



**BOARD OF DIRECTORS
EAST BAY MUNICIPAL UTILITY DISTRICT**

375 – 11th Street, Oakland, CA 94607

Office of the Secretary: (510) 287-0440

AGENDA

**Planning Committee
Tuesday, September 8, 2015
9:15 a.m.**

Training Resource Center

(Committee Members: Directors McIntosh {Chair}, Linney and Young)

ROLL CALL:

PUBLIC COMMENT: The Board of Directors is limited by State law to providing a brief response, asking questions for clarification, or referring a matter to staff when responding to items that are not listed on the agenda.

DETERMINATION AND DISCUSSION:

1. Update on San Francisco Bay Nutrient Efforts (Horenstein)
2. Main Wastewater Treatment Plant Odor Mitigation Update (Horenstein)

ADJOURNMENT:

Disability Notice

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Document Availability

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EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: September 3, 2015

MEMO TO: Board of Directors

THROUGH: Alexander R. Coate, General Manager *ARC*

FROM: Bennett K. Horenstein, Director of Wastewater *BH*

SUBJECT: Update on San Francisco Bay Nutrient Efforts

SUMMARY

The potential impact of nutrients in the San Francisco Bay continues to be a key area of interest for scientists, regulators, and wastewater community in the Bay Area. Municipal wastewater treatment plants are the significant source of nutrient inputs, unlike many past water quality concerns (e.g., mercury, Dioxin, and PCBs) where wastewater only constitutes a de minimis amount. Over the past year, stakeholders have furthered their collaborative efforts to better understand and manage the potential impacts of nutrient enrichment in the San Francisco Bay. Staff will provide an update on current San Francisco Bay nutrient efforts, District perspective, and challenges moving forward at the September 8, 2015 Planning Committee meeting.

DISCUSSION

Nutrient Concern and Regional Effort

Excessive nutrients loadings (nitrogen and phosphorus) to watersheds impact water quality by stimulating the growth of algae which can then deplete dissolved oxygen, lead to harmful algal blooms, produce toxins, and degrade habitat quality. The San Francisco Bay has long been recognized as a nutrient-enriched estuary. Despite receiving high nutrient loads, the Bay resists the eutrophication process found in other estuaries due to a number of factors, including: strong tidal mixing, high turbidity limiting light penetration, and large population of algae-filtering clams. Although the Bay does not seem to be currently impaired by nutrients, data in recent years suggest that the historic resilience of the Bay to nutrient enrichment is weakening. Scientists have observed indications of change in the Bay over the last twenty years such as: 3-fold increase in summer-fall phytoplankton biomass in the South Bay since 1999; commonly detected algal species capable of forming harmful blooms and algal toxins measured Bay-wide; unprecedented red tide event in 2004; and low dissolved oxygen in sloughs and creeks in the Lower South Bay. In addition to those in the Bay, harmful algal blooms have increased in frequency and severity along the California-Pacific coastline over the past two decades. All these factors combined have generated increasing concern from regulators and stakeholders, prompting research to determine whether nutrient reduction is necessary.

To address the growing nutrient concern, a Nutrient Management Strategy was developed by the San Francisco Bay Regional Water Quality Control Board (RWQCB) which lays out an overall approach for building science-supported nutrient management decisions. As municipal wastewater treatment plants account for about 63% of the total nitrogen load to the Bay, a RWQCB five-year watershed permit was implemented in 2014 requiring treatment plants to track and evaluate plant performance, investigate treatment optimization opportunities, and conduct upgrade studies for nutrient removal. Current discussions with the RWQCB indicate that the next permit may include requirements such as additional contributions to fund the science studies, no net increases in nutrient load, or a load reduction for wastewater treatment plants.

District Perspective

The District's Main Wastewater Treatment Plant (MWWTP) discharges a significant amount of nutrients to the Bay, accounting for about 20% of the total load from 42 wastewater treatment plants combined. The District's Resource Recovery Program has resulted in a higher nutrient discharge compared to a typical wastewater treatment plant. If full plant upgrades are required to reduce nutrient output from the MWWTP, the order-of-magnitude capital cost could exceed \$300 million. For comparison, the wastewater capital improvement program averages \$35 million per year.

The MWWTP discharge is located in the Central Bay, an area showing lower impact from nutrients in comparison to other embayments such as the Lower South Bay and Suisun Bay. This is likely due to strong tidal mixing and water replenishment from the Pacific Ocean which limits phytoplankton growth and biomass accumulation. The MWWTP discharge location and less immediate environmental impact to the Bay may allow the District extra time to develop nutrient solutions compared to other Bay Area agencies.

At the MWWTP, nutrient-rich sidestream flows account for more than 30% of nutrient load in the plant discharge. In 2014, the District won a U.S. EPA grant to lead a regional study to evaluate innovative sidestream treatment technologies. In addition to the grant work, District staff is developing a multi-faceted nutrient work plan that includes: evaluation of low-cost treatment plant optimization opportunities, identification of treatment plant upgrade options, and assessment of potential application of emerging nutrient removal technologies that are more sustainable than the conventional methods. In addition, staff is looking at the possibility of pursuing projects with multiple benefits such as water recycling.

Challenge

Nutrient removal will be one of the biggest financial and management challenges Bay Area wastewater agencies will face with substantial costs of \$2–10 billion. It is critical that future nutrient discharge limits be based on sound science to ensure that billions of dollars in capital spending will improve water quality in the Bay.

NEXT STEPS

Staff will continue engaging with key stakeholders (regulators, environmental non-governmental organizations, and other wastewater agencies) on regional efforts to study the impacts of nutrient inputs on water quality in the San Francisco Bay, will evaluate options for treatment optimizations and upgrades at the MWWTP, and will pursue feasibility of multiple benefits projects. Staff will keep the Board updated on both the regional and District specific nutrient efforts.

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EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: September 3, 2015

MEMO TO: Board of Directors

THROUGH: Alexander R. Coate, General Manager *ARC*

FROM: Bennett Horenstein, Director of Wastewater *BH*

SUBJECT: Main Wastewater Treatment Plant Odor Mitigation Update

SUMMARY

As part of ongoing odor control efforts at the District's Main Wastewater Treatment Plant (MWWTP), staff continues to address odors through improved monitoring and complaint investigations, implementation of capital improvements at key odor sources, and inclusion of effective odor controls in the design of future facilities. Staff will provide an update on near- and long-term odor mitigation activities at the Planning Committee meeting on September 8, 2015.

DISCUSSION

Background

In FY14 the District established a key performance indicator (KPI) to reduce average odor complaints near the MWWTP by 10% each year (relative to a baseline). This KPI reflects the District's commitment to continuous improvement towards being a good neighbor to the local community. The District received an average of 25 odor complaints from FY12 to FY14 via its "Odor Hotline." Although the District received 36 odor complaints in FY15, follow-up investigations revealed that 13 of these complaints were due to other sources. The remaining 23 complaints were likely due to the MWWTP and reflect an 8% reduction in complaints relative to the baseline of 25 complaints.

In FY15, staff implemented a detailed procedure to investigate the likely source of odors following an odor complaint. Following receipt of a rash of odor complaints from the 32nd Street/Peralta Street area, staff conducted numerous site investigations in April 2015 and was able to identify a local source of odors that was not related to the MWWTP—periodic application of manure to a community gardens project. Staff shared this finding with local residents, as well as attendees at the West Oakland Neighbors meeting on June 18, 2015.

Odor Mitigation Activities

Over the last 15 years, the District has spent approximately \$16 million in major capital improvements to reduce odors at the MWWTP. The District anticipates spending \$19 million over the next five years, which reflects a near quadrupling of capital investments to further address odors. Key projects include upgrading the existing odor control systems at the influent

pump station, solids dewatering facility, and high-strength waste receiving station, and covering the primary sedimentation tanks and installing a new odor control system.

In addition, staff is currently evaluating an innovative new technology called the OdoWatch® Odor Monitoring System, which utilizes electronic sensors (or “e-Noses”) to provide continuous monitoring data for a broad range of odor-causing compounds and predict the potential for off-site odors based on these field sensors along with atmospheric conditions. The District’s current real-time odor monitoring instrumentation is only able to detect hydrogen sulfide (i.e., rotten egg smell), which limits monitoring capabilities if other odor compounds are present. If successful, this new technology (which is not limited to hydrogen sulfide detection) would significantly improve the District’s ability to take early action before the generation of off-site odors in the local community. In July 2015, three e-Nose sensors were installed and calibrated at the influent pump station, primary sedimentation tanks, and secondary clarifiers. Staff intends to complete the technology evaluation by December 2015 with a recommendation as to whether to proceed with the purchase of additional e-Noses and the full system, including integration with weather station data and off-site odor dispersion modeling.

Food Waste Program Expansion

The District is currently planning to expand its food waste program, which will require a new food waste preprocessing facility and a new dedicated solids dewatering facility. These facilities will be designed to minimize odor impacts by requiring fully-enclosed buildings with odor control systems to treat foul air and operational controls (e.g., limiting on-site material storage, housekeeping procedures). Staff will monitor odors around these facilities during operation and will work to address any residual odors through operational improvements or additional capital upgrades.

Public Outreach

Staff has continued to update the local community on the District’s continued progress toward addressing odors at the MWWTP via a meeting with the West Oakland Liaison Group on February 25, 2015 and meetings with the West Oakland Neighbors on September 24, 2014, October 16, 2014, and June 18, 2015. The local community remains engaged with odor issues and is encouraged by the District’s commitment to addressing odors via significant capital investments and improved odor monitoring capabilities.

NEXT STEPS

Staff will continue design and construction of key capital improvement projects to address odors, while evaluating the OdoWatch® odor monitoring technology. Staff will also continue to engage the local community by providing updates on key activities and seeking feedback on the District’s overall progress.

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