NOAA Fisheries Restoration Center Federal Consistency Determination

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Contents

I. BACKGROUND AND OVERVIEW

The purpose of this report is to provide the background and context for a finding of Federal Consistency with the California Coastal Act and California Coastal Management Program (CCMP) for the National Oceanic and Atmospheric Administration Fisheries Restoration Center's (NOAA RC) Community-based Restoration Program (CRP or "Program"). The following sections provide detail on the role of the NOAA RC, the CRP project selection process, types of projects qualifying for CRP funding or technical assistance, standard environmental protection requirements, regulatory processes, adaptive management, pre and post-construction monitoring and project follow-up. This analysis demonstrates the CRP's consistency with the CCMP and Chapter 3 of the California Coastal Act.

A) Purpose for this Request for Renewal of Federal Consistency Determination

The NOAA RC's CRP has funded and provided technical assistance for habitat restoration projects in California since 1996. From 1996-2013, 390 CRP projects were completed; of those, at least 13 occurred in the Coastal Zone. These projects were permitted under the Coastal Act through issuance of Coastal Development Permits by a certified Local Coastal Program (LCP) or the California Coastal Commission, or they received Commission concurrence with a Consistency Determination or Negative Determination made by the NOAA RC. Many more projects were never developed due to project proponent concerns with difficulties obtaining permits for work in the Coastal Zone. NOAA RC restoration partners in Del Norte, Humboldt, Sonoma, Santa Cruz and Monterey Counties had expressed a strong reluctance to initiate projects in the Coastal Zone for this reason.

Since the issuance of federal Consistency Determination CD-021-13 in 2013, the NOAA RC approved 29 projects in the Coastal Zone. The number of applicants and restoration projects taken on in the Coastal Zone has increased over the last ten years.

The NOAA RC seeks to continue to partner with the Commission to make the process of regulatory review and permitting of environmentally beneficial habitat restoration projects more efficient. Before issuance of CD-021-13, the process of obtaining regulatory approval for these projects was perceived by project applicants to be a significant barrier to implementing conservation work with limited grant funding. With the increase in federal and state funding combined with the NOAA RC's programmatic CD, project proponents now have a new outlook on restoration in the Coastal Zone and are taking on many more projects.

Programmatic permitting of CRP projects through the programmatic federal CD was intended to reduce costs and time for project applicants and help ensure that important restoration projects are implemented as planned. These projects benefit a range of coastal resources, including streams, floodplains, wetlands and estuaries, providing populations of threatened and endangered salmon and steelhead better conditions for spawning, rearing and migration. NOAA RC is willing to continue to take the lead role to ensure that proposed restoration projects meet the environmental and coastal protection standards of the Commission – thereby allowing NOAA RC staff to focus on design, construction and other aspects of the technical assistance they provide to applicants, furthering fisheries habitat restoration goals.

CRP projects can be funded, permitted and implemented throughout California's Coastal Zone (and elsewhere in the state), from the Oregon border to the Mexican border. This proposed renewal of CD-021-13 would cover the geographic jurisdiction of NMFS Santa Rosa and Arcata offices, namely San Luis Obispo County north to Del Norte County. CRP projects in Santa Barbara, Ventura, Los Angeles, Orange and San Diego Counties are covered under a separate federal programmatic CD.

NOAA RC is proposing to continue this alternative regulatory process for another 10 years to further accelerate the implementation of environmentally beneficial projects that meet the standards of the Coastal Act as well as the federal Endangered Species Act and other state fish and wildlife and water quality laws and regulations. This alternative process gives the Coastal Commission the opportunity to programmatically review the NOAA Restoration Center's clear, well-defined goals, processes, and procedures for consistency with the Coastal Act and the CCMP. Projects that are consistent with the terms of this review will be implemented with NOAA RC oversight, avoiding the need for LCP or Coastal Commission project-by-project review and accelerating the restoration of California's coastal resources.

B) NOAA Restoration Center

The NOAA RC is an office of NOAA Fisheries, which is part of NOAA within the U.S. Department of Commerce. The NOAA RC operates from headquarters in Silver Spring, Maryland, and from offices located throughout the nation, including in California. California offices that include staff from the NOAA RC include Arcata, Santa Rosa, Sacramento and Long Beach.

NOAA Fisheries' mission is to conserve and manage coastal and marine ecosystems and resources. The NOAA RC carries out this mission by working with federal, state and local partners to implement habitat restoration and conservation projects that recover threatened and endangered species, rebuild and maintain managed fisheries stocks, and ensure that valuable natural resources are available to future generations of Americans. The need for NOAA's mission stems from a historical trend of habitat loss and degradation, and continued long-term threats to the sustainability of the nation's fishery resources. Coastal habitats are consistently stressed by natural forces such as storms, currents, and tides, as well as from man-made threats such as development, dredging, dams, coastal engineering and modification, and climate change. Approximately half of the original 11.7 million acres of coastal wetlands in the lower 48 states were lost between 1780 and 1978; in California, as much as 90% of tidal wetlands and salt marshes have been lost to development (Water Education Foundation 2000). Losses of riparian habitat in California are estimated to be from 85-98%, depending on the region (Katibah 1984, Dawdy 1989). Furthermore over 75% of commercial fisheries and 80-90% of recreational marine and migratory fishes depend on estuarine, coastal, and riverine habitats for all or part of their life cycles (National Safety Council 1998; NOAA 2002). Viable riparian, coastal and estuarine habitats, as well as adequate water quality, are required to maintain healthy fish stocks and ensure protection of threatened and endangered species and their habitats.

Projects supported nationally by the NOAA RC vary in terms of their size, complexity, and geographic location, and often benefit a wide range of habitat types and a number of different species. Typical restoration activities currently supported by the NOAA RC include, but are not limited to:

Several programs within the NOAA RC carry out these types of projects.

The focus of this Consistency Determination includes activities conducted by NOAA RC's Community-based Restoration Program (CRP).

The following Program description contains the specific types and scope of projects included in the CRP, along with applicable resources protection and monitoring elements.

Improvements to stream crossings and fish passage - Projects to address upstream and downstream movement by fish and other species and improve connectivity of habitats.

Removal of small dams, tide gates, levees, bank revetments, and other legacy structures - Projects to improve fish and wildlife habitat, migration, tidal and freshwater circulation, flow, and water quality.

Riparian Restoration and Protection – Projects that stabilize banks while reducing fine sediment input, enhancing aquatic and riparian habitat, and improving water quality.

Restoration and enhancement of off-channel and side-channel habitat - Projects to reconnect and/or improve aquatic and riparian habitat for fish and wildlife.

Restoration and enhancement of tidal, subtidal, and freshwater wetlands - Projects to improve ecological functions.

Floodplain restoration - Projects including breaching and removal of levees, berms and/or dikes, resulting in hydrologic reconnection and revegetation, to improve ecosystem function through hydrological connection between streams and floodplains.

Water conservation projects for enhancement of fish and wildlife habitat - Projects such as off-stream storage tanks and ponds, including necessary off-channel infrastructure, to reduce low-flow stream withdrawals.

Removal of pilings and other in-water structures - Projects to improve water quality and aquatic habitat for fish and wildlife.

Removal of non-native terrestrial and aquatic invasive species and revegetation with native plants - Projects to improve aquatic and riparian habitat for fish and wildlife and improve other watershed functions.

Instream Restoration - Projects to restore functions of streams and riparian areas.

Upslope Watershed Restoration - Projects that enhance geomorphic processes and reduce anthropogenic sediment pulses.

II. NOAA RESTORATION CENTER COMMUNITY-BASED RESTORATION – CALIFORNIA PROGRAM DESCRIPTION

The NOAA RC created the CRP in 1996 to encourage local efforts to restore fisheries habitat. The NOAA RC's California offices manage projects throughout the state, with supervisorial staff located in Santa Rosa and field staff working from offices in Arcata, Santa Rosa, Long Beach and Sacramento. Similar to its other locations around the nation, the CRP's California Region provides financial and technical assistance for habitat restoration projects that benefit natural resources under NMFS' jurisdiction in coastal or marine environments. In addition to performing on-the-ground restoration, the majority of these projects have an outreach or education component to promote and enhance natural resource stewardship. One of the primary objectives of the CRP is to bring together citizen groups; public and nonprofit organizations; industry; corporations and businesses; youth conservation corps; students; colleges and universities; landowners; and local, state, and federal government agencies to implement habitat restoration projects to benefit living coastal, marine, and migratory fish resources. By promoting community involvement and stewardship of local projects, the CRP leverages

between two and three times the federal investment through partner organization in-kind and matching contributions. The RC also provides restoration science and technical guidance to partners, including assistance with environmental compliance and monitoring activities.

A) Geographic Scope of the Program and Consistency Determination

This Consistency Determination applies to the NOAA RC's Community-Based Restoration Program in California, from the Oregon Border through San Luis Obispo County, including tidally influenced coastal estuarine areas (see Attachment A, Program Area Map). This Consistency Determination excludes San Francisco Bay.

B) Funding

The CRP receives two types of funds from the U.S. Congress—discretionary and nondiscretionary. Both types appear as line items in NOAA Fisheries' annual budget. Discretionary funds comprise the CRP's base funding levels, as well as a portion that supports activities under the Damage Assessment, Remediation and Restoration Program (DARRP) (which establishes natural resource damages under the Oil Pollution Act of 1990). The CRP uses these funds to implement various types of projects, including multi-year umbrella partnerships with national and regional organizations that are funded on an annual basis. CRP funds also support staff and operations related to these partnerships and projects.

Nondiscretionary funds are appropriated by Congress for specific organizations or purposes, and the CRP must use those funds only for the specific, line-item activities for which they are intended. Congressionally directed awards support individual cooperative agreements and grants, which in turn fund suites of individual restoration projects as sub-awards. Given the limited amount of funding available on a national level, NOAA RC staff leverages other funding sources to help supplement the funds needed to implement critically important restoration projects.

C) Technical Assistance and Project Oversight

NOAA RC staff is substantially involved with both funded and non-funded projects included in the CRP. Substantial involvement may include, but is not limited to, hands-on technical assistance; participation in feasibility studies, design plans, and construction oversight to ensure benefits are realized; support in development of appropriate monitoring protocols to ensure project performance can be evaluated; tracking the progression of restoration projects through site visits and progress report evaluation; and involvement in public meetings and events to discuss or highlight restoration activities.

D) Funding and Selection Process

Proposals selected for funding are primarily funded through cooperative agreements with project partners (e.g., RCDs, Tribes, non-profits, land conservancies, etc.), who conduct outreach to willing landowners to collaborate on restoration projects on their properties. Multi-year cooperative agreement awards are also considered, and additional releases of Congressional funds may be used to fund selected proposals

without further competition. Awards are dependent upon the amount of funds Congress makes available to NOAA for this purpose in annual budgets. The NOAA RC usually anticipates approximately $4-12M available per year but is dependent upon the level of funding made available by Congress. With the recent passage of the Infrastructure Investment and Jobs Act, the NOAA RC expects to distribute $491M nationally for coastal resiliency and $400M for fish passage improvement nationally over the next five years.

Both funded projects, as well as non-funded projects (those that receive only technical assistance from the NOAA RC staff), are evaluated by NOAA RC staff and other technical staff in the CRP project selection process. Non-funded projects eligible for technical and regulatory assistance (including coverage under existing NOAA Fisheries Biological Opinions) might receive help leveraging alternate funding sources and are prioritized separately by NOAA RC staff. Evaluation criteria are similar for both processes and include, but are not limited to, the following:

- Importance and Applicability to Program Priorities – Does the project support NOAA's goal to Protect, Restore, and Manage Use of Coastal and Ocean Resources through Ecosystem-Based management? Restoration includes, but is not limited to: 1) activities that contribute to the return of degraded or altered marine, estuarine, coastal, and freshwater, diadromous fish habitats to functioning habitats, or 2) techniques that return target species to their historical habitats.

- Enhancing Community Resilience – To what extent does the project support resilient habitat in the face of climate change?

- Disadvantaged Communities – Will the benefits from this restoration action support tribal and other disadvantaged communities?

- Project Benefits – Level of benefits to listed or candidate species, or other species under NOAA's jurisdiction.

- Technical/Scientific Merit - Is the restoration activity or approach technically sound, and does it utilize appropriate restoration/conservation methods and include clear goals and objectives? Applications will be evaluated based on the extent to which the applicant has described a realistic and thorough implementation plan that demonstrates the project is feasible from a biological and engineering perspective, including whether the proposed approach is technically sound, safe for the public, and uses appropriate methods and personnel. The project should also account for adaptation to known or potential climate change impacts, measure progress towards broad goals and evaluate success with clearly identified, measurable objectives using adequate and meaningful pre- and post-implementation monitoring, and be technically self-sustaining (require a low or reasonable level of maintenance to continue functioning as designed).

- Qualifications of Applicant (or "Project Partner") - Does the applicant possess the necessary education, experience, training, facilities, and administrative resources to support the proposed award and/or complete the project under the CRP? This includes restoration and conservation background with capacity/knowledge to conduct the scope and scale of the proposed work, as indicated by the qualifications and past experience of the project leaders and/or partners in designing, implementing and effectively managing and overseeing projects that restore marine and coastal habitats, especially those benefitting listed or managed species (as demonstrated by resumes, past project experience, and accomplishments of the key technical and financial staff).

- Cost Effectiveness - Is the budget realistic and commensurate with the project needs and time-frame for a comparable restoration project?

- Outreach, Education and Community Involvement - Does the proposed project(s) include community involvement and broad community support demonstrated by a diversity of partners and/or sponsorship from local entities, state and local governments, and/or members of Congress? Does the proposal include public outreach as it relates to the proposed restoration, including plans to disseminate information on: 1) restoration goals and results; 2) sources of funding and other support provided, such as the involvement of partners; and 3) the potential for the proposed restoration to encourage future restoration and protection of marine and coastal habitats or complement other local restoration or conservation activities?

All projects must be proposed in an application explaining the project design, construction details, benefits, applicable surveys, environmental protection measures, project partners, monitoring, and funding sources.

E) Regulatory Framework

All restoration projects receiving NOAA RC funding and/or technical assistance must be permitted by federal, state and local regulatory agencies before project implementation can occur. To improve project applicants' navigation through this complex process, NOAA RC staff provides applicants with assistance applying for and completing the required permits and authorizations. The following describes the primary regulatory processes that apply to projects covered by the CRP.

ESA Consultation and EFH Conservation Recommendations

A key component of the regulatory process includes consultation with the U.S. Fish and Wildlife Service (FWS) and intra-agency consultation with NOAA Fisheries' National Marine Fisheries Service (NMFS) under Section 7 of the Endangered Species Act (ESA), for projects that may affect threatened and endangered species and designated critical habitat. Consultation with NMFS also includes potential effects to Essential Fish Habitat (EFH) under the Magnuson-Stevens Fishery Conservation and Management Act.

Section 7 of the ESA directs all federal agencies to participate and actively cooperate in the conservation and recovery of listed threatened and endangered species. Federal agencies, including those such as the NOAA RC conducting environmentally beneficial activities such as habitat restoration projects, and the Army Corps of Engineers (USACE), which permits projects affecting aquatic habitat under section 404 of the Clean Water Act, must ensure that any actions they authorize, fund or carry out are not likely to jeopardize the continued existence of listed species or adversely modify designated critical habitat for these species. The Section 7 consultation process is triggered by the issuance of a USACE permit, followed by funding and technical assistance to project applicants by the NOAA RC. Typically, project proponents provide the NOAA RC and USACE with a detailed project description that includes proposed designs and materials, location and habitat surveys, environmental protection measures, monitoring and reporting plans, and other information. The USACE requests consultation with NMFS and FWS (if needed) under Section 7 during their permitting process.

This process is expected to be a cooperative effort to analyze potential effects of a project or program of multiple projects, and to agree on project designs and implementation that avoid and minimize impacts to listed species and their habitat. Section 7 consultations can be conducted informally, concluding with a written agreement or letter specifying how project impacts will avoided or minimized, or formally, with a biological opinion (BO) that includes mandatory terms and conditions and an incidental take statement issued by NMFS or FWS. The NOAA RC and USACE consult with FWS on a project-by-project basis.

NOAA RC Programmatic Biological Opinions
Prior to 2006, the NOAA RC and USACE also consulted with NMFS for restoration work on a project-by-project basis. However, since that time, programmatic BO's have been available and are used for most NOAA RC projects affecting anadromous salmonid habitat and EFH across the four NMFS offices with NOAA RC staff (Arcata, Santa Rosa, Long Beach and Sacramento). These programmatic consultations were written to facilitate the review and authorization of multiple projects of similar scope and purpose, and to encourage implementation of more restoration projects with a more efficient Section 7 consultation process.

Restoration practices closely follow detailed technical descriptions found in the California Department of Fish and Wildlife (CDFW, formerly Department of Fish and Game) *Salmonid Stream Habitat Restoration Manual* (http://www.dfw.ca.gov/fish/resources/habitatmanual.asp), NMFS' West Coast Region Anadromous Salmonid Passage Design Manual (https://media.fisheries.noaa.gov/2022-06/anadromous-salmonid-passage-design-manual-2022.pdf *)* – documents which guide many riparian habitat restoration projects in California. All projects proposed for coverage under the programmatic BO must comply with detailed environmental protection measures, including project type prohibitions (no gabion baskets or concrete-lined channels, use of treated lumber within stream channels, etc.; limitations on project size, number of projects per watershed and extent of invasive vegetation removal;

seasonal work timing; a required buffer distance between projects; fish relocation and stream dewatering requirements; and measures to minimize disturbance of sensitive habitat and degradation of water quality from construction activities). Construction monitoring and post-project monitoring and reporting requirements follow standard procedures established by CDFW as part of its Fisheries Restoration Grant Program, and are also detailed in the BO covering the project.

These restoration BO's have been utilized successfully for the past 16 years, with hundreds of restoration projects covered by both the Arcata and Santa Rosa NMFS' office BOs in that time. Together, these two programmatic consultations now provide standardized, efficient Section 7 review processes to facilitate habitat restoration projects in 10 coastal counties on the state's North and Central Coasts. Projects that do not meet the standards for these programmatic BOs – due to their size, proposed methods or materials, or any other reason – can be reviewed through NMFS' individual project Section 7 consultation process, or through other existing programmatic BOs such as those completed for Partners in Restoration programs in Mendocino and Santa Cruz Counties. These Section 7 processes include very similar environmental protection measures as the Santa Rosa and Arcata BOs to ensure protection of listed species and their habitats, water quality and other natural resources.

It is expected that the current Santa Rosa BO (2016) will be updated in the near future to mirror the content of the more recent 2022 Arcata BO, as well as any other necessary changes that may be needed to bring it up-to-date.

Species Recovery Plans

There are now 28 distinct populations of listed Pacific Salmon (salmon and steelhead), and all are experiencing significant declines or are nearly extinct. NMFS is required by the ESA to develop recovery plans for the conservation and survival of these listed species. The recovery planning process is guided by section 4 of the ESA, as well as NMFS policies and regulations.

Recovery plans are planning and guidance documents, not regulatory or prescriptive measures. They provide roadmaps for the many governmental and non-governmental entities that must work together to take small and large actions to improve habitat conditions so the species' populations can rebound. The ESA specifies that recovery plans must include: (1) a description of management actions necessary for the conservation and survival of the species; (2) objective, measurable criteria which would result in the species being recovered to the point it could be removed from the threatened and endangered list; and (3) estimates of time and costs required to achieve this goal and the intermediate steps necessary to reach that goal. Key to the recovery plans is a robust "threats assessment" that determines the major threats to each species of salmon and steelhead and its habitat and provides the basis for determining site-specific actions necessary for population recovery by each species.

Beginning in 2000, technical recovery teams composed of experts from state and federal agencies and academic institutions were formed by NMFS, commencing formal

processes to develop recovery plans for each listed species of salmon and steelhead. Quantitative and qualitative information has been gathered and evaluated by the technical recovery teams and additional stakeholders. Conditions and threats have been evaluated for each life history stage of each species, and specific recovery actions specified by watershed. The plans are required by the ESA to include estimates of the time and cost it will take to implement the recovery actions and recover the listed species, but they provide no funding.

NMFS has completed and published the following recovery plans for salmonids occurring within the geographic area of this Consistency Determination:

- Southern Oregon-Northern California Coast (SONCC) Coho Salmon Final Recovery Plan (2014)
- Final Coastal Multispecies Recovery Plan for California Coastal (CC) Chinook Salmon, Northern California (NC) Steelhead and Central California Coast (CCC) Steelhead (2016)
- Southern California Steelhead (SCS) Final Recovery Plan (2012)
- Central California Coast (CCC) Coho Salmon Final Recovery Plan (2012)
- South Central California Coast (SCCC) Steelhead Recovery Plan (2013)

Projects moving forward under the CRP will focus on implementation of these recovery plans. See Attachment E for a map of the Priority Species Recovery Areas.

NEPA
The National Environmental Policy Act (NEPA) requires documented, formal consideration of the environmental impacts of major federal actions, as well as analyses of the potential impacts associated with alternatives to the action, before a federal agency implements policies, programs, plans, and projects. NEPA applies to all federal agency actions that have the potential to affect the quality of the human environment.

In 2015, the NOAA RC finished and published the “Final Programmatic Environmental Impact Statement (EIS) for habitat restoration activities implemented throughout the coastal United States.” This final Programmatic EIS was prepared pursuant to the National Environmental Policy Act (NEPA) to assess the environmental impacts of NOAA’s proposed action to fund or otherwise implement coastal habitat restoration activities through its existing programmatic framework and related procedures. Projects implemented by NOAA vary in terms of their size, complexity, geographic location, and NOAA involvement, and they often benefit a wide range of habitat types and affect a number of different species. Fish passage, hydrologic/tidal reconnection, shellfish restoration, coral recovery, salt marsh and barrier island restoration, erosion prevention, debris removal, and invasive species removal, are among the project types implemented by NOAA through its various programs. Impacts from two alternatives are

described. The preferred alternative is a current management, or “no action,” alternative. The second alternative consists of providing technical assistance only. This document can be accessed at https://casedocuments.darrp.noaa.gov/southwest/vogetrader/pdf/4005_NOAA_Restoration_Center_Final_PEIS.pdf.

Coordination with Regulatory Agencies/Permitting Requirements

US Army Corps of Engineers (USACE)
Section 404 of the Clean Water Act requires approval for any discharge of dredged or fill material into Waters of the U.S., extending to the ordinary high water mark, or when adjacent wetlands are present, to the limit of the adjacent wetlands. A Section 404 permit issued by USACE is required for all restoration projects involving any kind of material placed into the stream channel. Section 10 of the Rivers and Harbors Act of 1899 requires approval for any work in, over, or under navigable waters of the U.S. A Section 10 permit issued by the USACE is required for all restoration projects that involve any modification of navigable waters.

Applicants for all projects which are funded by the NOAA RC, or which receive NOAA RC technical assistance, must complete the Section 404/Section 10 permit process with the USACE Regulatory Division, if required by USACE, through one of the two USACE Districts (San Francisco and Los Angeles) with jurisdiction along the California coast.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (FWS)
The Endangered Species Act (ESA) provides for the conservation of species that are endangered or threatened with extinction throughout all or a significant portion of their range, and the conservation of the ecosystems upon which they depend. NMFS and FWS share responsibility for implementing the ESA, with FWS managing terrestrial and freshwater species and NMFS managing marine species, including anadromous salmonids (ocean species that return to rivers to spawn). Federal action agencies are required to consult with NMFS and/or FWS under Section 7 of the ESA on any action authorized, funded or undertaken that may affect endangered or threatened species. In addition, under the Magnuson-Stevens Fishery Conservation and Management Act, federal action agencies are required to consult with NMFS on any action authorized, funded or undertaken that may adversely affect Essential Fish Habitat (EFH), which are the waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity.

For restoration projects it funds or for which it provides technical assistance, the NOAA RC is a federal action agency (along with the USACE, due to its issuance of a Section 404/Section 10 permit). Consequently, the NOAA RC and USACE must consult with NMFS and FWS for all NOAA RC restoration projects. Consultation with NMFS has been completed on a programmatic basis, through Biological Opinions (BOs) and incidental take statements issued by the Santa Rosa and Arcata Area Offices. Consultation with FWS on a statewide programmatic basis for habitat restoration projects is in the process of being finalized and is expected to be completed in the

summer of 2022. Individual Section 7 consultation, either formal (concluding with a BO and incidental take statement) or informal (concluding with a Letter of Concurrence) is an alternative route for projects occurring outside the geographic areas of the two NMFS BOs, or for projects the NOAA RC determines should be reviewed individually.

California Department of Fish and Wildlife (CDFW)

Under Section 2080 of the California Fish and Game Code, the California Endangered Species Act (CESA) prohibits take of any species listed by the California Fish and Wildlife Commission as endangered or threatened. CESA allows for take incidental to otherwise lawful projects, and emphasizes early consultation to avoid and minimize potential impacts to rare, endangered, and threatened species.

Applicants for NOAA RC restoration projects must receive either a Section 2080 Consistency Determination (documenting consistency with a federal incidental take statement), a Section 2081 incidental take permit, a restoration permit from CDFW, or approval through the Habitat Restoration and Enhancement Act process (see below) for compliance with CESA.

Section 1602 of the California Fish and Game Code requires a project applicant to notify CDFW of any proposed activity that may substantially modify a river, stream or lake. Notification is required for any work undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel, including ephemeral streams and watercourses with subsurface flow. It may also apply to work within the floodplain of a body of water.

NOAA RC project applicants must notify their regional CDFW office with a completed notification form and corresponding fee. If CDFW determines that the proposed activity may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement (LSAA) must be prepared, unless the project qualifies for the Habitat Restoration and Enhancement Act (see below). The LSAA includes reasonable conditions necessary to protect those resources and must comply with the California Environmental Quality Act (CEQA).

In addition, the Habitat Restoration and Enhancement Act of 2014 (Fish and Game Code Sections 1650 - 1657) is an expedited permitting process with CDFW for implementing small-scale, habitat restoration projects across California. Restoration and enhancement projects approved by CDFW, pursuant to the Act, do not require additional permits from CDFW, such as a Lake or Streambed Alteration agreement or CESA permit.

Projects approved under the Habitat Restoration and Enhancement Act must meet the current size limitations in the State Water Board's Order for Small Habitat Restoration Projects, be consistent with widely recognized restoration practices, and avoid or minimize incidental impacts.

State Water Resource Control Board and Regional Water Quality Control Boards

Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act regulate discharge of fill and dredged material into Waters of the US and State, including wetlands, headwaters and riparian areas. California's Water Quality Certification Program, under the jurisdiction of the State Water Resource Control Board (State Water Board) and Regional Water Quality Control Boards (Regional Boards) was initiated in 1990 (the Section 401 portion of the program was under the jurisdiction of the USACE prior to its delegation that year by the federal government to the State).

NOAA RC project applicants typically receive a Section 401 Water Quality Certification, and in some cases additional Waste Discharge Requirements, to comply with Section 401 and Porter-Cologne. These permits are issued by the appropriate Regional Board.

Applicants with projects that qualify may choose to utilize the State Water Board's 2012 Order for Clean Water Act Section 401 General Water Quality Certification for Small Habitat Restoration Projects. This Order authorizes projects that qualify for CEQA Categorical Exemption 15333 (e.g., projects 5 acres or less in size), with additional limitations.

The State Water Board is in the process of developing a Statewide Restoration General Order and associated California Environmental Quality Act (CEQA) document for projects that do not qualify for the Small Habitat Restoration Order. A public draft of the Order and CEQA document was released for review in August 2021 and they are expected to be issued/certified in summer/fall 2022.

California Coastal Commission

Under the authority of the California Coastal Act of 1976, the California Coastal Commission (Commission), in partnership with coastal cities and counties, plans and regulates the use of land and water in the coastal zone (the coastal zone established by the Coastal Act does not include San Francisco Bay, where development is regulated by the Bay Conservation and Development Commission or BCDC). Development activities, which are broadly defined by the Coastal Act to include (among others) activities that change the intensity of use of land or public access to coastal waters, generally require a coastal development permit from either the Commission or the local government. Along with BCDC and the California Coastal Conservancy, the Commission is one of three coastal management agencies designated to administer the federal Coastal Zone Management Act (CZMA) in California. NOAA RC project applicants must submit a Coastal Development Permit (CDP) application to the Commission's appropriate District office, or where there is a certified Local Coastal Program (LCP), to the appropriate city or county, and must receive a CDP for Coastal Act compliance.

California Environmental Quality Act (CEQA)

CEQA applies to all discretionary projects proposed or approved by a California public agency, including private projects requiring discretionary government approval. CEQA helps to guide CDFW, State and Regional Water Boards, Commission, RCDs, and local agencies during issuance of permits and approval of projects. Any public agency (state

or local) may be a CEQA lead agency or have CEQA obligations. NOAA RC project applicants must ensure that CEQA is complied with for their projects, through an exemption (Categorical Exemption 15333 for Small Habitat Restoration Projects), a Negative Declaration (ND) or Mitigated Negative Declaration (MND), Environmental Impact Report (EIR), or through an existing programmatic ND, MND, or EIR for a Partners in Restoration permit coordination program or other restoration program.

The State Water Board is in the process of developing a Statewide Restoration General Order and associated California Environmental Quality Act (CEQA) document (Programmatic Environmental Impact Report) for projects that do not qualify for the Categorical Exemption 15333 for Small Habitat Restoration Projects. A public draft of the Order and CEQA document was released for review in August 2021 and they are expected to be issued/certified in summer/fall 2022. Agencies and project applicants may be able to use this statewide CEQA document for CEQA compliance for their project or tier off of it when additional impact analysis is necessary.

Local Plans and Policies

NOAA RC project applicants must comply with all applicable city and county regulations and codes, including but not limited to those issued by local planning, public works and other departments. All required city and county permits must be obtained by the applicant before a NOAA RC project can be implemented.

F) Project Partners

The NOAA RC recognizes that with multiple threats facing the coastal environment, no one organization can succeed at habitat restoration alone. In addition, restoration is often not a success without the partnership of coastal communities and community organizations. The NOAA RC funds projects directly and through partnerships with national and regional organizations. The NOAA RC also works with a number of restoration project partners who implement projects on the ground. The following provides a list of key partners who have received funding to implement NOAA RC habitat restoration projects:

- American Rivers
- Association of National Estuary Programs
- California Conservation Corps
- CalTrout
- Ducks Unlimited
- Elkhorn Slough Foundation
- Fish America Foundation
- Five Counties Salmon Conservation Program
- Humboldt Fish Action Council
- National Association of Counties
- Resource Conservation Districts (RCDs)
- Restore America’s Estuaries
- State Coastal Conservancy
- Save the Redwoods League

- The Nature Conservancy
- Trout Unlimited
- Yurok Tribe

G) NOAA RC Programmatic CD-021-13 Project Summary, 2013- 2022

The NOAA RC concluded covering 29 projects over the 10 year duration of our programmatic federal consistency determination (CD-021-13). The following table shows how many projects were covered in each county.

County	Number of Completed Projects
Del Norte	2
Humboldt	5
Mendocino	7
Sonoma	2
Marin	2
San Mateo	10
Monterey	1
TOTAL	29

H) General Exclusions from this Determination

All projects included under the Program must involve on-the-ground habitat restoration resulting in physical habitat modifications and beneficial ecological impacts for federal trust species. The following projects will be excluded from this action due to their scope, complexity, or potentially controversial nature and individual project review from the Coastal Commission or the approved Local Coastal Program will be sought:

- Projects the NOAA RC determines to be inconsistent with NOAA RC goals or standards, the CDFW Manual, or other applicable restoration practices and guidelines.

- Projects determined to be inconsistent with Section 7 of the Endangered Species Act.

- Projects the Executive Director of the Coastal Commission determines to be potentially inconsistent with the California Coastal Management Program or that otherwise warrant individual review.

I) Qualifying Project Types

NOAA RC project types fall into three general categories and include Salmonid Habitat Restoration Projects, Estuarine Restoration (Marsh, Submerged Aquatic Vegetation and Shellfish [oysters] Restoration), and Coastal Kelp and Shellfish [abalone] Restoration.

Most NOAA RC projects included in the program are salmonid habitat restoration projects such as riparian revegetation, large woody debris placement, fish passage

barrier removal, invasive species removal, and off channel habitat creation. The NOAA RC also conducts a variety of estuarine habitat restoration projects designed to restore and enhance seagrass beds, mudflats, salt marsh, brackish marsh and other tidally influenced habitats. Off shore coastal habitats like kelp forests are also restored.

For all projects the NOAA RC funds or for which it provides technical assistance, the NOAA RC requires that all regulatory conditions must be met and all stated environmental protection measures implemented to reduce the potential for ancillary environmental impacts; proposed monitoring and reporting procedures must also be followed to help ensure project success. A summary of general conditions, NOAA RC review procedures, and environmental protection measures and monitoring/reporting are described in *Table 1, NOAA RC Summary of General Project Requirements and Protection Measures for Coastal Resources.*

Salmonid Habitat and Related Upland Restoration Projects
Within the geographic scope of this Federal Consistency Determination, it is anticipated that the majority of the projects implemented as part of the CRP will be salmonid habitat restoration projects and related upland restoration projects that benefit aquatic habitat. They are intended to restore degraded salmonid habitat through improving stream cover, pool habitat and spawning gravel; reconnecting floodplains, removing or modifying barriers to fish passage; ensuring adequate flows; and reducing or eliminating ongoing erosion or sedimentation impacts.

As referenced earlier, salmonid habitat restoration projects authorized through the Program must be designed and implemented consistent with the techniques and minimization measures presented in CDFW's *California Salmonid Stream Habitat Restoration Manual*, NMFS's *Guidelines for Salmonid Passage at Stream Crossings*, and NMFS *Fish Screening Criteria for Anadromous Salmonids*, all of which contain specific guidance on effective implementation of habitat restoration practices and pre- and post-construction protection measures.

These projects are reviewed and authorized by NOAA's National Marine Fisheries Service (NMFS) under Section 7 of the Endangered Species Act and the Magnuson-Stevens Fishery Conservation and Management Act (as discussed earlier under the Regulatory Framework section).

Additional engineering and fish passage specialist review will be required for projects including, but not limited to: culvert retrofit and replacement, removal of flashboard dam abutments and sills, installation of fish screens, and placement of weirs in concrete lined channels. Project or program specific BOs will include applicable requirements.

In addition to following applicable protection measures specified in Table 1, general measures for instream work will be implemented and flows will be diverted around the project worksite as described in the NMFS Santa Rosa and Arcata office Biological Opinions (Attachments C and D). Applicable protection measures will be followed as specified in the BO sections, *Requirements for Fish Relocation and Dewatering*

Activities and Measures to Minimize Loss or Disturbance of Riparian Vegetation. Additional measures, or modified measures, may be imposed by the NOAA RC as needed to protect natural resources.

Below are the detailed restoration project types included in the proposed Restoration Program. Each project type has a brief summary of the project purpose, a description of different activities and/or sub-project types, and a summary of typical construction, maintenance, and monitoring activities associated with the project type.

Although the Program does not cover projects whose primary purpose is creation or modification of non-restoration oriented infrastructure (e.g., dams and levees), some restoration projects may require creation, modification, or relocation of infrastructure so that travel, recreation, water supply or other types of infrastructure and operations can continue in the context of the restored habitat (e.g., relocation of a bridge or water control structure to allow for habitat restoration).

1. Improvements to stream crossings and fish passage

Improvements to stream crossings and fish passage, including fish screens, provide a number of ecological benefits. For example, they provide safe passage for migratory and non-migratory species, enhance beneficial transport of sediment and debris, and improve hydrology and hydraulics. Stream crossing and fish passage improvements must be consistent with NMFS' fish passage guidelines (NMFS 2001).

Stream Crossings, Culverts and Bridge Projects

Stream crossing, culvert, and bridge projects generally involve removing, replacing, modifying, retrofitting, installing or resetting existing culverts, fords, bridges and other stream crossings and water control structures of any size. This includes projects that are developed to upgrade undersized, deteriorated, or misaligned culverts.

Constructing or installing a stream crossing, culvert, or bridge may include site excavation, creation of rock ramps or roughened channels, weirs, adding fine and coarse grained streambed materials, formation and pouring of a concrete foundation and walls/abutments, roadway realignment and installation of the crossing structure, as well as placement of rock slope protection (RSP) to protect abutments, piers and walls.

Any crossing, culvert, or bridge that is part of the Program and intersects potential habitat for listed salmonid species must meet NMFS fish passage criteria. Only projects that meet stream simulation or active channel design metrics are included; projects that are considered hydraulic passage solutions (fishways, exposed concrete bottom, etc.) are not covered.

Design guidelines for this project type include:

- All stream crossing projects should consider storm-proofing guidelines presented in Flosi et al. (2010).

- Projects must follow the most recent NMFS guidelines for salmonid passage at stream crossings when implemented in currently occupied or potential anadromous habitat.

- Bridges and culverts will be designed to adequately convey flow and materials (e.g., the 100-year flood) in addition to allowing fish passage. If a bridge or culvert is designed to convey less than the 100-year design flow, the Project Applicant will demonstrate how the undersized culvert or bridge avoids excessive erosion/sedimentation, headcutting, or habitat impacts.

- Structures should be designed to provide passage for all life stages of salmonids. If this is not possible, the RC or USACE will work with WCR CCO engineers through the variance process established through the Environmental Services Branch for approval.

- Placement of RSP within the bankfull width of the stream will be avoided except for the minimum necessary for protection of bridge abutments and pilings, culverts, and other stream crossing infrastructure. The amount and placement of any RSP will not constrict the bankfull flow nor induce additional erosion in neighboring stream segments. The toe of RSP used for streambank stabilization will be placed sufficiently below the streambed scour depth to ensure stability

- Include minimal use of hard structures (e.g., wingwalls, footers) needed to maintain function of the passage facility. Structures that harden the channel should be placed outside the bankfull channel and/or buried to a depth below the lowest anticipated Vertical Adjustment Profile.

2. Fish Screens

This category includes the installation of fish screens on existing water intakes. Constructing/installing a fish screen usually includes site excavation, forming and pouring a concrete foundation and walls, and installation of the fish screen structure. Pile driving may be needed for certain types of screens. Typically, if the fish screen is placed within or near flood prone areas, rock or other armoring is installed to protect the screen. Fish screen types include: self-cleaning screens (including flat plate and other designs, including rotary drum screens and cone screens with a variety of cleaning mechanisms), and non-self-cleaning screens (including tubular, box, and other designs).

Design guidelines for this project type include:

- NMFS agency review is required for all fish screening projects.

- All fish screens must be consistent with the most recent NMFS fish screen design guidelines (NMFS, 1997).
- All fish screening projects will also provide a fish screen operations and maintenance plan along with their programmatic application form.

3. Removal of small dams, tide gates, and legacy structures

These projects are designed to reconnect stream corridors, floodplains and estuaries, establish wetlands, improve aquatic organism passage, restore more natural channel and flow conditions, restore fisheries access to historic habitat for spawning and rearing, and improve long-term aquatic habitat quality and stream geomorphology. All projects will be designed with seasonal construction considerations described in the instream work window section below, to minimize the potential adverse effects to water quality and/or aquatic species.

This project type involves removing small dams, tide gates, flood gates, and legacy structures to improve fish and wildlife migration, tidal and freshwater circulation and flow, and water quality. This project type may also include separation of streams from artificial impoundments (e.g., ponds or lakes) by realigning and/or rerouting channels around these artificial water bodies and/or through the use of vertical concrete or sheet-pile walls.

Removal of Small Dams

Small dams are removed to restore fish access to historic habitat for spawning and rearing and to improve long-term habitat quality and natural stream geomorphology. Types of eligible small dams include permanent, flashboard, debris basin, earthen, and seasonal-type dams that have the characteristics listed below.

Small dams included in the Program are defined by the California Division of Dam Safety (CDDS) as dams of non-jurisdictional size. Those dams are smaller in height and impounding capacity than those defined by (California Code 2010) where “dam” means:

Any artificial barrier [The Program is considering only dams with this definition] which is (a) less than 25 feet in height from the natural bed of the stream or watercourse at the downstream toe of the barrier, or from the lowest elevation of the outside limit of the barrier to the maximum possible water storage elevation and (b) was designed to have an impounding capacity of less than 2000 acre-feet.

Implementing small dam removal projects may require the use of heavy equipment (e.g., self-propelled logging yarders, mechanical excavators, backhoes, jackhammers, etc.) or explosives. Any use of explosives for small dam removal must be justified by site-specific conditions including equipment access difficulties and supported by analyses showing that potential harm is not greater than if heavy machinery were used.

The analysis required is defined in the In-water Pile Driving Protection Measures section below.

Proposed Restoration Projects meeting any of the following conditions are ineligible for the Restoration Program:

- Projects involving dams under CDDS jurisdiction (i.e., greater than 25 feet high and impound more than 2,000 acre feet of water);
- Projects in which sediments stored behind the dam have a reasonable potential to release accumulated harmful environmental contaminants [e.g.; dioxins, chlorinated pesticides, polychlorinated biphenyls, or mercury] beyond the freshwater probable effect levels summarized in the NOAA Screening Quick Reference Table guidelines (NOAA 2008); or
- Projects that require a more detailed analysis, based on the risk of significant loss or degradation of downstream spawning or rearing areas by sediment deposition.

Sites shall be considered to have a reasonable potential to contain contaminants of concern if they are adjacent to historical contamination sources such as lumber or paper mills, industrial sites, mining sites, or intensive agricultural production going back several decades (i.e., since chlorinated pesticides were legal to purchase and use). For sites that are found to have a reasonable potential for contaminants (e.g., Cone burner or mill sites), project proponents should also assess the habitat downstream as well as within the reservoir sediments to determine if releasing contaminants will exceed background levels. Therefore, preliminary sediment sampling is advisable in these areas to determine if a project would be eligible for the Restoration Program.

Small dams that do not have historical contamination sources in the upstream watershed are considered to have low potential to contain contaminants and, therefore, would be considered low risk with reduced sediment sampling and evaluation.

This Program will only include dam removal that will result in formation of a channel at natural grade and shape upstream from the dam, naturally or with excavation, to optimize connectivity upstream and improve or minimize negative effects on downstream habitat. Dam removal projects accepted into the program where the downstream habitat is in excellent condition and will not benefit from sediment input will: (1) have a small volume of sediment available for release relative to the transport capacity of the stream channel, that when released by storm flows, will have minimal effects on downstream habitat as verified by a qualified engineer and are reviewed by NMFS engineers, or (2) be designed to remove sediment trapped by the dam down to the elevation of the target thalweg including design channel and floodplain dimensions.

Design guidelines for this project type include:

Use of one of the following two methods to restore the channel in a small dam removal project: Natural channel evolution or “stream simulation” design.

The conditions under which each of these methods would be used are as follows:

Natural channel evolution: The natural channel evolution approach to restoring a channel bed would consist of removing all hardened portions (by hand efforts, heavy equipment, or explosives) of a dam and allowing the stream’s flows to naturally shape the channel through the project reach over time. This method shall only be used in the following situations: (1) there are benefits of introducing sediment downstream and risks are minimal (or risks can be mitigated) to any of the downstream habitats and the aquatic organisms inhabiting them (based upon the amount and size gradation of the material being stored above the dam) if all of the sediment upstream of the dam is released during a single large storm event; (2) the project reach has sufficient space and can be allowed to naturally adjust based upon any land constraints with minimal risk to riparian habitat; (3) when possible, project implementation should follow procedures that have been documented as having been successfully performed elsewhere under similar circumstances; (4) notching the dam in increments after periodic storm events in order to reduce the amount of sediment being released during any individual storm event should have sufficient project funding in place to allow the dam to be completely removed within the Proposed Project timeframe.

Stream simulation: Stream simulation design relies upon trying to duplicate the morphological conditions observed within a natural reference reach throughout the project reach. Stream simulation designs should be used in extreme situations where excessive sediment releases pose a threat to downstream habitat and organisms. Specifically, the sediment upstream of the dam would be physically removed, and the channel through the excavated reach would be designed using stream simulation. Stream simulation designs would be conducted in accordance with known stream restoration guidance documents. This specifically includes: (1) the identification of a suitable reference reach; (2) quantification of the average cross-sectional shape, bank full width, channel slope, bed and bank sediment grain size distributions, and the geomorphic features of the channel (e.g., pool-riffle sequences, meander lengths, step pools, etc.); and (3) reproducing the geomorphic features found within the reference reach in the project reach.

Data Requirements and Analysis:

- Use of a longitudinal profile of the stream channel thalweg for at least a distance equal to 20 bankfull channel widths upstream and downstream of the project and long enough to establish the natural channel grade (as described in the CDFW Manual (Flosi et al. 2010).

- Determine the quantity and quality (grain size distribution and stratigraphy) of sediment stored in the reservoir, methods chosen on a case-by-case basis, with technical input from NMFS technical advisors.

- Depending on the quantity and caliber of sediment stored behind the dam, additional information may be needed to characterize the stored sediment relative to average annual sediment supply and transport capacity near the dam. Methods for estimating these rates should be selected in coordination with NMFS technical advisors.

- Use a habitat typing survey (CDFW Manual Part III, Habitat Inventory Methods) that maps and quantifies all downstream habitat units, including spawning areas that may be affected by sediment released by removal of the water control structure.

- For those projects that are intended to benefit from coarse sediment release to downstream reaches, assess whether additional channel structure is needed to help retain sediment (e.g., LWD and/or boulders) and estimate potential increases in spawning area.

Removal of Tide Gates and Flood Gates

Removal of, or upgrades to, existing tide and flood gates, that involve modifying gate components and mechanisms in tidal stream systems where full tidal exchange is incompatible with current land use (e.g., where backwater effects are of concern). Tide/flood gate replacement or retrofitting include such activities as installation of temporary cofferdams and dewatering pumps, excavation of existing channels, adjacent floodplains, flood channels, and wetlands, and may include structural elements such as streambank restoration and improving hydraulic roughness.

Placement of new gates where they did not previously exist are not eligible for the Restoration Program, with the following exceptions. Often during floodplain and estuarine restoration projects, new tide gates are required within the setback levees in order to protect critical infrastructure, and these types of structures are allowed in this Program. Replacing tide gates is eligible only if the Project can demonstrate that such replacement would significantly increase or enhance fish passage and meaningfully contribute to increases in tidal prism over the baseline condition. New tide gates that do not achieve or allow for full tidal restoration should provide offsetting conservation measures (for example, the installation of a large wood structure), as these new structures will result in long-term and often permanent effects.

Excavators, cranes, boats, barges, pumps, dump trucks, and similar equipment are typically used to implement the projects in this category.

Design guidelines for this project type include:

- For projects that constrain tidal exchange, the Project Applicant will ensure that the project increases fish passage opportunities and conditions for target species in areas of constrained tidal exchange. This Program will not support projects that further constrain tidal exchange as compared to current conditions.

- If a culvert and bridge will be constructed at the location of a removed tide gate, consider designing the structure to allow for full tidal exchange whenever possible.

Removal of Legacy Habitat Structures

This activity includes the removal of nonfunctioning in-channel and floodplain legacy habitat structures (e.g., grade control structures, boulder weirs, J-hooks, etc.) to improve water quality and channel geomorphology.

Excavators, cranes, boats, barges, pumps, dump trucks, vibratory pile drivers, and similar equipment are typically used to implement the projects in this category.

Design guidelines for this project type include:

- If the structure being removed contains material (e.g., boulders, LWD, etc.) not typically found within the stream or floodplain at that site, consider burying the material to raise the channel invert, if that is a goal of the project, or disposing of removed material at an approved landfill or disposal site.

- If the structure being removed contains material (e.g., large wood, boulders, etc.) that is typically found within the stream or floodplain at that site, the material can be reused to implement habitat improvements described under other restoration project types in the Restoration Program.

- If the structure being removed is keyed into the bank, consider filling in “key” holes with native materials to restore contours of the stream bank and floodplain.

Fill material should be adequately compacted to prevent washing out of the soil during over-bank flooding. Material from the stream channel should not be mined to fill in “key” holes.

4. Riparian restoration and protection

Riparian restoration and protection projects are intended to improve salmonid habitat through increased stream shading intended to lower stream temperatures, increased future recruitment of LWD to streams, and increase bank stability and invertebrate production. These projects will aid in the restoration of riparian habitat by increasing the number of plants and plant groupings, and will include the following types of projects: natural regeneration, livestock exclusion fencing and crossings, off channel stock watering, bioengineering, non-native invasive vegetation removal, and revegetation. Part XI of the CDFW Manual, *Riparian Habitat Restoration,* contains examples of these techniques.

Revegetation with native plants should mimic the area’s naturally occurring wetland, riparian, or aquatic habitats and use seed or plant stock from the local watershed. Activities may include:

- Planting and seeding native trees, shrubs, and herbaceous plants
- Placing sedges, rushes, grasses, succulents, forbs, and other native vegetation
- Gathering and installing willow cuttings, stakes, bundles, mats, and fences
- Temporary irrigation

Reduction of instream sediment will improve fish habitat and fish survival by increasing fish embryo and alevin survival in spawning gravels, reducing injury to juvenile salmonids from high concentrations of suspended sediment, and minimizing the loss of, or reduction in size of, pools from excess sediment deposition.

Certain bioengineering techniques will be included under this Program, including the planting of native plant materials, willow walls, willow siltation baffles, brush mattresses, and brush bundles. These techniques are intended to improve riparian and stream habitat by increasing stream shade to lower stream temperatures, increase the production of invertebrates, provide future recruitment of large woody material to streams, and trap and bind fine sediment to reestablish riparian areas. Bioengineering techniques use a minimal amount of hard materials (e.g., rock), but are not intended to include traditional hard engineering techniques. This Program does not include bioengineering techniques that use large amounts of rip rap or other hard materials that are intended to harden banks or prevent geomorphic processes from occurring to prevent erosion on private properties that are within the floodplain/river channel.

The use of boulders should be limited in scope and quantity to the minimum necessary to secure the toe of willow baffle trenches and will be buried below the active channel grade. This Program is not meant to cover projects that are merely protecting private property bank erosion issues.

Projects in this category may require the use of heavy equipment (e.g., self-propelled logging yarders, excavators, backhoes, dump trucks, etc.).

Design guidelines for riparian restoration and willow restoration includes:

- A site-appropriate revegetation plan will be developed as part of the project description at the project level.
- Design species palette for revegetation based on the species that naturally or historically occur in the project area, have the best chance of survival considering current site conditions, and can provide required habitat elements for fish.
- Revegetation that is not dependent on irrigation systems is generally preferred, however, there can be instances where irrigation is desirable. If using an irrigation system is necessary for plant establishment, the system must be installed and operational prior to planting, or prior to any periods where the weather forecast may jeopardize successful establishment of plants.
- Acquire native seed or plant sources as close to the project site as possible.
- For installation of pole cuttings, source cuttings from healthy plants, limiting collection to no more than 30% of individual plants or populations. Pole cuttings should be taken from live wood at least one-year-old or older.
- Plant cuttings when dormant and within 48 hours of collection.
- Enclose plantings with temporary fencing, cages, tubex or other protective measure, as appropriate, in areas where plantings are subject to browse by animals, such as deer, elk, beavers, livestock, gophers, or moles. Remove any non-biodegradable fencing material after plantings are adequately established.

Design guidelines for livestock fencing to protect, restore, or establish aquatic or riparian resources:

- Fence placement should be designed to allow for lateral movement of a stream, migration or dispersal of wildlife through the area, and establishment of riparian plant species. To the extent possible, fences should be placed outside the channel migration zone, the area along a river within which the channel(s) can be reasonably predicted to migrate over time as a result of natural and normally occurring hydrological and related processes. Install cross-stream fencing at fords, with breakaway wire, swinging floodgates, hanging electrified chain, or

other devices to allow the passage of floodwater and large woody material during high flows.

- Avoid and minimize vegetation removal when constructing fence lines to the extent feasible. Large, established riparian vegetation should not be removed.

Design guidelines for livestock stream crossings and watering lanes to protect, restore, or establish aquatic or riparian habitat:

- Design and construct essential livestock stream crossings to handle reasonably foreseeable flood risks, including associated bedload and debris, and to prevent the diversion of streamflow out of the channel and down the livestock trail that uses the crossing, if the crossing fails. Livestock crossings will not create barriers to upstream and downstream passage of adult and juvenile fish.

- Use existing access roads and stream crossings whenever possible, unless new construction would result in less habitat disturbance and the old trail or crossing is retired. Locate new livestock stream crossings or water lanes where streambanks are naturally low. Avoid placement of stream crossings in or near sensitive aquatic habitats.

- Minimize the number of stream crossings for livestock within a single reach and across a watershed for livestock to limit vegetation disturbance and erosion.

- When locating livestock crossing and watering lanes, ensure the existing fences, pasture access, grazing patterns, shoreline slope and water depth is appropriate. The ramp should be wide enough to accommodate the expected usage but not less than 12 feet and not steeper than 3:1.

- Extend the ramp in the waterway far enough to achieve the desired depth and ensure the approach surface runoff is diverted away from the ramp. If side slopes will be the result of improving the lanes, make sure the cut or fills are not steeper than 2 horizontal to 1 vertical.

- The surface material should be an angular drainage rock and the use of fencing or other barriers is required to delineate the boundaries of the ramp to keep cattle out of the surrounding riparian areas and limit entrance into the active channel.

- Keep the ramps away from shaded river areas and follow the general avoidance and minimization measures included at the end of this document. Design guidelines for off-channel livestock watering to protect, restore, or establish aquatic or riparian habitat

- Withdrawals for livestock watering must not dewater habitats, cause streamflow conditions that adversely affect Covered Species, or significantly reduce habitat value.

- Each livestock water development should have a float valve or similar device, a return flow system, a fenced overflow area, or similar means to minimize water withdrawal and potential runoff and erosion.

- If water intakes are placed in native fish-bearing streams, screen surface water intakes to meet current NMFS and CDFW fish screening guidelines. Screens should be self-cleaning, or regularly maintained by removing debris buildup. A responsible party will be designated to conduct regular inspection and as needed maintenance to ensure that pumps and screens are properly functioning.

- Troughs or tanks should be placed far enough from a stream or surrounded with a protective surface to prevent mud and sediment delivery to the stream. Steep slopes and areas where compaction or damage could occur to sensitive soils, slopes, or vegetation due to congregating livestock should be avoided.

- Part X of the CDFW Manual, Upslope Assessment and Restoration Practices, describes methods for identifying and assessing erosion, evaluating appropriate treatments, and implementing erosion control treatments.

5. Restoration and enhancement of off-channel and side-channel habitat

Restoring and enhancing off-channel and side-channel habitat features helps to improve aquatic and riparian habitat for fish and wildlife. This project type has the following benefits:

- Increases habitat diversity and complexity

- Improves hydrologic and hydraulic diversity or complexity

- Provides long-term nutrient storage and substrate for aquatic macroinvertebrates

- Moderates flow disturbances and protects communities

- Increases retention of leaf litter

- Provides refuge for fish during high flows

Projects proposed for side-channel or off-channel habitat also typically improve hydrologic connection between main channels and their floodplains.

This project type typically involves reconnecting side-channel, alcove, oxbow, pond, off-channel, floodplain, and other habitats, and potentially removing off-channel fill, berms and plugs. This activity category typically applies to areas where side channels, alcoves, and other backwater habitats have been filled or blocked from the main channel, disconnecting them from most if not all flow events.

Work may involve removing or breaching levees, berms, and dikes; excavating channels; constructing wood or rock tailwater control structures; and constructing large wood and boulder habitat features.

This project type can involve the use of logs or boulders as stationary water level control structures. With the exception of off stream storage projects to reduce low-flow stream withdrawals, projects involving the permanent installation of a flashboard dam, head gate, or other mechanical structure are not eligible for the Program.

The creation of new side-channel, alcove, oxbow, and pond habitats is included. New side-channels and alcoves will be constructed in geomorphic settings that will accommodate such features.

Excavators, bulldozers, dump trucks, front-end loaders, and similar equipment may be used to implement projects.

Design guidelines for this project type includes:

- Excavated material removed from off- or side-channels will be 1) reused onsite to enhance riffles and grade controls to increase connectivity if it is the appropriate grain size range or can be screened to appropriate size range, or 2) hauled to an upland site for disposal, or 3) spread across the adjacent floodplain, as long as the soil is considered suitable for application (i.e. free of contaminants and/or pathogens), and is done so in a manner that does not restrict floodplain capacity or otherwise degrade floodplain function.

6. Floodplain restoration

Project types in this category enlarge key salmonid rearing habitat and improve the diversity and complexity of river-wetland corridors that include aquatic, meadow, and riparian habitat, as well as first order ecosystem functions, because they have the following effects:

- Drive primary productivity, which is the foundation of the food web
- Provide expansive areas of food-rich low velocity habitat that supports large numbers of juvenile salmonids
- Provide resilient habitat during high stress events such as floods and wildfire, and refuge from predators
- Provide thermal complexity and buffering due to the connectivity of the hyporheic zone, that offers multiple habitat niches within close proximity
- Deliver food resource benefits on site as well as downstream from floodplain return flows

- Provide numerous additional ecosystem benefits such as sediment, carbon, debris and water storage, which supports riparian vegetation, bird and mammal use
- Create dynamic hydrological connection between streams and floodplains that salmonids evolved with
- Increase floodway capacity (reducing downstream flood impacts) and the frequency and duration of floodway inundation.
- Reduce or eliminate legacy areas (such as gravel pits) that strand native fish or provide habitat for nonnative predatory fish, or both.
- Reset valley floors to stage zero

Floodplain restoration projects involve either 1) removing barriers (such as setback, breaching, and removal of levees, berms and dikes, 2) excavation of elevated surfaces to reconnect to the channel, or 3) or channel fill for hydraulic reconnection, and combinations of these approaches to create streams that are fully-connected with their floodplains and typically multi-threaded, or 'stage zero' (see Cluer and Thorne 2013).

These projects generally involve reconnecting historical stream and river channels and freshwater deltas with floodplains, and reconnecting historical estuaries to tidal influence, through levee removal, setback and breaching, or construction of floodplain surfaces that connect at base flow. Typically, these projects take place where floodplains and estuaries have been disconnected from adjacent streams and rivers. Levee setback projects include construction of new levees to facilitate removal or breaching of existing levees and creation of aquatic or riparian habitat. These project types may also include filling and/or reshaping of on- and off-channel gravel pits and channels. Levees may be adjusted or a low levee bench may be created to allow for tidal inundation or channel margin habitat.

Meadow and floodplain restoration may involve reconnecting down-cut channels to their floodplains to restore hydrologic processes and meadow health by filling incised, entrenched channels with local material such as undifferentiated sediment from nearby banks or legacy berms, creating new stream channels, re-grading floodplains (which involves skimming earth off higher areas and moving it into lower areas), realigning channels, or installing water surface elevation structures.

These restoration actions may be implemented to completion through construction and earth moving techniques, or through kick-starting physical processes that work over time to restore a channel network and floodplain that supports forested wetlands or grasslands. It follows that a multi-year multi-step process would be a necessary part of proposals that intend to rely on process-based incremental methods.

Similar to restoration projects that create off-channel/side-channel habitats, proposed floodplain restoration projects will include information regarding consideration of water supply (channel flow, overland flow, and groundwater), water quality, and reliability; and tolerance for an enlarged dynamic river corridor including channel changes.

Heavy equipment such as excavators, bulldozers, dump trucks, front-end loaders, and similar equipment may be used to implement these projects when valleys are being reset. Low tech methods such as beaver dam analogues (and similar), constructed riffles, beaver introduction, may be used when incremental process-based methods are used.

Design guidelines for channel reconstruction, valley reset, or relocation projects include:

- Design actions to restore floodplain inundation characteristics by modifying channel capacity through a combination of parameters, including elevation, width, sinuosity gradient, length, and roughness--in a manner that closely mimics or resets those that would naturally occur at that stream and valley type.

- To the extent feasible, native materials (rock, gravel, large wood, sod, willows, topsoil, etc.) should be salvaged and utilized as channel fill.

- Non-native fill material may be reused if it is of similar quality to native material, or removed from the channel and floodplain to an upland site or appropriate offsite disposal location, potentially including a landfill (for anthropogenic debris).

- Where practicable, construct geomorphically appropriate elevations, stream channels, and floodplains (e.g. enable natural transport processes including the creation of depositional and scour features) within a watershed and reach context to connect channels.

- When necessary, de-compact soils once overburden material is removed. Overburden or fill composed of pathogen-free and native materials, which originated from the project area, may be used within the floodplain to support the project goals and objectives.

- Significant areas of restored floodplain should remain hydraulically connected during base flow conditions.

Agricultural Lands

One goal of the CRP is to enhance agricultural lands through conservation efforts that will enhance soil and water resources. Consistent with Coastal Act agricultural policies, proposed implementation of the CRP in the coastal zone will help maintain the long-

term viability or farming, ranching, and grazing in the coastal zone by reducing the loss of valuable top soil subject to erosion, improving dependable water supplies for livestock, and increasing the function and health of waterways passing through agricultural properties. By improving the compatibility between agricultural land uses and the protection of sensitive habitat areas and waterways, the project will assist in preserving the long-term viability of both agricultural and natural resources. Most of the conservation practices approved for this program act as part of the farming or ranching operation even if the specific project location can no longer be used for economic production. The practices to be implemented in this project are an integral part of production since they enhance resource conditions and prevent loss of productive resources from adjacent crop or rangeland. This does not constitute conversion of agricultural lands to non-agricultural use, as these practices serve the agricultural purpose of controlling erosion and enhancing waterways. The beneficial impacts of retaining significant amounts of soil on site that would otherwise be lost to erosion, and increasing the quality of waterways on agricultural land, greatly outweigh the minor loss in areas of production from a site-specific conservation structure. Although some projects implemented under the CRP may result in the restoration and conversion of current and/or historic agricultural lands – primarily diked hay and grazing properties – into native salt and brackish marshlands and riparian floodplain habitat, these types of projects are proposed very infrequently. Since 1996 only two projects involving the restoration and conversion of agricultural lands to wetlands and riparian habitat have been implemented in the coastal zone under the CRP, resulting in the removal of approximately 257 acres of land from agricultural production. This relatively minor loss of agricultural lands is offset by important gains in coastal wetlands and riparian floodplain acreage – two of the coastal habitats most impacted by land uses in the coastal zone since 1850 (e.g., conversion of natural habitat due to construction of dikes, levees, and channels; fill of habitat for roadways, railroad crossings, and flood control projects). In addition, some areas currently or historically used for agricultural production are likely to be inundated by rising sea levels due to climate change, and their restoration to natural marshlands and floodplains would help to provide resiliency to coastal resources, including protection of higher elevation agricultural lands. While in past reviews described above, the Commission has found proposed habitat improvements consistent with Sections 30241 and 30242 because only minor amounts of agricultural land would be converted to habitat or water quality improvement measures, the Commission has also, in other contexts, found conversion of agricultural land for habitat restoration activities consistent with the Coastal Act under the conflict resolution provision (Section 30007.5). 30242, and
30243.

Design guidelines for projects that involve setback or removal of existing berms, dikes and levees:

- Design actions to restore floodplain activation characteristics in a manner that closely mimics, to the extent possible, those that would naturally occur in that area.

- Where it is not possible to remove or setback all portions of dikes and berms, openings may be created with carefully planned breaches. Timing and spacing of breaches should be planned for maximum positive environmental outcomes.

- Bare surfaces should be treated with LWD placement and/or replanted using native plants

7. Establishment, restoration, and enhancement of tidal, subtidal, and freshwater wetlands

Establishing, restoring and enhancing tidal, subtidal, and freshwater wetlands results in increased primary and secondary production and diversification and increased aquatic habitat for a diversity of fish and wildlife species.

This project type generally involves grading (e.g. creating depressions, berms, and drainage features) and/or breaching (i.e. excavating breaks in levees, dykes, and/or berms) to create topography and hydrology that:

- Supports native marsh plants (planted or recruited naturally)

- Provides habitat elements for target species

- Provides other targeted wetland functions

- Allows fish and other aquatic species to use channel networks and marsh plains with hydrologic variability (seasonally or tidally)

This project type also creates ecotones (transitional zone between two habitat or community types [aquatic and upland interface]), "horizontal levees", and/or setback berms) and/or “living shorelines” that use fill and excavation with native vegetation (submerged and/or emergent), alone or in combination with offshore sills (e.g., artificial reefs), to stabilize the shoreline.

Creation of ecotones could require extensive beneficial fill and have the potential to affect adjacent existing wetlands. However, these projects are necessary to allow tidal wetlands to respond to sea level rise, provide refuge for native wildlife, and buffer wetlands from adjacent municipal and industrial land uses.

Living shorelines provide a natural alternative to "hard" shoreline stabilization methods like stone sills or bulkheads, and provide numerous ecological benefits including water

quality improvements, fish and invertebrate habitat, and buffering of shoreline from waves and storms.

Living shoreline projects use a suite of habitat restoration techniques to reinforce the shoreline, minimize coastal erosion, and maintain coastal processes while protecting, restoring, enhancing, and creating natural habitat for fish and aquatic plants and wildlife.

This project type includes excavation, removal, and/or placement of fill materials to restore or approximate pre-disturbance site conditions; contouring wetlands to establish more natural topography, hydrology, and/or hydraulics; and setting back, modifying, or breaching existing dikes, berms and levees.

This project category also includes the following actions:

- Constructing transitional tidal marsh habitat (i.e., “horizontal levees,” setback berms, or ecotones)
- Backfilling artificial channels
- Removing existing drainage structures, such as drain tiles
- Filling, blocking, or reshaping drainage ditches to restore wetland hydrology
- Establishing tidal/fluvial channels and wetlands in tidal waters where those wetlands previously existed, or have migrated or will migrate as a result of sea level rise
- Installing structures or fill necessary to establish wetland or stream hydrology
- Constructing nesting/planting islands
- Constructing open water areas
- Constructing noncommercial, native oyster habitat (e.g. reefs) over an un-vegetated bottom in tidal waters
- Conducting noncommercial, native shellfish seeding
- Establishing submerged aquatic vegetation (e.g. eelgrass beds) in areas where those plant communities previously existed

Activities needed to establish vegetation, including plowing or disking for preparation of seedbeds and planting appropriate wetland species, and use of seed buoys are also included.

Project activities that plan for climate change, including sea level rise, will be considered in tidally influenced locations. California’s Climate Adaptation Strategy recommends

using ecotones and living shorelines as a potential adaptation method to reduce the need for engineered “hard” shoreline protection devices and to provide valuable, functional coastal habitat (CNRA 2018). The California State Coastal Conservancy’s Climate Change Policy also supports the use of living shorelines for their ability to improve the resiliency of estuarine habitat to future sea level rise and other related effects of climate change.

Ecotone habitat levees should be used when new exterior levees are required to protect adjacent landowners from the return of tidal inundation. The project side of the levee should be constructed with areas of longer gentle slopes to accommodate upland refugia for sensitive salt marsh and brackish marsh species during future flood king tides. Interior berms should be disconnected from the adjacent uplands to reduce access by predators during high tides. In addition, side cast material should be used during the excavation of new channels to re-contour pond bottoms to achieve the desired hydrology, including creating islands disconnected from uplands to provide future upland refugia and nesting areas in larger marshes.

Excavators, graders, bulldozers, dump trucks, front-end loaders, boats, barges, and similar equipment may be used to implement projects

Design guidelines for this project type include:

- Implement projects to repair or restore estuary functions, while not putting adjacent landowners at increased flood risk once dikes/levees are breached and the project area is flooded.

- Where possible, recreate historic channel morphology that supports wetland function. Channel designs should be based on aerial photograph interpretation, literature, topographic surveys, and nearby undisturbed channels. Channel dimensions (width and depth) should be based on measurements of similar types of channels and the drainage area.

- Removal of temporary access roads and de-compaction of soils as necessary to support desired revegetation.

- Restore wetlands to elevations necessary to support the desired vegetation communities, accounting for anticipated natural sediment accumulation and future sea level rise. Appropriate dredge material or other clean fill material may be imported to raise subsided landscapes, depending on the desired habitat to be restored. Overfill may be necessary to accommodate settling.

If grading of intertidal plane (landform) is needed, implement the following guidelines, to the extent feasible, to avoid and/or minimize adverse effects to water quality, sensitive resources, and/or Covered Species:

- Conduct all grading of tidal plane in dry conditions, behind cofferdams, dikes, and/or levees;

- After grading of the tidal plane is complete, implement water management activities to revegetate and stabilize exposed soils on the plane prior to removing cofferdam and/or breaching dikes or levees;

Implement the following pre-breach water management measures:

- Release on-site water gradually; water from the project area should be released gradually to reduce the effect of potentially low dissolved oxygen (DO) and high temperature water on the surrounding water body; this would allow the plume of degraded water to dissipate without harmful effects to aquatic life.

- For projects that include the use of donor vegetation beds for use in restored marsh and/or emergent or submerged vegetation sites, no more than five percent of the below ground biomass of an existing donor bed should be harvested for transplanting purposes. Plants harvested should be taken in a manner that thins an existing bed without leaving any noticeable bare areas. Harvesting of flowering shoots for seed buoy techniques should occur only from widely separated plants and only a certain percent of the donor stock should be used per year. This percent is site dependent and prior to restoration requires intimate knowledge of the genetics and population dynamics of the donor site.

- Shellfish substrate should be placed to encourage oyster larval recruitment. Restoration sites are typically subtidal or intertidal on un-vegetated, soft bottom estuarine areas. Rarely, substrate may be placed on hard substrate that represents former reef habitat, but only if the hard substrate is not currently producing oysters at a sustainable level. Natural substrate (oyster or clam shells) is preferred due to the oysters' affinity for it, but is not always available. Shells are most often deployed loose or in mesh bags. Artificial substrate should be used when there is not enough shell substrate available to create larger reef areas or when the bottom substrate is unstable and substantial sinking of the reef is likely to occur. Common artificial substrates include limestone rock and baycrete (e.g., Reef Balls, Oyster Castles, etc.). Regardless of type, most substrate is deployed from a boat or barge, but in some shallow water situations, restoration practitioners and community volunteers may carry the substrate to the reef location.

- Restoration efforts could also include releasing live shellfish in the restoration area if the local population is not large enough to produce viable larvae or has been fully extirpated from the area. Oysters may be released as single oysters, or already attached to substrate as oyster spat on shell. Non-reef-forming organisms such as clams and abalone are released as individuals, but may be caged as necessary to reduce predation and facilitate research efforts. Rearing shellfish prior to release occurs in land-based or near-shore aquaculture facilities.

Some shellfish are purchased from commercial facilities, but some funding recipient organizations run their own facilities as well.

- Shell sources – shell or other substance used for substrate enhancement should be procured from clean sources that do not deplete the existing supply of shell bottom. Shells should be left on dry land for a minimum of one month before placement in the aquatic environment. Shells from the local area should be used whenever possible.

- Native species and disease – Shellfish species native to the project area should be used where possible. Any shellfish transported across state lines or grown through an aquaculture facility should be certified disease free.

8. Water conservation projects for enhancement of fish and wildlife habitat

Creation, operation, and maintenance of water conservation projects, including off-stream storage tanks and ponds and associated off-channel infrastructure and rainwater harvest systems, reduce low-flow stream withdrawals and enhance stream flows, particularly base flows for fish and wildlife habitat during the dry season. These projects typically require placing infrastructure (e.g., pumps and piping, fish screens and head gates) in or adjacent to the stream to provide alternative water intake facilities. Other projects in this category include piping ditches to create a more efficient use of water where the water saved will be dedicated to fish and wildlife under State Water Code Section 1707 or forbearance agreements. These projects are designed to improve streamflow and riparian habitat for fish and wildlife. Excavators and other heavy equipment may be used to implement projects.

Tailwater is created in flood irrigation operations as unabsorbed irrigation water flows back into the stream. Restoration projects to address tailwater input will construct tailwater capture systems to intercept tailwater before it enters streams. Water held in capture systems, such as a pool or a pond, can be reused for future irrigation purposes, thereby reducing the need for additional stream withdrawals.

All water conservation projects in the Program will require diverters to agree to forbearance or dedication, and verify compliance with water rights — as conditioned by a small domestic use or livestock stockpond registration, appropriative water right, or a statement of riparian water use registered with the State Water Resources Control Board and reviewed for compliance by the NOAA RC and the USACE.

Design guidelines for this project type include:

- Design storage volumes so that water diverters have sufficient storage capacity to cover intended domestic, irrigation, or livestock needs during the no-pump time periods for drier than average years (e.g., dry season droughts). The no-pump time period should be based on the season, local conditions, forbearance

agreement, and existing studies if available. These projects will require a technical review.

- All pump intakes must be screened in accordance with current NMFS fish screen criteria.

- All water conservation projects will ensure that any water saved will remain instream for fish and wildlife benefits either through forbearance agreements or the State Water Board's 1707 process.

- All water conservation projects need to be associated with legal water rights recognized by the State Water Board or a local water master for watersheds that are adjudicated via decree.

- Tailwater collection ponds that do not incorporate return channels to the creek will be located far enough from the edge of the active channel to not likely cause stranding of juvenile salmonids during flood events.

- Tailwater captured and re-used shall be done to reduce stream withdrawals, an in-lieu of use. No new ground shall be put into production due to tailwater re-use.

9. Removal or remediation of pilings and other in-water structures

Untreated and chemically treated wood pilings, piers, vessels, boat docks, derelict seawalls (within embayments), and derelict fishing gear, and similar structures built using plastic, concrete and other materials may be removed and/or replaced to improve water quality and habitat for fish and wildlife. These projects are designed to remove contaminant sources and hazards from stream, river, and estuary habitats. These projects are intended to cover only the removal of debris or structures and not the replacement of any structures or pilings. The removal of any pilings in estuarine waters under this Program requires compliance with the California Eelgrass Mitigation Policy (CEMP), to ensure that eelgrass resources are not affected by the project.

Equipment such as boats, barges, excavators, dump trucks, front-end loaders, and similar equipment may be used to implement these projects.

Design guidelines for this project type includes:

- In areas where eelgrass is found within and around the project site, conduct work at high tides with sufficient depths in order to ensure that any impacts to submerged aquatic vegetation via propeller wash, or vessel groundings are avoided. Projects must demonstrate compliance with the CEMP.

- Install a floating surface boom to capture floating surface debris, as necessary.

- Dislodge the piling with an excavator bucket (through pushing and pulling) or vibratory hammer, whenever feasible. Avoid intentionally breaking a pile by twisting or bending.

- Slowly lift piles from the sediment and through the water column.

- Place chemically treated piles in a containment basin on a barge deck, pier or shoreline without attempting to clean or remove any adhering sediment. A containment basin for the removed piles and any adhering sediment may be constructed of durable plastic sheeting with sidewalls supported by hay bales or another support structure to contain all sediment.

- Fill the holes left by each piling with clean, native sediments located from the project area if available, as needed.

- Dispose of all removed piles, floating surface debris, any sediment spilled on work surfaces, and all containment supplies at a permitted disposal site.

- Pile cutting should be considered a last resort, following multiple attempts to fully extract piling using other methods. If cutting piles, piles should be cut below the mudline to provide more habitat and ensure that as much debris is removed as possible. Areas with low levels of contamination, wave and/or currents conducive to mixing (i.e., high-energy environments), and/or small numbers of piles removed may not need to be cut to prevent remobilization of contaminants.

Design guidelines for projects that involve removing a broken pile:

- If a pile breaks above the surface of uncontaminated sediment, or less than two feet below the surface, every attempt short of excavation should be made to remove it entirely.

- If a pile breaks above presumed, or known contaminated sediment, saw the stump off at the sediment line; if a pile breaks within contaminated sediment, make no further effort to remove it and cover the hole with a cap of clean substrate appropriate for the site, as applicable.

10. Instream habitat restoration

Instream restoration provides the following benefits:

- Habitat complexity, diversity, and cover for wildlife species

- Increased spawning and rearing habitat

- Improved pool habitat and pool-to-riffle ratios

- Increased sinuosity

- Improved water quality

These projects may include the following activities:

- Placing large woody material or boulders
- Constructing engineered logjams
- Installing small wood structures or beaver dam analogues
- Beaver restoration
- Augmenting and placing gravel
- Stream channel reconstruction
- Removing revetment and other streambank armoring materials
- Improving stream morphology and channel dynamics; restoring sediment input and retention balance; and improving water quality

Project activities may also include excavating, sorting, placing, and contouring existing on-site materials (e.g., historic mine tailings) on perched floodplains and in channels to reconnect those habitats and improve spawning and rearing conditions.

Project types in this category typically occur in areas where channel structure is lacking due to past stream cleaning (large woody material removal), riparian timber harvest, historic grazing and meadow dewatering practices, hydromodification, urbanization, and in areas where natural gravel supplies are low due to anthropogenic disruptions. These projects would occur in stream channels and adjacent floodplains to increase channel complexity, rearing habitat, pool formation, spawning gravel deposition, channel complexity, hiding cover, low velocity areas, and floodplain function. Equipment such as helicopters, excavators, dump trucks, front-end loaders, full-suspension yarders, and similar equipment may be used to implement projects.

Engineered logjams are large wood structures that include an anchoring system, such as rebar pinning, ballast rock, or vertical posts. These structures are designed to redirect flow and change scour and deposition patterns, and are patterned after stable natural log jams. They are anchored in place using rebar, rock, or piles (driven into a dewatered area or the streambank, but not in water). Engineered log jams create a hydraulic shadow, which is a low-velocity zone downstream that allows sediment to settle out. Scour holes develop adjacent to the engineered logjam.

Large woody material may be installed using either anchored and/or unanchored logs, or both, depending on site conditions and wood availability. Wood loading methods may

include but are not limited to direct felling, whole tree tipping/placement, or tree placement by helicopters, grip hoisting, or excavator, and other etc.

Creation of beaver habitat and installation of beaver dam analogue structures, including installation of in-stream structures to encourage or simulate beaver dam building and shunting of flows onto floodplain surfaces may be designed in association with stream and riparian habitat projects.

Porous channel-spanning structures consist of biodegradable vertical posts (beaver dam support structures) approximately 0.5 to 1 meter apart and at a height intended to act as the crest elevation of an active beaver dam. Variation of this restoration treatment may include post lines only, post lines with wicker weaves, construction of starter dams, reinforcement of existing active beaver dams, and reinforcement of abandoned beaver dams.

Beaver Habitat Restoration - The long-term goal of this category is to restore linear, entrenched, simplified channels to their previously sinuous, structurally complex channels that were connected to their floodplains. This will result in a substantial expansion of riparian vegetation and improved instream habitat. Beavers, which were historically prevalent in many watersheds, build dams that, if they remain intact, will substantially alter the hydrology, geomorphology, and sediment transport within the riparian corridor. Beaver dams will entrain substrate, aggrade the bottom, and reconnect the stream to the floodplain; raise water tables; increase the extent of riparian vegetation; increase pool frequency and depth; increase stream sinuosity and sediment sorting; and lower water temperatures.

In addition, infrastructure along streams and in riparian areas may be removed or relocated. The primary purpose of infrastructure removal is to eliminate or reduce impacts on riparian areas and vegetation, reduce erosion, reduce sedimentation into adjacent streams, and provide for native revegetation or natural native plant recruitment. Some examples of the types of infrastructure that could be removed or relocated are boat docks, boat haul out locations, campgrounds, campsites, day-use sites, roads/trails, and off-highway/off-road vehicle routes that impact aquatic resources or riparian habitat.

Design guidelines for these project types includes:

- Where appropriate, the CDFW Manual and Fluvial Habitat Center at Utah State, Low-Tech Process-Based Restoration Design Manual (http://lowtechpbr.restoration.usu.edu/) should be consulted during the planning and design process.

- For the purposes of large wood placement, trees can may be felled or pulled/pushed over, if tree felling does not significantly degrade the riparian habitat, create excessive stream bank erosion, destabilize stream banks, create temperature increases in water bodies, or concentrate surface runoff, or increase the likelihood of channel avulsion during high flows.

- Where feasible, retain trees killed through fire, insects, disease, blow-down, and other means. Retain snags and trees with broad, deep crowns ("wolf" trees), damaged tops, or other abnormalities that may provide a valuable wildlife habitat component.

- Stabilizing or key pieces of large wood must be intact, hard, with little decay, and if possible, have root wads (untrimmed) to provide functional refugia habitat for fish.

- Place large wood and boulders in areas where they would naturally occur and in a manner that closely mimics natural accumulations for that stream type. For example, boulder placement may not be appropriate in low gradient meadow streams. Engineered logjams should be patterned, to the greatest degree possible, after stable natural log jams in the project area, either present or historical.

- Project design should simulate log jams, debris flows, wind throw, tree breakage, and other disturbance events to the greatest degree possible using techniques including, but not limited to, log jams, debris flows, wind throw, and tree breakage.

- If large wood anchoring is required, a variety of methods could be used. These include buttressing the wood between riparian trees, the use of or using manila, sisal, or other biodegradable ropes for lashing connections. If hydraulic conditions warrant the use of structural connections, cable, duckbills, rebar pinning or bolted connections could be used but this approach should be generally avoided unless no other options exist. Clean rock could be used for ballast but is limited to the minimum size or weight needed to anchor the large wood.

Design guidelines for stream channel reconstruction

In situations where excessive sediment releases from the project site or surrounding watershed currently pose a threat to downstream habitat and organisms (i.e. stage zero projects and large (>100 acre) floodplain restoration projects), use stream simulations following USFS Stream Simulation Design to inform the project design. Stream simulation designs should:

- Identify a suitable reference reach and survey a longitudinal profile

- Quantify the average cross-sectional shape, bankfull width, bed and bank sediment grain size distributions, and the geomorphic features of the channel (e.g., pool-riffle sequences, meander lengths, step pools, etc.); and

- Reproduce the geomorphic features found within the reference reach in the project reach.

Design guidelines for gravel augmentation

- Only augment gravel in locations where the natural supply has either been eliminated, significantly reduced through anthropogenic disruptions, or where it can be used in conjunction with other projects, such as off-channel habitat or floodplain restoration.

- Size gravel with the proper gradation for the stream, using non-angular rock. When possible, use gravel of the same lithology as found in the watershed.

- Gravel should not be mined from the floodplain in a manner that would cause stranding during future flood events. Only use imported gravel that is free of invasive species and non-native seeds.

- Gravel should be placed directly into the stream channel, at tributary junctions, or other areas in a manner that mimics natural gravel deposition.

11. Upslope Watershed Restoration

Sites in upslope and riparian watershed areas may be restored to reduce delivery of sediment to streams, promote natural hydrologic processes, restore wildlife habitat, and improve water quality. This project type also includes road- and trail-related restoration, including decommissioning, upgrading, and storm-proofing. The following are some of the specific techniques that may be used:

- Removing, installing, or upgrading culverts

- Constructing water bars and dips

- Deep ripping decommissioned roadbeds

- Reshaping road prisms

- Vegetating cut slopes and roadbeds

- Removing and stabilizing side-cast materials

- Grading or resurfacing roads and trails that have been improved for aquatic restoration, using gravel, bark chips or other permeable materials

- Shaping the contours of the road or trail base

- Replacing road fill with native soils
- Installing new culverts under trails or roads to reduce ditch length
- Stabilizing the soil and tilling compacted soils to establish native vegetation.

These actions target priority roads and trails that contribute sediment to streams or disrupt floodplain and riparian functions. Equipment such as excavators, bulldozers, dump trucks, and front-end loaders, may be used to implement these projects.

Design guidelines for road and trail erosion control and decommissioning

- Road and trail erosion control and decommissioning shall use the Handbook for Forest, Ranch and Rural Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Upgrading, Maintaining and Closing Wildland Roads (Weaver et. al 2015) and any subsequent editions.
- When demolishing or removing road segments immediately adjacent to a stream, use BMP's including sediment control barriers between the project and stream.
- Where feasible, existing vegetative buffers along access roads or trails should be used to avoid or minimize runoff of sediment and other pollutants to surface waters.
- Minimize disturbance of existing native vegetation in ditches and at stream crossings.
- Space drainage features used for storm proofing and erosion treatment projects in such a manner as to hydrologically disconnect road surface runoff from stream channels. If grading and resurfacing are required, use clean, permeable materials for resurfacing.
- Dispose of slide and waste material in stable sites out of the flood-prone area. Clean material may be used to restore natural or near-natural contours.
- For projects within riparian areas, recontour the affected area to mimic natural floodplain contours and gradient to the extent possible.
- For permanent decommissioning of roads, complete excavation of stream crossing fills, including 100-year flood channel bottom widths and stable side slopes. Excavate unstable or potential unstable sidecast and fill slope materials that could otherwise fail and deliver sediment to a stream. Perform road surface drainage treatments (e.g., ripping, outsloping, and/or cross draining) to disperse and reduce surface runoff.

Design guidelines for road relocation

- When a road is decommissioned in a floodplain and future vehicle access through the area is still required, relocate the road away from the stream, as far as is practical. New road construction should be outside waters of the U.S. or any other aquatic habitat suitable for Covered Species.

12. Kelp Forest Restoration

Kelp forests are important structural components of the near shore marine environment that provide nursery and feeding grounds for thousands of marine species. They are also instrumental in the carbon sequestration process, which is important to maintaining healthy CO_2 levels in the environment.

Kelp forest restoration can occur throughout the Coastal United State and is most often used in Southern California, where kelp forests have been reduced by 80% over the past century. Pollution and sedimentation runoff from nearby land-based human activities have harmed kelp forests. Overfishing and extinction or reduction of natural sea urchin predators has eliminated large areas of kelp forest that once existed.

Kelp forest restoration involves transplanting lab grown kelp or drifting kelp into the marine environment. In some projects, sea urchins are removed from planted or already established areas to increase survival and growth of the kelp forest. Kelp forest restoration aims to restore structural and functional attributes of kelp forests. Techniques for planting and predator removal tend to be similar in all areas where kelp restoration is done. Species of kelp planted can vary between different geographic regions and may have different starting conditions and depth requirements.

Kelp forest restoration occurs in subtidal environments with hard substrate for kelp holdfast attachment. The NOAA RC has worked with the California Coastkeeper Alliance and the Orange County Coastkeeper to help restore beds off the Channel Islands in Southern California. Most kelp restoration projects are very labor intensive and therefore the overall footprint of restoration is small, typically one to three acres.

Standard Protection Measures for Kelp Restoration

In all cases, kelp restoration is performed by registered, certified divers. There is very little sedimentation that occurs with this type of restoration, but all restoration practitioners minimize turbidity and sedimentation based on considerations such as access to the project, size of restoration effort, duration, or sediment characteristics.

All vessel operators must be licensed and establish vessel corridor routes to avoid kelp beds and establish anchor lines to avoid hard bottom areas or kelp beds.

I) Summary of Environmental Compliance Requirements and NOAA RC Project Review

The NOAA RC and USACE have established general requirements and environmental protection measures that must be implemented for projects to be included in the Program. For example, a key component of the NOAA RC's Programmatic Biological Opinions involves the use of "sideboards" that establish a minimum distance between instream projects and limit the number of instream projects annually within a watershed,

relative to the size of the watershed. NOAA Biological Opinions also contain specific requirements for dewatering, riparian restoration, species protection, and more, as well as general project review procedures conducted by NOAA RC Staff.

As part of NOAA RC's general review process, NOAA RC staff will evaluate individual projects and assess whether they can be covered under existing NOAA RC programmatic BOs, applicable BOs for existing restoration programs that fall within the scope of activities covered by the CRP (e.g., existing Partners in Restoration permit coordination programs with pre-existing BOs), or whether a project should be reviewed through an individual Section 7 consultation because the project is outside the program or geographic scope of an existing BO and warrants separate analysis. NOAA RC staff will also screen applications for applicability to this Federal Consistency Determination, applying criteria from the "General Exclusions" and "Qualifying Projects" sections of this report. All projects will be subject to applicable general project requirements, as well as project specific conditions that NOAA RC and NMFS deem necessary in order to protect coastal resources. Table 1 below summarizes NOAA RC general project requirements, natural resource protection measures, and the NOAA RC project review process to ensure the protection of coastal resources.

Additional details on the protection measures listed below can be found in the NOAA RC Programmatic Biological Opinions for the Santa Rosa and Arcata field offices, in the NOAA Programmatic NEPA Documents (Attachments C, D, F, respectively), and the earlier referenced CDFW (formerly DFG) *Salmonid Restoration Manual*, and NMFS *Screening and Fish Passage Criteria*.

TABLE 1 - NOAA RC SUMMARY OF GENERAL PROJECT REQUIREMENTS AND PROTECTION MEASURES FOR COASTAL RESOURCES

Resource Area	NOAA Review Process	NOAA Restoration Center California Region - General Requirements and Protection Measures[1]
General Requirements/ Project Limits	Application reviewed by NOAA biologists to determine whether project qualifies for NOAA RC program, overall restoration benefit, ESA mandates met, avoidance of impacts to other coastal and marine resources. Must obtain all other agency permits to proceed.	- In addition to general conditions, site specific conditions are required as needed for each project - Projects must clearly demonstrate habitat restoration benefits - Engineering review required for complex projects - All other permits must be obtained before the project may commence - Contractors must be briefed in advance by qualified biologist on all protection measures - Impact evaluation criteria must be followed: first avoidance, then minimization, and mitigation - Detailed success criteria required for revegetation projects - Prohibited activities include, but are not limited to gabions, treated wood, migration obstruction, projects with toxic sediments - NOAA retains right of reasonable access to property to monitor effectiveness of project - Monitoring and reporting required (see section below) *BOs also Specify:* - Specific protection measures for species, water quality, and several other resources areas (see below) - Maximum stream dewatering length: 1000' at a time - Consistency w/ CDFW Salmonid Stream Habitat Restoration Manual, CDFW Culvert Criteria for Fish Passage, CDFW/NOAA Fish Screening Criteria for Salmonids, Handbook for Forest and Ranch Roads (Weaver and Hagans) - Construction work windows, typically limited to June 15-November 1 with planting allowed beyond November 1
Water Quality	NOAA requires both project-specific and general measures for WQ protection. 401 WQ Cert from RWQCB, 1600 Agreement from CDFW, USACE Permit, and compliance w/local ordinances also required.	- Detailed water quality protection and erosion control requirements during and following construction - Dewatering for in-channel work, with specific rules for how dewatering shall occur - Specific avoidance of impacts from poured concrete - Specific requirements for access road maintenance and road decommissioning - Temporary erosion controls will be in place before any significant alteration of the action site and will be monitored during construction to ensure proper function. Turbidity curtains, hay bales, and erosion mats shall be used where appropriate.

[1] Note: All projects are subject to site- and project-specific conditions, as specified in either the NOAA RC Programmatic BOs, (Arcata and Santa Rosa offices), other Program BOs applicable for CRP projects, individual Section 7 consultations for CRP projects that require separate consultation, and addendums to these documents containing further conditions. NOAA RC and NMFS staff will determine which BO shall be applied or whether individual Section 7 consultation must be completed. This table contains general requirements from the following sources: NOAA RC NEPA PEIS, Arcata and Santa Rosa Programmatic Biological Opinions (BOs), and NOAA RC Staff.

Resource Area	NOAA Review Process	NOAA Restoration Center California Region - General Requirements and Protection Measures[1]
		- Confine vegetation and soil disturbance to the minimum area, and minimum length of time, as necessary to complete the action, and otherwise prevent or minimize erosion associated with the action. - Cease work under high flows or seasonal conditions that threaten to disturb turbidity reduction measures, except for efforts to avoid or minimize resource damage. *General On-site Pollution Controls*: - Properly confine, remove, and dispose of construction waste, including every type of debris, discharge water, concrete, cement, grout, washout facility, welding slag, petroleum product, or other hazardous materials generated, used, or stored on-site. - All vehicles and other heavy equipment will (a) be stored, fueled, and maintained in a vehicle staging area set back from any natural waterbody or wetland; (b) inspected daily for fluid leaks before leaving the vehicle staging area. - Generators, cranes, and any other stationary equipment operated within 150 feet of any natural water body or wetland will be maintained as necessary to prevent leaks and spills from entering the water. - Use procedures to contain and control a spill of any hazardous material generated, used or stored on-site, including notification of proper authorities. - When local conditions indicate the presence of contaminated sediments is likely, soil samples will be tested for contaminant levels and precautions will be taken to avoid disturbance of or provide for proper disposal of contaminated sediments.
Listed Species	NOAA mission to protect species ESA sec. 7 consultations required with FWS and NOAA; CDFW CESA compliance also required	*Project and species specific avoidance measures required by NOAA, including measures in BOs:* - Work windows for all listed species - Detailed fish capture and relocation and dewatering requirements; qualified biologist required; reporting all encounters with listed species. - Water quality, water quantity, sensitive habitat protection, and other general measures also serve to protect species.
Sensitive Habitat Protection	Review projects for benefits to habitat and conditions required for avoidance of temporary and long-term impacts.	*In addition to site specific measures; typical BO requirements:* - Flagging required around sensitive areas and buffers - Specific measures to minimize impacts to riparian vegetation - Tree size removal limits - Construction access point must minimize vegetation and soil disturbance and compaction *General Measures for Reduction of Soil Compaction:* - Existing access ways will be used whenever possible. Temporary access roads will not be built on slopes greater than 50%, where grade, soil, or other features suggest a likelihood of excessive erosion or failure. Soil disturbance and compaction will be minimized within 150 feet of a natural waterbody or wetland. All temporary access roads will be removed when the action is completed, the soil will be stabilized, and the site will be revegetated. Temporary roads in wet or flooded areas will be restored shortly after the work period is complete.

Resource Area	NOAA Review Process	NOAA Restoration Center California Region - General Requirements and Protection Measures[1]
		- Heavy equipment will be selected and operated in a manner that minimizes adverse effects to the environment (e.g., minimally-sized, low pressure tires, minimal hard turn paths for tracked vehicles, temporary mats or plates within wet areas or sensitive soils). - To the extent feasible, heavy equipment will work from the top of the bank, unless work from another location would result in less habitat disturbance. *Site Restoration* - Any large wood, mature native vegetation, topsoil, and native channel material displaced by construction will be stockpiled for use during site restoration. When construction is finished, all streambanks, soils, and vegetation will be cleaned up and restored as necessary to renew ecosystem processes that form and maintain productive fish habitats. Measures to ensure native vegetation or revegetation success will be identified and implemented. *Planting or installing vegetation* - NOAA RC will ensure the use of an appropriate assemblage of species native to the action area or region, including trees, shrubs, and herbaceous species. *Adequate Training of Volunteers* - Training should be provided to ensure minimal impact to the restoration site by volunteers. Volunteers shall be trained in the use of low-impact techniques for planting, equipment handling, and moving around the restoration site to avoid unnecessary impacts to native flora and fauna. **Invasive Species Removal** - *Herbicide Application Controls* - Use of herbicides in project areas will be conducted according to established protocols for the locality, as determined by a state-licensed herbicide applicator. Such protocols will include information and guidelines for appropriate use, timing, amounts, application methods, and safety procedures relevant to the herbicide application. Chemicals used should be appropriate for the location. - *Additional Information and Guidelines* - For high-risk projects, additional measures shall be taken to ensure invasive species are controlled and removed. Additional information for inspection and cleaning methods can be found in the NOAA Restoration Center Best Management Practices for Invasive Species at: http://www.habitat.noaa.gov/restoration/programs/invasivespecies.html **Wetlands** - Wetlands projects follow standard protection measures listed through this table including, but not limited to, flagging sensitive areas, on-site erosion controls, on-site pollution prevention controls, methods to reduce soil compaction, seasonal work periods, adequate training of volunteers, and planting and installing vegetation standards.
Water Quantity	Any projects approved for NOAA RC program that affect flows will conserve water for habitat.	- Existing diversions only; must be in compliance with SWRCB water rights requirements; only allowed if water conservation benefit for species. - Additional hydrological data/water flow data information required for water conservation projects. - Pipe developments must decrease stream diversion and include permitted instream flow dedication (10 years).

Resource Area	NOAA Review Process	NOAA Restoration Center California Region - General Requirements and Protection Measures[1]
Visual Resources	Not directly reviewed by NOAA; typically beneficial impacts. Addressed through CEQA and local ordinances.	- All other permits/approvals must be acquired before project commences. - Not likely to be visual impacts because most projects are on private lands, and result in a net benefit to visual impacts by restoring degraded habitat and vegetation. - Project applications are also evaluated and ranked based on their level of public and landowner support.
Public Access	Evaluated during application review process. Addressed through CEQA process and local ordinances.	- All other permits/approvals must be acquired before project commences. NOAA's mission supports public access and recreation as long as it does not negatively impact listed species. - Public access not likely impacted because many projects are on private lands. Projects on public lands often include partners with shared mission of maintaining public access for educational and/or recreation purposes (USFWS). - Project applications are also evaluated and ranked based on their level of public and landowner support.
Estuarine and Marine Resources	Review projects for habitat/species benefits, and require avoidance of potential negative effects to estuarine habitat.	- Project/site specific protection measures required by NOAA RC; all measures for water quality/sensitive habitat/species listed above also apply in estuarine areas. - Existing BOs are utilized where applicable and project specific BOs (with project specific protection measures) are developed as needed for marine species. - Project- and species-specific conditions imposed by NOAA. - *Assessment, Research, and Monitoring Techniques* - Destructive sampling techniques (such as biomass sampling, benthic cores, fish capture, etc.) will only be used as part of an experimental design, tailored to require the fewest number of samples to achieve the desired purpose. All researchers will obtain biological sampling permits as required for their locality. **Living Shorelines** - Protection measures for living shorelines include those mentioned for wetlands, sea grasses, and oyster restoration since many of the techniques are used simultaneously. **Kelp Restoration** - In all cases, kelp restoration is performed by registered, certified divers. All restoration practitioners must minimize turbidity and sedimentation based on considerations such as access to the project, size of restoration effort, duration, or sediment characteristics. All vessel operators are licensed and establish vessel corridor routes to avoid kelp beds and establish anchor lines to avoid hard bottom areas or kelp beds. **Submerged Aquatic Vegetation** - All measures to protect both the donor beds and the newly restored beds are implemented. For all geographic areas, no more than five percent of the below ground biomass of an existing donor bed will be harvested for transplanting purposes. Plants harvested will be taken in a manner to thin an existing bed without leaving any noticeable bare areas. Harvesting of flowering shoots for seed buoy techniques will occur only from widely separated plants and only a certain percent of the donor stock can be used per year. This percent is site dependent and prior to restoration requires intimate knowledge of the genetics and population dynamics of the donor site.

Resource Area	NOAA Review Process	NOAA Restoration Center California Region - General Requirements and Protection Measures[1]
		All efforts to reduce any turbidity while at the site are implemented. In most cases restoration takes place during low tide and turbidity is avoided. If divers and boats are used the boat propellers are lifted and divers enter the SAV area outside the bed. **Shellfish Restoration** *General* - Disturbance is typically short duration. Reefs are typically built prior to times of high spat set (larval settling). All shell material is placed in un-vegetated areas (i.e. not directly on seagrasses). Any shell material or structures that are not providing ecological services are removed. *Shell sources* - Shell or other substance used for substrate enhancement will be procured from clean sources that do not deplete the existing supply of shell bottom. Shells will be left on dry land for a minimum of one month before placement in the aquatic environment. Shells from the local area will be used whenever possible. *Native species and disease* - Shellfish will be species native to the project area. Any shellfish transported across state lines or grown through an aquaculture facility will be certified disease free. **Rock Breakwaters** *(developed for habitat protection purposes)* - All rock or shell breakwaters will be designed with appropriate ingress and egress for fish in consultation with local regulatory agencies.
Coastal Agriculture	NOAA ranks projects based on public/landowner support, as well as watershed studies and prioritized actions from Integrated Regional Water Management Programs. Ag impacts included in CEQA analysis.	All other permits/approvals must be acquired before project commences. Projects evaluated in part by level of public support and coordination with local agencies, landowners, and other stakeholders. The majority of floodplain reconnection projects have mutual benefits that provide improved habitat conditions for fish and reduce flooding on agricultural lands, making ag land more productive.
Cultural Resources	Considered during NOAA RC project review. Also included in CEQA analysis.	- NOAA RC complies with Section 106 NHPA on a case-by-case basis. NOAA RC or designee will consult with SHPO and tribal officers for projects that may impact cultural or historic resources. NOAA has staff Cultural Resource Specialist.
Cumulative Impacts	NOAA reviews for avoidance of cumulative impacts; BOs specify limits on number of projects in each watershed and minimum distance between projects.	BOs have restrictions built in to avoid cumulative impacts: - Buffers required between projects in one watershed per year - Numerical limits on projects per watershed per year, based on size of watershed (Arcata), 3 total for Santa Rosa - Max 50 projects/year Santa Rosa region, 60/year Arcata region

Resource Area	NOAA Review Process	NOAA Restoration Center California Region - General Requirements and Protection Measures[1]
	Also addressed in CEQA compliance by SWRCB/CDFW/local agencies.	
Monitoring, Success Criteria, and Reporting	Pre- and post-construction and success monitoring, and annual reports required.	- Pre- and post-construction monitoring plan required of all projects; monitoring protocol typically follows CDFW FRGP - Development of success criteria - BOs require photo-monitoring - Annual report required and prepared by NOAA RC
General Application and Review Process * ***(some variations exist between funded and non-funded projects)**	NOAA RC directly involved in project review, funding (where available), technical assistance, design, protection measures, monitoring and reporting. NOAA also coordinates with other agencies on project permitting.	*General Process:* NOAA RC reviews project, assesses project qualifications and BO coverage; after approval for program inclusion. - NOAA RC is alerted to projects through project partnerships, funding opportunities, and through their involvement in technical assistance and project development. - Team of NOAA RC, NMFS, CDFW, USACE assists NOAA RC with project oversight - Projects submitted to other agencies and NOAA Section 7 biologists throughout the year, as applications come in. - All specific information requirements must be met before project is eligible to proceed under program - Pre-project reporting for qualifying projects required - Monitoring and reporting required; evaluation of success criteria

J) Application Submittal and Pre-Project Monitoring Requirements

Restoration project applications will be submitted by project proponents to the NOAA RC, or to the USACE at the time of application for a CWA section 404 permit, a Rivers and Harbors Act section 10 permit, or both. Projects will be reviewed and processed by NOAA RC as they are submitted by applicants.

Projects that are submitted for NOAA RC funding or technical assistance, or a USACE permit (which creates a "federal nexus" for NMFS Section 7 consultation), will be provided to the Program using a standard application form available through the NOAA RC. The NOAA RC will evaluate which projects are consistent with the Program requirements and determine which NMFS consultation applies (the NOAA RC CRP Programmatic BOs, another existing restoration BO that is applicable for the CRP, or a new, individual Section 7 consultation). The NOAA RC team will use a pre-established checklist to help determine if a proposed project is consistent with the parameters of the Program. Once projects have received initial project screening by NOAA RC, projects that do not fit Program requirements must be modified or further clarified and developed by the project proponent before they can be resubmitted for further consideration. For projects within the Coastal Zone, NOAA RC will also evaluate the project's eligibility for coverage under this Federal Consistency Determination.

The following list includes typical information that must be provided by Program applicants (with assistance from qualified biologists and other technical specialists) in order to fulfill CRP application requirements:

- Pre-project photo monitoring data (per CDFW's guidelines)
- Project problem statement, goals, objectives
- Watershed context
- Description of the type of project proposed and restoration techniques to be utilized (culvert replacement, instream habitat improvements, etc.)
- Project dimensions and engineering plans
- Description of construction activities (types of equipment, timing, staging areas or access roads required)
- If dewatering of the work site will be necessary, a description of temporary dewatering plan and methods, an aquatic species relocation plan, and identification of a qualified individual (verified by resumes or description of qualifications) who will be onsite to transport protected salmonids and be responsible for reporting on this information.
- Construction start- and end-dates
- Estimated number of creek crossings and type of vehicle

- Materials to be used

- If vegetation will be affected as a result of the project (including worksite access), provide a visual assessment of dominant native shrubs and trees, approximate species diversity, and approximate acreage of the vegetation to be removed and replaced.

- Description of existing site conditions and explanation of how proposed activities would improve or maintain these conditions for salmonids.

- Description of applicable minimization and avoidance measures incorporated into the project.

- Pre- and post-project photos and as-built designs

- For projects which may result in incidental take of listed salmonids (or other listed species), specify the funding for implementation of all proposed and required environmental protection measures

- A signed "checklist" of project conditions, verifying agreement by the project applicant

K) Post Construction Monitoring and Reporting Requirements

General Requirements

Implementation monitoring will be conducted for all projects implemented under the Program. Project applicants are also required to conduct post-construction monitoring and to comply with all reporting requirements. Monitoring and reporting will include photo-documentation (consistent with the pre-construction monitoring requirements), as-built drawings (post-construction plans for engineered projects); documentation of the required avoidance, minimization, and other environmental protection measures that were implemented; number (by species) of fish and wildlife relocated; and any incidental injury or mortality that resulted from the project. The applicant(s) shall submit this information to NOAA RC within 6 months post-construction for inclusion in annual reports, as described below.

A description of whether the project is meeting success criteria for revegetation and other parameters must also be submitted, starting at 6 months post-construction. Depending upon the type of project, a minimum of 1 year of monitoring is required. However, based upon funding availability, project goals, and federal, state and local agency monitoring requirements, more years of monitoring may be added. Fulfillment and completion of monitoring requirements is the responsibility of the project applicant. Regardless of the project's post-construction monitoring period, NOAA RC engages and works collaboratively with partner agencies and project proponents if issues arise that could negatively affect project outcome and success.

Additional Monitoring Requirements for Certain Project Types

Submerged Aquatic Habitat

Planting or seeding SAV aims to re-establish habitat complexity and critical nursery areas for estuarine fish. SAV monitoring metrics include % cover, number of plants per square meter, number of new recruits, and apical meristem growth. Water quality measurements include turbidity, temperature and dissolved oxygen. Additional ecosystem monitoring could include fish use (telemetry, minnow traps), and invertebrate collections. For most grants established by the NOAA RC, one to two years of monitoring is required.

Living Shorelines

Before the project begins, bathymetric surveys are planned to establish baseline conditions. Other pre-project monitoring could include collecting sediment cores to assess benthic invertebrate species richness and density and observing bird, fish, and epibenthic invertebrate use of the site before construction activities occur. Post restoration, biological monitoring of eelgrass and oysters may track growth rates, densities, and recruitment in the different treatments. Traps, suction sampling, and coring may be used to assess fish and invertebrate responses.

Monitoring of physical processes should focus on evaluating changes to waves, currents, and sedimentation/erosion rates at the larger scale experiment treatments only. Water properties may also be measured, including temperature, salinity, pH, dissolved oxygen, and turbidity.

Kelp Forest Restoration

Kelp is typically measured in biomass per square meter, or density of holdfasts per square meter. If urchins are removed, before and after counts are taken. Other metrics can include fish and invertebrate numbers within newly restored areas.

NOAA RC Annual Report

The NOAA RC will prepare an annual report summarizing results of projects implemented under the Program during the most recent construction season and results of post-construction implementation monitoring for that year and previous years. The annual report shall include a summary of the specific type and location of each project and the amount of habitat restored. NOAA will provide a copy of the annual report to the Coastal Commission for projects within the Coastal Zone.

L) Assurance of Project Performance

The NOAA RC has a long track record of effective restoration planning, as well as project coordination and implementation. The success of the NOAA RC's program stems from early coordination and staff involvement in design, funding, permitting, construction and post-project monitoring and compliance – for all projects the NOAA RC funds, as well as those for which only technical assistance and oversight are provided. When the NOAA RC is involved in a project at any level, staff biologists and other specialists communicate frequently with the project proponents during planning and design stages, coordinate closely during project implementation, and then remain involved to ensure that post-project compliance and effectiveness monitoring is carried

out. In the NOAA RC's Community-based Restoration Program (CRP) 28-year history and DARRP 33-year history, the NOAA RC has never experienced a project implementation issue that was not resolved.

The NOAA RC funds projects through individual grants signed with project applicants or through sub-awards under three-year partnership grants. Through competitive solicitations, the CRP will partner with key restoration advocates that include the State Coastal Conservancy, California Conservation Corps, The Nature Conservancy, Trout Unlimited, Ducks Unlimited, Restore America's Estuaries and others. These partnerships are generally funded to implement restoration projects for three years at a time. All grants allow project proponents to implement habitat restoration projects under their own oversight with close NOAA involvement and reporting to the NOAA RC via the Grants Online website (www.grants.gov). Regardless of the funding structure, NOAA RC staff is in regular contact with the grantee on all aspects of planning, permitting, construction and monitoring throughout the life of the restoration project and the grant. Should an unanticipated construction or other technical problem arise, the grantee and NOAA RC staff work together to seek a remedy whether it is a project modification or need for additional funding.

Post-Project Performance
For NOAA RC projects, the project landowner and/or grantee are directly responsible for project implementation and performance, while NOAA RC staff closely monitor this work and the project outcome. Many grantees regularly monitor beyond the required minimum monitoring period for a project to better understand the restored habitat's biological response and evaluate the overall resource conditions in the area following restoration.

It is expected that over time a handful of habitat restoration projects may not function as designed or expected. This is not necessarily a negative outcome -- in some instances, restoration projects adjust to the environmental conditions encountered at the site and nothing is required to "put them back." A good example of this is where a project adapts to a natural high flow event, and the resulting shift in large wood placement or stream meander, though no longer the exact design planned for the project, is a successful outcome.

Where a project experiences a more significant failure (for example, a blocked culvert that results in significant erosion, or a failed or blocked fish passage weir or structure) the NOAA RC is contacted, as well as any other permitting resource agency involved in the project (FWS, CDFW, Regional Water Quality Control Board) in order to rectify the problem. As stated above, there has not been an instance where an unanticipated problem was not satisfactorily resolved on a NOAA RC project. This is due to the considerable staff involvement in every aspect of project planning, implementation and monitoring, and due to the nature of the restoration partnerships NOAA RC projects rely on for their success. From the participating landowners, to their contract grantee partners at the local and state level, and through to the NOAA RC staff working with

these individuals, habitat restoration partnerships are a cooperative, team effort with strong motivation from all parties involved to ensure a successful outcome.

Ensuring Success for Non NOAA RC-Funded Projects
As NOAA's lead habitat restoration program, it is common for the NOAA RC to be sought out to advise and assist the public and private sectors on restoration plans and projects for which we are not providing funding. On a selective basis, the NOAA RC provides permit assistance and substantive technical advice on projects in the coastal zone that we determine will facilitate the conservation and recovery of ESA-listed species and their habitats. The NOAA RC only works with project applicants who clearly have the financial and administrative capacity to implement successful restoration projects.

In order for a project to receive this kind of assistance, and to be included in the coverage provided by the NMFS programmatic BOs for restoration projects, NOAA RC staff screen each project using a checklist that helps us determine whether the project meets the intent and requirements of the applicable programmatic BO. The screening is intended to eliminate projects that an applicant may believe qualify as habitat restoration, but that do not meet our criteria. An example of a common non-qualifying project would be a stream bank stabilization project that utilizes rip-rap and has little or no biological function associated with the work and techniques proposed. In contrast, a qualifying bank stabilization project would be one where stabilization of eroding banks is achieved from a bio-engineered design that provides clear habitat functions.

For projects on which the NOAA RC is not the funder but has provided technical and permitting assistance, the NOAA RC will track the project, along with the funding entity, to determine if the project is responding as designed and built. Similarly to NOAA RC funded projects, if a restoration project done in partnership with NOAA is failing to perform, NOAA will provide additional technical assistance to ensure the success of the project. This level of involvement ensures that NOAA's trust resources are properly managed and restored.

Attachments

Attachment A - Arcata NMFS Office 2022 Programmatic Biological Opinion
Attachment B - Santa Rosa NMFS Office 2016 Programmatic Biological Opinion
Attachment C - NOAA CRP Programmatic Environmental Impact Statement (PEIS), 2015
Attachment D – Programmatic CD Fillable Application

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