

**HAB-11: Develop and implement monitoring, research, and restoration activities to address the biological productivity loss that may result from water diversions from the estuary****BACKGROUND/MAJOR ISSUES:**

Seawater diversions from Morro Bay have the potential to reduce the biological productivity of the estuary by removing and/or killing estuarine and near-shore organisms through entrainment and impingement. Water diversions typically have a screen to prevent larger organisms and debris from entering the diversion system. Larval fish, invertebrates, and all other organisms smaller than the screen size can be entrained with the diverted water, and may be killed as a result. Larger organisms may be lost via impingement, where they are pinned against the screen or other water intake structure by the force of the intake flow. The loss of these organisms may reduce their overall abundance in the local environment, and could have cascading food web impacts on other creatures in the estuarine and near-shore ecosystem.

The Morro Bay Power Plant (MBPP) is the only significant source of water diversions from the estuary at this time. Other potential future sources of water diversions could include desalination facilities, aquariums, or other industrial uses. The impacts of the MBPP water withdrawals on the estuary were identified as a research need in the original CCMP. Significant research about those impacts has been conducted as part of the proposed plant modernization process, and is presented in the *MBPP Modernization Project 316(b) Resource Assessment Report*. The research shows that the diversions do result in impingement and entrainment of estuarine organisms. See also CCMP Amendment Placeholder #1, which is attached and incorporated in full by reference. The California Energy Commission (CEC) and the Central Coast Regional Water Quality Control Board (CCRWQCB) are the regulatory agencies responsible for reviewing and permitting the plant modernization project. The CEC has approved the modernization project; a decision by the CCRWQCB is pending at this time.

This action plan will provide a framework for the MBNEP to work with all parties to address the ecological effects of water diversions from the estuary. In implementing this action plan, it is important to note that the MBNEP does not have any regulatory authority, but is instead a collaborative program of stakeholders working cooperatively to protect the Bay and watershed.

BENEFITS OF THIS ACTION:

- Protection of the biological productivity of the Morro Bay Estuary
- Increased involvement and review by the MBNEP of proposals to divert water from the estuary
- Improved scientific information and understanding of the Morro Bay estuary ecosystem

IMPLEMENTATION:

1. Work in an advisory capacity with stakeholders and regulatory agencies in their efforts to ensure that any estuary water diversions do not threaten the biological productivity of the estuary.
2. Monitor the health, productivity, and the area (acreage) of estuarine habitats to develop a 'baseline' condition for the estuary so that changes from that baseline can be detected.
3. Participate in the planning, implementation, and effectiveness monitoring of any mitigation or enhancement projects that arise from estuary water diversions to ensure such projects are effective and are aligned with this CCMP.
4. Support research to increase the body of knowledge about the effects of estuary water withdrawals both on specific species and on the estuarine ecosystem.
5. Implement other CCMP action plans to protect and enhance subtidal habitat in the Bay such as CC-1 (Land acquisition), SED-1 (Road Management), SED-2 (Sediment Traps), SED-3 (Fire



Management), SED-4 (Landowner BMPs), SED-5 (Creek Restoration), SED-6 (Sandspit Revegetation), SED-7 (BMP Incentives), and SED-8 (Estuary Restoration).

WHEN:

- **Short-term:** Continue to participate in the MBPP permitting process.
- **Medium-term:** Participate as appropriate in the implementation of any approved monitoring, mitigation, or enhancement project related to estuarine water withdrawals; participate in the review of any new proposed estuary water diversions.
- **Long-term:** Monitor estuarine ecosystem health, monitor long-term effectiveness of any restoration, mitigation, or enhancement projects related to estuarine water withdrawals; participate in the review of any new proposed estuary water diversions.

WHO:

Primary:

- CCRWQCB (permitting authority for water withdrawals and discharges)
- CCRWQCB, MBNEP, and others (participate in any associated mitigation or enhancement project)

Support:

- Party or parties causing estuarine water withdrawals (funding)
- NOAA Fisheries (technical assistance)
- CDPR (technical assistance)
- CDFG (technical assistance)
- Cal Poly, other research institutions or organizations (technical and funding assistance w monitoring & research)
- ACOE (funding, technical assistance)

WHERE:

Morro Bay Estuary and Watershed

COST:

Task/Step	Cost/yr.	Duration of Project (once initiated)
Develop and implement an estuarine ‘baseline’ monitoring program	To Be Determined ¹	Ongoing
Participate in the review of current and future proposed estuary water withdrawals.	Staff time, will vary by project	1-3 years (will vary)
Implement other Action Plans to protect and restore subtidal bay habitat	See other Action Plans (CC-1, All SED action plans, HAB-8)	Ongoing

These tasks and costs are not intended to be borne solely by the MBNEP, but by many of the parties listed under “WHO” above.

BASIS FOR COST:

¹ Estimates of Baseline Monitoring costs vary widely, an expert working group should be assembled to direct and oversee this effort. Some estimates include:

- \$165,000/yr total, from CCRWQCB draft WDR Order of December 3rd 2004 and Duke proposed Habitat Enhancement Plan Appendix B. (Does not include fish or invertebrate assemblages, or sediment flux monitoring)



- \$250,000/yr total from CEC Final Staff Assessment (includes project monitoring in addition to baseline monitoring)
- \$ 90,000/yr for fish assemblage and habitat utilization monitoring (2002 proposal by Tenaera to MBNEP)
- Sediment deposition monitoring \$40,000/yr start up, then ~ \$10,000/yr ongoing (ongoing MBNEP study)

- Staff time for reviewing and participating in any future permitting process will vary by project.
- See Cost Basis for Action Plans CC-1, SED 1-8, and HAB-8

POTENTIAL FUNDING SOURCES:

- MBERF
- Party or parties causing estuarine water withdrawals
- EPA and NOAA Habitat Restoration Grants
- ACOE cost share for restoration studies and implementation
- Cal Poly (monitoring and research)
- See Funding Sources for Action Plans CC-1, SED 1-8, and HAB-8

EVALUATION:

- Ongoing monitoring of eelgrass habitat
- Implementation of additional monitoring
- Area and health of intertidal and subtidal estuarine habitats
- Long term health of the estuarine food web and of species likely to be entrained in water withdrawals

RELATED ACTIONS:

- All SED Actions
- CC-1 (Land acquisition)
- HAB-1 (Overlay Maps)
- HAB-3 (Mapping)
- HAB-5 (Restore Habitat)

**CCMP AMENDMENT PLACEHOLDER #1
THE EFFECTS OF THE MORRO BAY POWER PLANT COOLING WATER
WITHDRAWALS ON THE ESTUARY**

Issue:

The CCMP identifies the ecological effects of the Morro Bay Power Plant on the estuary as a research need, and suggests that this research will be conducted by the regulatory agencies as part of the proposed plant modernization process (CCMP Vol 1. Section 2.4.3). That data is now available as the 316(b) report, the California Energy Commission (CEC) Final Staff Assessment, and the CEC Revised Proposed Members Presiding Decision. The loss of larval organisms due to entrainment in the proposed cooling water withdrawals was studied in the 316(b) report, and has been described by various agencies as follows:

- CCRWQCB staff : “...an important adverse impact on the Morro Bay estuary.”
- CEC staff “...significant impacts to marine and estuarine biological resources.”
- CEC Presiding Committee: “...potentially an adverse and important impact...”
- NOAA Fisheries: “...may result in adverse impacts to Essential Fish Habitat...”
- CA DFG: “...the proposed modified or existing plant will continue to cause significant, avoidable impacts in the estuarine, terrestrial, and freshwater ecosystems.”
- CA Coastal Commission: “...the proposed project...would cause significant adverse impacts to the marine biological resources of Morro Bay.”

This information was not available when the CCMP was written, and the MBNEP is in the process of considering if the CCMP should be amended to include it, and if so, what the amendment will be.

Sources of Information to be Considered:

Procedural Information:

- Comprehensive Conservation and Management Plan for Morro Bay (Jan. 2001)
- Approved process for amending the CCMP (CCMP Amendment approved Feb 2004)
- *Primary Information Sources:*
- MBPP Modernization Project 316(b) Resource Assessment (July 2001)**
- CCRWQCB draft permit and staff report (Feb 2004)
- CEC Final Staff Assessment
- California Energy Commission Revised Presiding Member’s Proposed Decision (Nov. 2003)
- EPA’s 316(b) Phase II Final Rule (Feb 16 2004)
- 2nd Circuit Court Decision in Riverkeeper vs. EPA (Feb 3 2004)
- Comments from NOAA Fisheries, CA DFG, and the CA Coastal Commission to the CEC and/or the CCRWQCB.

These documents are all available from the MBNEP on request.

** The 316(b) report contains the actual studies and data used to assess entrainment and impingement effects.

Proposed Timeline:

