



Road Map to Implementation



Blending technical expertise and active community participation to define adaptation options for the low-lying North San Pedro Road through China Camp State Park

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Cover photo by Stuart Siegel



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China Camp State Park Component of the San Francisco Bay National Estuarine Research Reserve

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Introduction

The purpose of this “road map” is to describe the steps and their sequence to move from the recently completed effort to identify and select alternatives to the development and implementation of a project to address the low-lying North San Pedro Road where it approaches and traverses China Camp State Park.

The *Options and Qualitative Evaluation Report* (SF Bay NERR 2019a) presented the project goals, feasibility criteria, and design considerations for road reconfiguration options, summarized the community-based effort to identify a wide range of alternatives, evaluated efficacy of these alternatives relative to project goals and feasibility criteria, and concluded with a community-based selection of alternatives to carry forward into project planning (see Table 1).

There are four broadly bounded “next steps” (Table 2) – feasibility study, planning and design, implementation, and long-term operations and maintenance.

This “road map” report describes the elements of the feasibility assessment (Step 1) and draft plan (Step 2) for which the next round of funding will be sought, and summarizes the environmental planning and design stage (Step 3) that will follow. Implementation and associated operations and maintenance and monitoring and adaptive management details will be worked out during the environmental planning stage.

Table 1. Alternatives Proposed and Those Carried Forward to Feasibility Investigation

No.	Name	Carry Forward	
		Yes	No
Raise-in-Place Alternatives		Yes	No
1	Raise Road on Current Alignment via Solid Fill and Improve Marsh Hydrology ¹	Yes	
2	Raise Road on Current Alignment via Pile-Supported Modular Causeway	Yes	
3	Floating (Pontoon) Roadway		No
Reroute Alternatives			
4	The “Low Road” Relocation Around Back Ranch and/or Miwok Meadows	Yes	
5	The “Middle Road” Reroute Higher up Within the Park and its Watershed		No
6	The “High Road” Reroute Over the Ridge		No
Maintain or Slightly Improve Existing Road Alternatives			
7	Retain Current Road and Improve Marsh Hydrology	Yes	
8	Lower Road and Improve Marsh Hydrology		No
9	Maintain Status Quo	Yes	

Notes:

1. Alternative 1 from Options Report modified to be explicit that also includes improving marsh hydrology as described in Alternative 7

Table 2. Overview of Next Steps to Implementation

Project Stage	Purpose	Timing	Outcomes	Outputs
1) Feasibility Assessment	Assess alternatives feasibility: engineering, environmental, cultural, economic, recreation, etc. to support project selection	~1-1½ year duration after funded	Alternatives viability clearly established, some or all new data needed for CEQA collected	Feasibility Assessment Report(s), including technical appendices presenting new data collected
2) Planning, Design, Permits	Select proposed project, prepare draft plan, conduct impact assessment, complete all regulatory compliance and engineering design to “shovel ready” including cost estimates	~2 yr duration after funded	“Shovel ready” project	<ul style="list-style-type: none"> • CEQA-level project description • CEQA analyses • Project plan, monitoring and adaptive management plan, O&M plan • Natural and cultural resource consultations • Permits • Engineering plans and specifications • Engineers cost estimate • Bid package

Project Stage	Purpose	Timing	Outcomes	Outputs
3) Construction	Construct project	2023-2025 target	Completed project	As-built data
4) Long term	Initiate monitoring and adaptive management, O&M	2025 and beyond	Effectiveness assessments, O&M underway	Monitoring reports and adaptive management recommendations for time period initially funded

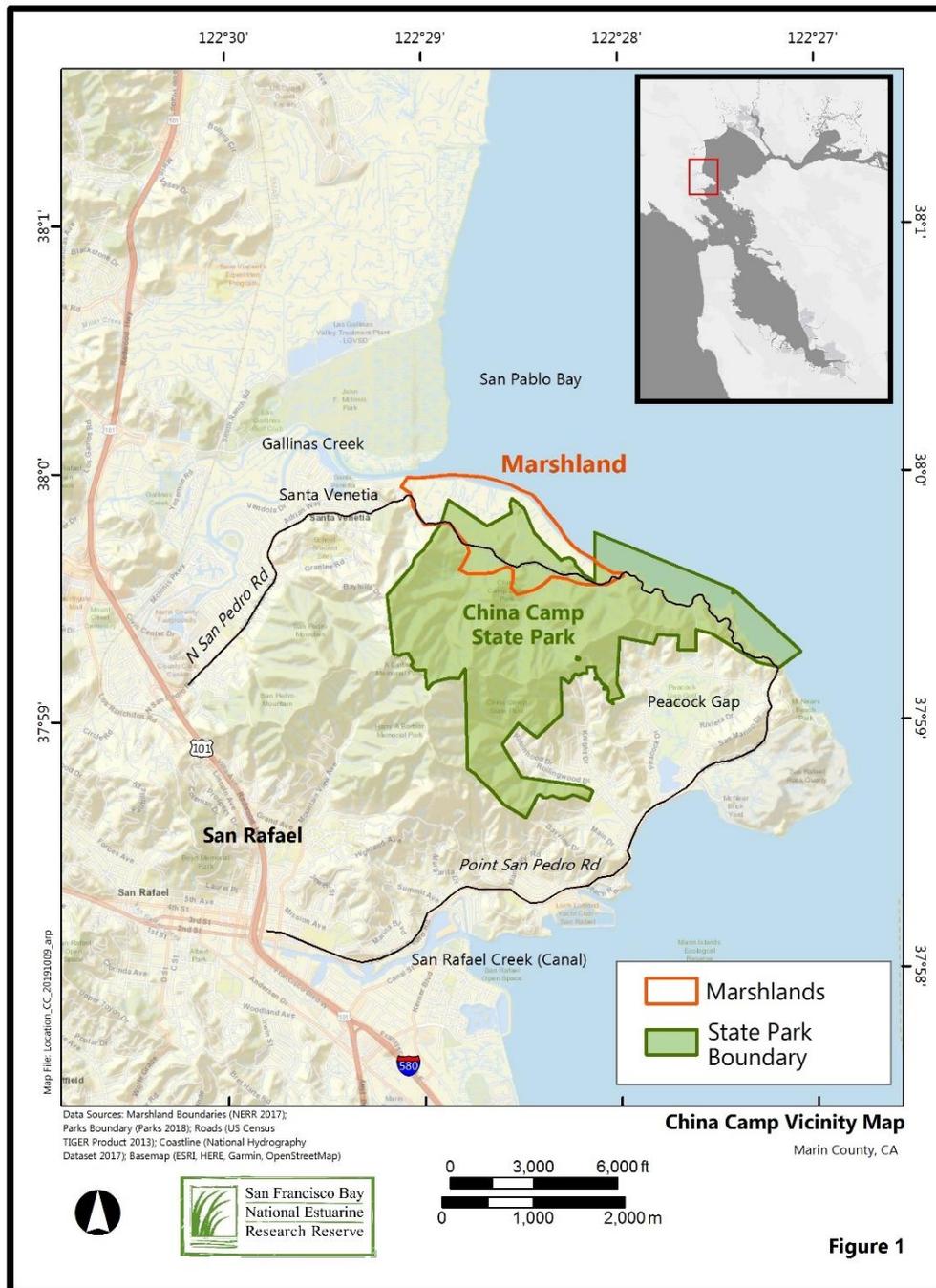


Figure 1. China Camp State Park Location Map

Step 1: Feasibility Assessment of Top-Ranked Alternatives

The feasibility evaluation includes field work, literature review, preliminary design work, agency coordination, and stakeholder engagement to elaborate alternatives, examine natural, cultural and historical resources, recreational uses, preliminary cost estimates, and regulatory compliance and Parks approval considerations. Following completion of these feasibility analyses will be selection of the proposed project based on these findings and then development of that project through the environmental design and planning process (Step 2).

Specific topics that would be covered in the feasibility study, at a minimum, are described in Table 3. From the perspective of managing the project, different entities hold appropriate responsibilities and expertise for different aspects. The SF Bay NERR project director will function as the overall coordinator of all activities to ensure effective integration. Managing funds will depend on whether one or multiple funding sources are secured and which entity or entities is best suited to carry out fiscal management.

From a practical standpoint to anticipate incremental funding availability to carry out this feasibility work, the approach is to start with a “fatal flaws” assessment (Table 4). The topics to be covered are those that scored poorly in the recently completed comparative evaluation. The expected outcome of starting with the fatal flaws assessment is to inform whether any alternatives warrant being dropped from further consideration early in the process, which will be decided as part of stakeholder participation. This outcome will allow focusing resources to develop and analyze alternatives that have merit.

Following the fatal flaws analysis, the remainder of the feasibility assessment activities would be carried out for all the alternatives retained. To support an efficient project delivery schedule, activities may start concurrent with the fatal flaws analysis that have longer duration or that are seasonally dependent.

Table 3. Feasibility Study Topics and Lead Oversight Entities

Topic	Description	Lead Oversight
Geotechnical	Field investigations of road routes foundation characteristics, to support engineering design and construction and long-term O&M cost estimates	Marin County DPW
Biological Resources	Field investigations and existing data compilation of endangered species and natural communities in and around road routes, to inform impact avoidance and minimization approaches, CEQA impact assessments	State Parks, NERR
Cultural Resources	Archival research and field investigation of archaeological and tribal cultural resources and current cultural uses in and near road routes, to inform design approaches and avoidance and minimization strategies.	State Parks,

Topic	Description	Lead Oversight
	Consultation with Federated Indians of Graton Rancheria.	
Recreation	User surveys of access and utilization, to inform how different alternatives might affect recreation and need for relocating any recreational elements	State Parks, FOCC
Topographic Surveys	Field topographic surveys in targeted areas to supplement recent County LiDAR data set to level of supporting engineering analysis, hydrologic investigations, and marsh conditions	Marin County DPW (NERR has BMs at China Camp)
Hydrology	Field hydrologic and sediment transport baseline conditions and model projected flows and sediment movement under sea level rise and storm scenarios, to inform design of hydrologic conveyance features (culverts, channels, etc.) and predict outcomes of road actions	NERR, Marin County DPW
Concept Designs	Utilizing all the above information, develop the design descriptions of all alternatives, to provide basis for cost estimating and selection of preferred alternative	NERR, Marin County DPW, State Parks
Cost Estimates	Engineers estimates for construction and long-term operations and maintenance costs of road as well as related mitigation and monitoring needs, to inform expected fiscal needs and range of prospective funding sources	Marin County DPW (road), NERR (marsh), State Parks (recreation)
Alternatives Evaluation	Update the Goals and Feasibility Criteria Assessment matrix utilizing all the above findings	NERR, State Parks, Marin County DPW
Stakeholder Engagement	Continue with stakeholder engagement including meetings, field trips, symposia, etc.	NERR, Marin County Supervisor Connolly

Table 4. Potential Fatal Flaws Analysis

Alternative	Potential Fatal Flaws and Analytical Approaches
1. Raise road with solid fill	<ul style="list-style-type: none"> • Issue 1: Significant ecological impacts and mitigation • Analytical approach: 10% design to establish footprint, calculate impacts and compensatory mitigation requirements including mitigation costs and approval processes with State Parks, CDFW, USFWS, BCDC, RWQCB, USACE. • Issue 2: Poor sea level rise adaptability • Analytical approach: Include future road raising in the design and examine associated costs and ecological impacts, and including accounting for expected fill settlement.

Alternative	Potential Fatal Flaws and Analytical Approaches
<p>2. Raise road with causeway</p>	<ul style="list-style-type: none"> • Issue 1: Costs potentially very high • Analytical approach: 10% design to establish concept, develop engineers cost estimate. Requires new geotechnical data. • Issue 2: Uncertain complexity of regulatory authorization • Analytical approach: Scoping meetings with regulatory and resource agencies during 10% design process.
<p>4. Low road relocation around Back Ranch and/or Miwok Meadows</p>	<ul style="list-style-type: none"> • Issue 1: Significant cultural and archaeological impacts are avoidable with different road alignment • Analytical approach: Road engineers to develop one or more route alignments that are consistent with local topography and geology, discussion with DPR archaeologist and FIGR to apply preliminary understanding of cultural and archaeological footprints to potential alignments and to receive input for each layout, identify level of regulatory complexity. • Issue 2: Road layout options not effective transportation corridor even with variances from road design standards (e.g., too many tight curves, significant extra transit distance) • Analytical approach: Traffic engineer and City and County Office of Emergency Services assess levels of service viability. • Issue 3: Trail and campground modifications required. • Analytical approach: Assess trail and campground modifications needed for each alignment, develop concepts for needed modifications and rough costs, assess impacts to recreational, natural and cultural resources, identify Parks and regulatory approvals required. • Issue 4: Costs potentially very high • Analytical approach: Develop initial ballpark engineers cost estimate on alignments options. Requires review of existing geologic and soils information.
<p>7. Retain current road and improve marsh hydrology</p>	<ul style="list-style-type: none"> • Issue: Level of willingness of broad stakeholder community to accept progressive increase in road flooding and associated decline in usability • Analytical approach: Develop more specific inundation projections for future conditions, discuss with stakeholders.
<p>9. Maintain status quo</p>	<p>This alternative included as the “no action” alternative for CEQA purposes</p>

Note: issues in this table taken from Table 7, Alternatives Evaluation Matrix, in the Options and Qualitative Evaluation Report (SF Bay NERR 2019a).

Step 2: Planning, Design, Environmental Compliance

The environmental planning, design and compliance process is well defined. The specific elements applicable to road reconfiguration at China Camp depend on the proposed project that is ultimately selected at the conclusion of the feasibility study, and the agency jurisdictions and consultations associated with that project.

Step 2A: Prepare Draft Adaptation Plan

The Draft Adaptation Plan will serve as the “entry point” into the environmental compliance process. It will present the following information:

- Formulation of the Proposed Project
 - Purpose and need
 - Landscape setting
 - Adaptation goals
 - Alternatives development
 - Feasibility evaluations
 - Selection of the proposed adaptation project and the community engagement process that supported that selection effort
- Project description
 - Design basis spanning the ecological, engineering, cultural resources, recreation, climate change, and community needs
 - Project design at the level necessary for CEQA impact analysis (e.g., 30% design)
- Monitoring and adaptive management
 - Expected outcomes and performance measures
 - Scientific studies incorporated into the project design
 - Potential adverse outcomes and possible strategies to address them
- Road map of the compliance and implementation paths including public engagement opportunities and funding needs.

Step 2B: California Environmental Quality Act (CEQA)

The lead agency will need to be determined and will most likely be Marin County with State Parks as a Responsible Agency. This entity will oversee preparation of the CEQA analysis. Public engagement is required at key milestones in this process and will be supplemental to and linked with the Stakeholder group.

The CEQA analysis consists broadly of the following steps:

- Scoping – this is a formal process to define the breadth of the impact analysis
- Additional studies – studies around design issues and significant environmental impacts (e.g., natural resources, cultural resources) will be completed during the feasibility study stage. Additional analysis and studies will focus on items like traffic, air quality, greenhouse gases, etc.

The intent is to keep the schedule moving forward through parallel activities during the feasibility study and draft plan preparation (Steps 1 and 2A, respectively) to the greatest extent possible.

- CEQA document – anticipating an Initial Study/Mitigated Negative Declaration, though it is possible that an Environmental Impact Report may be needed.

Step 2C: Permits and Associated Consultations

Several state and federal permits and associated consultations will be required for this project.

- **State**
 - **Bay Conservation and Development Commission** – McAteer-Petris Permit
 - **Regional Water Quality Control Board** – Water Quality Certification
 - **California Department of Fish and Wildlife** – Take Consultation, possible Lake and Streambed Alteration Agreement
 - **California State Parks** – Scientific Collection Permit, Archaeological Investigations Permit, Right of Entry Permit, and permanent easements.
 - **State Lands Commission** – Public Trust Easement or Waiver
 - **Tribal Consultation** – AB52 consultation conducted by CEQA lead agency
- **Federal**
 - **U.S. Army Corps of Engineers** – Clean Water Act and Rivers and Harbors Act Permit
 - **U.S. Fish and Wildlife Service** – Take Consultation
 - **National Marine Fisheries Services** – Take Consultation, Essential Fish Habitat Consultation
 - **Tribal Consultation** – National Historic Preservation Act Consultation

Step 2D: “Shovel-Ready” Final Design, Plans and Specifications, Bid Package

Though often the final engineering design and preparation of construction plans and specifications and the construction bid package can and does begin during the permitting stage, they are not completed until after permits are issued to ensure that all adjustments to the project design and all conservation measures that emerge from the permit process are incorporated. How much work can be done in parallel versus after permit issuance depends on the level of certainty around project design being changed or not changed. The conclusion of this step is the “shovel ready” project, ready for contractor bids and construction.

Steps 3 and 4: Construction, Long-Term Management

These two steps are premature to describe in much detail at this stage. Construction will have seasonal restrictions to protect endangered species present in the ancient tidal marshes of China Camp State Park and to protect water quality. It is very likely that construction will require two or more seasons to complete.

Once constructed, the roadway infrastructure will become part of Marin County’s ongoing road maintenance program. Some maintenance aspects may fall to State Parks depending on the project design selected. Monitoring of the ecological outcomes will commence following construction, including observations of potential outcomes that may require ongoing adjustments (adaptive management), reporting, and developing “lessons learned” that this project can offer.

Stakeholder Participation and Technical Review

Consistent with project planning to date, throughout these activities there will be active stakeholder participation. The existing Stakeholder Group will be convened as funds are obtained to begin moving forward. At the outset, the need to bring in additional stakeholders will be assessed to ensure effective participation. Complementary to the Stakeholder Group will be a Technical Review Group. We anticipate it comprising several members of the Stakeholder Group plus targeted expertise in transportation projects, marsh restoration, and adaptation projects. This group will convene at key milestones where their review and input will be important to support an effective project.

Project Critical Path and Schedule

Figure 2 illustrates the general critical path, estimated durations of the planning steps, and funding segments to carry out the project.

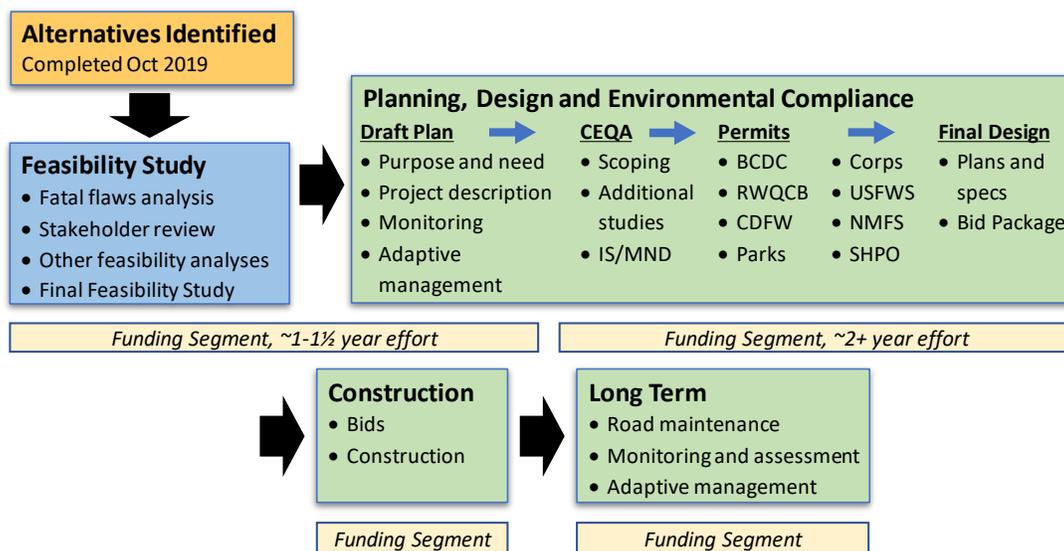


Figure 2. Project Critical Path and Estimated Schedule

Potential Funding Sources

Funding is of course essential to move this project forward. Figure 2 illustrates the four segments of funding that are typically the most effective for supporting planning and implementation. At the outset of each step, information developed from the previous step is used to determine the funding level needs for the next step. Here we list a number of potential funding sources, a few of which we describe in more detail as they are better known at this stage. Wherever possible and needed, grants will be designated as matching funds for other grants, to help leverage all fiscal resources.

The greatest challenge in seeking funding is understanding that competitive grants oftentimes are not awarded, even for well-rated proposals due to more funding requests than funding. Thus, it may be necessary at times to overlap scopes of work in funding requests when made simultaneously and if multiple awards are made then adjust and allocate specific fund sources to specific elements.

Grant Proposals Recently Submitted

We submitted two proposals to competitive grant programs in February 2020, one to the National Estuarine Research Reserve System Science Collaborative “Catalyst” grant program and one to the Bay Area Council’s California Resiliency Challenge grant program. In the hope that both grants are awarded, the concurrent timing is ideal to complete the full suite of activities listed below to keep moving forward most expeditiously. We would work with each granting entity to refine respective work plans to assign specific activities to each funding source. In particular, we are keen to invest in maintaining the collaborative community-based planning efforts that have proved so effective to date in advancing this project.

The combined scope requested in these two proposals contained the following activities:

- 1) Cultural resources field and literature review and tribal coordination. Compile all existing information and conduct field visit with FIGR representatives to develop scope of work for level of analysis necessary to support the later regulatory compliance process. State Parks Associate State Archaeologist and Tribal Liaison for the Bay Area District of State Parks to lead.
- 2) Update 2006 habitat map of marshes in northern China Camp, utilizing 2018 4-band imagery and high resolution LiDAR elevation data. SF Bay NERR lead, work with Golden Gate National Parks Conservancy that is developing an alliance-level map with these data, and NOAA Office of Coastal Management geospatial specialists to apply national-level methodologies.
- 3) Develop list of prospective special status species that may require further investigation to support permitting, via querying California Natural Diversity Database and California Native Plant Society database and working with Parks biologists and Point Blue to ensure a thorough list developed. SF Bay NERR lead.
- 4) Nesting bird surveys for two seasons in interior marsh, to support project planning and permitting. Carried out by Point Blue Conservation Science.

- 5) Recreational and educational field surveys of use, to support project planning and permitting. Carried out by recreation and education services company under close guidance from State Parks, Friends of China Camp, Marin County Bicycle Coalition, and SF Bay NERR.
- 6) Geotechnical review of existing and new, separately collected borings data to identify geotechnical issues that will have to be addressed in engineering design for alignments along the existing road. Contracted geotechnical engineering services. Marin County will provide drilling and laboratory analysis services. Geotechnical borings will also inform the cultural resources analysis and thus advance coordination will take place to link these two efforts.
- 7) Civil engineering to 10% design level and associated cost estimates. Contracted civil engineering services.
- 8) Select proposed project through end-user (stakeholder) structured decision making process, based on data gathered from above activities and from information gathered with different funding sources. SF Bay NERR lead.
- 9) Incorporate all information generated above into preliminary draft Adaptation Plan. SF Bay NERR lead, work with State Parks, County, contracted engineering service provider.
- 10) Develop detailed regulatory compliance strategy based on issues identified through above activities.
- 11) Lead periodic end user participation meetings following selection of proposed project, to ensure ongoing input into the project planning process. SF Bay NERR.
- 12) Project coordination across all parties and all activities. SF Bay NERR.

National Estuarine Research Reserve System Science Collaborative (NERRS Science Collaborative)

The SF Bay NERR submitted a \$173,000 Catalyst Grant proposal in February 2020 to cover some costs of the Feasibility Study and Adaptation Plan. Funding decisions are anticipated in June 2020, with funds under contract in fall 2020. Grant duration can be up to two years.

The NERRS Science Collaborative funded the two prior steps for China Camp adaptation planning: a \$10,000 Capacity Building grant to carry out the October 2017 Gallinas Watershed Symposium sponsored by the SF Bay NERR, and a \$157,000 Catalyst grant to carry out the first step of adaptation planning in 2018-2019 that produced the *Options and Qualitative Evaluation Report*, this *Road Map Report*, and the accompanying *Existing Conditions Report* (SF Bay NERR 2019, 2020a and 2020b). The NERRS Science Collaborative is a competitive grant program dedicated to promoting collaborative science involving the national NERRS program and administered by the University of Michigan for the next five years, as it has for the past five years. Catalyst grants, the appropriate grant type for this China Camp work, carries a maximum funding amount of \$200,000 and duration of up to two years.

Bay Area Council California Resiliency Challenge (BAC CRC)

Marin County Department of Public Works, in close collaboration with the SF Bay NERR and California State Parks, submitted a \$200,000 CRC grant proposal in February 2020 to cover some costs of the

Feasibility Study and Adaptation Plan. Funding decisions are anticipated in April 2020, with funds under contract in fall 2020. Grant duration can be up to two years.

Senate Bill (SB) 379, enacted in 2015, requires cities and counties to incorporate climate adaptation and resiliency strategies into their general plans. SB 246 (2015, Wieckowski) directs the Governor’s Office of Planning and Research (OPR) to establish an Integrated Climate Adaptation and Resiliency Program to coordinate regional and local adaptation efforts with state climate adaptation strategies. SB 1000 (2016, Leyva) further tasks municipalities, when updating their general plans, to include an environmental justice element identifying objectives and policies to reduce the unique health risks in disadvantaged communities, including pollution reduction, air quality improvement, and the promotion of public facilities. The Governor’s Office of Emergency Services (CalOES) may offer financial resources to prevent or lessen impacts from climate change.

To complement these and other climate change resilience planning efforts, the Bay Area Council’s California Resilience Challenge is providing funding by means of its 2020 Grant Program for eligible resiliency planning projects aimed at improving local resilience to climate impacts, including drought, flooding (including sea level rise), extreme heat, and wildfire. Selected plans will be innovative and replicable for other locations, will help protect critical infrastructure and vulnerable communities, and will enjoy broad community support. A key goal of the California Resilience Challenge is to support a diversity of projects in terms of scale, type, and readiness with a focus on supporting planning projects that could fast track implementation.

The California Resilience Challenge is a statewide effort, led by businesses, utilities, and a diverse range of partners, to build local and regional climate resilience and to support a shared vision for a resilient California in the face of increasing climate threats. The Challenge is providing grants for diverse, replicable and innovative climate change adaptation planning projects across California. These projects will reflect California’s diverse geography and showcase leadership in climate change adaptation. The California Resilience Challenge is an initiative of the Bay Area Council Foundation, a nonprofit corporation, qualified as a tax-exempt organization under section 501(c)(3) of the Internal Revenue Code. The Challenge is administered by the Bay Area Council, a business-sponsored public policy advocacy organization for the nine-county Bay Area that was founded in 1945. Learn more at bayareacouncil.org. The California Resilience Challenge has a Grant Fund in excess of \$2 million. The sources of the Grant Fund include businesses, utilities, nongovernmental organizations, and foundations. Donors to the Grant Fund are identified at ResilientCal.org/leadership.

Other Potential Funding Sources

Marin County Department of Public Works

Marin County indicated during stakeholder meetings that it has remaining federal stimulus funds from 2009 allocations that could be utilized for maintenance needs for North San Pedro Road. These funds have multiple demands upon them, require County staff oversight and coordination, are focused on road maintenance and improvement actions, and can carry added regulatory complexity of National

Environmental Protection Act (NEPA) analysis atop CEQA analysis. Further, the Covid-19 crisis will reduce gasoline tax and California Senate Bill 1 revenues both of which are tied to gasoline consumption, which in turn will impact road projects in Marin County (and throughout California).

Table 5. Potential Funding Sources Information

Program	Granting Entity	Funding cycle/ RFP Timing	Website
Coastal Protection, Restoration of Bay Wetlands	State Coastal Conservancy	Ongoing	https://scc.ca.gov/2019/08/22/coastal-conservancy-awards-over-26-7-million-for-coastal-protection-restoration-of-bay-wetlands-beach-wheelchairs-and-explore-the-coast-program/
Flood Mitigation Assistance (FMA) grant program	FEMA	9/19-2/20	https://www.fema.gov/flood-mitigation-assistance-grant-program
National Coastal Resilience Fund	NFWF	10/2020	https://www.nfwf.org/coastalresilience/Pages/home.aspx
Catalyst Grant ¹	NERRs Science Collaborative	Announced Oct 2019, due Feb 2020	http://nerrssciencecollaborative.org/catalyst
California Resiliency Challenge ¹	Bay Area Council	Announced Dec 2019, due Feb 2020	https://www.bayareacouncil.org/storm-flood-protection/california-resilience-challenge-announces-statewide-competition-for-climate-adaptation-projects/
Road Repair and Accountability Act	Senate Bill 1	2020	https://catc.ca.gov/programs/sb1/
Habitat restoration/ flood protection	Restoration Authority/ Measure AA	Each fall, due usually each Nov.	https://abag02.prod.acquia-sites.com/restoration-authority-grants
Restoration Program	CDFW	Fall 2019	https://www.wildlife.ca.gov/Conservation/Watersheds/Restoration-Grants
Environmental Program	Marin Community Foundation	Announced fall 2019	https://www.marincf.org/buck-family-fund-grants/environment/environmental-leadership-development
Greenhouse Gas Fund	CDFW	10/2020	https://www.wildlife.ca.gov/Conservation/Watersheds/Greenhouse-Gas-Reduction
Priority Conservation Area Program	Association of Bay Area Governments	Within Play Bay Area 2050 planning	https://abag.ca.gov/our-work/land-use/pca-priority-conservation-areas/pca-grant-program
Multiple	Private Foundations	Ongoing	https://fconline.foundationcenter.org/
Focus on supporting other fundraising efforts, some funds may be available	California State Parks Foundation	Ongoing	https://www.calparks.org/what-were-doing/park-funding

¹ Grant proposal submitted for this project.