

Backyard Buoys

Permitting Plan

Prepared for



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ACRONYMS AND ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
AK	Alaska
AOOS	Alaska Ocean Observing System
CATEX	Categorical Exclusion
CDIP	Coastal Data Information Program
CRISP	Community Research Implementation and Stewardship Plan
CWA	Clean Water Act
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
LMR	Land Management Regulations
MBTA	Migratory Bird Treaty Act
NANOOS	Northwest Association of Networked Ocean Observing Systems
NDBC	National Data Buoy Center
NOAA	National Oceanic and Atmospheric Administration
NSB	North Slope Borough
NWAB	Northwest Arctic Borough
NWP	Nationwide Permit
PacIOOS	Pacific Islands Ocean Observing System
PATON	Private Aids to Navigation
PCN	Preconstruction Notice
ROD	Record of Decision
TLUI	Traditional Land Use Inventory
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service

1 INTRODUCTION

The Backyard Buoys Initiative (Backyard Buoys) was created to find solutions to large-scale societal challenges through research, innovation, and partnerships. Backyard buoys consists of two phases aiming to provide wave data to Indigenous communities. Work conducted under Phase I is complete, and it engaged 15 communities from three regions to identify community priorities and needs. A culturally diverse team is collectively working to close the gap in access to coastal and ocean data by communities in remote coastal areas.

The Backyard Buoys Initiative aims to provide the wave data to Indigenous communities in a way that:

- takes advantage of existing, lower cost, user-friendly technology,
- provides co-designed applications for data input and dissemination, and
- enables sustained community-led stewardship of the wave buoys.

As such, a sense of ownership in ocean observations will be embraced by communities to serve the blue economy.

Data from community-chosen locations will improve coastal climatologies and predictions. Indigenous coastal communities have depended on ocean resources over millennia and have stewarded their environment sustainably, but climate change is causing a more rapidly fluctuating and less predictable ocean. Access to ocean data is essential for these communities' well-being, yet there is often insufficient financing and capacity available to purchase and sustain ocean observing technologies. The Backyard Buoys approach utilizes the power of local ownership and knowledge sharing to maintain ocean observations critical to the blue economy worldwide.

Backyard Buoys brings together three groups: 1) a wave buoy and sensor company, Sofar Ocean; 2) three U.S. Integrated Ocean Observing System Regional Associations, each with established, trusted relationships forged over decades with Indigenous and coastal communities and the demonstrated ability to provide tailored web applications that are intuitive and useful (Alaska Ocean Observing System [AOOS] in Alaska, Pacific Islands Ocean Observing System [PacIOOS] in the Pacific Islands, and Northwest Association of Networked Ocean Observing Systems [NANOOS] in the Pacific Northwest); and 3) Indigenous community partners to guide tool development and become lasting stewards of the technologies.

Currently, real time wave information is largely dependent on National Data Buoy Center (NDBC) and Datawell buoys, many of which are supported by the Coastal Data Information Program (CDIP); however, these moorings are relatively sparsely distributed in U.S. waters. The NDBC and CDIP buoys are expensive and large in size and weight, requiring significant resources to maintain.

During Phase I, Backyard Buoys produced a research and implementation planning model for community engagement and ocean observing stewardship across the three regions. The outcome of Phase I was the outline of Community Research Implementation and Stewardship Plan, founded on needs common across all regions. The CRISP allowed for creation of region-specific implementation plans for communities wanting to deploy wave buoys.

2 PROJECT DESCRIPTION

The Backyard Buoys team will work with community members to deploy sensor platforms with integrated solar power, satellite data connectivity, and modular sensor payload capabilities to instantaneously begin providing critical data for coastal communities and stakeholders including resource managers, policy makers, and educators. The real time data will be served on existing regional data visualization systems and customized applications developed during this project based on user interviews and iterative feedback. With accessible data tools, these data will serve community needs for decisions on scales from daily (e.g., related to assessing safety for maritime operations and coastal hazards) to longer planning horizons (e.g., related to assessing resilience for climate change and ecosystem function). During Phase II, the region-specific CRISPs developed within each community partnership will enable successful planning and implementation of community wave observing projects. Communities will deploy 3-5 of Sofar's Spotter wave buoys (Spotters), depending on specific needs and begin collecting real-time wave data using a platform consisting of the Spotters and an online Spotter Dashboard and Application Programming Interface. The dashboard provides access to real-time Spotter data, system status and alerts, data visualization, and allows remote configuration of the Spotter.

The Spotter device is a compact and lightweight instrument consisting of a waterproof hull, solar panel array, and electronics package (Figures 1 and 2). It can be deployed either as a free-floating drifter or in a moored configuration. For the purposes of the Backyard Buoys program, the Spotter will be anchored to the seafloor in water depths up to 50 meters using a designed Smart Mooring system. The Smart Mooring system is the underwater extension of the Spotter platform. It anchors to the seafloor using a 100 to 150-pound anchor weight and expands the sensing capabilities beneath the water surface. Specific mooring system configurations will vary depending on region and site-specific conditions.

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Figure 1. Spotter with Typical Smart Mooring Configuration

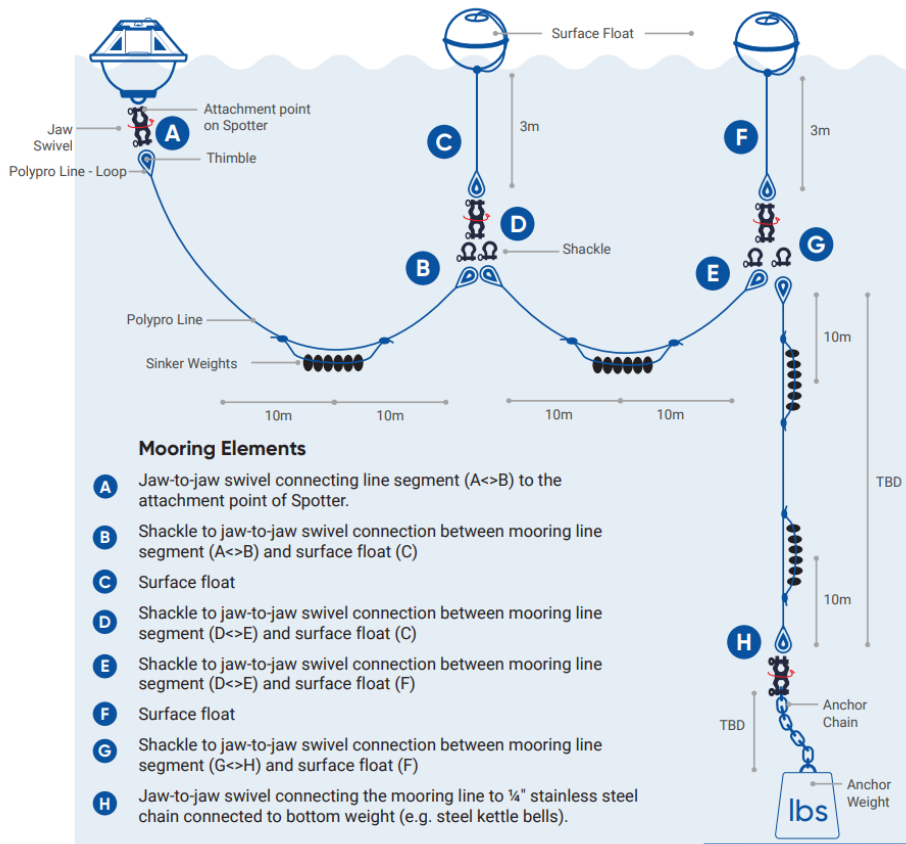


Figure 2. Detailed Schematic Showing a Typical Mooring Option and Element Details



Figure 3. Spotter Buoy Dimensions

3 REGULATORY FRAMEWORK

Some permits required for deployment of Spotter buoys may be acquired on a regional basis; however, the responsibility to attain other permit approvals and authorizations will fall on the communities seeking to deploy buoys. Mitigation measures or recommended Best Management Practices provided by federal agencies as part of any consultations or coordination during the permitting process as well as regional or general permit conditions or stipulations would ensure implementation of buoy deployment and data collection minimizes the potential for environmental effects. Permits and approvals required for development of buoys under the Backyard Buoy program are described below.

3.1 Federal Regulations

3.1.1 Rivers and Harbors Act and Clean Water Act

Buoy placement in waters of the U.S. would require a Section 10 or Section 404 permit. Section 10 of the Rivers and Harbors Act of 1899 prohibits the unauthorized obstruction or alteration of any navigable water of the U.S. and requires approval by the U.S. Army Corps of Engineers (USACE) for placement of structures in navigable waters of the U.S. Section 404 of the Clean Water Act gives USACE the authority to regulate disposal of dredge or fill material in waters of the U.S., including coastal wetlands, tidelands, and marine waters below the high tide line. Buoy deployment will require USACE authorization under these authorities. Authorization may consist of either individual permits or coverage under existing Nationwide Permits (NWP). Coverage under a NWP is preferred, when possible, as approvals are expedited and easier to attain. NWPs are designed for smaller, simpler, and more discrete projects with an easily anticipated set of potential impacts. The Backyard Buoys Spotter deployments are such projects and will likely be approved under NWP 5 – *Scientific Measurement Devices*.

3.1.2 National Environmental Policy Act and Federal Permits

If a permit is required from a federal agency or if federal funds have been provided for a project, such as the case of the Backyard Buoys Initiative, the National Environmental Policy Act (NEPA) requires agencies consider impacts on the environment of their proposed actions and the related social and economic effects. The assessment of potential impacts may be conducted in three potential ways:

1. *Categorical Exclusion (CATEX)*- a category of actions which do not individually or cumulatively have a significant effect on the human environment. CATEX lists are developed by each federal agency through their NEPA implementing procedures and must be formally approved by the White House Council on Environmental Quality.
2. *Environmental Assessment (EA)*- An EA is a brief and concise analysis completed by the lead federal agency to determine if an activity will have a significant impact on the environment. If after analysis and public comment, no significant impacts are found or mitigation can avoid or minimize the impacts below the level of significance, the agency can issue a Finding Of No Significant Impact (FONSI), which allows the project to begin.
3. *Environmental Impact Statement (EIS)* - An EIS is a more extensive review analyzing and documenting impacts the action and reasonable alternatives will have on the environment. Following the analysis and a mandatory 45-day public comment period, a Record of Decision (ROD) is prepared outlining the necessary actions that must be taken by the agency and the decision as to whether or not to proceed with the proposal or one of the alternatives considered in the analysis.

The USACE will likely take responsibility as the lead federal agency for NEPA review of Backyard Buoys projects. During the process of issuing the 2021 NWP, the agency prepared EAs which were included in the Final Decision Documents. NEPA compliance will likely be met by the EA for NWP 5 for the Backyard Buoys Spotter buoy deployment projects.

3.1.3 Endangered Species Act

Section 7 of the ESA, as amended, applies to federal agency actions (i.e. permit issuance) and sets forth requirements for consultation to determine if the proposed action may affect an endangered or threatened species. Section 7 consultations will be necessary when a potential for occurrence of federally ESA-listed or candidate species exists, seasonally or sporadically, in the area of selected buoy deployment locations, and where critical habitat is designated in or near those areas.

The USACE (likely federal lead agency) participated in Section 7 consultations during the process of issuing the 2021 Nationwide permits (NWPs), including NWP 5; however, the agency will review each Preconstruction Notification (PCN; required for authorization under a NWP in areas where ESA-listed species or designated critical habitat occur) on a case-by-case basis to assess the potential for effects on ESA protected resources.

USACE may not authorize any activity under a NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. Furthermore, no activity may be authorized under any NWP which “may affect” a listed species or critical habitat, unless ESA Section 7 consultation has been completed. Therefore, if the USACE makes a determination that buoy deployment and data collection may affect ESA-listed species or critical habitat, they will initiate consultation with U.S. Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Service (NMFS) prior to issuing authorization to begin work. Conditions resulting from that consultation may be added to the NWP authorization. Conversely, if a determination of “no effect” is made, no further consultation under the ESA is required. Applicants may provide justification of expected level of impact to the USACE, if amenable, to aid in its determination of effect.

3.1.4 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act, passed in 1976 and reauthorized in 2006, is the primary law governing marine fisheries management in the U.S. The Magnuson-Stevens Act requires federal agencies to consult with NOAA Fisheries when any activity proposed to be permitted, funded, or undertaken by a federal agency may have adverse effects on designated Essential Fish Habitat (EFH).

The Backyard Buoys program could minimally affect (temporary and localized) EFH in areas where designation overlaps with areas of buoy deployment as it would temporarily remove availability of habitat in the area directly impacted by the mooring anchor footprint. The USACE undertook consultation with NMFS regarding EFH during issuance of the 2021 NWPs. A determination of

As discussed in the Decision Document for NWP 5, there are procedures to help ensure that individual and cumulative impacts to essential fish habitat are no more than minimal. For example, division and district engineers can impose regional and special conditions to ensure that projects authorized under the NWP will result in no more than minimal adverse effects on essential fish habitat. Compliance with General Conditions 3 (Spawning Areas) and 5 (Shellfish Beds) will ensure that the authorized activity does not adversely affect important spawning areas and concentrated shellfish populations.

3.1.5 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 is the law implementing the U.S. commitment to four international conventions (with Canada, Japan, Mexico, and Russia) for the protection of a shared

migratory bird resource. Each of the conventions protects selected species of birds that are common to both countries (i.e., species occur in both countries at some point during their annual life cycle). Emergency Order (EO) 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, directs federal agencies to take certain actions to further implement the MBTA and to conserve migratory birds. The order prohibits the take of migratory birds, their eggs, feathers, or nests. General Condition 4 of USACE NWP 5 will minimize any effects on migratory birds by requiring that locations serving as breeding areas for migratory birds are avoided to the maximum extent possible. General Condition 20 of the USACE NWP requires proposed actions comply with the MBTA and that applicants inquire (during discussion with USFWS) about measures which could reduce potential impacts on migratory birds.

3.1.6 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to consider and evaluate the effect that federal actions (i.e. authorizations) may have on historic properties. The PCN required by USACE for NWP 5 (in areas where ESA listed species or critical habitat may occur) will provide information to assist USACE in identifying any potential effects on historic properties. In accordance with General Condition 20 the 2021 NWP, USACE will initiate consultation with SHPO if there is potential for effects based on regionally selected buoy deployment locations.

3.2 State Regulations

Buoy locations in nearshore waters may be subject to State regulations. The seaward boundary for state waters varies by state; however, the boundary extent is 3-miles from shore for Alaska, Hawaii, and Pacific Northwest regions.

3.3 Local Regulations

Certain local regulations may apply to buoy locations within local land management boundaries such as cities or boroughs. Locations closer to shore are more likely to fall under local jurisdiction and regulations.

4 PERMITTING PLAN

This Permitting Plan has been developed to identify the agency permits and authorizations that will likely be required for installation of Spotter buoy moorings on the seafloor in marine Waters of the United States as described in Section 2.0. It includes tables specific to federal requirements as well as regional state and local requirements.

4.1 Permitting Strategy

Regional Backyard Buoy permitting teams will acquire permits on a regional scale, when possible. For example, if after discussions with USACE it is determined that NWP coverage may be acquired for an area large enough to encompass several discrete buoy deployment projects, it may apply for coverage in lieu of the communities applying individually; however, generally speaking, the permitting burden for buoy deployment will fall on each community project.

4.2 Federal Permitting Requirements

Because the Backyard Buoys Initiative is funded through the federal National Science Foundation (NSF) and buoys may be placed in federal waters, federal permits will be required and the projects will be subject to the federal regulations described in Section 3.2. Permits, authorizations, and consultations identified in Table 1 may be required for the Backyard Buoys projects, regardless of the specific region in which they occur.

Table 1. Potential Federal Permit Requirements

Agency	Permit/Authorization/ Consultation Name	Driver	Est. time to issuance	Notes	Links to Additional Information
USACE	NWP 5 (Section 10 and Section 404 Authorities)	For scientific measurement devices such as tide and current gauges, meteorological stations and similar structures.	35 to 45 days	There is no impacted acreage limit for this NWP for equipment such as wave buoys. A PCN is required under NWP 5 in any areas where ESA-listed species or critical habitat may occur, in accordance with General Condition 18. Under this permit, all devices and associated structures must be removed upon completion. In addition to all General Conditions for the 2021 NWPs, each applicant will also need to ensure compliance with the appropriate Regional Conditions for the region in which the buoys will be deployed.	<ul style="list-style-type: none"> • 2021 Alaska Regional Conditions • 2021 Honolulu Regional Conditions • 2021 Seattle District Regional Conditions • 2021 NWP General Conditions (bottom of page)
EPA	CWA Section 401 Water Quality Certification	To certify water quality protections for NWP authorizations issued for buoys deployed in federal waters.	Existing Certification in Place if under NWP 5	Existing certifications are in place for 2021 NWP authorizations for buoy locations in federal waters. For buoy locations in state waters, the State is responsible for issuing the certification.	<ul style="list-style-type: none"> • Section 401 Certifications for NWPs
USFWS	ESA Section 7 Consultation	For buoys deployed in areas potentially occupied by and/or potentially affecting ESA-listed USFWS trust species.	Up to 90 days, if required	Section 7 consultation may not be required if covered by NWP 5. The PCN form will identify any ESA-listed species and critical habitat. The lead agency (likely the USACE) may determine there is no likely effect. If they determine there may be an effect on an ESA-listed species, consultation will be initiated with USFWS.	<ul style="list-style-type: none"> • USFWS Section 7 Guidance

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Agency	Permit/Authorization/ Consultation Name	Driver	Est. time to issuance	Notes	Links to Additional Information
NOAA	ESA Section 7 Consultation	For buoys installed in areas potentially occupied by and or potentially affected ESA-listed NOAA trust species.	Up to 90 days, if required	Section 7 consultation may not be required if covered by NWP 5. The PCN form will identify any ESA-listed species and critical habitat. The lead agency may determine there is no likely effect. If they determine there may be an effect on an ESA-listed species, consultation will be initiated with NOAA.	<ul style="list-style-type: none"> • NOAA Section 7 Guidance
NOAA	EFH Consultation	For buoys installed in areas with potential effects on EFH.	Up to 60 days, if required	USACE assessed potential effects on EFH during issuance of 2021 NWPs; however, a site-specific evaluation of potential effects will be made on a case-by-case basis prior to authorization. If USACE makes a determination that EFH may “adversely” affect EFH, consultation with NOAA Fisheries will be initiated. EFH consultation usually requires submittal of an EFH Assessment documenting species and lifestage EFH present, potential effects, and proposed mitigation.	<ul style="list-style-type: none"> • NOAA EFH Consultation Guidance
SHPO	NHPA Section 106 Consultation	For buoys installed in areas potentially affecting a historic or archaeological property.	30-60 days, if required	If the USACE determines buoy placement may have the potential to cause effects to historic properties Section 106 of the NHPA will be initiated.	<ul style="list-style-type: none"> • SHPO
USCG	PATON approval (33 CFR 66)	For PATONs on navigable waters regulated by the federal government	2 weeks	Specific location data and buoy markings required for issuance in Notice to Mariners.	<ul style="list-style-type: none"> • Website • Application Form

Acronyms: USACE = U.S. Army Corps of Engineers; NWP = Nationwide Permit; PCN = Preconstruction Notice; ESA = Endangered Species Act; EPA = Environmental Protection Agency; USFWS = U.S. Fish and Wildlife Service; CWA = Clean Water Act; NOAA = National Oceanic and Atmospheric Administration; EFH = Essential Fish Habitat; SHPO = State Historic Preservation Office; NHPA = National Historic Preservation Act; PATON = Private Aids to Navigation

4.3 Regional Permitting Requirements

4.3.1 Alaska Region

Permits, authorizations, and consultations identified in Table 2 may be required for the Backyard Buoys projects located in Alaska state waters.

Table 2. Potential Alaska State and Local Permit Requirements

Agency	Permit/Authorization/ Consultation Name	Driver	Est. time to issuance	Notes	Links to Additional Information
ADEC	CWA Section 401 Certification	To certify water quality protections for NWP authorizations issued for buoys deployed in State of AK waters.	Existing Certification in Place if under NWP 5	Existing certifications are in place for 2021 NWP authorizations for buoy locations in State of AK waters. For buoy locations in federal waters, EPA is responsible for issuing the certification.	<ul style="list-style-type: none"> • Section 401 Certifications for NWPs
ADNR	Land Use Permit	For buoys deployed in state waters.	30 days after application deemed complete	Authorization granted for up to 5 years. Buoy deployment does not qualify as a “generally allowed use” of state land, because the buoy is not for personal use of the upland owner. Marine waters supplemental form should be attached to Land Use Permit Application.	<ul style="list-style-type: none"> • General permitting information • Land Use Permit Application • Marine Waters Supplemental Form
NSB	TLUI Clearance	For buoys placed within a Resource Development, Conservation, Scientific Research, or Transportation Corridor District or for a use consisting of an earth-moving	30-60 days	Provides “clearance” saying there are no known historic, cultural, or archaeological sites in/near the area. Only applies to waters within 3 nautical miles of shore, similar to the LMR application. Fee of \$100. A permit fee waiver can be requested if the applicant is the NSB, State of AK, federal, local, or tribal government.	<ul style="list-style-type: none"> • Application Instructions • Application Form

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Agency	Permit/Authorization/ Consultation Name	Driver	Est. time to issuance	Notes	Links to Additional Information
		activity (placement of a new structure that covers new undisturbed ground).			
NSB	LMR/Scientific Research Approval	Required for placement of buoys within 3 nautical miles from shore.	Typically 10 days, but up to 90 days	Requires a Wildlife Interaction Plan, Waste Management Plan, Spill Prevention and Response Plan, and Emergency and Medical Plan. Also requires a copy of a \$100,000 liability insurance policy. Fee of \$1,500 for all except non-profit applicants. A permit fee waiver can be requested if the applicant is the NSB, State of AK, federal, local, or tribal government. Permits are valid for 1 year.	<ul style="list-style-type: none"> ● Application Instructions ● Application Form
NWAB	Title 9 Permit	There are several zoning districts which may apply to potential buoy locations in nearshore marine waters of the NWAB, including a large portion of Kotzebue Sound and out to 3 miles offshore of NWAB coastal lands.	Depends on type of permit: <ul style="list-style-type: none"> ● Minor Use Approval ~10 days ● Major Use Approval ~35 days 	This would likely be required if in Kotzebue Sound or nearshore waters within 3 miles of NWAB coastal lands. The permit type (i.e. Minor Use Approval vs. Major Use Permit) may depend on which district the buoys were deployed (either Habitat Conservation or Subsistence Conservation districts might apply).	<ul style="list-style-type: none"> ● Permit Instructions ● Title 9 ● Alaska Mapping Tool ● Title 9 Permit Application Form ● Fee Schedule

Acronyms: ADEC = Alaska Department of Environmental Conservation; CWA = Clean Water Act; EPA = Environmental Protection Agency; USACE = United States Army Corps of Engineers; NWP = Nationwide Permit; NSB = North Slope Borough; TLUI = Traditional Land Use Inventory; LMR = Land Management Regulations; AK = Alaska; NWAB = Northwest Arctic Borough

4.3.2 Pacific Northwest Region

4.3.2.1 Washington

Permits, authorizations, and consultations identified in Table 2 may be required for the Backyard Buoys projects located in Washington state waters.

Table 3. Potential Washington State and Local Permit Requirements

Agency	Permit/Authorization/ Consultation Name	Driver	Est. time to issuance	Notes	Links to Additional Information
DNR					●
JARPA	Does this catch them all? Do we need to do this as part of the USACE?				●
Include any state permits/consultations/consistency determinations, local/borough permits, tribal land use agreements, letters of non-objection, etc.					

4.3.3 Pacific Islands Region

Permits, authorizations, and consultations identified in Table 2 may be required for the Backyard Buoys projects located in the Pacific Islands Region.

Table 4. Potential Hawai‘i/Marshall Islands/American Samoa -- State and Local Permit Requirements

Agency	Permit/Authorization/ Consultation Name	Driver	Est. time to issuance	Notes	Links to Additional Information
ASHPO	Section 106 consultation for American Samoa	For buoys placed in areas with known archaeological/cultura l sites	30 days		●
DLNR OCCL	Site Plan Approval (SPA) Application for the State of Hawai‘i	Required for placement of buoys within 3 nautical miles from shore	30 days		● forms
Include any state permits/consultations/consistency determinations, local/borough permits, tribal land use agreements, letters of non-objection, etc.					