

SANTA MONICA BAY NATIONAL ESTUARY PROGRAM

Semi-Annual Report 1 April 2020 – 30 September 2020

Report Date: 30 October 2020

Prepared for the United States Environmental Protection Agency

Common Work Plan Acronyms

Army Corps	United States Army Corps of Engineers
ASBS	Areas of Special Biological Significance
BEP	Boater Education Program
BRP	Santa Monica Bay Restoration Plan
BWER	Ballona Wetlands Ecological Reserve
CalTrans	California Department of Transportation
CCMP	Comprehensive Conservation and Management Plan (formerly BRP)
CCVA	Climate Change Vulnerability Assessment
CDBW	California Department of Boating and Waterways
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CDWR	California Department of Water Resources
CMP	Santa Monica Bay Comprehensive Monitoring Program
CNRA	California Natural Resources Agency
CoSMoS	Coastal Storm Modelling System
CRAM	California Rapid Assessment Method
CRI	Loyola Marymount University's Coastal Research Institute
CVA	Clean Vessel Act
CWMW	California Wetland Monitoring Workgroup
DDT	Dichlorodiphenyltrichloroethane
EMPA	Estuarine Marine Protected Area
EWMP	Enhanced Watershed Management Plans
FMP	Fishery Management Plan
FOLD	Friends of the LAX Dunes
GB	Santa Monica Bay Restoration Commission Governing Board
GHG	Greenhouse Gases
GPRA	Government Performance and Results Act
HABs	Harmful Algal Blooms
HHW	Household Hazardous Waste
JWPCP	Joint Water Pollution Control Plant (Carson)
LACDBH	Los Angeles County Department of Beaches and Harbors
LACDPH	Los Angeles County Department of Public Health
LACDPW	Los Angeles County Department of Public Works
LACFCD	Los Angeles County Flood Control District
LACSD	Sanitation Districts of Los Angeles County
LADWP	Los Angeles Department of Water and Power
LARC	Los Angeles Regional Collaborative for Climate Action
LARWQCB	Los Angeles Regional Water Quality Control Board
LASAN	City of Los Angeles Sanitation
LCP	Local Coastal Plan
LVMWD	Las Virgenes Municipal Water District
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

NMFS	National Oceanic and Atmospheric Administration's National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	National Parks Service
NRC	Natural Resource Council
NZMS	New Zealand Mudsnails
OA	Ocean Acidification
OPC	Ocean Protection Council
OREHP	Ocean Resource Enhancement Hatchery Program
OWDS	On-site Wastewater Disposal Systems
PCB	Polychlorinated biphenyls
POTW	Public Owned Treatment Works
Prop.	Proposition Grant
PVPLC	Palos Verdes Peninsula Land Conservancy
RCDSMM	Resource Conservation District of the Santa Monica Mountains
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
SLC	State Lands Commission
SLR	Sea Level Rise
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 (also known as the Santa Monica Bay Restoration Foundation)
TMDL	Total Maximum Daily Load
UCD	University of California, Davis
UCLA	University of California, Los Angeles
UCSB	University of California, Santa Barbara
USC	University of Southern California
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WBMWD	West Basin Municipal Water District
WMP	Watershed Management Plans

Semi-Annual Report Overview and Structure

This semi-annual report outlines and provides an update for each of the [Fiscal Year 2020 \(FY20\) Work Plan](#) tasks for the time period 1 April through 30 September 2020, the second semi-annual reporting period for FY20. The FY20 Work Plan contains activities identified in the [2018 CCMP Action Plan](#) and is focused on a subset of the identified Actions and Next Steps in the Action Plan. The top priorities of SMBNEP from the CCMP included improving water quality, conserving and rehabilitating natural resources, protecting the Bay's benefits and values to people, and understanding and addressing climate change impacts. Given the cross-cutting and multi-benefit nature of most of the projects and programs listed in the FY20 Work Plan and this semi-annual report, they are not arbitrarily separated and categorized into one of those four priority areas. These four priority areas should be thought of as integrated and supported throughout the semi-annual report. Many of the FY20 tasks continue past efforts.

Within these priority areas, seven goals were identified in the [2018 CCMP Action Plan](#) and are listed below. All seven goals are to be addressed by the actions and next steps identified in the [FY20 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

The main section of this semi-annual report follows the Work Plan structure, which is based on the CCMP Action Plan. Thus, it consists of a large table that is organized by Action number and next steps identified with that Action from the 2018 CCMP. The table is intended to provide current status and a synthesis of updates by next step or project on efforts undertaken during this reporting period. For some next steps that required more description, a narrative section follows the table (organized sequentially by Action number). Narratives for individual steps are categorized by Action.

Note that the FY20 Work Plan and its semi-annual reports were based on the 2018 CCMP Action Plan. This is the second semi-annual report to reflect the new structure and is thus structured slightly differently than previous years of semi-annual reports of SMBNEP. For additional links to SMBNEP products that informed this semi-annual report, [click here](#).

The following table summarizes the primary work activities that occurred during this semi-annual reporting period. Additional information can be found on [TBF](#) or [SMBRC](#)'s

websites, the [2018 CCMP Action Plan](#), the [FY20 Work Plan](#), and as part of individual products produced for each project. The table provides brief updates on each of the CCMP actions that were implemented during this reporting period. Some actions will have additional deliverables or narratives as well.

During this time period, the continued spread of the novel coronavirus and its associated disease (COVID-19) required implementing social distancing and other guidelines. SMBNEP continues to follow recommendations by the Center for Disease Control and Prevention as well as recommendations by local authorities such as Los Angeles County Department of Public Health. SMBNEP is responding to challenges and continues ongoing efforts to adapt to restrictions.

#	CCMP Action	CCMP Next Step(s) / Project Activity Name	Objective(s)	Status	Semi-Annual Report Update
1	Acquire open space for preservation of habitat and ecological services	Continued participation on resources agency Technical Advisory Committees	Acquire and/or protect high priority properties that are at risk of development, or provide high diversity, include wildlife corridors, and/or provide socio-economic benefits	Ongoing	No activities occurred during this semi-annual reporting period
		Bond funded acquisitions	To acquire and protect 91 acres of undeveloped land in Carbon Canyon to prevent development in a fire-prone area and expand recreational opportunities	Ongoing	Grant agreement development for the Carbon Canyon Acquisition project was completed during this reporting period (funded by Prop. 12)
		Support partners in identification and prioritization of key acquisition or conservation easement properties	Acquire and/or protect high priority properties that are at risk of development, or provide high diversity, include wildlife corridors, and/or provide socio-economic benefits	Ongoing	Communicated with SMMC and MRCA on progress of land acquisitions during this reporting period, including the acquisitions of approximately 179 acres of private land throughout the Santa Monica Mountains at the Mulholland Waters, Tijan-Santa Maria Road, and the Ramirez Canyon-Lauber properties
2	Restore kelp forests in the Bay to improve the extent and condition of the habitat	Implement the rocky reef/kelp forest restoration project	To restore five 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	Ongoing	Partnered with fisherman to cull urchin densities within 0.22 acres of urchin barrens off White Point, Palos Verdes; no restoration activities were conducted April through August 2020 due to COVID-19 restrictions; TBF pre-monitored 0.89 acres of urchin barren during this time period and restoration divers resumed work in September 2020; see additional narrative below

#	CCMP Action	CCMP Next Step(s) / Project Activity Name	Objective(s)	Status	Semi-Annual Report Update
		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 the 0.22 acres cleared during this project period; annual biological response surveys conducted in August and September 2020
3	Recover abalone populations in the Santa Monica Bay and region to support rare species and socioeconomic benefits to people	Establish abalone outplanting sites and conduct juvenile and larval outplanting	To reintroduce abalone and test effectiveness of outplanting methods	Ongoing	Maintained temperature logger deployments at the outplanting site and established a miniDOT O2 sensor in May 2020; deployed SAFE module tops, Time Lapse Cameras and miniDOT O2 sensors in September 2020 in preparation for the fall outplanting event; SAFEs were stocked with 324 white abalone on 25 September and will be opened in October; a red abalone larval outplant occurred on 1 September 2020; see additional narrative
		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	6-month post-outplant monitoring was not conducted due to COVID-19 restrictions on project partner dive operations; TBF divers deployed and retrieved sensors twice, and shells were opportunistically collected during these dives; 9-month post outplant monitoring was successfully conducted on 11 September 2020 as required by the monitoring scheduled defined in the ESA permit; four live white abalone were observed in total, and 108 shells were collected during this reporting period
		Captive spawn abalone	To research captive spawning and larval culturing techniques, and raise abalone in aquaculture facility for outplanting	Ongoing	One red abalone captive spawn was conducted on 27 August, which resulted in gametes from two females and one male, producing approximately 109,000 viable larvae; larvae were outplanted to the Palos Verdes site on 1 September 2020

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		Maintain aquaculture facility for abalone	To facilitate captive spawning and rearing of red, green, and white abalone in support of future restoration activities for outplanting in the wild	Ongoing	TBF and SCMI staff continue to operate and maintain two abalone laboratory spaces at SCMI, housing red and endangered white abalone; in June 2020, over 5,000 juvenile white abalone were transferred from the Bodega Marine Lab to SCMI facilitated by two volunteer pilots coordinated through LightHawk; abalone will be held and cared for in TBF's abalone facility until they grow large enough to be outplanted
4	Assess and restore seagrass habitats in the Santa Monica Bay and nearshore environments to benefit marine ecosystems and improve coastal resilience	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 R2Deep2, side-scan sonar, and SCUBA divers to inform the CMP and restoration activities	Ongoing	No surveys were conducted during this reporting period; surveys and genetic sample collection was planned on 3 September for the Malibu sites but was cancelled; surveys and sample collections are planned for late fall 2020
		Develop restoration methods for eelgrass (<i>Zostera pacifica</i>) in the Santa Monica Bay	To improve understanding and probability of success for offshore eelgrass restoration using transplant methods	Ongoing	Collaborated with Paua Marine Research Group and partner agencies to improve understanding of eelgrass restoration methods to apply to the pilot project (see also below)

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		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	Preliminary implementation and monitoring plans for eelgrass restoration pilot project have been drafted; continued genetics study; applied for Smith Fellowship in support of eelgrass restoration research; see additional narrative below
		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	Outreach to seagrass experts throughout CA was initiated to form a TAC to inform transplant methods and monitoring protocols; first TAC meeting is being planned for Fall 2020; genetics study continued with completion of a senior research project assessing the first three <i>Zostera pacifica</i> sites and one <i>Z. marina</i> site; TBF staff continued participation on the regional Submerged Aquatic Vegetation Scientific Advisory Committee to inform regional standardization for seagrass monitoring
5	Assess and implement offshore artificial reefs to benefit marine ecosystems and provide socioeconomic benefits to people	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	Ongoing	Implementation of the Palos Verdes Restoration Reef project (funded by Prop. 12) continued during this reporting period, including continued construction of artificial reef blocks; construction was completed in September 2020; sonar surveys to monitor sediment and rock movement were conducted

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		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	Ongoing	<p>Opportunistic communications between TBF and Vantuna Research Group occurred during this report period reaffirming the need for this work; next step will be to seek funding</p> <p>Acoustic Telemetry Sensor Array recorded 370 detections of 11 individual white sharks in SMB; at least 9 individuals were juveniles; most detections occurred in June-September; data will inform the CMP</p>
6	Restore coastal strand and foredune habitat to beaches and sandy shores to improve coastal resilience	Continue long-term monitoring of the Santa Monica Beach Restoration Pilot Project	Continue long-term monitoring to inform coastal resilience, ecosystem benefits, and adaptive management of the restoration area	Ongoing	Continued physical and biological surveys at the frequency described in the Implementation and Monitoring Plan; results were summarized in the Year 4 Report (Sept 2020) ; vegetation continues to expand and dunes continue forming; data from southern portion of restoration area show over 0.5 meters of sand accretion, with dunes along fence lines of up to a meter in height
		Conduct Phase 1 (outreach and planning) and Phase 2 (implementation) of the Malibu Living Shoreline Project	Restore 3 acres of beach and dune habitat to improve coastal resilience and ecosystem benefits and improve public engagement	Ongoing	Permitting documents were completed and submitted to City of Malibu in June 2020, including a Restoration and Monitoring Plan, a final Coastal Development Permit (CDP) Application, a Baseline Assessment Report, and other associated documents; permitting documents contained significant scientific and external partner input (e.g., LACDBH, SCC, City of Malibu); documents also contained final graphics, signs, and restoration design elements provided by the subcontractors, Rios and CRC; permit coordination with City of

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					Malibu was ongoing; planning continued for baseline monitoring and other project implementation elements; see additional narrative
		Find funding for and implement another beach and bluff restoration project	Restore 3.5 acres of bluff, beach, and eelgrass habitat as part of a living shoreline pilot project; restore dune habitats in Manhattan Beach through iceplant removal and revegetation with native plants	Ongoing	Initiated the Manhattan Beach Dune Restoration project grant agreement and work plan; TBF continued outreach efforts and coordination with project partners; developed a project webpage and FAQ ; conducted virtual public outreach events in coordination with City of Manhattan Beach, USC Sea Grant, LARC, and other partners; planned and released a video outreach tool to solicit public input on the project; conducted baseline monitoring; solicited proposals through an open RFP and hired a restoration design firm (Rios/CRC); Continued work on the Los Angeles Living Shoreline Project; solicited proposals through an open RFP and hired a restoration design firm (Integral); continued virtual project outreach and meetings; developed a project webpage ; conducted an agency restoration planning meeting with over 25 participants; planned and conducted baseline monitoring; see additional narrative for both projects below
		Support efforts to standardize sandy beach monitoring and a regional approach to restoration	Continue efforts to standardize sandy beach monitoring and data collection for southern California through	Ongoing	Continued ongoing coordination with the Beach Ecology Coalition group; spring event planning was cancelled due to COVID-19; continued stakeholder and agency communications; continued the Site Suitability Model (SSM) analysis project in partnership with CRI; began

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			stakeholder partnerships and CMP implementation		coordination to develop the SSM in partnership with LACDBH and State Parks through CRI; continued CRI beach characterization study; presented at the American Shore and Beach Preservation Association National Conference (one oral presentation and four posters)
7	Restore and maintain the entire LAX Dunes system to support native plants, wildlife, and rare species	Conduct community restoration events in the northern 48-acre dune area	Engage community through hands-on stewardship and habitat restoration through events held at the LAX Dunes	Ongoing	TBF halted public community events in March 2020 as required by LA County Public Health due to COVID-19; TBF developed volunteer safety guidelines and waivers and continued planning efforts for when LAWA and local public health officials begin to allow outdoor gatherings and volunteer activities
		Support LAWA in long-term maintenance and adaptive management of the 48-acre northern dune area	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, restoration planning, and monitoring; conducted multiple site visit field days and native seed collection days with contractors; conducted ongoing scientific monitoring; continued planning for restoration activities and revisions of the Ecological Landscape Plan (ELP); drafted revised ELP as part of Coastal Dunes Improvement Project CDP
		Engage underserved students and volunteers and inland communities	Recruit underserved students and volunteers, particularly from inland communities, to participate in hand-on stewardship	Ongoing	Minimal activities occurred during this semi-annual reporting period, due to halting of events as required by LA County Public Health due to COVID-1; TBF continued to explore outreach opportunities and strategies for the future

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			and restoration at the LAX Dunes		
		Initiate planning for areas within the adjacent dunes, including baseline monitoring	Conduct baseline monitoring and develop recommendations for habitat management	Ongoing	Conducted several site visits with LAWA and project partners in the adjacent 52-acre dune area; project partner, Rancho Santa Ana Botanic Garden, performed frequent seed collection and vegetation monitoring in the adjacent dune areas and TBF assisted in activities on multiple occasions; TBF continued monitoring planning for the adjacent 52-acre dune area
8	Restore coastal bluff habitats in the Bay watershed to support ecosystem services	Use Beach Bluff Restoration Master Plan to explore bluff restoration and continue recovery of 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); continued ongoing participation and support for the El Segundo Blue Butterfly Coalition (ESB Coalition), a group of public stakeholders, organizations, and agencies dedicated to restoration for the butterfly

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		Identify partners and funding to support bluff restoration projects	To establish project partners, project sites, and identify potential funding sources in support of bluff restoration	Ongoing	Continued to identify and coordinate with project partners, agencies, and stakeholders to prioritize project locations; continued work as part of ESB Coalition; initiated discussions with LA County DBH and City of Los Angeles for additional bluff restoration projects on Dockweiler Beach; applied for one beach and bluff restoration grant; see also updates as part of the Los Angeles Living Shoreline Project (Action #6)
		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	Implementation of the Abalone Cove Habitat Restoration project (funded by Prop. 12) continued during this reporting period; partner organizations such as PV Peninsula Land Conservancy, LA Conservation Corps, City of Redondo, and South Bay Parkland Conservancy continue bluff restoration work in support of El Segundo Blue Butterfly habitat restoration; see also the narrative for Action 6 for the Los Angeles Living Shoreline Project
9	Implement Malibu Creek Ecosystem Restoration Project (Rindge Dam and other barrier removals) to support ecosystem restoration	Support lead agencies in efforts to complete the design and engineering plans for the Malibu Creek Ecosystem Restoration Project	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	Army Corps released the Final EIR for the Malibu Creek Ecosystem Restoration Project in August 2020 and is in process of certifying it; the Corps estimates the Record of Decision will be signed in spring 2021

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10	Remove additional barriers to support fish migration and ecosystem services	Identify, prioritize, and acquire funding for barrier removal projects	To engage with partner entities to identify potential opportunities for fish barrier removal	Ongoing	Opportunistically participated in meetings and engaged in conversations to advance project prioritization and funding, especially with entities such as State Parks and Resource Conservation District of Santa Monica Mountains; communicated about several grant opportunities for fish barrier removal and restoration
11	Restore urban streams, including daylighting culverted streams, removing cement channels, and restoring riparian habitats	Identify additional urban streams for restoration and prioritize actions	To engage with partner entities to identify potential opportunities for urban stream restoration	Ongoing	No activities occurred during this semi-annual reporting period
12	Restore smaller coastal lagoons and other wetland types to increase wetland habitat area and	Complete the final post-restoration assessment of the Malibu Lagoon Restoration and Enhancement Project	To assess the condition of the restoration project for a five-year period and evaluate the data against set success criteria	Completed	Completed the collection, consolidation, and evaluation of six years of physical, chemical, and biological monitoring data and produced a Final Comprehensive Monitoring Report (August 2019); the restoration project was found to have met all success criteria and project goals

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	condition throughout the watershed	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) continued planning efforts, including solicited input from over 100 public stakeholders, and evaluation by the Technical Advisory Committee contributed to development of three conceptual design alternatives for the project; alternatives are currently undergoing 1D and 2D sediment, hydrological, and hydraulic modeling; baseline surveys are ongoing; RCD also submitted a grant pre-proposal to advance restoration planning, but did not receive funding
		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	Additional outreach was undertaken to present results of the six years of surveys to scientific colleagues and to disseminate the Final Report completed in August 2019 to inform restoration objectives for other small coastal bar-built wetland systems; continued conversations with partners such as UCLA and RCD to gain information on bar-built estuaries; continued participation on the Estuarine MPA Technical Advisory Committee, which includes Malibu Lagoon as a study site; submitted an LOI for an NEP Watershed grant to expand the EMPA monitoring to three other bar-built estuaries in SM Bay, but grant was not selected for funding

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13	Restore Ballona Wetlands Ecological Reserve to enhance wetland habitats and benefits to people	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 and releasing the Final Environmental Impact Statement / Report and complete permitting	Ongoing	Continued to provide technical support and communicated with the lead agencies to restore Ballona Wetlands; the Final Environmental Impact Report for the Ballona Wetlands Restoration Project was released in December 2019; CDFW's next step is to certify the Final EIR
		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, small partner events, and biological monitoring in accordance with permits (TBF and FBW); halted public community events in March 2020 as required by LA County Public Health due to COVID-19 and restrictions are ongoing; continued restoration activities and associated monitoring in permitted areas as part of a project funded by Prop. 12; released the Year 4 Report for the community restoration project in July 2020; continued planning for revegetation efforts; see additional narrative below
14	Implement wildlife crossings and other innovative projects for	Support lead agencies to find funding for Phase 2 of the Liberty Canyon Wildlife Crossing project	To implement Phase 2 of the Liberty Canyon Wildlife Crossing Project in support of wildlife movement and safety and enhanced habitats	Ongoing	The project was awarded \$5 million from the Wildlife Conservation Board (Proposition 68) and \$1 million from the State Coastal Conservancy to further Phase 2 design and construction.

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	benefits to wildlife and people	Support lead agencies in permitting and environmental review of Liberty Canyon Wildlife Crossing project	To complete implementation of the Liberty Canyon Wildlife Crossing Project in support of wildlife movement and safety and enhanced habitats	Ongoing	The project continued the final design and engineering plan phase during this reporting period
15	Implement projects that improve understanding and/or enhance endangered and threatened species populations (e.g. habitat improvements for Western Snowy Plover, genetic banking)	Support restoration and monitoring activities to benefit California red legged frog populations	Improve riparian and stream habitats to support populations of California red legged frog	Ongoing	Finalized the grant agreement for the reestablishment of California red-legged frogs project; project implementation was postponed due to fire impacts
		Support projects within western snowy plover critical habitat	To provide habitat and ecological benefits in support of the threatened Western Snowy Plover and to restore critical habitat	Ongoing	Continued beach and dune restoration projects and continued to inform management actions in support of ecological benefits to plovers; ongoing communications with USFWS regarding habitat enhancement projects; continued conversations with Audubon Society and plover monitoring teams and received summary plover reports monthly; supported Audubon Society in efforts to protect Least Tern chicks in front of the enclosure on Venice Beach (north Dockweiler Beach) through restricting grooming and hand removing trash
16	Support the implementation of activities and projects such as those in Enhanced	Continue to support implementation of projects identified in EWMPs and WMPs	Allocate and oversee State Bond funding for implementation of projects identified in EWMPs and WMPs	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)

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	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	Continue implementation of LA IRWMP	Facilitate and support 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 IRWRP Leadership Committee
		Facilitate other sources of State funding	Facilitate and support allocation of funding from other State bond measures such as Prop. 1 and 65 for implementation of projects identified in EWMPs and WMPs in the watershed	Ongoing	No activities occurred during this semi-annual reporting period
17	Infiltrate, capture, and reuse stormwater and	Complete rain garden metal fate study with CRI	To assess the fate of sequestered or retained heavy metals in the Culver City Rain Garden	Ongoing	No activities occurred during this semi-annual reporting period

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	dry-weather runoff through green infrastructure, LID, and other multi-benefit projects and improve understanding of ecosystem services provided	Complete additional LID projects throughout the watershed	Complete more LID projects throughout the watershed to improve flood protection and water quality, and provide additional benefits	Ongoing	Continued to work with grantees to implement previously funded Prop. 84 projects: Culver Boulevard Realignment and Stormwater Infiltration/Retention Regional Project, Westwood Neighborhood Greenway Project, Santa Monica Bay Catch Basin Insert Project, and Ladera Park Water Quality Enhancement Project; worked with grantees to implement two Prop. 12 projects: Monteith Park Storm Water Capture and Beach Cities Green Streets (see also narratives for Action #17, below)
18	Support installation and monitoring of additional sewage and bilge pumpout facilities in Southern California harbors	Continue quarterly monitoring of public sewage pumpout stations	To assess the condition of public sewage pumpout stations	Ongoing	Per statewide directive, monitoring is now occurring on a triannual basis; conducted one triannual monitoring effort of 72 public sewage pumpout stations in Southern California harbors; finalized triannual monitoring report; finalized 2019 annual Pumpout Report; began research to develop dump station monitoring protocol
		Update CA Vessel Waste Disposal Plan	To assess the existing sewage management infrastructure and need for additional sewage management resources in Southern California harbors for vessels	Completed	Finalized the CA Vessel Waste Disposal Plan document in January 2020 to be made available upon final approval from CA State Parks Division of Boating and Waterways
19	Support minimization of biological impacts of water intake	Educate and increase public support of the state-wide	Support efforts by state regulatory agencies to achieve full implementation of the state-wide desalination requirements	Ongoing	No activities occurred during this semi-annual reporting period

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	and discharge from coastal power generation and seawater desalination facilities, including public engagement and education	desalination requirements	in the California Ocean Plan and Once-Through Cooling Policy		
20	Support elimination of non-point pollution from onsite wastewater treatment systems	Continue the coordinated OWTS identification, permitting, and inspection system between the LARWQCB and the cities and counties in the watershed	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	No activities occurred during this semi-annual reporting period
21	Support policies that promote reuse, recycling, and advanced wastewater treatment to reduce reliance on imported water sources	Support recycled wastewater efforts by JWPCP of LACSD	To support expansion of wastewater effluent recycling by JWPCP of LACSD	Ongoing	Communicated with LACSD, Governing Board members, and staff on JWPCP's efforts in expansion of wastewater recycling
		Hyperion Treatment Plant to implement pilot project for recycled water	To support timely completion of Hyperion's pilot project	Ongoing	Attended LA City Sanitation's virtual ceremony for the Hyperion MBR Pilot Project which included presentation on next steps to begin installation in late 2020; informed SMBRC

#	CCMP Action	CCMP Next Step(s) / Project Activity Name	Objective(s)	Status	Semi-Annual Report Update
					membership and other stakeholders of the Project's progress during SMBRC meetings
		Support recycled wastewater efforts by Tapia Water Reclamation Facility and others through expansion of distribution system and regional partnerships	To support expansion of recycled wastewater distribution and reuse	Ongoing	Attended the virtual grand opening of the Demonstration Facility in September 2020 with tours anticipated to be available in October 2020; Demonstration Facility will serve to educate customers, test equipment and train employees as progress to implement the full scale Pure Water Project (funded by Prop.12) continued
22	Support policies and implement projects that divert landfill waste and encourage composting to improve water quality and lower greenhouse gas emissions	Support continuation of Table to Farm compost hubs	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 project funded by US EPA Environmental Justice Small Grants Program and SoCalGas at Environmental Charter School Inglewood; continued collection of community input, received approval from Inglewood councilmember, consultant constructed three raised garden beds and two in-ground beds, began development of garden signs; supported existing compost hubs and program partners; contributed signatory to a letter to Mayor Garcetti and LA Board of Supervisors regarding support for keeping the rollout of CA composting facilities on track, per the Short-Lived Climate Pollutants law (SB 1383)

#	CCMP Action	CCMP Next Step(s) / Project Activity Name	Objective(s)	Status	Semi-Annual Report Update
24	Support the inclusion of coastal resilience through natural means and softscape measures into local coastal plan updates	Attend stakeholder meetings for local cities LCP development / updates / implementation	Continue involvement in stakeholder meetings for local cities LCP development and implementation	Ongoing	Attended and participated in stakeholder meetings and workshops related to LCPs to encourage inclusions of nature-based adaptation and living shoreline measures as coastal resilience strategies; supported AdaptLA in efforts to incorporated SLR resiliency into policy; published a scientific paper in Shore and Beach in support of nature-based adaptation strategies, including recommendations for stakeholder engagement and utilizing scientific tools
		Opportunistically assist cities in the development of sea level rise vulnerability studies	Identify and partner with cities to develop sea level rise vulnerability studies to strategically recommend coastal resilience strategies	Ongoing	Partnered with cities in the development of sea level rise vulnerability studies and recommend nature-based living shoreline measures be included as adaptation strategies; communicated with City of Manhattan Beach, City of Malibu, City of Hermosa Beach, City of Los Angeles, and others
		Use data collected from beach restoration “soft-scape” projects to inform and assist LCP development	Provide science-based data to inform LCP development and support beach restoration	Ongoing	Continued ongoing communications regarding TBF’s living shorelines projects with local municipalities, LACDBH, consulting firms, and other NGOs; continued outreach to universities and presentations to other scientists; see also Action #6; see additional narrative
25	Support best management practices, increased public access, and improved public facilities for beaches	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	Continued ongoing partnership with LACDBH and other coastal municipalities about opportunities to implement nature-based adaptation solutions to sea level rise; LACDBH and TBF continued discussions to prioritize infrastructure protection and reduce beach erosion through nature-based adaptation; ongoing conversations with City of Santa

#	CCMP Action	CCMP Next Step(s) / Project Activity Name	Objective(s)	Status	Semi-Annual Report Update
	and other public trail systems to support both enhanced natural resources values and benefits to people				Monica about an additional beach restoration project; see also Action #6
		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	Continued partnerships and active participation with groups and agencies such as LACDBH, Audubon Society, Pepperdine, Beach Ecology Coalition, State Parks, and USFWS to implement and provide recommendations for best management practices along beaches; conversations continued in conjunction with TBF's living shorelines projects; supported Beach Ecology Coalition in developing an agenda for the November meeting; Dr. Karen Martin presented at American Shore and Beach Preservation Association National Conference on beach BMPs and stakeholder collaborations
26	Participate in research, education, outreach, and policy on invasive species removal and control	Conduct New Zealand Mudsnaill surveys	Track the spread of NZMS in the Santa Monica Mountains and develop management recommendations for control	Ongoing	No activities occurred during this semi-annual reporting period
		Attend and participate in Invasive Species Council of California (ISCC) and regional meetings focused on management of invasive species	Increase public and agency awareness of invasive species issues	Ongoing	No activities occurred during this semi-annual reporting period

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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)	Produce educational materials	To produce educational materials to increase awareness of boating best management practices to boaters	Ongoing	Produced and distributed Summer 2020 Changing Tide newsletter; received funding from Coastal Quest to create Marine Protected Areas (MPAs) educational materials for the recreational boating community and began development of MPA educational video; translated 2021 Tide Calendar publication into Spanish; updated California Boater Kit binder card text to include MPA information and started coordinating with designer on the redesign of this material
		Conduct outreach	To conduct outreach to increase awareness of boating best management practices to boaters	Ongoing	Conducted five virtual Dockwalker trainings; implemented Honey Pot Day Program which included over 80 participants; conducted direct outreach virtually through digital media campaign for an instructional video about boat y-valves which reached 76,192 people; implemented an interactive Clean Boating Questionnaire for virtual engagement and Boater Kit distribution; established a Boater Kit Feedback Survey to gain insights on which components of the Boater Kit boaters find valuable, and began beta-testing a Boater Sewage Disposal Survey to better understand the sewage disposal options the California boating community prefers; began development of MPA virtual engagement outreach
		Manage Pumpout Nav app	Increase proper disposal of boater sewage	Ongoing	Continued to manage Pumpout Nav app, ensured pumpout status is accurate, and responded to problems reported; in partnership with San Francisco Estuary Partnership

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					contributed to and supported app development and maintenance
		Research public engagement metrics and specific engagement tools on reduction of pollutants to waterways	To optimize public engagement resources to increase impact of pollutant reduction strategies to waterways	Ongoing	Attended a workshop on Community Based Social Marketing; documented resources on incorporation of behavior change into the design and delivery of community programs
28	Support efforts of disadvantaged communities to achieve healthy habitats, implement green infrastructure, and reduce pollution	Utilize the Ballona Creek Greenway Plan to identify parcels in disadvantaged communities for implementation	To identify opportunities for the creation of parks, parklets, and green corridors	Ongoing	Attended Baldwin Hills Conservancy Board meetings and received project updates; Construction continued on a pedestrian bridge and wildlife crossing over La Cienega Boulevard with estimated project completion in December 2020

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29	Reduce health risks of swimming in contaminated waters and consuming contaminated seafoods through more comprehensive source control and, advanced monitoring and public notification	Continue implementation and improvement of beach water quality monitoring and reporting system	To support Heal the Bay and others efforts to standardize beach water quality monitoring and effectively disseminate the information to the public	Ongoing	Continued work drafting a manuscript to assess 30-year trend of fecal indicator bacteria in the Santa Monica Bay; Heal the Bay (HtB) NowCast system was expanded to predict summer water quality for 24 beaches (up from 20); HtB released the 30 th anniversary Beach Report Card Report and expanded to Tijuana; HtB continued to provide public beach water quality grades for over 500 beaches across CA; HtB released annual River Report Card Report in July 2020 and continued monitoring at popular freshwater recreation areas
		Maintain and enhance the existing seafood contamination education and enforcement program	Support and facilitate the continuation and enhancement of the existing seafood contamination education and enforcement program	Ongoing	No activities occurred during this semi-annual reporting period

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30	Conduct community engagement, education, and inform policies related to water conservation and reuse to reduce water demand and reliance on imported sources	Link water conservation with outreach events and social media	Opportunistically incorporate water conservation topics during outreach events and on social media	Ongoing	No activities occurred during this semi-annual reporting period
		Educate, engage communities, and provide resources that promote the importance of native plants	Promote the use of drought tolerant native plants	Ongoing	Continued to educate community and volunteers on the importance of using drought tolerant native plants in habitat restoration and residential landscaping through online communications such as social media; communicated and developed partnerships with local native plant nurseries
		Support efforts by water agencies to promote water conservation and reuse including dissemination of materials	Promote current information on water conservation and reuse efforts developed by water agencies	Ongoing	No activities occurred during this semi-annual reporting period
31	Achieve water quality benefits by businesses through community engagement and implementation of best management practices	Develop funding to support the expansion of best management practices to incorporate other business sectors	To reduce pollution from businesses through implementation of best management practices	Ongoing	No activities occurred during this semi-annual reporting period

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32	Reduce marine debris by supporting bans on single-use items, conducting outreach, and participating in trash reduction programs	Find funding for and continue ReThink Disposable LA	To contribute to source reduction of single-use disposable items from food service establishments	Ongoing	Formalized a time extension with Clean Water Action to implement ReThink Disposable on an adjusted timeframe due to COVID-19; California Coastal Commission approved a special condition for marine debris reduction for the Dana Point Harbor Revitalization Project that included ReThink Disposable as a permit condition for aligned businesses
		Support municipality bans of 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; contributed signatory to letters to Governor Newsom and City of Santa Monica urging the reinstatement of plastic bag bans after temporary suspensions; contributed signatory to Mayor Garcetti, LA City Council, and LA County Board of Supervisors urging upkeep of plastic pollution policies; promoted the California Circular Economy (SB 54) and Plastic Pollution Reduction Act Senate Bill (AB 1080) on social media, reaching over 500 people
33	Monitor microplastics (including microfibers) and other marine debris in the Bay and coastal environments to inform	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	CRI continued work refining and drafting the microplastics extraction protocol with recovery studies, including development of a new component of the protocol with recommendation for spectroscopy mapping to reduce effort and assess type of plastic
		Publish a manuscript on the results of the Bay studies	To publish a manuscript on the results of the Bay microplastics studies	Ongoing	CRI continued analyses and drafting to inform a future manuscript; studies were temporarily halted due to COVID-19 and lack of access to LMU's campus

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	management actions	Conduct additional studies to inform the transport, accumulation, and fate of microplastics in our marine and nearshore environments	To continue to collect data to inform the regional fate and transport model of microplastics in the nearshore marine environment	Ongoing	Studies were temporarily halted due to COVID-19 and lack of access to LMU's campus
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	Improve analytical methodology and standardize monitoring of more emerging contaminants	To update and implement State-wide recommendations for monitoring of emerging contaminants in aquatic ecosystems	Ongoing	No activities occurred during this semi-annual reporting period
35	Monitor and inform management actions for Harmful Algal Blooms (HABs)	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	Ongoing	CRI continued work by a Visiting Assistant Professor / Researcher through Loyola Marymount University to assist in filling harmful algal bloom research gaps for our region; began compiling remote data analyses over summer 2020, and planning for fieldwork once approved by LMU; will initiate fieldwork in October 2020

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		Conduct monthly maintenance of SCCOOS shore station at Santa Monica Pier and seek support for additional sensors	To inform long-term water quality trends in the Bay's nearshore environment and contribute data to the Comprehensive Monitoring Program	Ongoing	SCCOOS continued maintenance of the SCCOOS Santa Monica Pier Shore Station; this included approximately monthly maintenance, calibration, and water sampling to support an interactive data web portal for the SCCOOS Santa Monica Pier Shore Station
36	Monitor chemical, physical, and biological characteristics in the Bay to inform climate change impacts such as ocean acidification	Implement the Kelp Forest Hydrodynamic Study	To assess sediment transport, alteration of advective currents, and wave attenuation within kelp forests	Ongoing	No activities occurred during this reporting period
		Support OA sensor array maintenance, calibration, and data downloads in accordance with SOP	Continue using high-frequency, high-resolution OA sensors to characterize OAH conditions in Santa Monica Bay	Ongoing	OA sensor / wire-walker mooring system was deployed off Palos Verdes on 24 June but was pulled out 2 July, due to malfunction of the telemetry system and other technical issues; per request of the manufacturer RBR, the entire system was sent back to its laboratories in Canada to repair the issues; repair is still underway
		Support inclusion of climate change impacts into CMP, especially through new models and data	To include climate change into the Comprehensive Monitoring Program including new models and data	Ongoing	Continued initial drafting of the Comprehensive Monitoring Program for each major habitat in the Bay and its watershed; continued work on the CRI climate modeling project for sea surface temperature, including case studies for HABs and halibut
		Convene technical advisors to prioritize actions based on	To prioritize monitoring and data collection needs based on the revised CMP for major habitats in the Bay and implement the	Ongoing	Continued work to establish funding for implementation of the CMP and other monitoring needs identified in the CCMP, including communication with SWRCB staff and providing an update of remaining Proposition 50

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		information from CMP	prioritized monitoring protocols		grant funds prioritized for CMP implementation and other monitoring needs at the September 2020 Executive Committee meeting; continued work drafting the CMP, including the seven major habitats
37	Increase understanding of deep water habitats such as submarine canyons, deep reefs, and outfall pipes	Conduct ROV surveys to collect physical, chemical, and visual data	Use the ROV to conduct underwater surveys to supplement monitoring	Ongoing	CRI graduate student continued work on a literature review to support the building of a nearshore Remotely Operated Vehicle to conduct single-scan sonar surveys as well as help fill other data gaps
		Identify and apply emerging technology and techniques to better characterize Bay habitats, including recommendations	Utilize cutting edge advancements in remote sensing, and remote platforms to better characterize the condition of the Bay's habitats	Ongoing	No activities occurred during this semi-annual reporting period
38	Monitor and improve understanding of rocky intertidal habitats to inform restoration actions	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	CRI marine invertebrate mussel study assessing physiological impacts of temperature and other climate stressors was temporarily halted due to COVID-19 and lack of access to LMU's campus; in August and September 2020, USC Sea Grant Program and Cabrillo Marine Aquarium conducted a series of public webinars focused on rocky intertidal habitats highlighting work of scientist experts
39	Monitor and inform effective management of Marine	Support MDRA in their implementation of the youth and	Provide disadvantaged youth and veterans the opportunity to experience nature, boating, and fishing	Ongoing	No activities occurred during this semi-annual reporting period

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	Protected Areas, Fishery Management Plans, and local fisheries for recreational and commercially important species	veteran fishing program	and encourage sustainable lifestyles		
		Support MDRA in the completion of a halibut FMP	To provide technical and outreach support to MDRA in the development of a halibut FMP	Ongoing	Communications between TBF and MDRA continued during this reporting period
		Continue opportunistic aerial surveys to track boating and vessel activity	Continue to track ocean vessels and fishing trends within the South Coast MPA Network	Ongoing	No aerial surveys conducted during this reporting period due to COVID-19; pilots are experimenting with mounted GoPro camera surveys to collect observational data until social distancing requirements are relaxed
		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	Heal the Bay conducted trainings for MPA Watch volunteers, conduct shore-based surveys, and shared data with local enforcement agencies
40	Research and inform best management and pollution reduction practices to address non-point source pollution and	Identify partners and identify funding sources for long-term monitoring efforts for LID and water conservation efforts	Implement the SMB Comprehensive Monitoring Program	Ongoing	Developed recommendation to encourage LA County Safe Clean Water Program (SCWP Measure W) to work with Commission staff, and consult and incorporate the stormwater Best Management Practices standard monitoring framework developed by the Commission's TAC; Governing Board adoption recommendation at the June Governing Board meeting

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	facilitate reduction	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	Ongoing	Continued work on a CRI manuscript to assess the effectiveness of the Culver City Rain Gardens for stormwater pollution retention; continued coordination of TAC review of Prop. 84 project monitoring plans and TAC recommendation on enhanced monitoring of stormwater improvement projects funded under Measure W
42	Inform strategies to reduce greenhouse gas emissions and increase carbon sequestration in support of existing state actions and policies	Conduct research to establish rate of carbon sequestration associated with key habitats in the Santa Monica Bay and its watershed	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	Efforts between TBF and Sustainable Surf focused on carbon sequestration rates and pathways for giant kelp forests; prepared presentation for UCLA IoES Senior practicum to potentially inform carbon sequestration rates for SAV
43	Implement the County-wide Safe Clean Water Program to support stormwater pollution control projects (if approved by voters in 2018)	Participate in advisory board and support implementation of projects from the new funding mechanism	To improve stormwater management in urban areas and reduce stormwater pollution through attainment of water quality objectives, increased stormwater retention, and increased service to disadvantaged communities	Ongoing	Supported the efforts of agencies to utilize funds made available under Measure W for stormwater improvement and LID projects throughout the watershed by serving as member of the Measure W South Santa Monica Bay Area Steering Committee; presented staff recommendations on Measure W Stormwater Investment Plans (SIPs) within the watershed at the June 2020 Governing Board meeting, which Governing Board subsequently adopted; distributed letter of support and

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					<p>recommendations on the SIPs in advance of the LA County Board of Supervisor’s consideration of approval; discussed recommendations with LACDPW staff; and compiled and presented information on project eligibility criteria and solicitation process to facilitate additional project proposals at the August 2020 Governing Board meeting</p>
44	<p>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</p>	<p>Develop plans and/or update existing plans to promote sediment transport and deposition along the coast based on hydrodynamic modeling and analyses</p>	<p>Protection of public and private infrastructure, and ecosystem services by increasing the Los Angeles County coastline’s resilience to sea level rise, and increased wave run up</p>	<p>Ongoing</p>	<p>No activities occurred during this semi-annual reporting period</p>

Semi-Annual Report Narratives

The following section contains summary supplemental narratives for programs or projects within a subset of CCMP Actions. No additional narrative was determined to be needed for the following Actions during this reporting period, as the necessary detail was contained in the table preceding this section: Actions 10-11, 14, 19-20, 23, 25-26, 28, 30-31, 34, 37, 39-44.

SMBNEP Program Activity Updates

In June 2020, the SMBRC Governing Board approved the amended [Memorandum of Understanding](#) which delineates the authority, governance, and membership of the Commission and clarifies the Commission's role in the SMBNEP. The amended MOU was informed by extensive input from the Management Conference and general public solicited since 2018. Additionally, progress continued drafting the Comprehensive Monitoring Program in partnership with the Technical Advisory Committee. The [Fiscal Year 2021 Work Plan](#) was approved by the Management Conference in April 2020, which incorporated comments from SMBRC Governing Board members, interested stakeholders, and members of the public.

ACTION #1 – Acquire Open Space

SMBRC staff continued to coordinate with SCC in overseeing implementation of the Carbon Canyon Acquisition Project funded by Prop. 12. The project entails the acquisition in fee of 91 acres of undeveloped land in Carbon Canyon, outside of Malibu. MRCA will own and operate the land in perpetuity. The project will permanently protect 91 acres of open space and habitat in the Santa Monica Mountains, preserving habitat and wildlife corridors, preventing development, preserving the scenic viewshed, and increasing public access to recreation. Development of the grant agreement continued during this reporting period.

ACTION #2 – Restore Kelp Forests

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 1 April 2020 through 30 September 2020, 0.22 acres of reef were cleared of excess urchins off White Point. This site continues to contain very high urchin densities in the eastern portion of the cove and little to no macroalgae. In addition, the topography of this site consists of high relief, deep crevices, and stacked boulder complexes making restoration activities challenging. Pre-restoration *Strongylocentrotus purpuratus* (purple urchin) densities for White Point during this reporting period were 13.28 per square meter and were reduced to 0.90 per square meter post-restoration.

A total of 55.44 acres of reef have been restored 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* spp. 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. The Central Region and Region Nine Kelp Survey Consortium reported in 2019 that percent *M. pyrifera* canopy increased by the following cover percentages across restoration sites from 2011 pre-restoration to 2018 post-restoration: Hawthorne (119%), Honeymoon Cove (349%), Marguerite (524%), Point Fermin (159%), Resort Point (14%), and Underwater Arch Cove (631%). During the same timeframe, White Point averaged 7.5% canopy cover, highlighting the necessity for restoration activities. Additional efforts will be conducted to further work at White Point and Point Fermin.

ACTION #3 – Recover Abalone Populations

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. The outplant event schedule for May 2020 was postponed due to COVID-19 restrictions on project partner dive operations. The 6-month post monitoring survey was not completed due to restrictions on dive operations for NOAA and CDFW. TBF divers were able to safely continue essential dive operations during this time. This included two visits to the outplant site to retrieve and deploy temperature and O2 sensors. During these site visits, shells were opportunistically collected. In August 2020, CDFW divers were cleared to resume white abalone field work and in September, NOAA divers were also cleared to resume activities. The 9-month post-restoration monitoring was successfully completed on 11 September 2020. With all project partners back in operation, planning for the fall 2020 outplant event proceeded. A total of 572 abalone were selected and tagged for outplanting off Palos Verdes, using two methods, SAFE (Short-term Abalone Fixed Enclosure) modules and BARTs (Baby Abalone Recruitment Traps) used by CDFW. Six SAFEs were stocked with a total of 324 abalone on 25 September 2020. After four weeks, the SAFEs will be opened and two BARTs will be stocked with 248 abalone in total. Additionally, 176 white abalone were tagged, bagged, and transported for concurrent SAFE outplanting and 247 white abalone for BART outplanting off Point Loma, San Diego.

Site monitoring follows this schedule after SAFEs have been opened allowing abalone to crawl onto the reef: 1 week, 2 weeks, 1 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 diver will survey that area in approximately 40 minutes (1 dive). 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, and any other notes are recorded. The site can be monitored in a single day with a minimum of four divers. TBF has monitored the site one time during this reporting period; a total of four live white abalone have been observed and 108 shells have been collected.

In June 2020, over 5,000 juvenile white abalone were transferred from the Bodega Marine Lab to southern California. The transport was facilitated by two volunteer pilots coordinated through the non-profit LightHawk. By utilizing small planes, the transport time was significantly reduced from a 10-hour drive to a 2.5-hour flight. By reducing the transit time, the abalone were exposed to less stress during the process. These abalone will be held and cared for in TBF's abalone facility until they grow large enough to be outplanted.

ACTION #4 – Assess and Restore Seagrass Habitats

Los Angeles Living Shoreline Project: This innovative project incorporates the experimental establishment of offshore eelgrass within a one-acre footprint offshore of Dockweiler Beach and will restore approximately 3.5 acres of beach and coastal bluff habitat (see also Action #6). During this reporting period, TBF continued work on the grant funded by SCC, continued partnership development, and continued outreach and scientific collaborations. Additionally, TBF continued work on a grant through the Honda Marine Science Foundation to supplement project monitoring and implementation. No eelgrass surveys were conducted during this reporting period.

Progress was made on the application requirements for permitting the eelgrass restoration through CDFW by continuing the Eelgrass Genetics Research project. This project to evaluate population genetics of eelgrass is being led by Dr. Demian Willette of Loyola Marymount University's Coastal Research Institute (CRI). An attempt was made to conduct baseline surveys and collect genetic samples of *Zostera pacifica* on 3 September 2020; however, unfavorable oceanic conditions thwarted the attempt. Surveys and sample collections are planned for late fall 2020. Genetic collections of *Z. pacifica* previously occurred from three sites within two eelgrass beds off Catalina Island (Figure 1), and one collection of *Z. marina* occurred in Newport Bay Harbor. During this reporting period, a CRI senior capstone research student completed a paper summarizing work to-date and confirming the two species genetically. This project is helping to inform eelgrass restoration planning and permitting. For beach and bluff updates, see Action #6.

ACTION #5 – Assess and Implement Offshore Artificial Reefs

SMBRC staff continued to coordinate with SCC in overseeing implementation of the Palos Verdes Restoration Reef funded by Prop. 12. This project is restoring 69-acres of rocky reef/kelp habitat near Bunker Point off the Palos Verdes Peninsula by constructing an artificial reef. The Project will restore the nearshore ecological rocky-reef community, support an estimated six tons of reef fishes and a proportional amount of invertebrates, and increase the abundance of commercial and recreational species, offsetting historical losses to ecosystem services. During this reporting period, the project completed the construction phase in September 2020 and continued ongoing sonar and biological monitoring.

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, with the fourth subsequently included within the network. Currently, there

are eight receivers deployed throughout the Santa Monica Bay to inform SMBNEP of the movements, positions, and permanence of great white sharks, giant sea bass, and other species of interest. Data generated by this expansion of the network will improve protection and understanding for these species and contribute to the Comprehensive Monitoring Program. The receivers were downloaded bi-monthly, cleaned, and redeployed to their moorings. During this reporting period, the receivers detected multiple sightings of school sharks (*Galeorhinus galeus*) and shovelnose guitarfish (*Rhinobatos productus*). Additionally, eleven individual white sharks (*Carcharodon carcharias*), including at least nine juveniles were detected throughout the Bay across the past six months. Quarterly species count updates are provided by Dr. Lowe's lab at CSULB to TBF.

ACTION #6 – Restore Healthy Beaches

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 three acres of sandy beach and dune habitats at Zuma Beach and Point Dume Beach to improve coastal resiliency and increase the health of the beach systems through a living shoreline approach. During this time period, work focused on the permitting task associated with this project, planning for the next stages of baseline monitoring, project outreach, and initial planning for implementation. Specifically, significant coordination with City of Malibu occurred regarding Coastal Development Permit requirements, as well as beginning coordination with subcontractors for project implementation.

Permitting documents were submitted to the City of Malibu on 10 June 2020 and included the following five documents: 1) MLSP CDP Application, 2) MLSP Implementation and Monitoring Plan, 3) MLSP Site Characterization Report, 4) Attachment 1 – Previous CDP No. 04-01-227, 5) Attachment 2 – Previous CDP No. 04-18-0498. The Implementation and Monitoring Plan contains detailed project elements relating to restoration activities to occur upon issuance of all permits. Project documents are publicly available on TBF's website: www.santamonicabay.org. TBF continued ongoing communications with City of Malibu to facilitate the permit application process. TBF also began drafting a "Right of Entry" Permit through LACDBH. Additionally, multiple virtual outreach events were conducted with members of the community and project partners and intensive baseline monitoring continued.

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 also Action #4 – eelgrass).

Significant progress was made during this reporting period, including planning, coordination with experts and stakeholders, managing a subconsultant to conduct restoration design services (Integral Consulting, Inc.) and providing design feedback, baseline monitoring, permitting meetings, and community engagement activities.

Significant collaboration occurred through communications with various agencies such as SCC, California Coastal Commission, LACDBH, LA County Public Works, City of Los Angeles, California Department of Parks and Recreation, LA County Lifeguards, US Fish and Wildlife Service, CDFW, US Environmental Protection Agency, and others. Consensus was reached on several key elements of design (e.g., pathways through the beach site, aiming to remove sand fencing over time, options for interpretive signage). The permitting process for all habitat types is ongoing, with permit documents in draft form during this period.

Manhattan Beach Dune Restoration: This project aims to restore approximately three acres of foredune habitat along beaches in 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 at Bruce's Beach in Manhattan Beach from approximately 36th Street to 23rd Street, within 0.6 miles of coastline. The restoration project will involve 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 symbolic fencing, and installation of educational features like interpretive signage.

Significant progress was made during this reporting period including restoration planning; external coordination with partners, experts, and public stakeholders; conducting a public open call (Request for Proposals), and subsequently hiring a consultant to conduct restoration design services; coordinating and implementing a site visit with the consultants and project partners; comprehensive baseline monitoring across several field days; permitting meetings and coordination; hiring a consultant to assist acquiring innovative video public comment on the restoration project; and additional community engagement activities. Additionally, during this time period, TBF initiated and released an innovative community engagement tool – an interactive outreach video soliciting project feedback and input, including a brief 3-question survey. The video will be live for approximately two months to receive public feedback on the project and is available in English and Spanish. TBF is also in consultation with a Native American representative who will be engaged in the project as a cultural advisor.

Ongoing communications occurred with project partners to plan an invited conference session as part of the national American Shore and Beach Preservation Association Conference which will be hosted remotely in October 2020. The session highlights adaptive management to improve coastal resiliency in southern California and is entitled: "Managing a changing coastline through meaningful community engagement and collaborative partnerships." TBF will present along with project partners (e.g., SCC, City of Manhattan Beach, USC Sea Grant) and four CRI students from LMU.

Beach Monitoring: In partnership with Loyola Marymount University's Coastal Research Institute (CRI), this research program is conducting a beach characterization study and informing a Site Suitability Model (SSM) to determine potential areas for beach restoration, evaluating factors such as coastal infrastructure, sea level rise vulnerability, and physical and biological characteristics, while contributing information to the Comprehensive Monitoring Program. This project serves to assess the potential

threats faced by these beaches as well to determine which sites have the highest probability of being successfully restored with a high adaptive capacity.

During this reporting period, data from 11 beaches was compiled and analyzed, and preliminary meetings with SSM partners, LACDBH and State Parks, occurred in summer 2020. Summary results from both projects were presented at the American Shore and Beach Preservation Association National Conference in October (one oral presentation and four poster presentations), and in other virtual venues such as Los Angeles Regional Climate Collaborative meetings. Work continued on evaluating and combining GIS layers for the site suitability analysis and discussions with coastal municipalities will serve to inform its future use. The model will eventually be analyzed against the ongoing in situ data collection along beaches of the SM Bay as part of this research program. Lastly, two letters of intent to different grant programs were submitted during this time period to continue this work and to develop a public interfacing tool for the SSM project.

ACTION #7 – Restore LAX Dunes

The LAX Dunes are the largest remaining remnant contiguous coastal dune system in southern 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, restoration planning, and scientific monitoring of the LAX Dunes. Lead botanist project partner, Rancho Santa Ana Botanic Garden (RSABG), conducted seed collection and vegetation surveys; project ornithologist, Cooper Ecological Monitoring performed several avian surveys, including a targeted burrowing owl survey; and scientific consulting partner and restoration ecologists, Coastal Restoration Consultants, advised on planning for future restoration activities and drafting the Ecological Landscape Plan. In March 2020, TBF halted public community events as required by LA County Public Health due to COVID-19. In response, TBF developed volunteer safety guidelines and waivers for when LAWA and local public health officials deem it safe to resume outdoor community events. TBF submitted the first annual report to LAWA on 15 May 2020.

LMU's Coastal Research Institute and Dr. Michelle Lum's laboratory also continued work on identifying plant growth promoting bacteria of California native plants that can be used as an inoculum to enhance restoration efforts. Preliminary analysis showed a number of bacteria isolates are Plant Growth Promoting Bacteria and appear to enhance the germination and/or growth of native plant species. One student continued work planning his senior capstone research project, an experimental inoculated seed germination project at the LAX Dunes.

ACTION #8 – Restore Coastal Bluffs

SMBRC staff continued to coordinate with SCC in overseeing implementation of the Abalone Cove Habitat Restoration funded by Prop. 12. This project will implement an existing habitat restoration plan on 13-acres at Abalone Cove Reserve. The restoration includes the removal of invasive trees, shrubs, and herbaceous plants; the propagation

of native plant species and desired quantities; irrigation and planting specifications; maintenance schedule; and monitoring and reporting protocols. During this reporting period, the project entered the implementation phase after the approval to start work in October 2019.

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. Applied for grant funding for one combination beach and bluff restoration project at Dockweiler Beach south.

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.

ACTION #9 – Implement the Malibu Creek Ecosystem Restoration Project

The lead agencies for the Malibu Creek Ecosystem Restoration Project are the US Army Corps of Engineers (federal) and the California Department of Parks and Recreation (state). The primary purpose of the project is 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 about 15 miles of aquatic habitat that have been unreachable for many decades in this watershed. On 19 August 2020, the Corps released the proposed Report of the Chief of Engineers, the report of the District Commander, and a Final Environmental Impact Statement (FEIS), regarding ecosystem restoration for Malibu Creek, in Los Angeles and Ventura Counties. The FEIS was prepared in accordance with Section 102(2)(C) of the National Environmental Policy Act of 1969 (Public Law 91-190). The documents are publicly available on the [Army Corps website](#).

ACTION #12 – Restore Small Coastal Lagoons

With input from over 100 public stakeholders and further evaluation by the Technical Advisory Committee, three conceptual design alternatives for the Topanga Lagoon Restoration Project have been developed. They are undergoing 1D and 2D sediment, hydrological and hydraulic modeling to help evaluate their effectiveness in meeting the project goals for accommodating sea level rise, improving fish habitat and integrating visitor and emergency services. Preliminary model results will be virtually shared with the TAC in December, and another public meeting is planned for February 2021. Baseline surveys are ongoing.

TBF continued coordination with SCCWRP and Moss Landing Marine Laboratory to plan for the Estuarine Marine Protected Area monitoring program, which includes Malibu Lagoon as a study site. SCCWRP and TBF submitted a letter of intent for a grant application to expand the EMPA monitoring program to three additional sites in SMB, but the grant was not selected for funding.

ACTION #13 – Restore Ballona Wetlands Ecological Reserve

Ballona Reserve Community Stewardship Project: TBF, in partnership with California Department of Fish and Wildlife (CDFW), Friends of Ballona Wetlands (FBW), and community volunteers are conducting a project to remove invasive vegetation while broadening public involvement and stewardship at the Ballona Wetlands Ecological Reserve (Reserve), in Area B, south of Culver Boulevard. During this period, TBF continued maintaining and expanding the community restoration site at the Reserve. Community events were halted in March 2020 as required by LA County Public Health due to COVID-19, although TBF staff and their partners continued restoration efforts through frequent site maintenance days. TBF developed volunteer safety guidelines and waivers for when local public health officials deem it safe to resume outdoor community events. TBF also continued revegetation planning for Year 5, which included finalizing a plant palette with input from expert restoration scientists and acquiring updated cost estimates for various activities and supplies (e.g., container stock plants). Ongoing communications occurred with California Coastal Commission and other partners, especially regarding restoration activities to correct the impacts from illegal driving and dumping activities on site. Ongoing scientific monitoring continued in accordance with the Implementation and Monitoring Plan. Lastly, TBF released the [Year 4 Report](#) for the community restoration project in July 2020.

ACTION #15 – Enhance Populations of Rare Species

SMBRC staff continued to coordinate with SCC in overseeing implementation of the reestablishment of California red-legged frogs (CRLF) project funded by Prop. 12. 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 recent Woolsey fire. During this reporting period, work continued to finalize the grant agreement.

See also Action #3 in support of white abalone enhancement, Action #6 in support of western snowy plover habitat enhancement, and other Actions throughout this document. Additionally, TBF supported Audubon Society in their efforts to protect California Least Tern chicks before fledging by restricting grooming activities in front of the Venice Least Tern Colony. Audubon coordinated manual trash removal and the chicks successfully fledged.

ACTION #16 – Support Activities to Achieve TMDLs

No additional narrative needed for activities regarding implementation of LA IRWMP and facilitation of other sources of State funding. For activities regarding support of implementation of projects identified in EWMPs and WMPs, see narrative for Action #17.

ACTION #17 – Implement and Study Runoff Capture Projects

SMBRC staff continued overseeing implementation for the following previously funded Prop. 84 projects:

Culver Boulevard Realignment and Stormwater Infiltration/Retention Regional 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 belowground infiltration basin to recharge groundwater. During this reporting period, the TAC reviewed and provided comments and recommendations on the project's Monitoring and Reporting Plan. The project continued Phase II of construction and anticipated completion of the final phase of construction in October 2021.

Westwood Neighborhood Greenway Project: SMBRC staff worked with grantee, City of Los Angeles, 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 during this reporting period.

Santa Monica Bay Catch Basin Insert Project: SMBRC staff worked with grantee, City of Rancho Palos Verdes, to continue to implement this project, which will retrofit and install connector pipe screen (CPS) units in existing catch basins across the Palos Verdes Peninsula (PVP) watershed draining to Santa Monica Bay, spanning approximately 14 sq. miles. This project will help mitigate trash and marine debris and assist cities in the PVP watershed in implementing the requirements for stormwater permits. Installations of CPS units were completed on all catch basins suitable to be retrofitted, 1,067 CPS units during this reporting period and 1,112 CPS units total.

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 continued during this reporting period, including completion of the drywell installation and commencement of above-ground construction. Construction is anticipated to be completed in October 2020.

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

Monteith Park Storm Water 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, work continued to finalize the grant agreement with anticipated completion in January 2021.

Beach Cities Green Streets: 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, work continued to finalize conditions prior to implementation and a request for proposals for the design consultant was issued with the design contract anticipated to be awarded by October 2020.

Paramount Ranch Storm Flow and Sediment Reduction: The proposed project was canceled 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.

ACTION #18 – Install and Monitor Pumpout Facilities

TBF's Boater Education and Outreach Program was initiated in 1996 with a Clean Vessel Act grant. The program works to provide the boating community with the tools and resources they need to prevent pollution, including sewage and bilge pumpouts. The program also monitors these resources to ensure they are operating at peak efficiency. Monitoring efforts allow staff to provide facility managers support including technical expertise and parts such as nozzles and banjo valves. A collaborative approach to pumpout monitoring allows statewide consistency and is conducted in partnership with San Francisco Estuary Partnership and Morro Bay National Estuary Program supported by the federal Clean Vessel Act grant administered through California State Parks Division of Boating and Waterways. Pumpout monitoring is conducted statewide through the Pumpout Nav app. The app was published in 2017 and has developed to include additional sewage management facilities such as sewage dump stations and floating restrooms. The app data is maintained by monitoring agencies and app updates are developed and published regularly. During this reporting period, 60 of the 72 public sewage pumpouts monitored were of operational status. The average usability of the monitored units was 74%, and 100% of the units tested with biodegradable dye tablets were leak-free.

ACTION #21 – Support Policies to Reduce Reliance on Imported Water

SMBRC staff continued to coordinate with SCC in overseeing implementation of the Pure Water Project Las Virgenes-Triunfo (Pure Water Project) funded by Prop. 12. The 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 is needed to test the advanced microfiltration, reverse osmosis, ultraviolet light disinfection, and oxidation components of a Pure Water advanced treatment facility prior to implementation of a full-scale project. Construction was completed at the Demonstration Facility and a virtual grand opening was held in September 2020 with tours anticipated to be available in October 2020.

ACTION #22 – Implement Composting and Landfill Diversion Projects

The Table to Farm Composting for Clean Air project, initiated in 2016, is a collaborative network of schools, students, food service establishments, local non-profit organizations, and the community at large working to create local solutions to reduce air

pollution and greenhouse gas emissions, while increasing local food production. This project connects food service establishments with local compost hubs for diversion of pre-consumer food waste from the landfill. Nutrient rich compost is then used in gardens that grow fresh local produce for the community. This hyper-localized project is focused in a disadvantaged and underserved community to provide fresh produce in food deserts, build soil health, and reduce air pollution associated with transportation of food and food waste. Additionally, compost hubs and community gardens are located at schools Environmental Charter Schools three campuses to teach students about food equity, air pollution, carbon sequestrations, food waste, composting, and gardening. In 2020 a community garden was established outside of Environmental Charter Middle School Inglewood's gates. This garden will be available to all community members.

ACTION #24 – Include Coastal Resilience into LCP Updates

TBF continued to work with coastal municipalities such as LACDBH, City of Malibu, City of Santa Monica, City of Manhattan Beach, City of Hermosa Beach, City of Los Angeles (Venice Beach) and others to incorporate coastal resiliency planning into Local Coastal Program updates/revisions and other policies and actions. City of Hermosa Beach partnered with United States Geological Survey (USGS), Climate Access, and WhiteSpace VR to launch "[Look Ahead Hermosa Beach](#)" and release virtual reality interactive videos about what will happen with sea level rise and how we can use nature-based solutions to help. City of Manhattan Beach also continued drafting their visualizations that will help engage the public in incorporating coastal resiliency and nature-based solutions into coastal policies with the aim of releasing them publicly in November 2020. These visualizations will be incorporated into outreach for the Manhattan Beach Dune Restoration Project (see also Action #6). TBF continued to support and inform City of Manhattan Beach's other climate resiliency efforts, and inclusion of dune restoration into other multi-benefit projects.

ACTION #27 – Conduct Boater Outreach to Improve BMPs

TBF's Boater Education and Outreach Program was initiated in 1996 with a Clean Vessel Act grant and has since worked with the Southern California coastal boating communities on public engagement campaigns that decrease boat related pollution. The program evolves each year with new and innovative ways to promote clean boating. Over the last two decades, TBF has successfully worked to support a clean boating community in Southern California, engaging hundreds of thousands of boaters using a multi-faceted strategy based on: 1) creation of tools like the Southern California Boater's Guide, When Nature Calls sewage guide, Boater Kits, and educational videos; 2) direct outreach to the boating community through presentations, events, social media, and an email listserv; 3) a partnership approach that galvanizes statewide clean boating messages in part with San Francisco Estuary Partnership, Morro Bay National Estuary Program, and California's Boating Clean and Green Program via projects like the Pumpout Nav app, Dockwalker Program, and California Clean Boating Network (CCBN); and 4) strong relationships with the boating industry, boating public, marinas, yacht clubs, and other organizations throughout the State.

The Boater Education and Outreach Program also expanded to engage boaters and anglers on Marine Protected Areas (MPAs), specifically what they are and what the

regulations associated with them include. In May 2020, TBF received a grant from Coastal Quest to create MPAs educational materials for the recreational boating community, these materials will include one educational video, 2021 Tide Calendar with MPAs map and resource pages in English and Spanish, an updated California Boater Kit binder card that includes MPAs information, an educational interactive quiz, and two MPA articles featured in two The Changing Tide newsletters.

ACTION #29 – Reduce Health Risks to People

Heal the Bay expanded the NowCast program to predict summer water quality for 24 beaches (up from 20 last year). They also released the 30th anniversary Beach Report Card Report, which included a comprehensive analysis of water quality over the last 30 years and an expansion of the Beach Report Card to Tijuana. Heal the Bay continued to provide weekly beach water quality grades for over 500 beaches across California on the publicly available website and app. Additionally, Heal the Bay released their annual River Report Card Report in July 2020 and continued monitoring at popular freshwater recreation sites in LA County. They regularly updated the River Report Card website with new data for 28 sites across LA County.

ACTION #32 – Reduce Marine Debris

Most marine debris comes from land-based sources which are transported to oceans via storm water runoff. Much of this debris is from of single-use disposable products, the result of convenient ‘to go’ items that have a short useful life span and then are quickly disposed. It has become evident that source reduction of plastic is the only viable solution to solving the worlds plastic pollution issue. In 2018, TBF partnered with Clean Water Action to bring ReThink Disposable to Los Angeles, a technical assistance program for food service businesses targeting the reduction of single-use disposable items used on-site. By implementing Rethink Disposable, quantitative results of reduced single use disposables and restaurant cost savings have been measured, documented, and utilized by TBF to further TBF’s long standing support of municipal efforts to adopt plastic reduction ordinances. TBF works collaboratively as part of the Reusable Los Angeles Coalition to pass progressively more comprehensive bans on all single-use disposable plastics. Currently, seven of the 20 cities in the Santa Monica Bay watershed have adopted plastic reduction ordinances that go beyond the state’s existing legislation, banning single use disposable plastic bags and straws. During this reporting period, TBF signed onto five letters to government officials urging the reinstatement of various plastic legislation that was temporarily lifted due to COVID-19.

ACTION #33 – Monitor Microplastics and Other Marine Debris

LMU’s Coastal Research Institute and Dr. James Landry’s laboratory continued work on microplastics research in support of this action. Dr. Landry’s lab is completing a protocol to extract microplastics effectively from sediments (especially sand), analyzing them using infrared spectroscopy, and quantifying results. Dr. Landry’s lab through CRI is also working on initiating methods and studies to identify microplastics in nearshore marine invertebrates such as sand crabs, amphipods, and mussels. CRI microplastics research processing sediment and invertebrates for microplastics was halted in March

due to COVID-19 and LMU access restrictions. The study will resume once LA County Department of Public Health allows LMU to continue on campus activities.

ACTION #35 – Monitor Harmful Algal Blooms

CRI and its Visiting Assistant Professor / Researcher, Dr. Amber Bratcher-Covino, continued Harmful Algal Bloom (HAB) to fill data gaps in the Santa Monica Bay region. Dr. Bratcher-Covino continued planning for future fieldwork including beach water quality sample collection to process for phytoplankton as well as ocean samples. Her students conducted a literature review and a synthesis of existing phytoplankton data for the region over the summer. Additional work on modeling OAH and HABs continues by SCCWRP, with efforts to expand the model.

ACTION #36 – Monitor Climate Change Impacts and Ocean Acidification

LMU's Coastal Research Institute and Dr. Jeremy Pal's research team continued work on modeling coastal climate stressors (such as temperature) and predicted effects or impacts on various species. Both present, 1986-2005, and future, 2011-2050, were considered and modeled. Habitat suitability models (HSMs) depicted the frequency of suitable days per year in which sea surface temperature fell in a specified temperature range with the use of data from the National Oceanic and Atmospheric Administration. Additionally, the data were used to verify the accuracy of projected data from eight of the eleven climate change projection models from the Intergovernmental Panel on Climate Change. Preliminary results were completed in summer 2020, with specific research on Harmful Algal Blooms (HABs) and California halibut. Abstracts will be submitted for Western Society of Naturalists Conference to be held virtually in fall 2020.

Ongoing efforts by Los Angeles County Sanitation Districts, US EPA, and TBF continue to service, calibrate, maintain, deploy, download, and analyze data collected by an array of sensors collecting data on temperature, pH, dissolved oxygen, and carbon dioxide. The data collected by this effort are being used in conjunction with other similar studies to generate a report on best practices and the usability of these data to inform monitoring related to ocean acidification.

ACTION #38 – Monitor Rocky Intertidal Habitats

LMU's Coastal Research Institute and Dr. M. Christina Vasquez's laboratory continued research on physiological stress in rocky intertidal marine invertebrates, particularly mussels. Her research seeks to inform physiological reactions in mussels to stressors such as temperature and oxygen change. Dr. Vasquez's research was significantly impacted by the virus pandemic, and her experiments were halted due to LA County Public Health shutting down LMU campus.