



# **Capacity, Management, Operation and Maintenance (CMOM) Program Annual Report for 2009**

Milwaukee Metropolitan  
Sewerage District

June 2010

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## SECTION 1: PROGRAM OVERVIEW

The Milwaukee Metropolitan Sewerage District (District) developed and submitted to the Wisconsin Department of Natural Resources (WDNR) documentation of its Capacity, Management, Operation and Maintenance (CMOM) Program in June 2007. To oversee and assist with efforts related to the CMOM Program development and implementation, a CMOM Program Committee consisting of District Staff from the Technical Services, Legal Services, and Water Quality Protection Divisions was created. This committee now also includes staff from the Planning, Research and Sustainability Division, which was split from the Technical Services Division in 2009. Changes to the Program are made through consensus of the committee. The CMOM Committee also provided oversight on the preparation of the CMOM Program Annual Reports.

The District determined that it would implement its CMOM Program for its three main areas of operations: wastewater conveyance, treatment and watercourse systems. Further, the District viewed the CMOM Program implementation as an opportunity to (1) audit its practices and documentation, (2) bring the documentation under one umbrella to ensure consistent practices, and (3) improve its management of capital assets.

The CMOM Program is used as a method for the District to document current and proposed activities that are intended to help the District achieve goals related to overflows, effluent quality, and watercourse flooding. In addition, through the annual reporting and auditing effort, it is a way to periodically assess its practices and make systematic improvements. As part of this effort, the District has completed this third review of the Program in conjunction with evaluating the performance measures defined in the Program. The details of the Program changes resulting from the review are described further in the appropriate section below.

### ***1.1 REPORT PURPOSE***

The CMOM Program Annual Report provides summary descriptions of CMOM Program activities (past and planned) and is intended to be a communication tool. The report is intended for District staff, regulatory authorities, customers, and the general public. The report serves four general purposes:

1. To provide an overview of the activities completed under the CMOM Program on an annual basis;
2. To describe and document changes to the CMOM Program documentation on an annual basis, which may include changes to objectives, strategies, tactics, and performance measures; and
3. To describe the activities that are planned or currently being undertaken under the CMOM Program.
4. To continue compliance with the 2002 Stipulation Agreement between the District and the State of Wisconsin, which requires that “On a regular basis the District shall report to the Department on the implementation and performance of the CMOM program.”

The report consists of this Program Overview section plus one section for each of the CMOM Program Plans (Management Plan, Asset Management Plan, Overflow Response Plan, System Evaluation and Capacity Assurance Plan, Communication Plan, and Audit Plan).

## ***1.2 PROGRAM SUMMARY BY PLAN***

The District's CMOM Program includes a Management Plan, Asset Management Plan (AMP), Overflow Response Plan (ORP), System Evaluation and Capacity Assurance Plan (SECAP), Communication Plan and Audit Plan. Activities that took place in 2009 under each of these plans are discussed below. Performance measures are included in the CMOM Program under the Management Plan, but are discussed separately below.

### **Performance Measures**

A complete list of the performance measures and the value/status for 2007 through 2009 is included in Attachment 1. The purpose of the performance measures is to track District activities over time and gauge achievement of District objectives.

Some of these performance measures have been selected as key performance measures to be used to quickly gauge the overall performance of the District in the areas of Organization, System Performance, Satellite Municipalities, and Customer Service. These key performance measures are shown below in Table 1. Note that the performance measures relating to Satellite Municipalities evolve over time.

### **Management Plan**

The Management Plan describes the goals and objectives of the District related to conveyance, treatment plant and watercourse systems, the strategies and tactics the District is employing to achieve the goals, and the performance measures being used to assess attainment of the goals.

### **Asset Management Plan**

The Asset Management Plan describes the objectives, strategies, and tactics specifically related to asset management in more detail than is described in the Management Plan. These objectives are related to asset information, asset maintenance, asset rehabilitation and replacement, levels of service, and cost minimization.

The District contracts out the operation and maintenance of the conveyance and treatment facilities. Because of this, many of the District's asset management objectives related to these facilities were and are being met by the contract operator. The District has an agreement with the contract operator (Veolia Water Milwaukee, identified as Veolia in this report) that went into effect on March 1, 2008 and expires on February 28, 2018. The District worked with Veolia in 2009 on implementing the near-term and long-term objectives of the Asset Management Plan related to conveyance and treatment facilities. The bulk of this work is related to asset listings and work management (preventive, predictive, and corrective maintenance work).

The previous contract operator (United Water) was responsible for watercourse inspection and maintenance and performed this work without a formal program. However, in the agreement with Veolia, they maintain the single stormwater pumping

station (located at 42<sup>nd</sup> & Mt Vernon in the City of Milwaukee) that is owned by the District, but they do not otherwise have responsibility for watercourse assets. As of the end of 2007, the District had developed a watercourse inspection and maintenance program and an information and management system for tracking complaints, inspections, and maintenance related to the watercourse assets. The District used this system in 2009 to refine the list of watercourse assets, schedule and track watercourse inspections, and track issues related to the watercourse systems. The District also continued to refine the watercourse GIS in 2009. This GIS shows the watercourse systems and watercourse assets (such as culverts, gabion walls, retaining walls, and drop structures) in an easy to use intranet-based mapping system.

### **Overflow Response Plan**

The Overflow Response Plan describes the measures the District has put in place to be aware of, respond to, and provide notification of, overflows from the District system.

The contract operator has the equipment and personnel and is required by the District (through the Agreement for operation and maintenance services) to be the first responder for emergencies and overflows from the conveyance system. As the Agreement was developed during 2007, language was included that requires Veolia to have emergency, sanitary sewer overflow (SSO), and combined sewer overflow (CSO) response plans in place. In 2008, Veolia submitted their overflow and emergency response plans to the District. These plans are now in place and are implemented when responding to overflows and emergencies. In 2010, the District is planning to review the actual responses to: 1) The failure of the Underwood Creek force main that occurred on June 25<sup>th</sup>, 2009; and 2) The overflow at South Chase Ave and West Rosedale Ave that occurred on December 9<sup>th</sup>, 2009. The review of the actual responses will be used to update the existing plans as appropriate.

Veolia is not responsible for responding to watercourse issues beyond the stormwater pumping station. In 2009, the District completed a watercourse emergency response plan, which is put into place when there is the threat of severe rain, flooding, or issuance of a flood watch by the National Weather Service.

### **System Evaluation and Capacity Assurance Plan (SECAP)**

The SECAP describes the actions that the District has taken and will take to determine capacity requirements, evaluate system capacity, and undertake capacity enhancement measures.

The District completed and submitted the 2020 Facilities Plan (2020FP) to the WDNR in June of 2007. The 2020FP was a broad-scope effort and looked not only at the facilities required for the District to provide services, but also at methods of improving the quality of the region's water resources. As part of the 2020FP development process, an analysis of the capacity requirements and available storage and capacity was performed to determine additional facilities needed through the year 2020. The 2020 FP recommended additional treatment and conveyance facilities that may be needed, depending on several factors, including population growth, additional monitoring and analysis, success of I/I reduction efforts, etc.

The 2020FP recommended that a detailed capacity analysis be performed of both treatment plants to assure the stated capacity is accurate, and recommended increasing the capacity of the South Shore Water Reclamation Facility (SSWRF), depending upon future conditions. The capacity analyses were begun in 2008 and continued through 2009.

In addition to the capacity studies resulting from the 2020FP, the District was, in 2009, evaluating capacity requirements in small portions of the conveyance system for various reasons.

The District also continued to evaluate capacity in the watercourse systems as it relates to reducing the impacts to habitable structures from the one-percent probability flood-flows.

### **Communication Plan**

The Communication Plan serves to document the types and frequency of communications that will be prepared and distributed regarding the implementation of the CMOM Program.

The District conducted several activities during 2009 to communicate the status of its CMOM Program to various stakeholders. The activities included a presentation to a group of engineering consulting companies, the CMOM conference, which is attended by satellite municipalities, presentations to District staff, submitting the CMOM Program Annual Report to the WDNR, and updating CMOM Program information on the District's web site (both internal and external).

### **Audit Plan**

The Audit Plan serves to define the method, responsibilities, timeline, and documentation that will be used to complete an audit of the District CMOM Program.

The District updated the CMOM Program in 2009 through the preparation of the second annual report. The updates were described in the report submitted to the WDNR on June 30, 2009.

Table 1: Key Performance Measures

Performance Measure	2009 Value/Status	Evaluation
<b>Organization</b>		
1 <i>Organizational Best Practices Index</i> <sup>1</sup>	27	District is better than 75 <sup>th</sup> percentile in benchmark survey (25.5) <sup>2</sup>
2 <i>Bond Ratings</i>	AAA (Fitch), Aa1 (Moody's), AA+ (S&P)	Fitch is at top grade, Moody's and S&P are one step below top grade
3 <i>Employee Health and Safety Severity Rate</i> <sup>3</sup>	5.7	Reduction from 2008 value of 9.9
<b>System Performance</b>		
4 <i>Volume of wet weather SSOs where the event-generated flow is less than the WDNR approved Level of Protection</i>	Either zero or 0.62 MG <sup>4</sup>	
5 <i>Percent of time effluent is in compliance with WPDES permit limits</i>	100%	
6 <i>Conveyance System Integrity</i> <sup>5</sup>	0.56	Better than 25 <sup>th</sup> percentile in benchmark survey (4.3) <sup>6</sup>
7 <i>Annual number of habitable structures removed from the District's one-percent probability floodplain</i>	0	
8 <i>Number of building backups caused by the loss of capacity or function of a District facility</i>	3	Loss of function of bypass station at Honey Creek/Wisconsin (6-19-09)
<b>Satellite municipalities</b>		
9 <i>Satellite CMOM &amp; WWPFPMP development</i>		
2009	<i>WWPFMP developed and implemented</i>	Yes
	<i>District review of satellite CMOM Programs</i>	Yes
	<i>District action taken for satellite CMOM plans not submitted</i>	Yes
2010	<i>Review of annual satellite CMOM reports</i>	N/A for 2009
	<i>District action taken for satellite reporting issues</i>	N/A for 2009
	<i>Review of monitoring data</i>	N/A for 2009
	<i>District action taken with respect to peak flow performance standards</i>	N/A for 2009
<b>Customer Service</b>		
10	<i>Percent of inquiry documentation completed (conveyance and watercourse)</i>	100%

<sup>1</sup> Benchmark is defined in *Benchmarking Performance Indicators for Water and Wastewater Utilities*.

<sup>2</sup> Value of 25.5 is from *Benchmarking Performance Indicators for Water and Wastewater Utilities* (2007 survey report)

<sup>3</sup> Benchmark is defined in *Benchmarking Performance Indicators for Water and Wastewater Utilities*.

<sup>4</sup> The April 26<sup>th</sup>, 2009 event caused an overflow at one location (Green Tree/Milwaukee River) in the District system. The event consisted of up to 3.97 inches of rainfall with very wet antecedent conditions, however, the resulting wastewater recurrence interval in the vicinity of the overflow is unknown.

<sup>5</sup> Benchmark is defined in *Benchmarking Performance Indicators for Water and Wastewater Utilities*

<sup>6</sup> Value of 4.3 is from *Benchmarking Performance Indicators for Water and Wastewater Utilities* (2007 survey report)

### ***1.3 SIGNIFICANT ACTIVITIES***

Included here is a discussion of some significant activities that the District has completed, arranged by the CMOM Program plan under which they fall.

#### **Management Plan**

##### *Establish the Regional CMOM Program*

The District has spent considerable effort in establishing the regional CMOM Program, which includes all twenty-nine municipalities (includes Milwaukee County) within the District's service area. Previous work included preparing the readiness reviews and strategic plans for the municipalities. In 2009, District staff conducted one final CMOM workshop for municipal staff that went into detail on the preparation of each of the plans included in the CMOM Program. The purpose was to provide insight, gained by the District in the preparation of its CMOM Program, to the municipalities, as they were preparing their programs and submitting them to the District by June 30, 2009.

The municipal CMOM Program documentation that was submitted to the District includes the development of a Fats, Oils, and Grease Program. In 2009, the District began a cooperative effort among the tributary municipalities to assist in this development and provide consistency among the municipalities. The District assembled a committee, comprised of municipal staff, that will develop a "toolbox" that will be provided to all of the municipalities.

##### *Wet Weather Peak Flow Management Program*

To proceed with wet weather peak flow management activities, including implementing the Chapter 3 Rule, the District is developing the Wet Weather Peak Flow Management Program (WWPFMP). This Program is guided by a committee made up of members of the Technical Advisory Team (TAT). The TAT consists of both District and satellite municipality representatives. In 2009, the WWPFMP reviewed meter technology and types; selected the meters to be installed; began the procurement process for designing the metering system; revised the peak flow performance standards defined in the District Rules (Ch 3); and conducted a hydrologic analysis to refine the existing sewershed flow rates.

#### **Asset Management Plan**

##### *Geographical Information System*

Continuing the Enterprise geographic information system (GIS) Implementation begun in 2008, the District put in place numerous GIS applications and tools in 2009. This second year of implementation focused on efforts to improve organizational efficiency and the creation of business processes necessary to sustain the GIS and related systems.

##### *Equipment Assets and Work Management System*

Veolia uses two computerized maintenance management systems (CMMS), one for equipment assets (Oracle-WAM) and one for underground assets (ICOM3). There was a transition from the single old system (MAXIMO) to the two new systems that began in September 2008 and continued in 2009 with refining the required fields and standardizing

data input. The new systems provide the ability to implement asset management techniques much easier than was previously capable, including system criticality, condition monitoring information, predictive maintenance information, etc.

#### *Asset Risk*

Veolia uses the protocol for sewer televising and defect coding called Pipeline Assessment Certification Program (PACP) developed by the National Association of Sewer Service Companies (NASSCO). This protocol results in a condition rating for individual sewer pipes that are determined consistently throughout the District system.

In 2009, the District completed the criticality review of conveyance assets and uses this information to prioritize maintenance, rehabilitation, and replacement work. The criticality review information was documented in the Asset Information Management System (AIMS).

### **Overflow Response Plan**

#### *Root Cause Failure Analyses*

The District has been documenting and analyzing the causes of system failures, such as SSOs, pipe and equipment failures, and diversions in the conveyance system and at the treatment plants. The analyses conducted during 2009 were related to equipment failures that occurred during the June 7<sup>th</sup> through 15<sup>th</sup>, 2008 extreme precipitation event, the April 26<sup>th</sup>, 2009 overflow at Green Tree and the Milwaukee River, the Underwood Creek force main failure that occurred on June 25<sup>th</sup>, 2009, and an overflow from a manhole at S Chase Ave and W Rosedale Ave that occurred on December 9<sup>th</sup>, 2009..

#### *Watercourse Emergency Response Plan*

The District completed the preparation of a watercourse emergency response plan in 2009. The purpose of the plan is to enable efficient communication (internal and external) and have a planned response to emergency situations that might arise in the watercourse system during extreme precipitation and flood flow events.

### **System Evaluation and Capacity Assurance Plan**

#### *2020 Facilities Plan Advanced Planning Activities*

The 2020FP, completed and submitted to the WDNR in June 2007, was approved by the WDNR in December 2007. Advanced planning has been ongoing through 2009 on a number of capacity-related issues. Discussion of individual initiatives is included below in Section 5.

### **Communication Plan**

#### *CMOM Conference*

During 2009, the District highlighted its CMOM Program to engineering consultants that typically bid on District projects at a meeting held on January 21<sup>st</sup>, 2009. The District also held its third annual CMOM conference with the theme of caring for your facilities. The conference included a presentation of the District's CMOM program as well as information on fats, oils, and grease programs, enforcement techniques, and emergency preparedness. The District has already conducted the fourth annual CMOM conference in 2010.

## **SECTION 2: MANAGEMENT PLAN**

This section of the report will discuss the changes to the defined performance measures and the evaluation of the District's performance using the defined measures. The review of the performance using the defined measures is intended to be an evaluation of the District's status with respect to achieving its objectives. The review then provides impetus to continue existing strategies and tactics or to modify them to better achieve the objectives.

### ***2.1 PERFORMANCE MEASURES***

Performance measures were originally defined in section 2.2.6 of the CMOM Program documentation submitted to the WDNR in June 2007. There were modifications to the performance measures that were included in the annual reports submitted to the WDNR on June 30<sup>th</sup>, 2008 and June 30<sup>th</sup>, 2009.

#### **2.1.1 CHANGES TO THE DEFINED PERFORMANCE MEASURES**

There are no changes to the defined performance measures for this annual report.

#### **2.1.2 EVALUATION OF 2009 PERFORMANCE BASED ON THE DEFINED MEASURES**

All of the individual performance measures and the value or status for the years 2007 through 2009 are included in Attachment 1 to this report. A review of these indicates that the District is continuing to meet its objectives related to overflows, plant effluent quality and the use of in-plant diversions. The District has also made improvements related to employee health and safety (employee health and safety severity rate) managing the use of the Inline Storage System (ratio of unused volume of the ISS to the wet weather CSO volume), condition monitoring (percent of conveyance assets with a defined condition and management method), reuse of biosolids (percent of biosolids that are beneficially reused), and customer service (percent inquiry documentation completed). In addition to continuing the work on these objectives, the District needs to focus some effort on: 1) Completing root cause of failure analyses in a timely manner; 2) Developing the guidelines for conducting business case analysis; 3) Maintaining the monitoring system; 4) Quality checking the monitoring data in a timely manner; and 5) Maintaining the schedule for protecting structures from watercourse flooding.

### ***2.2 MANAGEMENT PLAN REVISIONS***

There were no changes made to the revised District's objectives, strategies, tactics and performance measures in 2009.

The only change to the Management Plan is substituting the new organization chart showing the Planning, Research, and Sustainability Division, which is where the responsibility for implementing the CMOM Program resides. See Attachment 2 for the revisions to Section 2.2.2 of the original CMOM Program documentation.

## **SECTION 3: ASSET MANAGEMENT PLAN**

The District has determined that a key component of its CMOM Program will be the development and implementation of an Asset Management Program. To oversee and assist with the efforts related to the Asset Management Program, an Asset Management Team has been developed. The Asset Management Team includes personnel from the areas of Planning, Accounting, Facilities Information, Contract Compliance, and Capital Program Business Administration.

Objectives were identified in the Asset Management Plan and are discussed below. They were grouped into immediate, near-term, and long-term objectives. Discussed first are the immediate objectives.

### ***3.1 IMMEDIATE OBJECTIVES***

The District's immediate asset management objectives include: 1) Vision and Support; 2) Plan Organization; 3) Plan Communication; 4) Plan Development; and 5) Immediate Gains. Each objective is discussed below.

#### **Vision and Support**

The key objectives include gaining understanding and obtaining support from District management and the Commission, and establishing relationships between levels of protection and costs. All of these objectives were met by the end of 2007. The District has received support from District management and the Commission, and the relationship between Level of Protection and cost has been addressed in the recently completed 2020 Facilities Plan.

#### **Plan Organization**

This objective required the establishment of the Asset Manager position and chartering the Asset Management Team, both of which occurred prior to the end of 2007.

#### **Plan Communication**

This objective required the identification and interests of key stakeholders, which has mostly occurred. In 2008, the District's internal CMOM web page was implemented and used to post information related to the documentation and implementation of the CMOM Program. This continued in 2009 with the posting of additional information and reports on the internal and external web pages.

#### **Plan Development**

This objective dealt with developing an Asset Management Plan (AMP). By virtue of the CMOM Program documentation submitted in 2007, this objective has been completed. Being part of the CMOM Program, the AMP is set up to be continually practiced and improved, and to receive periodic reviews for updates to the documentation.

## **Immediate Gains**

Immediate gains are expected to be realized through utilizing the Business Case Analysis (BCA) process, which defines objectives and drivers for each project and alternative approaches to meet objectives. The ultimate outcome of applying BCA process is to ensure that the projects that are undertaken have valid business objectives, that the project will meet the objectives, and that it is completed cost-effectively. The BCA process is expected to be developed in the future as part of the capital improvement program.

### ***3.2 NEAR-TERM AND LONG-TERM OBJECTIVES***

The District's near-term and long-term objectives include asset knowledge, planning, refurbishment and replacement, asset development, condition monitoring, operations and maintenance, financing, financial reporting, and the asset information management system (AIMS). The foundation for addressing these objectives was laid in 2007 through the development and documentation of the AMP, as well as including language in the Agreement with Veolia. These objectives were under various states of activity in 2009 that are discussed under the following areas: Asset hierarchy, Asset criticality, Asset maintenance, and Asset inventory.

#### **Asset Hierarchy**

The District has organized its assets by location and class (type). The location hierarchy includes buildings and treatment processes at the treatment plants, subsystems in the conveyance system, and watersheds and sub-watersheds in the watercourse system. The class hierarchy includes equipment types (i.e. pumps, conveyors, gates, valves), sewer types (i.e. interceptor sewers, collector sewers, storage tunnels, outfalls), and channel types (i.e. non-concrete, concrete lined, enclosed culvert). In 2008, in implementing asset management and the use of their new CMMSs, Veolia also grouped the District's assets into functional systems. In the conveyance system, this is the same as the location hierarchy. In the treatment plants, it somewhat mimics the location hierarchy, but is different in some significant ways, mainly where portions of systems are located in different buildings. For example, the primary sludge pumping system has assets located in both the primary clarifier gallery and in the preliminary treatment facility (where the sludge is processed). The system hierarchy allows for straightforward viewing of the functional group of assets and performing subsequent reviews related to criticality and failure modes.

In 2009, Veolia continued to refine the asset hierarchy in the CMMS. This effort is expected to be an ongoing effort to keep the asset listing as organized as possible.

#### **Asset Criticality**

Grouping the assets into functional systems was the first step in performing a criticality review of assets. The District began a study of criticality in the conveyance systems in 2007. The effort involved refining the factors used to determine criticality (or consequence of failure) and going through practice exercises with a team. This effort was completed in 2009 and is now used as part of the conveyance prioritization system.

The treatment plant equipment underwent a criticality review in 2008, undertaken by Veolia. The starting point for the criticality review was the system hierarchy, discussed immediately above. Each system was evaluated based on consequences of failure. In 2009, Veolia conducted a reliability-centered-maintenance (RCM) review on the Grit Removal system at the Jones Island Water Reclamation Facility.

RCM is a step-by-step method that is used to analyze a system's failure modes and effects and carefully looks at how to predict and prevent those failures through preventive or predictive maintenance strategies or through timing of capital improvements. RCM is a detailed study of things already known. Because RCM is intensive and takes significant amounts of time, only the systems that have been determined to be the highest rated for criticality go through the analysis.

The District did not perform any criticality reviews on watercourse assets in 2009. The current plan is to begin the criticality review of watercourse assets and equipment in 2010. The purpose of performing the criticality reviews is to determine which systems have unacceptable or major consequences of failure and to generally rank the systems by criticality.

Refining the asset hierarchy, determining system criticality and performing RCM ultimately result in better knowledge of the assets and asset systems. This allows for more proactive planning of preventive and predictive maintenance, reduction of failure risks and more efficient operations.

### **Asset Condition Monitoring and Maintenance**

Veolia currently uses the PACP defect coding devised by NASSCO. This condition monitoring method is being used to determine the condition and probability of failure for sewer lines, which leads to rescheduling and reprioritization of maintenance and inspection activities, as well as the subsequent rehabilitation or replacement as necessary to keep the risk of sewer failures at or below acceptable levels.

The CMMS used by Veolia generates preventive and predictive maintenance work orders for treatment plant and conveyance equipment generally in line with the maintenance recommended by the manufacturer. In 2009, Veolia completed nearly all of the preventive maintenance work orders that were generated and also completed predictive maintenance work on some equipment using infrared thermal imaging and oil analysis.

Corrective maintenance work orders, which are generated by Veolia staff, are also tracked in the CMMS. Tracking all of the work orders and associated information allows the cost of asset maintenance and asset ownership to be rolled-up, viewed, and analyzed in various ways, including by system, by location, and by asset type. This information can then be used to determine rehabilitation and replacement schedules, as well as which assets are using the most resources.

In the watercourse system, the District uses a custom-built system that includes the asset listing, schedules inspection work orders, tracks inspection results, tracks asset issues and is used to log complaints from citizens and municipal representatives. In 2009, this system was used for all of these tasks.

### **Asset Inventory**

The District conducted a fixed asset inventory and equipment condition assessment in 2007. The main purpose of this inventory was to compare the condition of fixed assets at the beginning and end of the operation and maintenance contract with United Water. This inventory used the accounting fixed asset list (Great Plains database), which was different from the CMMS list of assets. In 2008, these two asset lists were reviewed for consistency, with the intention of combining them and producing a single fixed asset list. Instead, it became clear that the purposes of the lists were different and they are too dissimilar to reconcile in a single attempt. Instead, revisions are being made in the gathering of information when construction projects are at substantial completion. This will allow the gradual reconciliation of the two fixed asset lists through time. The details for gathering data will be included in the Fixed Asset SOPs, which are to be updated by the end of 2010, as discussed above in Section 2.1.

The District, in 2009 continued to refine the GIS that is used for its conveyance facilities. This GIS provides greater accessibility to view District and municipal assets and has more asset information than was previously available. The development and deployment of a mobile application also allows users in the field to access system-wide data. Users are able to efficiently communicate data discrepancies to the GIS department, increasing the integrity of District data. A document management system was customized to manage electronic static materials including construction and record drawings. These drawings are accessible through the GIS

## **SECTION 4: OVERFLOW RESPONSE PLAN**

The overflow response plan (ORP) included with the CMOM Program documentation has listings of constructed overflow points (both SSO and CSO), as well as the methods in place for knowing there is an overflow, response procedures, analysis, and public notifications.

### ***4.1 CONSTRUCTED OVERFLOW POINTS***

In 2009, one of the constructed SSO points listed in Appendix 4-1 of the CMOM Program documentation was abandoned and another was converted to a relief sewer. The overflow at West Hampton Ave at North Green Bay Rd (west side), also known as BS0509 – permit number 212, was abandoned on January 29<sup>th</sup>, 2009. The overflow at West Hampton Ave at North Green Bay Rd (east side), also known as BS0508 – permit number 213, was changed from a sanitary sewer overflow to a relief sewer. The connection from the overflow pipe to the storm sewer at North Green Bay Rd and West Fairmount Ave was bulkheaded and a connection was made from the overflow pipe to the 72-inch MIS at North Green Bay Rd and West Villard Ave.

There were no physical changes to any of the other SSOs or to any CSOs in 2009. The SSO and CSO tables, included in this report as Attachments 3 and 4 show the most up-to-date listing of the District's constructed overflow points.

### ***4.2 CONTACT LISTS***

The District's list of municipal phone numbers for emergency situations has been updated. The updated list is included as Attachment 5 to this report. The District's situational contact list has been updated and sent out to the satellite municipalities. The contact list is included as Attachment 6 to this report.

### ***4.3 EMERGENCY RESPONSE PREPAREDNESS***

In 2008, Veolia submitted an overflow response plan and an emergency response plan. The overflow response plan details the steps to be taken when an overflow is identified, whether it is an SSO or CSO. The steps include notifications, dispatch of crews, containment, and feedback. The emergency response plan includes actions to be taken during various emergency situations, including severe weather, spills of hazardous substances into the conveyance system, power failures, and other treatment plant and conveyance system emergencies that impact the collection, conveyance, and treatment of sewage.

During 2009, Veolia responded to 18 reported spills, 13 odor issues, and 12 reports of damage to system equipment among the various items that were reported to them.

With the transition of the operating contract from United Water to Veolia in 2008, the District removed the duties related to watercourse maintenance and watercourse emergency response. With this change, the District began using the watercourse CMMS to track watercourse related emergencies and complaints. In 2009, the District responded

to numerous complaints regarding debris and sediment in the watercourse systems, as well as complaints about clogging of the trash racks, among the various items that were reported.

#### **4.4 FAILURE ANALYSIS**

The District has been preparing documentation on failures, overflows, and in-plant diversions that are not consistent with the WPDES permit, generally called root cause of failure analyses (RCFAs).

##### **2009 Failure Analysis**

1. A wet weather SSO occurred on April 26<sup>th</sup>, 2009 at the constructed overflow at Green Tree Rd and the Milwaukee River (permit number 263). The District contracted with Brown and Caldwell to conduct a RCFA and prepare a memorandum. A definitive cause of the overflow was not identified. There is a recommendation to modify or expand the monitoring equipment in the area to obtain more information on the hydraulics in the District sewers near this location. Information obtained from future events may help explain what occurred on April 26<sup>th</sup>, 2009.
2. A heavy precipitation event occurred on June 19<sup>th</sup>, 2009. During this event, the control cabinet at the Honey Creek and Wisconsin overflow station was flooded and did not operate. It was clear that the floodwaters from Honey Creek rose above the bottom of the cabinet and caused the station to not operate. Because the cause of the failure was clear, a formal RCFA was not conducted.
3. In September of 2009, the District identified a concrete sewer in North 107<sup>th</sup> Street, between West Silver Spring Road and West Hampton Ave that is less than 50 years old, was rehabilitated in the 1980s and is again in need of rehabilitation. The District began a RCFA to identify the cause of the shortened life of the sewer and potential solutions to prevent this from recurring.
4. On December 9<sup>th</sup>, 2009, an overflow occurred from a District manhole at the intersection of S Chase Ave and W Rosedale Ave in the City of Milwaukee. I RCFA was begun in 2009 on this incident to determine the sequence of events that resulted in the overflow and potential actions the District can take to reduce the probability of a similar overflow occurring in the future.

##### **Prior Failure Analysis**

1. The RCFA for the 6/7/08 flooding of the Beach Drive pump station (in the Village of Fox Point) was completed in 2009. The recommendations included upgrading the station's capacity, inspecting the MIS, removing some equipment, and constructing a relief sewer to prevent the station from future flooding.
2. The RCFA for the gate failure in the diversion chamber at North Green Bay Road and West Fairy Chasm Drive (DC0408) is still under investigation.
3. During the June 7<sup>th</sup>, 2008 precipitation event, a trash rack in the watercourse system at S 81<sup>st</sup> St & W Arthur Ave became plugged. A consultant was hired in

2008 to determine solutions to reduce the potential for the trash rack to become clogged in the future. The report was completed in 2009.

## **SECTION 5: SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN**

The District completed the 2020FP in June 2007, with the plan being approved by the Wisconsin Department of Natural Resources in December 2007. This plan addresses the long-term, overall evaluation of the capacity requirements and available capacity of the wastewater system. A number of advanced planning items were identified in the 2020FP that address specific capacity evaluations. Short descriptions of these and other capacity-related programs and projects that are being undertaken by the District are included below.

### **The Wet Weather Peak Flow Management Program (WWPFMP)**

The objective of the WWPFMP is to manage peak wet weather flows in the tributary municipal sewer systems to levels at or below those required by Chapter 3 of the District's Rules. In addition to changing the District rules to require management within the identified performance, the District, working in collaboration with the satellite municipalities, is in the process of developing a Program that will ensure continued long-term compliance with the peak flows identified for the satellite municipalities.

Efforts that were underway in 2009 include:

- Determining the types of flow meters to be used for both permanent and portable metering locations
- Evaluation of the rain gage system and determining required improvements
- Development of a Request for Proposals for the design of the metering facilities needed to implement the WWPFMP
- Hiring of an in-house hydraulic modeler and analyst
- Performing a hydrologic analysis to determine the five-year recurrence interval wastewater flow rates on a long-term, metershed basis
- Revising the Peak Flow Performance Standards as defined in Chapter 3 of the District Rules

### **Flow Metering for Potential Conveyance Relief Projects**

Investigation of locations and types of meters that will be used to evaluate the timing and need for potential conveyance relief projects was continued in 2009 and is expected to be finalized in 2010.

### **Evaluation of the South Shore Head Tank and South Shore Force Main**

The planning for a hydraulic analysis commenced in 2009 that involves the impact of upgrading the capacity of the Inline Pump Station on the South Shore Head Tank, the South Shore Force Main and the Diversion Chamber at S 6<sup>th</sup> St and W Oklahoma Ave.

### **Advanced Facilities Plan to Address Franklin/Muskego Future Flows**

This evaluation makes a recommendation for conveying future flows from the Franklin/Muskego area. This effort confirmed future growth areas and assessed the basis for sizing local facilities proposed to accommodate the future flows. The evaluation was initiated in 2007 and was completed in 2009.

### **Root Cause of Failure Analysis of the Beach Drive Pump Station**

The Beach Drive pump station became flooded and shut down during the June 7, 2008 rain event. A Root Cause of Failure Analysis (RCFA) was complete in 2009 on the station shutdown that included a review of the station capacity, as well as the upstream and downstream sewer capacity. As recommended by the RCFA, some improvements to the station are being designed to increase the capacity and provide protection against station flooding.

### **Real-Time Control Set-point Study**

This evaluation began in 2008. The purpose of this study is to determine if flow can be reverted (sent back to Jones Island) at different set points during events to optimize the use of District facilities for preventing overflows. The analysis was completed in 2009 and the final report is expected to be delivered in 2010.

### **Collector System and CSO Evaluation**

The purpose of this study, which began in 2008, is to evaluate whether inactive combined sewer outfalls are necessary for the operation of the conveyance system. It includes an evaluation of the near-surface collector system (that delivers flow to the inline storage system). The study continued in 2009 and will continue in 2010.

### **Capacity Analyses of the Jones Island and South Shore Water Reclamation Facilities**

Consistent with the recommendations of the 2020 Facilities Plan, a detailed capacity analysis of the Jones Island and South Shore Water Reclamation Facilities was initiated in 2008. The study includes process and hydraulic modeling to determine the upper limit of treatment capability. This analysis was continued in 2009 and is expected to be completed in 2010.

### **Demonstration and Installation Projects for Increasing Capacity of the South Shore Water Reclamation Facility**

This project consists of developing and pilot testing a biological/physical-chemical process for the treatment of wet weather flows at the South Shore Water Reclamation Facility. This project follows the Capacity Analyses mentioned directly above and is expected to be initiated in 2010. The information obtained from the demonstration project pilot testing will be used for the design of the full-scale wet weather treatment facilities, should they be necessary.

### **Milwaukee River Flood Management - Main stem**

The evaluation portion of this project continued in 2009. The purpose of this part of the project is to determine the one-percent flood flows along the main stem of the Milwaukee River and the areas where the flood-flows impact habitable structures. A District-funded study by SEWRPC was delivered in 2008 outlining the floodplain and the habitable structures within it. The June 2008 precipitation event, while not a one-percent event in the Milwaukee River watershed, was significant enough to verify numerous flooded structures. Work will continue to determine the potential solutions for reducing the impacts to habitable structures.

**Kinnickinnic River Flood Management - Main stem**

The evaluation portion of this project continued in 2009. The purpose of this part of the project is to determine the one-percent flood flows along the main stem of the Kinnickinnic River and the habitable structures that are currently being impacted by the flood flows. A District-funded study by SEWRPC was delivered in 2008 outlining the floodplain and the habitable structures within it at risk of flooding during a one-percent probability flood flow. Work has been ongoing to identify river capacity improvements and other solutions for reducing the impacts to habitable structures.

**Wilson Park Creek Flood Management – South 27<sup>th</sup> St to South Howell Ave**

The evaluation portion of this project began in 2009. The purpose of this part of the project is to determine the one-percent flood flows along Wilson Park Creek and the habitable structures that are currently being impacted by the flood flows. A District-funded study by SEWRPC was delivered in 2008 outlining the floodplain and the habitable structures within it at risk of flooding during a one-percent probability flood flow. Work has been ongoing to identify river capacity improvements and other solutions for reducing the impacts to habitable structures.

## SECTION 6: COMMUNICATION PLAN

The Communication Plan documents the types and frequency of communications that are prepared and presented or distributed regarding the implementation of the CMOM Program.

Discussed below are the activities of the communication plan that have been completed during 2009:

- Staff gave a presentation regarding CMOM information to a group of engineering consultants that typically bid on District projects on January 21<sup>st</sup>, 2009.
- The District held a CMOM conference on March 4<sup>th</sup>, 2009. Public works staff from the District's satellite municipalities attended. The topics covered revolved around the theme of caring for your facilities and included fats, oils, and grease programs, enforcement issues, sewer cleaning, and emergency readiness.
- Staff gave a presentation regarding CMOM information to the District's Resident Engineers and Resident Inspectors on April 22<sup>nd</sup> and 23<sup>rd</sup>, 2009.
- The CMOM Program Annual Report for 2008 was submitted to the WDNR on June 30, 2009.
- Staff submitted a memorandum to the Commission on July 2<sup>nd</sup>, 2009, which provided a summary and description of the 2008 CMOM Program Annual Report.
- The District's publicly accessible CMOM web page was updated to include the 2008 CMOM Program Annual Report.
- The District's publicly accessible community exchange web page was updated to include the presentations from the District's CMOM workshops and supporting documents.
- The District updated its internal CMOM web page with to include the 2008 CMOM Program Annual Report.

## **SECTION 7: AUDIT PLAN**

The Audit Plan is comprised of three sections: (1) Annual updating, which is completed through the Annual Report; (2) Program audit, which is completed through the Program Audit Report and undertaken on a five year cycle, with the first anticipated in 2012, and (3) Program change procedures, which will be implemented following the Program Audit.

The 2008 CMOM Program Annual Report was completed in 2009 and included some updating and clarifications to the language of some of the objectives and performance measures that are in the Management Plan. There were no other activities related to the Audit Plan that occurred in 2009.

ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure <small>* indicates the measure is also a benchmark</small>	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Overall	Program Organization	Organizational Best Practices Index*	2.2.1.1.1 – Enable implementation of the CMOM Program within the District organizational structure	27	27	27
Overall	Program Organization	CMOM Manager responsibilities assigned	2.2.1.1.1 – Enable implementation of the CMOM Program within the District organizational structure	Yes	Yes	Yes
Overall	Program Organization	CMOM work team established and functioning	2.2.1.1.1 – Enable implementation of the CMOM Program within the District organizational structure	Yes	Yes	Yes
Overall	Program Organization	Asset Manager responsibilities assigned	2.2.1.1.1 – Enable implementation of the CMOM Program within the District organizational structure	Yes	Yes	Yes
Overall	Program Organization	Asset Management Team established and functioning	2.2.1.1.1 – Enable implementation of the CMOM Program within the District organizational structure	Yes	Yes	Yes
Overall	Communication	CMOM page on the District’s internal web site updated annually to include new reports and communications	2.2.1.1.2 – Communicate the goals and objectives of the CMOM Program to internal and external stakeholders, monitor the CMOM Program implementation, and institute program modifications	No	Yes	Yes
Overall	Communication	CMOM page on the District’s public web site updated annually to include new reports and communications	2.2.1.1.2 – Communicate the goals and objectives of the CMOM Program to internal and external stakeholders, monitor the CMOM Program implementation, and institute program modifications	Yes	Yes	Yes
Overall	Communication	Annual TAT briefing completed	2.2.1.1.2 – Communicate the goals and objectives of the CMOM Program to internal and external stakeholders, monitor the CMOM Program implementation, and institute program modifications	Yes	No	No

ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure * indicates the measure is also a benchmark	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Overall	Communication	Annual Commission memorandum completed	2.2.1.1.2 – Communicate the goals and objectives of the CMOM Program to internal and external stakeholders, monitor the CMOM Program implementation, and institute program modifications	Yes	Yes	Yes
Overall	Communication	Annual staff briefing completed	2.2.1.1.2 – Communicate the goals and objectives of the CMOM Program to internal and external stakeholders, monitor the CMOM Program implementation, and institute program modifications	No	Yes	Yes
Overall	Communication	Percent of annual reports completed on time	2.2.1.1.2 – Communicate the goals and objectives of the CMOM Program to internal and external stakeholders, monitor the CMOM Program implementation, and institute program modifications	N/A for 2007	100%	100%
Overall	Program Organization	Annual cost for the implementation of the regional CMOM Program activities	2.2.1.1.2 – Communicate the goals and objectives of the CMOM Program to internal and external stakeholders, monitor the CMOM Program implementation, and institute program modifications	\$31,310.10 <sup>1</sup>	\$121,289.58	\$130,205.82
Overall	Finance	Percent of cash financing (six-year average)	2.2.1.1.3 – Continue to maintain adequate financial planning	25%	28%	27%
Overall	Finance	Outstanding Debt	2.2.1.1.3 – Continue to maintain adequate financial planning	1.29%	1.36%	1.44%
Overall	Finance	Six-year capital financing plan is updated and revised annually	2.2.1.1.3 – Continue to maintain adequate financial planning	Yes	Yes	Yes

<sup>1</sup> This does not include \$775,600 spent in 2007 or the money spent in prior years on the development of the regional CMOM Program. Development is considered to end with the formal documentation of the CMOM Program. All activity beyond development is implementation.



ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure <small>* indicates the measure is also a benchmark</small>	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Overall	Finance	Bond Ratings*	2.2.1.1.3 – Continue to maintain adequate financial planning	AAA (Fitch Ratings), Aa1 (Moody's), AA+ (S&P)	AAA (Fitch Ratings), Aa1 (Moody's), AA+ (S&P)	AAA (Fitch Ratings), Aa1 (Moody's), AA+ (S&P)
Overall	Finance	Establish a method for benchmarking operation and maintenance costs by December 31, 2008	2.2.1.1.3 – Continue to maintain adequate financial planning	In Progress	Yes	Completed in 2008
Overall	Communication	Percent of overflow and in-plant diversion events for which a public notification was issued	2.2.1.1.4 – Continue to comply with regulatory requirements	100%	100%	100%
Overall	System Performance	Percent of time effluent BOD is in compliance with WPDES permit limits	2.2.1.1.4 – Continue to comply with regulatory requirements	100%	100%	100%
Overall	System Performance	Percent of time effluent TSS is in compliance with WPDES permit limits	2.2.1.1.4 – Continue to comply with regulatory requirements	100%	100%	100%
Overall	System Performance	Percent of time effluent fecal coliform count is in compliance with WPDES permit limits	2.2.1.1.4 – Continue to comply with regulatory requirements	100%	100%	100%
Overall	System Performance	Percent of flow into system, resulting from wet weather, that is captured and treated	2.2.1.1.4 – Continue to comply with regulatory requirements	98.24%	91%	97%
Overall	System Performance	CMAR overall score*	2.2.1.1.4 – Continue to comply with regulatory requirements	JI = 4.0; SS = 3.84	JI = 3.91; SS = 3.76	Not determined at time of report

ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure <small>* indicates the measure is also a benchmark</small>	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Overall	System Performance	Number of wet weather sanitary sewage overflows occurring more frequently than the WDNR approved Level of Protection <sup>2</sup>	2.2.1.1.4 – Continue to comply with regulatory requirements	0	Either zero or one <sup>3</sup>	Either zero or one <sup>4</sup>
Overall	Satellite systems	All satellite CMOM compliance strategies completed by December 31, 2007	2.2.1.1.5 – Establish a regional CMOM program	27 completed. Other two in progress	Yes	All completed by end of 2008
Overall	Satellite systems	District has taken appropriate action for each satellite system that has not submitted a Management Plan, Overflow Response Plan, Communication Plan, Audit Plan, System Evaluation and Capacity Assurance Plan (where required) and I/I management plan by June 2009	2.2.1.1.5 – Establish a regional CMOM program	N/A for 2007	N/A for 2008	Yes
Overall	Satellite systems	District sewer plan review process defined and documented by December 31, 2008	2.2.1.1.5 – Establish a regional CMOM program	In Progress	Yes	Completed in 2008
Overall	Satellite systems	Percent of sewer plans reviewed by the District within deadlines established by the sewer plan review process	2.2.1.1.5 – Establish a regional CMOM program	100%	100%	100%

<sup>2</sup> Level of Protection is defined as the 5-year wastewater recurrence interval, as stated in the approved 2020FP

<sup>3</sup> The April 10th, 2008 event caused an overflow at one location (KK/St Francis) in the District system. The recurrence interval for the event in the vicinity of the overflow is unknown. The Warnimont Relief Sewer is a stipulated project that provides relief at this location and was put on-line after the 4-10-08 event

<sup>4</sup> The April 26th, 2009 event caused an overflow at Green Tree/Milwaukee River. The recurrence interval for the event in the vicinity of the overflow is unknown



ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure <small>* indicates the measure is also a benchmark</small>	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Overall	Satellite systems	District municipal sewer construction Quality Assurance program defined and documented by June 30, 2008	2.2.1.1.5 – Establish a regional CMOM program	In Progress	Yes	Completed in 2008
Overall	Satellite systems	Percent of municipal sewer construction projects receiving QA inspection as defined by the QA program	2.2.1.1.5 – Establish a regional CMOM program	100%	100%	100%
Overall	Personnel & Safety	Annual regulatory training completed	2.2.1.1.6 – Continue to maintain a safe work environment for District employees and sustain a competent District workforce	Yes	Yes	Yes
Overall	Personnel & Safety	Annual training hours per employee*	2.2.1.1.6 – Continue to maintain a safe work environment for District employees and sustain a competent District workforce	14.5 hrs per employee	11.4 hrs per employee	15.8 hrs/employee
Overall	Personnel & Safety	Employee Health and Safety Severity Rate*	2.2.1.1.6 – Continue to maintain a safe work environment for District employees and sustain a competent District workforce	27 injury hours per 100 FTEs	9.9 injury hours per 100 FTEs	5.7 injury hours per 100 FTEs
Conveyance	System Performance	Number of wet weather CSOs	2.2.1.2.1 – Establish CMOM Program elements specific to minimizing the number and volume of CSOs	4	3	2
Conveyance	System Performance	Ratio of unused volume of the ISS to the wet weather CSO volume for each event	2.2.1.2.1 – Establish CMOM Program elements specific to minimizing the number and volume of CSOs	4/3/07 - 8.8% 8/20/07 - 145%	4-10-08 - 17%, 6-7-08 - 0%, 12/27/08 - 160%	4-26-09 - 13%, 6-19-09 - 2%
Conveyance	System Performance	Development of the Wet Weather Peak Flow Management program by September 30, 2009	2.2.1.2.2 –Address peak wet weather flows from satellite systems that impact the District's system	In Progress	In Progress	Yes

ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure <small>* indicates the measure is also a benchmark</small>	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Conveyance	System Performance	Development of the Wet Weather Peak Flow Monitoring Plan by December 31, 2008	2.2.1.2.2 –Address peak wet weather flows from satellite systems that impact the District's system	N/A for 2007	Yes	Completed in 2008
Conveyance	Asset Management	Develop a plan for periodic operational readiness testing of sanitary sewer overflow facilities by June 30, 2009	2.2.1.2.3 – Where possible, establish additional practices to prevent SSOs, maintain or improve system performance, and avoid preventable failures	In Progress	In Progress	Completed
Conveyance	Asset Management	Percent completion of post-overflow review process within one year	2.2.1.2.3 – Where possible, establish additional practices to prevent SSOs, maintain or improve system performance, and avoid preventable failures	N/A for 2007	60%	33%
Conveyance	System Performance	Number of building backups caused by the loss of capacity or function of a District facility	2.2.1.2.3 – Where possible, establish additional practices to prevent SSOs, maintain or improve system performance, and avoid preventable failures	0 (5 investigated)	Undetermined at time of preparation of report due to ongoing analysis	3 <sup>5</sup>
Conveyance	System Performance	Percent of total flow entering the conveyance system that is captured and treated	2.2.1.2.3 – Where possible, establish additional practices to prevent SSOs, maintain or improve system performance, and avoid preventable failures	99.24%	95.1%	98.3%
Conveyance	System Performance	Number of dry weather overflows	2.2.1.2.3 – Where possible, establish additional practices to prevent SSOs, maintain or improve system performance, and avoid preventable failures	1	0	2

<sup>5</sup> Building backups were caused by the flooding of the control cabinet for the bypass station at Honey Creek and Wisconsin

ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure <small>* indicates the measure is also a benchmark</small>	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Conveyance	System Performance	Number of wet weather SSOs where the event generated flow is less than the WDNR approved level of protection	2.2.1.2.3 – Where possible, establish additional practices to prevent SSOs, maintain or improve system performance, and avoid preventable failures	0	Either zero or one <sup>6</sup>	Either zero or one <sup>7</sup>
Conveyance	System Performance	Number of wet weather SSOs	2.2.1.2.3 – Where possible, establish additional practices to prevent SSOs, maintain or improve system performance, and avoid preventable failures	1	2	2
Conveyance	System Performance	Volume of wet weather SSOs where the event generated flow is less than the WDNR approved level of protection	2.2.1.2.3 – Where possible, establish additional practices to prevent SSOs, maintain or improve system performance, and avoid preventable failures	0	Either zero or 0.18 MG. <sup>8</sup>	Either zero or 0.62 MG. <sup>9</sup>
Conveyance	System Performance	Volume of wet weather SSOs	2.2.1.2.3 – Where possible, establish additional practices to prevent SSOs, maintain or improve system performance, and avoid preventable failures	0.087 MG	686 MG	57 MG
Conveyance	System Performance	Regulatory-approved Industrial Waste Pretreatment Program in operation	2.2.1.2.3 – Where possible, establish additional practices to prevent SSOs, maintain or improve system performance, and avoid preventable failures	Yes	Yes	Yes

<sup>6</sup> The April 10th, 2008 event caused an overflow at one location (KK/St Francis) in the District system. The recurrence interval for the event in the vicinity of the overflow is unknown. The Warnimont Relief Sewer is a stipulated project that provides relief at this location and was put on-line after the 4-10-08 event

<sup>7</sup> The April 26th, 2009 event caused an overflow at Green Tree/Milwaukee River. The recurrence interval for the event in the vicinity of the overflow is unknown.

<sup>8</sup> The April 10th, 2008 event caused an overflow at one location (KK/St Francis) in the District system. The recurrence interval for the event in the vicinity of the overflow is unknown. The Warnimont Relief Sewer is a stipulated project that provides relief at this location and was put on-line after the 4-10-08 event.

<sup>9</sup> The April 26th, 2009 event caused an overflow at Green Tree/Milwaukee River. The recurrence interval for the event in the vicinity of the overflow is unknown.



ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure <small>* indicates the measure is also a benchmark</small>	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Conveyance	Asset Management	Fixed Asset SOPs audited by December 31, 2008	2.2.1.2.4 – Continue to establish and document level of protection, design and performance standards for conveyance assets constructed in the District service area	In Progress	Yes	Completed in 2008
Conveyance	Asset Management	Fixed Asset SOPs updated by December 31, 2010	2.2.1.2.4 – Continue to establish and document level of protection, design and performance standards for conveyance assets constructed in the District service area		N/A for 2008	In Progress
Conveyance	Asset Management	Percent of conveyance assets with defined condition and management method as documented in the Asset Information Management System	2.2.1.2.4 – Continue to establish and document level of protection, design and performance standards for conveyance assets constructed in the District service area	0%	10.3%	37.0%
Conveyance	Asset Management	Establish criteria and procedures for conducting Business Case Analysis on conveyance projects by June 30, 2009	2.2.1.2.4 – Continue to establish and document level of protection, design and performance standards for conveyance assets constructed in the District service area	In Progress	In Progress	Still in Progress <sup>10</sup>
Conveyance	Asset Management	Percent of Business Case Analyses completed where required by District procedures	2.2.1.2.4 – Continue to establish and document level of protection, design and performance standards for conveyance assets constructed in the District service area	N/A for 2007	N/A for 2008	N/A for 2009
Conveyance	Asset Management	Number of conveyance construction project updates to the GIS	2.2.1.2.4 – Continue to establish and document level of protection, design and performance standards for conveyance assets constructed in the District service area	12 contracts	34 contracts	9 contracts

<sup>10</sup> New completion date is June 30, 2011.



ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure <small>* indicates the measure is also a benchmark</small>	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Conveyance	Asset Management	Backlog of conveyance construction project updates to the GIS	2.2.1.2.4 – Continue to establish and document level of protection, design and performance standards for conveyance assets constructed in the District service area	44 contracts <sup>11</sup>	0 contracts	6 contracts
Conveyance	Asset Management	Level of Protection defined and approved by the WDNR for the wastewater system	2.2.1.2.4 – Continue to establish and document level of protection, design and performance standards for conveyance assets constructed in the District service area	Yes	Yes	Yes
Conveyance	Capital Program Implementation	Facilities Plan implementation on schedule	2.2.1.2.4 – Continue to establish and document level of protection, design and performance standards for conveyance assets constructed in the District service area	Yes	Yes	Yes
Conveyance	Asset Management	Number of open PM work orders older than 90 days (sewers)	2.2.1.2.5 – Minimize the cost of conveyance asset ownership while maintaining necessary stewardship of assets and achieving defined protection levels	80	51	45
Conveyance	Asset Management	Number of open PM work orders older than 90 days (conveyance equipment and pump stations)	2.2.1.2.5 – Minimize the cost of conveyance asset ownership while maintaining necessary stewardship of assets and achieving defined protection levels	45	65	70
Conveyance	Asset Management	Planned maintenance ratio: hours* (sewers)	2.2.1.2.5 – Minimize the cost of conveyance asset ownership while maintaining necessary stewardship of assets and achieving defined protection levels	85.40%	67%	99%

<sup>11</sup> 44 contracts for 2007 backlog was a high estimate for consultant contract, actual number turned out to be 34



ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure * indicates the measure is also a benchmark	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Conveyance	Asset Management	Planned maintenance ratio: cost* (sewers)	2.2.1.2.5 – Minimize the cost of conveyance asset ownership while maintaining necessary stewardship of assets and achieving defined protection levels	84.20%	67%	99%
Conveyance	Asset Management	Conveyance system integrity* [# of collection system failures/total miles in collection system]	2.2.1.2.5 – Minimize the cost of conveyance asset ownership while maintaining necessary stewardship of assets and achieving defined protection levels	0.9 failures per 100 miles of piping	0.56 failures per 100 miles of piping	0.56 failures per 100 miles of piping
Conveyance	Asset Management	Planned Maintenance ratio: count (sewers)	2.2.1.2.5 - Minimize the cost of conveyance asst ownership while maintaining necessary stewardship of assets and achieving defined protection levels	95.20%	92%	95%
Conveyance	Asset Management	Planned maintenance ratio: hours* (conveyance equipment and pump stations)	2.2.1.2.5 - Minimize the cost of conveyance asst ownership while maintaining necessary stewardship of assets and achieving defined protection levels	77.40%	71%	73%
Conveyance	Asset Management	Planned maintenance ratio: cost* (conveyance equipment and pump stations)	2.2.1.2.5 - Minimize the cost of conveyance asst ownership while maintaining necessary stewardship of assets and achieving defined protection levels	75.80%	69%	65%
Conveyance	Asset Management	Planned maintenance ratio: count (conveyance equipment and pump stations)	2.2.1.2.5 - Minimize the cost of conveyance asst ownership while maintaining necessary stewardship of assets and achieving defined protection levels	85.90%	86%	81%
Conveyance	System Monitoring	Percent of portable flow monitors repaired within 5 business days after problems are identified	2.2.1.2.6 – Enhance District level of knowledge and understanding of wet weather flows and system response to precipitation and other factors	94%	100%	100%



ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure <small>* indicates the measure is also a benchmark</small>	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Conveyance	System Monitoring	Percent of permanent monitoring sites with less than 30 consecutive days of missing or bad data	2.2.1.2.6 – Enhance District level of knowledge and understanding of wet weather flows and system response to precipitation and other factors	76%	77% <sup>12</sup>	72% <sup>13</sup>
Conveyance	System Monitoring	Percent of monitoring sites calibrated [check and adjustment as necessary] annually	2.2.1.2.6 – Enhance District level of knowledge and understanding of wet weather flows and system response to precipitation and other factors	100%	100%	100%
Conveyance	System Monitoring	Percent of rain gauges calibrated [check and adjustment as necessary] annually	2.2.1.2.6 – Enhance District level of knowledge and understanding of wet weather flows and system response to precipitation and other factors	100%	94%	94%
Conveyance	System Monitoring	Percent of data reviewed for QA within 30 days	2.2.1.2.6 – Enhance District level of knowledge and understanding of wet weather flows and system response to precipitation and other factors	90%	90%	70% <sup>14</sup>
Conveyance	Customer Service	Percent of documented inquiries with a documented response	2.2.1.2.7 – Provide information receipt, response activity, and feedback regarding customer inquiries	98.50%	97%	100%
Treatment	System Performance	Volume of in-plant diversions not consistent with permit requirements	2.2.1.3.1 – Continue to provide effluent quality that meets or exceeds WPDES permit requirements and effluent quality goals	4.1 MG	0	0

<sup>12</sup> Remainder of sites will be abandoned or replaced as part of WWPFMP

<sup>13</sup> Some sites currently have portable meters to cover gaps in data

<sup>14</sup> Delays in review time caused by problems with conversion to Flowlink 5



ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure <small>* indicates the measure is also a benchmark</small>	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Treatment	System Performance	Number of in-plant diversions not consistent with permit requirements	2.2.1.3.1 – Continue to provide effluent quality that meets or exceeds WPDES permit requirements and effluent quality goals	1	0	0
Treatment	System Performance	Receipt of NACWA Peak Performance Award	2.2.1.3.1 – Continue to provide effluent quality that meets or exceeds WPDES requirements and effluent quality goals	Yes	Yes	Yes <sup>15</sup>
Treatment	System Performance	Percent of time effluent BOD is in compliance with WPDES permit	2.2.1.3.1 – Continue to provide effluent quality that meets or exceeds WPDES requirements and effluent quality goals	100%	100%	100%
Treatment	System Performance	Percent of time effluent TSS is in compliance with WPDES permit	2.2.1.3.1 – Continue to provide effluent quality that meets or exceeds WPDES requirements and effluent quality goals	100%	100%	100%
Treatment	System Performance	Percent of time effluent fecal coliform count is in compliance with WPDES permit	2.2.1.3.1 – Continue to provide effluent quality that meets or exceeds WPDES requirements and effluent quality goals	100%	100%	100%
Treatment	System Performance	Percent of time effluent Phosphorous is in compliance with WPDES permit	2.2.1.3.1 – Continue to provide effluent quality that meets or exceeds WPDES requirements and effluent quality goals	100%	100%	100%
Treatment	System Performance	Percent of time effluent Ammonia is in compliance with WPDES permit	2.2.1.3.1 – Continue to provide effluent quality that meets or exceeds WPDES requirements and effluent quality goals	100%	100%	100%

<sup>15</sup> Qualified, not yet received



ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure <small>* indicates the measure is also a benchmark</small>	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Treatment	System Performance	Volume of SSOs due to closure of the ISS separate sewer gates where the event generated flow is below the approved Level of Protection	2.2.1.3.2 – Continue to optimize effectiveness of wet weather treatment capacity	0	0	0
Treatment	System Performance	Volume of SSOs due to closure of the ISS separate sewer gates	2.2.1.3.2 – Continue to optimize effectiveness of wet weather treatment capacity	0	686 MG <sup>16</sup>	56 MG
Treatment	System Performance	Number of SSO events due to closure of the ISS separate sewer gates where the event generated flow is below the approved Level of Protection	2.2.1.3.2 – Continue to optimize effectiveness of wet weather treatment capacity	0	0	0
Treatment	System Performance	Number of SSOs due to closure of the ISS separate sewer gates	2.2.1.3.2 – Continue to optimize effectiveness of wet weather treatment capacity	0	1	1
Treatment	System Performance	Percent of produced biosolids that are beneficially reused	2.2.1.3.3 – Continue to manage biosolids in a manner that maximizes beneficial reuse	74% <sup>17</sup>	91% <sup>18</sup>	96.8% <sup>19</sup>
Treatment	Asset Management	Fixed Asset SOPs audited by December 31, 2008	2.2.1.3.4 – Continue to establish and document levels of protection, design and performance standards for treatment plant assets	In progress	Yes	Completed in 2008

<sup>16</sup> This is the total overflow volume for the event where the ISS was closed to separate sewage. It is not an actual determination of the specific overflow volume that was directly caused by the closing of the ISS separate sewer gates.

<sup>17</sup> All of the biosolids that were landfilled in 2007 were due to PCB contamination.

<sup>18</sup> Remainder was PCB contamination and digester bottom sludge.

<sup>19</sup> All biosolids landfilled were from cleaning of digesters.



ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure <small>* indicates the measure is also a benchmark</small>	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Treatment	Asset Management	Fixed Asset SOPs updated by December 31, 2010	2.2.1.2.4 – Continue to establish and document level of protection, design and performance standards for conveyance assets constructed in the District service area		N/A for 2008	N/A for 2009
Treatment	Asset Management	Percent of treatment plant assets with defined condition and management method as documented in the Asset Information Management System	2.2.1.3.4 – Continue to establish and document levels of protection, design and performance standards for treatment plant assets	0%	0%	0%
Treatment	Asset Management	Establish criteria and procedures for conducting Business Case Analysis on treatment plant projects by June 30, 2009	2.2.1.3.4 – Continue to establish and document levels of protection, design and performance standards for treatment plant assets	In Progress	In Progress	Still in Progress <sup>20</sup>
Treatment	Asset Management	Percent of Business Case Analyses completed where required by District procedures	2.2.1.3.4 – Continue to establish and document levels of protection, design and performance standards for treatment plant assets	N/A for 2007	N/A for 2008	N/A for 2009
Treatment	Asset Management	Level of Protection is defined (by the 2020 Facilities Plan) and approved by the WDNR for the Wastewater System	2.2.1.3.4 – Continue to establish and document levels of protection, design and performance standards for treatment plant assets	Yes	Yes	Yes

<sup>20</sup> New completion date is June 30, 2011.



ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure <small>* indicates the measure is also a benchmark</small>	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Treatment	Capital Program Implementation	Facilities Plan implementation on schedule for treatment plant studies and projects	2.2.1.3.4 – Continue to establish and document levels of protection, design and performance standards for treatment plant assets	Yes	Yes	Yes
Treatment	Asset Management	Number of PM work orders older than 90 days (plant equipment)	2.2.1.3.5 – Minimize the cost of wastewater treatment plant asset ownership while maintaining necessary stewardship of assets and achieving defined protection levels	814	564	481
Treatment	Asset Management	Planned maintenance ratio: count of work orders	2.2.1.3.5 – Minimize the cost of wastewater treatment plant asset ownership while maintaining necessary stewardship of assets and achieving defined protection levels	98.20%	79%	72%
Treatment	Asset Management	Percent of PM tasks completed	2.2.1.3.5 – Minimize the cost of wastewater treatment plant asset ownership while maintaining necessary stewardship of assets and achieving defined protection levels	86.25%	89%	99%
Treatment	Asset Management	Number of CM work orders older than 90 days (treatment plant equipment)	2.2.1.3.5 – Minimize the cost of wastewater treatment plant asset ownership while maintaining necessary stewardship of assets and achieving defined protection levels	619	257	528
Treatment	Asset Management	Planned maintenance ratio: cost*	2.2.1.3.5 – Minimize the cost of wastewater treatment plant asset ownership while maintaining necessary stewardship of assets and achieving defined protection levels	46.20%	47%	38%

ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure * indicates the measure is also a benchmark	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Treatment	Asset Management	Planned maintenance ratio: hours*	2.2.1.3.5 – Minimize the cost of wastewater treatment plant asset ownership while maintaining necessary stewardship of assets and achieving defined protection levels	53%	56%	52%
Treatment	Asset Management	O&M cost per MG treated*	2.2.1.3.5 – Minimize the cost of wastewater treatment plant asset ownership while maintaining necessary stewardship of assets and achieving defined protection levels	\$920/MG	\$920/MG	\$1,040/MG
Watercourse	Capital Program Implementation	Annual number of habitable structures removed from the District's one-percent probability floodplain	2.2.1.4.1 – Within jurisdictional streams, cost-effectively remove habitable structures from flooding associated with the one-percent probability flood event	43	2	0
Watercourse	Capital Program Implementation	Percent of annual habitable structures removal goal achieved.	2.2.1.4.1 – Within jurisdictional streams, cost-effectively remove habitable structures from flooding associated with the one-percent probability flood event	100%	33%	0%
Watercourse	System Performance	Number of habitable structures impacted (low water entry into a habitable building) by the District's one-percent probability flood	2.2.1.4.1 – Within jurisdictional streams, cost-effectively remove habitable structures from flooding associated with the one-percent probability flood event	508 structures	861 structures <sup>21</sup>	1,093 structures <sup>22</sup>
Watercourse	System Conservation	Percent of stormwater management plans reviewed within the timeframe allowed	2.2.1.4.2 –Reduce the likelihood of new habitable structures being added to the District's one-percent probability floodplain	100%	100%	100%

<sup>21</sup> The number increased due to analysis conducted by SEWRPC on the Milwaukee and Kinnickinnic Rivers.

<sup>22</sup> The number increased due to analysis conducted on the Kinnickinnic River.



ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure * indicates the measure is also a benchmark	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Watercourse	System Conservation	Area of property protected/preserved through District ownership or conservation easement	2.2.1.4.2 –Reduce the likelihood of new habitable structures being added to the District's one-percent probability floodplain	460.7 acres <sup>23</sup>	228 acres <sup>24</sup>	187 acres <sup>25</sup>
Watercourse	Asset Management	Number of presentations by District personnel that included information on stormwater runoff reduction practices	2.2.1.4.2 - Reduce the likelihood of new habitable structures being added to the District's one-percent probability floodplain	57 presentations	60 presentations	119 presentations
Watercourse	Asset Management	Number of rain barrels sold by the District	2.2.1.4.2 - Reduce the likelihood of new habitable structures being added to the District's one-percent probability floodplain	2,700 rain barrels ordered	2,854 rain barrels ordered	2,814 rain barrels ordered
Watercourse	Asset Management	Number of stormwater runoff reduction projects with District financial participation	2.2.1.4.2 - Reduce the likelihood of new habitable structures being added to the District's one-percent probability floodplain	7 projects	5 projects	9 projects
Watercourse	Asset Management	Linear feet of jurisdictional streambank with a current condition assessment	2.2.1.4.3 – Establish and document level of protection, design and performance standards for new assets in the watercourse system	0%	15% (corrected from 2008 report)	20%
Watercourse	Asset Management	Fixed Asset SOPs audited by December 31, 2008	2.2.1.4.3 – Establish and document level of protection, design and performance standards for new assets in the watercourse system	In Progress	Yes	Completed in 2008

<sup>23</sup> 1,621 acres to date

<sup>24</sup> 1,849 acres to date

<sup>25</sup> 2,036 acres to date



## ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure * indicates the measure is also a benchmark	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Watercourse	Asset Management	Fixed Asset SOPs updated by December 31, 2010	2.2.1.2.4 – Continue to establish and document level of protection, design and performance standards for conveyance assets constructed in the District service area		N/A for 2008	N/A for 2009
Watercourse	Asset Management	Percent of watercourse assets with defined condition and management method documented in the Asset Information Management System	2.2.1.4.3 – Establish and document level of protection, design and performance standards for new assets in the watercourse system	0%	13%	24%
Watercourse	Asset Management	Establish criteria and procedures for conducting Business Case Analysis on watercourse projects by June 30, 2009	2.2.1.4.3 – Establish and document level of protection, design and performance standards for new assets in the watercourse system	In Progress	In Progress	Still in Progress <sup>26</sup>
Watercourse	Asset Management	Percent of Business Case Analyses completed where required by District procedures	2.2.1.4.3 – Establish and document level of protection, design and performance standards for new assets in the watercourse system	N/A for 2007	N/A for 2008	N/A for 2009
Watercourse	Asset Management	Number of jurisdictional watercourse construction project updates to the GIS	2.2.1.4.3 – Establish and document level of protection, design and performance standards for new assets in the watercourse system	0	9 contracts	6 contracts
Watercourse	Asset Management	Backlog of jurisdictional watercourse construction project updates to the GIS	2.2.1.4.3 – Establish and document level of protection, design and performance standards for new assets in the watercourse system	12 contracts <sup>27</sup>	0 contracts	1 contract

<sup>26</sup> New completion date is June 30, 2011.

<sup>27</sup> 12 contracts was a high estimate for the consultant effort required in transitioning to a new GIS, actual number was 9

## ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

Service Area	Functional Area	Measure * indicates the measure is also a benchmark	Reference Objective	2007 Status/Value	2008 Status/Value	2009 Status/Value
Watercourse	Asset Management	Level of Protection defined and accepted by Stakeholders	2.2.1.4.3 – Establish and document level of protection, design and performance standards for new assets in the watercourse system	Yes	Yes	Yes
Watercourse	Asset Management	Percent of scheduled jurisdictional watercourse inspections completed	2.2.1.4.4 – Minimize the cost of watercourse asset ownership while maintaining necessary stewardship of assets and achieving defined protection levels	N/A for 2007	100% <sup>28</sup>	86%
Watercourse	Asset Management	Percent of scheduled culvert and structure inspections completed	2.2.1.4.4 – Minimize the cost of watercourse asset ownership while maintaining necessary stewardship of assets and achieving defined protection levels	N/A for 2007	100%	100%
Watercourse	Asset Management	Jurisdictional watercourse O&M costs	2.2.1.4.4 – Minimize the cost of watercourse asset ownership while maintaining necessary stewardship of assets and achieving defined protection levels	N/A for 2007 <sup>29</sup>	\$ 228,240	\$ 564,940
Watercourse	Asset Management	Jurisdictional watercourse O&M hours	2.2.1.4.4 – Minimize the cost of watercourse asset ownership while maintaining necessary stewardship of assets and achieving defined protection levels	N/A for 2007 <sup>30</sup>	2,776	2,093
Watercourse	System Conservation	Percent of jurisdictional watercourse with non-concrete streambeds	2.2.1.4.5 – Continue to be a leader in the effort to improve the area's waterways	82%	82%	82%

<sup>28</sup> Schedule was not fully developed - inspections were scheduled on an as-needed basis and completed immediately.

<sup>29</sup> Watercourse O&M costs were included in the contract with United Water and were not tracked separately.

<sup>30</sup> Watercourse O&M was completed by United Water and was not tracked

ATTACHMENT 1 – CMOM PERFORMANCE MEASURES

<b>Service Area</b>	<b>Functional Area</b>	<b>Measure</b> * indicates the measure is also a benchmark	<b>Reference Objective</b>	<b>2007 Status/Value</b>	<b>2008 Status/Value</b>	<b>2009 Status/Value</b>
Watercourse	Customer Service	Percent inquiry documentation completed	2.2.1.4.6 – Provide information receipt, response activity, and feedback regarding customer inquiries on the watercourse system	100%	44% <sup>31</sup>	100%

<sup>31</sup> District transitioned to in-house receipt and response to watercourse inquiries in 2008.

## ATTACHMENT 2 – ORGANIZATIONAL STRUCTURE TO MANAGE THE CMOM PROGRAM

### ***2.2.2 Organizational Structure to Manage the CMOM Program***

This second section of the Management Plan includes an organizational chart and a description of the organizational requirements necessary for implementing the District CMOM program.

The District organizational chart is shown in Figure 2-1. The three divisions that have primary involvement in implementing the CMOM Program are the Planning, Research and Sustainability Division, the Technical Services Division and the Water Quality Protection Division, all of which fall under the Executive Director's authority. Although the Executive Director is not involved in the daily aspects of implementing the CMOM Program, it is through his direction that it is being implemented. Therefore, the activities that will take place are all under his authority. In the Planning, Research and Sustainability Division, the CMOM Program Manager is the person responsible for day to day execution of the tactics discussed above. The job description for the District CMOM Program Manager is included as Appendix 2-2.

ATTACHMENT 2 – ORGANIZATIONAL STRUCTURE TO MANAGE THE CMOM PROGRAM

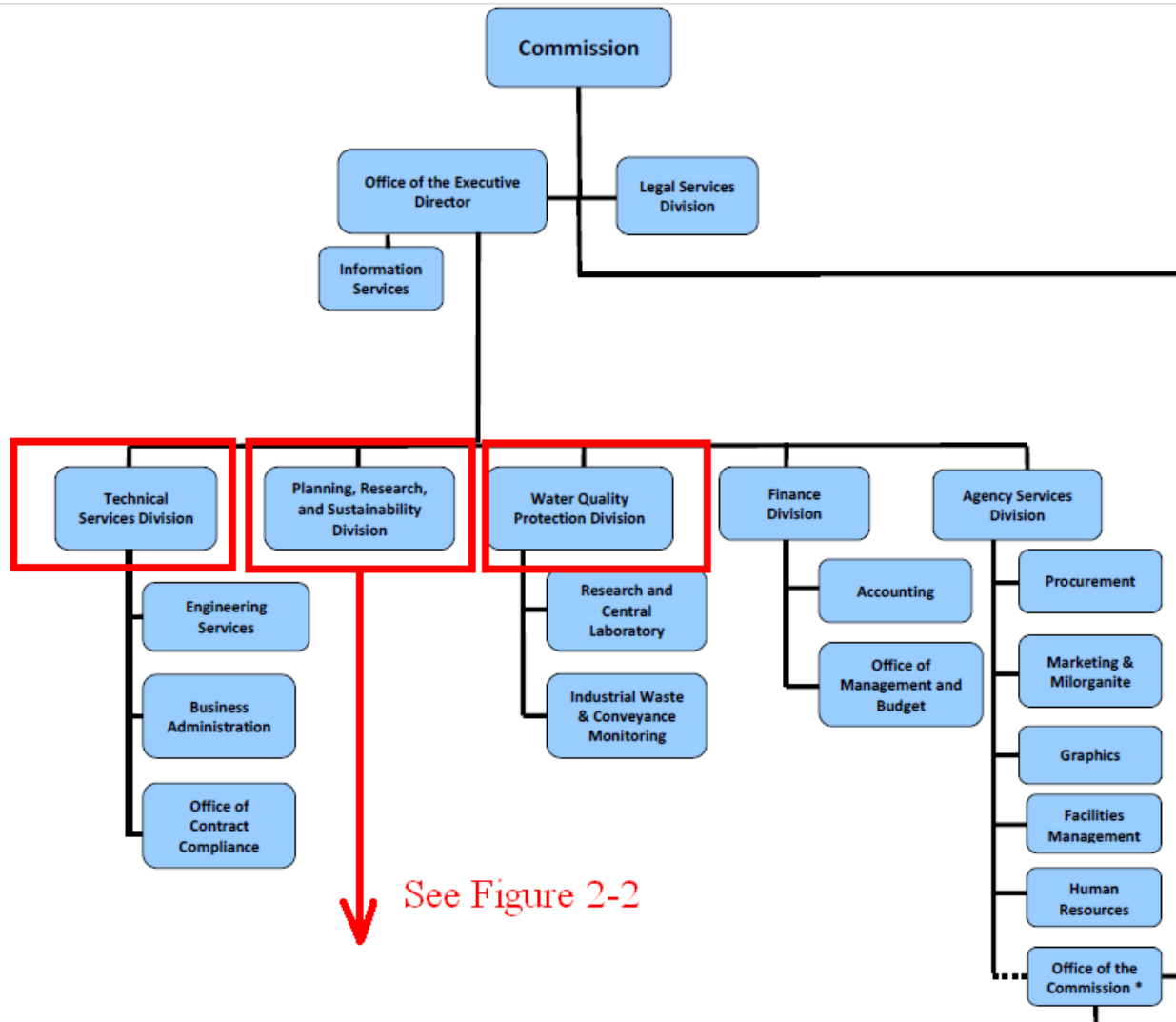


Figure 2-1: District Organizational Chart

# ATTACHMENT 2 – ORGANIZATIONAL STRUCTURE TO MANAGE THE CMOM PROGRAM

## Planning, Research and Sustainability Organizational Chart

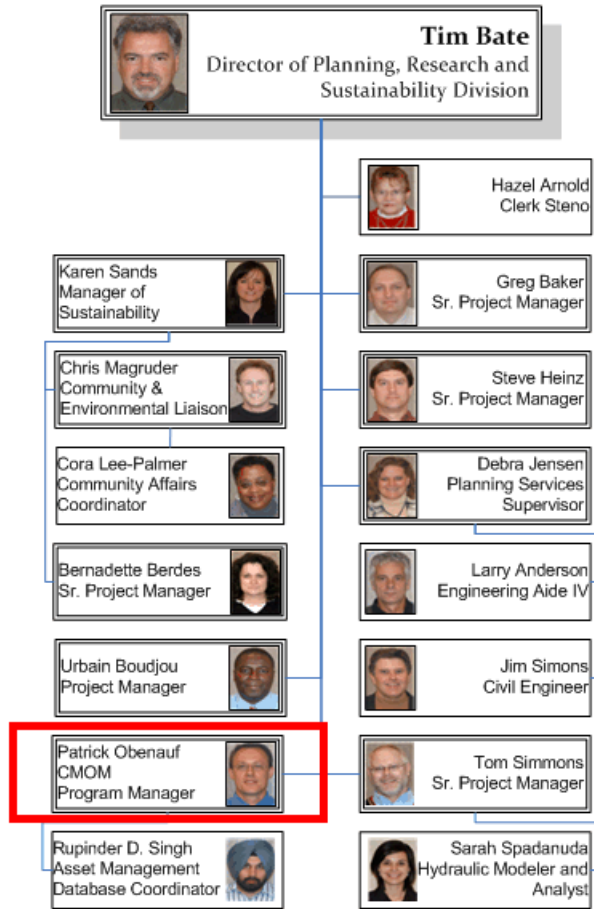


Figure 2-2: Planning, Research and Sustainability Organizational Chart

## ATTACHMENT 3 – CONSTRUCTED SANITARY SEWER OVERFLOW LOCATIONS

MMSD Site Number	WPDES Permit ID number	Location	Pump or Gravity	Current SCADA	Current Portable	Proposed SCADA	Notes
BS0101	220	S Howell Ave at E Grange Ave (ext'd)	Gravity	No	Yes	Yes	Installed portable meter on 3/15/06
BS0302	233	W Fisher Pkwy at N 106th St	Gravity	Yes			
BS0303	247	W Oklahoma Ave, 100 feet w/o S 74th St	Pump	Yes			
BS0304	242	S 79th St (ext'd) & W Dickenson St (ext'd)	Gravity	No	Yes	Yes	
BS0401	235	N Honey Creek Pkwy & W Wisconsin Ave	Pump	Yes			
BS0402	237	N Menomonee River Pkwy, 300 feet e/o N 68th St	Gravity	No	Yes	Yes	Portable meter in outfall pipe
BS0403	234	N Honey Creek Pkwy & W Portland Ave	Gravity	No	Yes	Yes	
BS0404	263	W Green Tree Rd & Milwaukee River	Gravity	Yes			
BS0501	230	N Richards St & E Congress St	Gravity	Yes			
BS0503	226	W Roosevelt Dr & N 35th St	Pump	Yes			
BS0504	214	W Hampton Ave & N Lydell Ave	Gravity	No	No	No	Manually activated gate
BS0505	223	W Villard Ave & N 27th St	Pump	Yes			
BS0506	231	N Range Line Rd & Milwaukee River (east side)	Pump	Yes			
BS0507	229	N 46th St & W State St	Gravity	Yes			
BS0508	213	W Hampton Ave at N Green Bay Rd (east side)	Gravity	No	Yes	No	Overflow was redirected to another MIS in 2009
BS0509	212	W Hampton Ave & N Green Bay Rd (west side)	Gravity	No	Yes	No	Site was abandoned on 1/29/09
BS0510	208	N 31st St (ext'd) & Lincoln Creek (north side)	Gravity	No	No	Yes	Site was abandoned with construction of Relief MIS in 2005
BS0511	207	N 31st St & W Fairmont Ave	Gravity	No	Yes	No	

## ATTACHMENT 3 – CONSTRUCTED SANITARY SEWER OVERFLOW LOCATIONS

MMSD Site Number	WPDES Permit ID number	Location	Pump or Gravity	Current SCADA	Current Portable	Proposed SCADA	Notes
BS0512	244	N Lydell Ave & W Lancaster Ave	Gravity	No	No	No	Manually activated gate
BS0513	245	N Lydell Ave & W Montclair Ave	Gravity	Yes	Yes	No	MS0508, and portable meter in overflow pipe
BS0514	209	N 27th St & W Silver Spring Dr	Gravity	No	Yes	No	
BS0515	N/A	200 E River Woods Parkway. [Manhole 02140 – s/o E Hampton Rd & N Lydell Ave, s/o Milwaukee River (formerly Pillsbury Silos)]	Gravity	No	No	Yes	Manholes modified as part of Northeast Side Flow Control Gates, level monitored at NS3 JC
BS0516	N/A	4700 N Estabrook Parkway. [Manhole 02141 – s/o E Hampton Rd & N Lydell Ave, n/o Milwaukee River (formerly Pillsbury Silos)]	Gravity	No	No	Yes	Manholes modified as part of Northeast Side Flow Control Gates, level monitored at NS3 JC
BS0601	225	S 35th St & W Manitoba St	Pump	Yes			
BS0602	232	S Kinnickinnic Ave & E St Francis Ave	Gravity	Yes			
BS0603	243	W Lincoln Ave, 565 feet w/o S 43rd St	Gravity	No	Yes	No	
<del>BS0604</del>	<del>224</del>	<del>S 1st St &amp; W Layton Ave</del>	<del>Gravity</del>	<del>No</del>	<del>Yes</del>	<del>No</del>	Abandoned in 2008
<del>BS0701</del>	<del>250</del>	<del>S Water St &amp; E Bruce St</del>	<del>Gravity</del>	<del>Yes</del>	<del>No</del>		Abandoned during 1990s
DC0103	260	S 6th St & W Oklahoma Ave	Gravity	Yes			Under wet weather operating conditions of the District system, this site acts as a CSO. The District will request to transfer this outfall to the CSO list in the discharge permit re-issuance process.
DC0402	262	N 59th St & W Trenton Pl	Gravity	Yes			Recently discovered information indicates combined sewage is tributary to this outfall. The District will request to transfer this outfall to the CSO list in the discharge permit re-issuance process.

ATTACHMENT 3 – CONSTRUCTED SANITARY SEWER OVERFLOW LOCATIONS

MS0409	206	RR Tracks 500' s/o Milwaukee/Ozaukee County border and 200' w/o Waverly Rd	Gravity	Yes			Level sensor in MS0409, which has a gravity overflow pipe
PS0402	264	Ravine Lift Station	Gravity	Yes			
N/A	205	W Roosevelt Dr & W Scranton Pl	Gravity	No	No	No	42 inch bypass pipe is currently bulkheaded; site is under evaluation

ATTACHMENT 4 – CONSTRUCTED COMBINED SEWER OVERFLOW LOCATIONS

Receiving water (of combined sewer overflow)	Combined Sewer Outfall Number	Diversions Structure Number	ISS Drop Shaft	Intercepting Structure Number	IS upstream of DS	Location	Notes
Burnham Canal	189	189	CT07	400	Yes	S 9th St	
Burnham Canal	190	190	CT07	400A	Yes	S 9th St	
Burnham Canal	191	191	CT07	399	Yes	S 11th St	
Burnham Canal	193	193	CT07	398	Yes	S 13th St	
Burnham Canal	194	194	CT07	396	Yes	S Muskego Ave	
Kinnickinnic River	019	85046	None	None	N/A	S 1st St at the Kinnickinnic River	MIS Overflow
Kinnickinnic River	148	148	CT08	369	Yes	E National Ave	
Kinnickinnic River	149	149	CT08	368A	Yes	S of E Walker St	
Kinnickinnic River	150	150	CT08	367	Yes	S of E Washington St	
Kinnickinnic River	151	151	CT08	346	Yes	E Greenfield Ave	
Kinnickinnic River	152	152	KK03	342	Same structure	S Kinnickinnic Ave	
Kinnickinnic River	153	153	KK03	339	Yes	S Kinnickinnic Ave	
Kinnickinnic River	154	154	KK03	341	Yes	S 1st St	
Kinnickinnic River	155	155	KK03	340	Yes	S 1st St	
Kinnickinnic River	156	156	KK03	345A	Yes	S 2nd St	
Kinnickinnic River	157	157	KK03	345/345A	Yes	W Rogers St	
Kinnickinnic River	158	158/159	KK03	343 & 344A	Yes	W Becher St	
Kinnickinnic River	159	158/159	KK03	343 & 344A	Yes	W Becher St	
Kinnickinnic River	160	160	KK04	None	Yes	E Lincoln Ave	
Kinnickinnic River	161	161	KK04	330	Same structure	W Lincoln Ave	
Kinnickinnic River	162	162	KK04	331	Same structure	W Lincoln Ave	
Kinnickinnic River	163	163	KK02	328	Yes	S Chase Ave	
Kinnickinnic River	164	164	KK02	327	Yes	S Chase Ave	
Kinnickinnic River	165	165	KK01	325	Same structure	W Cleveland Ave	
Kinnickinnic River	166	166	KK01	325	Same structure	W Cleveland Ave	
Kinnickinnic River	166A	KK1JC01	KK01	None	N/A	S 6th St at W Cleveland Ave	KK1 Junction Chamber overflow
Kinnickinnic River	167	167	KK01	City Manhole	Yes	S 8th St	

ATTACHMENT 4 – CONSTRUCTED COMBINED SEWER OVERFLOW LOCATIONS

Receiving water (of combined sewer overflow)	Combined Sewer Outfall Number	Diversion Structure Number	ISS Drop Shaft	Intercepting Structure Number	IS upstream of DS	Location	Notes
Kinnickinnic River	168	168	KK01	City Manhole	Yes	S 14th St	
Kinnickinnic River	169	169	KK01	City Manhole	Yes	S 27th St	
Lake Michigan	195	195	LMN	338	Same structure	E Bay St	
Lake Michigan	196	196	LMS	335, 336 & 337	Yes	E Russell Ave	
Lincoln Creek	145	145	NS12	500	Yes	N 35th St & W Congress St	
Lincoln Creek	197	BS0502	None	None	N/A	Hampton Ave at 32nd St	
Menomonee River	010	85047	None	None	N/A	W Canal St at 8th St	MIS Overflow
Menomonee River	170	170	CT08	404	Yes	S 2nd St	
<del>Menomonee River</del>	<del>471</del>	<del>471</del>	<del>CT07</del>	<del>390</del>	<del>Same structure</del>	<del>N Ember La</del>	Abandoned in 2007
Menomonee River	172	172	CT07	197B & 197C	Yes	N Ember La	Upsized in 2007
Menomonee River	173	173/174	CT07	388	Yes	N 15th St	
Menomonee River	174	173/174	CT07	388	Yes	N 15th St	
<del>Menomonee River</del>	<del>174A</del>	<del>174</del>	<del>CT07</del>	<del>384B</del>	<del>Yes</del>	<del>N 16th St &amp; Pittsburg St</del>	Abandoned
Menomonee River	175	175	CT07	387	Yes	N 17th St	
Menomonee River	176	176	CT5/6	380	Yes	N 25th St	
Menomonee River	177	177	CT5/6	380	Yes	N 26th St	
Menomonee River	177A	CT5/6	CT5/6	None	N/A	123 N 25th St (CT5,6)	
Menomonee River	178	178	CT5/6	358 & 359A	Yes	S 27th St	
Menomonee River	179	179	CT5/6	359A	Yes	S 27th St	178 and 179 are one outfall
Menomonee River	180	180	CT5/6	381 & 357	No	S 35th St	
Menomonee River	181	181	CT3/4	377	Same structure	W Wisconsin Ave	
Menomonee River	182	182	CT3/4	193A, 372 & 372A	Yes	N 43rd St	
Menomonee River	182A	C182A01	CT3/4	None	Yes	4251 W State St (CT3,4)	54" flow balance overflow

## ATTACHMENT 4 – CONSTRUCTED COMBINED SEWER OVERFLOW LOCATIONS

Receiving water (of combined sewer overflow)	Combined Sewer Outfall Number	Diversion Structure Number	ISS Drop Shaft	Intercepting Structure Number	IS upstream of DS	Location	Notes
Menomonee River	183	183	CT3/4	183	Yes	N 45th St	IS183 goes to City of Milwaukee sanitary sewer
Menomonee River	184	DG08-03	CT02	188	Yes	N Hawley Rd	
Menomonee River	185	185	CT07	386	Yes	N 9th St (Ext'd)	
Milwaukee River	015	85043	None	None	N/A	N Marshall St at the Milwaukee River	MIS Overflow
Milwaukee River	016	85042	None	None	N/A	W Vliet St ext'd, east of N 3rd St	MIS Overflow
Milwaukee River	017	105/017	NS08	None	N/A	N Van Buren St at E Brady St	MIS Overflow
Milwaukee River	018	BS0701	None	None	N/A	S Water St at E Bruce St	Siphon protection
Milwaukee River	051	51	NS07	208	Yes	Point 300' west of N Humboldt Ave & N Weil ext'd	
Milwaukee River	089	NS11JC01	NS11	134	Yes	E Capitol Dr	
Milwaukee River	090	90	NS04	135A	Yes	E Keefe Ave	
Milwaukee River	091	91	NS04	73 & 74A	Yes	E Edgewood Ave	
Milwaukee River	092	92	NS05	135	Yes	E Auer Ave	
Milwaukee River	094	94	NS05	Unknown	Yes	E Burleigh St	
Milwaukee River	096	NS5A02	NS05	None	Yes	E Locust St	
Milwaukee River	097	97	NS06	136	Yes	E Park Pl	
Milwaukee River	098	98	NS06	228	Yes	E Bradford Ave	
Milwaukee River	099	99	NS07	141 & 228A	Yes	E Boylston St	
Milwaukee River	101	101	NS07	230	Yes	N Pulaski St	
Milwaukee River	102	102	NS07	207	Yes	N Humboldt Ave	
Milwaukee River	103	103	NS07	231	Yes	N Marshall St	
Milwaukee River	103A	NS7	NS07	None	N/A	1944 N Commerce St	NS07 Junction Chamber
Milwaukee River	104	104	NS07	199/200A	Yes	N Holton St	

## ATTACHMENT 4 – CONSTRUCTED COMBINED SEWER OVERFLOW LOCATIONS

Receiving water (of combined sewer overflow)	Combined Sewer Outfall Number	Diversions Structure Number	ISS Drop Shaft	Intercepting Structure Number	IS upstream of DS	Location	Notes
Milwaukee River	105	105/017	NS08	232	No	E Brady St	
Milwaukee River	106	106	NS08	209	Yes	N of E Pleasant St	
Milwaukee River	107	107	NS08	210	Yes	E Walnut St	
<del>Milwaukee River</del>	<del>108</del>	<del>108</del>	<del>NS08</del>	<del>233</del>	<del>Yes</del>	<del>E Pleasant St</del>	Abandoned in 2007
<del>Milwaukee River</del>	<del>108A</del>	<del>NS8B01</del>	<del>NS08</del>	<del>None</del>	<del>N/A</del>	<del>E Pleasant St at N Water St</del>	96" flow balance overflow Abandoned in 2007
Milwaukee River	108B	108	NS08	233	Yes	E Pleasant St at N Water St	Constructed in 2007 to replace 108 and 108A
Milwaukee River	109	109	NS08	211	Same structure	N of W Cherry St	
Milwaukee River	110	110	NS08	201 & 201A	Yes	W Cherry St	
Milwaukee River	110A	110A	NS08	212	Same structure	W Cherry St	
Milwaukee River	111	111	NS08	234	Yes	E Lyon St	
Milwaukee River	112	112	NS09	235	Same structure	E Ogden Ave	
Milwaukee River	113	113	NS09	213	Yes	W McKinley Ave	
Milwaukee River	113A	113A	NS09	214A	Yes	W Juneau Ave (Park West Freeway)	
Milwaukee River	114	114	NS09	215	No	W Juneau Ave	
Milwaukee River	115	115	NS09	216	No	W Highland Ave	
Milwaukee River	116	116	NS09	237	No	E Highland Ave	
Milwaukee River	117	117	NS09	217	No	W State St	
Milwaukee River	118	118	NS09	238A	No	E State St	
Milwaukee River	119	119	NS09	218	Yes	W Kilbourn Ave	
Milwaukee River	120	120N/120S	NS09	239, 239A & 239B	No, Same, Same	E Kilbourn Ave	
Milwaukee River	121	121	NS09	219 & 219A	Yes	N of W Wells St	
Milwaukee River	122	122	NS09	220	No	W Wells St	
Milwaukee River	123	123	NS09	240	No	E Wells St	
Milwaukee River	124	124	NS09	221	Yes	N of W Wisconsin Ave	

## ATTACHMENT 4 – CONSTRUCTED COMBINED SEWER OVERFLOW LOCATIONS

Receiving water (of combined sewer overflow)	Combined Sewer Outfall Number	Diversion Structure Number	ISS Drop Shaft	Intercepting Structure Number	IS upstream of DS	Location	Notes
Milwaukee River	125	125	NS09	222	No	W Wisconsin Ave	
Milwaukee River	126	126	NS10	241	Same structure	E Wisconsin Ave	
Milwaukee River	127	127	NS10	223	No	W Michigan St	
Milwaukee River	128	128	NS10	242	No	E Michigan St	
Milwaukee River	129	129	NS10	224	Yes	N of W Clybourn St	
Milwaukee River	130	130	NS10	225	Yes	W Clybourn St	
Milwaukee River	131	131	NS10	243	No	E Clybourn St	
Milwaukee River	133	NS10F05	NS10	227	Yes	W St. Paul Ave	
Milwaukee River	134	134	NS10	244	No	E St. Paul Ave	
Milwaukee River	135	135	NS10	245	Yes	E Buffalo St	
Milwaukee River	136	136	NS10	246	Same structure	E Chicago St	
Milwaukee River	137	137	CT08	405	Same structure	S 1st Pl	
Milwaukee River	139	139	CT08	406	Yes	E Pittsburgh Ave	
Milwaukee River	140	140	NS10	247	Yes	N Broadway	
Milwaukee River	141	141	CT08	403 & 403A	Yes	E Florida St	
Milwaukee River	142	142	NS10	248A	Yes	E Polk St	
Milwaukee River	143	143	CT08	370	Same structure	E Bruce St	
Milwaukee River	144	144	NS08	234A	Yes	E Lyon St	
Milwaukee River	146	146	NS07	142A	Yes	N Arlington Pl	
Milwaukee River	147	147	NS09	236	No	E Juneau Ave	
South Menomonee Canal	061	EWWE	None	None	N/A	3 <sup>rd</sup> & Seeboth	Emergency Wastewater Exit
South Menomonee Canal	187	187	CT08	401 & 402	Yes	S 4th St	
South Menomonee Canal	188	188	CT08	384	Yes	S 6th St	

## ATTACHMENT 5– SATELLITE MUNICIPALITY PHONE LIST

<b>Municipality</b>	<b>Business Hours</b>	<b>After hours / weekends</b>
Bayside	414-351-8811	414-351-8800
Brookfield	262-782-0199	262-782-0199
Brown Deer	414-357-0120	414-371-2900
Butler	262-783-2525	262-783-2525
Caledonia	262-835-7765	262-835-4423
Cudahy	414-769-2216	414-769-2260
Elm Grove	262-782-6700	262-786-4141
Fox Point	414-351-8900	414-351-8914
Franklin	414-421-2613	414-425-2522
Germantown	262-250-4721	262-253-7780
Glendale	414-228-1710	414-228-1753
Greendale	414-423-2133	414-423-2121
Greenfield	414-761-5374	414-761-5300
Hales Corners	414-529-6161	414-529-6140
Menomonee Falls	262-532-4800	262-532-1700
Mequon	262-236-2919	262-242-3500
Milwaukee	414-286-2489	414-286-2489
Muskego	262-679-4128	262-679-4130
New Berlin	262-786-7086	262-782-6640
Oak Creek	414-768-7060	414-768-7060
River Hills	414-352-0080	414-247-2300
St. Francis	414-481-2300	414-481-2232
Shorewood	414-847-2650	414-847-2610
Thiensville	262-242-3720	262-242-2100
Wauwatosa	414-471-8422	414-471-8422
West Allis	414-302-8800	414-302-8000
West Milwaukee	414-645-6238	414-645-2151
Whitefish Bay	414-962-6690	414-962-6690

## ATTACHMENT 6 – DISTRICT SITUATIONAL CONTACT LIST

<b>Situation</b>	<b>Urgency</b>	<b>Direct to</b>	<b>Phone number</b>
Water in basement	Critical	Central Control Operator (Veolia)	282-7200 (internal x3491)
Sewage overflow	Critical	Central Control Operator (Veolia)	282-7200 (internal x3491)
Spill of a hazardous substance into the sewer system	Critical	Central Control Operator (Veolia)	282-7200 (internal x3491)
Clogged MIS or structure	Critical	Central Control Operator (Veolia)	282-7200 (internal x3491)
Illegal dumping into a sewer	Urgent	Central Control Operator (Veolia)	282-7200 (internal x3491)
Illegal dumping into catch basin	Urgent	Central Control Operator (Veolia)	282-7200 (internal x3491)
Contractor hit District facility	Urgent	Debra Jensen (District) (Backup is Larry Anderson)	225-2143 (Backup 617-1429)
Manhole cover missing	Urgent	Central Control Operator (Veolia)	282-7200 (internal x3491)
Blockage/debris in the river	Urgent	Dave Fowler (District) (Backup is Patrick Elliot)	277-6368 (Backup 225-2168)
Facility ownership question	Non-emergency	Debra Jensen (District)	225-2143
Municipal request regarding sewer system	Non-emergency	Debra Jensen (District)	225-2143
How much water is in the deep tunnel	Non-emergency	District Public web site	www.mmsd.com – click on storm update
How much rainfall have we received	Non-emergency	District Public web site	www.mmsd.com – click on storm update
Odor complaint	Non-emergency	Central Control Operator (Veolia)	282-7200 (internal x3491)
Maintenance of a District conveyance facility	Non-emergency	Central Control Operator (Veolia)	282-7200 (internal x3491)
Watercourse maintenance issue (e.g. grass cutting, graffiti, snow plowing)	Non-emergency	Dave Fowler (District)	277-6368
Construction site complaint	Non-emergency	Tom Zimmerman (District)	225-2147

Note: All phone numbers are (414)