

SECTION IX—MONITORING, MEASUREMENT AND PROGRAM MODIFICATIONS

Requirement*

Each Enrollee shall:

- a. Maintain relevant information to establish and prioritize SSMP activities
- b. Monitor implementation and where appropriate measure the effectiveness of each SSMP element
- c. Assess the success of the preventative maintenance program
- d. Update SSMP program elements based on monitoring or performance evaluations
- e. Identify and illustrate SSO trends including frequency, location and volume

Supporting Documents

A memorandum from the City Engineer describing the process to monitor, measure and modify the SSMP follows this page.

A copy of the 2011 Annual SSO report is attached. Although these annual reports are no longer required, information on SSOs is available in the State (CIWQS) public reports, and is summarized (along with other quantitative performance metrics) in the SSMP Audits. The most recent SSMP audit is attached to Section X.

* SWRCB Order No. 2006-0003-DWQ § B.13 (ix)



Public Works Department
MEMORANDUM

Date: August 26, 2008
To: File
From: Michael Throne, City Engineer 
Re: **Process to Monitor, Measure and Modify SSMP Program Elements**

This memorandum describes the process and methods by which Benicia will monitor the effectiveness of the SSMP elements and provide for ongoing modification and updating to keep the elements current, accurate, and available for audit.

Performance Indicators

A number of performance indicators are or will be tracked to evaluate the long-term effectiveness of the SSMP elements described in this plan and for reporting to the Water Board in the Annual SSO Report. Some of these indicators could be expected to relate directly to specific elements or O&M activities, whereas others relate to multiple activities or program effectiveness as a whole. For example, it may be possible to correlate the number of blockages attributed to roots with the total annual footage (or multi-year cumulative footage) of sewer lines subject to rodding as part of our preventative maintenance program (see SSMP Section 6). In contrast, the volume of SSOs reaching surface waters would more likely reflect multiple maintenance activities, emergency response times, the FOG program and even uncontrollable factors.

In measuring an outcome that is characterized by a relatively small number of events (e.g. number of annual wet weather SSOs), it is important to recognize that statistical variability may dominate short-term trends and that true causal relationships are likely to be evident only over the long term.

The following table lists the quantitative indicators that are currently tracked or planned to be tracked. As the historic record grows, future annual reports to the Water Board will include trend plots for key measures. Performance measures related to maintenance activities will be tabulated and charted in the annual collection system report.

SSMP Updates and Modifications

It is Benicia's intention that the SSMP remain a living document and that it be regularly updated to reflect program or organizational changes, new regulatory requirements, and other changing conditions. Methods to ensure this objective is met include:

- The City Engineer has the overall responsibility for maintaining and updating the SSMP. This will involve input and coordination with the PW Maintenance

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Superintendent and the WWTP Superintendent. If conditions or higher-level priorities warrant, an outside consultant may be engaged, at the direction of the City Engineer or designee, to update the plan.

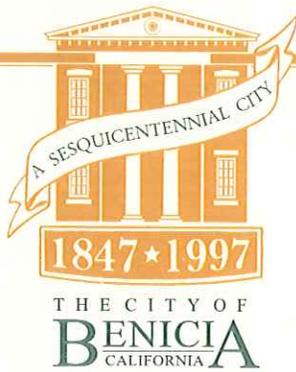
- A number of the activities described in the SSMP reflect ongoing programs for which the review and update process is well established. Examples include preventative maintenance (PM) measures, staff training, outreach, inspection, and testing.
- The Water Board and the General Order 2006-003-DWQ require periodic auditing of the SSMP. This elevates maintenance of the SSMP to a mandatory status on par with other regulatory requirements.
- In addition to periodic audits, Order 2006-003-DWQ requires that the SSMP be updated every five years. However, updates may be conducted more frequently if warranted through significant changes in the supporting documents for the program elements.

Table of Proposed SSMP Performance Indicators

| |
|---|
| Indicator |
| Number of SSOs (by season) |
| Wet season |
| Dry Season |
| Number of SSOs (by volume) |
| < 10 gal |
| 10 – 99 gal |
| 100 – 999 gal |
| ≥1000 gal |
| SSO Volume |
| Total |
| Recovered |
| Total Volume conveyed to the plant |
| Total volume SSO / Total volume conveyed |
| Number of SSO (by cause) |
| Blockages |
| Roots |
| Grease |
| Debris |
| Debris from Laterals |
| Animal Carcass |
| Construction Debris |
| Multiple causes |
| Infrastructure failure |
| Inflow & Infiltration |
| Electrical Power Failure |
| Flow Capacity Deficiency |
| Natural Disaster |
| Bypass |
| Cause Unknown |
| Number of SSOs per mile of sewer per year |
| Volume of SSOs per mile of sewer per year |
| Average Emergency Response Time |
| Business Hours |
| Non-business hours |
| Maintenance activities (lineal ft/yr) |
| Televised inspection |
| Top-down cleaning |
| |

Note: The above list has been expanded to include additional indicators. See the most current SSMP Audit in Section X.

**FINAL ANNUAL REPORT OF SANITARY
SEWER SYSTEM OVERFLOWS
MARCH 12, 2012**



Public Works & Community Development Department

March 12, 2012

Bruce H. Wolfe, Executive Officer
 California Regional Water Quality Control Board, San Francisco Bay Region
 1515 Clay Street, Suite 1400
 Oakland, CA 94612

ATTN: Claudia Villacorta, P.E., SSO Program Coordinator

The purpose of this letter is to report the Sanitary Sewer System Overflows (SSOs) that occurred in the City of Benicia's sanitary sewer system during the period of January 1, 2011 through December 31, 2011. This report is submitted pursuant to the requirements included in the San Francisco Bay Regional Water Quality Control Board Letter, New Requirements for Reporting Sanitary Sewer Overflows, dated November 15, 2004.

Number and Size of SSOs

The total number of SSOs (Table 1) for the reporting period was 13. All of the SSOs were associated with gravity sewers, and one was caused by a broken water main that is referenced as #773012 in the CIWQS (California Integrated Water Quality System). All 13 SSOs were associated with dry weather conditions, none with wet weather conditions. The sizes of the SSOs are summarized as shown in Table 2.

Table 1. Number of SSOs

| Size of SSO (gallons) | Number | Percent of Total by Number |
|--|-----------|----------------------------|
| Greater than or equal to 1,000 | 4 | 31.0% |
| From 100 to 999 | 1 | 8.0% |
| From 10 to 99 | 6 | 46.0% |
| Less than 10 [can include in line above] | 2 | 15.0% |
| Public Lateral Spills (see below note) | | |
| Total | 13 | 100% |

Note - Three of the above spills occurred at public laterals. The volumes were 2-gallons, 2-gallons, and 25-gallons.

Table 2. Volume of SSOs

| | Volume (gallons) | Percent of Total by Volume |
|---|-------------------------|-----------------------------------|
| Total volume contained and returned to sewer system for treatment | 2574 | 35.50% |
| Total volume reaching waters of the State | 4675 | 64.47% |
| Total volume not contained but not reaching waters of the State (everything else) | 2 | 00.03% |
| Total | 7251 | 100% |

Based on our calculations none of the SSOs exceeded 2250 gallons in volume. This report does not include SSOs that occurred from private sewer service laterals, unless the event was caused from blockages created within city owned sewers. The property owners are responsible for the condition and the operation of private sewer service laterals.

Cause of SSOs

The predominant cause(s) of SSOs during the period of this report were roots. However, as indicated in Table 3 below, one SSO was cause by a water main failure that flooded the surrounding area and overwhelmed a sewer manhole releasing a combination of treated water, and sewage out of the manhole. Because this SSO was caused by inflow of potable water, the cause was identified as I&I. Another SSO was a result of a deteriorated sewer main (Infrastructure Failure). The distribution of SSOs by cause is shown in Table 3.

Table 3. Causes of SSOs

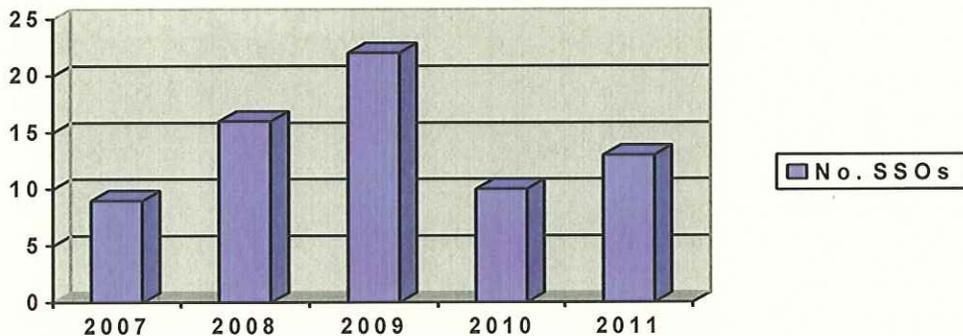
| Cause of SSO | Number | Percent of Total |
|------------------------------|---------------|-------------------------|
| Blockage: | | |
| Roots | 7 | 53.84% |
| Grease | 0 | |
| Debris | 4 | 30.76% |
| Debris from Laterals | 0 | |
| Vandalism | 0 | |
| Animal Carcass | 0 | |
| Construction Debris | 0 | |
| Multiple Causes | 0 | |
| Subtotal for Blockage | 11 | 84.6% |

| | | |
|---|-----------|-------------|
| Infrastructure Failure (Pumps,Pipes,Etc.) | 1 | 7.7% |
| Inflow & Infiltration | 1 | 7.7% |
| Electrical Power Failure | 0 | |
| Flow Capacity Deficiency | 0 | |
| Natural Disaster | 0 | |
| Bypass | 0 | |
| Cause Unknown | 0 | |
| Total | 13 | 100% |

Location of SSOs

This year SSOs incidents occurred in random areas, which includes residential, commercial, and industrial locations. No location had multiple SSOs.

SSO Trends



Status of Development of Sewer System Management Plan (SSMP)

The Sewer System Management Plan (SSMP) was certified and approved by the City Council in July 2009. In 2011, City staff revised SSMP sections 2, 4, 6, 7, 8 and 10. The 2011 SSMP Audit Report includes more details of changes made to our program (see attached 2011 SSMP Audit).

Other Information

In 2010 there was a decrease in the number of overflows due to roots, however 2011 shows an increase due to roots and failing infrastructure. The City Maintenance Collection Staff has increased its awareness of the need for more televising of the system in an effort to provide increased predictive and preventive maintenance. The plan to repair a section of the 8” Bayshore Force Main, identified in last year’s Annual Report, was further evaluated and a decision was

Letter-Bruce Wolfe
March 12, 2012
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made to not go forward with this project. This decision was based on the fact that there was a parallel 12" force main constructed with newer and more reliable material (HDPE). The new main has the capacity to convey all of the flows from this area.

Certification

I certify under penalty of law that this document and all attachments are prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeff Gregory", with a long, sweeping underline.

Jeff Gregory, Wastewater Treatment Plant Superintendent

JG:\dg

F:\Pubworks\Maintenance\Sewer & Water Reports\Sewer & Water Reports\SSO_Annual_Report2011.doc

Attachment

cc: Melissa Morton, Assistant Director of Public Works
Nathaniel Rankin, Public Works Maintenance Superintendent