

Section 9.0: Monitoring, Measurement and Program Modifications

9.1 Regulatory Requirements

The Enrollee shall:

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

9.1.a Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities;

System flow data information is collected and analyzed monthly as described in Section 8 to verify peak flow capacities during dry and wet weather events are adequate. The data collected assists the TSD Engineering and maintenance operations staff in identifying any system deficiencies. Any significant changes in levels, velocities, and quantities as typically observed throughout the year will initiate further investigations into the cause to aid in the prevention of sanitary sewer spills and backups.

All sanitary sewer spills and backups reported and observed will be documented and reported in the TSD. The cause of the SSOs will be evaluated to identify required corrective actions. The supervisor will generate corrective work orders to make emergency and identified repairs. If the SSO is identified as a structural deficiency or damage, engineering staff will be notified to analyze and recommend corrective actions needed. If the analysis targets grease and or debris, the environmental section is notified and corrective actions to address any FOG related actions including targeted restaurant inspections, business and residential outreach are recommended. The information collected, analysis and recommendations will be used to establish and prioritize the appropriate SSMP maintenance activities to ensure further SSOs are prevented.

9.1.b Monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP;

Each element of the SSMP requiring implementation will be measured for effectiveness through SSMP Review meetings conducted throughout the year by the TSD engineering staff. Wastewater maintenance managers will be interviewed to identify problematic areas requiring possible addition to the CIP spreadsheet. Short and long term projects will be added and if required, presented to the TSD Board for recommendations and funding sources.

Indicators used to measure the effectiveness of the SSMP elements are:

- Total number of SSOs;
- Number of SSOs by each cause (root, grease, pipe failure, capacity, pump station failure, and other);
- Portion of sewage contained compared to total volume spilled;
- Volume of spilled sewage discharged to surface waters; and
- Planned to actual performance for preventative maintenance.

9.1.c Assess the success of the preventative maintenance program;

The TSD PM program identified in Section 4 identifies needed maintenance activities. Through the SSMP Review meetings, the assessment and success of the PM program will be continually monitored. Any identified maintenance activity not meeting the expectations or is unsuccessful will be re-evaluated, changed, and/or eliminated as needed. This will be accomplished through the SSMP review meetings and actual maintenance feedback on the activity forms. The results will be entered into the OASIS/SEMS database and reviewed by the operations manager, supervisor(s), and SSMP review staff.

9.1.d Update program elements, as appropriate, based on monitoring or performance evaluations; and

The TSD engineering staff will maintain and update the SSMP program elements based on the SSMP Review meetings. If major changes to the SSMP are identified, TSD Board approval will be presented with staff recommendations.

9.1.e Identify and illustrate SSO trends, including; frequency, location, and volume.

The TSD has monitored the flow in the major lines at three flow monitoring stations since October 2006. Data from 2005 has been included in Table 9.1 showing this data for Gravity Sewers, Pump Stations, and Force Mains by Calendar Year. Table 9.2 shows the total number of SSOs by Cause, (Roots, Debris, Grease, Capacity, Pump Station Failure, Pipe Failure, and Other), by Calendar Year. Table 9.3 shows the TSD SSOs by date, type

and volume in gallons since 2005. The majority of SSOs took place in 2005 due to a pump station design and equipment problem.

The data in tables 9.1 through 9.3 will be kept current to continue monitoring and identifying the SSO trends in the TSD.

Table 9.1 –Yearly SSO Totals

Calendar Year	Gravity Sewer SSO	Pump Station SSO	Force Main SSO
2005	2	2	0
2006	0	0	0
2007	1	0	0
2008	1	0	0
2009	0	0	0

Table 9.2 – SSO Cause Totals

Calendar Year	Roots	Debris	Grease	Capacity	PS Failure	Pipe Failure	Other	Total
2005	0	0	0	2	2	0	0	4
2006	0	0	0	0	0	0	0	0
2007	0	1	0	0	0	0	0	1
2008	1	0	0	0	0	0	0	1
2009	0	0	0	0	0	0	0	0

Table 9.3 – TSD SSO History (2005 – 2009)

TSD SSO	Type	Quantity (gallons)
10-Jan-2005	Capacity	200,000
11-Jan-2005	Infiltration	912,000
12-Feb-2005	PS Failure	50,000
21-Feb-2005	PS Failure	500
8-Jan-2008	Roots	750
30-Nov-2008	Roots	2,100

page left blank intentionally