Draft Compatibility Determination

Title

Right of Way (operating and maintaining the Halahai and Bulikula submarine telecommunications cable systems), Mariana Trench National Wildlife Refuge.

Refuge Use Category

Rights-of-way and Rights to Access

Refuge Use Type(s)

Right of Way (Utility)

Refuge

Mariana Trench National Wildlife Refuge.

Refuge Purpose(s) and Establishing and Acquisition Authority(ies)

Presidential Proclamation 8335 (6 Jan 2009) established the Mariana Trench Marine National Monument in an area of 95,216 square miles, under the authority of the Antiquities Act of 1906. The Secretary of the Interior has management responsibility, except that the Secretary of Commerce has primary responsibility for the fishery related activities. Secretary's Order 3284 (16 Jan 2009) directed the Director of the Fish and Wildlife Service to manage the Trench Unit (Mariana Trench NWR) as a unit of the National Wildlife Refuge System. Therefore, the following are purposes of the Mariana Trench NWR:

"... for the development, advancement, management, conservation, and protection of fish and wildlife resources ... 16 U.S.C. § 742f(a)(4)

"... for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude ..." 16 U.S.C. § 742f(b)(1) (Fish and Wildlife Act of 1956).

"... conservation, management, and ... restoration of the fish, wildlife, and plant resources and their habitats ... for the benefit of present and future generations of Americans..." 16 U.S.C. § 668dd(a)(2) (National Wildlife Refuge System Administration Act).

"... suitable for— (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. § 460k-1

"... the Secretary ... may accept and use ... real ... property. Such acceptance may be

accomplished under the terms and conditions of restrictive covenants imposed by donors ..." 16 U.S.C. § 460k-2 (Refuge Recreation Act (16 U.S.C. § 460k-460k-4), as amended).

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System, otherwise known as Refuge System, is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife,and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (Pub. L. 105-57; 111 Stat. 1252).

Description of Use

Is this an existing use?

Yes. The Service has previously issued five right-of-way permits for submarine telecommunications cables through the Refuge. This Compatibility Determination has been prepared for a new right-of way permit for the Halahai and Bulikula telecommunications cable systems. NEPA compliance for the landing, operation, and maintenance of submarine telecommunications cables within the Mariana Trench NWR is covered under the Final Environmental Assessment for the Programmatic Issuance of Right-of-Way Permits for Telecommunications Cable-Laying Activities within the Mariana Trench National Wildlife Refuge and Mariana Trench Marine National Monument (Programmatic EA; USFWS 2023). The Service has determined that granting a Right-of-Way Permit for the Halahai and Bulikula telecommunications cable systems would result in negligible environmental disturbance and therefore can be categorically excluded from further NEPA documentation under the DOI categorical exclusion 8.5 DM C(4).

What is the use?

The use is issuance of a Right-of-Way Permit for a utility, defined as the "right to use and possibly alter the landscape through construction, maintenance, and operation of… powerline, telecommunications line …" on lands under control by the U.S. Fish and Wildlife Service (Service.) The Secretary of the Interior, through his/her authorized representative, the Regional Director, United States Fish and Wildlife Service (Service), in accordance with applicable authorities, and regulations published in 50 CFR 29.21 et. seq., will grant a Right-of-Way Permit to the Starfish Infrastructure Inc., herein referred to as the Permittee. The permit will grant the Permittee the right to use certain submerged lands within the Mariana Trench NWR solely for the purpose of operating and maintaining the submarine fiber optic telecommunications cable systems described herein, for a period of 50 years or while it is used for the purpose granted, whichever period is shorter. The permit includes those activities required to maintain telecommunications cables on submerged Refuge lands,

including, but not limited to, post-lay surveys, cable operations, and maintenance and repairs.

Is the use a priority public use?

No

Where would the use be conducted?

The Halahai and Bulikula Cable Systems are two separate cable systems, consisting of three fiber optic cable segments, or trunks (two for Bulikula, one for Halaihai) that each cross the Marianas Trench NWR a single time, for a total of three crossings. The Halahai and Bulikula Cable System route was selected based on criteria developed by the International Cable Protection Committee (ICPP), as outlined in Table 2-1 of the Programmatic EA (USFWS 2023).

Once across the Mariana Trench, Bulikula and Halaihai each branch a single time, resulting in two branches that make landfall within the Mariana Archipelago at the islands of Guam and Tinian (total of four landfalls, each cable landing on each island once).

The cable route for the north trunk of the Bulikula cable system crosses over the Mariana Trench and through the MTMNM for a total linear distance of approximately 109 miles (176 km or 94.72 nautical miles (NM)). The cable route for the south trunk of the Bulikula cable system crosses over the Mariana Trench and through the MTMNM for a total linear distance of approximately 71 miles (115 km or 61.70 nautical miles (NM)). The cable route for the main trunk of the Halahai cable system crosses over the Mariana Trench and through the MTMNM for a total linear distance of approximately 65 miles (105 km or 56.48 nautical miles (NM)). The cable routes are the shortest feasible routes across the MTMNM.

The total acreage of the ROW is 0.98 acres for the Bulikula north trunk, 0.48 acres for the Bulikula south trunk, and 0.58 acres for the Halaihai main trunk, for a total cable footprint within the MTMNM of approximately 2.04 acres (88,705 square feet (sq. ft)).

Water depths along the cable routes range from 4,370 to 9,640 m, spanning the abyssal (4,000 to 6,000 m) and hadal (6,000 to 11,000 m) zones. The route is relatively flat in the eastern sector, with areas of steep slopes and terrain roughness in the western sector of the route.

When would the use be conducted?

The right-of-way permit would grant the Permittee the right to use certain submerged lands within the Mariana Trench National Wildlife Refuge (Refuge) for a period of 50 years or while it is used for the purpose granted, whichever period is shorter. The project would have an anticipated lifespan of approximately 25 years but could be longer. The cable would be decommissioned and left in place once it has

reached the end of its lifespan.

How would the use be conducted?

A Right-of-Way Permit would be issued by USFWS to the Starfish Infrastructure Inc. to allow operation and maintenance of the Halahai and Bulikula fiber-optic communications submarine cables within a portion of the MTMNM.

Subsea Fiber-Optic Cable. The southern trunk of the Bulikula cable is comprised of lightweight (LW) marine fiber optic cable with a diameter of 1.70 centimeters (0.669 inches). The LW cable type has two layers of inner steel wires surrounding the fiber core, with a jacket of medium-density polyethylene. The Halahai cable and the northern trunk of the Bulikula cable is comprised of special application (SPA) cable with a diameter of 2.24 centimeters (0.882 inches). SPA cable is used where a moderate risk of abrasion to the system cable exists due to either high bottom currents or rugged seabed. The SPA cable consists of the standard LW design with the addition of an abrasion-resistant tape to the outer polyethylene surface (PLDT Inc. 2024). The fiber-optic cables are laid directly on the seabed, flush on the seafloor, and are installed to conform to the contour of the seabed as much as feasible.

The light pulses used in fiber-optic cables can be transmitted only approximately 37 to 50 miles along the cable before they need to be regenerated and amplified to maintain the signal's integrity. This amplification is performed by optical repeaters attached to the cable at regular intervals. The repeaters used for this project are approximately 18.0 inches (47.5 centimeters) in diameter and 40.6 inches (1.03 meters) long, with a footprint of approximately 5 square feet per repeater, and operate from approximately 61 volts of direct current. The Bulikula cable has three repeaters within the Trench NWR, two for the northern trunk and one for the southern trunk. The total footprint of these repeaters is approximately 15 square feet (1.4 square meters). The Halaihai cable has one repeater within the Trench NWR. The total footprint of this repeater is approximately 5 square feet (0.5 square meters).

Repeaters are connected in line with the cable and lay on the seabed. Repeaters are positioned to avoid conflict with existing cables.

Cable Operations and Maintenance. There is no routine monitoring or maintenance associated with the submerged segments of the cable. However, it is possible that emergency repair activities and associated upgrades could occur. Should the Permittee need to conduct repairs and/or upgrades to the telecommunications cable, these activities would occur within the ROW. The typical triggers for emergency repair are such things as ship anchors being dragged across the cable route during active anchoring, fishing gear entanglement during active fishing (neither of which would be a concern in the MTMNM due to the great depths), and equipment failure. The Right-of-Way permit will include conditions governing the ability to continue to conduct scientific research using ROVs in proximity to the cable. ROVs are generally not permitted to operate near known sea floor cables.

However, the Permittee has agreed to conditions in the right-of-way permit that allow the operation of ROVs in proximity of the cable.

Emergency Repair. In the case that emergency repair is needed, the permittee will comply with all Best Management Practices listed in Attachment 1 (Table 2-5 of the Programmatic EA; USFWS 2023) to minimize impacts to marine resources in the project area. If the cable needs to be repaired within the MTMNM, it would need to be recovered to the cable ship for repair. Because of the depth of the cable, the operation would take place in several steps. First a flatfish grapnel fitted with a cutting blade would be pulled until it snags and cuts the cable. Then a Gifford grapnel would be used to retrieve one end of the cable and bring it onto the cable ship. After the cable is recovered, the end would be prepared and the fibers tested using a conventional optical time-domain reflectometer (OTDR). After conducting the necessary tests onboard the cable ship, this end of the cable would be sealed and buoyed off for easy recovery later.

Next, the other cable end would be recovered and similarly tested to locate the fault more precisely. The cable ship would retrieve this end of cable until the fault is aboard the ship. After the fault site (either a cable or repeater section) is removed from the system, the repaired cable would be joined to the fault-free cable end and paid out as the vessel returns to the buoyed end. When the buoy is recovered aboard the ship, the two cable ends would be joined. After final testing, the cable would then be paid out through the stern of the ship to settle on the ocean floor.

Retirement, Abandonment, or Removal of the Cable Systems. After a cable is decommissioned, it is typically abandoned in place. Abandonment in place would cause fewer environmental impacts than recovering the cable from the seafloor.

Why is this use being proposed or reevaluated?

The freedom to lay undersea cables has long been recognized as a lawful use of the sea. The United States recognizes this right under the Convention on the High Seas (1958), Article 2: the Convention on the Continental Shelf (1958), Article 4; and the United Nations Convention on the Law of the Sea (UNCLOS) which provides that within the Exclusive Economic Zone (EEZ) (200 nautical miles (NM)), all states enjoy the “freedoms referred to in Article 87 of navigation and overflight and of the laying of submarine cables and pipelines” (Article 58). The Halahai and Bulikula cable systems enhance communication capacity for the Mariana Island Archipelago by increasing connectivity with eastern and western Pacific countries through landings in the United States (U.S.), Japan, Fiji, French Polynesia, Chile, and Australia.

Availability of Resources

In general, the Refuge will incur no expense except administrative costs for review of the application, issuance of a ROW Permit, and staff time to conduct a supplemental environmental analysis and complete a finding of appropriateness (FOA) and

compatibility determination (CD). The Permittee will be responsible for operation and maintenance of the cable.

Administrative Costs:
Review request, coordination, and process ROW Permit: 4 staff: 58 hours: $2,250.00
Review environmental analysis, prepare FOA and CD: 1 staff: 60 hours: $3.450.00
Total $5,700.00.

Anticipated Impacts of the Use

The effects and impacts of the proposed use to refuge resources, whether adverse or beneficial, are those that are reasonably foreseeable and have a reasonably close causal relationship to the proposed use. This CD includes the written analyses of the environmental consequences on a resource only when the impacts on that resource could be more than negligible and therefore considered an "affected resource." Water and air quality, geology, and soils will not be more than negligibly impacted by the action and have been dismissed from further analyses.

Potential impacts of a proposed use on the refuge's purpose(s) and the Refuge System mission

Most of the possible impacts recognized are over or within the water column, and therefore outside the boundary of the Refuge (The Mariana Trench NWR includes only submerged lands within the Mariana Trench Marine National Monument).

Possible impacts to the bottom community of Mariana Trench NWR, including disturbance to benthic marine organisms, are described in Short-term and Long-term Impacts, below. However, these impacts are likely to be negligible, and would not materially interfere with or detract from the Refuge's ability to meet its purposes, or the Refuge System mission.

Short-term impacts

Impacts of laying and maintaining submarine telecommunications cables within the Mariana Trench NWR were analyzed in the Programmatic EA (USFWS 2023). The impacts of operating and repairing the Halahai and Bulikula cable system would be consistent with the impacts described in the Programmatic EA. Impacts to habitat and wildlife caused by the Permittee's use of the ROW are expected to be short term and minor, as described below.

Cables in deep water environments are generally laid on the surface of the ocean floor. Environmental impacts associated with submarine cables can generally be attributed to either installation, maintenance and repair work, and removal; or the operational phase.

The Refuge consists only of submerged lands. The National Marine Fisheries Service

oversees activities that have the potential to affect fish and marine mammals living in the waters above the refuge. Therefore, only effects to the benthic environment are analyzed here. Effects to fish (other than benthic species) and marine mammals from multibeam sonar used during cable route surveys, noise or visual disturbance associated with the vessels, and potential collisions between the vessels and marine mammals, are not analyzed.

Actions with potential to affect the benthic environment include laying the cable on the seafloor, short and long-term interactions of the cable and its environment, and cable retrieval in the event of a fault or at the end of the cable's lifespan.

When placed in waters more than 2,000 meters in depth, cables are generally not buried. They are simply laid across the ocean floor. This is because, at such depths, cables are significantly less susceptible to potentially harmful interactions with living marine resources.

The degree of benthic disturbance caused by laying submarine cables depends on the habitat and its associated ecosystem. The underlying geology of the proposed cable route has not been extensively studied or surveyed. Hadal zone researchers Heather Stewart and Alan Jamieson studied areas in the hadal and adjacent abyssal slope zones of the southern MTMNM (Stewart and Jamieson 2018). They classified the basic geologic structure by depth zones. Substrate types were categorized through the analysis of photographic data. Within the water depth range of 4,506 m to 5,641 m, the dominant seabed sediment observed comprised muddy gravel, with one observation each of bedrock, bedrock and fine-grained sediment, and gravelly fine-grained sediment across all fifteen sampling stations (Stewart and Jamieson 2018). Within the water depth range of 6,008 to 7,941 m, gravelly fine-grained sediment was the dominating sediment type; fine-grained sediment, bedrock, slightly gravelly fine-grained sediment, and muddy gravel were also observed within this depth range (Stewart and Jamieson 2018). A bathymetric survey of the proposed Halahai and Bulikula cable route found predominantly rock outcrop along the western half of the route, and predominantly fine sediment on the eastern half of the route.

Deep sea coral and sponge communities occur in areas of clear water, such as on ridges, seamounts, canyon walls and shelf-edge breaks, where there is hard substratum, sufficient food, and moderate to strong currents (Hourigan et al. 2017). These communities are richest in areas of high slope and terrain roughness (rugosity). The bathymetry of the cable route indicates there are areas of higher slope and terrain roughness in the western portion of the cable route. Although there are no known deep-sea coral and sponge communities along the cable route, there is an inferred higher probability for the presence of deep-sea corals and sponges at these locations. However, ridge dives conducted at depths below 3,000 m have not yet observed high-density deep-sea coral and sponge communities. The deepest 2016 Mariana Islands expedition ROV dives were below a depth of 5,000 m: Petite-spot volcano (1605L3-18), Hadal Ridge (1605L3-04), Hadal Wall (1605L3-21) and Subducting Guyot 1 (1605L3-16). A low-density community of 20 counts per km was observed at

Petite-spot volcano, while deep-sea corals and sponges were scarce at the other three deepest dives (Kelley et al. 2019 in USFWS 2023, Appendix A). Therefore, at the depths of the cable route (5,100 to 7,500 m) it is unlikely that high densities of deep-sea corals or sponges would be encountered. Organisms, including deep-sea coral and sponge communities in the vicinity of the cable route, could be adversely affected by the temporary disturbance of surface sediments and the associated increase in turbidity associated with cable repairs. However, given the low likelihood of deep-sea corals and sponges at the depth the cables are laid, the small diameter of the cables (1.7 cm-2.24 cm/0.669 in-0.882 in), and the small footprint of the cable system, the likelihood of direct adverse impacts to sessile or slow-moving animals is low. Increases in turbidity and suspended sediments would be localized and temporary, and eventually dispersed by benthic currents.

A collaborative study conducted by the Monterey Bay Aquarium Research Institute (MBARI) and the National Oceanic and Atmospheric Administration division of Oceanographic and Atmospheric Research (NOAA-OAR) investigated the potential interactive effects between a fiber-optic submarine cable and its environment (Kogan et al. 2006). Results from this study indicated that the cable had few detectable effects on marine life. Although this was generally the case, in areas with soft sediments, the cable provided an artificial solid substrate that a number of different species sought out. This is known as the 'reef-effect' and results in species inhabiting an area that they typically would not (OSPAR 2009). The 'reef-effect' has been studied extensively and has been found in many cases to lead to the introduction of non-local biota and the alteration of the natural benthic community. The introduction on non-local biota is highly unlikely given the depth of the cable. Localized changes in the benthic community are possible, but would likely be temporary as the cable becomes buried in the sediments over time (Kerchhof et al. 2007, Tyrell and Byers 2007, OSPAR 2009).

Fiber-optic cables primarily transmit light; however, they also use a small amount of electricity to power the repeaters and boost the telecommunications signal, and therefore transmit small amounts of electromagnetic radiation and heat to the surrounding environment. During normal operation, the cable is powered by direct current (DC). DC currents produce the same type of magnetic field as the earth. The magnetic field generated by the cable is hundreds of times smaller than the Earth's magnetic field and thus would not be detectible or distinguishable against the Earth's field. A small amount of electromagnetic radiation may be produced by submarine fiber-optic cables during the rare events when the cable suffers an outage and AC electroding is used to find faulted cables. These would be exceedingly rare, short-term events and would generate very low levels of radiation comparable to background levels naturally produced by the earth. Therefore, it is expected that the weak magnetic fields produced by the Halahai and Bulikula cables would have a negligible potential effect on marine organisms.

The submarine cable system is designed and manufactured to be electrically isolated

from the environment and in the event of an incident resulting in an insulation cable fault, the cable will be automatically grounded to zero as it comes into contact with water. Consequently, there will likely be negligible effects resulting from electricity associated with the cable, either during normal operations or in the case of a fault.

Long-term impacts

Once in place—if correctly laid—submarine cables have thus far not been shown to have a significant adverse effect on the surrounding marine environment since they are generally immobile once placed and coated with a layer of polyethylene, which is inert in seawater. Leaching from cables and their repeaters is believed to pose very little risk to the surrounding environment, especially in extremely deep environments (Collins 2007; Andrady 2000). Chemical breakdown processes, such as oxidation, hydrolysis, and mineralization, are extremely slow, largely as a result of low UV penetration at those depths. In a study conducted by Andrady (2000), it was predicted that total conversion of cable-grade polyethylene to carbon dioxide and water would take centuries.

Impacts to the Public: The operation and maintenance of the cable will not interfere with existing regulated uses within the Mariana Trench, including research and exploration of the Mariana Trench with the proper federal permits, and commercial fishing in compliance with federal regulations. As noted above, the Permittee has agreed to conditions in the right-of-way permit that allow the operation of ROVs used in research and exploration in proximity of the cable.

In summary, the issuance of the ROW Permit to operate and maintain the telecommunications cable would result in minor, short term negative impacts to the benthic habitat and marine life; negligible long-term impacts to the benthic habitat and marine life; and no negative impacts to the public. There would be long-term positive impacts to the public since the Halahai and Bulikula cable system will enhance communication capacity for the Mariana Island Archipelago by increasing connectivity with eastern and western Pacific countries through landings in the United States (U.S.), Japan, Fiji, French Polynesia, Chile, and Australia. This access to the Internet would positively affect economies by facilitating faster and wider access to information, promoting competition in the markets, enhancing communication in terms of lower cost and higher speed.

Public Review and Comment

The public will be notified of the opportunity to review and comment on the Draft CD through posting of the CD on the Refuge's webpage. The Draft CD will be available for a 14-day public comment period. Concerns raised by the public will be addressed in the final CD.

Determination

Is the use compatible?

Yes

Stipulations Necessary to Ensure Compatibility

To ensure compatibility with the National Wildlife Refuge System and the refuge goals and objectives, operation and maintenance of the aforementioned submarine fiber optic cable can only occur under the following conditions:

1. The Service reserves the right to authorize other activities, including research involving remote operated vehicles (ROVs), in the vicinity of the cables. Before permitting activities within 500 meters of the final as-built location of the cables, the Service will consult with the Permittee to establish protocols for communications and operations to minimize the potential for impacts to the cables. The Permittee will ensure that the final coordinates identifying the location of the cables are fully communicated and has agreed to conditions in the right-of-way permit that allow the operation of ROVs in proximity of the cables.
2. The Permittee will produce and share the "as built" legal description describing the accurate location of the cables to the Service, within 180 days after they have been laid on the seafloor.
3. Any operations to conduct emergency repairs or maintenance of the cables must be coordinated with the Refuge Manager prior to scheduling said repair or maintenance.
4. In the case that emergency repair is needed, the permittee will comply with all Best Management Practices listed in Attachment 1 to minimize impacts to marine resources in the project area.
5. The Permittee shall notify the Refuge Manager 30 days prior to a cable decommission date.
6. Consistent with regulations at 50 CFR 25.21(h), the Service reserves the right to modify terms and conditions of the ROW permit in the future, as necessary to ensure continued compatibility with the use and occupancy of the land.

Justification

Issuing a Right of Way Permit for the operation and maintenance of the Halahai and Bulikula submarine telecommunication cable system is compatible because potential impacts from the permittee's use of this right of way on the Refuge's deep-sea species and their habitat would be minimal, and would not materially interfere with or detract from achievement of the NWRS mission and Refuge purposes.

Signature of Determination

Refuge Manager Signature and Date

Signature of Concurrence

Assistant Regional Director Signature and Date

Mandatory Reevaluation Date

2076

Literature Cited/References

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Attachment 1
Best Management Practices for Installation or Repair of Submarine Telecommunications Cables

Source: Final Environmental Assessment for the Programmatic Issuance of Right-of-Way Permits for Telecommunications Cable-Laying Activities within the Mariana Trench National Wildlife Refuge and Mariana Trench Marine Nation Monument, Table 2.5 (USFWS 2023)

Description of BMP or Mitigation Measure
Geology and Topography
Avoid geologically active features, e.g. serpentinite mud volcanoes, serpentinite mud volcano springs, and Mariana Arc of Fire NWR.
Biological Resources (Seabirds, Marine Mammals, Threatened and Endangered Species, Deep-Sea Coral and Sponge Communities)
Avoid areas with higher probability of deep-sea coral and sponge communities.
Abandon cables in place at the end of their lifespan (no salvage).
Implement biosecurity protocols described in the CD stipulations.
Reduce ship speed during cable-laying operations.
Use the minimum amount of light necessary for legal and safe transit when cable ship is underway at night.
Brief cable ship operators on protocols for handling of seabirds.
Employ constant vigilance for the presence of ESA-listed marine species (sea turtles, marine mammals, sharks, rays) during all aspects of the proposed action by an appropriate number of competent trained observers who will not be simultaneously engaged in any other activity (e.g., captaining, operating equipment, etc.). Surveys shall be made prior to the start of work each day, and prior to resumption of work following any break of more than one half hour.
Postpone or halt all work when ESA-listed marine species are within 50 meters (54.7 yards, 164 feet) of the proposed work, and will only begin/resume after the animals have voluntarily departed the area. If ESA-listed marine species are noticed within 50 meters (54.7 yards, 164 feet) after work has already begun, that work may continue only if, in the best judgement of a biologist, the activity will not adversely affect (i.e. disturb or harm) the animal(s).
Project construction must cease under unusual conditions, such as large tidal events and high surf conditions, except for efforts to avoid or minimize resource damage.
Cable ship will employ a contingency plan to control and clean spilled petroleum products, hydraulic leaks, and other toxic materials. Appropriate materials to contain and clean potential spills will be stored on board and be readily available.
All project-related materials and equipment placed in the water will be free of pollutants. Equipment will be inspected prior to beginning work each day to ensure the equipment is in good working condition, free of pollutants and there are no contaminant (e.g., oil, fuel) leaks. Work will be stopped until leaks are repaired and

Description of BMP or Mitigation Measure
equipment is cleaned. Equipment will be stored in appropriate staging area designed to be preventative in terms of containing unexpected spills when equipment is not in use or during fueling.
Debris and other wastes will be prevented from entering or remaining in the marine environment during the project.
Before any equipment, anchor(s), or material enters the water, verify that no ESA-listed marine animals are in the area.
Equipment operators shall employ “soft starts” when initiating work each day and after each break of 30 minutes or more that directly impacts the bottom. Equipment shall be sent to the bottom in a slow and controlled manner for the first several cycles before achieving full operational impact strength or tempo. All objects lowered to the bottom shall be lowered in a controlled manner.
Temporary in-water tethers, as well as mooring lines for vessels and marker buoys shall be kept taut to the minimum length necessary and shall remain deployed only as long as needed to properly accomplish the required task.
Vessel operators shall alter course to remain at least 100 m (109 yds) from whales, and at least 50 m (54.7 yds, 164 feet) from other ESA-listed marine animals. Reduce vessel speed to 10 knots or less when piloting vessels in proximity of ESA-listed marine mammals, sharks, and rays. Reduce vessel speed to 5 knots or less when piloting vessels in areas of known or suspected sea turtle activity. If despite efforts to maintain the distances and speeds described above, a marine mammal or turtle approaches the vessel, the vessel operator will put the engine in neutral until the animal is at least 15 m (~50 ft) away, and then slowly move away to the prescribed distance. Marine mammals, sea turtles and other ESA-listed motile species shall not be encircled or trapped between multiple vessels.
Fueling of project-related equipment shall take place at least 50 ft, or the maximum distance possible, from the water and within a containment area, preferably over an impervious surface.
Prior to in-water work, sanitize equipment or dive gear that has been previously used in an area known to contain invasive species. The crew of the vessel should try to minimize the amount of detergents and other noxious substances that might be washed overboard as part of an effort to clean instruments or equipment used during the cruise or in day-to-day operation of the vessel.
The cable ship will not uptake or discharge any ballast water within the Trench NWR to avoid the spread of invasive species.
Public Health and Safety
Notify USFWS in advance of cable laying operations or emergency repair within the Refuge and Monument
Land and Water Use for Transit, Other Cable Operations, Research and Military Operations
Notify USFWS in advance of cable laying operations or emergency repair within the Refuge and Monument.
Coordinate with NSCPO to avoid impacts to U.S. Navy cable installations.
Coordinate with U.S. military to avoid conflict with military operations in training areas.

Description of BMP or Mitigation Measure
Noise
Operate the cable ship at a low speed during cable installation.
Air Quality
Minimize vessel transit time through the Trench NWR.