

Upper Savoy Creeks Salmonid Habitat Improvement Design Project (Project ID: 1730201) 2023

Introduction:

The Pacific Coast Fish, Wildlife and Wetlands Restoration Association (PCFWWRA/Grantee) will implement the Upper Savoy Creeks Salmonid Habitat Improvement Design Project. This project will locate and design instream habitat structures and riparian treatments to improve Coho Salmon habitat and restore riparian function in stream reaches currently lacking quality salmonid habitat and LWM. LWM structures create habitat complexity and enhance valuable spawning and rearing habitat for all anadromous life stages. The LWM habitat designs and riparian treatments will address limiting factors by improving fluvial geomorphic function and instream habitat conditions.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement(s) will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* <https://www.wildlife.ca.gov/Grants/FRGP/Guidance>

Does the project involve the construction of beaver analogs?

Yes ☐ or No ☒

Is the project located in a tidally influenced [California coastal zone](#)?

Yes ☐ or No ☒

Objectives:

The goal of this project is to develop fully permittable 100% design plans to improve instream habitat conditions through the introduction of LWM habitat structures and riparian restoration to increase the rate at which LWM recruitment will occur. This design project proposes to assess instream habitat conditions and identify opportunities and locations for the design of engineered and non-engineered instream structure placement in 1 mile of Coho Salmon habitat in Savoy Creek on Green Diamond Resource Company ownership. This project will characterize and document the risks and potential impacts associated with different design options developed in consultation with a Design Review Team. Comprehensive field investigations will be conducted to allow the designs, which will characterize and prioritize stream reaches for treatment. This project will result in 100% designs for significant wood loading throughout Upper Savoy Creek. The benefits of ultimately implementing the improvement design features developed in this project will be a major reset to reestablish conditions for self-sustaining improved habitat conditions for all life stages of Coho Salmon and other native fish species. Completion of this proposed habitat restoration design

work will address major limiting factors inhibiting fisheries recovery in Upper Savoy Creek associated with the current lack of large wood's negative effect in reaching the intrinsic habitat potential for Coho Salmon and other aquatic resources in Savoy Creek.

Project Description:

Location:

The project area is located approximately 1 mile east of the town of Smith River, north of Crescent City. Savoy Creek feeds directly into SF Rowdy Creek, tributary to Rowdy Creek, which flows to the Smith River. The project reach starts 0.3 miles upstream of the confluence of South Fork Rowdy Creek and extends upstream for 1 mile. Project coordinates are: 41.91005 west, 124.09210 north.

Project Set Up:

Pacific Coast Fish, Wildlife and Wetlands Restoration Association (PCFWWRA) will provide all contracting oversight and administration including but not limited to obtaining permits; securing contracts (grantors, subcontractors, landowners); project scheduling; invoicing; report preparation; as well as facilitating agency and landowner and Native American Tribe communications.

PCFWWRA Personnel Categories

Project Manager (PM): Task 1 -8. The Project Manager oversees all aspects of the project. . This includes coordination and problem solving with agencies, landowner subcontractors and informal consultation and collaboration with the Tolowa dee Ni' Nation, the identified CA Native American Tribe for the project location. Obtaining permits, landowner agreements, and grant agreements are the PM's responsibility to make sure they are in place and that they are followed. The PM regularly reviews the progress of the project and completed work with respect to the approved budget, as well as working regularly with technical consultants to make sure it is being done to the required standards. The Project Manager will also expend time on tasks for compliance with requirements contained in the Agreement's Exhibit 1.b Non-Public Entities General Grant Provisions and Exhibit 2 – Federal Grant Provisions during the entire project. The PM is responsible for the review, editing, and submission of all invoices and reporting on projects. The PM's time is split between the field, meetings, and the office.

Administrative Assistant Manager (AAM): Task 1-8. The AAM drafts subcontracts, invoices, permit applications, and reports, and works closely with the Project Manager. The AAM assists in tracking the project's budgets and progress. They communicate with partners, perform outreach as needed, and review/verify subcontractor invoicing. The AAM also expends time on tasks required for compliance contained in the Agreement's Exhibit 1.b Non-Public

Entities General Grant Provisions and Exhibit 2 Federal Grant Provisions during the entire project. The AAM spends most of the time in the office but does also assist on-site as needed.

Bookkeeper/Office Manager: Task 1. Performs various financial bookkeeping, accounting, and administrative work as needed. These include payroll, accounts receivable and payable, financial statements, and maintaining accounting records for individual contracts. Other tasks are to maintain office functions, provide communications and perform site visits and support as needed. Also, tasks required for compliance are contained in the Agreement's Exhibit 1.b Non-Public Entities General Grant Provisions and Exhibit 2 – Federal Grant Provisions during the entire project.

GIS Specialist: Task 2. The GIS Specialist performs GIS work. Tasks include supporting field collection of botanical data and analyzing geospatial data. The GIS Specialist will prepare wetland maps and other maps needed for reporting and permitting. The GIS Specialist spends most of the time in the office but also assists on-site as needed.

Plant Ecologist: Task 9. The Plant Ecologist performs botanical work. Tasks include conducting a jurisdictional wetland delineation, preparing a revegetation plan and an invasive plants management plan, and providing other supporting materials as needed for permit acquisition. The Plant Ecologist's time is split between the field and office.

Engineering, Geologic, and Biological Subcontractor (Pacific Watershed Associates (PWA) field characterization and 100% design plan development). Pacific Watershed Associates will be the lead in conducting the assessments to characterize the historic watershed and channel disturbances, biological habitat and utilization by species at age, geomorphology, riparian composition, and topography (Tasks 2 below), and hydrologic modeling outlined in Tasks 1 – 5, below. In the priority stream reaches, the Tolowa Dee ni' Nation Environmental Department Staff Scientists will assist in characterization and designs with limited field visits and technical review.

PWA Personnel Categories for the Project Multidisciplinary Team

Principal Geologist: Tasks 2 - 8. Provides technical expertise in developing and reviewing design options, geologic and geomorphic investigations, and draft and final work plan review, editing, and guidance for project scientists and engineers. Also in charge of final report technical editing and review.

Senior Engineer: Tasks 2 - 8. Lead scientist for conducting site characterization, consideration of design options, hydrologic and hydraulic analyses and modeling, development of a grading plan (if necessary), 100% design of ELJ in-stream structures, development of comprehensive erosion control and revegetation plan, and developing a cost estimate that includes all plans and specifications for

construction of the project. The Senior Engineer will stamp the final 100% design with their professional seal.

Associate Engineer and Staff Engineer: Tasks 2 - 8. Support the Senior Engineer for conducting site characterization, consideration of design options, hydrologic and hydraulic analyses and modeling, design of in-stream structures for geomorphic and habitat purposes; and developing a cost estimate that includes all plans and specifications for construction of the project. Will conduct the topographic survey, hydrologic and hydraulic analyses, and development of design plans.

PWA Senior Scientist/Hydrologist (Tasks 1-8) The Senior Hydrologist is in charge of overall project management under the grant, developing, coordinating, and attending meetings (Task 2). Will assist Project Team members with site characterization and engineered and nonengineered LWM designs and proposed site locations.

PWA Senior Scientist/Engineering Geologist (Tasks 1-8) The Engineering Geologist will direct efforts to characterize past watershed disturbances, conduct geomorphic mapping and risk analysis, conduct the characterization of subsurface conditions. The Engineering Geologist is the responsible charge of geologic and geomorphic characterization (surface and subsurface) (Tasks 3.1, 4.4)

PWA Senior Scientist/Professional Geologist (Task 9) The Professional will lead the paleontological investigation and reporting for CEQA.

PWA Fisheries Biologist/Aquatic Ecologist (Task 1-9) Provides specific target species data and analysis for informing the project design by conducting field investigations, fish habitat assessments, juvenile salmonid habitat utilization, spawning surveys, macroinvertebrate community structure, and water quality testing; analyzing data to provide biological assessment and limiting factor identification and provide expertise for the ELJs and non-engineered LWM structures. Works collaboratively with the geologist and engineers during the development of design options.

PWA Staff Scientists (Tasks 3, 4) The Staff Scientists will assist fisheries biologist and engineering geologist in conducting field data collection and creating feature-specific conceptual design sketches.

PWA GIS Staff (Tasks 1-8) The GIS Staff will create field and report maps for all tasks and assist with topographic and hydrologic modeling.

PWA Clerical Staff (Task 1) The clerical staff will be responsible for budget tracking and invoicing throughout the life of the project.

Archeologist – Bill Rich and Associates will be responsible for completing archeology and cultural surveys consistent with requirements for CEQA (Task 9). Tolowa Dee-ni' Environmental Department: Brush and tree limbs that limit visibility for the topographic surveys will be brushed and trimmed by the Environmental Department's stream habitat restoration group (Task 4.3). TDN heavy equipment operator (approved licensed heavy equipment contractor) will operate backhoe or excavator to assist with the subsurface explorations if they are needed (Tasks 4.4).

Materials:

Task 1- Office supplies (PCFWWRA): Includes costs associated with field supplies, meeting materials, and supporting supplies such as flagging, measuring tapes, wooden stakes, rite-in-the-rain paper, notebooks and notepads, writing utensils, charting pads, envelopes, poster board, and fastening supplies.

Task 1 - Mileage (PCFWWRA): Project Manager requires mileage reimbursement for trips to the project site.

Tasks 2 - 9 - Office supplies (PWA): Photographic supplies, field maps, mylar overlays for field maps, photo duplication and copy binding for final reports, etc., phone, fax, email, postage, large format maps, and paper for mapping and design drawings.

Tasks 2 – 4 Mileage (PWA): Staff requires mileage to accommodate travel needs to visit the site, conduct project work tasks, and meet with partners.

Tasks 2 - 4- Field supplies (PWA) may include, but are not limited to: Batteries for time-lapse cameras and other electronic equipment; Flagging and spray paint for marking survey/gage/feature locations; wooden stakes, notebooks (Rite -in-Rain), gloves for manual labor; cameras, measuring tapes, etc.: Miscellaneous sharpies, pens, pencils, clipboards; Ziplock plastic bags for soil samples; 5-gallon plastic buckets for hauling materials.

Tasks 3 - 4- Equipment rental (PWA): Total station rental for topographic surveys, hand auger rental for subsurface exploration, survey gear for habitat inventories and snorkel and spawning surveys, multi-meter and turbidity meters, and continuous water temperature data loggers.

Tasks:

Task 1 - Grant Oversight and Project Administration

PCFWWRA personnel will provide all contracting and administration oversight pursuant to grant and regulatory guidelines. Project management includes grant management, contracting oversight and administration, scheduling landowner and agency communication, landowner access agreements, subcontracting, ongoing coordination with the various stakeholders and members of the project

design team, preparing invoices and progress reports, tracking project costs, and accomplishments, and assisting with final report preparation. Contract/Project management will be conducted by PCFWWRA. All reporting and billing will be timely and pursuant to the contract and regulatory guidelines. PCFWWRA will track the project budget and develop and submit invoices to the grantor on a regular basis. In addition, the required annual report metrics will be generated and submitted to the CDFW contract manager each year. PWA clerical staff will analyze accrued expenses and submit invoices to PCFWWRA for payment. This task will occur throughout the life of the project. Additionally, this task will cover project meetings including the 30%, 65%, 90% design meetings with the project team.

Task 2 - Technical Advisory Committee and Design Meetings

PCFWWRA and PWA will conduct out-reach to assemble a Technical Advisory Committee (TAC) for the project current conditions results and design processes review, and their professional guidance for producing process-based, shovel-ready projects. PCFWWRA and PWA will also coordinate all TAC meetings and provide all materials (electronic and printed) for their review.

Task 2.1 - Assemble and Coordinate TAC

CFWWRA and PWA will assemble and coordinate a TAC. It is anticipated that experienced technical staff from CDFW, Tolowa Dee-ni (TDN), Green Diamond Resource Company (GDRC) among others, will be included. The purpose of the TAC will be to guide the design process through technical review for the proposed design elements at four (4) meetings: 1) field characterization, 2) 30% conceptual design, 3) 65% design review, and 4) 90% + 100% design review and comment stages.

Task 2.2 - Field Characterization Meeting pre-30% Design Development

A project meeting will be held with the TAC. The meeting will occur after the initial field characterization has been completed and on-site with all TAC members. The meeting is designed to summarize findings from the initial field characterization. This meeting will occur after the completion of the project geomorphic surveys, habitat assessment and large instream wood assessment, and biological surveys (Tasks 3.1 ? 3.3). The meeting is designed to help identify project objectives and constraints, discuss different potential design options to be considered and agree on the approach that should be used in developing the 30% design (Task 5). It will be used to help identify project objectives and constraints and discuss different potential design options to be considered. One of the objectives of the meeting is to select the prioritized stream reaches that will be the focus of up to 2 ELJ designs.

Task 2.3 - 30% Design Meeting

A project meeting will be held with the TAC to discuss the 30% Design Plan and associated draft Basis of Design Memorandum (BODM). The meeting will occur after the TAC's review of the draft 30% Design Plan submitted as part of Task 5.

The meeting objectives are to refine or modify the project designs and/or identify design elements or factors that need to be addressed or re-enforced in the analyses, and to select the preferred design alternative(s).

Task 2.4 - 65% Design Review Meeting

A project meeting will be held with the TAC to discuss the 65% Design Plan and associated draft BODM. The meeting will occur after the TAC has had a chance to review the draft 65% Design Plan submitted as part of Task 6. The meeting is designed to provide input to help refine or modify the project designs and/or identify problematic design elements that need to be addressed or re-enforced in the analyses.

Task 2.5 - 90% Design Review Meeting (optional)

If deemed appropriate, a project meeting may be held with the TAC to discuss the 90% Design Plan and associated draft BODM. The meeting will occur after the TAC has had a chance to review the draft 90% Design Plan submitted as part of Task 6. The meeting would be designed to provide input to help refine or modify the project designs and/or identify issues or factors that need to be addressed or re-enforced.

Task 3 - Field Characterization of Existing Conditions

This task will be conducted to characterize the current fluvial geomorphic, habitat suitability, large woody material (LWM) conditions, and the biological utilization within the approximate 1.0 mile of the project reach length. This information will identify the primary limiting factors affecting summer and winter rearing habitats, identify existing LWM, and determine LWM potential. This will ultimately provide the project team with the information needed to determine the location and construction specifications for specific feature designs that will address the limiting factors affecting fisheries recovery within Savoy Creek. Through quantitatively documenting existing conditions, this base-line data can also be used to compare and evaluate future post-implementation endeavors with respect to performance and responses in the stream channel and in the target species.

Task 3.1 - Geomorphic survey

The Senior Scientist (Professional Geologist) and Staff Scientist will conduct a field-based characterization of the fluvial geomorphic conditions along the 1-mile Savoy Creek project reach (Maps 1 - 3). The geomorphic mapping will identify all the fluvial geomorphic features that will be engaged or impacted by the proposed engineered and nonengineered LWM structures.

Task 3.2 - Assessment of existing habitat conditions

A late summer habitat assessment of the 1 mile in Savoy Creek will be conducted by the PWA Fisheries Biologist and Staff Scientist. This assessment will be conducted to provide current information on the existing fish habitat conditions, key LWM within bankfull width, and riparian conditions. The habitat

data will be used to evaluate fish habitat suitability with respect to primary pool frequency, pool shelter values, LWM density and distribution, substrate composition, and habitat type ratios for stream process and productivity potential. These data will help to identify current limiting factors and determine site-specific habitat needs that will be addressed through designing up to 2 ELJs and up to 20 non-engineered LWM features to improve the habitats and address identified limiting factors in the project stream reach (Map 3). These surveys will follow the protocols as described in the California Salmonid Stream Habitat Restoration Manual for Level II Habitat Typing Methods (CDFW 2017).

Task 3.3 - Biological Surveys

Following the instream habitat assessment, the data will be analyzed for habitat suitability for winter rearing and summer holding within the project reach for juvenile Coho Salmon (the target species). Pools throughout the project length will be selected for sampling using snorkel survey techniques to inventory fish presence and utilization of LWM habitat structural elements for cover. Instream sampling will follow the Fish Sampling Methods as described in the California Salmonid Stream Habitat Restoration Manual. Winter spawning surveys will be conducted a minimum of three times to determine what habitats adults are utilizing. Spawning surveys will follow the Salmon Spawner Survey methods as described in the California Salmonid Stream Habitat Restoration Manual. These data will provide meaningful information and will reveal the utilization of habitat elements by the juvenile and adult target species that can then be used to guide the identification, design, and the placement of engineered and non-engineered instream habitat LWM structures. There will be one season of snorkel surveys and one season of spawner surveys.

Task 4 - Habitat Enhancement Design Layout

After the initial field characterizations of the existing conditions (Task 3) and analysis of the data, stream reach areas will be prioritized for limiting factor remediation through feature designs. The non-engineered and engineered design lay-out will follow to include more focused field-based surveys for analyzing existing conditions along the project stream length with respect to the feature types and locations. These activities will support both the 30% and 65% design levels.

Task 4.1 - Identify Prioritized Stream Reaches

The Project Team will utilize the results of the habitat assessment and large instream wood assessment, biological surveys, geomorphic surveys, and other data to characterize and prioritize stream reaches for both engineered and non-engineered LWM treatments. The project team will provide a risk and uncertainty assessment, identify preliminary constraints, and evaluate shovel-ready design options to improve rearing and spawning habitat, channel complexity and sinuosity, accessibility to existing off-channel floodplain rearing habitat, and high-flow refugia for juvenile and adult Coho Salmon and other salmonids, while also

considering the habitat needs for lamprey species. In addition, potential project access locations to allow for construction will be identified and mapped.

Task 4.2 - Constructable, simple non-engineered LWM design layout
PWA will utilize the project habitat assessment and large instream wood assessment, biological surveys, geomorphic surveys, and the base maps generated in previous tasks to design up to 20 simple, non-engineered log jams along the project channel reach at locations determined in Task 4.1 and based on the target metrics for pool frequency, LWM abundance, the existing channel and floodplain geomorphology, and the associated (existing/utilized) salmonid habitat. As part of designing the non-engineered LWM within the proposed project stream reaches, PWA will collect additional LWM design data, including LWM sources and evaluate potential installation techniques and equipment and materials needs and planning (e.g., heavy equipment access, accelerated recruitment opportunities, manual felling techniques or hand laborer requirements) at each site location. In addition, PWA intends to identify anchoring points, material and hardware needs, equipment, access routes, estimated disturbances, and data on design goals, objectives, and elements consistent with existing high and low-risk LWM habitat structure protocols described in the 2022 CDFW FRGP Guidelines and CDFW Salmonid Stream Habitat Restoration Manual, Part 7.

Task 4.3 - Develop topographic surveys and digital elevation model
To support the ELJ engineering design, a total station topographic survey will be conducted by the Associate Engineer and Staff Engineer along a section of the project reach selected based on the habitat and biological surveys, and geologic/geomorphic site characterization. The detailed survey will be conducted to develop a high resolution DTM composed of a survey control network, available LIDAR, and local surveying. The local surveys and LIDAR will be tied to this control network to facilitate DTM creation. The local surveying will include long profiles and cross sections throughout the project reach with a focus on areas proposed for engineered structures and areas pertinent to modeling flooding conditions. This data will be used to define the exact geometry of the area and will provide data to develop 2D models of existing and proposed conditions. A logistical analysis of potential site access to construct the project will be conducted as part of the initial designs and be refined as part of the 65% design submittal.

Task 4.4 – Geological and geotechnical investigations
The Senior Scientist (Engineering Geologist) and Staff Scientist will provide focused geologic and geotechnical surveys to characterize the geologic and engineering properties of site soils. The information will inform a design alternative analysis process. Surface and/or subsurface investigations will be conducted upslope and within the prioritized stream reaches. All threats to the design project from fluvial erosion, site soils properties, mass wasting processes, and land use will be identified. A qualitative description of sediment supply and

composition, mode of transport, and an assessment of potential impacts of accelerated sedimentation will be performed. If needed, an operator and hydraulic backhoe will be utilized to sample subsurface materials along the streambanks within the prioritized stream reaches. Soil investigations will inform the design engineer as to the utilization of onsite soil materials for construction of streambanks and fills, parameters for the integration of LWM structures into the habitat enhancement design, character of stockpiled materials, foundation, and structure design recommendations. Depth to bedrock and groundwater will be identified where observed. Lab testing of selected soil samples will be conducted as needed to identify materials properties such as grain size distribution, bulk density, penetration resistance, plasticity index, soil internal friction angle, and shear strength.

Task 4.5 – Hydrologic and hydraulic analysis

Staff Engineer will compile available hydrologic data for Savoy Creek that will be used to model hydraulic stream flow as it moves through the stream system. Hydraulic and/or inundation analyses will be completed using a 2D HEC-RAS model, or compatible modeling software. Preliminary hydraulic modeling will be conducted to evaluate existing hydraulic conditions and results will be used in the 30% engineering design plan phase.

Task 5 - Preliminary Design (30% Submittal) and BOD

Preliminary engineering designs (30%) will be developed for selected design options for up to 2 ELJ features. Design development will include preliminary designs of wood structures and anchoring techniques and general grading for excavation (if any). In addition, several analyses will be carried out to characterize the ELJ designs including a constraints analysis, and risk and uncertainty analysis. A BODM will be prepared that summarizes activities and findings to-date, provides a description of the proposed project and justification for the selected design options. A constraints analysis, risk analysis, and an uncertainty analysis will be detailed.

Task 6 - 65% Designs and updated BOD

Following receipt of review comments on the preliminary (30%) design submittal, the designs will be forwarded to the 65% completion phase. Input from the stakeholders will be incorporated into the design, as appropriate. Associate and Staff Engineers will conduct 2D hydraulic analyses of the proposed design features, perform structure stability computations, integrate subsurface geologic conditions to quantify design calculations, and prepare drawings for the Intermediate (65%) Design Plan set. The BODM will be finalized to include the results of the proposed-condition hydraulic modeling, methodology and results for structure stability, scour computations and construction considerations. Itemized construction quantities and an Opinion of Probable Construction Cost (OPCC) will be prepared. In addition to the 65% Design Plan, at least 20 non-engineered conceptual LWM structure designs will be developed for the remaining stream reaches identified and prioritized using information from the

site characterizations and TAC. These designs will be for simple, relatively low-risk bank-based structures that follow CDFW's Salmonid Stream Habitat Restoration Manual guidelines.

Task 7 – 90% Design Development

Comments received on the 65% design submittal will be addressed and the engineering design of the project will be finalized. A draft-final (90%) version of the complete design plans will be prepared. It is assumed that comments on the 90% submittal will be minor, and not involve redesign of sites. A draft final OPCC will be prepared that reflects uncertainties associated with market costs and unforeseen conditions during construction. This work will also include development of a Construction Oversight and Implementation Monitoring Plan.

Task 8 – 100% Design Development and Final Report

Once comments are received on the 90% submittal, the design drawings will be finalized, and signed and sealed by a California registered civil engineer. As part of the 100% design submittal, a post-project monitoring and inspection plan will be developed with input from CDFW. Plans will identify monitoring objectives, methods, and a timeline to achieve the monitoring objectives.

Task 9 - Wetland Assessment, Paleontological, Archeological, and Wildlife Initial Studies

To streamline the construction permitting process and to be covered by FRGP's programmatic permits, the Project Team will conduct initial studies evaluating environmental impacts to cultural, paleontological, botanical, wetland, fisheries, amphibians, and wildlife resources as required by CEQA. Qualified specialists in each field (e.g., archeologist, paleontologist, botanist, and fisheries and wildlife biologists) will conduct the appropriate initial studies and prepare initial study reports and determine if mitigations are required to reduce environmental impacts from the proposed project.

Deliverables:

Task 1 - Grant Oversight and Project Administration

Project deliverables will include the information listed below as well as everything that will be delivered to the CDFW Project Manager during the life of the project: Final landowner access agreements (prior to receiving Notice to Proceed), executed subcontractor agreements (prior to receiving the Notice to Proceed), and invoices and progress reports (submitted at least quarterly).

Task 2 - Technical Advisory Committee and Design Meetings

A TAC comprised of experienced professionals from agencies, TDN, GDRC, PCFWWRA, and PWA. Project deliverables for review for each meeting.

Task 2.1 - Assemble and Coordinate TAC

TAC for the project.

Task 2.2 - Field Characterization Meeting pre-30% Design Development
A summary of meeting outcomes and decisions for incorporation and consideration for 30% Design (Task 5) and all submitted written comments from TAC members.

Task 2.3 - 30% Design Meeting
Meeting notes

Task 2.4 - 65% Design Review Meeting
Meeting notes.

Task 2.5 - 90% Design Review Meeting (optional)
Meeting notes.

Task 3 - Field Characterization of Existing Conditions
Field data and results presented graphically for the Field Characterization Meeting (Task 2.2) and discussed within the BODM (Task 5).

Task 3.1 - Geomorphic survey
All data products associated with Task 3.1, including summary of geomorphic characterization. The deliverables will also be included in the BODM.

Task 3.2 - Assessment of existing habitat conditions
This data will be analyzed and summarized graphically for the Field Characterization Meeting Pre-30% Design Development (Task 2.2) and discussed within the BODM (Tasks 5 through 8). Existing habitat suitability will be described to include what habitats are being utilized by species at age, limiting habitat factors and other identified limitations to production and survival, derivations for suitability indices are derived, results and implications will be discussed, and recommendations for restoration activities to improve salmonid habitats for all life cycle stages will be provided for all project designs.

Task 3.3 - Biological Surveys
This data will be utilized and summarized for the Project Scoping Meeting. A description of the biological survey results, recommendations for creating habitats, pros and cons for the consideration in design elements of the alternatives and providing expertise for the engineered channel and habitat treatments within the biological section of the BODM.

Task 4 - Habitat Enhancement Design Layout
Prioritized stream areas for LWM features and survey results in PDF format and lay-out for up to 20 non-engineered LMW features for both the 30% BODM (Task 5) and 65 % BODM (Task 6).

Task 4.1 - Identify Prioritized Stream Reaches

At least two habitat enhancement stream reaches will be characterized as high risk and/or requiring complex engineered log jams (ELJs). Other stream reaches will be prioritized as appropriate for non-engineered LWM structures. Maps of the stream reach and potential construction access locations will be provided in PDF format and included in Task 5.

Task 4.2 - Constructable, simple non-engineered LWM design layout
Detailed reach-scale maps showing existing site conditions and prioritized stream reaches as distinct priority areas based on existing conditions analysis. Conceptual designs for up to 20 non-engineered log jams along the other project channel reaches, where appropriate, will be developed to the 100% (non-engineered, constructable) design level and included in Task 6.

Task 4.3 - Develop topographic surveys and digital elevation model
Topographic survey drawings in electronic PDF format. Integrated LiDAR and total station DTM that can be used for 2-D hydraulic modeling, field mapping, hydrologic rating curve, and hydrograph (Task 4.6).

Task 4.4 – Geological and geotechnical investigations
A preliminary geological and geotechnical memorandum will be prepared containing the methods of investigation and analyses, findings, and design recommendations resulting from geological investigation and provided to the grant manager, landowner, and design engineer in physical and digital formats. Results and analysis will be incorporated into BODM.

Task 4.5 – Hydrologic and hydraulic analysis
BODM summary report including results from hydraulic analysis and preliminary HEC-RAS modeling.

Task 5 - Preliminary Design (30% Submittal) and BOD
Preliminary (30%) Design Plan Sets for up to 2 ELJ features and a Draft BODM. Electronic PDF format and one hard copy set of plans covering all 2 ELJ features. Supporting data and analysis will be provided as attachments.

Task 6 - 65% Designs and updated BOD
All data collected as part of Intermediate design development, updated geotechnical memorandum to be incorporated into Final BODM, 65% Intermediate Design Plan Sets, Final BODM report, notes from 30% design meeting, and OPCC.

Task 7 – 90% Design Development
90% Design Plan Sets, notes from 65% design meeting, and OPCC.

Task 8 – 100% Design Development and Final Report
Final 100% Plan Sets and Post Project Monitoring and Inspection Plan.

Task 9 - Wetland Assessment, Paleontological, Archeological, and Wildlife Initial Studies

Each qualified specialist will prepare their initial study final report, provide mitigation recommendations, if required, and deliver to PCFWWRA or directly to the CDFW FRGP Project Manager. If mitigation measures are required, they will be provided to the Project Team and incorporated in the BODM and design plans.

Timelines:

Task 1 - Grant Oversight and Project Administration
4/1/2024 to 3/31/2027

Task 2 - Technical Advisory Committee and Design Meetings
6/1/2024 to 3/31/2027

Task 2.1 - Assemble and Coordinate TAC
6/1/2024 to 10/31/2024

Task 2.2 - Field Characterization Meeting pre-30% Design Development
8/31/2025 to 10/1/2025

Task 2.3 - 30% Design Meeting
4/1/2024 to 4/30/2026

Task 2.4 - 65% Design Review Meeting
11/1/2026 to 11/30/2026

Task 2.5 - 90% Design Review Meeting (optional)
2/1/2027 to 2/28/2027

Task 3 - Field Characterization of Existing Conditions
4/1/2024 to 7/31/2025

Task 3.1 - Geomorphic survey
4/1/2024 to 7/31/2025

Task 3.2 - Assessment of existing habitat conditions
4/1/2024 to 7/31/2025

Task 3.3 - Biological Surveys
4/1/2024 to 7/31/2025

Task 4 - Habitat Enhancement Design Layout
4/1/2024 to 10/31/2026

Task 4.1 - Identify Prioritized Stream Reaches

6/1/2024 to 3/31/2026

Task 4.2 - Constructable, simple non-engineered LWM design layout
6/1/2024 to 10/31/2026

Task 4.3 - Develop topographic surveys and digital elevation model
4/30/2026 to 10/31/2026

Task 4.4 – Geological and geotechnical investigations
6/1/2026 to 10/31/2026

Task 4.5 – Hydrologic and hydraulic analysis
6/1/2026 to 10/31/2026

Task 5 - Preliminary Design (30% Submittal) and BOD
3/1/2026 to 3/31/2026

Task 6 - 65% Designs and updated BOD
10/1/2026 to 10/31/2026

Task 7 – 90% Design Development
1/2/2027 to 1/31/2027

Task 8 – 100% Design Development and Final Report
2/28/2027 to 3/31/2027

Task 9 - Wetland Assessment, Paleontological, Archeological, and Wildlife Initial Studies
6/1/2024 to 3/31/2027

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the United States Army Corp of Engineers (USACE) Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife (CDFW).

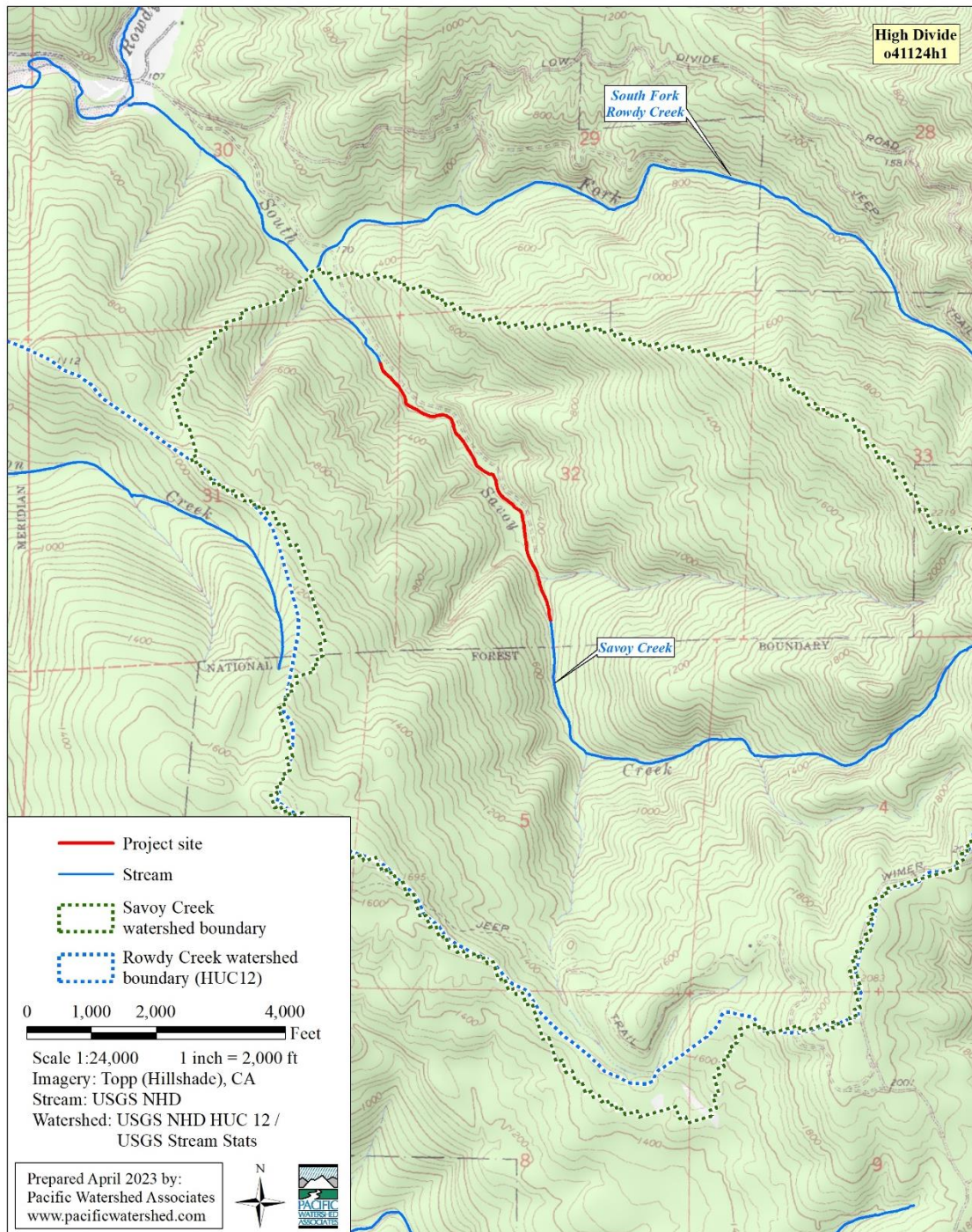
No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. All equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When

transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the CDFW Aquatic Invasive Species Decontamination Protocol.

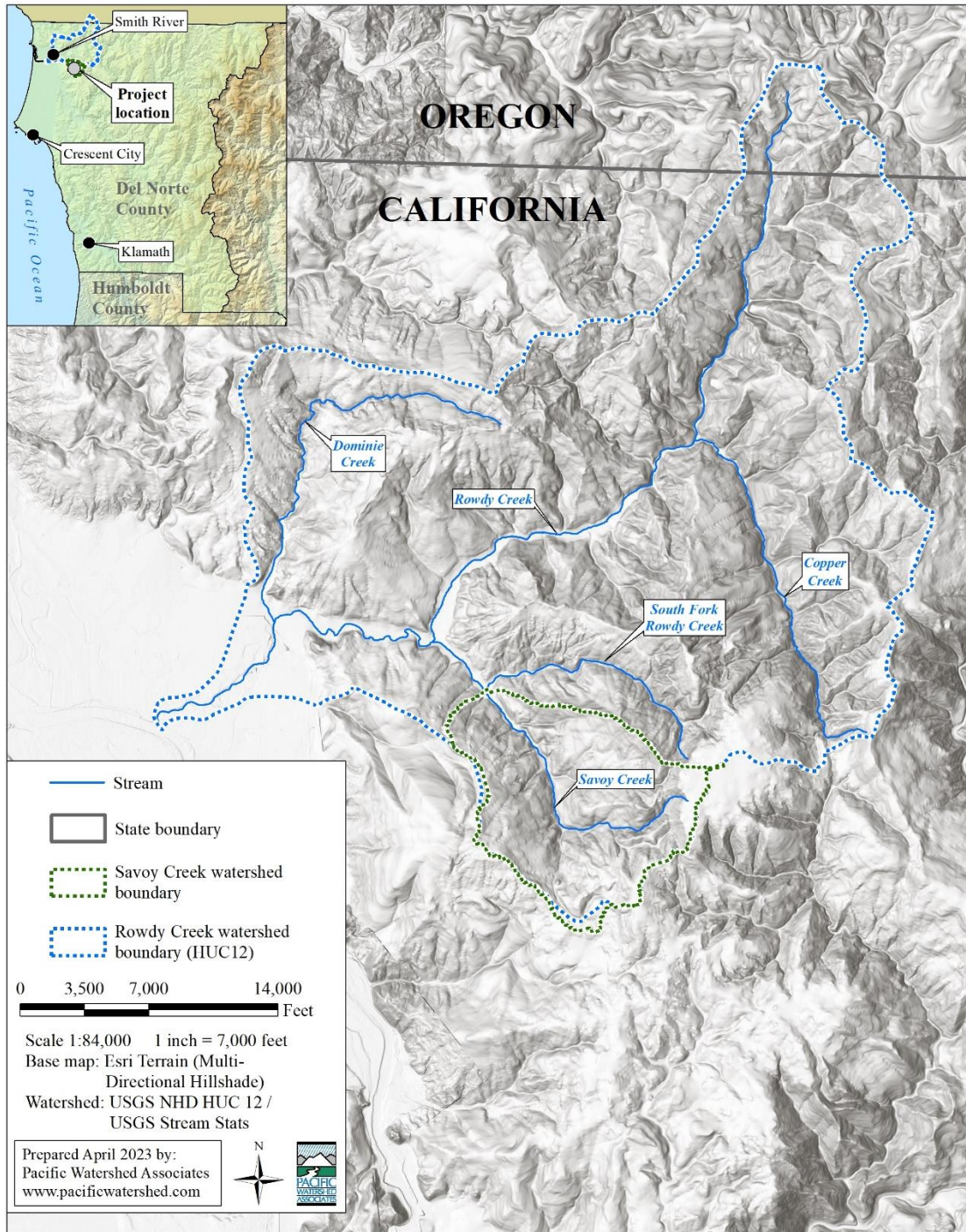
During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

All habitat improvements will follow techniques described in the *California Salmonids Stream Habitat Restoration Manual*, Volume I and Volume II.



Map 1. Project location topographic map for Savoy Creek Salmonid Habitat Improvement Project, Del Norte County, California. Grantee: PCFWWRA

Document Path: P:\GIS\10664 Savoy Creek\10664 LocationMap 19012023.mxd



Map 2. Watershed Map for Savoy Creek Salmonid Habitat Improvement Project, Del Norte County, California.
Grantee: PCFWRA

Document Path: P:\GIS\10664 Savoy Creek\10664_WatershedMap_19012023.mxd

CDFW RAREFIND

Query Summary:

Quad IS (High Divide (4112481) OR Smith River (4112482) OR High Plateau Mtn. (4112388) OR Crescent City (4112472) OR Hiouchi (4112471) OR Gasquet (4112378) OR Mt. Emily (4212412) OR Fourth of July Creek (4212411) OR Biscuit Hill (4212318))

CNDDDB Element Query Results

Scientific Name	Common Name	Taxonomic Group	Element Code	Total Occs	Returned Occs	Federal Status	State Status	Global Rank	State Rank	CA Rare Plant Rank	Other Status	Habitats
<i>Abronia umbellata</i> var. <i>breviflora</i>	pink sand-verbena	Dicots	PDNYC010N4	61	2	None	None	G4G5T2	S2	1B.1	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Coastal dunes
<i>Ancotrema voyanum</i>	hooded lancetooth	Mollusks	IMGAS36130	173	1	None	None	G1G2	S1S2	null	null	Oldgrowth, Riparian forest, Talus slope
<i>Anthoxanthum nitens</i> ssp. <i>nitens</i>	vanilla-grass	Monocots	PMPOA35041	6	2	None	None	G5T5	S2	2B.3	null	Meadow & seep, Wetland
<i>Arabis aculeolata</i>	Waldo rockcress	Dicots	PDBRA06010	8	1	None	None	G4	S2	2B.2	SB_BerrySB-Berry Seed Bank	Broadleaved upland forest, Lower montane coniferous forest, Ultramafic, Upper montane coniferous forest
<i>Arabis mcdonaldiana</i>	McDonald's rockcress	Dicots	PDBRA06150	27	16	Endangered	Endangered	G3	S3	1B.1	SB_BerrySB-Berry Seed Bank, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Lower montane coniferous forest, Ultramafic, Upper montane coniferous forest
<i>Ardea alba</i>	great egret	Birds	ABNGA04040	43	1	None	None	G5	S4	null	CDF_S-Sensitive, IUCN_LC-Least Concern	Brackish marsh, Estuary, Freshwater marsh, Marsh & swamp, Riparian forest, Wetland
<i>Ardea herodias</i>	great blue heron	Birds	ABNGA04010	156	6	None	None	G5	S4	null	CDF_S-Sensitive, IUCN_LC-Least Concern	Brackish marsh, Estuary, Freshwater marsh, Marsh & swamp, Riparian forest, Wetland
<i>Ascaphus truei</i>	Pacific tailed frog	Amphibians	AAABA01010	491	26	None	None	G4	S3S4	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Aquatic, Klamath/North coast flowing waters, Lower montane coniferous forest, North coast coniferous forest, Redwood, Riparian forest
<i>Asplenium trichomanes</i> ssp. <i>trichomanes</i>	maidenhair spleenwort	Ferns	PPASP021K2	1	1	None	None	G5T5	S1	2B.1	null	Lower montane coniferous forest
<i>Atractelmis wawona</i>	Wawona riffle beetle	Insects	IICOL58010	80	3	None	None	G3	S1S2	null	null	Aquatic
<i>Boechera koehleri</i>	Koehler's stipitate rockcress	Dicots	PDBRA060Z0	29	11	None	None	G3G4	S3	1B.3	USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, Ultramafic
<i>Bombus caliginosus</i>	obscure bumble bee	Insects	IIHYM24380	181	5	None	None	G2G3	S1S2	null	IUCN_VU-Vulnerable	null
<i>Bombus occidentalis</i>	western bumble bee	Insects	IIHYM24252	306	2	None	Candidate Endangered	G3	S1	null	IUCN_VU-Vulnerable, USFS_S-Sensitive	null

Brachyramphus marmoratus	marbled murrelet	Birds	ABNNN06010	110	3	Threatened	Endangered	G3	S2	null	CDF_S-Sensitive, IUCN_EN-Endangered	Lower montane coniferous forest, Oldgrowth, Redwood
Branta hutchinsii leucopareia	cackling (=Aleutian Canada) goose	Birds	ABNJB05035	19	2	Delisted	None	G5T3	S3	null	CDFW_WL-Watch List	Artificial standing waters, Sacramento/San Joaquin standing waters, Valley & foothill grassland
Calamagrostis crassiglumis	Thurber's reed grass	Monocots	PMPOA17070	15	3	None	None	G3Q	S2	2B.1	null	Coastal scrub, Freshwater marsh, Marsh & swamp, Wetland
Calicium adpersum	spiral-spored gilded-head pin lichen	Lichens	NLT0005640	1	1	None	None	G3G4	S1	2B.2	USFS_S-Sensitive	Lower montane coniferous forest, North coast coniferous forest
Calystegia atriplicifolia ssp. buttensis	Butte County morning-glory	Dicots	PDCON04012	121	3	None	None	G5T3	S3	4.2	null	Chaparral, Lower montane coniferous forest, Valley & foothill grassland
Cardamine angulata	seaside bittercress	Dicots	PDBRA0K010	38	2	None	None	G4G5	S3	2B.1	null	Lower montane coniferous forest, North coast coniferous forest, Wetland
Cardamine nuttallii var. gemmata	yellow-tubered toothwort	Dicots	PDBRA0K0R3	17	17	None	None	G5T3Q	S2	3.3	null	Lower montane coniferous forest, North coast coniferous forest, Ultramafic
Carex arcta	northern clustered sedge	Monocots	PMCYP030X0	13	1	None	None	G5	S1	2B.2	IUCN_LC-Least Concern	Bog & fen, North coast coniferous forest, Wetland
Carex lenticularis var. limnophila	lagoon sedge	Monocots	PMCYP037A7	4	1	None	None	G5T5	S1	2B.2	null	Bog & fen, Marsh & swamp, North coast coniferous forest
Carex lyngbyei	Lyngbye's sedge	Monocots	PMCYP037Y0	37	1	None	None	G5	S3	2B.2	IUCN_LC-Least Concern	Marsh & swamp, Wetland
Carex praticola	northern meadow sedge	Monocots	PMCYP03B20	14	1	None	None	G5	S2	2B.2	null	Meadow & seep, Wetland
Carex serpenticola	serpentine sedge	Monocots	PMCYP03KM0	17	14	None	None	G4	S3	2B.3	null	Meadow & seep, Ultramafic, Wetland
Carex viridula ssp. viridula	green yellow sedge	Monocots	PMCYP03EM5	8	3	None	None	G5T5	S2	2B.3	null	Bog & fen, Marsh & swamp, North coast coniferous forest, Wetland
Cascadia nuttallii	Nuttall's saxifrage	Dicots	PDSAX0U160	2	2	None	None	G4?	S1	2B.1	null	North coast coniferous forest
Castilleja elata	Siskiyou paintbrush	Dicots	PDSCR0D213	36	28	None	None	G3	S2S3	2B.2	null	Bog & fen, Lower montane coniferous forest, Ultramafic, Wetland
Castilleja litoralis	Oregon coast paintbrush	Dicots	PDSCR0D012	44	2	None	None	G3	S3	2B.2	null	Coastal bluff scrub, Coastal dunes, Coastal scrub
Cerorhinca monocerata	rhinoceros auklet	Birds	ABNNN11010	10	2	None	None	G5	S3	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	null
Charadrius nivosus nivosus	western snowy plover	Birds	ABNNB03031	138	2	Threatened	None	G3T3	S3	null	CDFW_SSC-Species of Special Concern	Great Basin standing waters, Sand shore, Wetland
Circus hudsonius	northern harrier	Birds	ABNKC11011	54	3	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds	Coastal scrub, Great Basin grassland, Marsh & swamp, Riparian scrub,

											of Conservation Concern	Valley & foothill grassland, Wetland
Coastal Brackish Marsh	Coastal Brackish Marsh	Marsh	CTT52200CA	30	1	None	None	G2	S2.1	null	null	Marsh & swamp, Wetland
Coastal and Valley Freshwater Marsh	Coastal and Valley Freshwater Marsh	Marsh	CTT52410CA	60	1	None	None	G3	S2.1	null	null	Marsh & swamp, Wetland
Cochlearia groenlandica	Greenland cochlearia	Dicots	PDBRA0S020	1	1	None	None	G4	S1	2B.3	null	Coastal bluff scrub
Coenonympha tullia yontockett	Yontockett satyr	Insects	IILEPN6035	1	1	None	None	G5T1T2	S1S2	null	null	Coastal dunes
Coptis laciniata	Oregon goldthread	Dicots	PDRAN0A020	122	5	None	None	G4?	S3?	4.2	null	Meadow & seep, North coast coniferous forest, Wetland
Coturnicops noveboracensis	yellow rail	Birds	ABNME01010	45	1	None	None	G4	S2	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive, USFWS_BCC-Birds of Conservation Concern	Freshwater marsh, Meadow & seep
Cypseloides niger	black swift	Birds	ABNUA01010	46	1	None	None	G4	S3	null	CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable, USFWS_BCC-Birds of Conservation Concern	null
Darlingtonia Seep	Darlingtonia Seep	Marsh	CTT51120CA	70	2	None	None	G4	S3.2	null	null	Bog & fen, Wetland
Downingia willamettensis	Cascade downingia	Dicots	PDCAM060E0	8	1	None	None	G4	S2	2B.2	null	Cismontane woodland, Valley & foothill grassland, Vernal pool
Egretta thula	snowy egret	Birds	ABNGA06030	20	1	None	None	G5	S4	null	IUCN_LC-Least Concern	Marsh & swamp, Meadow & seep, Riparian forest, Riparian woodland, Wetland
Elanus leucurus	white-tailed kite	Birds	ABNKC06010	184	1	None	None	G5	S3S4	null	BLM_S-Sensitive, CDFW_FP-Fully Protected, IUCN_LC-Least Concern	Cismontane woodland, Marsh & swamp, Riparian woodland, Valley & foothill grassland, Wetland
Empetrum nigrum	black crowberry	Dicots	PDEMP03020	4	2	None	None	G5	S1?	2B.2	null	Coastal bluff scrub, Coastal prairie
Empidonax traillii brewsteri	little willow flycatcher	Birds	ABPAE33041	2	1	None	Endangered	G5T3T4	S3	null	null	Meadow & seep, Riparian woodland
Emys marmorata	western pond turtle	Reptiles	ARAAD02030	1477	3	None	None	G3G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable, USFS_S-Sensitive	Aquatic, Artificial flowing waters, Klamath/North coast flowing waters, Klamath/North coast standing waters, Marsh & swamp, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters, South coast flowing waters, South coast standing waters, Wetland
Erethizon dorsatum	North American porcupine	Mammals	AMAFJ01010	523	34	None	None	G5	S3	null	IUCN_LC-Least Concern	Broadleaved upland forest, Cismontane

												woodland, Closed-cone coniferous forest, Lower montane coniferous forest, North coast coniferous forest, Upper montane coniferous forest
Eriogonum nudum var. paralinum	Del Norte buckwheat	Dicots	PDPGN08498	4	2	None	None	G5T2	S1	2B.2	null	Coastal bluff scrub, Coastal prairie
Eriogonum pendulum	Waldo wild buckwheat	Dicots	PDPGN084Q0	28	27	None	None	G4	S2S3	2B.2	null	Lower montane coniferous forest, Ultramafic, Upper montane coniferous forest
Erysimum concinnum	bluff wallflower	Dicots	PDBRA160E3	30	5	None	None	G3	S2	1B.2	BLM_S-Sensitive	Coastal bluff scrub, Coastal dunes, Coastal prairie
Erythronium hendersonii	Henderson's fawn lily	Monocots	PMLIL0U070	7	1	None	None	G4	S2	2B.3	USFS_S-Sensitive	Lower montane coniferous forest
Erythronium howellii	Howell's fawn lily	Monocots	PMLIL0U080	11	6	None	None	G3G4	S2	1B.3	null	Lower montane coniferous forest, North coast coniferous forest
Erythronium oregonum	giant fawn lily	Monocots	PMLIL0U0C0	37	4	None	None	G5	S2	2B.2	SB_UCSC-UC Santa Cruz	Cismontane woodland, Meadow & seep, Ultramafic
Erythronium revolutum	coast fawn lily	Monocots	PMLIL0U0F0	172	1	None	None	G4G5	S3	2B.2	SB_UCSC-UC Santa Cruz	Bog & fen, Broadleaved upland forest, North coast coniferous forest, Wetland
Eucyclogobius newberryi	tidewater goby	Fish	AFCQN04010	127	2	Endangered	None	G3	S3	null	AFS_EN-Endangered, IUCN_NT-Near Threatened	Aquatic, Klamath/North coast flowing waters, Sacramento/San Joaquin flowing waters, South coast flowing waters
Eumetopias jubatus	Steller sea lion	Mammals	AMAJC03010	38	1	Delisted	None	G3	S2	null	IUCN_NT-Near Threatened, MMC_SSC-Species of Special Concern	Marine intertidal & splash zone communities, Protected deepwater coastal communities, Rock shore
Fissidens pauperculus	minute pocket moss	Bryophytes	NBMUS2W0U0	22	1	None	None	G3?	S2	1B.2	USFS_S-Sensitive	North coast coniferous forest, Redwood
Fratercula cirrhata	tufted puffin	Birds	ABNNN12010	17	2	None	None	G5	S1S2	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Protected deepwater coastal communities
Gentiana setigera	Mendocino gentian	Dicots	PDGEN060S0	11	9	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Lower montane coniferous forest, Meadow & seep, Ultramafic, Wetland
Gilia capitata ssp. pacifica	Pacific gilia	Dicots	PDPLM040B6	91	13	None	None	G5T3	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Coastal bluff scrub, Coastal prairie, Valley & foothill grassland
Gilia millefoliata	dark-eyed gilia	Dicots	PDPLM04130	54	11	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Coastal dunes

<i>Haliaeetus leucocephalus</i>	bald eagle	Birds	ABNKC10010	332	1	Delisted	Endangered	G5	S3	null	BLM_S-Sensitive, CDFW_FP-Fully Protected, IUCN_LC-Least Concern, USFS_S-Sensitive	Lower montane coniferous forest, Oldgrowth
<i>Hesperex sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	Dicots	PDASTE5011	72	6	None	None	G4T3	S3	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Coastal bluff scrub, Coastal dunes, Coastal prairie
<i>Hydrobates furcatus</i>	fork-tailed storm-petrel	Birds	ABNDC04010	8	2	None	None	G5	S1	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Protected deepwater coastal communities
<i>Juga chacei</i>	Chace juga	Mollusks	IMGASK4180	11	10	None	None	G1	S1	null	USFS_S-Sensitive	Aquatic, Klamath/North coast flowing waters
<i>Kopsiopsis hookeri</i>	small groundcone	Dicots	PDORO01010	21	2	None	None	G4?	S1S2	2B.3	null	North coast coniferous forest
<i>Lanx alta</i>	highcap lanx	Mollusks	IMGASL7010	13	2	None	None	G2G3	S3	null	null	Aquatic
<i>Lasionycteris noctivagans</i>	silver-haired bat	Mammals	AMACC02010	139	1	None	None	G3G4	S3S4	null	IUCN_LC-Least Concern	Lower montane coniferous forest, Oldgrowth, Riparian forest
<i>Lasthenia californica</i> ssp. <i>macrantha</i>	perennial goldfields	Dicots	PDAST5L0C5	59	1	None	None	G3T2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Coastal bluff scrub, Coastal dunes, Coastal scrub
<i>Lathyrus japonicus</i>	seaside pea	Dicots	PDFAB250C0	24	5	None	None	G5	S2	2B.1	IUCN_LC-Least Concern	Coastal dunes
<i>Lathyrus palustris</i>	marsh pea	Dicots	PDFAB250P0	13	4	None	None	G5	S2	2B.2	null	Bog & fen, Coastal prairie, Coastal scrub, Lower montane coniferous forest, Marsh & swamp, North coast coniferous forest, Wetland
<i>Lewisia oppositifolia</i>	opposite-leaved lewisia	Dicots	PDPOR040B0	14	10	None	None	G3	S2	2B.2	USFS_S-Sensitive	Lower montane coniferous forest, Ultramafic
<i>Lilium occidentale</i>	western lily	Monocots	PMLIL1A0G0	16	4	Endangered	Endangered	G1G2	S1	1B.1	SB_BerrySB-Berry Seed Bank	Bog & fen, Coastal bluff scrub, Coastal prairie, Coastal scrub, Freshwater marsh, Marsh & swamp, North coast coniferous forest, Wetland
<i>Limnephilus atercus</i>	Fort Dick limnephilus caddisfly	Insects	IITRI15020	2	1	None	None	G3G4	S1S2	null	null	Aquatic, Klamath/North coast flowing waters, Klamath/North coast standing waters
<i>Lomatium martindalei</i>	Coast Range lomatium	Dicots	PDAP11B140	9	2	None	None	G5	S2	2B.3	null	Coastal bluff scrub, Lower montane coniferous forest, Meadow & seep, Ultramafic
<i>Lysimachia europaea</i>	arctic starflower	Dicots	PDPRI0A020	4	3	None	None	G5	S1	2B.2	null	Bog & fen, Meadow & seep, Wetland
<i>Margaritifera falcata</i>	western pearlshell	Mollusks	IMBIV27020	78	1	None	None	G4G5	S1S2	null	IUCN_NT-Near Threatened	Aquatic
<i>Martes caurina humboldtensis</i>	Humboldt marten	Mammals	AMAJF01012	44	1	Threatened	Endangered	G4G5T1	S1	null	CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	North coast coniferous forest, Oldgrowth, Redwood

Mitellastracaulescens	leafy-stemmed mitrewort	Dicots	PDSAX0N020	21	1	None	None	G5	S4	4.2	null	Broadleaved upland forest, Lower montane coniferous forest, Meadow & seep, North coast coniferous forest
Monadenia fidelis pronotis	rocky coast Pacific sideband	Mollusks	IMGASC7032	1	1	None	None	G4G5T1	S1	null	IUCN_DD-Data Deficient	Coastal bluff scrub
Moneses uniflora	woodnymph	Dicots	PDPYR02010	7	1	None	None	G5	S2	2B.2	null	Broadleaved upland forest, North coast coniferous forest
Monotropa uniflora	ghost-pipe	Dicots	PDMON03030	115	51	None	None	G5	S2	2B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Broadleaved upland forest, North coast coniferous forest
Montia howellii	Howell's montia	Dicots	PDPOR05070	123	1	None	None	G3G4	S2	2B.2	null	Meadow & seep, North coast coniferous forest, Vernal pool, Wetland
Myotis yumanensis	Yuma myotis	Mammals	AMACC01020	265	2	None	None	G5	S4	null	BLM_S-Sensitive, IUCN_LC-Least Concern	Lower montane coniferous forest, Riparian forest, Riparian woodland, Upper montane coniferous forest
Nannopterum auritum	double-crested cormorant	Birds	ABNFD01020	39	1	None	None	G5	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Riparian forest, Riparian scrub, Riparian woodland
Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	Marsh	CTT52110CA	53	1	None	None	G3	S3.2	null	null	Marsh & swamp, Wetland
Nycticorax nycticorax	black-crowned night heron	Birds	ABNGA11010	37	1	None	None	G5	S4	null	IUCN_LC-Least Concern	Marsh & swamp, Riparian forest, Riparian woodland, Wetland
Oenothera wolffii	Wolf's evening-primrose	Dicots	PDONA0C1K0	29	9	None	None	G2	S1	1B.1	SB_BerrySB-Berry Seed Bank	Coastal bluff scrub, Coastal dunes, Coastal prairie
Oncorhynchus clarkii clarkii	coast cutthroat trout	Fish	AFCHA0208A	45	7	None	None	G5T4	S3	null	AFS_VU-Vulnerable, CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	Aquatic, Klamath/North coast flowing waters
Packera bolanderi var. bolanderi	seacoast ragwort	Dicots	PDAST8H0H1	72	17	None	None	G4T4	S2S3	2B.2	null	Coastal scrub, North coast coniferous forest
Packera hesperia	western ragwort	Dicots	PDAST8H1L0	4	4	None	None	G3	S1	2B.2	USFS_S-Sensitive	Meadow & seep, Ultramafic, Upper montane coniferous forest
Pandion haliaetus	osprey	Birds	ABNKC01010	504	2	None	None	G5	S4	null	CDF_S-Sensitive, CDFW_WL-Watch List, IUCN_LC-Least Concern	Riparian forest
Pekania pennanti	Fisher	Mammals	AMAJF01020	555	1	None	None	G5	S2S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive	North coast coniferous forest, Oldgrowth, Riparian forest
Phacelia argentea	sand dune phacelia	Dicots	PDHYD0C070	16	16	Proposed Threatened	None	G2	S1	1B.1	SB_BerrySB-Berry Seed Bank	Coastal dunes
Pinguicula macroceras	horned butterwort	Dicots	PDLNT01040	26	16	None	None	G4	S2	2B.2	IUCN_LC-Least Concern, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCSC-UC Santa Cruz	Bog & fen, Ultramafic, Wetland
Piperia candida	white-flowered rein orchid	Monocots	PMORC1X050	222	3	None	None	G3?	S3	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Broadleaved upland forest, Lower montane coniferous

												forest, North coast coniferous forest, Ultramafic
Plethodon elongatus	Del Norte salamander	Amphibians	AAAAD12050	151	9	None	None	G4	S3	null	CDFW_WL-Watch List, IUCN_NT-Near Threatened	Oldgrowth
Polemonium carneum	Oregon polemonium	Dicots	PDPLM0E050	16	2	None	None	G3G4	S2	2B.2	null	Coastal prairie, Coastal scrub, Lower montane coniferous forest
Polites mardon	mardon skipper	Insects	IILEP66030	2	2	None	None	G2	S1	null	USFS_S-Sensitive	North coast coniferous forest
Pomatiopsis chacei	marsh walker	Mollusks	IMGASJ9030	6	2	None	None	G1	S2	null	null	null
Potamogeton foliosus ssp. fibrillosus	fibrous pondweed	Monocots	PMPOT030B1	1	1	None	None	G5T2T4	S1S2	2B.3	null	Marsh & swamp, Wetland
Prosartes parvifolia	Siskiyou bells	Monocots	PMLIL0R014	14	2	None	None	G2	S2	1B.2	SB_UCSC-UC Santa Cruz, USFS_S-Sensitive	Lower montane coniferous forest, Upper montane coniferous forest
Pyrrocoma racemosa var. congesta	Del Norte pyrrocoma	Dicots	PDASTDT0F4	13	12	None	None	G5T4	S2	2B.3	null	Chaparral, Lower montane coniferous forest, Ultramafic, Wetland
Ramalina thrausta	angel's hair lichen	Lichens	NLLEC3S340	21	8	None	None	G5?	S2S3	2B.1	null	North coast coniferous forest
Rana aurora	northern red-legged frog	Amphibians	AAABH01021	292	40	None	None	G4	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive	Klamath/North coast flowing waters, Riparian forest, Riparian woodland
Rana boylli pop. 1	foothill yellow-legged frog - north coast DPS	Amphibians	AAABH01051	1608	27	None	None	G3T4	S4	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	Aquatic, Klamath/North coast flowing waters, Riparian forest, Riparian scrub, Riparian woodland
Rhyacotriton variegatus	southern torrent salamander	Amphibians	AAAAJ01020	416	26	None	None	G3?	S2S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive	Lower montane coniferous forest, Oldgrowth, Redwood, Riparian forest
Rhynchospora alba	white beaked-rush	Monocots	PMCYP0N010	17	1	None	None	G5	S2	2B.2	IUCN_LC-Least Concern	Bog & fen, Marsh & swamp, Meadow & seep, Wetland
Riparia riparia	bank swallow	Birds	ABPAU08010	299	4	None	Threatened	G5	S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern	Riparian scrub, Riparian woodland
Romanzoffia tracyi	Tracy's romanzoffia	Dicots	PDHYD0E030	9	3	None	None	G4	S2	2B.3	null	Coastal bluff scrub, Coastal scrub
Rosa gymnocarpa var. serpentina	Gasquet rose	Dicots	PDR0S1J1V1	7	1	None	None	G5T3T4	S2	1B.3	SB_BerrySB-Berry Seed Bank, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Cismontane woodland, Ultramafic
Sabulina howellii	Howell's sandwort	Dicots	PDCAR0G0F0	24	21	None	None	G4	S3	1B.3	null	Chaparral, Lower montane coniferous forest, Ultramafic
Sagittaria sanfordii	Sanford's arrowhead	Monocots	PMALI040Q0	143	1	None	None	G3	S3	1B.2	BLM_S-Sensitive	Marsh & swamp, Wetland
Sanguisorba officinalis	great burnet	Dicots	PDR0S1L060	22	13	None	None	G5?	S2	2B.2	null	Bog & fen, Broadleaved upland forest, Marsh & swamp, Meadow & seep, North coast coniferous forest, Riparian forest,

												Ultramafic, Wetland
Scaphinotus behrensi	Behrens' snail-eating beetle	Insects	IICOL4L070	4	1	None	None	G2G4	S2S4	null	null	North coast coniferous forest
Sedum patens	Smith River stonecrop	Dicots	PDCRA0A250	6	2	None	None	G2	S2	1B.2	null	Lower montane coniferous forest, Talus slope, Ultramafic
Sidalcea malachroides	maple-leaved checkerbloom	Dicots	PDMAL110E0	136	1	None	None	G3	S3	4.2	null	Broadleaved upland forest, Coastal prairie, Coastal scrub, North coast coniferous forest, Riparian forest
Sidalcea malviflora ssp. patula	Siskiyou checkerbloom	Dicots	PDMAL110F9	60	5	None	None	G5T2	S2	1B.2	SB_UCSC-UC Santa Cruz	Coastal bluff scrub, Coastal prairie, North coast coniferous forest
Sidalcea oregana ssp. eximia	coast checkerbloom	Dicots	PDMAL110K9	19	4	None	None	G5T1	S1	1B.2	null	Lower montane coniferous forest, Meadow & seep, North coast coniferous forest, Wetland
Silene hookeri	Hooker's catchfly	Dicots	PDCAR0U2M0	31	4	None	None	G4	S2	2B.2	null	Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Silene serpentinicola	serpentine catchfly	Dicots	PDCAR0U2B0	55	51	None	None	G3	S3	1B.2	SB_UCSC-UC Santa Cruz, USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, Ultramafic
Speyeria zerene hippolyta	Oregon silverspot butterfly	Insects	IILEPJ6087	3	3	Threatened	None	G5T1	S1	null	null	Coastal dunes
Streptanthus howellii	Howell's jewelflower	Dicots	PDBRA2G0N0	28	27	None	None	G2G3	S2	1B.2	USFS_S-Sensitive	Lower montane coniferous forest, Ultramafic
Sulcaria spiralisera	twisted horsehair lichen	Lichens	NLT0042560	18	2	None	None	G3G4	S2	1B.2	BLM_S-Sensitive	Coastal dunes, North coast coniferous forest
Thaleichthys pacificus	eulachon	Fish	AFCHB04010	10	1	Threatened	None	G5	S1	null	IUCN_LC-Least Concern	Aquatic, Klamath/North coast flowing waters
Usnea longissima	Methuselah's beard lichen	Lichens	NLLEC5P420	206	6	None	None	G4	S4	4.2	BLM_S-Sensitive	Broadleaved upland forest, North coast coniferous forest, Oldgrowth, Redwood
Vaccinium scoparium	little-leaved huckleberry	Dicots	PDERI180Y0	27	3	None	None	G5	S3	2B.2	null	Subalpine coniferous forest
Viola langsdorffii	Langsdorf's violet	Dicots	PDVIO04100	2	2	None	None	G4	S1	2B.1	null	Bog & fen, Wetland
Viola palustris	alpine marsh violet	Dicots	PDVIO041G0	10	4	None	None	G5	S1S2	2B.2	null	Bog & fen, Coastal scrub, Wetland
Viola primulifolia ssp. occidentalis	western white bog violet	Dicots	PDVIO040Y2	19	17	None	None	G5T2	S2	1B.2	USFS_S-Sensitive	Bog & fen, Marsh & swamp, Ultramafic, Wetland