San Pedro Creek Watershed Work Plan

San Pedro Creek Watershed Coalition (SPCWC) a 501(c)(3) Non-Governmental Organization

March 2018 Update

Introduction

San Pedro Creek is perennial stream with a watershed area of 8.2 square miles that drains the western Santa Cruz Mountains, travels through the city of Pacifica, California, and empties into the Pacific Ocean at Linda Mar State Beach. It is the only creek home to steelhead between the Golden Gate and Half Moon Bay. Although sections of San Pedro Creek are relatively undisturbed, including the Middle Folk and South Fork, much of the Creek is either confined to a narrow riparian corridor through residential development or to culverts. Approximately half of the contributing watershed habitat is in good condition, protected by these jurisdictions:

- City of Pacifica open space (Cattle Hill and Pedro Point Headlands),
- San Mateo County Parks (San Pedro Valley County Park, Devils Slide County Park and Sanchez Adobe Historical Site),
- Golden Gate National Recreation Area or GGNRA (Sweeney Ridge), and
- California State Parks (Linda Mar State Beach and McNee Ranch State Park).

Despite the fact that surrounding habitat is in good natural condition, the watershed is subject to constant stress from pollution. Almost all of the storm drains associated with residential development in the watersheds empty into the Creek. During storms, the Creek waters rise rapidly due to the impervious pavement and rooftops. Although the amount is unknown, contamination by road oil and grease, pesticides and herbicides, soaps and other residential pollutants find its way into the Creek, and has led to fish kills. In addition, aging and leaky sanitary sewer laterals and mains appear to contaminate the creek with residential sewage waste. Upland erosion and failing stream banks, exacerbated by rapid runoff from hard surfaces in residential areas, contribute excessive sediment, which can be harmful to steelhead and other aquatic organisms, and threaten property along the stream. The Creek may also face future stress under different climate change scenarios that result in increased water temperatures, changes in base flows, or rising sea levels.

In spite of the stresses on the stream due to urbanization, the watershed supports a diverse community of aquatic and terrestrial organisms, including a wild steelhead population; the CA red-legged frog and other amphibians; mountain lions, bobcats, and coyotes; and a host of upland birds, neotropical migrants, resident riparian birds, shorebirds and waterfowl. Efforts to reduce threats and restore ecosystem health may help preserve streamside property and conserve the biological integrity and the recreational value of the SPCWC.

Founded in 1999, San Pedro Creek Watershed Coalition (SPCWC) is a non-governmental organization (NGO) with 501(c)(3) status dedicated to leading stewardship of the SPCW through community involvement with city, county, state, and federal resource managers. The SPCWC has been successful in obtaining grants funds to perform water quality monitoring and both physical and biological stream assessments, and to implement fish passage improvement projects, among other actions described below.

This document updates the workplan of the SPCWC to reflect current goals and objectives for community outreach, restoration projects, and conservation efforts on the Creek and in the

watershed. The ultimate purpose of this workplan is to provide guidance on how to best implement stewardship of the Creek for generations to come.

Goals

In pursuit of ecosystem health, restoration, and sustainability of the creek, the SPCWC has identified the following goals for best stewardship processes:

- Promote community involvement in the watershed through outreach programs with the general public, other NGOs working in Pacifica, local schools, colleges, and universities, and with local, state and federal agencies.
- Restore ecosystem functions and improve existing habitat to impacted areas of the watershed.
- Improve water quality throughout the creek, to benefit sensitive aquatic wildlife and humans (e.g., surfers and beachgoers).
- Promote flood protection measures to minimize stream bank erosion, protect streamside property, and allow for fish passage.
- Monitor state of crucial stream components, such as water quality and the steelhead population, in order to assess the effects of environmental changes, human perturbations, and restoration measures.

Summary of the March 2002 Assessment Plan and Accomplishments to Date

The SPCWC developed a plan in 2002 to address a host of issues identified at that time to improve in-stream conditions, reduce pollutant loads, and generally promote community involvement in these issues (see http://pedrocreek.org/SPCW_Assess_Enhance_Plan.pdf for details). This workplan was organized into the following management areas:
(a) Geomorphic Assessment; (b) Biological & Ecological Assessment; (c) Water Quality Assessment and Mitigation; (d) Information Compilation, Analysis and Planning; (e) Restoration Program; and (f) Education & Outreach.

Many of the elements of this 2002 Plan are incorporated into the revised workplan, as the issues remain valid. However, several projects that were listed in Tables 1 & 2 of the 2002 Assessment Plan have been completed. The major accomplishments by the SPCWC and other organizations are listed as follows:

1) Added to the geomorphic analysis of the stream by conducting channel cross sections and analyzing upland sediment sources (SPCWC and San Francisco State University).
2) Completed a snorkeling survey of juvenile steelhead in the stream (SPCWC and San Francisco State University).
3) Determined sources of bacterial pollution using both optical brighteners (found in laundry soaps) and DNA fingerprinting (SPCWC).
4) Restored steelhead passage at the Capistrano fish ladder and in the downstream section of the Creek. This project counteracted severe erosion downstream from the bridge, provided improved steelhead habitat and passage, and stabilized the creek banks of nearby properties. (Work was done by the City of Pacifica, with input and monitoring by the SPCWC, and with grants from the CA State Coastal Conservancy, CA

Department of Fish and Wildlife, State Water Resources Control Board, CA Department of Water Resources, National Fish and Wildlife Foundation, American Rivers, and NOAA.)

5) Restored the floodplain and improved habitat in the lower reaches of the stream (just above Highway 1 to the Creek mouth). In a sequence of several projects, a channelized section of the stream was replaced with meandering path, bordered by a floodplain that provided space for waters that previously had flooded the lower Linda Mar residential and shopping areas, the new stream banks were planted with native riparian vegetation to provide shade and bank stabilization, the Highway 1 bridge was widened to provide a pathway for the stream during high flows, and the approach of the stream to the beach was modified to provide improved aquatic habitat. (Work done by the City of Pacifica, US Army Corps of Engineers, State Coastal Conservancy, CALTRANS, and the SPCWC.)
6) Controlled erosion and restore drainages and upland habitat on Pedro Point Headlands and San Pedro Valley County Park (SPVCP). (Work still ongoing by the Pacifica Land Trust with funding from the CA State Coastal Conservancy, among others at Pedro Point and by the Volunteers at SPVCP.)
7) Restored and maintained coastal habitats at Linda Mar State Beach. (Work ongoing by the Pacifica Beach Coalition with funding from multiple sources.)

As is implicit in the above list of accomplishments made possible by the hard work of many groups and individuals, there has been substantial progress in: 1) the analysis of the fluvial geomorphology of the Creek; 2) habitat improvements and flood protection in the lower reaches of the system; 3) in protecting and restoring the near-shore habitat at Linda Mar State Beach, and 4) addressing erosion control and habitat restoration in open space and parklands, notably Pedro Point Headlands where the Pacifica Land Trust has done considerable work over several decades, and the San Pedro Valley County Park where the local volunteer group and County staff have ongoing stewardship programs to protect and maintain the trails and park habitats.

In the area of water quality, much is known about sources of pollution but more work is needed to prevent sewage and residential pollutants, including trash, from entering the Creek and the Pacific Ocean. The City of Pacifica has engaged in a program of overseeing the replacement of sewer lateral lines when homes are bought and sold and a monitoring program for coliform bacteria is being conducted by the San Mateo County Resource Conservation District (SMCRCD) at Linda Mar State Beach. Despite the accomplishments and ongoing efforts, much more work is needed as described in the following section, which forms the heart of the revised workplan.

Workplan Tasks

In this section the SPCWC presents proposed task in several categories, recognizing that many of the tasks from different categories will have interacting effects. For each action, we list the activity and expected benefits, who might do the work, costs and possible funding sources, a timeframe for getting it done, and how to monitor or assess effectiveness of the action.

Section A. Outreach and Education.

The general purposes of these activities are to engage the public in the creek, to enlist volunteers in creek stewardship, and to communicate ways of minimize human impacts on the creek.

A.1. Hold periodic SPCWC workshops to which all stakeholders would be invited. The initial goal of these is to obtain input on this workplan. Later, we will focus on the other tasks in this section as targeted activities.

Benefits: improved stakeholder and citizen engagement.
Lead: SPCWC Board of Directors
Costs: none
Timeframe: two meetings annually
Monitor effectiveness: track number of attendees at meetings.

A.2. Develop a social media presence for SPCW issues. Specific tasks may include publicizing the SPCWC web site and its Facebook page, and interacting in community social media sites

Benefits: improved stakeholder and citizen engagement.
Lead: SPCWC Board of Directors
Costs: unknown
Timeframe: within 1 year
Monitor effectiveness: track social media use

A.3. Work with Terra Nova and Oceana High Schools, Ingrid B. Lacey Middle School, and Farallone Elementary School (in Montara) to develop age-appropriate education, stewardship, and Creek clean up programs.

Benefits: improved student and teacher engagement; preparing students to become good environmental citizens as adults; possibly obtaining monitoring data if so engaged.
Lead: SPCWC Board of Directors
Costs: none
Timeframe: start immediately; develop sustainable program within two years at each school
Monitor effectiveness: track number of students involved, number of curricula developed for or used by teachers on issues related to the SPCW.

A.4. Develop closer working relationships with the Pacifica Beach Coalition, the Pacifica Land Trust, and the San Pedro Valley County Park Volunteers to "cross-pollinate" with education, funding, and restoration efforts.

Benefits: improved stakeholder and citizen engagement.
Lead: SPCWC Board of Directors
Costs: none
Timeframe: two meetings annually
Monitor effectiveness: track participation and number of joint projects

A.5. Continue working with San Francisco State University (SFSU) on appropriate educational, stewardship, and Creek monitoring programs. Many studies and monitoring efforts have been accomplished by SFSU students through the active leadership of past and current members of the Board of Directors of the SPCWC. Additionally, opportunities may exist to partner with Stanford University, which sponsored a beach water quality monitoring study this past winter and spring.

Benefits: continued student and professor engagement; preparing students to become good environmental citizens as adults; possibly obtaining monitoring and special study data if so engaged.

Lead: SPCWC Board of Directors in conjunction with SFSU faculty and students

Costs: none

Timeframe: start immediately; maintain and possibly expand connections with SFSU faculty and reach out to Stanford University students and faculty who sponsored recent study at the Creek confluence with ocean.

Monitor effectiveness: track number of students involved, number of studies developed for or used by professors on issues related to the SPCW.

A.5. Purchase and install signs indication that fishing is illegal in San Pedro Creek east of the Highway 1 bridge.

Benefits: lessen the frequency of illegal fishing to protect steelhead.

Lead: SPCWC Board of Directors

Costs: less than $100.

Timeframe: in 2018

Monitor effectiveness: ensure signs are purchased, installed, and report to Board and public.

Section B. In-stream and Streamside Habitat Improvements

B.1. Remove barriers to steelhead migration

B.1.a. Bridge replacement at Horseshoe Pit Bridge in San Pedro Valley Park.

B.1.b. Bridge replacement at the South Fork in San Pedro Valley County Park.

Both of these structures have been identified as potential barriers to fish migration as they are built on box culverts. Each has a plunge pool on the downstream end of the box culvert, which over time, will create greater barriers to fish passage. We learned from the fish barrier project completed on Weiler Ranch trail in 2001 that a significant benefit is streamside habitat restoration and hiker enjoyment of the improved scenery and the view of the creek bottom.

Benefits: improved fish passage; restore instream and riparian habitat in the project area, and increase recreational quality of hiking in the area.

Lead: SPCWC Board of Directors with assistance from contractors if planning grant can be secured.

Costs: Unknown but estimated to be $150,000 each. Need a planning grant or dedicated funding to obtain longitudinal profile, cross-sectional drawings, and planform drawings that will be needed, along with a geotechnical report, engineering plans and environmental permits, to replace the existing structure. An additional challenge at this site will be to provide alternative access between the Visitor Center area and the Weiler Ranch trail.

Timeframe: Obtain a grant (possibly a CA Department of Fish and Wildlife Proposition 1 Restoration Grant Programs) within 2 years. Complete construction within 5 years. Continue to monitor project for 10 years total

Monitor effectiveness: Ability to obtain planning and construction grants; demolish and reconstruct new bridge; restore instream and riparian habitat. Monitor for fish passage and habitat occupation. Take informal visitor surveys twice annually to judge hiker experience.

Section C. Water Quality

C.1. Work with the City of Pacifica, the SMC Resource Conservation District, and the SF Bay Regional Water Board on reviewing data from the ongoing water quality monitoring study and specific recommendations that may emerge from that effort. Report on those findings in a citizen-friendly, plain language report and hold a workshop to discuss next steps.

Benefits: improved stakeholder and citizen engagement in water quality protection, stormwater management, and pollution prevention.

Lead: SPCWC Board of Directors with assistance from the San Mateo RCD, City of Pacifica, and in consultation with the SF Bay Regional Waterboard

Costs: minimal; could seek funding to offset costs incurred from workshop(s)

Timeframe: hold at least one public workshop within 6 months of final report by the RCD

Monitor effectiveness: track number of attendees at meetings and feedback from stakeholders

C.2. Capture stormwater runoff to divert and treat it within the watershed. Design and construct stormwater sinks along streets or on public property. For example, these might consist of vegetated curb extensions or corner bulb outs to capture flow from gutters into very permeable soil sinks. Also encourage permeable pavement and use of rain barrels. As part of a public outreach process (Section A), develop a range of methods to inform the public of the dangers of dumping harmful materials into streets and gutters.

Benefits: Decreased stormwater flow into the Creek, resulting in less "flashiness", and decreased pollutants in the Creek as well.

Lead: City of Pacifica Public Works together with SPCWC and the San Mateo RCD

Costs: Substantial. Grants are available both from stormwater management funds and water quality or fisheries protection agencies.

Timeframe: Unknown. Consult with partners to determine where stormwater capture would have maximum effect, and how to structure the grants.

Monitor effectiveness: Track water flow in the Creek during storm events, and monitor pollutants

Section D. Upland Habitat and Contributing Watershed

D.1. Work with the City of Pacifica, the SMC Resource Conservation District, the Pacifica Beach Coalition, the Parks, Beaches and Recreation Commission, and the City's Open Space and Parkland Advisory Committee on reviewing the status of erosion issues and trail conditions on open space controlled by the City (Cattle Hill, Linda Mar State Beach). Develop recommendations for remedial actions and funding needed.

Benefits: improved water quality and habitat protection, stormwater management, and pollution prevention. Improved visitor quality of experience and protection of infrastructure.

Lead: SPCWC Board of Directors with assistance from the San Mateo RCD, City of Pacifica, and in consultation with committee and commission listed above.

Cost: unknown; Cattle Hill estimated at $100,000; would need to seek grant funding for any projects.

Timeframe: scoping within one year; initiate securing grants as soon as possible. Complete work within 5 years.

Monitor effectiveness: track number of projects; use photodocumentation and standard monitoring of vegetation or erosion control as required on a project-by-project basis.

Section E. Monitoring and Assessment

Every management action should be followed by a program of monitoring to assess the proposed benefits of the action. In addition, we propose some continuing, long-term progams to monitor certain aspects of the health of the creek, in order to inform future actions that might be taken in response to new findings.

E.1. Develop steelhead monitoring programs.

a. Install fish-counting devices in one or more places along the stream to monitor the number of adult steelhead returning to the creek to spawn each year

Benefits: provide baseline information on the status of the steelhead population in the SPCW. Then, the data and information can be used as a basis for understanding possible response to habitat restoration and fish barrier removal projects, and to unknown future factors affecting steelhead populations.. The data can also be used for public awareness and education programs.

*Lead***:** SPCWC Board of Directors with assistance from contractors if a planning grant can be secured.

Costs: Perhaps $150,000 for an automated monitoring system for an initial year.

Timeframe: report to the Board of Directors by end of 2017; seek funding to initiate basic program within 1 year.

Monitor effectiveness: completion of basic monitoring program and posting of data on website and Facebook page.

b. Develop a citizen-based steelhead monitoring program, based on counts of juvenile steelhead made during late summer and autumn in repeatedly-observed portions of the stream. In addition, the Coalition can act as a repository for other citizen-based observations in the creek.

Benefits: provide baseline information on the status of the steelhead population and other aquatic organisms in the SPCW. Then, the data and information can be used as a basis for understanding possible response to habitat restoration and fish barrier removal projects. The data can also be used for public awareness and education programs. This could include the promotion of the use of "Go Pro" cameras to document underwater life, the submission of still photographs of wildlife, stream conditions (good and bad), and images to promote the appreciation of the watershed. Finally, this program would engage citizens in the health of the creek.

*Lead***:** SPCWC Board of Directors

Costs: unknown, but a plan is currently being drafted to exploring costs, feasibility, and funding partners.

Timeframe: report to the Board of Directors by end of 2017; seek funding to initiate basic program within 1 year. Then operate the program in perpetuity.

Monitor effectiveness: completion of basic monitoring program and posting of data on website and Facebook page.

E.2. Place stream flow gauges at important points along the stream {middle fork above the north fork confluence, north fork, and below north-fork confluence?}.

Benefits. Provide a baseline for measuring the effects of hard-surface runoff from the north fork on peak flow downstream. These data can be used to evaluate the need for measures to

reduce flow from the north fork, and to evaluate the effects of any management actions taken there.

Lead. SPCWC Board of Directors

Costs. Unknown

Timeframe. Develop cost estimates and deployment plan by end of 2017. Seek funding to initiate the project within one year.

Monitor effectiveness. Provide a report of data annually.

E.3. Monitor pollutants (e.g. herbicides and pesticides), soaps (via brighteners), turbidity, and continue to monitor bacterial contamination in the Creek.

Benefits: Provide baseline and ongoing levels of contaminants harmful to steelhead and other users of the Creek. These measurements, along with the flow measurements, will provide an assessment of effectiveness of stormwater capture and outreach efforts to reduce pollution.

Leads: San Mateo RCD (current bacteriological monitoring) and SPCWC

Costs: Unknown, mainly lab analysis

Timeframe: Ongoing

Monitor effectiveness: Yearly report of results

F. Special Studies and Feasibility Analyses

Some projects are of such magnitude and complexity that we recognize that further studies are needed to determine if a particular project is feasible. Other issues need addition technical or scientific studies to understand the nature of the problem before action can be taken with any certainty of outcome. This section is intended to capture those issues or projects.

F.1. Bridge replacement at Adobe Drive. This has long been identified as a challenging project in a difficult reach. The reach above and below Adobe Drive is lined with houses on each side and the valley floor is entrenched.

Benefits: reduce flooding and protect property and infrastructure, improve fish passage, improve streamside habitat

*Lead***:** SPCWC Board of Directors with assistance from contractors if a planning grant can be secured.

Costs: unknown

Timeframe: obtain funding for feasibility analysis within 2 years; report to City Council within 3 years on status of project feasibility

Monitor effectiveness: track progress toward getting study completed; ultimate success is planned bridge replacement (as opposed to responding to an emergency repair/replacement)

F.2. Study the feasibility of treating stormwater from the underground portion of the North Fork before it empties into Creek next to Park Mall.

Benefits: reduce flooding and protect property and infrastructure, improve fish passage, improve streamside habitat

Costs: unknown

Timeframe: obtain funding for feasibility analysis within 2 years; report to City Council within 3 years on status of project feasibility.

Monitor effectiveness: track progress toward getting study completed; ultimate success is planned bridge replacement (as opposed to responding to an emergency repair/replacement).

F.4. Study the feasibility of constructing a car wash in Linda Mar for the purpose of allowing residents to wash vehicles at a subsidized rate (or free) in order to minimize the amount of soaps and other pollutants from entering the Creek. This would have the ancillary benefit of reducing water consumption as modern car washes recycle water.

Benefits: reduce the amount of soaps, which are especially harmful to fish, from getting into the storm drains and then the Creek. Other pollutants, such as brake lining, brake fluid, oil and grease would be discharged at a lower rate than is released into the environment.

Lead: SPCWC Board of Directors with assistance from contractors if a planning grant can be secured.

Costs: unknown

Timeframe: obtain funding for feasibility analysis within 2 years; report to City Council within 3 years on status of project feasibility.

Monitor effectiveness: track progress toward getting study completed; ultimate success is to construct a car wash that would encourage residents of the SPCW to use it with the goal of severely reducing pollutants from washing cars on the street or in driveways.

F.5. Study the feasibility of restoring the South Fork of San Pedro Creek in the vicinity of the former trout farm.

Benefits: restore stream habitat for steelhead and improve visitor experience.

Lead: SPCWC Board of Directors with the SMC Parks Department, with assistance from contractors if a planning grant can be secured.

Costs: unknown

Timeframe: obtain funding for feasibility analysis within 2 years; report to the Board of Directors within 3 years on status of project feasibility.

Monitor effectiveness: track progress toward getting study completed; ultimate success is restoring this section of the Creek.

F.6. Study the feasibility of connecting the Sanchez fork to the main stem of San Pedro Creek.

Benefits: increase habitat connectivity; remove a potential fish barrier.

*Lead***:** SPCWC Board of Directors with assistance from contractors if a planning grant can be secured.

Costs: unknown

Timeframe: obtain funding for feasibility analysis within 2 years; report to the Board of Directors within 3 years on status of project feasibility.

Monitor effectiveness: track progress toward getting study completed; ultimate success is planned bridge replacement (as opposed to responding to an emergency repair/replacement).

F.7. Study the concern raised about citizens building *ad hoc* crossings of the Creek near its confluence with the Ocean to make it easier to cross in moderate to high flows.

Benefits: remove a potential barrier to inbound adult steelhead, out-migrating adults and smolt steelhead and Pacific lamprey; assist beach visitors with a manageable way to get from one side of the Creek to another.

Lead: SPCWC Board of Directors with assistance from contractors if a planning grant can be secured.

Costs: unknown. Could range from inexpensive (hand removal by volunteers on a periodic basis) to construction of an expensive permanent pedestrian overpass, similar to the one built at

Pilarcitos Creek in Half Moon Bay, that would be parallel to San Pedro Avenue but closer to the Ocean.

Timeframe: obtain funding for feasibility analysis within 2 years; report to the Board of Directors within 3 years on status of project feasibility.

Monitor effectiveness: track progress toward getting study completed; ultimate success is finding the optimal solution to the issue so that fish passage is not impeded and beach visitors have a safe and convenient way to get across the Creek.

F.8. In coordination with the Pacifica Land Trust (PLT), evaluate the possibility of securing sites within the watershed to protect valuable streamside habitats.

Benefits: Purchase and protect important parcels to restore habitats, possibly to establish recreational or education facilities and generally to maintain critical open space.

Lead: SPCWC Board of Directors and PLT.

Costs: unknown and variable depending on site value, market conditions, etc.

Timeframe: obtain funding for feasibility analysis within 2 years; report to the Board of Directors within 3 years on status of project feasibility.

Monitor effectiveness: track progress toward getting study completed; ultimate success is finding the parcels and projects that protect the Creek and advance our public education and outreach goals.