



AGENDA REPORT


TO: Jestin D. Johnson
City Administrator

FROM: Josh Rowan
Interim Director, Oakland
Public Works

SUBJECT: Accept Limited Exemption to
Integrated Pest Management Policy to
Reduce Harmful Algae in Lake Merritt

DATE: June 9, 2025

City Administrator Approval


Jestin Johnson (Jul 3, 2025 08:44 PDT)

Date:

RECOMMENDATION

Staff Recommends That The City Council Adopt A Resolution 1) Authorizing City Staff To Apply For A National Pollutant Discharge Elimination System Permit (NPDES) From The State Water Board To Apply Algaecides In Lake Merritt To Control Harmful Algal Blooms, 2) Authorizing A Limited Exemption To The Integrated Pest Management Policy To Apply Algaecides In Lake Merritt According To NPDES Permit Conditions, And 3) To Make Appropriate California Environmental Quality Act (CEQA) Findings

EXECUTIVE SUMMARY

Approval of the proposed resolution will allow staff to finalize submission of a permit application to the [California State Water Resources Control Board](#) (State Water Board) for a Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications (a copy of the permit application is provided in **Attachment A**). If granted, the permit will allow the City to selectively treat harmful algal blooms in Lake Merritt using a hydrogen-peroxide (H₂O₂)-based algaecide. The permit would require the City to apply the H₂O₂-based algaecide in a manner that minimizes potential harm to Lake Merritt aquatic life and water quality.

Approval of the proposed resolution will authorize a limited exemption to the Integrated Pest Management Policy to allow the use of algaecides in Lake Merritt in special circumstances. Algaecides would only be used to control specific types of harmful algae that have a high potential to cause large fish kills like the one that happened in 2022 in the Lake. In August 2022, excessive algae in some places depleted oxygen levels in the water too low for fish to breathe. The drop in oxygen levels caused massive fish kills along the California coast and in Lake Merritt, where tens of thousands of dead fish washed up on the shoreline.

City Council
July 15, 2025

BACKGROUND / LEGISLATIVE HISTORY

In 1997 City Council approved the implementation of a comprehensive Integrated Pest Management (IPM) policy and passed Resolution No. 73968 C.M.S. that prohibited the use of pesticides on City property except as specifically exempted.

In 2001, the City Council approved Resolution No. 76254 C.M.S. authorizing a limited exemption to the IPM policy to use herbicides on landscaped street medians. In 2005, Resolution No. 79133 C.M.S. was authorized to conduct CEQA review of limited pesticides for fire management.

In August 2022, a red tide harmful algal bloom (HAB), caused by the *Heterosigma akashiwo* species, covered Lake Merritt, the Oakland Estuary, San Francisco Bay, and areas along California's coast. The conditions in these waters, including temperature and nutrient-availability, caused the algae to first proliferate and then die when the food source was consumed. In the Lake, the algae decomposition process depleted dissolved oxygen (DO) levels and suffocated tens of thousands of fish.

In response to this event, San Francisco Bay Regional Water Quality Control Board (Regional Water Board) initiated a new regulatory process known as a Total Maximum Daily Load Alternative that requires the City to develop and implement strategies to address controllable short- and long-term causes of low dissolved oxygen (this topic is described in the [May 9, 2024 Executive Officer's Report to the Regional Water Board](#)). Based on this regulatory mandate, Oakland Public Works (OPW) began studying Lake Merritt DO levels and developing and implementing solutions designed to maintain healthy DO levels for the Lake's aquatic life. This work includes the [Lake Merritt Water Quality Management Pilot Project](#), which was approved by the Oakland City Council in the [Fiscal Year 2023-2025 Capital Improvement Program](#). Through this project, OPW has monitored DO and water temperature levels and installed an oxygenation system and an aeration device in the Lake to provide oxygen-rich refuges that could protect some aquatic life during a harmful algal bloom. A final project goal is to obtain permission from the Oakland City Council and from the State Water Board to apply a targeted hydrogen-peroxide (H₂O₂)-based algaecide to the Lake in the event of a future harmful algal bloom with a high potential to kill fish and other wildlife in the Lake.

H₂O₂-based algaecides are used by other municipalities and agencies managing harmful algae in tidally influenced estuaries. The Cities of Alameda, San Mateo, Redwood City, Foster City, and Tiburon, and the East Bay Regional Park District and East Bay Municipal Utility District have obtained NPDES permits to use this type of algaecide (see **Attachment B** - FAQ NPDES permit coverage to apply algaecides). H₂O₂ is a fast-acting oxidizing agent that breaks down into water (H₂O) and oxygen (O₂) within 3 hours of an application. This algaecide selectively kills more fragile blue-green algae (cyanobacteria) species, typically leaving beneficial green algae unharmed. Research has shown it is also effective against red tide species¹. The H₂O₂-based algaecide does not kill aquatic plants, fish, or other animals when applied according to the legal

¹ Mitigation of Marine Dinoflagellates Using Hydrogen Peroxide (H₂O₂) Increases Toxicity towards Epithelial Gill Cells - <https://www.mdpi.com/2076/11/1/83>

Treatment of the red tide dinoflagellate *Karenia brevis* and brevetoxins using USEPA-registered algaecides - <https://pubmed.ncbi.nlm.nih.gov/36470610/>

Applicability of Hydrogen Peroxide in Brown Tide Control – Culture and Microcosm Studies - <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3474721/>

instructions on the product's label. Toxicology testing has shown that impacts to fingerling rainbow trout is only observed at 3 times the maximum label dosage, which would not be feasible to apply in a real-world setting.

If a fast-proliferating red tide harmful algal bloom is identified in Lake Merritt, and other conditions are present, such as hot weather and high water temperatures, OPW would direct a qualified City contractor to apply the H₂O₂-based algaecide once a positive lab result was obtained confirming the algae species. The algaecide would be applied from a boat using a handheld pump sprayer or from a boat with chemical application equipment installed. A mixture of H₂O₂-based algaecide would be injected into the lake water or sprayed out over the surface with a boom or boomless nozzles. Signage would be posted at locations around the Lake near the application location to notify the public of the application. An application report would be developed to document the amount of algaecide applied, the qualifications and certifications of the applicator, and the impact of the application. The report would also include any NPDES permit reporting requirements.

ANALYSIS AND POLICY ALTERNATIVES

Authorizing this limited exemption to the IPM Policy to reduce algae in Lake Merritt will support Oakland's citywide priority of creating vibrant, sustainable infrastructure by helping prevent Lake Merritt fish die-offs, which will allow the City to maintain Lake Merritt recreational opportunities and positive Lake Merritt use experiences for all Oakland residents and visitors. This action is also consistent with the goals of the City's Integrated Pest Management Policy.

OPW staff have identified the need for the use of hydrogen-peroxide based algaecides in Lake Merritt to control specific types of harmful algal blooms to protect aquatic life in Lake Merritt. The proposed algaecide has minimal environmental impact when applied per NPDES permit and label instructions. No other methods currently exist that could stop the growth of the algae in the event of a red tide, a harmful algal bloom.

OPW has considered many alternatives to control algae, including but not limited to mechanical removal, artificial circulation, and nutrient sequestration. OPW utilizes a mechanical harvester to remove filamentous algae from the Lake annually. However, this method is not effective for controlling red tide algae, such as *Heterosigma akashiwo*, which caused the fish kill in 2022.

Through the Lake Merritt Clean Lake Initiative Project, approved by Oakland City Council Resolution [90567 C.M.S.](#), the City will develop and implement strategies to control excessive algae growth and low dissolved oxygen concentrations in Lake Merritt to improve dissolved oxygen levels, including installation of additional surface aeration devices (artificial circulation). The funding for this Project is Congressionally Directed Spending through a State and Tribal Assistance Grant. Mayor Barbara Lee, while serving as United States Congresswoman, selected Oakland to receive nine hundred fifty-nine thousand seven hundred fifty-seven dollars (\$959,757.00) for the Project, and Congress appropriated the funding in 2024.

FISCAL IMPACT

An annual cost of \$11,380 is estimated. These funds would only be spent if a harmful algal bloom required treatment. The funds for these costs are available within Project 1006988, Organization 30245, Fund 2244.

Application Cost	Estimated Annual Cost	Available Funds Source
Application by contractor cost	\$6,000.00	Fund 2244, Organization 30245, Project 1006988
NPDES permit fee	\$3,630.00	Fund 2244, Organization 30245, Project 1006988
City staff costs	\$1,750.00	Fund 2990, Organization 30245, Project 1004385

To treat a qualifying harmful algal bloom (HAB) in Lake Merritt with a permitted H₂O₂-based algaecide, the City would initially utilize an existing contract under the Lake Merritt Water Quality Pilot Project, which expires December 31, 2027. A request for bids will be released in future years to establish a multi-year contract to ensure we have a contractor on-hand to complete the work. Measure Q funds will be used for this purpose in the future.

PUBLIC OUTREACH / INTEREST

Lake Merritt provides Oakland residents with a multitude of benefits, including a beautiful public space for recreation and relaxation, a connection to nature, and a sense of community. The Lake is a place for diverse activities like walking, jogging, boating, and picnicking. It is also a wildlife refuge and a venue for community events, it plays a role in Oakland's identity, and the Lake offers a unique urban experience to all Oakland residents. The Trust for Public Land (TPL), a nonprofit that analyzes inequities built into American cityscapes, scores cities annually on how equitably, across lines of race and income, they've distributed well-equipped and well-cared-for parks. In its most recent report, [*Parks and an equitable recovery*](#), TPL found that in most U.S. cities, park equity is markedly low. On average, neighborhoods that are majority nonwhite enjoy access to 44% less park acreage than majority-white neighborhoods. Low-income communities have access to 42% less park space than high-income neighborhoods. Places with fewer parks tend to be closer to industry, freeways, vehicle exhaust, and other sources of toxins. In these areas there are fewer backyards and balconies and residents are subjected to higher temperatures, longer stretches of concrete, and less tree canopy cover. The denial of access to quality parklands is not merely an emblem of inequity, but an engine of it as disparities in park investment have been found to deepen race and class divides. According to the *Parks and equitable recovery report*, Oakland suffers from more park inequity than do most cities of its size. According to TPL², Oaklanders in low-income neighborhoods have access to 78% less park space than those in high-income neighborhoods - a disparity 36 percentage points higher than the national average - and neighborhoods of color enjoy access to 69% less parkland than white neighborhoods: 25 percentage points higher than average. The City of

² See the TPL 2025 ParkScore Index report for Oakland, California: [Parks-and-an-equitable-recovery-The-Trust-for-Public-Land.pdf](#).

Oakland aims to ensure everyone has access to Lake Merritt and its facilities regardless of background, language or income. This project supports racial equity by ensuring water quality improvements are implemented by the city in collaboration with community partners actively working to improve and maintain the Lake's water quality, preserve wildlife, and advance and maintain recreational opportunities for all community members.

The City's Watershed and Stormwater Management Division will implement an equitable program to inform the community members, residents, lake users, and other stakeholders about the use of chemicals for harmful algal bloom control via the City's website and community meetings. Public outreach will be conducted in accordance with the City's language access policies. The City's Department of Race and Equity will be consulted on the public outreach approach.

COORDINATION

This report and resolution have been reviewed by the Office of the City Attorney and the Budget Bureau.

SUSTAINABLE OPPORTUNITIES

Economic: The approval of this resolution will help prevent Lake Merritt fish die-offs, which will improve conditions for businesses located around Lake Merritt and their patrons.

Environmental: By approving this resolution, the City Council ensures that the City of Oakland continues to protect Lake Merritt aquatic life and to comply with water quality regulations imposed by the Regional Water Board.

Race and Equity: The approval of this resolution has no direct, immediate opportunities to advance racial equity in Oakland. It will help prevent Lake Merritt fish die-offs, which will allow the City to maintain Lake Merritt recreational opportunities and positive Lake Merritt use experiences for all Oakland residents and visitors. Equitable outreach will be conducted prior to algaecide application.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

The application of algaecides is exempt under CEQA Section 15304 as activities "consists of minor public or private alterations in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees except for forestry and agricultural purposes". This project involves "minor alterations in land, water, and vegetation on existing officially designated wildlife management areas or fish production facilities which result in improvement of habitat for fish and wildlife resources or greater fish production" (15340(d)).

Additionally, the proposed limited exemption to apply algaecides in Lake Merritt is exempt from CEQA Environmental Impact Report requirements because the [California Department of Pesticide Regulation \(CDPR\)](#)'s registration program for pesticides is deemed a "functional

equivalent" to the [California Environmental Quality Act \(CEQA\)](#) process. This means that the CDPR's registration program is recognized as meeting the basic goals of CEQA, effectively exempting it from the CEQA procedural requirements.

ACTION REQUESTED OF THE CITY COUNCIL

Staff Recommends That The City Council Adopt A Resolution 1) Authorizing City Staff To Apply For A National Pollutant Discharge Elimination System Permit (NPDES) From The State Water Board To Apply Algaecides In Lake Merritt To Control Harmful Algal Blooms, 2) Authorizing A Limited Exemption To The Integrated Pest Management Policy To Apply Algaecides In Lake Merritt According To NPDES Permit Conditions, And 3) To Make Appropriate California Environmental Quality Act (CEQA) Findings

For questions regarding this report, please contact Jennifer Stern, Watershed Program Specialist, at 510-238-6191.

Respectfully submitted,



Josh Rowan (Jul 2, 2025 15:37 PDT)

JOSH ROWAN

Interim Director, Oakland Public Works

Reviewed by:

Liam Garland, Acting Assistant Director
Bureau of Design and Construction

Terri Fashing, Division and DD Bond Manager,
Watershed and Stormwater Management
Division

Prepared by:
Jennifer Stern, Watershed Program Specialist
Watershed and Stormwater Management
Division

Attachments (2):

A: NPDES permit application

B: FAQ NPDES permit coverage to apply algaecides

City Council
July 15, 2025