EBMUD

BOARD OF DIRECTORS
EAST BAY MUNICIPAL UTILITY DISTRICT

375 - 11th Street, Oakland, CA 94607 Office of the Secretary: (510) 287-0440

Notice of Time Change

PLANNING COMMITTEE MEETING

8:30 a.m.
Tuesday, August 8, 2017

Notice is hereby given that on Tuesday, August 8, 2017 the Planning Committee Meeting of the Board of Directors has been rescheduled from 9:15 a.m. to 8:30 a.m. The meeting will be held in the Training Resource Center of the Administration Building, 375 - 11th Street, Oakland, California.

Dated: August 3, 2017

Rischa S. Cole

Rischa S. Cole
Secretary of the District

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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, August 8, 2017
8:30 a.m.
Training Resource Center

(Committee Members: Directors Mellon {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.	Dam Safety Program Annual Report	(X. Irias)
2.	Reestablishing Native Landscape at the Estates Reservoir Site	(X. Irias)
3.	Main Wastewater Treatment Plant Odor Control Program Update	(White)
4.	Pollution Prevention Program Update	(White)
5.	Trihalomethanes Update	(Wallis)

ADJOURNMENT:

Disability Notice

If you require a disability-related modification or accommodation to participate in an EBMUD public meeting please call the Office of the Secretary (510) 287-0404. We will make reasonable arrangements to ensure accessibility. Some special equipment arrangements may require 48 hours advance notice.

Document Availability

Materials related to an item on this Agenda that have been submitted to the EBMUD Board of Directors within 72 hours prior to this meeting are available for public inspection in EBMUD's Office of the Secretary at 375 11th Street, Oakland, California, during normal business hours, and can be viewed on our website at www.ebmud.com.

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: August 3, 2017

MEMO TO: Board of Directors

THROUGH: Alexander R. Coate, General Manager

FROM: Xavier J. Irias, Director of Engineering and Construction

SUBJECT: Dam Safety Program Annual Report

SUMMARY

This report is provided in accordance with Policy 9.07 – Dam Safety Program, whereby the District's Chief Dam Safety Engineer (CDSE) provides an annual update to the General Manager, who informs the Board of dam safety issues, actions from the previous calendar year related to dam safety, projected dam safety activities for the upcoming year(s), and an assessment of the adequacy of the budget to cover the cost of safety needs. This report documents that the CDSE concludes that the District's dams are considered safe for continued operation. These items will be discussed at the Planning Committee on August 8, 2017.

DISCUSSION

The District manages 28 dams including Pardee and Camanche in the Sierra Nevada Mountains, five local raw water storage reservoirs and 21 smaller dams within the service area that store treated water. The dams range from 10 feet to 360 feet tall and were built from the late 1800s to the late 1960s.

To ensure the dams' safety, the District has an active, comprehensive dam safety program. Engineers monitor dams using instruments, perform monthly visual inspections and complete periodic dam safety reviews to prevent loss of life, personal injury and property damage from the failure of dams. The safety of each dam is reevaluated to incorporate advances in our understanding of geotechnical, structural and earthquake engineering or to investigate issue identified during routine inspections. Based on the findings of dam safety studies, over the past several decades the District has proactively made numerous capital improvements to its dams to ensure their ongoing safety. The dam safety program is subject to oversight by the California Division of Safety of Dams (DSOD) and Federal Energy Regulatory Commission (FERC).

In 2014, in response to new FERC requirements, the District documented and expanded its dam safety practices and developed Policy 9.07. While the legal mandate applied only to the two

FERC-regulated dams, Pardee and Camanche, the District is applying the relevant portions of the mandate to all of our dams, in the interest of maximizing public safety.

The new requirements are documented in a Dam Safety Program Guide that was approved by FERC. The Guide includes:

- Designation of responsibilities for dam safety, including designation of a Chief Dam Safety Engineer (CDSE). The District's CDSE is the Director of Engineering and Construction, Xavier J. Irias.
- Outline of training needs consistent with various individual responsibilities.
- Protocols and requirements to communicate annually with the General Manager and Board of Directors on dam safety related topics.
- Establishment of a Dam Safety Program Steering Committee that meets periodically to ensure that dam safety needs, including capital, maintenance and operational aspects, are on track.

Compliance with the District's Dam Safety Program Guide supports the District's strategic plan goals of Long-Term Water Supply and Long-Term Infrastructure Investment.

Recent and Upcoming Activities

Dam Safety Training Program

Staff is developing training modules on relevant dam safety topics. The training program's objectives are to formalize and standardize protocols and processes on dam safety activities; reinforce dam safety, regulatory compliance, policy awareness and culture at all District staff levels; maintain organizational knowledge and ensure successful succession planning; and meet regulatory and District policy requirements. Four out of 21 identified modules are in development with anticipated phased rollout of basic courses beginning in 2018. Staff will receive training that is specific to their classification and role in the Dam Safety Program. Final training lists are being developed with department heads and managers.

Emergency Plans, Drills and Exercises

FERC's dam safety program provides general requirements for Emergency Action Plans (EAPs) at hydropower projects under the FERC's jurisdiction. To encourage comprehensive and consistent emergency action planning to protect lives and reduce property damage, FERC requires that an annual drill be conducted. The drill includes notifying emergency responders with a mock dam safety emergency scenario and conducting an annual seminar with emergency management authorities to train on response readiness. Because Pardee and Camanche Dams have hydroelectric facilities as part of the Lower Mokelumne River Project, FERC Project No. 2916, are subject to FERC's jurisdiction. The District conducted a notification drill on September 27, 2016 to verify contact information, test the function of communication programs,

test familiarity of District staff on initial response, and train on message transmission. The District hosted a seminar on December 7, 2016. Attendees included 34 staff members from 13 emergency management agencies, such as the county and state Office of Emergency Services, California Highway Patrol, local fire departments and sheriff's office, and District staff. A second seminar was held on December 12, 2016, for District staff that were unable to attend the upcountry session. In both events, participants recommended improvements to notification processes, protocols, and to the EAP content.

District staff recently began the bi-annual update of the Dam Emergency Response Plan Annex of the District's Emergency Operations Plan. Communication protocols and notifications will be updated to parallel those in the Pardee and Camanche EAPs.

Dam Inspection and Surveillance

Staff inspects each dam monthly; the inspection includes the dam itself as well as its instrumentation. In addition, annual inspections are conducted with representatives from DSOD for jurisdictional dams, and with FERC for the upcountry dams.

This year, DSOD inspections of Camanche and Pardee Dams took place on May 31, 2017. No maintenance items were noted by the DSOD inspector. DSOD inspections of Briones, San Pablo and Upper San Leandro (USL) dams were completed in July 2017. In addition, fully-cycled drain valve exercises in the presence of the DSOD inspector for Briones, San Pablo, Lafayette and USL Reservoirs took place in July 2017. The open-cut dams were last inspected by DSOD in September 2016. Staff is also updating its internal web-based dam surveillance data program to include a graphical interface. This will provide additional tools to allow staff to perform geospatial analysis and view instrumentation data in a map-based system.

Based on the results of the inspections and with concurrence of the regulatory agencies, all District dams are deemed safe for continued operations.

Dam Safety Studies and Improvements

The following are key highlights from the District's current and upcoming dam safety capital projects and studies:

Chabot Dam Seismic Upgrade – The project is in its final phases of construction and is expected to be completed in September 2017 with final closeout in October. The District has constructed a stabilizing buttress with cement deep soil mixing columns to strengthen potentially liquefiable soils within the downstream toe of the earthen dam. In addition, a seepage collection trench was installed and the reservoir outlet works are being retrofitted to ensure their safe operation after an earthquake.

Camanche and Pardee Survey Improvements – The District in June 2017 finished installing modern survey-grade GPS instruments at Pardee Dam and Camanche Dam and dikes. The system will allow precise monitoring of the dams and dikes to detect any ground movement.

USL Reservoir Tower Retrofit – The seismic retrofit of USL Reservoir Tower is underway. The contractor is installing tower braces, abutted to the shoreline, to provide seismic stability. In addition, the tower gates and controls will be replaced. Construction is expected to be complete by late Fall 2017.

Dam Seismic Stability Studies – The District has completed updated seismic studies of most of its dams. The District is currently completing an evaluation of Maloney Reservoir.

Open Cut Reservoir Underdrain Instrumentation – The District has installed automated underdrain flow monitoring devices at its open cut reservoirs. Work is being completed at Maloney and Dunsmuir reservoirs, which are the last remaining sites.

Briones Tower Modifications – The District is currently designing a seismic retrofit of Briones Tower. Design is 50% complete. Construction is scheduled for FY18/19.

Dam Spillway Assessments – After the 2017 spillway damage at Oroville Dam, the District initiated a planning study of its terminal reservoir dam spillways at Briones, Chabot, San Pablo, and USL reservoirs. Subsequently, DSOD mandated that all dam owners perform a comprehensive evaluation of their spillways. The District's study will include detailed condition assessments and evaluation of the spillways and will include field investigations and tests, analyses, evaluations, document review, and a report of findings and recommendations for any repairs and retrofit alternatives.

Lafayette Tower Modifications – The District has been working for some time to address seismic concerns regarding the Lafayette tower, incorporating input from both DSOD and the City of Lafayette. Given that the tower performs a spillway function, and in light of more general recent concerns regarding dam spillway safety, DSOD recently sent a letter to the District directing that design begin in the near term and that the water level be lowered in the meantime. The District is working with DSOD to define scope and schedule for the project.

FERC Part 12D Safety Inspections and Evaluation Reports – Pursuant to the Part 12D of federal regulations, the District's FERC jurisdictional dams (Pardee and Camanche) must be inspected and evaluated by an independent consultant (IC) once every five years. The IC reviews structural and operational conditions of the dams, reports on safety conditions, and recommends corrective measures to maintain safe facilities. A focus area for the upcoming study will be spillway safety. The IC's reports are due to FERC by March 10, 2018. The District issued a Request for Proposals for these services, and selected Dr. Paul C. Rizzo, Ph.D., P.E., of Rizzo Associates, as the IC. On July 20, 2017, FERC issued a letter approving the selection. The Board will consider award of the contract at its August 8, 2017 Board meeting.

Compliance with the Dam Safety Program

FERC requires that the CDSE routinely assess the District's compliance with the requirements of the Dam Safety Program and concludes that the District's Dam Safety Program is being implemented in both the spirit of dam safety and in accordance with the written Dam Safety Program. To ensure that the program is continuing to improve, the District will contract with a qualified dam safety expert to conduct periodic independent audits on a schedule not to exceed five years. The next audit is due March 2021.

To the best of the CDSE's knowledge, along with the review of dam safety related reports and activities, the CDSE concludes that the District's dams are considered safe for continued operation.

FISCAL IMPACT

Funds from ongoing capital and operating budgets have sufficiently supported the efforts of the Dam Safety Program to date. The Dam Safety Program Steering Committee reviews budgets as part of its ongoing work and recommends adjustments as needed.

NEXT STEPS

The Dam Safety Program Steering Committee will continue to meet quarterly. Dam inspections will continue monthly and annual inspections will take place with DSOD and FERC. Progress on the District's various capital projects will continue and progress will be reported in the next annual report.

As mentioned previously, the FERC Part 12 review will begin in August 2017 and will be completed in March 2018. In addition, staff plans to audit its dam safety program on a schedule not to exceed five years in accordance with its Dam Safety Program Guide. The audit will be due March 2021. The District will contract with a qualified dam safety expert to conduct the periodic independent audit.

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EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: August 3, 2017

MEMO TO: Board of Directors

THROUGH: Alexander R. Coate, General Manager ARC

FROM: Xavier J. Irias, Director of Engineering and Construction XJI

SUBJECT: Reestablishing Native Landscape at the Estates Reservoir Site

INTRODUCTION

The native landscape at Estates Reservoir was developed through a public outreach process, as part of the Estates Reservoir Replacement Environmental Impact Report (EIR) and subsequent Supplemental EIR, and approved by the Board of Directors under Resolution No. 33960-13. The landscaping failed due to the extreme drought immediately after the application of a hydroseed mix. The native landscape needs to be reestablished to ensure compliance with the Supplemental EIR and associated Mitigation Monitoring and Reporting Program (MMRP). The reestablishment of landscaping includes reapplying the native grass hydroseed mix and conducting temporary intensive landscape maintenance for up to three years to reestablish the low-maintenance landscaping. Staff will provide a presentation to the Planning Committee on August 8, 2017.

DISCUSSION

The previous open-cut Estates Reservoir was replaced with two smaller concrete tanks within the existing basin in 2014. The MMRP required implementation of a native landscape plan that was developed and vetted with neighborhood input as part of the EIR process. The approved landscape plan consisted mainly of native grasses with some trees. The hydroseed mix, which contained the native grasses, was applied in 2014, but it failed to establish due to the drought. The site currently has significant weeds with a few failing trees. Consequently, the weeds must be removed, some trees braced or replaced, and the landscape reestablished per the approved landscape plan to ensure compliance with the certified EIR and consistency with the public outreach process.

The Montclair Pumping Plant, one of the District's highest-priority pumping plants identified for replacement in the Infrastructure Rehabilitation Master Plan for Distribution Pumping Plants, is located at the Estates Reservoir site and will require separate environmental review. The landscaping at Estates Reservoir should be reestablished prior to engagement with the community on the Montclair Pumping Plant Replacement currently scheduled for late fall 2018.

Staff identified the following corrective actions based on conversations with District forces, professional landscape architects, several landscape maintenance companies, and hydroseed wholesalers:

- Construct a temporary irrigation system to establish approved landscaping and remove the irrigation system once the landscaping is established.
- Remove weeds and brace or replace trees prior to applying the hydroseed.
- Reapply the native grass hydroseed mix.
- During the first year, conduct weekly intensive landscaping services by hand-pulling weeds over approximately three acres to ensure proper weed removal while the native grassland reestablishes. Reduce this effort to monthly for the second year and quarterly the third year until the grassland is established.

This work supports the District's Strategic Plan goal for Long-Term Infrastructure Investment.

CONTRACTING OUT

Staff recommends contracting out this work as District forces are fully committed to completing required regulatory weed abatement and other higher-priority work, this project is a one-time project and not an ongoing workload, and contracting out this work will ensure the native grasses will reestablish before fall 2018. District forces will manage the contract and monitor the completion of the landscape work.

Local 444 was notified of this contract on May 22, 2017. The District and Local 444 met on June 7, 2017 where staff answered all of the union's questions. Subsequent to the meeting, Local 444 objected to contracting out this work and requested the current number of vacant and unfunded Gardener positions. The District and Local 444 met again on August 2, 2017 to address Local 444's concerns; Local 444 no longer objects to contracting out this work. Staff will continue to coordinate with Local 444 and provide updates throughout the project and notify the union if changes are made to the contract.

NEXT STEPS

The work associated with reestablishing the landscaping at the Estates Reservoir site is estimated to cost $455,406. A contract is agendized for Board consideration on August 8, 2017. Scheduled contract milestone dates are as follows:

• Construct Temporary Irrigation System	August 9, 2017 to October 1, 2017
• Initial Weed Removal & Tree Repair	August 9, 2017 to October 1, 2017
• Apply Hydroseed	No later than November 2017
• Weekly Maintenance	October 1, 2017 to September 30, 2018
• Optional Monthly/Quarterly Maintenance	October 1, 2018 to September 30, 2020

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EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: August 3, 2017

MEMO TO: Board of Directors

THROUGH: Alexander R. Coate, General Manager

FROM: Eileen M. White, Director of Wastewater

SUBJECT: Main Wastewater Treatment Plant Odor Control Program Update

SUMMARY

Staff at the District's Main Wastewater Treatment Plant (MWWTP) continues to strive to control and minimize odors through good day-to-day operational and maintenance practices, quick investigation of odor complaints, and investment in odor control equipment and technology. In FY17, these efforts contributed to achieving the District's Key Performance Indicator (KPI) for the number of odor reports attributable to the MWWTP. Staff will provide an update on near- and long-term odor management and mitigation activities at the Planning Committee meeting on August 8, 2017.

DISCUSSION

The District's Strategic Plan includes an objective to "minimize customer and community impacts from water and wastewater operations." The Strategic Plan establishes a KPI for FY17 and FY18 of less than or equal to 30 customer complaints per year. In FY17, the District met the KPI; staff received 28 odor complaints where the MWWTP was determined to be the probable source of the odors.

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 an additional $23 million over the next five years. Key capital projects include:

- IPS Odor Control Improvements Project: Construction on an upgrade to the 16-year-old odor control system at the Influent Pump Station is approximately 45% complete and is expected to be operational by summer 2018. The new dual-stage odor control system, which includes a biofilter followed by an activated carbon system, will remove a broader range of odor compounds than provided by the current system.

- Primary Sedimentation Tank Odor Control: Field sampling performed in October 2016 indicated that hydrogen sulfide is the predominant odorant at the primary sedimentation tanks and that this compound was present at higher concentrations than had been assumed in the

2009 Odor Control Master Plan. Design work for a new odor control system for the primary sedimentation tanks will commence in FY18. Construction will be completed in FY21.

In addition to infrastructure upgrades, staff continues to analyze existing practices for opportunities to modify these practices to further reduce potential odor generation. In FY18, this continuous improvement effort will focus on optimizing the process used to remove a secondary clarifier from service since this process continued to generate offsite odors in FY17. In addition, staff is investigating opportunities to optimize odor management at the secondary reactor deck, either by continual flushing of the reactor basins or by portable odor scrubber systems.

In FY16, the Odor Management Program Team was selected as one of the District's values initiatives to pilot concepts and prototypes of team work and collaboration with an emphasis on promoting successful models that can be employed by all District staff. The Odor Management Program Team's goal is to utilize the knowledge and expertise of staff throughout the organization as well as foster broad staff awareness and ownership of the initiatives that will come out of the Odor Management Program through direct involvement of a cross-section of employees.

In FY17, this team successfully established an updated odor report response protocol that leverages staff from both the field services and operations teams in order to more effectively respond to and identify the root causes of odor complaints from the community. This new protocol provides more clarification to District staff about roles and responsibilities and ensures that the expertise of different work groups is maximized. In FY18, the core team will continue to meet on a regular basis to focus on certain topics, including public outreach, department culture change, operations and maintenance (O&M) practices, and capital upgrades.

Staff routinely updates the local community on the District's continued progress toward addressing odors at the MWWTP via meetings with the West Oakland Liaison Group. The most recent meeting was April 19, 2017. Refrigerator magnets with the District's odor control hotline were distributed at the meeting as a means to proactively encourage residents to report odors to the District.

NEXT STEPS

Managing odors from the MWWTP is an ongoing challenge. The District strives to be a good neighbor, and recognizes that odors from the MWWTP can have an impact on our neighbors' quality of life. Staff will continue to be vigilant in its O&M practices to reduce the potential for generating odors, and will continue to implement capital improvements to aid in odor management.

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EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: August 3, 2017

MEMO TO: Board of Directors

THROUGH: Alexander R. Coate, General Manager

FROM: Eileen M. White, Director of Wastewater

SUBJECT: Pollution Prevention Program Update

SUMMARY

As part of its Strategic Plan, the District is dedicated to water quality and environmental protection, including ensuring protection and stewardship of San Francisco Bay. In pursuit of this goal, the District implements a Pollution Prevention (P2) Program. The P2 Program focuses on waste minimization and pollution prevention at the source, utilizing a comprehensive broad-based approach to reduce the discharge of pollutants from residential and commercial sources to the sanitary sewers, the Main Wastewater Treatment Plant (MWWTP), and ultimately the Bay. Staff will provide a presentation on current activities of the P2 Program at the August 8, 2017 Planning Committee.

DISCUSSION

For several decades, the District has been a leader in proactive pollution prevention, identifying key contaminants, and building partnerships with businesses, residents, non-governmental organizations (NGOs), and regulators to reduce pollutants at their source. Key elements of the current P2 Program are outlined below.

P2 Commercial Permits Program

The District began a Commercial P2 Program in 1988 in an effort to reduce loading of metals and contaminants to the MWWTP. The program provides education and outreach on Best Management Practices and issues permits to particular types of commercial businesses. The current program includes radiator shops (5), dry cleaners (56), photo processors (42), print shops (74), auto body and repair shops (592), furniture refinishers (11), boatyards (5), car washes (76), hospitals (7), and dental offices (288).

The District reviews and refreshes the Best Management Practices on a routine basis. Staff also identifies and evaluates new commercial business categories to determine if P2 permits are warranted. Categories currently under review include long-term care facilities, microbreweries, and cannabis growing and processing operations.

Regional Fats Oils and Grease (FOG) Control Program

The District works with the satellite sewer collection system agencies to implement a Regional FOG Control Program. The program was instituted to help prevent FOG-related blockages and overflows in the sanitary sewer collection system. The District performs "hot spot" investigations and field work to identify restaurants that have caused or contributed to sanitary sewer overflows and reports findings to the satellite agencies. The satellite agencies are individually responsible for enforcement activities taken against restaurants causing or contributing to FOG-related sanitary sewer overflows.

The District also conducts outreach to residential customers to encourage them not to pour grease down the drain. During the holidays when cooking with grease is especially prevalent, the District conducts FOG outreach via the Customer Pipeline newsletter, the District website, and through partnerships with San Francisco Baykeeper and retail stores. Stores post and hand out flyers and hang posters that urge residents to recycle cooking oil at local collection sites. The District has four grease collection sites and collected approximately 1000 pounds of grease during the 2016 calendar year.

Pharmaceutical Take-Back Program

In 2009, the District established a Pharmaceutical Take-Back Program in its wastewater service area to provide an option for safe disposal of unwanted medications. The District currently manages nine collection sites and has collected and properly disposed of over ten tons of unwanted drugs.

In 2012, with support of the Alameda County Medication Education and Safety Disposal (MEDS) Coalition, of which the District is a member, the Alameda County Board of Supervisors approved the Alameda County Safe Drug Disposal Ordinance. This ordinance requires producers of any drug offered for sale in Alameda County (County) to participate in an approved drug stewardship program for the collection and disposal of unwanted drugs. The number of sites that now offer safe medication disposal in Alameda County has increased to 44 and will continue to do so as the County implements the ordinance. District staff is coordinating with County staff and continuing to engage in the MEDS Coalition to determine the best role for the District in safe medicine disposal in the future.

MWWTP Tour Program

In April 2016, the District launched the MWWTP Tour Program to educate and engage interested stakeholders and members of our community in our vital wastewater process. Bringing stakeholders into our operations allows us to demonstrate the District's commitment to protect public health and the environment. Throughout the tour, visitors learn what is required to treat wastewater in order to safeguard San Francisco Bay and what actions they can undertake to prevent pollution at the source.

MWWTP tours were initially offered twice a month on a pilot basis. The tours have proven so popular that additional tours have been added. Tours provided on the first and third or fourth Saturdays and third Wednesday of the month (during the dry season) are designed for East Bay

residents and the general public, while tours provided on the first Wednesday and last Thursday of the month are designed for middle and high school students. Staff also accommodates tour requests from fellow wastewater agencies, regulators, government officials, NGOs, and international groups on an as-needed basis, as resources allow. Since the 2016 launch, nearly 1000 people have taken the MWWTP tour.

Microplastics

In 2015, the Regional Monitoring Program for Water Quality in San Francisco Bay, managed by the San Francisco Estuary Institute (SFEI), conducted a study that identified higher levels of microplastics (particles smaller than 5 mm) in the Bay than in other urban water bodies. Microplastics, including microbeads from personal care products as well as tiny fibers, likely from synthetic clothing, were detected in wastewater effluent including the District's. Though it garnered a lot of media attention, that study was small and additional scientific work is needed.

The District is collaborating with SFEI as they embark on the next phase of this research. The District will be contributing effluent samples for further analysis, and staff is exploring partnerships for research to better understand and address the sources of microplastics in wastewater. While microbeads in personal care products were largely addressed by recent state and federal legislation, development of pollution prevention strategies for clothing fibers is in the early stages.

Residential and Community Outreach

The District conducts outreach to wastewater customers regarding a wide range of pollutants, including FOG, mercury, pharmaceuticals and non-dispersible wipes. The District participates in local events including the City of Alameda Earth Day Festival, City of Oakland Earth Day event, the Solano Stroll, the United Seniors of Oakland and Alameda County Healthy Living Festival, the Berkeley Adult School ECO Fair, and others. The District also collaborates with other stakeholders like the Bay Area Pollution Prevention Group to help us spread our pollution prevention message.

Staff is currently working on a P2 outreach campaign that will be launched in September. A key element of this campaign is a 12-page insert for the East Bay Express newspaper focusing on the District's environmental stewardship from our watersheds to the Bay and what residents can do to prevent water pollution. The District has engaged the California Coastal Commission, the Regional Water Quality Control Board, SFEI, City of Oakland, and NGOs including San Francisco Baykeeper and several creek and watershed stewardship groups to participate in this insert publication. With a publish date of September 6, the messages and timing of the insert will align with the annual California Coastal Cleanup Day and Creek to Bay Day on September 16, 2017. In concert with the East Bay Express insert, the District will be running ads carrying the message "Wipes Clog Pipes" on AC Transit bus shelters and inside buses and on Clear Channel billboards in East Bay neighborhoods beginning in mid-August. A second AC Transit campaign focused on FOG is scheduled to launch in November.

NEXT STEPS

The District will continue to seek effective ways to broaden the array of P2 activities, such as leveraging partnerships and working in concert with regional stewardship campaigns.

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EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: August 3, 2017

MEMO TO: Board of Directors

THROUGH: Alexander R. Coate, General Manager ARC

FROM: Michael J. Wallis, Director of Operations and Maintenance

SUBJECT: Trihalomethanes Update

INTRODUCTION

At the June 13, 2017 Planning Committee meeting, a proactive update on rising levels of disinfection byproducts (DBPs), in particular trihalomethanes (THMs), was discussed. At all times, the water supplied to the public meets all state and federal requirements. However, given that sampling showed measured concentrations of THMs have been higher than typical and exceeded the District's internal water quality goal, which is half the regulatory limit, a Committee update on proactive actions was provided. This memo provides an update on actions to mitigate this issue and the latest sampling results. This information will be discussed at the August 8, 2017 Planning Committee meeting.

SUMMARY

Many Northern California water agencies have seen a rise in the organic precursors which prompt the formation of DBPs during disinfection of water. For the District, a rise in organic compounds in Pardee Reservoir is a root cause of rising DBPs, in particular THMs, and the District's exceedance of our internal water quality goal for THMs. The District's THM goal, 40 parts per billion (ppb), is half the regulatory limit of 80 ppb, and was created to provide proactive notice to the District should source water quality decline. The Planning Committee was alerted to a rising trend in THM formation during the Semi-Annual Water Quality update in September 13, 2016. The June 13, 2017 Planning Committee update confirmed that THM formation had continued its upward trend, and additional operational and infrastructure actions were required.

Since the June meeting, the District has implemented numerous operational changes and has benefited from improved source water quality in Pardee Reservoir. As a result, THM concentrations have been reduced. In the last quarter sampling in April, the highest site Locational Running Annual Average (LRAA) was 75 ppb. For the current quarterly sampling in July, this site had an LRAA of 68 ppb. THM concentrations from all sixteen sampling sites this quarter had individual values ranging from a low of 30 ppb to a high of 57 ppb. All sites are below the Maximum Contaminant Level (MCL) of 80 ppb LRAA, and remain in compliance

with the regulatory requirements. The MCL was developed to protect health by limiting long-term exposure to THMs while balancing the need to protect the public from disease-causing pathogens. The District will continue to make improvements to surpass its water quality goal for all DBPs.

DISCUSSION

Multiple water quality objectives must be met simultaneously: the water must be filtered to remove particulate material, it must be disinfected to kill pathogens (disease-causing microorganisms), and it must be chemically adjusted to minimize corrosion of plumbing materials. These objectives are often at odds with each other. Water quality changes that reduce THMs, for example, might compromise other objectives such as disinfection or corrosion control.

Current efforts: An in-house team has formed to gather and evaluate data and conduct focused investigations. The District is collecting many additional water quality samples from the treatment plants and from key locations throughout the distribution system to better understand the complex factors affecting formation of DBPs as well as other treatment and hydraulic issues. Ongoing studies are evaluating the impact of reservoir mixing, chlorine doses and application points, retention time in reservoirs, adjustments to the chlorine-to-ammonia ratio in the treatment plants, and the impact of chemical dosing variability. Also a short tracer study was done to determine to what extent two treatment plants supply particular pressure zones under various demand and pumping schemes.

To the extent possible, adjustments have been made to chemical doses at the treatment plants and to the manner in which chemicals are added and mixed into the water. Some objectives, such as corrosion control in the raw water aqueducts and time-of-use pumping, are being suspended temporarily so that DBP concentrations can be reduced. Corrosion control in the water supplied to the customers, however, has not and will not been compromised. Additional tests are ongoing to simulate the impact of additional potential changes to chemical doses and injection points. Portions of the distribution system with particularly high water age have been flushed to clean the pipes and remove older, poorer quality water. Additional water quality analyzers have been purchased and installed to provide more data. Both online instrument and bench-top devices are being used. Changes have been made to the open gates at Pardee Outlet Tower and in the Mokelumne Aqueducts to improve incoming water quality and shorten the time water resides in the aqueducts. Comparison studies between various analytical methods and laboratories have been conducted.

Near-term efforts: A new air-stripping system has been installed at the Lafayette Water Treatment Plant (WTP) clearwell. This system removes some of the THMs from the water, lowering concentrations delivered to service area. Also, design is complete and equipment has been ordered for a carbon dioxide feed system to be located at the Bixler facility in Brentwood.

This system will permit carbon dioxide to be added to all three Mokelumne Aqueducts at the Bixler facility, allowing the lime feed system at Pardee to be restarted. This will restore corrosion protection to the upper three-quarters of the raw water transmission system. The Bixler carbon dioxide feed system is expected to be in operation by January 2018. New carbon dioxide storage and feed systems are being designed for each of the three inline treatment plants. Once the pH in the treatment plants can be controlled, corrosion protection for the entire Mokelumne Aqueduct system can be resumed.

A pilot testing plan is being developed to evaluate alternate coagulants; some coagulants are known to remove some of the THM precursor material from the water, preventing THM formation. Care must be taken, however, to ensure that the plants' filtration and solids handling systems can continue to operate effectively. Modifications are being made to key distribution reservoirs to enable installation of mixing devices to eliminate stagnation. The District is assembling a team of outside experts to review data and ongoing monitoring and control efforts and make recommendations for additional improvements.

Long-term efforts: In order to reliably produce water with low THMs under all expected water quality conditions, significant capital improvements are needed. Planning is nearly complete for a project to improve the quality of the water in the San Pablo Reservoir. This project will allow the Sobrante WTP to change its chlorination scheme, reducing THMs. Design and construction are scheduled for FY20. Preliminary design is underway for new treatment processes for the Walnut Creek and Orinda WTPs to remove organic material from the water. Design is underway for an ultraviolet light system at the Orinda WTP which will permit lower chlorine doses by meeting some of the disinfection requirements, reducing chlorine use. Design and construction for these large projects are scheduled to continue through FY22.

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