SANTA MONICA BAY NATIONAL ESTUARY PROGRAM

Semi-Annual Report
October 1, 2022 – March 31, 2023

Report Date: May 22, 2023

Prepared for the United States Environmental Protection Agency

Acronyms

Caltrans	California Department of Transportation
CCC	California Coastal Commission
CCMP	Comprehensive Conservation and Management Plan
CDBW	California Department of Boating and Waterways
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CMP	Santa Monica Bay Comprehensive Monitoring Program
CRI	Loyola Marymount University's Coastal Research Institute
CSU	California State University
CVA	Clean Vessel Act
DFA	Division of Financial Assistance of the State Water Resources Control Board
EIR	Environmental Impact Report
EMPA	Estuarine Marine Protected Area
EWMP	Enhanced Watershed Management Plans
FCEC	Fish Contamination Education Collaborative
FMP	Fishery Management Plan
FY	Fiscal Year
GHG	Greenhouse Gases
HAB(s)	Harmful Algal Blooms
HtB	Heal the Bay
JWPCP	Joint Water Pollution Control Plant (Carson)
LACDBH	Los Angeles County Department of Beaches and Harbors
LACFCD	Los Angeles County Flood Control District
LACSD	Los Angeles County Sanitation Districts
LADWP	Los Angeles Department of Water and Power
LARWQCB	Los Angeles Regional Water Quality Control Board
LASAN	City of Los Angeles Sanitation
LCP	Local Coastal Plan
MDRA	Marina Del Rey Anglers
MPA	Marine Protected Area
MRCA	Mountains Recreation and Conservation Authority
MWD	Metropolitan Water District of Southern California
NEP	National Estuary Program
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NPS	National Parks Service
NSMBW	North Santa Monica Bay Watershed
OAH	Ocean Acidification Hypoxia
OWDS	On-site Wastewater Disposal Systems
Prop	Proposition Grant
PVPLC	Palos Verdes Peninsula Land Conservancy
ROE	Right of Entry (permit)
RCDSMM	Resource Conservation District of the Santa Monica Mountains

SCWP	Safe Clean Water Program
SCC	California State Coastal Conservancy
SCCOOS	Southern California Ocean Observing Systems
SCCWRP	Southern California Coastal Water Research Project
SCMI	Southern California Marine Institute
SFEP	San Francisco Estuary Partnership
SMBNEP	Santa Monica Bay National Estuary Program
SMBRC	Santa Monica Bay Restoration Commission
SMMC	Santa Monica Mountains Conservancy
State Parks	California Department of Parks and Recreation
SWRCB	State Water Resources Control Board
TAC	Santa Monica Bay Restoration Commission Technical Advisory Committee
TBF	The Bay Foundation
TMDL	Total Maximum Daily Load
UCLA	University of California, Los Angeles
USC	University of Southern California
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VRG	Vantuna Research Group, Occidental College
WASC	Safe Clean Water Program's Watershed Area Steering Committee
WCB	Wildlife Conservation Board
WMP	Watershed Management Plans

Overview

This semi-annual report provides an update on the Fiscal Year 2023 (FY23) Work Plan tasks for the time period October 1, 2022 through March 31, 2023. The FY23 Work Plan is focused on a subset of actions and next steps identified in the 2018 CCMP Action Plan. Seven goals are identified in the CCMP Action Plan and are listed below. All seven goals are addressed by the actions and next steps identified in the FY23 Work Plan and this semi-annual report. The goals are achieved through actions by many different entities, including public agencies, municipalities, and non-profit organizations that take the lead on specific projects.

Seven CCMP Action Plan goals:

1. Protect, enhance, and improve ecosystems of Santa Monica Bay and its watersheds
2. Improve water availability
3. Improve water quality
4. Enhance socio-economic benefits to the public
5. Enhance public engagement and education
6. Mitigate impacts and increase resiliency to climate change
7. Improve monitoring and ability to assess effectiveness of management actions

Structure and Semi-Annual Report

This section of the semi-annual report is organized by the individual actions included in the FY23 Work Plan. For each action the Long-term Environmental Results from the CCMP Action Plan are identified and brief updates on implementation of the next steps are included in a table. A narrative section follows the table for next steps that required more description. In some cases, the table identified that a next step did not have project activities during this time period; this was due to a combination of factors including but not limited to funding, partner prioritizations, or permitting delays.

Additional information on activities can be found on the SMBNEP website, the CCMP Action Plan, the FY23 Work Plan, and as part of individual products produced for each project.

CCMP Action #1

Acquire open space for preservation of habitat and ecological services

Long-term Environmental Results / Outcomes: Publicly acquire new open space as it becomes available throughout the watershed to promote connectivity, preserve habitat, and sustain ecological services

Action #1 Next Steps / Project Name	Objectives	Status	Annual Report Update
Support partners in identification and prioritization of key acquisition or conservation easement properties	To acquire and/or protect high priority properties that are at risk of development, or provide high diversity, include wildlife corridors, and/or provide local socio-economic benefits	Ongoing	In December 2022 MRCA acquired an 8.2-acre property in Agoura Hills that serves as a corridor for deer, bobcat, and mountain lion and contains the federally listed Agoura Hills dudleya, CESA candidate species crotch bumble bee, Ojai navarretia, Coast live oak, and scrub oak woodland. The property borders hundreds of acres of already protected open space including the western approach of the Wallis Annenberg Wildlife Crossing. Acquisition was secured by a $2.3 million grant from the State Wildlife Conservation Board and a $330,000 grant from SMMC.

CCMP Action #2

Restore kelp forests in the Bay to improve the extent and condition of the habitat

Long-term Environmental Results / Outcomes: Restore 150 acres of kelp forest to improve habitat functions, local fisheries, and coastal resilience

Action #2 Next Steps / Project Name	Objectives	Status	Annual Report Update
Implement the rocky reef/kelp forest restoration project	To restore three acres of rocky reef kelp forest by reducing urchin density within barrens to the target 2 urchins per square meter to allow the reestablishment of giant kelp; To inform statewide restoration and management of kelp forest/rocky reefs	Ongoing	Partnered with commercial urchin harvesters to cull urchin densities within 2.22 acres of urchin barrens off Point Fermin, Palos Verdes; TBF pre-monitored a total of 2.45 acres of urchin barren, during this time period at Point Fermin with support from SeaTrees. At the December 15, 2022 SMBRC Governing Board meeting, TBF staff presented on the Palos Verdes Kelp Forest Restoration project including goals, benefits to ecosystem health and fisheries, restoration sites and procedures, post-restoration monitoring results, and observed kelp recruitment and growth from 2014 to 2021. See the SMBNEP FY22-23 Bipartisan Infrastructure Law semi-annual report for additional updates.
Biological response monitoring of restoration areas	To track the response of the kelp forest community after restoration activities occur	Ongoing	Conducted all pre- and post-restoration monitoring for 2.22 acres cleared during this project period; annual biological response surveys will be conducted in summer 2023.

Action #2 Next Steps / Project Name	Objectives	Status	Annual Report Update
Develop recommendations for the deposition of materials from Rindge Dam or other suitable sources to augment sediment supply	To support scientific analyses, inform priorities, and assist with site evaluations and communications for material deposition	Ongoing	Planning process for the Malibu Creek Ecosystem Restoration Project including the potential use of the material behind Rindge Dam for nearshore reef restoration and sediment augmentation (see Action #9)
Conduct carbon sequestration assessment of kelp restoration project	To assess carbon sequestration potential of kelp forest restoration	Ongoing	No activities occurred during this reporting period.

Action #2 Narrative:

Teams of restoration divers (via SCUBA) have been clearing the ocean floor of excess purple sea urchins (*Strongylocentrotus purpuratus*), thereby reducing herbivory and allowing for the natural recruitment and development of giant kelp (*Macrocystis pyrifera*). During the reporting period of October 1, 2022 through March 31, 2023, 2.45 acres were pre-monitored, and 2.22 acres of reef were cleared of excess urchins off White Point and Pt. Fermin. Restoration efforts will continue to be conducted to further work at White Point and Point Fermin.

A total of 62.33 acres of reef have been restored along Palos Verdes since the beginning of the project in July 2013. In that time, TBF and partners documented the development of a variety of macroalgae communities occurring on the reefs, higher densities and biomass of kelp bass (*Paralabrax clathratus)* and other fish species within restoration sites, increased density of CA spiny lobster (*Panulirus interruptus)*, higher algal and invertebrate diversity at all restoration sites, and increased *Strongylocentrotus purpuratus* and *Mesocentrotus fransicanus* gonadosomatic indices. These increases are comparable to reference site values. Focusing on kelp restoration areas where *S. purpuratus* suppression had occurred, canopy percent cover and kelp acreage increased in the completed restoration sites.

CCMP Action #3

Recover abalone populations in the Santa Monica Bay and region to support rare species and socioeconomic benefits to people

Long-term Environmental Results / Outcomes: Establish 2-3 minimally viable green and red abalone populations (i.e., at least 2,000 abalone per hectare) in the Bay; establish 1-2 viable white abalone populations (i.e., at 2,000 abalone per hectare) in the Bay

Action #3 Next Steps / Project Name	Objectives	Status	Annual Report Update
Establish abalone outplanting sites and conduct juvenile and larval outplanting	To reintroduce abalone, test effectiveness of outplanting methods, and assess habitat site suitability	Ongoing	Maintained temperature and dissolved oxygen logger deployments at outplanting site; 621 white abalone were outplanted to SAFEs and BARTs on October 13, 2022. See the SMBNEP FY22-23 Bipartisan Infrastructure Law semi-annual report for additional updates.
Monitor abalone restoration and reference sites	To conduct SCUBA-based surveys within outplant sites to assess the survivability of outplanted abalone and suitability of the site for future outplanting efforts	Ongoing	Outplant monitoring occurred at scheduled intervals of one week, two weeks, and one month post SAFE opening, followed by quarterly site monitoring thereafter; during this reporting period 19 live white abalone were observed on site and 235 white abalone shells were collected.
Captive spawn abalone	To research captive spawning and larval culturing techniques, and raise abalone in aquaculture facility for outplanting	Ongoing	No captive abalone were spawned at SCMI during this reporting period. This spawning season, the White Abalone Captive Breeding Program facility partners collected 9.5 million eggs resulting in 2 million competent larvae.

Action #3 Next Steps / Project Name	Objectives	Status	Annual Report Update
Maintain aquaculture facility for abalone	To facilitate captive spawning and rearing of red and white abalone in support of future restoration activities for outplanting in the wild; to serve as central staging facility for southern California outplant efforts	Ongoing	TBF and SCMI staff continued to operate and maintain two abalone laboratory spaces at SCMI, housing red and endangered white abalone; staff transferred ~2,800 juvenile white abalone from The Cultured Abalone Farm, Aquarium of the Pacific and Moss Landing Marine Lab. Animals >25mm will be outplanted in spring and fall 2023

Action #3 Narrative:

TBF operates and maintains two mariculture facilities located at SCMI. These spaces serve as a wet lab and hatchery for abalone rearing, experimentation, and long-term housing of broodstock. The facility is a registered aquaculture facility and has been certified as “sabellid free” by CDFW.

Site monitoring follows this schedule after SAFEs have been opened, allowing abalone to egress onto the reef: one week, two weeks, one month, and quarterly. Site monitoring is not performed if weather or ocean conditions do not permit a safe or productive day of diving. For assessment, the site is broken into ten 4 x 30-meter surveys and the divers will survey that area in approximately 40 minutes. Divers use flashlights to investigate crevices and carefully look under small rocks for abalone. When a diver encounters an abalone, its location, length (if able to measure), tag ID (if able to read), and any other notes are recorded.

TBF has visited the PVR01 site 35 times since the spring 2021 white abalone outplant date and have collected shells and recorded live observations of outplanted white abalone. During this reporting period, TBF and partner organizations visited the PVR01 site seven times and recorded 19 live observations of outplanted abalone and collected 235 shells. Since the spring 2021, 253 live observations of outplanted abalone have been recorded, which accounts for 9% of the total abalone outplanted. Additionally, a total of 538 shells have been collected that can be traced back to the spring 2021, fall 2021, spring 2022, and fall 2022 outplants with another 74 shells with unknown identification due to lost tags.

Although the mortality rate may seem high, the total shells collected only account for approximately 30% of the total number of abalone outplanted since the first outplant associated with TBF's current NOAA Restoration Center grant. Periodic monitoring will continue to identify live abalone and shells to assess survivorship.

In preparation for 2023 outplanting events, on January 5, 2023, 539 white abalone were transferred from Aquarium of the Pacific to TBF's abalone laboratory at the Southern California Marine Institute (SCMI). On January 12, 2023, due to storm impacts and flooding, The Cultured Abalone Farm (TCAF) evacuated approximately 2,030 white abalone to TBF abalone laboratory. On February 1, 2023, TBF staff transferred 216 white abalone from the Moss Landing Marine Lab (MLML) to TBF abalone facility. Any abalone 25mm or greater in size will be outplanted this spring and fall 2023 at the experimental abalone sites off Palos Verdes and San Diego.

CCMP Action #4

Assess and restore seagrass habitats in the Santa Monica Bay and nearshore environments to benefit marine ecosystems and improve coastal resilience

Long-term Environmental Results / Outcomes: Restore 2-5 acres of seagrasses to the Bay to improve habitat functions and coastal resilience

Action #4 Next Steps / Project Name	Objectives	Status	Annual Report Update
Survey the extent and condition of seagrasses in the Bay using R2Deep2, side-scan sonar, and SCUBA divers to inform the Comprehensive Monitoring Program	To survey the extent and condition of seagrasses in the Bay using SCUBA divers and side-scan sonar, to inform the CMP and restoration activities	Ongoing	TBF and project partners conducted numerous SCUBA-based surveys to monitor seagrass within the Bay at transplant and donor sites; quarterly surveys were conducted in October 2022 and January 2023; TBF, Paua Marine Research Group, Vantuna Research Group, and Scripps Institution of Oceanography procured CA State Proposition 50 funding to utilize SCUBA-based surveys, side-scan sonar, and deployment of biophysical oceanographic sensors to further elucidate key data gaps outlined in the CMP surrounding SAV and soft-bottom habitat within the Bay.
Develop restoration methods for eelgrass (*Zostera pacifica*) in the Santa Monica Bay	To improve understanding and probability of success for offshore eelgrass restoration using transplant methods	Ongoing	Continued collaboration with Paua Marine Research Group and partner agencies to improve understanding of eelgrass restoration methods to apply to the pilot project. A CRI research effort is in development for the summer of 2023 that will aid in our understanding of environmental stressors impacting the health of *Z. marina*. A QAPP is in development and is expected to be submitted to the USEPA in spring 2023.

Action #4 Next Steps / Project Name	Objectives	Status	Annual Report Update
Conduct pilot restoration project(s) of offshore eelgrass in the Bay	To conduct a pilot restoration project of offshore eelgrass in the Bay within a one-acre footprint	Ongoing	TBF staff and partners implemented a pilot project *Z. pacifica* transplant effort in July 2021; during this reporting period, TBF and project partners conducted quarterly monitoring at the transplant sites in October 2022 and January 2023;
Evaluate restoration potential of seagrasses in the Bay, harbor, wetlands, and nearshore environments	To improve understanding and probability of success for seagrass restoration projects	Ongoing	Ongoing monitoring of donor and transplant sites involved the deployment of PAR and MiniDot sensors in existing *Z. marina* and *Z. pacifica* beds in Santa Monica Bay, Catalina Island and La Jolla. Data collected at these sites will be used to inform site selection for future transplant efforts. Data are being processed with results presented in a report due later this spring.

Action #4 Narrative:

Santa Monica Bay Subtidal Eelgrass Restoration: This innovative project, funded by State Coastal Conservancy (as part of the LA Living Shoreline Project), Honda Marine Science Foundation, and NEP Coastal Watershed Grants Program, incorporates the experimental establishment of subtidal eelgrass offshore of Dockweiler Beach, Redondo Canyon, and Malaga Cove within Santa Monica Bay. TBF staff participated on a regional Submerged Aquatic Vegetation Technical Advisory Committee, led by SCCWRP. This group provided external scientific input and recommendations to the subtidal components of the restoration project, while concurrently spreading awareness of the importance of open coast eelgrass transplants. Further, TBF staff convened preeminent SAV researchers in California to establish the “Santa Monica Bay Subtidal Eelgrass Restoration Project Technical Advisory Committee” (TAC), comprised of researchers from academic institutions, governmental agencies, and environmental consultants. This group proved invaluable in refining the approach of the project and providing essential recommendations and insights into transplanting and monitoring processes. The members of the TAC expressed overwhelming support for the project and highlighted the importance of conducting this work.

Baseline monitoring surveys of extant *Z. pacifica* donor sites were conducted by project partners in October 2020 at donor sites off Catalina Island, including deploying a physical oceanographic sensor tracking wave characterization. In addition, side-scan sonar mapping and SCUBA-based surveys were undertaken to estimate the number of turions and expanse of the donor sites. Subsequently the project harvested Z. pacifica material from two donor beds on the backside of Catalina Island, “Palisades”, and “East End”, utilized for three transplants within Santa Monica Bay. Each transplant site received roughly 500 turions, shoot-like structures supporting the blades of the eelgrass. Two methods were applied: one used a single turion placed into holes excavated by divers, and the second bundled 8-10 turions together. Thus far, post-transplant monitoring was conducted at 24 hours, 1-week, 2-weeks, 1 month, and two quarterly surveys after transplant activities to inform survivability; quarterly monitoring will continue through 2022.

Survivability varied from site to site and by method. In general, survivability at 24 hours was 100% across all sites and methods, except for the single shoot method at Dockweiler which had a survivorship of 91%. At the one-month interval survivorship at Redondo (85% single and 85% bundle) and Malaga (86% single and 77% bundle) outperformed Dockweiler (74% single to 26% bundle). At the 20 October 2021, quarterly survey survivorship at Redondo (80% single and 61% bundle) and Malaga (83% single and 60% bundle) outperformed Dockweiler (60% single to 11% bundle). At the February 4, 2022, quarterly survey survivorship at Malaga (36% single and 27% bundle) outperformed Redondo (0% single and 0% bundle) and Dockweiler (0% single to 0% bundle). At the 18 April 2022, quarterly survey survivorship at Malaga (14.3% overall) outperformed Redondo and Dockweiler (0%). On the 28 July 2022 quarterly survey, no eelgrass was observed in any sites.

During this reporting period, TBF and project partners conducted numerous SCUBA-based surveys to monitor seagrass within the Bay, both transplant and donor sites. Quarterly monitoring events occurred in October 2022 and January 2023. Bottom mounted sensors were deployed in the donor sites from September 2022 through March 2023. Those data are currently being processed and will be presented in the final grant report due May 31, 2023. Additional visits to transplant and donor sites are scheduled for the upcoming reporting period for both biological monitoring surveys and to retrieve and deploy additional sensors. Relatedly, TBF, alongside Paua Marine Research Group, Vantuna Research Group, and Scripps Institution of Oceanography, procured CA State Proposition 50 funding to utilize SCUBA-based surveys, side-scan sonar, and the deployment of a suite of biophysical oceanographic sensors to record light, temperature, and dissolved oxygen. These data will further elucidate key data gaps outlined in the CCMP surrounding SAV and soft-bottom habitat within the Bay. Project partners will deploy sensors at nine sites to acquire a suite of environmental data metrics. A three-pronged data acquisition program will address the central scientific problem of determining key physical environmental drivers influencing the realized niche of Z. pacifica and enhance applied restoration efforts from local to regional scales with significant potential benefits for southern California coastal shelf habitats.

CCMP Action #5

Assess and implement offshore artificial reefs to benefit marine ecosystems and provide socioeconomic benefits to people

Long-term Environmental Results / Outcomes: Implement artificial reef projects to achieve 69 new acres of rocky reef habitat of a similar condition as reference reef habitats

Action #5 Next Steps / Project Name	Objectives	Status	Annual Report Update
Implement rocky reef restoration project off Palos Verdes	To restore 69 acres of rocky reef habitat lost to landslides activity using high relief rocky modules that will resist future burial from sediment deposition	Completed	SCMI and VRG continued monitoring the Palos Verdes Reef Restoration Project (funded by Prop 12) completed biological surveys and the Year 2 post-construction monitoring report indicating that all four performance standards were met.
Annual monitoring with the use of side scan sonar and SCUBA based surveys	To assess nearshore coastal marine habitats using side-scan sonar and SCUBA to inform data gaps in the CMP and future restoration projects; to understand the movements, positions, and permanence of great white sharks, giant sea bass, and other species of interest in SMB	Ongoing	Communications between TBF, VRG, and SIO occurred during this reporting period resulting in submission of a Prop 50 grant proposal to seek funding for Santa Monica Bay, Catalina Island, and La Jolla soft bottom habitat and extant eelgrass bed surveys; proposal was accepted and is expected to elucidate gaps in knowledge. An update on data collected via the Acoustic Telemetry Sensor Array will be provided with the submittal of the annual report and will capture this work period. Data provided by CSULB shark lab.

Action #5 Next Steps / Project Name	Objectives	Status	Annual Report Update
Preliminary work regarding the benefits of dynamic revetments and nearshore reefs	To preliminarily advance work towards understanding dynamic revetments and nearshore reefs, including feasibility of using recycled concrete for construction	Ongoing	The SMBNEP FY22-23 Bipartisan Infrastructure Law Work Plan approved by the SMBRC Governing Board and Executive Committee includes funding for the Santa Monica Breakwater Rocky Intertidal Preserve Project. (Update for the Adamson House Project provided in the BIL-semi-annual report submitted May 2023.)

Action #5 Narrative:

The Palos Verdes Reef Restoration Project aims to restore the nearshore ecological rocky-reef community, support an estimated six tons of reef fish and a proportional amount of invertebrates, and increase the abundance of commercial and recreational species, offsetting historical losses to ecosystem services. The project received $1,409,000 in Prop 12 funds for construction and post-construction monitoring for Year 1. Vantuna Research Group and Southern California Marine Institute completed construction of an artificial reef in September 2020 to restore rocky reef habitat near Bunker Point off the Palos Verdes Peninsula, which involved strategically placing 57,000 tons of quarry rock in a 42-acre area. During this reporting period, the project leads completed the Year 2 post-construction monitoring report, indicating increased percentage of biotic benthic cover and fish biomass compared to before construction at and near the restoration site. No invasive species were recorded at the restoration site nor at any nearby reefs at the same depth. In 2023, additional monitoring will continue at this project site and nearly every other rocky reef in Los Angeles County through funding from the SMBRC Proposition 50 Grant Program (see Action 36). Four acoustic receivers were purchased by TBF in 2016 to improve the coverage of the Southern California Acoustic Telemetry Network, led by Dr. Chris Lowe at CSU Long Beach. Three receivers were first deployed in May 2017 to sites in the northern Santa Monica Bay. Data generated by this expansion of the network will improve protection and understanding for these species and contribute to the CMP.

CCMP Action #6

Restore coastal strand and foredune habitat to beaches and sandy shores to improve coastal resilience

Long-term Environmental Results / Outcomes: Restore 10 acres of coastal strand and dune habitat along Santa Monica Bay beaches to improve ecological function, increase coastal resilience, and provide habitat for rare species

Action #6 Next Steps / Project Name	Objectives	Status	Semi-Annual Report Update
Continue long-term monitoring of the Santa Monica Beach Restoration Pilot Project	To continue long-term monitoring to inform coastal resilience, ecosystem benefits, and adaptive management of the restoration area; to convert the site to a permanent feature of the coastline	Ongoing	No activities occurred during this reporting period.
Conduct Phase 1 (outreach and planning) and Phase 2 (implementation) of the Malibu Living Shoreline Project	To restore three acres of beach and dune habitat to improve coastal resilience and ecosystem benefits and improve public engagement	Completed	Restoration completed. Post restoration and maintenance are ongoing.

Action #6 Next Steps / Project Name	Objectives	Status	Semi-Annual Report Update
Find funding for and implement another beach and bluff restoration project	To restore 3.5 acres of bluff, beach, and eelgrass habitat as part of a living shoreline pilot project (Los Angeles Living Shoreline Project); restore dune habitats in Manhattan Beach through iceplant removal and revegetation with native plants	Ongoing	The restoration of bluff habitat, for the LA Living Shoreline was completed in October 2022. The Manhattan Beach Project was planted with additional container stock in November 2022.
Support efforts to standardize sandy beach monitoring and a regional approach to restoration	To continue efforts to standardize sandy beach monitoring and data collection for southern California through stakeholder partnerships and CMP implementation	Ongoing	No activities occurred during this reporting period.

Action #6 Narrative:

Santa Monica Beach Restoration Pilot Project: A report encompassing the results of five years of monitoring, post restoration, was produced in December of 2021. The report describes the expansion of vegetation, formation of dunes 0.5 meters in height, with sand accretion along the perimeter fence up to one meter in height. Western snowy plovers were regularly reported in monitoring data.

TBF staff visited this site periodically during the reporting period, collecting trash and inspecting the site infrastructure for damage or displacement. The site continues to develop desirable dune characteristics and the vegetation continues to mature. This year the flowers on the primrose at this site have persisted through the late winter and early spring adding a great deal of beauty to this well-functioning site. The heavy rains and large waves of this winter caused driftwood to wash onto the site. This wood will contribute to heterogeneity and is likely to contribute to future dune development. The history

of this project, a site tour, and the results of the monitoring occurred on January 12th, 2023, at the Beach Ecology Coalition Meeting hosted at the Annenberg Beach House.

Santa Monica Dune Restoration Project: This project was planned in partnership with City of Santa Monica, California State Parks, Audubon Society, and public stakeholders and will include restoration of approximately 4.5 acres of beach habitat on Santa Monica Beach, including the area with an existing snowy plover enclosure. This project was approved to receive funding by the Refugio Beach Oil Spill Trustee Committee in September 2021 through the National Fish and Wildlife Foundation. The grant agreement was executed in July 2022. Project outreach, stakeholder engagement, planning, design, and permitting were begun in fall 2022.

During the reporting period, TBF staff interacted with the City of Santa Monica to inform site footprint, location, and the plant palette for the future restoration site. Further outreach and stakeholder engagement will continue in the spring and summer of 2023.

Malibu Living Shoreline Project: This project, in partnership with the City of Malibu, Los Angeles County Department of Beaches and Harbors (LACDBH), and State Coastal Conservancy (SCC) aims to restore approximately three acres of sandy beach and dune habitats at Zuma Beach and Westward Beach to improve coastal resilience and increase the health of the beach systems through a living shoreline approach. All permits, including ROE and CDP, were obtained in winter 2020. Implementation was conducted in winter 2020-21 and resulted in removal of approximately 25 tons of invasive iceplant and other non-native vegetation from the project area. Implementation also included planting over 500 native plants, seeding, and the installation of post and rope fencing to delineate the project boundary and pathways. Other elements included sand fence segments and biomimicry stakes to promote dune growth. The first three rounds of semi-annual post-restoration monitoring were completed. TBF conducted supplemental seeding and planting with community and student support. Interpretive signage was installed in May 2022. The Year 1 Annual Report was finalized in May 2022. Adaptative management and site maintenance are ongoing.

During this reporting period, the dunes at the Zuma Beach site remained in good condition and the plants seemingly benefited from the prodigious rains of the winter and early spring of 2022-2023. The high wave events in early January that caused pronounced coastal erosion at other foredune beach restoration sites, had little impact at Zuma. Discharge from the Creek and Zuma lagoon was expansive and cut through the beach berm leaving a scarp from the lagoon edge along the restoration site to the breach at the surf line. TBF staff visited and cleaned up trash and debris within the site and led two tours with Malibu Middle School students. These tours involved species identification, data collection along defined transects, and exploration of coastal dynamics.

The Westward Beach site was significantly impacted by coastal erosion associated with the high wave energy impacting the beach in the first two weeks of January 2023. LACDBH responded to these changes in the beach profile by creating a rock revetment to protect the restrooms located near the northern extent of the Westward Beach parking lot. TBF staff recovered infrastructure associated with the project site on the 7th and 9th of January. This included the recovery and transport offsite of sand fencing, and post and rope. Dramatic recontouring of the site has occurred. TBF staff will redeploy the project infrastructure commensurate with the new beach contours later in the spring. TBF presented at a meeting of the Beach Ecology Coalition on January 12th, 2023. The presentation included images and descriptions of the changes that occurred at Westward Beach only days earlier.

Los Angeles Living Shoreline Project: This innovative project, in partnership with LACDBH, State Parks, SCC, and Honda Marine Science Foundation, aims to implement a multi-habitat approach to restore approximately 3.5 acres of beach and coastal bluff habitat. This project at Dockweiler Beach directly supports a disadvantaged community and adds to SMBNEP's efforts to improve coastal resilience in Los Angeles County. It also incorporates the experimental establishment of offshore eelgrass within a one-acre footprint (see Action #4 – eelgrass).

TBF implemented the beach portion of the project in January through March 2022. As part of implementation activities, TBF and LACC removed the old existing plover enclosure fence and replaced it with post and rope fencing. The outer project perimeter and interior pathways were also delineated with post and rope to guide beach visitors through the site. In addition, non-native sea rocket was hand pulled, and the project area was subsequently seeded with native dune species. Approximately 200 native plants were planted in the project area outside of the plover enclosure. Sand fencing segments were also installed in this area to help promote dune growth. The first round of post-restoration monitoring was performed in August 2022.

For the bluff portion of the project, additional coordination and permitting with the City of Los Angeles Bureau of Engineering was necessary. TBF submitted a Right of Way permit application to the City in December 2021 and a local CDP application in January 2022. Following submission of the CRP application package, the City of Los Angeles waived the need for a local CDP. A Right of Way permit was obtained in July 2022. Implementation of the bluff was completed in October 2022. Over the course of several weeks crews installed silt fencing, pulled and removed ice plant, and installed erosion prevention measures, i.e., stakes and wattles. The final action taken in this sequence was the application of a seed mix utilizing hydroseeding as an additional measure of erosion control and to promote germination of the seeds. This site required maintenance during and after the heavy rains with repeated repair or replacement of sections of the silt fence. Repositioning and re-staking of sections of wattle were also undertaken. Ongoing communications with LACDBH operational staff helped manage the site during this challenging period as the rains and storm water flows from Vista Del Mar caused considerable erosion. Assessment and management of the bluff site will continue in 2023.

The beach dune aspect of this project was impacted by the high energy wave events in early January. On January 10th, TBF staff recovered, and transported offsite, displaced post and rope from the site, other materials undamaged by the storms, were left in place. Similarly, to Westward Beach these infrastructure elements will be redeployed in late spring commensurate with the local changes in the beach topography. Communication with USFWS occurred in early March to coordinate any activities that might be undertaken, if western snowy plovers were present or observed nesting in or neighboring the site.

Manhattan Beach Dune Restoration: This project aims to restore approximately three acres of dune habitat along the beach in the City of Manhattan Beach to provide infrastructure protection and increase coastal resilience, while improving habitat quality through invasive plant removal and native plant establishment. The project is located on existing back dunes along the coast of Manhattan Beach, adjacent to Bruce's Beach, from approximately 36th Street to 23rd Street, within approximately 0.6 miles of coastline. The restoration project involves the removal of non-native vegetation, seeding / planting of native vegetation, strategic installation of sand fencing and other features to help establish vegetation, installation of post and rope, and installation of interpretive signage. TBF obtained a ROE permit to conduct scientific monitoring on-site in May 2021 and amended the permit in December 2021 to include implementation and post-restoration activities. The final CDP application package, including the Restoration and Monitoring Plan, was submitted in August 2021 and subsequently approved in January 2022. TBF drafted the application for the LACFCD permit in October 2021 and received and secured the Flood Construction Permit in January 2022.

Restoration commenced in January 2022 and is ongoing. With support from LACC, community volunteers, and project partners, TBF removed and disposed of nearly 28 tons of iceplant and planted 1,400 native dune plants. The post and rope pathways and project boundary have also been delineated and sand fencing segments were installed to promote dune growth. TBF coordinated with LACDBH to obtain Special Events Permits for community restoration events to support implementation.

During this reporting period, TBF conducted several days of site maintenance. Additional container stock from native plant nurseries was planted in October along with some modest weeding. The replacement of signage and installation of a few segments of sand fencing was conducted in December in advance of the holiday break. Manhattan Beach was also impacted by high wave energy in January with little discernable impact to the dune sites. The heavy rains experienced in the winter and spring of 2022-2023 have likely contributed to the growth of non-native vegetation within the project site. Maintenance activities were ongoing in 2023, and additional weeding, seeding, and planting will be planned accordingly.

CCMP Action #7

Restore and maintain the entire LAX Dunes system to support native plants, wildlife, and rare species

Long-term Environmental Results / Outcomes: Restore 48 acres of LAX Dune system to improve native dune functions and provide habitat for rare species; Maintain larger 300-acre Preserve to benefit rare species and dune plants and wildlife

Action #7 Next Steps / Project Name	Objectives	Status	Semi-Annual Report Update
Conduct community restoration events in the northern 48-acre dune area	To engage community through hands-on stewardship and habitat restoration through eventsheld at the LAX Dunes	Ongoing	TBF held eight community restoration events, where a total of 107 volunteers removed approximately 6,021 lbs. (163 bags) of non-native vegetation.
Support LAWA in long-term maintenance and adaptive management of the 48-acre northern dune area	To continue and strengthen partnership with LAWA to restore and maintain the LAX Dunes	Ongoing	Continued to coordinate and work with LAWA and project partners on seed collection, plant propagation, habitat restoration, future restoration planning, and monitoring; conducted non-native species removal, planting, and seeding along with project partner IOEI, (in accordance with Revised Ecological Landscape Plan). From October 2022 through March 2023 revegetation activities consisted of planting approximately 4,500 native plants and applying native seed within the CDIP area. TBF completed the first Ecological Monitoring Report, on behalf of LAWA, in November 2022.The report was approved by the California Coastal Commission in January 2023. Annual Compliance monitoring will be conducted in spring 2023.

Action #7 Next Steps / Project Name	Objectives	Status	Semi-Annual Report Update
Engage underserved students and volunteers and inland communities	To recruit underserved students and volunteers, particularly from inland communities, to participatein hand-on stewardship and restoration at the LAX Dunes	Ongoing	TBF continued internal planning to improve ability to connect with underserved communities, including discussions in its Justice, Environment, Diversity, and Inclusion (JEDI) Committee.
Initiate planning for areas within the adjacent dunes, including baseline monitoring	To conduct baseline monitoring and developrecommendations for habitat management	Ongoing	No activities occurred during this reporting period.

Action #7 Narrative:

The LAX Dunes are the largest remaining remnant contiguous coastal dune system insouthern California. The 302-acre dune site is owned and managed by Los Angeles World Airports (LAWA). The site provides habitat for over 900 species, including the beautiful and delicate federally endangered El Segundo Blue Butterfly. During this period, TBF continued coordination and work with LAWA and partners on revegetation efforts, habitat restoration, future restoration planning, and scientific monitoring of the LAX Dunes.

CCMP Action #8

Restore coastal bluff habitats in the Bay watershed to support ecosystem services

Long-term Environmental Results / Outcomes: Restore 5 acres of bluff habitats in the SMB watersheds to support ecosystem services

Action #8 Next Steps / Project Name	Objectives	Status	Annual Report Update
Use Beach Bluff Restoration Master Plan to explore bluff restoration and continue recoveryof El Segundo Blue Butterfly	To provide habitat and ecological benefits in support of the recovery and eventual delisting of the endangered El Segundo Blue Butterfly and to restore bluff habitats	Ongoing	TBF continues ongoing communications with LAWA to develop a restoration plan and enhance habitat for the El Segundo Blue Butterfly at the LAX Dunes, especially within the El Segundo Blue Butterfly Preserve (southern dunes) See Action #6 for the Los Angeles Living Shoreline Project..
Identify partners and funding to support bluff restoration projects	To establish project partners, project sites, andidentify potential funding sources in support of bluff restoration	Ongoing	No activities occurred during this reporting period.
Initiate restoration of one bluff restoration project	To restore 13 acres of rare coastal bluff habitat to support threatened and endangered wildlife and plant species, reduce coastal erosion, improve water infiltration, and enhance public access	Ongoing	PVPLC continued to implement the Abalone Cove Habitat Restoration Project (funded by Prop 12) continued during this reporting period including planting, monitoring, irrigation installation and maintenance, and completing restoration in March 2023 (see additional narrative). See Action #6 for the Los Angeles Living Shoreline Project.

Action #8 Next Steps / Project Name	Objectives	Status	Annual Report Update
Initiate Pt. Dume stair replacement and bluff restoration projectto benefit people and wildlife	To replace a deteriorated beach access staircase and restore bluff habitat atPoint Dume State Beach	Ongoing	Construction of the Point Dume State Beach staircase was completed and is open to the public for use. Restoration of native plant species impacted by construction continued and native plants were installed and are now being maintained.

Action #8 Narrative:

SMBRC staff continued to coordinate with SCC in overseeing implementation of the Abalone Cove Habitat Restoration Project which involves habitat restoration of 13-acres at Abalone Cove Reserve in Rancho Palos Verdes. The restoration includes the removal of invasive trees, shrubs, and herbaceous plants; the propagation of native plant species; irrigation and planting specifications; maintenance schedule; and monitoring and reporting protocols. During this reporting period, approximately 3,881 coastal sage scrub, southern cactus scrub, and butterfly host plant species were planted on site from the PVPLC native plant nursery. PVPLC continues to monitor planted habitat for invasive species and successful propagation of native plants. An additional five acres of irrigation drip was installed, and the previous irrigation was maintained. The restoration project was completed in March 2023 with monitoring continuing for 20 years.

Additional coordination between TBF and LACDBH continues regarding potential bluff restoration projects adjacent to County beaches, including several sites at Dockweiler Beach, and one being led by LACDBH. Several bluff restoration projects are being conducted in the SMBNEP study area by partners such as Palos Verdes Peninsula Land Conservancy, Los Angeles Conservation Corps, City of Redondo, and South Bay Parkland Conservancy. Projects are removing invasive species, planting natives, and providing habitat for the federally endangered El Segundo Blue Butterfly. Additional work continues through a stakeholder engagement group known as the El Segundo Blue Butterfly Coalition (ESB Coalition), bringing together partners from many different non-profit groups, agencies, and representatives from municipalities. The ESB Coalition is working on several projects, including updates to their new website, a mapping tool to track restoration efforts, and coordination of project updates and discussions from many partners.

CCMP Action #9

Implement Malibu Creek Ecosystem Restoration Project (Rindge Dam and other barrier removals) to support ecosystem restoration

Long-term Environmental Results / Outcomes: Complete implementation of the Malibu Creek Ecosystem Restoration Project including the removal of barriers to improve stream and riparian habitats and to benefit the steelhead trout

Action #9 Next Steps / Project Name	Objectives	Status	Annual Report Update
Support lead agencies in effortsto complete the design and engineering plansfor the Malibu Creek Ecosystem Restoration Project	To develop design and engineering plans to remove Rindge Dam and additional barriers, to restore terrestrial and aquatic habitat connectivity and establish natural sediment transport regime	Ongoing	In April 2023 State Parks announced the start of the pre-construction, engineering, and design phase and the outreach team started meeting with stakeholder groups.

Action #9 Narrative:

The Malibu Creek Ecosystem Restoration Project aims to restore aquatic habitat connectivity along Malibu Creek and its tributaries, establish a more natural sediment regime from the watershed to the shoreline, and restore aquatic habitat of sufficient quality along Malibu Creek and tributaries to sustain or enhance indigenous populations of aquatic species within the next several decades, allowing for migratory opportunities to roughly 15 miles of aquatic habitat that have been unreachable for many decades in this watershed. The project involves the removal of Rindge Dam and approximately 780,000 cubic yards of sediment behind the dam and modification/removal of eight upstream barriers within the Malibu Creek watershed. During the reporting period, State Parks selected a consultant team and started the pre-construction, engineering, and design phase. This phase includes baseline biological surveys, hydrology/hydraulic modeling and flood risk assessment, engineering plans, environmental permitting, public outreach, and other project studies to advance the project to a 90% level of design. The target date for completion of this phase is March 2026. A public workshop is planned for 2023 to receive public input on this phase of the project. Community events and outreach programs are being planned for public and student education and information will be shared about traditional lands and cultural legacies in consultation with Pipimaram (Fernande?o Tataviam), mitsqanaq'n (Venture?o Chumash) and Tongva (Gabrielino) people.

CCMP Action #10

Remove additional barriers to support fish migration and ecosystem services

Long-term Environmental Results / Outcomes: Remove fish barriers to support endangered steelhead trout habitat expansion, increase resilience related to climate change, and provide ecosystem services

Action #10 Next Steps / Project Name	Objectives	Status	Annual Report Update
Identify, prioritize, and acquire funding for barrier removal projects	To engage with partner entities to identify potential opportunities for fish barrier removal	Ongoing	RCDSMM secured $125,000 from State Parks to continue three years of snorkel surveys to assess abundance and distribution of Southern California steelhead trout Malibu and Topanga Creeks until 2026. The surveys inform several restoration projects by monitoring before and after removal of natural and human-caused barriers to fish migration. State Parks and RCDSMM are collaborating with Caltrans on lagoon restoration proposed in association with the replacement of the Big Sycamore Creek Bridge in Malibu.

CCMP Action #12

Restore smaller coastal lagoons and other wetland types to increase wetland habitat area and condition throughout the watershed

Long-term Environmental Results / Outcomes: Restore and increase wetland and transition habitat acreages for small lagoons such as Topanga Lagoon and other wetland systems to improve ecological functions

Action #12 Next Steps / Project Name	Objectives	Status	Annual Report Update
Finalize restoration planning and permitting for Topanga Lagoon restoration project and initiate project	To create a restored habitat that integrates fish passage barrier removal, wetland habitat restoration,visitor services, and recreational opportunities at Topanga Lagoon	Ongoing	Topanga Lagoon Restoration Planning project (funded by Prop 12) received additional funding to further the environmental permitting and completion of additional necessary studies. TBF supported baseline assessment through deployment and management of a water quality sensor in partnership with RCDSMM.
Complete land acquisition, feasibility analyses, and restoration designin coordination with bridge redevelopment for Trancas Lagoon	To restore habitats adjacent to Trancas Lagoon after Caltrans bridge expansion is completed	Ongoing	Caltrans continued work to replace the Trancas Creek Bridge.

Action #12 Next Steps / Project Name	Objectives	Status	Annual Report Update
Conduct comprehensive monitoring of small lagoons in northern Bay to inform CMP and seek funding to continue Malibu Lagoon monitoring	To conduct comprehensive monitoring of the northern Bay lagoons, inform the Comprehensive Monitoring Program (wetlands chapter), and acquire funding to continue long-term monitoring and data collection at Malibu Lagoon	Ongoing	Continued conversations with partners such as CSULB, SCCWRP, UCLA, and RCDSMM to gain information on bar-built estuaries; continued participation on the Estuarine MPA Technical Advisory Committee, which includes Malibu Lagoon as a study site; continued coordination with EMPA monitoring, including deployment, management, and maintenance of one water quality sonde in Malibu Lagoon; SCCWRP, TBF, and CSULB applied for Proposition 50 money to conduct monitoring of the small lagoons in northern Bay to fill CMP data gaps.

Action #12 Narrative:

SMBRC staff continued to coordinate with SCC in overseeing implementation of the Topanga Lagoon Restoration Planning project. The project aims to advance the planning effort for the restoration of Topanga Lagoon to improve habitat for the endangered steelhead trout and tidewater goby, be resilient to sea level rise and climate change, as well as improve visitor experience and enhance recreational opportunities. During this reporting period, the project received additional funding administered by CDFW and WCB from the state budget and a budget augmentation from SCC that will fund completion of the CEQA and NEPA processes, permitting for the bridge and lagoon restoration, and allow completion of additional necessary studies.

TBF continued coordination with SCCWRP and Moss Landing Marine Laboratory for the Estuarine Marine Protected Area, (EMPA) monitoring program, which includes Malibu Lagoon as a study site. TBF partnered with CSULB to coordinate, deploy, and manage one water quality sensor in the lagoon. CSULB and partners implemented the first round of EMPA monitoring in the lagoon in March and April 2021 and another in fall 2021, including fish traps, nutrients, and other metrics. SCCWRP led a Proposition 50 proposal in partnership with TBF and CSULB to fill CMP data gaps for the small northern Bay wetland lagoon systems, which was approved.

Additionally, a proposal led by SCC to the EPA Wetland Program Development Grant (including TBF and many other partners) to help take the next steps in standardizing regional wetland monitoring for southern California. This proposal was preliminarily accepted, with additional work towards a Scope of Work by SCC and partners.

CCMP Action #13

Restore Ballona Wetlands Ecological Reserve to enhance wetland habitats and benefits to people

Long-term Environmental Results / Outcomes: Restore 577-acre Ballona Wetlands Ecological Reserve to improve wetland, transition, and upland habitats, functions, and services; Create public access trails and bike paths and encourage recreation and stewardship at the Ballona Wetlands Ecological Reserve

Action #13 Next Steps / Project Name	Objectives	Status	Annual Report Update
Support the lead agencies by contributing technical information to the Final Environmental Impact Statement and Report and permitting	To support the lead agencies in completing permitting and a federal environmental review document	Ongoing	At the October 20, 2022 SMBRC Governing Board meeting, CDFW staff provided an update on the project including funding received from SCC to continue planning and design, a request for proposals to complete the design and permitting of sequences 1 and 2, tribal engagement, and public outreach planning. CDFW continued working on the final design and engineering for sequences 1 and 2 of the project in the south and southeast areas of the Ballona Wetlands Ecological Reserve. Permit applications are anticipated to be submitted for these sequences by June 2023 and final design and engineering completed by February 2024. Tribal engagement during the reporting period included government-to-government consultations with tribes, two tribal advisory committee meetings, and two tribal community meetings. A public stakeholder meeting is anticipated for May 2023 to inform the public about the project and gather feedback from stakeholders.

Action #13 Next Steps / Project Name	Objectives	Status	Annual Report Update
Continue community engagement and hand-restoration within the Reserve with FBW	To restore four acres of degraded wetland and transition habitat at the Ballona Wetlands Ecological Reserve through community restoration	Ongoing	Continued to conduct restoration, maintenance, and biological monitoring in accordance with permits (TBF and FBW); Five public community events were held from October 2022 through March 2023, a total of 92 volunteers removed non-native vegetation; continued restoration activities and associated monitoring in permitted areas as part of a project funded by Prop 12. Post-restoration site maintenance and monitoring are ongoing.
Support lead agencies to identify and obtain restoration funding	To support lead agencies in finding funding to implement the Ballona Wetlands Restoration Project	Ongoing	No activities occurred during this reporting period.

CCMP Action #14

Implement wildlife crossings and other innovative projects for benefits to wildlife and people

Long-term Environmental Results / Outcomes: Complete construction and implementation of two major freeway wildlife crossing projects to benefit wildlife, genetic diversity, and people

Action #14 Next Steps / Project Name	Objectives	Status	Annual Report Update
Support lead agencies to find funding for Phase 2 of the Liberty Canyon Wildlife Crossing project	To implement Phase 2 of the Wallis Annenberg Wildlife Crossing ,formerly the Liberty Canyon Wildlife Crossing Project, (Final/ 100% Design) in support of wildlife movement and safety and enhanced habitats	Ongoing	No activities reported by partners during this period.
Support lead agencies in permitting and environmental review of Liberty Canyon Wildlife Crossing project	To complete implementation of the Wallis Annenberg Wildlife Crossing in support of wildlife movement and safety and enhanced habitats	Ongoing	Construction of the crossing section over the 101 Freeway (Stage 1) continued including installing reinforced concrete columns in the median of the freeway that will support the bridge and excavating both sides of the freeway to prepare for the bridge abutments. A public open house is scheduled for 16 April 2023. Docent-led tours of the site are anticipated to begin as early as May 2023. The design for the section over Agoura Road (Stage 2) is anticipated to be completed in 2023 and construction to begin in 2024. Completion of the entire wildlife crossing is estimated for late 2025.

CCMP Action #15

Implement projects that improve understanding and/or enhance endangered and threatened species populations (e.g., habitat improvements for Western Snowy Plover, genetic banking)

Long-term Environmental Results / Outcomes: Improved extent and condition of habitats for rare species throughout the Bay and its watershed

Action #15 Next Steps / Project Name	Objectives	Status	Annual Report Update
Support Southern California Steelhead Trout genetic banking study	To conduct the Southern California Steelhead Trout genetic banking study to inform population recovery	Ongoing	RCDSMM received $340,000 from the State budget and initiated development of an action plan that identifies priority watersheds and potential tools for recovering fish during acute disturbances while continuing efforts to restore habitat, fish passage, and instream flows. Several TAC meetings were held during this reporting period and final plan is due by end of 2023.
Support restoration and monitoring activities to benefit California red legged frog populations	To improve riparian and stream habitats to supportpopulations of California red legged frog	Ongoing	NPS continued to implement the California Red-legged Frogs Project (funded by Prop 12) including frog capture and habitat surveys.

Action #15 Next Steps / Project Name	Objectives	Status	Annual Report Update
Support projects within western snowy plover critical habitat	To provide habitat and ecological benefits in support of the threatened Western Snowy Plover andto restore critical habitat	Ongoing	Continued beach and dune restoration projects and communications with USFWS regarding projects and activities that may impact western snowy plovers. Ongoing communications with the City of Santa Monica to inform project design and engage stakeholders in the Santa Monica Dune Restoration Project. This project will create an expected 4.5 acres of beach dune habitat encompassing an existing plover enclosure, which would be expanded and enhanced as part of the scope of the project (see Action #6).

Action #15 Narrative:

SMBRC staff continued to coordinate with SCC in overseeing implementation of the reestablishment of California red-legged frogs (CRLF) project. The project builds on an earlier effort by National Park Service (NPS) to reintroduce the CRLF to the Santa Monica Mountains and consists of actions to establish self-sustaining populations of CRLF in Santa Monica Mountain streams and to address impacts from the Woolsey fire. During this reporting period, nine nighttime frog capture surveys were performed and over 100 CRLF adults and tadpoles were swabbed for chytrid fungus. Multiple habitat surveys were performed and all CRLF sites remain dynamic and in various stages of recovering from the Woolsey fire in fall 2018.

See Action #3 in support of white abalone enhancement, Action #6 in support of western snowy plover habitat enhancement.

CCMP Action #16

Support the implementation of activities and projects such as those in Enhanced Watershed Management Plans (EWMPs) and activities identified in the TMDL implementation schedule to help achieve TMDL goals for 303d listed waterbodies in the Bay and its watershed

Long-term Environmental Results / Outcomes: Assist in achieving constituent percentage load reduction targets for waterbodies in the Santa Monica Bay according to TMDL compliance timeline

Action #16 Next Steps / Project Name	Objectives	Status	Annual Report Update
Continue to support implementation of projects identifiedin EWMPs and WMPs	To allocate and oversee State Bond funding for implementation of projects identified in EWMPs and WMPs; support implementation of projects made available under the Safe Clean Water Program (SCWP)	Ongoing	Continued overseeing implementation of capital projects for storm water pollution reduction through multi-benefit solutions including two projects funded by Prop 12 and four projects funded by Prop 84 (see also Action #17); see Action #43 for efforts related to SCWP support.

Action #16 Next Steps / Project Name	Objectives	Status	Annual Report Update
Continue implementation ofLA IRWMP	To facilitate and support coordination and allocation of IRWMP funding and implementation of projects identified in EWMPs and WMPs in the watershed	Ongoing	Continued to participate in activities of the Greater Los Angeles County IRWM Leadership Committee and IRWMP South Bay Steering Committee. SMBRC staff participated in review and selection of project proposals for the Prop 1 Round 2 funding including projects that provide primary benefits directly to disadvantaged communities. In November 2022 the Greater Los Angeles County IRWM Leadership Committee selected 17 projects for inclusion in the application for the Prop 1 Round 2 grant and submission to the Department of Water Resources; and the selected projects began working with the application preparation consultant to complete the work plans, budgets, and schedules.
Facilitate other sources of State funding	To facilitate and support allocation of funding from other State bond measuressuch as Prop 1 and 65 for implementation of projects identified in EWMPs and WMPs in the watershed	Ongoing	No activities occurred during this reporting period.

CCMP Action #17

Infiltrate, capture, and reuse stormwater and dry-weather runoff through green infrastructure, LID, and other multi-benefit projects and improve understanding of ecosystem services provided

Long-term Environmental Results / Outcomes: Assist in achieving constituent percentage load reduction targets for waterbodies in the Santa Monica Bay according to TMDL compliance timeline

Action #17 Next Steps / Project Name	Objectives	Status	Annual Report Update
Complete rain garden metal fate study with CRI	To assess the fate of sequestered or retained heavy metals in the CulverCity Rain Garden	Ongoing	No activities occurred during this reporting period.
Complete additional LID projects throughout the watershed	To complete more LID projects throughout the watershed to improve floodprotection and water quality, and provide additional benefits	Ongoing	Continued to work with grantees to implement four previously funded Prop 84 projects: Culver Boulevard Urban Stormwater Project, Westwood Neighborhood Greenway Project, Santa Monica Bay Catch Basin Insert Project, and Ladera Park Water Quality Enhancement Project; Continued to coordinate with SCC to oversee two Prop 12 projects: Monteith Park and View Park Green Alley Stormwater Improvements Project and Beach Cities Green Streets (see additional narratives).

Action #17 Narrative:
SMBRC staff continued overseeing implementation for the following previously fundedProp 84 projects:

Culver Boulevard Realignment and Urban Stormwater Project: SMBRC staff continued to coordinate with SWRCB staff in overseeing implementation of this stormwater pollution reduction project. This project, carried out by the City of Culver City, consists of capturing and treating dry-weather runoff and storm runoff from a drainage area of 800 acres for local irrigation and using a below-ground infiltration basin to recharge groundwater.

Construction was completed in May 2022. However, a few outstanding items prevent the stormwater elements from being fully operational. During this reporting period, the Operations and Maintenance Plan was approved and Culver City continued addressing the outstanding issues including cleaning debris build up and installing a channelizing berm in the outfall, a secondary irrigation line, and educational signage.

***Westwood Neighborhood Greenway Project*:** SMBRC staff worked with LASAN to continue to implement the Westwood Neighborhood Greenway Project, which will clean and conserve water while providing native habitat for wildlife and opportunities for public engagement. This project aims to improve water quality by diverting and capturing runoff from 2,400 acres of drainage area into two bioswales. Construction was completed in September 2020. During this reporting period, the facility was in full operation and staff completed the two required wet weather monitoring events. In January 2022 the grant agreement was amended to extend the work completion date to June 30, 2023. LASAN is anticipated to present an overview of the project to the SMBRC Governing Board at its August 2023 meeting.

***Santa Monica Bay Catch Basin Insert Project*:** $589,386 in Prop 84 funds were allocated to this project. SMBRC staff worked with the grantee, City of Rancho Palos Verdes, to finalize remaining deliverables for this project, which retrofitted and installed 1,112 connector pipe screen (CPS) units in all suitable catch basins across the Palos Verdes Peninsula (PVP) watershed draining to Santa Monica Bay, spanning approximately 14 sq. miles. This project aims to help mitigate trash and marine debris and assist cities in the PVP watershed in implementing the requirements for stormwater permits. During this reporting period, to the project leads presented an overview of the project to the SMBRC Governing Board at its December 15, 2022 meeting. The City submitted the Final Project Report and Summary and SMBRC staff worked with SWRCB staff to close out the project.

***Ladera Park Water Quality Enhancement Project*:** SMBRC staff continued to coordinate with SWRCB staff in overseeing implementation of the Ladera Park Water Quality Enhancement Project by the Los Angeles County Department of Public Works.This project aims to treat, store, and infiltrate runoff from a 110-acre tributary area through a combination of pre-treatment, retention, and infiltration facilities. Construction of the stormwater elements was completed in July 2021. During this reporting period, Los Angeles County inspected monitoring equipment and flow sensors, nearly completed landscaping, and continued work on the slide gate, motor, telemetry and water harvesting system. Due to unforeseen delays, the County was unable to conduct post-construction monitoring in the 2022-2023 wet season. The County submitted a time extension request to complete monitoring in the 2023-2024 wet season.

SMBRC staff continued to coordinate with SCC in overseeing implementation of previously funded Prop 12 projects:

***Monteith Park and View Park Green Alley Stormwater Capture*:** The project consists of constructing an infiltration system and recreational and aesthetic improvements at Monteith Park and at View Park alley. Stormwater will be diverted into the infiltration system and be allowed to percolate into the ground. The project will prevent potentially polluted runoff from being discharged downstream thus improving the water quality in the Ballona Creek Watershed. During this reporting period, design plans were completed in October 2022 and the construction bid was opened in December 2022. The construction bid was awarded in January 2023 with construction anticipated to begin in August 2023 and complete by September 2024.

***Beach Cities Green Streets Project*:** This project consists of designing and constructing Green Street infrastructure to help meet water quality objectives set for the Santa Monica Bay beaches. The Beach Cities will retrofit existing impervious areas within the public parkways and right-of-ways using green infrastructure technologies such as porous pavement, catch basin trash screens, bio-filtration / bio-retention systems and dry wells. During this reporting period, efforts continued to finalize designs, verify preliminary locations of Best Management Practices, conduct supplemental survey and potholing work, and secure permits.

***Paramount Ranch Storm Flow and Sediment Reduction*:** The proposed project wascanceled due to Woolsey Fire impacts and the Prop 12 funds were reallocated to the Topanga Lagoon Restoration Planning project and the Palos Verdes Restoration Reef project.

CCMP Action #18

Support installation and monitoring of additional sewage and bilge pumpout facilities in Southern California harbors

Long-term Environmental Results / Outcomes: Meet 86-100% annual average usability percentage (based on analysis of equipment performance) for all publicly funded sewage pumpout stations throughout Southern California

Action #18 Next Steps / Project Name	Objectives	Status	Annual Report Update
Continue quarterly monitoring of public sewage pumpout stations	To assess the condition of public sewage pumpout and dump stations	Ongoing	Per statewide directive, monitoring is now occurring on a triannual basis and includes dump stations; conducted one triannual monitoring effort of 71 public sewage pumpouts and seven dump stations in Southern California harbors; finalized one triannual monitoring report; finalized Clean Vessel Act (CVA) Pumpout and Dump Station Performance Report 2022; delivered on phase 1 of a CVA stationary pumpout sewage volume study with SFEP by generating a study methodology; initiated phase 2 of the sewage volume study via planning and troubleshooting the methodology's data collection.
Support installation of sewage pumpouts in Marina del Rey or King Harbor	To provide the boating community with additional pollution prevention resources	Ongoing	No activities occurred during this reporting period.
Support installation of bilge pumpouts in Marina del Rey or King Harbor	To support installation ofbilge pumpouts	Ongoing	No activities occurred during this reporting period.

Action #18 Next Steps / Project Name	Objectives	Status	Annual Report Update
Support efforts of neighboring harbors in installation of bilgeand sewage pumpouts in southern California	To provide the boating community with additional pollution prevention resources	Ongoing	No activities occurred during this reporting period.

Action #18 Narrative:

TBF's Boater Education Program works to enhance stewardship and reduce ocean pollution generated by recreational boating activities. A key pollutant of focus is boat sewage. Discharging sewage overboard causes severe environmental and human health problems, especially in a state with more than four million recreational boaters. To reduce the negative impacts of discharging sewage overboard, all boaters are encouraged to use sewage management facilities including pumpout stations, mobile pumpout services, marine composting toilets, dump stations and floating restrooms. To decrease potential sewage discharged into waterways, TBF's Boater Education Program monitors public boat sewage disposal facilities to ensure Southern California's pumpout and dump station network is operational, well-maintained, and accessibly to recreational boaters. Monitoring utilizes the Pumpout Nav app for surveying and additionally provides technical assistance to facility managers that supports maintenance and equipment replacements such as nozzles and banjo valves. This collaborative approach to pumpout and dump station monitoring is conducted in partnership with San Francisco Estuary Partnership and Morro Bay National Estuary Program which yields statewide consistency. It is supported by the federal Clean Vessel Act Education and Outreach grant administered through California State Parks Division of Boating and Waterways. Pumpout Nav's data is maintained by monitoring agencies and app updates are developed and published regularly. During this reporting period, monitoring of pumpout units found an average 80% usability (based on analysis of equipment performance), and 97% of the pumpout units tested with biodegradable dye tablets were leak-free.

CCMP Action #20

Support elimination of non-point pollution from onsite wastewater treatment systems

Long-term Environmental Results / Outcomes: Achieve level of performance and water quality protection set by state policy for all OWDS in the Santa Monica Bay watershed

Action #20 Next Steps / Project Name	Objectives	Status	Annual Report Update
Complete sewer connections of residential properties to the centralized wastewater treatment facility in the Malibu Civic Center area	To improve water quality and reduce nutrient pollution through connecting residential properties to the centralized wastewater treatment facility	Ongoing	City of Malibu continued Phase 2 design and planning and work to resolve cultural resource issues and obtaining additional project grants.
Continue the coordinated OWTS identification, permitting, and inspection system between the LARWQCB and the cities and counties in the watershed	To continue to support efforts by the LARWQCB and cities and counties to achieve full implementation of the statewide policy for siting design, operation, and maintenance of OWTSs	Ongoing	LARWQCB staff continued inspections at municipal and industrial facilities and issuing waste discharge permits as needed.

CCMP Action #21

Support policies that promote reuse, recycling, and advanced wastewater treatment to reduce reliance on imported water sources

Long-term Environmental Results / Outcomes: Help reduce dependence of the Los Angeles region on imported water and lower the percentage of imported water use by water agencies; work towards meeting the State's goals for recycled water in the Recycled Water Policy

Action #21 Next Steps / Project Name	Objectives	Status	Annual Report Update
Support recycled wastewater efforts by JWPCP of LACSD	To support expansion of wastewater effluent recycling by JWPCP of LACSD	Ongoing	MWD and LACSD's Pure Water Southern California project continued testing the secondary membrane bioreactors (which treat primary effluent from JWPCP) at the demonstration facility and the environmental review process for the full Advanced Water Purification Facility. The draft EIR is anticipated to be released by spring 2024 and final EIR certified by fall 2024.

Action #21 Next Steps / Project Name	Objectives	Status	Annual Report Update
Hyperion Treatment Plant to implement pilot project for recycled water	To support timely completion of Hyperion's pilot project	Ongoing	LASAN staff continued to implement the two pilot/demonstration projects that will inform the full-scale transformation of Hyperion to recycled water. Both projects (the Hyperion Advanced Water Purification Facility and the Membrane Bioreactor Pilot Project) are at 95% construction completion with start-up and commissioning pending permits. Development of the Hyperion 2035 Program Implementation Plan continued, is anticipated to be completed in early 2024, and will delineate the advanced water purification processes and design capacities, site layout, costs, schedules, construction phasing, and other details. LASAN also continued to develop the LADWP Master Plan which explores various recycled water alternatives for Los Angeles and is anticipated to be completed by February 2024.
Support recycled wastewater efforts by Tapia Water Reclamation Facility and othersthrough expansionof distribution system and regional partnerships	To support expansion of recycled wastewater distribution and reuse	Ongoing	The Pure Water Project (funded by Prop12) released the Year 2 Purification System Performance Report for the demonstration facility, held in-person tours and events, received and applied for additional funding for the full Advanced Water Purification Facility, released the public draft of the Programmatic EIR and held a public scoping meeting, approved the Programmatic EIR, and conducted outreach (see additional narrative).

Action #21 Narrative:

The Las Virgenes-Triunfo Pure Water Project involves constructing a 100 gallon-per-minute, indirect potable water reuse demonstration project for reservoir augmentation that will produce up to six million gallons of local, drought resistant water supply per day, while improving in-stream habitat. The demonstration facility received $925,720 in Prop 12 funds and completed construction in September 2020. The demonstration facility is needed to test the advanced microfiltration, reverse osmosis, ultraviolet light disinfection, and oxidation components of the future Pure Water Advanced Water Treatment Facility. During this reporting period, the demonstration facility released the Year 2 Purification System Performance Report describing the testing activities carried out during the second year of operation and continued to hold events, celebrations, and in-person tours for schools and the public. In August 2022 the Advanced Water Purification Facility received $10.2 million from US Bureau of Reclamation and released the draft Programmatic EIR. A public scoping meeting was held in October 2022. The Programmatic EIR was adopted by the Las Virgenes-Triunfo Joint Powers Authority Board and the Advanced Water Purification Facility project was invited to apply for USEPA's Water Infrastructure Finance and Innovation Act funding in December 2022. In February 2023 Las Virgenes-Triunfo released the conceptual design report, conveyance study, and equalization storage study which serve as the conceptual design documents for the Advanced Water Purification Facility. Throughout the reporting period, project leads provided presentations and briefings at city councils, water districts, and water reuse conferences; published social media posts, newspaper and digital media ads, articles, and press releases in local newspapers; and worked to develop the podcast series "Full Circle Podcast".

CCMP Action #22

Support policies and implement projects that divert landfill waste and encourage composting to improve water quality and lower greenhouse gas emissions

Long-term Environmental Results / Outcomes: Establish 10 local community-based compost hubs and divert food waste from 20 food service establishments; distribute compost among community support agriculture, gardens, and restoration projects

Action #22 Next Steps / Project Name	Objectives	Status	Annual Report Update
Support continuation of Table to Farm compost hubs	To reduce food waste being sent to landfills, compost food waste, and apply compost to urban gardens to grow food	Ongoing	Continued Table to Farm community garden maintenance by co-leading monthly volunteer events at Environmental Charter School (ECS) Inglewood; initiated Table to Farm Revitalization project by rebuilding ECS Inglewood compost bin and engaged community members at ECS Inglewood's November 2022 Harvest Festival; attended ECS Lawndale's Dia de Los Muertos event in November 2022; obtained 48 responses to our community workshop input survey; visited ECS Gardena's new high school campus to plan for the spring 2023 compost build; began planning for ECS Inglewood greenhouse PV fan retrofit; supported ECS Inglewood's March 18, 2023 community workshop on composting and gardening.

Action #22 Next Steps / Project Name	Objectives	Status	Annual Report Update
Support expansion, outreach and implementation for residential and commercial organics collection and recycling	To support greenhouse gas reduction by way of residential and commercial organics recycling implementation by city and state regulatory agencies	Ongoing	No activities occurred during this reporting period.

Action #22 Narrative:

The Table to Farm program, initiated in 2016, is a partnership between Environmental Charter Schools (ECS), TBF, and the community at large working collaboratively to reduce greenhouse gas emissions by recycling organic food waste and growing local produce. Between 2016 and 2019, three compost hubs were established at ECS Inglewood, Gardena, and Lawndale. In 2020, a community garden was established outside of ECS Inglewood's gates. The garden continues to thrive and has monthly volunteer events to support the upkeep of planting, harvesting, and maintenance. During this period, strides were made in meeting revitalization project's milestones, such as rebuilding ECS Inglewood's compost bin, updating ECS Lawndale's compost infrastructure, attending outreach events to engage community members on the initiative and participate, and receiving input on topics of interest for community workshops that will be produced.

CCMP Action #24

Support the inclusion of coastal resilience through natural means and softscape measures into local coastal plan updates

Long-term Environmental Results / Outcomes: Inclusion of climate change adaptation measures in at least half of the 12 local coastal jurisdictions general plans (or equivalent) amendments

Action #24 Next Steps / Project Name	Objectives	Status	Annual Report Update
Attend stakeholder meetings for local cities LCP development / updates / implementation	To continue involvement in stakeholder meetings for local cities LCP development and implementation	Ongoing	No activities occurred during this reporting period.
Opportunistically assist cities in the development of sea level rise vulnerability studies	To identify and partner with cities to develop sea level rise vulnerability studies to strategically recommend coastal resilience strategies	Ongoing	No activities occurred during this reporting period.
Use data collected from beach restoration “soft-scape” projects to inform and assist LCP development	To provide science-based data to inform LCP development and support beach restoration	Ongoing	No activities occurred during this reporting period.

CCMP Action #25

Support best management practices, increased public access, and improved public facilities for beaches and other public trail systems to support both enhanced natural resources values and benefits to people

Long-term Environmental Results / Outcomes: Improve access to the coast and enhance coastal experiences through linking and expanding the California Coastal Trail; develop and build partnerships that support the implementation of natural infrastructure throughout the Bay watersheds

Action #25 Next Steps / Project Name	Objectives	Status	Annual Report Update
Support implementation of identified actions within plans such as the LACDBH Sea Level Rise Vulnerability Assessment	To implement adaptation projects that will improve coastal resilience	Ongoing	No activities occurred during this reporting period.
Continue to advise BMPs for beaches that promote habitat condition improvements and support for unique species	To build upon and continue partnerships with groups and agencies to benefit beach habitat conditions	Ongoing	No activities occurred during this reporting period.

CCMP Action #27

Produce educational resources and materials and conduct outreach to improve best management practices for Southern California boaters (e.g., fuel, sewage, and hazardous waste management)

Long-term Environmental Results / Outcomes: Increase understanding and adoption of sustainable boating habits to reduce boating related pollutants entering waterways (e.g., boat sewage, used oil, antifreeze, bilge water, batteries, copper, trash, and aquatic invasive species)

Action #27 Next Steps / Project Name	Objectives	Status	Annual Report Update
Produce educational materials	To produce educational materials to increase awareness of boating best management practices to boaters	Ongoing	Produced and distributed Winter 2022 Changing Tide newsletter; produced 2023 Tide Calendars in Spanish and English; produced Dockwalker social media toolkit in Spanish and English; assembled 2,450 Boater Kits for 2023; generated the 2023 Clean Boater Questionnaire for virtual engagement.

Action #27 Next Steps / Project Name	Objectives	Status	Annual Report Update
Conduct outreach	To conduct outreach to increase awareness of boating best management practices to boaters	Ongoing	Co-presented at the 2022 California Clean Boating Network meeting with SFEP; co-produced the 2022 Boater Kit Feedback Report regarding boaters assessment of the pollution prevention toolkit (with State Parks and CCC); co-produced the 2022 California Boater Kit Recipient Questionnaire Report to assess boaters environmental knowledge (with State Parks and CCC); distributed 611 California Boater Kits to Southern California Dockwalkers and individual recreational boaters engaged online January through March 2023; tabled at the March 18, 2023 Marina del Rey Harbor Community Clean Up event, engaging local boaters on clean boating and distributing Boater Kits; promoted and co-hosted two Dockwalker Trainings with a total of 46 attendees; applied for a grant opportunity to fund and build momentum around previous MPA outreach initiatives.
Manage Pumpout Nav app	Increase proper disposal of boater sewage	Ongoing	Continued to manage the Pumpout Nav app via ensuring pumpout and dump station status are accurate and responding to ad hoc problems reported by Southern California boaters; contributed to and supported app development and maintenance in partnership with SFEP, specifically by obtaining the display of No Discharge Zones on the app.

Action #27 Next Steps / Project Name	Objectives	Status	Annual Report Update
Research public engagement metrics and specific engagement tools on reduction of pollutants to waterways	To optimize public engagement resources to increase impact of pollutantreduction strategies to waterways	Ongoing	Finalized our community-based social marketing pilot on proper sewage disposal via stationary pumpouts in Marina del Rey and produced a report for CDBW.
Find funding and implement fuel spill prevention tools and outreach	To reduce fuel and oil pollution from the boating community	Ongoing	Distributed 611 2023 Boater Kits, each with a fuel bib and two oil absorbent sheets for southern California boaters in partnership with California Boating Clean and Green Program; co-hosted two Dockwalker Trainings conducted in partnership with State Parks and CCC which includes information on oil recycling and oil pollution best management practices.
Support and develop marine debris reductionand cleanup efforts	To reduce fishing line marine debris from theangling community	Ongoing	Promoted instruction collateral for do-it-yourself fishing line recycling instructions within the Dockwalker Social Media Toolkit; produced 2023 Tide Calendars in English and Spanish which features fishing line recycling station locations within Southern California harbors.

CCMP Action #28

Support efforts of disadvantaged communities to achieve healthy habitats, implement green infrastructure, and reduce pollution

Long-term Environmental Results / Outcomes: Help disadvantaged communities to achieve healthy habitats through restoration and pollution reduction projects

Action #28 Next Steps / Project Name	Objectives	Status	Annual Report Update
Support IRWMP and similar programs to preferentially invest in disadvantaged communities	To support green infrastructure projects for IRWMP and Measure W funding in disadvantaged communities	Ongoing	At the October 20, 2022 SMBRC Governing Board meeting, SCC staff presented on the SCC's draft Strategic Plan that outlines the agency's vision and objectives for the next five years and funding opportunities to increase climate change resiliency and promote environmental equity and justice. See Action #16 for efforts related to IRWMP and Action #43 for efforts related to Measure W.

CCMP Action #29

Reduce health risks of swimming in contaminated waters and consuming contaminated seafoods through more comprehensive source control and, advanced monitoring and public notification

Long-term Environmental Results / Outcomes: Achieve no elevated health risks associated with swimming and seafood consumption through source control, monitoring, and public notification

Action #29 Next Steps / Project Name	Objectives	Status	Annual Report Update
Continue implementation and improvement of beach water quality monitoring and reporting system	To support SWRCB's collection and coordination of bacterial sampling results for beach water quality monitoring required under AB 411; to support Heal the Bay's efforts to standardize beach water quality monitoring and effectively disseminate the information to the public	Ongoing	SWRCB continued maintaining the Safe to Swim map, which displays bacterial sampling data for coastal and inland monitoring locations, including paused data refreshes in September 2022 to fix issues with the internal database, resumed data refreshes in January 2023, and held internal discussions on making improvements to the map and database. HtB posted daily water quality predictions (NowCast) at six beaches in Santa Monica Bay (17 total beaches statewide), held the final technical advisory committee meetings for updating the grading methodology for the River Report Card which is anticipated to start being used in June 2023, and continued to develop the annual River Report Card and Beach Report Card to be released in mid-June.

Maintain and enhance the existing seafood contamination education and enforcement program	To support and facilitate the continuation and enhancement of the existing seafood contamination education and enforcement program	Ongoing	In November 2022 FCEC published reports on the condition of pier signs identifying "Do Not Consume" fish and enforcement of existing white croaker regulations for commercial and recreational anglers and retail food facilities between August 2021 and July 2022. In December 2022 the FCEC published a newsletter highlighting community events in the last year. In February 2023 FCEC published the Annual Angler Outreach Report summarizing outreach conducted between August 2021 and July 2022 including angler, bait shop, digital outreach via the FCEC website and Facebook page, and community events. A FCEC meeting was scheduled for 3 May 2023 to provide an update on outreach and enforcement activities and redesign of outreach materials. USEPA continued sample collections for the Palos Verdes Shelf Superfund Site to support the upcoming Feasibility Study and the Second Monitored Natural Recovery including completing sediment and high-resolution water and passive water sample collections, collecting most of the fish samples (white croaker and barred sand bass), and sending samples to labs for analysis. Fish sample collection is anticipated to be completed in May 2023. The draft Second Monitored Natural Recovery Report is anticipated to be complete in November 2023 and draft Feasibility Study by summer 2025. The next meeting of the Palos Verdes Shelf Technical Information Exchange Group is anticipated to be scheduled in fall 2023.

CCMP Action #30

Conduct community engagement, education, and inform policies related to water conservation and reuse to reduce water demand and reliance on imported sources

Long-term Environmental Results / Outcomes: Help reduce dependence of the Los Angeles region on imported water and lower the percentage of imported water use by water agencies

Action #30 Next Steps / Project Name	Objectives	Status	Annual Report Update
Link water conservation with outreach events and social media	To opportunistically incorporate water conservation topics during outreach events and on social media	Ongoing	No activities occurred during this reporting period.
Educate, engage communities, and provide resources that promote the importance of native plants	To promote the use ofdrought tolerant nativeplants	Ongoing	No activities occurred during this reporting period.
Support efforts by water agencies to promote water conservation and reuse including dissemination of materials	To promote current information on water conservation and reuse efforts developed by wateragencies	Ongoing	No activities occurred during this reporting period.

CCMP Action #31

Achieve water quality benefits by businesses through community engagement and implementation of best management practices

Long-term Environmental Results / Outcomes: Achieve Clean Bay Certified adoption by 100% of Bay watershed cities; develop and distribute BMP materials to food service establishments and marine fuel docks

Action #31 Next Steps / Project Name	Objectives	Status	Annual Report Update
Research contaminants, environmental laws, sustainability, pollution prevention standards, and BMPs for commercial businesses such as nurseries, landscapers, restaurants, and horse stables	To assess contaminants and pollution prevention impact from commercial businesses	Ongoing	No activities occurred during this reporting period.
Distribute restaurant engagement tools	To reduce pollution from restaurants	Ongoing	See Action #32 for efforts related to restaurant source reduction.

Action #31 Next Steps / Project Name	Objectives	Status	Annual Report Update
Develop funding to support the expansion of best management practices to incorporate other business sectors	To contribute to source reduction of single-use disposable items from food service establishments	Ongoing	See Action #32 for updates related to restaurant source reduction.

CCMP Action #32

Reduce marine debris by supporting bans on single-use items, conducting outreach, and participating in trash reduction programs

Long-term Environmental Results / Outcomes: Implement ban on single-use disposable plastics in Los Angeles County and 100% of cities throughout watershed; engage 30 food service establishments as ReThink Disposable participants

Action #32 Next Steps / Project Name	Objectives	Status	Annual Report Update
Find funding forand continue ReThink Disposable LA	To contribute to source reduction of single-use disposable items from food service establishments	Ongoing	Subcontracted with APTIM for City of Los Angeles Reusable Foodware Microgrant Program and kicked off the project with planning, supporting collateral development, and participating in field assessing outreach trainings.
Support municipality bansof polystyrene, non-recyclable plastics, and single use items	To contribute to source reduction of polystyrene,non-recyclable plastics, and single use items	Ongoing	Participated in Reusable LA Coalition and continued to participate in its steering committee; contributed signatory to letters to City of Los Angeles Councilmembers regarding support for the adoption of 1) zero waste city facility and event requirements 2) an expansion of single-use carryout bag regulations and 3) a ban on the distribution and sale of expanded polystyrene products (the legislation passed on December 6, 2022); partnered on 5 Gyre Institute's Plastic-Free Parks campaign to mobilize volunteers around the country to document plastic pollution in U.S. National Parks, the results will be used to support and inform legislation to keep single-use items out of Parks, 5 Gyres finalized the 2022 report.

CCMP Action #33

Monitor microplastics (including microfibers) and other marine debris in the Bay and coastal environments to inform management actions

Long-term Environmental Results / Outcomes: Use microplastics data analyses and identified trends to inform source reduction management strategies in the Bay

Action #33 Next Steps / Project Name	Objectives	Status	Annual Report Update
Complete the development of a microplastics in sediment extraction and analysis method	To complete the development of a microplastics in sediment extraction and analysis method	Ongoing	No activities occurred during this reporting period.
Publish a manuscript on the results of the Bay studies	To assist in characterizing microplastics in the Bay and nearshore environment and disseminate results	Ongoing	No activities occurred during this reporting period.
Conduct additional studies to inform the transport, accumulation, and fate of microplastics in our marine and nearshore environments	To continue to collect datato inform the regional fate and transport model of microplastics in the nearshore marine environment	Ongoing	No activities occurred during this reporting period.

CCMP Action #34

Improve understanding of emerging contaminants through monitoring and research to inform source control and reduce loading (e.g., fire retardants), especially in the context of climate change

Long-term Environmental Results / Outcomes: Reduce impacts of emerging contaminants on key habitats in the Bay and its watersheds

Action #34 Next Steps / Project Name	Objectives	Status	Annual Report Update
Improve analytical methodology and standardize monitoring of more emerging contaminants	To improve availability, sensitivity, and repeatability of analytical methods for emerging contaminants to improve data quality for monitoring emerging contaminants in aquatic ecosystems	Ongoing	No activities occurred during this reporting period.

CCMP Action #35

Monitor and inform management actions for Harmful Algal Blooms (HABs)

Long-term Environmental Results / Outcomes: Reduce prevalence of HABs in the Bay and its waterbodies as measured by the Comprehensive Monitoring Program

Action #35 Next Steps / Project Name	Objectives	Status	Annual Report Update
Continue to support research and monitoring efforts for HABs, especially in context of climate change and CMP implementation	To support research and monitoring efforts that fill data gaps in our region for HAB occurrences, frequencies, causes, and impacts, especially in the context of climate change	Ongoing	Research plans are in development and are proposed as a line of study through CRI for the summer and the upcoming academic year, 2023-2024. A QAPP is in development and is expected to be submitted to the USEPA in the spring of 2023.
Conduct monthly maintenance of SCCOOS shore station at Santa Monica Pier and seek support for additional sensors	To collect data on oceanographic conditions in the nearshore environment and potentially inform long-term changes related to environmental factors, including climate change	Ongoing	No activities reported by partners during this period.
Improve public outreach and education on HABs	To improve public understanding of harmful algal blooms, causes, and impacts	Ongoing	No activities occurred during this reporting period.

CCMP Action #36

Monitor chemical, physical, and biological characteristics in the Bay to inform climate change impacts such as ocean acidification

Long-term Environmental Results / Outcomes: Development and implementation of adaptation strategy addressing impacts of ocean acidification in the Bay

Action #36 Next Steps / Project Name	Objectives	Status	Annual Report Update
Support OA sensor array maintenance, calibration, and data downloads in accordance with SOP	To continue using high-frequency, high-resolution OA sensors to characterize OAH conditions in Santa Monica Bay	Ongoing	At the October 20, 2022 SMBRC Governing Board meeting, LACSD staff presented on OAH monitoring efforts including regular compliance monitoring and the Wirewalker Special Study, programs that provide regional context and validate model outputs to inform management actions, and plans to continue quarterly monitoring and assess technological advancements for future studies. The Palos Verdes Wirewalker Special Study was completed in November 2022 (see additional narrative).
Support inclusion of climate change impacts into CMP, especially through new models and data	To implement monitoring associated with new climate change indicators in the CMP; to seek funding and implement the CMP; to complete and release the State of the Bay Report	Ongoing	TBF released a call for proposals for a State of the Bay Report consultant team and through a competitive process hired 3Lane Marketing to work with the TAC to draft a State of the Bay Report; 3Lane contract was finalized in this reporting period and the web based State of the Bay Report is being generated.

Action #36 Next Steps / Project Name	Objectives	Status	Annual Report Update
Convene technical advisors to prioritize actions based on information from CMP	To prioritize monitoring and data collection needs based on the revised CMP for major habitats in the Bay and implement the prioritized monitoring protocols	Ongoing	In October 2022 DFA approved a Revised Project List removing one project that declined the award and reallocating the remaining funds to two existing projects. SMBRC staff continued to coordinate with DFA and awardees to develop and execute the grant agreements (see additional narrative).

Action #36 Narrative:

2019 Palos Verdes Wirewalker Special Study: LACSD's project OA sensors to accurately collect realtime data at high-resolution, both temporally and vertically through the water column, and characterize OAH levels and variability in the upper 100m of the water column. The project commenced in May 2019 and concluded in November 2022. When functional, the system provided unparalleled visualization of oceanographic conditions on the Palos Verdes shelf. These data showed spatial-temporal variability unable to be captured by traditional mooring systems, which could allow for events such as algal blooms or plume movement to be contextualized through the water column. This was also an opportunity for LACSD staff to learn more about this cutting-edge technology through deployment and troubleshooting of system elements.

SMBRC Proposition 50 Grant Program: These projects fill many data gaps identified in the CMP covering a range of habitats in the Santa Monica Bay and its watersheds, including chaparral, riparian, wetlands, rocky reefs, rocky intertidal, and soft bottom. SMBRC staff continue to coordinate with DFA and awardees for drafting project scopes of work and grant agreements. The grant agreements are anticipated to be executed by June 2023. The six projects on the Revised Project List are:

- Support of Comprehensive Monitoring Program Wetlands Evaluation through Monitoring and Assessment of Santa Monica Bay Estuaries (SCCWRP)
- Monitoring rocky intertidal habitats in the Santa Monica Bay to support habitat assessments (CSU Fullerton Auxiliary Services Corporation)
- Establishing a baseline census and ecological monitoring program for *Zostera pacifica* habitats in coastal Southern California (TBF)

- Assessment of the Nearshore Rocky Reef Resources of Santa Monica Bay (Occidental College)
- Looking Back to See Ahead: Using long-term monitoring data to predict species persistence across the NSMBW (Pepperdine University)
- Citywide Bioretention Basin Project (City of Culver City)

CCMP Action #37

Increase understanding of deep-water habitats such as submarine canyons, deep reefs, and outfall pipes

Long-term Environmental Results / Outcomes: Enhance functions and conditions of deep marine environments (e.g., deep reefs) in the Bay

Action #37 Next Steps / Project Name	Objectives	Status	Annual Report Update
Conduct ROV surveys to collect physical, chemical, and visual data	To use the ROV to conduct underwater surveys to supplement monitoring	Ongoing	TBF's ROV, R2Deep2, was updated for use by VRG to help fill CMP data gaps. VRG staff deployed the ROV on March 9, 2023 to survey several spots at the Bolsa Chica artificial reefs to ground truth high resolution sonar data collected previously and obtain video with a stereo camera system to obtain fish species identification and size data post hoc. This spring, the ROV will be used to survey a *Macrocystis pyrifera* aquaculture facility installed by Ocean Rainforest in Santa Barbara. Bi-monthly surveys will be conducted to confirm the anchoring system at 75m depth is in good condition and that there are no marine mammal entanglements.
Identify and apply emerging technology and techniques to better characterizeBay habitats, including recommendations	To utilize cutting edge advancements in remote sensing, and remote platforms to better characterize the condition of the Bay's habitats	Ongoing	TBF is working with NOAA and Marauder Robotics to advance design of remote sensing and remote platforms to collect data in nearshore coastal environments.

CCMP Action #38

Monitor and improve understanding of rocky intertidal habitats to inform restoration actions

Long-term Environmental Results / Outcomes: Implementation of the Comprehensive Monitoring Program to achieve a better understanding of the extent and condition of habitats in the Santa Monica Bay and its watershed

Action #38 Next Steps / Project Name	Objectives	Status	Annual Report Update
Support study recommendations and outreach efforts for improved protection	To improve understanding of rocky intertidal habitats to fill CMP data gaps and inform restoration activities	Ongoing	Developed further research priorities for the assessment of environmental stressors associated with the mussel, *Mytilus galloprovincialis*. This line of study is expected to continue in the summer and through the 2023-2024 academic year through CRI. A QAPP is in development and is expected to be submitted to the USEPA in spring 2023.

CCMP Action #39

Monitor and inform effective management of Marine Protected Areas (MPAs), Fishery Management Plans, and local fisheries for recreational and commercially important species

Long-term Environmental Results / Outcomes: Inform agency enforcement plans and long-term adaptive management of MPAs, assist with fishery related public health advisories

Action #39 Next Steps / Project Name	Objectives	Status	Annual Report Update
Support MDRA in their implementation of the youth and veteran fishing program	To provide disadvantaged youth and veterans the opportunity to experience nature, boating, fishing, and healthy lifestyles	Ongoing	No activities occurred during this reporting period.
Support MDRA in the completion of a halibut FMP	To provide technical and outreach support to MDRA in participating and tracking the development of a halibut FMP by CDFW and promotion of sustainable fisheries	Ongoing	At the October 20, 2022 SMBRC Governing Board meeting, MDRA reported on a white seabass genetics study that may inform the effectiveness of hatchery programs.
Continue opportunistic aerial surveys to track boating and vessel activity	To continue to track ocean vessels and fishing trends within the South Coast MPA Network	Ongoing	No activities occurred during this reporting period.

Action #39 Next Steps / Project Name	Objectives	Status	Annual Report Update
Conduct MPA Watch to monitor and inform use of MPAs in the Bay	To implement a community-science based program to monitor activities in MPAs and encourage appropriate enforcement and regulation activities	Ongoing	HtB conducted trainings for MPA Watch volunteers, conduct shore-based surveys, and shared data with local enforcement agencies and contributed to a report to CDFW for the MPA Decadal Management Review, which is anticipated to be presented to the Fish and Game Commission in February 2023; SMBRC, TBF, and HtB staff participated in LA MPA Collaborative meetings including discussions on broadening awareness of MPAs and increasing equity and inclusion; see Action #27 for additional MPA outreach efforts included in California Boater Kits and Dockwalker Trainings.

CCMP Action #40

Research and inform best management and pollution reduction practices to address non- point source pollution and facilitate reduction

Long-term Environmental Results / Outcomes: Assist in achieving constituent percentage load reduction targets for waterbodies in the Santa Monica Bay according to TMDL compliance timeline

Action #40 Next Steps / Project Name	Objectives	Status	Annual Report Update
Identify partners and identify funding sources for long-term monitoring efforts for LID and water conservation efforts	To establish project partners and identify potential funding sources in support of long-term monitoring for LID and water conservation efforts	Ongoing	See Action #36 for efforts related to CMP implementation.
Implement monitoring programs for long-term monitoring and to inform effectiveness of LID/BMP implementation projects	To fill data gaps and inform LID/BMP effectiveness in reducing non-point source pollution, especially nutrient pollution	Ongoing	No activities occurred during this reporting period.

CCMP Action #42

Inform strategies to reduce greenhouse gas emissions and increase carbon sequestration in support of existing state actions and policies

Long-term Environmental Results / Outcomes: Implement and support carbon sequestration/cycle monitoring, research, and quantification as part of projects to inform or prioritize efforts

Action #42 Next Steps / Project Name	Objectives	Status	Annual Report Update
Research landfill diversion's reduction on greenhouse gas emissions and carbon sequestration due to compost application	To conduct research on landfill diversion to obtain quantifiable GHG reduction metrics	Ongoing	No activities occurred during this reporting period.
Conduct research to establish rate of carbon sequestration associated with key habitats in the Santa Monica Bay and its watershed	To conduct research to identify processes and metrics to further understand rates of carbon sequestration within key habitats in Santa Monica Bay and its watershed	Ongoing	No activities occurred during this reporting period.

CCMP Action #43

Implement the County-wide Safe Clean Water Program to support stormwater pollution control projects

Long-term Environmental Results / Outcomes: Assist in achieving constituent percentage load reduction targets for waterbodies in the Santa Monica Bay according to TMDL compliance timeline

Action #43 Next Steps / Project Name	Objectives	Status	Annual Report Update
Participate in advisory board and support implementation of projects from the new funding mechanism	To improve stormwater management in urban areas, protect water quality within our communities, provide new sources of water for current and future generations, and reduce stormwater pollution through attainment of water quality objectives, increased stormwater retention, increased service to disadvantaged communities, and coordination of efforts across the County	Ongoing	SMBRC staff continued to serve as a member of the SCWP's South Santa Monica Bay WASC. At the October 2022 SMBRC Governing Board meeting, the Watershed Coordinators for the North, Central, and South Santa Monica Bay WASCs presented on their roles and funding opportunities for future applicants. In November 2022 the Metrics and Monitoring Study continued, which will develop criteria to inform adaptive management of the SCWP, including holding the first public workshop and starting initial monitoring strategies development. In April 2023, the Santa Monica Bay Watershed Area Steering Committees completed their recommended Stormwater Investment Plans for the Year 4 (Fiscal Year 2023-2024) to be reviewed by the Regional Oversight Committee and the Los Angeles County Board of Supervisors for approval. The application deadline for the Year 5 Stormwater Investment Plans is 31 July 2023. A Biennial Report is anticipated in late 2023 highlighting SCWP's progress.

CCMP Action #44

Support the development and implementation of a comprehensive regional sediment management plan for restoring natural hydrological functions of river systems and mitigating impacts from climate change

Long-term Environmental Results / Outcomes: Complete and implement a comprehensive regional sediment management plan to restore natural functions where possible and mitigate impacts of climate change

Action #44 Next Steps / Project Name	Objectives	Status	Annual Report Update
Build capacity and conduct pilot projects to inform future actions and advance program development / design	To utilize pilot level projects to test assumptions and develop preferred methods for sediment transport and/or placement	Ongoing	No activities occurred during this reporting period.