DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
REGULATORY DIVISION
P.O. BOX 6898
JBER, AK 99506-0898

January 21, 2020

Regulatory Division
POA-2019-00313

Power Systems & Supplies of Alaska
Attention: Mr. David Spokely
PO Box 772
Ward Cove, Alaska 99928

Dear Mr. Spokely:

Enclosed is the signed Department of the Army (DA) permit, file number POA-2019-00313, Ward Cove, which would authorize construction of a two-berth cruise ship dock in Ward Cove under Section 10 of the Rivers and Harbors Act of 1899 (30 Stat. 1151; 33 U.S.C. 403). The project site is located within sections 33-34, T. 74 S., R. 90 E., Copper River Meridian; USGS Quad Map Ketchikan B-6; Latitude 55.4037º N., Longitude 131.7316º W.; Alaska Tidelands Survey 1010 Parcel # 313230006000ATS1, at approximately seven miles north of downtown Ketchikan off the North Tongass Highway; in Ward Cove, Alaska. Also enclosed is a Notice of Authorization which should be posted in a prominent location near the authorized work.

If changes to the plans or location of the work are necessary for any reason, plans must be submitted to us immediately. Federal law requires approval of any changes before construction begins.

Nothing in this letter excuses you from compliance with other Federal, State, or local statutes, ordinances, or regulations. Please contact me via email at: Estrella.f.campellone@usace.army.mil, by mail at the address above, by phone at (907) 753-2518, if you have questions or to request a hard copy of the provisional permit. For additional information about our Regulatory Program, visit our website at: www.poa.usace.army.mil/Missions/Regulatory.

Sincerely,

Estrella Campellone
Project Manager

Enclosures

This notice of authorization must be conspicuously displayed at the site of work.

United States Army Corps of Engineers
Ward Cove

A permit to: Construct a 1,300-foot cruise ship dock with 54 steel piles (30-inch, 36-inch, and 48-inch diameters); 500 foot x 70 foot floating pontoon dock, trestle with driving lane and passenger walkway, bull rail, floating fenders, mooring cleats, driveway, curb, passenger walkway, hand rail and mast lights plus a temporary template frame with driving and removal of 48 steel piles (30-inch diameter).

at: Ward Cove Alaska Tidelands Survey 1010 Parcel # 313230006000ATS1

has been issued to: David C. Spokely, Power Systems & Supplies of Alaska

on: January 21, 2020 and expires: January 31, 2025

Address of Permittee: PO Box 772, Ward Cove, Alaska 99928

Permit Number:

POA-2019-00313

FOR: *District Commander*
Estrella Campellone
Project Manager
REGULATORY DIVISION

ENG FORM 4336, Jul 81 (33 CFR 320-330) EDITION OF JUL 70 MAY BE USED
(Proponent: CECW-O)

DEPARTMENT OF THE ARMY PERMIT

Permittee: David C. Spokely, Power Systems & Supplies of Alaska

Permit No.: POA-2019-00313

Issuing Office: U.S. Army Engineer District, Alaska

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description:
To construct a 1,300-foot dock to berth two Neo-Panamax class cruise ships in Ward Cove. The project requires 54 steel piles of various diameters and consists of a 500 feet by 70 feet floating pontoon dock and a trestle with a driving lane and walkway for easy access to shore. A bull rail, floating fenders, mooring cleats, vehicle driveway, curb, passenger walkway, hand rail and mast lights are also part of the dock design; these components will be installed out of the water.

This permit also include the construction of a temporary template frame needed to guide construction of the 1,300-foot dock. The temporary template frame will include the driving and removal of 48 steel piles each 30" in diameter.

PROPOSED PILE SCHEDULE

Pile Location	Pile Size	Pile Quantity	Max. Length	Socket Length
Trestle Bent (7 bents w/ 2 piles per bent)	30"	14	120'	30'
Trestle Mooring Dolphins (2 dolphins w/ 5 piles per dolphin)	36"	20	130'	30'
Reaction Dolphins (2 dolphins w/ 6 piles per dolphin)	48"	12	150'	30'
Off-shore Mooring Dolphins (2 dolphins w/ 4 piles per dolphin)	48"	8	180'	30'
Template piles (temporary) (20 piles for standard trestle, 12 piles for mooring trestle, 8 piles for reaction dolphins, & 8 piles for off-shore mooring dolphins)	30"	48	Varies	Varies
TOTAL PILES		**102**		

The floating pontoon dock will be constructed between -86 & -96 MMLW. The 54 piles will range in diameter between 30", 36", and 48". Fourteen (14) 30" steel piles will be installed using a vibratory and an impact hammer; forty (40) 36"-48" piles would be installed using a vibratory and an impact hammer and will also be rock anchored. Fourteen (14) 30" diameter trestle piles will be installed through sand and gravel with a vibratory hammer and impact hammer (Delmag D46/Max Energy 107,280 feet-pounds) and forty (40) 36"-48" diameter piles will be driven through sand and gravel with a vibratory hammer and then impact driven into bedrock. After being impacted, the pile will be rock-anchored using a Holte 100,000 feet-pounds top drive with down-the-hole hammer and bit. To rock-anchor the pile a down-the-hole hammer with a 33 or 42-inch-diameter bit will be used to drill a shaft into the bedrock. The drill bit will be

removed and the shaft will be filled with vertical reinforcement (a rebar cage) in concrete to secure the pile. The depth of the shaft will be between 25 and 35 feet into the bedrock as determined by the geotechnical engineer.

In-water construction of the cruise ship dock will take place before July 2020 with impact pile driving planned to occur before June 30, 2020, to avoid impacts to migrating salmon.

Trestle and dolphin construction would follow this sequence:
1) Vibrate thirty-two (32) temporary 30-inch-diameter piles for the trestle, and sixteen (16) temporary 30-inch-diameter piles for the dolphins, a minimum of 10 feet into overburden to create a template to guide installation of permanent piles.
2) Weld a template frame around the temporary piles.
3) Within the template frame, vibrate and impact fourteen (14) permanent 30-inch-diameter piles into place for the trestle; or vibrate, impact, and rock-anchor twenty (20) permanent 36-inch and twenty (20) 48-inch-diameter piles into place for the dolphins.
4) Remove the template frame and temporary piles.
5) Perform this sequence at the seven (7) trestle bent locations, working farther from the shoreline each sequence. Once the trestle is completed perform this sequence at the eight (8) dolphin locations.

Upon pile installation, the floating dock, transfer span, trestle, mechanical systems, and other above-water components (vehicle driveway, passenger walkway, and mast lights) will be installed. The decking and wood supporting the decking will constructed with wood treated with ammoniacal-copper-zinc-arsenate (ACZA) and creosote.

Equipment to be used: Vibratory Hammer: ICE 44B/Static weight 12,250 pounds, Diesel Impact Hammer (Delmag D46/Max Energy 107,280 feet-pounds), to drill shaft drill (Holte 100,000 feet-pounds top drive with down-the-hole hammer and bit), a material barge (250 feet x 76 feet x 15.5 feet), crane barge (280 feet x 76 feet x 16 feet), 2 skiffs (25-foot skiff with a 125–250 horsepower outboard motor and a 25-35-foot skiff powered with a 35-50 horsepower outboard motor), tug boats, clamshell to remove logs and positioning piles (stabbing the pile) to direct pile positions on seabed substrate.

Construction barge (crane) will be secured in place by four mooring anchors using a global positioning system (GPS) unit to place them outside restricted areas. The anchors will be below the surface to avoid a hazard to navigation. Material staging barge will be tied to the construction barge, and materials will be moved from the staging barge to the construction barge using crane. Barges will moved to the next pile installation area in approximately 100 feet increments and at an approximate speed of less than two (2) miles per hour.

Work is expected to commence on January 2020 and continue through July 2020.

All work will be performed in accordance with the attached plan, sheets 1-10, dated May 16, 2019.

Project Location:
The project site is located within sections 33-34, T. 74 S., R. 90 E., Copper River Meridian; USGS Quad Map Ketchikan B-6; Latitude 55.4037º N., Longitude 131.7316º W.; Alaska Tidelands Survey 1010 Parcel # 313230006000ATS1, at approximately seven (7) miles north of downtown Ketchikan off the North Tongass Highway; in Ward Cove, Alaska.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on January 31, 2025.

If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should

you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

Water Quality Conditions:

1. All pile-shaft drill cuttings and organics resulting from pile-shaft drillings shall be collected, self-contained, stored in barges, and transported to an approved upland disposal facility so that such drill cuttings are not discharged into Waters of the U.S.

2. A 50-feet deep silt curtain will surround the area where pile driving and pile removal will occur to contain turbidity to only the working area. The turbidity control curtain shall remain in place, monitored for effectiveness and maintained until the authorized work has been completed and suspended materials have been settled.

3. No mooring anchors (used on construction barges or other vessels involve in construction) would be placed in sand capped areas or the Monitored Natural Attenuation area and care will be taken not to drag anchors in these areas; this is to minimize to the extent possible re-suspension of sediments/wood waste and other contaminants into the water column.

4. If creosote piles are tailored on site, any incidental leftover creosote materials shall be properly contained to prevent creosote cuttings or sawdust from entering waters of the U.S.

5. The permittee shall develop a contingency plan for the prevention and control of spills of fuels, oils, or other hazardous materials. This plan shall be maintained on site at all times and all personnel working on-site shall be familiar with the plan.

ESA Species, Fish, and Submerged Aquatic Vegetation Conditions:

1. The permittee shall comply with the Federal Endangered Species Act, and must implement all of the mitigating measures identified in the enclosed National Marine Fisheries Service letter of concurrence (Number NMFS #AKRO-2019-0664, dated January 9, 2020, attached), including those ascribed to the Corps therein. If you are unable to implement any of these measures, you must immediately notify the Corps, the U.S. Fish and Wildlife Office, and the National Marine Fisheries Service so we may consult as appropriate, prior to initiating the work, in accordance with Federal law.

2. The permittee shall conduct survey of the benthic community, including submerged aquatic vegetation (SAV), before and after the project is completed. Accordingly best management practices would be incorporated to avoid impacts to SAV.

3. All construction work in marine waters shall occur before July 31, 2020, to minimize impacts on ESA species. Impact pile driving shall occur before June 30, 2020, to minimize impacts on in-bound migrating adult salmon. Exceptions to these time periods require case-specific written approval from the Corps and National Marine Fisheries Service.

4. The Revised Marine Mammal Monitoring Plan dated December 12, 2019, approved by National Marine Fisheries Service (NMFS) on January 9, 2019, will be followed during construction activities (attached).

5. Conservation and mitigation measures for pile installation and removal and overwater structures as specified in EFH Assessment dated December 2019 will be followed during construction activities (attached).

6. Piles shall be driven during low tide stages in intertidal and shallow sub-tidal areas. Low tidal stage is defined as a six hour period beginning three hours before low tide and ending three hours past low tide.

Navigation Conditions:

1. Your use of the permitted activity must not interfere with the public's right to free navigation on all navigable waters of the United States.

2. You must install and maintain, at your expense, any safety lights, signals, and signs, as prescribed by the United States Coast Guard (USCG), through regulations or otherwise, on your authorized facilities. The USCG may be reached at the following address and telephone number: Commander (dpw), 17th Coast Guard District, Post Office Box 25517, Juneau, Alaska 99802; or by telephone at (907) 463-2272.

3. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers (Corps), to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

Administrative Conditions:

1. Contractors: All contractors involved in this permitted activity shall be provided copies of this permit in its entirety. A copy shall remain on site at all times during construction.

2. Permit Posting: The Permittee shall have available and maintain for review a copy of this permit and approved plans at the construction site.

3. Self-Certification: Within 60 days of completion of the work authorized by this permit, the Permittee shall complete the attached "Self-Certification Statement of Compliance" form (Attachment A) and submit it to the Corps. In the event that the completed work deviates in any manner from the authorized work, the Permittee shall describe the deviations between the work authorized by this permit and the work as constructed on the "Self-Certification Statement of Compliance" form. The description of any deviations on the "Self-Certification Statement of Compliance" form does not constitute approval of any deviations by the Corps.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(**x**) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

( ) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorization required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a revaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain

situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Power Systems + Supplies of Alaska

[signature], Member

(PERMITTEE) AND TITLE

January 18, 2020

(DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

[signature]

FOR (DISTRICT COMMANDER)
Colonel Phillip J. Borders
Estrella Campellone, Project Manager

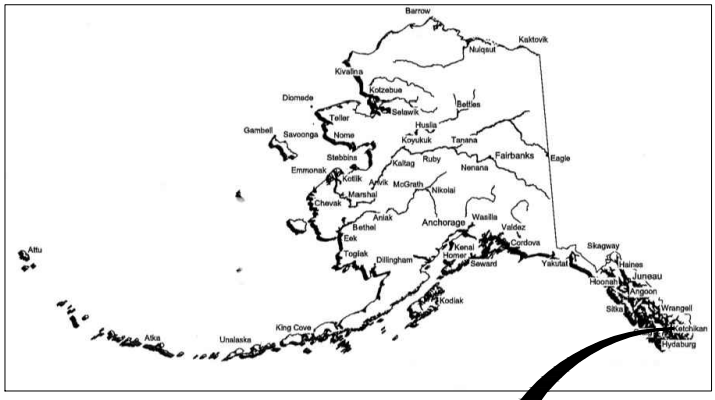
January 21, 2020

(DATE)

When the structures or work authorized by this permit are still in existence at the time the property is transferred the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions have the transferee sign and date below.

(TRANSFEREE)

(DATE)



PURPOSE:

DATUM: 0.0'

HTL = 19.7'
MHW = 15.45'
MLLW = 0.0'

VICINITY MAP & LOCATION MAP

JOB NO. 19_112_A

PROPOSED: CRUISE SHIP DOCK

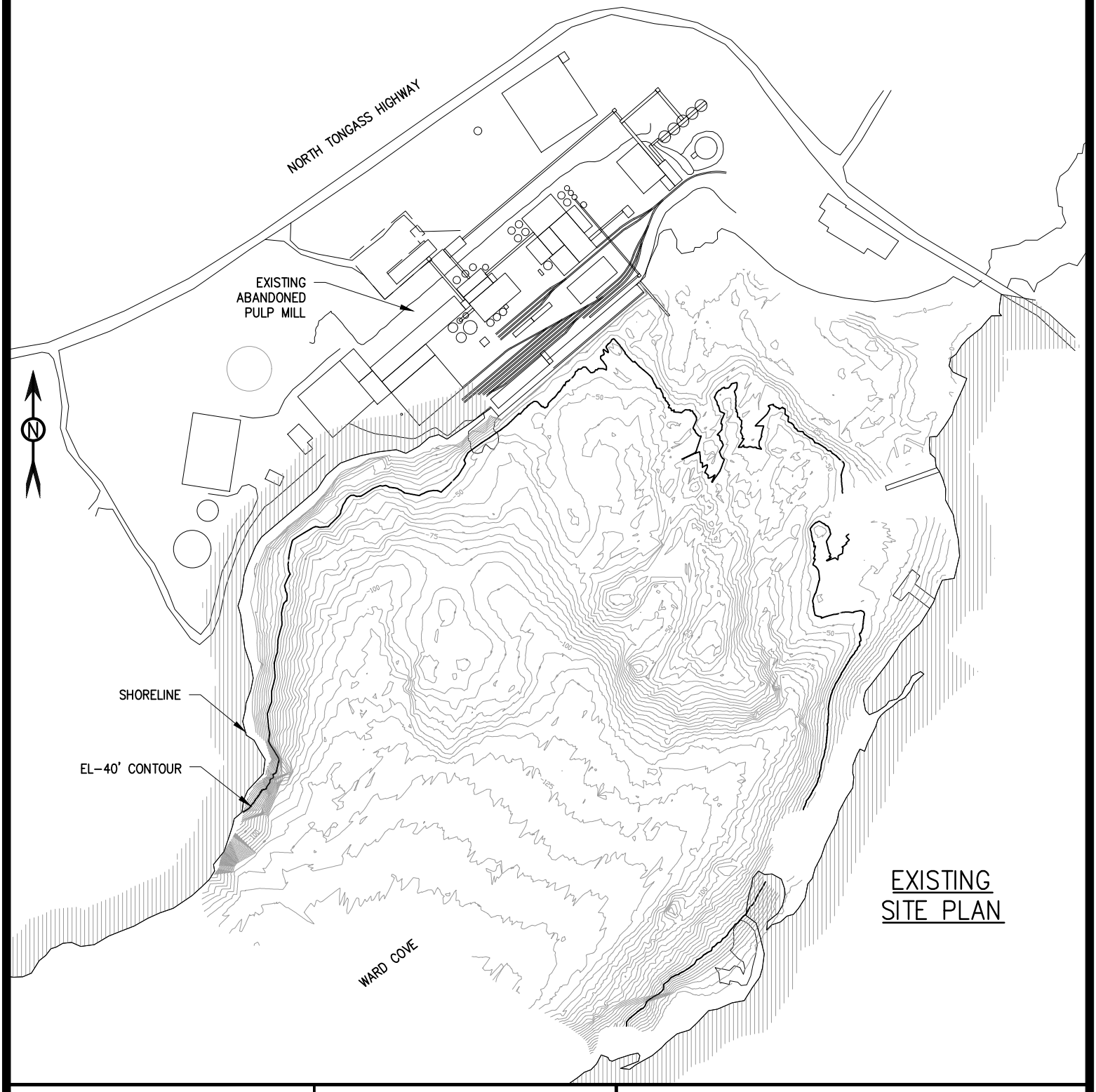
IN: WARD COVE

AT: KETCHIKAN, AK

APPLICATION BY: POWER SYSTEMS & SUPPLIES OF ALASKA

DATE: 16 MAY 2019

SHEET: 1 OF 10



PURPOSE:

DATUM: 0.0'

HTL = 19.7'
MHW = 15.45'
MLLW = 0.0'

EXISTING
SITE PLAN

JOB NO. 19_112_A

PROPOSED: CRUISE SHIP DOCK

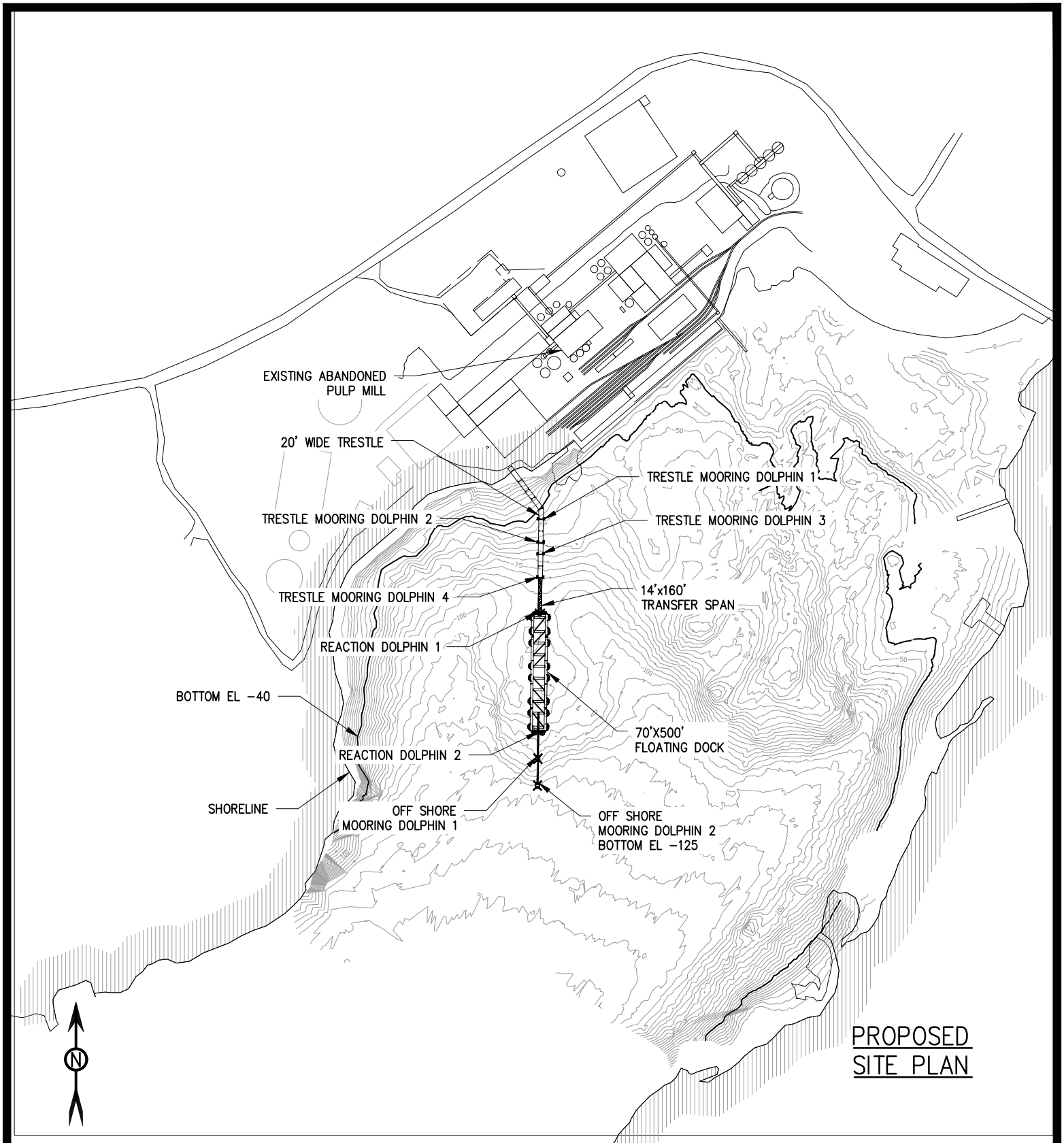
IN: WARD COVE

AT: KETCHIKAN, AK

APPLICATION BY: POWER SYSTEMS & SUPPLIES OF ALASKA

DATE: 16 MAY 2019

SHEET: 2 OF 10



PURPOSE:

DATUM: 0.0'

HTL = 19.7'
MHW = 15.45'
MLLW = 0.0'

PROPOSED
SITE PLAN

JOB NO. 19_112_A

PROPOSED: CRUISE SHIP DOCK

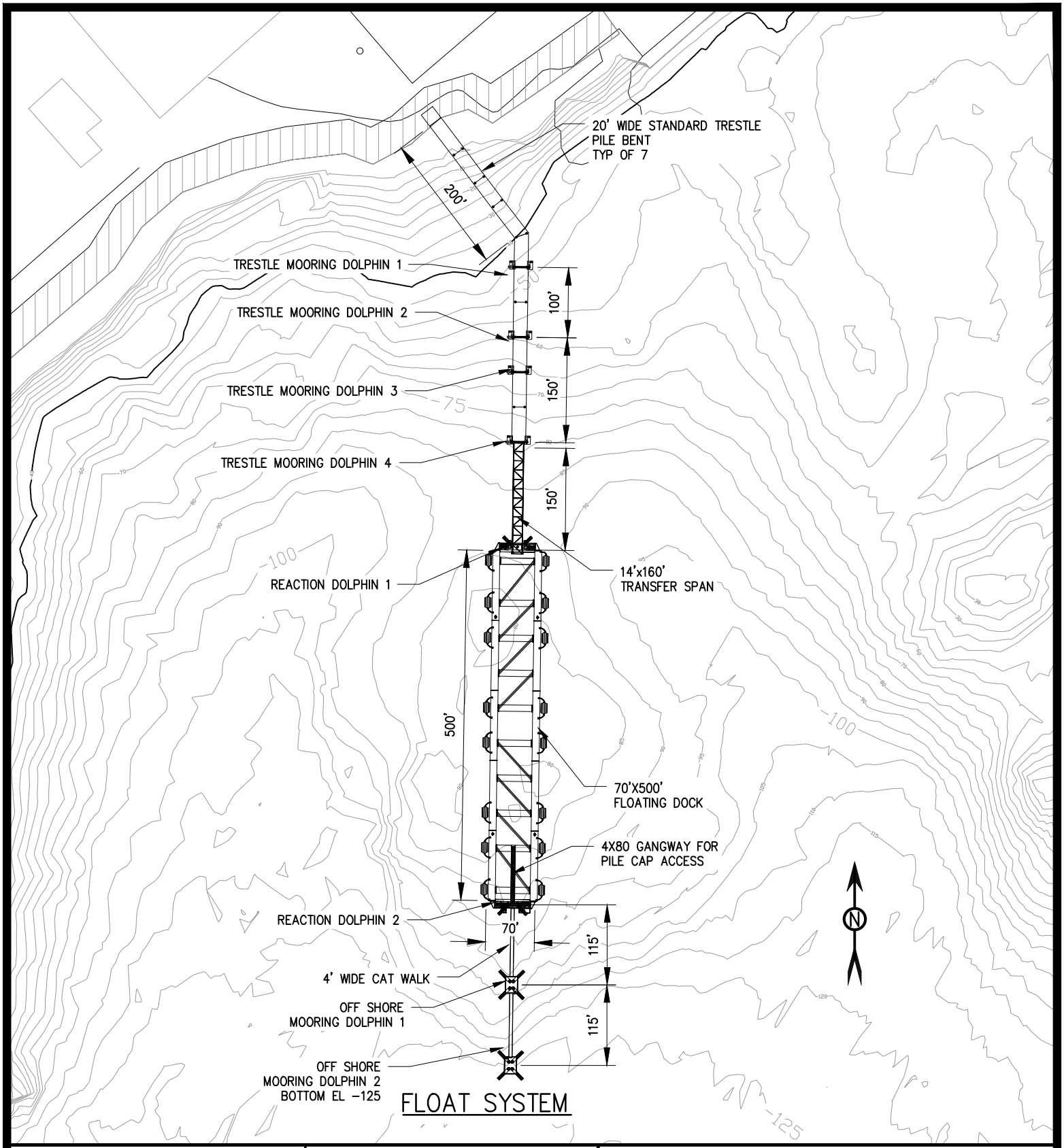
IN: WARD COVE

AT: KETCHIKAN, AK

APPLICATION BY: POWER SYSTEMS & SUPPLIES OF ALASKA

DATE: 16 MAY 2019

SHEET: 3 OF 10



FLOAT SYSTEM

PURPOSE:

DATUM: 0.0'

HTL = 19.7'
MHW = 15.45'
MLLW = 0.0'

PROPOSED
FLOAT SYSTEM

JOB NO. 19_112_A

PROPOSED: CRUISE SHIP DOCK

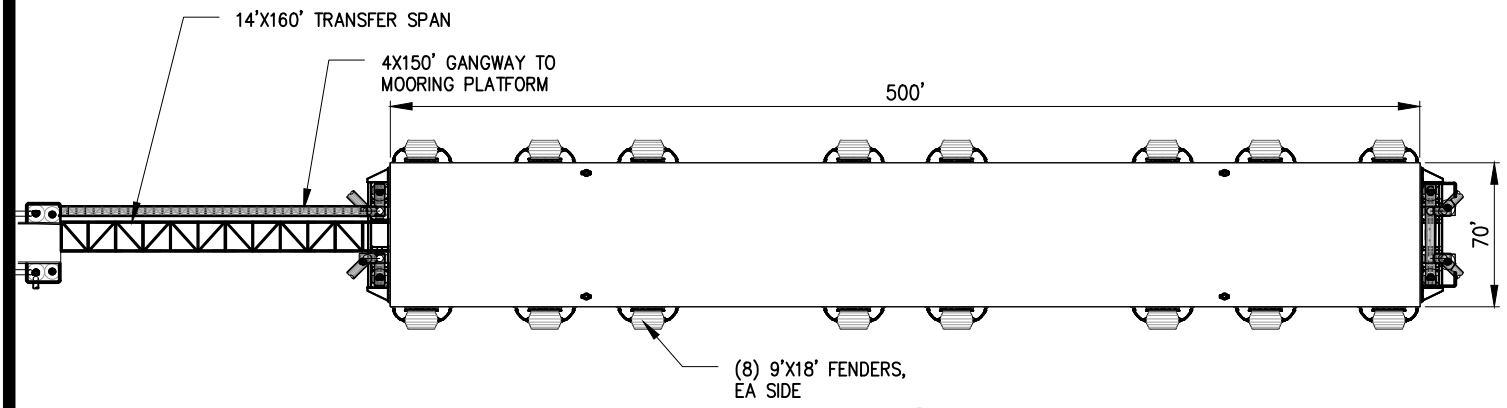
IN: WARD COVE

AT: KETCHIKAN, AK

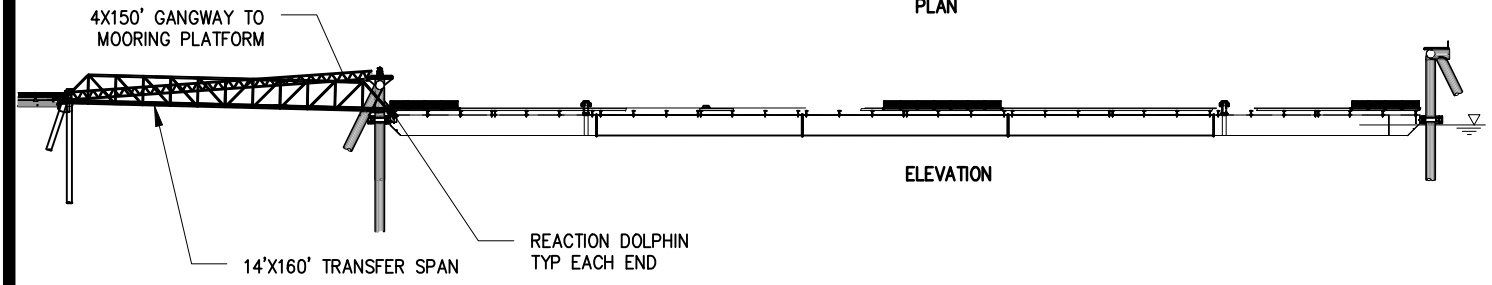
APPLICATION BY: POWER SYSTEMS & SUPPLIES OF ALASKA

DATE: 16 MAY 2019

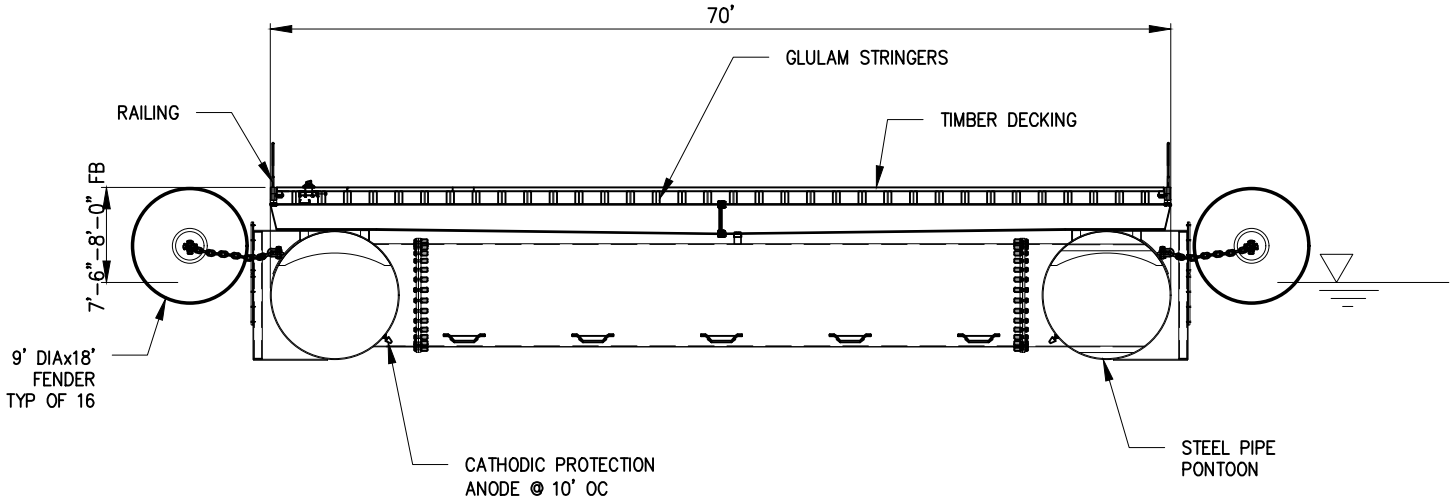
SHEET: 4 OF 10



PLAN

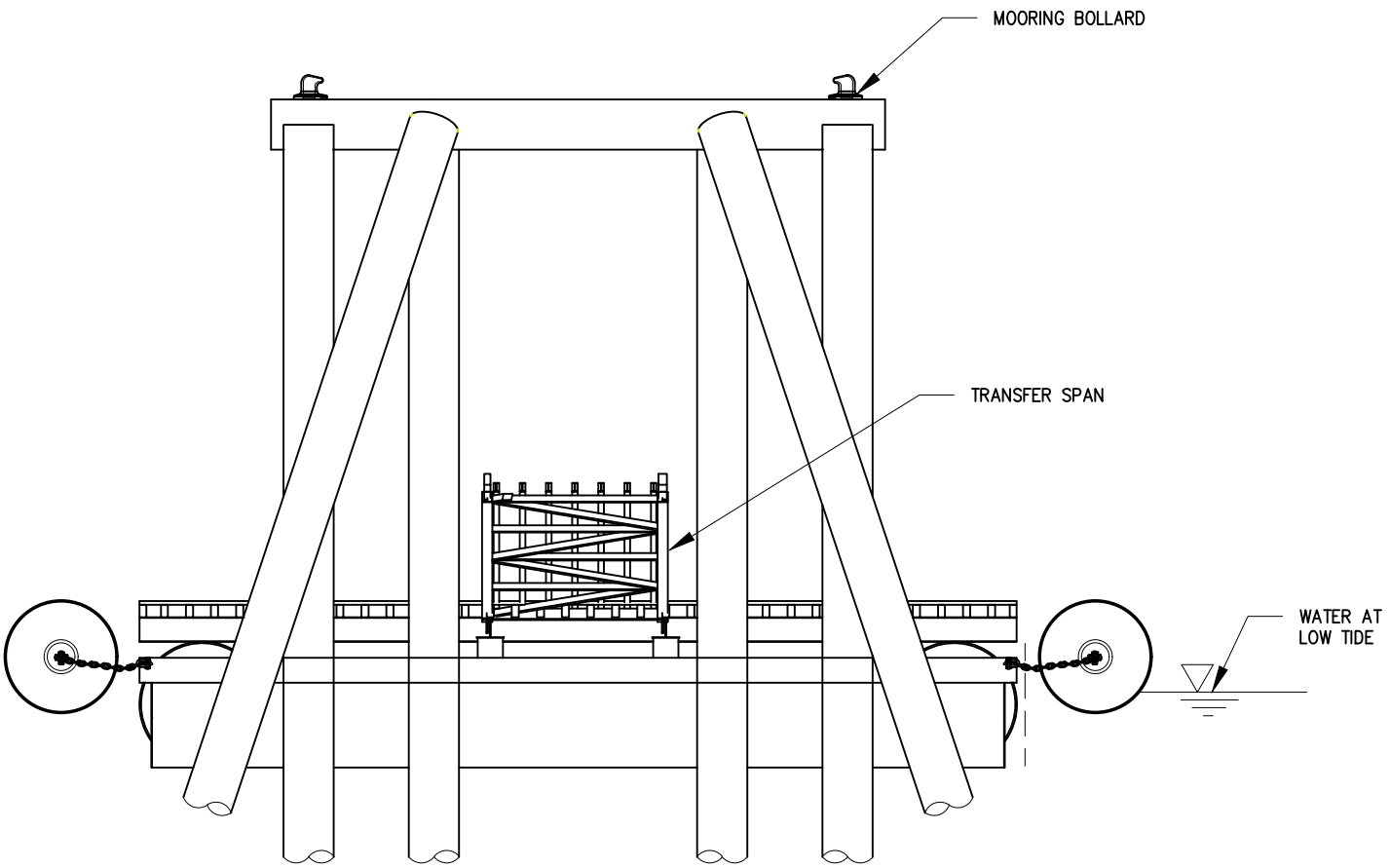


ELEVATION



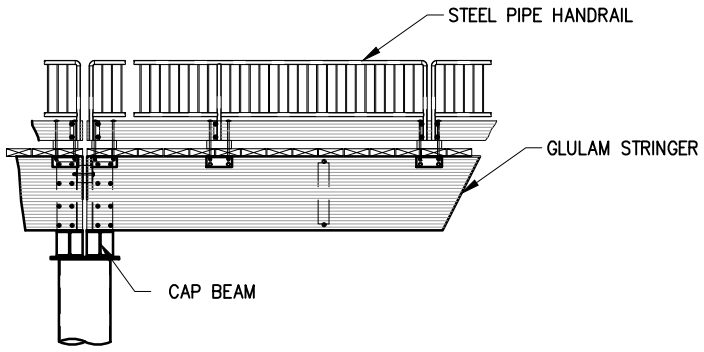
TYPICAL FLOAT SECTION

PURPOSE: NEW CRUISE SHIP DOCK	TYPICAL FLOAT	PROPOSED: CRUISE SHIP DOCK
		IN: WARD COVE
		AT: KETCHIKAN, AK
DATUM: 0.0' HTL = 19.7' MHW = 15.45' MLLW = 0.0'	JOB NO. 19_112_A	APPLICATION BY: POWER SYSTEMS & SUPPLIES OF ALASKA
		DATE: 16 MAY 2019 SHEET: 5 OF 10

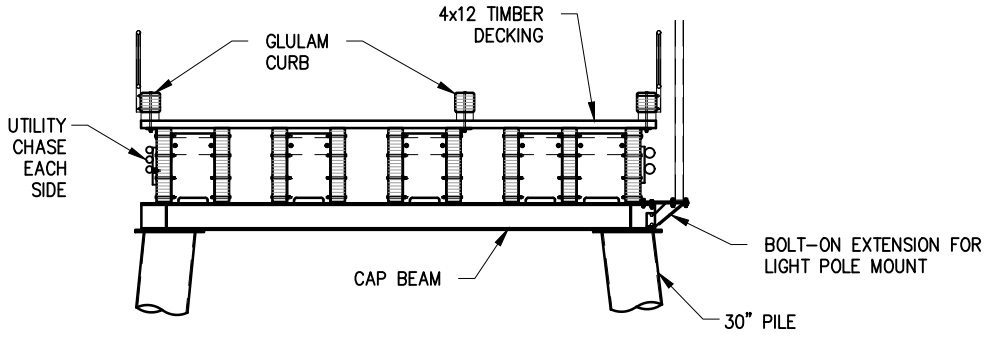


REACTION DOLPHIN

PURPOSE: NEW CRUISE SHIP DOCK DATUM: 0.0' HTL = 19.7' MHW = 15.45' MLLW = 0.0'	PROPOSED REACTION DOLPHIN JOB NO. 19_112_A	PROPOSED: CRUISE SHIP DOCK IN: WARD COVE AT: KETCHIKAN, AK APPLICATION BY: POWER SYSTEMS & SUPPLIES OF ALASKA DATE: 16 MAY 2019 SHEET: 6 OF 10



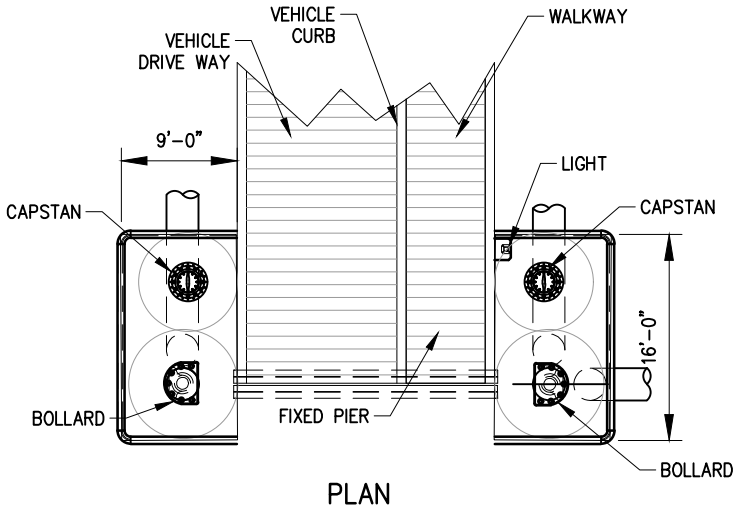
ELEVATION AT PILE BENT



SECTION AT PILE BENT

TYPICAL TRESTLE SECTION AT STANDARD BENT

PURPOSE:		PROPOSED TRESTLE DETAIL	PROPOSED: CRUISE SHIP DOCK
			IN: WARD COVE
			AT: KETCHIKAN, AK
DATUM: 0.0'	HTL = 19.7'		APPLICATION BY: POWER SYSTEMS & SUPPLIES OF ALASKA
	MHW = 15.45'		
	MLLW = 0.0'	JOB NO. 19_112_A	DATE: 16 MAY 2019 SHEET: 7 OF 10



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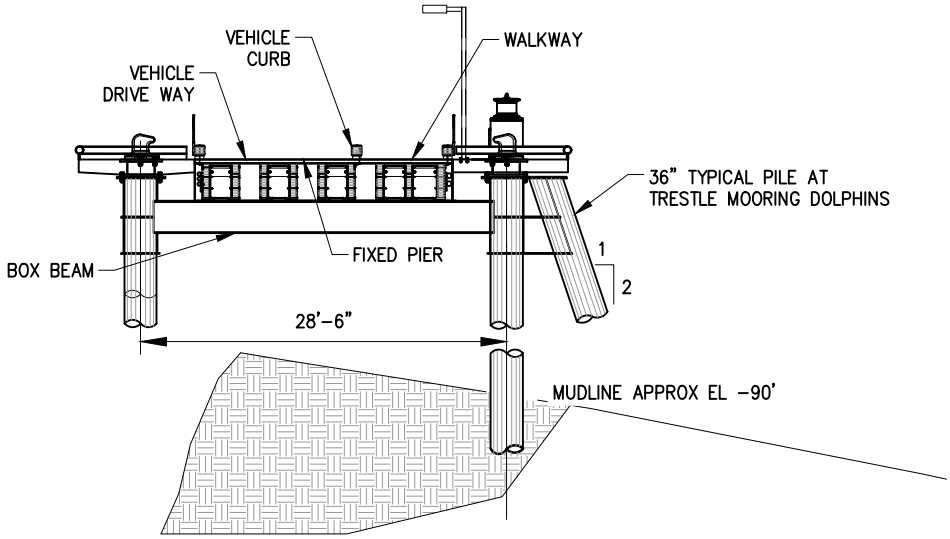
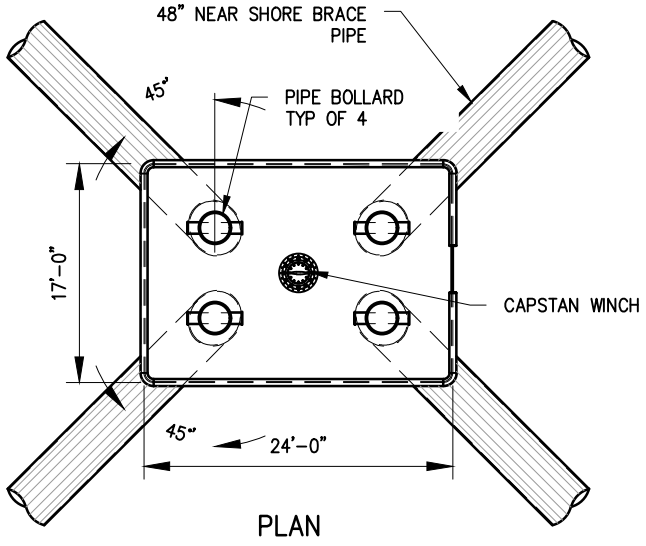


ELEVATION

TYPICAL TRESTLE SECTION AT MOORING DOLPHIN

PURPOSE:	PROPOSED MOORING DOLPHIN	PROPOSED: CRUISE SHIP DOCK IN: WARD COVE AT: KETCHIKAN, AK APPLICATION BY: POWER SYSTEMS & SUPPLIES OF ALASKA
DATUM: 0.0' HTL = 19.7' MHW = 15.45' MLLW = 0.0'	JOB NO. 19_112_A	DATE: 16 MAY 2019 SHEET: 8 OF 10



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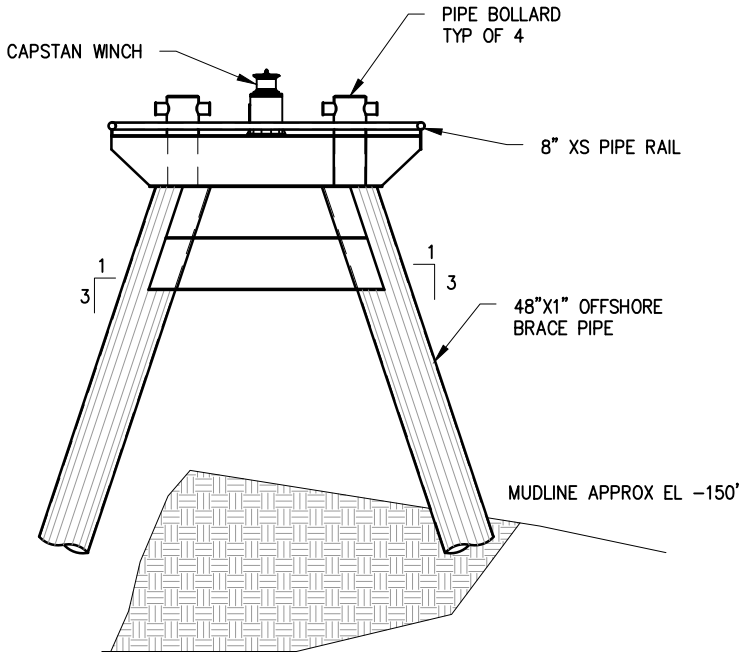
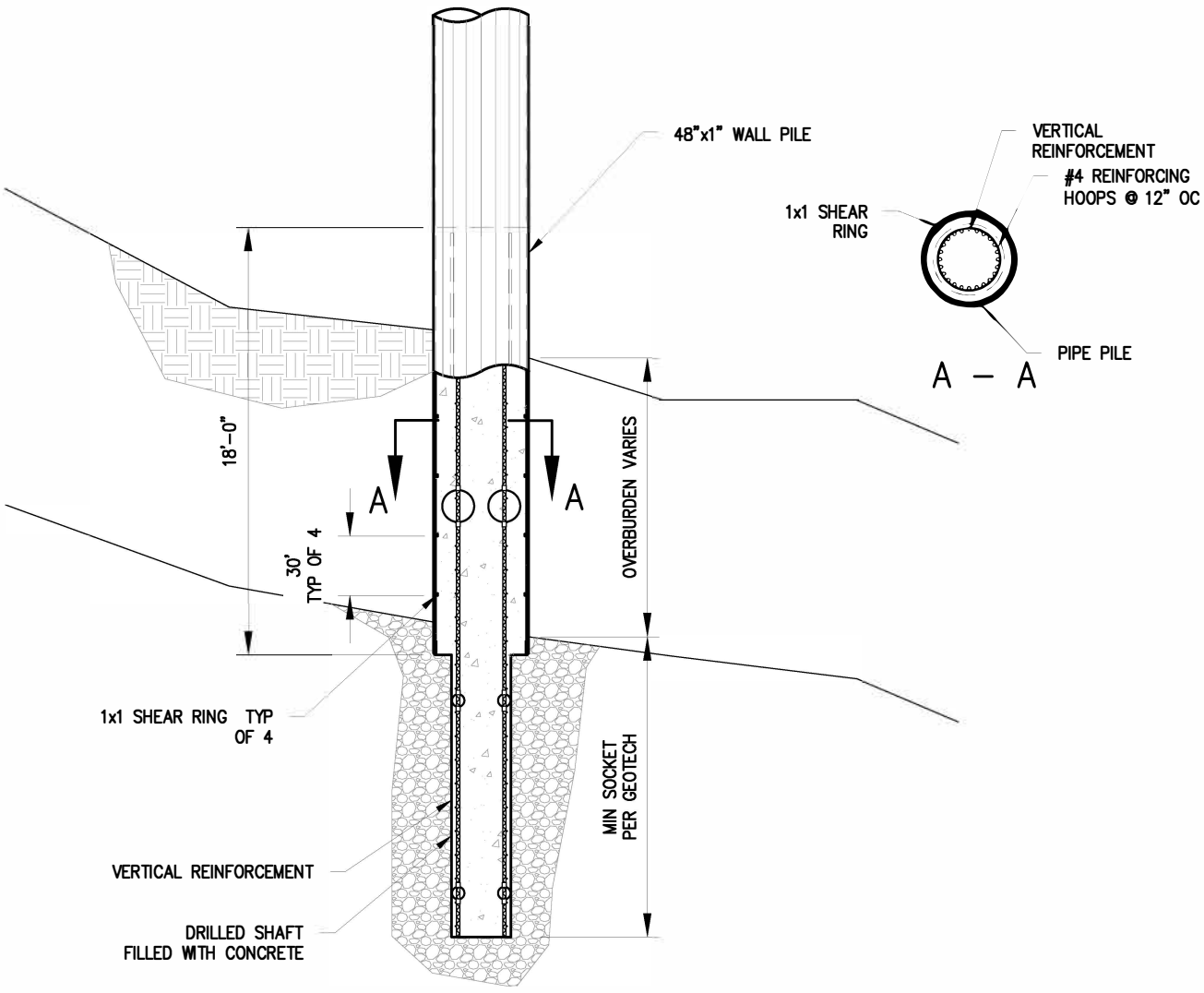


ELEVATION

OFFSHORE MOORING DOLPHIN DETAIL

PURPOSE:	PROPOSED MOORING DOLPHIN	PROPOSED: CRUISE SHIP DOCK IN: WARD COVE AT: KETCHIKAN, AK APPLICATION BY: POWER SYSTEMS & SUPPLIES OF ALASKA
DATUM: 0.0' HTL = 19.7' MHW = 15.45' MLLW = 0.0'	JOB NO. 19_112_A	DATE: 16 MAY 2019 SHEET: 9 OF 10



ELEVATION

TYPICAL ELEVATION AT ROCK ANCHOR

PROPOSED PILE SCHEDULE				
LOCATION	SIZE	QTY	MAX LENGTH	SOCKET LENGTH
TRESTLE BENT (7 BENTS WITH 2 PILES PER BENT)	30"	14	120'	30'
TRESTLE MOORING DOLPHIN (4 DOLPHINS WITH 5 PILES PER DOLPHIN)	36"	20	130'	30'
REACTION DOLPHIN (2 DOLPHINS WITH 6 PILES PER DOLPHIN)	48"	12	150'	30'
OFF SHORE MOORING DOLPHIN (2 DOLPHINS WITH 4 PILES PER DOLPHIN)	48"	8	180'	30'
TEMPLATE PILE (20 PILES FOR STANDARD TRESTLE, 12 PILES FOR MOORING TRESTLE, 8 PILES FOR REACTION DOLPHINS AND 8 PILES FOR OFF SHORE MOORING DOLPHINS)	30"	48	VARIES	VARIES

PURPOSE:

DATUM: 0.0'

HTL = 19.7'
MHW = 15.45'
MLLW = 0.0'

PROPOSED
PILE ANCHOR

JOB NO. 19_112_A

PROPOSED: CRUISE SHIP DOCK

IN: WARD COVE

AT: KETCHIKAN, AK

APPLICATION BY: POWER SYSTEMS & SUPPLIES OF ALASKA

DATE: 16 MAY 2019

SHEET: 10 OF 10

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

January 9, 2020

Colonel Phillip J. Borders
U.S. Army Corps of Engineers, Alaska District
Regulatory Division
P.O. Box 6898
JBER, Alaska 99506-0898

Re: Ward Cove Cruise Ship Dock, ESA Letter of Concurrence and EFH Consultation, POA-2019-00313, NMFS AKRO-2019-03664

Dear Colonel Borders:

The National Marine Fisheries Service (NMFS) has completed consultation under section 7(a)(2) of the Endangered Species Act (ESA) and section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) regarding the proposed installation of a cruise ship dock in Ward Cove, approximately 5 miles north of Ketchikan, Alaska. Solstice Alaska requested, on behalf of the U.S. Army Corps of Engineers (USACE), written concurrence that the proposed action may affect, but is not likely to adversely affect, the threatened Mexico Distinct Population Segment (DPS) of humpback whale (*Megaptera novaeangliae*). Based on our analysis of the information you provided to us, and additional literature cited below, NMFS concurs with your determination. NMFS has also reviewed the Essential Fish Habitat (EFH) Assessment and provides EFH Conservation Recommendation below. A complete administrative record of this consultation is on file in this office.

This letter underwent pre-dissemination review in compliance with applicable Data Quality Act guidelines.

ESA Consultation History

On June 13, 2019, NMFS was notified by USACE that Robin Reich of Solstice Alaska Consulting, Inc. (Solstice) would serve as the USACE's non-Federal representative for this consultation. USACE, Solstice, and NMFS met to discuss the proposed project on October 10, 2019, and on October 31, 2019 NMFS received a revised Marine Mammal Monitoring and Mitigation Plan (4MP). From November 6 to December 10, 2019, NMFS, Solstice and USACE coordinated on various aspects of the proposed project. On December 13, 2019, USACE submitted a request for an expedited informal consultation. NMFS sent comments to Solstice and USACE on December 18, 2019. A revised letter for initiation of expedited informal consultation was received December 18, 2019, and consultation was initiated that day. Given the nature of the project, NMFS determined that a standard letter of concurrence would be more appropriate than our expedited approach (which relies on and references the action agency's analysis), and proceeded to develop this letter.

Description of the Proposed Action

The proposed project includes the installation of steel piles to support a new 500-foot by 70-foot floating pontoon dock, mooring structures, and shore-access transfer span and trestle. The project will require the installation of 102 piles (Tables 1 and 2, Figure 1). The project will:

- Install 48 temporary 30-inch-diameter steel piles as templates to guide proper installation of permanent piles (these temporary piles would be removed prior to project completion);
- Install 14 permanent 30-inch-diameter piles, 20 permanent 36-inch-diameter piles, and 20 permanent 48-inch-diameter piles to support a new 500-foot x 70-foot floating pontoon dock, mooring structures, and shore-access transfer span and trestle for a total of 54 piles (Table 2);
- Install dock components such as bull rail, floating fenders, mooring cleats, vehicle driveway, curb, passenger walkway, hand rail, and mast lights.

Table 1. Proposed Pile Schedule

Location	Pile Diameter (inches)	Pile Quantity
Trestle (7 bents with 2 piles per bent)	30	14
Trestle Mooring Dolphin (4 dolphins with 5 piles per dolphin)	36	20
Reaction Dolphin (2 dolphins with 6 piles per dolphin)	48	12
Off Shore Mooring Dolphin (2 dolphins with 4 piles per dolphin)	48	8
Temporary Template Pile (20 piles for standard trestle, 12 piles for mooring trestle, 8 piles for reaction dolphins and 8 piles for off shore mooring dolphins)	30	48

Installation and Removal Methods

Temporary, 30-inch-diameter piles serving as a template would be installed and removed using a vibratory hammer. The 14 permanent 30-inch trestle piles will be installed through sand and gravel with a vibratory hammer and impact hammer. The permanent 54, 36-inch and 48-inch-diameter piles will be driven through sand and gravel with a vibratory hammer and then impact driven into bedrock. After being impacted, the pile will be rock anchored. To rock anchor the pile, a down-the-hold hammer with a 33-inch-diameter bit will be used to drill a shaft into the bedrock. The drill bit will be removed, and the shaft will be filled with vertical reinforcement (a rebar cage) in concrete to secure the pile. The depth of the shaft is to be determined by a geotechnical engineer prior to construction. During anchor drilling the pile will not be touched by the drill, and no steel-on-steel hammer noise will be generated. As much as possible, the hammer will be operated at a reduced energy setting.

Table 2. Ward Cove Cruise Ship Dock Pile Installation and Removal Summary

Description	Project Component				
	Temporary Pile Installation	**Temporary Pile Removal**	**Permanent Pile Installation**	**Permanent Pile Installation**	**Permanent Pile Installation**
Diameter of Steel Pile (inches)	30	30	30	36	48
# of Piles	48	48	14	20	20
Vibratory Pile Driving					
Total Quantity	48	48	20	15	20
Max # Piles Vibrated per Day	4	4	4	2	2
Vibratory Time per Pile	10 min	10 min	10 min	30 min	30 min
Vibratory Time per Day	40 min	40 min	40 min	60 min	60 min
Number of Days (48 days)	12	12	4	10	10
Vibratory Time Total (38 hours 20 min)	8 hours	8 hours	2.33 hours	10 hours	10 hours
Impact Pile Driving					
Total Quantity	0	0	14	20	20
Max # Piles Impacted per Day	0	0	2	2	2
# of Strikes per Pile	0	0	40	100	100
Impact Time per Pile	0	0	1 min	2.5 min	2.5 min
Impact Time per Day	0	0	2 min	5	5 min
Number of Days (27 days)			7	10	10
Impact Time Total (1 hour 54 minutes)	0	0	14 min	50 min	50 min
Rock Anchor Installation (Drilled Shaft)					
Total Quantity	0	0	0	20	20
Anchor Diameter	--	--	--	33”	33”
Max # Piles Anchored per Day	0	0	0	2	1
Anchor Time per Pile	0	0	0	4 hours	5 hours
Anchor Time per Day	0	0	0	8 hours	5 hours
Number of Days (30 days)				10 days	20 days
Anchor Time Total (180 hours)	0	0	0	80 hours	100 hours

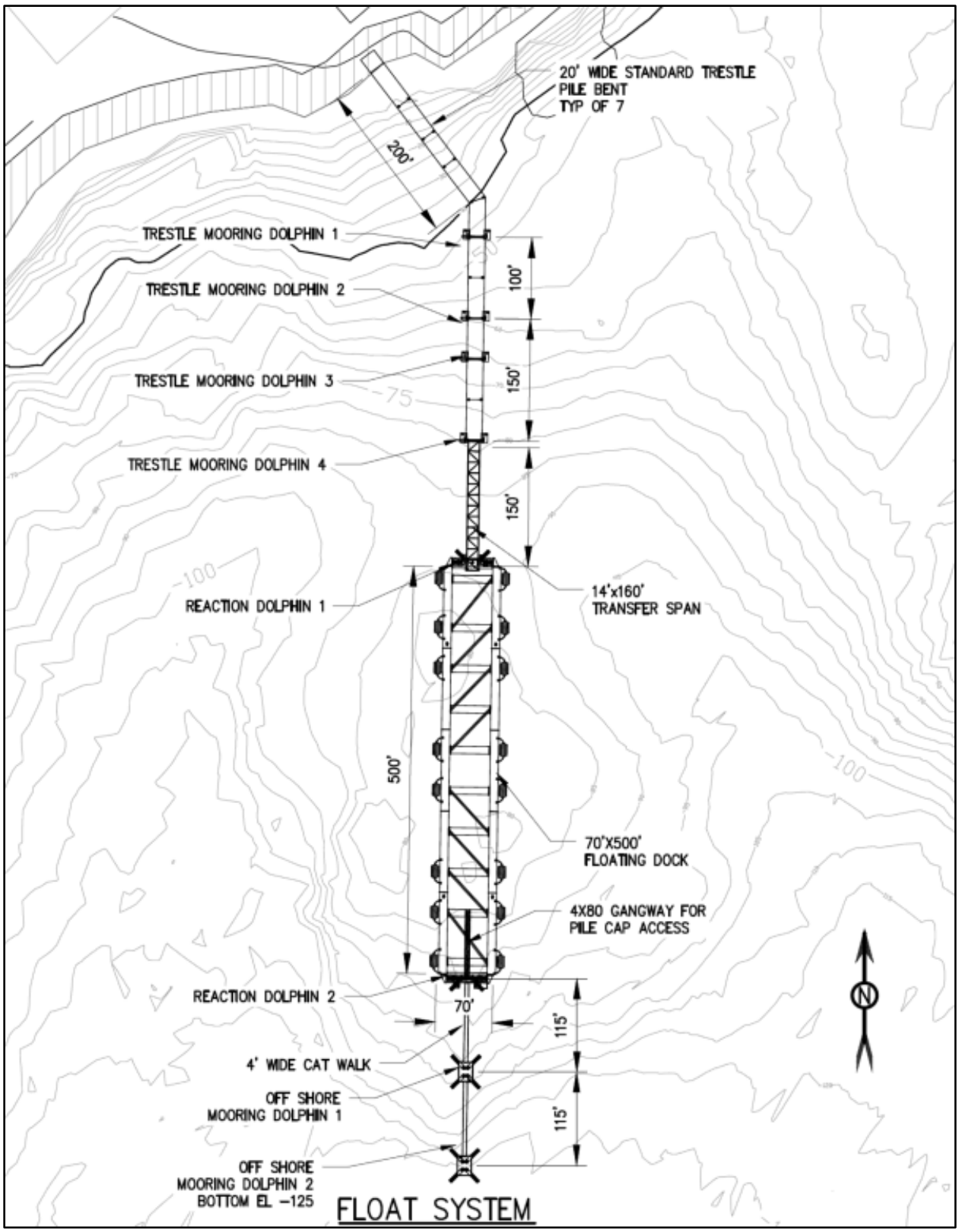


Figure 1. Ward Cove trestle, dock, and dolphins

In-water construction of the cruise ship dock will begin with installation of the trestle. Once the trestle is constructed, dolphins will be constructed. Trestle and dolphin construction will follow this sequence:

1) Vibrate 32 temporary 30-inch-diameter piles for the trestle, and 16 temporary 30-inch-diameter piles for the dolphins, a minimum of 10 feet into overburden to create a template to guide installation of permanent piles.
2) Weld a template frame around the temporary piles.
3) Within the template frame, vibrate and impact 14 permanent 30-inch-diameter piles into place for the trestle; or vibrate, impact, and rock anchor 20 permanent 36-inch and 20 48-inch-diameter piles into place for the dolphins.
4) Remove the template frame and temporary piles.
5) Perform this sequence at the seven trestle bent locations, working farther from the shoreline each sequence. Once the trestle is completed perform this sequence at the eight dolphin locations.

After all piles are installed, construction will proceed with installation of the floating dock, transfer span, trestle, mechanical systems, and other above-water components like the vehicle driveway, passenger walkway, and mast lights. The decking will include wood treated with ammoniacal copper zinc arsenate (ACZA) and the wood supporting the decking will be treated with creosote.

Construction Vessels

The following vessels are expected to be used to support construction and protected species monitoring:

- One material barge (approximately 250 feet x 76 feet x 15.5 feet) to transport materials from Washington to the project site and to be used on-site as a staging area during construction.
- One construction barge (crane barge 280 feet x 76 feet x 16 feet) to transport materials from Washington to the project site and to be used onsite to support construction.
- One skiff (25-foot skiff with a 125–250 horsepower outboard motor) transported to the project site on the material barge or acquired locally in Ketchikan to support construction activities.
- One skiff (25-35-foot skiff powered with a 35-50 horsepower outboard motor) transported to the project site on the material barge or acquired locally in Ketchikan to support Protected Species Observers' (PSO) efforts.

The material and construction barges will transport materials from Washington to the project site. Once at the project site the construction barge will be secured in place by four mooring anchors. Anchors will not be placed in the monitored natural attenuation area or sand capped areas of the previously contaminated areas of Ward Cove. A global positioning system (GPS) unit will be used to place anchors outside the restricted areas. The anchors will be below the surface and will not be a hazard to navigation. The material staging barge will be tied to the

construction barge, and materials will be moved from the staging barge to the construction barge and project site by a crane on the barge. When the barge is moved to the next pile installation area (in approximately 100 feet increments) it will occur at a speed of less than two miles per hour.

In addition to the activities described above, the proposed action will involve other in-water construction and heavy machinery activities. Examples of other types of activities include using standard barges, tug boats, or clamshell equipment to place or remove material (including submerged logs); and positioning piles on the substrate via a crane (i.e., "stabbing the pile").

ESA Action Area

The action area is defined in the ESA regulations (50 CFR 402.02) as the area within which all direct and indirect effects of the project will occur. The action area is distinct from and larger than the project footprint because some elements of the project may affect listed species some distance from the project footprint. The action area, therefore, extends out to a point where no measurable effects from the project are expected to occur (Figure 2).

NMFS defines the action area for this project as the area within which project-related noise levels are ≥120 dB rms re 1μPa or approaching ambient noise levels (i.e., the point where no measurable effect from the project would occur). NMFS uses the following conservative thresholds of underwater sound pressure levels[1], expressed in root mean square[2] (rms), from broadband sounds that cause behavioral disturbance, and referred to as Level B harassment under section 3(18)(A)(ii) of the Marine Mammal Protection Act (MMPA):

- impulsive sound: 160 dB re 1 μPa_{rms} (e.g. impact pile driving)
- continuous sound: 120 dB re 1μPa_{rms} (e.g. vibratory pile driving)

For vibratory pile installation of 48-inch piles, Solstice used median reference sound level of 168.2 dB re 1 μPa rms SPL from sound source verification (SSV) studies conducted on 48-inch piles at the Port of Anchorage (Austin et al. 2016). Using the practical spreading model developed by NMFS, the calculated ensonfied area radiates 16,343 meters from the pile driving source. Sound will be truncated by landforms; it will radiate through Ward Cove to the shores of Revillagigedo Island and across Tongass Narrows to the shore of Gravina Island (Figures 2 and 3). The applicant has agreed to deploy 4 PSOs in strategic locations (Figure 3, 4MP) to observe and shutdown project activities before a listed marine mammal enters the action area and is exposed to sound levels that would cause harassment.

[1] Sound pressure is the sound force per unit micropascals (μPa), where 1 pascal (Pa) is the pressure resulting from a force of one newton exerted over an area of one square meter. Sound pressure level is expressed as the ratio of a measured sound pressure and a reference level. The commonly used reference pressure level in acoustics is 1 μPa, and the units for underwater sound pressure levels are decibels (dB) re 1 μPa.

[2] Root mean square (rms) is the square root of the arithmetic average of the squared instantaneous pressure values.

There is no authorized take associated with this consultation, and the exclusion zone corresponds with the Level B thresholds in order to prevent exposure that could result in behavioral harassment.

Solstice, in coordination with NMFS, will perform an SSV study to determine the actual area that would be ensonified to at least 120 dB_{rms} re 1µPa (or above background noise levels, if those are higher). Consequently, the size of the action area (and thus the area within which effects to listed species are expected) may be altered to reflect those site-specific measurements.

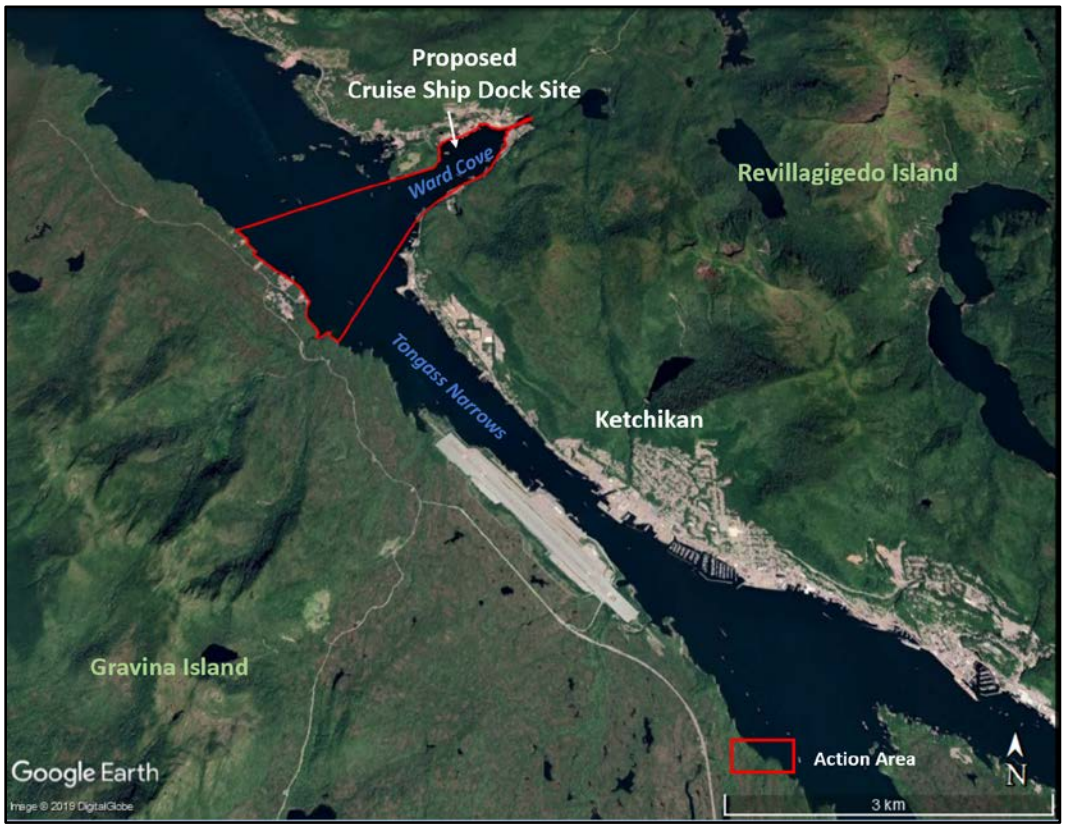


Figure 2. Ward Cove action area.

Mitigation Measures to Address ESA-Listed Species

As piles are installed, it is expected approximately 2 cubic yards of material will come out of each trestle pile and 10 cubic yards of material will be excavated from each dolphin pile. About 6 cubic yards per day will be excavated during construction of the trestle and about 20 cubic yards per day will be excavated during the construction of the dolphins, for a total of 280 cubic yards for the project. All material that comes out of the top of the pile during pile driving (drill cutting discharge) will be collected on a barge and transported to a permitted upland location for disposal. In addition, a 50-feet deep silt curtain will be installed to surround the pile driving and temporary pile removal operation.

A benthic sediment and water quality field study, reviewed by the Alaska Department of Environmental Conservation (ADEC), will be conducted prior to, during (water quality only), and following cruise ship dock construction. Following sampling protocols previously developed for the Environmental Protection Agency (EPA) during cleanup and monitoring of the site, a water quality and sediment sampling program will occur. The sampling program will be reviewed and approved by the ADEC.

If the sand cap area is damaged during construction or operations, it will be restored as directed by ADEC and EPA.

The dock's treated timber decking will be pre-fabricated and installed at the fabricator's yard in Washington State. No cutting, drilling, patching, or treatment of timber is expected to occur on site. If any incidental drilling or cutting were to become necessary on-site proper containment will be used to prevent any cuttings or sawdust from entering the water to avoid contamination from the treated wood.

The following mitigation measures to avoid impacts to Mexico DPS humpback whales and other marine mammals that may occur within the action area. See also the attached 4MP for additional details and figures.

1. Four or more protected species observer (PSOs) stations, each manned by one or more PSOs able to accurately identify and distinguish species of Alaska marine mammals, will be present before and during all in-water construction and demolition activities.
2. For this project, the exclusion zone for humpback whales includes all marine waters within the action area, radiating approximately 3,000 meters from the sound source, across Tongass Narrows to Gravina Island.
3. Pile-driving will not be conducted unless all waters within and adjacent to the exclusion zone are clearly visible.
4. The PSO(s) will be positioned such that the entire exclusion zone is visible to them (e.g., situated on a platform, elevated promontory, boat or aircraft).
5. The PSO(s) will have the following to aid in determining the location of observed listed species, to take action if listed species enter the exclusion zone, and to record these events:
    a. Binoculars
    b. Range finder
    c. GPS
    d. Compass
    e. Two-way radio communication with construction foreman/superintendent
    f. A log book of all activities which will be made available to the USACE and NMFS upon request
6. The PSO(s) will have no other primary duty than to watch for and report on events related to marine mammals.

7. The PSO(s) will be in direct communication with on-site project lead and will have shutdown authority.

8. The PSO(s) will work in shifts lasting no longer than four hours with at least a one hour break between shifts, and will not perform duties as a PSO for more than 12 hours in a 24-hour period.

9. The PSO(s) will scan the exclusion zone for the presence of listed species for 30 minutes immediately prior to any pile-driving or removal activities.

    a. If any listed species are present within the exclusion zone, pile-driving and removal activities will not begin until the animal(s) has left the exclusion zone or no listed species have been observed in the exclusion zone for 15 minutes (for pinnipeds) or 30 minutes (for cetaceans).

10. Throughout all pile-driving activity, the PSO(s) will continuously scan the exclusion zone to ensure that listed species do not enter it.

    a. If any listed species enter, or appear likely to enter, the exclusion zone during pile-driving or removal activities, all pile-driving activity will cease immediately. Pile-driving activities may resume when the animal(s) has been observed leaving the area on its own accord. If the animal(s) is not observed leaving the area, pile-driving activity may begin 15 minutes (for pinnipeds) or 30 minutes (for cetaceans) after the animal is last observed in the area. Note: If a marine mammal is first observed within the exclusion zone during construction operations, the PSO will notify NMFS immediately after ordering a shut-down of operations.

11. If an environmental factor, water conditions, or sea state restricts the observers' ability to make observations within the marine mammal shutdown zone, pile driving activities will cease. Pile driving activities will not be initiated or continue until the entire largest shutdown zone for the activity is visible.

12. Ramp-up (soft start) procedures will be applied prior to beginning pile-driving activities each day and/or when pile-driving hammers have been idle for more than 30 minutes:

    a. For impact pile-driving, contractors will be required to provide an initial set of three strikes from the hammer at 40 percent energy, followed by a 30-second waiting period. This procedure shall be repeated two additional times prior to operational impact pile driving.

13. All in-water work will be completed by May of each calendar year.

14. Monthly PSO reports and a final PSO report will be provided to NMFS.

    a. The reporting period for each monthly PSO report will be the entire calendar month, and reports will be submitted by close of business on the fifth day of the month following the end of the reporting period (e.g., the monthly report covering April 1 to 30, 2020, will be submitted to the NMFS by close of business on May 5, 2020).

    b. PSO report data will also include the following for each listed marine mammal observation or “sighting event” if repeated sightings are made of the same animal(s):

        i. Species, date, and time for each sighting event.

ii. Number of animals per sighting event; and number of adults/juveniles/calves per sighting event.

iii. Primary, and, if observed, secondary behaviors of the marine mammals in each sighting event.

iv. Geographic coordinates for the observed animals, with the position recorded by using the most precise coordinates practicable (coordinates must be recorded in decimal degrees, or similar standard, and defined coordinate system).

v. Time of the most recent pile-driving or other project activity prior to marine mammal observation.

vi. Environmental conditions as they existed during each sighting event, including Beaufort sea state, weather conditions, visibility (km/mi), lighting conditions, and percent ice cover.

c. A final technical report will be submitted to NMFS within 90 days after the final pile has been driven for the project. The report will summarize all activities associated with the proposed action, and results of marine mammal monitoring conducted during the in-water project activities. The final technical report will include items from the list above as well as the following:

i. Summaries of monitoring efforts including total hours, total distances, and marine mammal distribution through the study period, accounting for sea state and other factors that affect visibility and detectability of marine mammals.

ii. Analyses on the effects from various factors that may have influenced detectability of marine mammals (e.g., sea state, number of observers, fog, glare, and other factors as determined by the PSOs).

iii. Species composition, occurrence, and distribution of marine mammal sightings, including date, water depth, numbers, age/size/gender categories (if determinable), group sizes, and ice cover.

iv. Effects analyses of the project activities on listed marine mammals.

v. Number of marine mammals observed (by species) during periods with and without project activities (and other variables that could affect detectability), such as:

1. Initial marine mammal sighting distances versus project activity at time of sighting.

2. Observed marine mammal behaviors and movement types versus project activity at time of sighting.

3. Numbers of marine mammal sightings/individuals seen versus project activity at time of sighting.

4. Distribution of marine mammals around the action area versus project activity at time of sighting.

15. Though take is not authorized, if a listed marine mammal is taken (i.e., a listed marine mammal(s) is observed entering the 3,000 meter exclusion zone before pile-driving

operations can be shut down), re-initiation of consultation is required, and the take must be reported to NMFS within one business day (contact listed at item 16 below). PSO records for listed marine mammals taken by project activities must include:

a. All the information that must be listed in the PSO report.

b. Number of listed animals taken.

c. The date and time of each take.

d. The cause of the take (e.g., impact hammer operating at maximum energy).

e. The time the animal(s) entered the exclusion zone, and, if known, the time it exited the zone.

f. Mitigation measures implemented prior to and after the animal entered the exclusion zone.

16. Monthly and final reports and reports of take will be submitted to: NMFS Protected Resources Division, Anchorage Office, Dr. Marilyn Myers (Marilyn.myers@noaa.gov)

17. SSV monitoring will be conducted by an experienced passive acoustic monitoring firm to draft an acoustic monitoring plan and conduct an SSV program during pile driving. The plan will be reviewed and approved by NMFS prior to the initiation of pile driving activities. The SSV report will be submitted to NMFS within 60 days of conducting monitoring activities.

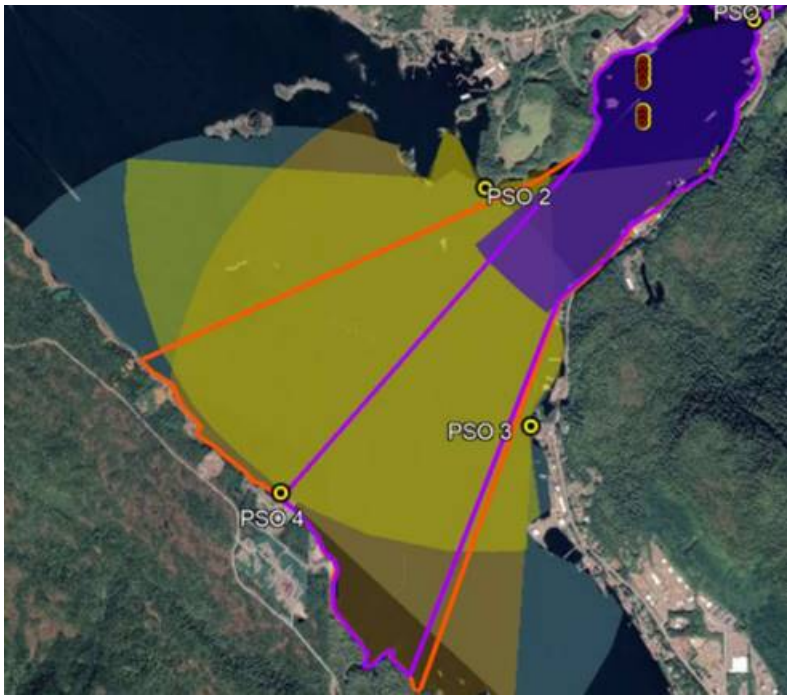


Figure 3. Observation zones for the 4 PSOs. See 4MP for more details.

ESA-Listed Species

Threatened Mexico DPS humpback whales may occur in the action area. Although humpback whales are more commonly seen in the vicinity of the project area in the summer and fall, they have also been documented in the action area in other months and may occur in the area when the pile driving is occurring. However, based on the low proportion of humpback whales in Southeast Alaska being from the ESA-listed Mexico DPS (see discussion below), the probability of the humpback whales seen in the action area being members of the Mexico DPS is correspondingly low.

The humpback whale was listed as endangered under the Endangered Species Conservation Act (ESCA) on December 2, 1970 (35 FR 18319). Congress replaced the ESCA with the ESA in 1973, and humpback whales continued to be listed as endangered. NMFS recently conducted a global status review and changed the status of humpback whales under the ESA. The Western North Pacific DPS (which includes a small proportion of humpback whales found in the Aleutian Islands, Bering Sea, and Gulf of Alaska) is listed as endangered; the Mexico DPS (which includes a small proportion of humpback whales found in the Aleutian Islands, Bering Sea, Gulf of Alaska, and Southeast Alaska) is listed as threatened; and the Hawaii DPS (which includes most humpback whales found in the Aleutian Islands, Bering Sea, Gulf of Alaska, and Southeast Alaska) is not listed (81 FR 62260; September 8, 2016). Critical habitat has not been designated for the Western North Pacific or Mexico DPSs.

Relatively high densities of humpback whales occur throughout much of Southeast Alaska and northern British Columbia, particularly during the summer months. The abundance estimate for humpback whales in the Southeast Alaska is estimated to be 6,137 (CV= 0.07) animals which includes whales from the Hawaii DPS (94%) and Mexico DPS (6%) (Wade et al. 2016). Although migration timing varies among individuals, most whales depart for Hawaii or Mexico in fall or winter and begin returning to Southeast Alaska in spring, with continued returns through the summer and a peak occurrence in Southeast Alaska during late summer to early fall. However, there are significant overlaps in departures and returns (Baker et al. 1985, Straley 1990). Given their widespread range and their opportunistic foraging strategies, Mexico DPS humpback whales may be in the vicinity during the proposed project activities.

Humpback whales produce a variety of vocalizations ranging from 20 Hz to 10 kHz (Winn et al. 1970, Tyack and Whitehead 1983, Payne and Payne 1985, Silber 1986, Thompson et al. 1986, Richardson et al. 1995, Au 2000, Frazer and Mercado III 2000, Erbe 2002a, Au et al. 2006, Vu et al. 2012). NMFS categorizes humpback whales in the low-frequency cetacean functional hearing group, with an applied frequency range between 7 Hz and 35 kHz (NMFS 2016b).

Additional information on humpback whale biology and natural history is available at:
http://www.nmfs.noaa.gov/pr/species/mammals/whales/humpback-whale.html
http://alaskafisheries.noaa.gov/pr/humpback
http://www.fisheries.noaa.gov/pr/sars/pdf/stocks/alaska/2015/ak2015_humpback-cnp.pdf

Effects of the Action on ESA-Listed Species

For purposes of the ESA, "effects of the action" means all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the 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 insignificant, discountable, or completely beneficial. Insignificant effects relate to the size of the impact and are those that one would not be able to meaningfully measure, detect, or evaluate, and should never reach the scale where take occurs. Discountable effects are those that are extremely unlikely to occur. Beneficial effects are contemporaneous positive effects without any adverse effects to the species.

This consultation includes NMFS guidance on the term "harass," which means to: "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering" (Wieting 2016).

The potential effects of the proposed action on listed species include acoustic disturbance (noise), vessel strike, habitat alteration, and disturbance from increased traffic.

Acoustic Disturbance

Possible impacts to marine mammals exposed to loud underwater or in-air noise include mortality (directly from the noise, or indirectly from a reaction to the noise), injury, and disturbance ranging from severe (e.g., abandonment of vital habitat) to mild (e.g., startle response). In-water noise is the primary concern for the species covered in this consultation. Pile driving introduces noise into the underwater environment that has the potential to negatively impact marine mammals (Thompson et al. 2013). See the "Action Area" section above for a description of NMFS sound exposure thresholds. Though proposed pile driving will introduce impulsive sounds into the water, the activities are not expected to adversely affect Mexico DPS humpback whales due to the mitigation measures.

Impact pile driving is expected to be the loudest sound source associated with the proposed action. Impact pile driving methods can generate peak pulsed sound pressure levels of 237 dB re 1 µPa at 1m at frequencies between 0.1 and 1 kHz (Hildebrand 2009). Based on information gathered for the Port of Anchorage test pile project using 48-inch piles, the 160 dB isopleth using vibratory pile driving would radiate out over 16,000 meters. However, sound spread will be constrained by land barriers around the project site. Sound will be capable of traveling beyond Ward Cove in one direction, out across Tongass Narrows where it will meet the land mass of Gravina Island.

We do not anticipate that this project will expose Mexico DPS humpback whales to sound pressure levels that reach Level B acoustic thresholds because: 1) we expect very few Mexico DPS humpback whales to be present in the area during the proposed pile driving period (January-May); and 2) the project incorporates monitoring and mitigation measures that include

shut down of all pile driving operations when a marine mammal approaches, enters, or appears within the shutdown zone. For these reasons, Mexico DPS humpback whales are extremely unlikely to be exposed to noise from pile driving. Therefore, we conclude that effects from pile driving are discountable.

Noise generated from pile driving can reduce the fitness and survival of fish in areas used by foraging marine mammals; however, given the small area of the project site and the fact that any physical changes to this habitat would not be likely to reduce the localized availability of fish (Fay and Popper 2012), it is unlikely that Mexico DPS humpback whales would be affected. We consider potential impacts to Mexico DPS humpback whales via their prey resources to be insignificant.

Tugs, barges, and small skiffs will be used during construction. For tugs and barges broadband source levels have been measured at 145 to 170 dB re: 1 µPa, and for small ships and supply vessels broadband source levels have been measured at 170 to 180 dB re: 1µPa (Richardson et al. 1995). Once the dock is operational, cruise ships will dock there. Average broadband source levels for cruise ships have been estimated at 181 ± 3 dB re: 1 µPa (Hatch et al. 2008) and 182 dB re: 1 µPa (Kipple and Gabriele 2007)219 ± 3.8 dB re: 1 µPa. Allen et al. (2012) recorded source levels for four categories of vessels, recording cruise ships as the loudest of 24 ships in these categories with the highest broadband source level calculated at 219 ± 3.8 dB re: 1 µPa. Allen et al. (2012) also found that source levels typically increased with vessel size and speed.

Numerous studies of interaction between surface vessels and marine mammals have demonstrated that free-ranging marine mammals engage in avoidance behavior when surface vessels move toward them. Many authors suggest that vessel generated noise is a factor in that avoidance behavior (NMFS 2019). Noise from the proposed action would be introduced to an area that already experiences vessel noise due to existing high volumes of vessel traffic. Marine vessels that use the area include passenger ferries, commercial freight vessels/barges, commercial tank barges, cruise ships, U.S. Coast Guard vessels, commercial fishing boats, charter vessels, recreational vessels, and floatplanes (Marine Safety Task Force 2018). Cruise ships are the largest vessels that routinely use Tongass Narrows. At any given time during the summer (May-September), as many as five large cruise ships may be moored and/or anchored at the Port of Ketchikan located in downtown Ketchikan. Marine mammals that occur in the action are area likely habituated to vessel noise.

Acoustic disturbance from vessel noise associated with this action is not anticipated to significantly impact humpback whales because:

1) construction vessel noise associated with this project would be temporary and the number of cruise ships in the Ketchikan vicinity is not expected to increase;
2) humpback whales that occur in the Ketchikan vicinity are likely habituated to regular vessel traffic and noise; and
3) as discussed in the 4MP, the Humpback Whale Approach Regulations will be followed during the proposed activity and when transiting to and from the project site (see 50 CFR §§ 216.18, 223.214, and 224.103(b)), and in Tongass Narrows the maximum speed limit

of 7 knots for vessels of over 23 feet will be observed as outlined in the 2018 Southeast Alaska Voluntary Waterway Guide.

Therefore, impacts on Mexico DPS humpback whales associated with vessel noise from this project would be too small to detect or measure and thus are insignificant.

Vessel Strike

The action area currently experiences high volumes of vessel traffic. There are three types of vessels associated with this project: construction related vessels, cruise ships, and shuttle boats. Construction related vessels will be slow moving and their use will be temporary. Construction materials and equipment, will be transported from Washington to the project site by slow moving barge. Once on site the barge would be secured in place by four mooring anchors and local barge moves from one pile installation area to the next would occur at a speed of less than 2 knots. Workers will be transported from shore to the barge work platform by a 25-foot skiff with a 125–250 horsepower motor. The travel distance will be less than 300 feet. There could be multiple shore-to-barge trips during the day; however, the area of travel will be relatively small and close to shore.

Once the dock is functional, cruise ships will transit through Tongass Narrows and dock at the facility from April or May to October. The dock will be able to accommodate very large cruise ships which can carry twice as many passengers as vessels in the current fleet. However, this project is not expected to increase the number of cruise ships arriving in Ketchikan. According to Moffatt and Nichol (2016) growth over the next decade will occur primarily as a result of existing ports being modified to accommodate larger vessels, without significantly expanding the number of vessels operating within Alaska.

In conjunction with this project, it is expected that about 10 round trips between Ward Cove and downtown Ketchikan would be made by a small vessel during cruise season (late April-early October). The exact downtown landing location has not been determined, but it would be at an existing dock and within walking distance of downtown amenities.

Vessel speed is a factor in whale strikes. In assessing records with known vessel speeds, Laist et al. (2001) found a direct relationship between the occurrence of a whale strike and the speed of the vessel involved in the collision. The authors concluded that most deaths occurred when a vessel was traveling in excess of 24.1 km/h (14.9 mph; 13 kts). In 2017, there were seven reported vessel strikes to humpback whales in Alaska, and between 2010 and 2014 the minimum mean annual mortality and serious injury rate due to ship strikes reported in Alaska for humpback whales was 2.7 whales (Muto et al. 2017). These incidents account for a very small fraction of the total humpback whale population (Laist et al. 2001). Of the reported vessel strikes of humpback whales in the Ketchikan vicinity between 2007 and 2017, only one was reported within Tongass Narrows; in that incident a dead humpback whale arrived in the port of Ketchikan on the bow of a cruise ship. NOAA performed a necropsy on that whale, but it is uncertain if the whale was struck in Tongass Narrows or elsewhere (NMFS 2019).

While cruise ships may strike whales within Alaska waters in the future, it is unlikely that such strikes can be attributable to this project for the following reasons:

1. humpback whales are occasional visitors to the action area,
2. construction related vessel traffic is slow moving and temporary,
3. the new dock is not expected to increase the number of cruise ships in the Ketchikan area, and
4. all vessels will be required to observe the Alaska humpback whale approach regulations (100 yards), and in Tongass Narrows there is a maximum speed limit of 7 knots for vessels of over 23 feet in length, which will further reduce the likelihood of interactions.

All of these factors limit the risk of strike. Given the extremely small increase in vessel traffic above existing levels in the action area, there will be no detectable increase in the risk of vessel strike. Therefore we conclude effects to Mexico DPS humpback whales are insignificant.

Habitat Alteration

Ward Cove has experienced significant industrial activity and pollution from pulp mill, sawmill, and fish processing plant activities. The pollution qualified Ward Cove for a U.S. Environmental Protection Agency Superfund cleanup to reduce toxicity of sediments to the bottom-dwelling animals, and to enhance recolonization of the bottom sediments to support a healthy community of marine animals. Remediation activities which included removing logs, dredging, and capping with sand were completed in 2001 and the EPA now considers the remedy functioning as intended and protective of human health and the environment (EPA 2015).

During pile driving and removal, a temporary and localized increase in turbidity near the seafloor would occur in the immediate area surrounding the area where piles are placed. These sediments will be disturbed during pile driving; however, suspension will be brief and very localized through the use of a 50 foot silt curtain. In addition, the number of piles to be driven per day is small (2-4) and tidal action is expected to quickly dilute and disperse sediments that are re-suspended. Although a very small amount of benthic habitat will be lost directly from the installation of the piles, benthic invertebrates are not typical prey items for humpback whales and because of the very small area of lost habitat, the loss of prey items for fish will be insignificant.

The contractor will have a boom, absorbent materials, and containment available in the event of a small spill from refueling. The contractor will also have contact information for spill response contractors in Ketchikan. Construction will be conducted in accordance with Clean Water Act Section 404 and 401 regulations, to minimize potential construction related impacts on water quality. Thus, the likelihood of pollutants entering the water will be minimal. For the above reasons, we expect the effects of habitat alteration on Mexico DPS humpback whales to be insignificant.

Disturbance from Increased Traffic

USACE does not expect that this project will increase the number of cruise ships visiting Southeast Alaska because ships that have been berthing in the city of Ketchikan will use the new cruise ship dock. Because the dock will be able to accommodate larger cruise ships carrying more passengers, there will be an increase in the number of tourists. To meet the tourism needs of increased numbers of cruise ship passengers, other types of marine vessel traffic (like charter fishing vessels, sightseeing vessels, ferries, and float planes) will increase. An overall increase in vessel traffic could affect listed humpback whales through increased noise, harassment, or

pollution. Given the high level of tourism activity that already occurs in the area, the additional traffic attributable to this project is expected to be too small to detect or measure and effects on Mexico DPS humpback whales are therefore insignificant.

Essential Fish Habitat

As the USACE noted in the EFH Assessment, the project area is defined as EFH for all five species of Pacific salmon and fifteen species of groundfish, including rockfish. The area is known to contain forage fish and crab; however, EFH is not defined for forage fish or crab in Ward Cove. These stocks are managed by the State of Alaska.

NMFS recognizes your determination in the EFH Assessment that these actions will not adversely impact EFH. However, project impacts to nearshore areas are likely and would be minimized by the mitigation measures included in the project from early coordination.

The proposed project will require impact and vibratory hammers to install the pilings. The applicant will minimize impacts of pile driving by limiting pile driving to 2 piles per day. Dock construction in Ward Cove may impact fish with swim bladders; however, most forage fish and adult groundfish will likely leave or avoid the area once construction begins. Juvenile Pacific salmon may not be large enough to move away from the construction activity.

Since the marine areas allow access to anadromous streams and are designated as EFH for Pacific salmon, NMFS recommends the USACE require timing windows for construction activities to avoid juvenile salmon migration. Juvenile salmon can be expected to start out-migration in the spring. Thus, NMFS recommends construction conclude in early spring to avoid impacts to this vulnerable life stage of salmon.

Although disturbance of the sand cap over historic contaminated material may have adverse impacts on EFH, the USACE has proposed mitigation measures that adequately minimize impacts to EFH. To construct the dock structures, pile driving will penetrate the sand cap into the contaminated sediments, potentially releasing contaminants into the environment. To mitigate the potential impacts to EFH, the USACE proposes to use silt curtains to reduce the potential turbidity and minor releases of any contaminants. Moreover, all displaced sediments will be collected and removed from Ward Cove by barge. The sediments will be stored permanently at the Alaska Department of Environmental Conservation (ADEC) approved landfill site. In the long term, this could benefit EFH by permanently removing contaminated sediments.

Although detailed sediment sample composition data were not included in the EFH Assessment, the applicant will sample the area and coordinate with ADEC to find the appropriate upland disposal site. The applicant is required to test the sediments for contaminants before the project begins and following construction. These data can then be compared to archived baseline data collected by the EPA under identical sampling methodology. The EPA requires the applicant to monitor, maintain, and repair the sediment cap.

Overall, the project will increase vessel traffic, which has the potential to disturb the sand cap. Potential impacts to EFH will be mitigated through the CERCLA remedy and stipulations required by Section 404 of the Clean Water Act, i.e., the applicant is liable for maintaining the

sediment cap. As such, the applicant will be required to establish best management practices, approved by the EPA and ADEC, to maintain and monitor the integrity of the sand cap and repair any damage. The USACE will require the applicant to commit to a mutual agreement with the EPA to ensure the applicant is liable for the sediment cap/CERCLA remedy. This needs to be completed before construction can begin.

EFH quantity will be reduced due to the footprint of the project and the quality of benthic EFH will be reduced due to the shade cast by the main dock, cement floating dock, and cruise ships. However, it is likely the steel pilings will create vertical habitat complexity in Ward Cove. Pilings are usually colonized quickly by organisms typically found on benthic rocky substrate. This could benefit species diversity in the area and provide habitat for juvenile crabs.

NMFS commends USACE for the inclusion of monitoring into the proposed project. In addition to the monitoring efforts already planned, NMFS recommends USACE conduct surveys of the benthic community, including submerged aquatic vegetation (SAV). SAV is a key EFH attribute which can contribute to the health and efficacy of nearshore habitat. It is unlikely any SAV exists in the deep water area of the project area, but it is likely that SAV (eelgrass, rockweed) exists in shallow nearshore areas. SAV could be impacted by the dock components that extend seaward from shore.

EFH Conservation Recommendations

NMFS provides several general recommendations to enhance the conservation of EFH in the project area. NMFS recommends the USACE:

- require the proposed adjacent floating dock (POA-2017-00166) be held to the same mitigation requirements as those proposed for the larger cruise ship dock, such as including the use of silt curtains and collection/removal of all sediments for upland disposal;
- coordinate with the State of Alaska to incorporate anadromous timing windows to minimize adverse impacts on salmon EFH under their Title 16 permit;
- ensure stakeholders are familiar with or update the Geographical Response Strategies to minimize the risk of an oil spill;
- require the applicant to conduct surveys of the benthic community, including SAV, before and after the project is completed and incorporate best management practices to avoid impacts to SAV.

Conclusion

Based on this analysis, NMFS concurs with your determination that the proposed action may affect, but is not likely to adversely affect, Mexico DPS humpback whales. Reinitiation of consultation is required where discretionary federal involvement or control over the action has been retained or is authorized by law and if (1) take of listed species occurs, (2) 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, (3) the 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 (4) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16).

Under section 305(b)(4)(B) of the MSA, the federal action agency is required to respond to NMFS EFH Conservation Recommendations in writing within 30 days. If your response is inconsistent with our recommendations, please explain the reasons for not following our recommendations, including the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects (50 CFR 600.920(k)). Should the project or preferred alternative change significantly, NMFS wishes to be informed of any such changes in order to reassess our EFH Conservation Recommendations.

Please direct any questions regarding this the ESA portion of letter to Marilyn Myers at marilyn.myers@noaa.gov or (907) 271-5147, and direct any questions regarding EFH to Seanbob Kelly at seanbob.kelly@noaa.gov or (907) 271-5195 or Lydia Ames at lydia.ames@noaa.gov or (907) 271-5002.

Sincerely,

for

James W. Balsiger, Ph.D.
Administrator, Alaska Region

Enclosure (4MP prepared by Solstice)

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Marine Mammal Monitoring and Mitigation Plan

Power Systems & Supplies of Alaska
Ward Cove Cruise Ship Dock Project
Ward Cove, Ketchikan, Alaska

Submitted July 2019
Revised October 2019
Revised December 12, 2019

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ACRONYMS AND ABBREVIATIONS

4MP	Marine Mammal Monitoring and Mitigation Plan
ESA	Endangered Species Act
IHA	Incidental Harassment Authorization
MMPA	Marine Mammal Protection Act
NMFS	National Marine Fisheries Service
OPR	Office of Protected Resources (NMFS)
PSO	protected species observer
USACE	U.S. Army Corp of Engineers
USFWS	U.S. Fish and Wildlife Service

1 INTRODUCTION

Power Systems & Supplies of Alaska proposes the following Marine Mammal Monitoring and Mitigation Plan (4MP) for use during pile installation to construct a dock in Ward Cove approximately eight kilometers (five miles) north of downtown Ketchikan, Alaska. The project is in waters of the U.S., within the range of the Endangered Species Act (ESA) listed Mexico distinct population segment of humpback whales and nine Marine Mammal Protection Act (MMPA)-listed marine mammals, and has the potential to generate noise that could exceed Level A and B harassment thresholds established by the National Marine Fisheries Service (NMFS). Monitoring and shutdown zones will be implemented to prevent Level A and Level B impacts to marine mammals.

The purpose of this plan is to prevent impacts to marine mammals by prescribing how mitigation measures and construction techniques will be employed, outlining the duties of the Protected Species Observers (PSOs), and summarizing reporting requirements. The plan uses a combination of marine mammal monitoring, soft-starts, shutdowns, and species data collection and reporting to comply with the permits and authorizations required to construct this project.

Figure 1. Location of Proposed Cruise Ship Dock in Ward Cove

Figure 2. Photo of Project Site

Photo Credit: Ward Cove Group as published in Alaska Journal of Commerce June 2013.

2 PERMITS AND AUTHORIZATIONS

The project will comply with the required terms and conditions outlined in the following requested permits and authorizations:

- U.S Army of Engineers (USACE) Permit (DA Permit) POA-2019-00313, Ward Cove Cruise Ship Dock Project for activities is Waters of the U.S. (requested);
- NMFS Alaska Region Protect Resources Division ESA Section 7 Informal Consultation (to be requested).
- NMFS Office of Protected Resources (OPR) Incidental Harassment Authorization (IHA) for Level B take of harbor seals (to be requested).[1]

[1] If take of harbor seals is authorized, this plan will be updated accordingly.

3 EXPECTED SPECIES AND TAKE REQUESTED

The species that may occur in the project area are shown in Table 1. Shutdowns will be implemented to avoid take of these species. Shutdown zones are described in Section 4. An IHA for Level B take of harbor seals will be requested. If take of harbor seals is authorized, this plan will be updated accordingly.

Table 1. Species that May Occur in Project Area

Minke Whale (*Balaenoptera acutorostrata*)
Humpback Whale (*Megaptera novaeangliae*)
Gray Whale (*Eschrichtius robustus*)
Killer Whale (*Orcinus orca*)
Pacific White-Sided Dolphin (*Lagenorhynchus obliquidens*)
Dall's Porpoise (*Phocoenoides dalli*)
Harbor Porpoise (*Phocoena phocoena*)
Harbor Seal (*Phoca vitulina*)
Steller Sea Lion (*Eumatopia jubatus*)
Northern Sea Otter (*Enhydra lutris*)

4 SHUTDOWN ZONES

Because species are impacted by noise in different ways, species-specific shutdown zones have been calculated for this project employing NMFS's *2018 Revisions to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing* and *User Spreadsheet*. Where landforms, like the shores of Revillagigedo Island and Gravina Island, stop underwater noise transmission, shutdown zones are based on the truncated distance and are smaller than their calculated distances. Calculated distanced are described in Section 4.1 and shutdown zones are described in Section 4.2.

4.1 Calculated Distance to Shutdown Zones

The calculated distances to the Level B thresholds are shown in Table 2. For NMFS-managed species, Level B shutdown zones represent areas where received noise levels from pile driving activities meet or exceed 120 dB during vibratory pile driving and rock anchoring, and 160 dB during impact pile driving. For U.S. Fish and Wildlife Service (USFWS) managed northern sea otters, Level B shutdown zones represent areas where received noise levels from pile driving activities meet or exceed 160 dB during all pile driving activities.

Table 2. Calculated Distances to Level B Shutdown Zones

Source	Level B for NMFS-managed species (m)*	Level B for USFWS-managed northern sea otter (m)
Vibratory Pile Driving/Removal		
30-inch steel installation and removal	6,213	13
36-inch and 48-inch steel installation	16,343	35
Impact Pile Driving		
30-inch, 36-inch and 48-inch steel installation	3,744	3,744
Rock Anchor Installation		
33-inch anchor for 36-inch and 48-inch steel piles	12,023	26

4.2 Shutdown Zones

Power Systems & Supplies of Alaska's contractor will monitor different shutdown zones depending on species and the type of construction activity that is occurring. Shutdown zones for this project include a 10- meter shutdown zone for all in-water activity and truncated distances to the Level B thresholds for pile installation activities. The shutdown zones for the project are presented in Table 3.

Table 3. Shutdown Zones

Source	Shutdown Zones for NMFS managed species (m)	Shutdown Zones for USFWS managed Northern sea otter (m)
In-Water Construction Activities*		
Barge movements, pile positioning, sound attenuation placement	10	10
Vibratory Pile Driving/Removal		
30-inch steel installation and removal	3,645	15
36-inch and 48-inch steel installation	3,645	35
Impact Pile Driving		
30-inch, 36-inch and 48-inch steel installation	3,645	3,645
Rock Anchor Installation		
33-inch anchor for 36-inch and 48-inch steel piles	3,645	30

Shutdown zones are rounded up to the nearest 5 meters.

*Although acoustic injury is not the primary concern with these activities, shutdowns will be implemented to avoid impacts to species.

5 METHODS

Power Systems & Supplies of Alaska, their contractor, and qualified PSOs will work together to implement construction mitigation methods, marine mammal monitoring and reporting, and shutdowns to prevent impacts to marine mammals.

The contractor will submit a Pre-Construction Notification to NMFS 10 days prior to initiating pile driving activities. The contractor will employ construction mitigation measures including driving all piles with a vibratory hammer to the maximum extent possible prior to using an impact hammer, and using soft-starts and pile caps for pile driving.

Four land based PSOs will be employed for marine mammal monitoring and will be present during all in-water work. PSOs will continuously scan the shutdown zones outlined in this plan and ensure shutdown zones are clear of marine mammals prior to in-water construction. PSOs will collect data including environmental conditions, marine mammal sightings and behavior, and construction activity at the time of sightings and will relay data to the contractor and Power Systems & Supplies of Alaska for reporting. If a marine mammal is observed approaching a shutdown zone the PSOs will contact the contractor to shutdown construction activity.

Land based PSOs will be located at stations that allow them to clearly view the shutdown zones for marine mammals. These PSO stations and shutdown zones are shown on Figures 3-7.

Figure 3. Ward Cove Cruise Ship Marine Mammal Monitoring and Shutdown Zones Locations

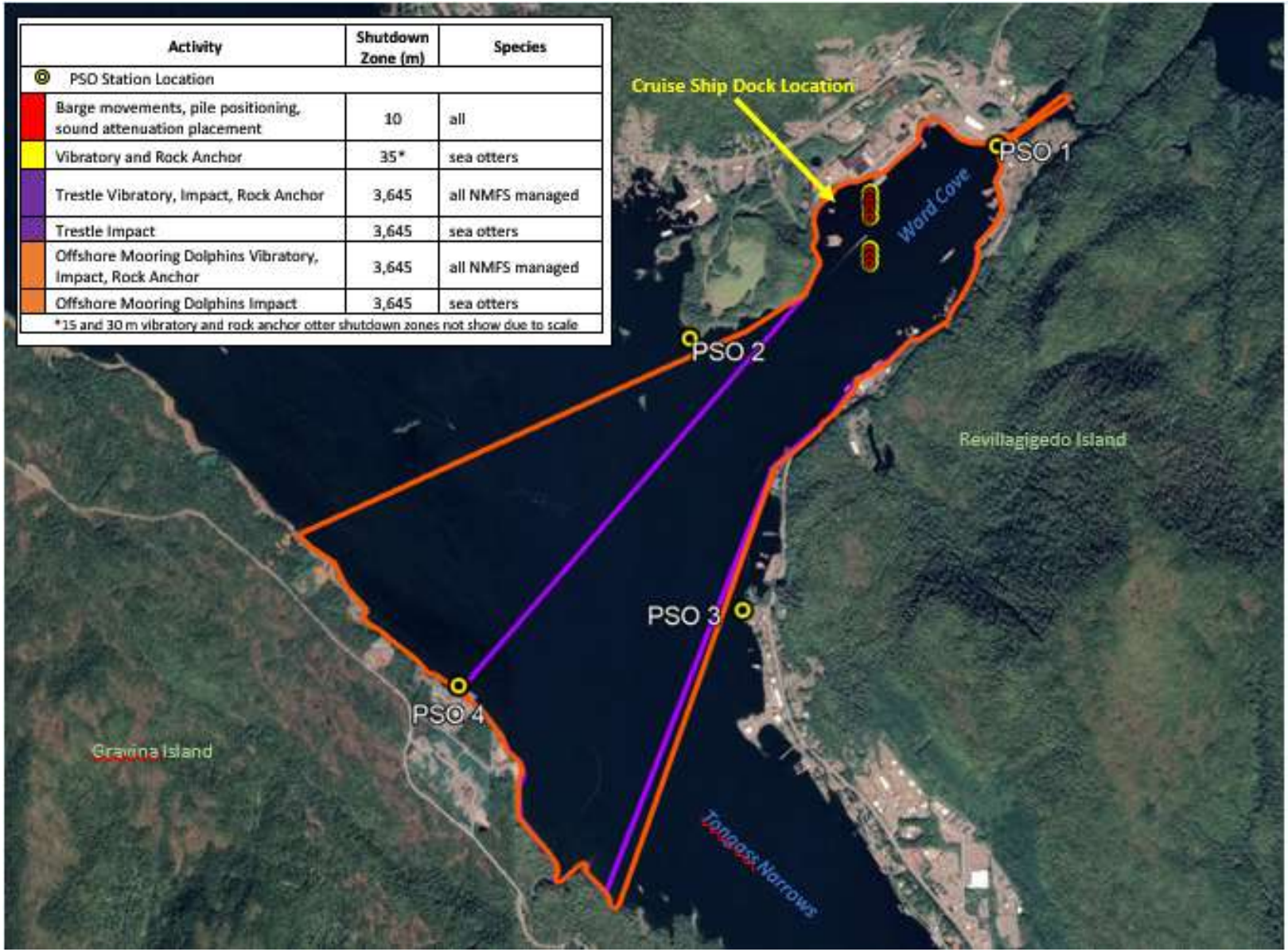


Figure 4. View of Ward Cove and Tongass Narrows from PSO Station 1

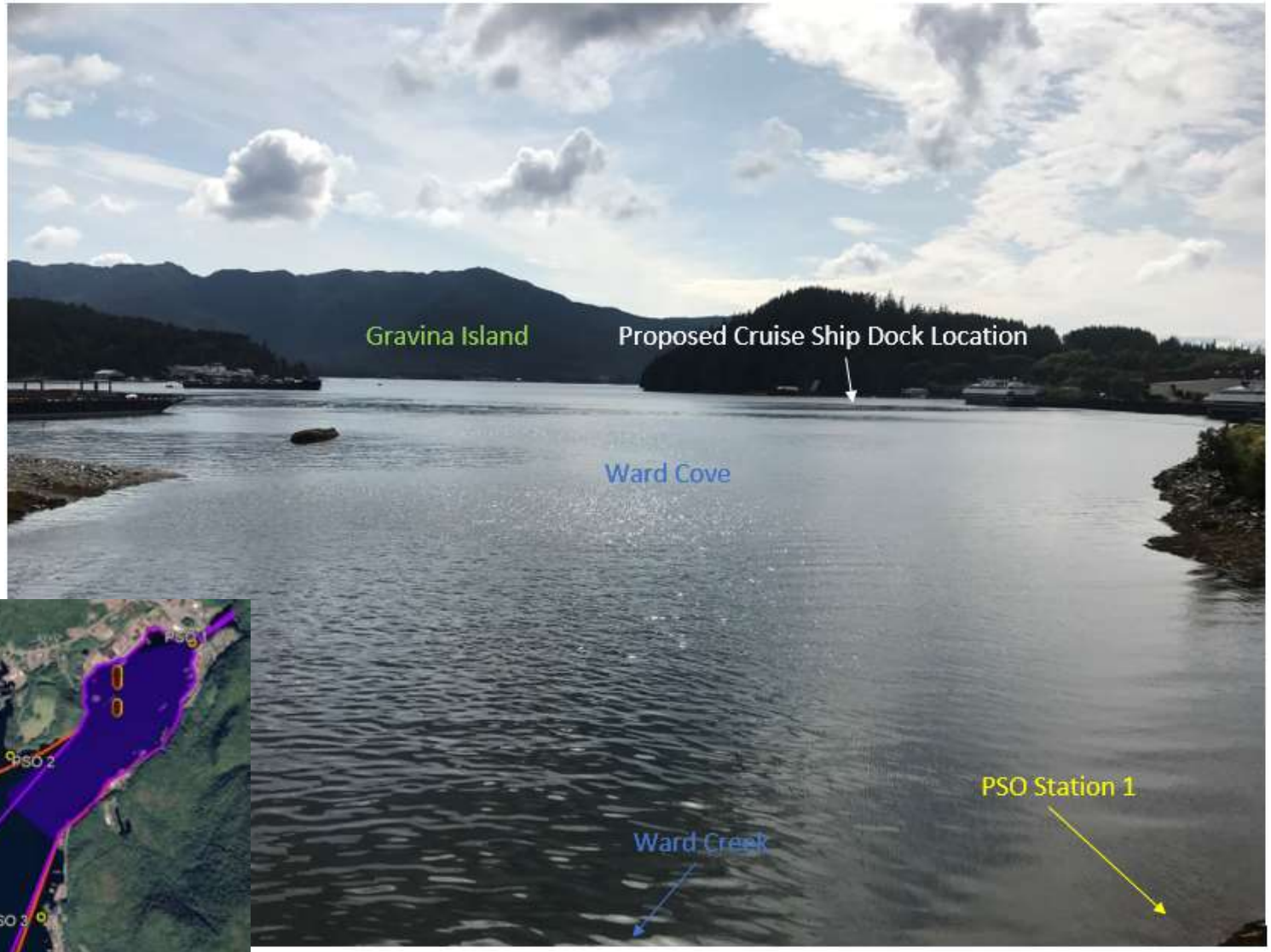


Figure 5. PSO Station 1 Observation Area (blue shaded area) **in Relation to the Action Area** (orange and purple lines)

Figure 6. View of Ward Cove and Tongass Narrows from PSO Station 2 near "The Cross"

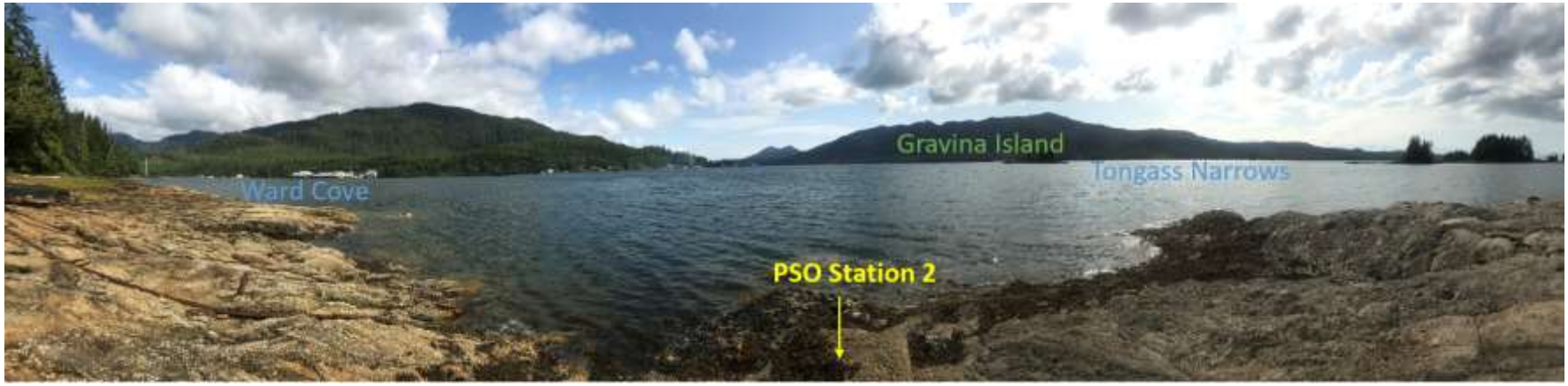


Figure 7. PSO Station 2 Observation Area (yellow shaded area) **in Relation to the Action Area** (orange and purple lines)

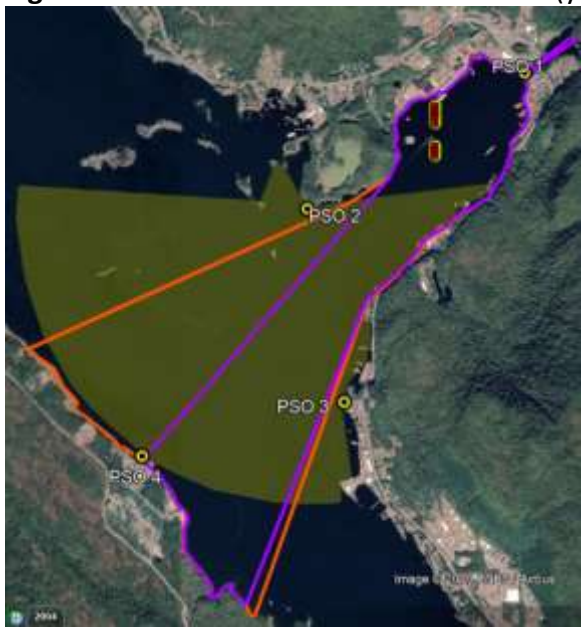


Figure 8. View of Ward Cove and Tongass Narrows from PSO Station 3 above Murphy's Seaplane Base

Figure 9. PSO Station 3 Observation Area (yellow shaded area) **in Relation to the Action Area** (orange and purple lines)

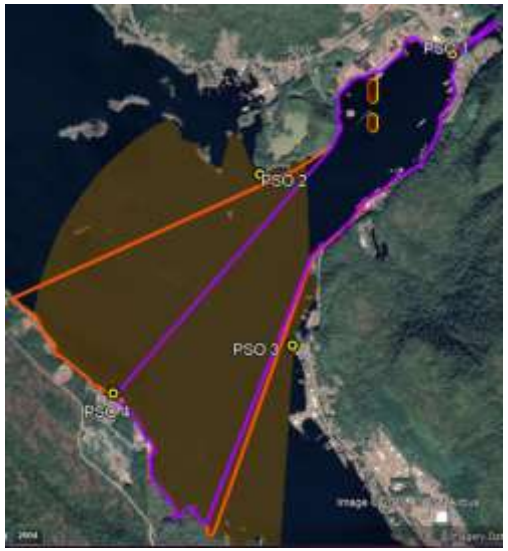


Figure 10. View of Ward Cove and Tongass Narrows showing PSO Station 4 at the Ketchikan Gateway Borough Dock on Gravina Island

Figure 11. PSO Station 4 Observation Area (blue shaded area) **in Relation to the Action Area** (orange and purple lines)

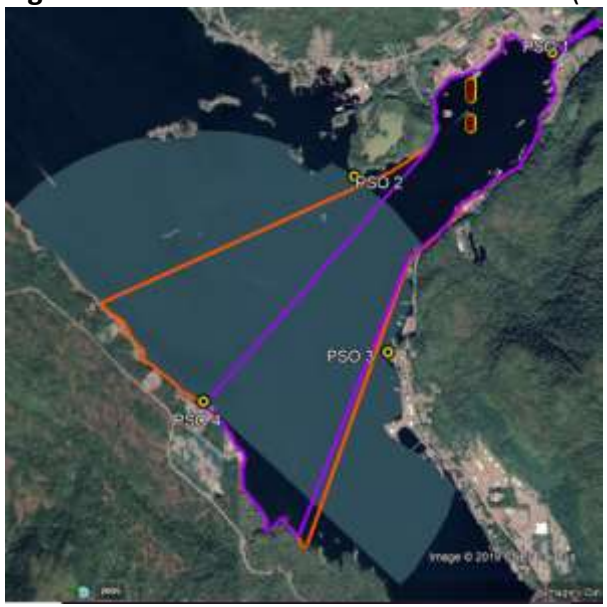
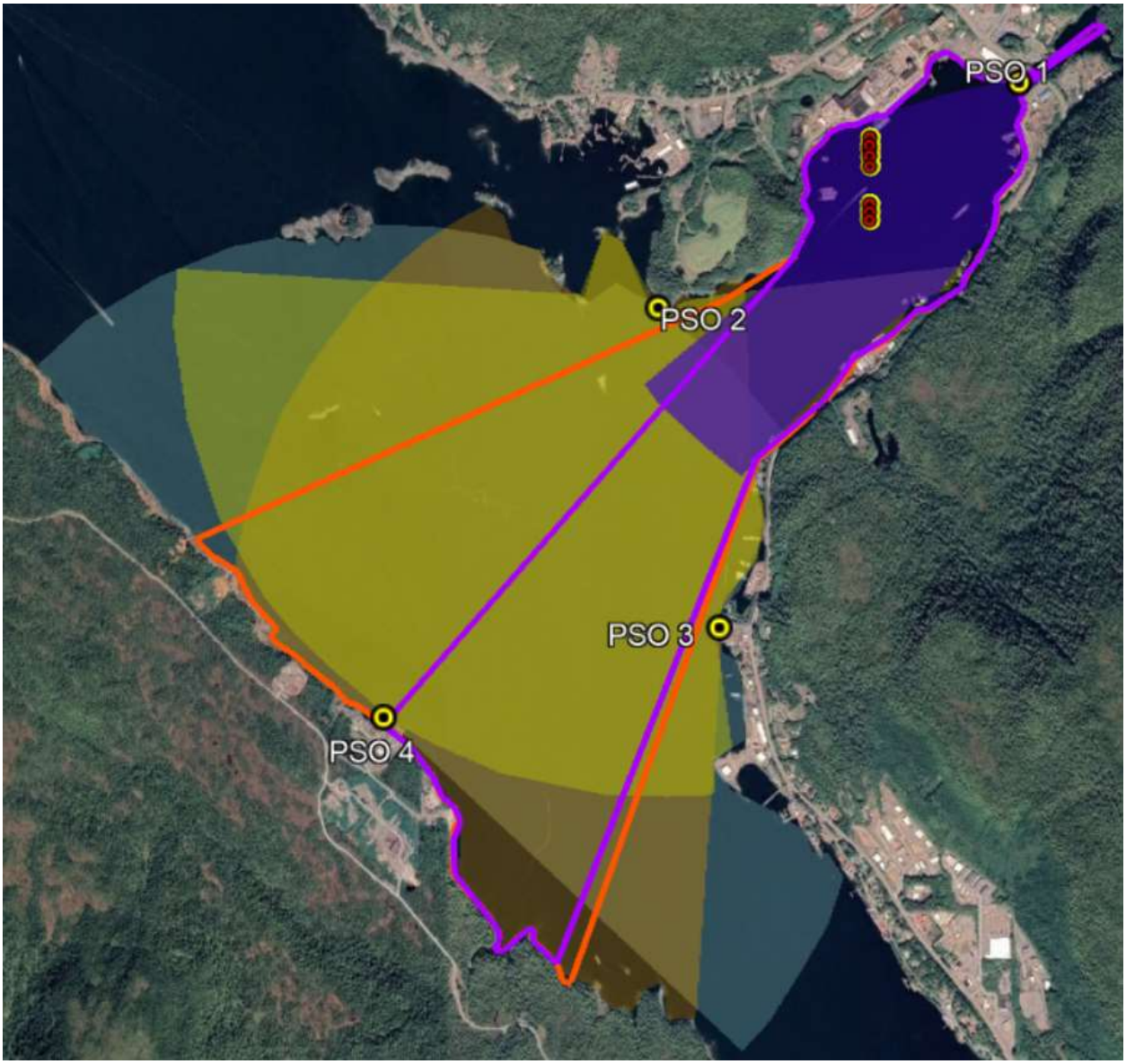


Figure 12. All Ward Cove Cruise Ship Protected Species Observer Stations' Observation Areas (shaded areas) **in Relation to the Action Area** (orange and purple lines)



6 MITIGATION MEASURES

In order to prevent impacts to marine mammals, the contractor will implement the following mitigation measures during pile driving activities.

6.1 General Conditions

- To minimize noise during impact pile driving, pile caps (pile softening material) will be used. Much of the noise generated during pile installation comes from contact between the pile being driven and the steel template used to hold the pile in place. The contractor will use high-density polyethylene or ultra-high-molecular-weight polyethylene softening material on all templates to eliminate steel on steel noise generation.

- To minimize impact to marine mammals, a "soft start" technique will be used when impact pile driving with an initial set of three strikes from the impact hammer at 40 percent energy, followed by a one-minute waiting period, then two subsequent 3-strike sets.

6.2 Visual Monitoring by PSOs

6.2.1 General requirements – visual monitoring

- Power Systems & Supplies of Alaska's contractor, through the use of NMFS-approved PSOs, will monitor for the presence and behavior of marine mammals prior to, during, and after all pile driving and removal.

- All work will be performed during daylight hours to allow for visual monitoring. Pile driving activities will not be conducted when weather conditions or darkness do not allow for observation of all waters within the shutdown zones.

- If an environmental factor, water conditions, or sea state restricts the observers' ability to make observations within the marine mammal shutdown zone, pile driving activities will cease. Pile driving activities will not be initiated or continue until the entire largest shutdown zone for the activity is visible.

- To aid in observing, determining the location of, and communicating the presence of protected species within the action area, PSOs will have the following supplies:
    - binoculars
    - range finder
    - GPS
    - compass
    - two-way radio communication with construction foreman/superintendent
    - log book to record all activities that may be submitted to agencies (NMFS, USACE) upon request

- Power Systems & Supplies of Alaska's contractor will conduct briefings between construction supervisors and crews, the marine mammal monitoring team, and Power Systems & Supplies of Alaska staff prior to the start of all pile driving activities and when

new personnel join the work, in order to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.

- Each day prior to commencing pile driving activities, the lead PSO will conduct a radio check with the construction foreman or superintendent to confirm the activities and zones to be monitored that day. The construction foreman and lead PSO will maintain radio communications throughout the day so that the PSOs may be alerted to any changes in the planned construction activities and zones to be monitored.

- On-shift PSOs will have no other primary duties than to watch for and report on events related to marine mammals during monitoring periods.

- PSOs will work in shifts lasting no longer than 4 hours with at least a 1-hour break between shifts, and will not perform duties as a PSO for more than 12 hours in a 24-hour period (to reduce PSO fatigue).

- Pre-activity monitoring: PSOs will scan for the presence of marine mammals for 30 minutes before any pile driving activities take place for the day or if more than 30 minutes has elapsed in absence of pile activity.
    - If the shutdown zone has been observed to be clear of marine mammals for 30 minutes, pile driving activities may commence.
    - If any marine mammals are present within a shutdown zone, pile driving activities will not begin until the animal(s) has left the shutdown zone or has not been observed in the shutdown zone for 15 minutes.

- For all pile driving activities and in-water heavy machinery work, Power Systems & Supplies of Alaska's contractor will implement the appropriate shutdown zone (Table 2) around the pile or work zone. If a marine mammal approaches the shutdown zone, such operations will cease.

- For in-water heavy machinery and construction work other than pile driving (e.g., barge movements, pile positioning, dead-pulling, and sound attenuation), a minimum 10 meter shutdown zone will be implemented. If a marine mammal comes within 10 meters of such operations, operations will cease and vessels will reduce speed to the minimum level required to maintain steerage and safe working conditions.

- After a shutdown occurs, pile driving activities will only begin after the animal is observed leaving the shutdown zone or has not been observed for 15 minutes after the commencement of the shutdown.

- If waters exceed a sea state that restricts the observers' ability to make observations within the marine mammal shutdown zone, pile driving activities will cease. Pile driving

activities will not be initiated or continue until the entire largest shutdown zone for the activity is visible.

- Throughout all pile driving activity, the PSOs will continuously scan the shutdown zones to monitor for the presence or approach marine mammals.
    - If any marine mammals enter, or appear likely to enter, their respective shutdown zones during pile driving activities, all pile driving activities will cease immediately. Pile driving activities may resume when the animal(s) has been observed leaving the area on its own accord. If the animal(s) is not observed leaving the area, pile-driving activity may begin 15 minutes (pinnipeds) and 30 minutes (cetaceans) after the animal is last observed in the area.

- Post-construction monitoring will be conducted for 30 minutes beyond the cessation of pile driving activities at the end of the day.

6.2.2 Number and location of PSOs

Four PSOs will work from monitoring stations that have been selected to provide an unobstructed view of all water within the shutdown zones (Figure 3).

- Four (4) PSOs will be employed during all pile driving activities. One PSO will be posted at each station listed below (Figure 3):
    - PSO #1: stationed near the site of pile driving (Figure 4);
    - PSO #2: stationed at the point on the north side of Ward Cove (near "The Cross") (Figure 5);
    - PSO #3: stationed at the pull-off of North Tongass Highway above Murphy's Seaplane Base (Figure 6);
    - PSO #4: stationed at the Ketchikan Gateway Borough Dock on Gravina Island across Tongass Narrows from Ward Cove (Figure 7).

6.2.3 PSO Qualifications

Power Systems & Supplies of Alaska and their contractor will adhere to the following conditions when selecting PSOs:

- Independent PSOs will be used (i.e., not construction personnel).
- Power Systems & Supplies of Alaska will submit the curriculum vitae (CV) of all observers to NMFS OPR (name to be determined) prior to the PSOs starting work.
- At least one PSO must have prior experience working as a marine mammal observer during construction activities.
- Other PSOs may substitute education (degree in biological science or related field) or training for experience.
- One observer will be designated as lead observer or monitoring coordinator. The lead observer will have prior experience working as an observer.
- Power Systems & Supplies of Alaska and their contractor will ensure that observers have the following additional qualifications:

- Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;
- Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience);
- Experience or training in the field identification of marine mammals, including the identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times and reasons for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior;
- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary; and
- Sufficient training, orientation, or experience with the construction operations to provide for personal safety during observations.

6.3 Reporting

6.3.1 Notification of intent to commence construction

Power Systems & Supplies of Alaska will inform NMFS OPR and the NMFS Alaska Region Protected Resources Division (names to be determined) 10 days prior to commencing construction activities.

6.3.2 Daily activity logs

For each day of construction activity that requires a PSO, the following information will be recorded in a log provided by Power Systems & Supplies of Alaska:

1. Date and time that each monitoring period[2] begins and ends;

2. Prevailing environmental conditions in each monitoring period (e.g., wind speed, percent cloud cover, visibility, sea state, tide state);

3. Construction activities occurring during each monitoring period, including how many and what size of piles were driven; and

4. Indication of whether marine mammals were sighted. For each marine mammal sighting, the PSO will complete a "Marine Mammal Sighting Form" as described below, and shown in Appendix A.

[2] There may be several monitoring periods within a day. If environmental conditions change throughout the day, the PSO should record a new monitoring period to reflect those changes. A new monitoring period will also begin after each break in construction activity.

6.3.3 Marine Mammal Sighting Form

Each marine mammal sighting will be recorded on a "Marine Mammal Sighting Form." The PSO will record the following information:

- Species, numbers, and, if possible, sex and age class of marine mammals;
- Description of any observable marine mammal behavior patterns, including bearing and direction of travel and distance from pile driving activity;
- Location and distance from pile driving activities to marine mammals and distance from the marine mammals to the observation point;
- Time and description of most recent project activity prior to marine mammal observation;
- Environmental conditions as they existed during each sighting event, including, but not limited to: Beaufort sea state, weather conditions, visibility (km), lighting conditions;
- Description of implementation of mitigation measures, if required, within each monitoring period (e.g., shutdown or delay);
- Other human activity in the area within each monitoring period.

6.3.4 Interim monthly reports

During construction, Power Systems & Supplies of Alaska will submit brief, monthly reports to the NMFS Alaska Region Protected Resources Division that summarize PSO observations and recorded unauthorized takes, if they occur. The monthly reports will be submitted by email to a NMFS representative (to be named).

The reporting period for each monthly PSO report will be the entire calendar month, and reports will be submitted by close of business on the fifth working day of the month following the end of the reporting period.

6.3.5 Final report

Power Systems & Supplies of Alaska will submit a draft final report by email to NMFS OPR (name to be determined) and NMFS AKR Protected Resources Division (name to be determined) not later than 90 days following the end of construction activities. Power Systems & Supplies of Alaska will provide a final report within 30 days following resolution of NMFS's comments on the draft report. If no comments are received from NMFS within 30 days, the draft final report will be considered the final report.

The final reports will contain, at minimum, the following information:

- Summary of construction activities, including beginning and completion dates;
- Description of any deviation from initial proposal in pile numbers, pile types, average driving times, etc.;
- Table summarizing all marine mammal sightings during the construction period including:
  a. dates, times, species, number, location, and behavior of any observed ESA-listed marine mammals, including all observed humpback whales and Steller sea lions;
  b. daily average number of individuals of each species (differentiated by month as appropriate) observed and estimated as taken, if appropriate;
- Number of shut-downs throughout all monitoring activities;

- Table summarizing any incidents resulting in unauthorized take of ESA-listed species;
- Brief description of any impediments to obtaining reliable observations during construction period;
- Description of any impediments to complying with these mitigation measures; and
- Appendices containing all PSO daily logs and marine mammal sighting forms.

6.3.6 Reporting Injured or Dead Marine Mammals

If it is clear that project activity has caused the take of any marine mammal, Power Systems & Supplies of Alaska's contractor will immediately cease the specified activities and report the incident to NMFS OPR, the NMFS Alaska Region Protected Resources Division, and the NOAA Fisheries statewide 24-hour Stranding Hotline (877) 925-7773.

The report must include the following:

- Time and date of the incident;
- Description of the incident;
- Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility);
- Description of all marine mammal observations in the 24 hours preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and;
- Photographs or video footage of the animal(s) (if available).

Activities will not resume until NMFS is able to review the circumstances of the unauthorized take. NMFS would work with Power Systems & Supplies of Alaska and their contractor to determine what measures are necessary to minimize the likelihood of further unauthorized take and ensure ESA and MMPA compliance. Power Systems & Supplies of Alaska's contractor will not resume their activities until notified by NMFS.

In the event that Power Systems & Supplies of Alaska or their contractor discovers an injured or dead marine mammal and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the IHA (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), Power Systems & Supplies of Alaska will report the incident to the NMFS OPR and the NMFS Alaska Regional Stranding Coordinator or Hotline within 24 hours of the discovery. The report will include the same information identified in the paragraph above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with Power Systems & Supplies of Alaska to determine whether additional mitigation measures or modifications to the activities are appropriate.

6.4 Strike Avoidance

Vessels will adhere to the Alaska Humpback Whale Approach Regulations when transiting to and from the project site (see 50 CFR §§ 216.18, 223.214, and 224.103(b)). These regulations require that all vessels:

- Not approach within 100 yards of a humpback whale, or cause a vessel or other object to approach within 100 yards of a humpback whale,
- Not place vessel in the path of oncoming humpback whales causing them to surface within 100 yards of vessel,
- Not disrupt the normal behavior or prior activity of a whale, and
- Operate at a slow, safe speed when near a humpback whale (safe speed is defined in regulation (see 33 CFR § 83.06)).

Vessels will also follow the NMFS Marine Mammal Code of Conduct for other marine mammal species, which recommend maintaining a minimum distance of 100 yards; not encircling, or trapping marine mammals between boats, or boats and shore; and putting engines in neutral if approached by a whale or other marine mammal to allow the animals(s) to pass.

Appendix A.

Marine Mammal Sighting Forms

MARINE MAMMAL OBSERVATION RECORD

Project Name: ____________________

Monitoring Location: ____________________

Date: ____________________

Time Effort Initiated: ____________________

Time Effort Completed: ____________________

Page ________ of ________

Time	Visibility	Glare	Weather Condition	Wave Height	BSS	Wind	Swell
:	B – P – M – G – E	%	S – PC – L – R – F – OC – SN – HR	Lt/Mod/Hvy		N S E W	N S E W
:	B – P – M – G – E	%	S – PC – L – R – F – OC – SN – HR	Lt/Mod/Hvy		N S E W	N S E W
:	B – P – M – G – E	%	S – PC – L – R – F – OC – SN – HR	Lt/Mod/Hvy		N S E W	N S E W
:	B – P – M – G – E	%	S – PC – L – R – F – OC – SN – HR	Lt/Mod/Hvy		N S E W	N S E W
:	B – P – M – G – E	%	S – PC – L – R – F – OC – SN – HR	Lt/Mod/Hvy		N S E W	N S E W
:	B – P – M – G – E	%	S – PC – L – R – F – OC – SN – HR	Lt/Mod/Hvy		N S E W	N S E W

Event Code	Sight # (1 or 1.1 if re-sight)	Time/Dur (Start/End time if cont.)	WP/ Grid #/ DIR of travel	Zone/ Radius/ Impact Pile #?	Obs.	Sighting Cue	Species	Group Size	Behavior Code (see code sheet)	Construction Type	Mitigation Type	Exposure (Y/N)	Behavior Change/ Response to Activity/Comments/Human Activity/Vessel Hull # or Name/ Visibility Notes
E ON PRE/POST CON S M OR E OFF		: :	____ Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		: :	____ Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		: :	____ Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		: :	____ Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		: :	____ Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		: :	____ Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		: :	____ Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		: :	____ Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		

Marine Mammal Observation Record – Sighting Codes

Behavior Codes

Code	Behavior	Definition
BR	Breaching	Leaps clear of water
CD	Change Direction	Suddenly changes direction of travel
CH	Chuff	Makes loud, forceful exhalation of air at surface
DI	Dive	Forward dives below surface
DE	Dead	Shows decomposition or is confirmed as dead by investigation
DS	Disorientation	An individual displaying multiple behaviors that have no clear direction or purpose
FI	Fight	Agonistic interactions between two or more individuals
FO	Foraging	Confirmed by food seen in mouth
MI	Milling	Moving slowly at surface, changing direction often, not moving in any particular direction
PL	Play	Behavior that does not seem to be directed towards a particular goal; may involve one, two or more individuals
PO	Porpoising	Moving rapidly with body breaking surface of water
SL	Slap	Vigorously slaps surface of water with body, flippers, tail etc.
SP	Spyhopping	Rises vertically in the water to "look" above the water
SW	Swimming	General progress in a direction. Note general direction of travel when last seen [Example: "SW (N)" for swimming north]
TR	Traveling	Traveling in an obvious direction. Note direction of travel when last seen [Example: "TR (N)" for traveling north]
UN	Unknown	Behavior of animal undetermined, does not fit into another behavior
AWA	Approach Work	
LWA	Leave Work Area	
Pinniped only		
EW	Enter Water (from haul out)	Enters water from a haul-out for no obvious reason
FL	Flush (from haul out)	Enters water in response to disturbance
HO	Haul out (from water)	Hauls out on land
RE	Resting	Resting onshore or on surface of water
LO	Look	Is upright in water "looking" in several directions or at a single focus
SI	Sink	Sinks out of sight below surface without obvious effort (usually from an upright position)
VO	Vocalizing	Animal emits barks, squeals, etc.
Cetacean only		
LG	Logging	Resting on surface of water with no obvious signs of movement

Sea State and Wave Height: Use Beaufort Sea State Scale for Sea State. This refers to the surface layer and whether it is glassy in appearance or full of white caps. In the open ocean, it also considers the wave height or swell, but in inland waters the wave height (swells) may never reach the levels that correspond to the correct surface white cap number. Therefore, include wave height for clarity.

Glare: Percent glare should be the total glare of observers' area of responsibility. Determine if observer coverage is covering 90 degrees or 180 degrees and document daily. Then assess total glare for that area. This will provide needed information on what percentage of the field of view was poor due to glare.

Swell Direction: Swell direction should be where the swell is coming from (S for coming from the south). If possible, record direction relative to fixed location (pier). Choose this location at beginning of monitoring project.

Wind Direction: Wind direction should also be where the wind is coming from.

Event

Code	Activity Type
E ON	Effort On
E OFF	Effort Off
PRE	Pre-Construction Watch
POST	Post-Construction Watch
CON	Construction (see types)
S	Sighting
M	Mitigation (see types)
OR	Observer Rotation

Sighting Cues

Code	Distance Visible
BL	Blow
BO	Body
BR	Breach
DF	Dorsal Fin
SA	Surface Activity
OTHR	Other

Marine Mammal Species

Code	Marine Mammal Species
HSEA	Harbor Seal
STSL	Steller Sea Lion
HPBK	Humpback Whale
HAPO	Harbor Porpoise
DAPO	Dall's Porpoise
MINK	Minke Whale
ORCA	Killer Whale

Construction Type

Code	Activity Type
V	Vibratory Pile Driving
I	Impact Pile Driving
ST	Stabbing
DR	Drilling
OWC	Over-Water Construction
NOWC	No Over-Water Construction
NONE	No Construction

Mitigation Codes

Code	Activity Type
SS	Soft Start
BC	Bubble Curtain
DE	Delay onset of In-Water Work
SD	Shut down In-Water Work

Visibility

Code	Distance Visible
B	Bad (<0.5km)
P	Poor (0.5 – 0.9km)
M	Moderate (0.9 – 3km)
G	Good (3 - 10km)
E	Excellent (>10km)

Weather Conditions

Code	Weather Condition
S	Sunny
PC	Partly Cloudy
L	Light Rain
R	Steady Rain
F	Fog
OC	Overcast
SN	Snow
HR	Heavy Rain

Wave Height

Code	Wave Height
Light	0 – 3 ft
Moderate	4 – 6 ft
Heavy	>6 ft

Essential Fish Habitat Assessment

Ward Cove Cruise Ship Dock Project

Ward Cove, Revillagigedo Island, Alaska

December 2019

Prepared for:
Power Systems & Supplies of Alaska and
Ward Cove Dock Group, LLC.
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FIGURES

1 INTRODUCTION

Power Systems & Supplies of Alaska is proposing to construct a cruise ship dock in Ward Cove approximately eight kilometers (five miles) north of downtown Ketchikan, Alaska. The new dock would allow cruise ships to safely transit Tongass Narrows and provide them safe harbor in Ward Cove while relieving vessel, pedestrian, and vehicle congestion in downtown Ketchikan. Construction, which includes the installation of piles to support a new 500-foot by 70-foot floating pontoon dock, mooring structures, and a shore-access transfer span and trestle, would begin in December 2019 and be completed in May 2020. No fill, dredging, or blasting is proposed as part of this project.

Historically, Ward Cove has supported the Ketchikan Pulp Mill, Co. from 1954 until its closure in 1997, a sawmill, and fish processing plant (Kiffer 2017). Since the closure of the pulp mill the Environmental Protection Agency (EPA) has completed sediment cleanup of the area after years of mill effluent being dumped into the cove (EPA 2000). Ward Cove is now being redeveloped into an industrial park and the proposed cruise ship dock would be installed adjacent to decommissioned structures associated with the pulp mill.

This assessment of Essential Fish Habitat (EFH) for the Ward Cove Cruise Ship Dock Project is being provided in compliance with The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104- 267). The 1996 amendment established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan (FMP). Section 305(b)(2) of the Magnuson-Stevens Act requires Federal action agencies to consult with NOAA's National Marine Fisheries Service (NMFS) on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH.

The proposed cruise ship dock in Ward Cove is located within an area designated as EFH and the below assessment satisfies all EFH consultation requirements.

2 PROJECT PURPOSE

The purpose of this project is to construct a dock that accommodates larger cruise ships and their passengers outside of downtown Ketchikan. This project is needed to improve safe transit through Tongass Narrows, provide safe harbor for large cruise ships, and relieve existing and future vessel, pedestrian, and vehicle congestion in the Port of Ketchikan and downtown Ketchikan.

Ketchikan is one of the main ports-of-call for cruise ships in Alaska (Moffatt & Nichol/ LandDesign 2016, City of Ketchikan Ports & Harbors 2019). Currently up to six ships visit Ketchikan daily between May and September, and this number is expected to increase. According to projections from the Cruise Lines International Association (CLIA), cruise ship tourism is estimated to increase by about 16 percent in 2019 over 2018 numbers.

Not only will more ships land in Ketchikan, the ships will be larger. The "Very Large Cruise Ships" (VLCS, also referred to as Neo Panamax, mega cruise ships, and megaships), which carry 4,000-5,000 passengers, began visiting Alaska in 2019 and carry up to twice as many passengers as other ships. According to a January 2019 presentation to the Ketchikan City Council, a fifth berth may be needed to accommodate the future demand and the community needs to evaluate its capacity to handle the future load.

All of the cruise ships visiting Ketchikan currently land downtown at the Port of Ketchikan in Tongass Narrows. With up to six ships landing a day, this causes congestion in the Port and in Tongass Narrows. To dock at the busy there, cruise ships must transit and maneuver very slowly in a very busy section of Tongass Narrows. These ships can be difficult to maneuver at slow speeds making transiting in the Narrows difficult. The Southeast Alaska Pilots Association conducted research relevant to the VLCS operational guidelines for Southeast Alaska. Their recommendations to Captain White of the Coast Guard Sector Juneau highlight vessel congestion in Tongass Narrows and recommend fewer large vessels in Port area.

On a heavy ship day, Ketchikan can host more than 15,000 visitors in a town of approximately 8,300 residents. As the ships get larger and accommodate more passengers, that may increase to 20,000 visitors in a day. All of the cruise ships visiting Ketchikan currently land downtown. When the passengers disembark, they often head out for excursions or walk around downtown. There is considerable vessel, pedestrian, and vehicle congestion in downtown Ketchikan during periods when cruise ships are docked.

3 PROPOSED ACTION

3.1 PROJECT LOCATION

The proposed cruise ship dock is located in Ward Cove, located on the north side of Tongass Narrows, approximately eight kilometers (five miles) north of Ketchikan, in Southeast Alaska; Township 74S, Range 90E, Sections 33 and 34, Copper River Meridian, USGS Quadrangle Juneau A5 NE; latitude 55.4037 and longitude -131.7316 (Figure 1-3). Tongass Narrows are part of Alaska's Inside Passage, a route for ships through Southeast Alaska's network of islands.

Figure 1. Ward Cove Cruise Ship Dock Project Location

Figure 2.Location of Proposed Cruise Ship Dock

Figure 3. Photo of Project Site (Photo Credit: Ward Cove Group 2013)

3.2 CONSTRUCTION DETAILS

The proposed project would include the installation of piles to support a new 500-foot by 70-foot floating pontoon dock, mooring structures, and shore-access transfer span and trestle (Table 1-2 and Figure 4). The project would:

- Install 48 temporary 30-inch-diameter steel piles as templates to guide proper installation of permanent piles (these temporary piles would be removed prior to project completion);
- Install 14 permanent 30-inch-diameter piles, 20 permanent 36-inch-diameter piles, and 20 permanent 48-inch diameter piles to support a new 500-foot by 70-foot floating pontoon dock mooring structures, catwalks, and shore-access transfer and 450-foot by 20-foot trestle (Table 1-2 and Figure 4)
- Install dock components such as bull rail, floating fenders, mooring cleats, vehicle driveway, curb, passenger walkway, hand rail, and mast lights. (Note: these components would be installed out of the water.)

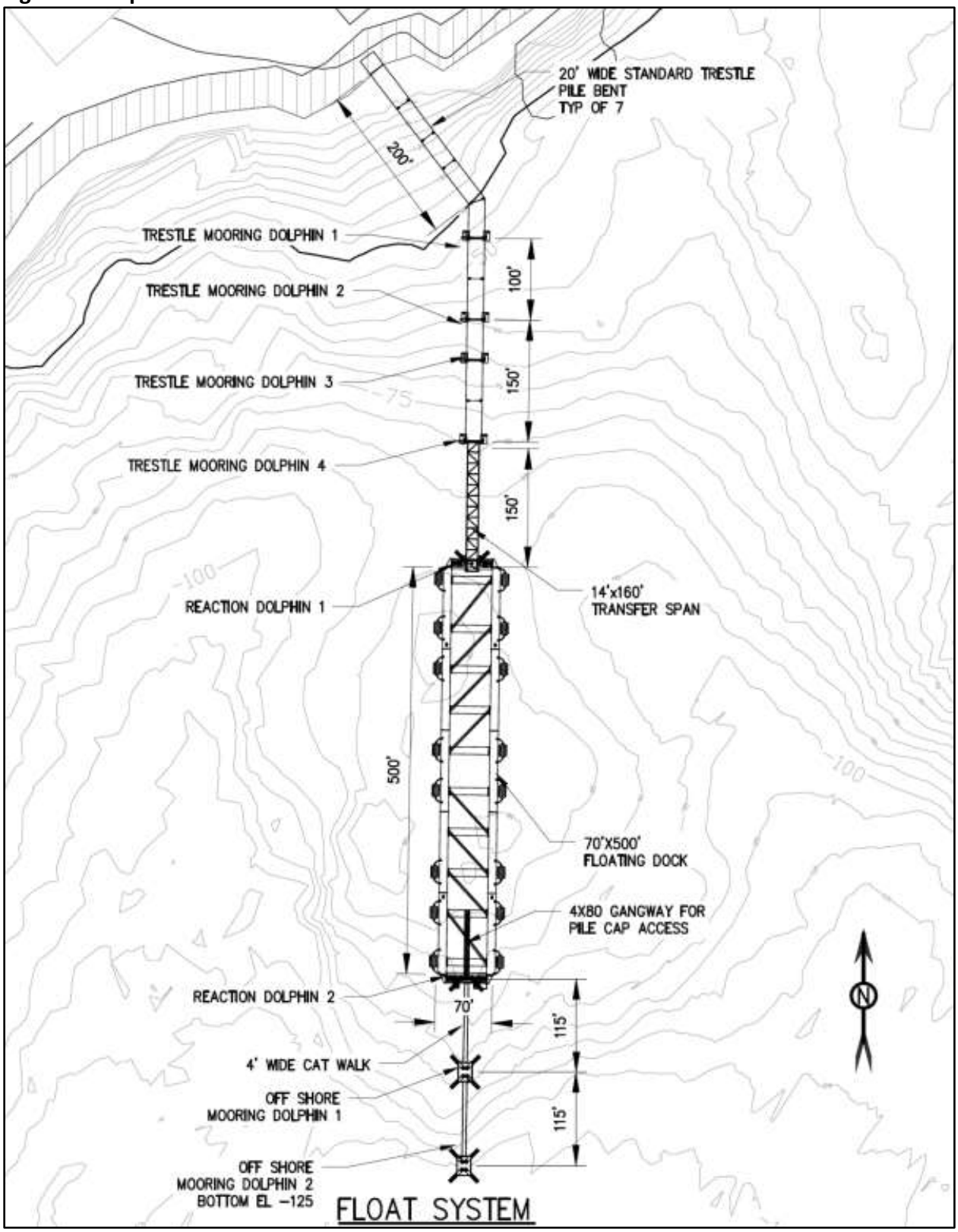
Table 1. Ward Cove Construction Components

Construction Component	Material	Dimensions (feet)	Distance Above Mean High Water (feet)
Trestle	Treated Timber Decking (slated)	450 x 20	25
Transfer Span	Fiberglass Decking (slated)	16 x 14	0-25
Floating Dock	Painted Steel Pontoons with Treated Timber Decking (slated)	500 x 70	32
Catwalks (x2)	Fiberglass Decking (slated)	115 x 4	29
Piles	Galvanized Steel	See Table 2	N/A

Table 2. Ward Cove Cruise Ship Dock Pile Installation and Removal Summary

Description	Project Component				
	Temporary Pile Installation	Temporary Pile Removal	Permanent Pile Installation	Permanent Pile Installation	Permanent Pile Installation
Diameter of Steel Pile (inches)	30	30	30	36	48
# of Piles	48	48	14	20	20
Vibratory Pile Driving					
Total Quantity	48	48	20	15	20
Max # Piles Vibrated per Day	4	4	4	2	2
Vibratory Time per Pile	10 min	10 min	10 min	30 min	30 min
Vibratory Time per Day	40 min	40 min	40 min	60 min	60 min
Number of Days (48 days)	12	12	4	10	10
Vibratory Time Total (38 hours 20 min)	8 hours	8 hours	2.33 hours	10 hours	10 hours
Impact Pile Driving					
Total Quantity	0	0	14	20	20
Max # Piles Impacted per Day	0	0	2	2	2
# of Strikes per Pile	0	0	40	100	100
Impact Time per Pile	0	0	1 min	2.5 min	2.5 min
Impact Time per Day	0	0	2 min	5	5 min
Number of Days (27 days)			7	10	10
Impact Time Total (1 hour 54 minutes)	0	0	14 min	50 min	50 min
Rock Anchor Installation (Drilled Shaft)					
Total Quantity	0	0	0	20	20
Anchor Diameter	--	--	--	33”	33”
Max # Piles Anchored per Day	0	0	0	2	1
Anchor Time per Pile	0	0	0	4 hours	5 hours
Anchor Time per Day	0	0	0	8 hours	5 hours
Number of Days (30 days)				10 days	20 days
Anchor Time Total (180 hours)	0	0	0	80 hours	100 hours

Figure 4. Proposed Ward Cove Dock



3.2.1 Pile Installation Equipment

The following pile installation equipment is expected to be used:

- Vibratory Hammer: ICE 44B/Static weight 12,250 pounds
- Diesel Impact Hammer: Delmag D46/Max Energy 107,280 feet-pounds
- Drilled shaft drill: Holte 100,000 feet-pounds top drive with down-the-hole hammer and bit

3.2.2 Pile Installation Methods

Installation and Removal of Temporary (Template) Piles

Temporary 30-inch-diameter piles would be installed and removed using a vibratory hammer.

Installation of Permanent Piles

The permanent 30-inch-diameter trestle piles would be installed through sand and gravel with a vibratory hammer and impact hammer. The permanent 36-inch and 48-inch-diameter piles would be driven through sand and gravel with a vibratory hammer and then impact driven into bedrock. After being impacted, the pile would be rock anchored. To rock anchor the pile a down-the-hole hammer with a 33-inch-diameter bit would be used to drill a shaft into the bedrock. The drill bit will be removed and the shaft will be filled with vertical reinforcement (a rebar cage) in concrete to secure the pile. The depth of the shaft will be determined by a geotechnical engineer prior to construction. During anchor drilling the pile is not touched by the drill and no steel-on-steel hammer sound is generated.

3.2.3 Construction Vessels

The following vessels are expected to be used to support construction:

- One material barge (approximately 250 ft by 76 ft x 15.5 ft) to transport materials from Washington to the project site and to be used onsite as a staging area during construction.
- One construction barge (crane Barge 280 ft by 76 ft by 16 ft) to transport materials from Washington to the project site and to be used onsite to support construction.
- 1 skiff (25-foot skiff with a 125–250 horsepower outboard motor) transported to the project site on the material barge or acquired locally in Ketchikan to support construction activities.
- 1 skiff (25-35-foot skiff powered with a 35-50 horsepower outboard motor) transported to the project site on the material barge or acquired locally in Ketchikan to support PSO efforts.

3.2.4 Construction Sequence

In-water construction of the cruise ship dock would begin with installation of an approximately 650-foot-long trestle. Once the trestle is constructed, dolphins will be constructed. Trestle and dolphin construction will use the following sequence:

1) Vibrate 32 temporary 30-inch-diameter piles for the trestle, and 16 temporary 30-inch-diameter piles for the dolphins, a minimum of ten feet into overburden to create a template to guide installation of permanent piles.
2) Weld a frame around the temporary piles.
3) Within the frame, vibrate and impact permanent 30-inch-diameter piles into place for the trestle; or vibrate, impact, and rock anchor permanent 36-inch or 48-inch-diameter piles into place for the dolphins.
4) Remove the frame and temporary piles.
5) Perform this sequence at the seven trestle bent locations, working farther from the shoreline each sequence. Once the trestle is completed perform this sequence at the eight dolphin locations, completing one dolphin before beginning another.

After all piles are installed, construction will proceed with installation of the floating dock, transfer span, trestle, mechanical systems, and other above-water components like the vehicle driveway, passenger walkway, and mast lights.

Please see Table 2 for a conservative estimate of the amount of time required for pile installation and removal.

3.2.5 Other In-water Construction and Heavy Machinery Activities

In addition to the activities described above, the proposed action will involve other in-water construction and heavy machinery activities. Examples of other types of activities include using standard barges, tug boats, or clamshell equipment to place or remove material (including submerged logs); and positioning piles on the substrate via a crane (i.e., “stabbing the pile”).

4 AFFECTED ESSENTIAL FISH HABITAT

EFH is defined by the Magnuson-Stevens Fishery Conservation and Management Act as those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity. Section 305(b)(2) of the Magnuson-Stevens Act requires Federal action agencies to consult with National Oceanic and Atmospheric Administration (NOAA) NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH.

4.1 AFFECTED HABITAT

Tongass Narrows and Ward Cove are designated as EFH under the Magnuson Stevens Fisheries and Conservation Management Act for all 5 species of Pacific salmon and 15 species of groundfish (NMFS 2019, NOAA 2019). Alaska Department of Fish and Game (ADFG) and NMFS have also identified Pacific herring and Pacific halibut as important in the project area (HDR 2017). Additionally, ENSR Consulting and Engineering listed forty-one (41) fish species within the vicinity of Ward Cove and other sources have identified that as many as 75 non-salmonid species may occur within Ward Cove (EPA 2003). EFH listings are summarized in Tables 4 and 5.

In addition to the marine habitat in Tongass Narrows and Ward Cove, several fish streams listed as anadromous by ADFG are located in the project action area. ADFG's Alaska Fish Resource Monitor mapper identifies waterbodies in Alaska that are important to the spawning, rearing, or migration of anadromous fish (ADFG 2019). Table 3 identifies the anadromous waters near the project action area.

4.1.1 Tongass Narrows and Ward Cove

Tongass Narrows is a U-shaped glacier-carved fjord that varies between 300 meters (0.2 mile) to 2.4 kilometers (1.5 miles) wide and 15 meters (50 foot) to 55 meters (180 foot) deep (ADEC 2017, NOAA 2019). Water temperatures in the Narrows range from 12.7 to 16.6° centigrade (C) with an average of 15° C (ADEC 2017). Tongass Narrows is known for strong tidal currents and unusually large tidal ranges of 8 meters (25 foot) or more (Pentec 2001). The Narrows are characterized by steep bedrock or coarse gravel-cobble-boulder shoreline. Lower intertidal and shallow subtidal areas are often sandy or mixed gravel, sand, and shell with varying amounts of silt (HDR 2017). The Narrows are part of Alaska's Inside Passage, a route for ships through Southeast Alaska's network of islands.

Ward Cove is a small estuary with an area of approximately 1 square kilometer (0.4 square mile) located off the western coast of Revillagigedo Island and on the North Shore of Tongass Narrows. The Cove is approximately 1.6 kilometers long (1 mile) and 0.8 kilometers (0.5 mile) wide with depths to 60 meters (200 feet) (EPA 2015, NOAA 2019). As stated in Section 1.2.1, the cove has experienced significant industrialization as it was the site of a pulp mill, sawmill, and fish processing plant that has resulted in low dissolved oxygen levels (EPA 2003). Today the surrounding area is largely forested with pockets of industrial/commercial, residential, and recreational properties clustered along North Tongass Highway.

According to the ShoreZone Mapper (ShoreZone 2019), the shoreline at the proposed dock site in Ward Cove has the following characteristics:

- Habitat Class: protected/partially mobile/ sediment or rock sediment
- Coastal Class: cliff with gravel beach
- Biological Wave Exposure: protected

Contamination History

Ward Cove was home to a pulp mill, a sawmill, and a fish processing plant and their discharges of chemicals, pulp, and fish waste polluted the cove. The Ketchikan Pulp Company operated for 43 years, from 1954 to 1997. During that time the mill stored logs (approximately 7 billion board feet) and discharged pulp mill effluent in to the cove. This caused accumulation of bark and sunken logs on the bottom of the cove (EPA 2015). Although this discharge ceased with the mill's closure, log storage activities continued until 2001 under the operation of a sawmill and veneer mill by Gateway Forest Products, Inc., contributing additional wood residues to the cove (ADEC 2007). Wards Cove Packing Company, a seafood processing facility, discharged fish-processing waste to the cove from 1912 until its closure in 2002 (ADEC 2007).

In the early 1990s, preliminary investigations were conducted to determine the environmental effects mill discharges were having on Ward Cove. Studies show that the large quantities of organic material discharged from the pulp mill led to anaerobic conditions in the sediment and production of ammonia, sulfide, and 4-methylphenol (EPA 2015). The discharge of seafood waste caused depletion of dissolved oxygen in the deeper waters of Ward Cove (ADEC 2007).

Since then, significant remediation activities, including removing logs, dredging, and sand capping, have occurred to reduce the harmfulness of sediments to the bottom-dwelling animals and to enhance recolonization of the bottom sediments to support a healthy community of marine animals. Remediation activities were completed in 2001 (EPA 2015). As stated in the letter from EPA (May 7, 2009) approving the 2007 monitoring report:

> "As you know, sediment remedial action was performed within the 80-acre Area of Concern (AOC) in Ward Cove between October 2000 and February 2001. The sediment remedy addressed risks to benthic macroinvertebrates from three chemicals of concern (i.e., ammonia, 4-methylphenol, and sulfide). As documented in the Record of Decision (ROD; EPA 2000), EPA had determined that the contaminated sediments were not toxic to human health or to birds and mammals living in the Cove. The sediment remedial action relied largely on monitored natural recovery and enhanced natural recovery. Enhanced natural recovery using thin layer placement (TLP) with 6-12 inches of clean sand was successfully implemented at approximately 27 acres within Ward Cove. Monitored natural recovery was the remedial alternative for the remainder of the AOC. The first long-term monitoring effort occurred in Ward Cove in 2004, and the second monitoring effort occurred in 2007."

As stated in the letter from the EPA (September 19, 2019) in response to the public notice for this project:

> "Ward Cove is a small 250-acre bay on the north shore of the Tongass Narrows that was formerly home to the Ketchikan Pulp Company. In 2000, the EPA issued a Record of Decision (ROD) addressing the Marine Operable Unit (OU) at the Ketchikan Pulp Company (KPC) CERCLA Site (the Site) pursuant to CERCLA, 42 U.S.C. 9601 et seq. The 2000 ROD set forth a remedy that addressed 80 acres of contamination in Ward Cove. The remedy was intended to "reduce toxicity of surface sediments" and to "enhance recolonization of surface sediments to support a healthy marine benthic infauna community with multiple taxonomic groups" (p. 49, ROD). Of the 80-acre remedy, the ROD called for monitored natural attenuation (MNA) on approximately 53 acres, and for dredging and a thin-layer sand cap for the remaining 27 acres. Under the EPA oversight, KPC performed the remedial action construction in Ward Cove between 2000 and 2001. In May 2009, the EPA concluded that the multiple lines of evidence used to evaluate sediment quality in the Marine OU indicated that the Remedial Action Objectives had been achieved, and that the sediments supported healthy benthic communities."

The sand cap was not designed to encapsulate or contain underlying sediment. The goal of the sand cap (as detailed in 1.1 Overview of Remedy of the ROD) was to reduce toxicity of surface sediments to the benthic organisms and to provide material to enhance recolonization of the bottom sediments to support a healthy community of marine animals. According to the ROD, the selected remedy would achieve remedial action objectives (RAOs; i.e. reduce toxicity in surface sediments and enhance recolonization of sediments to support a healthy benthic community) through a combination of thin-layer capping, mounding, navigational dredging, and natural recovery.

According to the EPA's letter cited above, the RAOs have been successful. Over 10 years ago, the EPA found that the RAOs had been met and that the sediments support health benthic communities.

4.1.2 Anadromous Waterways

Sediment (bottom and suspended), water temperature, dissolved oxygen, streamflow, and debris are important factors in freshwater streams, rivers, and creeks that can successfully support salmon and trout species. The relatively young geological topography of Southeast Alaska has mass wasting and valley and stream development that are in particularly active stages. This lends to changing watersheds, but consistently suitable salmon and trout habitat (USFS 1974). In 1991, the U.S. Forest Service (USFS) completed an *Evaluation of a Stream Channel-Type System for Southeast Alaska* indicated that a majority of freshwater ways that supported fish species had gravel substrates that ranged from fine gravel and rubble to course gravel and cobble with occasional sections of large boulders. Some streams also had sand and organic muck present (USFS 1991). Table 3 lists anadromous streams that provide habitat suitable for salmon and trout species near the proposed project (Figure 5).

Table 3. Anadromous Waterways Near the Project Area

Stream Name	AWC Code	Distance from Project (km)	Species Present
Ward Creek	10150	0.7	Chum Salmon, Pink Salmon, Sockeye Salmon, Dolly Varden, and Steelhead Trout
Unnamed Stream	10145	0.7	Coho Salmon and Pink Salmon
Unnamed Creek	10490	3.5	Coho Salmon and Pink Salmon

Figure 5. Proposed Project Action Area and Locations of Anadromous Waterways

Ward Creek (AWC: 10150) and Unnamed Stream (AWC: 10145)

Ward Creek and Unnamed Stream (AWC: 10145) flow into the Northeast side of Ward Cove approximately 0.7 km from the proposed project location. Ward Creek flows from Connell Lake south to Ward Lake before emptying into Ward Cove. The creek supports Chum (present), Coho (present and rearing), Pink (present and spawning), and Sockeye Salmon (present), Steelhead Trout (present, spawning, and rearing) and Dolly Varden (present). The Unnamed Stream flows to the west of Ward Lake and supports Coho (spawning and rearing) and Pink Salmon (spawning) (ADFG 2019).

Unnamed Creek (AWC: 10490)

Unnamed Creek (AWC: 10500) is located on Gravina Island approximately 3.5 km from the proposed project location and flows directly into Tongass Narrows. The creek supports Chum (spawning), Coho (present), and Pink Salmon (present and spawning) (ADFG 2019).

Unnamed Creek (AWC: 10550)

Unnamed Creek (AWC: 10550) is located 4.0 km Northwest of the proposed project location. The creek is located on Gravina Island and flows directly into Tongass Narrows. Unnamed Creek supports Coho (present) and Pink Salmon (present) (ADFG 2019).

4.2 AFFECTED SPECIES

Based upon correspondence with NMFS and examining other marine projects in the area it was determined that all five (5) species of Pacific salmon and fifteen (15) species of groundfish have EFH in the waterways in and around the proposed project area (USACE 2017; HDR 2017). Tables 4 and 5 list each species and what life stages they are present. A description of each species is below.

Table 4. Essential Fish Habitat Salmon Species in Project Area

Salmon Species	Juvenile	Immature	Mature	Juvenile-marine	Adult-marine waters	Spawning-freshwater only
Coho Salmon				X	X	
Chum Salmon		X		X	X	
Pink Salmon				X	X	
Chinook Salmon		X	X		X	
Sockeye Salmon		X		X	X	

Table 5. Essential Fish Habitat Groundfish Species in Project Area

Ground Fish Species	Egg	Larvae	Late Juvenile	Adult	Spawning
Pacific Ocean Perch			X	X	
Yelloweye Rockfish			X	X	
Shortraker			X	X	X
Southern Rock Sole				X	
Dover Sole		X	X	X	
Flathead Sole			X	X	
Rougheye Rockfish			X	X	
Dusky Rockfish			X	X	
Walleye Pollock	X			X	
Alaska Plaice				X	
Sablefish			X	X	X
Pacific Cod			X	X	
Arrowtooth Flounder			X	X	
Sculpin spp.			X	X	
Skates spp.			X	X	

4.2.1 Species Descriptions

Salmonid Species Descriptions

Coho Salmon (*Oncorhynchus kisutch*)

The NMFS EFH mapper shows that Coho Salmon have EFH in Ward Cove and in Tongass Narrows (NMFS 2019). Coho salmon enter spawning streams from July to November, usually during periods of high runoff. The eggs hatch early in the spring, where the embryos remain in the gravel using the egg yolk until they emerge in May or June. Juvenile Coho spend one to three winters in streams and may spend up to five winters in lakes before migrating to the sea as smolt (ADF&G 2002). Coastal streams, lakes, estuaries, and tributaries to large rivers provide Coho rearing habitat. Coho juveniles may also use brackish-water estuarine areas in summer and migrate upstream to fresh water to overwinter. They spend about 16 months at sea before returning to coastal areas and entering fresh water to spawn (NPFMC 2019).

Chum Salmon (*O. keta*)

The NMFS EFH mapper shows that Chum Salmon have EFH in Ward Cove and Tongass Narrows (NMFS 2019). Returning to spawn as 2 to 7-year old, Chum Salmon spawn between June and November in gravel in streams, side-channel sloughs, and intertidal portions of streams when the tide is below the spawning grounds (NPFMC 2019). Chum Salmon fry, like Pink Salmon, do not overwinter in the streams but migrate out of the streams directly to the sea shortly after emergence (ADF&G 2002). This outmigration occurs between February and June, but most fry leave the streams during April and May. Chum salmon tend to linger and forage in the intertidal areas at the head of bays. Estuaries are important for Chum Salmon rearing during spring and summer..

Pink Salmon (*O. gorbuscha*)

The NMFS EFH mapper shows that Pink Salmon have EFH in Ward Cove and Tongass Narrows (NMFS 2019). Pink Salmon are distinguished from other Pacific salmon by having a fixed two-year life span. Because of the life span, pink salmon spawning in a particular river system in odd and even years are reproductively isolated from each other and have developed into genetically different lines (NPFMC 2019). Adult pink salmon enter spawning streams between late June and mid-October. They spawn within a few miles of the coast, and spawning within the intertidal zone or the mouth of streams is very common. Shallow riffles where flowing water breaks over coarse gravel or cobble-size rock and the downstream ends of pools are favored spawning areas. The eggs hatch in early to mid-winter and the fry swim up out of the gravel and migrate downstream into salt water by late winter or spring (ADF&G 2002).

Chinook Salmon (*O. tshawytscha*)

The NMFS EFH mapper shows that Chinook Salmon have EFH in Ward Cove and Tongass Narrows (NMFS 2019). Adult chinook salmon are found over a broad geographic range,

encompassing different ecotypes and very diverse habitats in Southeast Alaska. Chinook salmon generally spawn from mid-June to mid-August in waters ranging from a few centimeters deep to several meters deep. Eggs hatch in the late winter or early spring and juveniles typically remain in fresh water for at least one year before migrating to the ocean in the springtime (ADF&G 2002). Chinook salmon spend one to six years at sea before they return to freshwater streams to spawn (NPFMC 2019). Adults return to spawning streams from July through September (Morrow 1980).

Sockeye Salmon (*O. nerka*)
The NMFS EFH mapper shows that Sockeye Salmon have EFH in Tongass Narrows and Ward Cove (NMFS 2019). Sockeye Salmon exhibit a greater variety of life history patterns than other Pacific salmon, and are known to use lake-rearing habitats in the juvenile stages (NPFMC 2019). Sockeye Salmon generally spawn in late summer and autumn. They use a wide variety of spawning habitats such as rivers, streams, and upwelling areas along lake beaches. Eggs hatch during the winter and the young salmon move into the rearing areas. In systems with lakes, juveniles usually spend one to three years in fresh water before migrating to the ocean in the spring as smolts. However, in systems without lakes, many juveniles migrate to the ocean soon after emerging from the gravel (ADF&G 2002).

Ground Fish Species Descriptions
Pacific Ocean Perch (*Sebastes alutus*)
Pacific Ocean Perch have a wide range throughout the North Pacific. They can be found in Alaskan waters during all life stages. Adults are primarily found offshore during fall and winter months in 150 to 420 meters waters along the outer continental shelf and the upper continental slope. During the summer, adults migrate to shallower depths (150 to 300 meters). Not much is known about the early life stages of Pacific Ocean Perch; however, larvae released offshore in April and May are thought to be pelagic and drift with the current. Larvae release is thought to occur offshore, but it is suggested that small juveniles prefer rocky, high relief areas inshore and progressively move into deeper waters (NPFMC 2019).

Yelloweye Rockfish (*S. ruberrimus*)
This species is found in 18 to 550 meters of water, but most commonly occur in rocky, rugged habitat between 90 to 185 meters of water. Little is known about early life stages, but juveniles have been found in high relief areas that are abundant with underwater structures at depth of 13 meters or more. Yelloweye adults spawn in southeast Alaska between April and July with a peak occurring in May (NPFMC 2019).

Shortraker (*S. borealis*) and Rougheye Rockfish (*S. aleutianus*)
Shortraker and Rougheye Rockfish often occur together due to similar depth and habitat preferences. Both species are found in the highest abundance along the continental slope in areas of steep slopes and numerous boulders between 300 to 500 meters. Little is known about

the early life stages of each species. It is estimated that Shortraker Rockfish spawn from February to April and Rougheye Rockfish spawn December through April. The larvae from both species are pelagic and have been found in offshore waters and some Shortraker larvae have been sampled in coastal Southeast Alaskan waters. Juveniles share the same habitat as adults; however, they have been found in shallower areas (NPFMC 2019).

Southern Rock Sole (*Lepidopsetta bilineata*)
Southern Rock Soles range from Baja, California to the Gulf of Alaska and eastern Aleutian Islands. Adults spawn during the summer months within the Gulf of Alaska between 35 to 120 meters. Larvae are pelagic, but juveniles as young as one year have been sampled in benthic habitats along the continental shelf with adults (Forrester and Thompson 1969). Prior to spawning, adults migrate to shallower waters between 50 to 100 meters with sandy substrate to feed. After spawning during the summer Southern Rock Sole migrate to deeper wintering grounds (NPMFC 2019).

Dover Sole (*Microstomus pacificus*)
There is a wide spread distribution of Dover Sole in the Gulf of Alaska with presence in waters deeper than 300 meters, but more common between 100 to 200 meters during the summer (Turnock et al. 2002). Spawning occurs in deeper waters from February through May with peak spawning occurring in May (Abookire and Macewicz 2003). As Dover Sole go through life stages and reach sexual maturity, they move down the continental slope and into deeper waters (NPMFC 2019).

Flathead Sole (*Hippoglossoides elassodon*)
Adult Flathead Sole migrate between winter spawning grounds near the shelf margins and summer feeding grounds in the mid to outer continental shelf. Spawning can start as early as March and goes through June. Juveniles inhabit water shallower than 100 meters and much like adult Flathead Sole prefer sand and mud substrate (NPMFC 2019).

Dusky Rockfish (*S. variabilis*)
Much of the information that has been obtained about dusky rockfish comes from data collected during the summer months from the commercial fishery or in research surveys. Based upon this data, the Gulf of Alaska appears to be the center of abundance for Dusky Rockfish. It is presumed that spawning occurs in spring and may extend into summer. Juveniles share the same 100 to 200 meters depth preferences possibly along rocky areas of the outer continental as adults, but they have been found in shallower water during this early life stage (NPFMC 2019).

Walleye Pollock (Theragra calcogramma)
Walleye pollock is the second most abundant groundfish stock in the Gulf of Alaska and accounts for 25 to 50 percent of the catch and 20 percent of the biomass. The proposed project

is within the Gulf of Alaska stock area which extends from Southeast Alaska to the Aleutian Islands. Based upon mid-water trawler surveys, Pacific Walleyes occurs in waters less than 300 meters. Peak spawning in the Gulf of Alaska happens in late March in Shelikof Strait generally over 100 to 200 meters of water. Juveniles have a widespread distribution and have no known habitat preferences. Adult Walleye Pollock occur throughout the water column on the outer and mid-continental shelf of the Gulf of Alaska (NPFMC 2019).

Alaska Plaice (*Pleuronectes quadrituberculatus*)
Alaska Plaice are present in continental shelf waters year-round and travel seasonally through their range. A majority of Alaska Plaice have been sampled along the Alaska Peninsula and Kodiak Island, but have been found within the Gulf of Alaska. Sampling events have obtained fish from near shore waters at depths less than 100 meters. Spawning typically occurs from March to April on hard sandy ground (Zhang 1987 and NPMFC 2019).

Sablefish (*Anoplopoma fimbria*)
Most adult and late juvenile Sablefish are found in depths of 366 to 914 meters along the continental shelf, the lope, and the deep-water coastal fjords over any substrate (NPFMC 2019). Spawning occurs in late spring and larvae have been found in pelagic waters at 300 to 500 meters (McFarlane 1997).

Pacific Cod (*Gadus macrocephalus*)
Pacific Cod prefer soft substrate such as mud, sandy mud, muddy sand, or sand in deeper waters (Marrow 1980). This habitat can be found in Tongass Narrows and the species is likely to be present. Pacific Cod are concentrated along the continental shelf edge and upper slope from 100 to 200 meters of water during winter and spring before overwintering in shallower waters (<100 meters) (DiCosimo 2001). Larvae are epipelagic and most commonly found in the upper 45 meters of the water column. Juveniles can be found in nearshore waters from 60 to 150 meters deep and often use eelgrass and kelp beds (NMFS 2003).

Arrowtooth Flounder (*Atheresthes stomias*)
Arrowtooth flounder have a benthic lifestyle with distinct summer and winter grounds along the eastern Bering Sea shelf. Spawning occurs from as early as September to as late as March at depths of 100 to360 meters (NPMFC 2019; DiCosimo 2001). Pelagic (open seas) eggs and larvae inhabit all areas of the continental shelf, though predominantly inhabiting only the inner and middle shelf regions. Juveniles and adults are demersal (bottom dwelling) in gravel and muddy sand. Juveniles typically inhabit shallow areas until they are about 10 centimeters long. During winter, the flounder migrate to shelf margins and upper continental slopes to avoid cold temperatures (NPMFC 2019). This species is a likely inhabitant of Ward Cove and Tongass Narrows.

Sculpin spp. (*Cottidae*)
Sculpins are bottom-dwelling fish that live in tide pools and in shallow marine waters, but can be found in deeper waters. They can occasionally can be found in freshwater. Sculpins generally spawn in the winter; however, larvae have been found year-round. Adults and late juveniles can be found in the middle shelf regions. Sculpins are known to use a wide range of habitats, including intertidal pools and all shelf habitats, e.g., mud, sand, gravel, etc. (NPFMC 2019). Several species of sculpin have been identified in intertidal and subtidal surveys in Tongass Narrows and are likely to occur in Ward Cove.

Skates spp. (*Rajidae*)
Juvenile and adult skates can be found in the middle shelf regions and feed on bottom invertebrates and fish. Not much is known about seasonal movements and or early life stage habitat requirements. Skates are known to use a broad range of substrate types (mud, sand, gravel, and rock) and can typically be found in the lower portion of the water column (NPFMC 2019). It is probable that skates occasionally inhabit the deeper waters of Tongass Narrows and shallower waters of Ward Cove.

5 ASSESSMENT OF POTENTIAL PROJECT IMPACTS ON ESSENTIAL FISH HABITAT

In general, construction activities within the estuarine habitat and in coastal marine areas have the potential to impact EFH. The proposed activities associated with construction of the dock may adversely impact marine resources directly and indirectly through sound pollution, increased turbidity, habitat loss and/or modification. Other impacts that may occur as a result of the proposed project include the following: increase in vessel traffic, increased human access (e.g., tourism), and cumulative development of shoreline properties. Impacts as a result of each construction activity and indirect impacts are described below. Table 6 details each activity that could impact EFH and what potential adverse impacts the activity may have (NOAA 2017).

Table 6. Potential Adverse Impacts for Each Activity Associated with the Proposed Project

Activity	Potential Impacts						
	Distribution of Fish	**Behavior of Fish**	**Injuries and or mortality to Fish**	**Increase in Turbidity**	**Release of Contaminants**	**Changes in Ambient Light**	**Changes in Wave and Current Regimes**
Pile Installation	X	X	X	X			
Pile Removal	X	X	X	X	X		
Overwater Structure	X	X				X	X

5.1 PILE INSTALLATION AND REMOVAL

5.1.1 Short-Term Impacts

Sound

Pilings are a central part of the construction of marine structures. For the proposed action, galvanized steel pilings will support the trestle, the floating dock structure, and provide structures (dolphins) for mooring the large ships that will use the dock. To install and remove these piles a vibratory hammer, impact hammer, and drilled shaft drill will be used. Each piece of equipment produces sound that exceeds known thresholds for fish species (Table 7). Impact hammers produce sharp, short bursts of sound that create sound with little energy in the infrasound range that fish fail to respond to the particle motion. In comparison to impact hammers, vibratory hammers produce sound with longer duration and have more energy in the lower frequency range (Carlson et al 2001; Wursig et al 2000).

There are several methods used to remove temporary pilings from the substrate. Pilings can be removed from the substrate using a vibratory hammer or via the direct pull method. The use of the vibratory hammer will cause similar sound impacts as present during pile installation; however, the direct pull method creates little noise within the water column.

For the proposed project, an action area for fish has been determined by the area of water that will be ensonified above the acoustic threshold of 155 decibels (dB) re 1µPa (rms) for impacting; this is the area where received noise levels from pile driving could expose fish to impacts described below. The action area includes approximately 4 square kilometers in Ward Cove extending into Tongass Narrows near the community of Ketchikan in Southeast Alaska (latitude 55.4037 and longitude -131.7316; See Figure 2).

Distances were calculated using the practical spreading model in the Zone of Influence spreadsheet tool developed by NMFS. The calculated area radiates from between 8,066 meters from pile driving at the proposed cruise ship dock site for impacting.[1] However, sound will be truncated by landforms; it will radiate through Ward Cove to the shores of Revillagigedo Island and across Tongass Narrows approximately 3,600 meters to the shore of Gravina Island.

Note that impact driving would only occur for approximately 2.5 minutes each day and would only occur on 27 days (not concurrent); therefore, ensonification of the area by impact pile driving would be for a total of 2 hours over 27 days.

[1] Impact pile driving source level of 186.7 SEL/ 198.6 SPL8 is proxy from median received levels at 10 m from impact hammering of 48-inch piles for the Port of Anchorage test pile project (Austin et al. 2016, Tables 9 and 16).

Little is known about the effects of sound on juvenile and adult fish; however, current research accepted by NMFS supports that physical injury can occur when SPLs reach 206 dB re 1 µPa during a single strike and/or when the accumulated sound exposure level (SEL) from multiple strikes reaches 187 dB re 1 µPa for large fishes (≥2 grams) or 183 dB re 1 µPa for small fishes (<2 grams). There is currently not enough research to determine how sound impacts the earlier life stages of fish though it is known that smaller fish are more affected than larger fish by sound pollution (NOAA 2017).

During pile installation and removal, pile driving sound can affect the distribution and behavior of juvenile pink salmon and chum salmon. Other species of fish may change migration routes to avoid the area or leave the area entirely to find more suitable spawning grounds and habitat (NOAA 2017). SPLs of 155 dB re 1 µPa can stun small fish and make them more susceptible to predation. Physical injury to fish such as fatal damage to swim bladders in small fish and compromised swim bladders in larger fish can also result from exposure to underwater sound.

Sedimentation

Installing and removing pilings could potentially compromise the sand layer that was created as a part of the EPA clean-up effort. As piles are installed, it is expected approximately 2 cubic yards of material would come out of each trestle pile and 10 cubic yards of material will be excavated from each dolphin pile. Less than two piling will be drilled in a day to minimize the volume of sediment disturbance. About 6 cubic yards per day would be released during construction of the trestle and about 20 cubic yards per day would be released during the construction of the dolphins, for a total of 280 cubic yards for the project.

Some agencies would contend that the material coming out of the driven piles would have contamination. The release of contaminates is well studied in Ward Cove due its use as a pulp mill. In the past, these contaminates have created hypoxia, insufficient oxygen, for marine life in ward cove (EPA 2003). Contaminates and hypoxia can lead to decreased growth rates and reduced reproductive success. Some species such as juvenile Chinook Salmon have been observed avoiding areas of low dissolved oxygen. Non-salmonid species that use Ward Cove are less effected by low dissolved oxygen; however, research still suggests that there is the potential for adverse effects to occur (EPA 2003).

5.1.2 Long-term Impacts

No long-term impacts are expected from the placement of piles within the project area.

5.1.3 Indirect Impacts

Injured fish as a result of sound, increased turbidity, and the release of contaminates can have indirect impacts on other species and the local marine system as a whole. Lethal and sublethal impacts to fish, decreased visibility, and an increase in suspended particles in the water column can have indirect impacts on prey species by making them more susceptible to predation. This combined with fish potentially being deterred from the area and seeking out alternative

spawning grounds could affect future populations in the area and in-turn commercial, sport, and subsistence harvests (NOAA 2017).

5.1.4 Conservation and Mitigation Measures

Incorporating the following **pile driving** conservation measures will help to ensure that no adverse impacts would occur to EFH and EFH-managed species/species complexes and other fish and marine resources in the project area.

Sound Conservation and Mitigation Measures

- Pile installation and removal will occur at a time of year (January-May) when larval and juvenile stages of fish species with designated EFH are not present.
- Impact hammer use will be minimized. When impact hammers are used, the pile will first be driven as deep as possible with a vibratory hammer and then use the impact hammer to drive the pile to its final position. (See Table 7.)
- As possible, the impact hammer will be operated at a reduced energy setting when possible and impacted into bedrock.

Sedimentation Conservation and Measures

- All material that comes out of the top of the pile during pile driving (drill cutting discharge) will be collected on a barge and transported to a permitted upland location for disposal.
- A 50-feet deep silt curtain will surround the pile driving and temporary pile removal operation.
- Temporary piles will be removed slowly to allow sediment to slough off at or near the mudline.
- A benthic sediment and water quality field study, reviewed by the Alaska Department of Environmental Conservation (ADEC), will be conducted prior to and following cruise ship dock construction.
- Following sampling protocols previously developed for the EPA during clean up and monitoring of the site, a water quality and sediment sampling program would occur. The sampling program would be reviewed and approved by the ADEC. The sampling program would include:
    - Prior to initiating construction and immediately following construction:
        - Determining the depth of the sediment at the site.
        - Collecting and analyzing sediment samples from within and near dock project footprint for contaminates.
        - Collecting water samples and determining dissolved oxygen and O_2.

- During construction, collecting water samples and determining dissolved oxygen and O_2.

5.2 OVERWATER STRUCTURES

The trestle, transfer spans, floating dock, and catwalks are designed to allow some ambient light to flow through to the water surface, but adverse impacts are still likely to occur as a result of installing the overwater structures. Table 1 and Section 2.2 provides additional information about each construction component.

5.2.1 Short Term Impacts

No short-term impacts are expected as a result of installing an overwater structure. Measurable effects of over water structures on the marine environment occur over a period of time.

5.2.2 Long-term Impacts

Long-term impacts as a result of installing an overwater structure include changes in ambient light conditions, alterations of wave and current energy regimes, release of contaminants, and activities associated with the use and operation of the overwater facilities (NOAA 2017).

Ambient light is often reduced as a result of overwater structures. Shading caused by structures can affect the plant and animal communities that rely on the habitat below the installed structures. Distributions of plants, invertebrates, and fish can become limited and less complex. This is due to a decrease in available light for photosynthesis to occur in diatoms, benthic algae, eelgrass, and other photosynthesizers that marine and estuarine fishes rely on as a food source, protection, and rearing young. Studies have shown there is a decrease in juvenile fish populations under overwater structures. Reduced-light conditions can also directly adversely impact fish species that rely on visual cues for spatial orientation, prey capture, schooling, predator avoidance, and migration.

Changes in wave and current energy regimes can be adversely impacted by overwater structures. The structures can interrupt the transportation of detrital materials and alter substrate composition in nearshore habitats (Hanson et al 2005; NOAA 2017). Adequate substrate is required for plant propagation, fish and shellfish settlement and rearing, and forage fish spawning (NOAA 2017).

Although no treated wood will come directly in contact with marine waters, some treated wood is incorporated into the dock structure. Contaminates from overwater structure materials such as the treated wood used in the trestle and floating dock structures are commonly known to leak into the marine environment for a short period after installation. The most common contaminates associated with treated wood are polycyclic aromatic hydrocarbon (from creosote-treated wood), ammoniacal copper zinc arsenate, and chromated copper arsenate (NOAA 2017; Poston 2001). These chemicals are known to cause harmful effects to fish such as, but not limited to: cancer, reproductive anomalies, immune dysfunction, and growth and development impairment.

5.2.3 Indirect Impacts

A decrease in aquatic vegetation and phytoplankton as a result of a decrease in light from overwater structures can indirectly impact fish by reducing prey abundance and habitat complexity (NOAA 2017).

5.2.4 Overwater Structures Conservation and Mitigation Measures

- The project employs the fewest number of pilings necessary to support the dock structure and to allow light into under-pier areas and minimize impacts to the substrate.
- Although not planned for this reason, the docks will be installed in a north-south orientation to allow the arc of the sun to cross perpendicular to the structure to reduce the duration of light limitation.
- In addition, although not planned specifically for this reason, the float is located in deep water to avoid light limitation and grounding impacts to the intertidal or shallow subtidal zones.
- As recommended by NMFS, the dock' bottom would maintain at least 5 feet water between the top of the water and the deck of the float (supported by pontoons). The floating deck would be in about 70-500 feet of water.

5.3 CRUISE SHIP OPERATIONS

Deep draft vessels are equipped with azipod propulsion systems to aid in maneuvering the vessel. These propulsion systems have been shown to disturb sediment and increase turbidity in shallower depths (Jones 2011).

5.3.1 Long-Term Impacts

Cruise ships will be the primary vessels at the Ward Cove Cruise Ship Dock and will utilize the dock daily from late April to early October. Due to the frequent and extended period of use and projected lifetime of the dock sedimentation impacts to EFH and EFH species associated with cruise ship operations could potentially be long-term.

Agencies have voiced concern over the potential for cruise ship operations to displace the sediment cap associated

5.3.2 Conservation and Mitigation Measures

The cruise ship dock has been located to avoid disturbance to the sand cap and ocean floor and therefore, EFH and EFH species because it is:

- Located on the fringe of sand capped area to minimize cruise ship travel distance and maneuvering within the area of concern.
- In deep water to decreases the potential for scour or turbidity. The cruise ship azipods would be in approximately 127 feet of water (about 100 feet below the azipods) when the vessel is docked. Note that these depths are at extreme low tide. Most of the time the azipods will be in deeper water.

- Oriented so that the cruise ships can perform primary course adjustments prior to entering the area of concern. (The optimized orientation allows cruise ships to dock with only minor, slow speed course adjustments occurring within the area of concern.)

In addition, cruise ship operations will ensure that there would be minimal disturbances to the remedy since:

- Cruise ship azipods point out, laterally from the ship, not down towards the ocean floor, which minimizes impacts to the benthic environment.
- Cruise ship vessels will approach the dock bow first. Approaching the berth bow first will keep the thrust from the azipod propellers away from the sand cap and the area of concern.
- Vessels will approach the dock such that near-berth maneuvering is minimized. To the extent possible, major course corrections will occur prior to entering the area of concern.
- Docking will be performed with the minimal use and thrust from bow thrusters as operationally possible.

During the first season of cruise ship operation, a water quality and sediment sampling program, following protocols reviewed and approved by the ADEC, would occur to gage whether there are impacts to the sediment cap. The protocols would mirror the sampling methods used prior to construction and would include:

- Determining the depth of the sediment at the site.
- Collecting and analyzing sediment samples from within and near dock project footprint for contaminates.
- Collecting water samples and determining dissolved oxygen and O_2.

Finally, as directed by the EPA, a "plan of best management practices" for operations of cruise ships using the proposed dock would be developed by the applicant with the EPA, ADEC, and other agencies as appropriate. The plan would include details of the information taking into account anticipated wind, current, and traffic conditions. As requested, the plan would be submitted to EPA and ADEC at least 90 days prior to commencing operations.

6 CONCLUSIONS AND DETERMINATION OF EFFECTS

That construction methods and proposed conservation and mitigation measures, including collecting the drill cuttings material, using a sediment curtain will help to ensure **that no short-term adverse impacts to EFH and EFH-managed species/species complexes and other fish and marine resources would occur** in the project area. In addition, because the floating portion of the dock is at least 5 feet above water in 70 to 500 feet of water, there will be **no long-term adverse impacts to EFH from the overwater structure**. Finally, because of the placement of the dock in deep water and the operations of the cruise ships as they move into and out of

Ward Cove, it is unlikely that the sediment cap or other bottom material will be disrupted by cruise ship operations. Therefore, there would **be no long-term adverse impacts to EFH from cruise ship operations**.

Field-based sediment and water quality sampling conducted before and during construction and during the first season of cruise ship operations will show that no damage to the site or adverse impacts to EFH occurs.

However, if damage is observed, the EPA's institutional controls require that any damage caused to the areas that have been remedied, in particular the sand capped areas, be restored at the direction of the EPA. Power Systems & Supplies of Alaska and Ward Cove Dock Group, LLC. are aware that the 2000 Consent Decree between the EPA and the responsible parties, prohibits persons from "using the site in a manner that would interfere with or adversely affect the integrity or protectiveness of the remedial measures…" The applicants further understands that the Consent Decree applies to them as the owner of Ward Cove tidelands and that they would be responsible for any costs associated with reviewing and overseeing actions that violate the institutional controls.

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Attachment A: SELF-CERTIFICATION STATEMENT OF COMPLIANCE
Permit Number: POA-2019-00313

Permittee's Name & Address (please print or type):_____

_____

_____

Telephone Number:_____

Location of the Work:_____

_____

Date Work Started:_____ Date Work Completed:_____

PROPERTY IS INACCESSIBLE WITHOUT PRIOR NOTIFICATION: YES _____ NO_____
TO SCHEDULE AN INSPECTION PLEASE CONTACT _____
AT _____

Description of the Work (e.g. bank stabilization, residential or commercial filling, docks, dredging, etc.):_____

_____

_____

Acreage or Square Feet of Impacts to Waters of the United States: _____

Describe Mitigation completed (if applicable): _____

_____

_____

Describe any Deviations from Permit (attach drawing(s) depicting the deviations):

_____

_____

I certify that all work and mitigation (if applicable) was done in accordance with the limitations and conditions as described in the permit. Any deviations as described above are depicted on the attached drawing(s).

_____
Signature of Permittee

_____
Full Name of Permittee (printed or typed)

_____
Date