BY BRETT WARD

SORP Minimizes Sewer Public Health Concerns

John West of Knoxville's Water Pollution Control describes SORP as "a mechanism that gets you to the root causes of sanitary sewer overflows and backups. It gets you better information that can be used for collection system improvements. It is the foundation of a CMOM (Capacity, Management, Operations, & Maintenance) program and, most importantly, it aids in mitigating or minimizing potential public health concerns."

Most everyone within the wastewater industry knows that the number one sanitary sewer system operational problem is inflow and infiltration (I/I). There are many causes and reasons, but the results of large amounts of I/I are collection system overflows, backups, and plant violations. Regulators, especially Region 4 EPA, have decided the best approach to correct I/I problems is to improve the management of the collection system through the use of a prescriptive management system like CMOM. A SORP is simply a part of a CMOM program.

John West is correct; if used honestly, a SORP should provide operators and managers with information about system deficiencies. There are several challenges in the development and use of the program, but the greatest challenge is often finding the will and funding to actually make collection system improvements. Of course regulators have methods of increasing motivation. In Tennessee, if you receive an order related to sewer system problems, it will always have CMOM development as a requirement even if the problems addressed in the order are not related to I/I.

Many Tennessee cities have already developed SORP programs within their CMOM programs that were mandated through regulatory Orders. Others may have the request made in the course of Compliance Review Meetings or perhaps have just decided it is the right thing to do.

A SORP is a written plan of action that describes what will be done and by whom in case of an overflow or bypass. The basic format for most SORPs is the same. There will be operational sections that actually describe the processes that workers will follow in the case of an event. Of course no matter how well you plan, there will be things that do not go according to the plan. In this case, there must be governing principles like goals and objectives that should guide the workers. These principles and many other details will be located in the administrative sections of the plan.

Top: Chronic overflow location prepared for the next event. This overflow has now been corrected. Above: Manhole overflow into a stream. Left: Long-ago constructed bypass on lift station wet well.

Sample SORP Outline

Administrative Sections

- Definitions
- Program objective
- Program goals
- Personnel organization and roles
- Identification of overflows
- Information management and tracking
- Reporting
- Information usage

Operational Sections

- Training
- First responder procedures
- Correction, containment, cleanup
- Primary cause evaluation
- Reporting to regulators and management
- Evaluation of Program

Large City Program

Metro Water Services (MWS) serves the Nashville area and has a relatively mature SORP which it calls a Spill and Overflow Response Plan. It is large and quite detailed as you would expect for a major metropolitan area. Hal Balthrop of MWS stated that they had a program for years, but it was called a Standard Operating Procedure program. The new program is patterned after Knoxville Utility Board's.

The SORP has resulted in cultural changes within the organization. There is now a sense of urgency in dealing with sanitary sewer overflows and a more open communication style. Stakeholders have higher expectations than in past years, and the SORP is a tool to meet these expectations. For workers, the program has a detailed procedure to follow in the investigation and response to an overflow or backup. These procedures include public notices that are intended to help protect public health and the environment and to demonstrate to the public and regulators that Metro is diligently managing and operating the sanitary sewer system. Kevin McCullough of Metro stated that the most common type of public notice is the use of door hangers or simply door-to-door notice.

By following the program, Metro has avoided any dry weather overflows for several years. A primary reason for this improvement is that the SORP assists Metro in determining the primary cause of the overflow or backup.

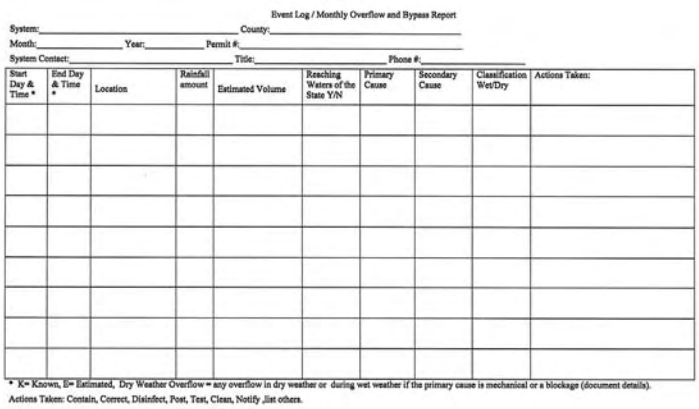
Once the true cause is determined, the most effective remediation processes can be put in place. In the past, fat, oil, and grease (FOG) have been a primary cause. Metro's FOG control program has been quite effective in reducing problems due to FOG from commercial food service establishments. Now the challenge is to reduce FOG from residential areas. Other causes of overflows and bypasses include grit and debris and roots.

Metro personnel recommended that utilities begin developing a SORP before they are forced to. The workers who will use the program should be involved in its development.

New Program in a Small City

Wartburg, located west of Knoxville in Morgan County, has a new SORP. The basic text, developed by MTAS, is only 11 pages long and includes detailed response plans for two chronic locations. Collection system operator Danny Phillips reports that the plan is making a difference, but it is hard to get started. There is new and extra paper work, but following it means the reporting is better. It also means that more accurate and useful data is available for their engineer and Board. Danny expressed concerns about finding the extra time to do more I/I investigation.

The Wartburg program is a paper-based system that could be incorporated into an electronic data base system in the future. It includes five key worksheets; Customer Complaint Log, Watch List, Event Log/Monthly Overflow Report, Overflow Log Sheet for each site, and a Root Cause Summary.



Event Log / Monthly Overflow and Bypass Report

System:_____ County:_____

Month:_____ Year:_____ Permit #:_____

System Contact:_____ Title:_____ Phone #:_____

Start Day & Time *	End Day & Time *	Location	Rainfall amount	Estimated Volume	Reaching Waters of the State Y/N	Primary Cause	Secondary Cause	Classification Wet/Dry	Actions Taken:

* K= Known, E= Estimated, Dry Weather Overflow = any overflow in dry weather or during wet weather if the primary cause is mechanical or a blockage (document details).

Actions Taken: Contain, Correct, Disinfect, Post, Test, Clean, Notify ,list others.

This improved Monthly Overflow Report meets the requirements of the Knoxville Field Office personnel.

Program Development Tips

Recently issued Commissioners Orders give respondents 60 days to submit a SORP for the Division's approval. The Order lists two general requirements; "procedures for minimizing health impacts" and "measures for the notification of affected property owners and stream users."

The two areas actually run together because public notice is a way of minimizing health impacts. The procedures for minimizing health impacts will include most of the operational items such as correction, containment, and cleanup as well as barricades and perhaps signs in the area of the spill and perhaps public notice.

The public notice requirements can be quite varied depending on the situation. A simple manhole overflow that is contained in the adjacent area would not need widespread public notice, but a major and long lasting overflow into a stream where there is a high probability of public exposure will need more extensive notice including notice to the local Public Health Department in order to reduce the health risk to the public and the subsequent financial risk to the utility.

An Order further states that "posting signs shall remain in place until in-stream monitoring reveals that the water body has returned to normal background conditions." This monitoring requirement would mean above and below E-coli testing, until the below value is within 25% of background or upstream level. This testing should be based on multiple samples of the stream. This would include up and down stream testing as well as testing at areas of expected public contact.

An additional item to include is the regulatory reporting process. Carefully follow the permit specified reporting requirements as well as the local variations. Some field offices prefer different methods of communication for the initial "within 24 hours" report. The program should specify who will execute the 24 hour, five-day, and monthly reporting. An annual summary of overflow and bypasses may also be part of the program.

A well written program will include a "Watch List" or "Hot List." This is a listing of locations that have a history of overflows or backups. The list is a way of maintaining focus on areas that have a high potential for overflows. If the location is prone to wet weather overflows, the system operator should take extra steps to check these locations during times of rainfall. If the location is prone to dry weather overflows, management should be directing resources to correct the root cause. EPA has set a very high standard for dry weather overflows, and the goal is that they never occur.

Carefully define the two terms "wet" and "dry" weather overflows. Adding to the confusion about the program is the request that overflows that occur because of a blockage or mechanical breakdown be called a "dry weather" overflow even if they occur during a rainfall event. This is a situation where there is more than one contributing factor.

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Listing the primary and secondary cause and a third cause if applicable may be a way of reducing the confusion. Classify the overflow according to the primary cause, but qualify the classification with the other causes. In some cases it may be more effective to correct the secondary cause and prevent future overflows than to focus entirely on the primary cause. An example could be an overflow caused by primarily high flow and, secondarily, a root blockage. It may be quicker and cheaper to remove the roots and keep them out than to fix the I/I. Removing the roots eliminates the public health problem, though the I/I will ultimately need to be corrected.

Though the program objectives are to protect public health, don't forget the safety of system workers. Sewer workers should always have the appropriate personal protective equipment available for the nature of the work they must perform.

Phil Simmons, Manager of the Municipal Facilities Section, cautions utilities that when copying some other utilities program they should carefully customize the program for their local conditions and their permit requirements. This is especially true if the first program is from out of state. Most EPA guidance material specifies "site specific" programs. If you simply take a program from the Internet and add your name, you miss the opportunity to think through what is happening in your system and to struggle with the details of executing the program in your system.

Other items to consider are making notice to the local health department during an event that may have wide ranging health impacts. Carefully evaluate where the spilled sewage may flow and who may come in contact with that sewage. Are there drinking water plants downstream; are there parks or areas where the public enters the stream? There may be times when the local emergency response system may need to be notified. These persons and organizations should be made aware of the program and their role in the response process well before an overflow event occurs. Because people call "911" for everything, you should inform the 911 Center on the process of contacting the appropriate utility personnel if they receive the initial complaint.

The primary objective of a SORP program is to protect public health. A well drafted program that is followed carefully should produce the information that leads operators and managers to the basic causes of the overflows or backups. Once the cause is determined, steps should be taken to correct the deficiency. This is very easy to say and sometimes very difficult to act upon, but the problem will never be solved until the cause is determined.

Utilities that are using SORPs frequently state the program development is a struggle, the initial stages of implementation are tough, but the results of using the program are very good. Benefits cited include improved collection maintenance, reductions of overflows and backups, improved communications internally and with stakeholders such as the public and elected officials, and a general higher level of professionalism within the utility. TPW

RESOURCES: Preparing Sewer Overflow Response Plans, American Public Works Association. Available from APWA or the MTAS Library.
ONLINE RESOURCES:
http://cfpub.epa.gov/npdes/home.cfm?program_id=4
http://www.nashville.gov/water/docs/cleanwater/pdr/MWS-SORP090527.pdf