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MEMORANDUM

TO: HONORABLE MAYOR &
CITY COUNCIL

FROM: David Ferguson
Interim Director, OPW

SUBJECT: Status Of The City's Wastewater
Sewer Program

DATE: April 19, 2021

City Administrator
Approval

Date:

May 4, 2021

INFORMATION

This Informational Memo shall provide the Mayor, City Council, and community with an update regarding the status of the City's compliance with the Federal Consent Decree (CD), National Pollutant Discharge Elimination System Permit (NPDES), and State Waste Discharge Requirements for Sanitary Sewer Systems (WDR) through the reporting timeline July 1, 2019, through June 30, 2020.

General Overview

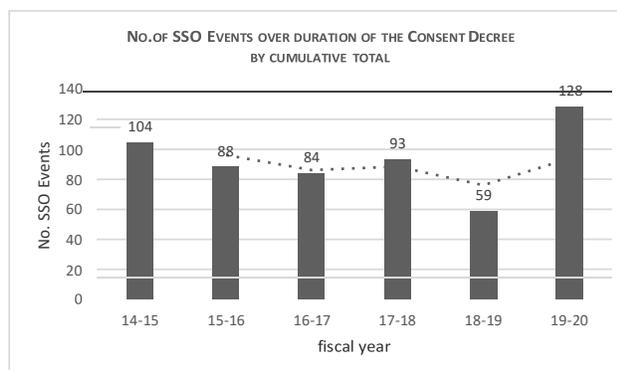
Despite considerable disruption to the City of Oakland's wastewater operation, maintenance, and capital improvement programs due to impacts of the COVID-19 pandemic and statewide shelter-in-place orders, Oakland has continued to maintain compliance with the Consent Decree (CD) and National Pollutant Discharge Elimination System (NPDES) permit issued by the Environmental Protection Agency (EPA), and the State of California's Waste Discharge Requirements (WDR) regulation for sanitary sewers. This report summarizes the program's accomplishments, analysis, planning and implementation of mandated capital improvements, inspection and maintenance activity, and regulatory compliance efforts related to the sanitary sewer system between July 1, 2019, and June 30, 2020, and as reported in the *Consent Decree Sanitary Sewer Collection System Annual Report, FY2019-20*.

The City is in full compliance with the work mandated by the CD to reduce stormwater inflow and infiltration (I/I) into the sanitary sewer system and the occurrence of sanitary sewer overflows (SSOs). The sanitary sewer system consists of nine-hundred thirty-four (934) miles of pipe. To date, more than ten percent (10%) of the total pipes in the system - approximately ninety-five (95) miles - have been repaired or replaced since the inception of the CD. By the end of this reporting period, the cumulative total of sewer pipes that have been repaired or replaced has exceeded what is required by the CD by ten percent (10%) - approximately ten (10) miles. The entire system was cleaned over an eight-year (8) period since the inception of the CD. The City began a new five-year (5) cleaning cycle on July 1, 2018, and just over one-fifth (1/5) - one-hundred eighty-six (186) miles - of the total pipes in the system have been cleaned. Over sixty percent (60%) of the system - five-hundred sixty (560) miles - has been inspected since the

inception of the CD. Ten percent (10%) – ninety-three (93) miles – of the system was inspected during the reporting period ending June 30, 2020.

Performance of this work resulted in a twenty-five percent (25%) reduction of stormwater I/I and effluent flow volumes at both the Oak Port and San Antonio Creek wet-weather facilities serving Oakland and are operated by East Bay Municipal Utility District (EBMUD).

The number of SSO events increased during the annual reporting period. However, the City successfully mitigated these spills and reduced their impact on the environment and the community. In conjunction with collaborative efforts with regional public utility partners and regulatory agencies, the City implemented several SSO reduction strategies and awareness measures to reduce the incidents of overflows caused by residential use of non-dispersible ‘flushable’ wipes. The use of these wipes and their subsequent disposal into the sewer system has increased significantly during COVID-19 related shelter-in-place conditions, and have contributed to the increase in blockages in the sanitary sewer system.



The City continued implementing its updated Asset Management Implementation Plan/Sewer System Management Plan (AMIP/SSMP). The plan was developed to meet the requirements of the CD; NPDES permit (Order No. R2-2020-0009); and the State Water Board's SSO Reduction Program requirements, as defined by the WDR and Statewide Monitoring and Reporting Program, Order No. WQ 2013-0058-EXEC (MRP). The plan was adopted by the City of Oakland Council on December 10, 2019, and it replaced the plan previously adopted by the Council on March 3, 2015. Key features of the updated plan include:

- Implementation of the revised *Overflow Emergency Response Plan*
- Implementation of the stand-alone *Water Quality Monitoring Plan*
- Update of cumulative performance data for reduction of sewer overflows
- Implementation of a formal *Change Log* document to track policy and procedure development.

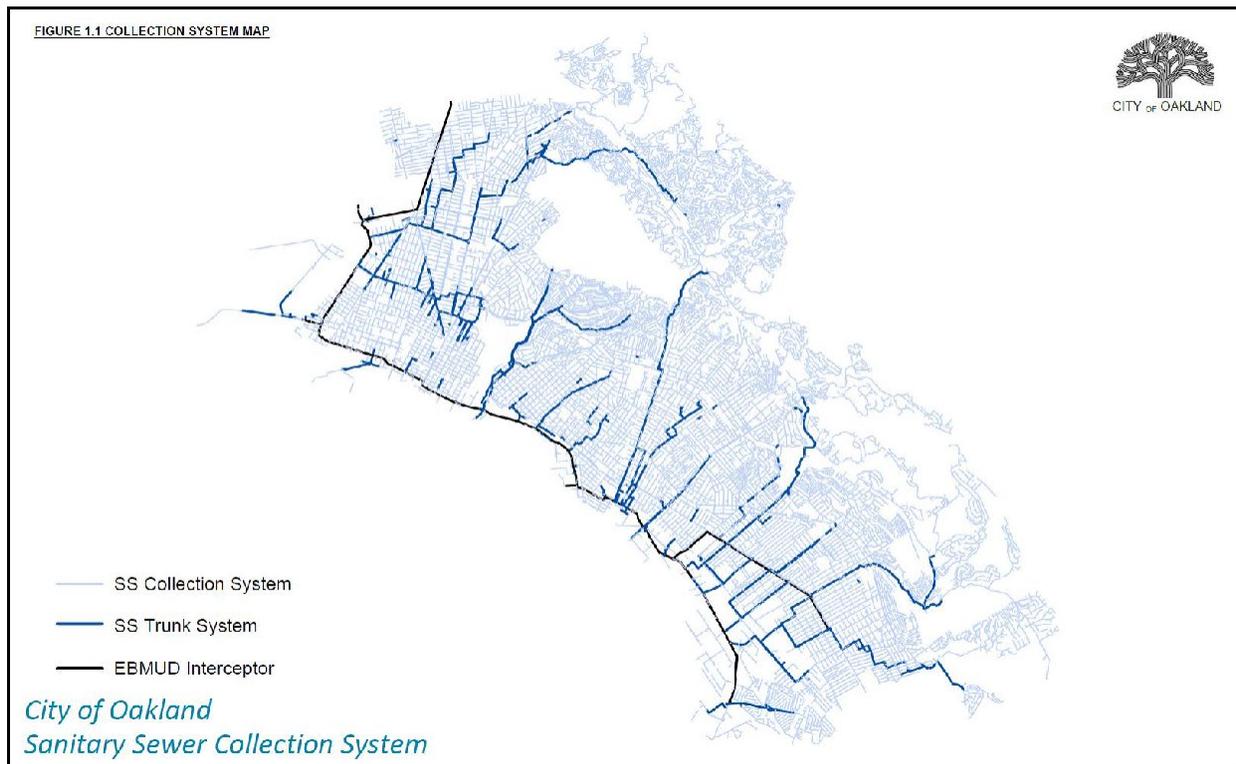
The City successfully negotiated and received approved renewal of the NPDES permit governing its discharge of untreated wastewater into EBMUD's treatment system. The permit is valid and active for a five-year (5) period and was approved without any additional stipulations or changes to the terms, conditions, and prohibitions of operation of Oakland's sanitary sewer system.

Through the development of a sanitary sewer master plan, efforts are underway to reduce the number and magnitude of sewer overflows, increase the effectiveness of stormwater I/I reduction strategies and capital improvements, and prevent an excessive increase in costs associated with achieving regional performance goals mandated throughout the duration of the Consent Decree.

Background Information

City of Oakland Sewer System

The City of Oakland owns and operates a sanitary sewer collection system that serves approximately four-hundred and thirty thousand (430,000) residents and generates a dry-weather average flow of forty-eight million gallons per day (48 MGD). The sewer system includes approximately nine-hundred and thirty-four (934) miles of gravity pipelines, less than one (1) mile of pressurized sewer pipelines, and eleven (11) pump stations. There are approximately one-hundred and two thousand (102,000) private sewer lateral connections to the sewer system.



Sewer Consent Decree

The Federal Consent Decree is the result of several years of negotiations between the city(s) of Alameda, Albany, Berkeley, Emeryville, Oakland, Piedmont; Stege Sanitary District; EBMUD; EPA and the State/Regional Water Boards; and local environmental NGOs. The CD was finalized on September 22, 2014, and mandates that the Defendants (EBMUD and the seven Satellite Agencies) perform appropriate management, operation, and improvements to their respective sewer systems such that the occurrence of SSOs that flow into US Waters (or Waters of the State) are reduced, and discharges of partially treated wastewater into San Francisco Bay from EBMUD's three (3) wet-weather facilities are eliminated by the year 2036. As a condition of compliance, by September 30 of each calendar year, Oakland must submit an annual progress report to the regulatory agencies and the plaintiff NGOs.

Per the Consent Decree, EBMUD must perform scheduled analyses of the efficacy of its region-wide I/I reduction work, coupled with the work prescribed for each of the Satellite Agencies. The flow output ratio test check-ins for each of the three (3) wet-weather facilities are scheduled for 2022 and 2030. They will analyze a three-year average change in flow for each station. If the collective activities of all the Defendants do not achieve mandated flow reduction goals, then a strategic Performance Evaluation Plan (PEP) would need to be developed and implemented to determine appropriate modifications to the regional I/I reduction program. Data collected and analyzed by the PEP would be used to justify the development of a Revised Work Plan (RWP) to ensure that regional flow reduction goals are met.

Since the Consent Decree's final approval in 2014, the City has submitted the required annual reports to the EPA, Regional Water Quality Control Board (RWQCB), and the United States Department of Justice. The City submitted yearly reporting for the fiscal year ending June 30, 2020 (FY20) on September 30, 2019. The report summarizes the completion of the City's FY20 work plan, and it provides the status of the City's compliance with other CD requirements. The Sanitary Sewer Collection System Annual Report, July 1, 2019, to June 30, 2020, can be found on the City's website through the following link:

<https://cao-94612.s3.amazonaws.com/documents/Annual-Report-FY-2019-20.pdf>.

The EPA 2014 Consent Decree can be found on the City's website through the following link:

<https://cao-94612.s3.amazonaws.com/documents/OAK048411.pdf>.

State Water Board Waste Discharge Requirements

In May 2006, the State Water Resources Control Board (State Water Board) adopted the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (WDR) to provide a consistent, statewide regulatory approach to address sewer overflows. The WDR requires that public agencies that own or operate sanitary sewer systems develop and implement a sewer system management plan and report all sewer overflows to the State Water Board's online database. The City enrolled in the State's SSO Reduction program in January 2007 and developed its initial sewer system plan in August 2008. There have been three (3) revisions to the City's sewer system management and planning document, the most recent being approved by the Council in December 2019. The plan must be updated and approved by Council every five (5) years, or when there have been substantial changes to any component of the programs. A review of the City's plan is underway. It is anticipated that revisions will be needed by December 2022 to reflect pending changes to the regulation recently proposed by the State Water Board.

The sole purpose of the WDR is to provide for the appropriate funding, management, operation, and maintenance of the City's sewer system in order to reduce or eliminate sewer overflows. Its regulatory requirements and obligations complement the federal Clean Water Act, and in some cases, supersede it. The Consent Decree requires that, in addition to the stipulations contained therein, the City adhere to and abide by the regulatory requirements of the WDR, as well.

Summary of Compliance

The purpose of the CD is to facilitate the City’s legal obligation to reduce inflow and infiltration that contributes to discharges of partially treated wastewater from EBMUD’s wet-weather facilities into the San Francisco Bay. The CD also mandates the elimination of sanitary sewer overflows that result in the discharge of untreated wastewater to Waters of the United States and/or Waters of the State of California.

Completing the sewer system rehabilitation and capital improvement work prescribed to the City appears to be effective in moving the City toward meeting the regional flow reduction goals of the decree. The output test used to develop a percent value for the ratio of current flow versus baseline flow for each regional wet-weather facility shows consistent reductions both annually and averaged over a three-year period. The goal is to demonstrate enough regional wet-weather flow reductions by 2022, and again in 2030, to meet the target elimination of wet-weather discharges for select wet-weather facilities in the region. Target reductions for wet-weather facilities specific to Oakland are forty-three percent (43%) for San Antonio Creek (SAC) and sixty-five percent (65%) for Oakport (OAK) by September 2022. The current output ratio percentages for SAC and OAK show continued reductions and are anticipated to meet the minimum reduction thresholds required under the CD.

FY19 WWF Output Ratio and Test Results					
Facility	FY19 Output Ratio		CD Benchmark		
	Baseline Flow Model Volume (MG)	3-Yr Average Facility Ratio	2022	2030	Final Compliance
Point Isabel	23.3	97%	53%	18%	0% by 2034
Oakport	53.7	80%	65%	31%	0% by 2036
San Antonio Creek	13.2	81%	43%	-*	0% by 2028
*: The compliance date for SAC WWF precedes 2030.					
* From FY19 Flow Model Update Report by EBMUD					

FY19 WWF Output Ratio and 3-year Test Results				
Facility	Annual Output Ratio Percentage			
	FY17	FY18	FY19	Net Change
Oakport	86%	77%	75%	-11%
San Antonio Creek	86%	82%	74%	-12%
* From FY19 Flow Model Update Report by EBMUD				

Replacement of sewer pipes and sealing of defective maintenance holes is the primary activity the City has engaged in to reduce inflow/infiltration. It is estimated that the publicly-owned portion of the sewer system accounts for thirty-five to forty percent (35-40%) of the source

inflow/infiltration. An additional sixty to sixty-five percent (60-65%) of inflow/infiltration comes from defective private sewer laterals or roof-leader and sump-pump connections to the sewer system.

Infiltration and Inflow Reduction

Under the Regional Technical Support Program (RTSP) part of the CD work, the City completed mandated repairs of all high-priority I/I sources within 24 months of identification by disconnecting the storm drain inlets to the sewer collection system eliminating 1,400,000 gallon per day I/I contribution.

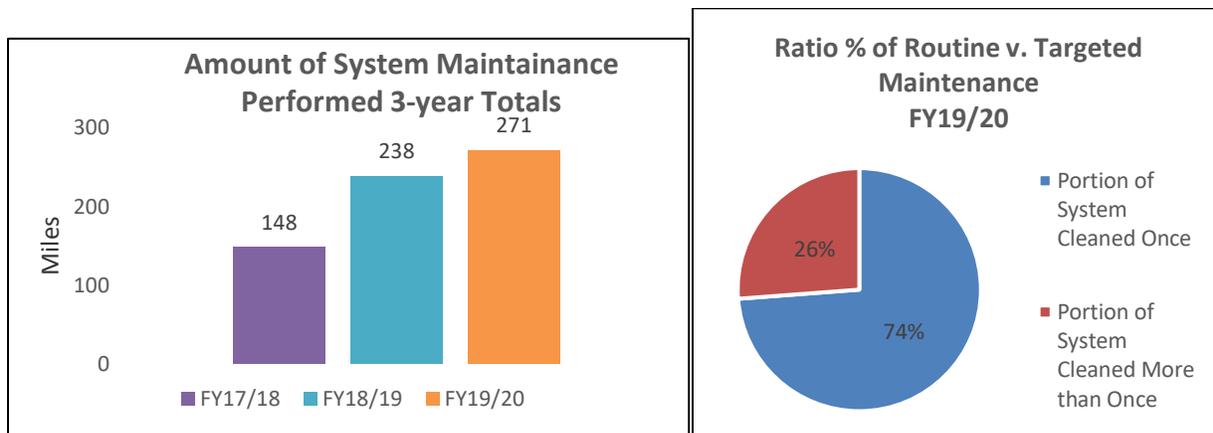
The City inventoried twenty-eight (28) publicly-owned sewer assets previously identified as low-priority sources of I/I. Although the low-priority locations are not mandated, the City went above and beyond by rehabilitating eighteen (18) low-priority defective maintenance holes, contributing to eliminating over 3,000,000 gallon per day I/I contribution.

Eighty-seven (87) private sewer laterals were previously identified as low-priority sources of I/I. The City worked with property owners to repair twenty-four (24) low-priority sewer laterals eliminating over 2,000,000 gallon per day I/I contribution.

In FY19-20, the City mitigated a total of 44 I/I sources and reduced 6,400,000 gallons per day of I/I.

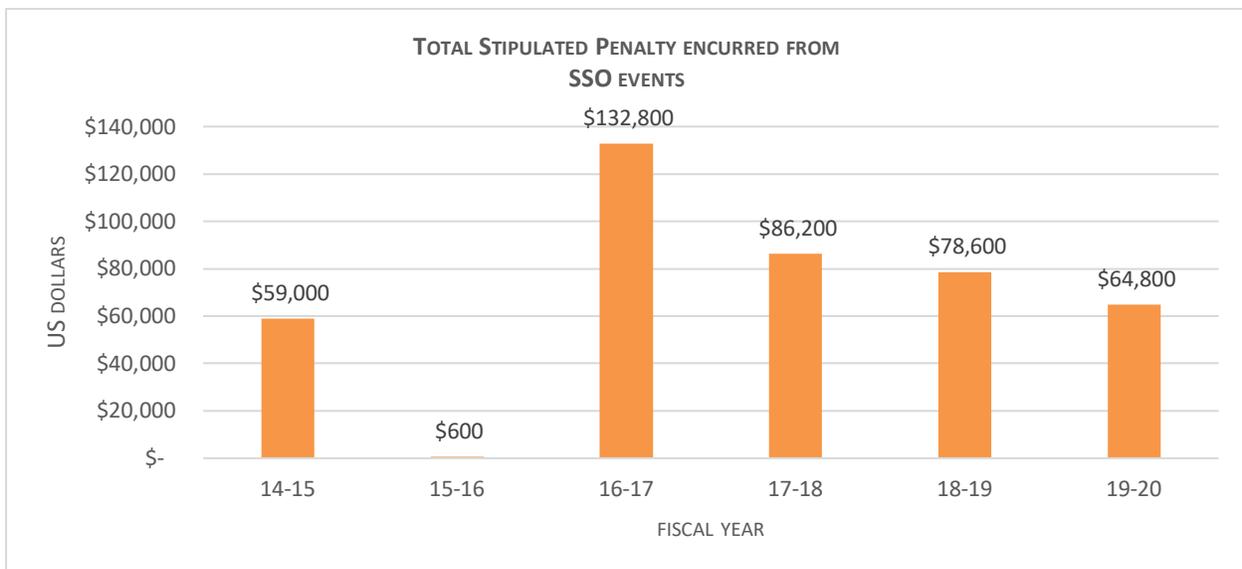
Sanitary Sewer Overflows

Per the Consent Decree mandate, the City utilized an aggressive maintenance strategy to reduce the occurrence and frequency of blockages and overflows of the sanitary sewer system. Maintenance was targeted to sewer pipes that had not been cleaned in the previous five fiscal year periods, as well as pipelines with a known history of sewer blockages and overflows. Despite an almost fourteen percent (14%) increase in pipe cleaning performed during the reporting period, this strategy was less effective than anticipated and did not result in a reduction in blockages and/or overflows of the sewer system.



The ineffectiveness of the maintenance activity is believed to have been primarily due to the increased residential flushing of non-dispersible wipes and changes in flow patterns within the system that has occurred during the extended shelter-in-place order mandated by the state in response to the COVID-19 pandemic. These uncontrollable changes in uses of the system increased the number of sewer overflows that occurred during both wet and dry weather conditions. The number of sewer overflows increased one-hundred seventeen percent (117%) over the reporting period from July 1, 2019, to June 30, 2020.

The increase in the number of sewer overflows also resulted in a more considerable total amount of untreated wastewater discharged into regional creeks and waterways. Although the amount of untreated wastewater that reached surface water increased by sixty-three percent (63%) over the reporting period, faster response times and better equipment allowed staff to mitigate many of these overflows by containing portions of the spilled sewage. Of the total amount spilled during sewer overflows, forty-one percent (41%) of the untreated wastewater was captured and returned to the system. As a result, the City reduced the monetary penalty for sewer overflows imposed by the EPA/Regional Water Board by thirteen-thousand eight-hundred dollars (\$13,800) – or seventeen and one-half percent (17.5%).



Funding for Sewer Services

Per the City Charter, the Sewer Service fund (Fund 3100) is used to construct and maintain the City’s sanitary sewer infrastructure. This use includes all the mandates placed on the City by the EPA 2014 Consent Decree to address Sanitary Sewer Overflows and to reduce Infiltration and Inflow of stormwater into the sewer system. The table below outlines the recent FY 2020 Adopted Budget for the appropriation of Fund 3100. It outlines how the Sewer Fund is distributed and for what purpose.

Department	FY20 Adopted Appropriation	Percentage
City Administrator	\$253,415	0.38%
City Attorney	\$857,150	1.28%
Finance Department	\$2,339,217	3.50%
Fire Department	\$429,644	0.64%
Oakland Public Works Department	\$31,991,975	47.89%
Department of Transportation	\$1,518,864	2.27%
Information Technology Department	\$224,092	0.34%
Non-Departmental and Port	\$10,841,324	16.23%
Capital Improvement Projects	\$18,350,263	27.47%
Grand Total	\$66,805,944	100.00%

The Consent Decree requires a minimum of two and one-half million dollars (\$2.5M) annually for sewer system rehabilitation. The City spent approximately fifteen and one-half million dollars (\$18.4M) on sewer rehabilitation and capacity upgrades during this reporting period. Staff anticipates a continued increase in construction costs over the next budget cycle, which will impact the total linear footage of capital work that can be completed per fiscal year. Unless the City can negotiate a revised work plan that allows for reduced capital repair, additional funding through a rate increase may be needed by FY2024/25 to maintain compliance with repair and rehabilitation work mandated by the Consent Decree.

Development of Sewer System Master Plan

Wastewater Program staff are working with an engineering consultant to develop a Sewer System Master Plan that will be used to define its asset management program further. The plan will include enhanced inflow/infiltration and capacity modeling, a risk assessment and decision-making matrix for capital improvements and emergency repairs, and an operations and maintenance component. The proposed approach includes weighted scores toward underserved communities balancing environmental impacts and social equities similar to how the capital improvement program projects are prioritized. The plan will help maximize expended resources on both the capital/design side of the sewer system and daily maintenance and inspection activity. Successful completion and implementation of the plan is anticipated to help effectively manage capital costs over the duration of the Consent Decree.

Wastewater Program Audit

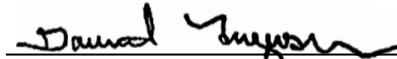
An internal audit of the wastewater program will be conducted during Calendar Year (CY) 2021. The audit is required by the WDR and will assess the City’s compliance with its revised asset management plan. Completion of the audit will dovetail into the completion of the master plan. A subsequent audit report will be completed and made available by the end of CY2021.

Public Information

Pursuant to Section D.13.xi of the State Water Resources Control Board Order No. 2006-00003 DWQ, this report will be made available to the public via the City’s website. Instructions for

submission of comments from the public will be included in the posting of this report and will be logged and made visible for a designated duration and as appropriate.

Respectfully submitted,



DAVID FERGUSON
Interim Director, Public Works

For questions, please contact Jimmy Mach, Principal Civil Engineer, at (510) 238-3303.