

MEMO

Date: July 24, 2009

To: Michelle Moustakas, EPA Region 9

From: Bill Hahn and Dianne Stewart, SAIC

Subject: Sewage Collection System Inspection of the City of Alameda, CA (NPDES Permit No. CA0038474; RWQCB Order No. R2-2004-0008)

On April 2 and 3, 2009 EPA Region 9, RWQCB 2, and SAIC conducted an inspection of the City of Alameda's sewage collection system. The inspection was done as part of a series of inspections of the EBMUD satellite systems in conjunction with the EBMUD Stipulated Order. The main purpose of the inspection was to identify ways in which the system could reduce I/I so as not to contribute to overflows at the EBMUD wet weather facilities. The inspection also evaluated the SSO response and correction programs.

The first eight of the program areas below follow the programs or activities identified in the EBMUD document entitled *Technical Memorandum Subtask 4.6 – Community O&M Activities Impacting Peak Flows*. The first paragraph under each program area states an accepted industry practice for the program. This is followed by bullets that indicate what the City is doing within this program area.

Findings

1. Sewer Inspection Program

Sewer agencies should have an inspection program that includes planned periodic inspection of all sewer system assets using closed circuit television to determine their current condition at least every 10 years.

- The City contracts out all pipe televising work. The sewer fund has budgeted \$187,000 for annual sanitary sewer CCTV inspection.
- Over the last 10 years, about two percent of pipes have been inspected annually, on average. The City plans to inspect nearly twice this amount over the next 10 years, or 37.5 percent in total during the period. The City recognizes that it will take 30 years to inspect the entire system.
- Force mains are not inspected.

2. Condition-Based Sewer Rehabilitation

Sewer agencies should use condition-based sewer rehabilitation that includes use of inspection data to select sewer line segments for repair/rehabilitation/replacement to reduce infiltration.

- The sewer pipe condition assessment Phase 1 project completed in 2007 determined that, of the 25 miles of assessed pipe: 5.5% failed condition, 32.2%

critical condition, 28.5 in poor condition, 7.5% in fair condition, and 26.3% in good condition. The studies show that 62.3% of the system is in operational condition.

- Four percent of mains were replaced or rehabilitated between 2005 and the present, and the City projects that an additional 22 percent will have been done by 2019.
- Currently, the City is undergoing its annual Cyclic Sewer program that is replacing all the clay pipe in the City, as well as upsizing all sewer main pipe from 6-inch and less to a minimum of 8-inch diameter.
- It is not apparent that the condition assessment is the basis for the pipe replacement program.

3. Inflow Source Identification and Elimination

Sewer agencies should have ongoing programs to identify sources of inflow (such as roof leaders) and take action to eliminate those sources.

- The City ordinance prohibits storm water discharges to the sanitary sewer. This is enforced by Building Services when complaints are filed or when inspectors discover illegal connections during new permit site visits. New permits are not granted to violators until the illegal connections are fixed.
- The City does not have a proactive ongoing program, such as smoke testing, to detect sources of inflow.

4. Chemical Root Control Program

Sewer agencies should consider using herbicides to stop/reduce the damage to pipes, joints, and structures that is caused by root intrusion.

- The City does not have a chemical root control program. However, historically there have been very few blockages due to roots (one to two per year).

5. Data Management (Computerized Maintenance Management System)

Sewer agencies should collect O&M data by individual asset and analyze that data to identify appropriate maintenance and capital improvement actions.

- The City has a CMMS. It is used to plan the locations for the Annual Cleaning.
- Sewer maps are on a GIS.

6. Rehabilitation/replacement of lower laterals

Sewer agencies should rehabilitate or replace lower laterals during sewer system capital improvement projects.

- The City is responsible for about 100 miles of lower laterals. When mains are rehabilitated or replaced, the lower lateral is included in the project.

7. Private lateral testing/inspection and rehabilitation program

Sewer agencies should have a program to require mandatory testing of the private portion of private laterals to determine their condition. The program should include requirements to repair or rehabilitate laterals that fail the inspection.

- The City has a private lateral inspection program that includes mandatory inspection of the lateral by the homeowner's contractor upon property sale. Laterals that fail the inspection must be repaired or replaced. On average, out of 300 laterals inspected annually, about 100 pass and 200 must be repaired or replaced. The City estimates that 5,700 laterals will be inspected between the present and 2019.

8. Routine Flow Monitoring

Sewer agencies should conduct periodic flow monitoring to identify areas with infiltration/inflow contributions to the total flow

- Flow is measured at the EBMUD interceptor only. The City has no flow meters in place within the collection system.
- A sewer flow capacity model is being built by consultant, to be delivered in July 2009.

9. SSOs Rates/Response/Correcting Causes

The City's NPDES permit contains requirements for controlling and containing SSOs and SSO reporting. State Water Board Order No. 2006-0003-DWQ, as amended, contains further requirements, including electronic reporting. The most recent and comprehensive SSO reporting requirements are contained in a May 1, 2008 Letter from the Regional Board.

- The City's spill rate (number of spills per 100 miles of pipe per year) for 2008 was 2.1. This figure includes lower lateral spills. Based on SAIC's experience with similar systems, this appears to be a low rate.
- Although the numbers vary from year to year, grease was the cause of 40 percent of spills in 2008.
- The City typically has one to two spills from pump stations each year. This may result from the fact that only a few pump stations have backup power onsite, and staff only inspect the stations monthly. Spills from pump stations are a particular concern because they tend to be larger than spills from blockages.
- The spill response plan is oriented towards stopping and containing the spill, correcting the cause, and recovering as much of the spill as possible. It does not include written procedures for receiving calls and dispatching crews, spill volume

estimation, sampling, or determining spill start time. The City uses the San Diego methods of volume classification, but the procedure is not described in the spill response plan.

- The City does not use CCTV to investigate the causes of SSOs.

10. FOG Program

EBMUD implements the FOG control program for all of its satellite agencies.

- The City does not know how many FSEs are in its service area.
- Each of the satellites has adopted a FOG source control ordinance equivalent to the East Bay Municipal Utility District Wastewater Control Ordinance, Ordinance 311A-03. Apart from an oil & grease limit, the ordinance does not contain specific FOG program requirements.
- EBMUD has issued permits to about 3,000 FSEs in the service area. The FOG program focuses on GRD installation and appropriate maintenance. The required GRD pumping frequency is once every three months, and this is only changed if the GRD is found to exceed the 25% rule during an inspection or if it is found to cause or contribute to a blockage or overflow in the collection system.
- EBMUD did not know how many FSEs have GRDs. GRDs are required for food handling facilities that meet any of the following criteria:
 - New construction
 - Remodels, additions, alterations or repairs valued at or greater than \$75,000
 - Has caused or contributed to a grease related collection system blockage resulting in maintenance requirements and/or a sewage spill.
- The goal for FSE inspections is once during every permit period. Permits are issued for a five year period. Based on SAIC's experience, this inspection frequency is not likely to be adequate for most FSEs. Restaurant staff and even ownership turn over frequently. Business conditions also vary, leading to the potential for the grease loading to the interceptor to increase at times. These factors point to a need for more frequent inspections.
- EBMUD has a comprehensive public education program for residential grease control.
- There does not appear to be a consistent feedback mechanism between the satellite and EBMUD on such issues as enforcement actions against non-complying FSEs and feedback on follow-up to FSEs referred to EBMUD.