

Introduction:

The Nature Conservancy (TNC) will assess and create bid-ready plans to remove two barriers on Jalama Creek in Santa Barbara County. These barriers, JA-1 Dam and JA-2 Bridge, block passage to 12.3-miles of spawning and rearing habitat for federally endangered southern California steelhead (*Oncorhynchus mykiss*) adults and juveniles. Jalama Creek is a Core 3 recovery priority in the 2012 NOAA Southern California Steelhead Recovery Plan. This project is the first step in restoring 21-miles of connectivity between the ocean and the upper reaches of Jalama Creek.

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* Volume I and Volume II Part XI and Part XII. (<https://www.wildlife.ca.gov/Grants/FRGP/Guidance>)

Objective(s):

This project will assess and create 100% Design Plans to remove two barriers, JA-1 Dam and JA-2 Bridge, in Jalama Creek. Removal of these barriers will open 12.3-miles of federally-designated critical habitat for the migration of southern California steelhead.

Project Description:

Location:

The project location is two specific steelhead passage barriers on the lower 1.4-miles of Jalama Creek (see Topographic map at end of Scope of Work). Both barriers are located on TNC property, approximately 13-miles southwest of State Route 1, along Jalama Road. The nearest city is Lompoc, located 20-miles to the northeast. Vandenberg Air Force Base is immediately to the north.

The first barrier, JA-1 Dam, is located 0.6-miles upstream of Jalama Creek's estuary at Jalama Beach County Park, and 0.2-miles downstream of the confluence with Espada Creek. Jalama Road is located 450 ft to the south of JA-1 Dam.

The second barrier, JA-2 Bridge, is located 1.4-miles upstream from the Pacific Ocean and 0.6-miles upstream of the confluence with Espada Creek. A Jalama Road (a Santa Barbara County road) bridge crossing of Jalama Creek occurs at this location.

Project coordinates are JA-1 Dam - Latitude 34.51094, Longitude -120.49341, and JA-2 Bridge - Latitude 34.51375, Longitude -120.48482.

Project Set Up:

TNC Program Director Laura Riege will manage this grant and oversee its implementation. Ms. Riege will be the point of contact, coordinating with CDFW, NOAA, Santa Barbara County, and the Coastal Commission as required for site access, design review, reporting, permitting and pre-CEQA surveys. She will issue and manage all contracts with subcontractors and provide quality assurance review. Ms. Riege will manage the schedule and budget to assure all products are delivered on time. Key TNC personnel supporting this work include Bill Leahy, Deputy Director, who will provide site logistics and management oversight and coordination with local stakeholders, including the Santa Ynez Band of the Chumash Indians; Kelly Easterday, GIS Manager, who will provide GIS coordination and support; and Mark Reynolds, Lead Scientist and Jeanette Howard, Director of Science, who will provide technical support and quality review.

The primary subcontractor will be ICF. The other two subcontractors are Robert Shellman with Terramark Surveying, Inc. and Martin McIlroy, a geotechnical engineer with MGE Engineering. Terramark Surveying and MGE Engineering will be subcontractors to ICF. The roles of the subcontractors on the key tasks are described as follows: ICF will lead the tasks to evaluate the two existing impediments to fish passage; develop, evaluate and rank three fish passage concept options; and prepare plans and specifications through 100% design. ICF will also support TNC in permit application preparation and coordination with CDFW, NMFS, Santa Barbara County Public Works, and other stakeholders. Brendan Belby, PH (Professional Hydrologist and fluvial geomorphologist) will be the consultant Project Manager. He will be supported by Kevin MacKay (restoration ecologist) as the consultant Project Director.

Robert Shellman (Terramark Surveying, Inc.) is a California Professional Land Surveyor and will lead aerial topographic survey and mapping services. In addition, he will provide ground-based topographic survey and right-of-way surveys.

Martin McIlroy (MGE Engineering) is a California licensed Professional Engineer, Professional Geologist, certified Engineering Geologist, and will lead the geotechnical assessment and rock scour analysis at the two fish passage barriers. Brendan Belby and Jeff Kozlowski (senior fisheries biologist) will lead the field fish passage and geomorphology assessment.

ICF has two California licensed Professional Engineers on the project. Annika Sullivan, PE will serve as the Project Engineer leading day-to-day work and Martin Fisher, PE (senior engineer) will provide input and senior review. Brendan Belby will lead the stream hydrology study and hydraulic modeling with support from Annika Sullivan and Jeff Kozlowski. All ICF staff will contribute to the preparation of a Baseline Conditions Memo, and development and evaluation of

three concept options. Annika Sullivan will lead the development of the 30%, 65%, 90%, and 100% draft plans, specifications, and cost estimates, including the AutoCAD Civil3D work for development of the grading plan. Annika will coordinate closely with Martin Fisher throughout the design process.

Regular check-in meetings will be held with the other ICF staff, TNC, and stakeholders throughout the project to provide progress updates and solicit feedback from all team members on how to improve the designs as they progress through higher levels of design stage so that consensus is obtained on the best constructible project.

ICF will support TNC in conducting archaeological and biological surveys necessary to complete CEQA at a future time. Andrew Belcourt with ICF is a Southern California archaeologist and will inspect site conditions and coordinate with the State Historic Preservation Office on eligibility determination of cultural resources. Joel Mulder with ICF is an aquatic scientist based in Ventura with extensive experience in aquatic habitats and endemic fishes, reptiles, and amphibians of California. He holds a current federal 10(a)1(A) recovery permit for California red-legged frog, unarmored threespine stickleback, and tidewater goby. Paul Schwartz with ICF is a Southern California botanist specializing in botanical and rare plant surveys and jurisdictional delineations. Joel and Paul will conduct biological surveys at the site and prepare a technical report.

Materials:

All materials will be supplied by the subcontractors, as in-kind cost share. The field fish passage and geomorphology assessments will require: wading gear (waders, boots), tools to measure and document habitat and substrate characteristics (stadia rod, auto level, range finder, GPS, camera; gravelometer; field sieve, sand card), and safety equipment (first aid kit).

Tasks:

Task 1: Kickoff Meeting and Field Stakeholder Visit:

Grantee will schedule a kickoff meeting with stakeholders, including CDFW, NMFS, and Santa Barbara County Public Works, to discuss existing conditions and data gaps, obtain consensus on project goals and objectives, and establish the schedule and decision making process of the next steps in the fish passage design work.

Task 2: Topographic Survey:

A topographic site survey will be conducted by Robert Shellman, a California Professional Land Surveyor and owner of Terramark Surveying, Inc.

Terramark Surveying, Inc. will provide aerial topographic survey and mapping services for ± 47 acres in a reach that extends from ± 150 feet downstream of barrier JA-1 Dam to ± 150 feet upstream of barrier JA-2 Bridge, and even further distance, if necessary, to capture the anticipated effects of fish passage designs. The survey will be tied into the State Plane Coordinate system.

The remotely sensed topography will be supplemented with on-the-ground field topographic survey to capture topography in densely vegetated areas, bathymetry (if water is present), cross-sections and thalweg, and in areas requiring additional detail (e.g., spot elevations, planimetric features such as the concrete dam, bridge abutments, and/or other prominent features or utilities).

Terramark Surveying, Inc. will conduct a partial right-of-way survey depicting Jalama Road along portions at JA-1 and JA-2 containing (± 600 LF) for mapping & design purposes. Property or right-of-way corners or points will not be set under this SOW. The survey detail will be sufficient to generate contours at a 1-foot interval and to generate a Digital Terrain Model (DTM) needed for hydraulic modeling and engineering design. The survey will also provide detailed channel bed and water surface elevation (if water is present) longitudinal profiles that extend far enough upstream and downstream of the features to capture how the features currently alter the natural channel profile, and how the profile could be changed to restore fish passage under potential design options.

Task 3: Geotechnical Assessment:

Martin McIlroy, PE with MGE Engineering will provide geotechnical and engineering geologic services for the project. MGE will review available documents prior to making a site visit. MGE will review bridge as-built plans, boring data, rock data, geologic mapping, and any documents provided for the project. After document review, MGE will make a site visit to both barriers JA-1 Dam and JA-2 Bridge sites to evaluate any rock outcrop, potential alluvial and rock scour, stream channel slopes, alluvial material, and to evaluate how removal or improvements to the channel may affect structure foundations or slope stability when considering the potential long term scour at each site. If rock outcrop is observed, MGE will use an in-situ hand-held Schmidt Hammer to complete manual non-destructive tests to evaluate strength of rock exposures within the vicinity of the bridge. MGE will record rock characteristics such as strike and dip, spacing, and characteristics of rock joints and bedding.

After the site review, MGE will prepare a report regarding channel slope stability, potential for rock scour, potential for improvements to affect existing structures, and provide a summary of our observations and in-situ tests. The report will include:

- Vicinity map.
- Geologic map.
- Site observations

- Test results.
- Qualitative geotechnical evaluation of improvement impacts.
- Discussion of potential rock scour.
- Geotechnical recommendations or geotechnical remediation measures for improvements.

Task 4: Field Fish passage and Geomorphology Assessment:

A fisheries biologist and geomorphologist will undertake fieldwork in Jalama Creek to assess existing fish passage conditions of the two lowermost barriers.

The work will be supported with GPS mapping and a topographic survey of longitudinal bed and water surface profile elevations and a select survey of other key features (e.g., channel roughness and riparian conditions).

A stream habitat inventory will be conducted based on the methods described in the California Salmonid Stream Habitat Restoration Manual (Flosi et al. 2010). The inventory will include mapping of the habitat types and measurement of their dimensions. Measurements will be made of the fish passage barriers, including drop height, jump distance, and leaping pool depth.

The geomorphic assessment will include mapping of channel type, particle size analysis of channel bed substrate and bank material, indicators of channel instability (e.g., incision, sedimentation), the extent the barriers are altering natural fluvial process upstream and downstream, and the likely channel response if the barriers were to be removed or altered.

The methods and results of these assessments and field measurements, including supporting maps, graphics, and tables, will be included in the Baseline Conditions Memo.

Task 5: Stream Hydrology Study:

A HEC-HMS rainfall-runoff-routing watershed hydrology model will be created to generate hydrographs for the two fish passage design sites. Inputs into the hydrology model will include watershed land use, soil type, precipitation, evapotranspiration, drainage network, and topography. The Jalama Creek stream gage and groundwater data, and to the extent possible the gage on Salsipuedes Creek, will be used to aid calibration of the watershed hydrology model. Peak flows generated from the model will be compared with values determined from regional regression curves and with any design flow information available in hydraulic studies associated with Jalama Creek bridges.

A narrative of the methods and results from the stream hydrology study, including tables and graphics of model output, will be included in the Baseline Conditions Memo.

Task 6: 2D Hydraulic Model of Baseline Conditions:

A two-dimensional hydraulic model will be created for each barrier site to evaluate water surface elevations, flow depths, flow velocities, and shear stresses under existing conditions.

Hydraulic modeling will be performed using SRH-2D and Aquaveo's SMS software. The elevation surface for the model will be based on the surface created from the field topographic survey. The model domains will extend far enough upstream and downstream of each barrier to fully capture the anticipated effects of fish passage designs. Model roughness calibration will be aided by field observations of channel and riparian conditions, as well as stage vs. discharge readings available from the TNC gage installed in Jalama Creek downstream of Espada Creek. Modeled flows will range from the lowest flow needed to assess juvenile and adult steelhead passage up to large flood events.

The model output will be reviewed by the fisheries biologist and compared against fish swimming and leaping criteria to assess the level of fish passage impediment created by each barrier, for both juvenile and adult steelhead, and other species, under a range of flows.

A narrative of model methods and results, including model output in the form of maps and profile charts and a fish passage implications discussion, will be prepared, and included in the Baseline Conditions Memo.

Task 7: Baseline Conditions Memo:

The work of the previous tasks will be incorporated into a Baseline Conditions Memo. The memo will describe existing fish habitat, geomorphic conditions, geotechnical analysis, stream hydrology, modeled hydraulics at the two barriers, and the severity of fish passage impediment created by the barriers. The memo will identify opportunities and constraints for removing or modifying the barriers to create fish passage.

These opportunities and constraints discussions will lead into the next phase of work to develop fish passage concept design options.

Task 8: Concept Options Analysis:

Grantee will develop three concept options. Fish passage opportunities and constraints identified in the previous task will guide the development of three conceptual designs that could be implemented to create steelhead passage at both barriers. The options will be developed in coordination with the key project stakeholders, including at a minimum CDFW, NMFS, and Santa Barbara County Public Works. Many considerations will be factored into the type of fish passage designs proposed and in the development of appropriate design criteria at each barrier. These include likelihood of providing effective steelhead passage for

juveniles and adults under a range of flow conditions, compatibility with natural fluvial processes, sustainability under flood flows, potential to adversely diminish flood flow conveyance at the bridge (i.e., barrier JA-2), impact of the design on the existing dam and bridge structures, expectations for feature longevity, maintenance considerations, constructability, cost, and the amount of time until results are achieved.

Guidance used to develop the concept designs will include, at a minimum, the following literature: CDFW's (2010) "California Salmonid Stream Habitat Restoration Manual, 4th Edition, Volume Two, Part XII, Fish Passage Design and Implementation"; NMFS' (2001) "Guidelines for Salmonid Passage at Stream Crossings. Southwest Region"; and NMFS' (2011) "Anadromous Salmonid Passage Facility Design. Northwest Region".

The three design options will only include concept designs that could be realistically implemented and successful at each barrier. Concept options could include, but are not limited to, stream simulation of a reference reach, roughened channel or rock ramp, step-pools, rock weirs, or barrier notching. The conceptual design options will be created in GIS (with the selected option transitioned into AutoCAD at the 30% design level). They will clearly illustrate in planview the major proposed actions and features at each barrier and will identify potential constraints. Schematic longitudinal elevation profiles of ground and water surface elevations will also be created to support the maps.

A narrative description of potential steelhead passage created by each concept will be prepared, as well as a summary of where similar designs have successfully been implemented on other creeks to obtain similar objectives.

The evaluation of the concept design options will be described in the Concept Design Options Analysis Memo. Evaluation, Ranking, and Selection of Preferred Design Concept. Performance metrics will be developed for use in evaluating how well each design option for the two barriers meets the established design performance criteria developed in the previous task. A matrix with a supporting narrative will be created to track the process used to rank the concept designs.

A conference call will be held with the project stakeholders to discuss the evaluation and ranking of the concept options and obtain consensus on recommended selection of the preferred option. The preferred option will be the basis for development of detailed design plans for each barrier. The preferred option may be a composite of desirable components from more than one option. The process of ranking and selecting a preferred concept design will be documented in the Concept Design Options Analysis Memo.

Task 9: Prepare 30% Design Plan:

A detailed design will be created for the selected preferred concept design for each barrier. The design will be developed in AutoCAD Civil3D software. A first task for the design work will be to create a precise elevation surface of the design's features (e.g., boulder size and placement for a roughened channel design, step-pool configuration) integrated with the baseline topographic conditions.

The elevation surface will be used in 2D hydraulic modeling to evaluate the performance of the 30% design. 30% Hydraulic Model and Fish Passage Evaluation. The baseline condition 2D hydraulic model prepared in Task 2 will be updated with new elevations to represent the 30% level fish passage design. The model will be rerun under the range of design flows.

Model output, including planview maps and longitudinal profile charts, will be evaluated to determine the extent to which depths and velocities meet established criteria for juvenile and adult steelhead passage. The model's shear stress output will be evaluated to determine if the design is able to remain intact during flood flows, sediment transport analysis to assess if continuity of sediment movement through the design reach will be obtained, and water surface elevations will be evaluated to determine if the design creates an unwanted rise in water surface elevations at the bridge or other infrastructure.

The model analysis will aid in refinement of the 30% design to improve its ability to meet fish passage objectives and other design criteria. Prepare 30% Draft Plans & Cost Estimate. Separate 30% draft plans and cost estimates will be prepared for the two barrier sites (JA-1 and JA-2). The 30% draft plans for these sites will include:

- Cover sheet with index.
- General notes and legends.
- Site plan, including access routes, staging, and stockpiling areas; erosion control.
- Grading plans, including protection fencing, utility locations, vegetation removal areas, and instream features of the fish passage design.
- Cross sections and longitudinal profiles.
- Schedule of quantities.
- Details: Planting plans, including planting zones, species mix, quantities, and schedule.
- and Irrigation plans, including points of connection and locations of irrigation main lines.

The 30% draft plans will be prepared using AutoCAD Civil 3D and submitted on 22" x 34" plan sheets with a standard contractor title block. The plans will be in English units and consistent with the construction document standards determined by the stakeholder team. A 30% level design cost estimates will be

prepared with itemized estimates for construction and will include a brief description of each item, item quantities, identification of the relevant unit, unit cost, and an extended cost for each item of construction.

Following submittal of the 30% plans and specifications to, at a minimum, CDFW, NMFS, and Santa Barbara County Public Works, a plan check review conference call will be held with the stakeholders to review and discuss comments on draft documents.

Task 10: Prepare 65% Design Plan:

Based on analysis of how the 30% design performed in terms of fish passage, stability, and flood risk (as appropriate), and incorporating feedback from stakeholder review, the 30% level design will be advanced to create a 65% level design. A revised elevation surface will be created that shows improvements made to the 30% design that are intended to enhance performance. 65% Hydraulic Model and Fish Passage Evaluation. The 30% condition 2D hydraulic model will be updated with the 65% design and the same modeling process and fish passage evaluation will be performed as was undertaken for the 30% design.

Prepare 65% Draft Plans, Specifications & Cost Estimate. The 30% draft plans and cost estimates will be updated with additional detail to reflect the advanced design level. In addition, to compliment the design plans and communicate the level of quality required during construction, relevant technical sections of construction specifications will be prepared. The construction specifications will be prepared consistent with agreed upon standards and will include technical sections addressing earthwork, pollution control, planting, erosion control, irrigation, instream and biotechnical bank protection structures, and maintenance.

A Basis of Design Report will be prepared that describes the logic and decisions made during the design process that led to the 65% design so that the stakeholders and the construction contractor understand the design to be implemented. The report will communicate the history and objectives of the restoration designs with reference to exiting conditions and how they will be changed. The studies, data collection, modeling, and other assessments performed as part of the design will be described and related to the overall discussion of the design. The report will also include a section on the expected performance of the design so that post-construction an evaluation can be made of project performance. Importantly, the report will identify limitations of the design and how the designs could be altered through natural processes. 65% Design Field Constructability Meeting. Upon completion of the 65% design, a site visit will be held with the project stakeholders (at a minimum CDFW, NMFS, and Santa Barbara County Public Works) to review and discuss the design.

The field visit will show how existing conditions will be changed and the footprint and expected performance of the design. Potential impacts to habitat, species, and water quality, including permitting implications, from construction in the channel or riparian areas will be discussed. Locations of proposed construction access and staging areas will be visited, as well as proposed avoidance and minimization measures. Feedback received from the site visit will be incorporated into the 90% level design.

Task 11: Prepare 90% Design Plans:

Based on analysis of how the 65% design performed in terms of fish passage, stability, and flood risk, and incorporating feedback from stakeholder review, the 65% level design will be advanced to create a 90% level design. A revised elevation surface will be created that shows improvements made to the 65% design that are intended to enhance performance. 90% Hydraulic Model and Fish Passage Evaluation. The 65% condition 2D hydraulic model will be updated with the 90% design and the same modeling process and fish passage evaluation will be performed as was undertaken for the 65% design.

Prepare 90% Draft Plans, Specifications & Cost Estimate. The 65% draft plans, specifications, and cost estimates will be updated with additional detail to reflect the advanced design level. 90% Basis of Design Report. A Basis of Design Report prepared for the 65% design will be updated based on the 90% design changes.

Task 12: Prepare 100% Design:

Prepare 100% Draft Plans, Specifications & Cost Estimate. The 90% draft plans, specifications, and cost estimates will be updated with additional detail to reflect the advanced design level. The outcome of the 100% design will be a bid-ready set of construction documents that could be put out for contractor bidding and construction.

Task 13: Project Management & Quality Assurance

Project oversight will be conducted by the California Chapter of The Nature Conservancy (TNC). All reporting and billing will be pursuant to contract and regulatory guidelines. This task includes, but is not limited to, contract oversight, scheduling, invoicing, preparing progress reports for submittal to CDFW, and coordination with project partners, subcontractors, permitting agencies, and others as required to successfully implement the project. TNC Lead Scientist and Water Program Director of Science will provide technical quality assurance review. TNC GIS Manager will assure all spatial products are technically accurate and incorporated into TNC's master GIS database system.

Task 14: Permitting

TNC will work with CDFW, the County and the Coastal Commission to secure necessary Santa Barbara County permits (grading and encroachment) and a

Coastal Development permit. TNC will engage with these entities throughout the planning and design process and will apply for these permits at the 65% design level so that any comments can be incorporated into the 90% designs. As part of this grant TNC will also oversee biological and archaeological surveys necessary to complete CEQA at a future time. ICF will support the permitting process by conducting biological and archaeological surveys and providing engineering plans and specifications.

Deliverables:

Task 1 – Stakeholder site visit summary memo.

Task 2

- A. Rectified color ortho digital photography overlaid onto an AutoCAD base map (aerial map scale: 1" =40")
- B. Signed and stamped 24"x36" PDF copy of the topographic map and an electric version of the same in AutoCAD format with accompanied DTM and point file (ground survey map scale: 1"=10' with 1' contour interval and spot elevations).

Task 3 - Geotechnical Engineering Report.

Task 4 - Data Analysis, Results, and Discussion, included in Baseline Conditions Memo

Task 5 - HEC-HMS files of modeled watershed hydrology.

Task 6 - SRH-2D files of modeled channel hydraulics at JA-1 and JA-2.

Task 7 - Baseline Conditions Memo.

Task 8 - Concept Design Options Analysis Memo.

Task 9

- A. Hydraulic model and fish passage evaluation of the 30% design with supporting maps, tables, and graphics.
- B. Electronic copies of two 30% draft plans.
- C. Electronic copies of two 40% draft cost estimates.
- D. Electronic copies of two comment matrices.
- E. Participate in on plan check review conference call.

Task 10

- A. Hydraulic model and fish passage evaluation of the 65% design with supporting maps, tables, and graphics.
- B. Electronic copies of two 65% draft plans, technical specifications, cost estimates, and comment matrices.
- C. 65% Basis of Design Report.

Task 11

- A. Hydraulic model and fish passage evaluation of the 90% design with supporting maps, tables, and graphics.
- B. Electronic copies of two 90% draft plans, technical specifications, cost estimates, and comment matrices.
- C. 90% Basis of Design Report.
- D. Participate in one plan check review conference call.

Task 12

- A. Electronic copies of two 100% draft plans, technical specifications, and cost estimates.

Task 13 – Progress reports

Task 14

- A. Coastal Development Permit.
- B. County Grading and Encroachment Permit.
- C. Biological and Archaeology Survey Reports needed for future CEQA.

Timeline:

The Project timeline runs from May 3rd, 2021 through January 31, 2023. Any delays will be communicated with the Grantor's CDFW Grant Manager immediately.

Task 1: Kickoff Meeting and Field Stakeholder Visit – May 2021

Task 2: Topographic Survey – May 2021 to June 2021

Task 3: Geotechnical Assessment – May 2021 to June 2021

Task 4: Field Fish Passage and Geomorphology Assessment – May 2021

Task 5: Stream Hydrology Study – May 2021 to June 2021

Task 6: 2D Hydraulic Model of Baseline Conditions – June 2021

Task 7: Baseline Conditions Memo– May 2021 to June 2021

Task 8: Concept Options Analysis – June 2021 to September 2021

Task 9: Prepare 30% Design – September 2021 to March 2022

Task 10: Prepare 65% Design – March 2022 to August 2022

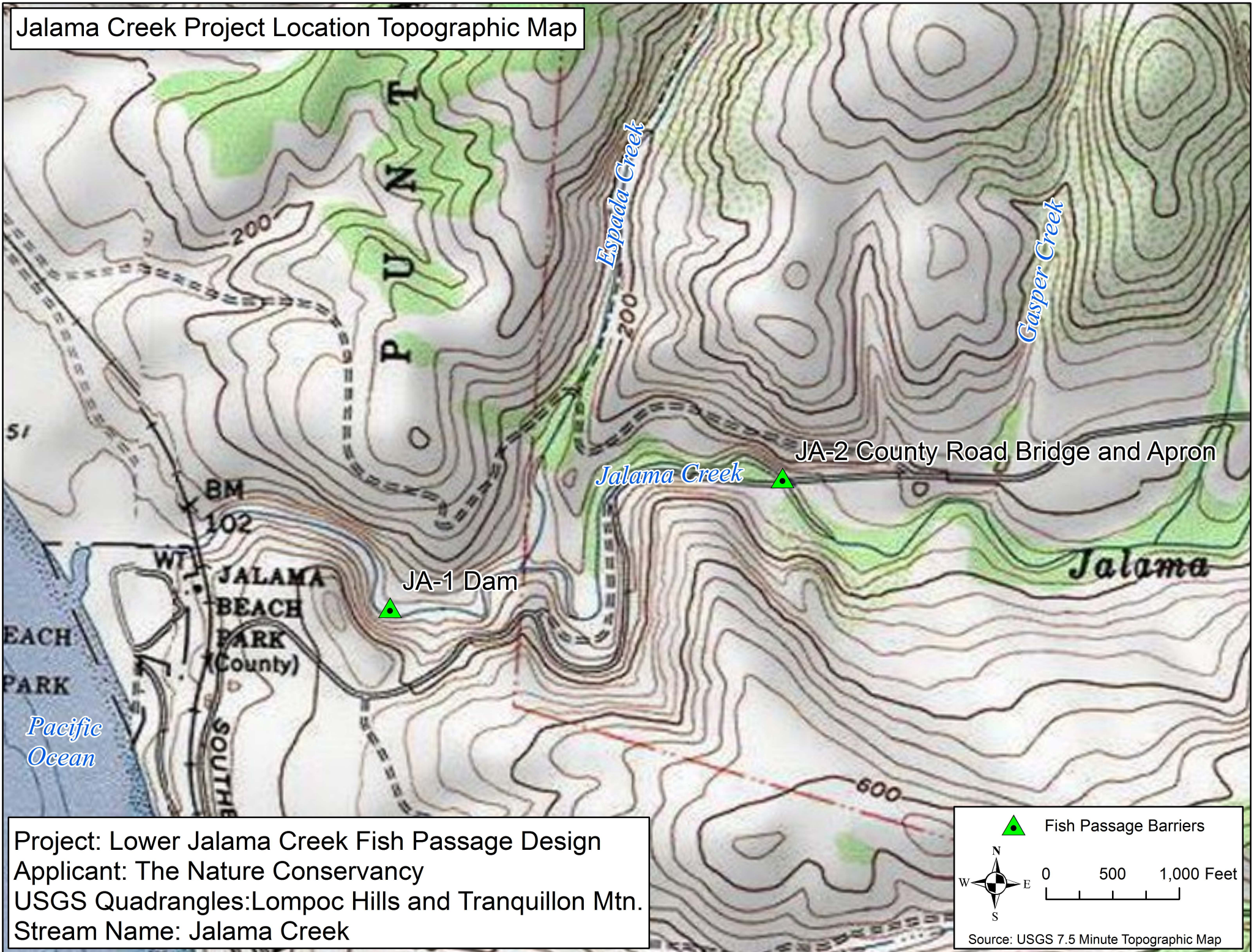
Task 11: Prepare 90% Design – August 2022 to January 2023

Task 12: Prepare 100% Design – January 2023


Task 13: Project Management and Quality Assurance – May 2021 to January 2023


Task 14: Permitting – May 2021 to January 2023

Jalama Creek Project Location Topographic Map



Project: Lower Jalama Creek Fish Passage Design
Applicant: The Nature Conservancy
USGS Quadrangles: Lompoc Hills and Tranquillon Mtn.
Stream Name: Jalama Creek

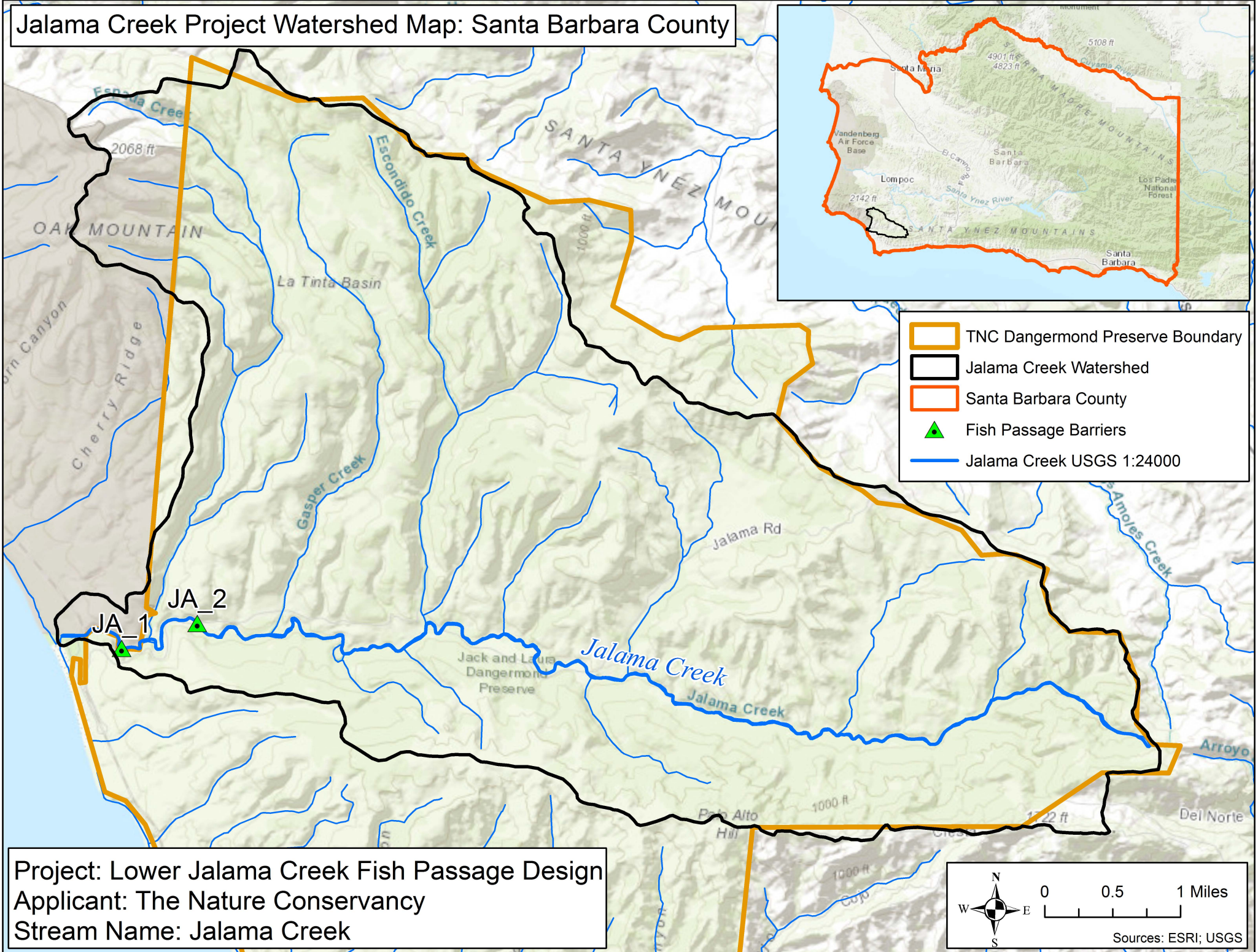
 Fish Passage Barriers

 N
W E S

0 500 1,000 Feet

Source: USGS 7.5 Minute Topographic Map

Jalama Creek Project Watershed Map: Santa Barbara County



Legend

- TNC Dangermond Preserve Boundary
- Jalama Creek Watershed
- Santa Barbara County
- Fish Passage Barriers
- Jalama Creek USGS 1:24000

Project: Lower Jalama Creek Fish Passage Design
Applicant: The Nature Conservancy
Stream Name: Jalama Creek

Scale and Orientation

0 0.5 1 Miles

Sources: ESRI; USGS



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad (Lompoc Hills (3412054) OR Point Conception (3412044) OR Tranquillon Mtn. (3412055) OR Surf (3412065) OR Lompoc (3412064) OR Los Alamos (3412063) OR Santa Rosa Hills (3412053) OR Sacate (3412043))

Possible species within the Lompoc Hills and surrounding quads for 1723442- Lower Jalama Creek Fish Passage Design, Santa Barbara County

Table with 7 columns: Species, Element Code, Federal Status, State Status, Global Rank, State Rank, Rare Plant Rank/CDFW SSC or FP. Rows include species like Agelaius tricolor, Agrostis hooveri, Ambystoma californiense, etc.



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Central Dune Scrub Central Dune Scrub	CTT21320CA	None	None	G2	S2.2	
Central Foredunes Central Foredunes	CTT21220CA	None	None	G1	S1.2	
Central Maritime Chaparral Central Maritime Chaparral	CTT37C20CA	None	None	G2	S2.2	
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
Chenopodium littoreum coastal goosefoot	PDCHE091Z0	None	None	G1	S1	1B.2
Chorizanthe rectispina straight-awned spineflower	PDPGN040N0	None	None	G2	S2	1B.3
Cirsium rhotophilum surf thistle	PDAST2E2J0	None	Threatened	G1	S1	1B.2
Cirsium scariosum var. loncholepis La Graciosa thistle	PDAST2E1N0	Endangered	Threatened	G5T1	S1	1B.1
Cladium californicum California saw-grass	PMCYP04010	None	None	G4	S2	2B.2
Cordylanthus rigidus ssp. littoralis seaside bird's-beak	PDSCR0J0P2	None	Endangered	G5T2	S2	1B.1
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Danaus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	None	None	G4T2T3	S2S3	
Deinandra increscens ssp. villosa Gaviota tarplant	PDAST4R0U3	Endangered	Endangered	G4G5T2	S2	1B.1
Delphinium parryi ssp. blochmaniae dune larkspur	PDRAN0B1B1	None	None	G4T2	S2	1B.2
Delphinium umbraculorum umbrella larkspur	PDRAN0B1W0	None	None	G3	S3	1B.3
Diplacus vandenbergensis Vandenberg monkeyflower	PDSCR1B381	Endangered	None	G1	S1	1B.1
Dithyrea maritima beach spectaclepod	PDBRA10020	None	Threatened	G1	S1	1B.1
Dudleya blochmaniae ssp. blochmaniae Blochman's dudleya	PDCRA04051	None	None	G3T2	S2	1B.1
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Erigeron blochmaniae Blochman's leafy daisy	PDAST3M5J0	None	None	G2	S2	1B.2
Eriodictyon capitatum Lompoc yerba santa	PDHYD04040	Endangered	Rare	G2	S2	1B.2



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Eucyclogobius newberryi</i> tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
<i>Eumops perotis californicus</i> western mastiff bat	AMACD02011	None	None	G5T4	S3S4	SSC
<i>Falco peregrinus anatum</i> American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
<i>Gasterosteus aculeatus williamsoni</i> unarmored threespine stickleback	AFCPA03011	Endangered	Endangered	G5T1	S1	FP
<i>Horkelia cuneata var. puberula</i> mesa horkelia	PDROS0W045	None	None	G4T1	S1	1B.1
<i>Horkelia cuneata var. sericea</i> Kellogg's horkelia	PDROS0W043	None	None	G4T1?	S1?	1B.1
<i>Lasionycteris noctivagans</i> silver-haired bat	AMACC02010	None	None	G5	S3S4	
<i>Lasiurus blossevillii</i> western red bat	AMACC05060	None	None	G5	S3	SSC
<i>Lasiurus cinereus</i> hoary bat	AMACC05030	None	None	G5	S4	
<i>Lasthenia glabrata ssp. coulteri</i> Coulter's goldfields	PDAST5L0A1	None	None	G4T2	S2	1B.1
<i>Layia carnosa</i> beach layia	PDAST5N010	Endangered	Endangered	G2	S2	1B.1
<i>Layia heterotricha</i> pale-yellow layia	PDAST5N070	None	None	G2	S2	1B.1
<i>Lepidium virginicum var. robinsonii</i> Robinson's pepper-grass	PDBRA1M114	None	None	G5T3	S3	4.3
<i>Lonicera subspicata var. subspicata</i> Santa Barbara honeysuckle	PDCPR030R3	None	None	G5T2?	S2?	1B.2
<i>Monardella hypoleuca ssp. hypoleuca</i> white-veined monardella	PDLAM180A5	None	None	G4T3	S3	1B.3
<i>Monardella sinuata ssp. sinuata</i> southern curly-leaved monardella	PDLAM18161	None	None	G3T2	S2	1B.2
<i>Monardella undulata ssp. arguelloensis</i> Point Arguello monardella	PDLAM18151	None	None	G3T1	S1	1B.1
<i>Monardella undulata ssp. crispa</i> crisp monardella	PDLAM18070	None	None	G3T2	S2	1B.2
<i>Monardella undulata ssp. undulata</i> San Luis Obispo monardella	PDLAM180X0	None	None	G2	S2	1B.2
<i>Muhlenbergia utilis</i> aparejo grass	PMPOA481X0	None	None	G4	S2S3	2B.2
<i>Myotis yumanensis</i> Yuma myotis	AMACC01020	None	None	G5	S4	



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Neotoma lepida intermedia</i> San Diego desert woodrat	AMAFF08041	None	None	G5T3T4	S3S4	SSC
<i>Northern Coastal Salt Marsh</i> Northern Coastal Salt Marsh	CTT52110CA	None	None	G3	S3.2	
<i>Oncorhynchus mykiss irideus pop. 10</i> steelhead - southern California DPS	AFCHA0209J	Endangered	None	G5T1Q	S1	
<i>Phrynosoma blainvillii</i> coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
<i>Plebejus icarioides moroensis</i> Morro Bay blue butterfly	IILEPG801B	None	None	G5T2	S2	
<i>Rana draytonii</i> California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
<i>Salvadora hexalepis virgultea</i> coast patch-nosed snake	ARADB30033	None	None	G5T4	S2S3	SSC
<i>Scrophularia atrata</i> black-flowered figwort	PDSCR1S010	None	None	G2?	S2?	1B.2
<i>Senecio aphanactis</i> chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
<i>Southern California Coastal Lagoon</i> Southern California Coastal Lagoon	CALE1220CA	None	None	GNR	SNR	
<i>Southern California Steelhead Stream</i> Southern California Steelhead Stream	CARE2310CA	None	None	GNR	SNR	
<i>Southern Cottonwood Willow Riparian Forest</i> Southern Cottonwood Willow Riparian Forest	CTT61330CA	None	None	G3	S3.2	
<i>Southern Vernal Pool</i> Southern Vernal Pool	CTT44300CA	None	None	GNR	SNR	
<i>Southern Willow Scrub</i> Southern Willow Scrub	CTT63320CA	None	None	G3	S2.1	
<i>Spea hammondi</i> western spadefoot	AAABF02020	None	None	G3	S3	SSC
<i>Sternula antillarum browni</i> California least tern	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
<i>Taricha torosa</i> Coast Range newt	AAAAF02032	None	None	G4	S4	SSC
<i>Taxidea taxus</i> American badger	AMAJF04010	None	None	G5	S3	SSC
<i>Thamnophis hammondi</i> two-striped gartersnake	ARADB36160	None	None	G4	S3S4	SSC
<i>Thelypteris puberula var. sonorensis</i> Sonoran maiden fern	PPTHE05192	None	None	G5T3	S2	2B.2
<i>Trimerotropis occulens</i> Lompoc grasshopper	IORT36310	None	None	G1G2	S1S2	

Record Count: 82