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AGENDA REPORT

2018 JUN 14 PM 5:29

TO: Sabrina B. Landreth
City Administrator

FROM: Jason Mitchell
Director, Public Works

SUBJECT: Supplemental Status Report on
Sanitary Sewers

DATE: May 17, 2018

City Administrator Approval

Date:

6/14/18

RECOMMENDATION

Staff Recommends That The City Council Receive An Informational Report Summarizing And Attaching The 2015, 2016, And 2017 Annual Reports Submitted According To Section 5.3 Of The Asset Management Implementation Plan And Sanitary Sewer Management Plan; And Detailing (1) Compliance With Overflow Protocols Including Public And Outside Agency Notice; (2) Oversight of Sanitary Sewer Contractor Performance; And (3) Usage of Fund 3100 As It Relates To Sewers.

REASON FOR SUPPLEMENTAL

At the April 24, 2018 Public Works Committee (PWC), staff was directed to return with a supplemental report addressing and responding to several questions that were brought forward at the meeting. This report addresses the questions and are as follows:

Question 1: Root Foam - Selection Process of Project Locations

The Root Foam Program applies various factors in determining locations for root foaming. The presence of heavy roots shown from historical sanitary sewer overflows (SSO), closed-circuit television (CCTV) inspections and findings from sewer maintenance are the primary factors to prioritize locations for root treatment. Additional factors that are considered may include the proximity of certain tree species, main vegetation, past and future pipe rehabilitation plans, location of the sewer main, development of the right-of-way (ROW), pipe material, pipe depth, pipe diameter, and soil classification.

The decision to foam an entire subbasin is considered necessary when at least 40 percent of the pipes in a subbasin are root-infested. Subbasins with a low percentage of root intrusion are often treated with a targeted pipe-selection process.

Most of the East Oakland hills have pipes rehabilitated as part of the Cease and Desist Order (CDO) and the Consent Decree. Once rehabilitated, pipes typically have less root intrusion problems. Roots are less prevalent in the East Oakland hills pipes compared to North Oakland hills, because streets in the East Oakland hills have been developed with curbs and gutters, as such, there is a lower risk of roots in said areas. There has been more past root foaming activities in the East Oakland hills relative to the flat lands because of the differing degrees of

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vegetation. As more pipes are rehabilitated, the root foam program expects less root foaming will be needed. However, the Consent Decree requires a minimum of 50 miles of root foaming a year until the Environmental Protection Agency (EPA) agrees to reduce the mileage.

Question 2: EPA Demand Letter – Actual Amount of Stipulated Penalties

Based on reported overflow volume estimates that reached surface waters for the past three (3) fiscal years and as indicated in the FY 2016-17 Annual Report, the City estimated a potential stipulated penalty of \$191,600. The Environmental Protection Agency's demand letter assessed \$192,400 for overflow volume estimates that reached surface waters for the past three (3) fiscal years. The City agrees that the \$192,400 is an accurate assessment but the City will be challenging the merits of the penalty, per Page 151, Paragraph 172 of the Consent Decree, which provides:

"If the Annual Report documents that any of the obligations subject to stipulated penalties may not have been complied with, and a Defendant takes the position that potentially applicable stipulated penalties should not be assessed, that Defendant may include in the Annual Report an explanation as to why Plaintiffs should forego collecting such penalties; ... "

In March 2018, the EPA and the San Francisco Bay Regional Water Quality Control Board invited EBMUD and all of the satellite cities covered under the Consent Decree to a meeting at the EPA headquarters. The meeting was only described as a "review of Consent Decree compliance from July 2014 to present" and "to address any shortcomings now to ensure future compliance with the Consent Decree." Not until the April 3, 2018 meeting did the EPA provide any indication related to the upcoming assessment of Stipulated Penalties. The City was not provided the opportunity to comment, nor was the chance to discuss potential penalties provided by the EPA. The City requested this discussion in each of the three (3) Annual Reports submitted thus far and the EPA did not provide the City with a response.

The additional penalty of \$34,100 from failure to repair acute defects within one year was unexpected. The language used for the penalty in the Consent Decree is ambiguous – late acute defect repairs are not listed as considerations in the Stipulated Penalties section of the Consent Decree. Additionally, \$32,100 of the \$34,100 assessed are related to private homeowners' responsibilities. Per the Consent Decree language above, the City will contest this fine.

As a point of reference, the City's sanitary sewer system discharges an estimated 11.9 billion gallons of sewage yearly. At peak wet weather flow, the system discharges up to an estimated 477.7 million gallons of sewage per day. The total estimated volume of SSOs in Fiscal Year (FY) 2016-17 was 203,560 gallons, which is significant but represents only 0.0017% of the annual amount of sewage from the City's sanitary sewer system that reached the waters of the State.

Question 3: Sanitary Sewer Overflows – Accuracy of Numbers and Volume Estimates Reported

The City has clearly defined protocols for responding to, documenting, and reporting sewer overflows. Staff uses three standardized approaches in making volume estimates for overflows: measured volume; visual 'eyeball' estimate; and duration and flowrate methods. A brief explanation of each method is as follows:

1. Method 1: Measured Volume

The volume of most small spills that have been contained can be estimated using this method. The shape, dimensions, and the depth of the contained wastewater are needed. The shape and dimensions are used to calculate the area of the spill and the depth is used to calculate the volume.

2. Method 2: Eyeball Estimate

The volume of small spills can be assessed using an "eyeball estimate." To use this method, imagine the amount of water that would spill from a bucket or barrel. A bucket contains 5 gallons and a barrel contain 50 gallons. If the spill is larger than 50 gallons, try to mentally break the standing water into barrels and then multiply by 50 gallons. This method should only be used for contained spills up to approximately 200 gallons.

3. Method 3: Duration and Flow Rate

Calculating the volume of larger spills where it is difficult or impossible to measure the area and depth requires a different approach. In this method, separate estimates are made of the duration of the spill and the flow rate.

- Estimating Duration: The duration is the elapsed time from the time the overflow started to the time that the overflow was stopped.
- Estimating End Time: Field crews on-site observe the "blow down" that occurs when the blockage is removed.
- Estimating Flow Rate: The flow rate is the average flow that left the sewer system during the time of the spill.
 - The City of Oakland use the San Diego Manhole Flow Rate Chart. This chart specifies sewage flowing from manhole covers at a variety of flow rates. The observations of the field crew can be used to select the appropriate flow rate from the chart. If available, photographs can be helpful in documenting the basis for the flow rate estimate.
- Estimating Spill Volume: Once duration and flow rate have been estimated, the volume of the spill can be calculated as the product of the spill duration (hours or days) and the flow rate (gallons per hour or gallons per day).

Training for use of this method is performed annually for Sewer Division staff.

Staff is aware of three specific SSO locations where concerns regarding the accuracy of the reporting were brought to their attention. On January 10, 2017 staff notified BIO-Sewers Operations Manager for support during multiple heavy wet-weather overflow events. Staff

specifically requested assistance calculating volume estimates for what appeared to be large volume and/or long duration discharges. Two specific overflow events at 885 69th Avenue and 819 35th Avenue were identified as:

- SSOID 831762 (885 69th AVE)
- SSOID 831763 (819 35th AVE)

The Operations Manager made on-site visits to both locations, which included visual assessment and documentation of the system at the overflow locations, downstream of the overflow locations, and in the surrounding tributary waterways. Upon supervisor review of the initial reporting submitted to the State on behalf of the City, there appeared to be discrepancies between the spill volumes initially reported, and the documentation (photos), work orders, and observations made during the SSO event. Both event files were thoroughly reviewed per protocol, and additional supportive documentation was sought from staff. Based on the information provided, volume estimates were re-calculated by the Operations Manager, calculations were initiated and added to the event file. The revised volume estimates were updated in the State's database, but staff neglected to update some narrative language in the database that conflicted with the revised volume estimates.

The third location of concern involves SSOs at Lake Temescal. In late January 2017 the City was engaged in several wet-weather related overflow events that resulted in sewer overflows that affected Lake Temescal. Due to the intermittent nature of overflowing from a sewer pipeline, it took Public Works personnel 2-3 business days from the time of receiving the initial complaint to identify the source of the contaminants and take corresponding, appropriate action. The initial efforts made resulted in short-term mitigation, and the City coordinated with East Bay Regional Park District over the course of 2-3 weeks to ensure that contaminants did not reach the lake from the compromised sewer and storm systems. Effective mitigative measures were taken once the source of the issue was clearly identified. Two separate overflow events affecting Lake Temescal were reported during this time.

Question 4: Steps Needed for Full Compliance with Consent Decree

The City is in overall compliance with the annual goals of the Consent Decree, with the exception of private sewer lateral connections that are over one (1) year old. Staff faced compliance challenges on that issue due to the complexity of working with private residences and other utilities. Public Works will continue to strive towards meeting the annual goals to stay in compliance with the Consent Decree. The fines in the stipulated order were related to sanitary sewer overflows. The City mitigates the potential of SSOs by cleaning, inspecting, rehabilitating and performing other tasks to reduce the risk of overflows. The sanitary sewer system has an average age of 80 years, and Oakland is not unique with regards to the age of the system as well as the occurrence of sanitary sewer overflows. Refer to the State's Sanitary Sewer Overflow Incident Map to view the State's sanitary sewer overflows:
https://www.waterboards.ca.gov/water_issues/programs/sso/sso_map/sso_pub.shtml

Below is an outline of the ten (10) major requirements of the Consent Decree and Status of Compliance:

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1. Rehabilitate an average of 13 miles of sewer pipes per year – the City is ahead of schedule by an aggregate of 18.9 miles.
2. Complete cleaning of the entire sewer system by June 30, 2018 – the City is ahead of the projected schedule by 1.0 months.
3. Inspect entire sewer system on a 10-year cycle – the City is ahead of the projected schedule by 23 miles.
4. Root foam 50 miles of sewers per year – the City has completed its annual requirement and is ahead by an aggregate of 32 miles.
5. Renovate all seven (7) sewer pump stations by 2022 – the City has completed three (3) stations, one (1) is currently under construction, and three (3) are planned for construction which puts the City ahead of schedule by approximately three years.
6. Eliminate high priority storm water inflow sources and infiltration within 2 years wherever found - 1 private high priority source was abated within 2 years; 2 private high priority sources were identified in FY 2016-17 and letters were sent within 90 days; status of abatement is pending.
7. Repair acute defects in pipes within one year - 91 acute defects were found; 73 were repaired within one year; 4 City-responsible sites were repaired but not within one year; 2 private-responsible sites were repaired but not within one year; 8 City-responsible sites are reported as outstanding; 4 private-responsible sites are reported as outstanding.
8. Maintain list of 'hot spots' and clean annually for at least three years – the City maintains a 'hot spot' list for pipes which are cleaned on a 3, 6, or 12-month frequency.
9. Rehabilitate sewer laterals owned by the City within 10 years at targeted locations – 95 City facilities were identified; 26 have been inspected and completed thus far in the first three Fiscal Years.
10. Implement a fat, oil, and grease (FOG) control program – the City continues to work with EBMUD in the FOG Control Program and coordinates activities within the City.

In addition to performing the work to stay in compliance with the Consent Decree, the Capital Improvement Program has plans to develop a master plan that not only meets the Sewer Consent Decree requirements, but also provides a comprehensive strategy to address deficiencies of the entire sewer network.

Question 5: Status of Hiring Third-Party Consultant for Regulatory Compliance Support Services

In addition to internal work to meet the goals of the Consent Decree, the City has hired a third-party consultant to review the sewer program and ensure the city is using best management practices through the sewer program including maintenance, engineering and construction management programs.

Public Works has entered into a contract for Engineering Services for Oakland's Sanitary Sewer System, with V&A Consulting Engineers. A kick-off meeting with V&A Consulting Engineers occurred on May 4, 2018 to finalize the scope of the services. The work will include a third-party review of the City's Sanitary Sewer Program within OPW. This will include review and evaluation of the Engineering, PSL, Maintenance, Construction, and Inspection programs for feasibility, effectiveness, and conformance with Consent Decree mandates. The Asset

Management Implementation Program and Sanitary Sewer Management Program (AMIP/SSMP) will be reviewed and updated, which will include all aspects of the sewer program. The Fats, Oils and Grease (FOG) Program will be reviewed and recommendations will be made for best management practices for its implementation in coordination with Eastbay Municipal Utility District (EBMUD) who is responsible for the implementation of the FOG program. The Capital Improvement Program's specifications and construction documents for quality control and assurance of contractor's work will be reviewed. Public Works has committed to continue to implement all aspects of the Consent Decree and ensure we are improving as the practices in this sector continues to evolve.

Question 6: Inquiry on Possible Misuse of Fund 3100 on a Truck

Vehicle Unit #4581 was originally purchased by the Sewers Division from Fund 3100 on July 31, 2015. The vehicle in question was purchased as part of a larger allocation of resources within the Streets & Sidewalks Division. The Streets & Sidewalks Division provides storm and sewer support annually and the Sewer Fund funds supports a portion of this activity.

ACTION REQUESTED OF THE CITY COUNCIL

Receive an Informational Report summarizing the attached 2015, 2016, and 2017 Annual Reports submitted according to section 5.3 of the Asset Management Implementation Plan and Sanitary Sewer Management Plan; and detailing (1) Compliance with overflow protocols including public and outside agency notice; (2) Oversight of Sanitary Sewer contractor performance; and (3) Usage of Fund 3100 as it relates to sewers.

For questions regarding this report, please contact Danny Lau, Assistant Director at (510) 238-7211.

Respectfully submitted,



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