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STAFF REPORT: REGULAR CALENDAR

Application No.:	**9-19-0836**
Consistency Certification No.:	**CC-0005-19**
Applicant:	**RTI Infrastructure, Inc.**
Location:	In state and federal waters offshore of Mendocino County, to the edge of the continental shelf; and at a landing site north of Manchester, Mendocino County, connecting to a terrestrial conduit system.
Project Description:	Install four steel landing pipes extending from the landing site approximately 3,280 feet offshore to serve as conduits for fiber optic cables. Through state and federal waters and occupying one of the four landing pipes, install and operate a submarine fiber optic cable extending from the landing site to Hong Kong. Connect cable to terrestrial infrastructure approved by Mendocino County (**Exhibits 1 and 2**).
Staff Recommendation:	Approval with conditions (CDP); concurrence with conditions (Consistency Certification).

SUMMARY OF STAFF RECOMMENDATION

RTI Infrastructure, Inc. (RTI Infrastructure) proposes the installation of four steel bore pipes and a fiber optic cable as part of a multi-phase project in Mendocino County to install and operate up to four trans-Pacific submarine fiber optic cables (**Exhibit 1**). The purpose of the project is to connect locations on the western rim of the Pacific Ocean to the United States. The proposed project includes installation by horizontal directional drilling of four steel landing pipes, extending from the cable landing site approximately 3,280 feet offshore, through which cables would pass and connect to terrestrial infrastructure approved by Mendocino County. Three of these landing pipes would be reserved for future use, as the proposed project includes construction and operation of just one submarine fiber optic cable connecting through state and federal waters and eventually to Hong Kong. This recommendation covers a combined coastal development permit and federal consistency certification; the standard of review for both is Chapter 3 of the Coastal Act.

The key Coastal Act issues raised by this project are the potential for adverse impacts to marine resources and commercial fishing. The project has the potential to harm marine mammals, fish, hard bottom habitat, soft bottom habitat and water quality. To minimize impacts, Commission staff recommends several conditions designed to protect marine habitats and sensitive species. These include **Special Condition 4** requiring RTI Infrastructure to submit a Marine Wildlife Monitoring and Contingency Plan (MWMCP), **Special Condition 5** that requires the cable to be buried to a depth of one meter, and **Special Condition 6** requiring RTI Infrastructure to avoid and eliminate cable suspensions. **Special Condition 8** requires RTI Infrastructure to eventually remove the cable from state waters. In addition, **Special Conditions 16** and **17** require RTI Infrastructure to quantify impacts to hard bottom substrate and mitigate for those impacts through payment of a hard bottom mitigation fee to be used to remove derelict fishing gear and marine debris from waters off of Mendocino County. Further, **Special Conditions 18 and 19** require RTI Infrastructure to submit plans to protect against the discharge of hazardous and non-hazardous substances into the marine environment, and **Special Condition 20** requires RTI Infrastructure to develop an inadvertent release contingency plan for horizontal directional drilling activities. As conditioned, the Commission staff recommends the Commission find the proposed project would be consistent with Sections 30230, 30231 and 30232 of the Coastal Act.

The proposed project also has the potential to result in conflicts with and impacts to commercial and recreational fishing activities. To minimize this potential, **Special Conditions 7** and **9** require RTI Infrastructure to notify fisherman of the location of the installed cable and any areas of exposed or suspended cable. In addition, **Special Condition 12** requires RTI Infrastructure to adhere to the requirements included in an existing Fishing Agreement between fiber optic cable companies and the fishing industry. As conditioned, the Commission staff recommends the Commission find the project would protect commercial and recreational fishing interests and is therefore consistent with Coastal Act Section 30234.5.

Commission staff recommends that the Commission **approve** coastal development permit application 9-19-0836, as conditioned, and **conditionally concur** with consistency certification CC-0005-19. The motions can be found on page 4.

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APPENDICES

EXHIBITS

MOTION AND RESOLUTION

1. Coastal Development Permit

Motion:

*I move that the Commission **approve** Coastal Development Permit No. 9-19-0836 pursuant to the staff recommendation.*

Staff recommends a **YES** vote on the foregoing motion. Passage of this motion will result in conditional approval of the permit and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

Resolution:

The Commission hereby approves Coastal Development Permit 9-19-0836 and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

2. Consistency Certification

Motion:

*I move that the Commission **conditionally concur** with Consistency Certification CC-0005-19 on the grounds that, if modified in accordance with the special conditions in the staff report, the project described therein would be consistent with the enforceable policies of the California Coastal Management Program (CCMP).*

Staff recommends a **YES** vote on the motion. Passage of this motion will result in a concurrence with the certification and adoption of the following resolution and findings. An affirmative vote of a majority of the Commissioners present is required to pass the motion.

Resolution to Conditionally Concur with Consistency Certification:

The Commission hereby conditionally concurs with Consistency Certification CC-0005-19 on the grounds that, if modified in accordance with the special conditions in the staff report, the project described therein would be consistent with the enforceable policies of the CCMP.

II. APPLICANT'S CONSISTENCY CERTIFICATION

RTI Infrastructure has certified that the proposed activity complies with the California Coastal Management Program and will be conducted in a manner consistent with such program.

III. STANDARD CONDITIONS

The Coastal Development Permit (CDP) No. 9-19-0836 is granted subject to the following standard conditions:

1. **Notice of Receipt and Acknowledgment**. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. **Interpretation.** Any questions of intent of interpretation of any condition will be resolved by the Executive Director or the Commission.

4. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

IV. SPECIAL CONDITIONS

Both CDP No. 9-19-0836 and Consistency Certification (CC) No. CC-0005-19 are granted subject to the following special conditions:

1. **Performance Bond.** PRIOR TO ISSUANCE OF THIS PERMIT, the applicant shall provide a surety bond or other security device guaranteed by The Permittee acceptable to the Executive Director of the Commission (hereinafter "Executive Director"), for $500,000, and naming the Commission as the assured, to guarantee the faithful observance and performance of the applicant of the terms and conditions of this permit. The surety bond or other security device shall be maintained in full force and effect at all times until the cable has been removed pursuant to **Special Condition 8** of this permit.

2. **Other Permits and Approvals:** PRIOR TO THE START OF CONSTRUCTION, the applicant shall provide to the Executive Director copies of all other local, state, and federal permits required to perform project-related work. These permits and approvals include:
   - Regional Water Quality Control Board – North Coast Region: final approved Clean Water Act Section 401 water quality certification.
   - U.S. Army Corps of Engineers: Authorization under Nationwide Permit #12, pursuant to Rivers and Harbors Act Section 10 and Clean Water Act Section 404.
   - County of Mendocino: Coastal Development Use Permit, approved October 3, 2019 for terrestrial portion of project.
   - California Department of Fish and Wildlife: Section 1602 Streambed Alteration Agreement.
   - California State Lands Commission: lease for use of state lands, issued June 28, 2019.

3. **Mitigated Negative Declaration Mitigation Measures.** This permit incorporates those mitigation measures identified in the April 2019, Mitigated Negative Declaration for the RTI Infrastructure, Inc. Manchester Subsea Cables Project (State Clearinghouse No. 2019049159) concerning boring-related hazards, marine habitats and wildlife, fishing, marine invasive species, cultural resources, and hazardous materials that are attached to this report as **Exhibit 8.**

4. **Marine Wildlife Monitoring and Contingency Plan (MWMCP**). AT LEAST 60 DAYS PRIOR TO THE START OF CABLE INSTALLATION ACIVITIES, the Permittee shall prepare a MWMCP for review and approval by the Executive Director. The Permittee shall implement the MWMCP during all marine operations (e.g., cable installation, post-lay inspection, burial, maintenance and repair, retrieval of entangled fishing gear, and inspection surveys). The MWMCP shall include the following elements, and shall be implemented consistent with vessel and worker safety:
   - Prior to the start of offshore activities, the Permittee shall provide awareness training to all Project-related personnel and vessel crew, including viewing of an applicable wildlife and fisheries training video, on the most common types of marine wildlife likely to be encountered in the Project area and the types of activities that have the most potential for affecting the animals.
   - A minimum of two National Marine Fisheries Service (NMFS)-qualified marine mammal observers shall be located on the cable installation vessel (CIV) to conduct observations, with two observers on duty during all cable installation activities. The MWMCP shall identify any scenarios that require an additional observer on the CIV or other Project vessel and, in these cases, make recommendations as to where they should be placed to ensure complete coverage of the surrounding marine environment.
   - Shipboard observers shall submit a daily sighting report to the Executive Director no later than noon the following day, provided that electronic communications from the CIV are available, that shall be of sufficient detail to determine whether observable effects to marine mammals are occurring.

- The observers shall have the appropriate safety and monitoring equipment adequate to conduct their activities (including night-vision equipment).
- The observers shall have the authority to stop any activity that could result in harm to a marine mammal or sea turtle. For monitoring purposes, the observers shall establish a 1,640 foot (500 meter) radius avoidance zone around the CIV and other project vessels (if required by the MWMCP) for the protection of large marine mammals (i.e., whales) and a 500-foot (152-meter) radius avoidance zone around the CIV and other project vessels (if required by the MWMCP) for the protection of smaller marine mammals (i.e., dolphins, sea lions, seals, etc.) or sea turtles.
- In the event that a whale becomes entangled in any cables or lines, the observer shall immediately notify NMFS and the Executive Director, so appropriate response measures can be implemented. Similarly, if any take involving harassment or harm to a marine mammal occurs, the observer shall immediately notify the Executive Director, NMFS and any other required regulatory agency.
- While cable is being deployed, cable-laying vessel speeds shall be limited to less than two nautical miles per hour (knots), with the speed of Project support vessels while assisting the cable-laying vessel limited to three to five knots, to minimize the likelihood of collisions with marine mammals and sea turtles.
- Propeller noise and other noises associated with cable laying activities shall be reduced or minimized to the extent feasible.
- The captain of the CIV and the Permittee's project management team shall be responsible for ensuring that the MWMCP is implemented.
- A final report summarizing the results of monitoring activities shall be submitted to the Executive Director and other appropriate agencies no more than 90 days following completion of cable installation and retrieval activities. The report shall include: (a) an evaluation of the effectiveness of monitoring protocols and (b) reporting of (i) marine mammal, sea turtle, and other wildlife sightings (species and numbers); (ii) any wildlife behavioral changes; and (iii) any project delays or cessation of operations due to the presence in the project area of marine wildlife species subject to protection.

5. **Cable Burial Depth**. The cable shall be buried to a depth of one meter in waters up to 1800 meters, except where precluded by seafloor substrates. Where a one-meter burial depth cannot be achieved, the Permittee shall bury the cable to the maximum depth feasible.

6. **Avoid and Eliminate Cable Suspensions**. AT LEAST 60 DAYS PRIOR TO THE START OF CABLE INSTALLATION ACTIVITIES, the Permittee shall prepare a Cable Slack Management Plan for review and approval by the Executive Director. The plan shall include the following elements to avoid and eliminate cable suspensions:

- During cable surface-lay operations, the Permittee shall employ a remotely-operated vehicle (ROV) to track cable-lay operations and provide real-time ROV video feed to the cable ship.

- If the ROV video feed identifies a suspended segment of cable that can be eliminated or minimized by repositioning or introduction of additional cable slack, the Permittee shall recover the cable and reinstall it using the above methods.
- During post-lay inspection and burial operations, the Permittee shall use an ROV to reposition and/or bury to one meter any suspended or exposed cable segment, unless precluded from doing so by seafloor substrates.

7. **As-Built Documentation**. WITHIN 45 DAYS OF COMPLETING MARINE CABLE INSTALLATION, the Permittee shall submit to the Executive Director and the signatories of the amended Fishing Agreement (see **Special Condition 12**) the following: (a) as-built plans in writing (Route Position List) and alignment or strip charts depicting bathymetry, seafloor substrates or features, seabed profile, depths of cable burial below the seafloor, and cable tension; (b) electronic as-built plans (in a format to be determined by the Fishing Agreement signatories); and (c) as-built cable plans overlaid on National Oceanic and Atmosphere Administration (NOAA) navigation charts. The cable location shall be obtained by an acoustic navigation system linked to a surface differential global positioning system. The transponder for the acoustical navigational system shall be mounted on the equipment used for cable burial. The cable shall be considered installed the day after the last day of post-lay inspection burial operations.

8. **Cable Removal**. WITHIN 90 DAYS OF EITHER TAKING A CABLE OUT OF SERVICE or after the expiration or sooner termination of the Permittee's State Lands Commission lease(s) or permit(s), the Permittee shall apply for an amendment to this permit to remove the cable(s) from the territorial waters of the State of California. Upon approval by the Commission of the permit amendment, the applicant shall implement the cable removal project authorized by the amendment in accordance with the time schedule specified therein.

9. **Notification of Exposed Cable**. During the marine cable installation phase of the project, the Permittee shall submit to (a) the Executive Director, (b) the U.S. Coast Guard (for publication in a Notice to Mariners), and (c) the signatories of the Fishing Agreement (see **Special Condition 12**), weekly notices containing preliminary as-built coordinates of any unburied or exposed sections of cable. The Permittee shall also make radio broadcast announcements on the local fishers' emergency radio frequency that provide the current cable installation location and a toll-free number that can be called for additional information.

10. **Changes to Nautical Charts:** WITHIN 30 DAYS OF COMPLETING INWATER CONSTRUCTION, the Permittee shall provide written verification to the Executive Director that the Permittee has submitted project-related information to NOAA to be included on area nautical charts. Information submitted shall include as-built drawings, blueprints, or other engineering documents which depict the completed development; geographic coordinates of the location, using a Differential Geographic Positioning System (DGPS) unit or comparable navigational equipment; and the Permittee's point of contact and telephone number.

11. **Cable Entanglements and Gear Retrieval**. In the event that fishermen snag a cable and lose or cut gear, or that any other type of entanglement occurs (e.g., involving a whale), the Permittee shall use all feasible measures to retrieve the fishing gear or inanimate object. In the event of an entanglement involving a whale, the Permittee shall notify the NOAA stranding coordinator. The Permittee shall notify the Executive Director within 48 hours of its knowledge of gear loss or other cable entanglement. Retrieval shall occur no later than six weeks after discovering or receiving notice of the incident, unless otherwise authorized by the Executive Director. If full removal of gear is not feasible, the Permittee shall remove as much gear as practicable to minimize harm to wildlife (e.g. fishes, birds, and marine mammals). Within two weeks of completing the recovery operation, the Permittee shall submit to the Executive Director a report describing: (a) the nature of and location of the entanglement (with a map), and (b) the retrieval method used for removing the entangled gear or object or the method used for minimizing harm to wildlife if gear retrieval proves infeasible.

12. **Compliance with Fishing Agreement Requirements**. AT LEAST 30 DAYS PRIOR TO THE COMMENCEMENT OF OFFSHORE ACTIVITIES, the Permittee shall provide proof of having formally joined the existing Fishing Agreement with the Point Arena Joint Cable/Fisheries Liaison Committee. The Permittee shall comply with all deadlines for payment, reimbursement, and compensation of all expenses of the Cable Committee and Cable Committee representatives, as approved by the Cable Committee in its Annual Budget.

13. **Critical Operations and Curtailment Plan (COCP).** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the Permittee shall submit a Final COCP to the Executive Director for approval. The COCP shall define the limiting conditions of sea state, wind, or any other weather conditions that exceed the safe operation of offshore vessels, equipment, or divers in the water; that hinder potential spill cleanup; or in any way pose a threat to personnel or the safety of the environment. The COCP shall provide for a minimum ongoing five-day advance favorable weather forecast during offshore operations. The plan shall also identify the onsite person with authority to determine critical conditions and suspend work operations when needed.

14. **Anchoring Plan**. AT LEAST 30 DAYS PRIOR TO THE COMMENCEMENT OF OFFSHORE ACTIVITIES, the Permittee shall prepare and submit an Anchoring Plan to the Executive Director for review and approval that describes how the Permittee will avoid placing anchors on sensitive ocean floor habitats and pipelines. The Plan shall include at least the following information:

- A list of all vessels that will anchor during the Project and the number and size of anchors to be set;
- Detailed maps showing proposed anchoring sites that are located at least 40 feet (12 meters) from rocky habitat identified during the geophysical survey;

- A description of the navigation equipment that would be used to ensure anchors are accurately set; and
- Anchor handling procedures that would be followed to prevent or minimize anchor dragging, such as placing and removing all anchors vertically.

15. Cable Installation Report. WITHIN 60 DAYS OF CABLE INSTALLATION, the Permittee shall submit to the Executive Director a cable installation report containing, at minimum, the following: (a) a summary of pre-lay, cable-laying, and burial methods used; (b) a summary of slack control equipment and methods applied during cable installation; (c) results from the post-lay burial survey indicating the depth of burial achieved along the cable route; (d) identification of any areas of cable suspension greater than one meter from the seafloor and a description of why cable could not be re-routed to avoid suspended cable; (e) a map depicting the cable route and indicating areas where the cable could not be buried and where cable suspensions of greater than one meter from the seafloor are present; (f) an evaluation of the consistency of cable installation with the project description and applicable special conditions of this permit; and (g) a description of any observed fishing activity during the pre-lay and cable installation project phases.

16. Hard Bottom Seafloor Study. WITHIN 60 DAYS OF CABLE INSTALLATION, the Permittee shall submit to the Executive Director for review and approval the results of a Hard Bottom Study that quantifies the extent of hard bottom substrate that is impacted by the installed cable out to the edge of the outer continental shelf. The study will use data collected during cable installation and/or post-lay burial operations to determine areas where the cable is in direct contact with or is suspended above hard bottom substrate. At least 30 days prior to the cable installation work, the Permittee shall submit to the Executive Director for review and approval a proposed methodology for collecting the necessary data and calculating the hard bottom impact. Still-photographs of representative habitat shall be taken in any area of rocky substrate traversed by the cable. The survey shall quantify the extent of exposed rocky substrate, including type and relief along the cable corridor and the height and length of any cable suspended over rocky or soft substrates at heights greater than one meter from the seafloor.

17. Hard Bottom Mitigation Fund. The applicant shall compensate for all project-related impacts to hard bottom habitat through payment of a compensatory hard bottom mitigation fee to be used to remove derelict fishing gear and other marine debris from waters offshore Mendocino County. This work will be carried out pursuant to a Memorandum of Agreement (MOA) by and between the California Coastal Commission and the Regents of the University of California on behalf of the UC Davis Wildlife Health Center's California Lost Fishing Gear Recovery Project.

The amount of the hard bottom mitigation fee shall be calculated by applying a 3:1 mitigation ratio to the total square footage of impacted hard bottom and multiplying that acreage by a compensation rate of $14.76 per square foot. The total square footage of hard bottom impacted shall be calculated by multiplying the linear distance of cable laid on or suspended over hard bottom by twice its width. The fee shall be paid to the UC Davis Wildlife Center within 30 calendar days of the approval of the Executive Director

of the results of the hard bottom study required by **Special Condition 16**. The applicant shall provide evidence of this payment to the Executive Director in the same time frame.

18. **Spill Prevention and Response Plan.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the Permittee shall submit a Project-specific Spill Prevention and Response Plan to the Executive Director for review and approval. The Plan shall identify the worst-case spill scenario and demonstrate that adequate spill response equipment will be available. The Plan also shall include preventative measures the Permittee will implement to avoid spills and clearly identify responsibilities of onshore and offshore contractors and the Permittee personnel and shall list and identify the location of oil spill response equipment (including booms), appropriate protocols and response times for deployment. Petroleum-fueled equipment on the main deck of all vessels shall have drip pans or other means of collecting dripped petroleum, which shall be collected and treated with onboard equipment. Response drills shall be in accordance with Federal and State requirements. Contracts with off-site spill response companies shall be in-place and shall provide additional containment and clean-up resources as needed.

19. **Marine Discharge**. There shall be no marine discharge of sewage or bilge/ballast water from vessels either installing or repairing the cable. A zero-discharge policy shall be adopted for all project vessels.

20. **Inadvertent Release Contingency Plan for HDD Activities**. PRIOR TO ISSUANCE OF THIS PERMIT, the Permittee shall submit to the Executive Director for review and approval an Inadvertent Release Contingency Plan for all HDD activities associated with the project. At a minimum, the plan shall include:

- An evaluation of a worst-case spill volume;
- Clear identification of the trajectory and depth of marine bores;
- A commitment to use water as a drilling fluid for the last 60-100 feet of the bore before the drill punches out to the ocean bottom;
- Measures describing training of personnel, monitoring procedures, equipment, materials and procedures in place for the prevention, containment, clean up, and disposal of release drilling muds, and agency notification protocols;
- Methods for detecting the accidental release of drilling fluids that include: (1) continuous monitoring of drilling pressures to ensure they do not exceed those needed to penetrate the geologic formation; (2) continuous monitoring of mud returns at the entry pit to determine if mud circulation has been lost; and (3) a protocol for using fluorescent dye to detect a frac-out on the sea floor;
- Protocols the Permittee will follow if there is a loss of circulation or other indicator of a release of fluids;

- Protocols the Permittee will follow if there is a fluid release on the beach or bluff (e.g., isolating the area through construction of temporary berms, use of silt fences, straw bales, absorbent pads, or straw wattles); and
- Protocols the Permittee will follow if there is a fluid release in marine waters (e.g., immediately erect an underwater boom/curtain or other method of isolating and containing the release).

If a frac-out and fluid release occurs in the marine environment, the Permittee shall immediately halt work and notify and consult with the staffs of the Commission, SLC, CDFW Office of Spill Prevention and Response, and the National Marine Fisheries Service regarding appropriate incident-specific actions to be undertaken before HDD activities can be renewed.

21. **Cable Repairs**. The Permittee shall provide notice of proposed cable repairs in writing to the Executive Director and in a U.S. Coast Guard Notice to Mariners 15 days prior to any cable repair or maintenance activity, or as soon as possible for emergency repairs.

22. **Cable Surveying**. Five years after cable installation, the Permittee shall survey those portions of the cable route from the mean high tide line to where project operations extend into federal waters out to the 1800-meter depth contour to verify that the cable has remained buried consistent with the cable installation report required by **Special Condition 15**. The survey shall be conducted by a third party, approved by the Executive Director, using an ROV equipped with video and still cameras. Within 30 days of survey completion, the Permittee shall submit to the Executive Director a report describing the results of the survey (including still images) and a copy of the video recorded during the cable survey. The video shall include a display that identifies the date, time, position, water depth, and heading of the ROV.

a. If the initial five year cable installation survey demonstrates no significant change in cable burial status, then the Permittee shall not be required to conduct a follow-up cable survey except after any event that has the potential to affect the cable. "Event" for the purposes of this condition is defined as: an incident or activity (such as a gear snag), the circumstances of which indicate the likelihood that the previously buried cable has become unburied; an act of God, such as a severe earthquake in the vicinity of the cable that could cause deformation of the sea floor or underwater landslides; or any other significant event that could cause excessive ocean floor scouring. The applicant shall notify the Executive Director in writing within ten days of the reporting or other identification of a qualifying event. This notification shall describe the location and nature of the qualifying event and the proposed survey, including survey location and timing. Following Executive Director approval of the proposed survey, the applicant shall schedule a survey at the soonest available opportunity, subject to vessel availability, weather conditions, and related operational conditions affecting the survey. Five years after the initial cable survey, and once every five years thereafter, in the absence of an event that would trigger a cable survey as described above, the applicant shall submit a written statement to the Executive Director confirming that no

qualifying event has occurred since the prior cable survey and that no other conditions or changes have occurred that would affect the burial status of the segments of the cable that were documented as buried in the post-lay survey and subsequent cable surveys.

b. If, instead, the Executive Director determines that the initial five year survey demonstrates that a segment(s) of a cable is no longer buried consistent with the cable installation report required by **Special Condition 15**, the Permittee shall, within 30 days of survey completion, submit to the Executive Director for review and written approval a plan to re-bury that cable segment(s). Upon approval of the plan by the Executive Director, the Permittee shall proceed to implement the plan in accordance with the time schedule specified therein. The Permittee shall also be required to conduct additional cable burial surveys within five years of the initial survey and every five years thereafter and to re-bury any unburied cable identified in such surveys consistent with this special condition.

23. Marine archeological resources and historic shipwreck avoidance plan. AT LEAST 30 DAYS PRIOR TO THE COMMENCEMENT OF PROJECT CONSTRUCTION ACTIVITIES, the Permittee shall provide the marine archeological resources and historic shipwreck avoidance plan, required through **Special Condition 3**, to the Executive Director for review and approval.

V. FINDINGS AND DECLARATIONS

A. PROJECT DESCRIPTION

RTI Infrastructure proposes to install four landing pipes and one fiber optic cable as part of a multi-phase project to install and operate up to four transpacific submarine fiber optic cables landing north of Manchester, Mendocino County with the purpose of connecting the United States to Japan (**Exhibit 1**). The proposed cable would extend through state and federal waters (**Exhibit 2**) and connect with Hong Kong. The proposed project also includes installation (using horizontal directional drilling techniques) of four steel landing pipes which would extend approximately 3,280 feet offshore from the cable landing site (**Exhibit 3**); the proposed cable would use one of these landing pipes, with the other three reserved for future use. The proposed cable would connect with terrestrial fiber optic cable infrastructure (including a landing manhole, surface access vault, and conduit system) included in an October 2019 coastal development permit issued by Mendocino County. According to the Mitigated Negative Declaration (MND) for the proposed project, construction of the surface access vault would enable installation of the marine cables without additional disturbance to the ground surface at the cable landing site.

The four steel landing pipes are proposed to be approximately 6 inches in diameter and would be buried at least 35 feet below the ocean bottom (**Exhibit 3**). The landing pipes would surface offshore at an ocean depth of approximately 30 to 40 feet. The MND for the proposed project

describes the horizontal directional drilling technique proposed for the steel landing pipes as follows:

> *The HDD would be guided by a drill head fitted with a steering tool using magnetometers and inertial devices to track the direction of advance (horizontal and vertical) and the absolute location. Two types of drill heads could be used, depending on geologic conditions: a spud jet or an in-hole mud motor. Spud jets force the drilling fluid through the jet bit to erode the earth material and create the bore hole into which the conduit is inserted. This type of drill head is used in soft soils such as sands, silts, and clays—the expected composition of material to be encountered during marine steel bore pipe installation. An in-hole mud motor uses drilling fluids to rotate a drill head through hard rock such as limestone, sandstone, and granite; this type of head would be used if such conditions were encountered.*
>
> *The marine steel bore pipe would be advanced in 30-foot sections through the boreholes as they are created. Surveys would be conducted in 15- and 30-foot increments to verify the drill position and path. The directional bore machine would occupy the bore entry site, drilling steel casing into the ground at an angle. Once the bore pipe reaches the desired depth, the direction would level out as the drilling continues to push the pipe horizontally through the ground. Once the marine bore reaches the appropriate distance offshore, the drill head would be guided to the surface. This operation would be undertaken four times for installation of the marine steel bore pipes—once for each cable system. These drill heads would stay at the exit point offshore until the divers take them off and cap the marine steel bore pipes so that ocean water does not enter into them.*

RTI Infrastructure proposes to install the fiber optic cable along the alignment shown in **Exhibit 4**. This alignment was selected to avoid (and minimize interactions with) features such as the Manchester State Park, Point Arena State Marine Reserve, Greater Farallones National Marine Sanctuary, Habitat Areas of Particular Concern, and other existing cables.

Before installing the submarine fiber optic cable on the seafloor, RTI Infrastructure would conduct a pre-lay grapnel run to clear debris from the cable corridor. Anything snagged on the grapnel, such as discarded fishing gear, would be retrieved and disposed of onshore. The grapnel would be towed at a speed of approximately 1 knot (approximately 1.2 miles per hour) and would not be pulled over areas of hard bottom or in the vicinity of existing buried cables. Once the pre-lay grapnel run is complete, RTI Infrastructure would lay the cable. Depending on the risk of cable damage (due to substrate conditions or fishing activity, e.g.), one of two types of cable design, both less than 2 inches (5 centimeters) in diameter, would be used: a double-armored design with two layers of polypropylene sheathing, and a light-weight armored cable with a single surrounding polypropylene sheath. Beginning at the seaward extent of the steel landing pipe, the cable would be spooled out by the cable lay vessel and temporarily laid on the seafloor. Up to water depths of about 98 feet (30 meters), divers using hand jets would open up a small furrow under the cable, allowing the cable to drop into the furrow. Sediments disturbed by

the jets would then settle back over the cable, burying it to an optimal depth of 3.28 feet (one meter) where feasible. **Exhibit 5** provides a conceptual schematic of this portion of this operation. At water depths from 98 to 328 feet, a remotely operated vehicle (ROV) would be used to bury the cable. Several passes by the ROV may be required to reach the target depth of three to four feet (1-1.2 meters). From 328 feet (100 meters) to 5,904 feet (1800 meters) at the edge of the continental shelf, a distance of approximately 36 miles, the cable would be installed using a cable plow (**Exhibit 6**). The plow, as it is pulled by the cable-laying ship, slices through ocean floor sediments while feeding the cable into the newly created furrow. As the sled moves forward, the weight of the sled, coupled with the weight of the soil, closes and compacts the furrow, effectively burying the cable to a target burial depth of 3.28 feet (one meter). In areas where the plow is not able to achieve the targeted burial depth due to bottom conditions, an ROV would be used to attempt to bury the cable as described above. Deeper than 5,904 feet (1800 meters) feet, the cable will be laid directly on the seafloor.

RTI estimates that constructing the marine landing pipes would last up to four weeks in duration and is anticipated to begin in winter 2020. RTI Infrastructure estimates that construction of the offshore fiber optic cable would take approximately 30 days and is anticipated for spring 2020. Installation of the cable would occur 24 hours per day and seven days per week.

Once installed, the marine portions of the fiber optic cable do not require routine maintenance. However, damage caused by salt water intrusion into the conduit, anchors, or snagged fishing gear could result in a fault that would need to be repaired. If the cable is buried in the vicinity of the fault, a standard grapnel would be used to recover the cable in burial depths up to 20 inches. If the cable is buried deeper, a de-trenching grapnel, divers and an ROV could be used to remove the cable from the burial trench and bring it to the surface, where the cable would be repaired and then reburied in its original position to the extent practicable. If the cable is not buried, it might be possible to bring the cable to the surface without cutting it.

RTI Infrastructure estimates that the fiber optic cable would have a life of approximately 25 years. Within 90 days of either taking the cable out of service or the expiration of the lease approved by the State Lands Commission (SLC), RTI Infrastructure would notify the SLC, the Commission and other applicable agencies of the status and proposed disposition of the inactive cable. At the end of the cable's life, RTI Infrastructure proposes to abandon the cable in place.

B. PRIOR FIBER OPTIC CABLE PROJECTS APPROVED BY THE COMMISSION

Since 2016, the Commission has approved a number of fiber optic cable projects in offshore waters:

- In July 2016, the Commission approved the installation of a fiber optic cable offshore of Hermosa Beach and the construction of two landing sites in Hermosa Beach with a total capacity of four cables by MC Global BP4, Inc. (9-16-0160/CC-0001-16).

- In February 2018, the Commission approved a fiber optic cable and 4-cable landing site at Dockweiler State Beach (9-17-0389/CC-0004-17).
- In November 2018, the Commission approved a second fiber optic cable at Dockweiler State Beach (9-18-0647/CC-0006-18).
- In February 2019, the Commission approved a second fiber optic cable at Hermosa Beach (9-18-0593/CC-0008-18).
- In March 2019, the Commission approved a third fiber optic cable at Hermosa Beach (0-18-1211/CC-0010-18).

Through its federal consistency authority, the Commission also has concurred with numerous other consistency determinations and negative determinations for submarine fiber optic cable-related projects in other areas of the state submitted by, for example, the Navy, Coast Guard, and the Federal Aviation Administration.

C. Other Agency Approvals and Tribal Consultations

CA State Lands Commission

The CA State Lands Commission (SLC) is the lead agency under the California Environmental Quality Act (CEQA) for the proposed project. On June 28, 2019, the SLC adopted a Mitigated Negative Declaration and approved a lease for the proposed project.

Regional Water Quality Control Board – North Coast Region (RWQCB)

The RWQCB regulates waste discharges into receiving waters in the project area. A Section 401 water quality certification for the proposed project is pending.

U.S. Army Corps of Engineers (Corps)

The Corps has regulatory authority over the proposed project under Section 10 of the Rivers and Harbors Act of 1899 (*33 U.S.C. 1344*) and Section 404 of the Clean Water Act (CWA) (*33 U.S.C. 1344*). The Applicant requested federal authorization from the Corps, who is processing the request under Nationwide Permit #12 (Utility Line Activities).

Tribal Outreach and Consultations

During the process of reviewing RTI Infrastructure's application for this project and developing this recommendation, Commission staff reached out to representatives from Native American Tribes understood to have current and/or historic connections to the project area. These Tribes include the Coyote Valley Band of Pomo Indians, Guidiville Band of Pomo Indians, Hopland Band of Pomo Indians, and the Manchester Band of Pomo Indians. Contact information for these Representatives was provided by the Native American Heritage Commission. At the time of publication of this staff report and recommendation, no concerns had been brought to the attention of Commission staff by representatives of these Tribes. Any concerns raised subsequent to the publication of this report will be brought to the attention of the Commission through an addendum to this staff report and recommendation.

D. DREDGING AND PLACEMENT OF FILL IN COASTAL WATERS

Coastal Act Section 30233(a) states:

> *The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:*
>
> *(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.*
>
> *(2) Maintaining existing, or restoring previously dredged depths on existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.*
>
> *(3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.*
>
> *(4) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.*
>
> *(5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.*
>
> *(6) Restoration purposes.*
>
> *(7) Nature study, aquaculture, or similar resource dependent activities.*

The proposed project includes the burial and placement of a marine cable and four steel landing pipes on the seafloor. This activity constitutes fill of open coastal waters that is subject to Coastal Act Section 30233(a), which imposes three tests on such an activity. The first test requires that the proposed activity must fit into one of the seven categories of uses enumerated above. The second test requires that there be no feasible less environmentally damaging alternative. The third test requires that feasible mitigation measures be provided to minimize the project's adverse environmental effects.

Allowable Use Test

One of the seven allowable uses of fill under 30233(a) is a coastal-dependent industrial facility. The proposed transoceanic cable, the purpose of which is to provide direct ocean connectivity between the United States and Japan, is "coastal-dependent" since it requires "a site on, or adjacent to, the sea to be able to function at all" as defined in Coastal Act Section 30101. The Commission thus finds that the proposed cable meets the allowable use test of Coastal Act Section 30233(a).

Alternatives

The Commission must further find that there is no feasible less environmentally damaging alternative to the proposed project, particularly with respect to the impacts of the submarine cable and cable installation on marine organisms and hard bottom habitat. In order to find that there is no less environmentally damaging alternative to the proposed project, it is necessary to investigate two types of alternatives: (1) alternatives to the proposed landing sites, and (2) alternative offshore routes.

Alternatives to the Proposed Landing Sites

Mendocino County issued a Coastal Development Permit for the cable landing site where the proposed cable would connect to terrestrial infrastructure. This site was chosen in part to avoid the proposed cable crossing into the Greater Farallones National Marine Sanctuary and Manchester State Park (located to the south of the proposed landing site; see **Exhibit 4**). An alternative site would involve new construction or use of a different but already constructed landing site. Use of a different landing site would involve the same construction activities and impacts associated with the proposed project, and therefore would not be considered less environmentally damaging. For these reasons, the Commission finds that there is no feasible less environmentally damaging alternative landing location to the proposed project.

Alternative Offshore Routes

RTI Infrastructure sited the proposed fiber optic cable to minimize or avoid sensitive marine habitats and other known marine features, including: the Greater Farallones National Marine Sanctuary and state marine reserves and marine conservation areas (**Exhibit 4**). The bore pipe exit location was selected to avoid an area of hard substrate to the east (**Exhibit 7**). In addition, RTI Infrastructure worked with local fishing community members to choose routes with minimal potential to affect fisheries.

Although the proposed project will not avoid all hard bottom substrate, impacts to benthic habitats that surround these areas will be minimized. In June 2018, RTI Infrastructure conducted a geophysical survey of seabed features that concluded that a significant portion (approximately half) of hard bottom habitat in the cable corridor consisted of low relief rocks or sub-cropping rocks (defined as rock covered by a layer of loose sediment less than five feet thick and including areas where rocks or boulders are intermittently exposed at the seabed surface). Although the MND did not specifically analyze alternate marine cable routes, it is not likely that an alternate route could be found that would be able to completely avoid or even significantly decrease impacts to hard bottom areas. Additionally, as described above, the proposed route was designed specifically to avoid several areas designated for protection or conservation.

Accordingly, for the reasons described above, the Commission finds that the proposed project is the least environmentally damaging feasible alternative and therefore meets the second test of Coastal Act Section 30233(a).

Mitigation

The final requirement of Coastal Act Section 30233(a) is that dredging and filling of coastal waters may be permitted if feasible mitigation measures have been provided to minimize any adverse environmental effects. In Sections E and F of this report, the Commission has identified mitigation measures that will minimize the adverse environmental effects of the proposed cable and steel bore pipes. These mitigation measures include: requiring RTI Infrastructure to bury the cable to a depth of one meter; avoiding and eliminating cable suspensions; providing notification to fisherman of the cable location and any exposed sections (to reduce the potential for snags); submitting plans to minimize impacts from anchoring and spills of hazardous material, including potential inadvertent release of drilling fluids during the installation of the bore pipes; and assessing and mitigating for impacts to hard bottom habitat from the proposed project.

With the imposition of the afore-mentioned conditions of this permit, the Commission finds that the third test of Coastal Act Section 30233(a) has been met, and the proposed project is consistent with Section 30233(a) of the Coastal Act.

E. MARINE RESOURCES AND WATER QUALITY

Section 30230 of the Coastal Act states:

> *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

Section 30231 of the Coastal Act states:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

Section 30232 of the Coastal Act states:

> *Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.*

The offshore portion of the project extends from offshore from the cable landing site north of Manchester, Mendocino County, through state and federal waters to the edge of the outer continental shelf (**Exhibit 2**). This area is known for its biological diversity and contains several valuable marine habitats characterized by both soft and hard substrate, and supports several special-status species. Although not located within a State or federal Marine Protected Area, the project alignment is in the vicinity of several such areas (**Exhibit 4**).

The proposed project involves the installation of a fiber optic cable on the seafloor from the shoreline out to the edge of the outer continental shelf and has the potential to result in impacts to marine mammals and sea turtles, fish, hard bottom habitat, soft bottom habitat, and marine water quality. Each of these potential impacts is discussed in detail below.

1. Marine Mammal and Sea Turtle Impacts

There are three potential types of impacts to whales and other marine wildlife due to the proposed project: entanglement with the project cable, entanglement with "ghost nets" or abandoned fishing gear, and collision with project vessels.

Potential Whale Entanglement with the Project Cable
Marine mammals that live and migrate through coastal waters in the project area may become entangled in unburied or insufficiently buried cable or in cable suspensions. Whale species observed offshore this area of California include gray whales (*Eschrichtius robustus*), humpback whales (*Megaptera novaeangliae*), blue whales (*Balaenoptera musculus*), fin whales (*B. physalus*), minke whales (*B. acutorostrata*), sperm whales (*Physeter microcephalus*), and killer whales (*Orincus orca*). In addition, several types of dolphins and porpoises, including bottlenose dolphins (*Tursiops truncates*), common dolphin (*Delphinus capensis*), harbor porpoise (*Phocoena phocoena*), Pacific white-sided dolphins (*Lagenorhynchus obliquidens*) and Risso's dolphins (*Gampus griseus*) are also common in the area. Other types of marine mammals such as pinnipeds (*e.g.*, sea lions, harbor seals) and fissipeds (*e.g.*, sea otters) and sea turtles have also been observed.

Of the marine mammal species that frequent the area, two species—the California gray whale (*Eschrichtius robustus*) and sperm whale (*Physeter macrocephalus*)—have the potential to become entangled due to, respectively, bottom-feeding behavior or deep-diving behavior. Approximately 20,000 gray whales migrate through California waters each year between Alaskan waters and Baja California. Because of their abundance off the Pacific coast, their tendency to hug the shoreline during migration and their bottom feeding patterns, gray whales may face the highest risk of entanglement with insufficiently buried or exposed cables. The majority of southbound (November to January) gray whales migrate within two nautical miles (nm) from shore, while the northbound migration (late winter – early summer) occurs much closer to shore, with mother and calves reported within kelp beds and sometimes only yards from the shoreline. These distances, however, vary seasonally over time, particularly due to the deterring presence of boat traffic.

Gray whales usually feed nearshore in soft-bottom sediments, and also typically feed opportunistically during migration (MMS 1989). Gray whales forage on the seafloor by diving, rolling onto one side on the seafloor, and sucking up sediments that the whale filters with its baleen. One study also found sea floor gouges approximately 15 centimeters deep created by migrating gray whales offshore of Northern California, and concluded that migrating gray whales interact with the muddy part of the central marine shelf (at 60-120 meter water depths), although this behavior was determined to be secondary to their migratory objective (Cacchione et al 1987). Gray whales can also dive in waters from 150 to 200 meters deep, but usually prefer shallower water.

Sperm whales are much less abundant off the coast of California than gray whales, numbering only approximately 1,200 individuals. Sperm whales typically inhabit deep open waters, and are the deepest and longest diving of all cetaceans. Sperm whales regularly dive to water depths between 200 and 1,000 meters. Sperm whales are the only species confirmed to have been entangled in a submarine cable, and their deep diving puts them at risk of entanglement with insufficiently buried, exposed, or suspended cables. In addition, unlike gray whales, sperm whales do not bottom feed; instead, they feed solely on squid and octopi found in the water column.

Several older studies have documented occurrences of whale entanglements with submarine cables. A study by Heezen (1957) documents fourteen examples of sperm whale entanglements with submarine telegraph cables worldwide between 1930 and 1955.[1] Heezen postulated that the sperm whales became entangled "…while swimming along in search of food, with their lower jaw skimming through the upper layer of sediment. It may also be that the whales attacked the cable mistaking it for prey." The report also documented possible entanglements of baleen (*e.g.*, gray) whales in shallower water, and one humpback whale reported entangled in Alaskan waters.

In the October 2008 *IEEE Journal of Oceanic Engineering*, Wood and Carter published the results of a new evaluation of two substantial fault databases to determine the occurrence of whale entanglements with telecommunication cables since the 1955-1966 time period. Wood and Carter discuss the 14 cable faults occurring between 1877 and 1955 attributed to whales in Heezen's 1957 study, and they cite a 1969 study of the Alaska-mainland USA telegraph system which reported two whale entanglements prior to 1966. Wood and Carter state that both of the aforementioned studies "continue to be cited as examples of the potential threat posed to whales by submarine cables although there is a suggestion, unsupported by definitive data, that entanglements may not have occurred since 1955-1966." Wood and Carter's 2008 report concluded that:

> *Before 1955-1966, up to 16 faults in submarine telegraphic cables were reported and attributed to entanglements with mainly sperm whales. Circumstantial evidence suggests that capture was related to excessive slack in repaired cables laid in areas of rough and/or*

[1]At the time of the study, there were nearly a half-million miles of cable laid on the sea floor in various parts of the world (Heezen 1957). That figure has more than doubled in the years since (Rampal 1998).

> *steep topography. Since 1955-1966, substantial fault data sets contain no reference to whale entanglements. This cessation and its continuation to the present day is largely related to marked changes in submarine cable design, deployment, and maintenance as well as advances in marine surveying. The period from 1955 to 1966 marked the phased replacement of submarine telegraphic cables by coaxial types, which were superseded by fiber-optic systems in the 1980s. Cables of the post-telegraphic era have different torsional and flexile characteristics, are laid with just enough slack to follow the seabed topography, and are commonly buried below the seabed on the continental shelf and upper continental slope – the main sounding habitat of sperm whales. Furthermore, precision marine surveys allow for accurate cable placement to avoid areas where potential ensnaring suspensions may result.*

Despite these findings, the potential for whale entanglement with submarine cables still exists. Given the diving depth ranges of both gray whales and sperm whales, and the bottom-foraging behavior of gray whales, the presence of suspensions in the submarine cable increases the risk of whale entanglement in cables. In addition, the potential for entanglement is present during initial project installation as cable is spooled out from the cable-laying vessel on the surface and traverses the entire length of the water column before it is buried in the seafloor sediments. Due to the protection of these marine mammals under the federal Endangered Species Act and the Marine Mammal Protection Act, entanglement or injury impacts resulting from insufficiently buried or exposed cables or from cable-laying would be significant. RTI Infrastructure estimates that along approximately 11 percent of the total cable distance to the edge of the continental shelf (approximately 36 miles), the cable will not be buried and will instead be placed on the ocean floor, thus creating the potential for cable suspensions.

To ensure that the proposed project minimizes the potential for whale and other marine wildlife interaction with the project cable, and to document any future entanglements, the Commission is imposing several conditions. **Special Condition 3** requires RTI Infrastructure to implement the mitigation measures related to marine resources included in the project MND (**Exhibit 8**). To further reduce the potential for entanglement during cable laying, **Special Condition 4** requires RTI Infrastructure to submit a Marine Wildlife Monitoring and Contingency Plan (MWMCP) to the Executive Director for review and approval. The MWMCP will incorporate the marine protection elements of MND mitigation measure BIO-17, and Condition 4 expands upon these measures by including provisions for marine wildlife training for project personnel, reduced vessel speed during cable-laying activities and minimization of propeller noise. In addition, the MWMCP also must describe a marine wildlife monitoring program that includes two NMFS-approved marine mammal observers responsible for monitoring a 500-1640 foot radius around the Project vessels. The observers will send daily sightings reports to the Executive Director and other agencies and will have the authority to stop any activity that could result in harm to a marine mammal or sea turtle.

To minimize the potential for entanglement once the cable is installed, **Special Condition 5** requires RTI Infrastructure to bury the cable to a depth of one meter except where precluded by seafloor substrates. Where a one-meter burial depth cannot be achieved, RTI Infrastructure is required to bury the cable to the maximum depth feasible. To minimize the occurrence of

suspended cable, **Special Condition 6** requires RTI Infrastructure to submit to the Executive Director for review and approval a Cable Slack Management Plan that describes the steps RTI Infrastructure will take during cable installation to identify and eliminate, where feasible, segments of cable that are suspended above the seafloor. In order to ensure that cable installation is consistent with the project description, **Special Condition 7** requires RTI Infrastructure to submit to the Executive Director and the signatories to the Fishing Agreement the as-built plans, including burial depth, of the project cable.

In addition, **Special Condition 8** requires RTI Infrastructure to apply for an amendment to this permit to remove the cable within 90 days of either taking the cable out of service or after the expiration or sooner termination of RTI Infrastructure's lease in state waters off of Mendocino County.

In order to ensure compliance with these and other conditions, **Special Condition 1** requires RTI Infrastructure to post a performance bond in the amount of $500,000 to cover its cable operations in State and federal waters.

Entanglement with Ghost Nets and Abandoned Fishing Gear

Fishermen may snag gear or nets on cables. When this occurs, fishermen generally abandon their gear or nets (creating "ghost nets"), thereby creating a risk to marine mammals and other species. This abandoned gear, and particularly the nets, can become a hazard to marine life, potentially entangling marine mammals and fish, preventing them from feeding and causing them to drown.

To address these concerns, the proposed project was designed to reduce impacts to commercial and recreational fishing. The practice of burying the cable to an optimal depth of one meter will ensure that the vast majority of the cable is buried beneath the surface and does not create a potential hazard for fisherman. RTI Infrastructure estimates that only 11% of the cable length will be laid on the surface and thus potentially available to snag fishing gear. To further minimize the likelihood that fisherman come into contact with the cable, **Special Condition 7** requires RTI Infrastructure to provide the signatories to the amended Fishing Agreement (that will be signed between RTI Infrastructure and local fishermen) with as-built plans of the installed cable, including information related to burial depth and cable suspensions. Additionally, **Special Condition 9** requires the applicant to provide weekly updates regarding preliminary as-built coordinates of any unburied or exposed sections of cable (during construction). This information can be used by fisherman to avoid potentially problematic areas where the cable is exposed. In addition, **Special Condition 10** requires RTI Infrastructure to provide NOAA with the information necessary to update its nautical charts to reflect the position and burial status of the installed cable.

Although fishing gear entanglement with the proposed cable is not expected to occur, to provide additional assurance that any gear that does become entangled would not pose a threat to marine wildlife, **Special Condition 11** requires RTI Infrastructure to use all feasible measures to retrieve any fishing gear or object that becomes entangled in a cable no later than six weeks after

discovering or receiving notice of the incident. If full removal is not feasible, RTI Infrastructure will remove as much gear as feasible to minimize harm to wildlife. Within two weeks of completing a recovery operation, RTI Infrastructure is required to submit to the Executive Director a report describing the nature and location of the entanglement and the retrieval method used.

Finally, specifically for the proposed project, RTI Infrastructure will be signing an amended agreement with the Point Arena Joint Cable/Fisheries Committee as required by **Special Condition 12**. As required by **Special Condition 12**, if the fisherman was operating consistent with established procedures, RTI Infrastructure will reimburse the fisherman for the lost gear.

Marine Mammal or Sea Turtle Collision with Project Vessels

Impacts to marine mammals and sea turtles could result from collisions with or harassment from project vessels during marine operations associated with the proposed project. As described above, several species of marine mammals are known to inhabit the waters in the vicinity of the proposed project. Ship strikes of whales present the most serious concern. However, the slow speeds necessary for project vessels during cable installation activities are likely to limit the potential for collisions with marine mammals or sea turtles. Additionally, a biological assessment prepared for the proposed project suggests that marine mammals would likely avoid project vessels and activities because of noise (ICF 2019).

The project MND includes three mitigation measures intended to reduce the impact to marine mammals and sea turtles to a less than significant level: monitoring by two qualified onboard marine mammal observers, modification of vessel operations when marine mammals or sea turtles are present, and reporting any collisions to appropriate Federal and State agencies. **Special Condition 3** requires RTI Infrastructure to implement these mitigation measures. Although these measures are likely to decrease collision risk, additional measures are necessary to enable the proposed project to be found consistent with the requirement to protect marine species as required by Section 30230 of the Coastal Act. Thus, **Special Condition 4** requires RTI Infrastructure to submit a Marine Wildlife Monitoring and Contingency Plan to the Executive Director for review and approval. This plan includes provisions for a minimum of two marine wildlife observers, the establishment of a 500-1640 foot avoidance zone, project vessel speed limits, and training for project personnel. With these conditions in place, potential adverse impacts to marine mammals and sea turtles from collisions with project vessels or harassment from noise associated with project activities will be minimized.

Marine Mammal Effects from Project-Related Vessel Noise

Underwater noise from cable installation activities and work vessels could result in effects to marine mammals and sea turtles, as summarized in the biological assessment prepared for the proposed project (ICF 2019). Marine mammals could occur offshore Mendocino County during cable laying activities. However, the time- and geography-limited nature of project activities will limit the potential for underwater noise effects. Additionally, implementation of the marine mammal monitoring program required in **Special Condition 4**, including the vessel avoidance zone, will further help limit exposure of marine mammals to underwater noise levels that would be sufficiently high to result in acute effects.

2. Fish

The distribution of fishes is influenced by depth, substrate type, temperature, and ocean currents. According to the MND, rocky areas offshore this portion of the California coast are occupied by species such as rockfishes (*Sebastes* spp.), lingcod (*Ophiodon elongates*), staghorn sculpin (*Leptocottus armatus*), and wolf eels (*Anarrhichthys ocellatus*). Sandy or soft bottom areas are typically inhabited by species such as sanddabs (Citharichthys spp.), Petrale sole (*Eopsetta jordani*), English sole (*Parophrys vetulus*), Dover sole (*Microstomus pacificus*), Pacific hake (*Merluccis productus*), eelpouts (Zoarcideae), and the shortspine and longspine combfish (*Zaniolepsis frenata* and *Z. latispinnus*). Pelagic (occurring in the water column) species include smelts (Osmeridae), anchovy (*Engraulis mordax*), mackerel (*Scomber japonicas*), Pacific sardine (*Sardinops sagax*), shiner surfperch (*Cymatogaster aggregata*), assorted perches (Embiotocidae), skates (*Raja* spp.), tunas (Thunnus spp.), and sharks. In addition, salmonid species can be present in the area, including northern California coast steelhead (*Oncorhynchus mykiss*), California coastal Chinook (*Oncorhynchus tshawytscha*), and central California coho (*Oncorhynchus kisutch*). Finally, the proposed project is in an area designated as Essential Fish Habitat for three Fishery Management Plans (FMPs) developed pursuant to the Magnuson-Stevens Fishery Conservation and Management Act: the Pacific Coast Groundfish, Coastal Pelagic Species, and Highly Migratory Species.

In contrast to benthic species that are immobile or severely restricted in their mobility, fish species are not likely to experience direct impacts from project activities. Cable installation activities will result in a temporary increase in turbidity that will likely cause mobile species such as fish and marine mammals to avoid the project area. However, sediment is likely to settle relatively quickly (i.e., within a matter of hours), and the relatively narrow project footprint will not substantially limit available habitat. Thus, these impacts are not expected to be significant. During cable-lay operations, the cable installation vessel will move slowly, allowing any mobile species to avoid the descending cable. **Special Condition 13** requires RTI Infrastructure to submit a Critical Operations and Curtailment Plan which describes the sea and weather conditions under which project activities can safely occur, thus minimizing sediment dispersal and the potential for release of hazardous material by limiting construction activities to avoid periods of storms or heavy seas.

Another potential concern for fish species are impacts associated with noise from construction activities. Project-related underwater noise is expected to originate from project vessels, and for marine vessels underwater noise is generally correlated with vessel speed. Background levels of noise in the near-shore environment are often close to noise levels that would be expected a few meters from project vessels, due to both anthropogenic and natural sources of noise. Based on this information, noise levels are not anticipated to reach levels that would cause injury in fish. However, as an additional precaution, **Special Condition 4** requires RTI Infrastructure to limit the speed of project vessels to two nautical miles per hour (knots), further reducing noise levels associated with project activities.

Finally, the proposed project also has the potential to result in disturbance to Essential Fish Habitat. Specifically, in areas of soft substrate, the pre-lay grapnel run and cable installation activities including use of the sea plow or ROV to bury the cable could result in short term disturbance associated with the displacement of sediments and minor, local turbidity effects from suspended sediments. In addition, resuspension of contaminated sediments could occur, although the areas of highest concentration will be avoided. These potential impacts are likely to be short-lived, with full recovery expected within a year. In hard bottom areas, horizontal movement and strumming of the cable has the potential to harm organisms in the immediate vicinity of the cable. However, horizontal movement of undersea cables, once installed, is not anticipated to be more than three inches, and therefore impacts to hard substrate in Essential Fish Habitat would be minor and localized. Further, although recovery in hard bottom areas is expected to be longer than in soft-bottom areas, the small width of the disturbance corridor would limit impacts to individual organisms. Therefore, the proposed project is not likely to lead to any measurable reduction in the capacity of these environments to support fishes included in Fishery Management Plans.

3. Benthic Species: Hard Substrate Impacts

Cable-laying operations could adversely impact hard substrate habitat and associated biota. Hard substrate is exposed rocky seafloor area that provides habitat for a diverse group of plants and animals. Common epifaunal invertebrates occurring in the hard substrate areas vary based on depth and substrate relief height. Along much of the California coast, there is a strong positive association between the types of communities and the depths and substrate types in which they occur. Hard substrates, including rocky bottoms, rock outcrops, and rock crevices, provide habitat and shelter for numerous sessile organisms, demersal fishes, and mobile invertebrates such as lobsters and crabs. In shallow waters less than 200 meters (656 feet) deep, algae including bull kelp (*Nereocystis luetkana*), purple urchins (*Strongylocentrotus purpuratus*), and anemones such as *Corynactis californica* are present. At these depths (and deeper), depending on the presence of favorable high relief substrate, current speeds and sedimentation rates, branching hard and soft corals have also been reported. In deeper waters (greater than 600 meters or 1,968 feet), hydroids provide substrate to anemones, amphipods, polychaetes, and ectoprocts. Gorgonians, large sponges, shrimp, crinoids, and ophiuroids, brittle stars, and seastars.

Hard substrate (especially high-relief substrate) and its associated biota are rare, and therefore any effect to them is potentially significant. Impacts to high-relief substrate in particular are significant because: (a) deepwater reefs are relatively rare along the California coast; (b) they support a diverse assemblage of epifaunal invertebrates; (c) they attract fish as a nursery ground, food source, and as shelter; and (d) epibiota residing on rocky substrates are sensitive to mechanical disturbance and increased sediment loads.

Adverse impacts (*e.g.*, crushing, scraping, and/or displacement) to hard substrate can occur during cable installation and subsequent movement of the cable on the seafloor due to currents and wave action. In their study on the environmental impacts of a one- to three-inch submarine cable offshore of Half Moon Bay, Kogan et al. (2006) found incisions, scrapes, and vertical

grooves from 2.5-inches to 17.5-inches wide in rocky substrate along the cable route. Hard substrate was altered or damaged by these scrapes and grooves and typical epifaunal organisms were absent. Placement of the project cable on rocky substrates would disrupt associated bottom communities, likely crushing and/or dislodging small, sessile or relatively sedentary invertebrates along a narrow strip. Sessile species may experience repeated, localized disturbances throughout the life of the cable if it moves due to current action.

Potentially significant impacts to hard substrate and biota could occur if rock features are crossed with the grapnel or if vessel anchors are placed directly on hard bottom. The grapnel will be dragged along the proposed alignment in soft sediment areas and is expected to disturb a three foot-wide area along the centerline of the cable lay corridor. However, to avoid impacts to hard bottom associated with the pre-lay grapnel run, RTI Infrastructure will not deploy the grapnel in areas of rocky seafloor substrate. Impacts to hard bottom habitat from vessel anchors would be temporary, and would be removed as soon as the vessel has completed its work**.** However, studies have shown that hard bottom ecosystems are relatively slow to recover from direct impacts (e.g., as compared to soft bottom ecosystems). Thus, it is likely that areas impacted by project anchors could take many years to recover, even though the impact itself is short-lived. Thus, to further reduce the potential for impacts to hard substrate from project anchors, **Special Condition 14** requires RTI Infrastructure to submit for Executive Director review and approval an anchoring plan demonstrating that hard bottom substrate areas would be avoided and listing equipment and procedures to be used to ensure anchors would be placed accurately.

Additionally, RTI Infrastructure will lay cable over areas of hard substrate. The Commission calculates the hard substrate impact area by multiplying the length of cable that will be laid over hard substrate by double the cable width, because the cable does not necessarily stay stationary. In this case, RTI Infrastructure estimates the length of cable to be laid over hard substrate to be approximately 4.19 miles (6.74 kilometers). Multiplying this distance by double the width of the cable results in a potential hard substrate impact area of 3,765 square feet. As described above, cable-laying activities and any ongoing movement of the cable over the life of project, has the potential to damage or crush rocky substrate and its associated biota.

In previous marine cable related projects, the applicants have agreed to compensate for potential project-related impacts to hard substrate and its biota by paying a mitigation payment to the UC Davis Wildlife Health Center's California Lost Fishing Gear Recovery Project. Started in 2005 by the SeaDoc Society, a marine ecosystem health program of the UC Davis Wildlife Health Center, the primary purpose of the Recovery Project is to remove commercial fishing gear that is accidentally lost or intentionally discarded in California's marine environment. The Commission has previously found contributions to the Recovery Project to be an acceptable form of compensation for unavoidable adverse impacts to hard substrate and the organisms it supports. In combined CDP/Consistency Certification E-08-021/CC-005-09, the Commission accepted AT&T's offer of $100,000 to the Recovery Project as adequate to compensate for potential project-related impacts to 5,500 square feet of hard substrate and its biota. Subsequent marine cable projects have used this $100,000 dollars per 5,500 square feet of impact area figure

approved under E-08-021/CC-005-09 to determine appropriate compensatory funds for different areas of impact.

Derelict fishing gear likely is found in the water along the entire coast of California. The gear is potentially hazardous to divers and an array of wildlife including seabirds, fish, turtles, sea otters, and other marine mammals. Derelict fishing gear affects the marine environment in several ways: it can continue to "catch" fish and marine animals, which become enmeshed or trapped, and it can damage the habitat upon which it becomes entangled or upon which it rests. It is also a visual blight on the seafloor, diminishing the natural aesthetic quality of the seafloor and rocky habitat.

In 2016, Commission staff examined data on completed compensatory mitigation work to quantify the acreage of compensation that could be achieved for the funds provided to the Recovery Project for this purpose. In total, at that time the Recovery Project had received $801,193 in compensatory mitigation funds to mitigate impacts to a collective total of 24,325 square feet of hard bottom habitat from seven fiber optic cable projects and two pipeline removal projects. With these funds, the Recovery Project was able to collect 1301 items of derelict fishing gear over 105 field days, resulting in the enhancement of an estimated 64,702 square feet. These data show that the Recovery Project was able to achieve enhancement of marine habitats at a mitigation ratio of 2.7 to 1 and for a cost per area of $12.38/square foot. When this cost per acre figure is adjusted to 2019 dollars using the Consumer Price Index, the result is $14.76/square foot.

For all fiber optic cable projects approved in 2016 or more recently, the Commission applied the results from the analysis of Recovery Project data described above to determine an appropriate mitigation fee for impacts to hard bottom substrate from submarine cable projects. In addition, the Commission applied a 3:1 mitigation ratio because of the nature of the mitigation work performed by the Recovery Project. The Recovery Project's work removes chronic sources of habitat and wildlife disturbance and loss, but it does not actively restore habitat areas after those sources of disturbance are removed. The actual "restoration" of the disturbed areas is achieved through natural recruitment of missing organisms over time. It can often take years for that natural recovery to occur on marine hard substrate habitats (Lissner et al. 1991). Compensating for this time lag between the impact and the success of the mitigation site is one of the principal reasons the Commission has applied mitigation ratios larger than 1:1 in other cases. Another key consideration is the likelihood of mitigation success. Once the Recovery Project removes a source of disturbance from a particular area, it is highly likely that natural recovery of the restored site will occur over the long-term. However, unlike terrestrial mitigation projects where the Commission generally requires conservation easements or other types of protections to protect against future ecological damage, there is no similar mechanism that can be applied to protect marine mitigation sites. Thus, the Commission cannot assume that future anthropogenic disturbance of the same site will not occur in the future. It is likely that some of the sites that are restored by the Recovery Project could be subjected to future damage as lost fishing gear re-accumulates or other types of damage are sustained. Thus, in this case, the uncertainty in the long term restoration of the site also justifies applying a 3:1 mitigation ratio when calculating the appropriate mitigation fee.

As described above, the proposed project could impact approximately 3,765 square feet of hard bottom substrate. This impact area was determined using data from a geophysical survey, conducted in 2018, that used sonar to determine substrate type within the cable corridor. These data were then used to forecast the anticipated depth of burial that can be achieved, but can only provide an estimate of the impact. To determine the actual impact**, Special Condition 15** requires RTI Infrastructure to provide a cable installation report that includes a post-lay burial survey indicating the depths of cable burial. The survey also will quantify the height and length of any cable suspended at heights greater than one meter from the seafloor. Additionally, **Special Condition 16** requires RTI Infrastructure to quantify the extent of actual hard bottom impacts. Within 60 days of cable installation, RTI Infrastructure will submit to the Executive Director a written report describing the results of the post-lay burial survey and the hard bottom seafloor study for review and approval.

Additionally, **Special Condition 17** requires RTI Infrastructure to compensate for all project-related impacts to hard bottom habitat through payment of a compensatory hard bottom mitigation fee to the UC Davis Wildlife Center to be used to remove derelict fishing gear and other marine debris from waters offshore Mendocino County. The total hard bottom mitigation fee will be calculated by applying a 3:1 mitigation ratio to the total square footage of impacted hard bottom and then multiplying that acreage by a compensation rate of $14.76 per square foot. The total square footage of hard bottom impacted will be calculated by multiplying the linear distance of cable laid on or suspended over hard bottom by approximately twice the width of the cable laid down at the particular location.

The mitigation work will be carried out pursuant to a Memorandum of Agreement (MOA) by and between the Commission and the Regents of the University of California on behalf of the UC Davis Wildlife Health Center's California Lost Fishing Gear Recovery Project. Once the mitigation funds are received, the Recovery Project will submit a spending plan to the Executive Director for review and approval that includes, at minimum, a description of the mitigation project and its estimated cost. The mitigation work will aim to recover known (previously located and/or reported) and opportunistically encountered derelict commercial fishing nets, traps and other types of gear offshore the Mendocino coast. The removal of derelict nets snagged on rocky bottom habitat or on underwater structures, or in some cases still attached to fishing vessels, is critical because this form of derelict fishing gear presents a significant entanglement/drowning risk to wildlife and to underwater users (divers, scientists, engineers). The Recovery Project also will recover lost trap gear that results in hazards, blight, and/or interferes with fishing, emphasizing recovery soon after the close of commercial seasons. Project personnel will collect data on all gear recovered, including location, type, substrate type and impacts to resources and habitat. The overall scope of the field effort will be dependent upon the final determination of mitigation funds.

The Commission finds that removing lost fishing gear from the marine environment will offset the projected impacts to rocky bottom areas caused by cable-laying activities. Thus, with the

above special condition incorporated, impacts to hard bottom habitat and the associated benthic species will be minimized, consistent with the requirement in Section 30230 of the Coastal Act that marine resources be maintained, enhanced, and where feasible, restored.

4. Benthic Species: Soft Bottom Habitat Impacts

Soft-bottom areas are unconsolidated sediments (e.g., gravel, coarse-grained and mixed sediments, sand, and mud) that provide habitat to epifauna (surface living) and infaunal (below-surface living) organisms. Impacts to epifauna and infauna due to the proposed project are of concern because: (1) the proposed cable burial will disturb their seafloor habitat; (2) many infaunal organisms have limited mobility and cannot easily escape habitat disturbance or rapidly repopulate regions of disturbance; and (3) they are a source of food for more mobile epifaunal and pelagic marine organisms such as crabs, fin fish, and marine mammals.

Soft-bottom benthic communities in the nearshore areas of the proposed cable route are comprised of species associated with the sand and gravel substrate typical of the high-energy and dynamic environments of the California coast. As depth increases from the shore to 200 meters (656 feet), the density of infaunal species increases, most likely because of the greater stability of the sediments (nearshore areas affected by wave and tidal action are high energy, dynamic environments). Examples of dominant species present at shallow water depths (up to 48 meters or 158 feet) include the ornate tube worm (*Diopatra ornata*), the sand dollar (*Dendraster excentricus*), the slender crab (*Cancer gracilis*), Dungeness crab (*Metacarcinus magister*), octopus (*Octopus rubescens*), squid (Loligo spp.), the orange fleshy sea pen (*Ptilosarchus gurneyi*), sand-rose anemone (*Urticina Columbiana*), and various sea stars. In the coarser sand habitats, the invertebrate community was typically dominated by ornate tubeworms and sand dollars when they were present in colonies occupying fairly narrow bands. Demersal fish present include the California halibut and other flat fish species. From 48-109 meter (157-358 feet) depths, species such as sea pens, sea whip (*Halipteris californica*), several species of anemones, Paguroidea hermit crabs, the sea slug (*Pleurobranchea californica*), several crab species, and seastars are also present. At deeper depths, soft substrates are generally inhabited by sea pens, sea whip, octopus, squid, sea stars, and multiple species of small polychaetes and crustaceans.

Approximately 89 percent of the proposed cable route crosses soft-bottom habitat. In 2018, RTI Infrastructure completed a geophysical survey of the proposed cable route corridor. Additionally, in 2019, Applied Marine Science prepared a summary report examining and summarizing previous surveys of benthic habitats in the region (Applied Marine Science 2019). This summary and data collected during the 2018 geophysical survey were used to characterize the seafloor habitat and associated biota.

Potential impacts to marine habitats and associated biota could occur throughout the cable laying operation, including those resulting in seafloor disturbance (i.e., pre-lay grapnel clearance, diver support vessel anchoring, and the laying and burial of the cable). In addition, during post-installation surveying of the cable route as required by **Special Condition 6**, any cable segments that have become exposed will be reburied with an ROV jet pursuant to an approved re-burial plan.

In evaluating the significance of potential project impacts on soft-bottom habitat and associated biota, the MND states that:

> *The potential scale and duration of seafloor disturbance caused by Project installation and maintenance activities would be limited, resulting in predominantly localized and temporary disturbance to the seafloor. Marine invertebrates…are anticipated to move away from, and thus avoid, all physical disturbances and to recolonize the area after the disturbance has occurred. Consequently, any Project activities on soft substrate habitat and associated biological communities would be less than significant.*

Additional factors, including the fact that the disturbance to benthic habitat does not involve the removal of sediment, and the proximity of the disturbed sediments to undisturbed sediments, will also serve to minimize the amount of time required for benthic organisms to recover. Thus, impacts to soft bottom habitat from the proposed project would be minor and temporary for the following reasons: (1) the area of impact is relatively small compared to the geographical extent of this habitat type offshore of Mendocino County; (2) the species that are likely to be impacted are common and will readily repopulate; and (3) studies have shown that recolonization of most soft-bottom communities is rapid following short-term and localized disturbance.

5. Marine Water Quality Impacts

The proposed project is proposed for open waters offshore Mendocino County. The California Current, a broad, slow-moving southward-flowing current, is the predominant oceanographic feature of this portion of the California Coast. Wind conditions result in periods of upwelling, where surface water is pushed offshore bringing colder, nutrient-rich water to the surface. Water quality conditions in these offshore areas are affected by general oceanographic conditions as well as point and non-point sources of pollutants, although the relatively un-developed nature of this portion of coast has resulted in no waters in the project area being listed as impaired.

Principal potential effects on marine water quality from the proposed project are: (1) harm to filter-feeding benthic organisms due to increased turbidity during cable installation and the suspension and resettling of contaminated sediments within Santa Monica Bay; (2) the release of fuel, hazardous material, sewage or bilge/ballast water from project vessels or the horizontal directional drilling process associated with the placement of the steel landing pipes; and (3) frac-outs during HDD Operations.

Turbidity and Redistribution of Sediments

The size of the turbidity plume caused by cable installation activities (*i.e.*, grapnel, jetting, and burial) depends on the grain size of the bottom sediments, rates at which the suspended particles settle to the bottom or are dispersed by bottom currents, and the energy produced by the trenching equipment. Increases in turbidity can degrade water quality by reducing light penetration, discoloring the ocean surface, or interfering with filter-feeding benthic organisms sensitive to increased turbidity. At the bore pipe terminus, water jetting operations to expose the

newly installed bore pipe will result in localized increases in turbidity. However, the majority of nearshore sediments consist largely of sand (see **Exhibit 7**), which is expected to settle rapidly within the immediate area of the conduit, resulting in only minor impacts to marine water quality.

The pre-lay grapnel run, laying of the cable, jetting of sediments during cable installation, and use of the sea plow farther offshore will result in local and temporary increases in turbidity. However, the greatest concentrations in turbidity are anticipated to be in the immediate vicinity of these Project activities, as dilution through dispersion by currents and settling of heavier articles would greatly reduce impacts beyond the immediate vicinity. Thus, due to the minor and short-term nature of the increase in turbidity, impacts to filter-feeding and other benthic organisms will not be significant.

Project Vessel Releases

The proposed project requires the use of several different marine vessels and equipment to support the construction and operation of the Jupiter cable. It is possible that marine vessels could discharge fuel or other hazardous fluids, sewage water, bilge water, debris, or ballast water into the marine environment. Depending on the size and contents of the release, impacts to marine organisms could be significant. Although the likelihood of a spill occurring is low, the MND includes several mitigation measures to further reduce the risk of a spill from a project vessel. For example, EIR mitigation measures HAZ-1, 2b and 2c require RTI Infrastructure to develop a Hazardous Materials Management and Contingency Plan, which includes measures regarding spill response. In addition, **Special Condition 18** requires RTI Infrastructure to submit a project-specific Spill Prevention and Response Plan to the Executive Director for review and approval. In addition to the requirements of HAZ-1, the Spill Prevention and Response Plan is required to identify the worst-case spill scenario and demonstrate that adequate spill response equipment is available. In addition, this Plan is required to clearly identify responsibilities, list and identify the location of oil spill response equipment, and include a plan for conducting training and response drills. Further, **Special Condition 13** requires RTI Infrastructure to implement an Executive Director-approved Critical Operations and Curtailment Plan (COCP). The COCP defines the limiting conditions of sea state, wind, or any other weather conditions that would hinder safe operation of vessels and equipment or a potential spill cleanup. Finally, consistent with previous fiber optic cable projects, **Special Condition 19** requires implementation of a zero discharge policy for all project vessels.

Frac-outs during HDD Operations

RTI Infrastructure will use bentonite, a non-toxic drilling fluid, during HDD operations proposed to construct the steel landing pipes. These operations could result in the inadvertent release of drilling fluids (i.e., a frac-out) onto the beach or ocean bottom above the bore. Although it does not pose an acute toxicity threat, bentonite releases can smother benthic organisms and contribute to localized turbidity. **Special Condition 20** requires that the Inadvertent Release Contingency Plan includes provisions to use water as a drilling fluid for the last 60-100 feet of the HDD bore, implement a monitoring procedure using fluorescent dye to detect a frac-out occurring on the seafloor where visibility is poor, and protocols to be followed in the event of a loss of drilling pressure and a confirmed frac-out. With these measures in place, the potential for

a frac-out will be minimized; in the event a frac-out does occur, RTI Infrastructure will have procedures in place to ensure that any impacts are temporary and minor.

To summarize, with the inclusion of the special conditions described above, the Commission finds the proposed project will minimize the potential for adverse impacts associated with increased turbidity, resuspension of contaminated sediments, inadvertent release of hazardous substances, discharges from project vessels and runoff from terrestrial activities. The project will therefore maintain the biological productivity and quality of coastal waters and ensure that the project does not adversely impact existing populations of marine organisms.

6. Conclusion

For the reasons discussed above, the Commission finds that the proposed project, as conditioned by **Special Conditions 1 through 20**, will be carried out in a manner that maintains marine resources and sustains the biological productivity and quality of coastal waters and protects against the spillage of hazardous substances into the marine environment, and is therefore consistent with Coastal Act Sections 30230, 30231 and 30232.

F. COMMERCIAL AND RECREATIONAL FISHING

Coastal Act Section 30234.5 states:

> *The economic, commercial, and recreational importance of fishing activities shall be recognized and protected.*

Commercial fishing is an important component of the regional economy in this portion of coastal California, with most commercial fish caught being landed at Fort Bragg. Many types of fisheries are active in these waters, including trolling, trawling, diving, and trapping. According to California Department of Fish and Wildlife (CDFW) data, 20 species account for 99% of landings based on tonnage. From 2013 – 2017, red sea urchin (*Mesocentrotus franciscanus*) were most dominant (although recent landings have fallen sharply), followed by Dover sole, sablefish, Dungeness crab, Chinook salmon, longspine thornyhead (*Sebastolobus altivelis*), shortspine thornyhead (*Sebastolobus alascanus*), Petrale sole, assorted rockfish (Sebastes spp.), longnose skate (*Rajidae rhina*), hagfish (Class Myxini), market squid (*Doryteuthis opalescens*), and lingcod.

Recreational fishing from private boats and commercial party boats also occurs in the project area. According to CDFW, lingcod catch was highest from 2013-2017 (based on tonnage), followed by assorted rays (*Rajidae* spp.), assorted rockfish, Barred surfperch (*Amphistichus argenteus*), Dungeness crab, striped bass (*Morone saxitilis*), California halibut (*Paralichthys californicus*), jacksmelt (*Atherinopsis californiensis*), cabezon (*Scorpaenichthys marmoratus*), Pacific mackerel (*Trachurus symmetricus*), Pacific sanddab (*Citharichthys sordidus*), rock crab (*Cancer productus*), red abalone (*Haliotis rufescens*), night smelt (*Spirinchus starksi*), American shad (*Alosa sapidissima*), and striped kelpfish (*Gibbonsia metzi*).

Potential Project-Related Impacts

The gear types with the greatest potential for interacting with cables are bottom trawls.[2] Fishing may still occur over the cable, whether buried or unburied, but in areas where the cable is not buried (*e.g.*, over rocky substrates or on steep slopes), is insufficiently buried, or becomes exposed, and where trawling occurs, the gear may be snagged, damaged, or abandoned if the fisherman is forced to cut gear. Fishing will also be temporarily precluded during cable installation and repair operations. The principal impacts to fishing due to the proposed project therefore are: (1) preclusion from the project area during cable installation and repair; (2) fishing gear-cable conflict or entanglement; (3) and economic losses due to fishing-cable conflicts, including preclusion and gear loss.

Commercial fishing will be precluded from the cable installation corridor and safety zone during marine activities associated with cable installation. While the duration of these activities will vary along the cable corridor, project construction is anticipated to last up to 30 days. Temporary economic impacts to fishermen therefore could result during cable installation. Pursuant to the federal Submarine Cable Act (47 U.S.C. 21 §24), all vessels are required to maintain a distance of at least one nautical mile from a vessel laying or repairing a cable and one-quarter mile from the buoy of a vessel intended to mark the position of a cable when being laid or out of order. However, this de facto preclusion area created by all cable installation activities will be temporary and will be in constant motion as the cable is being laid and/or buried, so there will be sufficient access to other fishing and boating areas in the project area. Moreover, once the cable is buried, there will be unrestricted access to these areas. Fishing could occur at locations within the route, but away from the cable-laying vessel(s), throughout the installation period. Therefore, a temporary fishing preclusion zone should not be a significant impact to commercial and recreational fishermen.

As required by **Special Condition 12**, to minimize potential conflicts and impacts to fishing from cable installation, operation, and repair, RTI Infrastructure will join the Point Arena Joint Cable/Fisheries Liaison Committee Agreement between AT&T (owner of existing fiber optic cables that traverse the area) and local fishermen. The Fishing Agreement includes the following provisions:

- Distribute as-built cable installation information in writing, electronically, and on navigational charts of cable location and burial depth after installation to assure that accurate positions and depths are known to fishermen and other interested parties;
- Establish and fund a Cable Committee with fishermen and cable company representatives to "…reduce potential conflicts between the installation, continuation, and maintenance of the Cable Projects and commercial fishing activities along the California Coast";
- Fund and hire, through the Cable Committee, a Cable Committee Liaison Officer to carry out Cable Committee activities;
- Approval by the Cable Committee of all future cable alignments;
- Allow a representative of the fishing community to observe all cable-laying activities;

[2] Bottom longlines also have a high potential for interacting with cables on the seafloor, but this type of fishing gear is now prohibited in California.

- Fund a Commercial Fishing Industry Improvement Fund in the amount of $75,000 annually, for enhancement of commercial fisheries and the commercial fishing industry and support facilities. The funds are intended to be used for enhancement of commercial fishing industry and support facilities;
- Establish a 24-hour hotline to take calls from fishermen who believe they have snagged their gear on fiber optic cables;
- Pay 100% of the costs of gear sacrificed by fishermen as a result of snagging cable provided: 1) the fisherman has informed the appropriate 24-hour toll-free telephone hotlines of its situation; and 2) the fisherman's conduct was consistent with the Fishing Vessel Operating Procedures established in the Fishing Agreement. The applicable Cable Company shall also pay a premium in the amount of 50% of the value of the sacrificed gear to settle claims for loss of business incurred by the Fishermen.
- Compensate fishermen economically impacted by cable installation, repair, replacement, or cable maintenance activities;
- Release any claims they might otherwise have against individual fishermen and refrain from taking any administrative, legal, or other action to sanction and/or recover damages against fishermen who comply with terms and conditions of the Fishing Agreement; and
- Resolve disputes with fishermen according to Dispute Resolution procedures.

Special Condition 12 requires RTI Infrastructure to comply with the provisions of the Fishing Agreement. To further minimize potential conflicts with fishing during cable repairs, **Special Condition 21** requires RTI Infrastructure to provide notice in writing to the Executive Director and in a U.S. Coast Guard *Notice to Mariners* 15 days prior to any cable repair or maintenance activity, or as soon as possible for emergency repairs.

Once a cable is laid, fishing gear could snag cable segments that are insufficiently buried or exposed on the seafloor, resulting in gear damage or loss and financial losses from abandoned gear and lost fishing time. RTI Infrastructure will minimize potential fishing conflicts and effects through a number of measures. Most importantly, **Special Condition 5** requires RTI Infrastructure to bury the cable to a depth of one meter in waters up to 1800 meters, except where precluded by seafloor substrates. Where a one-meter burial depth cannot be achieved, RTI Infrastructure will bury the cable to the maximum depth feasible. RTI Infrastructure estimates it can bury the cable along 89% of the cable route. Buried cable will minimize the potential for fishing gear entanglement and gear damage or loss. RTI Infrastructure will lay the cable on the seafloor and will not attempt to bury it in waters greater than 1800 meters in depth.

To minimize the potential that fishing gear is snagged on exposed cable, several conditions have been added to ensure fisherman and other interested parties are notified of the as-built location of the cable as well as the location of exposed sections of the cable. **Special Condition 9** requires RTI Infrastructure to notify fishermen of areas of exposed cable during the marine cable installation phase of the project by submitting to (a) the Executive Director, (b) the U.S. Coast Guard (for publication in a *Notice to Mariners*), and (c) the signatories of the Fishing Agreement, weekly notices containing preliminary as-built coordinates of any unburied or exposed sections of cable. RTI Infrastructure is also required to make radio broadcast announcements on the local fishers' emergency radio frequency that provide the current cable

installation location and a toll-free number that can be called for additional information. **Special Condition 7** requires RTI Infrastructure to submit to the signatories of the Fishing Agreement electronic and hard copy as-built plans overlaid on NOAA navigation charts. Further, **Special Condition 15** requires RTI Infrastructure to submit to the Executive Director a final cable installation report that includes a summary of cable installation and cable slack methods used; identification of any areas of cable suspension greater than one meter above the seafloor; an evaluation of the consistency of cable installation with RTI Infrastructure's project description and conditions of this permit; and a description of any observed fishing activity during the pre-lay and cable installation project phases. In addition, **Special Condition 10** requires RTI Infrastructure, within 60 days of completion of cable installation, to submit evidence to the Executive Director that the company has submitted to NOAA the geographical coordinates of the cable as-built plans using a Differential Geographic Positioning System unit or comparable navigational equipment so that NOAA can update its navigational charts for this area of coast.

Where the cable is suspended over the seafloor, there is a greater chance of fishing gear snags and entanglements. To minimize cable suspensions, **Special Condition 6** requires RTI Infrastructure to submit a Cable Slack Management Plan to the Executive Director for review and approval. This Plan will describe the steps RTI Infrastructure will take during cable installation to identify and eliminate, where feasible, cable suspensions above the seafloor.

To make sure that the cable remains buried, **Special Condition 22** requires that after any event with the potential to affect the cable, the applicant survey potentially affected portions of the cable route from the mean high tide line to the seaward limit of the territorial waters of the State of California. The survey purpose would be to verify that the cable has remained buried consistent with the as-built cable burial plan required by **Special Condition 7**. An "event" is defined as an incident or activity (such as a gear snag), the circumstances of which indicate the likelihood that previously buried cable has become unburied; an act of God, such as a severe earthquake in the vicinity of the cable that could cause deformation of the sea floor or underwater landslides; or any other significant event that could cause excessive ocean floor scouring. The survey is required to be conducted with an ROV equipped with video and still cameras and by a third party approved by the Executive Director. Within 30 days of survey completion, RTI Infrastructure is required to submit to the Executive Director a report describing survey results. If the survey indicates that there has been significant change to the burial status of the cable, RTI Infrastructure is required to submit to the Executive Director a plan to re-bury those cable segments.

To address potential impacts during cable repairs or cable re-burial, **Special Condition 21** requires RTI Infrastructure to provide notice of such proposed repair or re-burial to the Executive Director and in a US Coast Guard Notice to Mariners 15 days prior to any cable repair or maintenance activity, or as soon as possible for any emergency repairs. In addition, within 90 days of either taking a cable out of service or after the expiration or termination of RTI Infrastructure's lease agreement with the City, **Special Condition 8** requires RTI Infrastructure to apply for an amendment to this permit to remove the cable from the seafloor. In order to ensure compliance with these and other conditions, **Special Condition 1** requires RTI Infrastructure to post a $500,000 performance bond to cover cable operations in State and federal waters.

With implementation of these measures, the Commission finds that project-related impacts to commercial and recreational fishermen will be minimized, and that the proposed project is consistent with Section 30234.5 of the Coastal Act.

G. PUBLIC ACCESS AND RECREATION

Coastal Act Section 30210 states:

> *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*

Coastal Act Section 30220 states:

> *Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.*

Project activities may result in short-term disruption to recreational boaters. During marine cable installation, recreational fishers and other boaters must avoid the cable installation ship. Pursuant to the federal Submarine Cable Act (47 U.S.C. 21), the master of any vessel must maintain a distance of at least one nautical mile from a vessel engaged in laying or repairing a cable and at least 0.25 mile from buoys marking the cable position when it is being laid. Therefore, the project may cause recreational vessels to change their course. However, the preclusion zones created by cable installation and repair activities will be temporary or in constant motion as the cable is being laid and/or buried, so there will be sufficient access to other fishing and boating areas in the project area. Moreover, once the cable is laid, full access will be restored. Because of its short-term nature, the disruption of fishing and boating would not be significant.

With these above-described measures in place, the Commission finds that any project-related impacts to public access and beach users will be minimal and temporary and therefore concludes that the project is consistent with Sections 30210 and 30220 of the Coastal Act.

H. CULTURAL RESOURCES

Coastal Act Section 30244 states:

> *Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.*

Historic and cultural resources are places or objects that possess historical, cultural, archaeological or paleontological significance and include sites, structures, or objects significantly associated with, or representative of earlier people, cultures and human activities

and events. Project-related activities have the potential to disturb or damage Native American artifacts and shipwrecks of potential cultural resources value. Disturbance of surface and subsurface soils both in the onshore and offshore environment could directly destroy a previously unrecorded historic or archaeological resource, including human remains, or disrupt the site such that the historic or archaeological context of the resource is altered adversely.

An archeological archival and records search report (Macfarlane Archeological Consultants 2018) completed for the proposed project in October 2018 documented 135 potential shipwrecks within the four marine cable alignments potentially landing at Manchester, plus a ten-nautical mile buffer from these alignments. The records search resulted in no maritime finds of prehistoric origin within this study area.

Project-related activities have the potential to disturb, disrupt or degrade prehistoric sites and watercraft and historic shipwrecks found on or within ocean sediments. Impacts from the pre-lay grapnel run, and cable installation, burial and repair activities have the potential to displace or destroy elements of these resources. The MND for the proposed project included several mitigation measures to address the potential impacts, which are incorporated into this permit through **Special Condition 3**. **Exhibit 8** describes these mitigation measures, which includes MM CUL-2 (to conduct a pre-construction offshore archeological resources survey) and MM CUL-3 (to conduct a pre-construction offshore historic shipwreck survey. Based on the results of these survey efforts, MM CUL-4 (also incorporated into this permit through **Special Condition 3**) requires the development of an avoidance plan to address potential effects of the proposed project on identified archeological resources and historic shipwrecks, including modifying the potential cable route so that it is no closer than 164 feet from the center find of any given find. **Special Condition 23** requires this avoidance plan to be submitted to the Executive Director for review and approval. A subsequent geophysical survey of the proposed cable route was conducted in May of 2018. The survey resulted in no areas indicative of older channels or associated buried paleo-environments along the proposed cable route, and no potential shipwrecks within the proposed cable corridor (MacFarlane Archaeological Consultants 2018).

The Commission finds that based on these factors and with the implementation of Special Conditions **3 and 23**, the project would not adversely impact cultural resources and is therefore consistent with Section 30244 of the Coastal Act.

I. GEOLOGY

Coastal Act Section 30253 states that:

> *New development shall . . . :*
>
> *(b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.*

RTI Infrastructure selected the marine route to avoid several significant geologic features that could impact the cable, including submarine canyons, unstable substrates, and rocky substrates. Most of the marine route crosses sandy material, and liquefaction of the upper several meters of sediments on the sea floor in which the cable is to be installed is possible at various locations. The bulk density of the fiber optic cable is greater than that of the liquefied sediments, and so the cable may sink within the liquefied sediments. Such sinking will serve to bury the cable to a greater depth than its installation depth and may remove some cable slack and increase cable tension.

Geologic Processes and the Submarine Cable

The safety of the submarine cable along its route offshore is of concern because, as described in Section E, repair operations have the capacity to adversely impact marine organisms. Accordingly, the need to conduct repair operations, the potential for breaks or damage to the cable related to erosion, scour, unstable soils, seismic activity or other hazards should also be minimized. To address these concerns, **Special Condition 5** requires RTI Infrastructure to bury the cable to a depth of one meter where feasible. Burying the cable will protect it from scour and erosion associated with marine currents and waves. RTI Infrastructure estimates that it can bury the cable along approximately 89% of the proposed route.

Even with these measures in place, it is possible that the cable could sustain impacts associated with geologic processes. Given submarine currents present on the continental shelf, burial to the one-meter depth may not be sufficient in all locations to prevent exposure of the cable by scouring. Further, areas of relatively steep slopes (up to 15 % grade) on which the cable is to be installed could be subject to slumping and/or sliding, which could expose or break the cable. Exposure of the cable on the seafloor could subject it to damage by anchoring or trawling operations. To identify areas of cable that may have been exposed, **Special Condition 22** requires that after any event that has the potential to affect the cable, the applicant survey those potentially affected portions of the cable route from the mean high tide line to the 1800-meter depth contour. The purpose of this survey will be to verify that the cable has remained buried consistent with the as-built cable burial plan required by **Special Condition 7**. If the surveys show that previously buried portions of the cable have become exposed, RTI Infrastructure is required to submit to the Executive Director a plan to assure re-burial of those cable segments.

With implementation of **Special Conditions 5, 7, and 22**, the Commission finds that the proposed project will minimize risks from geologic hazards to life and property and is therefore consistent with Section 30253 of the Coastal Act.

J. CALIFORNIA ENVIRONMENTAL QUALITY ACT

Section 13096 of the Commission's Code of Regulations requires Commission approval of Coastal Development Permits to be supported by a finding showing the permit, as conditioned, to be consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would

substantially lessen any significant adverse effect which the activity may have on the environment.

The California State Lands Commission, acting as lead CEQA agency, adopted a Mitigated Negative Declaration for the proposed project on June 28, 2019.

The proposed development has been conditioned in order to be found consistent with the Chapter 3 policies of the Coastal Act. Mitigation measures, including conditions addressing marine resources, dredge and fill of coastal waters, water quality, commercial and recreational fishing, geologic hazards, public access and cultural resources will minimize all adverse environmental impacts. As conditioned, there are no feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impact which the activity may have on the environment. Therefore, the Commission finds that the proposed project is the least environmentally-damaging feasible alternative and is consistent with the requirements of the Coastal Act to conform to CEQA.

K. FEDERAL CONSISTENCY

The Commission's action in this case authorizes both a CDP for the proposed project and results in a conditional concurrence with RTI Infrastructure's federal consistency certification. In the case of a conditional concurrence with a consistency certification, the following procedures are triggered under the federal consistency regulations (15 CFR Part 930):

> 930.4 Conditional Concurrences.
>
> *(a) Federal agencies, applicants, persons and applicant agencies should cooperate with State agencies to develop conditions that, if agreed to during the State agency's consistency review period and included in a Federal agency's …approval under subparts D … of this part, would allow the State agency to concur with the federal action. If instead a State agency issues a conditional concurrence:*
>
> > *(1) The State agency shall include in its concurrence letter the conditions which must be satisfied, an explanation of why the conditions are necessary to ensure consistency with specific enforceable policies of the management program, and an identification of the specific enforceable policies. The State agency's concurrence letter shall also inform the parties that if the requirements of paragraphs (a)(1) through (3) of the section are not met, then all parties shall treat the State agency's conditional concurrence letter as an objection pursuant to the applicable Subpart and notify, pursuant to §930.63(e), applicants, persons and applicant agencies of the opportunity to appeal the State agency's objection to the Secretary of Commerce within 30 days after receipt of the State agency's conditional concurrence/objection or 30 days after receiving notice from the Federal agency that the application will not be approved as amended by the State agency's conditions; and*

> *(2) The … applicant (for Subpart… D), … shall modify the applicable plan, project proposal, or application to the Federal agency pursuant to the State agency's conditions. The Federal agency, applicant, person or applicant agency shall immediately notify the State agency if the State agency's conditions are not acceptable; and*
>
> *(3) The Federal agency (for Subpart…D) shall approve the amended application (with the State agency's conditions). The Federal agency shall immediately notify the State agency and applicant or applicant agency if the Federal agency will not approve the application as amended by the State agency's conditions.*
>
> *(b) If the requirements of paragraphs (a) (1) through (3) of this section are not met, then all parties shall treat the State agency's conditional concurrence as an objection pursuant to the applicable Subpart.*

If the applicant were not to agree to the conditions, the federal consistency regulations require the Commission to notify the applicant as follows:

Right of Appeal

Pursuant to subsection (a)(1) quoted in the prior section and Subpart H of the federal consistency regulations, within 30 days from receipt of notice of a Commission conditional concurrence to which RTI Infrastructure does not agree, RTI Infrastructure may request that the Secretary of Commerce override this objection. 15 CFR §§ 930.4(a)(1) & 930.125(a). In order to grant an override request, the Secretary must find that the proposed activity for which RTI Infrastructure submitted a consistency certification is consistent with the objectives or purposes of the Coastal Zone Management Act, or is necessary in the interest of national security. A copy of the request and supporting information must be sent to the Commission and the U.S. Army Corps of Engineers. The Secretary may collect fees from RTI Infrastructure for administering and processing its request. [Note: This right of appeal does not apply to the CDP, but only to the activity authorized under the consistency certification.]

APPENDIX A: SUBSTANTIVE FILE DOCUMENTS

Coastal Development Permit Application and Federal Consistency Certification Materials:

Application for Coastal Development Permit 9-19-0836, dated July 03, 2019.

Consistency Certification CC-0005-19, September, 2019.

Electronic Correspondence from Chris Brungardt, RTI Infrastructure, Inc. to John Weber, Coastal Commission staff, dated November 7, 2019.

RTI Infrastructure, Inc., responses to Notices of Incompleteness, submitted September 12, 2019 and October 28, 2019.

Environmental Documents:

Applied Marine Sciences, Marine Aquatic Habitats and Biological Communities near Manchester Beach, California: Addendum 1 – RTI Manchester Transpacific Fiber Optic Cable Project Route Characterization, April 2019.

Applied Marine Sciences, Marine Habitats and Associated Biological Communities and Resources near Manchester Beach, California, December 2018.

CA State Lands Commission, Mitigated Negative Declaration for the RTI Infrastructure, Inc. Manchester Subsea Cables Project, April 2019.

ICF. Biological assessment for the Manchester Subsea Cables Project, Mendocino County, California. Prepared for RTI Infrastructure, Inc. May 2019.

Macfarlane Archeological Consultants. Marine Cultural Resources Technical Report for RTI Infrastructure, Inc. Manchester Subsea Cables Project. October 2018.

Published Articles and Reports:

Cacchione, Drake, Field, and Tate. “Sea-floor gouges caused by migrating gray whales off northern California,” Continental Shelf research, Vol. 7, No. 6, pp. 553-560.

Heezen, B.C. “Whales entangled in deep sea cables.” Deep-Sea Research 4:105-115, 1957.

Kogan, Paul, Kuhnz, Burton, Von Thun, Greene, and Barry, 2006. *ATOC/Pioneer Seamount cable after 8 years on the seafloor: Observations, environmental impact*. Continental Shelf Research, Vol. 26, pp. 771-787.

Lissner, Andrew, Taghon, Gary, Diener, Douglas, Schroeter, Stephen, Dixon, John, 1991. Recolonization of Deep-Water Hard-Substrate Communities: Potential Impacts from Oil and Gas Development. Ecological Applications, Vol. 1, No. 3 (August 1991), pp. 258-267.

Minerals Management Service, Department of the Interior. *Gray Whale Monitoring Study: Final Report*, prepared by MBC Applied Environmental Sciences, August 1989.

Rampal, G. *Undersea Fiber-Optic Cable Systems Undergoing Unprecedented Growth*, Sea Technology, Vol. 39, No. 3, 10-19, 1998.

Wood, M.P. and Carter L. "Whale Entanglements with Submarine Communication Cables." IEEE Journal of Oceanic Engineering, Vol. 33, No. 4, October 2008.

Other:

Applied Marine Sciences. 2015. Subtidal Habitats and Associated Macrobenthic and Fish Communities Observed Offshore Coastal California Along Fiber Optic Cable Routes. Prepared for ICF International. May, 2015.

"Seadoc 2009-2014," spreadsheet developed by Cassidy Teufel and Kate Huckelbridge, California Coastal Commission, dated 6/17/16.