

**Staff Planning and Utilization at CSO/SSO Facilities
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Introduction

In order to meet wet weather control regulations, large, medium and small governmental agencies are required to construct wet weather treatment facilities to treat and reduce the frequency and volume of treated and untreated combined sewer overflow (CSO) and sanitary sewer overflow (SSO) discharges to receiving streams. Budgetary issues in operating and maintaining wet weather facilities ultimately becomes a major concern for the municipality. Since labor costs make up a large portion of any budget, staffing alternatives for wet weather facilities must be considered. Staffing plans associated with these control facilities must be considered during the planning of these controls so that a best solution can be developed for the community's control plan. Controls requiring less staff are often a better solution even though the capital cost of that solution may be higher, because it provides a solution with the smallest total cost (capital plus O&M).

Objective

The objective of this paper is to share staffing experience for CSO/SSO control facilities. The paper will explore the used of dedicated, shared, seasonal, and subcontracted staffing solutions to perform the operations and maintenance activities associated with wet weather control facilities. In addition, the paper will present the various tasks associated with O&M and the job classifications and skill sets required to perform these tasks.

Staffing Experience

Southeast Michigan has implemented many types of wet weather treatment processes and facilities to control CSO discharges into the Great Lakes. Four major southeast Michigan governmental agencies were consulted to evaluate and analyze the operations and maintenance of these various facilities. A workgroup team was formed by the City of Detroit Water and Sewerage Department (DWSD), Macomb County Office of Public Works, Oakland County Drain Commission (OCDC) and Wayne County Department of Environment (WCDOE). These agencies have over 25 years of experience in operating and maintaining wet weather treatment facilities. This information was supplemented with information from other areas in the United States (Pennsylvania and New York). This information was used to develop staffing requirements of these facilities.

The staffing analysis identified the following four considerations for staffing CSO/SSO facilities:

- Staff Planning;
- Staff Resources;
- Staff Qualifications
- Staff Scheduling

Staff Planning

When a wet weather treatment facility is to be constructed, the owner must plan for staffing the facility early in the process. Decisions will need to be made to identify which staff resources will be assigned to operate and maintain the facility. If existing staff is selected, operating these types of facilities will most likely not be in their qualification skill set. Rather, plans to train and possibly certify staff will need to be planned and coordinated. Another option would be to recruit and hire personnel already experienced in the operation and maintenance of such facilities, but depending on the location, local talent may not be available.

Considering the amount of staff required to operate these facilities, the agency must plan to budget for the manpower that will be required to maintain and operate the facility. When the details are analyzed on projecting the manpower financial impacts to the agency, it is a major consideration during the planning phase of any wet weather facility.

Staff Resources

Depending on the size and complexity of the wet weather treatment facility, decisions will be made as to which type of staff commitment will be required at these facilities. Four (4) types of staff may be utilized to operate and maintain wet weather treatment facilities.

- Dedicated – Full time duties involved only wet weather treatment facilities.
- Shared – Part-time duties involved wet weather treatment facilities. Additional duties involve other wastewater treatment facilities (wastewater treatment plants, storm water facilities, and sanitary pump stations).
- Seasonal – Staff hired during warm weather months to paint and maintain grounds (generally 1,000 hours annually).
- Subcontracted – Skilled trades hired for specialty services related to operation and maintenance of wet weather treatment facilities. Additional resources are contracted by the agency on an as-needed basis.

The staff identified to operate and maintain these facilities will have numerous tasks. The staff assigned to these tasks will vary depending on their skill set. Some of the specific tasks are related to maintenance and some related to operations. In general the staffing of these facilities can be categorized into the following categories: *Engineer, Supervisor, Mechanic Operator, Electrician, Instrument Technician, Laborer, Data Analyst and Clerk*. The role of the staff is divided into two primary roles: Operation and Maintenance.

Operations Role

The operations role of the respective staff can be summarized as below:

Engineer – Called upon only in the event of emergency.

Supervisor – Responds to alarms, assigns staff, directs activities, monitors operations.

Mechanic Operator – Operates equipment, troubleshoots problems, makes minor repairs, performs basic laboratory analysis, monitors instrumentation and controls.

Electrician – Called upon only in the event of an emergency.

Instrument Technician – Called upon only in the event of instrumentation failure.

Laborer - Supports operational staff as needed for minor tasks.

Data Analyst – During work hours begins data compilation.

Clerk – No operational duties.

Maintenance Role

The maintenance role of the respective staff can be summarized as below:

Engineer – Plans improvement projects.

Supervisor – Oversees staff, plans improvement projects, determines preventative maintenance (PM) tasks, ensures safe work practices.

Mechanic Operator – Performs PM tasks on equipment and various improvement projects.

Electrician – Installs and repairs electrical equipment and systems. Performs calibration.

Instrument Technician – Calibrates equipment. Performs various low voltage electrical troubleshooting tasks.

Laborer – Performs facility and grounds maintenance and non-mechanical PM such as painting.

Data Analyst – Compiles and reports flow and water quality data. Processes work orders for maintenance tasks.

Clerk – Answers phones, processes purchasing, files.

Staff Qualifications

As previously discussed operating these types of facilities requires specialized skills. Acquiring these skills through proper training and certifications is paramount to a successful operating facility. Regulatory agencies may require certification for operators of CSO/SSO Control Facilities. The agency must plan ahead of the construction of the facility to ensure that the appropriate operations and maintenance staff have the appropriate certifications and training. The certification process will vary from state to state, but must be investigated long before a facility is ready for operation.

Training the wet weather treatment facility staff can be accomplished both at specialty courses or “on-the-job” training at similar facilities or once the facility comes on line. The proper training of all facility staff, rather dedicated, shared, seasonal or subcontracted, is a crucial element in operating the facility efficiently.

Staff Scheduling

Operation of wet weather treatment facilities many times involves committing staff outside the normal Monday through Friday 8am to 5pm business hours. In fact rain events, no matter when, will dictate when the facility becomes operational during wet weather events. Planning to have staff ready to work during the odd shift events (holidays, off hours, weekends) is one of the biggest challenges the supervisor will face in managing the facility. Staff must be prepared to report to work once an event becomes apparent.

The scheduling of staff for the facility will depend on what type of state the facility is in. The operational states of the facility include dry weather, pre-event, event and post-event. Staff assignments will differ considerably during the different operational states of the facility as follows:

Dry Weather – Pull and service pumps; Inspect, lubricate and exercise mechanical equipment; Calibrate flow and level measuring devices; Adjust limits on valves and actuators; Service air handling units; Calibrate gas detectors; House and grounds keeping.

Pre-Event – Plan staffing; Check condition and charge chemical feed system; Record baseline levels and readings; Check SCADA system for proper operation; Check fluid levels in equipment.

Event – Monitor flow levels; Record start times; Monitor and operate equipment; Troubleshoot equipments as necessary; Collect and analyze samples; Record data on operational logs.

Post-Event – Dewater; Flush and clean basins and wet wells; Flush and clean equipment; Complete sample analysis; Compile and report data; Debrief staff with event summary; Grease equipment and check fluid levels.

The details of scheduling the staff generally follow the type of state the facility is in. For instance, during dry weather and pre-event periods most agencies assign a normal 40 hour work week staff to maintain the facility. However, during events, the facility is generally staffed 24 hours a day, 7 days a week, with key staff also on-call. During these events staff are required to work overtime hours if the facility and event demand it. Post-event activities usually go back to 40 hour work week schedules. It is the responsibility of the supervisor to coordinate the schedules of the entire facility staff to assure all parties are on site when the conditions require it.

Summary

The decision by a public agency to construct wet weather treatment facilities is a major decision. The staffing of these facilities must not be overlooked during the planning phase of the facility. Dedicated staff will be required to operate and maintain the facility. When the manpower for the facilities is evaluated, it becomes apparent staffing for operations and maintenance of wet weather treatment facilities will require large budgets. Financial planning in advance of the construction of the facility will be required to budget for the additional staff that will be required to operate the facilities.

The staff required to operate and maintain these facilities will need to possess or acquire a very specialized skill set. Hiring the appropriate experienced staff or training existing staff must be planned as part of the process.

The weather will determine the frequency of wet weather events and ultimately the exact amount of staff that will be required to run the facility. The scheduling of staff for assignment to the facility will be the responsibility of the facility supervisor and will involve committing staff to overtime, weekends, off hours and even holidays.