



**US Army Corps
of Engineers**
New England District
696 Virginia Road
Concord, MA 01742-2751

PUBLIC NOTICE

Comment Period Begins: February 28, 2017

Comment Period Ends: March 29, 2017

File Number: NAE-2005-658

In Reply Refer To: Christine Jacek

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The District Engineer has received a permit application to conduct work in waters of the United States from Neptune LNG, LLC of 20 City Square, Charlestown, Massachusetts. This work is proposed in the Atlantic Ocean three miles off the coast of Marblehead, Massachusetts. The site coordinates are North Buoy: Latitude 42.487, Longitude 70.610, and South Buoy: Latitude 42.456, Longitude 70.601.

The work proposed by the applicant involves the decommissioning of the Neptune Deepwater Liquid Natural Gas (LNG) Port. The proposed decommissioning work plan will include the complete removal of the hot tap assembly that attaches the Neptune LNG line to the Algonquin LNG Hubline, three transition manifolds, two submerged turret loading buoys, and sixteen mooring lines consisting of wire rope and chain. The applicant's preferred work plan proposes to abandon in place 13.1 miles of 24 inch pipeline which is buried 1.5 feet (ft.) below the mudline, and sixteen suction piles that will be capped with trawl guards. This proposed action will result in the addition of 11,500 square feet (sq. ft.) of new structures sitting 6.4 ft. above the mudline in waters of the United States.

The applicant has provided three other alternatives for the removal or abandonment of the suction piles:

Alternative 1

Alternative 1 involves full removal of all sixteen suction piles utilizing a reverse installation method which would result in 6,086 sq. ft. (0.13 acres) of temporary impacts to waters of the U.S. The applicant does not prefer alternative 1 as they state pile removal may fail resulting in a larger portion of pile(s) partially exposed above the mudline and full pile removal poses a larger danger to divers working on the decommissioning. Full details regarding Alternative 1 can be found on page 16 of the decommissioning plan.

Alternative 2

Alternative 2 involves cutting the suction piles 15 ft. below the mudline. A 56 ft. radius would be excavated around the pile, the pile cut, the 15 ft. cut section removed from the area, and the excavated sediment placed back over the cut pile. Alternative 2 would result in 4.97 acres of temporary impacts to Waters of the U.S. The applicant does not prefer alternative 2 as they state it results in larger impacts to waters of the U.S. compared to the preferred alternative of abandoning piles in place and covering the piles with trawl guards. Additional information regarding Alternative 2 can be found on page 17 of the decommissioning plan.

Alternative 3

Alternative 3 involves cutting the suction piles 3 ft. below the mudline. A 17 ft. radius would be excavated around the pile, the pile cut, the 3 ft. cut section of pile removed, and the excavated sediment placed back over the cut

pile. Alternative 3 would result in 0.74 acres of temporary impacts to Waters of the U.S. The applicant does not prefer alternative 3 as they state it results in larger impacts to waters of the U.S. compared to the preferred alternative of abandoning piles in place and covering the piles with trawl guards. Additional information regarding Alternative 3 can be found on page 18 of the decommissioning plan.

The proposed work and alternatives is shown on the attached decommissioning plan entitled "Neptune Deepwater Port Decommissioning Plan," on thirty six (36) sheets, and dated "November 2016."

AUTHORITY

Permits are required pursuant to:

- ☒ Section 10 of the Rivers and Harbors Act of 1899
- ☐ Section 404 of the Clean Water Act
- ☐ Section 103 of the Marine Protection, Research and Sanctuaries Act.

The decision whether to issue a permit will be based on an evaluation of the probable impact of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which may reasonably accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are: conservation, economics, aesthetics, general environmental concerns, wetlands, cultural value, fish and wildlife values, flood hazards, flood plain value, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food production and, in general, the needs and welfare of the people.

The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

ESSENTIAL FISH HABITAT

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires all federal agencies to consult with the National Marine Fisheries Service on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH).

This project may have an adverse effect on 0.13 (full pile removal) to 4.97 (piles cut 15 ft. below mudline) acres of Essential Fish Habitat (EFH), depending on the final decommissioning plan chosen, for the species and life stages listed on the attached sheet. This habitat consists of fine sandy substrate in a subtidal area with depths ranging from 122 ft. (at hot tap) to 260 ft. (at buoy locations) of water. Loss of this habitat may adversely affect the species listed on the attached table. The District Engineer has made a preliminary determination that site-specific impacts may be substantial. Accordingly, the Corps of Engineers will submit an expanded EFH

assessment to National Marine Fisheries Service, who in turn will provide conservation recommendations to the Corps. The Corps will coordinate with the applicant regarding implementation of these recommendations. The EFH consultation will be concluded prior to the final decision.

NATIONAL HISTORIC PRESERVATION ACT

Based on his initial review, the District Engineer has determined that little likelihood exists for the proposed work to impinge upon properties with cultural or Native American significance, or listed in, or eligible for listing in, the National Register of Historic Places. Therefore, no further consideration of the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended, is necessary. This determination is based upon one or more of the following:

- a. The permit area has been extensively modified by previous work.
- b. The permit area has been recently created.
- c. The proposed activity is of limited nature and scope.
- d. Review of the latest published version of the National Register shows that no presence of registered properties listed as being eligible for inclusion therein are in the permit area or general vicinity.
- e. Coordination with the State Historic Preservation Officer and/or Tribal Historic Preservation Officer(s)

ENDANGERED SPECIES CONSULTATION

The New England District, Army Corps of Engineers has reviewed the list of species protected under the Endangered Species Act of 1973, as amended, which might occur at the project site. It is our preliminary determination that the proposed activity for which authorization is being sought is designed, situated or will be operated/used in such a manner that it is likely to adversely affect Federally listed endangered or threatened species or their designated critical habitat. The National Oceanic and Atmospheric Administration has issued an Incidental Harassment Authorization to Neptune LNG, LLC to take small numbers of marine mammals by Level B harassment incidental to the maintenance, repair, and decommissioning of the Neptune LNG deep water port.

COASTAL ZONE MANAGEMENT

The States of Connecticut, Maine, Massachusetts, New Hampshire and Rhode Island have approved Coastal Zone Management Programs. Where applicable, the applicant states that any proposed activity will comply with and will be conducted in a manner that is consistent with the approved Coastal Zone Management Program. By this Public Notice, we are requesting the State concurrence or objection to the applicant's consistency statement.

The following authorizations have been applied for, or have been, or will be obtained:

- (X) Permit, License or Assent from State.
- (X) Permit from Local Wetland Agency or Conservation Commission.
- (X) Water Quality Certification in accordance with Section 401 of the Clean Water Act.

In order to properly evaluate the proposal, we are seeking public comment. Anyone wishing to comment is encouraged to do so. Comments should be submitted in writing by the above date. If you have any questions,

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please contact Christine Jacek at (978) 318-8026, (800) 343-4789 or (800) 362-4367, if calling from within Massachusetts.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider the application. Requests for a public hearing shall specifically state the reasons for holding a public hearing. The Corps holds public hearings for the purpose of obtaining public comments when that is the best means for understanding a wide variety of concerns from a diverse segment of the public.

The initial determinations made herein will be reviewed in light of facts submitted in response to this notice. All comments will be considered a matter of public record. Copies of letters of objection will be forwarded to the applicant who will normally be requested to contact objectors directly in an effort to reach an understanding.

THIS NOTICE IS NOT AN AUTHORIZATION TO DO ANY WORK.



Barbara Newman
Chief, Permits and Enforcement Branch
Regulatory Division

If you would prefer not to continue receiving Public Notices by email, please contact Ms. Tina Chaisson at (978) 318-8058 or e-mail her at bettina.m.chaisson@usace.army.mil. You may also check here () and return this portion of the Public Notice to: Bettina Chaisson, Regulatory Division, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751.

NAME: _____

ADDRESS: _____

PHONE: _____

Essential Fish Habitat for NAE-2005-658 Neptune LNG LLC Decommissioning						
Species	Scientific Name	Life Stage				
		Eggs	Larvae	Juvenile	Adult	All Life Stages
American Plaice	<i>Hippoglossoides platessoides</i>	X	X	X	X	X
Atlantic Butterfish	<i>Peprilus triacanthus</i>				X	X
Atlantic Cod	<i>Gadus morhua</i>	X	X	X	X	X
Atlantic Halibut	<i>Hippoglossus hippoglossus</i>					X
Atlantic Herring	<i>Clupea harengus</i>		X	X	X	X
Atlantic Mackerel	<i>Scomber scombrus</i>	X	X	X	X	X
Atlantic Wolffish	<i>Anarhichas lupus</i>					X
Basking Shark	<i>Cetorhinus maximus</i>			X	X	X
Bluefin Tuna	<i>Thunnus thynnus</i>			X	X	
Blue Shark	<i>Prionace glauca</i>			X	X	X
Haddock	<i>Melanogrammus aeglefinus</i>	X	X	X		X
Longfin Inshore Squid	<i>Doryteuthis pealeii</i>			X	X	X
Monkfish	<i>Lophius americanus</i>	X	X	X	X	X
Northern Shortfin Squid	<i>Illex illecebrosus</i>				X	X
Ocean Pout	<i>Zoarces americanus</i>	X	X	X	X	X
Redfish	<i>Sciaenops ocellatus</i>					X
Red Hake	<i>Urophycis chuss</i>	X	X	X	X	X
Sea Scallop	<i>Placopecten magellanicus</i>					X
Silver Hake	<i>Merluccius bilinearis</i>	X	X	X	X	X
Smooth Skate	<i>Malacoraja senta</i>			X		X
Spiny Dogfish	<i>Squalus acanthias</i>				X	X
Thorny Skate	<i>Amblyraja radiata</i>			X	X	X
White Hake	<i>Urophycis tenuis</i>	X	X	X	X	X
White Shark	<i>Carcharodon carharias</i>					X
Windowpane Flounder	<i>Scophthalmus aquosus</i>	X	X			X
Winter Flounder	<i>Pseudopleuronectes americanus</i>	X	X	X	X	X
Witch Flounder	<i>Glyptocephalus cynoglossus</i>	X	X	X	X	X
Yellowtail Flounder	<i>Pleuronectes ferruginea</i>	X	X	X	X	X

Neptune Deepwater Port Decommissioning Plan

November 2016

Prepared for

Neptune LNG LLC

20 City Square
Charlestown, MA 02129

Prepared by:



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Attachment A - Prevention, Monitoring & Mitigation Plan (PMMP)

Attachment B - Incidental Harassment Authorization (IHA)

Attachment C - Communications Plan – (To be provided, when available)

Attachment D - Spill Prevention, Control, & Countermeasures (SPCC) Plan – (To be provided, when available)

Attachment E - Trawl Guard Spec Sheet – (To be provided, when available)

Attachment F - Subsea 7 Similar Projects List

Attachment G - Seven Falcon and Seven Pacific Specifications

Acronyms and Abbreviations

ACOE	Army Corps of Engineers
BSEE	Bureau of Safety and Environmental Enforcement
Buoy	Submerged Turret Loading Buoy
Company	Neptune LNG LLC
Contractor	Company Awarded Contract for Decommissioning
DEP	Department of Environmental Protection
DP	Dynamic Positioning
DSV	Dive Support Vessel
DWP	(Neptune) Deep Water Port
EPA	(U.S.) Environmental Protection Agency
GAL	Gallon (US)
GAS	Odorized Natural Gas
GPS	Global Positioning System
Hot Tap	Mechanical Tap Fitting on the 30" HubLine
HSE	Health Safety and Environment
HubLine	Algonquin's 30" main pipeline
IHA	Incidental Harassment Authorization
IMCA	International Marine Contractors Association
JSA	Job Safety Analysis
LNG	Liquefied Natural Gas
LNGSRV	Liquefied Natural Gas Shuttle Regasification Vessel
Mat	Articulated Concrete Mat
MDEP	Massachusetts Department of Environmental Protection
MARAD	Maritime Administration
MEPA	Massachusetts Environmental Protection Act

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MLLW	Mean Low Low Water
MMDMRP	Marine Mammal Detection, Monitoring, and Response Plan
PSO	Protected Species Observer
Mooring Line	Chain, Cable, and fittings securing the buoy to the anchor pile
Neptune	The Neptune Deep Water Port
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OCS	Outer Continental Shelf
Pile	Suction Anchor Pile
Pipeline	All Pipeline segments comprised of Gas Transmission Line and Flowline
Plan	Decommissioning Plan for the Neptune Deepwater Port
PLEM	Pipeline End Manifold
PMMP	Prevention, Monitoring, and Mitigation Plan
Protective Cover	Steel structure over the top of the Transition Manifold
ROV	Remotely Operated Vehicle
SOW	Scope of Work
SPCC	Spill Prevention, Control and Countermeasures (Plan)
SRV	Shuttle and Regasification Vessel
STL	Submerged Turret Loading Buoy
Subsea 7	Prime Marine Contractor
Te	Metric Tonne
USCG	United States Coast Guard

1. Introduction

This document describes the Decommissioning Plan (Plan) for Neptune LNG, LLC's (Neptune LNG) Deepwater Port (DWP) located in Massachusetts Bay. An overview of the DWP components is provided below in Section 2 – System Architecture. The Plan describes abandoning the pipeline and suction anchor piles in place and removal of the remaining components as described by this document.

Decommissioning of the DWP was approved as part of the original licensing process as stated in the Port License, Section 20 and is addressed in Section 8 of the current operational Prevention, Monitoring, and Mitigation Plan (PMMP) attached to this Plan as Attachment A. Decommissioning activities will be performed in accordance with all regulatory permits, approvals and guidelines. This document presents the components of the DWP, the general sequence of decommissioning, as well as environmental monitoring and mitigation activities that will be performed as part of the Plan.

The DWP, located 22 miles northeast of Boston, Massachusetts, consists of two mooring and unloading buoys, two pipeline end manifolds (PLEMS), a pipeline and a transition manifold that receives natural gas from "shuttle and regasification vessels" (SRVs). The natural gas is transferred from the SRV through the unloading buoy then through a flexible riser that connects to the PLEMS then a 24-inch subsea flowline and ultimately into a 24-inch gas transmission line. The 24-inch gas transmission line connects the DWP pipeline system to the existing 30-inch Algonquin HubLine natural gas pipeline through a transition manifold, a 16 inch spool and a hot tap tie-in assembly. The DWP is located in US federal waters in blocks NK 19-04 6525 and NK 19-04 6575 of the Outer Continental Shelf in approximate water depths ranging from 125 feet to 250 feet (MLLW). A portion of the pipeline and the connection to the Algonquin HubLine are located within the territory of the Commonwealth of Massachusetts.

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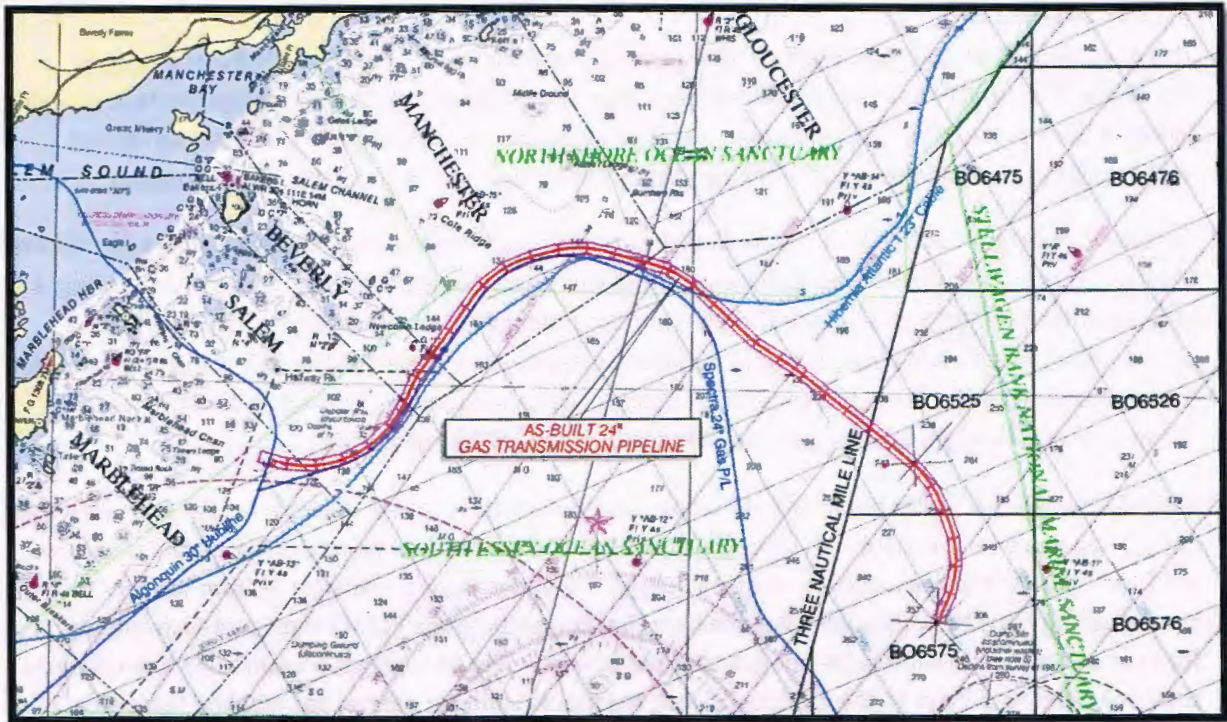


Figure 1-1 - Location Map

2. System Architecture

The DWP consists of the following components:

- Two Submerged Turret Loading (STL) Buoys, located 2.3 miles from each other, with each STL Buoy comprised of the following components:
 - Eight mooring lines consisting of wire rope and chain connecting each unloading buoy to anchor points on the seabed;
 - Eight anchor points consisting of suction piles;
 - One 14" diameter flexible pipe riser; and
 - One electro-hydraulic control umbilical from the unloading buoy to the PLEM.
- 13.1 miles of 24" O.D. pipeline, 0.500" wall thickness with 2.5 inches of concrete weight coating
- North Riser Manifold -PLEM with connecting spools
- South Riser Manifold -PLEM with connecting spools
- Hot Tap Tie-in Transition Manifold with protection cover and connecting spools
- Hot tap fitting with 20" tap valve, check valve, and associated supports

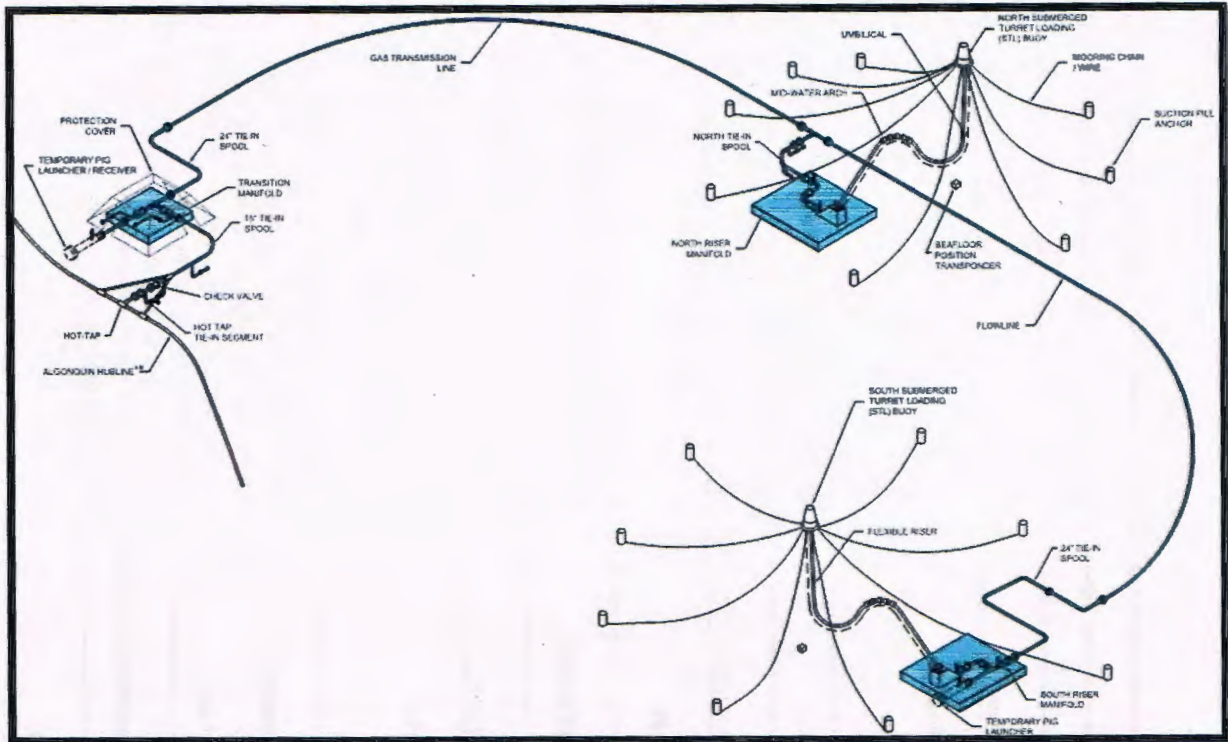


Figure 2-1 - System Architecture

3. Regulatory Stakeholder Outreach

Beginning in May 2016, Neptune LNG representatives initiated contact with federal, state and local officials about its intention to decommission the DWP. A "Discussion Draft" of the decommissioning plan and the anticipated schedule for the work was provided to the Agencies listed in Section 3.1 over the summer. Neptune solicited comments from each and incorporated necessary changes to the Plan to address pertinent comments.

3.1 Stakeholders

The stakeholders identified in the Table 3-1 include the officials, agencies, municipalities and groups that participated in the original permitting process of the DWP and were contacted to review the Discussion Draft.

Table 3-1 - Stakeholder List

Agency	Role	Contact	Summary
Maritime Administration (MARAD)	DWP License Agency (Lead)	Yvette Fields Yvette.fields@dot.gov	
US Coast Guard (USCG)	Co-lead agency – Application processing Lead agency – Port Operations and Regulations	Curtis Borland Curtis.e.borland@uscg.mil	
NOAA	Marine Mammals – IHA		Received IHA on October 27, 2016 for decommissioning work.
NOAA-NMFS	Fisheries Impacts	Ben Laws benjamin.laws@noaa.gov	Cooperating agency with NOAA.
Stellwagen Bank National Marine Sanctuary	Sanctuary Management	Leila Hatch leila.hatch@noaa.gov	Cooperating agency with NOAA.
Pipeline & Hazardous Materials Safety Administration (PHMSA)	Pipeline Safety	Bob Smallcomb robert.smallcomb@dot.gov	Reviewed Discussion Draft Decommissioning Plan and advised that no specific approval or permit required.
US EPA, Ocean and Coastal Unit	Ocean Impacts	Phil Colarusso colarusso.phil@epa.gov	Reviewed Discussion Draft Decommissioning Plan. No specific requirements identified.
US EPA, Air Unit	Air Emissions, Clean Air Act	Donald Dahl dahl.donald@epa.gov	Reviewed Discussion Draft Decommissioning Plan. Provided flaring details and confirmed this activity does not exceed thresholds required to obtain specific permit. Advised additional review may be required.
Bureau Safety and Environmental Enforcement (BSEE)	Offshore Facilities and ROW	Bimal Shrestha bimal.shrestha@bsee.gov Peter Hosch Peter.Hosch@bsee.gov	Reviewed Discussion Draft Decommissioning Plan. Permit to Relinquish Pipeline ROW in Federal waters required. Permitting requirements regarding removal and/or abandonment of port structures in Federal Waters has been provided.
US Army Corps of Engineers (USACE)	Dredging – Section 10 and 404.	Christine Renzoni Christine.M.Renzoni@usace.army.mil	Reviewed Discussion Draft Decommissioning Plan. Advised a new permit required to authorize the work as defined by the Plan. In progress.

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MA DEP	State Waters Environment	Lealdon Langley lealdon.langley@state.ma.us	Reviewed Discussion Draft Decommissioning Plan. Advised a license amendment may be necessary for any components left in place within the DEP's jurisdiction.
Coastal Zone Management	Coastal Zone	Robert Boeri Robert.boeri@state.ma.us	Reviewed Discussion Draft Decommissioning Plan. Requested supplemental details on assessment of removal of suction piles, trawl protectors, and decommissioning timeline, which have been included herein. Supplemental information on the trawl protectors will be provided during the engineering phase.
Townships:			
Marblehead	Chapter 91	Rebecca Cutting rebeccac@marblehead.org	Initiated Notice of Intent as requested by MDEP to review and permit Decommissioning activities in municipality.
Others:			
Pilots Association			Communication plan will be developed during operational planning phase to communicate with commercial and recreational uses of the work areas.
Fishermen & Lobstermen Associations			
Whale Watchers			
Harbormasters from Salem, Beverly, Gloucester, Manchester-by-the-Sea and Marblehead			
Yacht Clubs from Salem, Beverly, Gloucester, Manchester-by-the-Sea and Marblehead			

3.2 Discussion Draft Reviews

The Discussion Draft contained details regarding the abandonment and removal of the Port components as defined in the Port Decommissioning section of the Port License, approved by MARAD and the cooperating agencies the exception being the abandonment of the suction piles and placement of a trawlable protection device over each abandoned pile.

Comments and input received have been addressed and/or incorporated into this current version of the Plan. Inter-agency interaction is ongoing and specific permits which have been identified are being pursued by Neptune LNG concurrently with the submittal of this Plan to MARAD.

3.3 Final Plan Development

The Plan incorporates comments received from the various agencies reviewing the Discussion Draft.

Notable changes made to the Discussion Draft include the following:

- Alternatives Analysis - The Port Decommissioning scope approved by the Port License indicated that the suction anchor piles would be removed or cut 15 feet below the mudline. Initial agency review of the Plan demonstrated the need for incorporating the alternatives analysis associated with the removal of the suction piles. The details and results of this analysis are provided in Section 5.
- Contingency Plans - Supplemental information regarding contingency measures that may be implemented were incorporated into Section 6.
- Safety and Environmental - Additional details regarding the mitigation measures being implemented to minimize environmental and safety concerns were incorporated into Section 4.

4. Safety and Environment

4.1 Safety

Neptune LNG is fully committed to performing this work safely while taking all diligent measures to prevent, minimize, and mitigate any potential adverse environmental effects. Neptune's Contractor will develop procedures and utilize equipment that will help ensure the safety of all personnel and protection of all property and the environment.

Neptune LNG has gone through a thorough vetting process and has chosen Subsea 7 as the Prime Contractor performing all offshore work. Subsea 7 has demonstrated experience and a proven track record of performing similar offshore works safely (See Attachment F). Subsea 7 has several vessels in their fleet capable of performing this work and has proposed using the *7 Falcon* or the *7 Pacific* DP vessels (See Attachment G). These vessels are based out of St. John's Newfoundland. Subsea 7 anticipates utilizing a local port, either Cashman's or the East Mineral Salt Dock for mobilization.

During the planning stages and prior to any work, Risk Assessments and Hazard Reviews will be performed. The Contractor will perform daily Job Safety Analysis (JSA) and Tool Box Talks on site and will stop work and perform a JSA for specialized tasks or if there is a change in the Plan.

All personnel, whether a Contractor or Neptune LNG employee, have stop work authority should a safety or environmental issue be observed.

All Contractor and Neptune LNG personnel will receive additional environmental and marine mammal awareness training as defined by the PMMP.

All personnel will be required to wear the appropriate Personal Protection Equipment (PPE) as defined by Neptune LNG's safety policies, the Contractor's safety policies or OSHA, with the most stringent PPE requirements taking precedence.

4.1.1 Surface Work

For the safety of all personnel and the public, an exclusion zone in close proximity of all activities will be established and monitored throughout operations. This zone will be identified during the development of the detailed engineering and procedures and will be coordinated with the USCG prior to mobilization.

The Contractor also will develop a Communication Plan prior to mobilization that will identify all required notifications including the Local Notice to Mariners (LNM). Broadcasts will be made when vessels are moving into or out of the exclusion zones as well when there will be major movements within the zone.

In addition to notification to the USCG, Neptune LNG will issue notifications to the local Harbormasters and to area interests such as local marinas, yacht clubs, fishermen (Lobstermen), tour boats, etc. to assure all in the area are aware of the activities.

Subsea 7 will provide a "Safe Boating Plan" 30 days prior to mobilization to the work-site which will include, in addition to the above, other information such as the pre-determined safe harbor location for the assets in the event of a storm and emergency evacuation procedures.

4.1.2 Subsea Work

As this work involves the use of divers, additional considerations are made to assure their safety. The Contractor chosen uses highly trained and experienced divers and dive support personnel as well as state of the art diving systems. As the depths of water involved with this project range between 125 and 275 feet, Saturation Diving will be utilized. This method of diving allows for longer duration work times on bottom and minimizes the need for repeated exposures of the divers to decompressions. Decompression will occur in a pressurized system within a controlled environment.

All diving and decommissioning activities will be conducted in strict adherence to all required governing agency commercial diving regulations, including but not limited to those of the USCG¹. All diving activities are to follow the Contractor's Commercial Diving Rules and Regulations as detailed in their Group Diving Management System. The Contractor is a member of International Marine Contractors Association (IMCA) and its diving practices are based on IMCA standards.

¹ Commercial Diving Operations, 46 C.F.R. §197-Subpart B

All divers will be fully qualified for the tasks they will undertake and will be Operator Qualified (OO'd) for the specific tasks they will be performing.

The vessel from which they will be operating has been designed and used for such diving operations and the vessel crew is familiar with all the special requirements for the divers. It will be a Dynamically Positioned (DP) Class 2 (Double Redundancy) vessel. The vessel crew is highly trained and certified as well as experienced.

Whenever feasible, certain operations will be performed using a Remotely Operated Vehicle (ROV) which will help reduce the exposure of divers to certain potentially hazardous operations.

4.1.3 Lifting

During the planning stages, the Contractor will develop a lifting plan for all heavy and atypical lifts. Should conditions change, the lifting will cease until a new plan has been developed and reviewed.

Prior to any special lift, work will stop and the lifting plan will be reviewed with all crew and dive team members.

4.1.4 Transport of recovered materials

In addition to developing the lifting plan, the Contractor will perform engineering analyses of the loading of certain recovered materials onto ABS certified barges and a "Loading Plan" will be issued.

At this time Subsea 7 anticipates using Schnitzer Metals Recycling Yard, in Everett, MA for the disposal of recovered materials. Although none are anticipated, any recovered materials containing lead, asbestos, polychlorinated biphenyl, or any other regulated material, will be disposed of in accordance with required regulations.

4.2 Environmental Protection

4.2.1 Marine Mammals & Fisheries

As required in Sections 4 and 5 of the July 11, 2011 National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) Letter of Authorization and reflected in the IHA issued on October 7, 2016 (Attachment B), "Acoustic Monitoring and Mitigation Plan for Neptune Deepwater LNG Port Decommissioning" pending before NOAA, and the Operations PMMP (Attachment A), both visual and acoustic monitoring will be conducted during the decommissioning of the DWP.

Two Protected Species Observers (PSOs) will conduct continual visual watches on a shift basis during all daylight hours. Daytime PSOs will monitor the acoustic alert program when not on active visual watch. During the night, one PSO will monitor the acoustic alert program and will scan the area around the vessel using a thermal imaging or similar enhancement device.

The Right Whale auto-detection buoys will continuously record and analyze underwater sounds, particularly calling whales, throughout the entirety of the decommissioning period. When the program detects a Right Whale call, the buoy sends the recorded audio data for the detected signal via a radio link to a computer display or handheld device that is monitored by the PSO on duty.

4.2.2 Air Quality

The volume of natural gas contained in the pipeline is estimated to be 12 million standard cubic feet. Neptune LNG anticipates that the Contractor will deploy a U-Shaped Burner Boom to perform the flaring operations. Although emissions information isn't available directly from the supplier, Neptune provides the emission estimate as shown below:

- a) Destruction Efficiencies – 99.9%
- b) Time to flare – 21 Hours (flaring from South Riser Manifold) + 2 Hours (flaring from Transition manifold for the 16" spool)
- c) Btu flaring rate-600Btu/hr
- d) Natural gas HHV: assume 1,050 Btu/scf

Estimated Emissions		
	lbs/hr	tons/yr
NOx	40.8	0.43
CO	186.0	1.95
VOC	342.0	3.59
SO ₂	0.34	0.004
PM _{10/2.5}	4.34	0.05
Pb	0.0003	3.0E-06
CO _{2e}	---	737.7

The EPA has reviewed the emissions associated with the flaring operations and concur that they are a temporary, one-time event and do not require a specific air permit².

All other emissions associated with decommissioning the DWP were accounted for in Section 4.8 of the Final Environmental Impact Statement.

4.2.3 Water Quality

All vessels performing the work will be inspected and prepared, prior to mobilizing to the field, to verify the Contractor has the equipment and procedures in place to ensure unauthorized discharges do not occur. As referenced in Section 3 and throughout the PMMP, each vessel involved with the project will have a spill prevention, control, and countermeasures plan (SPCC) and equipment required by the SPCC plan.

4.2.4 Benthic Zone

The activities described by this Plan are associated with very localized and limited areas of the seabed, namely the Hot Tap, North Buoy and South Buoy. Specific post decommissioning monitoring of the

² Neptune LNG's Dan McPherson communicated with EPA's Donald Dahl in April 2016 to determine if a specific permit was required. On October 18, 2016, Neptune contacted Donald Dahl again and confirmed that the volume of gas being flared results in emissions that are below the thresholds established by 310 CMR, Section 7.02.

benthic resource recovery is not planned. The current Plan, which includes abandoning the suction anchors in place and placing trawl protectors, minimizes the area of seabed disturbance. Removal or cutting the piles 15 feet below the seabed results in significantly higher seabed disturbance as shown in Section 5 – Suction Pile Removal Alternatives Analysis.

4.2.5 Post Decommissioning Use of the Port Area

Neptune LNG anticipates that all existing regulated navigational areas (i.e. safety and security zone, no anchoring area and area to be avoided) presently enforced around each STL Buoy and mooring array and charted on NOAA charts will be removed and the area can be returned to uses that occurred prior to the DWP installation. Neptune LNG will coordinate with the appropriate USCG authorities to have the NOAA charts updated as appropriate.

The water depth and location of each suction pile, once capped, do not pose an obstruction or hazard to navigation since the capped suction piles will not restrict, endanger or interfere with navigation. The proposed over-trawlable caps (See Attachment E) are designed to allow fishing equipment that drags the bottom to pass over the suction piles without becoming a hazard.

5. Suction Pile Removal Alternatives Analysis

Neptune LNG commissioned an evaluation of decommissioning scenarios associated with the suction anchor piles. The evaluation included a conservative geotechnical and structural review of the soil properties and suction anchor design. A description and pertinent issues or concerns with each scenario is provided below along with the final conclusions and methodology established based on the technical, environmental and safety considerations.

5.1 Removal

Removal of the suction anchor piles was considered using the reverse installation method which involves attaching a crane to the lifting points and attaching a pump to the suction pile receptacle located on the top of each suction pile. Sea water will be pumped into the pile while the crane on the DSV applies a lifting load.

The potential failures of the reverse installation method include the inability to achieve the required internal pressurization, the inability to produce a flowrate capable of achieving and maintaining the necessary pressure to unseat each suction anchor, or the structural failure of the pile top plate. The evaluation concludes that the soil pressure capacity is insufficient to safely overcome the required extraction pressures.

A potentially immitigable risk could occur during this operation if a suction pile becomes lodged in a partially removed condition in which pumping water into the pile no longer produces internal pressure and the lifting forces exceed the capacity of the crane or the lifting padeyes. A partially removed suction pile potentially jeopardizes the safety of the diving personnel and DSV and results in a significant seafloor obstruction. There is additional unavoidable risk that certain partially removed conditions cannot safely be rectified. For example, if one (or more) of the padeyes fail, the ability to control the

center of gravity and safely support the partially removed pile in a controlled manner necessary to perform other contingency measures, such as cutting the pile at the seafloor will not be possible.

There is also a high likelihood that plugs or masses of soil will remain adhered to portions of the internal and external walls of the suction pile, upsetting the center of gravity and/or exceeding the safe limits of the lifting padeyes. Monitoring the lifting load during the process would allow the operation to cease prior to exceeding the safe working loads but could result in a partially removed pile.

5.2 Cut Suction Pile 15 feet below Mudline

This approach was identified in the original Port License as an alternate to full removal. Due to the internal structure of the suction pile, internal access by divers and use of internal cutting methods cannot be performed. The work would then require circumferentially excavating a considerable trench around each pile in order for the diver and/or ROV to cut the pile 15 feet below the mudline externally using any of several methods, such as cold cut saws or by underwater burning.

As shown in Figure 5-1, assuming a gradient of 3:1, the minimum width and depth of the excavation required are 54 feet and 18 feet respectively and results in considerable seabed impacts as well as the generation of significant turbidity in the water column. Further impacts would occur to return the seabed to pre-existing conditions filling the void created by the removal activities.

Other environmental impacts associated with this scenario include prolonged noise from construction vessels being on site for an extended duration potentially adversely affecting Marine Mammals.

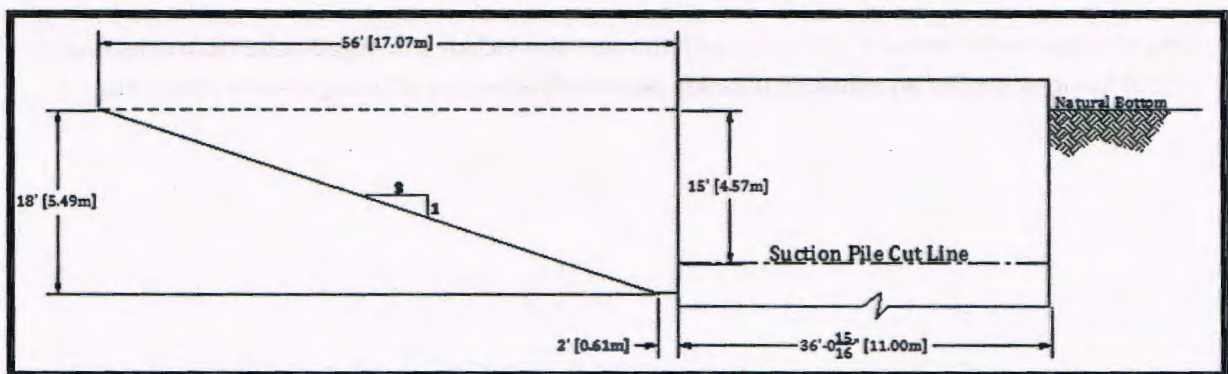


Figure 5-1 – 15 feet Trench Cross Section

15 Foot Excavation Area and Volume

Dia.	width ft	Depth Ft	Area ft2	Surf Area ft2	Vol / pile		QTY	Total	
					ft3	yd3		cu yds	Acres
5 m - 16.4 ft	56	18	522	12,737	88,193	3,266	11	35,930	3.22
9 m - 29.52 ft	56	18	486	15,045	109,708	4,063	4	16,253	1.38
11 m - 36.08 ft	56	18	486	16,199	120,466	4,461	1	4,461	0.37
Grand Totals								56,645	4.97

5.3 Cut Suction Pile 3 feet below Mudline

This approach was identified as an alternative to the 15 feet cutting of the suction piles. The work will require circumferentially excavating a considerable trench around each pile in order for the diver and/or ROV to cut the pile 3 feet below the mudline using any of several methods, such as cold cut saws or by underwater burning.

As shown in Figure 5-2, assuming a gradient of 3:1, the minimum width and depth of the excavation required are 17feet and 5 feet respectively and results in considerable reduction in seabed and benthos impacts as well as the generation of significant turbidity in the water column when compared to removal of 15 feet of each suction pile. Further impacts would occur when returning the seabed to pre-existing conditions filling the void created by the removal activities.

Other environmental impacts associated with this scenario include prolonged noise from construction vessels being on site for an extended duration potentially adversely affecting Marine Mammals.

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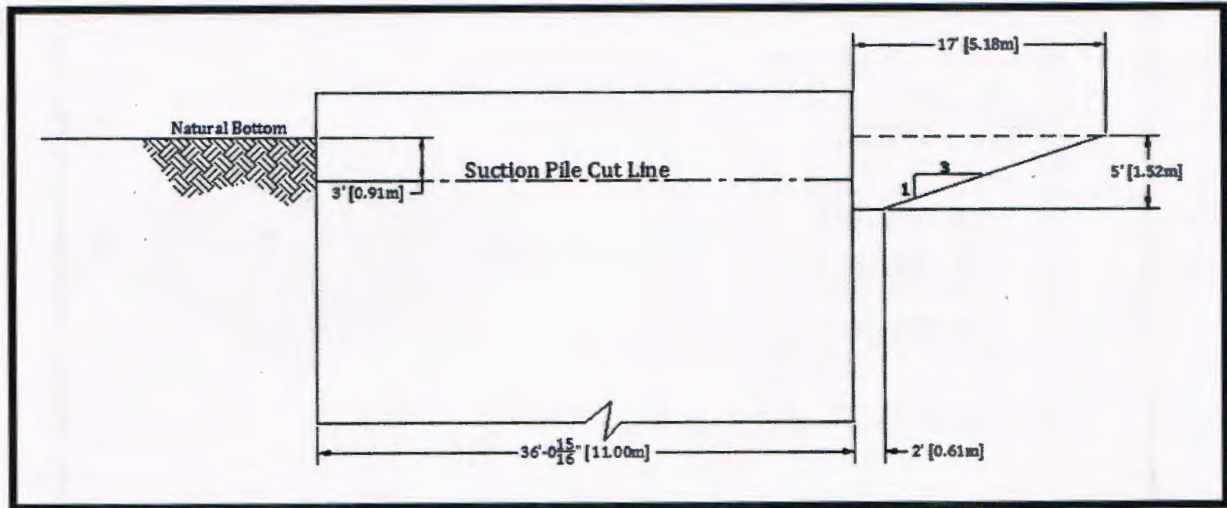


Figure 5-2 - 3 feet Trench Cross Section

3 Feet Excavation Area and Volume

Dia.	Width ft	Depth ft	Area ft ²	Surf Area ft ²	Vol		QTY	Total	
					ft ³	yd ³		cu yds	acres
5 m - 16.4 ft	17	5	47.5	1,783	4,159	154	11	1,694	0.45
9 m - 29.52 ft	17	5	47.5	2,484	6,117	226	4	906	0.23
11 m - 36.08 ft	17	5	47.5	2,834	5,899	218	1	262	0.07
Grand Totals								2,863	0.74

In order to avoid these unfavorable scenarios and to reduce the environmental impacts associated with excavation, turbidity and duration on location Neptune LNG proposes the placement of concrete mats or some other over-trawlable protection device.

5.4 Trawl Guard

This scenario entails installation of a prefabricated over-trawlable structure, shown in Attachment E and similar to Figure 5-3 below, over the "as-is" protruding top section of each suction pile. Each structure for the DWP suction piles will have a Trawl Guard fabricated (by diameter and height) to fit over the pile onto which it will be installed. The installation of these structures can be completed by either divers or ROV.

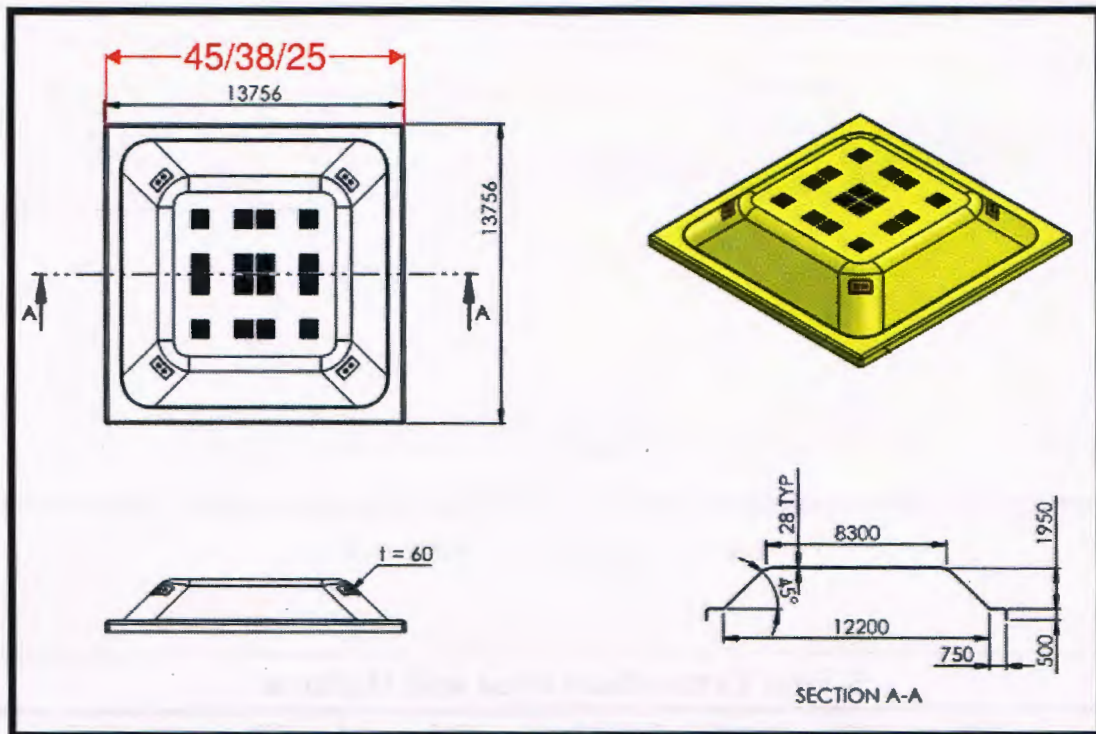


Figure 5-3 – Over-trawlable Protection

Neptune LNG will submit the final design, specifications and installation methodology of the Trawl Guard for review and approval once the detail design has been completed.

Trawl Protection Dimensions		
<i>Pile Dia.</i> (m)	<i>Approximate Guard Length and width</i> (m)/(ft)	<i>Height</i> (m)/(ft)
5	7.8 / 25.5	1.9 / 6.4
9	11.7 / 38.5	1.9 / 6.4
11	13.7 / 45.1	1.9 / 6.4

5.5 Final Conclusion

The following evaluation table provides a summary of the review of each decommissioning scenario for the piles against the decision criteria with ratings from 1-5 where 1 is the least impact/risk or most favorable outcome and 5 is the greatest impact/risk or least favorable outcome.

Suction Pile Scenario Evaluation							
Scenario Description	Decision Criteria						Final Weighting
	Safety Risk (x3)	Likelihood of Success (x2)	Execution Duration	Noise Disturbance	Water Turbidity	Fisheries Impact	
Remove All Piles	3	N/A	3	3	2	2	N/A
Cut Piles 15 ft below Mudline and Remove Top Section	5	5	5	5	5	2	42
Cut Piles 3 ft below Mudline and Remove Top Section	4	3	3	4	4	2	31
Install Trawl Protection	1	1	1	2	1	1	10

Taking into consideration safety risks to the diving and construction equipment as well as the environmental impacts associated with the removal or cutting of the suction piles, the most suitable, safest, and least environmental impact approach for the decommissioning of the suction piles is to abandon them in place and cap them with the over-trawlable protection devices.

6. Contingency Plan

Neptune LNG has approached the decommissioning of the DWP with due consideration for potential delays and risks associated with the work. As a result, Neptune LNG has developed the construction plan so as to minimize the opportunity for unexpected issues to occur during the course of the work.

The planning of the decommissioning has proceeded with the goal of establishing methodologies and timing that would maximize the ability to execute the work with predictable results. An assessment of project risks was performed and resulted in specific decisions taken to minimize construction issues, such as:

6.1 Weather Downtime

- ♦ Selection of a time-of-year for construction that minimizes potential impacts from weather delays and impacts to the marine environment.
- ♦ Development of a construction schedule with reasonable allowances for mobilization of the contractor prior to commencement of in-field work and for traditional weather downtime delays.

6.2 Construction Methodology

- ♦ Selection of construction equipment and techniques that are proven (See Attachment F)
- ♦ Plan for optimized construction vessel and location usage so as to minimize the overall decommissioning duration for the facilities.

6.3 Spill Prevention, Control and Countermeasures

As previously identified in section 4.2.3, all vessels performing the work will be inspected and prepared, prior to mobilizing to the field, to verify the Contractor has the equipment and procedures in place to ensure discharges do not occur. During the planning stages the Contractor will develop spill prevention, control, and countermeasures plans (SPCC) (See Attachment D) specific for each vessel involved with the project following all permit and regulatory requirements. The Contractor will work to assure "Zero Discharge". In the unlikely event of an incident, all work will cease and all efforts will be focused on any countermeasures that may be required and all required notifications will be made.

6.4 Regional Considerations

- ◆ Neptune LNG has selected a proven and experienced marine contractor utilizing specialized equipment that does not exist locally.

Neptune LNG has identified several scenarios that may potentially cause delays to the planned construction activity and the overall schedule. Table 6-1 outlines several scenarios and their proposed contingency measures.

Table 6-1. Issues that Could Impact the Overall Schedule		
Issue/Scenario	Evaluate Impact	Contingency Measures/Actions
Delay in construction vessels mobilization/arrival	Assess the length of the delay and evaluate impact to project schedule	If the construction start date is delayed in a manner that jeopardizes completion within the required window, require the contractor to supply additional vessels or equipment to perform portions of the work. The present schedule has sufficient buffer should there be minor delays
Significant mechanical failure(s)	Discuss options with contractor and evaluate schedule impact	Inspect records and equipment prior to mobilization to insure equipment is fully functional and maintained and require the contractor to provide redundant systems where possible and/or replacement parts for components that are likely to experience failure
Lifting points of components to be recovered damage.	Identify condition. Assess alternate removal procedures	Devise alternate lifting points or disassemble components and remove in multiple pieces
Slower than expected progress	Review options with contractor and overall schedule impacts	Isolate issue causing delay and require contractor to increase resources. Subsea 7 has several vessels and equipment in their fleet that could perform the work

Table 6-1. Issues that Could Impact the Overall Schedule

Marine Mammal Presence within Construction Zone	Review options with contractor and overall schedule impacts	Implement procedures outlined in the Marine Mammal Detection Plan. Seek potential alternate location to continue work that will not be impacted by Marine Mammal Presence
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7. Construction Equipment and Schedule

Neptune LNG is presently engaged in discussions with the Contractor regarding the specific construction equipment that will perform the work. The information provided below is intended to describe the type of equipment anticipated. These vessels will be similar to what was used during the installation; with the exception of pipe lay equipment which is not required for decommissioning.

All of the vessels will operate 24 hours per day and seven days per week, with the exception of weather conditions that are deemed unsuitable for safe operations. Neptune LNG anticipates that the decommissioning work will occur over an approximate 10-12 week period.

7.1 Dive Support Vessel (DSV)

This vessel will be dynamically positioned and will support diving and ROV operations required to perform the work.

This vessel will perform the pipeline depressurization and flooding operations, minor and localized equipment exposure activities, and support of the Heavy Lift Vessel (if required). It may remove and recover components, if appropriate.

7.2 Support Barge and Tug

One or more support barges and associated tugs may be required to stage recovered components for transport to a dockside facility for proper disposal. A separate anchored barge may be used to support flaring activities.

7.3 Survey Vessel

Once all decommissioning activities are completed and all the components have been recovered a small survey vessel may perform an "As Left Survey" if this activity is not performed by the DSV ROV.

7.4 Crew Boat

A small vessel will be utilized periodically to transport personnel to and from the work site.

7.5 Preliminary Schedule

Neptune LNG is planning to perform the decommissioning work as described by this plan in the spring and summer of 2018 and anticipates an overall estimated duration of 10-12 weeks to perform all field activities. All activities will be completed by no later than November 30, 2018. The work will be performed between May 1 and November 30.

A detailed schedule and notification of actual work dates will be provided before March 31, 2018.

8. Scope of Work

This Scope of Work is intended to provide an overview of each major phase of the work and does not necessarily capture every activity. The sequence of activities will be finalized upon award of the decommissioning contract and prior to the start of field work.

8.1 Hot Tap Tie-in

Neptune LNG has collaborated with Algonquin to confirm their requirements for the final disposition and configuration of the Hot Tap Assembly that will remain attached to the HubLine pipeline once the DWP has been decommissioned.

To isolate the DWP pipeline extending from the HubLine pipeline, the 20" valve attached to the hot tap must be uncovered and closed. The Hot Tap fitting and 20" valve will be left in place. As illustrated in Figure 8-1, all other components, which include the check valve and associated support clamps, will be removed. Once the spool and structural clamps are removed, a blind flange will be installed and the assembly will be covered with sand bags and concrete mats.

The isolation of the Hot Tap valve and depressurization of the tie-in spool may be performed as pre-work prior to the remaining decommissioning activities to ensure that the valve operates properly and does not pose a safety risk to the divers.

In order to verify that the 20" Tap Valve closes properly and does not leak, the 16" Tie-in Spool between the Transition Manifold and the Hot Tap valve must be depressurized. The 16" Tie-in spool is approximately 100 feet in length and contains an estimated volume of 6000 standard cubic feet of natural gas. This volume of natural gas will be flared at the hot-tap location.

The depressurization of the 16" Tie-in Spool will be accomplished by installation of a high pressure hose to a blowdown valve on the Hot Tap Assembly. The venting hose will be run to the surface and connected to a flare stack positioned on the barge supporting this operation where the gas in the spool will be flared off.

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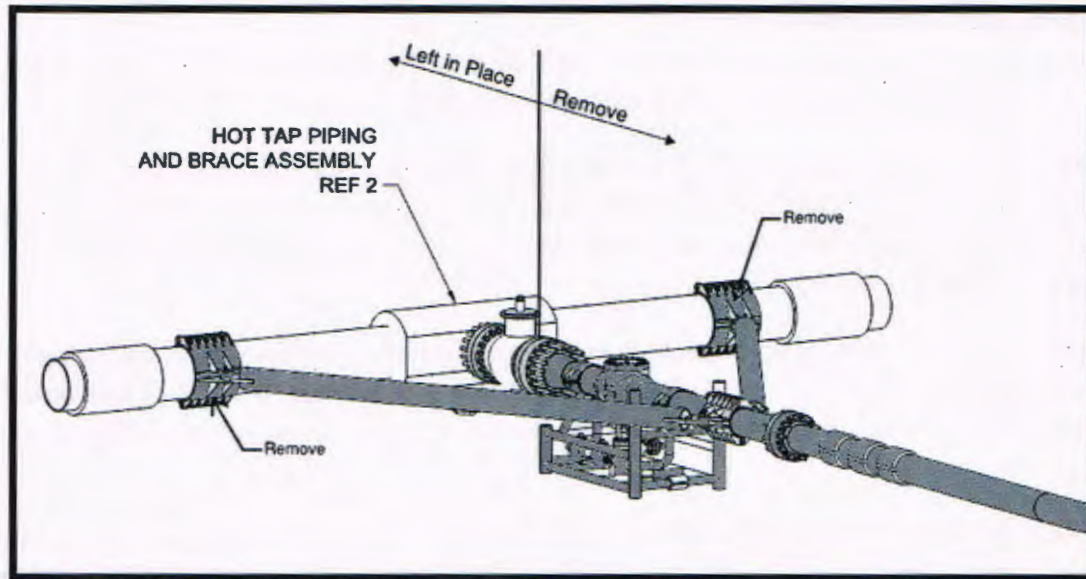


Figure 8-1 - Hot Tap Assembly

The anticipated Hot Tap isolation and Spool Assembly removal methodology is as follows:

Step	Description	Vessel
1.	Mobilize DSV to location	DSV
2.	Divers will uncover the Hot Tap piping and brace assembly	DSV
3.	Divers will close the 20" Hot Tap valve and the valve on the Transition manifold to isolate the 16" tie-in spool	DSV
4.	The spool will be depressurized by connecting a high pressure hose from the spool to a flare stack on the support barge and flaring the gas at the surface will take place. The spool will then be flooded	DSV/Barge
5.	Divers will disconnect the spools and check valve from the 20" hot tap valve and the transition manifold valve and recover the spools and check valve assembly to the surface	
6.	Divers will install a blind flange on the 20" Hot Tap valve	DSV
7.	Divers will remove and recover the two brace clamps from the HubLine pipeline	DSV
8.	Divers will install sand bags over the Hot Tap Valve and cover the area with concrete mats	DSV

Additional pre-work activities may also include disconnecting the hydraulic lines in the two buoy umbilicals from the PLEMS and at the Buoys and flushing and recovering the environmentally safe hydraulic oil from them. At this time the detailed engineering for that operation is in development.

8.2 Pipeline Decommissioning

In accordance with Section 8.2 and other relevant provisions of the PMMP, and with 49 CFR Section 192.727, Neptune LNG will decommission and abandon the pipeline in place.

The pipeline lies in water depths ranging between 260 feet (MLLW) at the South Buoy and 122 feet (MLLW) at the Hot Tap. The last pressure reading obtained from the pipeline was 793 psig. The total length of the pipeline is approximately 13.1 miles and presently contains approximately 12 million standard cubic feet of natural gas.

The pipeline decommissioning includes depressurization of the pipeline by installation of a high pressure hose to a blowdown valve on the PLEM adjacent to the South Buoy location. The hose will be connected to a flare stack positioned on the vessel supporting this operation and the gas in the pipeline will be flared off in federal waters.

Temporary pig launchers and receivers will be installed at each end of the pipeline. Once the pipeline has been depressurized, a poly pig will be launched and propelled using seawater to flood the pipeline. Any remaining gas will continue to be combusted at the surface through the flare stack.

The volume of untreated, filtered seawater required to flood the pipeline is approximately 1.5 million gallons. The intake screen will be sized to ensure the intake velocity does not exceed 0.5 feet per second, will have slots cut and will be placed strategically in the water column to minimize entrainment of sea life in accordance with Section 3.2.3 of the PMMP. The flow rate during the flooding activity will range between 1500 and 3000 gallons per minute.

Later in the decommissioning process, once the PLEMS, Transition Manifold and associated spools have been removed, each end of the pipeline will be plugged, buried and covered with concrete mats.

The anticipated pipeline decommissioning methodology is as follows:

Step	Description	Vessel
1.	Mobilize flaring barge to field and set up at South PLEM location	Barge
2.	Set-up DSV at Transition Manifold Location	DSV
3.	Install temporary pig launcher, with preloaded poly pigs, on Transition Manifold	DSV
4.	DSV relocates to South PLEM	DSV / Barge
5.	Install temporary pig receiver on South PLEM	DSV
6.	Set up flare on barge and connect high pressure hose between flare and pig receiver	DSV / Barge
7.	Perform pipeline depressurization, flaring gas	DSV / Barge
8.	Once pipeline has been depressurized, pipeline flooding will commence. DSV will transition to Transition manifold Location	DSV
9.	A pig will be launched from the Transition manifold Pig launcher and propelled with untreated, filtered seawater towards the South PLEM	DSV / Barge
10.	Flooding of the pipeline is completed once the pig is received at the South PLEM	DSV / Barge
11.	The temporary pig receiver and pig may be removed and recovered from the South PLEM or may remain attached until PLEM is recovered	Barge
12.	The temporary pig launcher may be removed and recovered from the Transition	DSV

	Manifold or may remain attached until the Manifold is recovered	
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8.3 Risers and Umbilicals

Once the pipeline has been depressurized and flooded, the risers and umbilicals will be disconnected and removed. The contractor will verify that the riser has been depressurized and the umbilical has been disconnected from the buoy and PLEM. The riser will be cut utilizing a hydraulic sheer, or an ROV mounted cutting wheel, recovered to the work vessel and properly disposed of at an appropriate onshore disposal facility.

The anticipated Riser and Umbilical removal methodology is as follows (South Buoy described below; similar activities are performed at the North Buoy):

Step	Description	Vessel
1.	Position DSV to South Buoy Location	DSV
2.	A clump weight will be installed on the Riser near the PLEM cut point	DSV
3.	Hydraulic shears or an ROV cutting tool is deployed to cut the Riser near the bottom of the buoy and near the PLEM	DSV
4.	The cut Riser and disconnected umbilical will be recovered to the vessel	DSV
5.	The vessel will transition to the North Buoy and repeat the steps	DSV

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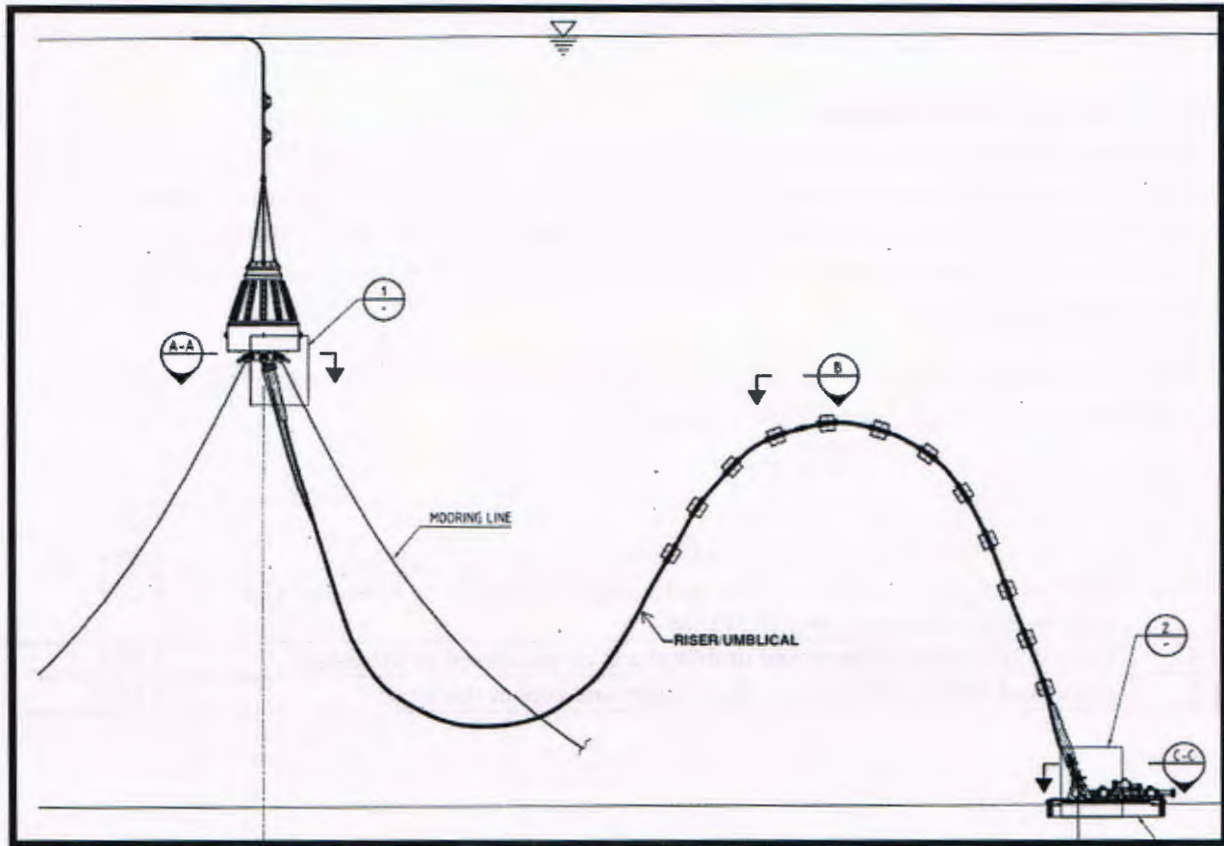


Figure 8-2 – Riser and Umbilical Removal

8.4 STL Buoys

The STL Buoy removal plan involves cutting each of the eight mooring lines that connect the buoy to the piles. A hydraulic shear or ROV mounted cutting tool will be deployed to cut each mooring line close to the buoy, freeing the buoy for retrieval. The Contractor will attach the proper rigging to either lift the buoy onto the work vessel or to tow the buoy to a quayside facility for salvage. The process will be repeated for each buoy.

The buoy locations and physical parameters are as shown in the table below:

	Latitude:	Longitude:	Diameter mm (ft)	Height mm (ft)	Weight Kg (sT)
North Buoy	N 42°29'12.61"	W 70°36'29.77"	7350	10707	161,174
South Buoy	N 42°27'20.70"	W 70°36'07.28"	(24.1)	(35.1)	(177.7)

The anticipated STL Buoy removal methodology is as follows (South Buoy described below; similar activities are performed at the North Buoy):

Step	Description	Vessel
1.	A hold back weight will be deployed and rigged to the Buoy to stabilize the buoy prior to cutting of mooring lines	DSV
2.	The vessel crane or a tow line will be attached to the buoy	DSV
3.	Hydraulic shears or an ROV cutting tool will be deployed to cut each of the eight mooring lines near the buoy	DSV
4.	The Buoy will either be recovered to the vessel or towed to a dockside facility	DSV
5.	The vessel will transition to the North Buoy and repeat the steps	DSV

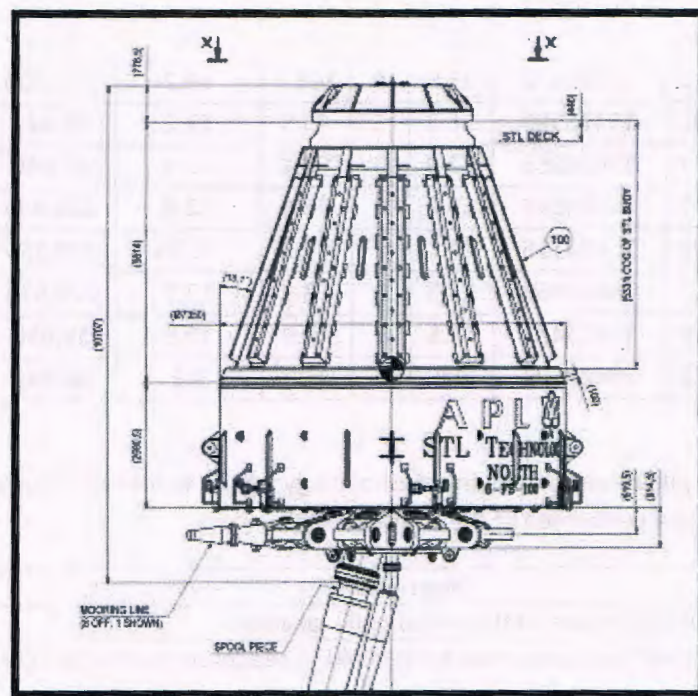


Figure 8-3 – STL Buoy

8.5 Suction Piles

A review of the engineering challenges and environmental impacts associated with the reverse installation methodology for the removal and recovery of the suction piles was conducted. The purpose of the review was to determine the most environmentally responsible and safest manner to decommission the suction piles considering several factors which include minimizing environmental impacts, personnel safety and long term post port uses.

Based on the review, Neptune LNG plans to abandon the suction piles in place and to cover the suction piles with trawl protectors.

Pile No	Position (US)		Height (m)	Dia. (m)	Weight (Te)	Penetration	Volume (gal)	Protrusion above Seafloor (m)
	E (ft)	N (ft)				Depth (m)		
N1	1206666.98	15439222	16.4	5	64.3	15.8	85,066	0.6
N2	1209438.72	15439501	14.7	5	59.4	14	76,248	0.7
N3	1209405.85	15436713	16.7	5	64.8	15.7	86,622	1
N4	1208735.54	15434845	16.5	5	64.3	15.9	85,584	0.6
N5	1206862.25	15434697	12.1	11	112.8	11.5	303,769	0.6
N6	1205669.5	15435390	16	5	62.9	15.4	82,991	0.6
N7	1205138.6	15436531	16.1	5	63.1	15.2	83,510	0.9
N8	1205343.98	15437951	10.9	5	47.9	10	56,537	0.9
S1	1208432.49	15427870	13.9	9	101.7	13.2	233,600	0.7
S2	1210231.6	15426980	18.3	5	69.5	17.2	94,921	1.1
S3	1210868.51	15425063	17.9	5	68.4	17.1	92,846	0.8
S4	1210012.47	15423210	13.2	9	98.5	12.4	221,836	0.8
S5	1208103.78	15423116	13.1	9	97.9	12.35	220,155	0.75
S6	1207005.13	15424169	13.3	9	98.9	12.7	223,516	0.6
S7	1205070.19	15425472	11.5	5	49.9	10.5	59,650	1
S8	1206198.28	15427603	9.8	5	45.3	9.2	50,832	0.6

The anticipated suction pile decommissioning methodology will be as follows (South Buoy described below; similar activities are performed at the North Buoy):

Step	Description	Vessel
1.	The DSV will mobilize to one of the suction pile locations	DSV
2.	Trawl protectors will be transported to the field to rendezvous with the DSV vessel	Barge
3.	The trawl protectors will be lowered to the seafloor and placed over each respective suction pile	DSV
4.	Divers will secure the trawl protectors to the seabed (either gravity based, screw anchors, or similar method)	DSV
5.	The vessels will transition to the North Buoy and repeat the steps	DSV

8.6 Mooring Lines - Anchor Chain and Wire Rope

Each anchor chain will be cut as close to the suction pile as practical and recovered.

The wire rope that attached the chain to the buoy will be recovered and properly disposed of.

The anticipated anchor chain removal methodology is as follows:

Step	Description	Vessel
1.	The DSV will mobilize to one of the suction pile locations	DSV
2.	Divers or an ROV will cut the anchor chain as close to the suction pile as practical	DSV
3.	The DSV will attach to the end of the chain and recover the chain and wire rope to the vessel or barge	DSV
4.	The vessel will repeat the anchor chain and wire recovery for all remaining suction piles	DSV

This process will be repeated for all 16 mooring lines.

Line	Chain Length (A)	Chain Weight in Air (Te)	Wire Rope length	Wire Rope Weight in Air (Te)
N1	675m	265.1	150m	12.86
N2	1070m	420.3	150m	12.86
N3	675m	265.1	150m	12.86
N4	675m	265.1	150m	12.86
N5	450m	176.7	150m	12.86
N6	375m	147.2	150m	12.86
N7	375m	147.2	150m	12.86
N8	470m	184.5	150m	12.86
S1	675m	265.1	150m	12.86
S2	675m	265.1	150m	12.86
S3	675m	265.1	150m	12.86
S4	690m	270.9	150m	12.86
S5	520m	204.3	150m	12.86
S6	375m	147.2	150m	12.86
S7	845m	331.9	150m	12.86
S8	825m	324.1	150m	12.86

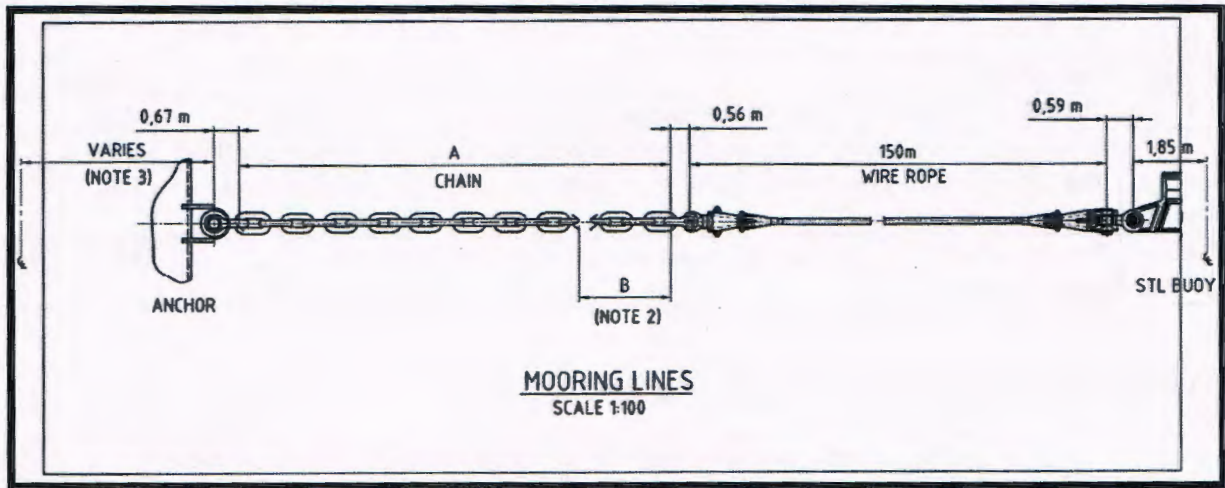


Figure 8-4 - Mooring Line Detail

8.7 PLEMS / Transition Manifold

The DWP consists of three manifolds, South PLEM, North PLEM and the Transition Manifold with a protection cover.

The details of each manifold and associated spools that will be removed and recovered are provided in the table and figures below:

Details	North PLEM	South PLEM	Transition Manifold	
			Roof Structure	Transition Manifold
Length (m)	12	12	12.5	8.5
Width (m)	12	12	12.5	8
Height (m)	4.3	4.7	3.5	3
Weight (Kg)	91200	120100	45000	31000

Note: The PLEMs, Transition Manifold and associated spools will only be removed once the pipeline has been flooded and the riser/umbilical has been detached.

8.7.1 South PLEM and Tie-In Spools

The South PLEM and tie-in spools will be removed, recovered and properly disposed of once the two tie-in spools have been disconnected. The end of the pipeline will be plugged and covered with concrete mats.

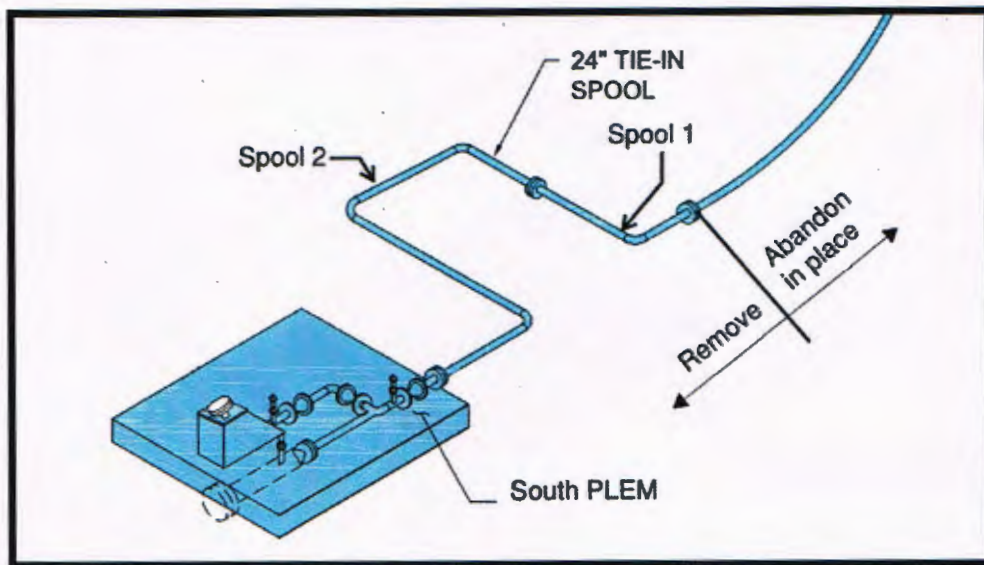


Figure 8-5 - South PLEM and Tie-in Spools

The anticipated South PLEM removal methodology will be as follows:

Step	Description	Vessel
1.	The DSV will mobilize to the South PLEM location	DSV
2.	Divers will disconnect spools 1 and 2 and recover spools	DSV
3.	Divers will plug the end of the 24" pipeline and cover with mats	DSV
4.	Divers or the ROV will attach rigging to the South PLEM and the vessel will recover the PLEM	DSV

8.7.2 North PLEM and Tie-In Spool

The North PLEM and tie-in spool will be disconnected from the pipeline removed, recovered and properly disposed of. The end of the pipeline will be plugged and covered with concrete mats.

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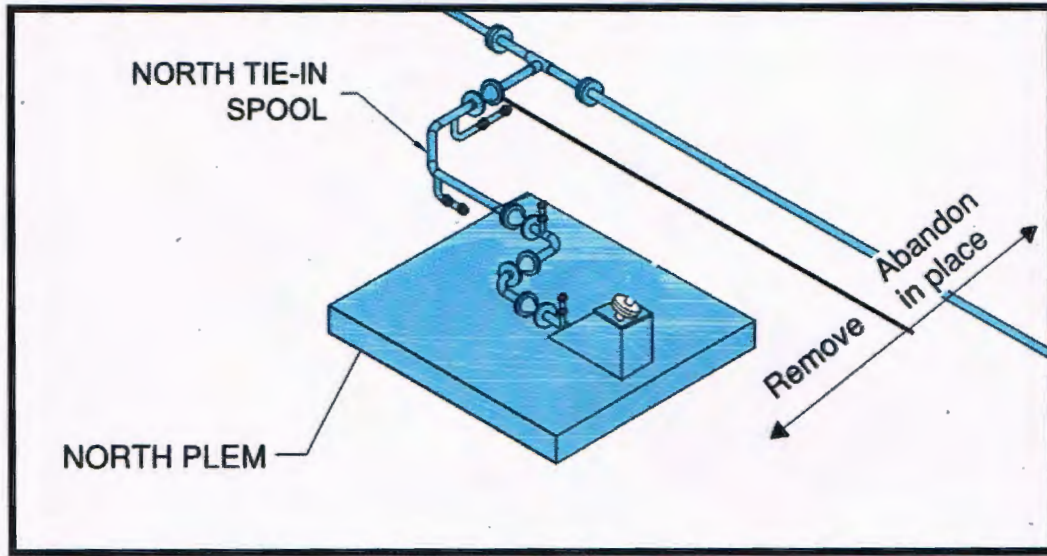


Figure 8-6 - North PLEM and Tie-in Spool

The anticipated North PLEM removal methodology is as follows:

Step	Description	Vessel
1.	The DSV will mobilize to the North PLEM location	DSV
2.	Divers will disconnect the North Tie-in spool and recover spool	DSV
3.	Divers will plug the "Tee" end of the 24" pipeline and cover with mats	DSV
4.	Divers or the ROV will attach rigging to the North PLEM and the vessel will recover the PLEM	DSV

8.7.3 Transition Manifold and Tie-In Spools

The components that will be removed in conjunction with the Transition Manifold include the 24" Tie-in Spool, the 16" Tie-in Spool and the Protection Cover as shown in Figure 8-7 below. The Transition Manifold, Protection Cover, Hazard Buoy and tie-in spools will be recovered and properly disposed of. The hazard buoy marking the location of the transition manifold will also be recovered.

Once disconnected, the end of the pipeline will be plugged and covered with concrete mats.

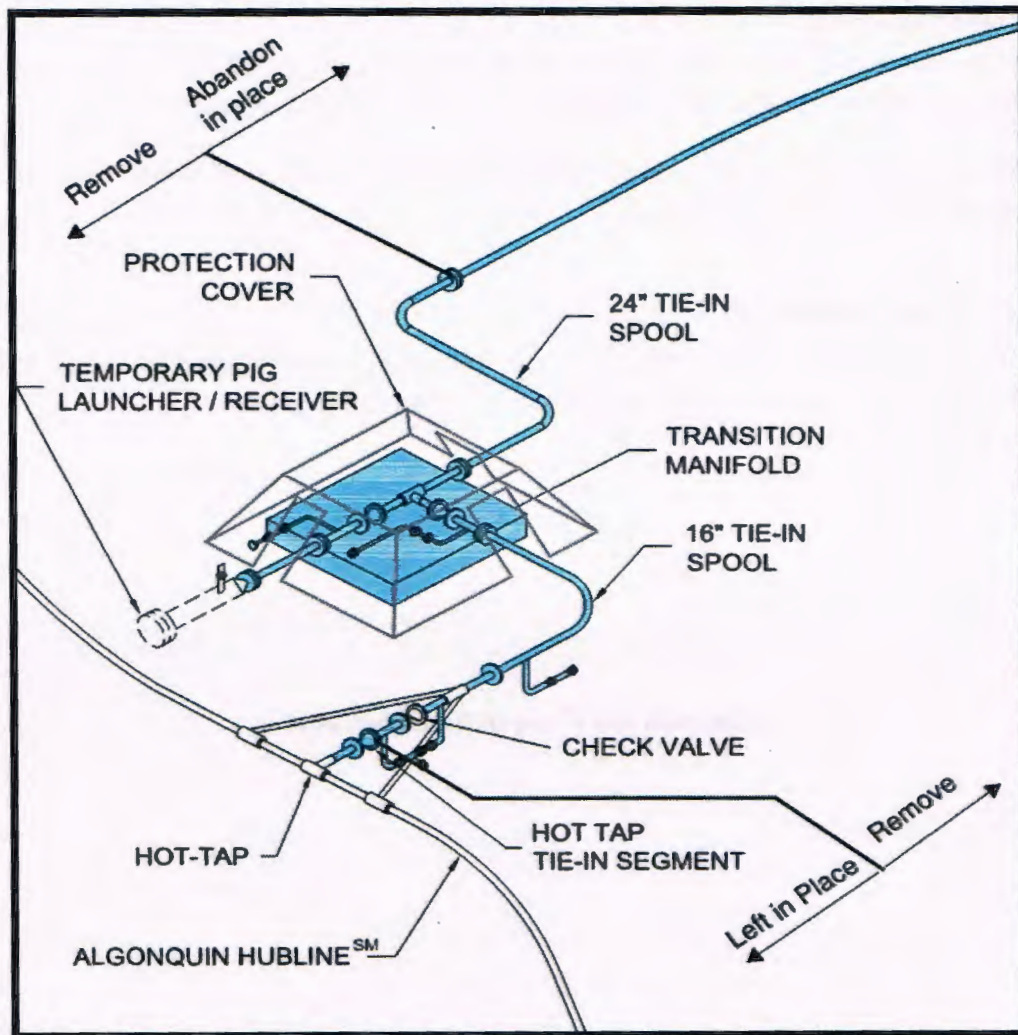


Figure 8-7 - Transition Manifold

The anticipated Transition Manifold removal methodology will be as follows:

Step	Description	Vessel
1.	The DSV will mobilize to the Transition Manifold location	DSV
2.	Divers to remove and recover access doors/panels on the Protective Cover	DSV
3.	Divers will disconnect the 24" Tie-in spool and recover spools	DSV
4.	Divers will plug the end of the 24" pipeline and cover with mats	DSV
5.	Divers or the ROV will attach rigging to the Protective Cover and the vessel will recover the cover	DSV
6.	Divers or the ROV will attach rigging to the Transition Manifold and recover the manifold	DSV

8.8 Seafloor Position Transponders

The two Transponders, one located at each buoy position, will be recovered and properly disposed of onshore.

8.9 As Left Survey

Once all of the activities defined in the plan have been completed, an "As Left Survey" of the seabed will be performed to confirm that there is no debris associated with the DWP left behind.

A final drawing of the survey will be prepared illustrating the final contours and seabed elevation in the area where each component was removed.

9. Final Documentation

The As Left Survey and any required reports will be submitted to all required agencies along with any required notifications that decommissioning is complete will be made.

Submitted this 1st day of December, 2016