twb Environmental Research and Consulting

Case Study:
Fort Bragg Blue Economy Intake and Discharge Feasibility Study

CLIENT: The City of Fort Bragg, CA

FACILITY: Blue Economy Innovation Center and Noyo Marine Science Center

BACKGROUND: The City is undertaking an economic revitalization which will focus on the "Blue Economy". Developing a new vibrant economy based on the ocean will improve livelihoods and wages while concurrently nurturing a healthy marine ecosystem. The City has engaged a team comprised of TWB and ASA Analysis and Communications, Inc (ASA) to evaluate solutions to withdraw ocean water (intake) and return treated wastewater back to the ocean (discharge) for the following uses:

- The proposed Blue Economy Innovation Center for small, land-based aquaculture companies and blue tech businesses.
- The proposed Noyo Marine Science Center on the Noyo Headlands facility (aquariums, research, etc.).

CHALLENGE: For the defined uses, an intake flow rate of approximately 1 million gallons per day (MGD) would be required and some (yet to be defined) flow rate of effluent would have to be discharged. There are multiple configurations that could be feasible for intake and discharge-related infrastructure for the above-mentioned facilities. Each option comes with its own operation and maintenance challenges as well as permitting compliance hurdles. Additional challenges include ensuring appropriate water quality for land-based aquaculture facilities, meeting various regulatory requirements, availability of adequate quantities of ocean water, and creating minimum impact to surrounding resources such as freshwater aquifers.

APPROACH: TWB was focused on the ultimate permittability of the various intake and discharge options being considered. ASA was focused on the design criteria, project constraints, preliminary design, and budgetary cost. Together, the ASA/TWB team conducted a screening evaluation of various intake design concepts and discharge approaches. The evaluation considered a variety of different configurations/technologies and examined how various environmental factors may influence the feasibility of each option. Regulatory agencies were consulted to begin the engagement process, understand the potential permitting requirements, and to aid in developing a permitting strategy.

SOLUTION: A technical report was assembled summarizing the intake and discharge options (surface and subsurface intakes), conceptual designs, and budgetary cost estimates. Recommendations were provided for the preferred options from an overall cost, design, construction, operation, and permitting perspective. This preliminary analysis will help the City determine next steps for funding the design and construction of the needed infrastructure.

View west to Pacific Ocean where the new intake would be located. Foreground shows the existing outfall infrastructure where discharge would be tied in.

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