



REPORT TO CITY COUNCIL

To: Honorable Mayor and Members of the City Council

From: Jason Simpson, City Manager

Prepared by: Adam Gufarotti, Community Support Manager

Date: June 25, 2024

Subject: Agreements for Lake Water Quality Plan Projects with Moleaer, Inc., Ballard Marine Construction, and Poseidon LLC.

Recommendation

1. Approve and authorize the City Manager to execute an Equipment Purchase & Service Agreement with Moleaer, Inc., in an amount not to exceed \$1,595,847 in such final form as approved by the City Attorney and authorize the City Manager to execute change orders not to exceed a 10% contingency amount of \$160,000 for construction uncertainties and adjustments. Waive the formal bidding process per Municipal Code Section 3.08.070(G) for the purchase from Moleaer since it is a non-replicable, custom water treatment system;
2. Approve and authorize the City Manager to execute a Contractor Services Agreement with Ballard, Marine Construction in an amount not to exceed \$1,286,240 for installation of barges, mooring, anchoring, and electrical connections in such final form as approved by the City Attorney and authorize the City Manager to execute change orders not to exceed a 10% contingency amount of \$128,624 for construction uncertainties and adjustments. Waive the formal bidding process per Municipal Code Section 3.08.070(G) for the purchase from Ballard since it is a non-replicable, custom installation;
3. Authorize the City Manager to purchase custom barge systems from Poseidon LLC. in an amount not to exceed \$425,507 and to execute change orders not to exceed a 10% contingency amount of \$42,550 for construction uncertainties and adjustments; and
4. Find that the proposed Lake Water Quality Plan Projects are exempt from the California Environmental Quality Act (CEQA) pursuant to CEQA Guidelines Section 15301 (Existing Facilities).

Background

As Southern California's largest freshwater lake, Lake Elsinore is a vital resource for both wildlife and recreation. Located at the bottom of the San Jacinto Watershed, the lake has a history of algae blooms and frequent water quality challenges. The San Jacinto River Watershed, upstream of Lake Elsinore, covers 780 square miles in the western half of Riverside County. It begins in the San Jacinto Mountains and runs west through Canyon Lake, ending in Lake Elsinore. The natural water flow through the San Jacinto Watershed carries nutrient-rich sediment into our lake each year. The sediment carries high levels of nitrogen and phosphorus that contribute to water quality issues and threaten aquatic life in Lake Elsinore.

The City along with its partners have implemented several water quality projects over the last twenty years. In 2008, the Lake Elsinore & San Jacinto Watershed Authority (LESJWA) installed the Lake Elsinore Aeration and Mixing System (LEAMS) project that aerates and mixes lake water to improve the oxygen levels. We have studied the fish population and worked to remove harmful fish like carp from the ecosystem. In the fall of 2022, the City conducted a pilot study to explore long-term solutions to improving the water quality of Lake Elsinore.

On August 22, 2023, the City Council approved several agreements to kick off the Lake Elsinore Water Quality Plan. The Lake Water Quality Plan is not one large project but a road map approach with several strategies to improve the Lake. This road map includes immediate and long-term water treatment projects that will work together to improve the Lake. The Lake Water Quality Plan projects include Nannobubble Treatment with an oxygen concentrator system to produce oxygen and ozone injected into the nanobubbles, Algaecide and Phosphorus Treatments.

On February 6, 2024, the city implemented the first treatment plans with a cutting-edge nanobubble system designed to infuse oxygen into the lake, effectively preventing the release of phosphorus from its sediment layer. Early observations indicate promising outcomes, evident through visible transformations in the lake's appearance and notable improvements in both dissolved oxygen levels and Oxidative Reduction Potential (ORP).

Discussion

In 2023, the City secured a California Proposition 1 Round 2 grant amounting to \$1.5 million, requiring an equal matching contribution from the City. The grant application, submitted in 2022, proposed using an Algal Harvester from AECOM to physically remove algae from the lake. The project involves deploying the algae harvester over two-years, treating approximately one million gallons of water daily. The project site spans roughly 12,500 square feet, with AECOM planning to treat an area of 5.5 acres.

The budget for the project includes \$1,760,000 for leasing the equipment for two years, \$963,377 for operations and biomass disposal through CR&R, \$75,000 for equipment breakdown and removal by AECOM, and \$200,833 for laboratory analysis and reports.

City staff conducted a thorough analysis of the project and has raised several concerns, including high operational costs, the limited treatment area, and challenges related to future scalability to cover the entire lake. In comparison, our existing nanobubble pilot project addresses a 200-acre area using equipment that we now own, making it a more scalable and cost-effective solution.

To fully leverage the potential of the state funding, City staff have revised the grant application to enhance the existing nanobubble project by incorporating two additional barges. These new barges will be identical in size and appearance to the current barge but will feature significant improvements in their operational capacities. Specifically, the new barges will have double the pumping capacity and oxygen generation capability compared to the existing one. Although the new barges will not initially include ozone generation capabilities, this feature can be integrated at a later stage if needed.

This strategic enhancement aims to significantly increase the efficiency and effectiveness of the nanobubble project, ensuring a more comprehensive approach to lake treatment and algae removal. By doubling the pumping and oxygen generation capacity, the project can address larger areas more quickly and maintain better water quality over time. The decision to allow for future ozone integration provides flexibility for further improvements based on the project's evolving needs and outcomes.

In addition to expanding nanobubble generation under this state grant, we will implement a comprehensive phosphorus mitigation project to further enhance water quality. This project entails installing specialized boom socks filled with phosphorus-absorbing pellets. These boom socks will be strategically placed so that as water flows over them, the excess phosphorus is effectively removed. Phosphorus, a key contributor to algae growth, will be targeted directly, helping to prevent algal blooms and improve overall lake health.

The installation of this phosphorus mitigation system will take place on the south side of Elm Grove Beach, specifically at the point where recycled water enters the lake. This location has been chosen due to its strategic importance in influencing the lake's water quality.

We are currently in the process of bidding this project out and will return to City Council at a later time to award this project.

This dual approach—expanding the nanobubble technology and implementing the phosphorus mitigation project—demonstrates our commitment to using innovative and effective methods to improve and maintain the lake's water quality. By addressing both oxygenation and nutrient levels, we aim to create a more balanced and healthy aquatic ecosystem.

Environmental Determination

The proposed Lake Water Quality Plan projects (Project) is exempt from the California Environmental Quality Act (CEQA) pursuant to Section 15301 (Class 1: Existing Facilities). Class 1 consists of the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination. (h) Maintenance of existing landscaping, native growth, and water supply reservoirs (excluding the use of pesticides, as defined in Section 12753, Division 7, Chapter 2, Food and Agricultural Code); and (i) Maintenance of fish screens, fish ladders, wildlife habitat areas, artificial wildlife waterway devices, streamflows, springs and waterholes, and stream channels (clearing of debris) to protect fish and wildlife resources. Lake Elsinore has a history of algae blooms and frequent water quality challenges. The natural water flow through the San Jacinto Watershed carries nutrient-rich sediment which carries high levels of nitrogen and phosphorus that contribute to water quality issues and threaten aquatic life in Lake Elsinore. The proposed Project involves infusing oxygen to improve oxygen levels and installing specialized boom socks filled with phosphorus-absorbing pellets which will prevent the release of phosphorus from its sediment layer. The Project involves maintenance work only to improve the water quality of Lake Elsinore and does not involve any expansion of use.

Fiscal Impact

Funding costs are included in the Fiscal Year 2024/2025 Measure Z Budget.

Attachments

Attachment 1- Agreement with Moleaer, Inc.
Attachment 2- Agreement with Ballard Marine Construction
Attachment 3- Quote with Poseidon LLC