Port of Alsea

BOAT LAUNCH AND MARINA CONSTRUCTION PROJECT

RFP 2018-01

ADDENDUM #2

Issued September 10, 2018

Proposals Due by 2:00 pm, September 28, 2018

II.B. Scheduling: The due date for proposals, along with the rest of the schedule, is being extended to allow perspectitve proposers sufficient time to review new materials and submit questions prior to submitting their proposal. ***The dates provided here supersede any conflicting dates provided in RFP 2018-01 and Addendum #1.***

The new dates are as follows:

1. Deadline of Written Questions: September 18, 2018, 5:00 pm.
2. Final Addenda will be issued by September 21, 2018, at 2:00 pm.
3. Due date for Proposals: September *28*, 2018 2:00 p.m.
4. Interviews: October 16-17, 2018
5. Notice of Intent to Award: October 18, 2018
6. Deadline for Selection Protests: October 29, 2018
7. Execute Contract: October 30, 2018
8. Notice to Proceed: October 30, 2018
9. GMP Proposals Due: January 31, 2019

Attachment B- New Boat Launch Drawings. Attached to this addendum are updated drawings of the replacement boat ramp and float project from OSMB. These drawings have been updated, and supersede the drawings provided in RFP 2018-01. *Please carefully review the drawings and note the changes.*

Additional Materials: The following additional materials are provided as requested. These documents, together with Attachment B of RFP 2018-01 and the drawings provided with this addendum, define the scope of work.

1. Utilities Diagram
2. Soil Sample Report
3. Sediment Characterization Report
4. Dredging Report dated 5/03/17
5. DSL Lease and Easement Diagram
6. NMFS Report re: new boat launch, dated March 7, 2016
    a. Proposers should assume that all "Terms and Conditions" listed in Section 2.8.4 of this report (beginning on Page 35) will need to be complied with, while the "Conservation Reccomendations" in Section 2.9 are not requirements.

The following additional information is provided. This information further defines the scope of work of this project.

1. The permitting process for the boat launch has begun and a report has been received from NMFS, but the process has not been finalized.
2. The marina improvements will require stand-alone permit documents, mitigation (if required), and consultations with permitting agencies.

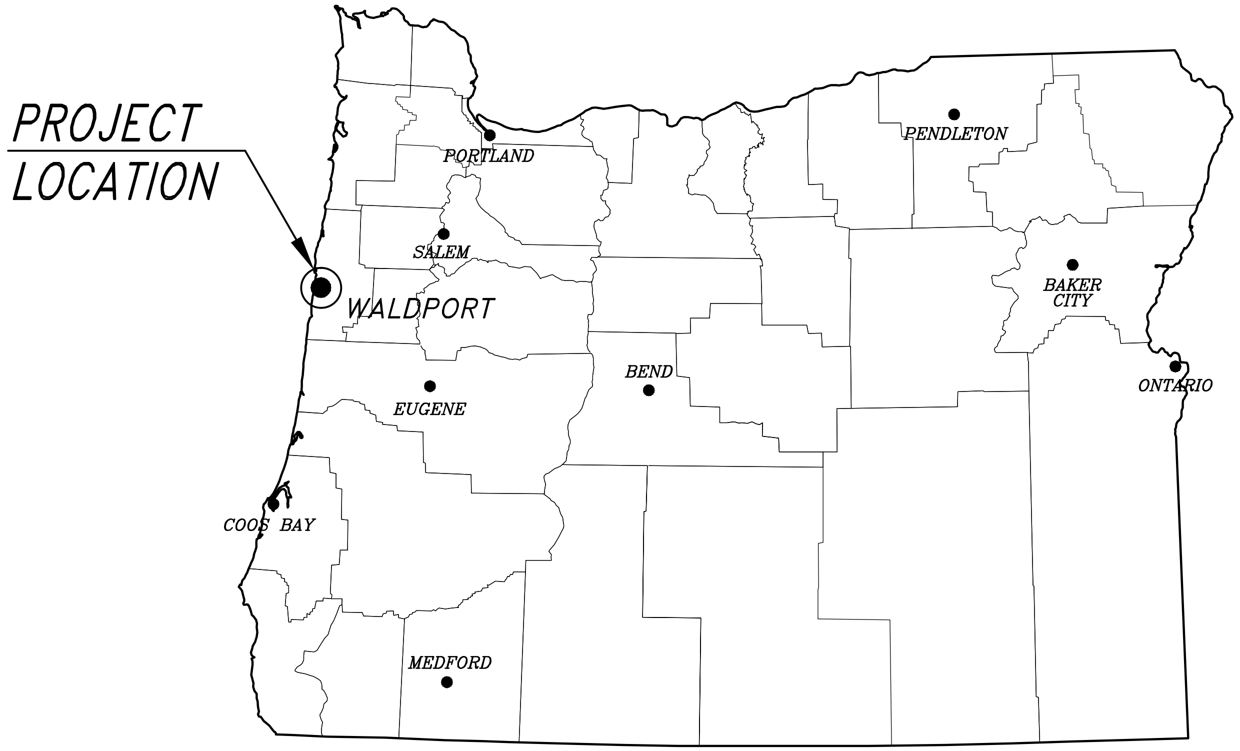
3. It is not yet known whether SLOPES IV Programattic Permitting can be utilized for the marina improvements, or whether a biological assessment will be required.
4. The Port has 6" water mains on Mill and Port Streets. The meters are 5/8".
5. The Port requires that water and power be available to the marina for maintenance purposes, but does not intend to provide water and power to the marina slips. The Port would prefer that conduit for water and power be run so that those services may be added in the future.
6. No past pile driving logs are available for review.
7. The Dredge Report provided has the last bathymetric survey.
8. Voltage in the overhead transmission lines across Alsea Bay is 69 KV.
9. The ramp/gangway to the new crabbing pier must be ADA accessible.
10. If possible, the Port would prefer a kayak launch at the east end of the Marina.
11. Grating is required on all floats, although the exact percentage of grating will be determined during the permitting process and is not yet known.
12. Both Port parking lots will be shut down and fully available to contractors to use for staging, etc.
13. For purposes of this proposal, Proposers should assume that no mitigation planning will be required for this project.

Attachment F- Part I- General Conditions Work. Proposers are asked to submit their estimated general conditions costs, based on a cost of work of $1,500,000. General conditions work is defined in the cost responsibility matrix. No detailed breakdown is required. While the general conditions cost is not scored as part of the proposal, the succesful proposer is expected to closely adhere to their estimates when negotiating a GMP.

Attachment F- Part III- Pre-Construction Services. Proposers are asked to submit a not to exceed amount for pre-construction services. It has come to the Port's attention that this cost is difficult to ascertain without knowing whether a biological assessment or mitigation will be required for the marina improvements. Therefore, the Port is amending its requirements as follows:

1) Proposers are asked to submit a NTE amount for pre-constrcuction services that assumes SLOPES IV programattic permitting is allowed and no biologial assessement or mitigation are required. (III.A)
2) Proposers are also asked to submit a NTE amount for pre-construction services that assumes a biological assessment will be necessary, but no mitigation will be necessary. (III.B)
3) Attachment F has been updated to reflect these changes, and is attached.

List of Attendees: The sign-in sheet from the pre-proposal conference is attached, per request.



LOCATION MAP

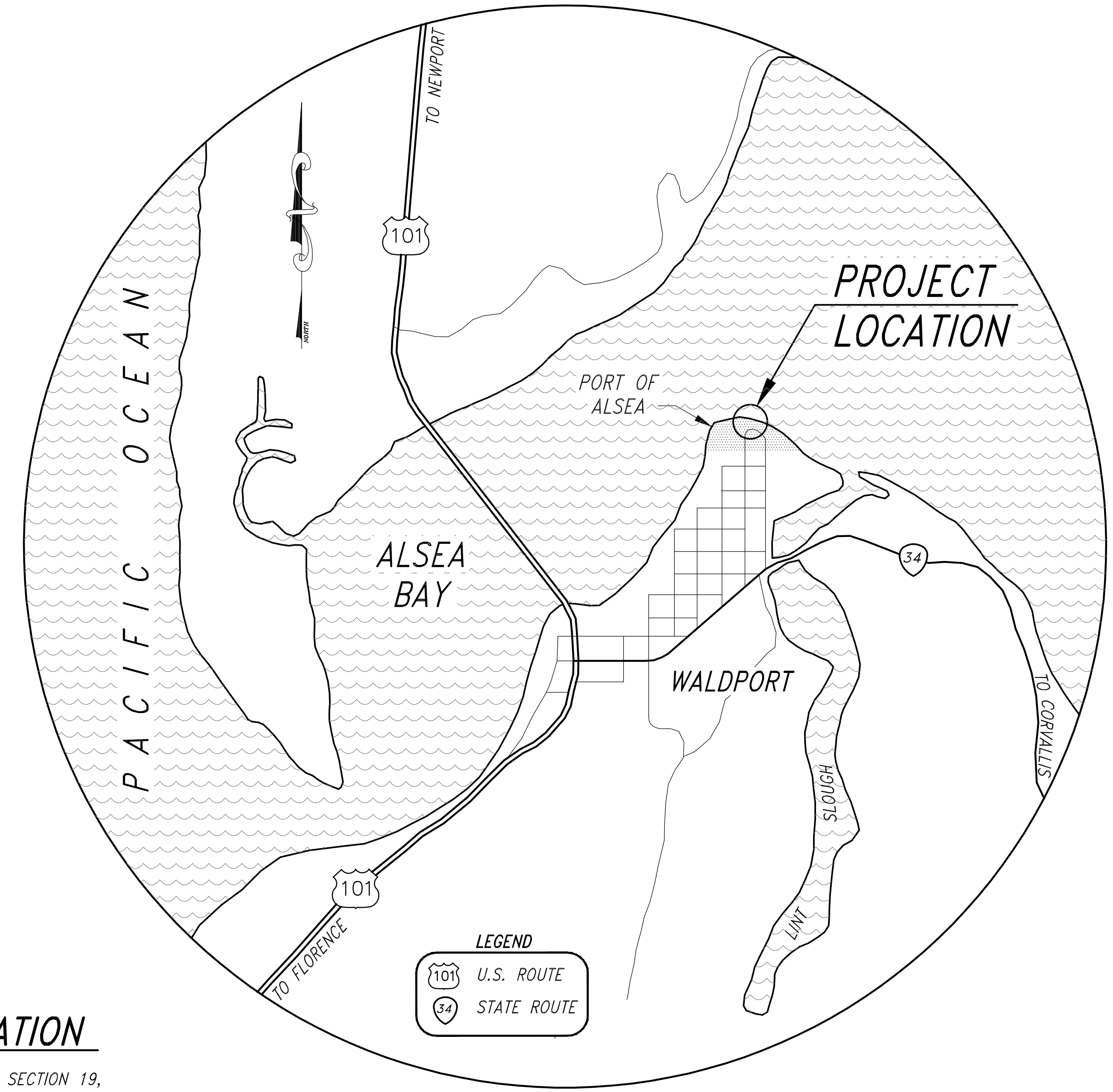
NOT TO SCALE

DRAWING INDEX

1. TITLE SHEET
2. EXISTING SITE PLAN
3. DEMOLITION PLAN
4. PROPOSED SITE PLAN
5. LAUNCH RAMP PLAN & PROFILE
6. LAUNCH RAMP CROSS SECTIONS

GEOGRAPHIC LOCATION

TOWNSHIP 13 SOUTH, RANGE 11 WEST, SECTION 19,
WILLAMETTE MERIDIAN, LINCOLN COUNTY, OREGON
LATITUDE 44°26'24" NORTH, LONGITUDE 124°03'30" WEST
USGS QUAD MAP: WALDPORT LANDING



VICINITY MAP

0 1/2 1
SCALE IN MILES

BOAT RAMP & FLOAT REPLACEMENT PROJECT

AT THE PORT OF ALSEA, ALSEA BAY
FOR THE PORT OF ALSEA

PERMIT REVIEW
NOT FOR CONSTRUCTION

DATE	REVISIONS	BY

APPROVED: BOATING FACILITIES MANAGER
FINAL CHECK BY
R. LANHAM DESIGNED BY
R. LANHAM DRAWN BY
04/09/15 DATE

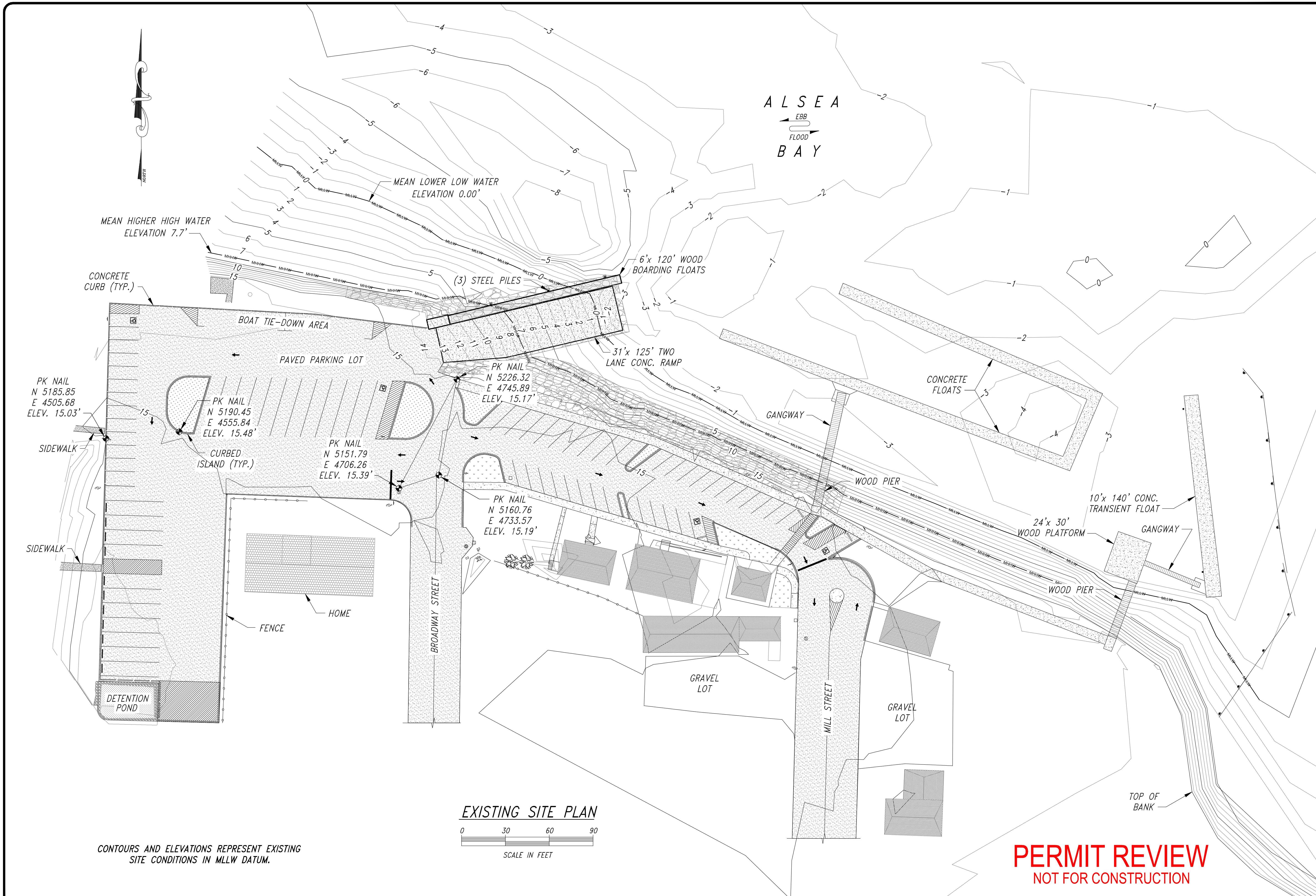
REGISTERED PROFESSIONAL ENGINEER 17237 OREGON JULY 19, 1983 RAYMOND G. LANHAM EXPIRES DECEMBER 31, 2016
PRELIMINARY
ENGINEER

OREGON STATE MARINE BOARD

TITLE SHEET
AT THE PORT OF ALSEA, ALSEA BAY
FOR THE PORT OF ALSEA

OREGON STATE MARINE BOARD

1 SHEET 6 OF
2101 - NG - 1
DRAWING NO.



PERMIT REVIEW
NOT FOR CONSTRUCTION

DATE	REVISIONS	BY

FILE PATH J:\Civil 3D Projects\Future Projects\Port of Alsea\Civil 3D\
FILE NAME 02 - Existing Site Plan 3D.dwg

APPROVED: BOATING FACILITIES MANAGER

FINAL CHECK BY

DESIGNED BY R. LANHAM

DRAWN BY R. LANHAM

DATE 05/15/13

REGISTERED PROFESSIONAL ENGINEER 17237 PRELIMINARY OREGON JULY 19, 1994 RAYMOND G. LANHAM EXPIRES DECEMBER 31, 2016

ENGINEER

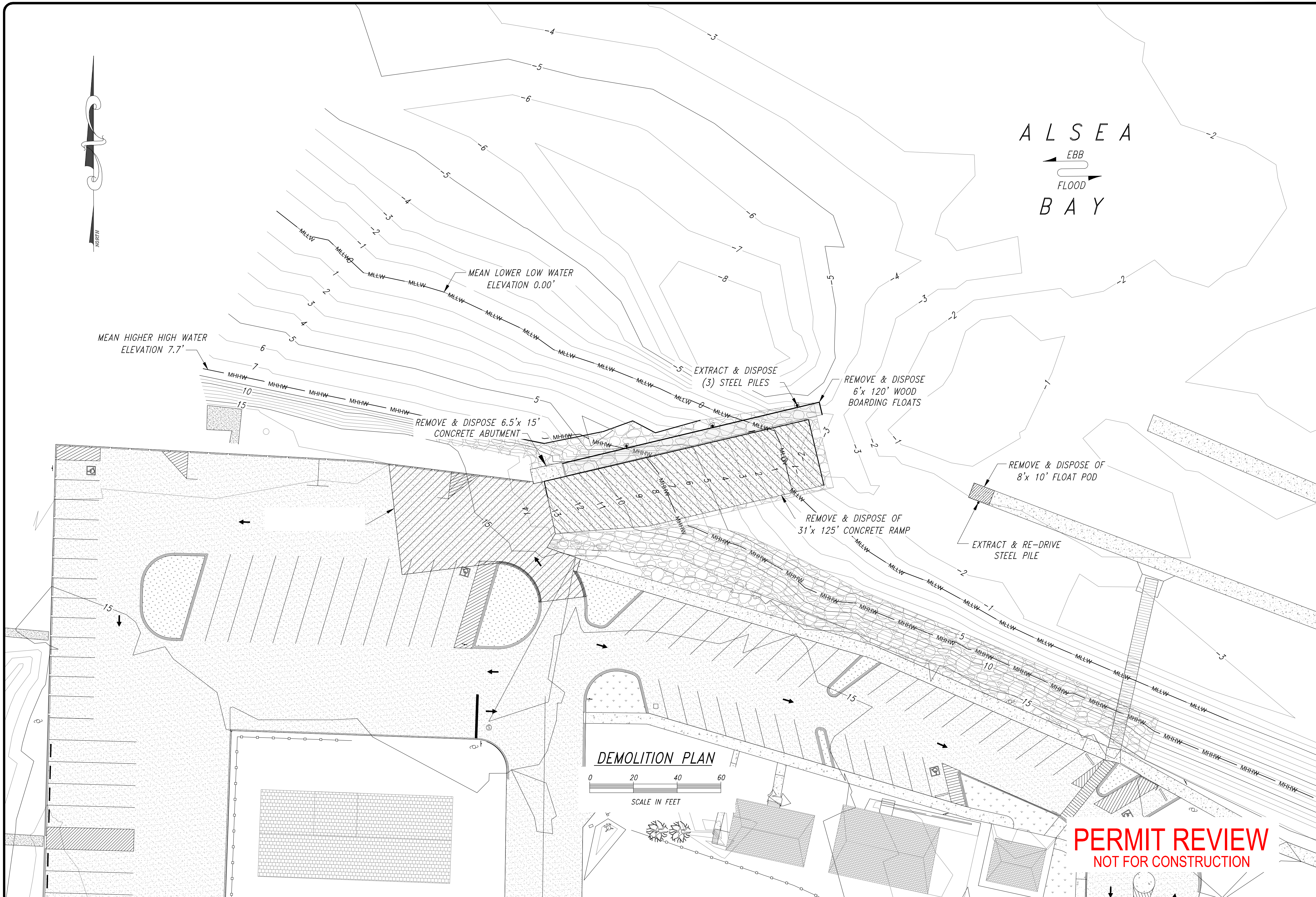
OREGON STATE MARINE BOARD

EXISTING SITE PLAN
AT THE PORT OF ALSEA, ALSEA BAY
FOR THE PORT OF ALSEA

OREGON STATE MARINE BOARD

SHEET 2 OF 6

DRAWING NO. 2101 - NG - 2



PERMIT REVIEW
NOT FOR CONSTRUCTION

REVISIONS	DATE	BY

APPROVED: BOATING FACILITIES MANAGER

FINAL CHECK BY

R. LANHAM
DESIGNED BY

R. LANHAM
DRAWN BY

04/09/15
DATE

REGISTERED PROFESSIONAL ENGINEER
17237
OREGON
JULY 19, 1984
RAYMOND G. LANHAM
EXPIRES DECEMBER 31, 2016
PRELIMINARY
ENGINEER

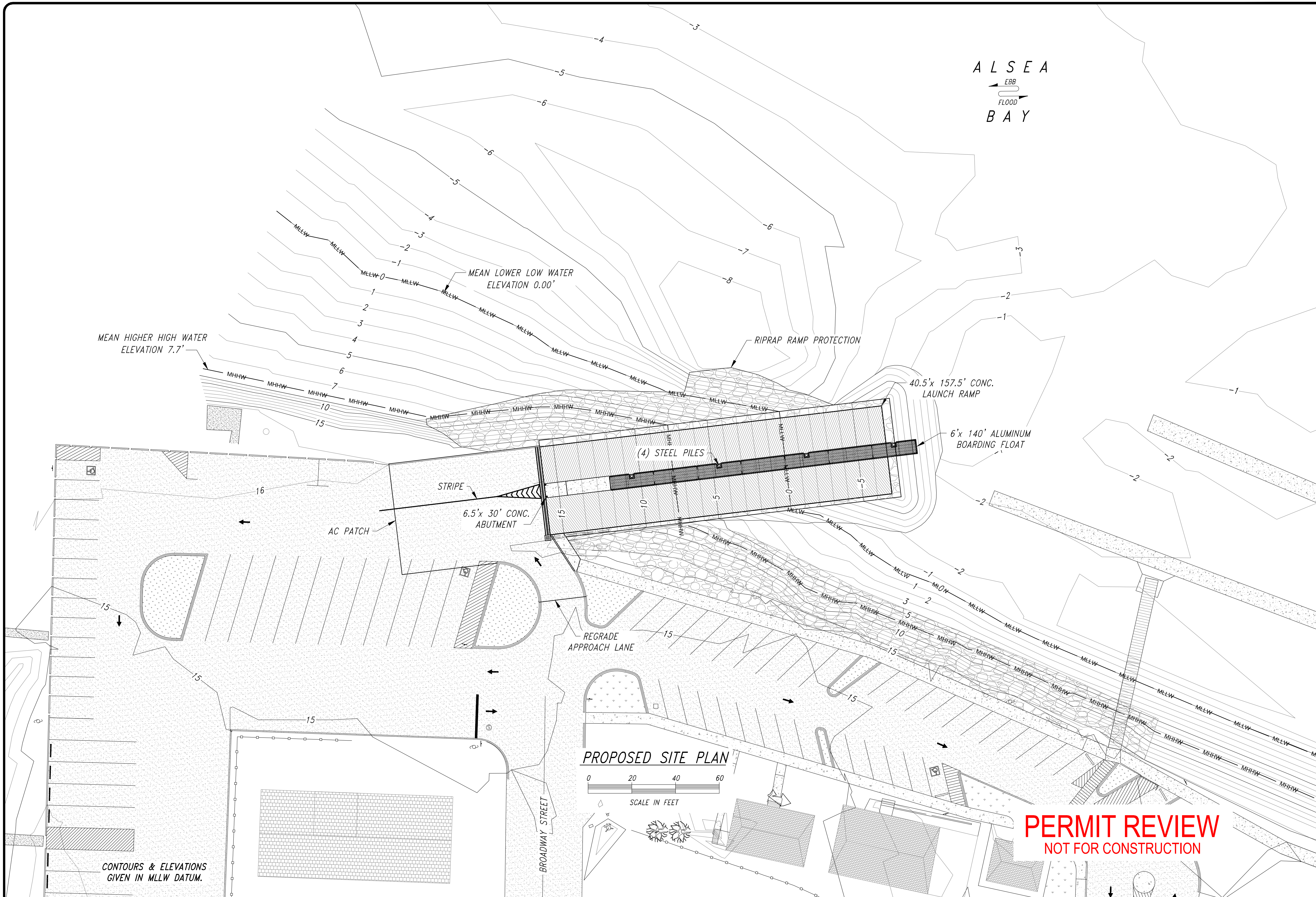
OREGON STATE MARINE BOARD

DEMOLITION PLAN
AT THE PORT OF ALSEA, ALSEA BAY
FOR THE PORT OF ALSEA

OREGON STATE MARINE BOARD

3 SHEET 6 OF

2101 - NG - 3
DRAWING NO.



REVISIONS	DATE	BY

APPROVED: BOATING FACILITIES MANAGER

FINAL CHECK BY

DESIGNED BY: R. LANHAM

DRAWN BY: R. LANHAM

DATE: 04/09/15

REGISTERED PROFESSIONAL ENGINEER — OREGON — RAYMOND G. LANHAM — PRELIMINARY — EXPIRES DECEMBER 31, 2016

ENGINEER

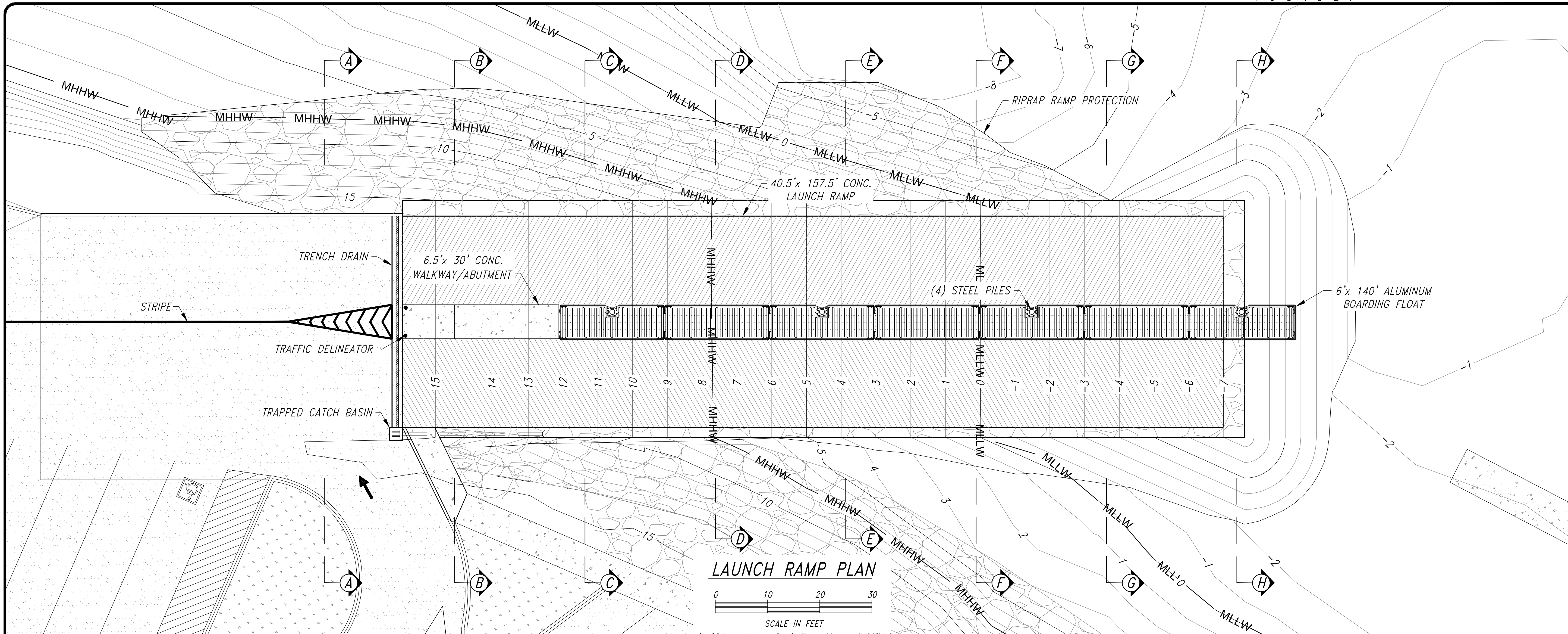
OREGON STATE MARINE BOARD

PROPOSED SITE PLAN
AT THE PORT OF ALSEA, ALSEA BAY
FOR THE PORT OF ALSEA

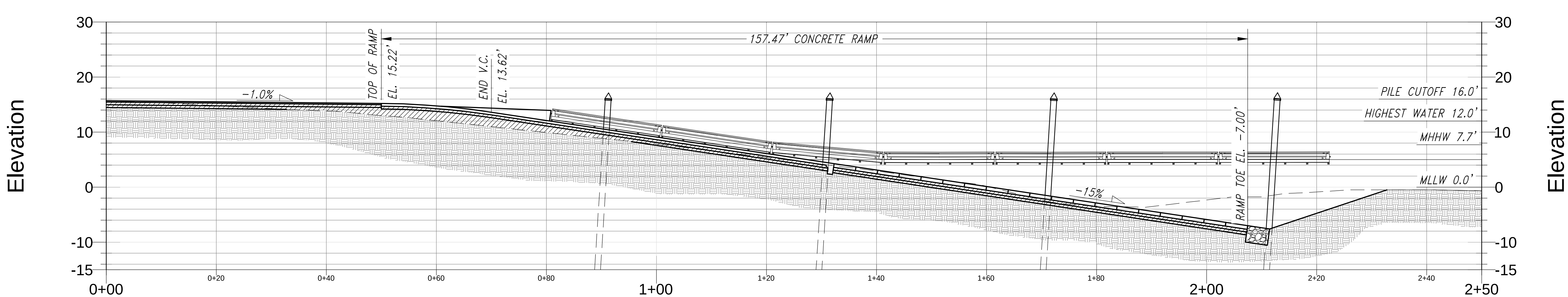
OREGON STATE MARINE BOARD

SHEET 4 OF 6

DRAWING NO. 2101 - NG - 4



LAUNCH RAMP PLAN



LAUNCH RAMP PROFILE

0 10 20 30
SCALE IN FEET

CONTOURS & ELEVATIONS GIVEN IN MLLW DATUM.

PERMIT REVIEW
NOT FOR CONSTRUCTION

REVISIONS		
DATE		BY

FILE PATH J:\Civil 3D Projects\Future Projects\Port of Alsea\Civil 3D\
FILE NAME 05 - Plan & Profile.dwg

APPROVED: BOATING FACILITIES MANAGER
FINAL CHECK BY
DESIGNED BY R. LANHAM
DRAWN BY R. LANHAM
DATE 04/09/15

REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY
OREGON
RAYMOND G. LANHAM
EXPIRES DECEMBER 31, 2016

OREGON STATE MARINE BOARD

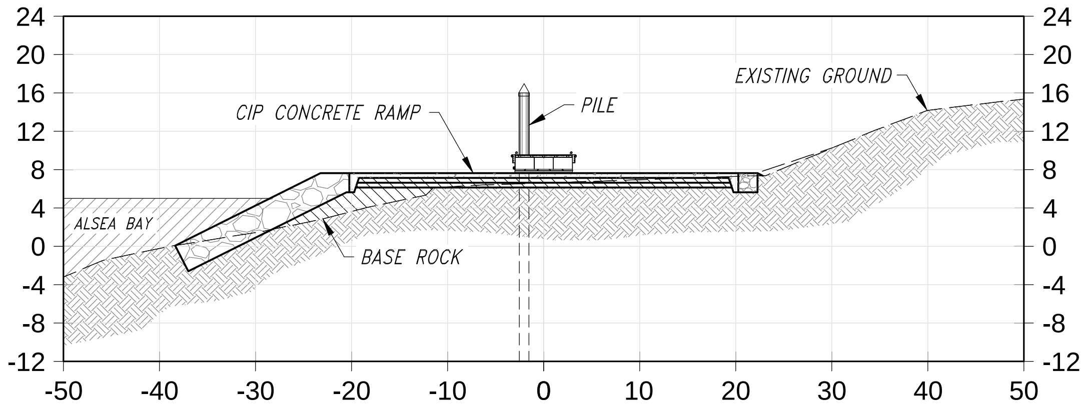
LAUNCH RAMP PLAN & PROFILE
AT THE PORT OF ALSEA, ALSEA BAY
FOR THE PORT OF ALSEA

OREGON STATE MARINE BOARD

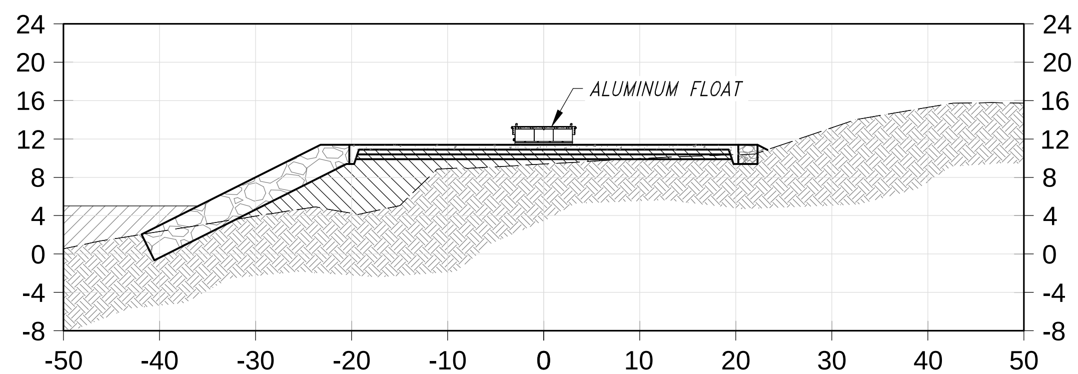
SHEET 5 OF 6

DRAWING NO. 2101 - NG - 5

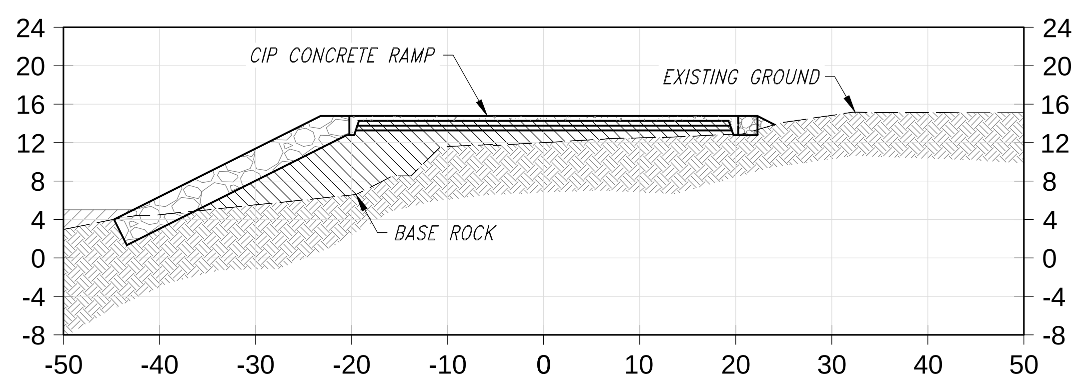
1+10.00 D–D



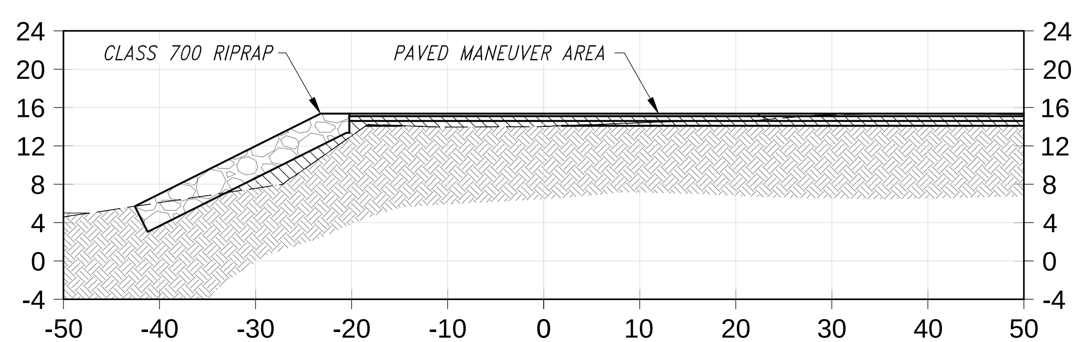
0+85.00 C–C



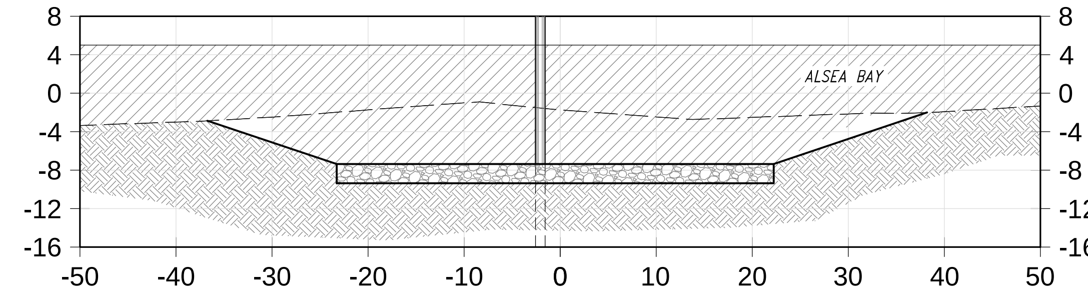
0+60.00 B–B



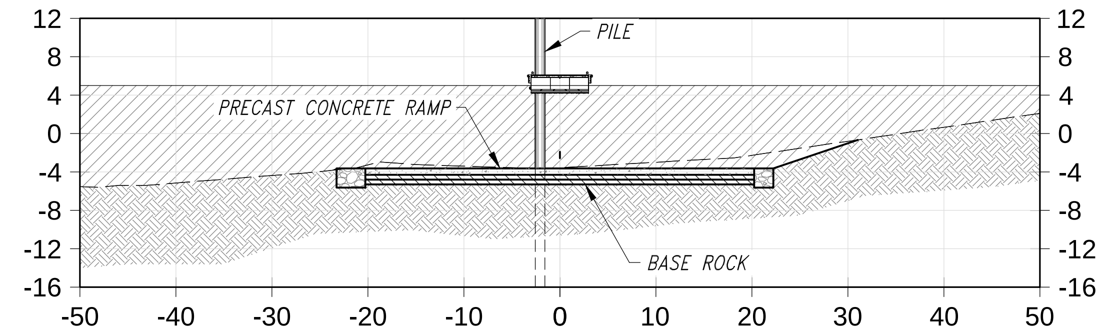
0+35.00 A–A



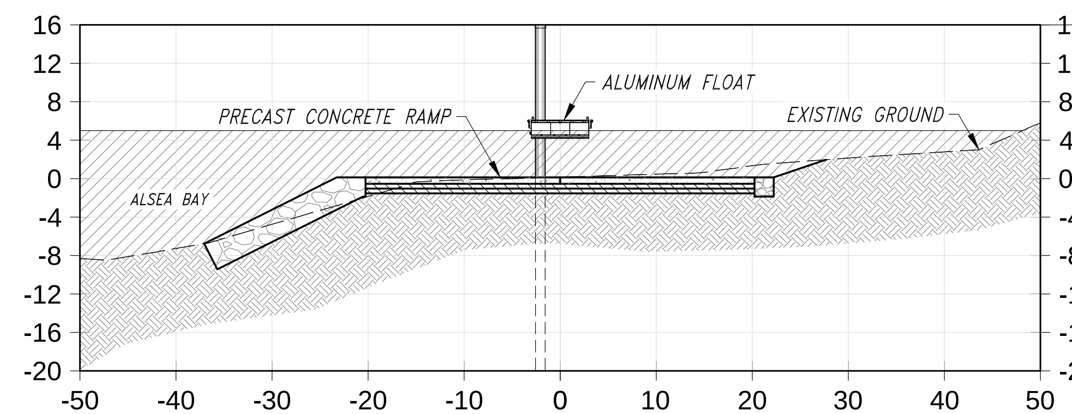
2+10.00 H–H



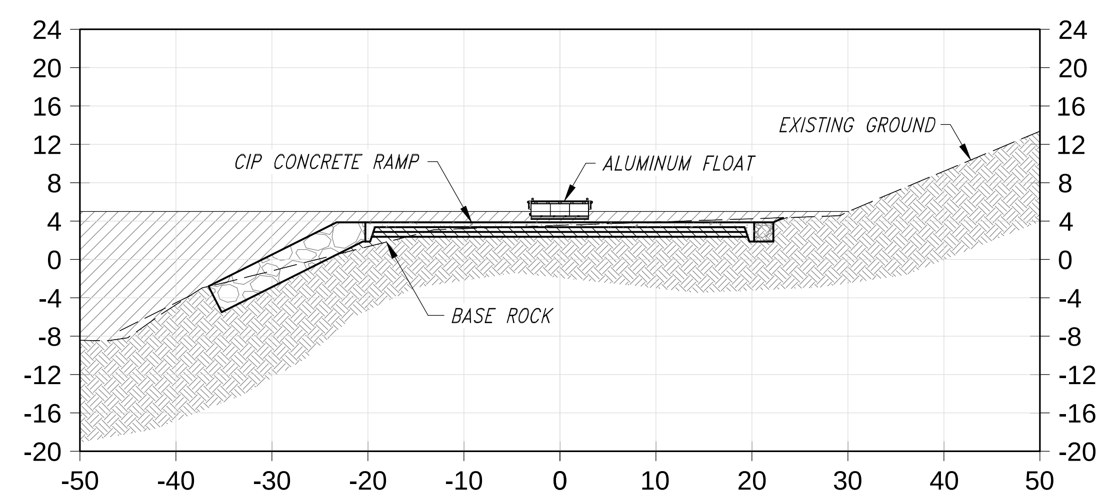
1+85.00 G–G



1+60.00 F–F



1+35.00 E–E



LAUNCH RAMP CROSS SECTIONS

0 10 20 30
SCALE IN FEET

ELEVATIONS GIVEN IN MLLW DATUM.

PERMIT REVIEW
NOT FOR CONSTRUCTION

DATE	REVISIONS	BY

FILE PATH: J:\Civil 3D Projects\Future Projects\Port of Alsea\Civil 3D\
FILE NAME: 06 - Ramp Cross Sections.dwg

APPROVED: BOATING FACILITIES MANAGER
FINAL CHECK BY: R. LANHAM
DESIGNED BY: R. LANHAM
DRAWN BY
DATE: 04/09/15

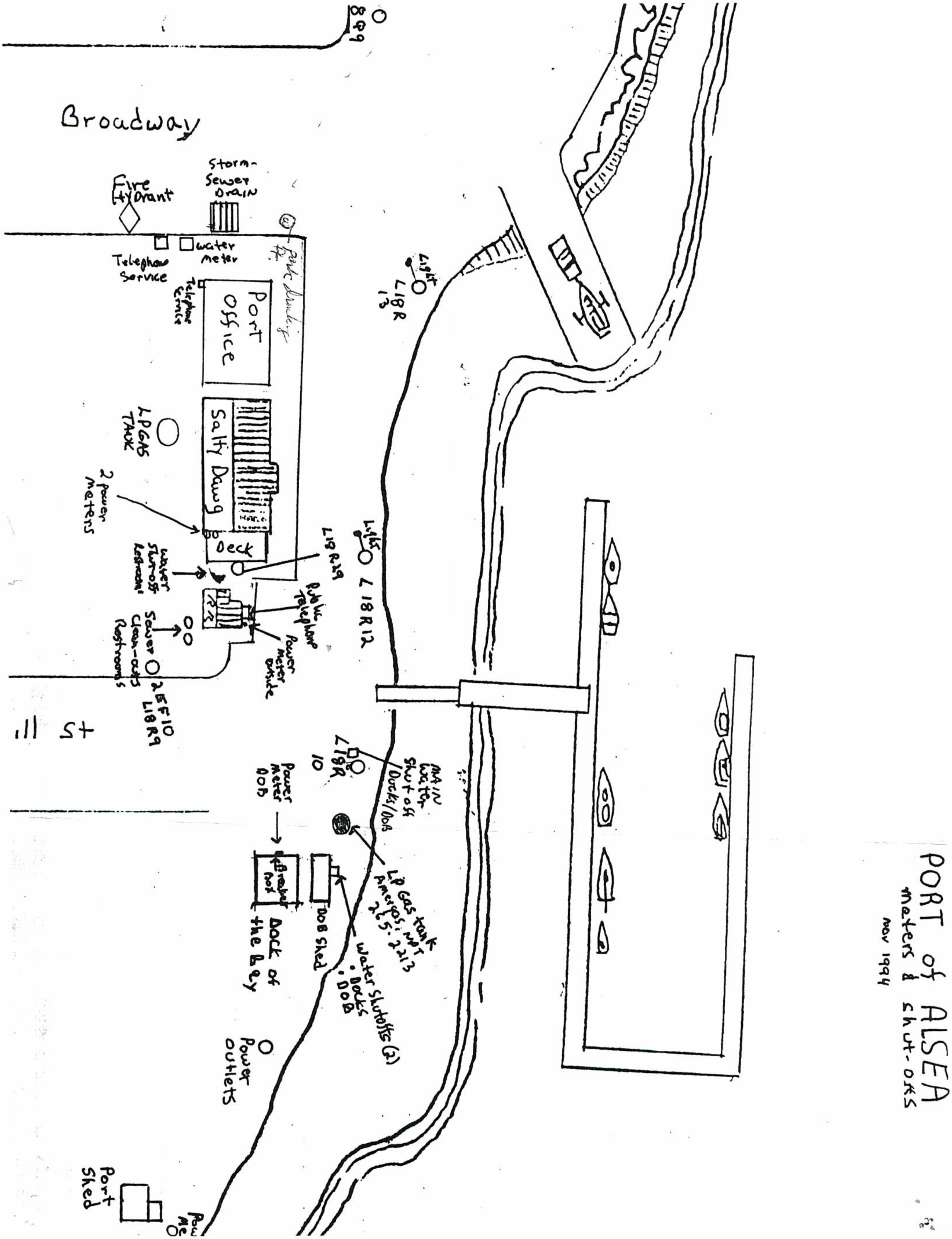
REGISTERED PROFESSIONAL ENGINEER 17237 OREGON JULY 19, RAYMOND G. LANHAM EXPIRES DECEMBER 31, 2015
PRELIMINARY
ENGINEER

OREGON STATE MARINE BOARD

LAUNCH RAMP CROSS SECTIONS
AT THE PORT OF ALSEA, ALSER BAY
FOR THE PORT OF ALSEA

OREGON STATE MARINE BOARD

SHEET 6 OF 6
2101 - NG - 6
DRAWING NO.


PORT of ALSEA
meters & shut-offs
Nov 1994
Broadway
Fire Hydrant
Storm-Sewer Drain
Telephone Service
water meter
Port Office
Salty Dawg
LP GAS TANK
2 power meters
Deck
Light
Public Telephone
Power meter outside
Sewer clean-outs Restrooms
MAIN Water shut off Docks/DOB
LP Gas tank
Power meter DOB
DOB Shed
Dock of the Bay
Water Shutoffs (2) Docks DOB
Power outlets
Port Shed
11 St

ACCREDITED IN ACCORDANCE WITH nelac

ALS Environmental
1317 South 13th Avenue
Kelso, WA 98626

Confirmation of Sample Receipt

To:	Rob Bishop	From:	Chris Leaf
Email:	portofalsea@casco.net	Email:	Chris.Leaf@ALSGlobal.com
Fax:		Fax:	
Phone:	541-563-3872	Phone:	360-577-7222 x3275

Samples for analysis have been received by ALS Environmental on 6/11/15 and assigned our Service Request number **K1506354**. **Please verify the following information and notify me of any corrections as soon as possible.**

The estimated completion date for this work is: **6/25/15**

Client: Port of Alsea
Project: Alsea

EDD Required: Yes

Tier: V

Report To:
Rob Bishop
Port of Alsea
P.O. Box 1060
Waldport, OR 97394

Billing Address:
Rob Bishop
Port of Alsea
P.O. Box 1060
Waldport, OR 97394

Comments:
Must run DUP/MS/MSD on client's sample.
SRM required on TOC, Metals, 8081, 8082, TBT, 8270, NWTPH

Thank you for your business!

A - Test is Authorized   H - Test is On Hold   HP - Test is On Hold Pending Input   P - Test is Authorized for Prep Only   C - Test has been Cancelled   * - Test has assigned QC

				160.3 Modified Moisture	160.3 Modified TS	160.4 Modified TS Fixed	160.4 Modified TVS	350.1M NH3 Plumb	6020A Metals T	7471B Hg	8081B PEST OC LL	8082A PCB LL	8270D SVO LL	9060 TOC	Archive Archive -20C
K1506354-001	Alsea	Sediment	6/10/15 1505	A	A	A	A	A	A	A	A	A	A	A	A

Test Comments:

Group	Test/Method	Samples	Comments
GenChem	160.3 Modified/TS	1	105 C
GenChem	160.4 Modified/TVS	1	440 C
SMO	Archive/Archive -20C	1	Per Sample per month
Metals	6020A/Metals T	1	Sb As Cd Cr Cu Pb Ni Ag Zn

				ASTM D854 Sp Grav	ASTM E1109-86 B Density	Butyltins Pore BUTYLTINS_PORE	Butyltins BUTYLTINS_TBT	NWTPH-Dx NWTPH SGT	Pore Pore	PSEP PS PSEP PartSizeCB	PSEP Sulfide PSEP Sulfide
K1506354-001	Alsea	Sediment	6/10/15 1505	A	A	HP	A	A	A	A	A

ALS Environmental

CHAIN OF CUSTODY

60702

001

SR# K1506354

COC Set____ of ____

COC# __________

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: ALSEA	Project Number:
Project Manager: JACK AKINS	
Company: EMC ENGINEERS	
Address:	
Phone #:	email:
Sampler Signature:	Sampler Printed Name:

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	7D: 350.1M / NH3 Plumb	7D: Butyltins Pore /	7D: Pore / Pore	7D: PSEP Sulfide / PSEP Sulfide	14D: 8081B / PEST OC LL	14D: 8082A / PCB LL	14D: 8270D / SVO LL	14D: Butyltins / BUTYLTINS_TBT	14D: NWTPH-Dx / NW TPH SGT	28D: 7471B / Hg	28D: 9060 / TOC	180D: 6020A / Metals T	180D: ASTM D854 / Sp Grav	180D: PSEP PS / PSEP PartSizeCB	365D: 160.4 Modified / TS Fixed	365D: 160.4 Modified / TVS	999D: 160.3 Modified / Moisture	999D: 160.3 Modified / TS	999D: Archive / Archive -20C	999D: ASTM E1109-86 / B Density	1	2	3	Remarks
1. ALSEA		6-10-15	3:05	SED																									
2.																													
3.																													
4.																													
5.																													
6.																													
7.																													
8.																													
9.																													
10.																													

See Bottle List

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. CLP Like Summary (no raw data)

___ IV. Data Validation Report

___ V. EDD

Invoice Information

P.O.# ________

Bill To: ________

Turnaround Requirements

___ 24 hr. ___ 48 hr.

___ 5 Day

___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____ (Circle One)

Special Instructions/Comments:

	Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature	[signature]	[signature]				
Printed Name	DAVID NIEHENKE	TRAN AIR				
Firm	NRC INC	ALS				
Date/Time	6-11-15 11:48	6/11/15 1148				

ALS

PC CV

Cooler Receipt and Preservation Form

Client / Project: EMC - Eng/Sci   Service Request K15 06354

Received: 6/11/15   Opened: 6/11/15   By: [signature]   Unloaded: 6/11/15   By: [signature]

1. Samples were received via? Mail Fed Ex UPS DHL PDX Courier **(Hand Delivered)**
2. Samples were received in: (circle) **(Cooler)** Box Envelope Other ______ NA
3. Were custody seals on coolers? NA **(Y)** N   If yes, how many and where? 2 front

   If present, were custody seals intact? **(Y)** N   If present, were they signed and dated? **(Y)** N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
5.7	5.7	*1.4	1.4	Ø	337			

4. Packing material: Inserts **(Baggies)** **(Bubble Wrap)** Gel Packs **(Wet Ice)** Dry Ice Sleeves ______
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y **(N)**
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA **(Y)** N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y **(N)**
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* **(NA)** Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? **(NA)** Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* **(NA)** Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* **(NA)** Y N
12. Was C12/Res negative? **(NA)** Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions:

*Temp Blank insulated by bubblewrap.
Samples not labeled
COC not filled out - no tests marked. Assigned analyses per project profile. CL 6/11/15

EMC
Grants Pass * Jacksonville * Medford, OR
GP Office: 1867 Williams Hwy., Suite 216, Grants Pass, OR, 97527
Jville Office: 450 Conestoga Dr., Jacksonville, OR, 97530
Ph: 541-474-9434, Ext. 1 * Fax 541-727-5488
emc@emcengineersscientists.com; bioscapetechnologies@charter.net
http://www.emcengineersscientists.com
- Engineers/Scientists, LLC (a BioScape Technologies Affiliate)

8/21/15 SEDIMENT CHARACTERIZATION REPORT FOR THE PORT OF ALSEA
Launch Ramp & Boat Basin

Utilizing Data from SEF-Guided Lab Analyses of Sediment Samples Collected During 6/10/15 Sampling Event

TABLE OF CONTENTS

1.0 Introduction

A sediment quality study was conducted on June 10th, 2015 to support maintenance dredging of the Port of Alsea, Launch Ramp and Boat Basin. The Port of Alsea submitted a final Sampling and Analysis Plan (SAP) in May 2015 which outlined the proposed dredge areas containing approximately 30,500 yd.^{3} of sediments. The estimates were derived from a hydrographic survey conducted by the Oregon State Marine Board in 2015, and include allowances for sloughing and over dredge. This sediment characterization report describes the results of field sampling activities and sediment chemistry carried out according to the methods and analysis set forth in the previously submitted and revised per the program review group stipulations seen in the SAP (**Attached**).

2.0 Purpose

The purpose of the study is to determine the quality of the sediment to be removed from the birthing space, and suitability for unconfined, flow lane disposal of this settlement. All field activities and chemical analyses were performed in general accordance with the settlement evaluation framework (SEF) prepared by the US Army Corps of Engineers, the US Environmental Protection Agency and the Oregon Department of Environmental Quality. The stated data goals, as outlined in Section 2.0 of the submitted and approved SAP were, in addition to characterizing the sediments according and in compliance with the SEF, 2009, to collect, handle and analyze representative sediment from the project in accordance with protocols and quality assurance control requirements, characterized sediments to be dredged for evaluation, and analyze for physical and chemical parameters according to the cited SEF 2009.

3.0 Site History Information

Site history information is available in the attached SAP document in Section 1.2, which includes site history and prior settlement characterization and current project conditions.

4.0 Project Ranking

No USACE studies of Alsea sediments have been found. However, the Port of Alsea has had no history of commercial activity since 1957 (see Port of Alsea 5/25/15 SAP, Section 1.2, Site Information).

Past analytical data has not been found at this Port. The sediment samples collected during the 6/10/15 sampling event called for a single DMMU, represented by a composite of four discrete subsamples. Due to the history and use of this Port, a ranking of “low” was initially assumed. The proposed dredge prism volume is less than 40,000 yds^3, adequately low volume for even “moderate” ranked Sites, represented by a single DMMU. As to be demonstrated by the conclusions of the SDR, this low ranking assumption is confirmed by the laboratory analytical results.

5.0 Project Team and Responsibilities

Jack Akin, MS, PE of EMC – Engineers/Scientists, LLC (EMC) worked as the Project Manager for this event. Assisting EMC was Brian Perleberg, Principal Scientist from Northern Resources Consultants (NRC), and David, Certified Boat Captain, also from NRC. NRC provided and operated the boat and vibracore sampler. EMC directed core locations and sample depths. After the determined length of tube was vibrated through the sediment prisms, the cores were measured through the top of the tube, extracted, capped and placed top-up within the boat. All tubes were then transported ashore to the sample core inspection and packing area. All sampling and navigation was performed by NRC.

6.0 Sample Collection and Handling Procedures

Sampling location, positioning, decontamination, sampling method and logging, field compositing, replicates, transport, and chain of custody were conducted as generally described in Section 4 of the submitted SAP. Departures from any of these details are described in the section below entitled "**SAP Modifications**".

After directing the team and equipment to each sampling location, EMC determined the elevation of the basin floor (using MLLW application and 25' survey rod), and then determined the penetration depth required. NRC then selected the appropriate tube length to fit mudline penetration requirements and drove the core to the bottom of the new surface material (NSM), or as close to the NSM bottom possible until reaching a point of practical refusal. The sampler is designed for small boat operation and is powered by two 12 volt batteries. Aluminum 3" core tube lengths were used, as determined by EMC, to accommodate prisms at each location. After each sediment core was collected the tube was withdrawn by winch and capped at each end. At the end of the sampling period (end of the day) the core tubes were transported to an on-shore, clean and tarped area, and then cut open. The SDI core catchers were cut off by chop saw and the tubes were cut longitudinally by fitted router to expose the sediment cores. Field notes were taken by EMC as described in Section 4.3 of the attached SAP.

EMC photographed and characterized (noted soil types, organisms, odors, physical properties, moisture content as physically and visibly observable), and grabbed the determined quantity of the sample (equal to the estimated quantity of the shortest core within the subsample set, in order to assure equal composites). After final determination of the reasons for % recovery rate (penetration of tube vs core length obtained, whether due to compression, escape of softer sediments during core lift, or voids), the appropriate portions of dredge prism and NSM material were estimated. During the placement of the individual subsamples the sediments were hand mixed within dedicated stainless steel bowls and then, after all subsamples were mixed and placed into lab-supplied containers.

All actions requiring human contact with the sediment samples were performed while wearing nitrile gloves. Gloves were changed when necessary to prevent cross-contamination. The containers were labeled and thence placed into coolers and iced. Each cooler contained a temperature vial.

A custody seal was placed on the outside of each container. The containers were transported with chain of custody by NRC, who delivered them to the selected laboratory (ALS). Receipt of the samples was confirmed by ALS on June 11th, 2015.

7.0 SAP Modifications

As summarized below in **TABLE A** (Sampling Locations), horizontal and vertical soil core elevations were revised as a result of field conditions that were encountered during the sampling event. With respect to horizontal locations, the event latitudes and longitudes were adjusted for Core ID SL1, after encountering refusal. Other adjustments, all due to refusal and loose sands, in all cases, caused inability to collect NSM samples. (See TABLE A, the attached SEDIMENT CORE LOGS and the attached annotated drawing entitled "PROPOSED SAMPLING LOCATIONS OVERVIEW PLAN").

The attempt to sample material planned to be exposed as the new basin floor (NSM) failed as shown in TABLE A and as described in the attached SEDIMENT CORE LOGS, but nevertheless would not have been analyzed unless analytical results from this sampling event indicated a 2009 SEF parameter exceedance, as provided per PSET consultation (Section 4.2.4.3 does not seem to specify, but leaves the decision as to whether or not to analyze NSM at a given Site at the discretion of the PSET).

RE all four composite sampling station locations, two or more attempts were made at each location to achieve the SAP directives for this project. After two or more attempts the NSM was found to not be obtainable at all locations. Usually the refusals were caused when medium/fine (loosely packed) sands were encountered during the collection. These sands tended to absorb Vibracorp vibration energy, and generally thus refused tube penetration. Further, sands at NSM depths were not very fine-grained and resisted packing, and so were not held in by the core catcher as the sample was drawn up for capping.

8.0 Physical and Chemical Testing Results

The Columbia Analytical Services (ALS) reports are attached, but a summary of the analytical results are presented in the following sections and in **TABLE B** (Testing Results Comparison).

8.1 Physical Testing Results: Fines (very fine sands, fine sands, and medium sands) are the predominate sediments at the Port of Alsea (over 90% total sediment recovered weight). Total solids averaged just over 50%, with a total volatile solids fairly low at about 2.9% (shown in **TABLE B**).

8.2 Chemical Testing Results: This section compares sediment chemistry testing results with SEF screening levels to assess the suitability of the dredge material for flow lane disposal. It is herein noted that none of the analytes detected exceeded their corresponding screening levels (as shown in **TABLE B**).

8.2.1 Metals: Metals were detected in the sediment at well below SEF limits.

8.2.2 Tributyltin: Tributyltin (TBT) was detected in the sediment at well below SEF limits.

8.2.3 Polynucleic Aromatic Hydrocarbons and Other Organics: No detections of semivolatile organics and other organics exceeded their SEF screening levels.

8.2.4 Pesticides and PCBs: Pesticides or PCBs were detected in the sediment at well below SEF limits.

8.3 Quality Assurance/Quality Control

Laboratory quality control samples included method blanks and surrogate recoveries as specified by the analytical method. Additional quality control analyses included laboratory duplicates, matrix bikes, matrix spike duplicates and laboratory control samples. Several quality control issues were identified, including problems with calibrations, matrix spike recoveries and control criteria exceeded in surrogates, but these problems did not significantly affect data quality. In general, it is an EMC opinion that sample composite heterogeneity is inferred by a comparison of duplicate, and in some cases, triplicate analyses of both samples. For more detail referred to the case narrative in the ALS analytical results (attached).

EMC
Grants Pass * Jacksonville * Medford, OR
GP Office: 1867 Williams Hwy., Suite 216, Grants Pass, OR, 97527
Jville Office: 450 Conestoga Dr., Jacksonville, OR, 97530
Ph: 541-474-9434, Ext. 1 * Fax 541-727-5488
emc@emcengineersscientists.com; bioscapetechnologies@charter.net
http://www.emcengineersscientists.com
- Engineers/Scientists, LLC (a BioScape Technologies Affiliate)

TABLE A – Sampling Locations

Sample ID	061015-Alsea	061015-Alsea	061015-Alsea	061015-Alsea
Core ID	DMMU1-SL-1b	DMMU1-SL-2	DMMU1-SL-4	DMMU1-SL-5b
Proposed Top of NSM Elevation, MLLW	-10	-10	-10	-10
Proposed NSM Sample Elevation, MLLW	-12	-12	-12	-12
Proposed Latitude	44° 26' 05.72" N	44° 26' 05.22" N	44° 26' 05.23" N	44° 26' 03.85" N
Proposed Longitude	-124° 03' 34.40" W	-124° 03' 33.06" W	-124° 03' 30.04" W	44° 26' 03.85" N
Event Latitude	-124° 03' 34.40" W	44° 26' 05.22" N	44° 26' 05.23" N	44° 26' 03.85" N
Event Longitude	124°-10'-33.84"	-124° 03' 33.06" W	-124° 03' 30.04" W	44° 26' 03.85" N
Event Water Elevation, MLLW	3.0	8.2	6.2	5.8
Event Tide Elevation, MLLW	+0.66	+3.63	+3.1	+1.8
Penetration	6.1	8	7.2	6.2
Event NSM Sample Elevation, MLLW	-8.44	-9.9	-7.5	-10.2

* *Practical refusal encountered, NSM not reached. See field logs.*

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Grants Pass * Jacksonville * Medford, OR
GP Office: 1867 Williams Hwy., Suite 216, Grants Pass, OR, 97527
Jville Office: 450 Conestoga Dr., Jacksonville, OR, 97530
Ph: 541-474-9434, Ext. 1 * Fax 541-727-5488
emc@emcengineersscientists.com; bioscapetechnologies@charter.net
http://www.emcengineersscientists.com
- Engineers/Scientists, LLC (a BioScape Technologies Affiliate)

TABLE B - DMMU (Dredge Prism Only): Testing Results Comparison

*** SEF SL (Sediment Evaluation Framework, 2009)**

Physical Parameters	Result*	Q	SEF SL*
* - reporting limit reported for non-detected results			
Gravel	0.49		
Very Coarse Sand	0.24		
Coarse Sand	1.01		
Medium Sand	13.46		
Fine Sand	70		
Very Fine Sand	7.71		
Silt	3.88		
Clay	2.49		
Conventional Parameters			
Total Solids (%)	71.4		
Volatile Solids (%)	2.91		
Total Organic Carbon (%)	0.89		
Total Sulfide (mg/Kg)	7.9		
Total Metals			
Antimony	0.041	J,N	150
Arsenic (mg/Kg)	5.44		57
Cadmium (mg/Kg)	0.038		5.1
Chromium (mg/Kg)	19.9		260
Copper (mg/Kg)	7.16		390
Lead (mg/Kg)	3.74		450
Mercury (mg/Kg)	0.009	J	0.41
Nickel (mg/Kg)	12.8		---
Silver (mg/Kg)	0.013	J	6.1
Zinc (mg/Kg)	36.7		410
Semivolatile Organic Compounds			
Polynuclear Aromatic Hydrocarbons (ug/kg)			
Naphthalene	2.9	U	2100
Acenaphthene	3.2	U	500

EMC
Grants Pass * Jacksonville * Medford, OR
GP Office: 1867 Williams Hwy., Suite 216, Grants Pass, OR, 97527
Jville Office: 450 Conestoga Dr., Jacksonville, OR, 97530
Ph: 541-474-9434, Ext. 1 * Fax 541-727-5488
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Acenaphthylene	2.6	U	560
Fluorene	3.3	U	540
Phenanthrene	3.6	U	1500
Anthracene	3.2	U	960
2-Methylnaphthalene	2.8	U	670
Total LPAHs	21.6		5200
Fluoranthene	3.7	U	1700
Pyrene	3.7	U	2600
Benz[a]anthracene	3.6	U	1300
Chrysene	4.1	U	1400
Benzo(b+k)fluoranthene	7.4	U	3200
Benzo(a)pyrene	3.6	U	1600
Indeno(1,2,3-cd)pyrene	3.2	U	600
Dibenzo(a,h)anthracene	3	U	230
Benzo(ghi)perylene	3.7	U	670
Total HPAHs	36		12000
Chlorinated Hydrocarbons (ug/kg)			
1,4-Dichlorobenzene	2.5	U	110
1,2-Dichlorobenzene	2.4	U	35
1,2,4-Trichlorobenzene	2.6	U	31
hexachlorobenzene	3.3	U	22
Phthalates (ug/kg)			
Dimethyl phthalate	4	U	71
Diethyl phthalate	3.7	U	200
Dibutyl phthalate	5.5	J	1400
Butyl benzyl phthalate	3.7	U	63
Bis(2-Ethylhexyl) Phthalate	8.9	U	1300
Di-N-Octyl Phthalate	3.2	U	6200
Phenols (ug/kg)			
Phenol	5.6	J	420
2-Methylphenol	4.1	U	63
4-Methylphenol	4.5	U	670
2,4 Dimethylphenol	6.3	U	29
Pentachlorophenol	5.3	U	400

EMC
Grants Pass * Jacksonville * Medford, OR
GP Office: 1867 Williams Hwy., Suite 216, Grants Pass, OR, 97527
Jville Office: 450 Conestoga Dr., Jacksonville, OR, 97530
Ph: 541-474-9434, Ext. 1 * Fax 541-727-5488
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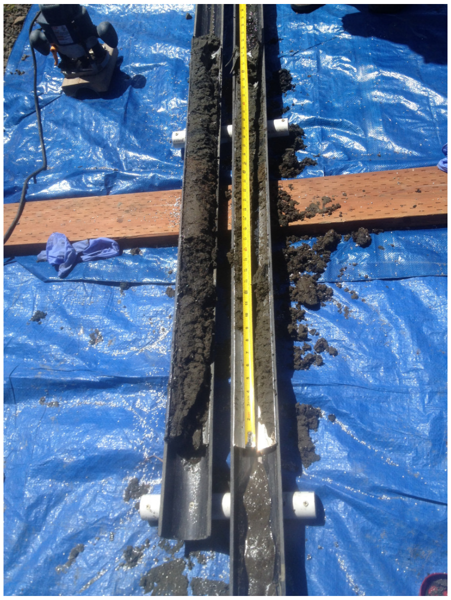
Misc. Extractables (ug/kg)			
Benzyl Alcohol	4.9	U	57
Benzoic Acid	96	U	650
Dibenzofuran	3.4	U	540
Hexachlorobutadiene	3	U	11
N-Nitrosodiphenylamine	3.2	U	28
Pesticides (ug/kg)			
4,4'-DDD	0.085	U	16
4,4'-DDE	0.1	U	9
4,4'-DDT	0.078	U	34
Aldrin	0.056	U	---
cis-Chlordane	0.063	U	---
trans-Chlordane	0.072	U	---
Total Chlordane	0.135		---
Dieldrin	0.083	U	---
Heptachlor	0.055	U	---
Lindane	0.051	U	---
PCB Aroclors (ug/kg)			
PCB-aroclor 1016	2.1	U	
PCB-aroclor 1221	2.1	U	
PCB-aroclor 1232	2.1	U	
PCB-aroclor 1242	2.1	U	
PCB-aroclor 1248	2.1	U	
PCB-aroclor 1254	2.1	U	
PCB-aroclor 1260	2.1	U	
Total PCB Aroclors	14*		**130**
Chemicals of Special Occurrence			
TBT Pore Water (ug/kg)	0.015	U	0.15
Diesel Organics, mg/KG	3.6	J	---
Residual Organics, mg/KG	8.5	J	---

Note RE Qualifiers for Table B: As presented within the attached laboratory analytical results, N: The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.**; J (corrected from the "T" provided by the laboratory due to a transcription error):** The result is an estimated value; **U:** The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. ***Note: Highest MRL value is used for Total PCB Aroclors.**

The photos above show typical sediment penetration procedure, performed after the Project Manager (EMC) has measured depth to mudline, read tide level MLLW, calculated mudline elevation MLLW and called for necessary penetration length. Field personnel (NRC) proceed to select aluminum tube length and penetrate sediment floor to specified penetration depth. Once achieving desired depth or refusal they then extract the tube and cap the tube end. The space at the top of the tube is measured, and the % recovery calculated by EMC. Finally the top of the tube is capped and the tube and core labeled and set aside.

After the in-water work is completed the cores are transferred to a sheltered and tarped work area. The tubes are individually cut open by router and the cores exposed. Each dredge prism and NSM section for each composite (sub-sample) is measured, and EMC log observations (color, grain size, odors, biota, etc.).



After core inspections and log entries are completed the composite cores are collected into individual, stainless steel bowls, one per dredge prism and NSM, until all composites are collected for the sample. Bowls are covered by heavy-duty aluminum foil between composite inspection and collection procedures.

After collection of all composites into bowls is completed for each sample the sediments are completely mixed and placed into the labeled laboratory-supplied sample containers. These containers are then placed into coolers that are supplied with ice to keep the samples at about 4 deg. Celcius. The ice chests were delivered by NRC to the laboratory (ALS), as described and dated in the chain-of-custody.

EMC - Engineers/Scientists, LLC
Grants Pass * Jacksonville * Medford, OR
GP Office: 1867 Williams Hwy., Suite 216, Grants Pass, OR, 97527
Jville Office: 450 Conestoga Dr., Jacksonville, OR, 97530
Ph: 541-474-9434 * Cell: 541-261-9929 * Fax 541-727-5488
emc@emcengineersscientists.com; http://www.emcengineersscientists.com

Port of Alsea 5/03/17
Ms. Roxie Cuellar, Port Manager
Waldport, OR

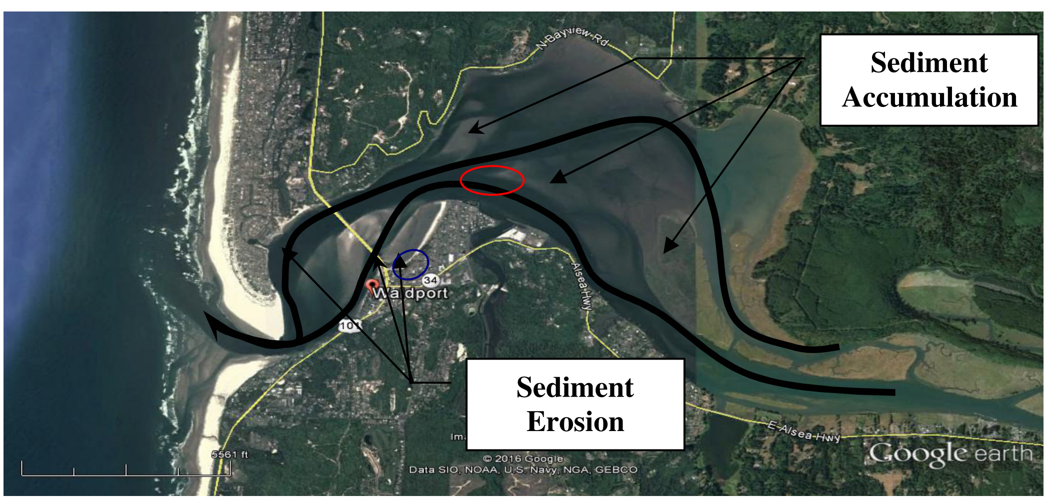
cc: USACE, Brad Johnson

Executive Summary

On February 28th, 2017 the Port of Alsea (Port) completed its dredging of its basins as shown in the attached drawing set entitled "2017-05 Site Plan – Completed Project". It is estimated that about 23,500 cubic yards of basin sediment was removed from the navigable areas inside the authorized dredge prism, and transported for beneficial use along the beachfront located about 3000 feet west of the Port.

Project Need

Dredging has not been done in the Port Basin (or Launch Ramp) area for decades (no records of construction found). The Port's harbor services are vital to the local and transient boating community, as well as to those of local city and county residents. Sediments that migrate into the harbor must be dredged in order for the harbor to be enabled to continue to provide these services. There had been several instances of vessels getting stuck, damaging props and outdrives and threatening public health and safety. This is a popular launching site for sport crabbing and fishing. As was submitted to the US Army Corps of Engineers (USACE) and to the Oregon State Marine Board (OSMB), among others, a Preliminary Sediment Transport Narrative[1] , relying somewhat on a May, 1987 historical research study produced by the Oregon Department of Geology[2] showed locations along Alsea Bay and River at and surrounding the Port that experience erosive and accreting conditions.



The above annotated aerialphoto shows some of the observed eroded and accreted areas.

[1] Preliminary Transport Narrative
[2] Oregon Geology, Volume 49, Number 5, May, 1987, Oregon Department of Geology and Mineral Industries (DOGAMI

Examples of sediment accretion and erosion can be seen in the photos below, striking very "close to home".

The OSMB 2013 bathymetric survey[3] indicated depths of 1' – 2' MLLW in areas shown in the 12/15 photograph to the right to be at or above 0' MLLW (tide was at about -1' MLLW when this photo was taken). A likely major source of these accumulating sands is encircled in red in the aerial above. For this and other reasons presented in the cited Narrative (*Footnote #1*), sediment shoaling at a rate of about one foot per year is estimated. However, as found from bathymetric surveys conducted at the Port before and after the 12/15 winter storms, an average of a foot or more of shoaling can occur at the Port as a result of a single major storm event.

As also described in the Narrative, there are areas of erosion in and along the Alsea Bay system. Homes in the area encircled in blue in the above annotated aerialphoto have been threatened in recent years by encroaching storm surges, resulting in losses of acres along beach fronts and structural threats to residential homes (see photos below).

Though, as concluded within the studies cited in this narrative, sediment accumulation and erosion in the Alsea estuary seem to occur cyclically, all studies categorize this system to be erosive overall.

The attached Oregon State study (*see Footnote #2*) confirms what Stokes Law tells us: higher velocity water carries higher concentrations of sediment, and subsequently sediment will settle at locations where stream flow is slowed, either at the points of a widening channel, at a bend in the channel or when slowed by impact against sediment accumulation. Historical aerialphotographs seem to show that these accumulations vary from summer to winter during any given year, but are fairly consistent from year to year, with an overall net loss of marine and river sands over time (erosive).

[3] OSMB Existing Site Plan, 2013, Sheet 2 of 4, DWG. No. 2101-NG-2

Among those areas of sediment accumulation is a zone adjacent and north-northeast of the Port. Acting as a sediment trap, the lower elevation of the harbor flow allows some drifting from the sediment accumulation into the Port harbor.

The estimated (from sequential bathymetric surveys) shoaling rate inside the harbor is not expected to increase or decrease as a result of deepening the harbor by dredging, because the primary mechanism whereby these sediments are transported is by energetic drift. This is because the slope from the accumulated sediment zone to the margin of the harbor is gradual.

Environmental History

On 12/2015 the Port had applied for a permit via a Joint Permit Application (JPA) to dredge the Launch Ramp and Marina areas that service the Port District. Within the permit application the Port proposed to utilize the dredged sediment to build up the north & west, adjacent beach. This disposal location was viewed favorably by the permitting regulatory bodies (USACE & NOAA/NMFS) because it keeps the dredged sand in the eco-system, and sand grain size of the harbor sediment is similar to that of the adjacent beach sand[4]. The proposed disposal location is favored by local community because it may help to protect residential homes that are presently threatened by the erosion of areas along the south beach front.

Prior to the submission of the JPA several actions were taken, necessary to ascertain operation and sediment disposal options. A sediment quality study was conducted on June 10th, 2015. The purpose of the study was to determine the quality of the sediment to be removed from the birthing space, and suitability for unconfined disposal of this sediment. All field activities and chemical analyses were performed in general accordance with the sediment evaluation framework (SEF) prepared by the US Army Corps of Engineers, the US Environmental Protection Agency and the Oregon Department of Environmental Quality. The stated data goals, as outlined in Section 2.0 of the submitted and approved SAP were, in addition to characterizing the sediments according and in compliance with the SEF, 2009, to collect, handle and analyze representative sediment from the project in accordance with protocols and quality assurance control requirements, characterized sediments to be dredged for evaluation, and analyze for physical and chemical parameters according to the cited SEF 2009. The Port of The Port submitted a final Sampling and Analysis Plan[5] (SAP) in May 2015 which outlined the proposed dredge areas containing approximately 30,500 $yd.^3$ of sediments (prior to the 12/2015 storm surge disaster). The estimates were derived from a hydrographic survey conducted by the Oregon State Marine Board in 2013, and include allowances for sloughing and over dredge. This sediment characterization report[6] described the results of field sampling activities and sediment chemistry carried out according to the methods and analysis set forth in the previously submitted and revised per the program review group stipulations seen in the SAP. Jack Akin, MS, PE of EMC – Engineers/Scientists, LLC (EMC) worked as the Project Manager/Engineer-of-record for these events.

[4] 5/2015 EMC Dredge & Disposal Plan
[5] Sampling & Analyses Plan, 2015; Port of Alsea
[6] 9/2015 Port of Alsea Sediment Characterization Report

No USACE studies of Alsea sediments had been found, but it was also noted that the Port has had no history of commercial activity since 1957. Neither had any past analytical data regarding basin sediments been found at this Port. The sediment samples collected during the 6/10/15 sampling event called for a single DMMU, represented by a composite of four discrete subsamples. Due to the history and use of this Port, a ranking of "low" was initially assumed. The proposed dredge prism volume was less than 40,000 yds^3, an adequately low volume for even "moderate" ranked Sites, represented by a single DMMU. The cited SCR (*see Footnote #5*) confirmed this ranking.

In March, 2015 the USACE contacted EMC and advised that, in order to avoid delays in its permitting efforts, submerged aquatic vegetation (SAV) within areas previously identified and permitted to be used for vessel traffic and moorage should be assessed. Further, on site observations by EMC and Port management noted that there could be a potential for SAV to be located in the Port's dredge prisms, and acknowledged that any SAV growing in the dredge prism is expected to be lost (destroyed), or adversely affected through the action of maintenance dredging. A Tier-1 survey was therefore devised to provide qualitative assessment of SAV resources within the vicinity of a proposed project and is generally applicable to small-scale activities, such as single-family docks and piers, small-scale aquaculture projects, boat moorings and ramps, and small-scale activities associated with transmission cables and pipelines.

The survey was conducted on Tuesday morning[7], July 14th, 2015, and eelgrass (Zostera Marina) was encountered and so the required reporting of eelgrass distribution and approximate size of the overall bed(s), relative density of the bed(s) to be estimated was shown. A Mitigation Plan was then submitted[8] was submitted on 12/2015. Mitigation was completed at the next available minus tide, and a final report submitted in 8/2016.[9]

Joint Permit Approval

The permit to dredge per the conditions and SLOPES IV criteria outlined in the application[10], submitted in 12/2015, was approved by the USACE, ODSL, NOAA, ODEQ, and all other regulatory bodies with jurisdiction for the 2016/2017 in-water work period.

Operational Summary

On-site work began with pipe and equipment mobilization, welding and layout in 11-12/2016, and dredging began on 12/12/2016, and was completed on 2/28/17. About 30,500 were targeted. Due to weather and in-water work period constraints, the Port was able to dredge about 23,507 cubic yards.

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[7] Port of Alsea Boat Basin and Launch Ramp Areas Submerged Aquatic Vegetation Survey, 7/2015
[8] Port of Alsea Boat Basin and Launch Ramp Areas Submerged Aquatic Vegetation Mitigation Plan, 6/2016
[9] Port of Alsea Boat Basin and Launch Ramp Areas Submerged Aquatic Vegetation Mitigation Project, 8/2016
[10] Joint Permit Application, Port of Alsea, 12/2015

EMC
Grants Pass * Jacksonville * Medford, OR
GP Office: 1867 Williams Hwy., Suite 216, Grants Pass, OR, 97527
Jville Office: 450 Conestoga Dr., Jacksonville, OR, 97530
Ph: 541-474-9434 * Cell: 541-261-9929 * Fax 541-727-5488
emc@emcengineersscientists.com; http://www.emcengineersscientists.com
- Engineers/Scientists, LLC

The Port contracted the Port of Coos Bay to utilize an Ellicott SL (Swinging Ladder) 360, 68,000 lb. (w/o fuel), 16.3' wide X 58.8' long (assembled), custom-constructed hydraulic suction dredge with cutter head; a one-truck transported push boat dredge tender with a-frame, block and rigging, operating a winch; a small boat with outboard motor to assist with swing anchor, supplies, pipeline and other operations during project; a 10" self-aligning plastic (HDPE) pipe fusion welder; a material handling truck, with 3-section; a lowboy trailer with ramp for dredge mobe/demobe (optional); an adequately specified crane capable (capacity dependant upon required off/on-loading, reach and method considerations-optional); approximately 3500 feet of 10" HDPE pipe, and various in-house and purchased anchoring, rigging, lighting, buoys, floats and signage, as determined during project equipment mobilization. This equipment and materials were equivalent to those previously specified by EMC.

The pipeline was constructed, laid out along the parking lot, anchored at crucial points and floated to position, with the pipe outlet (end) laying near the disposal site or approach from points along the access and moved or altered in length as dictated by settling characteristics of the slurry. Further operational detail is outlined below.

a. Existing survey data shown had been supplied by Oregon State Marine Board – Basin Survey, EMC data, and by the Port.
b. Interpolated elevation data was used at several locations in the dredge prism in order to extend beyond the proposed dredging boundary.
c. All areas of the Port basins were to be dredged to a depth of 10.0 feet MLLW (includes 2 foot overdredge), or to other depths as dictated by conditions, whichever is shallower. The Port was able to obtain about an average of about 7 feet MLLW.
d. All areas of the Launch Ramp Area were also to be dredged to 10.0 feet MLLW (includes 2 foot overdredge), or to other depths as dictated by conditions, whichever is shallower. The Port was able to obtain about an average of about 7 feet MLLW.
e. Disposal pipe was specified to be 10 inch, with at least SDR 21 HDPE, with the total of pipe sections to be about 3500 feet, and subsequent engine horsepower and pump (centrifugal, slurry) characteristics are based on production rate capacity of the available dredge.
f. The system was designed assuming a 440 hp hydraulic suction dredge, supplied with a rotating cutterhead/ladder system capable of pumping about 10-12 feet/second, 3000 GPM of 15-30% slurry as specified by the project manager, providing an approximated 160 to 250 yd.^{3} per hour maximum production rate.
g. Pipe sections within the Port would be sunken by sediment only, and therefore would have potential to float when filled only with seawater. This occurred during purging, and safety precautions to avoid collisions with boaters was taken during purging (pipe cleanout).

EMC
Grants Pass * Jacksonville * Medford, OR
GP Office: 1867 Williams Hwy., Suite 216, Grants Pass, OR, 97527
Jville Office: 450 Conestoga Dr., Jacksonville, OR, 97530
Ph: 541-474-9434 * Cell: 541-261-9929 * Fax 541-727-5488
emc@emcengineersscientists.com; http://www.emcengineersscientists.com
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h. Anchoring of the pipe would be completed as specified by the project engineer/manager to prevent uncontrolled horizontal drifting of pipe sections.
j. The end of the pipe was managed so as to provide even loading of designated upland disposal (beach nourishment) area as specified. Piping began to the most distal end of the upland disposal site and then moved side to side, shortened as required, and layered as determined by the Project Manager/Engineer during the project.

Photos: The photo on the left was taken mid-December, 2016, during the beginning of the project. The tide is high, but without storm surge or King tide elevations. As it can be seen, the water is up to the rocks and positioned, anchored wood along the residential property lines and homes. The photo above was taken in early March, 2017, shortly after project completion on 2/28/27. All the rocks and wood are now covered, and the beach level near the residences is close to, and in some cases even with the adjacent property lines.

k. A turbidity curtain was to be placed alongside the beach sections, if required, within inter-tidal areas, to ensure return water flowing back into the inter-tidal areas with minimal turbidity. However, the use of a turbidity curtain was found to be impracticable, because the work-beach was often dry, and the curtain would be buried by settling dredged sand, and lost. It was found within weeks of the beginning of operations that the sand slurry was very adequately contained by using the pipeline itself.

EMC | Grants Pass * Jacksonville * Medford, OR
GP Office: 1867 Williams Hwy., Suite 216, Grants Pass, OR, 97527
Jville Office: 450 Conestoga Dr., Jacksonville, OR, 97530
Ph: 541-474-9434 * Cell: 541-261-9929 * Fax 541-727-5488
emc@emcengineersscientists.com; http://www.emcengineersscientists.com
- Engineers/Scientists, LLC

Volume Estimate and Rationale

Weekly estimates had been generated by beach surveys and referenced in two separate progress reports during the project.[11] These were produced to ascertain the completion of the FEMA-funded portion of the project, and to assist the Port and EMC to determine whether or not an extension of the in-water work period should be sought. By the end of the second report on 1/27/17 it had been estimated that about 9200 cubic yards (with up to a 20% margin of error) had been dredged from the Port basins. This estimate correlated closely to the 1/28/17 production report produced by AKS (requested by the Port of Coos Bay), which estimated about 9800 cubic yards dredged. The AKS survey[12] was well conceived, and so EMC concurred with the AKS volumetric estimate.

The last day of the dredging operation was 2/28/17, and so a final bathymetric survey was conducted by EMC on 3/17/17. It should be noted that the AKS study extended beyond that of the 3/17/17 EMC study, and also at some points beyond the authorized dredge prism, and so sediment volume was added in conformity with measured mudline elevation differences found throughout the Port basins. Also, gaps in elevation readings were present in both studies. Therefore EMC added production volumes that conform with adjacent readings, based on the observations made by EMC during the dredging event that dredge runs were along parallel, east/west routes. The final beach survey (conducted by Wiederhold[13] on March 1, 2016 and subsequently calculated by EMC) concluded that about 22,300 cubic yards had been added to the beach since the beginning of the project. The 3/17/17 EMC bathymetric survey[14], with all adjustments noted, estimates a total dredge production of about 23,507 cubic yards (AKS total of 9800 on 1/27/17, plus EMC total of 13,707 on 3/17/17).

Of that volume, associated mobe/demobe, engineering, labor and equipment and fuel costs were funded by FEMA, allocated for 9020 cubic yards (approximated to the extent feasible with underwater dredge volume estimating), as well as that funded by OSMB.[15]

[11] 1-03-17 Dredge Production Report & 1-27-17 Dredge Production Report.

[12] the AKS xyz data was downloaded and plotted by EMC to assure common horizontal and vertical benchmark locations (attached)

[13] Beach Survey-3-01-17

[14] Port of Alsea-POST DREDGE SURVEY, 5/03/17 (attached)

[15] Total volumes were calculated based on cuts through existing contours, estimating 8,700 yds.^{3} for an 8.0 ft. MLLW depth achieved. EMC utilized this data to construct the other attached drawing, showing an additional 2 ft. overdredge and a resulting additional 7300 yds.^{3} to be removed. Of this, since contours are basically flattened after achieving 8.0 ft. MLLW, the Launch Ramp portion of that total is estimated to be 3540 yds.^{3}. The total before deducting the FEMA-funded sediment migrated into the harbor most recently via the mid-December, 2015 storms is 12,240 yds.^{3}. FEMA has considered 9090 yds.^{3} as the total eligible sediment volume at the Port, with an approximate thickness of about 1.94 ft. over the total 126,600 ft.^{2} of basin area. Assuming atop existing known contours, the volume of that 1.94 feet in the Launch Ramp area is 3,730 yds.^{3}, and the total OSMB-fundable volume are therefore estimated to be <u>8510 yds.^{3}</u>

Conclusion

The Ports of Coos Bay and Alsea have cooperated to successfully accomplish this dredging project. The depths within the basins themselves average about minus seven feet MLLW (that is: seven feet below zero tide), and have produced, over an 800-wide beach-head, elevation increases averaging about five feet closest to residential property lines.

It is reasonable to assume, based on the sediment shoaling data available, that adequate depths to mudline for launch, navigation and moorage at the Port are now available for Port of Alsea use. It is uncertain to what extent the residences near the beach build will be protected in upcoming years. At present, the new beach elevation closest to the residences is estimated to average + 10 to +12 feet MLLW.

Sincerely

Jack (John) Akin, MS, PE, IC, HMS, CAI
EMC-Engineers/Scientists, LLC

1 POST DREDGE SITE PLAN

SCALE 1" = 40'

PORT OF ALSEA

EXISTING SURVEY DATA SHOWN SUPPLIED BY
EMC ENGINEERING DATED 3/17/17.

NORTH

0 40 80 120

SCALE IN FEET

(IF PRINTED 11X17 @ 50% - MULTIPLY SCALE X 2)

APPROXIMATE VOLUME	
VOLUME (CUT)	
EMC POST DREDGE VOLUME	13,707 CU. YDS.
AKS PROGRESS VOLUME	9,800 CU. YDS.
TOTAL VOLUME	23,507 CU. YDS.

PRELIMINARY
NOT FOR CONSTRUCTION

EMC
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http://www.emcengineersscientists.com
- Engineers/Scientists, LLC (a BioScape Technologies Affiliate)

PORT OF ALSEA

PORT OF ALSEA, ALSEA BAY

P.O. BOX 1060 · 365-A PORT STREET · WALDPORT, OREGON 97394

POST DREDGE SURVEY

DRAWN:	JW
CHECKED:	JA
DATE:	05-02-17

1 PROGRESS DREDGE SITE PLAN

PORT OF ALSEA

SCALE 1" = 40'

EXISTING SURVEY DATA SHOWN SUPPLIED BY AKS ENGINEERING DATED 1/24/17.

NORTH

0 40 80 120

SCALE IN FEET

(IF PRINTED 11X17 @ 50% - MULTIPLY SCALE X 2)

APPROXIMATE VOLUME
VOLUME (CUT)
9,800 CU. YDS.

PRELIMINARY
NOT FOR CONSTRUCTION

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http://www.emcengineersscientists.com
- Engineers/Scientists, LLC (a BioScape Technologies Affiliate)

PORT OF ALSEA, ALSEA BAY

P.O. BOX 1060 · 365-A PORT STREET · WALDPORT, OREGON 97394

AKS PROGRESS SURVEY

DRAWN:	JW
CHECKED:	JA
DATE:	05-02-17

State of Oregon
Department of State Lands

Exhibit A

11967-LI & 51881-EA
T13S, R11W, Sec. 17 & 18
Alsea Bay, Lincoln County

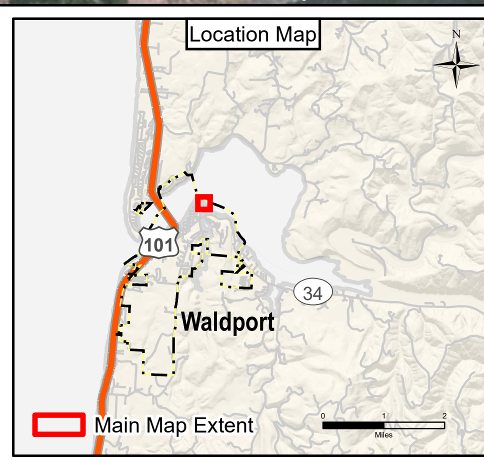
0 50 100
Feet

N W E S

Map Projection:
Oregon Statewide Lambert
Datum NAD83
International Feet

State of Oregon
Department of State Lands
775 Summer St NE, Suite 100
Salem, OR 97301
503-986-5200
www.oregon.gov/DSL

Date: 7/17/2017



2016 Aerial Photo

This map depicts the approximate location and extent of a Department of State Lands Proprietary authorization for use. This product is for informational purposes only and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1201 NE Lloyd Boulevard, Suite 1100
Portland, OR 97232

Refer to NMFS No.:
WCR-2015-2762

March 7, 2016

Shawn H. Zinszer
Chief, Regulatory Branch
Portland District, Corps of Engineers
P.O. Box 2946
Portland, Oregon 97208-2946

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Port of Alsea's boat ramp and dock replacement and expansion, Alsea River (Eckman Creek – Alsea River 171002050405) Waldport, Lincoln County, Oregon (Corps Permit No.: NWP-2014-083)

Dear Mr. Zinszer:

Thank you for your letter of May 26, 2015, requesting initiation of consultation with National Oceanic and Atmospheric Administration's (NOAA's) National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the Port of Alsea boat ramp and dock replacement and expansion. In this biological opinion (opinion) we conclude that the proposed action is not likely to adversely affect southern distinct population segment (DPS) Pacific eulachon (*Thaleichthys pacificus*). We also conclude that the proposed action is not likely to jeopardize the continued existence of Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch*) or southern DPS North American green sturgeon (*Acipenser medirostris*) and will not destroy or adversely modify designated critical habitat for OC coho salmon.

As required by section 7 of the ESA, we are providing an incidental take statement (ITS) with the opinion. The ITS describes reasonable and prudent measures we consider necessary or appropriate to minimize the impact of incidental take associated with this action. The ITS sets forth nondiscretionary terms and conditions, including reporting requirements, and the U.S. Army Corps of Engineers (Corps) and your applicants must comply with them to implement the reasonable and prudent measures. Incidental take from actions that meet these terms and conditions will be exempt from the ESA's prohibition against the take of listed species. Exceeding the specified level of take in the ITS would trigger reinitiation of this consultation.

This document also includes the results of our analysis of the action's likely effects on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and includes four conservation recommendations to avoid, minimize, or otherwise offset potential adverse effects on EFH. All of these conservation recommendations are a subset of the ESA take statement's terms and conditions. Section 305(b) (4) (B) of the MSA requires Federal agencies to provide a detailed written response to us within 30 days after receiving these recommendations.

If the response is inconsistent with the EFH conservation recommendations, the Corps must explain why the recommendations will not be followed, including the scientific justification for any disagreements over the effects of the action and the recommendations. In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, we established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we request that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

Please contact Jeff Young, fisheries biologist in the Oregon Coast Branch of the Oregon Washington Coastal Area Office at 541.957.3389 or jeff.young@noaa.gov if you have any questions concerning this section 7 consultation, or if you require additional information.

Sincerely,

William W. Stelle, Jr.
Regional Administrator

cc: Brad Johnson, Corps
Port of Alsea

Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation

Port of Alsea's Boat Ramp and Dock Replacement and Expansion
Alsea River (Eckman Creek – Alsea River 171002050405)
Waldport, Lincoln County, Oregon

NMFS Consultation Number: WCR-2015-2762

Action Agency: U.S. Army Corps of Engineers

Affected Species and NMFS' Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species or Critical Habitat?*	Is Action Likely To Jeopardize the Species?	Is Action Likely To Destroy or Adversely Modify Critical Habitat?
Oregon Coast coho salmon (*Oncorhynchus kisutch*)	Threatened	Y	N	N
Southern distinct population segment North American green sturgeon (*Acipenser medirostris*)	Threatened	Y	N	NA
Southern distinct population segment Pacific eulachon (*Thaleichthys Pacificus*)	Threatened	N	NA	NA

*Please refer to Section 2.11 for the analysis of species or critical habitat that are not likely to be adversely affected.

Fishery Management Plan That Describes EFH in the Project Area	Does Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast salmon	Y	Y
Pacific Coast groundfish	Y	Y
Coastal pelagic species	Y	Y

Consultation Conducted By: National Marine Fisheries Service, West Coast Region

Issued By:

William W. Stelle, Jr.
Regional Administrator

Date: March 7, 2016

TABLE OF CONTENTS

1. INTRODUCTION

This Introduction section provides information relevant to the other sections of this document and is incorporated by reference into Sections 2 and 3 below.

1.1 Background

The National Marine Fisheries Service (NMFS) prepared the biological opinion (opinion) and incidental take statement portions of this document in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.), and implementing regulations at 50 CFR 402.

We also completed an essential fish habitat (EFH) consultation on the proposed action, in accordance with section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801 et seq.) and implementing regulations at 50 CFR 600.

We completed pre-dissemination review of this document using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). A complete record of this consultation is on file at the Oregon Washington Coastal Area Office.

1.2 Consultation History

On May 26, 2015, we received a letter and biological assessment (BA) from the U.S. Army Corps of Engineers (Corps) requesting formal consultation on the effects of issuing a permit under section 10 of the Rivers and Harbors Act and section 404 of the Clean Water Act for the Port of Alsea's (Port) boat ramp and dock replacement and expansion (proposed action) in Waldport, Oregon. In their BA, the Corps determined that the proposed action was likely to adversely affect Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch*), southern distinct population segment (DPS) North American green sturgeon (*Acipenser medirostris*) (hereafter referred to as 'green sturgeon'), and designated critical habitat for OC coho salmon. The Corps also determined the proposed action would not adversely affect EFH designated for Pacific coast groundfish, coastal pelagic species, and Pacific salmon.

On June 18, 2015, we issued a letter to the Corps requesting additional information to continue with formal consultation. Our letter included our non-concurrence with the Corps' determination that EFH would not be adversely affected by the proposed action and informed them we would conduct an EFH consultation on the proposed action. We also informed the Corps the proposed action may affect southern DPS Pacific eulachon (*Thaleichthys pacificus*) (hereafter referred to as 'eulachon'). After receiving no response to our additional information request, we issued a close-out letter on September 2, 2015 to close-out the consultation if we had not received the additional information. On September 3, 2015 we received a complete additional information response from the Corps. We initiated consultation on September 3, 2015.

1.3 Proposed Action

"Action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies (50 CFR 402.02).

The proposed action is the Corps issuance of a permit to the Port to remove, replace, and expand their public boat ramp and dock in Waldport, Oregon. The purpose of the proposed action is to provide a safe and adequately sized boat launch at the existing public boat launch at the Port of Alsea.

Prior to work beginning, the Port will install a silt curtain that is impervious to sediment and fish. Curtain installation will include chain ballast or other weight along the lower edge to extend the curtain to the bottom. The Port will set the silt curtain by starting at the shore and walking the net out into the bay with the chain ballast on the mudline until it is in place. The Port proposed that if ESA-listed fish are trapped after installation, they will be captured in accordance with all rules and guidelines associated with fish salvage and released at a safe release site.

Using heavy equipment that may include a backhoe loader, track excavator, and dump truck, the Port will demolish and remove the concrete boat ramp and the existing boat dock. Once the existing boat ramp is removed the Port will construct a new ramp by placing pre-cast concrete slabs below the water line. The Port will construct the remainder of the ramp below the ordinary high water line of cast-in-place concrete, which will occur in the dry so no uncured concrete will contact the water. The completed boat ramp will be 40.5 feet by 133 feet and will be 0.12 acres. To support the ramp the Port will install 500 cubic yards of riprap at the base of the ramp covering approximately 0.1 acres.

To construct the proposed boat dock, the Port will install a 6-foot by 140-foot boarding float and a cast-in-place concrete abutment that will provide access to the boarding float. The Port will use a material that will not leach contaminants into the water to construct the boarding float. The completed boat dock will be 120 square feet larger than the existing dock. To support the float the Port will install one new pile and four existing piles that will be reused from the old dock. All piles are 12-inch steel piles and will be driven using a vibratory hammer. If needed, the Port will use an impact hammer to achieve the desired depth.

The Port proposed to treat stormwater associated with 0.12 acres of impervious surfaces associated with the proposed action. The Port will install a Filterra® bioretention system to treat 50% of the 2-year 24-hour storm. The bioretention system will be 4 feet wide by 8 feet long by 4 feet deep. Filter media in the bioretention system will consist of washed aggregate and organic material that supports grasses, shrubs, or trees for pollutant absorption. The Port will also conduct maintenance on the bioretention system that consists of removing trash, sediment, and mulch and replacing with a fresh 3-inch layer of mulch. The trench drain and high-flow catch basin will also be cleaned and inspected on an annual basis and after any significant rain event. The boat ramp consists of 0.11 acres of impervious surfaces that will discharge untreated to the Alsea River estuary. The ramp consists of 1-inch v-grooves that will disperse water to the sides of the ramp to filter through the aggregate material and vegetation along the sides of the ramp.

The Port proposed the following conservation measures to minimize the effects of their proposed action:

1. In-water work will occur during the November 1 to February 15 work window.
2. Construction impacts will be confined to the minimum area necessary to complete work.
3. Work will be completed using equipment having the least impact.
4. The Port will implement a pollution and erosion control plan (see NMFS project file no.: WCR-2015-2762 for details).
5. Only clean, suitable material will be used as fill.
6. Temporary fills will be entirely removed and the site restored to pre-existing conditions.
7. Damaged areas will be restored to pre-work conditions, including use of native plant species where appropriate.
8. Synthetic flotation material will be permanently encapsulated to prevent breakup into small pieces and dispersal in water.
9. Anti-perching devices will be installed on all piles to prevent perching of piscivorous birds.
10. The Port will conduct impact pile driving with a bubble curtain for sound attenuation.
11. Care will be taken to avoid pouring concrete in conditions or locations that would subject uncured concrete to contact with surface water or heavy precipitation.
12. Concrete will be poured into sealed forms, such that no green concrete will be placed in the water.
13. The concrete will be protected from contact with water until concrete has hardened.
14. Riprap will be placed on a layer of geotextile fabric to prevent the underlying sediment from being washed out through the openings of the riprap.
15. Riprap will be keyed into the bottom substrate to ensure its stability and effectiveness in protecting the boat ramp.

1.4 Action Area

"Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). For this proposed action, the action area consists of the footprint of the proposed boat ramp, boat dock, and riprap (0.24 acres) and the all of the Alsea River estuary (1,791 acres) from 1.25 mile upstream of the project site to the Pacific Ocean associated with the effects of stormwater discharge (Figure 1). This action area includes areas affected by sound disturbance (1,053 acres) (Figure 1) , work area isolation, over-water coverage by the boat dock (840 square feet), and dispersion of suspended sediments and contaminants associated with construction equipment (100 feet laterally in all directions from the boat ramp).

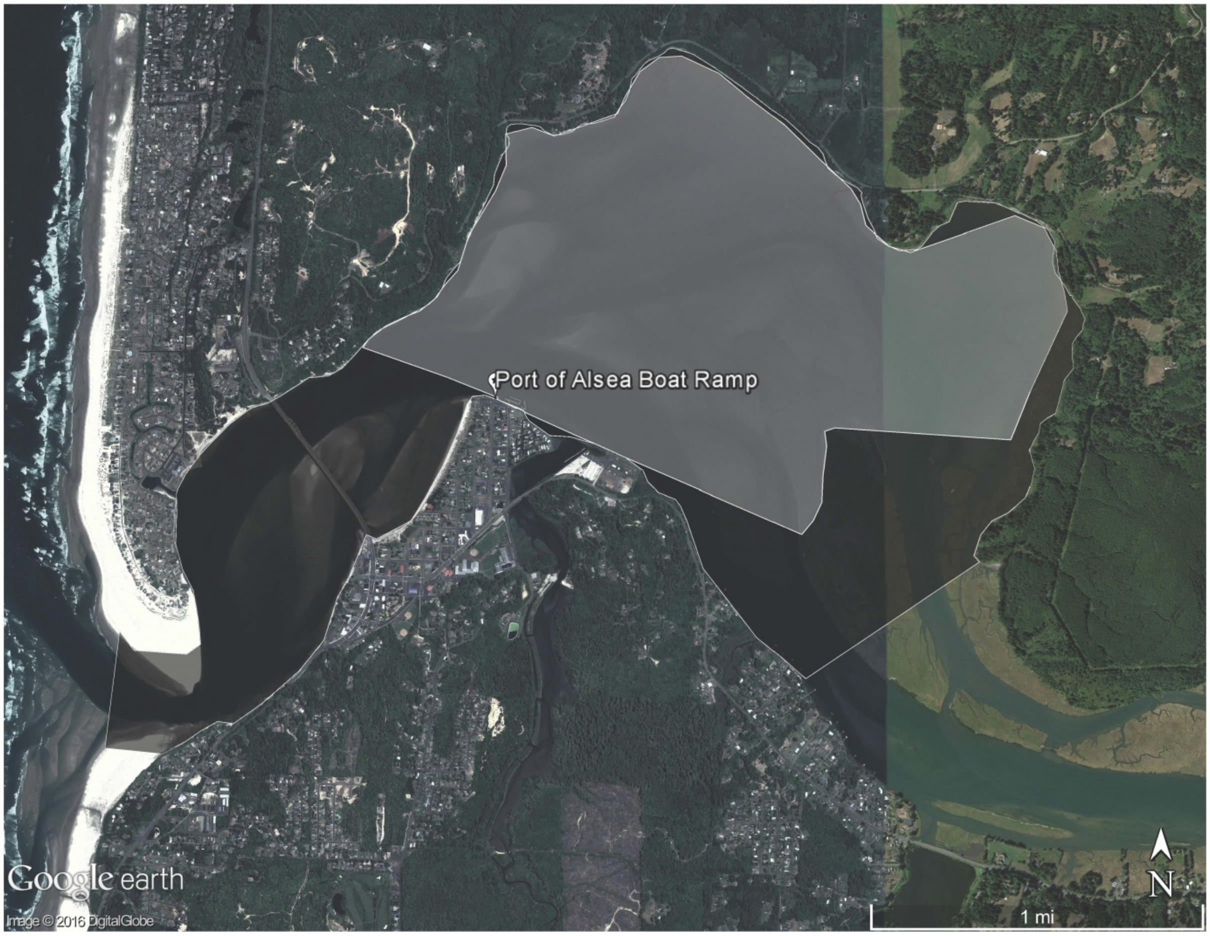


Figure 1. Action area for the Port of Alsea Boat Ramp Replacement and Expansion. The dark area represents the entire action area defined by dispersion of stormwater and the lighter area depicts the area of sound disturbance.

The action area provides habitat for three ESA-listed fish shown in Table 1 below. The action area is designated critical habitat for OC coho salmon. The action area is not designated critical habitat for green sturgeon and eulachon.

Table 1. Federal Register notices for final rules that list threatened and endangered species, designate critical habitats, or apply protective regulations to listed species considered in this consultation. Listing status: "T" means listed as threatened under the ESA.

Species	Listing Status	Critical Habitat	Protective Regulations
Marine and Anadromous Fish			
Coho salmon (*Oncorhynchus kisutch*)			
Oregon Coast	T 6/20/11; 76 FR 35755	2/11/08; 73 FR 7816	2/11/08; 73 FR 7816
North American green sturgeon (*Acipenser medirostris*)[1]			
Southern	T 4/07/06; 71 FR 17757	10/09/09; 74 FR 52300	6/02/10; 75 FR 30714
Pacific eulachon (*Thaleichthys pacificus*)[2]			
Southern	T 3/18/10; 75 FR 13012	10/20/11; 76 FR 65324	Not applicable

The action area is also designated as EFH for various life stages of groundfish (PFMC 2005), coastal pelagics (PFMC 1998), and Pacific salmon (PFMC 1999) and may adversely affect EFH for those species.

2. ENDANGERED SPECIES ACT: BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT

The ESA establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat upon which they depend. As required by section 7(a)(2) of the ESA, Federal agencies must ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. Per the requirements of the ESA, Federal action agencies consult with NMFS and section 7(b)(3) requires that, at the conclusion of consultation, NMFS provides an opinion stating how the agency's actions would affect listed species and their critical habitat. If incidental take is expected, section 7(b)(4) requires NMFS to provide an incidental take statement (ITS) that specifies the impact of any incidental taking and includes non-discretionary reasonable and prudent measures and terms and conditions to minimize such impacts.

The proposed action is not likely to adversely affect eulachon. The analysis is found in the "Not Likely to Adversely Affect" determinations section (2.11).

2.1 Analytical Approach

This biological opinion includes both a jeopardy analysis and an adverse modification analysis. The jeopardy analysis relies upon the regulatory definition of "to jeopardize the continued existence of a listed species," which is "to engage in an action that would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50

[1] Hereafter referred to as 'green sturgeon'.
[2] Hereafter referred to as 'eulachon'.

CFR 402.02). Therefore, the jeopardy analysis considers both survival and recovery of the species.

The adverse modification analysis considers the impacts of the Federal action on the conservation value of designated critical habitat. This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.[3]

We use the following approach to determine whether a proposed action is likely to jeopardize listed species or destroy or adversely modify critical habitat:

- Identify the rangewide status of the species and critical habitat likely to be adversely affected by the proposed action.
- Describe the environmental baseline in the action area.
- Analyze the effects of the proposed action on both species and their habitat using an "exposure-response-risk" approach.
- Describe any cumulative effects in the action area.
- Integrate and synthesize the above factors to assess the risk that the proposed action poses to species and critical habitat.
- Reach jeopardy and adverse modification conclusions.
- If necessary, define a reasonable and prudent alternative to the proposed action.

2.2 Rangewide Status of the Species and Critical Habitat

This opinion examines the status of each species that would be adversely affected by the proposed action. The status is determined by the level of extinction risk that the listed species face, based on parameters considered in documents such as recovery plans, status reviews, and listing decisions. This informs the description of the species' likelihood of both survival and recovery. The species status section also helps to inform the description of the species' current "reproduction, numbers, or distribution" as described in 50 CFR 402.02. The opinion also examines the condition of critical habitat throughout the designated area, evaluates the conservation value of the various watersheds and coastal and marine environments that make up the designated area, and discusses the current function of the essential physical and biological features that help to form that conservation value.

One factor affecting the rangewide status of OC coho salmon and green sturgeon, and aquatic habitat at large is climate change. Climate change is likely to play an increasingly important role in determining the abundance of ESA-listed species, and the conservation value of designated critical habitats, in the Pacific Northwest. These changes will not be spatially homogeneous across the Pacific Northwest. Areas with elevations high enough to maintain temperatures well

[3] Memorandum from William T. Hogarth to Regional Administrators, Office of Protected Resources, NMFS (Application of the "Destruction or Adverse Modification" Standard Under Section 7(a)(2) of the Endangered Species Act) (November 7, 2005).

below freezing for most of the winter and early-spring will be less affected. Low-elevation areas are likely to be more affected.

During the last century, average regional air temperatures increased by 1.5°F, and increased up to 4°F in some areas. Warming is likely to continue during the next century as average temperatures increase another 3°F to 10°F. Overall, about one-third of the current cold-water fish habitat in the Pacific Northwest is likely to exceed key water temperature thresholds by the end of this century (USGCRP 2009).

Precipitation trends during the next century are less certain than for temperature but more precipitation is likely to occur during October through March and less during summer months, and more of the winter precipitation is likely to fall as rain rather than snow (ISAB 2007; USGCRP 2009). These changes to precipitation occurrence will likely result in higher winter stream flows. Where snow occurs, a warmer climate will cause earlier runoff so stream flows in late spring, summer, and fall will be lower and water temperatures will be warmer (ISAB 2007; USGCRP 2009).

Higher winter stream flows will increase the amount of gravel entering the action area, but may also increase the risk that winter floods in sensitive watersheds will damage spawning redds and wash away incubating eggs. Earlier peak stream flows will also flush some young salmon and steelhead from rivers to estuaries before they are physically mature, increasing stress and the risk of predation. Lower stream flows and warmer water temperatures during summer will degrade summer rearing conditions, in part by increasing the prevalence and virulence of fish diseases and parasites (USGCRP 2009). Other adverse effects are likely to include altered migration patterns, accelerated embryo development, premature emergence of fry, variation in quality and quantity of tributary rearing habitat, and increased competition and predation risk from warm-water, non-native species (ISAB 2007).

The earth's oceans are also warming, with considerable interannual and inter-decadal variability superimposed on the longer-term trend (Bindoff *et al*. 2007). Historically, warm periods in the coastal Pacific Ocean have coincided with relatively low abundances of salmon and steelhead, while cooler ocean periods have coincided with relatively high abundances (Scheuerell and Williams 2005; Zabel *et al*. 2006; USGCRP 2009). Ocean conditions adverse to salmon and steelhead may be more likely under a warming climate (Zabel *et al*. 2006).

2.2.1 Status of Listed Species

For Pacific salmon, steelhead, and other relevant species we commonly use four parameters to assess the viability of the populations that, together, constitute the species: spatial structure, diversity, abundance, and productivity (McElhany *et al*. 2000). These "viable salmonid population" (VSP) criteria therefore encompass the species' "reproduction, numbers, or distribution" as described in 50 CFR 402.02. When these parameters are collectively at appropriate levels, they maintain a population's capacity to adapt to various environmental conditions and allow it to sustain itself in the natural environment. These attributes are influenced by survival, behavior, and experiences throughout a species' entire life cycle, and these characteristics, in turn, are influenced by habitat and other environmental conditions.

"Spatial structure" refers both to the spatial distributions of individuals in the population and the processes that generate that distribution. A population's spatial structure depends fundamentally on habitat quality and spatial configuration and the dynamics and dispersal characteristics of individuals in the population.

"Diversity" refers to the distribution of traits within and among populations. These range in scale from DNA sequence variation at single genes to complex life history traits (McElhany *et al*. 2000).

"Abundance" generally refers to the number of naturally-produced adults (i.e., the progeny of naturally-spawning parents) in the natural environment (e.g., on spawning grounds).

"Productivity," as applied to viability factors, refers to the entire life cycle; i.e., the number of naturally-spawning adults produced per parent. When progeny replace or exceed the number of parents, a population is stable or increasing. When progeny fail to replace the number of parents, the population is declining. McElhany *et al*. (2000) use the terms "population growth rate" and "productivity" interchangeably when referring to production over the entire life cycle. They also refer to "trend in abundance," which is the manifestation of long-term population growth rate.

For species with multiple populations, once the biological status of a species' populations has been determined, we assess the status of the entire species using criteria for groups of populations, as described in recovery plans and guidance documents from technical recovery teams. Considerations for species viability include having multiple populations that are viable, ensuring that populations with unique life histories and phenotypes are viable, and that some viable populations are both widespread to avoid concurrent extinctions from mass catastrophes and spatially close to allow functioning as metapopulations (McElhany *et al*. 2000).

The following summary describes the status of the ESA-listed species, and their designated critical habitat considered in this opinion. More detailed information on the status and trends of these listed resources, and their biology and ecology, are in the listing regulations and critical habitat designations published in the Federal Register.

Status of OC Coho Salmon

We published a notice of intent to prepare a recovery plan for this species on June 25, 2013 (78 FR 38011). Among other things, the recovery plan will identify criteria for removing OC coho salmon from the ESA list, human activities that contribute to the listing, and actions necessary to recover the species.

Spatial Structure and Diversity. This species includes populations of coho salmon in Oregon coastal streams south of the Columbia River and north of Cape Blanco. The Cow Creek Hatchery Program (South Umpqua population) is included as part of the OC coho salmon evolutionary significant unit (ESU) because the original brood stock was founded from the local, natural origin population and natural origin coho salmon have been incorporated into the brood stock on a regular basis. The OC-technical recovery team (TRT) identified 56 populations, including 21 independent and 35 dependent populations in five biogeographic strata (Table 2) (Lawson *et al.*

2007). Independent populations are populations that historically would have had a high likelihood of persisting in isolation from neighboring populations for 100 years and are rated as functionally independent or potentially independent. Dependent populations are populations that historically would not have had a high likelihood of persisting in isolation for 100 years. These populations relied upon periodic immigration from other populations to maintain their abundance (McElhany *et al.* 2000; Lawson *et al.* 2007).

Table 2. OC coho salmon populations. Population types included functionally independent (FI), potentially independent (PI) and dependent populations (D) (McElhany *et al.* 2000; Lawson *et al.* 2007).

Stratum	Population	Type	Stratum	Population	Type
North Coast	Necanicum River	PI	Mid-Coast (cont.)	Alsea River	FI
	Ecola Creek	D		Big Creek (Alsea)	D
	Arch Cape Creek	D		Vingie Creek	D
	Short Sands Creek	D		Yachats River	D
	Nehalem River	FI		Cummins Creek	D
	Spring Creek	D		Bob Creek	D
	Watseco Creek	D		Tenmile Creek	D
	Tillamook Bay	FI		Rock Creek	D
	Netarts Bay	D		Big Creek (Siuslaw)	D
	Rover Creek	D		China Creek	D
	Sand Creek	D		Cape Creek	D
	Nestucca River	FI		Berry Creek	D
	Neskowin Creek	D		Siuslaw River	FI
Mid-Coast	Salmon River	PI	Lakes	Siltcoos Lake	PI
	Devils Lake	D		Sutton Creek	D
	Siletz River	FI		Tahkenitch Lake	PI
	Schoolhouse Creek	D		Tenmile Lakes	PI
	Fogarty Creek	D	Umpqua	Lower Umpqua River	FI
	Depoe Bay	D		Middle Umpqua River	FI
	Rocky Creek	D		North Umpqua River	FI
	Spencer Creek	D		South Umpqua River	FI
	Wade Creek	D	Mid-South Coast	Threemile Creek	D
	Coal Creek	D		Coos River	FI
	Moolack Creek	D		Coquille River	FI
	Big Creek (Yaquina)	D		Johnson Creek	D
	Yaquina River	FI		Twomile Creek	D
	Theil Creek	D		Floras Creek	PI
	Beaver Creek	PI		Sixes River	PI

A 2010 biological recovery team noted significant improvements in hatchery and harvest practices have been made (Stout *et al.* 2012). However, harvest and hatchery reductions have changed the population dynamics of the ESU. Current concerns for spatial structure focus on the Umpqua River. Current status of diversity shows improvement through the waning effects of hatchery fish on populations of OC coho salmon. In addition, recent efforts in several coastal estuaries to restore lost wetlands should be beneficial. However, diversity is lower than it was historically because of the loss of both freshwater and tidal habitat loss coupled with the restriction of diversity from very low returns over the past 20 years.

Abundance and Productivity. It has not been demonstrated that productivity during periods of poor marine survival is now adequate to sustain the ESU. Recent increases in adult escapement do not provide strong evidence that the century-long downward trend has changed. The ability of the OC coho salmon ESU to survive another prolonged period of poor marine survival remains in question. Wainwright *et al.* (2008) determined that the weakest strata of OC coho salmon were in the North Coast and Mid-Coast of Oregon, which had only "low" certainty of being persistent. The strongest strata were the Lakes and Mid-South Coast, which had "high" certainty of being persistent. To increase certainty that the ESU as a whole is persistent, they recommended that restoration work should focus on those populations with low persistence, particularly those in the North Coast, Mid-Coast, and Umpqua strata.

Limiting Factors. Information about limiting factors at the species scale can be gleaned from the discussion of factors for decline and threats in Stout *et al.* (2012). Also, the state of Oregon provided "population bottlenecks" (*i.e.*, limiting factors at the population scale) in its coastal coho assessment (State of Oregon 2005). Based on these two sources, limiting factors for this species include:

- degraded stream complexity
- reduced recruitment of wood to streams
- increased fine substrate sediment
- loss of beaver dams
- increased water temperature
- reduced stream flow
- human disturbance of the landscape
- loss of wetlands and estuarine habitat
- fish passage barriers
- effects of global climate change
- periodic reduction in marine productivity
- hatchery effects
- effects from exotic fish species

Alsea River population. The Alsea River population is functionally independent.[4] The abundance of Alsea River OC coho salmon has shown a high degree of fluctuation since 1997 (Figure 2). Fluctuation in population abundance occurs for many reasons including changes in land use, changing climate conditions, and changes in ocean conditions.

[4] Functionally-independent population – populations with a likelihood of persisting in isolation over a 100-year period and are not substantially altered by exchanges of individuals of other populations.

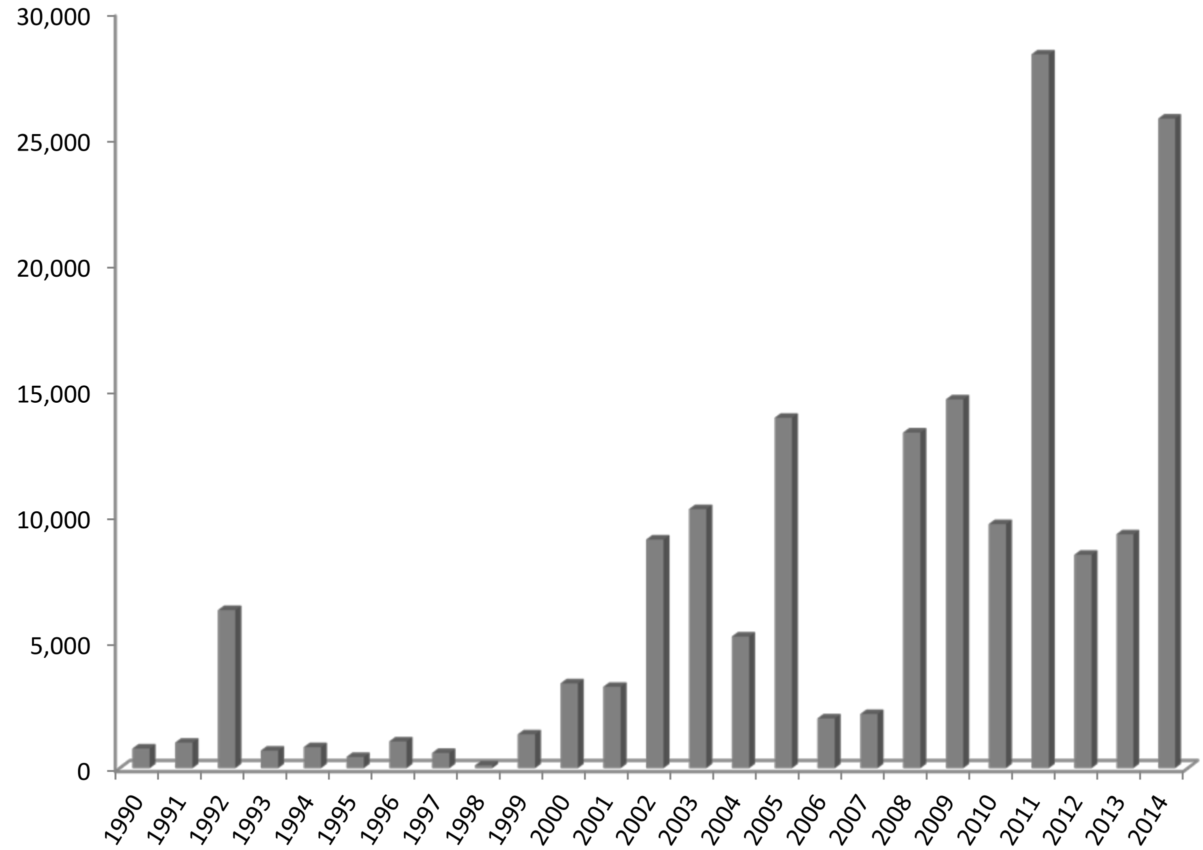


Figure 2. Estimated abundance of wild adult OC coho salmon spawners in the Alsea River population from 1990 to 2014.[5]

In 2008, the TRT developed a biological recovery criteria report for the OC coho salmon ESU. The primary purpose of this report was to assess the progress of species recovery. The biological recovery criteria developed are framed within the context of a Decision Support System that is organized into two categories; persistence and sustainability. A persistence analysis assesses the ability of the ESU to persist (*i.e.* not go extinct) over a 100-year period. A sustainability analysis assesses the ability of the ESU to maintain its genetic legacy and long-term adaptive potential for the near future (Wainwright *et al.* 2008). In developing the criteria, the TRT explained a system where a persistence or sustainability value of 1 would indicate complete confidence that the ESU will persist or sustain itself for the next 100 years. A value of -1 would indicate complete certainty of failure of a population to persist or sustain itself and a value of 0 would indicate no certainty of persistence, sustainability, or extinction.

The biological review team (BRT) (Stout *et al*. 2012) conducted updated persistence and sustainability analyses for the populations in the OC coho salmon ESU. Results of the BRT's persistence and sustainability analyses in Stout *et al*. 2012 showed that the persistence value in the Alsea River population was -0.03 indicating complete uncertainty about whether the

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[5] ODFW data available at: http://oregonstate.edu/dept/ODFW/spawn/cohoabund.htm

population will persist or not. The truth value for population sustainability was 0.13. As with the persistence score, this value indicates uncertainty that this population is sustainable.

The Oregon Coast Coho Conservation Plan (ODFW 2007) identified primary and secondary limiting factors for independent populations within the OC coho salmon species. The primary and secondary limiting factors in the Alsea River population are stream complexity and water quality. Stream complexity refers to the ability of a stream to provide various types of habitat. The type of habitat most limiting to OC coho salmon is high quality over-winter rearing habitat (ODFW 2007).

Status of Green Sturgeon

We have released a recovery outline for this species (NMFS 2010). This preliminary document identifies important threats to abate, including exposure to contaminants, loss of estuarine and delta function, and other activities that impact spawning, rearing and feeding habitats. Key recovery needs are restoring access to suitable habitat, improving potential habitat, and establishing additional spawning populations.

Spatial Structure and Diversity. Two DPSs have been defined for green sturgeon, a northern DPS (spawning populations in the Klamath and Rogue rivers) and a southern DPS (spawners in the Sacramento River). Southern green sturgeon includes all naturally-spawned populations of green sturgeon that occur south of the Eel River in Humboldt County, California. When not spawning, this anadromous species is broadly distributed in nearshore marine areas from Mexico to the Bering Sea. Although it is commonly observed in bays, estuaries, and sometimes the deep riverine mainstem in lower elevation reaches of non-natal rivers along the west coast of North America, the distribution and timing of estuarine use are poorly understood.

Limiting Factors. The principal factor for the decline of southern green sturgeon is the reduction of its spawning area to a single known population limited to a small portion of the Sacramento River. It is currently at risk of extinction primarily because of human-induced ''takes'' involving elimination of freshwater spawning habitat, degradation of freshwater and estuarine habitat quality, water diversions, fishing, and other causes (USDC 2010). Adequate water flow and temperature are issues of concern. Water diversions pose an unknown but potentially serious threat within the Sacramento and Feather rivers and the Sacramento River Delta. Poaching also poses an unknown but potentially serious threat because of high demand for sturgeon caviar. The effects of contaminants and nonnative species are also unknown but potentially serious. As mentioned above, retention of green sturgeon in both recreational and commercial fisheries is now prohibited within the western states, but the effect of capture/release in these fisheries is unknown. There is evidence of fish being retained illegally, although the magnitude of this activity likely is small (NOAA Fisheries 2011).

2.2.2 Status of Critical Habitat

This section examines the status of designated critical habitat affected by the proposed action by examining the condition and trends of essential physical and biological features throughout the designated areas. These features are essential to the conservation of the listed species because they support one or more of the species' life stages (*e.g.*, sites with conditions that support spawning, rearing, migration and foraging).

<u>Salmon and Steelhead.</u> For salmon and steelhead, NMFS ranked watersheds within designated critical habitat at the scale of the fifth-field hydrologic unit code (HUC_5) in terms of the conservation value they provide to each listed species they support.[6] The conservation rankings are high, medium, or low. To determine the conservation value of each watershed to species viability, NMFS' Critical Habitat Analytical Review Teams (CHARTs) evaluated the quantity and quality of habitat features (for example, spawning gravels, wood and water condition, side channels), the relationship of the area compared to other areas within the species' range, and the significance to the species of the population occupying that area (NOAA Fisheries 2005). Thus, even a location that has poor quality of habitat could be ranked with a high conservation value if it were essential due to factors such as limited availability (*e.g.*, one of a very few spawning areas), a unique contribution of the population it served (*e.g.*, a population at the extreme end of geographic distribution), or if it serves another important role (*e.g.*, obligate area for migration to upstream spawning areas).

The physical or biological features of freshwater spawning and incubation sites, include water flow, quality and temperature conditions and suitable substrate for spawning and incubation, as well as migratory access for adults and juveniles (Table 3). These features are essential to conservation because without them the species cannot successfully spawn and produce offspring. The physical or biological features of freshwater migration corridors associated with spawning and incubation sites include water flow, quality and temperature conditions supporting larval and adult mobility, abundant prey items supporting larval feeding after yolk sac depletion, and free passage (no obstructions) for adults and juveniles. These features are essential to conservation because they allow adult fish to swim upstream to reach spawning areas and they allow larval fish to proceed downstream and reach the ocean.

[6] The conservation value of a site depends upon "(1) the importance of the populations associated with a site to the ESU [or DPS] conservation, and (2) the contribution of that site to the conservation of the population through demonstrated or potential productivity of the area" (NOAA Fisheries 2005).

Table 3. Physical or biological features of critical habitats designated for ESA-listed salmon and steelhead species (except Snake River spring/summer-run Chinook salmon, Snake River fall-run Chinook salmon, Snake River sockeye salmon, and Southern Oregon Northern California Coast coho salmon), and corresponding species life history events.

Physical or Biological Features		Species Life History Event
Site Type	**Site Attribute**	
Freshwater spawning	Substrate Water quality Water quantity	Adult spawning Embryo incubation Alevin growth and development
Freshwater rearing	Floodplain connectivity Forage Natural cover Water quality Water quantity	Fry emergence from gravel Fry/parr/smolt growth and development
Freshwater migration	Free of artificial obstruction Natural cover Water quality Water quantity	Adult sexual maturation Adult upstream migration and holding Kelt (steelhead) seaward migration Fry/parr/smolt growth, development, and seaward migration
Estuarine areas	Forage Free of artificial obstruction Natural cover Salinity Water quality Water quantity	Adult sexual maturation and "reverse smoltification" Adult upstream migration and holding Kelt (steelhead) seaward migration Fry/parr/smolt growth, development, and seaward migration
Nearshore marine areas	Forage Free of artificial obstruction Natural cover Water quantity Water quality	Adult growth and sexual maturation Adult spawning migration Nearshore juvenile rearing

CHART Salmon and Steelhead Critical Habitat Assessments

The CHART for each recovery domain assessed biological information pertaining to areas occupied by listed salmon and steelhead, determine whether those areas contained physical or biological features essential for the conservation of those species and whether unoccupied areas existed within the historical range of the listed salmon and steelhead that are also essential for conservation. The CHARTs assigned a 0 to 3 point score for the physical or biological features in each HUC_5 watershed for:

Factor 1. Quantity
Factor 2. Quality – Current Condition
Factor 3. Quality – Potential Condition
Factor 4. Support of Rarity Importance
Factor 5. Support of Abundant Populations
Factor 6. Support of Spawning/Rearing

Thus, the quality of habitat in a given watershed was characterized by the scores for Factor 2 (quality – current condition), which considers the existing condition of the quality of physical or biological features in the HUC_5 watershed; and Factor 3 (quality – potential condition), which considers the likelihood of achieving potential in the HUC_5 watershed, either naturally or through active conservation/restoration, given known limiting factors, likely biophysical responses, and feasibility.

OC coho salmon

The historical disturbance regime in the central Oregon Coast Range was dominated by a mixture of high and low-severity fires, with a natural rotation of approximately 271 years. Old-growth forest coverage in the Oregon Coast Range varied from 25% to 75% during the past 3,000 years, with a mean of 47%, and never fell below 5% (Wimberly *et al.* 2000). Currently, the Coast Range has approximately 5% old-growth, almost all of it on Federal lands. The dominant disturbance now is logging on a cycle of approximately 30 to 100 years, with fires suppressed.

Oregon's assessment of OC coho salmon (Nicholas *et al.* 2005) mapped how streams with high intrinsic potential for rearing are distributed by land ownership categories. Agricultural lands and private industrial forests have by far the highest percentage of land ownership in high intrinsic potential areas and along all coho salmon stream miles. Federal lands have only about 20% of coho salmon stream miles and 10% of high intrinsic potential stream reaches. Because of this distribution, activities in lowland agricultural areas are particularly important to the conservation of OC coho salmon.

The OC coho salmon assessment concluded that at the scale of the entire domain, pools are generally abundant, although slow-water and off-channel habitat (which are important refugia for coho salmon during high winter flows) are limited in the majority of streams when compared to reference streams in minimally-disturbed areas. The amount of large wood in streams is low in all four ODFW monitoring areas and land-use types relative to reference conditions. Amounts of fine sediment are high in three of the four monitoring areas, and were comparable to reference conditions only on public lands. Approximately 62% to 91% of tidal wetland acres (depending on estimation procedures) have been lost for functionally and potentially independent populations of coho salmon.

As part of the coastal coho salmon assessment, Oregon Department of Environmental Quality (ODEQ) analyzed the status and trends of water quality in the range of OC coho salmon using the Oregon water quality index, which is based on a combination of temperature, dissolved oxygen, biological oxygen demand, pH, total solids, nitrogen, total phosphates, and bacteria. Using the index at the species scale, 42% of monitored sites had excellent to good water quality, and 29% show poor to very poor water quality (ODEQ 2005). Within the four monitoring areas, the North Coast had the best overall conditions (six sites in excellent or good condition out of nine sites), and the Mid-South coast had the poorest conditions (no excellent condition sites, and only two out of eight sites in good condition). For the 10-year period monitored between 1992 and 2002, no sites showed a declining trend in water quality. The area with the most improving trends was the North Coast, where 66% of the sites (six out of nine) had a significant improvement in index scores. The Umpqua River basin, with one out of nine sites (11%) showing an improving trend, had the lowest number of improving sites.

The specific unit of OC coho salmon critical habitat that the proposed action will affect is the Lower Alsea River fifth-field watershed (HUC 1710020504). The mainstem in this watershed is used by OC coho salmon for migration, rearing, and the transition between freshwater and saltwater. Therefore, the physical and biological features (PBFs) include: (1) Floodplain connectivity, (2) forage, (3) natural cover, (4) water quality, (5) water quantity, (6) passage free of artificial obstruction, and (7) salinity. Activities including agriculture, forestry, grazing, and urbanization have reduced the quality and function of PBFs in this watershed.

2.3 Environmental Baseline

The "environmental baseline" includes the past and present impacts of all Federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process (50 CFR 402.02).

2.3.1 Species in the Action Area

The action area is in the lower Alsea River estuary and is a transitional area between fresh and saltwater for OC coho salmon. The action area is also designated critical habitat for OC coho salmon that use it for rearing and migration and to transition from fresh to saltwater. OC coho salmon will occur in the action area from September to mid-January (adults) and from February through June (juveniles).

Green sturgeon use the Alsea River estuary for subadult and adult growth, development, and migration. Green sturgeon congregate in coastal waters and estuaries, including non-natal estuaries. Beamis and Kynard (1997) suggested that green sturgeon move into estuaries of non-natal rivers to feed. Data from Washington studies indicate that green sturgeon will only be present in estuaries from June until October (Moser and Lindley 2007). Recent fieldwork indicates that green sturgeon generally inhabit specific areas of coastal estuaries near or within deep channels or holes, moving into the upper reaches of the estuary, but rarely into freshwater (WDFW and ODFW 2012). Green sturgeon in these estuaries may move into tidal flats areas, particularly at night, to feed (Dumbauld *et al*. 2008). Green sturgeon will be feeding and migrating in the action area from June to October and will be exposed to the long term effects of the proposed action. They will be absent from the action area during the November 1 to February 15 work window. The action area is not designated critical habitat for green sturgeon.

Individual OC coho salmon and green sturgeon are exposed to a number of environmental stressors that are likely to adversely affect their growth and survival in the action area. Urbanization, forestry, grazing, and agriculture have simplified habitat and reduced water quality. Water and sediment quality have been degraded by the use of treated wood to construct the docks. Water quality and habitat alteration also occurs because docks facilitate motorized boat use. In addition, motorized boats generate underwater noise although the action area is not a high use area.

Under these environmental conditions, (*i.e.* exposure to environmental stressors including degraded water quality, fragmented and degraded riparian areas, and predation), OC coho salmon and green sturgeon in the action area are stressed. Stress may lead to reductions in biological reserves, altered biological processes, increased disease susceptibility, and altered performance of individual fish (*e.g.* growth, osmoregulation, and survival). There are limits to an individual's ability to compensate for stresses. Exceeding those limits will lead to injury or death of that individual fish. Adding additional environmental stressors to the already poor environmental baseline increases the probability of injury and death.

Limiting factors to the production of OC coho salmon in the action area include reduced habitat complexity and poor water quality. OC coho salmon and green sturgeon within the action area are exposed to these highly modified environmental conditions as they rear in or migrate through the action area. These factors have contributed to degraded baseline environmental conditions in the action area. While habitat is currently in poor condition, it provides some support for OC coho salmon and green sturgeon production.

2.3.2 Critical Habitat in the Action Area

Critical habitat for OC coho salmon in the action area has been degraded by urbanization, agriculture, rural development, water withdrawals, and introduction of pollutants. The current conditions of the natural cover and water quality PCEs relate directly to the population limiting factors in this watershed, and therefore are limiting the quality and function of this critical habitat.

2.4 Effects of the Action

Under the ESA, "effects of the action" means the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline (50 CFR 402.02). Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur.

Effects of the proposed action include short-term and long-term effects to water quality, noise disturbance from pile driving, habitat conversion, and habitat degradation from an over-water structure.

2.4.1 Effects on Critical Habitats

Construction associated with the proposed action in and adjacent to the Alsea River estuary. Effects of the proposed action will affect the lower Alsea River fifth-field watershed (HUC 1710020504), which is designated critical habitat for OC coho salmon. The primary constituent elements (PCEs) of critical habitat in the action area include floodplain connectivity, forage, natural cover, water quality, water quantity, salinity, and passage free of obstruction. The proposed action will affect the forage, water quality, and passage free of obstruction PCEs.

Water quality

Contaminants. The Port's removal and replacement of the boat ramp will result in 0.23 acres of impervious area that will contribute stormwater to the Alsea River. Of this 0.23 acres, the Port will treat 0.12 acres and 0.11 acres (the boat ramp) will discharge to the Alsea River untreated. To treat the 0.12 acres of impervious area, the Port will use a Filterra® bioretention system designed to treat 50% of the 2-year 24-hour storm. This area of impervious surfaces has been untreated in the past. Effects of stormwater occur year-around. The Port selected the bioretention planter box because of its ability to treat the expected pollutants from stormwater runoff including sediment, nutrients, oils and greases, polycyclic aromatic hydrocarbons (PAHs), and heavy metals. However, treatment of the stormwater pollutants by the bioretention planter box will not be 100% effective. Some of each pollutant will discharge and result in discharge stormwater pollutants delivered to the Alsea River. Stormwater treatment will reduce the amount of stormwater contaminants discharged to the river, but the remaining contaminants discharged to the Alsea River will adversely affect water quality from 1.25 miles upstream of the discharge point to the Pacific Ocean over the long-term (decades).

During equipment operation for construction, small operational leaks or spills (a few ounces) of fuel, oil, or hydraulic fluids from equipment operation on barges, overwater structures, or on-shore facilities are likely to occur. The most likely scenario for fuel or oil contact with water in the action area is smaller leaks composed of diesel fuel or lubricating oils. The Port proposed to implement a pollution and erosion control plan to minimize the likelihood of fuel, oil, or hydraulic fluids contacting any waterbody or wetland in the action area. Thus, leaks or spills will be small in volume, small in area, and will disperse within minutes.

Suspended sediments. Increases in suspended sediments will occur during all in-water work activities including boat ramp removal and construction, pile removal and installation, and riprap removal and installation. The Port will install a silt curtain to minimize the extent of suspended sediment dispersion associated with the proposed action. However, it is likely that some suspended sediment outflow will occur. The highest concentrations of suspended sediments will occur in the area within the silt curtain, with lower concentrations occurring outside the silt curtain for up to 100 feet. Suspended sediments within the silt curtain will reach adverse levels during construction and will adversely affect water quality within the silt curtain for only a few days. While sediment plumes that flow out of the silt curtains will reach concentrations high enough to adversely affect water quality, they will quickly dissipate. Outside the silt curtains sediment plumes will be short-term (less than 4 hours) and effects to water quality will be minor.

In summary, short-term effects (less than 4 hours) of suspended sediments and contaminants associated with heavy equipment operation will be minor and not change quality and function of water quality in the action area. While suspended sediments contained within the silt curtain will likely reach adverse levels, they, too, will be short-term (days to weeks) and will not change the quality and function of water quality in the action area. Conversely, stormwater discharged to the Alsea River resulting from the proposed action will degrade water quality from the point of discharge downstream to the river's confluence with the Pacific Ocean for the life of the project (decades) and, thus, will reduce the quality and function of water quality in the action area.

Underwater noise

The Port will use a vibratory hammer to remove the pilings supporting the existing dock and to drive five 12-inch steel piles that will support the new dock. An impact hammer may be required should hard substrate be encountered during vibratory driving. If an impact hammer is required, the Port will deploy a bubble curtain for sound attenuation during impact hammer driving. The Port estimates pile driving will occur over one day and that up to 8,700 pile strikes could occur in one day. This represents the worst-case scenario that could occur during pile driving. Pile driving will occur during the November 1 to February 15 work window. The dual threshold interim criterion for behavior modification (150 decibels (dB)) from impact pile driving is based on adverse effects directly related to individual fish and their behaviors. Although, using this threshold, we can relate underwater sound disturbance to the fish passage and migratory corridor PBFs for OC coho salmon, green sturgeon, and eulachon because of the role that artificially produced sound from pile driving plays in delaying and impeding migration during migration periods.

Vibratory hammers are known to produce lower sound levels than impact hammers; generally 10 to 20 dB lower. Root mean square (RMS) sound levels above 150 dB would adversely affect the passage free of obstruction PCE in the action area. Caltrans (2012) suggested that vibratory hammer use on a 12-inch steel pile produced sound values of 171 dB (peak) and 155 for both RMS and sound exposure level (SEL). Using the practical spreading model for transmission loss and sound attenuation, we determined that during in-water vibratory pile driving RMS sound levels greater than 150 dB would extend to a distance of 72 feet laterally in all directions from the pile. Impacts during in-water vibratory driving will be short-term (up to 2.5 hours per day) and localized leaving 96% of the river open to passage all day as the Alsea River spans approximately 1,900 feet in this area.

During in-water impact driving, the Port will use a bubble curtain for sound attenuation. The level of attenuation provided by a bubble curtain varies from project to project. The performance of a bubble curtain also varies based on environmental conditions. Specifically when using an unconfined bubble curtain. Unconfined bubble curtains, when used in waters where the flow velocity is greater than 1.6 feet per second, fail to provide any sound attenuation. Washington Department of Transportation (WSDOT) (2015) suggests a wide range of attenuation provided by bubble curtains from 0 to 32 dB for unconfined and 0 to 38 dB for confined bubble curtains. For the purposes of this analysis we will use 4 dB as the level of attenuation for the proposed bubble curtain. We believe this is a conservative estimate and represents an achievable level of attenuation for the proposed bubble curtain. According to Caltrans (2012), the RMS value for a 12-inch steel pile driven unattenuated with an impact hammer is 177 dB RMS and 173 dB RMS with our estimate of attenuation provided by the bubble curtain. Impact pile driving will result in sound increases greater than 150 dB that will degrade the fish passage within 1,118 feet of the pile, which is 58% of the river channel. Impact driving will occur for up to 2.5 hours per day, so the impact of sound to the passage PCE will be short-term and allow passage for 21.5 hours per day.

Effects to the fish passage PCE will either be short-term (2.5 hours per day for 1 day) or localized allowing passage through a portion of the river channel. Therefore, increases in underwater noise above 150 dB will not change the quality and function of the passage free of obstruction PCE for OC coho salmon in the action area.

Boat ramp and over-water structure

The proposed boat ramp, boat dock, and associated riprap will reduce the habitat for OC coho salmon prey organisms by 0.15 acres below mean higher high water. Additionally, the proposed dock will create minimal shading in the water column in a 780 ft^2 area. The abundance of prey organisms in this area is likely already reduced because of the use of the existing boat ramp and the lack of appropriate habitat caused by the existing boat ramp. The replacement of the boat dock, ramp, and riprap will perpetuate the existing reduced prey organism abundance and the expansion will further reduce prey organism abundance of the 0.15 acre area for the life of the boat ramp, dock, and riprap (decades). Furthermore, shading from docks, piers, boathouses, moored boats, and marinas may reduce juvenile salmonid and adult prey organism abundance and habitat complexity by reducing aquatic vegetation and phytoplankton abundance (Kahler *et al.* 2000; Carrasquero 2001). The resulting decrease in prey organism abundance because of the area of the proposed boat ramp, riprap, and the dock will last for the life of the dock and ramp (decades). Therefore, the proposed action will slightly reduce the quality and function of the forage PCE for OC coho salmon.

Summary of effects on critical habitat

Critical habitat in the action area supports OC coho salmon rearing and migration. The PCEs of OC coho salmon critical habitat present in the action area are forage, passage free of artificial obstruction, natural cover, salinity, water quality, and water quantity. The proposed action will not affect the quality and function of natural cover, salinity, and water quantity PCEs for OC coho salmon.

The proposed action will adversely affect the water quality and forage PCEs and reduce their quality and function over the long-term (decades) in the action area. Long-term effects to water quality will occur from 1.25 miles upstream of the discharge of stormwater contaminants associated with the boat ramp downstream to the Pacific Ocean (3.7 miles). Long-term effects to the forage PCE includes reduced prey organism abundance resulting from a 0.15 acres reduction in prey organism habitat and reduced phytoplankton production that supports prey organism abundance and production. The effects to the passage free of obstruction PCE are either short-term or localized and thus are minor and unlikely to change the quality and function of this PCE in the action area.

The extent of the action area is directly related to the adverse effects to water quality and includes smaller areas affecting forage and passage free of obstruction PCEs. The Lower Alsea River fifth-field watershed extends up to approximately river mile 48 and contains approximately 132 miles of OC coho salmon designated critical habitat. The action area of the proposed action includes 3.7 miles of OC coho salmon designated critical habitat, thus the proposed action will affect 2.8% of designated critical habitat in the Lower Alsea River watershed. Because the proposed action's adverse effects are minor or affect only a small portion of critical habitat, it will not further degrade PCEs essential for OC coho salmon at the designated critical habitat unit scale (watershed).

2.4.2 Effects on Listed Species

OC coho salmon will be exposed to water quality degradation, reduced forage abundance, and underwater noise. Green sturgeon will be exposed to only long-term effects of water quality degradation and reduced forage abundance.

Work area isolation and salvage

The Port proposed to use a silt curtain to minimize dispersion of suspended sediments associated with removal and construction of the existing and proposed boat ramp and dock. Because of the timing of work area isolation and the location of the project, OC coho salmon smolts or pre-smolts and green sturgeon are reasonably unlikely to be present in the action area. To install the silt curtain the Port will begin at the shoreline and walk the curtain out into the bay with the ballast chain or weighted line on the bottom. During deployment of the silt curtain, adult OC coho salmon will likely move away from the curtain. It is unlikely that any adult OC coho salmon will be trapped by the silt curtain because they move away quickly or be pushed away during deployment of the silt curtain. The Port proposed to conduct fish salvage if any ESA-listed fish were trapped during silt curtain deployment. Because of the timing and the mobility and ability of adult OC coho salmon to avoid the isolation area, it is unlikely fish salvage would be needed. Therefore, it is unlikely that any OC coho salmon or green sturgeon individuals will be injured or killed because of work area isolation or fish salvage.

Water quality

Contaminants. Impervious surfaces that will contribute stormwater to the Alsea River are Zone 1, which consists of 0.12 acres of impervious surface and Zone 2, which is the boat ramp and consists of 0.11 acres of impervious surfaces. Zone 1 and Zone 2 likely see up to 50 to 75 vehicles a day during the high use season which is September through October with much less use during the rest of the year. Zone 2 is exposed to tidal influences which makes it very difficult to capture stormwater for treatment. Contaminants from Zone 2 will either be washed off the boat ramp during high tide or during rain events on low tides and will run down the side of the ramp into the river. Contaminant discharges from Zone 2 will occur regularly with the tidal cycle, but will be of much lower concentrations because of the continuous exposure of the impervious surfaces to tidal inundation. Much of the contaminants from Zone 1 will be discharged to the Alsea River during the "first flush" event, which is the first significant rainfall of the year. The Port will treat stormwater from Zone 1 with a Filterra® bioretention planter box sized to treat 50% of the 2-year 24-hour storm (first flush). Concentrations of contaminants from Zone 1 discharged to the Alsea River will likely be significantly higher than those from Zone 2 since they will have built up and are only effectively discharged during a significant rain event.

Stormwater runoff from impervious surfaces delivers a wide variety of pollutants to aquatic ecosystems, such as metals (*e.g.* copper and zinc), petroleum-related compounds (polynuclear aromatic hydrocarbons), and sediment washed off the road surface (Driscoll *et al.* 1990; Buckler and Granato 1999; Colman *et al.* 2001; Kayhanian *et al.* 2003). Stormwater pollutants are a source of potent adverse effects to coho salmon, even at ambient levels (Loge *et al*. 2006; Hecht *et al*. 2007; Johnson *et al*. 2007; Sandahl *et al*. 2007; Spromberg and Meador 2006). These pollutants also accumulate in the prey and tissues of juvenile salmon where, depending on the level of exposure, they cause a variety of lethal and sublethal effects including disrupted behavior, reduced olfactory function, immune suppression, reduced growth, disrupted smoltification, hormone disruption, disrupted reproduction, cellular damage, and physical and developmental abnormalities (Fresh *et al*. 2005; Hecht *et al.* 2007; LCREP 2007). Aquatic contaminants often travel long distances in solution or attached to suspended sediments, or gather in sediments until they are mobilized and transported by the next high flow (Anderson *et al*. 1996; Alpers *et al.* 2000a, 2000b).

Metals have a number of similar toxic effects on fish because of their similar properties. Most metals tend to accumulate in the gill tissue, where the metals form precipitates with the mucus. This leads to decreased ventilation, coughing responses, decreased oxygen and carbon dioxide exchange, and a depletion of energy reserves. The depletion of energy reserves causes decreased swimming ability and a slower response to predators (LaLiberte and Ewing 2006).

Metals tend to accumulate within the body of the fish by binding to phosphate and sulfide groups of various proteins. When the sulfhydryl groups of enzymes are bound, the enzyme activity can be inhibited potentially causing major disruption of physiological functions and a general decline in fish health (Leland and Kuwabara 1985; Kime 1998). At high enough concentrations, osmoregulatory and hormonal systems can cease to function (LaLiberte and Ewing 2006). Some metals also interfere with olfaction in salmonids (Klaprat *et al*. 1992). Salmon use olfaction as the major sensory input describing the environment around them. Olfaction has been shown to play important roles in predator avoidance (Scholz *et al*. 2000; Brown and Smith 1997; Hiroven *et al*. 2000), recognition of kin (Quinn and and Busack 1985; Olsen 1992), homing of adults to natal streams (Wisby and Hasler 1954; Hasler and Scholz 1983; Stabell 1992), and spawning rituals of adults (Sorensen 1992; Olsen and Liley 1993; Moore and Waring 1996).

Heavy metals also interfere with the workings of the immune system in salmonids (*Anderson et al.* 1989) but the mechanism of interference is not clear (Kime 1998). Metals may affect the immune system directly or the response could result from a stress reaction that elevates cortisol which subsequently results in immunosuppression (Schreck 1996). Suppression of the immune system increases infection of salmonids to bacteria, fungi, viruses, and parasites. Such infections decrease the vitality of the fish and increase the chances of mortalities due to osmotic imbalance, inability to feed, or predation (LaLiberte and Ewing 2006).

Baldwin *et al.* (2003) exposed juvenile coho salmon to various concentrations of copper to evaluate sublethal effects on sensory physiology, specifically olfaction. These researchers demonstrated that short pulses of dissolved copper at concentrations as low as 2 microgram per liter (μg/L) over experimental background concentrations of 3 μg/L reduced olfactory sensory responsiveness within 20 minutes such that the response evoked by odorants was reduced by approximately 10%. At 10 μg/L over background, responsiveness was reduced by 67% within 30 minutes. They calculated neurotoxic thresholds sufficient to cause olfactory inhibition at 2.3 to

3.0 µg/L over background. They also referenced three studies that reported copper exposures over four hours cause cell death of olfactory receptor neurons within rainbow trout (*Oncorhynchus mykiss*), Atlantic salmon (*Salmo salar*), and Chinook salmon (*Oncorhynchus tshawytscha*).

Inhibiting olfaction is detrimental to salmon because olfaction plays a significant role in the recognition and avoidance of predators and migration back to natal streams to spawn (Baldwin *et al*. 2003). More recent research indicates that the effect of 2 µg/L concentrations over experimental background concentrations of 3 µg/L reduces the survival of individuals (Hecht *et al.* 2007).

A review of zinc toxicity studies reveals effects including reduced growth, behavioral alteration (avoidance), reproduction impairment, increased respiration, decreased swimming ability, increased jaw and bronchial abnormalities, hyperactivity, and hyperglycemia. Juvenile fish are more sensitive. Avoidance in juvenile rainbow trout has been documented at concentrations as low as 5.6 µg/L above a background of 3 µg/L (Sprague 1968). In a 144 hour test, the concentration that killed half the rainbow trout (LC50) was as low as 23.9 µg/L (Hansen *et al*. 2002). When making general comparisons between lethal and sublethal endpoints tested on juvenile rainbow trout, the sublethal effects occur at concentrations approximately 75% less (5.6 µg/L) than lethal effects (24 µg/L) (EPA 2007; Hansen *et al*. 2002). Even relatively low concentrations (5.6 µg/L, established for juvenile rainbow trout) resulted in avoidance of the plume.

Petroleum-based contaminants (such as fuel, oil, and some hydraulic fluids) contain PAHs, which are acutely toxic to listed fish species and other aquatic organisms at high levels of exposure and cause sublethal adverse effects on aquatic organisms at lower concentrations (Heintz *et al.* 1999; Heintz *et al.* 2000; Incardona *et al.* 2004; Incardona *et al.* 2005; Incardona *et al*. 2006). It is likely that petroleum-based contaminants have similar effects on eulachon. Fish embryos and larvae exposed to PAHs are likely to experience adverse changes in heart physiology and morphology, including pericardial edema and heart failure, leading to mortality, even with only temporary exposure to low concentrations (Hicken *et al*. 2011; Incardona *et al.* 2012; Brette *et al.* 2014; Incardona *et al.* 2014). Although exposed embryos and larvae may grow to look like normal fish on the outside, internally there are subtle changes in heart shape reducing individual survival due to long-term physiological impairment (Hicken *et al.* 2011). Other individuals may experience a disturbance in heartbeat rhythm (Brette *et al.* 2014). Sources of cardiotoxic PAHs include vehicle exhaust, fuel spills, and oil and grease.[7]

The stormwater from 0.12 acres of impervious surfaces associated with Zone 1 will be treated by the Filterra® bioretention planter box while that from Zone 2 (0.11 acres) will essentially be untreated when it discharges to the Alsea River. Because treatment through the bioretention system is not 100% effective and some will be untreated, stormwater contaminants will discharge to the Alsea River. For stormwater discharged to the Alsea River, the area likely affected by concentrations of stormwater contaminants above the thresholds of effect detailed

[7] Personal communication from Nat Scholz, Ecotoxicology Program Manager from NOAA's Northwest Fisheries Science Center (February 2, 2014) to Michelle McMullin (NOAA Fisheries)

above is 1.25 miles upstream from the discharge point downstream to the Pacific Ocean (3.7 miles).

Adult OC coho salmon migrating past the proposed boat ramp may alter their migration path to avoid the stormwater discharge plume, but will not spend adequate time in the action area for exposure to result in adverse effects. Exposure to stormwater contaminant concentrations high enough for a duration long enough for injury or death is unlikely. OC coho salmon smolts and adult and sub-adult green sturgeon likely spend a more significant amount of time rearing in the affected area and will be adversely affected by stormwater contaminants. These effects are reasonably certain to include a variety of sublethal and behavioral effects that will reduce growth, fitness, and survival. OC coho salmon smolts and adult and sub-adult green sturgeon will be exposed mainly by the forage they eat while in the action area.

OC coho salmon will also be exposed to contaminants associated with construction equipment operation. However, exposure to these contaminants is unlikely to result in injury or death to OC coho salmon because equipment operation will yield only small amounts (ounces) over the duration of equipment use to remove and construct the boat ramp, place the riprap, and to remove and drive the pilings that will be limited in area and duration of presence. Thus, contaminant concentrations are not likely to reach levels for a period of time that will injure or kill OC coho salmon. Green sturgeon are unlikely to be present in the action area during construction.

Suspended sediments. At moderate levels, suspended sediments have the potential to reduce primary and secondary productivity; at higher levels, suspended sediments may interfere with feeding and may injure and even kill both juvenile and adult fish (Berg and Northcote 1985; Spence *et al.* 1996). However, adult and larger juvenile salmonids appear to be little affected by the high concentrations of suspended sediments that may be experienced during storm and snowmelt runoff episodes (Bjornn and Reiser 1991), which last for days.

Adult OC coho salmon outside the isolation area will be exposed to suspended sediments; however, given that adult OC coho salmon appear to be affected very little by suspended sediments and suspended sediment plumes will be of lower concentrations and shorter duration, the effects of suspended sediments are minor. Because the effects of suspended sediments to adult OC coho salmon are minor, injury or death to individuals will not occur. Because of the timing and location of construction resulting in suspended sediment increases, green sturgeon and OC coho salmon smolts are unlikely to be present in the action area and will not be exposed to effects of suspended sediments.

Underwater noise

Increases in underwater noise will occur during vibratory and impact hammer pile driving and pile removal. Pile work consists of removal and replacements of three piles, remove and re-drive one pile, and drive one new pile. Piles will be 12-inch steel pilings and will be first driven with a vibratory hammer and then an impact hammer, if it is needed to achieve a desired pile depth. If an impact hammer is needed, a bubble curtain will be deployed for sound attenuation during impact driving. For the purposes of this analysis we will assume the Port will use an impact hammer to drive each pile after vibratory driving occurs. All pile driving will likely occur in one day and for up to 5 hours total. Only adult OC coho salmon will be exposed to increases of underwater noise associated with pile driving.

The dual threshold interim criteria for impact pile driving are cumulative sound exposure level (SEL) of 187 dB (1 $\mu Pa^2 sec^{-1}$) for fish >2 grams and 183 dB (1 $\mu Pa^2 sec^{-1}$) for fish <2 grams, and peak pressure of 206 dB (1 $\mu Pa^2 sec^{-1}$), respectively, for adverse effects (*i.e.* injury or harm). The threshold for behavior modification is 150 dB RMS.

Vibratory driving produces a rounded waveform with slower rise times than the much quicker and steeper waveforms produced by impact driving. Physical injury to a fish's swim bladder or organs results from quicker, steeper waveforms associated with peak sound pressures created by impact strikes whereas rounded waveforms with slower rise times produced by vibratory hammers do not have the same physical effect to fish during short pile driving periods. Vibratory hammers' sound levels are also generally 10 to 20 dB lower than those from impact pile driving. General agreement does not exist on what vibratory SEL threshold value should be used for fish injury, although the likely range is 187 to 228 dB (CalTrans 2009).

Twelve inch steel piles typically produce sound levels of approximately 171 dB (peak) and 155 dB (root mean square and SEL) (CalTrans 2012). It is unlikely that adult OC coho salmon will be injured during vibratory pile driving because peak sound levels and the wave form from a vibratory hammer are such that they do not typically result in injury or death of fish, SEL values do not fall within the range for the threshold value for injury described above, and while the RMS value produced by vibratory hammer on a 12-inch steel pile is slightly higher than the 150 dB RMS threshold for behavioral effects, the duration is short enough that behavior effects to adult OC coho salmon are unlikely to occur.

In our assessment of impact pile driving for this proposed action, we determined that impact pile driving will result in peak, cumulative SEL, and RMS values exceeding the dual threshold interim criteria within a distance of 3 feet (peak), 243 feet for fish over 2 grams (cumulative SEL), and 1,118 feet (RMS).[8] OC coho salmon adults within 243 feet of the pile will be injured or killed during impact pile driving and may exhibit behavioral responses to RMS values greater than 150 dB within 1,118 feet from the pile.

Sound levels greater than 150 dB will occur from pile driving. Sound increases from vibratory and impact pile driving can cause behavior modification in fishes, which may result in injury depending on exposure duration and magnitude. Exposure to noise may result in predator avoidance behavior (Voellmy *et al.* 2014; Simpson *et al.* 2015) in fishes. Voellmy *et al.* 2014 observed three-spined stickleback respond to a predatory threat quicker under exposure to anthropogenic noise potentially resulting in unnecessary energy expenditure and lost foraging opportunities. Simpson *et al.* (2015) observed European eels that were 50% less likely and 25% slower to respond to an ambush predator and were caught more than twice as quickly by a pursuit predator under exposure to additional noise. Collectively, behavioral responses can vary

[8] These thresholds were calculated using the NMFS pile driving spreadsheet (8,700 pile strikes). The representative threshold as measured at 30 feet is 209 dB cumulative SEL.

broadly, from insignificant to a range of short- and long-term responses limiting to survival, growth, and fitness.

Physical injury to adult OC coho salmon because of in-water impact driving will occur as sound levels will exceed thresholds for injury. The degree to which an individual fish exposed to underwater sound will be affected is dependent on the number of variables such as species of fish, size of the fish, presence of a swim bladder, sound pressure intensity and frequency, shape of the sound wave (rise time), depth of the water around the pile and the bottom substrate composition and texture. High levels of underwater sound have been shown to have negative physiological and neurological effects on a wide variety of vertebrate species (Yelverton *et al*. 1973; Yelverton and Richmond 1981; Cudahy and Ellison 2002; Hastings and Popper 2005). Risk of injury from underwater noise appears related to the effect of rapid pressure changes, termed barotraumas, especially on gas-filled spaces in the bodies of exposed organisms (Turnpenny *et al*. 1994). Broadly, the effects of underwater noise on organisms range from no observable effects to immediate death. Over this range of effect, there is no easily identifiable point at which behavioral responses occur or where the effects transition to physical injury or death. The sounds from impact pile driving can injure and/or kill fishes, as well as temporarily stun them or alter their behavior (Turnpenny *et al*. 1994; Turnpenny and Newell 1994; Popper 2003; Hastings and Popper 2005).

Fish with swim bladders appear to be more susceptible to barotraumas from impulsive sounds (sounds of very short duration with a rapid rise in pressure) because the sounds cause their swim bladders to resonate. When a sound pressure wave strikes a gas-filled space such as the swim bladder, it causes that space to expand and contract. When the amplitude of this vibration is sufficiently high, the pulsing swim bladder can press against, and strain, adjacent organs, such as the liver and kidney. This pneumatic compression causes injury, in the form of ruptured capillaries, internal bleeding, and maceration of highly vascular organs (CalTrans 2002). Sound waves can cause different types of tissue to vibrate at different frequencies, and this differential vibration can tear mesenteries and other sensitive collective tissues (Hastings and Popper 2005). Exposure to high noise levels can also lead to injury through "rectified diffusion," the formation and growth of bubbles in tissues. These bubbles can cause inflammation and cellular damage and block or rupture capillaries, arteries, and veins (Crum and Mao 1996; Vlahakis and Hubmayr 2000; Stroetz *et al*. 2001). Death from barotrauma and rectified diffusion injuries can be instantaneous or delayed for minutes, hours, or even days after exposure.

Even if fish are not killed, elevated noise levels can cause sublethal injuries that affect the fishes' survival and fitness (Slabbekoom *et al*. 2010). Similarly, if injury does not occur, noise may modify fish behavior in ways that may make them more susceptible to predation or reduce their ability to detect prey (Slabbekoom *et al*. 2010). Fish suffering damage to hearing organs may suffer equilibrium problems, and have a reduced ability to detect predators and prey (Turnpenny *et al*. 1994; Hastings 1996). Exposure to elevated noise levels can cause a temporary shift in hearing sensitivity (referred to as a temporary threshold shift, or TTS), decreasing sensory capability for periods lasting from hours to days (Turnpenny *et al*. 1994; Hastings 1996). Feist *et al.* (1996) noted that juvenile pink and chum salmon exposed to pile driving noise were less likely to startle and flee when approached by an observer. Other types of sub-lethal injuries can place the fish at increased risk of predation and disease.

Regardless of species, smaller fish such as juveniles and larvae appear to be more sensitive than larger fish to non-auditory tissue injury (Yelverton *et al*. 1975). For example, NMFS biologists observed that approximately 100 surf perch from three different species (*Cymatogaster aggregate, Brachyistius frenatus,* and *Embiotoca lateralis*) were killed during impact pile driving of 30-inch diameter steel pilings at Bremerton, Washington (NMFS 2009). Dissections revealed complete swim bladder destruction across all species in the smallest fish (80 millimeters fork length (mm FL)), while swim bladders in the largest fish (170 mm FL) were nearly intact. However, swim bladder damage was typically more extensive in *C. aggregata* when compared to *B. frenatus* of similar size. Comparable size specific results have been demonstrated in other species. Due to their large size, adult salmon can tolerate higher noise levels and are generally less sensitive to injury of non-auditory tissues than juveniles (Hubbs and Rechnitzer 1952). However, no information is available to determine whether the risk of auditory tissue damage decreases with increasing size of the fish.

Gravid female salmon, specifically ovarian tissues and egg masses may face elevated injury risk relative to immature adults and sub-adults of comparable size. Eggs and supporting mesenteries are highly vascular tissues located in close proximity to the swim bladder, suggesting elevated sensitivity to barotrauma. These risks could include direct injury to individual eggs, tearing of the mesenteries that hold the eggs in place (resulting in the eggs being extruded prematurely), and loss of blood flow leading to developmental abnormalities or death. While this form of barotrauma has not been the subject of directed study, some inferences can be drawn from studies of other species. For example, Banner and Hyatt (1973) demonstrated increased mortality of sheepshead minnow eggs and embryos when exposed to continuous broadband noise (100 to 1000 Hertz [Hz]) approximately 15 dB above ambient. Hatched sheepshead minnow fry were unaffected by the same exposure, as were the eggs and fry of the longnose killifish (*Fundulus similis*). However, it must be noted that the sounds produced by impact driving of steel piles are very different in character than the sounds in this study, and the eggs were free floating and not contained within the ovaries of the mother. As such, extrapolations from this study to eggs in a gravid female salmon are tenuous, at best. Nonetheless, it is prudent to avoid potential injury to gravid female salmon because individual level effects can significantly impact population productivity.

Adult OC coho salmon that are within 243 feet of the pile during impact driving will experience the physical trauma described by the literature above and be injured or killed as a result. Those within 1,118 feet of the pile will experience behavioral effects that will increase their vulnerability to and potentially result in predation or reduce their growth and survival due to unnecessary energy expenditure. Because most individuals will be migrating through, only a few, if any, OC coho salmon individuals will be injured or killed.

Quantifying the number of OC coho salmon individuals in the area of injury resulting from pile driving is difficult. There is not sufficient information available to provide a reliable and accurate estimate of the number of individual fish present in this area at any one time because of variability of environmental conditions and migration patterns. However, the number of OC coho salmon injured or killed because of behavioral or physical injury is likely small because most adult OC coho salmon will migrate quickly through the area and will not be present long enough to experience injury or death.

Boat ramp and over-water structure

Modification of OC coho salmon and green sturgeon habitat at the project site will occur from expansion of the boat ramp, dock, and riprap footprint. Expansion of the boat ramp, dock, and riprap will reduce the available foraging habitat and habitat for OC coho salmon and green sturgeon prey organisms. Thus, it is likely that the abundance of OC coho salmon and green sturgeon prey organisms will be reduced following completion of the proposed action. Exposure to reduced prey organism will likely occur to juvenile OC coho salmon and adult and sub-adult green sturgeon using the 0.15 acres area affected by the boat ramp, dock, and riprap. The level of exposure depends on an individual's preference for foraging and the duration of time spent foraging in the action area. Following construction, individual OC coho salmon and green sturgeon will use the action area for foraging, but in small numbers because the lack of available forage will cause individuals to move to a more species rich area. Nonetheless, individual OC coho salmon smolts will remain to forage in the action area long enough to experience injury or death via insufficient prey and increased competition among the individuals of the species, albeit a small number of individuals each year. Actively foraging green sturgeon will not likely remain long enough in the small area affected and thus are unlikely to experience injury or death from insufficient prey and increased foraging competition.

Summary of Effects on Species

The proposed action will result in the discharge of stormwater contaminants to the Alsea River which will be dispersed upstream and downstream by tidal influence from 3.7 miles upstream of the boat ramp downstream to the Pacific Ocean. Exposure to stormwater will injure adult and smolt OC coho salmon and adult and sub-adult green sturgeon in the Alsea River from 3.7 miles upstream of the boat ramp downstream to the Pacific Ocean. The severity of effect is related to the concentration of the contaminant and the duration each life stage's exposure. Only a few individuals each year will be adversely affected in each species.

Construction of the boat dock will reduce in the long-term prey organism abundance for OC coho salmon and green sturgeon. Over a period of decades, annually, a few rearing OC coho salmon smolts, with extended rearing periods in the impacted area, will experience reduced growth, survival, and fitness following exposure to reduced forage caused by construction of the over water structure, boat ramp, and riprap. For the several decades of structural life of the new over-water structure, each rearing OC coho salmon smolt cohort that spend extended rearing periods in the impacted area will experience reduced growth, survival, and fitness due to exposure to reduced forage caused by the structure.

Increases in underwater noise because of pile driving will have the greatest impact to adult OC coho salmon affected by it. Green sturgeon will not be present during pile driving. A few adult OC coho salmon within 243 feet of the pile will be injured or killed because of in-water pile driving with an impact hammer. A few adult OC coho salmon within 1,118 feet of the pile during the duration of in-water impact pile driving will experience reduced growth, survival, and fitness or predation resulting from behavioral injury.

Adult OC coho salmon injured because of impact pile driving will be carrying eggs as they will be migrating upstream to spawn. This will increase the number of OC coho salmon injured or killed because of pile driving. Estimating the number of eggs injured or killed is impossible because we will not know the number of adults that will be present in affected area during pile driving or the number of those adults that are females. Some adults will be passing through the action area during pile driving, but only a few will likely remain in the action area long enough to experience injury or death. Thus, only a few adult OC coho salmon will be injured or killed by pile driving and the number of eggs injured or killed would not equate to a number of adults that would result in a measurable impact to the long-term abundance of OC coho salmon in the Alsea River.

When we combine probability and duration of exposure of OC coho salmon and green sturgeon together with the severity of effect resulting from all elements of the proposed action, we find that a small number of OC coho salmon and even fewer green sturgeon will experience injury or death because of the proposed action. The adverse effects of each element of the proposed action (stormwater, impact pile driving, reduced forage) resulting in injury or death are either spatially localized or short-term in duration limiting the impact to the abundance of each species such that it is likely not meaningful. On the population scale, the effects of the proposed action will not be measurable because too few OC coho salmon and fewer green sturgeon individuals will be injured or killed and no limiting factors adversely affected.

2.5 Cumulative Effects

"Cumulative effects" are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. We checked the biological assessment and additional information provided by the Corps and did not discover any specific future state or private actions reasonably certain to occur in the action area. However, as discussed below, general state and private actions are anticipated to be on-going and reasonably certain to occur in, and affect, the action area. We did not include Federal actions.

Non-project related land and waterway management activities including agriculture and urbanization will continue to degrade aquatic habitat for OC coho salmon and green sturgeon in the Alsea River estuary action area. These activities in and around the action area will contribute to degraded water quality and habitat complexity in the action area that has adversely affected the action area. These activities will degrade water quality by increasing water temperatures, adding contaminants to the water (stormwater contaminants associated with urbanization), increasing sedimentation, increasing predation on OC coho salmon and green sturgeon, and reducing large wood for creation of complex habitats. Continued maintenance of degraded water quality and habitat complexity conditions in the action area over time will cause neutral or slightly negative effects on OC coho salmon, green sturgeon, and their habitat. We expect cumulative effects in the action area will continue to have a depressive effect on the Alsea River populations of OC coho salmon and green sturgeon abundance and productivity in the future. Likewise, we expect the quality and function of OC coho salmon critical habitat primary constituent elements (PCEs) will continue to be negatively impacted in the future because of cumulative effects.

2.6 Integration and Synthesis

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action (Section 2.4) to the environmental baseline (Section 2.3) and the cumulative effects (Section 2.5), taking into account the status of the species and critical habitat (Section 2.2), to formulate the agency's biological opinion as to whether the proposed action is likely to: (1) reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) reduce the value of designated or proposed critical habitat for the conservation of the species.

2.6.1 Critical Habitat

The OC coho salmon CHART identified forestry, grazing, agriculture, and urbanization as key management activities affecting the physical or biological features within this critical habitat unit (watershed). More specifically, the landscape changes are largely from: a loss of large woody debris and over-allocation of surface water (for irrigation and municipal uses), diking and filling of estuarine wetlands, loss of appropriate channel substrates (associated with modified hydrology related to road building and forestry), and impaired riparian vegetation (mostly due to modification associated with roadbuilding, forestry, agriculture/grazing, and residential development. The CHART considered this watershed and the associated Alsea River mainstem as having high conservation value.

Climate change is likely to adversely affect the overall conservation value of OC coho salmon designated critical habitat, though it may have beneficial effects in certain circumstances. The adverse effects are likely to include, but are not limited to, depletion of cold-water habitat and other variations in quality and quantity of tributary spawning, rearing and migration habitats.

The action area contains PCEs necessary for rearing and migration (Table 3). The environmental baseline is degraded from human caused impacts, particularly urban, residential, and industrial development as well as forestry and agricultural related practices. Developments in and around the estuary, including construction of in-water infrastructure and channelization have altered habitat value throughout the estuary. Water quality is likely impaired by several contaminants associated with stormwater and other non-point source discharges resulting from agriculture.

The proposed action will degrade quality and function of water quality through the increase in stormwater contaminants discharged to the Alsea River and reduce forage species abundance because of construction of the boat dock and ramp in the action area. The concentrations of stormwater contaminants will likely be high enough to adversely affect water quality from the point of discharge at the boat ramp to the Pacific Ocean. The reduction in forage will be limited to the area affected by the boat ramp, riprap, and dock (0.15 acres within the area affected by stormwater).

Cumulative effects on OC coho salmon critical habitat will come mostly from non-project related land and waterway management activities including agriculture, forestry, grazing, road building and maintenance, and urbanization that will continue in and around the action area to adversely affect critical habitat for OC coho salmon in the action area.

We are reasonably certain that the proposed action will adversely affect the quality and function of water quality and forage in the action area, but because the effects will be either minor or localized to a small portion of the critical habitat unit (2.8%), the proposed action will not appreciably reduce the value of the Lower Alsea River critical habitat unit for the conservation of OC coho salmon. Consequently, since the proposed action will not appreciably diminish the value of critical habitat for the conservation of the species in the action area. The proposed action will also not diminish the value of the critical habitat at the designation level. Based on the above analysis, when considered in light of the status of the species, the effects of the proposed action, when added to the effects of the environmental baseline, and anticipated cumulative effects and climate change, critical habitat will remain functional, or retain the current ability for the PBFs to become functionally established, to serve the intended conservation role for the species.

2.6.2 Species

OC coho salmon

OC coho salmon in the action area are part of the Alsea River population identified as functionally-independent. Their annual abundance varies considerably from year to year, with average spawner returns over the last 10 years of 6%, respectively, of their potential historical spawner abundance. The Alsea population has a high certainty of the population not being able to sustain itself for the foreseeable future. The primary and secondary limiting factors are stream complexity and water quality. The proposed action will have localized long-term effects to the water quality limiting factor due to the increase in stormwater contaminants discharged to the Alsea River. The proposed action will not affect any of the other limiting factors listed above.

Climate change is likely to adversely affect the survival and recovery of OC coho salmon, though it may have beneficial effects in certain circumstances. The adverse effects are likely to include, but are not limited to, depletion of cold-water habitat and other variations in quality and quantity of tributary spawning, rearing and migration habitats.

The action area supports smolt rearing and adult and smolt migration. The environmental baseline of the action area is degraded from human caused impacts, particularly urban and residential development and industrial development. Developments in and around the estuary, including construction of in-water infrastructure and channelization have altered forage and habitat value throughout the estuary. Water quality is likely impaired by several contaminants from stormwater and other non-point discharges to the Alsea River.

The proposed action will injure or kill OC coho salmon because of sublethal effects experienced from increased stormwater contaminant discharge; reduced growth, survival, and fitness resulting from reduced forage; and physical injury or death from pile driving. Although these effects will occur to multiple life stages of OC coho salmon, we are reasonably certain that the timing of the proposed action and measures taken to minimize the effects to fish will result in only a small number of OC coho salmon injured or killed during implementation of the proposed action and a few per year injured or killed due to long-term effects on water quality and forage.

Cumulative effects on OC coho salmon will come mostly from non-project related land and waterway management activities including agriculture, forestry, grazing, road building and maintenance, and urbanization that will continue in and around the action area to adversely affect OC coho salmon in the action area.

Adverse effects of the proposed action will injure or kill OC coho salmon in the action area. The small number of OC coho salmon injured or killed will not be meaningful at the population level. When we add the effects of the proposed action to the populations' statuses, environmental baseline, cumulative effects, and climate change, we find the proposed action will not appreciably reduce the likelihood of the survival or recovery of OC coho salmon at the population scale. Based on our conclusion that the Alsea populations' survival and recover will not be impeded because of the proposed action, the proposed action will not appreciably reduce the likelihood of the survival or recovery of the OC coho salmon ESU.

Green sturgeon

Green sturgeon occurring in the action area are spawned south of the Eel River in California. When not spawning, green sturgeon are broadly distributed in nearshore marine areas from Mexico to the Bering Sea, including Alsea River estuary. The principal factor for the decline of green sturgeon is the reduction of its spawning area to a single known population limited to a small portion of the highly degraded Sacramento River. This limiting factor does not apply in the action area.

Climate change is likely to adversely affect the survival and recovery of green sturgeon. The adverse effects are likely to include, but are not limited to, loss of quality and quantity of spawning habitat in the Sacramento River. It may also result in changing ocean conditions.

The action area supports adult and sub-adult growth and development. The environmental baseline of the action area is degraded from human caused impacts, particularly urban and residential development and industrial development. Developments in and around the estuary, including construction of in-water infrastructure and channelization have altered forage and habitat value throughout the estuary. Water quality is likely impaired by several contaminants from stormwater and other non-point discharges to the Alsea River.

Increases in stormwater discharge in the action area associated with the proposed action will have sub-lethal effects to green sturgeon that will result in injury observed as reduced growth, survival, and fitness of green sturgeon individuals. However, the number of green sturgeon injured by the proposed action will be limited to a few individuals rearing in the action area for extended periods.

Cumulative effects on green sturgeon will come mostly from non-project related land and waterway management activities including agriculture, forestry, grazing, road building and maintenance, and urbanization that will continue in and around the action area to adversely affect green sturgeon in the action area.

Adverse effects of the proposed action will injure green sturgeon in the action area, but the number will be small and not meaningful at the population scale. When we add the effects of the proposed action to the population status, environmental baseline, cumulative effects, and climate change, we find the proposed action will not appreciably reduce the likelihood of the survival or recovery of green sturgeon that use the action area. Based on our conclusion, the proposed action will not appreciably reduce the likelihood of the survival or recovery of the southern DPS of green sturgeon.

2.7 Conclusion

After reviewing and analyzing the current status of OC coho salmon and OC coho salmon critical habitat, the environmental baseline within the action area, the effects of the proposed action, any effects of interrelated and interdependent activities, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of OC coho salmon or destroy or adversely modify OC coho salmon designated critical habitat.

After reviewing and analyzing the current status of green sturgeon, the environmental baseline within the action area, the effects of the proposed action, any effects of interrelated and interdependent activities, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of green sturgeon. No critical habitat has been designated or proposed for this species in the action area; therefore, none was analyzed.

2.8 Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). "Incidental take" is defined by regulation as takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). Section 7(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this incidental take statement.

2.8.1 Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take would occur as follows:

- Smolt OC coho salmon will be injured or killed from exposure to stormwater contaminants and reduced forage availability.
- Adult OC coho salmon and OC coho salmon eggs will be injured or killed from exposure to increased noise associated with impact pile driving.
- Adult and sub-adult green sturgeon will be injured or killed from exposure to stormwater contaminants.

Accurately quantifying the number of fish taken by these pathways is not possible. Much of the action area is too deep and velocities are too great to allow observation of injured or killed individuals. Furthermore, there are no methods available to monitor this death and injury will occur over a large area throughout the year (stormwater and reduced forage). In such cases we use a take surrogate or take indicator that rationally reflects the incidental take caused by the activities.

For stormwater discharges, the best available indicator for the extent of take is the level of water quality impairment that will occur when the stormwater treatment system is functioning properly. For this action, the Filterra® bioretention system is an integral means of minimizing potential take, so this system must function in accordance with its specifications. Inspection within 48 hours following storm events will provide a precise indicator of proper swale and filter function (City of Portland 2014). The extent of take for stormwater is ponding of water in the system for 48 hours. Water ponding longer than 48 hours implies that untreated stormwater will overflow the bioretention system and pass into the Alsea River untreated. This indicator is appropriate for this proposed action because it has a rational connection to the release of stormwater pollutants that cause take of listed species. If water continues to pond after 48 hours and sources of possible clogging are not identified and corrected within 7 days, the extent of take will be exceeded and the reinitiation provisions of this opinion will be triggered.

For incidental take related to reduced forage, the best available indicator for the extent of take is an indicator that best describes the extent of OC coho salmon habitat that will be subject to a long-term reduction in forage species abundance because of the boat ramp, riprap, and boat dock (shade). The extent of take for reduced forage is the area below the mean higher high water that is subject to habitat alteration resulting from the boat ramp, riprap, and dock (0.15 acres). This indicator is appropriate for this proposed action because it is related to the impacts of shading by over-water structures and changes in habitat type and forage species assemblage caused by construction of the boat ramp and riprap placement. If the total area of habitat alteration caused by the boat ramp and dock exceeds 0.15 acres below mean higher high water, reinitiation of consultation on this proposed action will be warranted.

For impact pile driving, the best available indicator for the extent of take is an indicator that demonstrates that incidental take authorized by this ITS is within the scope of what we analyzed in this opinion. The extent of take for in-water impact pile driving is the number of pile strikes per day (8,700). This indicator is appropriate for this proposed action because it is directly related to the increase in sound generated by impact pile driving that will cause take of listed species. If the Port exceeds 8,700 pile strikes per day the extent of take will be exceeded and the reinitiation of consultation on this proposed action will be warranted.

2.8.2 Effect of the Take

In the biological opinion, NMFS determined that the amount or extent of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

2.8.3 Reasonable and Prudent Measures

"Reasonable and prudent measures" are nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02).

1. Minimize incidental take from exposure to stormwater contaminants discharged to the Alsea River.
2. Minimize incidental take from exposure to in-water impact pile driving.
3. Minimize incidental take from exposure to the boat ramp and dock.
4. Conduct monitoring during proposed action implementation and on operation of the stormwater treatment swale to document the effects of the proposed action on listed species in the action area. Provide monitoring reports to NMFS.

2.8.4 Terms and Conditions

The terms and conditions described below are non-discretionary, and the Corps or any applicant must comply with them in order to implement the reasonable and prudent measures (50 CFR 402.14). The Corps or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this incidental take statement (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

1. To implement reasonable and prudent measure 1 (stormwater discharge), the Port shall:
    a. Comply with the Filterra® bioretention system maintenance manual.
        i. The Port will inspect the bioretention system for ponding within 48 hours after every major rainfall event (*i.e.* greater than 1 inch of rain over a 24-hour period).
    b. Maintain proper functioning condition of the bioretention system.
        i. If water continues to pond after 48 hours, the Port will identify and correct sources of clogging within 7 days.
        ii. In addition to any other monitoring or reporting requirement, the Port will report any failure to drain within 48 hours to NMFS within 30 days, including a description of the remedy.

2. To implement reasonable and prudent measure 2 (impact pile driving), the Port shall:
    a. Conduct pile driving with an impact hammer during a period from November 1 to February 15 and only during daylight hours with the sun above the horizon. This is to ensure that pile driving does not occur at dawn or dusk, which can be peak movement time for OC coho salmon.
    b. The Port shall allow a minimum rest period of 12 hours between daily pile driving activities during which no impact pile driving occurs.

c. When using the bubble curtain during impact hammer pile driving, one of the following configurations shall be used to reduce sound generated by impact pile driving.
   i. Employ a bubble curtain that complies with the following:
      1) If water velocity is 1.6 feet per second or less, surround the pile by an unconfined bubble curtain that will distribute small air bubbles around 100% of the pile diameter for the full depth of the water column.
      2) If water velocity is greater than 1.6 feet per second, surround the pile by a confined bubble curtain (*e.g.*, a bubble ring surrounded by fabric or metal sleeve) that will distribute small air bubbles around 100% of the pile diameter for the full depth of the water column.

d. On each day of pile driving, count the total number of impact hammer pile strikes that occur during pile driving. If the number of daily pile strikes exceeds 8,700, cease pile driving activities and contact the NMFS consultation biologist, Jeff Young, at 541.957.3389 or jeff.young@noaa.gov, or the Oregon Coast Branch at 541.957.3383.

3. To implement reasonable and prudent measure 3 (boat ramp and dock), the Port shall:
   a. Develop an acceptable method of reducing shading from and increasing light intensity underneath the boat dock to minimize predation and reduction to primary production and forage species abundance.
   b. Submit for NMFS review and approval a letter describing how the Port will reduce shading from and increase light intensity underneath the boat dock at least 30 days prior to project implementation.

4. To implement reasonable and prudent measure 4 (monitoring), the Port shall:
   a. Prepare a project completion report that shall include:
      i. Project name (include NMFS tracking number WCR-2015-2762).
      ii. Corps permit number and contact person.
      iii. Starting and ending dates of work.
      iv. Photos of habitat conditions at the project site before, during, and after project completion.
         1) Include general views and close-ups showing details of the project and project area, including pre- and post-construction.
         2) Label each photo with date, time, and subject.
      v. Finished area of the boat ramp, boat dock, and riprap.
      vi. Total number of pilings installed during pile driving.
      vii. The total number of strikes per day.
      viii. A discussion of the effectiveness of the bubble curtain used during impact pile driving.
   b. Conduct annual reporting on stormwater treatment facility management. The reports shall include:
      i. Project name (include NMFS tracking number WCR-2015-2762).
      ii. Corps permit number and contact person.
      iii. Monitoring data to demonstrate stormwater discharges are within the extent of take specified in the ITS:

1) Provide a stormwater facilities management report annually for the first 3 years and then at 5 years.
2) Dates of routine maintenance activities.
3) Summary of maintenance activities occurring throughout the year to ensure that the Filterra® bioretention planter box functions properly to remove stormwater pollutants (debris removal, soil amendments, vegetation removal and replanting, mowing, sediment removal, etc.).
4) Documentation of the functioning of the biofiltration planter box, including the following:
    a) Record of all major rainfall events (i.e., greater than 1 inch of rain over a 24-hour period as measured at the Waldport weather station).
    b) Record of whether water remains within the biofiltration planter box 48 hours after the end of all major rainfall events.
    c) Record of what actions were taken and when they were taken if the biofiltration planter box does not drain within 48 hours after major rainfall events (i.e. greater than 1 inch of rain over a 24-hour period).

2.9 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02).

1. The Corps should work with the Port to identify and remove old derelict over-water structures in the Alsea River estuary that have degraded estuarine habitat complexity by reducing seagrass, reducing prey organism abundance, and likely contribute to predation of fish by avian piscivorous predators.
2. The Corps should work with the Port to identify an alternative to discharging stormwater into the Alsea River (*e.g.*, pipe treated stormwater to wastewater collection system for secondary treatment through the wastewater treatment plane, etc.)
3. The Corps should encourage the Port to provide pre-project baseline monitoring for heavy metals commonly associated with stormwater runoff for waterbodies anticipated to receive stormwater runoff from an anticipated project. Monitoring data should include hardness, alkalinity, dissolved organic carbon, and temperature for the receiving waterbody.
4. The Corps should encourage applicants to monitor water quality of a receiving waterbody following the completion of a project modifying stormwater runoff. Recommended sampling would include 3 years of post-construction discharges timed to capture the “first flush” storm event (i.e., the first storm after September 1 of each year that precipitation causes a stormwater discharge from the facility. Additional recommendations include:
    a. Collect three discrete samples and analyze each sample individually (e.g., do not composite).

b. Collect all samples within approximately 3 hours of each other at the initial part of the rainfall event.
c. Record days with no precipitation preceding storm, rainfall duration, and the average storm intensity (rainfall inches per hour).

2.10 Reinitiation of Consultation

This concludes formal consultation for the Port of Alsea boat ramp and dock replacement and expansion.

As 50 CFR 402.16 states, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) the amount or extent of incidental taking specified in the incidental take statement is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action.

2.11 "Not Likely to Adversely Affect" Determinations

The NMFS does not anticipate the proposed action will take Pacific eulachon (*Thaleichthys pacificus*).

The consultation history, proposed action, action area, and Corps' effects determination are described in Sections 1.2 (*Consultation History*), 1.3 (*Proposed Action*), and 1.4 (*Action Area*) of the accompanying opinion.

Species in the action area

Eulachon range from the Mad River in northern California to the Skeena River in British Columbia, Canada. First appearance of eulachon spawners in the Alsea River has not been studied, but based on the available information for eulachon run-timing, adult eulachon may be present in the action area from mid-January through May. Adults are capable of multiple spawning events throughout their life. Eggs hatch in 20 to 40 days and larval eulachon are carried downstream within a few days. Larval eulachon when in the Alsea River may be present in the action area from February through June. The action area is not designated critical habitat for eulachon, though they may use it for migration and growth and development. Eulachon have not been observed in the Alsea River (Gustafson *et al.* 2010), but may occur on an infrequent basis in small numbers. Thus, the likelihood of presence in the action area is very low, such that the probability of eulachon exposure to the effects of this proposed action is very low.

Effects on listed species

For purposes of the ESA, "effects of the action" means the direct and indirect effects of an action on the listed species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action (50 CFR 402.02). The applicable standard to find that a proposed action is not likely to adversely affect listed species or critical habitat is that all of the effects of the action are expected to be discountable, insignificant, or completely beneficial.[9] Beneficial effects are contemporaneous positive effects without any adverse effects on the species. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur.

The opinion detailed the effects of the proposed action, including water quality degradation from stormwater discharge, habitat degradation from removal and replacement of the existing boat ramp and dock with a new boat ramp and dock and installation of riprap to support the boat ramp, and increased sound levels associated with pile driving. While construction will occur during a period when eulachon could be present, their presence in the action area is unlikely, thus they will unlikely be exposed to the effects of the proposed action. As such, the effects of the proposed action are discountable for eulachon.

Conclusion

Based on this analysis, we are reasonably certain that the proposed action is not likely to adversely affect eulachon identified here in Section 2.11.

Reinitiation of Consultation

Reinitiation of consultation is required and shall be requested by the Corps or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (2) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this concurrence letter; or if (3) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16). This concludes the ESA portion of this consultation.

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT ESSENTIAL FISH HABITAT CONSULTATION

Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. The MSA (section 3) defines EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects on EFH may result from actions occurring within EFH or outside of it and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR

[9] U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. Endangered Species Act consultation handbook: procedures for conducting section 7 consultations and conferences. March. Final. P. 3-12.

600.810). Section 305(b) also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH.

This analysis is based, in part, on the EFH assessment provided by the Corps and descriptions of EFH for Pacific coast groundfish (PFMC 2005), coastal pelagic species (PFMC 1998), and Pacific coast salmon (PFMC 1999) contained in the fishery management plans developed by the Pacific Fishery Management Council and approved by the Secretary of Commerce.

3.1 Essential Fish Habitat Affected by the Project

The PFMC described and identified EFH for Pacific coast groundfish (PFMC 2005), Pacific salmon (PFMC 1999), and coastal pelagic species (PFMC 1998). The proposed action and action area for this consultation are described in the Introduction to this document (Section 1). The action area includes areas designated as EFH for various life-history stages of Pacific coast groundfish, Pacific salmon, and coastal pelagic species (Table 4). In addition, the following habitat area of particular concern is present in the action area: estuary.

Table 4. Species with designated EFH found in waters of Oregon and Washington.

Groundfish Species	
Leopard shark (*Triakis semifasciata*) Soupfin shark (*Galeorhinus zyopterus*) Spiny dogfish (*Squalus acanthias*) Big skate (*Raja binoculata*) California skate (*R. inornata*) Longnose skate (*R. rhina*) Ratfish (*Hydrolagus colliei*) Pacific rattail (*Coryphaenoides acrolepsis*) Lingcod (*Ophiodon elongatus*) Cabezon (*Scorpaenichthys marmoratus*) Kelp greenling (*Hexagrammos decagrammus*) Pacific cod (*Gadus macrocephalus*) Pacific whiting (Hake) (*Merluccius productus*) Sablefish (*Anoplopoma fimbria*) Aurora rockfish (*Sebastes aurora*) Bank Rockfish (*S. rufus*) Black rockfish (*S. melanops*) Blackgill rockfish (*S. melanostomus*) Greenspotted rockfish (*S. chlorostictus*) Greenstriped rockfish (*S. elongatus*) Longspine thornyhead (*Sebastolobus altivelis*) Shortspine thornyhead (*Sebastolobus alascanus*) Pacific Ocean perch (*S. alutus*) Quillback rockfish (*S. maliger*) Redbanded rockfish (*S. babcocki*) Redstripe rockfish (*S. proriger*) Rosethorn rockfish (*S . helvomaculatus*) Rosy rockfish (*S. rosaceus*) Blue rockfish (*S. mystinus*) Bocaccio (*S. paucispinis*) Brown rockfish (*S. auriculatus*) Canary rockfish (*S. pinniger*)	Chilipepper (*S. goodei*) China rockfish (*S. nebulosus*) Copper rockfish (*S. caurinus*) Darkblotched rockfish (*S. crameri*) Grass rockfish (*S. rastrelliger*) Rougheye rockfish (*S. aleutianus*) Sharpchin rockfish (*S. zacentrus*) Shortbelly rockfish (*S. jordani*) Shortraker rockfish (*S. borealis*) Silvergray rockfish (*S. brevispinus*) Speckled rockfish (*S. ovalis*) Splitnose rockfish (*S. diploproa*) Stripetail rockfish (*S. saxicola*) Tiger rockfish (*S. nigrocinctus*) Vermillion rockfish (*S. miniatus*) Widow Rockfish (*S. entomelas*) Yelloweye rockfish (*S. ruberrimus*) Yellowmouth rockfish (*S. reedi*) Yellowtail rockfish (*S. flavidus*) Arrowtooth flounder (*Atheresthes stomias*) Butter sole (*Isopsetta isolepsis*) Curlfin sole (*Pleuronichthys decurrens*) Dover sole (*Microstomus pacificus*) English sole (*Parophrys vetulus*) Flathead sole (*Hippoglossoides elassodon*) Pacific sanddab (*Citharichthys sordidus*) Petrale sole (*Eopsetta jordani*) Rex sole (*Glyptocephalus zachirus*) Rock sole (*Lepidopsetta bilineata*) Sand sole (*Psettichthys melanostictus*) Starry flounder (*Platyichthys stellatus*)
Coastal Pelagic Species	
Northern anchovy (*Engraulis mordax*) Pacific sardine (*Sardinops sagax*) Pacific mackerel (*Scomber japonicus*)	Jack mackerel (*Trachurus symmetricus*) Market squid (*Loligo opalescens*)
Pacific Salmon	
Coho salmon (*O. kisutch*)	Chinook salmon (*O. tshawytscha*)

3.2 Adverse Effects on Essential Fish Habitat

1. Water quality – The proposed action will adversely affect water quality in the action area. The effects on water quality in EFH from stormwater, suspended sediments, and contaminants are similar to those discussed in the attached biological opinion. Please see Section 2.4, *Effects on Critical Habitat* for a discussion of effects to water quality. Based on that discussion, the discharge of stormwater contaminants to the Alsea River associated with the proposed action will adversely affect EFH in the action area for Pacific coast groundfish, Pacific salmon, and coastal pelagic species.

2. Passage and migration – The proposed action will adversely affect fish passage and migration in the action area. The effects on passage and migration in EFH from increased noise levels associated with pile driving are similar to those discussed in the accompanying biological opinion. Please see Section 2.4, *Effects on Critical Habitat* for a discussion of effects on passage and migration. Based on that discussion, the short-term increase in noise levels associated with pile driving will adversely affect EFH in the action area for Pacific coast groundfish, Pacific salmon, and coastal pelagic species.
3. Food – The proposed action will adversely affect prey organisms by reducing their habitat and abundance in the action area. The effects on prey organism habitat and abundance in EFH from the boat ramp, boat dock, and riprap are similar to those discussed in the attached biological opinion. Please Section 1.3, *Effects on Critical Habitat* for a discussion of effects on food. Based on that discussion, the slight long-term reduction in prey organism abundance in the action area will adversely affect EFH in the action area for Pacific coast groundfish, Pacific salmon, and coastal pelagic species.

3.3 Essential Fish Habitat Conservation Recommendations

The following four conservation recommendations are necessary to avoid, mitigate, or offset the impact of the proposed action on EFH. These conservation recommendations are a subset of the ESA terms and conditions.

1. Water quality – Minimize adverse effects on water quality by maintaining stormwater treatment facility, as stated in Term and Condition 1 in the accompanying opinion.
2. Passage and migration – Minimize adverse effects on passage and migration by implementing sound attenuation, as stated in Term and Condition 2 in the accompanying opinion.
3. Food – Minimize adverse effects on prey organism habitat and abundance by developing a method to reduce shade and increase light intensity associated with the boat dock, as stated in Term and Condition 3 in the accompanying opinion.
4. Monitoring – Ensure completion of a monitoring and reporting program to confirm the proposed action is meeting the objective of minimizing adverse effects to EFH, as stated in Term and Condition 4 in the accompanying opinion.

Fully implementing these EFH conservation recommendations would protect, by avoiding or minimizing the adverse effects described in section 3.2, above, approximately 405 acres of designated EFH for Pacific coast groundfish, Pacific salmon, and coastal pelagic species.

3.4 Statutory Response Requirement

As required by section 305(b)(4)(B) of the MSA, the Corps must provide a detailed response in writing to NMFS within 30 days after receiving an EFH Conservation Recommendation. Such a response must be provided at least 10 days prior to final approval of the action if the response is inconsistent with any of NMFS' EFH Conservation Recommendations unless NMFS and the Federal agency have agreed to use alternative time frames for the Federal agency response. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the Conservation Recommendations, the Federal agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreements with NMFS over the anticipated effects of the action and the measures needed to avoid, minimize, mitigate, or offset such effects (50 CFR 600.920(k)(1)).

In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we ask that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

3.5 Supplemental Consultation

The Corps must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations (50 CFR 600.920(l)).

4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

The Data Quality Act (DQA) specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the opinion addresses these DQA components, documents compliance with the DQA, and certifies that this opinion has undergone pre-dissemination review.

4.1 Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended user of this opinion is the Corps. Other interested users could include the Port of Alsea (permittee). Individual copies of this opinion were provided to the Corps. The format and naming adheres to conventional standards for style.

4.2 Integrity

This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, 'Security of Automated Information Resources,' Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

4.3 Objectivity

Information Product Category: Natural Resource Plan

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including the NMFS ESA Consultation Handbook, ESA regulations, 50 CFR 402.01 et seq., and the MSA implementing regulations regarding EFH, 50 CFR 600.

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the References section. The analyses in this opinion and EFH consultation contain more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in ESA and MSA implementation, and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

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ATTACHMENT F

CATEGORIES OF GENERAL CONDITIONS WORK

PORT OF ALSEA

Proposal Form

Cost Responsibility Matrix

FEE PROPOSAL FORM

PORT OF ALSEA, OREGON

Boat Launch and Marina Construction Project

TO: Port of ALSEA, (Port)

The undersigned submits the following Proposal.

BID:
Pursuant to and in compliance with the Request for Fee Proposals and **Cost Responsibility Matrix**, **and DBC Contract and General Conditions,** the undersigned certifies having carefully examined the RFP, Contract Documents and conditions affecting the Work and being familiar with the site; and the undersigned proposes to furnish all labor, materials, equipment and services necessary to complete the Work, as follows:

Description of Proposal Item: Part I ***General Conditions***			
Total General Conditions Proposal: (Per General Condition per DB Cost Responsibility Matrix.)			**$ ____________**

Description of Proposal Item: Part II ***DBC Fee***	**Percentage**	**Total Estimated MCC**	**Proposal Amount**
Insert Percent Fee and multiply by **the Total Estimated MCCC** to determine DBC's Fee Proposal Amount	_______%	**$1,500,000.00**	$ ____________
			(enter the amount in the box directly above in the box immediately below)
DBC's Fee: Refer to Cost Responsibility matrix for scope requirements of Fee:		**Total Proposal Amount:**	**$ ____________**

Note: MCC: (Maximum Construction Costs= Direct Construction Costs excluding Fee and General Conditions: MCC+GC's+Fee=GMP)

FEE PROPOSAL FORM

PORT OF ALSEA, OREGON

Boat Launch and Marina Construction Project

Description of Proposal Item: Part III *Schematic Design Services*	**Proposal Amount**
Staff Member Classification / Hourly Rate x / Estimated Hours / = Total per Staff Member Classification	
____________ $________ x ________ = $________	
____________ $________ x ________ = $________	
____________ $________ x ________ = $________	
____________ $________ x ________ = $________	
____________ $________ x ________ = $________	
____________ $________ x ________ = $________	
TOTAL ***Pre-Construction Services*** **Proposal (Not To Exceed)**	
III.A. NTE Proposal, Assuming SLOPES IV Permitting:	$__________
III.B. NTE Proposal, assuming biological assessment required:	$__________

Summary of all Proposal Items:	**Proposal Amount TOTALS:**
Description of Proposal Item: Part I: ***General Conditions***	$__________
Description of Proposal Item: Part II: ***DBC's Fee***	$__________
Description of Proposal Item: Part III.A: ***Pre-Construction Services, Assuming SLOPES IV permitting (NTE)***	$__________
TOTAL PROPOSAL ALL PARTS	$

CONTRACT AND BOND:

For the purposes of calculating the costs of bonds, taxes and insurance, the Proposer shall assume a MCC as referenced above, and in accordance with related RFP documents.

If a MCC is agreed to between Owner and Proposer, a Guaranteed Maximum Price (GMP) will be established by Owner consisting of the negotiated MCC, DBC's percent Fee based on the negotiated MCC, the fixed dollar amount Proposal for General Conditions, and Pre-Construction services NTE. The undersigned agrees to execute a contract for the above Work for the GMP using the DBC Contract and General Conditions agreements attached hereto, and to furnish bonds and evidence of insurance as required by the Contract Documents.

FEE PROPOSAL FORM

PORT OF ALSEA, OREGON

Boat Launch and Marina Construction Project

Proposer's Business Name:					
Type of Business: ____ (Insert above Sole Proprietorship, General or Limited Partnership, Limited Liability Company, Corporation, or Other – and if Other describe the entity) State of Incorporation or of other business entity formation: ______________________					
Business Address:		City:		State:	Zip Code:
Business Telephone Number:	Business Fax Number:		Business E-mail Address:		
State of Oregon numbers for the following:					
Contractor Registration No:CCB	Federal Tax ID:		Oregon Registry Number:		
Receipt is hereby acknowledged of Addenda No(s). : _____ (initials)					

<u>REPRESENTATIVE AUTHORIZED TO SIGN FOR PROPOSER:</u>

"I certify (or declare) under penalty of perjury under the laws of the State of Oregon that the foregoing is true and correct":	
Signature:	Date:
Print Name and Title	Location or Place Executed: (City, State)

Cost Responsibility Matrix– Port of Alsea

(To be attached to Preconstruction Agreement & DBC Construction Agreement amendment at contract execution)

In order to assist the Firms responding to this RFP, DBC in developing its cost associated with the different segments of the proposal process, the Owner is providing the following Cost Responsibility Matrix ("Matrix"). The checked box indicates in what section of the proposal the Owner will apply the identified cost. This Matrix is not intended to be a complete list of activities required to complete the Project, but is only a guide. The proposing DBC firms should refer to the RFP and supporting documents, DBC Agreement and General Conditions documents including all addenda, to ascertain all the project scope requirements of the DBC . (Note: MCC=Maximum Construction Costs, which includes the sum of all reasonable direct construction costs and cost of work, not including the Contractors Fee and General Conditions)

Item	Pre-construction Services	General Conditions	DBC Fixed Fee	Provided by Owner	Included in the MCC:	Reimbursable by Owner
Negotiations for the scope of work,MCC and GMP			X			
DBC taxes			X			
DBC overhead costs			X			
DBC Design and Engineering Services			X			
Preconstruction Phase Services as outlined in RFQ/RFP and called for by DBC Agreement	X					
Preconstruction Phase Services (once MCC/GMP are established by execution of Amendment No. 1 to the DBC Agreement These services become part of Specified General Conditions)	X					
Subcontractor Procurement Plan	X					
Design, planning and engineering participation after MCC/GMP are established by execution of Amendment No. 1 to the DBC Agreement			X			
Preconstruction Phase Services cost estimating (once MCC/GMP are established by execution of Amendment No. 1 to the DBC Agreement These services become part of General Conditions)	X					
All other estimating		X				

Item	Pre-construction Services	General Conditions	DBC Fixed Fee	Provided by Owner	Included in the MCC:	Reimbursable by Owner
Architectural and Engineering Services			X			
Review and Analysis of Subcontractor Qualifications	x					
Coordination and finalization of subcontracting for labor, material and equipment, including reviews/finalization of scopes of work, bidding and buyouts		X				
Provide Owner analysis of market conditions prior to bidding		X				
Subcontract administration and coordination		X				
Subcontractor bid packaging and development		X				
Advertise project for Subcontractor bids		X				
Conduct pre-bid conferences with Subcontractors		X				
Analyze Subcontractor bids and make recommendation to Owner prior to award		X				
All corporate office costs and expenses relative to negotiation of the DBC Agreement and Amendment No. 1 thereto and the General Conditions Document and all bonds			X			
Corporate Office accounting and cost accounting			X			
Provide cash flow analysis		X				
Administration of the project safety program		X				
Administration of the environmental program		X				
All site safety work					X	
Development of the MCC			X			

Item	Pre-construction Services	General Conditions	DBC Fixed Fee	Provided by Owner	Included in the MCC:	Reimbursable by Owner
Development of the GMP			X			
Commissioning					X	
Administration and coordination of the commissioning program		X				
Builder's Risk insurance premiums and costs as stated in DBC Agreement and General Conditions			X			
General Liability Insurance, Professional Liability Insurance and performance and payment Bonds premiums and costs			X			
RFP preparation, site walk, interview process, Invitation to bid, all corporate office costs and expenses relative to negotiation of the DBC Agreement and General Conditions			X			
Application for payments		X				
Change order preparation and procedures		X				
Communications and coordination		X				
Field engineering		X				
On-site staff: including but not limited to: field supervision, project management, project engineering, MEP coordinator, scheduler, administrative support and other jobsite support staff		X				
Off-site support staff, project management, administrative, technical engineering, I.T. and data processing			X			
Surveying					x	
Geotechnical Engineering and soils report					X	

Item	Pre-construction Services	General Conditions	DBC Fixed Fee	Provided by Owner	Included in the MCC:	Reimbursable by Owner
Obtain regulatory requirements		x				
Meet regulatory requirements					x	
Building Permit – by DBC					x	
All other permits – by DBC					x	
Preconstruction Phase Services meeting minutes (once MCC/GMP are established by execution of Amendment No. 1 to the DBC Agreement These services become part of Specified General Conditions)	x					
All other meeting minutes		x				
Subsistence, travel, housing and moving		X				
Review and process of submittals		X				
Pre-construction schedules	X					
All other schedules		X				
Preparation and execution of DBC documents		X				
Construction Manager Quality Control Manager		X				
Testing Laboratory and testing services				X		
Coordination of testing laboratory		X				
Replacement of defective or non-conforming work including retesting			X			
Parking - All		X				
Commissioning Agent				X		
Mechanical tech engineer: TAB (testing and balancing)					X	
Coordination of Commissioning		X				

Item	Pre-construction Services	General Conditions	DBC Fixed Fee	Provided by Owner	Included in the MCC:	Reimbursable by Owner
Construction Office and facilities		X				
Office equipment and supplies related to jobsite overhead		X				
Refuse collection, clean-up, removal and disposal from the site					X	
Dust control					X	
Vehicles, fuel, transportation and travel		X				
Power and water use only					x	
Utility hook-up, meters and fees					X	
Signs, fences and barricades					X	
Sanitation (other than Field Offices)					X	
Site Security including lighting					X	
Flagger and traffic control					X	
Project sign					X	
Request of and implementation of Substitutions	x					
Erosion control					x	
Final Cleaning					X	
Cranes and Hoisting					X	
Scaffolds and Shoring					X	
Elevator operations					X	
Weather protection					X	
Temporary Site conditions and modifications					X	

Item	**Pre-construction Services**	**General Conditions**	**DBC Fixed Fee**	**Provided by Owner**	**Included in the MCC:**	**Reimbursable by Owner**
Mock-ups					X	
Project fire protection					X	
Temporary heat, power and water					X	
Fuels for initial tank filling					X	
Special Requirements Coordination		X				
Coordination of Owner Contracts		X				
Occupancy phase Owner move-in coordination support		X				
Equipment & FF&E delivery and Install coordination support		X				
Contract Close-out:		X				
Punch-list preparation and administration		X				
Warranty inspectors coordination		X				
Warranty costs for repairs after final completion			X			
All DBC corporate overhead			X			
DBC Fees; profit / margin			X			
Subcontractor bid document reproduction					X	
All Subcontractor cost					X	
Building operation after move-in				X		
Building maintenance after move-in				X		

Note: MCC: (Maximum Construction Costs= Direct Construction Costs excluding Fee and General Conditions: MCC+GC's+Fee=GMP

PORT OF ALSEA PRE-PROPOSAL CONFERENCE SIGN-IN

September 5, 2018

Name	Company	Phone Number	Email Address
Clayton Solberg	Bergerson Const.	503-325-7130	csolberg@bergerson const.com
CARL McNABB	PND ENGINEERS	206-624-1387	CMCNABB@PNDENGINEERS.COM
DERRICK AMES	Bellingham Marine Ind.	360-739-8258	dames@bellingham-marine.com
Joey Walczak	Farline Bridge, Inc.	503-764-3014	joey@farlinebridge.com
Jon Koller	Advanced American Construction	503-729-6720	jkoller@advanced-american.com
Julian Koerner	Triton Marine Construction	360-337-0180	jkoerner@triton-marine.com
Dan Sartor	Reese Electric	541-297-5221	dsartor@reeseelectric.com
Chad Franklin	Reese Electric	541-756-0584	cfranklin@reeseelectric.com
Scott Jansen	OSMB	503-378-2634	scott.jansen@oregon.gov
DAN JANKULSON	TRANSPAC	360-293-8888	DANJ@TRANSPACMARINE.COM
ALEX DUNN	McGEE ENGINEERING	541-915-7594	ALEXDUNN@MCGEE-ENGINEERING.COM
KUSTAA MANSFIELD	PACIFIC PILE & MARINE	206 331 3873	KUSTAA@PACIFICPILE.COM

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September 5, 2018

Name	Company	Phone Number	Email Address
Daniel Covington	MB+G (with McGee Engineering)	503.224.3445	dcovington@masonbruce.co
Chris Raw	Legacy contracting Inc.	503-749-1818	bids@legacycontracting inc.com