

ACTION ITEM 7.6 – CAPACITY CERTIFICATION PROGRAM

ACTION ITEM

Maintain a program and process for certifying wastewater collection system capacity for new development and redevelopment projects.

OBJECTIVE

A capacity certification program, that includes the calculation of a system’s capacity, can reduce the number of SSOs in the Metro Water District. Capacity certification programs allow local wastewater providers to determine whether adequate wastewater collection and treatment capacities exist or will be available within their sewer systems, before authorizing new flows and sewer service connections.

Some portions of the Metro Water District are experiencing a great deal of infill development and re-development activity, which is expected to continue. When one home on a large lot is subdivided into multiple lots and residences, the volume of the wastewater increases. Similarly, if a sewer system extends beyond the originally planned boundaries; additional flows are added to the system. These additional flows can strain the existing collection system that was initially designed for lower volume flows. Capacity certification programs allow local wastewater providers to determine whether adequate wastewater collection and treatment capacities exist or will exist within their sewer systems, before authorizing new flows and sewer service connections.

DESCRIPTION OF MEASURE

The conveyance capacity of a sanitary sewer system can be estimated using manual calculations or a commercially-available hydraulic model. The prevailing base and peak flows are estimated using data from strategically placed permanent and temporary flow meters, rainfall data collectors and sewer system inspection data. A hydraulic model or calculations estimate the remaining (unused) capacity of the sewer system. The accuracy of the capacity determination is dependent upon the quality of data used in its calculation.

The intent of the capacity certification program is to base decisions regarding system expansions and new connections on the available sewer system capacity. Prior to allowing new connections into a sewer system, local wastewater providers should ensure there is sufficient capacity in the sewer system to handle predicted flows.

The capacity certification program must be clearly described. It should address at what point in the planning/development process various levels of review are performed (during initial building permit application, requests for zoning/rezoning, sewer connection requests, etc.) and which agencies of the organization will be responsible for certifying capacity availability. Building permit applications should include detailed plans, estimated wastewater flows, and supporting calculations. The authorizing agency within a jurisdiction will certify that the system has available adequate capacity to collect, transmit, and treat additional flows associated with new building construction and occupancy. Alternately, the authorizing agency will certify that ongoing or planned sewer system improvements

Responsible Party

- Local Government
- Local Wastewater Provider
- Other: _____

In Coordination With

- Site Plan Review Staff
- Community Development/ Zoning
- Local Stormwater Program
- Local Water Providers
- County Board of Health
- Other: neighboring wastewater providers, as necessary

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would provide the capacity needed to handle the additional flows. A capacity certification form will be completed and signed by authorized representatives before a service connection is allowed.

Certification of sewer collection capacity alone is not sufficient. In addition to certifying capacity, it is necessary to certify transmission and treatment capacities to ensure reduction in sewer system overflows, while ensuring compliance with the requirements of wastewater permits. Using these guidelines, each jurisdiction will develop its own unique capacity certification program based on system specific conditions and available information.

SPECIFIC SUB-TASKS

Sub-Task	Description
Maintain a flow and rainfall monitoring program	Maintain flow and rainfall monitoring to support the hydraulic modeling and capacity certification program.
Maintain a hydraulic model or manual calculation approach	Maintain a modeling software or manual calculation approach to determine available capacity.
Determine system capacity	Using manual calculations or hydraulic modeling, determine the system capacity.
Maintain procedures for certifying available capacity	Maintain a written procedure for certifying available capacity for proposed developments and sewer system extensions
Certify availability of capacity for proposed developments	Certify that capacity is available or will be available.

FLOW & RAINFALL MONITORING

Most wastewater treatment facilities have flow and rainfall monitors as part of their wastewater permit requirements. Additional flow monitors may be needed to address capacity certification, depending on the location of existing flow monitoring devices and the extent of the system.

If strategically located, flow monitors can track wastewater flow trends and aid in determining the volume of I/I entering the collection system upstream of the flow monitor. The combination of flow and rainfall monitoring is typically used to estimate the peak flows associated with various rainfall events. It is recommended that flow and rainfall monitoring be performed continuously within old and deteriorating sewer systems. Where possible, flow monitoring should be performed continuously at all major pump stations and wastewater treatment facilities. If possible, it is recommended that flow and rainfall data be stored in the asset management database discussed in this Section.

In lieu of traditional flow monitoring, some systems may be able to determine actual flows using run time data from pump stations within the collection system. Pump station run time calculations are acceptable if they accurately determine the volume of flow through the system.

HYDRAULIC MODELING

The conveyance capacity of a sewer system can be estimated through manual calculations or based on data output from a hydraulic model of the collection system.

A hydraulic model is a tool that can be used to determine the available sewer system capacity and to estimate the ability of the system to handle additional wastewater flows. Local wastewater providers

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with rapidly expanding collection systems, planning facility expansions, experiencing redevelopment at higher densities, or having sanitary sewer overflow challenges may require a hydraulic model of their system or the affected portion of their system to support the capacity certification program. A computer-based model may be preferred due to the number of iterations expected with planned system extension. A comprehensive sewer system map (Action Item 7.1) will provide the base data needed to develop an accurate hydraulic model. Flow and rainfall monitoring will be used to calibrate the hydraulic model as well as provide the needed information on anticipated inflow and infiltration volumes.

The hydraulic model of each sewer system will be maintained and updated as needed to minimize sanitary sewer overflows, but at a minimum prior to planned future expansions that may stress the collection system. Some local wastewater providers may choose a method of calculation of available capacity in lieu of developing a hydraulic model, such as a spreadsheet. Regardless of the tool chosen, the local wastewater provider must have a means for determining available capacity in the system and determining the impact of additional wastewater flows on the collection system.