Morro Bay National Estuary Program

Bipartisan Infrastructure Law (BIL)

Semi-Annual Report

October 1, 2023 to March 31, 2024
(FY22-23, FY24 Workplan)

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Contents

1. Introduction

Bipartisan Infrastructure Law

On November 15, 2021, President Biden signed the Bipartisan Infrastructure Law (P.L. 117-58), also known as the "Infrastructure Investment and Jobs Act of 2021" (IIJA) or "BIL." The law includes $50 billion to the U.S. Environmental Protection Agency (EPA) for water infrastructure, the single largest investment in water that the federal government has ever made. The BIL provides $132 million in funding for the 28 longstanding National Estuary Programs (NEPs) for fiscal years 2022 through 2026. This funding will be evenly distributed to the NEPs, annually providing each with approximately $900,000 in BIL funds. Funding through the BIL provides a historic investment to the NEP, more than doubling the current base funding of $850,000 per estuary annually.

A core emphasis of the NEP BIL funding is the acceleration of environmental and community restoration goals within the Comprehensive Conservation and Management Plans (CCMPs). The substantial increase in NEP funding appropriated in the BIL is expected to significantly enhance NEP capacity to do this work, as well as enable the NEPs to develop and strengthen partnerships necessary to make the most effective use of these new funds.

Environmental justice (EJ) and addressing climate change are key EPA priorities reflected in the Agency's Fiscal Year (FY) 2022–2026 EPA Strategic Plan, which provides the framework for EPA to integrate EJ considerations into its programs, plans, and actions, and to ensure equitable and fair access to the benefits from environmental programs for all individuals. The Strategic Plan's first two goals are to:

- "Tackle the Climate Crisis" by reducing emissions that cause climate change and accelerating resilience and adaptation to climate change impacts; and
- "Take Decisive Action to Advance Environmental Justice and Civil Rights" by promoting EJ and protecting civil rights at the federal, state, and local levels.

EPA is embedding these goals in its programs, policies, and activities, including the implementation of the NEP BIL funds. NEP projects funded through BIL should seek to:

- Accelerate and more extensively implement CCMPs
- Ensure that benefits reach disadvantaged communities
- Build the adaptive capacity of ecosystems and communities
- Leverage additional resources

Morro Bay National Estuary Program (Estuary Program)

In early 2023, the Estuary Program completed administrative grant requirements to initiate activities in the BIL FY22/23 Workplan. Subsequently, the Estuary Program developed the BIL FY24 Workplan. The FY22/23 Workplan was approved by the US Environmental Protection Agency and the Estuary Program's Executive Committee on August 17, 2022. The FY24 Workplan was approved by the US Environmental Protection Agency and the Estuary Program's Executive Committee on November 15, 2023. Our BIL spending under the grant (Grant Number 4T-98T47301) as of March 31, 2024, were $953,477.

The Estuary Program requests EPA's continued participation on the Executive Committee and assistance with meeting relevant administrative and programmatic grant conditions. During this period, the Estuary Program continued to coordinate with EPA staff to get relevant BIL administration information, particularly related to the development of an equity strategy and BIL reporting metrics in NEPORT.

The following report summarizes BIL activities and deliverables completed during the first period of FY24.

2. NEP BIL Priorities

A core emphasis of BIL funding is the acceleration of goals and actions in the Estuary Program's Comprehensive Conservation and Management Plan (CCMP). Additionally, the EPA has specified goals to be addressed by BIL-funded projects and activities. This section highlights several activities that incorporate EPA goals for BIL funding that were completed or in process during this period. These activities are specified in the Estuary Program's approved BIL FY22/23 and FY24 Workplans.

Accelerate and more extensively implement the Estuary Program's CCMP

- Maintained staff capacity to support BIL projects and CCMP implementation.
- Began implementation of several workplan tasks.
- Furthered progress towards developing a Habitat Planning Initiative to support CCMP implementation.

Ensure that benefits reach disadvantaged communities

- Developed an EPA approved Equity Strategy to guide BIL project prioritization and measure benefits to communities.
- Began updates to the nature center to provide increased educational opportunities.
- Developed partnerships with local environmental education organizations to increase opportunities for disadvantaged communities to access field trips and camps.
- Conducted teacher training events in partnership with Cal Poly and Project WET.
- Hosted a California State University Field-based Learning, Outreach, & Workforce Scholarship (FLOWS) field course.

Build the adaptive capacity of ecosystems and communities

- Continued projects that further understanding of sea level rise and flooding impacts in the Estuary and surrounding habitats.
- Initiated a study and concept design to restore riparian habitat by addressing a fish passage barrier modification.
- Coordinated with stakeholders and partners to begin prioritizing potential stormwater improvement projects.
- Expanded drought monitoring efforts to identify potential water conservation project opportunities.
- Continued to support sensor systems to collect high-resolution water parameters to support the Central and Northern California Ocean Observing System (CeNCOOS) program that will inform changing conditions and research/modelling in the Bay.
- Supported efforts to monitor groundwater through the installation of a monitoring well in the Los Osos community.

Estuary Program Definition of Regionally Disadvantaged Communities

The Estuary Program has an EPA-approved Equity Strategy that utilizes a comprehensive and regionally applicable definition of disadvantage, through comparison of indicators across a variety of screening tools and datasets. These indicators were selected for use in identifying disadvantaged communities within the MBNEP and adjacent regions and consideration was given to the following priorities:

- Geographic scale at which data is available
- Social indicators that highlight burdens facing communities in the MBNEP region
- Indicators that demonstrate variance across the MBNEP region
- Environmental indicators with potential to be influenced by Estuary Program activities

Additional information on the Estuary Program's definition of regionally disadvantaged communities is available in the Equity Strategy.

3. Project updates

The following section provides updates to BIL projects and activities by workplan task: capacity building, environmental monitoring and research, habitat restoration and planning, water infrastructure, and education and outreach.

Capacity Building

Capacity-1: Capacity Building
Project Status: ongoing
Objective: Increase and maintain staff capacity to support all programmatic areas including BIL administration and implementation.

Description: The addition of BIL funding requires additional staff capacity to administer and implement projects. Staff will support the administration of BIL funding, reporting, and grant/contract management. Additionally, staff will support restoration, monitoring, and education/outreach needs. This task includes increasing associated technology needs such as equipment and software to perform programmatic tasks. General monitoring and restoration equipment and supplies that can support multiple program efforts are included in this task. This activity also includes professional development training opportunities for staff.
Progress Towards Milestones: The Estuary Program successfully recruited and hired staff to build capacity to support the implementation of BIL projects. BIL funding supported a full-time Restoration Coordinator, Education & Outreach Specialist, and Monitoring Technician. Part-time positions supported by the BIL funding included one Monitoring Technician and an Administrative Assistant.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: BIL-funded staff directly support BIL projects and implementation of the CCMP.
Problems Encountered: None.
Deliverables: None.
Activities Planned for the Next Six Months: The Estuary Program will continue to support staff positions.
Pending Deliverables: None.

Capacity-2: BIL Management and Equity Strategy Development
Project Status: ongoing
Objective: Support BIL planning, management, and implementation.

Description: Conduct strategy planning for BIL projects and develop an Equity Strategy. Develop and implement reporting metrics and performance tracking methods for BIL projects and CCMP actions.

Progress Towards Milestones: The Estuary Program developed an Equity Strategy that was approved by EPA Region 9 and EPA Headquarters in September 2023. Additionally, staff finalized a long-term BIL strategy that was approved by the program's Management Conference and EPA in June 2023. During this period, the Estuary Program utilized the Equity Strategy and long-term BIL strategy to help guide project selection and utilization of BIL funds. Staff furthered efforts to develop reporting metrics and performance tracking methods for BIL projects and CCMP actions.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: These efforts directly support the task outcome of effectively managing BIL funding and developing the Equity Strategy to guide program EJ efforts.

Problems Encountered: None.

Deliverables: None.

Activities Planned for the Next Six Months: The Estuary Program will implement the Equity Strategy and long-term BIL strategy to support BIL workplan development and implementation. Staff will implement a strategy to develop reporting metrics and performance tracking measures.

Pending Deliverables: None.

Environmental Monitoring and Research

Monitoring-1: Tracking Bay Health

Project Status: ongoing

Objective: Collect high quality data set to support understanding of estuary health.

Description: A primary goal of the Estuary Program is to conduct monitoring to understand changing conditions. The program will continue tracking key environmental indicators, working with partners to develop and implement monitoring efforts, and collecting data related to the impacts of climate change. Efforts included purchasing and maintaining continuous monitoring sensors as part of the Central & Northern California Ocean Observing System (CeNCOOS) buoy network; supporting the Estuary Program's long-running monitoring in the bay of indicator bacteria to safeguard swimming and shellfish farming; and monitoring nutrients in the bay's waters to better understand impacts to eelgrass and other aquatic life.

Progress Towards Milestones: Staff coordinated with Cal Poly on use of data generated by the CeNCOOS sensor arrays in Morro Bay. Planning is underway to send sensors in for calibration and maintenance work. Staff recruited, trained, and coordinated Cuesta College students to conduct monitoring in the bay for indicator bacteria. The volunteers are collecting high quality bacteria data from the bay to support safe swimming and shellfish farming efforts. The community college student volunteers are at the same time gaining real-life field and lab skills that may help open doors to future career pathways. The indicator bacteria data is being shared via the California Environmental Data Exchange Network (CEDEN), a State Water

Resources Control Board data portal and with partners to facilitate resource management and support efforts to safeguard human health. The Estuary Program is coordinating with Cal Poly faculty and students to collect monthly nutrient samples from bay shoreline sites. To better understand bay tidal prism, a Cal Poly researcher installed a tide height sensor purchased with BIL funding to provide data to further refine the existing tidal prism calculations for the bay. Staff partnered with the California Department of Public Health (CDPH), which is responsible for managing water quality in shellfish growing areas, to conduct additional monitoring in Morro Bay following storms. The goal of the data is to assess the rainfall closure guidelines developed to assure safe harvesting following storms. Staff are also partnering with a Cal Poly researcher on a phytoplankton monitoring project. The work will include collecting and identifying phytoplankton samples from the front and back bay and conducting genetic analysis of sediment and water samples to assess phytoplankton communities.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities for this task involved collecting and sharing high quality data that increases understanding of the long-term trends in ambient water quality in the estuary, promotes safe swimming and aquaculture, and supports identification of projects to address bacteria and nutrient pollution.

Problems Encountered: None.

Deliverables: Example of monthly indicator bacteria memos shared with partners. Data for front bay and back bay sites available via CeNCOOS data dashboard. Bay Health Memo for 2023. Activities as described in semi-annual reports.

Activities Planned for the Next Six Months: Continue data collection and coordination with partners.

Pending Deliverables: Data managed in an Access-based system for submittal to the California Environmental Data Exchange Network (CEDEN). Monthly bacteria result memos.

Monitoring-2: Tracking Creek Health

Project Status: ongoing

Objective: Collect high quality data to support our understanding of watershed creek health.

Description: A primary goal of the Estuary Program is to conduct monitoring to understand changing conditions. The program will continue tracking key environmental indicators, working with partners to develop and implement monitoring efforts, and collecting data related to the impacts of climate change. Efforts will include monitoring of: bacteria indicators in watershed creeks to determine safe swimming and impacts to creek water quality; low flow conditions to assess drought impacts; creek water quality in areas impacted by agriculture and other discharges; and extended deployments for water quality monitoring in creeks.

Progress Towards Milestones: Staff conducted monitoring to track key environmental indicators in the watershed. We worked with partners to complete installation of water level sensors to expand our surface flow monitoring network throughout the watershed. Staff are now collecting data for the development of rating curves. Staff developed a contract for

additional analysis with the low flow data. Staff developed and implemented monitoring efforts, including coordination with the Central Coast Ambient Monitoring Program (CCAMP) and the Stream Pollution Trends Monitoring Program (SPoT) to prepare for sediment and water toxicity monitoring. Staff conducted the wet season toxicity monitoring effort. Staff worked with volunteers to monitor cross-sectional profiles in creeks throughout the watershed to track erosion and sedimentation. Staff worked with Cuesta College volunteers to collect and analyze creek samples for indicator bacteria. Staff shared the bacterial indicator results on CEDEN and via monthly bacteria memos sent to partners, agencies, land managers, and landowners. Staff conducted expanded nutrient and water quality parameter monitoring. Staff is conducting planning for the spring bioassessment monitoring. Although staff had planned to have a researcher conduct sediment impact monitoring as part of the bioassessment monitoring effort, the work was not able to be coordinated this year. Efforts are also underway to develop a pesticide monitoring effort in conjunction with existing toxicity and biossessment monitoring efforts. Staff have been coordinating with the CCRWQCB and the California Department of Pesticide Regulation to develop a monitoring effort. Staff purchased water quality equipment and deployed it throughout the watershed to expand our continuous monitoring data set.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities for this task involve working with partners to develop and implement monitoring efforts to increase understanding of the long-term trends in ambient water quality in the watershed.
Problems Encountered: None.
Deliverables: A quality data set that meets the parameters outlined in the Quality Assurance Project Plan (QAPP). Monthly indicator bacteria memo (see example).
Activities Planned for the Next Six Months: Continue data collection. Submit data to CEDEN.
Pending Deliverables: Monthly bacteria memos. Data submittal to CEDEN. Creek Health Memo for WY2023 summarizing data for nutrients, oxygen, and temperature.

Monitoring-3: Eelgrass Monitoring and Research

Project Status: ongoing
Objective: Conduct eelgrass monitoring to determine distribution in the bay as well as bed health.

Description: Eelgrass is a valued habitat type in Morro Bay, providing multiple benefits. It enhances water quality and water clarity, reduces erosion, and provides habitat for wildlife. Morro Bay's eelgrass has undergone rapid changes recently, with a steep decline in acreage from 2007 to 2017 and a rebound after that. Baywide mapping of eelgrass allows for tracking of bed health and indicates when there is a need for restoration efforts. Projects will include a baywide eelgrass map in 2023 and the implementation of a macroalgae monitoring effort to understand impacts to eelgrass habitat.
Progress Towards Milestones: The selected contractor completed a draft map of baywide eelgrass utilizing drone and sonar data collected in spring 2023. The map is nearly finalized.

MBNEP staff conducted macroalgae monitoring throughout the year and are currently conducting analysis on the resultsCal Poly conducted a baywide flight drone flight in early 2024 to collect high resolution imagery that allows for tracking eelgrass extent and health. Staff conducted groundtruthing to better interpret vegetation types in the drone imagery. Staff began coordination with a Cuesta College professor to develop a project to analyze eelgrass prokaryote communities to understand how eelgrass supports the estuarine ecosystem.
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 of eelgrass stressors and dynamics. This improved understanding directly supports the outcome of development of eelgrass monitoring and restoration.
Problems Encountered: None.
Deliverables: None.
Activities Planned for the Next Six Months: Contractor will complete the baywide eelgrass map, in spring 2024. Macroalgae monitoring will occur in 2024. High-resolution drone imagery will be collected in winter 2024. Eelgrass prokaryote work will be conducted.
Pending Deliverables: 2023 bay-wide map of eelgrass in Morro Bay. 2023 Eelgrass Report.

Monitoring-4: Data Analysis and Management

Project Status: Ongoing
Objective: Analyze and maintain data in state-compatible format.

Description: The Estuary Program compiles and analyzes program-generated data to assess long-term trends and project-specific effects on water quality and other indicators of environmental quality. These analyses are shared with program partners, local landowners, and the public to help inform decision-making. Data must be available in the correct format for analysis and must be maintained in a data management system that allows for easy sharing of results. Projects include: calculation of California Stream Condition Index (CSCI) scores with the program's bioassessment data to determine the relative health of a site in comparison to other areas; and updates to the program's database for storing and outputting data.
Leads, Partners, and Roles: The lead is the Estuary Program, with partner support from the CCRWQB and SWRCB who as users of the data and provide input on data collection, analysis, and sharing.
Progress Towards Milestones: Staff coordinates with SWRCB CEDEN staff for support on data submittal to the CEDEN system. Staff have worked with an Access database contractor to implement updates to the data management system. CSCI analysis was completed for the 2023 bioassessment data, and analysis of the data is underway, including a bioassessment memo for 2023.

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.
Deliverables: None.
Activities Planned for the Next Six Months: Continue to work with SWRCB on CEDEN updates. Complete Access database work. Contract CSCSI analysis of 2024 bioassessment data.
Pending Deliverables: Bioassessment Memo for WY2023.

Habitat Restoration and Protection

RESTORATION-1: Invasive Species Management

Project Status: Ongoing
Objective: Prioritize, manage, and implement invasive species management in the estuary and watershed.

Description: Identify locations and remove invasive giant reed *(Arundo donax)* within the Morro Bay watershed to support native riparian plant species. Support monitoring, possible mapping, and removal of invasive plants such as ice plant (*Carpobrotus)*, salt cedar (*Tamarisk ramosissima)*, cobweb bush (*Plechostachys serpyliflora)*, and purple pampas grass (*Cortaderia jubata)* on the Morro Bay sandspit and adjacent estuary habitats. Explore the possibility of conducting sensitive species surveys on sandspit before invasive management. Support weed management on the restored floodplain area of the Chorro Creek Ecological Reserve (CCER).
Progress Towards Milestones: A consultant is scheduled to map *Arundo donax* and up to 19 other priority invasive species within the Chorro Creek watershed in Spring 2024 and conduct drone surveys in Winter 2024 to provide priority management areas in addition to permitting pathways. Camp SLO will continue to implement their invasive species management plan focusing on cape ivy, tree of heaven, periwinkle, *Arundo*, and thistle in Spring 2024 with partner funding. They have treated a total of 38.6 acres of invasive species in Spring 2023. Staff received a permit wavier from the California Coastal Commission to manage ice plant on the sand spit in for five years starting in October 2023. Estuary Staff received additional funds for this project through USFWS Coastal Program. Staff conducted pre-monitoring vegetation surveys in October 2023 and snail surveys prior to ice plant treatment in November and December 2023. A licensed herbicide applicator contractor treated 33 acres of ice plant in November—December 2023. Researchers from University of California, Santa Barbara conducted drone, plant, and geomorphic surveys in February 2024 to track the project over the next two years as part of a Climate Action Initiative Grant through the UC system. The Estuary Program is a co-investigator on this project. Post-project monitoring, hand removal of ice plant, and reporting to the CA Coastal Commission will continue into FY24.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Tasks are on schedule. Weeding of Chorro Creek Ecological Reserve also typically occurs in the April to October timeframe.
Problems Encountered: None.
Deliverables: None.
Activities Planned for the Next Six Months: Complete post-project monitoring and reporting to the California Coastal Commission for Year One of ice plant management. Work with the California Conservation Corps (CCC) to complete weeding of the Ecological Reserve floodplain restoration site.
Pending Deliverables: None.

RESTORATION-2: Habitat Restoration and Climate Planning

Project Status: Ongoing
Objective: Support research and planning that furthers understanding of climate impacts to estuary and watershed habitats. Implement restoration projects to improve habitat acreage or conditions.

Description: Model estuary habitat conditions under multiple sea level rise scenarios and consider adaptation actions with stakeholder involvement. Conduct a historical ecology study of the estuary and parts of the watershed to inform restoration planning, prioritization, and outreach. Finalize a Habitat Protection/Restoration Strategy report that identifies relevant habitat types and key species in the Morro Bay watershed, incorporates climate change vulnerability, and prioritizes restoration/conservation efforts with measurable objectives. Continue baseline oyster surveys on the shoreline of the estuary. Further planning and designs of additional habitat restoration projects within the watershed and estuary.
Progress Towards Milestones: Staff conducted tidal marsh sediment fieldwork in partnership with USGS to inform sea level rise planning in March 2024. A subaward is underway with USGS for this monitoring and modeling effort to study sea level rise impacts on tidal marshes. Modeling sea level rise and climate change vulnerabilities of the tidal marsh is under development using 2023's sediment results. A partnership with the San Francisco Estuary Institute (SFEI) is underway to conduct a historical ecology project. SFEI is gathering available data and planning a site visit to Morro Bay in the spring. The Habitat Protection/Restoration Strategy report and a mapping assessment are under development. Match funding has also been provided to the Coastal San Luis Resource Conservation District (CSLRCD) for a State Coastal Conservancy (SCC) grant to model storm and sea level rise flood vulnerability and adaptation measures along lower Chorro Creek. Staff are working with partners on baseline monitoring and planning for in-creek and floodplain habitat enhancement (e.g. low-tech process-based restoration) on Cal Poly's property of Walters Creek. Staff coordinated and led

three community habitat restoration events in October and November 2023 at Los Osos Creek Wetland Preserve in partnership with CSLRCD.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Tidal marsh sediment monitoring has been completed. USGS has initiated modeling of sea level rise scenarios and marsh impacts.

Problems Encountered: None.

Deliverables: None.

Activities Planned for the Next Six Months: A draft of the Habitat Protection/Restoration Strategy will be completed. Initial modeling results of the USGS sea level rise vulnerability study will be shared.

Pending Deliverables: To be determined as contracts are completed over the next six months.

RESTORATION-3: Fish Habitat Monitoring and Improvement

Project Status: Ongoing

Objective: Support research and monitoring to increase understanding of fish habitat conditions and populations. Prioritize and further implementation of fish passage barrier improvement projects.

Description: Conduct baseline fisheries monitoring in the estuary to understand response in abundance and diversity after recent eelgrass expansion. Conduct juvenile steelhead growth and habitat use surveys in Chorro Creek watershed. Conduct pre-assessment studies to further planning of San Luisito Creek Fish Passage Barriers at Adobe Rd. in conjunction with Highway 1.

Progress Towards Milestones: Estuary Staff received funds from the USFWS Coastal Program to conduct bay fish monitoring. A round of bay fish monitoring was conducted in the fall. Various methodologies were employed to collect fish for identification and counting, before fish were returned to the water. Annual reporting to USFWS was completed in December 2023. A spring round of bay fish monitoring will be conducted in May, followed by analysis and comparison to historical data. The juvenile steelhead growth and habitat use surveys were conducted in the fall. Steelhead were tagged and antennae were installed to track fish movement in lower Chorro Creek. Data from the winter storms show steelhead moving from Chorro Creek into the estuary and back again. The contractor for the San Luisito Creek Fish Passage Barrier conducted monitoring and created a draft alternative assessment.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Project tasks are so far on schedule.

Problems Encountered: None.

Deliverables: None.

Activities Planned for the Next Six Months: Summarize and report on results of the baseline estuary fish monitoring. Complete juvenile tracking and growth study utilizing PIT tags. A

consultant will complete pre-design tasks (e.g., geomorphology, hydrology, alternatives analysis) for the Adobe Rd. barrier. Develop contract for pikeminnow management in fall 2024.
Pending Deliverables: Summary report on baseline fisheries monitoring in the estuary and juvenile steelhead growth and habitat use survey in the Chorro Creek watershed.

RESTORATION-4: Open Space Habitat and Access

Project Status: Ongoing
Objective: Further plans and implementation to restore habitat and improve conditions at coastal access sites.

Description: Collaborate with community stakeholders and partner organizations to further plans to restore habitat and improve conditions at coastal access sites. Evaluate Pasadena Point for habitat restoration opportunities and access improvements including completing a cultural resources survey. Support habitat restoration opportunities and access improvements at Sweet Springs Nature Preserve and other established and protected open spaces in the watershed. Consider further acquisitions or conservation easements for the protection of habitats.
Progress Towards Milestones: Estuary Program staff consulted with a landowner and The Land Conservancy of San Luis Obispo County (LCSLO) on a possible easement along the floodplain of Chorro Creek. Estuary Program staff met with SLO County Parks and Recreation staff to discuss Pasadena Point habitat enhancement opportunities. A project to conduct cultural resource survey and remove iceplant is under development.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Staff continue to collaborate with partners to prioritize projects.
Problems Encountered: None.
Deliverables: None.
Activities Planned for the Next Six Months: Coordinate with LCSLO and private landowner on possible easement and funding allocated, if needed. Work with SLO County on Pasadena Point habitat project.
Pending Deliverables: None.

RESTORATION-5: Implement BMPs in Watershed

Project Status: Ongoing
Objective: Implement best management practices (BMPs) in the watershed to support improved water quality and quantity.

Description: Collaborate with partners and landowners to prioritize and implement BMPs. A range of BMPs will be completed including improvements to gully erosion areas, roads, fencing, culverts, and others. Install fencing along riparian corridors to limit grazing. Support Cuesta

College's sustainable agriculture program to install a water tank, interior fencing, and complete road improvements.

Progress Towards Milestones: Estuary Program staff have a subaward with CSLRCD to complete 20,000 feet of wildlife-friendly riparian fencing and off channel watering on private lands. CSLRCD has finished the majority of the fencing and off channel watering and is in the process of closing out the subaward. The subaward with Cuesta College was completed, and work was conducted to install piping for a water tank in November 2023. Project is now closed out and audit of any findings will be submitted after Cuesta College's fiscal year.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The fencing BMP subaward is slightly delayed in closing out due to changing priority sites for fencing.

Problems Encountered: No further problems.

Deliverables: None.

Activities Planned for the Next Six Months: Close out subawards. Identify new projects to support this goal with partners.

Pending Deliverables: None.

Water Infrastructure

WATER-1: Stormwater Improvement

Project Status: Ongoing

Objective: Prioritize and further implementation of stormwater improvement projects that improve the health of the bay.

Description: Engage stakeholders on further planning, data collection, and prioritizing stormwater projects that could be supported with BIL funding. Further planning designs and/or permits for selected stormwater improvement project(s) in Los Osos, Morro Bay, and/or Camp SLO.

Progress Towards Milestones: MBNEP staff hired a consultant to support review of existing stormwater projects to focus on identifying those with the most benefits given costs. Staff hired a consultant to complete project planning at Camp SLO and the CCC Center, including a hydrology delineation, groundwater study, and prioritization for upcoming stormwater enhancement projects. The Estuary Program supported implementation of the Calaveras Ave. stormwater improvement project on Camp SLO, which occurred in September 2023. The project had to be slightly scaled back due to more utility infrastructure in the project area than expected.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Project is just getting underway.

Problems Encountered: None.

Deliverables: None.

Activities Planned for the Next Six Months: The Estuary Program will be supporting additional aspects of the Calaveras Ave. stormwater project. Results of the planning study at Camp SLO and CCC Center will be shared. BIL funding will also support partial designs on a chosen stormwater project in the watershed.
Pending Deliverables: None.

WATER-2: Groundwater Monitoring

Project Status: Ongoing
Objective: Support monitoring of groundwater for the community of Los Osos.

Description: Increasing drought and groundwater supply is a major issue, in particular for vulnerable communities. The community of Los Osos depends primarily on groundwater for its water supply. Water withdrawals are leading to saltwater intrusion into the lower aquifer. To halt this threat to the aquifer, the Los Osos Basin Management Committee and the Los Osos Community Services District (LOCSD) are planning to install monitoring and municipal wells farther to the east. This project involves supporting the installation of a monitoring well and rehabilitation of existing well(s) to provide crucial water quality data to all purveyors in the basin.
Progress Towards Milestones: The LOCSD completed monitoring well installation at the end of 2023, and the contract and subaward have been closed. Staff are now working with LOCSD staff to develop a subaward and contract to rehabilitate two existing monitoring wells to expand the network needed to support the drinking water needs of the Los Osos community.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The project supports the outcome of expanding monitoring of groundwater for the community of Los Osos to ensure access to clean safe drinking water.
Problems Encountered: None.
Deliverables: None.
Activities Planned for the Next Six Months: Complete well rehabilitation project for two existing wells.
Pending Deliverables: Subaward documents and results of financial audit review.

Education and Outreach

E&O-1: Communications

Project Status: Ongoing
Objective: Implement a communications strategy and develop multi-media content to share the story of the Estuary Program, highlight projects, and engage a variety of audiences.

Description: Enhance and develop the Estuary Program's website, media content, and library to effectively communicate projects, highlight progress on the CCMP, and engage a wide variety of audiences.
Progress Towards Milestones: Regularly updated webpages on the Estuary Program's website. The website had 43,144 views in the first half of FY24. Staff are continuing to develop more communication on CCMP progress for the website. The seasonal *Between the Tides* newsletter continues to be published and has over 275 email subscribers. The newsletter is posted on the website and sent out to subscribers via email. Communications via social media have been utilizing multi-media content including educational Reels on Instagram. In the first half of FY24, nineteen blogs were posted on our website, sent to 549 email subscribers, and posted on our social media pages.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Progress towards updating the Estuary Program's website.
Problems Encountered: None.
Deliverables: Communications statistics shared in the semi-annual report (see above).
Activities Planned for the Next Six Months: Continue to update website and improve the user-friendliness of the site. Continue the quarterly newsletter and continue to increase its reach. Develop and share more stories on CCMP progress.
Pending Deliverables: None.

E&O-2: Environmental Education

Project Status: Ongoing
Objective: Provide environmental watershed and estuary-based education opportunities for students and teachers.

Description: Develop relationship with local outdoor education organizations to support bay field trips and curriculum. Develop and implement watershed and estuary-based curriculum and projects in schools and within the watershed. Partner with local education programs to implement watershed-based teacher training to benefit students across the county through professional development opportunities for teachers.
Progress Towards Milestones: Continued education partnerships with One Cool Earth, Camp Ocean Pines, California State Parks, and Cal Poly. Staff coordinated and hosted two teacher training workshops that focused on Coastal Ocean Literacy, climate resiliency, restoration, and inspiring stewardship in the Morro Bay estuary and watershed in the first half of FY24. These workshops are the first two in a series of three workshops this spring. The same cohort of 25 educators will attend all three workshops of the series in FY24. These attendees include 20 traditional school teachers. The other five attendees are a combination of informal educators, docents, volunteers, and environmental educators. In the first half of FY24, we hosted 19 field trips that reached 438 students and individuals. These field trips were for school groups, classrooms, youth organizations, and the El Camino Homelesss Organization shelter. Topics

included watershed health, careers in the environmental field, local wildlife, nature journaling, tidepooling, and estuarine habitats. Established a monthly recurring field trip with the Heartland Charter School for their Estuary Adventure Club. This includes 15-30 students with their parents from various locations around San Luis Obispo County and Kern County. Established and implemented an educational partnership with the nonprofit One Cool Earth to create a watershed week for all of their classrooms across 28 schools in San Luis Obispo County. Estuary Program staff trained 20 One Cool Earth instructors and staff about the estuary and Morro Bay watershed prior to the watershed week. One Cool Earth presented watershed education curriculum in 75 classrooms throughout the county this spring, reaching an estimated 2,250 students.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Development of education partnerships increased educational opportunities for students and teachers and resulted in curriculum development.

Problems Encountered: None.

Deliverables: Environmental education statistics shared in semi-annual report (see above).

Activities Planned for the Next Six Months: Continue working on educational panels for a watershed model at Monarch Grove, a local Title I elementary school. Finish the series of three teacher training workshops in spring 2024. Continuing to offer field trips to school groups. Working with Camp Ocean Pines on watershed education lessons to be held at their campus in Cambria. This includes a Marine Lab and codeveloping curriculum, a touch tank with educational activities, and creating their own Watershed demonstration lesson.

Pending Deliverables: None.

E&O-3: Nature Center

Project Status: Ongoing

Objective: Design and install new exhibits, upgrade and maintain exhibits, and support education and outreach programing for the Nature Center.

Description: Upgrade and redesign exhibits in the Nature Center, as well as establish education and outreach programming for the Nature Center. Integrate more technology and interactive exhibits to engage with various age groups in the Nature Center. Implement and design rotating displays. Integrate climate change and environmental justice into exhibits. Upgrade and maintain the Nature Center, including signs, flooring, paint, and display cases. Implement strategies to advertise for the Nature Center to draw more visitors. Update and maintain the virtual Nature Center on the Estuary Program website.

Progress Towards Milestones: Artwork was created for the new Nature Center entrance and a new logo was made. These signs were manufactured and will be installed in the second half of FY24. The Kid's Corner activity sheets are regularly updated and stocked for youth to use while in the Nature Center and to take home. Staff are creating a Nature Center activity guide specific

to activities to do with the Nature Center exhibits. This will be added to and revised in the next six months. The Nature Center had 9,000 visitors in the first half of FY24.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Nature Center updates support the task outcomes to create engaging exhibits and develop supplemental programming that will increase annual visitation.

Problems Encountered: None.

Deliverables: Nature Center statistics shared in the semi-annual report (see above).

Activities Planned for the Next Six Months: Staff plans to continue programming in the Nature Center and bringing field trip groups to the space. Staff will work on adding new interactive exhibits and continue space maintenance and infrastructure updates. Staff will continue to advertise for the Nature Center to bring in more visitors.

Pending Deliverables: Programming statistics and Nature Center usage statistics.

E&O-4: Community Engagement and Stewardship

Status: Ongoing

Objective: Provide community engagement and stewardship opportunities by hosting events and partnering with environmental organizations.

Description: Partner with local nonprofit ECOSLO to implement an adopt-a-spot program in Los Osos and the Embarcadero. Establish recurring clean-up events to engage the community and address marine debris and nonpoint source pollution. Organize habitat restoration events for community volunteers to participate in project activities. Co-develop community project with indigenous tribal communities.

Progress Towards Milestones: Staff opportunistically partnered with organizations to engage the community including Woods Humane Society, Creek Lands Conservation, Camp Ocean Pines, El Camino Homeless Organization, Sea Otter Savvy, California State Parks, and more. Staff hosted two more Science on Tap events in December and March, with a combined reach of over 55 attendees. Staff continued tabling at the Downtown SLO Farmers Market and downtown Morro Bay Farmers Market approximately quarterly. Tabling at farmers markets in the first half of FY24 reached approximately 200 people.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities conducted support the workplan task outcomes of increasing volunteer engagement and developing the infrastructure to keep the estuary free of litter.

Problems Encountered: The Adopt-a-Spot program with ECOSLO has been put on hold for staff changes at ECOSLO. MBNEP staff are looking at alternative options to implement the Adopt-a-Spot. Inclement weather cancelled several winter Farmers Market tabling events.

Deliverables: Event statistics included in the semi-annual report (see above).

Activities Planned for the Next Six Months: Staff will explore alternative partnerships to launch and manage the Los Osos and Morro Bay groups of adopt-a-spot cleanup crews.

Pending Deliverables: Event statistics and amount of trash picked up.

4. Subaward Reporting

The Estuary Program utilizes subawards to manage BIL funding projects. The following efforts with partners were initiated as subawards during FY23:

- Cuesta College: Sustainable Agriculture Educational Program Support
- USGS: Salt Marsh Monitoring and Modeling to Plan for Future Sea Level Rise Impacts
- Los Osos Community Services District: Groundwater Monitoring Well Installation
- San Francisco Estuary Institute: Historical Ecology Study
- Coastal San Luis Resource Conservation District: BMP fencing implementation and stormwater planning support

Staff conducted the following activities to manage subawards:

- Each subawardee was contacted to determine the fiscal year under which they operate and the timing of their next financial audit that will include the subaward funds.
- Estuary Program staff developed tracking and reporting forms for use with subawardees to review the results of any financial auditing and review for their organization.
- Estuary Program staff developed the subaward reporting content for inclusion in upcoming BIL semi-annual reports.

The status of each Estuary Program subaward under the BIL funding is as follows.

Subawardee: Los Osos Community Services District

Project Name: Groundwater Monitoring Well Installation

Project Status: Completed

Activities Completed to Date: Procurement, selection, and contracting with contractor and well driller. Permitting coordinated and completed. Well successfully installed. Final reporting completed. Contract was closed. Subaward was closed.

Future Activities: Upon completion of financial audit, Estuary Program staff will review subaward reporting forms to ensure that all subaward management requirements have been successfully met.

Review of Financial and Programmatic Reports: In the contract development and implementation process, the subaward recipient met all financial and programmatic requirements. Upon completion of a financial audit, Estuary Program staff will review the results.

Summary of Findings from Site Visits/Desk Reviews: In all project updates and communication with the subawardee, there were no issues of concern raised related to implementation of the subaward.

Environmental Results Achieved: The installation of this monitoring well expands the monitoring network for the Los Osos Basin Management Committee and the LOCSD. This allows for better management of the drinking water supply for the community. Data from the newly installed monitoring well will be available in fall 2024.

Summaries of Audit Findings and Related Subawardee Management Decisions: The Estuary Program is awaiting the results of the LOCSD's upcoming financial audit. There were no issues to date related to the pass-through entity's (PTE) management decisions.

Actions the Subawardee Taken to Correct Deficiencies: Not applicable. No deficiencies have been identified to date.

Subawardee: Cuesta Community College

Project Name: Sustainable Agriculture Educational Program Support

Project Status: Completed

Activities Completed to Date: Completed procurement, selection, and contracting for pipe installation and fence installation. All construction work completed. Final reporting completed. Contracted closed. Subaward closed.

Future Activities: Upon completion of financial audit, Estuary Program staff will review subaward reporting forms to ensure that all subaward management requirements have been successfully met.

Review of Financial and Programmatic Reports: In the contract development and implementation process, the subaward recipient met all financial and programmatic requirements. Upon completion of a financial audit, Estuary Program staff will review the results.

Summary of Findings from Site Visits/Desk Reviews: In all project updates and communication with the subawardee, there were no issues of concern raised related to implementation of the subaward.

Environmental Results Achieved: The installation of infrastructure to support Cuesta College's sustainable agriculture education curriculum trains the next generation of ranchers in environmentally-friendly land management practices. While these environmental results cannot be directly measured, the project expands and improves Cuesta's ability to provide education in updated land management practices which benefits rangeland in the Morro Bay watershed and beyond.

Summaries of Audit Findings and Related Subawardee Management Decisions: The Estuary Program is awaiting the results of the Cuesta College's upcoming financial audit. There were no issues to date related to PTE management decisions.

Actions the Subawardee Taken to Correct Deficiencies: Not applicable. No deficiencies have been identified to date.

Subawardee: San Francisco Estuary Institute (SFEI)

Project Name: Historical Ecology Study

Status: Ongoing

Activities Completed to Date: SFEI coordinated with partners to identify available resources for study. Coordinated visits to archives and site visits.

Future Activities: SFEI is planning a visit to the area in spring 2024 to visit archives and view portions of the estuary and watershed. SFEI will then conduct analysis and mapping to determine the habitat and channel types present prior to major Euro-American modification of the landscape and to develop an illustrated report describing early landscape patterns and processes. Deliverables are expected in 2025.

Review of Financial and Programmatic Reports: In the contract development and implementation process, the subaward recipient met all financial and programmatic requirements. Upon completion of a financial audit, Estuary Program staff will review the results.

Summary of Findings from Site Visits/Desk Reviews: In all project updates and communication with the subawardee, there were no issues of concern raised related to implementation of the subaward.

Environmental Results Achieved: The project supports more sustainable restoration and land management in the face of future climate change. While the environmental results cannot necessarily be quantified, the results support building a more resilient landscape to protect natural resources for both humans and the environment.

Summaries of Audit Findings and Related Subawardee Management Decisions: The Estuary Program is awaiting the results of SFEI's upcoming financial audit. There were no issues to date related to PTE management decisions.

Actions the Subawardee Taken to Correct Deficiencies: Not applicable. No deficiencies have been identified to date.

Subawardee: USGS

Project Name: Salt Marsh Monitoring and Modeling to Plan for Future Sea Level Rise Impacts

Status: Ongoing

Activities Completed to Date: Estuary Program staff worked with USGS to conduct sediment monitoring in the salt marsh. This data as well as historic information was fed into USGS models

to understand sediment transport and sea level rise impacts on the fragile salt marsh habitat. A draft model has been completed.

Future Activities: USGS will further refine their model of future outcomes, considering several scenarios including a range of sea levels and sediment availability. The effort will address the likely loss of key habitats and the development of adaptation strategies to reduce coastal flooding for the Morro Bay estuary. The effort will develop management scenarios for restoration, enhancement, and adaptation for sea level rise concerns.

Review of Financial and Programmatic Reports: In the contract development and implementation process, the subaward recipient met all financial and programmatic requirements. Upon completion of a financial audit, Estuary Program staff will review the results.

Summary of Findings from Site Visits/Desk Reviews: In all project updates and communication with the subawardee, there were no issues of concern raised related to implementation of the subaward.

Environmental Results Achieved: By better understanding the historical landscape, the project supports more sustainable restoration and land management in the face of future climate change. While the environmental results cannot necessarily be quantified, the projects results provide guidance and framework for developing a more resilient landscape to both the fragile habitats surrounding the estuary and essential infrastructure.

Summaries of Audit Findings and Related Subawardee Management Decisions: The Estuary Program is awaiting the results of USGS's upcoming financial audit. There were no issues to date related to PTE management decisions.

Actions the Subawardee Taken to Correct Deficiencies: Not applicable. No deficiencies have been identified to date.

Subawardee: Coastal San Luis Resource Conservation District

Project Name: BMP implementation and stormwater improvement implementation

Status: Ongoing

Activities Completed to Date: Estuary Program staff worked with RCD on two projects. The first project involves collaborating with landowners to develop on-farm best management practices (BMP's) through riparian fencing and associated stock water infrastructure on upper Los Osos and Warden Creeks. This project is underway and nearly complete. CSLRCD aims to complete 20,000 feet of wildlife-friendly riparian fencing and off channel watering on private lands. CSLRCD has finished the majority of the fencing and off channel watering and is in the process of closing out the subaward. The second project supports stormwater improvement projects at Camp SLO military base. This project supported implementation of the Calaveras Ave.

stormwater improvement project on Camp SLO, which occurred in September 2023. The project had to be slightly scaled back due to more utility infrastructure in the project area than expected.
Future Activities: CSLRCD will be completing additional aspects of the Calaveras Ave. stormwater project and finishing implementation of the BMP project.

Review of Financial and Programmatic Reports: In the contract development and implementation process, the subaward recipient met all financial and programmatic requirements. Upon completion of a financial audit, Estuary Program staff will review the results.

Summary of Findings from Site Visits/Desk Reviews: In all project updates and communication with the subawardee, there were no issues of concern raised related to implementation of the subaward.

Environmental Results Achieved: Both projects aim to address stormwater and soil erosion in the watershed. Bioswales associated with the stormwater improvement project will be constructed to capture and infiltrate stormwater while slowing flow to reduce erosion in the current drainages. On farm best management practices (BMP's) will improve water quality through reduced sediment and nutrient loading.

Summaries of Audit Findings and Related Subawardee Management Decisions: The Estuary Program is awaiting the results of RCD's upcoming financial audit. There were no issues to date related to PTE management decisions.

Actions the Subawardee Taken to Correct Deficiencies: Not applicable. No deficiencies have been identified to date.

5. Lab Competency Documentation

The Estuary Program utilizes laboratories that have met the certification requirements for their technical area. During FY24, the following labs were used:

For Water Quality: In 2024, we primarily used two labs, Fruit Growers Laboratory (FGL) and County of SLO Public Health Laboratory. Both labs maintained Environmental Laboratory Accreditation Program (ELAP) certification during this time period. Documentation for the county lab is available online. The certification for FGL is available online. Note that the state has been slow to update the certification status online. Staff contacted the labs to confirm that their certifications are still current.

For Bay Nutrient Analysis: The University of California, Santa Barbara (UCSB) Marine Sciences Laboratory conducts analysis of Morro Bay waters for nutrients. Although the laboratory is not ELAP certified, it undergoes similar steps to ensure data quality. Their detailed QA manual was provided and reviewed by Estuary Program staff, and the lab's QA activities were deemed sufficient to ensure data quality.

6. Budget Overview

Tables 1 and 2, represent costs associated with BIL activities since the beginning of the BIL grant agreement on December 12, 2022. These costs are associated with the workplan and budget for BIL funding for FY22/FY23 and FY24. The Estuary Program has a waiver for the match requirement for this workplan. Future BIL workplans will have match waived as our Equity Strategy has been approved.

Budget Overview

Table 1: Costs expended during this semi-annual report period (October 1, 2023 – March 31, 2024). These costs represent cumulative costs since the initiation of BIL activities.

Category	Subcategory	BIL FY24 Period 1 Funds	Total Cumulative Funds
Personnel	Salaries	$ 104,593	$ 258,139
	Fringe	$ 2,341	$ 18,954
	Subtotal	*$ 106,934*	*$ 277,093*
Supplies	Computers, software	$ 0	$ 11,406
	Monitoring supplies	$ 21,385	$ 57,905
	Education and Outreach supplies	$ 6,011	$ 23,193
	Subtotal	*$ 27,397*	*$ 92,505*
Equipment	Monitoring equipment	$ 12,716	$ 152,746
	Subtotal	***$ 12,716***	***$ 152,746***
Contractual	Capacity Building	$ 0	$ 24,729
	Monitoring	$ 74,927	$ 122,595
	Restoration	$ 47,584	$ 53,928
	Water Infrastructure	$ 10,528	$ 17,860
	Education and Outreach	$ 4,033	$ 9,534
	Subtotal	*$ 137,072*	*$ 228,646*
Other	Training, Prof. Dev.	$ 400	$ 4,339
	Restoration Subawards	$ 62,400	$ 128,148
	Water Infrastructure Subawards	$ 68,523	$ 70,000
	Subtotal	*$ 131,323*	*$ 202,487*
TOTAL		**$ 415,440**	**$ 953,477**

Table 2: Costs by Program Area and Task for BIL funding (FY22/23 and FY24)

Program Area	Workplan Task	BIL FY24 Period 1 Funds	Total Cumulative Funds
Capacity Building	Capacity-1: Capacity Building	$ 107,329	$ 292,833
	Capacity-2: BIL Management and Equity Strategy Development	$ -	$ 24,729
	Subtotal	***$ 107,329***	***$ 317,562***
Environmental Monitoring and Research	Monitoring-1: Tracking Bay Health	$ -	$ 143,128
	Monitoring-2: Tracking Creek Health	$ 38,235	$ 115,480
	Monitoring-3: Eelgrass Monitoring and Research	$ 63,112	$ 65,576
	Monitoring-4: Data Analysis and Management	$ 7,681	$ 7,681
	Subtotal	***$ 109,028***	***$ 331,864***
Habitat Restoration and Protection	Restoration-1: Invasive Species Management	$ 8,955	$ 12,181
	Restoration-2: Habitat Restoration and Climate Planning	$ 38,317	$ 101,168
	Restoration-3: Fish Habitat Monitoring and Improvement	$ 38,629	$ 41,747
	Restoration-4: Open Space Habitat and Access	$ -	$ -
	Restoration-5: Implement BMPs in Watershed	$ 24,083	$ 28,362
	Subtotal	***$ 109,984***	***$ 183,458***
Water Infrastructure	Water-1: Stormwater Improvement	$ 10,528	$ 17,860
	Water-2: Groundwater Monitoring	$ 68,523	$ 70,000
	Subtotal	***$ 79,051***	***$ 87,860***
Education and Outreach	E&O-1: Communication	$ -	$ -
	E&O-2: Environmental Education	$ 7,538	$ 10,948
	E&O-3: Nature Center	$ 1,406	$ 19,247
	E&O-4: Community Engagement and Stewardship	$ 1,106	$ 2,538
	Subtotal	***$ 10,050***	***$ 32,733***
	TOTAL	**$ 415,440**	**$ 953,477**