# FISH in SEAK - Development Plan

## Pioneer Consulting
## Rev 0 • March 2, 2026

221 River Street, 9th Floor • Hoboken, NJ 07030, USA • Telephone: +1 978 357 3605

www.pioneerconsulting.com

# Table of Contents

# Table of Figures

# List of Tables

# 1. ATTACHMENT A: LOCATION INFORMATION

**Table 1: Location Information by Landing Location, Branch, and Area within State Waters**

| Municipality/State Waters Area | Section(s) | Township | Range | Meridian |
|---|---|---|---|---|
| Cordova Landing | 28 | 015S | 003W | Copper River |
| Cordova to Yakutat Branch* **exits State waters into Federal waters* | 28;29;30 | 015S | 003W | Copper River |
| | 25; 26; 34; 35 | 015S | 004W | Copper River |
| | 3; 10; 15; 16; 20; 21; 29; 30 | 016S | 004W | Copper River |
| | 25; 36 | 016S | 005W | Copper River |
| | 1; 2; 3; 10; 15; 22; 25; 26; 27 | 017S | 005W | Copper River |
| | 30; 31 | 017S | 004W | Copper River |
| | 6; 7; 18; 19; 20; 28; 29; 33; 34 | 018S | 004W | Copper River |
| | 2; 3; 11; 12; 13; 24 | 019S | 004W | Copper River |
| | 19; 29; 30; 32; 33 | 019S | 003W | Copper River |
| | 2; 3; 4; 11; 12; 13 | 020S | 003W | Copper River |
| | 18; 19; 20; 28; 29; 33; 34 | 020S | 002W | Copper River |
| Kayak Island Area | 28; 29; 30; 33; 34; 35; 36 | 024S | 004E | Copper River |
| | 1 | 025S | 004E | Copper River |
| | 31; 32; 33; 34; 35; 36 | 024S | 005E | Copper River |
| | 6 | 025S | 005E | Copper River |
| | 13; 22; 23; 24; 27; 28; 29; 30; 31 | 024S | 006E | Copper River |
| | 1; 2; 9; 10; 11; 16; 17; 18 | 024S | 007E | Copper River |
| Yakutat Branch | 13; 23; 24; 26; 34; 35 | 027S | 032E | Copper River |
| | 3; 10; 14; 15; 17; 18; 20; 21; 22; 23; 26; 27; 34; 35 | 028S | 032E | Copper River |
| | 7; 8; 9; 15; 16;18; 22; 25; 26; 27 | 027S | 033E | Copper River |
| | 30 | 027S | 034E | Copper River |

| Municipality/State Waters Area | Section(s) | Township | Range | Meridian |
|---|---|---|---|---|
| Yakutat Landing | 30 | 027S | 034E | Copper River |
| Gulf of Alaska Area | 7; 16; 17; 18; 21; 22; 25; 26; 27; 36 | 038S | 046E | Copper River |
| | 31 | 038S | 047E | Copper River |
| | 5; 6; 9; 10; 14; 15; 23; 24 | 039S | 047E | Copper River |
| | 19; 29; 30; 32; 33; 34 | 039S | 048E | Copper River |
| | 7; 17; 18; 20; 21; 26; 27; 28; 35; 36 | 040S | 049E | Copper River |
| | 3; 4; 10; 11; 12 | 041S | 050E | Copper River |
| | 7; 15; 16; 17; 18; 22; 23; 24; 25 | 041S | 051E | Copper River |
| | 30; 31; 32 | 041S | 052E | Copper River |
| | 5; 8; 9; 15; 16; 22; 23; 25; 26 | 042S | 052E | Copper River |
| Icy Straight Area | 30; 31; 32 | 042S | 053E | Copper River |
| | 2; 3; 4; 5; 11; 12 | 043S | 053E | Copper River |
| | 7; 8; 13; 14; 15; 16; 17; 22; 23; 24 | 043S | 054E | Copper River |
| | 25; 26; 27; 33; 34 | 041S | 055E | Copper River |
| | 4; 8; 9; 17; 20; 29; 32 | 042S | 055E | Copper River |
| | 5; 8; 17; 18; 19; 29; 30; 32 | 043S | 055E | Copper River |
| | 4; 5; 9; 10; 14; 15; 23; 24; 25; 36 | 044S | 055E | Copper River |
| | 23; 24; 26; 27; 28; 29; 30 | 041S | 056E | Copper River |
| | 31 | 044S | 056E | Copper River |
| | 2; 11; 13 | 045S | 056E | Copper River |
| | 18; 19; 20 | 045S | 057E | Copper River |
| Pelican Landing | 19; 20 | 045S | 057E | Copper River |
| Pelican to Gustavus Branch | 10; 11; 12; 15; 16; 17; 18; 19 | 041S | 057E | Copper River |
| | 25; 26; 34; 35 | 040S | 058E | Copper River |
| | 7; 8; 9; 10; 11; 12 | 041S | 058E | Copper River |
| | 19; 30 | 040S | 059E | Copper River |
| | 5; 7; 8; 916; 17; 21; 22; 25; 26;27; 36 | 041S | 059E | Copper River |

| Municipality/State Waters Area | Section(s) | Township | Range | Meridian |
|---|---|---|---|---|
| Gustavus Landing | 19 | 040S | 059E | Copper River |
| Gustavus to Hoonah Branch | 31; 32 | 041S | 060E | Copper River |
| | 3; 4; 5; 10; 11; 13 ;14 | 042S | 060E | Copper River |
| | 18; 19; 20; 21; 27; 28; 34; 35; 36 | 042S | 061E | Copper River |
| | 1; 3; 9; 10; 16; 21 | 043S | 061E | Copper River |
| Hoonah Landing | 21 | 043S | 061E | Copper River |
| Hoonah to Juneau Branch | 5; 6; 8; 9; 10; 11; 13; 14 | 043S | 062E | Copper River |
| | 1; 2; 3; 10; 15; 22; 27; 34 | 040S | 063E | Copper River |
| | 12; 13; 14; 15; 16; 17; 18 | 043S | 063E | Copper River |
| | 6; 7; 8; 17; 20; 21; 24; 25; 28; 33; 34; 35 | 040S | 064E | Copper River |
| | 5; 8; 17; 20; 29; 32; 33 | 041S | 064E | Copper River |
| | 4; 9; 15; 16; 22; 27; 33; 34 | 042S | 064E | Copper River |
| | 4; 5; 7; 8 | 043S | 064E | Copper River |
| Juneau Landing | 24 | 040S | 064E | Copper River |

# 2. ATTACHMENT B: DETAILED PROJECT DESCRIPTION AND CONSTRUCTION METHODOLOGY

## 2.1 Project Description

This project consists of the installation of a new high-speed subsea fiber-optic cable (SFOC) interconnecting Alaska and will provide additional geographic redundancy and, ultimately, help to establish and maintain resilient connectivity. The subsea fiber optic cable (SFOC) system for the Fiber Internet Serving Homes in Southeast Alaska ("FISH in SEAK") project is being built by Cordova Telecom Cooperative ("CTC") and is a subsea fiber optic component to CTC's overall network. It will significantly augment the internet capacity of remote areas of Southeast Alaska.

FISH in SEAK will connect Cordova to Juneau via an approximately 845.16 km long SFOC with branches along the route from Cordova to Juneau at approximately 420.22 km, 679.18 km, 735.69 km, and 766.15 km in Yakutat, Pelican, Gustavus, and Hoonah, respectively (Figure 1; Table 1). Beach manholes (BMH) will be used at each landing location to connect the subsea cable to an existing, or new, cable landing station (CLS) where the fiber optic cable will connect to land-based networks.

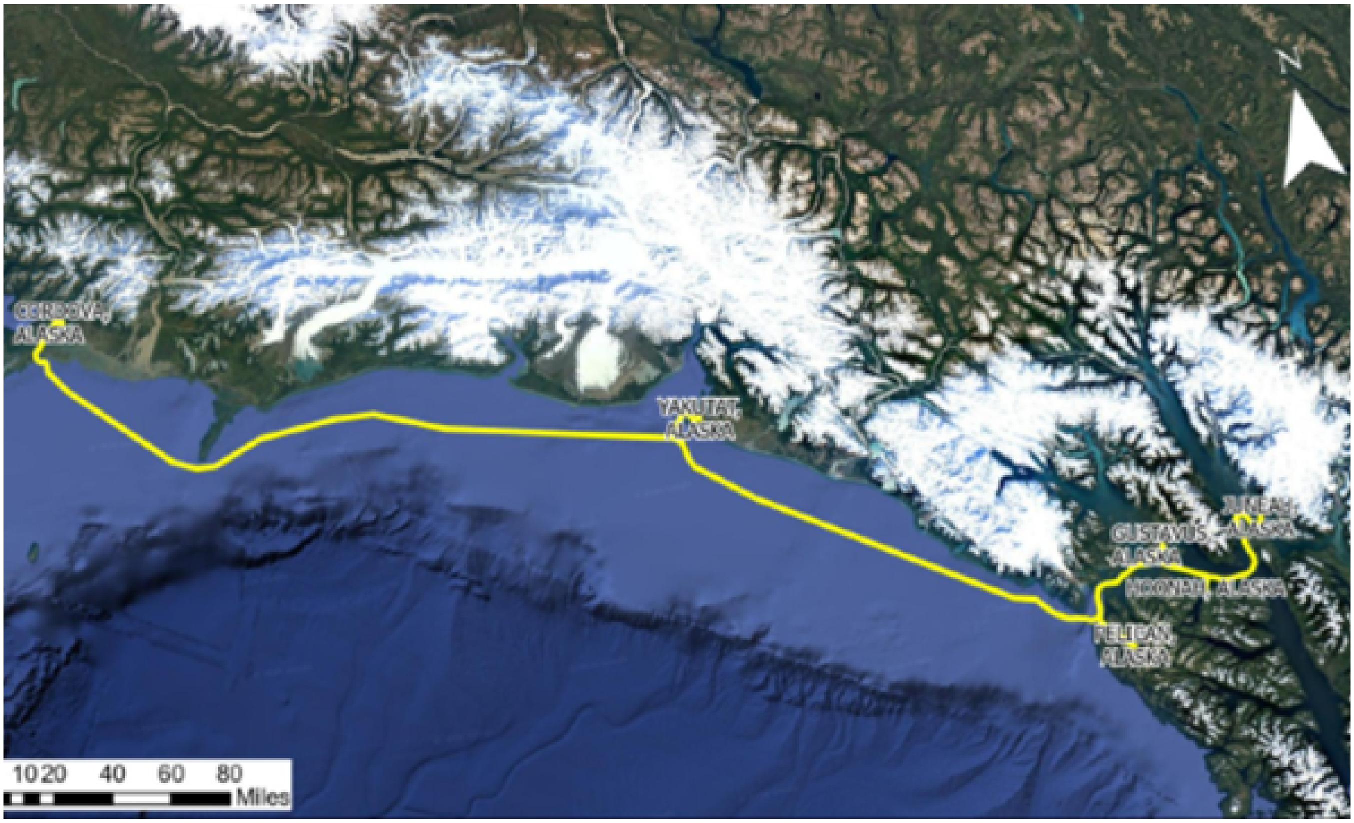



**Figure 1: Proposed FISH SEAK Subsea Fiber system.**

The upland portion of the proposed work consists of installing a beach manhole and pulling/hauling a new fiber optic cable through conduits (a PVC duct) into the manhole for onward terrestrial connection. The installation of the ducts from the BMHs, Ocean Ground Beds, and BMHs are the only above ground land disturbing activity. The proposed method of installation is by direct landing where the cable will come ashore with post-lay diver assisted burial in the nearshore.

#### 2.1.1. Project Overlap with State Waters and Land

Figures 2 to 12 illustrate the overlap of the overlap of the project with State and Federal waters. All of the SFOC landing locations (i..e., beach manholes) terminate above the high tide line and, with the exception of Gustavus, outside of State owned or managed lands (Figures 3 to 8). A detailed plan view of the project overlap with state owned and managed lands at Gustavus is provided in Figures 13 and 14.

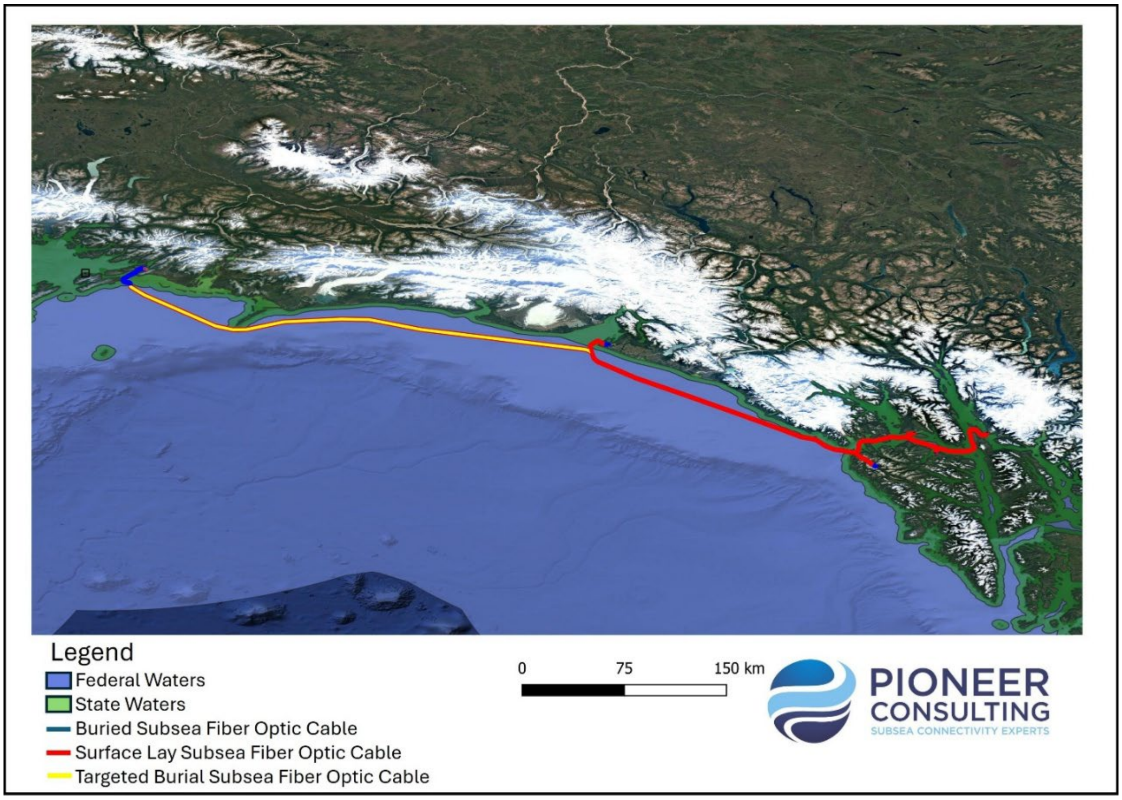



**Figure 2: FISH in SEAK Federal and State Waters with lay type.**

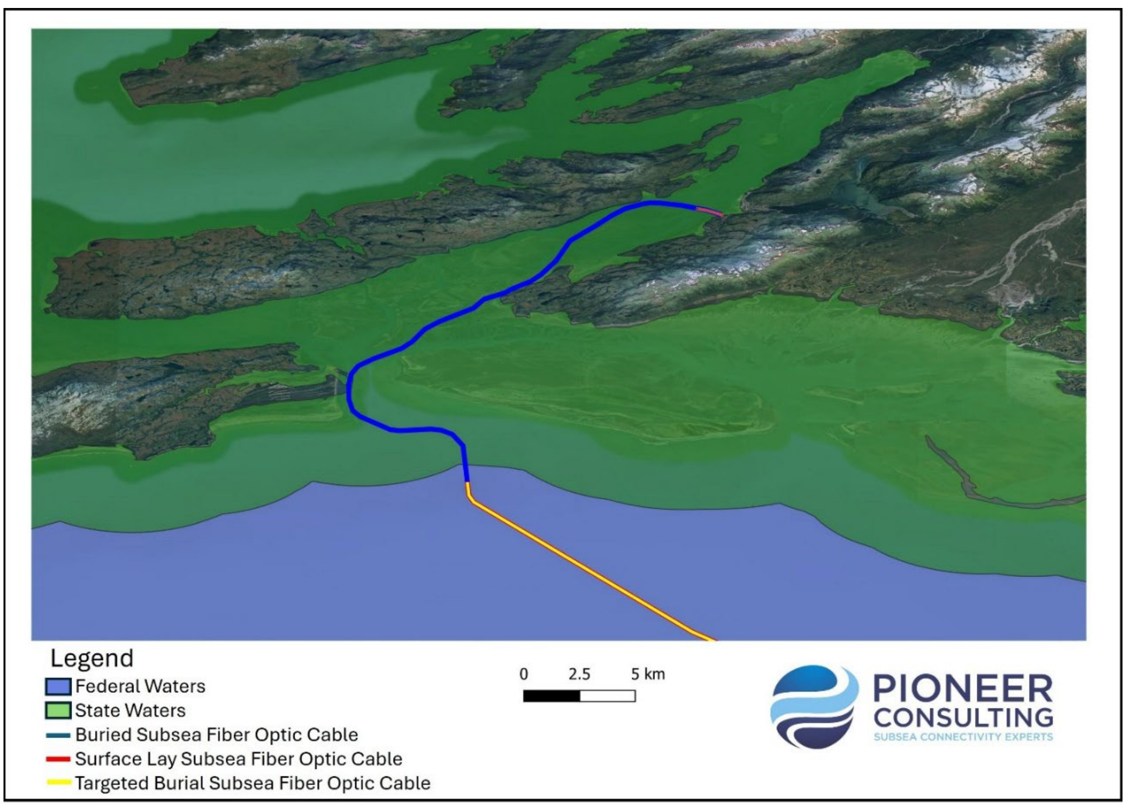



**Figure 3: FISH in SEAK Cordova Branch Federal and State Waters with lay type.**

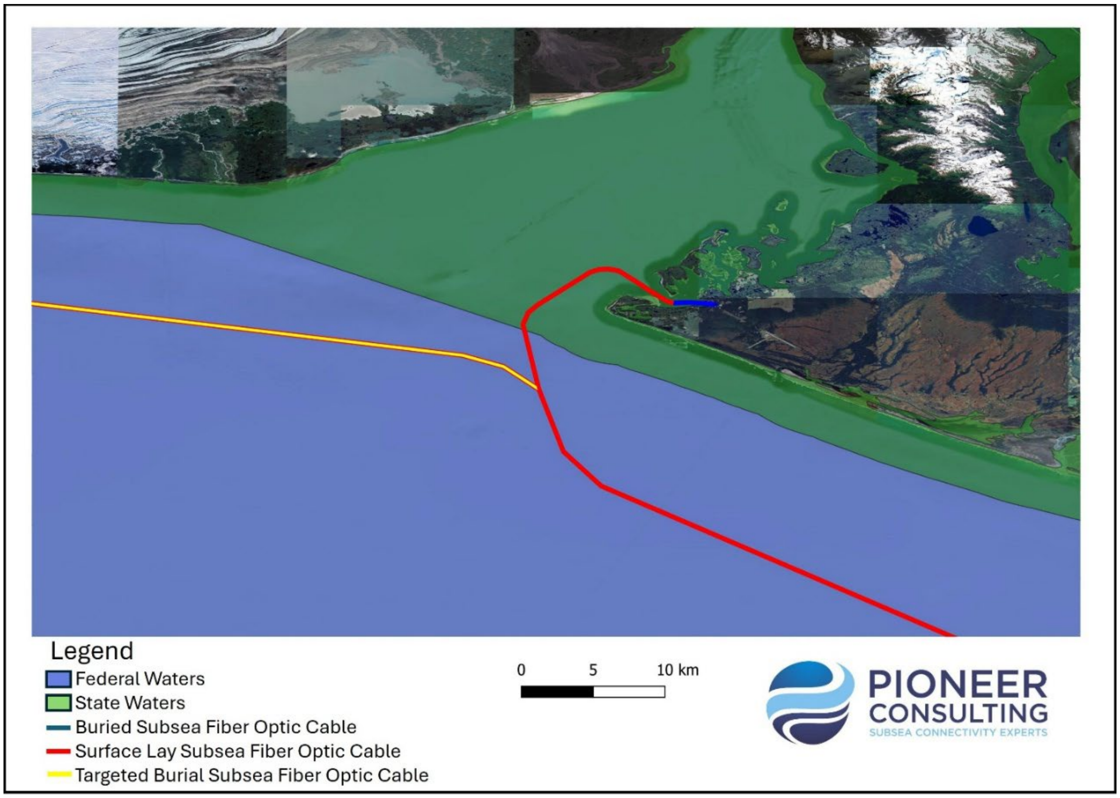



**Figure 4: FISH in SEAK Yakutat Branch Federal and State Waters with lay type.**

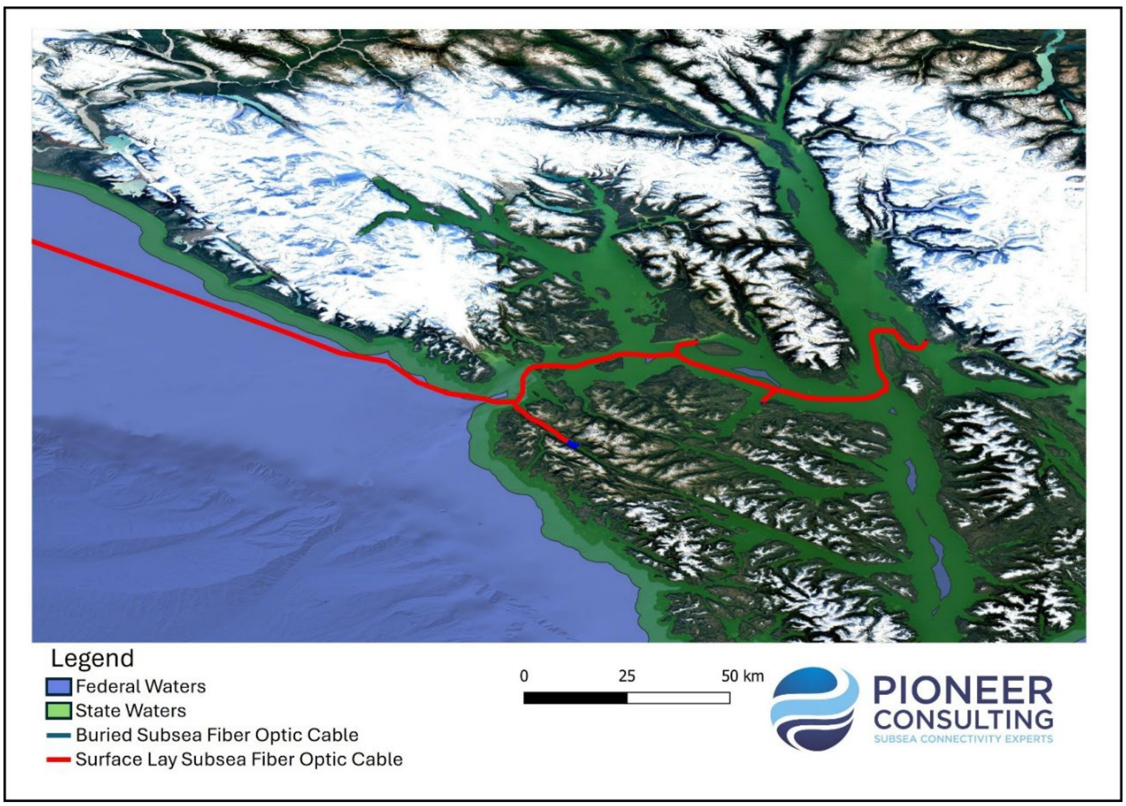



**Figure 5: FISH in SEAK Icy Strait Branches Federal and State Waters with lay type.**


**Figure 6: FISH in SEAK Cordova Landing with Earthing Cable to Sea Earth Plate.**

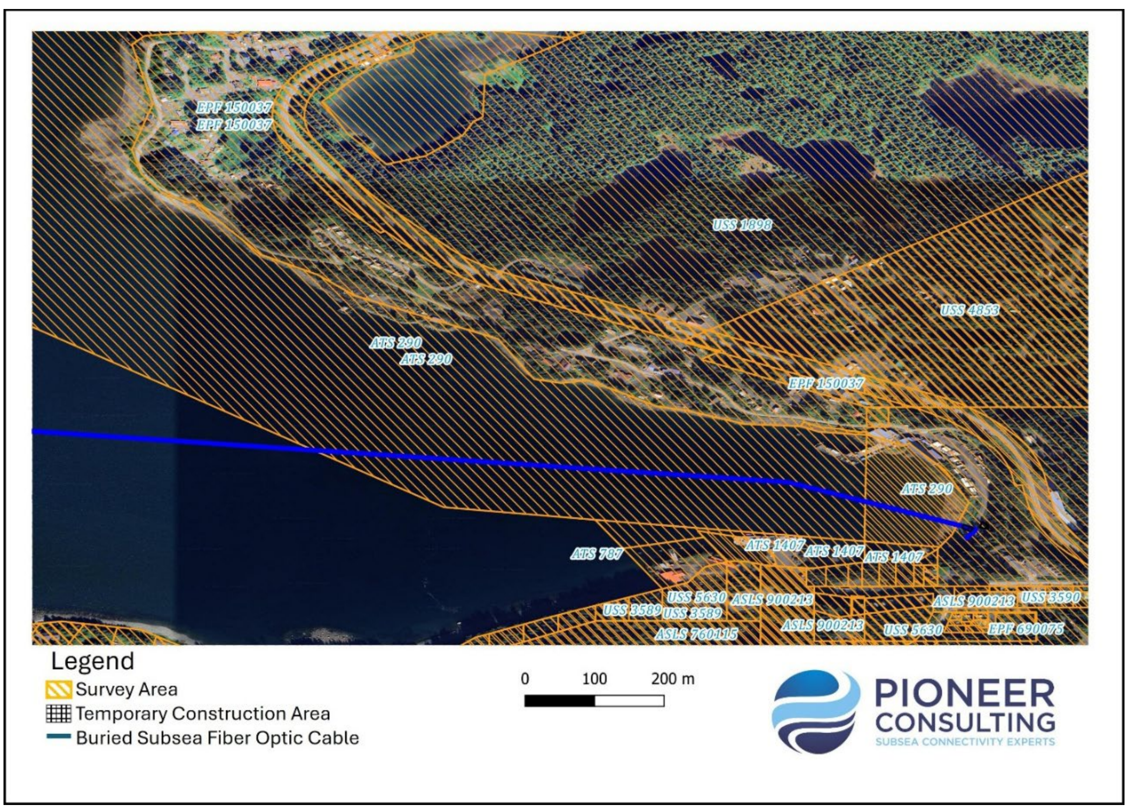



**Figure 7: FISH in SEAK Yakutat Landing Overview.**

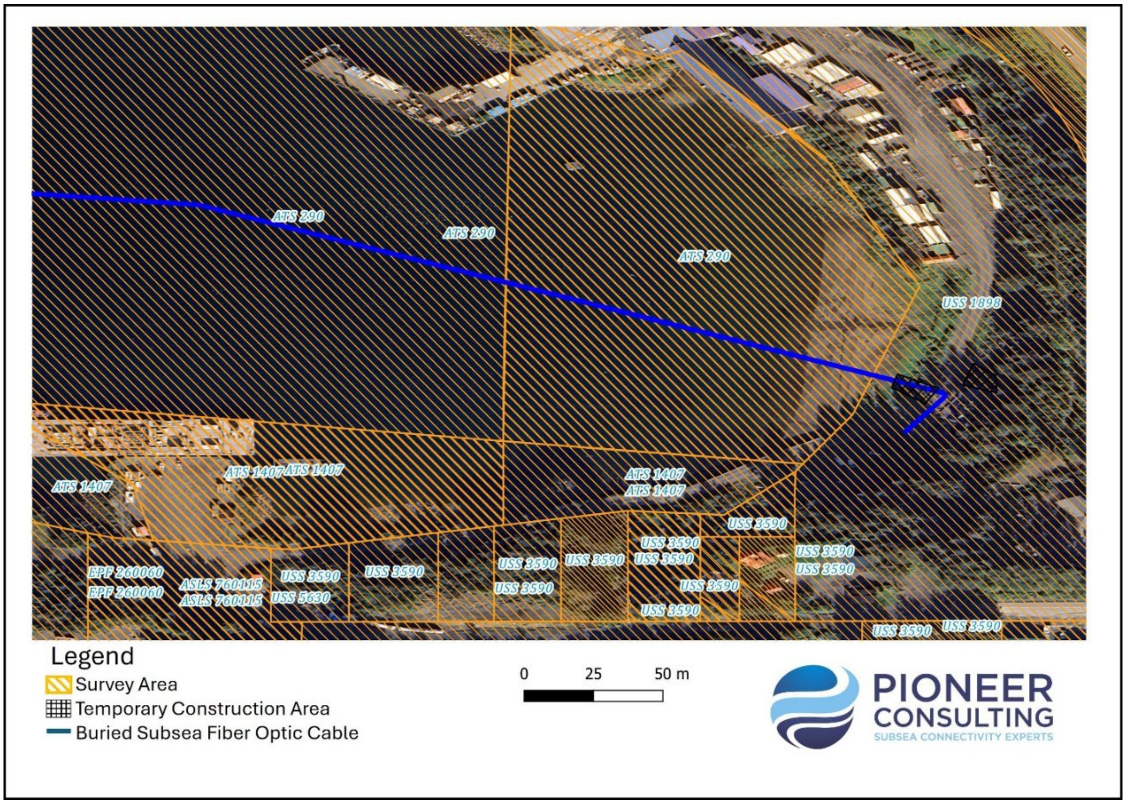



**Figure 8: FISH in SEAK Yakutat Landing.**

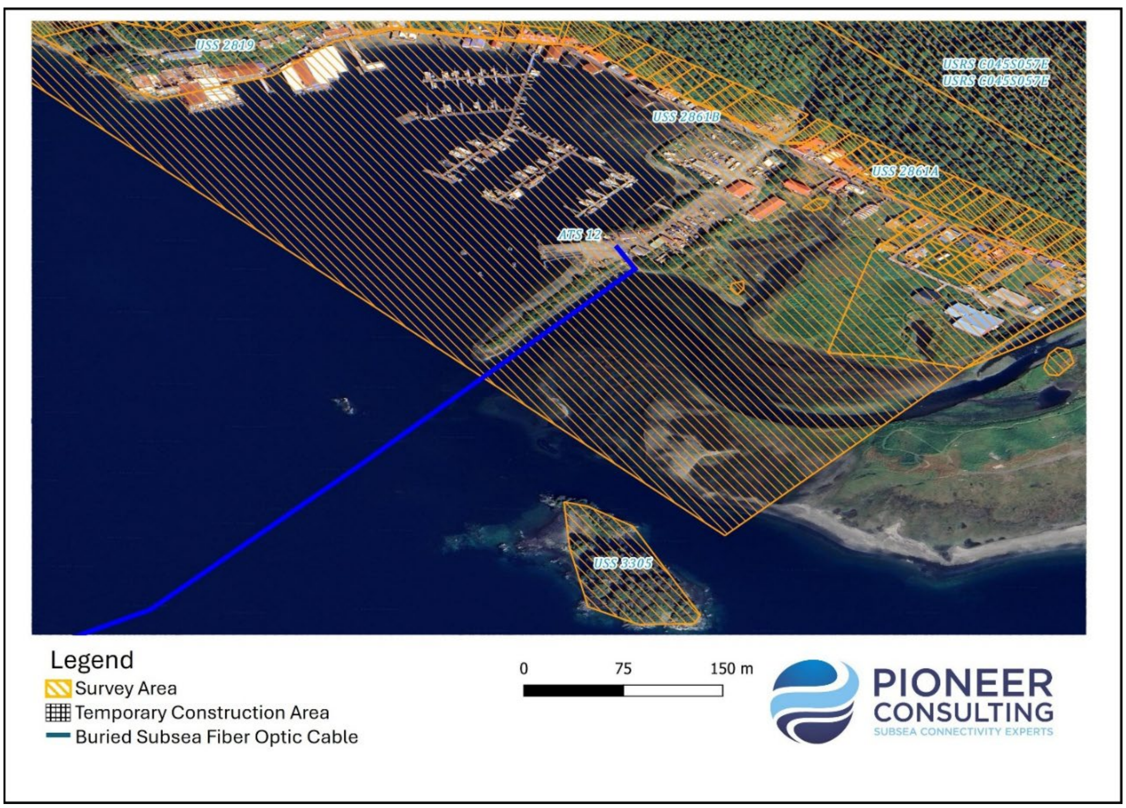



**Figure 9: FISH in SEAK Pelican Landing.**

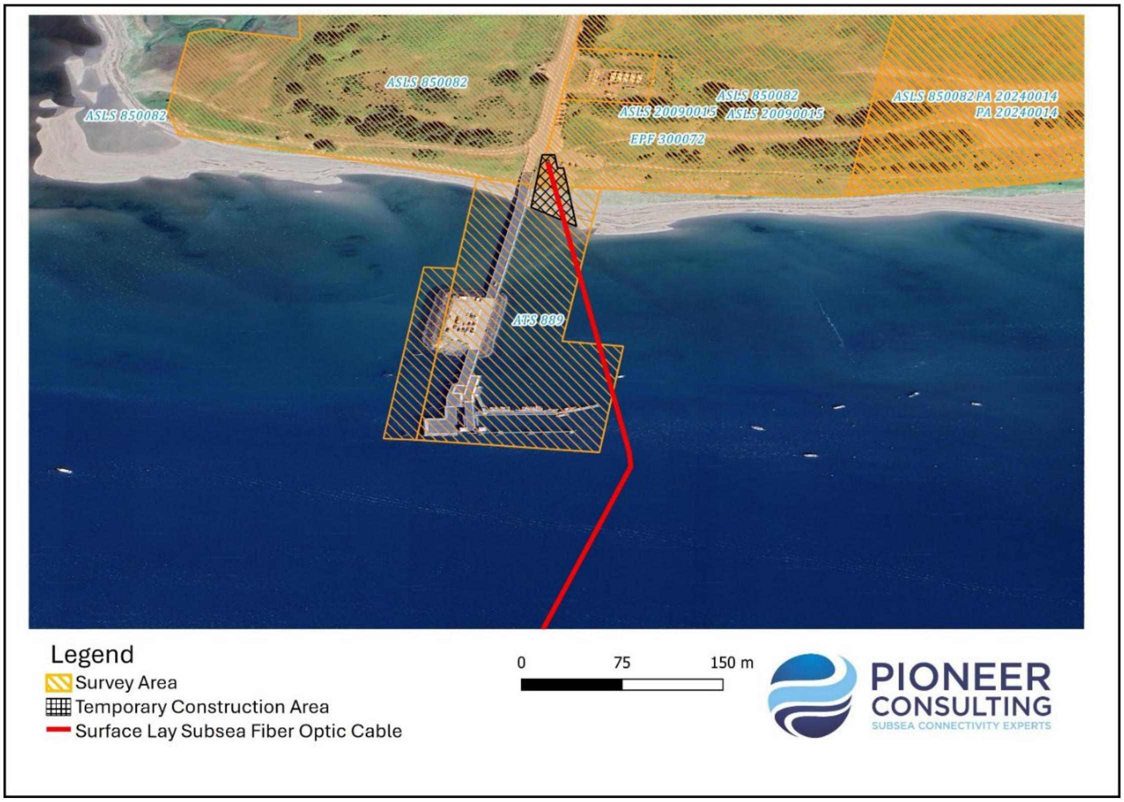



**Figure 10: FISH in SEAK Gustavus Landing.**

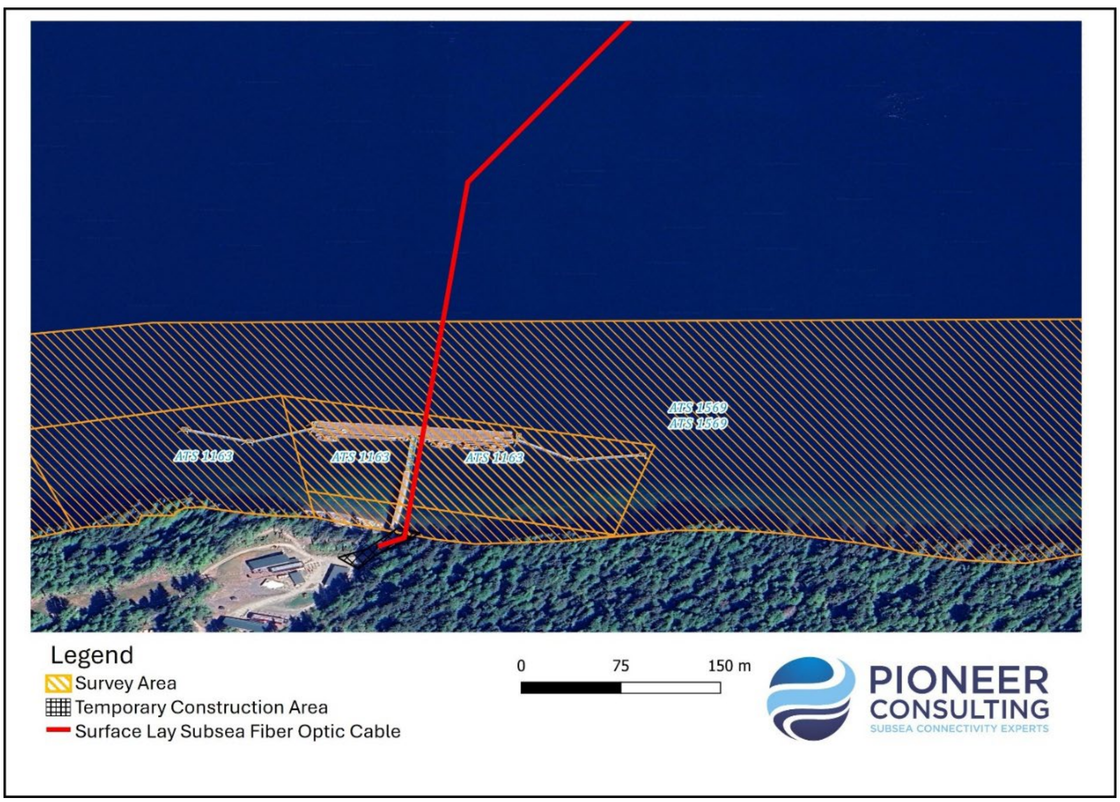



**Figure 11: FISH in SEAK Hoonah Landing.**

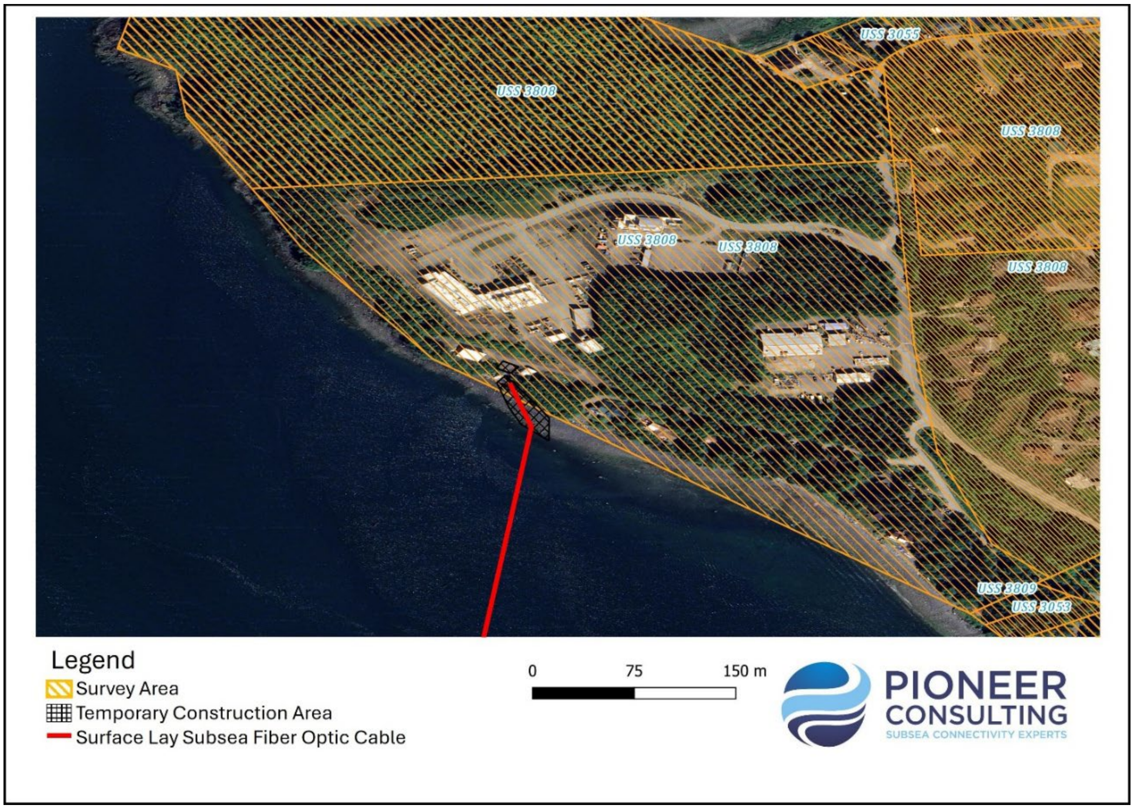



**Figure 12: FISH in SEAK Juneau Landing with currently proposed Direct Landing configuration.**

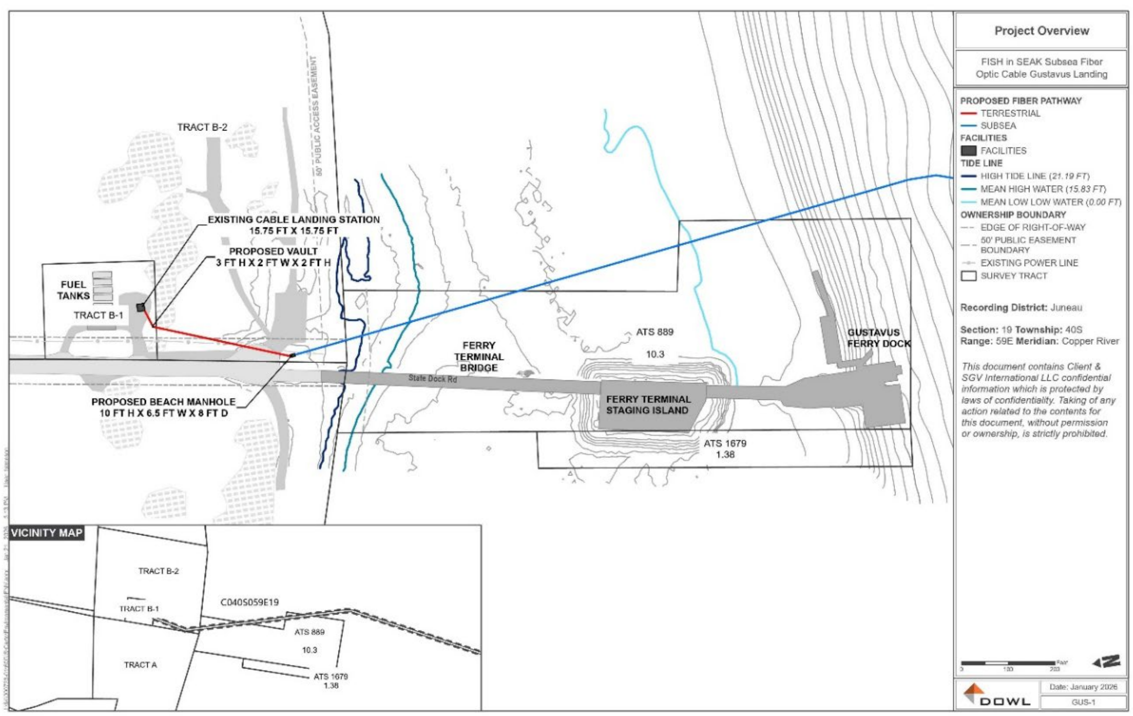
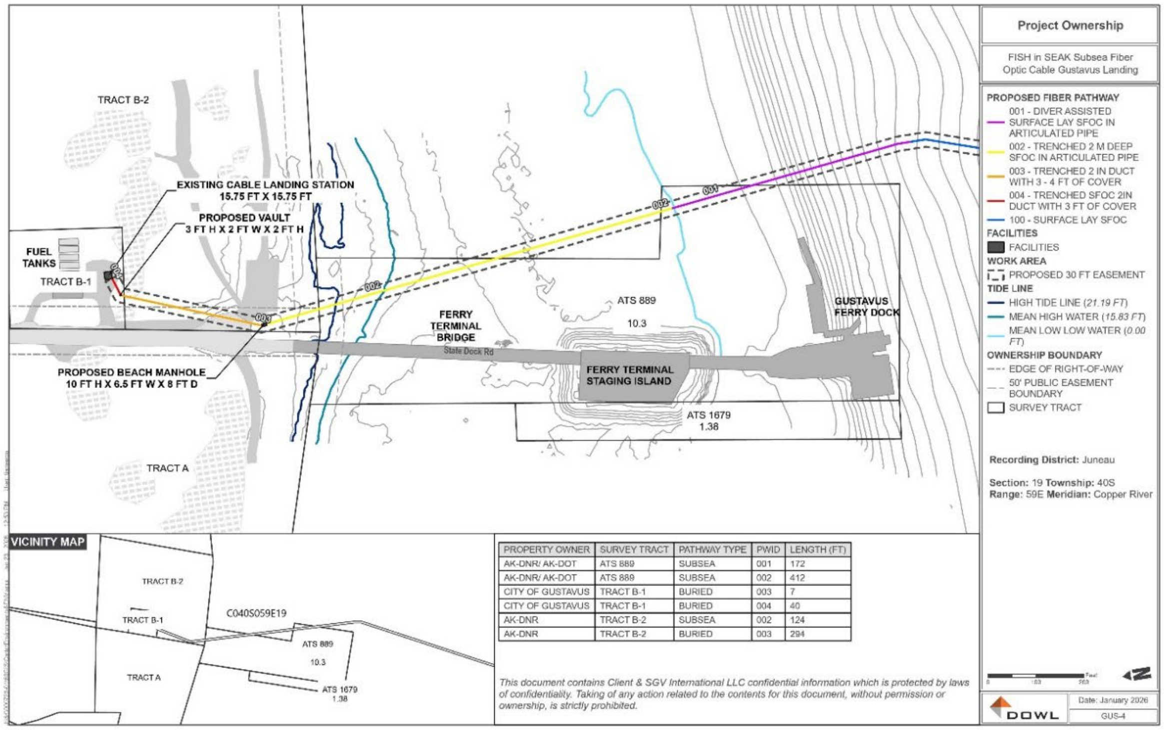



**Figure 13: FISH in SEAK Gustavus Landing Detail.**




| PROPERTY OWNER | SURVEY TRACT | PATHWAY TYPE | PWID | LENGTH (FT) |
|---|---|---|---|---|
| AK-DNR/ AK-DOT | ATS 889 | SUBSEA | 001 | 172 |
| AK-DNR/ AK-DOT | ATS 889 | SUBSEA | 002 | 412 |
| CITY OF GUSTAVUS | TRACT B-1 | BURIED | 003 | 7 |
| CITY OF GUSTAVUS | TRACT B-1 | BURIED | 004 | 40 |
| AK-DNR | TRACT B-2 | SUBSEA | 002 | 124 |
| AK-DNR | TRACT B-2 | BURIED | 003 | 294 |

**Figure 14: FISH in SEAK Gustavus Ownership and Easement Request Detail.**

### 2.1.2. Route Position List

The most recently updated Route Position List (RPL), issued February 21,2026, provides the detailed route and specifications for the FISH in SEAK subsea cable and is included as a table (Table 2) in the Appendix.

## 2.2 Construction Methodology

The FISH in SEAK subsea cable installation will employ a combination of surface lay and burial using either double armor (DA) or light weight armor (LWA) cable to prevent damage from external sources like anchoring and fishing. The outside diameter of the widest DA cable is typically around 47 mm. Due to the length of the subsea cable, the FISH in SEAK SFOC will be equipped with repeaters (amplifiers of the optical signal) placed along the main trunk repeaters with two ocean ground beds (one in Cordova and one in Juneau) to provide grounding for the repeatered system.

### 2.2.1. Pre-Lay Grapnel Run (PLGR)

Prior to burial installation operations, a PLGR operation will be conducted to ensure that the selected route is clear from artificial hazards (such as ropes, wires, and fishing nets) which may impede cable installation and burial operations. Any debris would be recovered and brought ashore for controlled disposal. The PLGR may be conducted by the lay vessel. The operation involves dragging grapnels along the cable line and periodically recovering to check for debris. Typical industry standard grapnels are depicted in Figure 15.

**Figure 15: Typical Grapnels**

### 2.2.2. SFOC Lay Operations

The cable lay will be undertaken by a cable lay vessel (hereafter CLV), which has a modern navigation system. The CLV will install the cable through most of the route. These facilities allow both precise positioning on the planned route and accurate administration of the tension applied to the cable. The vessel's stern working feature allows all installation activities to be carried out on the after deck. This includes cable laying and buoy handling. The vessel will remain in Direct Positioning (DP) mode throughout all lay operations (apart from transits). An integrated DP system interfaces accurate positional information with the vessel's propulsion and thruster systems. For safety reasons, the CLV will cease operations at approximately 10-15m water depth and the cable will either be floated ashore by divers (and diver buried), or a shallower draft shore end vessel will install the cable to shore.

### 2.2.3. Shore End SFOC Lay Operations

Several vessels will be required to conduct and support the installation of the shore end cable. For the shallow water approach at the Cordova landing site, a Pre-lay Shore End (PLSE) Installation Vessel will be selected from local resources and will typically be a capable work type flat back vessel which can be temporarily converted into a shallow water cable lay vessel. The conversion will include the installation of a cable basket and various chutes and trackways, winches, and cable engines to accurately control cable deployment. Prior to cable lay, the PLSE Vessel will also conduct a pre-lay grapnel run (PLGR) to catch and recover any debris (e.g., fishing lines and nets) from the seabed which could impede subsequent burial attempts. If not conducted by the PLSE Installation Vessel (like the vessel shown in Figure 16), a Shore End Burial Vessel will be used to conduct diver supported burial operations.

Depending on perceived risk at the time of installation, it is possible that a local fishing vessel will be employed as a guard vessel until cable lay operations are complete. The duties of the guard vessel would be to remain on site until the cable can be buried to warn other vessels that an exposed cable lies on the seabed.

For the Pre Lay Shore End (PLSE) operations at Cordova, a work vessel or a support barge will use a purpose-built diver-supported jetting sled to bury the cable after the cable has been laid on the seabed.

**Figure 16: Example shore end installation vessel**

### 2.2.4. Shore End Cable Landing

On the day of the cable landing, communication would be set up between the Beach Master ashore and the Marine Manager on the shore end lay vessel by means of marine very high frequency (VHF) radio.

During operations, rollers would be set up inside the BMH to limit friction while the pull ropes and cable are drawn through the duct. A load cell will be used to ensure cable tensions are as expected.

The cable lay vessel would then attach a pulling rope to the FO cable and pass the other end of the pulling rope to the workboat. The pulling rope attached to the FO cable would then be floated to the duct entrance suspended from buoys to avoid dragging the cable across the seabed (Figure 17). The pulling rope would then be spliced to the duct pulling wire.

As the floated cable approaches the duct, divers would cut the floats from the cable allowing it to fall to the seabed immediately in front of the duct entrance before the cable is drawn into the duct.

This mode of pulling the cable from shore while controlling the release of cable from the shore end lay vessel would continue until sufficient cable has been drawn ashore. The operation would commence at first light and would be completed within the same day.

Once the cable has been tested, it will be secured within the BMH and spliced into the terrestrial cable. Any remaining floats on the cable seaward of the duct entrance would be cut in a controlled manner such that the cable falls onto the proposed cable route (Figure 18). Once this is complete, the shore end vessel can continue with the shore end lay. At the end of operations, site reparations will be conducted to ensure the work area is returned to pre-construction conditions and elevations.

**Figure 17: Workboat delivering a cable to a duct exit.**

**Figure 18: Divers cutting and collecting buoys.**

During a direct landing, once the cable is securely ashore, the shore end cable lay vessel can commence surface laying the cable by maneuvering along the planned cable route while paying out cable in a controlled manner. The cable will initially be laid directly on the seabed surface, with cable burial being a separate operation. During the laying operation the cable deployment will be controlled by a purpose-built linear cable engine, with tension monitored using a saddle back gauge as the cable leaves the vessel. The resultant lay angle is monitored by the lay team who are in continuous communication with the bridge team who control vessel forward progress.

### 2.2.5. Horizontal Direction Drill Landing (HDD)

The feasibility of using an HDD for landing the cable in Juneau is being investigated. If an HDD is used for the Juneau landing, a steel pipe conduit will be installed from an entry position onshore out to an exit position offshore at the 15 meter water depth contour. The onshore end of the HDD pipe will be connected to a beach manhole location on private property at the Juneau landing – all other landings will be a direct landing (i.e. connected to the beach manhole at the beach and buried under the beach). If it is determined feasible in Juneau, the shore end installation vessel will therefore pass the shoreward end of cable through the HDD conduit using a land-based winch (Figure 19) thus completing the submarine cable installation.

**Figure 19: Example of shore based winch.**

### 2.2.6. Direct Landing

All landings of the proposed cable will be a direct landing (i.e. connected to the beach manhole and buried under the beach). The cable will be brought ashore and connected to a pre-installed BMH prior to beach burial. From the BMH, the SFOC will be connected to a new terrestrial cable installed landward to either a new or an existing cable landing station (CLS), where the fiber would connect to the broader land-based network. Gustavus is the only landing location where the terrestrial build includes work on State lands.

#### 2.2.6.1. Beach Manhole, Duct, and Earth Array Installation

A beach manhole (BMH) will be installed above the high tide line at each landing location. To ensure the subsea cable installation can be completed during the construction season (April to October), the BMH for each landing location needs to be installed prior to the initiation of the subsea cable installation so the infrastructure necessary to land the SFOC is in place at the time of cable lay activities. Therefore, the construction and installation of FISH in SEAK requires a phased approach, with the BMH at each landing location being installed during the construction season prior to the installation of the subsea cable.

The construction of a BMH consists of either a pre-cast underground chamber or will be a concrete and brick construction. A hole approximately 5m (L) x 4m (W) x 4m (D) will be dug to accommodate the BMH chamber, with typical external dimensions of 3.5m (L) x 2.5m (W) x 2.65m (D). The manhole cover will be heavy-duty, class D400 in accordance with EN124, to withstand weights of 40 tons and suitable for use on decks of highways or urban roads used by vehicles of any kind and weight. The surrounding area will be restored to pre-disturbance elevations and conditions. The terrestrial portion of the project is also planned to be constructed during phase one. With the exception of the Gustavus landing, all of the terrestrial construction will occur on private or municipal properties. The terrestrial cable construction in Gustavus includes the installation of a 0.914m (L) x 0.61m (W) x 0.61 (D) vault within the City of Gustavus property. The terrestrial cable will be installed in a 2-inch diameter duct that is trench to a depth of approximately 1.2m from the BMH to the vault. The terrestrial cable will be connected from the vault to an existing CLS on the City property using the same trenching method.

The remaining terrestrial and inshore ground disturbing activities (i.e., duct and earthing system installation) will occur during phase two of the project, coincident with the subsea cable installation.

In general, system earths are provided by one of two methods – either a steel plate normally referred to as a "Sea Earth Plate" or an array of electrodes placed in boreholes known as an "Earth Array". An Earth Array will be installed at Juneau and will comprise of a linear row of roughly 4 anodes installed vertically into the ground to a depth of 8m using a drill rig. As shown in Figure 21, the total length of the earth array could be up to 15m (L) x 2m (W) x 8m (D) and located outside of state managed lands in an upland area.

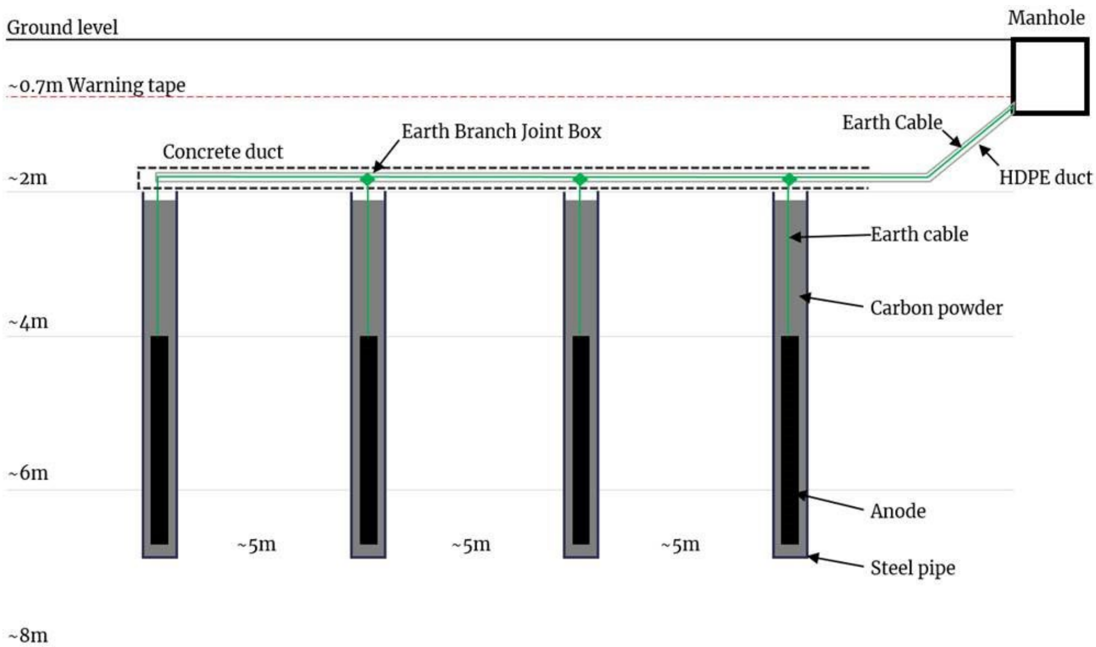



**Figure 20: Drawing of a typical earth array.**

Steel pipes are cut to the level of the bottom of a trench, and each anode is placed vertically into the pre-installed steel pipe (as shown below in Figure 21), and the pipe backfilled with conductive carbon powder. The carbon powder is non-toxic to the environment and used widely in electrical products to prevent their decay.

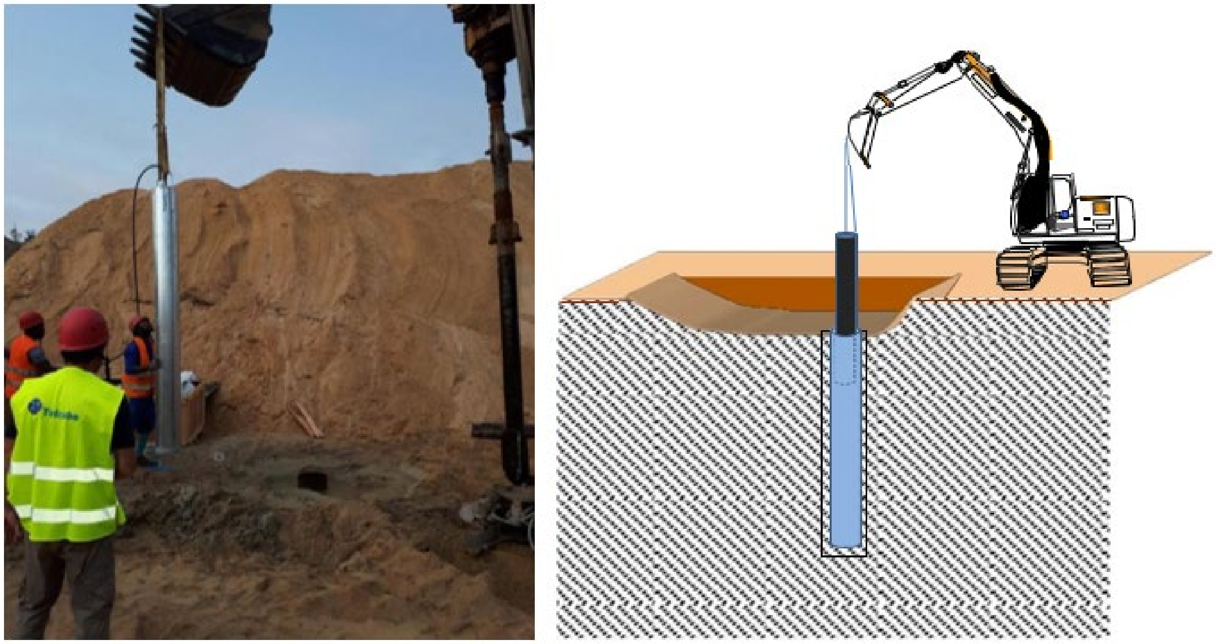


**Figure 21: Anode being lowered into the steel casings.**

A Sea Earth Plate will be used at Cordova instead of an onshore Earth Array due to the unsuitable soil resistivity at the Cordova landing point. An example Sea Earth Plate is shown in Figure 22. The Sea Earth Plate is in essence a large piece of metal placed into the sea or buried on a beach. The metal object has a large surface area and is large enough in mass to ensure it will not corrode away during its expected lifetime of the cable system. Typically, the Sea Earth Plate will be 2 meters in diameter, and weigh in excess of 1 ton. The plate is attached to an earthing cable that runs adjacent to the SFOC along the seabed for approximately 1.2 km and connects into the BMH. The submarine grounding cable is then connected to a terrestrial grounding cable which is then connected to the Power Feed Equipment in the Cable Landing Station. The submarine grounding cable diverges from the SFOC as it is laid seaward of the BMH, to a point approximately 32 m west of the SFOC at the 1.2 km terminus of the earthing cable where the Sea Earth Plate will be located.

**Figure 22: Example Sea Earth Plate to be used at Cordova.**

Coincident with the SFOC laying, approximately 4-inch diameter ducting will be installed by excavating a trench across the beach (L) x 1m (W) x 2m (D) from the BMH constructed during phase one of the project to the low water line. The trench will be backfilled with the excavated, native material and the area restored to its original condition and elevation. Resources required for the construction of the seaward duct and BMH typically include a team of three - five workmen, a 7 – 10 ton excavator (pictures of typical excavators are shown in Figure 23). The equipment and welfare facilities will be delivered to the site on appropriate HGV's or low loaders. A crane may be utilized to unload the construction materials from the transport vehicle and place them into position.

**Figure 23: Example trench digging on beach.**

### 2.2.7. Nearshore Burial and Cable Lay Operations

Following approval that a cable section lay is complete, shore end cable burial would commence to protect against third party interaction (fishing/anchoring). Shore end burial operations are typically carried out by diver operated hand jet or jetting sled systems. Although target burial is typically 1.5m below seabed level, it is expected that near surface rocks and hardbottom areas will reduce burial potential with some cable sections laying close to seabed level.

Burial Logs will be maintained to report burial depths achieved and the geographical location where burial is variable. Depending on schedule, it is possible that – depending on environmental conditions – the offshore main CLV could assist with the burial of some of the offshore sections of the shore end cable where water depths allow. If this is advantageous to the project schedule, the CLV would utilize their remote operational vehicle (ROV) to bury the cable using water jets.

### 2.2.7.1. Diver Jetting

Water hand jetting burial will likely be performed by means of water jetting lance connected to a seawater water pump onboard the support vessel. Controlled by the divers, the water jet is directed at the seabed under the pre-installed cable to open a trench, allowing the cable to fall below seabed level.

### 2.2.7.2. Jetting Sled

Most cable burial operations in the shore end section are expected to be completed using a diver supported jetting sled. The jetting sled uses a water pump located on the support vessel to inject pressurized water through twin jetting lances which can be lowered into the seabed either side of the cable. The jets fluidize the sediment around the cable allowing it to fall through the liquified sediment into burial. The jetting action is used to propel the sled slowly forward guided by the cable and the divers.

Where hardbottom or rock is close to the seabed, the jetting prongs will be retracted to a level where maximum burial into sediments is achieved. Sled position and burial depth is monitored and recorded throughout operations. The type of jetting sled and support barges likely to be used during the FISH in SEAK shore end operations are depicted in the series of Figure 24, Figure 25, and Figure 26, although it is likely that the jet sled will be operated from the shore end installation vessel.

**Figure 24: Jetting sled and support barge for the shore end operations.**

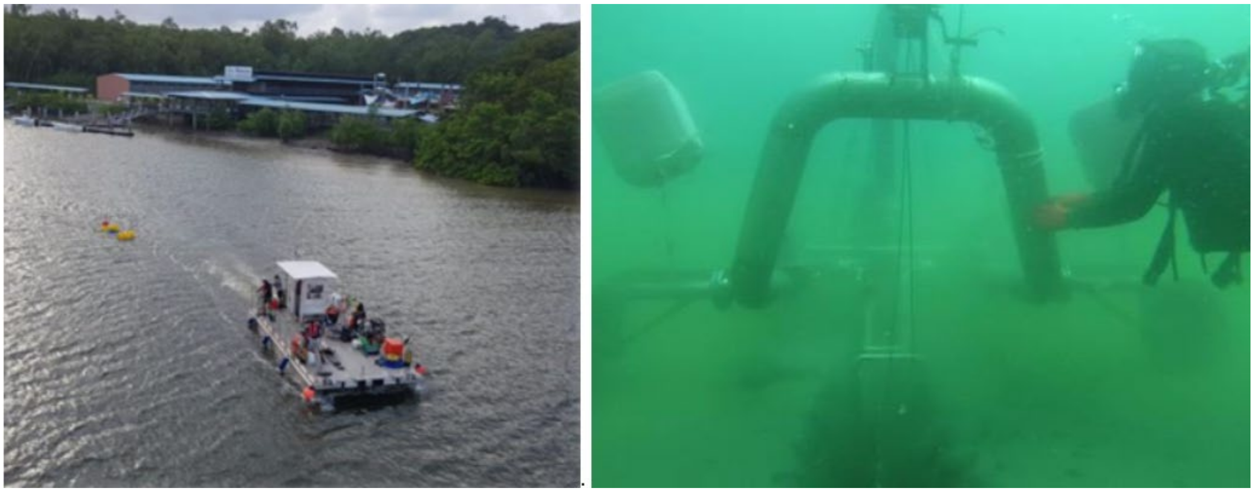


**Figure 25: Support barge and jetting sled for the shore end operation.**

**Figure 26: Diver assisted hand jetting via an air-lift.**

#### 2.2.7.3. Cable Protection

Articulated (split) pipe is a protective iron alloy shell which can be bolted around the fiber optic cable where additional protection is needed. This protection would be installed using hand tools prior to burial operations by the divers from the dive support vessel (see Figure 27). At all landing locations, the SFOC will be encased in articulated pipe from the end of the beach trench area (i.e., low water line) seaward to the 15 meter water depth. The articulated pipe will be buried 1 meter deep at the Cordova, Yakutat, and Pelican, and surface laid at Gustavus, Hoonah, and Juneau.

**Figure 27: Articulated pipe installation.**

### 2.2.8. Cable End Streaming

Where there are planned Pre-Lay-Shore-End installations (one known PLSE at Cordova), once the shore end cable has been laid to the seabed in 15 meter water depth, the cable end will be secured on the seabed. A 100m rope with swivel and clump weight weighing approximately 25kg will be attached to the cable end and released onto the seabed (Figure 28). If necessary, the cable end and recovery rope will be buried into the seabed during shore end burial operations so that it does not obstruct the seabed. The cable end will subsequently be recovered by the offshore cable ship by grappling through the streamed rope.

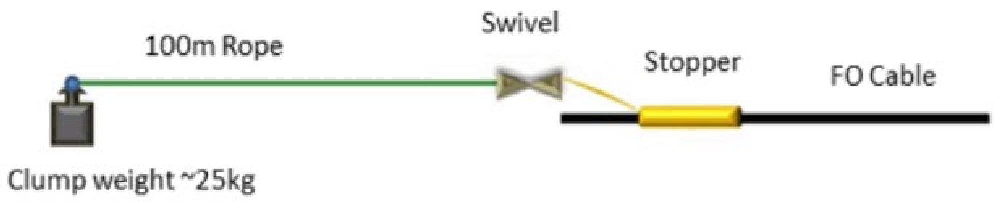



**Figure 28: Clump weight, recovery rope, swivel, stopper, and cable end streaming.**

### 2.2.9. Offshore SFOC Lay Operations

The offshore cable installation will be conducted from the cable lay ship (CLS). The CLS operates a purpose-built cable plow and remotely operated vehicles to assist with cable burial operations.

Accurate vessel positioning and controlled speed will ensure that the cable is laid as close as possible to the pre-selected route. During the laying operation, the position and distance travelled by the ship will be monitored in real time, as well as the amount of cable laid, so that the final position of the fiber optic cable is geo-referenced.

The vessel positioning, speed, and slack control is monitored by computerized cable lay management systems. A cable lay management system can also perform the data logging for the generation of as-laid reporting (raw data, burial graphs, slack graphs, as laid route position lists, etc.) and charting.

#### 2.2.9.1. Cable Plow Burial

The areas planned for burial are indicated in blue in Figure 2, with areas for potential targeted burial operations indicated in yellow. In all other areas seaward of the 15 meter water depth, the cable will be surface laid on the seabed.

**Figure 29: Typical cable plow.**

The cable plow is the primary cable burial tool allowing simultaneous lay and burial operations. In this mode of operation, the plow is deployed and recovered with the cable passing through the plow. The plow (Figure 29) is towed by the CLV and is designed to bury the cable at a depth which will be secure from fishing activities. The plow uses a minimally invasive ploughshare to create a furrow in the seabed approximately 750 mm in width. As the plow is towed through the seabed, its share blade lifts a wedge of substrate. As the plow progresses forward, the cable emerges from the base of the share and sediment is naturally lowered back into the trench, emplacing the cable at the bottom of a relatively undisturbed sediment wedge. Sediment is minimally disturbed and remains on site. No sediment is taken offsite because of this burial technique.

The plow that carries the trenching component will have two feet, or skids (50 centimeters wide) that run across the surface of the seabed; therefore, the main area of seabed impact is considered very small. Typical ploughing speed is less than 1.9 km per hour and is dependent on the stiffness of the seabed sediment. There is no significant noise generation during ploughing operations. Cable installation by plow produces only a minor plume of suspension of seabed sediments in the water column which is transient and localized due to the slow nature of the ploughing and natural backfill processes.

All plow burial will be performed after the guidelines for "reasonable endeavors". Reasonable endeavors may be expressed in terms of tow tension and plow speed. The full potential of the plow systems available tow force will be exploited to achieve a target burial depth of 1.5m, subject to a suitable safety margin to avoid plow damage. In areas of stiff soil, the actual burial depth may be reduced but is planned to be at a depth which will protect the cable from fishing operations and generally not less than 0.5m. The following steps outline the use of the plow:

- The plow is prepared from the storage position to launching area, where the cable is placed through the plow.

- When the plow is in the launching area, the plow is lifted by the gantry to its vertical position, and then released at a controlled velocity, while the ship navigates at slow velocity ahead.
- The deployment of the gantry continues. When the plow skids are on the seabed, tow speed and tow length are adjusted to control the tow wire tension (Figure 30).
- When the setup is complete, the tow engine changes to pulling mode and starts plowing, while placing the fiber cable into the sediment simultaneously.
- Once the plow reaches the end of the planned segment, it is recovered by means of the opposite CLV maneuver (Figure 31).

The estimated plow speed will typically be between 600 and 900 meters per hour (m/h), depending on the seabed topography and seabed morphology. This speed will be controlled by means of a tow winch, together with the vessel velocity control. If the burial of the final fiber optic cable is not considered sufficient, subsequent burial work can be carried out by ROV jetting.

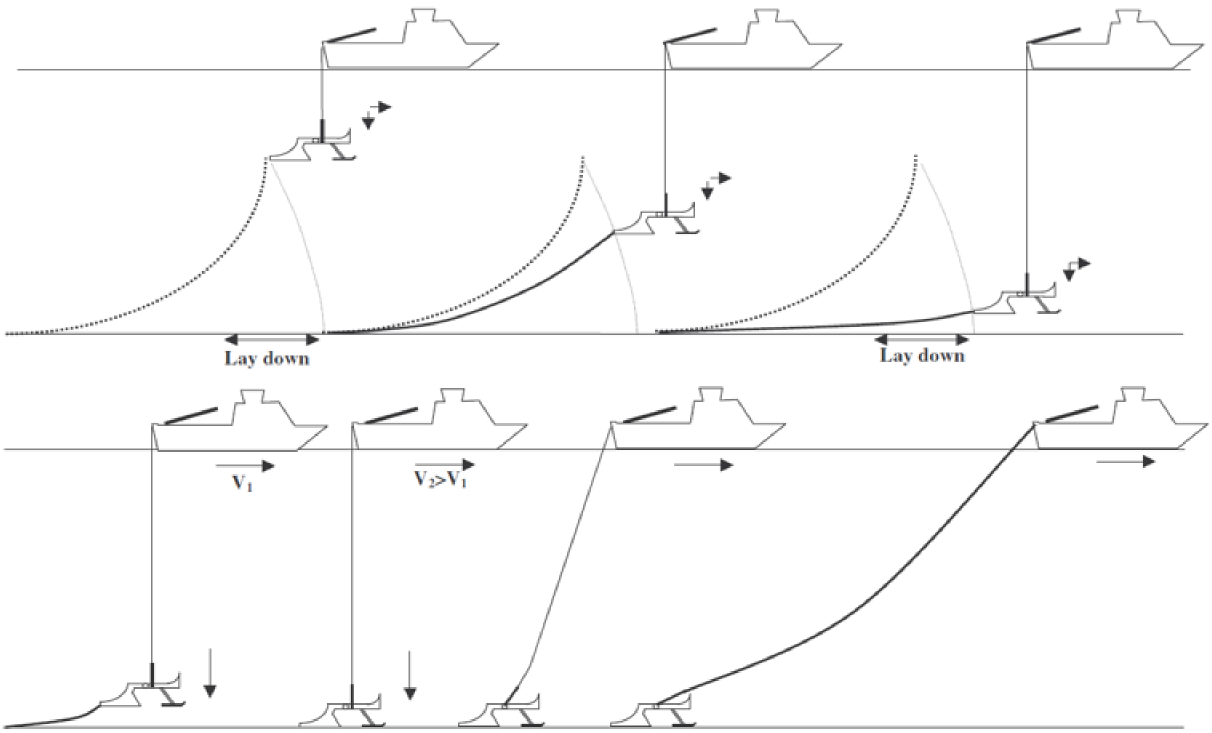



**Figure 30: Plow deployment maneuvers.**

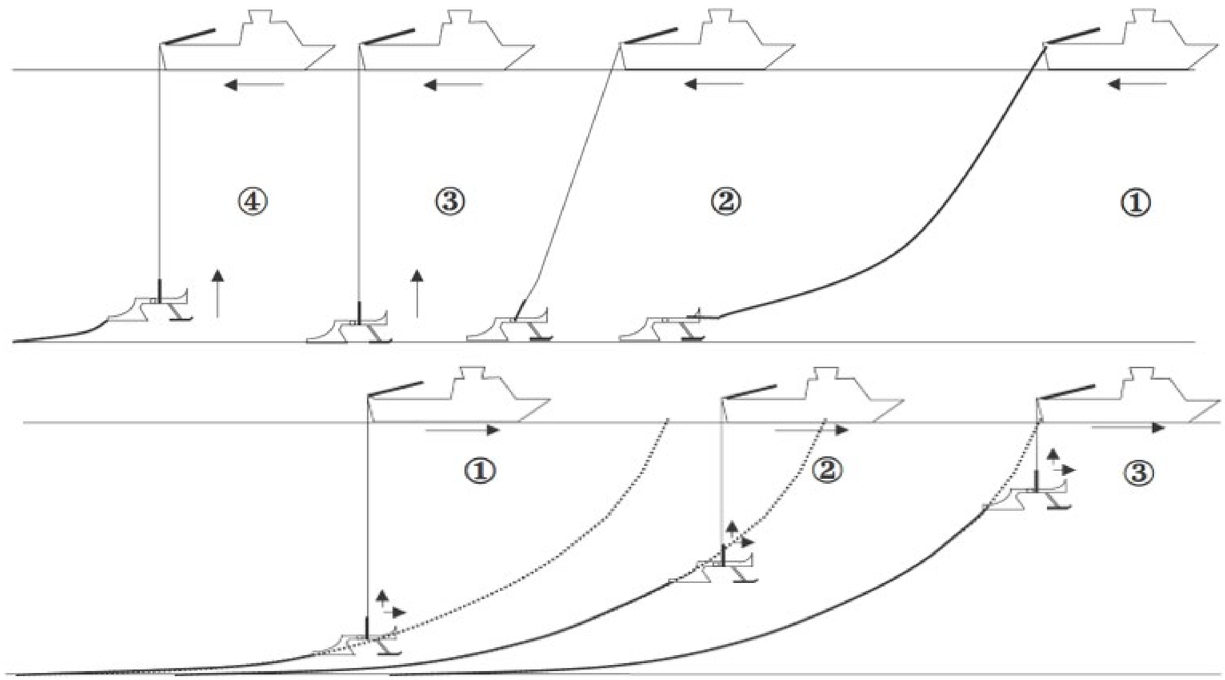



**Figure 31: Vessel forwarding as the plow is lifted.**

### 2.2.10. Post Lay Inspection and Burial Operation

#### 2.2.10.1. Post-Lay Burial (PLB)

Where cable burial with ploughing is not suitable, plow burial is halted, or where the plow is unsuited to seabed conditions, the subsea cable will be laid directly on the seabed by the CLV. A subsequent assessment will then be made for burial by Post-Lay Burial (PLB).

In offshore areas, PLB would typically be performed using an ROV either deployed by the CLV itself or by an offshore support vessel. The ROV can be a free-swimming, or track driven, umbilical tethered underwater vehicle that has remotely operated tools including cable locators and jetting tools, and is suitable for cable detection, inspection, and burial (Figure 32).


**Figure 32: Typical Type of ROV to be utilized.**

The ROV can bury the cable using "jetting" techniques, which opens a trench in the seabed by applying pressurized water jets that fluidize the soil under the cable, allowing it to sink through the suspended sediments to the bottom of the trench, to the required burial depth. The ROV launching and recovery procedures require a ship equipped with a specialized crane and a winch and monitoring systems. This equipment usually uses a dedicated handling system for launch and recover from the mother vessel.

Initially, for cable safety and calibration purposes, the ROV would be launched close to the as-laid cable route. The ROV is then maneuvered over the cable by the ROV pilot onboard the CLV. Once correctly aligned, the ROV starts moving slowly along the cable as the CLV follows. The ROV maintains the correct trajectory by means of the monitoring systems including detection and tracking systems, forward-looking sonar, gyroscope, and cameras displayed for the ROV pilots. At this point, the water jetting can be initiated, and jetting swords deployed as the vehicle moves forward along the cable. This process is generally repeated three times to achieve required burial depths, but fewer attempts are made if the required cable burial has been reached or no further improvement in burial is expected.

#### 2.2.10.2. Post- Lay Inspection (PLI)

Cable Post-Lay Inspection is used to verify the success of burial operations – following burial by both plow or ROV. For PLI, the ROV's on-board detection systems are used to periodically or selectively inspect small sections of burial cable to verify results. Using the same ROV for cable burial depicted in Figure 32, such inspection techniques can also be used to perform seabed inspections in environmentally sensitive areas.

It is preferable to perform PLI heading into the bottom current to give better visibility for the cameras and the vehicle control. However, currents stronger than the ability of the ROV to maneuver can prevent both ROV inspection and burial operations.

### 2.2.11. SFOC Targeted Burial Operations

With the aim of protecting the cable from external aggression (such as fishing or anchoring), planned and potential targeted burial operations will be carried out along portions of the route (Figure 2). The concept of plow "Reasonable Endeavors" is that the initial plow setting will be the Target Burial depth (typically 1.5m). If plow conditions become too difficult, the plow share is lifted in increments until the agreed levels of forward progress are achieved without exceeding the prescribed tow tensions. As progress improves, the plow share is lowered in increments to a maximum of the Target Burial level.

### 2.2.12. Temporary and Permanent Construction Areas

The terrestrial end of the project originates in a buried concrete vault with flush mounted BMH covers and ducts leading offshore. The BMH is typically located completely within upland areas with a record of previous disturbances. Excavation on the beach for burial at the landings will result in a temporary footprint of 1.5m either side of the cable.

A permanent project footprint is calculated using the diameter of cable (ranging from 20 mm to 47 mm) times the length of cable. The total cable length will be approximately 845.16 km, with a permanent footprint of 0.0397 km$^2$ (based on the widest diameter of cable of 47mm). This figure is likely over-estimated given that the cable diameter will be less than 47mm for the majority of the route.

During the burial process, there may be a temporary disturbance area approximately 5m wide. The various cable burial methods are described above and while there are different methods, the width of the disturbance area is the same whether an ROV, jet sled or plow is used.

As described above, the proposed FISH in SEAK SFOC includes activities in uplands and open waters. As a result, the project area includes both a terrestrial and in-water construction area. The terrestrial construction area includes an approximately 0.1-acre staging area surrounding the proposed beach manholes, ground beds and seaward ducts at the six landings. The in-water construction area assessed for installation within this analysis consists of a 5 m (16.4 feet) wide corridor centered on the proposed cable route, starting at the shore and extending 845.16 km through State and Federal waters as shown in Figure 1.

### 2.2.13. Other Necessary Authorizations

The FISH in SEAK project is partially funded by a U.S. Department of Agriculture (USDA) ReConnect grants and as part of the funding process, NEPA was completed in 2024, including the completion of Federal and State environmental and cultural consultations. CTC is in the process of obtaining all necessary municipal authorizations and permits, including necessary easements and ROWs through municipal and private lands for the initial and second phases of the project. In addition, the FISH in SEAK project will require an Army Corps of Engineers Nationwide Permit #57 for all construction activities within jurisdictional wetlands and waterways, and a State of Alaska Department of Fish and Game Special Area Permit for the second phase (the subsea cable installation) of the project construction.

# 3. APPENDIX

**Table 2: Route Position List**

| Pos No. | Position (WGS-84) | | Depth (m) | Heading (°) | Cable Distance | | Cable Type | Comments |
|---|---|---|---|---|---|---|---|---|
| | Latitude | Longitude | | | Between (km) | Total (km) | | |
| 1 | 60° 32.1699209' N | 145° 46.7449943' W | -8 | | | 0.000 | | CORDOVA BMH |
| | | | | 0.00 | 0.020 | | DA | |
| 2 | 60° 32.1699209' N | 145° 46.7449943' W | -8 | | | 0.020 | | Cable Allowance |
| | | | | 317.16 | 0.063 | | DA | |
| 3 | 60° 32.1946932' N | 145° 46.7916157' W | -6 | | | 0.083 | | AC 1 |
| | | | | 301.74 | 0.719 | | DA | |
| 4 | 60° 32.3973080' N | 145° 47.4563805' W | 2 | | | 0.802 | | AC 2 |
| | | | | 291.48 | 1.217 | | DA | |
| 5 | 60° 32.6360317' N | 145° 48.6877654' W | 2 | | | 2.018 | | AC 3 |
| | | | | 282.48 | 0.821 | | DA | |
| 6 | 60° 32.7310177' N | 145° 49.5593479' W | 5 | | | 2.839 | | AC 4 |
| | | | | 282.53 | 0.201 | | DA | |
| 7 | 60° 32.7543637' N | 145° 49.7726659' W | 9 | | | 3.040 | | AC 5 |
| | | | | 272.51 | 0.419 | | DA | |
| 8 | 60° 32.7642055' N | 145° 50.2285987' W | 10 | | | 3.459 | | AC 6 |
| | | | | 256.05 | 0.282 | | DA | |
| 9 | 60° 32.7278134' N | 145° 50.5261453' W | 11 | | | 3.741 | | AC 7 |
| | | | | 241.84 | 0.963 | | DA | |
| 10 | 60° 32.4842830' N | 145° 51.4499129' W | 7 | | | 4.704 | | AC 8 |
| | | | | 223.55 | 0.909 | | DA | |
| 11 | 60° 32.1313472' N | 145° 52.1310656' W | 8 | | | 5.613 | | AC 9 |
| | | | | 217.63 | 1.245 | | DA | |
| 12 | 60° 31.6030635' N | 145° 52.9575485' W | 4 | | | 6.858 | | AC 10 |
| | | | | 220.79 | 0.606 | | DA | |
| 13 | 60° 31.3573393' N | 145° 53.3876956' W | 5 | | | 7.464 | | AC 11 |
| | | | | 219.77 | 1.102 | | DA | |
| 14 | 60° 30.9035965' N | 145° 54.1538811' W | 7 | | | 8.566 | | AC 12 |
| | | | | 199.08 | 1.934 | | DA | |

| Pos No. | Position (WGS-84) | | Depth (m) | Heading (°) | Cable Distance | | Cable Type | Comments |
|---|---|---|---|---|---|---|---|---|
| | Latitude | Longitude | | | Between (km) | Total (km) | | |
| 15 | 60° 29.9240108' N | 145° 54.8410280' W | 4 | | | 10.500 | | AC 13 |
| | | | | 208.09 | 1.415 | | DA | |
| 16 | 60° 29.2550668' N | 145° 55.5648291' W | 3 | | | 11.915 | | AC 14 |
| | | | | 216.33 | 0.764 | | DA | |
| 17 | 60° 28.9253320' N | 145° 56.0562482' W | 3 | | | 12.679 | | AC 15 |
| | | | | 230.61 | 1.147 | | DA | |
| 18 | 60° 28.5352377' N | 145° 57.0187856' W | 5 | | | 13.826 | | AC 16 |
| | | | | 221.41 | 0.481 | | DA | |
| 19 | 60° 28.3421164' N | 145° 57.3637908' W | 3 | | | 14.307 | | AC 17 |
| | | | | 238.60 | 1.078 | | DA | |
| 20 | 60° 28.0410841' N | 145° 58.3626025' W | 5 | | | 15.385 | | AC 18 |
| | | | | 209.94 | 0.946 | | DA | |
| 21 | 60° 27.6017992' N | 145° 58.8749281' W | 3 | | | 16.331 | | AC 19 |
| | | | | 231.59 | 1.961 | | DA | |
| 22 | 60° 26.9489631' N | 146° 0.5421306' W | 8 | | | 18.292 | | AC 20 |
| | | | | 223.36 | 0.962 | | DA | |
| 23 | 60° 26.5740248' N | 146° 1.2587333' W | 9 | | | 19.255 | | AC 21 |
| | | | | 206.45 | 1.277 | | DA | |
| 24 | 60° 25.9612507' N | 146° 1.8757308' W | 6 | | | 20.532 | | AC 22 |
| | | | | 217.59 | 0.790 | | DA | |
| 25 | 60° 25.6259604' N | 146° 2.3979190' W | 12 | | | 21.322 | | AC 23 |
| | | | | 233.21 | 1.621 | | DA | |
| 26 | 60° 25.1058352' N | 146° 3.8046355' W | 6 | | | 22.943 | | AC 24 |
| | | | | 226.44 | 0.917 | | DA | |
| 27 | 60° 24.7673884' N | 146° 4.5244263' W | 6 | | | 23.859 | | AC 25 |
| | | | | 202.94 | 0.764 | | DA | |
| 28 | 60° 24.3904208' N | 146° 4.8469811' W | 22 | | | 24.623 | | AC 26 |
| | | | | 187.23 | 0.966 | | DA | |
| 29 | 60° 23.8769339' N | 146° 4.9787052' W | 14 | | | 25.589 | | AC 27 |
| | | | | 180.15 | 1.370 | | DA | |
| 30 | 60° 23.1426438' N | 146° 4.9824632' W | 17 | | | 26.959 | | AC 28 |
| | | | | 170.75 | 1.065 | | DA | |

| Pos No. | Position (WGS-84) | | Depth (m) | Heading (°) | Cable Distance | | Cable Type | Comments |
|---|---|---|---|---|---|---|---|---|
| | Latitude | Longitude | | | Between (km) | Total (km) | | |
| 31 | 60° 22.5794800' N | 146° 4.7972795' W | 17 | | | 28.024 | | AC 29 |
| | | | | 148.34 | 0.642 | | DA | |
| 32 | 60° 22.2864900' N | 146° 4.4323508' W | 13 | | | 28.667 | | AC 30 |
| | | | | 131.27 | 1.823 | | DA | |
| 33 | 60° 21.6420754' N | 146° 2.9499769' W | 14 | | | 30.490 | | AC 31 |
| | | | | 102.28 | 0.453 | | DA | |
| 34 | 60° 21.5903899' N | 146° 2.4706715' W | 6 | | | 30.943 | | AC 32 |
| | | | | 83.79 | 1.397 | | DA | |
| 35 | 60° 21.6713204' N | 146° 0.9684792' W | 6 | | | 32.340 | | AC 33 |
| | | | | 102.51 | 0.489 | | DA | |
| 36 | 60° 21.6145460' N | 146° 0.4517854' W | 6 | | | 32.830 | | AC 34 |
| | | | | 127.54 | 0.629 | | DA | |
| 37 | 60° 21.4091885' N | 145° 59.9122968' W | 7 | | | 33.459 | | AC 35 |
| | | | | 155.18 | 1.142 | | DA | |
| 38 | 60° 20.8538006' N | 145° 59.3939354' W | 9 | | | 34.600 | | AC 36 |
| | | | | 176.61 | 3.338 | | DA | |
| 39 | 60° 19.0682001' N | 145° 59.1805362' W | 20 | | | 37.939 | | END PLSE SLACK TO 2% |
| | | | | 176.65 | 1.240 | | DA | |
| 40 | 60° 18.4149034' N | 145° 59.1034098' W | 34 | | | 39.178 | | AC 37 |
| | | | | 160.00 | 0.644 | | DA | |
| 41 | 60° 18.0951714' N | 145° 58.8688654' W | 38 | | | 39.823 | | AC 38 |
| | | | | 140.17 | 15.713 | | DA | |
| 42 | 60° 11.7248682' N | 145° 48.1782445' W | 115 | | | 55.535 | | DA/LWA |
| | | | | 131.02 | 70.398 | | LWA | |
| 43 | 59° 47.3279638' N | 144° 52.2020428' W | 140 | | | 125.934 | | AC 39 |
| | | | | 112.59 | 13.988 | | LWA | |
| 44 | 59° 44.4904750' N | 144° 38.6836642' W | 41 | | | 139.922 | | AC 40 |
| | | | | 88.59 | 10.254 | | LWA | |
| 45 | 59° 44.6238386' N | 144° 27.9609272' W | 109 | | | 150.175 | | AC 41 |
| | | | | 67.68 | 30.042 | | LWA | |
| 46 | 59° 50.6469407' N | 143° 58.8436939' W | 89 | | | 180.218 | | AC 42 |
| | | | | 84.52 | 43.150 | | LWA | |

| Pos No. | Position (WGS-84) Latitude | Longitude | Depth (m) | Heading (°) | Cable Distance Between (km) | Total (km) | Cable Type | Comments |
|---|---|---|---|---|---|---|---|---|
| 47 | 59° 52.8225298' N | 143° 13.7504755' W | 145 | | | 223.368 | | AC 43 |
| | | | | 92.01 | 21.086 | | LWA | |
| 48 | 59° 52.4320787' N | 142° 51.6172149' W | 162 | | | 244.454 | | AC 44 |
| | | | | 110.87 | 41.215 | | LWA | |
| 49 | 59° 44.6797513' N | 142° 11.2516951' W | 139 | | | 285.669 | | AC 45 |
| | | | | 103.52 | 79.814 | | LWA | |
| 50 | 59° 34.8250907' N | 140° 50.2686083' W | 219 | | | 365.483 | | AC 46 |
| | | | | 103.32 | 47.231 | | LWA | |
| 51 | 59° 29.0807081' N | 140° 2.4900612' W | 158 | | | 412.714 | | AC 47 |
| | | | | 118.47 | 3.308 | | LWA | |
| 52 | 59° 28.2481254' N | 139° 59.4719888' W | 155 | | | 416.022 | | AC 48 |
| | | | | 141.63 | 4.043 | | LWA | |
| 53 | 59° 26.5745545' N | 139° 56.8688965' W | 163 | | | 420.065 | | Cable Allowance |
| | | | | 141.63 | 0.150 | | LWA | |
| 54 | 59° 26.5745545' N | 139° 56.8688965' W | 163 | | | 420.215 | | YAKUTAT BU |
| | | | | 168.63 | 8.882 | | LWA | |
| 55 | 59° 21.9763985' N | 139° 55.0554753' W | 181 | | | 429.097 | | AC 49 |
| | | | | 150.80 | 5.535 | | LWA | |
| 56 | 59° 19.4249725' N | 139° 52.2637939' W | 180 | | | 434.632 | | AC 50 |
| | | | | 129.97 | 38.320 | | LWA | |
| 57 | 59° 6.4260864' N | 139° 22.0184326' W | 104 | | | 472.953 | | AC 51 |
| | | | | 123.77 | 46.831 | | LWA | |
| 58 | 58° 52.6805878' N | 138° 42.1829222' W | 121 | | | 519.784 | | AC 52 |
| | | | | 124.33 | 46.832 | | LWA | |
| 59 | 58° 38.7322998' N | 138° 2.8738397' W | 103 | | | 566.616 | | AC 53 |
| | | | | 124.65 | 45.782 | | LWA | |
| 60 | 58° 24.9846710' N | 137° 24.8450956' W | 181 | | | 612.398 | | AC 54 |
| | | | | 126.17 | 15.197 | | LWA | |
| 61 | 58° 20.2482604' N | 137° 12.5106773' W | 181 | | | 627.596 | | AC 55 |
| | | | | 109.20 | 12.408 | | LWA | |
| 62 | 58° 18.0935668' N | 137° 0.7488959' W | 180 | | | 640.004 | | AC 56 |
| | | | | 142.03 | 12.155 | | LWA | |

| Pos No. | Position (WGS-84) | | Depth (m) | Heading (°) | Cable Distance | | Cable Type | Comments |
|---|---|---|---|---|---|---|---|---|
| | Latitude | Longitude | | | Between (km) | Total (km) | | |
| 63 | 58° 13.0332182' N | 136° 53.2553033' W | 143 | | | 652.158 | | AC 57 |
| | | | | 125.36 | 9.116 | | LWA | |
| 64 | 58° 10.2468107' N | 136° 45.8193887' W | 97 | | | 661.275 | | AC 58 |
| | | | | 106.05 | 2.963 | | LWA | |
| 65 | 58° 9.8143404' N | 136° 42.9738463' W | 92 | | | 664.237 | | SLACK CHANGE TO 3% |
| | | | | 98.71 | 2.388 | | LWA | |
| 66 | 58° 9.6251677' N | 136° 40.6384181' W | 99 | | | 666.625 | | AC 59 |
| | | | | 113.63 | 2.721 | | LWA | |
| 67 | 58° 9.0548182' N | 136° 38.1721693' W | 94 | | | 669.346 | | AC 60 |
| | | | | 105.66 | 2.045 | | LWA | |
| 68 | 58° 8.7661585' N | 136° 36.2243063' W | 312 | | | 671.391 | | AC61 |
| | | | | 116.60 | 0.338 | | LWA | |
| 69 | 58° 8.6869476' N | 136° 35.9252108' W | 315 | | | 671.729 | | NORTHSTAR IS XNG |
| | | | | 116.07 | 0.332 | | LWA | |
| 70 | 58° 8.6107325' N | 136° 35.6306445' W | 317 | | | 672.060 | | AC 62 |
| | | | | 121.97 | 1.652 | | LWA | |
| 71 | 58° 8.1531814' N | 136° 34.2444087' W | 321 | | | 673.713 | | AC 63 |
| | | | | 105.63 | 1.293 | | LWA | |
| 72 | 58° 7.9708947' N | 136° 33.0128486' W | 321 | | | 675.006 | | LWA/DA |
| | | | | 81.88 | 1.259 | | DA | |
| 73 | 58° 8.0639021' N | 136° 31.7806039' W | 323 | | | 676.265 | | AC 64 |
| | | | | 91.90 | 2.765 | | DA | |
| 74 | 58° 8.0160536' N | 136° 29.0482282' W | 328 | | | 679.030 | | Cable Allowance |
| | | | | 91.90 | 0.150 | | DA | |
| 75 | 58° 8.0160536' N | 136° 29.0482282' W | 328 | | | 679.180 | | PELICAN BU |
| | | | | 49.38 | 1.077 | | DA | |
| 76 | 58° 8.3826171' N | 136° 28.2402236' W | 310 | | | 680.256 | | AC 65 |
| | | | | 15.67 | 1.130 | | DA | |
| 77 | 58° 8.9517972' N | 136° 27.9382190' W | 287 | | | 681.386 | | AC 66 |
| | | | | 20.59 | 1.521 | | DA | |
| 78 | 58° 9.6963499' N | 136° 27.4090440' W | 246 | | | 682.907 | | AC 67 |
| | | | | 14.96 | 1.645 | | DA | |

| Pos No. | Position (WGS-84) Latitude | Longitude | Depth (m) | Heading (°) | Cable Distance Between (km) | Total (km) | Cable Type | Comments |
|---|---|---|---|---|---|---|---|---|
| 79 | 58° 10.5274198' N | 136° 26.9888168' W | 241 | | | 684.552 | | AC 68 |
| | | | | 0.96 | 4.015 | | DA | |
| 80 | 58° 12.6269878' N | 136° 26.9221683' W | 130 | | | 688.567 | | AC 69 |
| | | | | 358.66 | 2.173 | | DA | |
| 81 | 58° 13.7629585' N | 136° 26.9727114' W | 98 | | | 690.740 | | AC 70 |
| | | | | 9.11 | 1.547 | | DA | |
| 82 | 58° 14.5618270' N | 136° 26.7296958' W | 161 | | | 692.287 | | AC 71 |
| | | | | 32.50 | 0.835 | | DA | |
| 83 | 58° 14.9301587' N | 136° 26.2845690' W | 208 | | | 693.122 | | AC 72 |
| | | | | 15.61 | 2.196 | | DA | |
| 84 | 58° 16.0362896' N | 136° 25.6983671' W | 252 | | | 695.318 | | AC 73 |
| | | | | 33.83 | 0.914 | | DA | |
| 85 | 58° 16.4332578' N | 136° 25.1934670' W | 266 | | | 696.231 | | AC 74 |
| | | | | 61.43 | 0.956 | | DA | |
| 86 | 58° 16.6724198' N | 136° 24.3599363' W | 103 | | | 697.188 | | AC 75 |
| | | | | 65.54 | 1.004 | | DA | |
| 87 | 58° 16.8899085' N | 136° 23.4523756' W | 287 | | | 698.192 | | AC 76 |
| | | | | 76.58 | 1.433 | | DA | |
| 88 | 58° 17.0638051' N | 136° 22.0687466' W | 285 | | | 699.624 | | AC 77 |
| | | | | 87.55 | 2.154 | | DA | |
| 89 | 58° 17.1120258' N | 136° 19.9313538' W | 258 | | | 701.779 | | AC 78 |
| | | | | 93.10 | 1.276 | | DA | |
| 90 | 58° 17.0759579' N | 136° 18.6657545' W | 248 | | | 703.055 | | AC 79 |
| | | | | 94.26 | 1.124 | | DA | |
| 91 | 58° 17.0322415' N | 136° 17.5524728' W | 205 | | | 704.179 | | AC 80 |
| | | | | 103.19 | 0.836 | | DA | |
| 92 | 58° 16.9324490' N | 136° 16.7440618' W | 233 | | | 705.016 | | AC 81 |
| | | | | 101.55 | 1.175 | | DA | |
| 93 | 58° 16.8094992' N | 136° 15.6014398' W | 142 | | | 706.190 | | AC 82 |
| | | | | 87.15 | 0.740 | | DA | |
| 94 | 58° 16.8287165' N | 136° 14.8673348' W | 219 | | | 706.930 | | AC 83 |
| | | | | 99.40 | 0.884 | | DA | |

PIONEER CONSULTING
SUBSEA CONNECTIVITY EXPERTS

| Pos No. | Position (WGS-84) Latitude | Longitude | Depth (m) | Heading (°) | Cable Distance Between (km) | Total (km) | Cable Type | Comments |
|---|---|---|---|---|---|---|---|---|
| 95 | 58° 16.7532424' N | 136° 14.0016447' W | 213 | | | 707.814 | | AC 84 |
| | | | | 54.15 | 0.439 | | DA | |
| 96 | 58° 16.8876056' N | 136° 13.6485820' W | 209 | | | 708.253 | | NORTHSTAR IS XNG |
| | | | | 55.27 | 4.246 | | DA | |
| 97 | 58° 18.1527769' N | 136° 10.1829779' W | 184 | | | 712.499 | | AC 85 |
| | | | | 71.14 | 4.331 | | DA | |
| 98 | 58° 18.8850263' N | 136° 6.1104660' W | 115 | | | 716.830 | | AC 86 |
| | | | | 50.57 | 1.592 | | DA | |
| 99 | 58° 19.4139857' N | 136° 4.8879767' W | 103 | | | 718.422 | | AC 87 |
| | | | | 66.88 | 2.752 | | DA | |
| 100 | 58° 19.9790950' N | 136° 2.3711905' W | 63 | | | 721.174 | | AC 88 |
| | | | | 88.19 | 2.641 | | DA | |
| 101 | 58° 20.0228114' N | 135° 59.7463720' W | 28 | | | 723.815 | | AC 89 |
| | | | | 100.85 | 5.180 | | DA | |
| 102 | 58° 19.5126337' N | 135° 54.6880801' W | 34 | | | 728.996 | | SLACK CHANGE TO 2% |
| | | | | 79.07 | 4.384 | | DA | |
| 103 | 58° 19.9475091' N | 135° 50.4079867' W | 78 | | | 733.380 | | AC 90 |
| | | | | 102.61 | 2.160 | | DA | |
| 104 | 58° 19.7010034' N | 135° 48.3123430' W | 92 | | | 735.540 | | Cable Allowance |
| | | | | 102.61 | 0.150 | | DA | |
| 105 | 58° 19.7010034' N | 135° 48.3123430' W | 92 | | | 735.690 | | GUTAVUS BU |
| | | | | 137.42 | 3.393 | | DA | |
| 106 | 58° 18.3945458' N | 135° 46.0308470' W | 121 | | | 739.082 | | NORTHSTAR IS XNG |
| | | | | 137.45 | 1.135 | | DA | |
| 107 | 58° 17.9571526' N | 135° 45.2682121' W | 134 | | | 740.218 | | AC 91 |
| | | | | 125.94 | 1.104 | | DA | |
| 108 | 58° 17.6181785' N | 135° 44.3801498' W | 137 | | | 741.322 | | AC 92 |
| | | | | 119.86 | 12.117 | | DA | |
| 109 | 58° 14.4630690' N | 135° 33.9506502' W | 100 | | | 753.439 | | SLACK CHANGE TO 3% |
| | | | | 119.98 | 8.626 | | DA | |
| 110 | 58° 12.2087849' N | 135° 26.5438282' W | 95 | | | 762.065 | | AC 93 |
| | | | | 126.01 | 3.183 | | DA | |

| Pos No. | Position (WGS-84) | | Depth (m) | Heading (°) | Cable Distance | | Cable Type | Comments |
|---|---|---|---|---|---|---|---|---|
| | Latitude | Longitude | | | Between (km) | Total (km) | | |
| 111 | 58° 11.2299654' N | 135° 23.9931308' W | 89 | | | 765.248 | | AC 94 |
| | | | | 118.24 | 0.580 | | DA | |
| 112 | 58° 11.0863276' N | 135° 23.4867720' W | 87 | | | 765.829 | | AC 95 |
| | | | | 146.22 | 0.175 | | DA | |
| 113 | 58° 11.0100491' N | 135° 23.3901538' W | 87 | | | 766.004 | | Cable Allowance |
| | | | | 146.22 | 0.150 | | DA | |
| 114 | 58° 11.0100491' N | 135° 23.3901538' W | 87 | | | 766.154 | | HOONAH BU |
| | | | | 112.09 | 3.508 | | DA | |
| 115 | 58° 10.3200518' N | 135° 20.1717500' W | 168 | | | 769.662 | | AC 96 |
| | | | | 119.61 | 4.290 | | DA | |
| 116 | 58° 9.2116019' N | 135° 16.4811276' W | 212 | | | 773.952 | | AC 97 |
| | | | | 101.25 | 4.041 | | DA | |
| 117 | 58° 8.7993528' N | 135° 12.5599630' W | 226 | | | 777.993 | | AC 98 |
| | | | | 91.03 | 3.641 | | DA | |
| 118 | 58° 8.7650061' N | 135° 8.9588685' W | 425 | | | 781.634 | | AC 99 |
| | | | | 89.98 | 4.879 | | DA | |
| 119 | 58° 8.7659436' N | 135° 4.1326020' W | 187 | | | 786.514 | | AC 100 |
| | | | | 80.60 | 3.048 | | DA | |
| 120 | 58° 9.0262776' N | 135° 1.1584864' W | 236 | | | 789.561 | | AC 101 |
| | | | | 64.09 | 1.952 | | DA | |
| 121 | 58° 9.4723779' N | 134° 59.4214424' W | 400 | | | 791.513 | | DA/LWA |
| | | | | 64.13 | 0.368 | | LWA | |
| 122 | 58° 9.5563856' N | 134° 59.0937218' W | 537 | | | 791.881 | | AC 102 |
| | | | | 42.91 | 1.492 | | LWA | |
| 123 | 58° 10.1277750' N | 134° 58.0885235' W | 526 | | | 793.373 | | AC 103 |
| | | | | 30.55 | 1.401 | | LWA | |
| 124 | 58° 10.7588041' N | 134° 57.3835283' W | 561 | | | 794.774 | | AC 104 |
| | | | | 68.35 | 0.695 | | LWA | |
| 125 | 58° 10.8929806' N | 134° 56.7435847' W | 608 | | | 795.469 | | ALASKA UNITED IS XNG |
| | | | | 66.70 | 0.431 | | LWA | |
| 126 | 58° 10.9821307' N | 134° 56.3517093' W | 618 | | | 795.900 | | AC 105 |
| | | | | 359.58 | 1.489 | | LWA | |

| Pos No. | Position (WGS-84) Latitude | Longitude | Depth (m) | Heading (°) | Cable Distance Between (km) | Total (km) | Cable Type | Comments |
|---|---|---|---|---|---|---|---|---|
| 127 | 58° 11.7606332' N | 134° 56.3625068' W | 621 | | | 797.389 | | AC 106 |
| | | | | 8.70 | 1.198 | | LWA | |
| 128 | 58° 12.3797585' N | 134° 56.1830631' W | 584 | | | 798.586 | | AC 107 |
| | | | | 354.57 | 1.564 | | LWA | |
| 129 | 58° 13.1938077' N | 134° 56.3298095' W | 611 | | | 800.150 | | AC 108 |
| | | | | 339.83 | 4.510 | | LWA | |
| 130 | 58° 15.4080942' N | 134° 57.8722142' W | 621 | | | 804.660 | | AC 109 |
| | | | | 350.00 | 4.346 | | LWA | |
| 131 | 58° 17.6465586' N | 134° 58.6211170' W | 638 | | | 809.007 | | AC 110 |
| | | | | 357.36 | 3.681 | | LWA | |
| 132 | 58° 19.5696238' N | 134° 58.7895743' W | 628 | | | 812.688 | | AC 111 |
| | | | | 353.14 | 3.941 | | LWA | |
| 133 | 58° 21.6158274' N | 134° 59.2574096' W | 598 | | | 816.628 | | AC 112 |
| | | | | 349.23 | 2.439 | | LWA | |
| 134 | 58° 22.8689005' N | 134° 59.7110560' W | 613 | | | 819.067 | | AC 113 |
| | | | | 355.33 | 3.016 | | LWA | |
| 135 | 58° 24.4409209' N | 134° 59.9558237' W | 522 | | | 822.083 | | AC 114 |
| | | | | 5.51 | 1.391 | | LWA | |
| 136 | 58° 25.1651396' N | 134° 59.8225968' W | 433 | | | 823.474 | | AC 115 |
| | | | | 38.46 | 1.278 | | LWA | |
| 137 | 58° 25.6883587' N | 134° 59.0304963' W | 409 | | | 824.752 | | LWA/DA |
| | | | | 58.29 | 0.841 | | DA | |
| 138 | 58° 25.9194625' N | 134° 58.3173487' W | 197 | | | 825.593 | | AC 116 |
| | | | | 91.60 | 0.995 | | DA | |
| 139 | 58° 25.9049569' N | 134° 57.3256841' W | 229 | | | 826.587 | | AC 117 |
| | | | | 97.21 | 1.885 | | DA | |
| 140 | 58° 25.7811403' N | 134° 55.4608709' W | 111 | | | 828.473 | | AC 118 |
| | | | | 97.39 | 0.629 | | DA | |
| 141 | 58° 25.7387968' N | 134° 54.8386519' W | 112 | | | 829.102 | | AC 119 |
| | | | | 106.69 | 0.484 | | DA | |
| 142 | 58° 25.6660545' N | 134° 54.3760153' W | 105 | | | 829.586 | | AC 120 |
| | | | | 146.54 | 0.542 | | DA | |

| Pos No. | Position (WGS-84) | | Depth (m) | Heading (°) | Cable Distance | | Cable Type | Comments |
|---|---|---|---|---|---|---|---|---|
| | Latitude | Longitude | | | Between (km) | Total (km) | | |
| 143 | 58° 25.4296852' N | 134° 54.0782610' W | 94 | | | 830.128 | | AC 121 |
| | | | | 160.95 | 1.273 | | DA | |
| 144 | 58° 24.8003314' N | 134° 53.6639690' W | 70 | | | 831.401 | | AC 122 |
| | | | | 156.61 | 2.705 | | DA | |
| 146 | 58° 23.5019460' N | 134° 52.5943564' W | 80 | | | 834.106 | | AC 123 |
| | | | | 156.66 | 1.476 | | DA | |
| 147 | 58° 22.7931356' N | 134° 52.0121065' W | 59 | | | 835.582 | | AC 124 |
| | | | | 148.75 | 1.676 | | DA | |
| 148 | 58° 22.0438361' N | 134° 51.1467363' W | 82 | | | 837.258 | | AC 126 |
| | | | | 119.58 | 2.016 | | DA | |
| 149 | 58° 21.5233587' N | 134° 49.4017373' W | 54 | | | 839.274 | | AC 127 |
| | | | | 105.93 | 0.904 | | DA | |
| 150 | 58° 21.3935827' N | 134° 48.5365621' W | 39 | | | 840.178 | | AC 128 |
| | | | | 73.13 | 1.019 | | DA | |
| 151 | 58° 21.5482771' N | 134° 47.5659654' W | 71 | | | 841.197 | | AC 129 |
| | | | | 29.28 | 0.911 | | DA | |
| 152 | 58° 21.9638695' N | 134° 47.1225983' W | 105 | | | 842.108 | | AC 130 |
| | | | | 63.12 | 0.091 | | DA | |
| 153 | 58° 21.9854710' N | 134° 47.0415025' W | 103 | | | 842.200 | | SEALINK IS CABLE |
| | | | | 58.90 | 0.104 | | DA | |
| 154 | 58° 22.0134613' N | 134° 46.9531985' W | 100 | | | 842.303 | | AC 131 |
| | | | | 11.72 | 1.276 | | DA | |
| 154 | 58° 22.6667803' N | 134° 46.6952618' W | 79 | | | 843.579 | | AC 132 |
| | | | | 49.16 | 0.141 | | DA | |
| 155 | 58° 22.7149174' N | 134° 46.5892309' W | 87 | | | 843.720 | | ALASKA UNTED IS XNG |
| | | | | 50.68 | 0.111 | | DA | |
| 156 | 58° 22.7517994' N | 134° 46.5034972' W | 86 | | | 843.831 | | AC 133 |
| | | | | 6.85 | 1.122 | | DA | |
| 157 | 58° 23.3344048' N | 134° 46.3703322' W | 15 | | | 844.953 | | 15m DEPTH CONTOUR |
| | | | | 6.75 | 0.117 | | DA | |
| 158 | 58° 23.3949253' N | 134° 46.3566863' W | -3 | | | 845.070 | | AC 134 |
| | | | | 345.29 | 0.065 | | DA | |

| Pos No. | Position (WGS-84) | | Depth (m) | Heading (°) | Cable Distance | | Cable Type | Comments |
|---|---|---|---|---|---|---|---|---|
| | Latitude | Longitude | | | Between (km) | Total (km) | | |
| 159 | 58° 23.4278843' N | 134° 46.3731659' W | -10 | | | 845.135 | | Cable Allowance |
| | | | | 0.00 | 0.020 | | DA | |
| 160 | 58° 23.4278843' N | 134° 46.3731659' W | -10 | | | 845.155 | | JUNEAU BMH |