



Semi-annual Report: April 2020 – September 2020

The Morro Bay National Estuary Program (Estuary Program) has continued to move forward on completing new and ongoing tasks in the Fiscal Year (FY) 2020 workplan. All workplans are approved by the Environmental Protection Agency and the Estuary Program's Executive Committee. The budget report shows that our Section 320 expenses under the current grant in the second half of the fiscal year were \$301,651. As of September 30, we have expended 93% of our current 320 grant (started in FY17), with a remainder of approximately \$173,505. The Estuary Program has met 208% of its match requirement for the cumulative grant with cash match and estimated current in-kind contributions (at approximately \$5,277,123).

The Estuary Program requests EPA's continued participation on the Executive Committee and assistance with meeting relevant administrative and programmatic grant conditions. During this reporting period, the Estuary Program continued to work to meet the requirements of the final Program Evaluation (PE) letter, which was completed in FY16. Staff worked with EPA on preparing for the 2020 PE review, submitting the PE package, and meeting virtually with the PE team in lieu of an in-person site visit. The Estuary Program also requests participation from the EPA Project Officer in providing feedback as the update process for the Comprehensive Conservation and Management Plan (CCMP) is finalized.

The following summarizes activities and deliverables completed during the semi-annual report period. As the Estuary Program does not have any subawards, a reporting of subaward monitoring activities carried out under 2 CRF 200.331(d) does not apply.

Habitat and Water Quality Protection and Restoration

Land Conservation

Objective: Conserve land to achieve Management Plan goals as opportunities arise.

Status: Ongoing task

Progress Toward Milestones: The Estuary Program has worked with The Land Conservancy of San Luis Obispo County (LCSLO) to further easement and acquisition projects in the watershed. Staff time was spent to develop these opportunities, conduct landowner outreach, and support LCSLO efforts. Potential land conservation deals in the watershed are being explored.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: These efforts directly support the task outcome of completing land conservation projects as opportunities arise.

Problems Encountered: None.

Deliverables: NEPORT Habitat project reporting completed.

Activities Planned for Next Six Months: The Estuary Program plans to coordinate with the LCSLO and other partners on potential land conservation efforts.

Pending Deliverables: Updated map tracking protected lands included in next State of the Bay report.

Restoration Maintenance and Monitoring

Objective: Complete monitoring for conservation easements and restoration projects, as necessary.

Status: Ongoing task

Progress Toward Milestones: The Estuary Program conducted flow monitoring on Pennington Creek following removal of a fish passage barrier and improvements to a water diversion. Data are submitted to Trout Unlimited on a regular basis to manage a flow diversion and comply with water rights. Staff monitored eelgrass planted in 2020 to assess restoration success. Staff completed annual monitoring of conservation easement on Maino property.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The accomplished tasks directly support the outcomes of conducting easement monitoring and maintaining landowner communications. Efforts also support the outcome of further development of eelgrass restoration targets. The Estuary Program is also developing potential projects with Camp San Luis Obispo Army National Guard Base to address stormwater runoff.

Problems Encountered: None.

Deliverables: Pennington Creek data submitted to the California Environmental Data Exchange Network ([CEDEN](#)) and shared with partners.

Activities Planned for Next Six Months: The Estuary Program plans to conduct eelgrass restoration. We will also work with partners to address any needed restoration maintenance.

Pending deliverables: Eelgrass restoration monitoring reports to restoration funder (Pacific Marine Estuarine Fish Habitat Partnership) and California Department of Fish and Wildlife (CDFW).

Eelgrass Restoration

Objective: Develop eelgrass restoration goals based on ongoing monitoring, restoration, and research efforts with various partners.

Status: Ongoing task

Progress Toward Milestones: Estuary Program staff coordinated with local partners, including California Polytechnic State University at San Luis Obispo (Cal Poly), the city of Morro Bay, CDFW, and the National Oceanographic and Atmospheric Administration (NOAA). The Estuary Program developed a restoration plan for 2020 and submitted it to CDFW to obtain the necessary Scientific Collection Permit and Letter of Authorization to conduct the restoration work. Small-scale eelgrass plantings were conducted in

February, March, and May 2020 where eelgrass was harvested from healthy beds and transplanted in various areas at different elevations (both intertidal and subtidal).

The Estuary Program concluded a grant from CDFW Duck Stamp to support transplanting and restoration monitoring efforts for 2019. The Estuary Program was awarded a US Fish & Wildlife Service (USFWS) grant through the Pacific Marine and Estuarine Fish Habitat Partnership (PMEP) to fund restoration efforts in 2020 and partial funding for 2021. Staff coordinated with PMEP to establish the contract and implement the grant, which funded much of the 2020 planting effort. Additional funding was provided by the Black Brant Group. This funding supported MBNEP staff and a contract with a consultant to complete the restoration and monitoring efforts.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Estuary Program activities under this workplan task supported the long-term outcomes, which are monitoring for results to inform future recovery actions and developing numeric targets for eelgrass restoration. The knowledge gained from earlier restoration and monitoring work were utilized for designing the 2020 transplant effort and will inform future efforts and development of numeric targets.

Deliverables: CDFW permit reports for 2020 restoration effort. PMEP reports for grant funding for 2020 restoration. NEPORT Habitat submittal.

Problems Encountered: None.

Activities Planned for Next Six Months: Staff will communicate restoration results with project partners to support future research and restoration efforts. Staff will manage the PMEP grant and the newly awarded USFWS Coastal Program grant for additional eelgrass restoration within the next five years.

Pending Deliverables: CDFW permit for 2021 transplant effort. 2019 Eelgrass Report.

Chorro Creek Ecological Reserve Restoration Phase 2

Objective: Complete implementation of the Chorro Creek Ecological Reserve Restoration Project.

Status: Ongoing task

Progress Toward Milestones: Construction was completed in October 2019 with grading of two side channels, installation of large wood structures and willow baffle, implementation of erosion control measures, and improvements to the road crossing. Installation of extensive native plants on the site was also largely completed this winter. Irrigation during the dry season and a small amount of planting occurred in the second half of FY20.

The project is funded by a CDFW Fisheries Restoration Grant Program (FRGP) award of just over \$1,000,000 and a \$400,000 award from the California State Coastal Conservancy. The California Conservation Corps is providing labor and materials for planting and irrigating the site. The project is currently coming in under budget.

The post-project work included establishing the monitoring required by the project permits. This includes the following monitoring activities:

- Frequency and extent of side channel activation: Side channels flows will be monitored with field cameras and temperature loggers on site. Adequate flows did not occur during FY20 to trigger the side channels.
- Success of native plantings: Revegetation efforts are being monitored through direct counting of plantings quarterly to track success over the next three to five years.
- Fish entrapment: Side channels will be monitored during specific flows to assess the potential for fish stranding.
- Geomorphic conditions: Repeat cross-section and long-profile surveys of the side channels will be conducted periodically to evaluate changes in side channel conditions.
- California Rapid Assessment Monitoring (CRAM): A CRAM survey will track changes in the channel and riparian vegetation over time.

Deliverables: Project completion reports for ACOE. NEPORT Habitat submittal.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Efforts conducted under this task directly support the outcome of supporting climate ready estuary goals including floodplain restoration.

Problems Encountered: None.

Activities Planned for Next Six Months: Native plant installation should be completed or nearing completion. Plant success monitoring will continue under a State Coastal Conservancy grant for three years. Post-project monitoring as required by the project permits will be conducted.

Pending Deliverables: Final project report.

Other Restoration Efforts

Objective: Engage in other restoration efforts that arise and help achieve Management Plan goals.

Status: Ongoing task

Progress Toward Milestones: The Estuary Program participated in numerous efforts to meet Management Plan goals. These included participation in the following efforts:

- Public process for wastewater treatment facility in Morro Bay.
- Participation on the Pacific Marine and Estuarine Fish Habitat Partnership (PMEP) Steering Committee, which funds restoration projects and develops data resources for estuaries across the West Coast. Attended their annual meeting to develop the workplan for the upcoming year. Staff reviewed and supported development of a study to synthesize information on eelgrass restoration efforts.
- County Stormwater Resource Plan development through Regional Water Management Group meetings.
- SLO County and Caltrans effort to replace the bridge over Los Osos Creek on South Bay Boulevard.
- Los Osos Basin Management Committee.
- Integrated Regional Water Management (IdRWM) stakeholder meetings.

- SLO County Weed Management Area meetings.

The Estuary Program completed a grant from the Resource Legacy Fund to work with the Coastal San Luis Resource Conservation District (CSLRCD) to reach out to private landowners to provide educational resources on conservation practices such as rotational grazing, keyline ploughing, etc. This funding concluded at the end of FY19. Currently the Estuary Program is providing support to the CSLRCD to apply for grants to procure funding to implement projects developed under the Resource Legacy Fund grant. This included conceptual designs for three projects, and the CSLRCD is working on three additional designs. Project types include irrigation design, farm plans for soil health management, and bank stabilization. CSLRCD is also adding two stormwater projects sites on Camp SLO property to address sediment sources to Chorro Creek.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The Estuary Program met the anticipated outputs and outcomes by staying involved in partner efforts related to the estuary as opportunities arise that support CCMP implementation and partner projects.

Deliverables: Activities described in Semi-annual report (see above), [County Stormwater Resource Plan](#).

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program plans to continue work on the Conservation Planning Initiative and to continue to participate in the local restoration and management efforts listed above. Plan to conduct management efforts for the invasive pikeminnow to help recovery of native steelhead populations. Staff is also developing a project for a sea level rise vulnerability and adaptation strategies assessment, which would inform future management actions to protect estuarine habitat into the future.

Pending Deliverables: Final conservation planning document and updated IRWM plan.

Conservation and Restoration Project Development

Objective: To develop projects and funding for conservation and restoration.

Status: Ongoing

Progress Toward Milestones: Staff continues to participate in the IRWM effort at the county level, which covers issues of stormwater management, water supply issues, water quality issues, and potential implementation projects. Staff attend the meetings of the Central Coast Water Conservancy, a collaborative group working together to bring resources and projects to the Central Coast. The Estuary Program worked with the CSLRCD to further develop projects identified and developed through the recently-completed Resource Legacy Fund grant. See previous task.

Deliverables: Activities described in this Semi-annual report (see above).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Working with partners such as the CSLRCD to provide resources to private landowners with the end goal of implementing projects to improve water quality.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program plans to work with partners to further the progress of stormwater management and water conservation projects. The Estuary Program will work with the CSLRCD to further develop project ideas developed under the Resource Legacy Fund effort. The Estuary Program will also work with Camp San Luis Obispo on stormwater implementation projects.

State Park Marina Stormwater Management Project

Objective: To implement a stormwater management project at State Park Marina.

Status: New

Progress Toward Milestones: Partnership with Morro Bay State Park and California Marine Sanctuary Foundation to implement a grant from California Ocean Protection Council (OPC) for a stormwater improvement project at the Morro Bay State Park Marina parking lot. Staff developed and managed a contract to conduct pre-construction stormwater runoff monitoring. Staff coordinated with the consultant to complete the reporting for FY20 and plan for monitoring in FY21. Staff worked with State Parks and other partners to establish the contract and coordinate with partners to move the project forward.

The Estuary Program, OPC, and State Parks have agreed to amend the project scope. Instead of using a pump setup to divert stormwater to a leach field across the street, the project will now address stormwater through low impact development installations along the bay side of the parking lot. This approach is more cost effective and easier to maintain, but requires significant changes to the grant contract that have not yet been approved. Changes were prompted by State Parks leadership in Sacramento. This negotiation process has significantly delayed the project; project partners are waiting for an approved assistance agreement from State Parks.

Deliverables: Stormwater monitoring data submitted to [CEDEN](#).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Anticipated output is installed stormwater BMPs. Anticipated outcome is improved water quality of stormwater entering the bay.

Problems Encountered: Engagement from State Parks leadership in Sacramento has generated some sticking points on design and scope. Negotiating these issues with State Parks and OPC has significantly delayed the project. A revised timeline and project scope has been approved by State Parks and OPC. Timeline is constrained by the funding source, which has a strict end date, and the project is in danger of not being completed before this deadline if more delays occur.

Activities Planned for Next Six Months: Grant agreement, assistance agreement with State Parks, and permits will be finalized and the design phase re-initiated. This action is dependent upon cooperation from State Parks.

Pending Deliverables: Final completed project report.

Environmental Monitoring and Research

Monitoring Program Coordination

Objective: Continue coordination of the Monitoring Program and collect data that meets Quality Assurance Project Plan guidelines.

Status: Ongoing task

Progress Toward Milestones: Staff conducted monitoring in the watershed and estuary to track long-term ambient trends and project implementation effectiveness. During the second half of FY20, the following occurred:

- Due to COVID-19, volunteer activities had to be halted. Staff were able to continue the most crucial monitoring upon receipt of permission from the County Office of Coordination. Monitoring efforts included: 42 monitoring trips for bay water quality, 52 for bacteria, 93 for creek water quality, and seven for bioassessment.
- Staff coordinated with the California Department of Public Health and local shellfish growers on monitoring related to storm flows and bacteria. This includes monitoring bacteria in Chorro Creek and monitoring freshwater seeps along the bay to track improvements in bacteria and nitrates since the Los Osos Water Reclamation Facility has come on line.
- Staff continued long-term partnership with Cuesta College, providing lecture and class materials for an oceanography course.
- Conducted our spring bioassessment monitoring effort, which was funded in part by a grant from a private foundation. The work was conducted by three staff members and, due to COVID restriction, was not able to include the 20 or so volunteers that typically participate.
- Staff monitored sites watershed-wide for nutrients every other month to track long-term trends.

Deliverables: A quality dataset that meets the parameters outlined in the Quality Assurance Project Plan (QAPP). 2019 and 2020 data submitted to [CEDEN](#). Activities described in Semi-annual report (see above). [Bioassessment memo for Water Year \(WY\) 2019](#).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities for this task involved collecting and sharing data, resulting in an increased understanding of the long-term trends in ambient water quality in the watershed and estuary.

Problems Encountered: Reduced number of bioassessment sites were monitored due to COVID restrictions and lack of volunteers. We were able to monitor seven sites instead of the typical ten sites.

Activities Planned for Next Six Months: The monitoring that can be accomplished depends on our ability to once again work with volunteers. If volunteers are once again able to participate, the Estuary Program plans to conduct the following types of monitoring: creek water quality, creek and bay bacteria, bay water quality, seeps water quality, and flow. Without volunteer participation, only limited creek bacteria monitoring can take place.

Pending Deliverables: Bay Health and Creek Health memos for Water Year (WY) 2019 and WY 2020. Bioassessment memo for WY 2020. Sediment monitoring report for 2019.

Monitoring Program Reporting and Analysis

Objective: Analyze data and share results with grantors, partners, local landowners, and the public.

Status: Ongoing Task

Progress Toward Milestones: Estuary Program staff compiled data in formats appropriate for various audiences, including academic classes, landowners, and the general public. Staff responded to requests for program-generated data. Several blog posts on monitoring-related topics were created over the year, including popular monthly “Field Updates” posts that provide a rundown of what staff have been up to in the estuary and watershed. Analysis is underway of sediment data, bioassessment data, and creek and bay water quality data.

Deliverables: Activities described in Semi-annual report (see above). [Bioassessment Memo for 2019](#).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities conducted under this task involved analyzing data and sharing data and results with partners, landowners, and the general public. These activities directly support the task outcome of making analysis available for others to support their own efforts to protect and restore Morro Bay and its watershed.

Problems Encountered: Due to COVID restrictions, some changes have been made in monitoring reporting procedures. Bacteria samples must be processed by the County’s laboratory, rather than being processed locally by Estuary Program staff and volunteers. This makes data management more complicated, and we have unable to support our usual bacteria reporting memos. We are working to develop a simpler bacteria memo that can be easily compiled with available information to share the bacteria status with partners and landowners.

Upcoming Activities: The Estuary Program plans to respond to requests for data, create blog posts to share data, and compile sediment, bioassessment, and water quality data to share monitoring results.

Pending Deliverables: Sediment Report for 2019. Bioassessment memo for WY 2020. Bay Health and Creek Health memos for WY 2020.

Monitoring Program Data Management

Objective: Maintain data in Surface Water Ambient Monitoring Program (SWAMP)-compatible format.

Status: Ongoing task

Progress Toward Milestones: Estuary Program data for bay and creek water quality through January 2020 has been submitted to CEDEN. Staff participates in State Water Resources Control Board (SWRCB) meetings to discuss updating of CEDEN. Staff coordinated with SWRCB staff on recent changes to data management. The former system of Regional Data Centers has been eliminated, and the State now handles all data submittal. Staff worked with the SWRCB on submittal of our 2019 and 2020 bioassessment data.

Deliverable: Activities described in Semi-annual report (see above). Submittal to [CEDEN](#) of data through December 2019.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities such as storing and submitting data accomplished the outcome of making available to the public and state a high quality data set that supports TMDL analysis, 303(d) assessment, land management, etc.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program will to continue working with the SWRCB to upload data from the second half of WY 2020 to CEDEN.

Pending Deliverables: Submittal of WY 2020 data to CEDEN.

Monitoring Program Quality Assurance

Objective: Maintain an approved Quality Assurance Project Plan (QAPP) and implement necessary quality assurance measures.

Status: Ongoing task

Progress Toward Milestones: The Estuary Program continues to implement the quality assurance measures contained in the QAPP to ensure data quality. Staff updated the QAPP for 2020 and submitted a draft to the EPA's Office of Quality Assurance. The QA Officer approved the document and it has been finalized.

Deliverables: Activities as described in this Semi-annual report (see above). [QAPP update for 2020](#).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: An accurate and up-to-date QAPP document directly supports the task outcome of producing a high quality data set with data to support efforts throughout the watershed including 303(d) and TMDL assessment.

Problems Encountered: None.

Activities Planned for Next Six Months: Staff will conduct the QA measures needed to ensure the quality of program-generated data.

Pending Deliverables: QAPP update for 2021.

Project Effectiveness Monitoring

Objective: Complete monitoring to show project effectiveness for various restoration projects.

Status: Ongoing task

Progress Toward Milestones: Staff worked with Cal Poly's Sea Grant project team to create a paper analyzing the erosion and deposition changes in the estuary and how they might be related to eelgrass

success. Staff conducted monitoring of the freshwater seeps at the bay's edge to assess the impacts of the recently completed Los Osos Water Reclamation Facility. The Estuary Program conducts monitoring for a project on Pennington Creek to assess impacts from improvements to a water diversion. Staff also conducted monitoring of eelgrass conditions in the bay.

Deliverables: Publication from the Sea Grant team in *Estuary, Shelf and Coast Science*. Activities as described in the Semi-annual report (see above).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The activities under this task support the outcome of conducting monitoring and developing analysis that informs future management and restoration efforts.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program plans to continue monitoring the seeps. Staff will coordinate with the Sea Grant project team on future monitoring and potential publications. Staff will also communicate with project partners to share data results and coordinate efforts.

Pending Deliverable: Sediment monitoring report for 2019. Eelgrass Restoration Monitoring PMEP and CDFW permit reports.

Eelgrass Monitoring and Research

Objective: Monitor eelgrass to determine distribution in the bay.

Status: Ongoing Task

Progress Toward Milestones: Estuary Program staff worked with a contractor to complete the bay-wide eelgrass map for fall 2019. Staff coordinated with Cuesta College faculty on their eelgrass research efforts. Staff is compiling the 2019 eelgrass report. Staff selected and contracted with a consultant to conduct the tidal prism calculations for comparison to historic data. The project had a kick-off meeting and analysis is underway. Staff began planning with Cal Poly to conduct a baywide eelgrass map in the fall using drone imagery.

Deliverables: Monitoring activities documented in the Semi-annual report (see above).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Monitoring and planning for mapping efforts as well as working with research partners all support the outcome of better understanding eelgrass stressors and dynamics. This improved understanding directly supports the outcome of development of restoration strategies and goals.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program will finalize the 2019 Eelgrass Report, which will include the results of the November 2019 eelgrass mapping effort as well as field data collected during the year. Staff will coordinate with project partners to share our findings. Staff will work with a

contractor to complete the tidal prism calculations for the bay for comparison to TMDL targets and historic data.

Pending Deliverables: 2019 Morro Bay Eelgrass Report. 2019 baywide eelgrass map. Bay tidal prism results included in semi-annual report.

Partner Research Efforts

Objective: Support science partners in pursuing research efforts relevant to the goals of the Estuary Program.

Status: Ongoing task

Progress Towards Milestones: Estuary Program staff coordinated and collaborated with Cal Poly, CDFW, NOAA, Cuesta College, ACOE, the city of Morro Bay, and other project partners to research the causes of eelgrass decline and related water quality issues. Staff studied eelgrass monitoring and restoration methods in other areas, and reached out to other researchers. Staff sought results of research efforts in Morro Bay related to nutrients, sedimentation, ocean acidification, and other water quality data. Staff coordinated with Cal Poly on ocean acidification monitoring efforts in the bay. Staff collaborated with partners such as Cal Poly and USGS on future research efforts related to eelgrass, climate change, and habitat. Staff worked with a Cal Poly faculty member and his students to explore the potential for herbicide sampling in creek and bay sediments to determine potential impacts on eelgrass. Staff began planning with Cal Poly to map baywide eelgrass in the fall using drone imagery.

Research efforts conducted in the Morro Bay estuary and watershed include:

- United States Geological Survey (USGS) tidal marsh elevation impacts from sea level rise (SLR).
- Cal Poly research into impact of crabs on eelgrass.
- Cal Poly research on impact of brant grazing on eelgrass.
- Cuesta College research on impact of *Labyrinthula spp.* wasting disease on eelgrass.
- Cal Poly research on ocean acidification in Morro Bay, in partnership with Central and Northern California Ocean Observing System (CeNCOOS).
- Cal Poly research on herbicide use and potential impacts on Morro Bay and its eelgrass.

We also track research that is occurring elsewhere but is relevant to Morro Bay, including nutrient target development in Elkhorn Slough and pathogen TMDL development in Southern California.

Deliverables: Water quality data collected by Cal Poly partners and shared on CeNCOOS web portal for the [front bay](#) and [back bay](#).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Coordination with research partnership efforts directly supports the task outcome of improving understanding of resources in order to better target efforts such as monitoring and restoration.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program plans to coordinate with monitoring and research partners to share data, methods, and knowledge. These partners include Cal Poly, NOAA, CDFW, USGS, EPA, the Water Board, Cuesta College, and Elkhorn Slough National Estuarine Research Reserve (NERR).

Pending Deliverables: 2019 eelgrass report. Bay tidal prism results included in semi-annual report. 2020 baywide eelgrass map from drone imagery.

Public Participation, Education and Outreach

Communications

Objective: Communicate with a variety of audiences using presentations, printed materials, online presence, social media, and other venues.

Status: Ongoing task

Progress Toward Milestones: Estuary Program staff regularly conducted the following communications tasks:

- Created weekly blog posts that were shared via email, website, and social media. 350 subscribers receive the blog via email each week. The blog is posted on Facebook and Twitter, and corresponding content is posted to Instagram when appropriate for the platform. Popular blog posts may have as many as 2,500 reads, not including subscribers. Updated the website to share program news, COVID-19 changes, and upcoming digital events.
- Conducted 11 presentations and fieldtrips that reached 764 individuals in person and online. All events have been conducted digitally since March 13, when local COVID-19 restrictions were put in place.
- Continued to increase the number of followers on Facebook to 2,346 users. Utilized two-way communication with these users, such as giveaways for rain gauge network participants and Mutts for the Bay photo contest entrants.
- Ran the annual Morro Bay Estuary Poetry Contest and a new Beauty and Bounty of Morro Bay poetry contest. Combined, these contests reached 11,235 individuals.
- Maintained a Twitter feed that currently has 583 followers.
- Maintained an Instagram feed that currently has 2,195 followers.
- Five news stories were published that covered Estuary Program-specific content and projects in the watershed. Two of these articles covered the successful completion of the highly collaborative Chorro Creek Ecological Reserve Restoration Project.
- Issued one media release promoting Estuary Program accomplishments.
- Ran eighteen public-radio advertisements with a reach of 53,800 people and two social media campaigns with an organic reach of 12,230 and a paid reach of 3,740 people for our Science Explorations talk series.
- Began the design phase of the Habitat Exhibit Update in the Morro Bay Estuary Nature Center.

Deliverables: Weekly blog posts (26 for this time period) at www.mbnep.org/blog. Website and social media statistics (see above).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The activities listed above enhanced communication with residents, visitors, and the general public. This works toward the task outcome of increasing their understanding of their roles as stewards of the estuary and encouraging behaviors that protect clean water.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program plans to continue the communications tasks outlined above.

Pending Deliverables: Additions to the Nature Center Habitats exhibit.

Education

Objective: Develop formal education partnerships and services and continue to maintain the Nature Center and other education efforts.

Status: Ongoing task

Progress Toward Milestones: Efforts to support Education included the following:

- Maintained the Nature Center and its exhibits. Due to shelter-at-home order, the Nature Center was closed during the second half of FY20. The content for our Estuary Science Kiosk, which can be accessed via the internet, had about 20,300 page views during the same time period.
- Continued to partner with Central Coast Aquarium, a local nonprofit focused on marine education for visitors and residents, to provide funding for hands-on science field trips for K-12 students. This funding is prioritized for schools with Title I status. This field trip allows students to experience the bay and its wildlife, learn about water quality measurements, and practice scientific fieldwork methods. During this time period, the field trips served 60 students from Del Mar Elementary school, just prior to the COVID-19 pandemic shutdown.
- Posted a high-quality digital copy of the Spanish version of a kids' activity workbook on Marine Protected Areas on the Estuary Program website and the San Luis Obispo Marine Collaborative Area's website. Distribution of physical copies will occur when the Nature Center, Morro Bay State Park Natural History Museum, and other local education centers are able to open for business after the COVID-19 pandemic.
- Worked with local teachers to adapt the microplastic monitoring curriculum to online school setup. We plan to offer safe and accurate microplastic monitoring opportunities for students during the next six months.

Deliverables: Estuary Science Kiosk statistics (see above). Fieldtrip and presentation statistics (see above in the Communications section). The Spanish version of the kids' activity workbook focused on Marine Protected Areas is available at www.mbnep.org/kids.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The activities under this task directly support the outcome of providing formal education partnerships to share estuary-related messaging with local students.

Problems Encountered: Due to COVID-19 restrictions and concerns for the health of both visitors and staff, we closed the Nature Center on March 13 and have not welcomed any new visitors since then. Summer is typically our busiest time at the Nature Center, so our visitor numbers for this year are much lower than normal. Morro Bay High School students did not complete field portion of microplastics monitoring curriculum as normal during this period, due to COVID restrictions.

Activities Planned for Next Six Months: The Estuary Program plans to continue the Education tasks outlined above. We will reopen the Nature Center when it is safe to do so.

Pending Deliverables: Statistics for distribution of Marine Protected Areas kids' activity workbook translated into Spanish, as well as statistics of use of the online version.

Nature Center Update

Objective: Update the content and displays in the Nature Center.

Status: Ongoing task

Progress Toward Milestones: Estuary Program staff have finished the design phase of three new informational panels related to the large habitat mural on the Nature Center's south wall. These will be manufactured and installed in early FY21. Plans are underway to create a hands-on exhibit that teaches kids about the lifecycle of steelhead trout in the Morro Bay watershed. Ongoing maintenance and upkeep was conducted to keep the Nature Center functioning smoothly. Staff maintained the trout tank and continue to photograph the fish throughout their life cycle for educational purposes, even though the Nature Center is closed.

Deliverables: User statistics for the Nature Center kiosk (see above in the Education section).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The updates to the Nature Center conducted as part of this task directly support the outcome of providing a learning center for the estuary that contains updated and engaging exhibits. Due to the public health situation, visitors are not currently allowed in the Nature Center, which eliminates the public reach of this resource.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program will develop content and seek funding to update additional exhibits in the Nature Center.

Community Projects

Objective: Provide support for Community Projects that further the goals of the Management Plan and engage the community.

Status: Ongoing task

Progress Toward Milestones: Staff worked with the Management Committee to redesign the Community Projects program to increase partnership building, to work more closely with partners to

develop and implement projects, and to ensure that implemented projects meet goals set out in the CCMP and its Action Plans. The revamp of the program increased the maximum dollar amount from \$5,000 for a project to \$10,000. The amount available for projects increased from \$10,000 per year to \$15,000 per year. Staff continued to work with partners on ongoing projects and to develop new projects with partners.

One Community Project was recently completed:

- The SLOMPAC completed the translation, redesign, printing, and digital distribution of a Spanish translation of a kids' MPA activity booklet.

Two Community Projects are ongoing:

- Dr. John Perrine of Cal Poly deployed wildlife cameras on a property in the watershed in 2020 to track wildlife movement. The goal is to target areas for conservation and restoration.
- California State Parks received funding for a Watershed Demonstrator project to design curriculum and build a learning station to demonstrate soil health.

Staff worked with three project partners to develop potential Community Projects for 2021. The Estuary Program received three project proposals which are currently under review by staff and TAC members.

Deliverables: Activities described in the Semi-annual report (see above). SLOMPAC Kids' MPA activity booklet in Spanish available online at www.mbnep.org/kids Revised guidance for the [Community Project program](#).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The activities conducted under this task included working with existing funding recipients and coordinating with partners to develop new projects that support CCMP goals and Action Plans. These activities directly supported these goals, thus meeting the task outcomes of developing and completing projects that meet program guidelines on community involvement and CCMP nexus.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program plans to continue to work with partners on ongoing Community Projects. Staff will work with partners and the Management Committee to select projects for 2021. If staff decides to offer a round of applications in the spring, we will work with potential partners to develop project ideas.

Pending Deliverables: Final reports for completed Community Projects. Wildlife camera monitoring reports.

Other E&O Tasks/Community Partner Projects

Objective: Support outreach projects in the community that further goals of the Management Plan.

Status: Ongoing task

Progress Toward Milestones: Efforts to support outreach projects in the community included:

- Managed checkout of a mini-ROV donated to the SLOMPAC. Estuary Program staff worked with other Collaborative members to maintain effective ROV checkout, check-in, and maintenance procedures for researchers and educators who want to use the ROV. The ROV was utilized for an outdoor education fieldtrip with local elementary-aged students.
- Co-managed a mini-ROV training refresher for SLOMPAC members that served representatives from six local organizations.
- Partnered with ECOSLO on a socially-distanced cleanup effort to replace International Coastal Cleanup Day. This effort provided 300 cleanup kits to serve 1,500 people in their efforts to keep marine debris out of the waters of San Luis Obispo County. The Estuary Program delivered 30 of these kits, enough to serve 150 people, within the Morro Bay watershed.
- Working with Morro Bay State Parks staff, Creek Lands Conservation, and other community groups to create a Watershed Protectors educational activity booklet for kids.

Deliverables: Outreach statistics (see above).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities conducted under this task directly support the outcome of coordinating with partner organizations on developing and sharing key messages.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program will continue working with the MPA Collaborative to manage the ROV for use by partners. We will work with ECOSLO on another socially-distanced cleanup effort for early 2021. We will also continue working with partners on the Watershed Protectors educational activity booklet.

Pending Deliverables: ROV checkout statistics. Cleanup statistics. Watershed Protectors educational activity booklet.

Mutts for the Bay

Objective: Support pet waste management program to prevent bacterial contamination in the bay.

Status: Ongoing

Progress Toward Milestones: The Estuary Program continued its work managing the program, which included accepting and managing donations, installing and maintaining dispensers, and coordinating volunteers. The program received a grant from a private foundation to fund staff time and related costs for three years. The grant also funds developing outreach materials and sharing them with pet owners. In the second half of FY20, 32 dispensers were maintained and an additional dispenser was installed. More than 195,000 bags were given away to pet owners. This number of bags prevents an estimated 47,950 pounds of pet waste from negatively impacting the estuary. Estuary Program staff distributed educational curriculum on the negative impacts of pet waste, presented it at local schools, and distributed it to more than 150 teachers across San Luis Obispo County and in the Central Valley.

Deliverables: Mutts for the Bay program statistics (see above).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities under this task directly support the outcome of encouraging responsible behavior by pet owners to reduce bacterial loading to the estuary, thus improving water quality and protecting beneficial uses such as shellfish farming and recreation.

Problems Encountered: None.

Activities Planned for Next Six Months: Staff will continue its financial and coordinating activities to maintain the program. Efforts will also continue on developing outreach materials and delivery methods for pet owners.

Pending Deliverables: Reporting for the private foundation grant. Outreach materials.

State of the Bay 2020

Objective: Distribution of triennial State of the Bay report and conducting supporting events.

Status: Ongoing

Progress Toward Milestones: Staff conducted planning for State of the Bay (SOTB) events in the spring of 2020. A public-friendly SOTB report was developed, designed, and printed. Over 500 hardcopy reports were distributed to partners and members of the general public. Additional online content was compiled and made available on the Estuary Program website, where it has reached more than 680 individuals during this reporting period. Brief videos for each indicator were created and are available on the website and on Youtube. The series of videos currently has a total of 224 views. An evening public science talk was held in January on the topic of eelgrass and included presentations by Estuary Program staff and Cal Poly researchers, with 62 attendees. A second evening of science talks was held in early March to share results on estuary health. Speakers included staff from the Estuary Program, State Parks, and USGS and the event reached 79 attendees. A final science talk on Bay health indicators was planned to be held in person in May but was delivered online via Zoom due to COVID-19 restrictions on gatherings. This event included speakers from the Estuary Program staff, the San Luis Coastal Resource Conservation District, and the Land Conservancy of San Luis Obispo County. The online talk had 52 participants, and an additional 28 people watched the recorded talk on the Estuary Program's YouTube channel. Staff had planned an in-person SOTB themed trivia night in collaboration with a popular local pizza parlor. We moved this event online after the COVID-19 restrictions were put in place. Staff conducted a poetry contest as part of the State of the Bay efforts and shared the winning poems through our blog. Staff also developed a public-friendly presentation summarizing report results and reached out to partners, service organizations, community groups, and others to share the results of the report card. In a typical SOTB year, Estuary Program staff would go out into the community to present report results. Due to COVID-19 restrictions, this was not possible. Staff did conduct four remote presentations on the SOTB, with a reach of 259 individuals.

Deliverables: 2020 SOTB report in print and [online](#). Online content related to the report results are available at <https://www.mbnep.org/state-of-the-bay-2020/>. Videos summarizing SOTB content available at <https://www.youtube.com/user/MorroBayEstuary/videos>

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities accomplished to date directly support the task outcomes of sharing the results of monitoring by the program and its partners to increase education on non-point source pollution, restoration, etc.

Problems Encountered: The SOTB activities planned for the most part involved public gatherings. Due to the current pandemic situation, several of the activities planned for SOTB were moved online, including those events mentioned above. Three additional events that could not be completed digitally were cancelled. These included an on-the-water cleanup and paddle event, the poetry contest reading, and two guided hikes in the watershed. Estuary Program staff encouraged would-be pickup-up and paddle participants to complete safe, socially-distanced cleanups independently. We are currently working on a video that will allow us to share readings of the poems digitally, since we were not able to hold the in-person reading. We also created and posted two blogs that cover the information that would have been shared during the two guided hikes. These are available on the Estuary Program's blog at www.mbnep.org/blog. Brief videos were developed for each indicator question in the report and shared on the Estuary Program website and our Youtube channel. This allows more access to the report results despite our inability to conduct in-person outreach. See more details of these changes at mbnep.org/events.

Activities Planned for Next Six Months: None, task is complete.

Program Management

Manage Committees and Build Partnerships

Objective: Hold quarterly meetings and support partnerships.

Status: Ongoing task

Progress Toward Milestones: Staff compiled meeting materials and coordinated quarterly meetings of the Executive Committee (EC) throughout the year. Technical Advisory Committee (TAC) members were called on as needed for review of Community Project applications and technical plans. Membership was updated for the EC and TACs.

Staff has already integrated TACs into the decision-making processes of the organization. They lent their expertise for Community Project application review, eelgrass efforts, water quality monitoring, data analysis, and pikeminnow management.

Partnerships are also supported through collaborative project development and technical support. The Estuary Program continues its work on partnership projects developed in collaboration and implemented with partner organizations. These include:

- The Estuary Program was awarded a US Fish & Wildlife Service (USFWS) grant through the Pacific Marine and Estuarine Fish Habitat Partnership (PMEP) to fund restoration efforts over the next two years. Staff coordinated with PMEP to establish the contract and began implementing the grant, which funded much of the 2020 planting effort.

- Coastal San Luis Resource Conservation District was awarded a grant to continue efforts to design and implement restoration at their Los Osos Wetland property. The Estuary Program is an essential partner in this project, providing technical expertise and outreach components.
- The Estuary Program is a partner on the Santa Monica Bay National Estuary Program's vessel pump-out monitoring program, monitoring three pump-outs three times a year, and providing data through a statewide accessible app.

Deliverables: Minutes, agendas, staff reports, and materials completed for each meeting. List of partnerships and project activities (see above).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The activities conducted under this task directly supported the task outcome of providing input and direction for the program and ensuring that partnerships are well supported.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program plans to continue to coordinate quarterly meetings and work with Management Conference members. We will continue to work with the TACs to develop projects, funding, and collaborations. We will continue to partner with the CSLRCD to seek funding to implement projects developed with Resource Legacy Funding and support work at the Los Osos Wetland property.

Grants and Contracts Administration and Financial Management

Objective: Develop workplan, administer grants, and complete annual financial management tasks.

Status: Ongoing task

Progress Toward Milestones: Staff worked on financial reporting, progress reports to the EPA and the Management Conference, and participation in NEP conference calls and committees. We coordinated with EPA to provide required materials for oversight of the 320 grant and managed numerous grants to the Estuary Program to support our project work.

Deliverables: Semi-annual report for the first half of FY20. Minority Business Enterprises-Women Business Enterprises (MBE-WBE) submitted to EPA Region 9 Grants Office.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities under this task directly supported the outcome of conducting grant administration and financial management tasks in a timely and accurate manner.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program will implement the FY21 Workplan and complete required reporting for the FY20 grant.

Pending Deliverables: Annual FFR and MBE-WBE.

General Administration and Human Resources Management

Objective: Maintain accurate financial and human resources records and manage personnel.

Status: Task ongoing

Progress Toward Milestones: Staff maintained the ongoing financial and administrative functions, including recordkeeping, filing, bookkeeping, and equipment and office space upkeep, as well as interacting with the general public. In addition, the Director spent time managing staff performance and Workplan progress. Other HR tasks included training, professional development, recruitment, and keeping all personnel policies and procedures up to date. Staff responded to the COVID-19 situation. Protocols addressing fieldwork, staff use of the office, etc. were developed, and training was provided.

Deliverables: Summary of task activities (see above). Bookkeeping and other recordkeeping tasks contribute to the completion of the deliverables included for the previous tasks (financial management).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The administrative and human resources management tasks conducted in the second half of FY20 directly supported the outcome of providing the administrative support that allows the program to function smoothly so that staff can focus on attaining the goals of the organization.

Problems Encountered: None.

Activities Planned for Next Six Months: Staff will conduct all bookkeeping and recordkeeping tasks required for grant management. Staff will conduct all HR tasks including training and professional development.

Tracking Implementation of the CCMP and Workplan

Objective: Keep track of Workplan and Comprehensive Conservation and Management Plan (CCMP) implementation.

Status: Ongoing task

Progress to Date: Tracked progress on CCMP implementation through biannual reports to the Executive Committee and through NEPORT data submissions. Worked with Regional and Headquarters EPA to prepare for the Program Evaluation (PE) process. Coordinated a virtual site visit, including a meeting focused on eelgrass research and one dedicated to partnerships. EPA staff participated in these meetings, reviewed the submitted PE package, and drafted a PE letter. Staff responded to the letter, and it was finalized in mid-September. Staff compiled Leverage and Habitat data and submitted it to NEPORT.

Deliverables: Semi-annual report to EPA submitted Spring 2020. Biannual Executive Committee reports. Final PE letter. NEPORT submittals for Leverage and Habitat for FY20.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The tasks completed directly support the outcome of conducting tracking to ensure that tasks are completed in a timely and accurate manner.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program plans to report to the Executive Committee on Workplan progress.

Pending Deliverables: None.

Management Plan Update/Revision

Objective: Update the CCMP per EPA guidance.

Status: Ongoing task

Progress Toward Milestones: The Estuary Program provided EPA with a draft CCMP update for review. Regional and Headquarters EPA provided comments on the CCMP update and ancillary documents, including the Monitoring Plan, Communication Plan, and Finance Plan. Staff began reviewing comments and planning a response.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The tasks conducted directly support the outcome of working toward a Management Plan that is up-to-date, relevant, and complies with EPA's guidance.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program plans to work with EPA to finalize the CCMP and sub-plans.

Pending Deliverables: Management plan and ancillary document update.

Lab Competency Documentation for 2020

The Estuary Program utilizes laboratories that have met the certification requirements for their technical area. During FY20, the following labs were used:

For Water Quality: We primarily use two labs: BC Laboratories and County of SLO Public Health Laboratory. Both maintained Environmental Laboratory Accreditation Program (ELAP) certification during this time period. Copies of the documentation are provided with the deliverables for this semi-annual report.

For Bioassessment: The Estuary Program uses one lab, EcoAnalysts, Inc., for analysis of our bioassessment samples. Bioassessment labs certify their individual taxonomists rather than the lab as a whole. They provided their taxonomists' certifications. Any of the listed taxonomists listed could be

assigned to our projects. The list of taxonomists' certifications are provided with the deliverables for this semi-annual report.

Budget Overview

Table 1: Costs expended during this semi-annual report period (April 1, 2020 through September 30, 2020) and cumulative since the beginning of the grant in October 2016.

Category	Subcategory	FY20 Period 2 320 Funds	FY20 Period 2 Cash Match	FY20 Period 2 TOTAL	Cumulative 320 Funds	Cumulative Cash Match	Cumulative TOTAL
Personnel	Salaries	\$203,745	\$11,007	\$214,752	\$1,420,689	\$88,160	\$1,508,849
	Fringe	\$18,400	\$243	\$18,643	\$134,382	\$1,484	\$135,866
	Management Conference	\$0	\$0	\$0	\$0	\$0	\$0
	<i>Subtotal</i>	\$222,145	\$11,250	\$233,395	\$1,555,071	\$89,644	\$1,644,715
Travel		\$351	\$0	\$351	\$30,360	\$0	\$30,360
Supplies	Computers, software	\$955	\$0	\$955	\$6,806	\$79	\$6,885
	Vehicle maintenance, fuel	\$83	\$0	\$83	\$5,096	\$0	\$5,096
	Monitoring supplies	\$749	\$909	\$1,658	\$33,155	\$1,815	\$34,970
	Misc. office supplies	\$1,250	\$0	\$1,250	\$28,197	\$0	\$28,197
	Rent	\$28,992	\$0	\$28,992	\$220,356	\$0	\$220,356
	Utilities	\$1,299	\$0	\$1,299	\$12,013	\$0	\$12,013
	<i>Subtotal</i>	\$33,328	\$909	\$34,237	\$335,983	\$1,894	\$337,877
Contractual	Audit/Taxes/Accounting	\$12,912	\$1,436	\$14,348	\$53,374	\$24,921	\$78,295
	Education and Outreach	\$3,621	\$25,930	\$29,551	\$77,510	\$94,835	\$172,345
	Monitoring and Research	\$16,429	\$18,379	\$34,808	\$177,583	\$51,878	\$229,461
	Restoration and Protection	\$8,417	\$46,788	\$55,205	\$105,037	\$543,151	\$648,188
	<i>Subtotal</i>	\$41,379	\$92,533	\$133,912	\$413,504	\$714,785	\$1,128,289
Other	Postage	\$310	\$273	\$583	\$4,639	\$1,165	\$5,804
	Copying, Printing	\$1,287	\$0	\$1,287	\$9,728	\$0	\$9,728
	Training, Prof. Dev.	\$262	\$0	\$262	\$5,630	\$0	\$5,630
	Telephone, Internet	\$2,122	\$0	\$2,122	\$16,333	\$0	\$16,333
	Repairs and Maintenance	\$1,467	\$0	\$1,467	\$9,478	\$879	\$10,357
	Insurance	\$0	\$0	\$0	\$9,629	\$0	\$9,629
	<i>Subtotal</i>	\$5,448	\$273	\$5,721	\$55,437	\$2,044	\$57,481
TOTAL		\$302,651	\$104,965	\$407,616	\$2,359,995	\$808,367	\$3,168,362

Table 2: Costs by program area and task. Match numbers do not include in-kind match.

Program Area	Project	FY20 Period 2 320 Funds	FY20 Period 2 Match	FY20 Period 2 TOTAL	FY20 Overall TOTAL
Education and Outreach	Communications	\$280	\$0	\$280	\$20,441
	Community Projects	\$0	\$1,075	\$1,075	\$1,075
	Bay Friendly Recreation	\$0	\$0	\$0	\$713
	Education and Nature Center	\$166	\$4,855	\$5,021	\$18,587
	Community Volunteer Program	\$500	\$0	\$500	\$914
	State of the Bay	\$869	\$0	\$869	\$869
	Other E&O Tasks	\$1,806	\$20,000	\$21,806	\$25,916
	<i>Subtotal</i>	\$3,621	\$25,930	\$29,551	\$68,515
Monitoring and Research	Benthic Invertebrate Monitoring	\$0	\$5,165	\$5,165	\$12,165
	Stats	\$1,365	\$0	\$1,365	\$4,375
	Water Quality Monitoring	\$3,568	\$8,214	\$11,782	\$25,601
	Eelgrass Monitoring & Analysis	\$11,496	\$5,000	\$16,496	\$98,219
	<i>Subtotal</i>	\$16,429	\$18,379	\$34,808	\$140,360
Habitat Protection and Restoration	Restoration & Conservation Planning	\$0	\$0	\$0	\$34,308
	Eelgrass Restoration	\$406	\$2,760	\$3,166	\$17,342
	Chorro Creek Ecological Reserve	\$2,098	\$32,869	\$34,967	\$129,348
	Restoration Project Maintenance	\$0	\$0	\$0	\$39
	Other Restoration*	\$5,913	\$11,159	\$17,072	\$50,224
	<i>Subtotal</i>	\$8,417	\$46,788	\$55,205	\$231,261
Program Administration		\$0	\$0	\$0	\$0
	TOTAL	\$28,467	\$91,097	\$119,564	\$440,136