Morro Bay National Estuary Program

Bipartisan Infrastructure Law (BIL)

Semi-Annual Report

April 1, 2024 to September 30, 2024
(FY24 Workplan)

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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)

The Estuary Program is moving forward with implementing the FY24 BIL Workplan. Our BIL spending under the grant (Grant Number 4T-98T47301) as of September 30, 2024, was $1,454,279.

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 second 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 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 FY24 Workplan.

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.
- Developed a Habitat Protection and Restoration Strategy, currently being finalized, 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.
- Developed a non-discrimination and accessibility plan for outreach events.
- Conducted teacher training events in partnership with California Polytechnic University, San Luis Obispo (Cal Poly) and Project WET.

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.

- Continued a study and concept design to restore riparian habitat by addressing a fish passage barrier modification.
- Coordinated with stakeholders and partners to prioritize 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 quality 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 and rehabilitation of monitoring wells 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 Estuary Program's study area 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 Estuary Program region
- Indicators that demonstrate variance across the Estuary Program 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, Administrative Assistant, Planning Intern, and Planning Advisor. Additionally, several Estuary Program staff funded through the 320 grant contribute time towards implementing BIL projects.
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 implement an Equity Strategy. Develop and implement reporting metrics and performance tracking methods for BIL projects and CCMP actions.
Progress Towards Milestones: 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 utilizing 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.
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 (SWRCB) 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. Sampling occurred throughout the spring, and 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 includes collecting and identifying phytoplankton samples from the front and back bay, and samples will soon undergo genetic analysis of sediment and water to assess phytoplankton communities. Staff purchased supplies to support monitoring efforts throughout the estuary.

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 WY23. 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 CEDEN. Monthly bacteria result memos. Bay Health Memo for WY24.

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.

Progress Towards Milestones: Staff conducted monitoring to track key environmental indicators in the watershed. We worked with partners to collect and analyze data from water level sensors to expand our surface flow monitoring network throughout the watershed. Staff are now collecting data for the development of rating curves. A contract is underway to conduct additional analysis with the low flow data. Staff conducted water quality monitoring of agricultural impacted sites throughout the watershed, with a focus on analysis of nutrients. Staff implemented monitoring efforts, including coordination with the Central Coast Ambient Monitoring Program (CCAMP) and the Stream Pollution Trends Monitoring Program (SPoT) for sediment and water toxicity monitoring. Staff sampled water and sediment for the dry season

toxicity monitoring effort. 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 conducted the spring bioassessment monitoring at ten sites. 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 supplies to support monitoring efforts throughout the watershed.

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). Creek Health Memo for WY23.

Activities Planned for the Next Six Months: Continue data collection. Submit data to CEDEN.

Pending Deliverables: Monthly bacteria memos. Data submittal to CEDEN. Bioassessment Memo for WY24. Creek Health Memo for WY24.

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. Mapping and monitoring of eelgrass allows for tracking of bed health and indicates when there is a need for restoration efforts.

Progress Towards Milestones: The selected contractor completed a final map of baywide eelgrass utilizing drone and sonar data collected in spring 2023. The map indicated 750 acres of intertidal and subtidal eelgrass in the bay. Estuary Program staff conducted macroalgae monitoring throughout the year and are currently conducting analysis on the results. Staff are partnering with Cal Poly to improve the accuracy of an automated model to map eelgrass using imagery collected during drone flights. Staff conducted groundtruthing to better interpret vegetation types in the drone imagery. Staff continued a partnership 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: 2023 Eelgrass Report, which includes the baywide eelgrass habitat map.
Activities Planned for the Next Six Months: Project development is underway for a baywide eelgrass mapping effort in spring 2025. Macroalgae monitoring will occur in 2025. High-resolution drone imagery will be collected in winter 2024. Eelgrass prokaryote work will be conducted.
Pending Deliverables: 2025 bay-wide map of eelgrass in Morro Bay. 2024 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.
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 worked with an Access database contractor to implement updates to the data management system. CSCI analysis was completed for the 2024 bioassessment data, and analysis of the data is underway, including a bioassessment memo for 2024. Monitoring data was submitted to CEDEN to support the SWRCB Integrated Report for 2028.
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: Data submittal to CEDEN. Bioassessment Memo for WY23.
Activities Planned for the Next Six Months: Continue to work with SWRCB on CEDEN updates.
Pending Deliverables: Bioassessment Memo for WY24.

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: To protect sensitive habitats in the watershed, proactive management of invasive species is a key tool. The Estuary Program works with partners and landowners to map and treat invasives such as giant reed *(Arundo donax)* ice plant (*Carpobrotus)*, European sea lavender (*Limonium duriuscilum*), salt cedar (*Tamarisk ramosissima)*, cobweb bush (*Plechostachys serpyliflora)*, and purple pampas grass (*Cortaderia jubata).* Efforts also include support of weed management on the restored floodplain area of the Chorro Creek Ecological Reserve (CCER).
Progress Towards Milestones: A contractor surveyed and mapped *Arundo donax* and up to 19 other priority invasive species within the Chorro Creek watershed in spring 2024. Drone surveys are scheduled for winter 2024 to identify priority management areas. The next stage involves initial permitting. Army National Guard Base Camp San Luis Obispo (SLO) continued 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 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 sandspit in for five years starting in October 2023. Estuary Staff received additional funds for this project through USFWS Coastal Program. Following iceplant treatment in fall , California Conservation Corps (CCC) corpsmembers completed additional hand pulling of iceplant near sensitive plant species and near the waters edge in August 2024. Additional iceplant was pulled during a teacher training workshop focused on hands-on environmental stewardship. In May 2024, the CCC corpsmembers managed weeds at CCER. Staff completed bi-monthly European sea lavender monitoring at target areas and a bay-wide monitoring effort in summer 2024.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Tasks are on schedule.
Problems Encountered: None.
Deliverables: Iceplant Monitoring Report for Coastal Commission, 2023.
Activities Planned for the Next Six Months: Complete year two of iceplant treatment on the sandspit with licensed herbicide applicator and snail monitor in November-December 2024. Treatment will involve re-spray of any sprouts and new locations that weren't treated in 2023.

Complete post-project monitoring and reporting to the California Coastal Commission for Year 2 of iceplant management. Work with the CCC to complete weeding of the CCER 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: A changing climate poses a threat to sensitive estuary habitats. Monitoring, modeling, and planning efforts can help communities mitigate the impacts of these changes by supporting planning and designs of additional habitat restoration projects within the watershed and estuary.
Progress Towards Milestones: The United States Geological Survey (USGS) is continuing their modeling efforts to study sea level rise impacts on tidal marshes. The Estuary Program also received grant funding to further support Technical Advisory Committee (TAC) involvement and expand the effort to include modeling of adaptation measures. Staff completed bi-annual sediment monitoring in September 2024. The Estuary Program partnered with the San Francisco Estuary Institute (SFEI) to conduct a historical ecology project. To date, SFEI has completed an extensive list of referenced documents and georeferenced maps in GIS. The Habitat Protection and Restoration Strategy was submitted to the EPA in September 2024. EPA provided comments which the Estuary Program is currently addressing. Match funding has also been provided to the 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 on Walters Creek. The Estuary Program is partnering with Trout Unlimited to complete conceptual designs and initial permitting efforts for the project. Draft conceptual designs were completed in September 2024. In September, a contractor completed geomorphic surveys at CCER to access change over time (accretion/erosion) and fish passage at the restoration site.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Tidal marsh sediment monitoring has been completed with BIL funding with some additional monitoring with additional grant funding.
Problems Encountered: None.
Deliverables: None.
Activities Planned for the Next Six Months: Address comments from EPA on the Habitat Protection and Restoration Strategy and finalize the plan. SFEI will start to map habitat

locations and get review from advisory panel. We will begin TAC involvement for the USGS modeling study and complete additional monitoring in fall 2024. Initial modeling results of the USGS sea level rise vulnerability study will also 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: Much of the habitat restoration and protection efforts of the Estuary Program target the protection of sensitive species, including steelhead. Monitoring and management of fish populations and their habitats directly support this work.
Progress Towards Milestones: Estuary Staff received funds from the United States Fish and Wildlife Service (USFWS) Coastal Program to conduct bay fish monitoring. Two rounds of bay fish monitoring were conducted, one in fall 2023 and spring 2024. 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 2024. The contractor is currently analyzing the data and comparing it to historical data with final report anticipated in winter 2024. Juvenile steelhead growth and habitat use surveys were conducted in fall 2023. 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 completed two conceptual design options in August 2024.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Project tasks are so far on schedule.
Problems Encountered: None.
Deliverables: San Luisito Creek Fish Passage Barrier- Existing Conditions Modeling Memorandum, Geomorphic Characterization and Field Mapping Summary, and Concept Level Designs.
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 again in October 2024 with tracking of fish though spring 2025. A consultant will present the two fish passage alternatives to stakeholders in November 2024. Develop contract and implement a reduced effort 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. Revised conceptual designs for the San Luisito Creek fish passage barrier.

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: The Estuary Program strives to protect sensitive open space habitats while supporting access to these areas. We collaborate with community stakeholders and partner organizations to further plans to restore habitat and improve conditions at coastal access sites. The program supports habitat restoration opportunities and access improvements at Sweet Springs Nature Preserve and other established and protected open spaces in the watershed. The Estuary Program and our partners are always seeking opportunities for 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: The Estuary Program collaborates with partners and landowners to prioritize and implement best management practices (BMPs), which can include improvements to gully erosion areas, roads, fencing, culverts, and others. Installing fencing along riparian corridors to limit grazing is another common tool.
Progress Towards Milestones: The CSLRCD completed 20,000 feet of wildlife-friendly riparian fencing and off-channel watering on private lands. A subaward with Cuesta College was completed to install water and fencing infrastructure to support their sustainable agriculture program.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: None.
Problems Encountered: No further problems.
Deliverables: None.
Activities Planned for the Next Six Months: Work with partners to identify new projects to support this goal. Continue discussion with Cal Poly on rainwater/high flow capture tanks.
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: Stormwater management is an effective tool for protecting sensitive habitats such as our estuary and creeks. The Estuary Program engages stakeholders on planning, data collection, and prioritizing stormwater projects that could be supported with BIL funding.
Progress Towards Milestones: Estuary Program 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 and groundwater study.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Project is just getting underway.
Problems Encountered: None.
Deliverables: Camp SLO Stormwater- Hydrology Report.
Activities Planned for the Next Six Months: Further results of the planning study (e.g., site geotech) at Camp SLO and CCC Center will be shared.
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 Estuary Program works with partners such as Los Osos Basin Management Committee and the Los Osos Community Services District (LOCSD).

Progress Towards Milestones: The LOCSD completed monitoring well installation at the end of 2023, and the contract and subaward have been closed. Staff worked 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. All three wells support expanded monitoring to better manage the drinking water supply. A consultant has been selected to provide technical support for the project, and the next step is selecting a contractor.
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: None.

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: A primary goal of the Estuary Program is to educate residents and visitors of all ages on how to be good stewards of the bay. Communication in various forms is essential to this work, allowing us to effectively communicate the status of our wok, to highlight progress on CCMP implementation, and to engage a wide variety of audiences.
Progress Towards Milestones: Staff regularly updated webpages on the Estuary Program's website. The website had 36,175 views in the second 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 every quarter and has over 300 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 second half of FY24, 12 blogs were posted on our website, sent to 553 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 work to expand 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: Partnerships are key to implementing our program's environmental education goals. Staff work with partners to support bay field trips and develop curriculum.
Progress Towards Milestones: The Estuary Program continued education partnerships with One Cool Earth, Camp Ocean Pines, California State Parks, and Cal Poly. Staff coordinated and hosted three teacher training workshops that focused on Coastal Ocean Literacy, climate resiliency, restoration, and inspiring stewardship in the Morro Bay estuary and watershed in FY24. The same cohort of 25 educators attended all three workshops of the series in FY24. These attendees included 20 traditional schoolteachers. The other five attendees were a combination of informal educators, docents, volunteers, and environmental educators. The attendees were from the following counties in California: San Luis Obispo, Monterey, Santa Barbara, Kings, Fresno, Sonoma, and Contra Costa. In the second half of FY24, we hosted six field trips that reached 96 students and individuals. These field trips were for school groups, classrooms, and youth organizations. Topics included watershed health, careers in the environmental field, local wildlife, nature journaling, tidepooling, and estuarine habitats. In the summer months, we led four SLO County library storytime events and hosted activities for Creek Lands Conservation summer programming three times in Morro Bay. MBNEP staff also attended the Morro Bay Junior Guards and Morro Bay Little Guards summer camps seven times total to host beach cleanups, teach about pollution in the watershed utilizing the watershed model, and other environmental education activities with students. These summer field trips picked up a total of 16 pounds of trash from the Morro Rock beach area. The Estuary Program worked with Camp Ocean Pines to build up their touch tank and marine lab curriculum and facilities. We worked together to develop curriculum on a watershed model demonstration, water quality labs, and touch tank educational activities.
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: Host the 2025 teacher training workshops in winter 2025. Continue to offer field trips to school groups.
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: The Estuary Program maintains a free Nature Center open to the public to share messaging about the estuarine environment and stewardship. Staff maintain, update, and promote the center.
Progress Towards Milestones: Staff created updated artwork for the Nature Center entrance, and a new logo was made. These signs were manufactured and will be installed this fall. 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 continuing to create a Nature Center activity guide specific to activities related to the Nature Center exhibits. This will be added to and revised in the next six months. The Nature Center had 11,246 visitors in the second 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: Challenges identifying a contractor to work on multiple upgrades to the Nature Center**.**
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 hosting field trip groups to the space. Staff will work on adding new interactive exhibits and continue maintenance and infrastructure updates. Staff will continue to advertise for the Nature Center to attract 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: The Estuary Program engages with partners to collaborate on efforts to engage the community and promote stewardship. Volunteer efforts are particular powerful for connecting with community members and encouraging stewardship.
Progress Towards Milestones: Staff opportunistically partnered with organizations to engage the community including Creek Lands Conservation, Camp Ocean Pines, California State Parks, and more. Staff hosted one more Science on Tap event in June, with 40 attendees learning

about eelgrass in Morro Bay. We also hosted a Science Explorations event in August to learn more about eelgrass, wasting disease, and fish studies in Morro Bay that had 30 attendees. Staff continued tabling at the Downtown SLO Farmers Market approximately quarterly. Tabling at farmers markets in the second half of FY24 reached approximately 200 people. Staff hosted four cleanups at Morro Rock in the second half of FY24, picking up 115 pounds of trash with 180 volunteers. The plans for working with ECOSLO on Adopt-a-Spot cleanups in Morro Bay and Los Osos have been progressing, and this fall we will make an implementation plan.

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 due to staff changes at ECOSLO.

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

Activities Planned for the Next Six Months: Staff will launch Adopt-A-Spot in Los Osos and Morro Bay in the next six months in partnership with ECOSLO. We will continue to host cleanups and table at events and markets.

Pending Deliverables: Event statistics and amount of trash picked up (see above).

4. Subaward Reporting

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

- 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
- Los Osos Community Services District: Groundwater Monitoring Well Rehabilitation
- 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.
- Staff developed a new project and subaward with the LOCSD.

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

Subawardee: Los Osos Community Services District Monitoring Well Installation

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: Los Osos Community Services District Monitoring Well Rehabilitation

Project Name: Groundwater Monitoring Well Rehabilitation

Project Status: Ongoing

Activities Completed to Date: Procurement, selection, and contracting with consultant. Bid package to solicit contractor is underway. Ongoing permitting coordination. Successful transfer of ownership of one of the wells from the County to the LOCSD.

Future Activities: Selection of a contractor. Rehabilitation of two wells. Closing the contract and subaward. 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 rehabilitation of two monitoring wells 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.

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 have been 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. SFEI completed visits to several archival sites and a site visit in the watershed in spring 2024. SFEI has compiled initial georeferenced maps with ArcGIS.

Future Activities: SFEI will 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. Advisory members will be chosen in October 2024. Deliverables are expected in late 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 have been 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 historical 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 have been 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 CSLRCD on two projects, both of which are now complete. The first project involved collaborating with landowners to develop on-farm BMPs through riparian fencing and associated stock water infrastructure on upper Los Osos and Warden Creeks. CSLRCD completed 20,000 feet of wildlife-friendly riparian fencing and off channel watering on private lands. The second project supports stormwater improvement projects at the Camp SLO military base. This project supported implementation of the Calaveras Avenue 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: None.

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 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 BMPs 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 CSLRCD's upcoming financial audit. There have been 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.

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.

The Marine Pollution Studies Laboratory at Granite Canyon Laboratories (GC) conducts toxicity monitoring for the Estuary Program. This laboratory is ELAP-certified under certificate number 2821.

The University of Connecticut (UCONN) Institute for Systems Genomics (CGI) conducts amplicon sequencing of 18S rRNA genes, following rigorous protocols to ensure data quality. The CGI adheres to Illumina MiSeq protocols and quality assurance processes, which have been reviewed and approved by Estuary Program staff and the Pasulka Lab, ensuring that their QA practices meet high standards for producing accurate and reliable sequence data.

6. Budget Overview

Tables 1 and 2 present costs associated with BIL activities since the beginning of the BIL grant agreement on December 12, 2022.. 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 (April 1, 2024 – September 30, 2024). These costs represent cumulative costs since the initiation of BIL activities.

Category	Subcategory	BIL FY24 Period 2 Funds	Total Cumulative Funds
Personnel	Salaries	$ 117,553	$ 375,693
	Fringe	$ 17,514	$ 36,468
	Subtotal	*$ 135,068*	*$ 412,161*
Supplies	Computers, software	$ 3,829	$ 15,236
	Monitoring supplies	$ 11,545	$ 69,450
	Education and Outreach supplies	$ 7,228	$ 30,422
	Subtotal	*$ 22,602*	*$ 115,107*
Travel	Travel (includes local mileage)	$ 1,288	$ 1,288
	Subtotal	$ 1,288	$ 1,288
Equipment	Monitoring equipment	$ 0	$ 152,746
	Subtotal	*$ 0*	*$ 152,746*
Contractual	Capacity Building	$ 0	$ 24,729
	Monitoring	$ 31,370	$ 153,965
	Restoration	$ 159,093	$ 213,021
	Water Infrastructure	$ 15,003	$ 32,863
	Education and Outreach	$ 13,797	$ 23,331
	Subtotal	*$ 219,263*	*$ 447,909*
Other	Training, Prof. Dev.	$ 140	$ 4,479
	Restoration Subawards	$ 100,283	$ 228,069
	Water Infrastructure Subawards	$ 22,158	$ 92,158
	Subtotal	*$ 122,581*	*$ 325,068*
	TOTAL	**$ 500,801**	**$ 1,454,279**

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

Program Area	Workplan Task	BIL FY24 Period 2 Funds	Total Cumulative Funds
Capacity Building	Capacity-1: Capacity Building	$ 140,324	$ 433,157
	Capacity-2: BIL Management and Equity Strategy Development	$ -	$ 24,729
	Subtotal	***$ 140,324***	***$ 457,886***
Environmental Monitoring and Research	Monitoring-1: Tracking Bay Health	$ 16,390	$ 159,517
	Monitoring-2: Tracking Creek Health	$ 19,945	$ 135,425
	Monitoring-3: Eelgrass Monitoring and Research	$ 5,517	$ 71,093
	Monitoring-4: Data Analysis and Management	$ 1,063	$ 8,744
	Subtotal	***$ 42,915***	***$ 374,780***
Habitat Restoration and Protection	Restoration-1: Invasive Species Management	$ 50,534	$ 62,716
	Restoration-2: Habitat Restoration and Climate Planning	$ 85,838	$ 187,006
	Restoration-3: Fish Habitat Monitoring and Improvement	$ 85,841	$ 127,587
	Restoration-4: Open Space Habitat and Access	$ -	$ -
	Restoration-5: Implement BMPs in Watershed	$ 37,164	$ 65,525
	Subtotal	***$ 259,376***	***$ 442,835***
Water Infrastructure	Water-1: Stormwater Improvement	$ 29,968	$ 47,828
	Water-2: Groundwater Monitoring	$ 7,193	$ 77,193
	Subtotal	***$ 37,160***	***$ 125,020***
Education and Outreach	E&O-1: Communication	$ 1,350	$ 1,350
	E&O-2: Environmental Education	$ 18,713	$ 29,661
	E&O-3: Nature Center	$ 353	$ 19,600
	E&O-4: Community Engagement and Stewardship	$ 609	$ 3,147
	Subtotal	***$ 21,025***	***$ 53,758***
	TOTAL	**$ 500,801**	**$ 1,454,279**