

Milwaukee Metropolitan Sewerage District

Contracted Wastewater Operations and Maintenance Oversight Audit

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GLOSSARY

Term	Meaning
BOD	Biochemical Oxygen Demand. The amount of dissolved oxygen that microorganisms consume while breaking down organic matter in water.
CCS	Central Control System. Where and how MMSD and Veolia exercise automated control of the conveyance system.
Contract Operator	The company selected to operate and maintain the MMSD facilities. Differentiated from individuals responsible for WRF or conveyance system operations.
CSO	Combined Sewer Overflow. A discharge of mixed stormwater and wastewater from the combined sewer system to a river or Lake Michigan when wet-weather flows exceed the capacity of the system.
CVE	Common Vulnerabilities and Exposures. A standardized list of publicly disclosed cybersecurity flaws used to ensure consistent identification and tracking of security issues.
D&D	Dewatering and Drying biosolids management process area at Jones Island
DNR	Wisconsin Department of Natural Resources. The state agency that issues and enforces WPDES and air permits.
DO	Dissolved Oxygen. Oxygen dissolved in water. Aeration basins must keep enough DO for the microorganisms that treat the wastewater.
DSPS	Wisconsin Department of Safety and Professional Services. The state agency that oversees workplace safety for public employers such as MMSD.
ECHO	Enforcement and Compliance History Online. EPA's public database of permit compliance and enforcement records.
EPA	US Environmental Protection Agency
ERP	Enterprise Resource Planning. IT systems used for finance and human resources management.
HVAC	Heating, Ventilation, and Air Conditioning
IPS	Interplant Solids. Pipelines and pumping systems that allow biosolids to be transported between Jones Island and South Shore

Term	Meaning
ISS	Inline Storage System. The deep tunnels and the pumping systems used to retrieve wastewater from the tunnels so it can be treated. Also called the deep tunnel.
IT	Information Technology. Business computer systems, networks and devices, as distinct from OT.
KPI	Key Performance Indicator
MCRR	Material Capital Repair or Replacement. A category or repair or replacement maintenance project defined in the MMSD contract with Veolia.
MGD	Million Gallons per Day
MMSD	Milwaukee Metropolitan Sewerage District
NEXGEN	New maintenance management system recently purchased by MMSD and currently being implemented. This system will be used by both MMSD and the Contract Operator.
O&M	Operations and Maintenance
Operator	Individuals responsible for WRF or conveyance system operations. Differentiated from Contract Operator which refers to the company selected to operate and maintain the MMSD facilities.
OSHA	Occupational Safety and Health Administration. The federal agency that regulates workplace safety for private employers such as Veolia.
OT	Operational Technology. The automation systems, SCADA and operational data management systems used to monitor and control the WRFs and conveyance systems.
OWAM	Oracle Work and Asset Management. The previous maintenance management system used by Veolia at Jones Island and South Shore before 2024.
PCB	Polychlorinated Biphenyls. Persistent industrial chemicals that are regulated in biosolids products such as Milorganite.
PdM	Predictive Maintenance or predictive maintenance work orders.
PM	Preventive Maintenance or preventive maintenance work orders.
QA/QC	Quality Assurance/Quality Control

Term	Meaning
RFI	Request for Information
RFP	Request for Proposals. The procurement documents MMSD issued for the 2028 contract.
SCADA	Supervisory Control and Data Acquisition
SOP	Standard Operating Procedures
SSO	Sanitary Sewer Overflow. A release of untreated wastewater from the separate sanitary sewer system. SSOs are prohibited by the WPDES permit.
SU	Special Utility Operator. An operations role at Jones Island and South Shore WRFs. The SU operator understands all the process areas and can be assigned tasks as needed.
TSS	Total Suspended Solids. The dry weight of undissolved particles in water that remain suspended rather than settling quickly. TSS includes inorganic particles as well as organic debris, algae, and bacteria.
VAMS	Veolia Asset Management System. The existing maintenance management system used by Veolia at Jones Island and South Shore since 2024 and supplied by Hexagon.
WAS	Waste Activated Sludge. The excess biological material removed from a wastewater treatment system to maintain process performance. It forms when microorganisms grow while consuming organic pollutants.
WPDES	Wisconsin Pollutant Discharge Elimination System. The discharge permit system managed by the Wisconsin Department of Natural Resources.
WRF	Water Reclamation Facility

Specialized technical and contractual terms are defined in Appendix A.

EXECUTIVE SUMMARY

In July 2026, the Milwaukee Metropolitan Sewerage District (MMSD) Commission retained EMA to conduct an independent performance audit of Veolia Water Milwaukee's operation and maintenance of MMSD's water reclamation facilities (WRFs), conveyance system and related infrastructure, and of MMSD's oversight of that contract. The Commission asked three questions: Did the Contract Operator comply with its contract? Did MMSD oversee the contract terms appropriately? What should the future contract include to ensure regulatory compliance and manage short- and long-term risks?

EMA conducted 18 interviews with 16 current and former Veolia and MMSD employees and union representatives arranged through Common Ground, interviewed 38 MMSD staff and the Executive Director, visited both WRFs and selected conveyance sites, reviewed documents and data from MMSD and Veolia, and examined public regulatory, financial and Commission records. The evaluation generally covers March 2018 to June 2026.

Overall Conclusions

Did Veolia comply with the contract? Partially. Veolia met its regulatory permit obligations almost all the time: in 100 months there were only two weekly permit exceedances, and combined sewer overflows (CSO) stayed within the permit limit every year. Veolia fell short of many of the contract's stricter requirements, particularly staffing levels, timely corrective maintenance, accurate maintenance records, South Shore contract effluent standards, Milorganite particle size, dryer availability, report accuracy and information technology (IT) obligations.

Did MMSD oversee the contract appropriately? Partially. MMSD made permit compliance its highest priority, and that oversight was effective. Control of other contract requirements was less effective. The Contract Compliance Office was under-resourced for a complex contract with a growing workload. Penalties for staffing shortfalls were not applied, default remedies were not collected, and two contract effluent standards and a Milorganite specification were loosened. Withholding payments resolved individual problems but did not prevent them from recurring. MMSD staff also disagree about whether all contract terms should be enforced or only those tied to permit compliance, and this disagreement is eroding trust in MMSD leadership.

Is the future contract on the right track? Largely, if some gaps are closed during contract negotiations and MMSD can enforce it. MMSD's internal lessons-learned process produced 109 recommended changes; 61% are fully reflected in the proposed 2028 contract and a further 34% partially addressed. The draft contract adds staffing requirements, a single MMSD-owned maintenance management system, stronger inspection rights, clearer IT responsibilities and stronger penalties. Many MMSD employees expect improvement but doubt the new provisions will be enforced unless MMSD changes its approach. The audit also identified new risks the draft creates, including MMSD assuming the cost of all corrective maintenance.

Contract Compliance Results

EMA identified 121 Veolia obligations in the contract documents and classified each against the available evidence.

Result	Met	Indicated, not proven	Partly met	Not met	Could not verify
Number of obligations (121)	20	21	39	20	21

Only one in six obligations could be confirmed as fully met, and more than a third could not be confirmed either way because the records needed to demonstrate compliance were incomplete, inaccurate, unavailable or beyond the audit scope.

Key Findings

- **Maintenance and records are the most significant weaknesses.** New assets were sometimes put in service without preventive maintenance tasks. Significant equipment remained out of service for extended periods, the backlog of material capital repairs is about 150 projects, and maintenance records were inaccurate or difficult for MMSD to verify. The 2024 maintenance system migration further complicated the audit trail.
- **South Shore treatment capacity is a long-standing concern.** South Shore WRF operated below its design capacity in 81% of weeks since 2018. Equipment outages explain some, but not all, of the reductions. Variable industrial influent may contribute; an US Environmental Protection Agency (EPA) notice of violation in September 2025 cited MMSD's pretreatment program for failing to enforce standards.
- **Safety programs are generally effective, but specific hazards persist.** Both organizations have strong safety programs, and no safety concerns were observed on site. Combustible dust housekeeping in Milorganite areas, lockout/tagout procedures complicated by valves that do not seal, and non-functioning in-plant communication systems may need attention.
- **Staffing shortfalls affected performance.** Veolia was below its 216-position minimum in almost every month, and required key positions were vacant about 20% of the time. Interviewees linked shortages to lone work, limited supervisory support, missed training and reduced participation in capital projects.
- **Milorganite met production goals but not all quality requirements.** Annual production targets were met, but Classic Milorganite missed the particle-size standard in 93 of 100 months, and dryer availability frequently fell below the contract requirement.
- **Capital project handover needs stronger controls.** Operator participation in design was limited, operations and maintenance (O&M) documentation was delayed, training was missed, and maintenance tasks for new equipment were not set up. Capital and repair timelines appear long.

- **Information technology responsibilities shifted to MMSD.** MMSD assumed much of the work assigned to Veolia, including network management and cybersecurity, which has since improved. Many IT assets were not tracked and in-plant phones and paging were not maintained.
- **Workplace concerns were raised in both organizations.** Interviewees described fear of retaliation, low confidence in Human Resources and limited coordination between the two Human Resources functions. Most specific allegations involved people no longer employed and could not be verified.

Concerns Raised Through Common Ground

Of the concerns raised by Common Ground, five were confirmed, 21 were partially confirmed, eight were not confirmed and 10 could not be verified based on the information available during the audit. Appendix B provides a detailed comparison of the audit findings with the concerns raised.

	Confirmed	Partially confirmed	Not confirmed	Not assessed
Concerns (44)	5	21	8	10

Strengths

MMSD and Veolia employees are knowledgeable, dedicated and proud of their work. Veolia's permit compliance record, safety programs and community outreach are strong. MMSD's oversight of conveyance data and wet weather operations is effective, its asset management program has matured significantly, and its cybersecurity defenses have improved. Collaboration between MMSD and Veolia has improved over the past year, and MMSD's lessons-learned process shows it recognizes the need for change.

Priority Recommendations

The report makes 64 recommendations. The following are the highest priority (recommendation numbers in parentheses):

- **Close the gaps in the 2028 draft contract before award**. Add verification methods and consequences to operating standards, ensure remedies can be practically applied, provide for independent checks of operator-supplied data, account for responsibilities that are not planned or scheduled and limit MMSD cost exposure (R10, R11, R15, R25).
- **Strengthen governance and enforcement.** Adopt a Commission-endorsed contract enforcement policy, report waivers and settlements to the Commission, track every non-compliance instance to closure, and give the Commission an exception-based performance dashboard (R2, R4, R5, R9).

- **Build MMSD's capacity as an informed owner.** Size the contract management function to its workload, implement a written on-site inspection program, independently verify plant data, and establish an independent assurance function reporting to the Commission (R3, R7, R8, R60).
- **Prepare for the 2028 contract and asset hand back.** Commission an independent baseline condition assessment before the current term ends, define the evidence of compliance for every obligation, build data-integrity controls into the new maintenance management system, and control MMSD's cost exposure for corrective maintenance (R11, R15, R36, R53).
- **Address safety hazards now.** Commission an independent safety assessment focused on combustible dust, lockout/tagout and isolation, and in-plant communications, and make injury and hazard reporting safe and closed-loop (R16, R17, R18, R20, R62).
- **Restore South Shore capacity.** Commission a root-cause study of South Shore treatment capacity and correct the deficiencies in the industrial pretreatment program (R42, R43).
- **Rebuild workforce and workplace confidence.** Enforce staffing requirements, commission an independent assessment of MMSD Human Resources, investigate outstanding complaints independently and provide an independent reporting channel for MMSD employees (R25, R28, R29, R30).

Limitations

The audit could not fully examine Veolia Human Resources records (held in a different location by Veolia), detailed maintenance management data, Supervisory Control and Data Acquisition (SCADA) process records, MMSD laboratory results, MMSD financial records, or the alignment of the capital plan with MMSD's long-range plans. These are identified as areas for further investigation.

INTRODUCTION

In July 2026, the Milwaukee Metropolitan Sewerage District (MMSD) Commission retained EMA to audit Veolia Water Milwaukee's operation and maintenance of MMSD's water reclamation facilities (WRFs), conveyance system and related infrastructure, and MMSD's oversight of that contract.

The audit was intended to produce outcomes to satisfy the following Commission goals:

- Evaluating the Contract Operator's compliance with the terms of their contract with MMSD.
- Evaluating MMSD's oversight of contract terms.
- Recommending considerations for the future contract to ensure regulatory compliance and address any short- or long-term social, environmental, or economic risks.

The audit was also conducted in a manner that satisfied the following Commission values:

- "Maintain public trust through the process. This includes all parties participating respectfully, openly, and transparently. (Note, under the Wisconsin Public Records Law, all information is presumed open to the public. However, some personnel information will be safeguarded and all protections applying to whistleblowers will be enforced.)"
- "Maintain MMSD's adopted values: Stewardship, Integrity, Quality, Collaboration, Diversity, Innovation."
- "Maintain an open and constructive approach. Embrace concerns as opportunities for learning, improvement and growth toward advancing MMSD's mission of protecting public health and the environment through world-class, cost-effective water resource management, leadership and partnership."

METHODOLOGY

EMA's audit team gathered and reviewed information from five sources to prepare this report.

Information Sources

First, we met with representatives from Common Ground and sought their assistance to arrange interviews with the people who had brought forward their concerns. Common Ground coordinated 18 interviews with 16 current and former Veolia and MMSD employees and union representatives. Two people were interviewed twice. Six people who raised concerns with Common Ground declined to be interviewed for this audit. Before each interview, EMA reviewed documentation provided by the interviewees. We identified key questions to ask them and opportunities to collect additional data to either validate or refute the concerns they raised.

Second, we prepared a comprehensive Request for Information (RFI) for MMSD and Veolia. The RFI requested documentation and data related to:

- Veolia contract administration and performance
- Staffing and workforce management
- Safety
- Complaint processes
- Records preservation
- Information systems
- Regulatory compliance
- Laboratory operations
- Asset reliability
- Plant capacity
- Operations performance
- Capital projects and third-party contractor management
- Asset registry, preventive and corrective maintenance and work management
- Biosolids and Milorganite

Third, we planned and carried out site visits to the Jones Island and South Shore WRFs and selected conveyance sites to observe current conditions. The site visits took place during the week of August 10, 2026. EMA's audit team observed regular weekly operations and maintenance meetings, met with Veolia employees, supervisors and managers and walked through process areas and conveyance facilities. We met with Veolia safety and human resources professionals and attended tailgate meetings and shift transitions. Our team reviewed data, meeting agendas and checklists used by Veolia personnel.

Fourth, we interviewed 38 MMSD employees, managers and directors from four divisions: Technical Services, Water Quality Protection, Information Technology Services and Administration. We also interviewed the MMSD Executive Director. We asked about each person's responsibilities, measures of success, and work procedures and processes. We then explored how their work involved Veolia, the contract, or the water reclamation and conveyance facilities. Questions also covered perceptions of the relationship between MMSD and Veolia, and the specific concerns shared with Common Ground. Finally, we asked for lessons learned and recommendations for the future.

Fifth, we investigated publicly available data sources, including:

- EPA and Wisconsin Department of Natural Resources (DNR) permit and compliance records
- MMSD Commission meeting files
- MMSD financial reports and budgets
- The proposed 2028 contract request for proposal (RFP) documents
- Peer utility contracts where publicly available and
- Published reports and news coverage

This data was reviewed to confirm or validate the information provided by MMSD and Veolia. A list of reference materials is in Appendix C.

Some of the information we asked for was not readily available. Gaps are noted in the text. Outstanding questions are listed under Areas for Further Investigation. Unless noted, the audit covers March 2018 to June 2026.

Analysis

After completion of the site visits and interviews, we combined our findings with publicly available data sources and documentation provided by MMSD, Veolia and individual interviewees. Where written evidence supported interview statements, we described them as verified or partly supported. Otherwise, we stated they were reported but not verified. We analyzed the extent to which Veolia complied with the terms of their contracts, recognizing that those terms evolved over time. We reviewed MMSD's oversight of the Veolia contract. Looking beyond the contract, we evaluated eleven areas: safety, staffing levels, workplace culture and employee relations, falsification of records, operations, maintenance, asset management, the capital program, IT systems and data and contract management.

We reviewed the lessons learned by MMSD and their proposed revisions to the future contract and provided recommendations to address issues identified through the audit.

Limitations

An audit of this type is invariably limited by timeline, available information, the quality of records and access to relevant individuals.

Some key areas we could not fully investigate included:

- Veolia Human Resources issues reported by current and former employees. We were informed that investigation and disciplinary actions were led by Veolia Corporate staff and records were not retained locally.
- Detailed examination of WRF process operations, including records obtained from the SCADA system and consultant reports of investigations performed during capital project planning and design.
- Detailed examination of MMSD laboratory test results.
- Detailed examination of MMSD financial records.
- Detailed examination of Veolia maintenance data. MMSD has already done some of this analysis, and the data record includes gaps and inaccuracies.
- Review of the MMSD capital plan and comparison of risks and timelines with the commitments in the 2050 Facilities Plan, Biosolids Management Plan and Energy Plan.

Many claims raised by the people who shared their concerns with Common Ground involved individuals who no longer work for Veolia or MMSD. Several people reported these claims, although their accounts may have repeated the same underlying story rather than providing independent confirmation. Because the individuals concerned were no longer employed by either organization, the audit shifted its focus to recommendations that could help prevent similar situations in the future.

Artificial Intelligence (AI) Use Disclosure

EMA is committed to delivering high-quality consulting services to our clients. This section explains how EMA used artificial intelligence (AI) on this project.

How We Used AI

At EMA, we use closed, enterprise-grade AI tools to support our consulting services. On this project, we used our secure Microsoft Copilot and Anthropic Claude accounts in six ways:

- Organized and searched the documents, emails and scanned records MMSD and Veolia provided.
- Extracted and tested operations and maintenance data from the monthly reports against the contract.
- Traced how the contract changed over time and how it was enforced.
- Researched public records.
- Summarized and cross-referenced, blinded, interview and site visit notes.
- Compared findings across all these information sources.

Human Review of All Output

AI is a tool that supports EMA's professionals. It does not replace them. All AI-generated output was reviewed and validated by a qualified member of our team before it was relied upon or included in the report.

Our Data Protection Commitments

We only use AI platforms whose terms of service confirm that user inputs are not used to train the provider's underlying models. This means the information we work with is not being used to improve or develop general-purpose AI systems.

AUDIT FINDINGS

The audit findings are grouped to address the Commission's goals.

Context

MMSD is a complex, multi-faceted organization with multiple goals and priorities related to its clean water mandate. It is a very successful public organization, and its employees and the community are proud of its record.

Since 1998, MMSD has used a private company to operate and maintain its wastewater facilities. MMSD is responsible for governing and managing regulatory compliance, capital and financial planning, contract oversight and public communication. Although the contracted operator is responsible for day-to-day operations and maintenance, MMSD retains overall accountability for system performance and long-term planning. The contract is extensive and complex, with many different types of requirements and controls.

MMSD's decision to contract out its operations and maintenance remains controversial among some of the people we talked to during this audit. They acknowledge there have been benefits for taxpayers, largely financial. Some questions linger, including whether publicly owned assets are being adequately maintained, whether employees are being treated fairly, whether the contracts are being managed transparently enough, and whether liabilities are being created that will be passed on to future generations.

When the decision to contract the operations and maintenance was originally made, much of the equipment in the WRFs was relatively new. Over the subsequent 28 years of operation, some of it has been replaced and other assets are nearing the end of their useful service lives. Maintenance needs have increased. Costs for replacement equipment, construction and raw materials have increased significantly since 2020.

The impacts of significant storms experienced in 2025 and 2026 underline the need to plan for increasingly uncertain future conditions.

Before drafting the 2028 contract, MMSD completed an internal lessons-learned review. The modifications proposed show MMSD recognizes the need for change and is working to address it.

Veolia Contract Compliance

Did Veolia comply with the contract, recognizing that its requirements evolved over time? ***Partially.***

Veolia generally met its permit compliance obligations but fell short of many stricter contract requirements. EMA identified 121 Veolia obligations in the contract documents and classified them using the available evidence (Table 1). Of these, 20 were met and 21 showed indications of compliance that the available data did not

prove. Another 39 were partly met, 26 were not met, and 21 could not be verified using the information collected.

Table 1: Veolia Contract Compliance Summary

Contract Section (2016 Extension Agreement)	Met	Indicated, Not Proven	Partly Met	Could Not Verify	Not Met	Total
1. Performance standards	3*	0	4	0	5	12
2. Staffing and training	2	1	4	5	2	14
3. Maintenance (plants and conveyance)	0	2	6	4	4	16
4. Maintenance systems and records	0	1	1	2	2	6
5. Safety and security	2	3	2	1	0	8
6. Permits, capacity and wet weather	2*	4	4	2	1	13
7. Biosolids and Milorganite	5*	1	5	0	3	14
8. Reporting and submissions	3	1	8	0	1	13
9. Capital improvement participation	1	1	3	0	1	6
Other obligations (IT, insurance, financial, outreach)	2	7	2	7	1	19
All compliance findings	**20***	**21**	**39**	**21**	**20**	**121**

Note: * indicates requirement that changed during the duration of the 2016 Contract Extension Agreement

The contract compliance findings are presented by topic as defined in the 2016 Extension Agreement. Compliance is tested against the Agreement and the Amendments in force at the time of the activities. Except as noted, the evaluation period is from March 2018 to June 2026. Key findings are summarized below.

Performance Standards

WPDES Permit Compliance

Veolia met the contract requirements for operating the two WRFs within the Wisconsin Pollutant Discharge Elimination System (WPDES) permit effluent limits for biochemical oxygen demand

(BOD), total suspended solids (TSS), fecal coliform, ammonia nitrogen and phosphorus almost all the time. In the 100 months from March of 2018 to June 2026, there were only two weekly exceedances above permit limits, one for fecal coliform and one for TSS. Two other events (one 2018 unscheduled bypass and one 2025 facility overflow) also resulted in effluent discharges above permit limits. All four of these events occurred at South Shore. Jones Island also recorded a bypass in July 2024 due to a power failure. No regulatory fines were levied.

Contract Effluent Quality

The contract establishes effluent quality standards that are stricter than the permit limits. The intent of these standards is to give an operating buffer. Jones Island consistently met the effluent quality standards with only one exception. In October of 2023, the standard for phosphorus was not met. Since March of 2018, South Shore periodically did not meet the contract standards for BOD, TSS, ammonia nitrogen and fecal coliform. Contract standards were relaxed for South Shore for BOD in January 2024 (Amendment 4), and for fecal coliform in August 2022 (Amendment 1).

Permit Fees

Annual Permit Fee assessments (financial penalties) were assigned to Veolia in each year from 2021 to 2025 because they did not meet combined two-plant annual averages for BOD and TSS.

Staffing and Training

Staffing Plan

Veolia did not consistently meet the contract's staffing requirements. The staffing plan sets minimum levels by role and an overall minimum of 216 positions. Staffing was below 216 in almost every month since March 2018, with an average of about six vacancies. Five designated positions must be filled at all times: Plant Operations Manager, Safety (and Security) Manager, Maintenance (Asset) Manager, Collection System (Conveyance) Manager and Capital Project Coordinator. That requirement was not met about 20% of the time. A separate requirement calls for at least one Shift Supervisor to be physically on the grounds 24/7. Records were unavailable to determine whether this requirement was met. From 2021 to 2023, the Jones Island biosolids dryers shut down three times because no dryer operator was available on shift.

Amendment 6 provided for supplemental staffing of five key positions to be added to the baseline of 216: A Commissioning Engineer, a Reliability Engineer, a Shift Supervisor, an Electrician and a Field Plant Maintenance Worker. With some delay in hiring, and subject to other vacancies, Veolia has generally made use of the additional positions.

Qualified, Trained and Certified Operators

Under both the 2008 agreement and the 2016 extension agreement, operators had to be qualified, trained and hold valid licenses and WRFs had to be under the direct supervision of a state certified operator to comply with the WPDES permit. Certain operators were permitted to continue in their roles under grandfathering provisions without obtaining licensure. The operator in charge was

certified every year. Veolia keeps records of operator certification. In February 2018, there was a permit violation at Jones Island after heavy rain and the subsequent investigation found that two key Veolia staff lacked current operator certifications.

Training

Although no training hours threshold was specified, Veolia was supposed to keep management and staff education and training up to date on a scheduled basis and keep staff recertified or relicensed as the law requires. Technical training records available indicated about seven hours per person per year, which is about what an certified operator needs to retain certification in Wisconsin, but below the level a professional engineer needs to retain a license. Each monthly report was to summarize training activities, split into technical and safety training and this requirement was met. Required annual training and succession reports were produced in 2020, 2022, 2025 and 2026, but were not available for the other years since 2018.

Reporting

Monthly reporting showing the number of employees by position compared to the staffing plan was generally not provided by Veolia. Veolia met the requirements to continue recognizing the unions representing transferred employees and operate under their collective bargaining agreements. Prior personnel taken on from United Water were also kept employed as required and the results regularly reported to MMSD.

Apprenticeship Program

Amendment 1 added an apprenticeship program in 2022, and Amendment 2 expanded it in 2024. Veolia substantially met the goal to have initially two and later three apprentices according to the implementation plan. The Apprenticeship Program was reported to be successful, with Veolia seeking to retain many apprentices as regular employees.

Maintenance Performance

The contract sets deadlines for preventive maintenance (PM), predictive maintenance (PdM), and specified sewer cleaning, televising and maintenance work in the WRF and conveyance facilities. More critical assets have shorter deadlines of 45 days; less critical assets have deadlines of 120 days. Sewer pipe cleaning has a 90-day deadline. Veolia's reports indicate that the requirements were almost always met (96 of 99 months) for the two plants combined after March 2018. However, the early-2024 transition from the Oracle work and asset management system (OWAM) to the Veolia asset management system (VAMS), together with changes to work-order content and frequency, complicates interpretation of the compliance record. A detailed examination of maintenance management system records was outside this audit's scope.

Conveyance

Conveyance preventive and predictive work orders, including exercising gates critical for wet weather flow management and performing manhole inspections, were not met in some months in 2023, 2024 and 2025.

Annual goals were established for sewer camera inspection mileage and associated upstream manhole or structure inspections and Veolia met these goals. Monthly inspections of intercepting and diversion structures were required, and any required repairs were to be completed within three business days. Some sites were not inspected in a timely manner and repairs routinely took much longer than three days. A sewer cleaning plan is to be prepared and submitted by March 15 of each year. Sewers 48 inches and smaller are to be cleaned when 15% or more blocked, cleaning is to be performed when MMSD directs, and Veolia must respond to blockages. These requirements were frequently not met.

Veolia is obligated to calibrate and maintain all monitoring, control and weather sites. They must fix any deficiencies within three or ten business days depending on the type and run annual functional readiness tests with reports. Monthly reports describe annual functional readiness tests, but calibration data and repair completion dates were not available for these activities.

Corrective Maintenance

Similar time limits were applied to corrective maintenance work orders and Veolia's reports show significant numbers of corrective work orders were not completed by the target dates in many of the reported months.

The contract obligates Veolia to keep equipment in service and repair it in a timely way. Veolia must not take equipment out of service or offline for any reason other than maintenance or repair without MMSD's prior written authorization. Repairs below the capital threshold (which was increased from $10,000 to $25,000 in 2022 by Amendment 1) are to be performed "in an expeditious and timely manner" with maximum days established in a table included in the contract. These limits can be exempted by MMSD. Review of Veolia equipment availability spreadsheets identified numerous examples of significant equipment out of service for extended periods.

Veolia must notify MMSD in writing within three business days of identifying the need for a Material Capital Repair or Replacement (MCRR). It must show that recommended maintenance was done, and it must not let repairs build up past the cost threshold so that MMSD is required to shoulder the cost of repair/replacement. Records show multiple late requests and failures to provide the documentation. Veolia and MMSD employees interviewed reported that it was common for Veolia to not maintain equipment so that it would hit the dollar threshold, although this statement could not be verified from the information available to the audit team.

Maintenance Standards

Veolia is also obliged to maintain new equipment to the Standards of Maintenance (O&M Manuals, manufacturer recommendations) and bear the cost of repairs caused by the Contract Operator. A

significant dispute arose between MMSD and Veolia related to the eight Jones Island bar screens installed in about 2018. MCRR's were submitted to replace all eight screens within a ten-month period in 2020 and 2021 and a manufacturer's assessment indicated that no effective preventive maintenance had been performed since installation. Up to five of the eight screens were out of service at once over about a five-month period although six of the eight are needed in service to sustain full 330 MGD (Million Gallons per Day) capacity at Jones Island.

In 2021 Veolia stopped entering asset data for new assets and MMSD found 83 of 149 (56%) plant assets made active from January 2021 to March 2022 had no preventive maintenance work orders assigned to them. As a result, no preventive maintenance work was performed on these assets until after the situation was remedied in July 2022.

Valve Exercising

Veolia is required to exercise every valve 12 inches or larger on the Schedule 18 list once a year. Valves on the Do-Not-Exercise list are exempt, with set cost sharing if one fails. Some corrective work orders on valves have been open for more than a year. Veolia and MMSD employees noted problems with achieving effective isolation of equipment in the plants due to smaller valves (less than 12 inches) not operating correctly.

Buildings, Grounds and Fleet

The contract also specifies requirements for Veolia to maintain buildings and grounds, including the 13th Street facility, and specifying safety and security equipment, housekeeping, vegetation management, lighting, roofs, plumbing, signs and snow removal. Fleet vehicle maintenance is also a Veolia responsibility. Numerous interviews indicated these requirements were not being met consistently. The audit team did not visit the 13th Street facility but noted that Jones Island and South Shore grounds appeared to be well maintained at the time of the site visit. Buildings were generally in good repair during the site visit, except for some process areas and heating, ventilation and air conditioning (HVAC) systems out of service. Control rooms, laboratories, office areas and maintenance shops could benefit from updating. The storeroom was well organized and clean.

Return of Assets at end of Contract Term

At the end of the contract term, Veolia will be required to return capital assets to MMSD in the condition recorded in the starting inventory lists except for normal wear and tear or pay for the shortfall. This obligation can't be tested until the return occurs, but there are many indicators of asset condition decline over the last ten years that will need to be considered before a new operator is engaged.

Maintenance Systems and Records

Contract requirements to report Schedule 3 maintenance metrics accurately were not met about 20% of the time according to MMSD review of Veolia reports. Multiple MMSD and Veolia employees interviewed for this audit stated that maintenance activities were not recorded accurately and that records were not kept at the asset level with labor and costs, as required by the contract.

Correspondence between MMSD and Veolia in 2022 and 2023 indicated that work orders were being closed without the work being done and that this constituted non-compliance with the terms of the agreement.

Maintenance-system changes complicated reporting accuracy and MMSD's ability to verify asset history. The contract requires Veolia to use approved maintenance systems, keep complete asset-level histories, including out-of-service information, and implement new systems on a milestone schedule. MMSD must review and approve the data conversion. Reports from March to December 2024 state that Veolia was still validating work orders migrated from OWAM to VAMS. Open WRF preventive maintenance work orders increased from 1,155 in January 2024 in OWAM to between 3,519 and 4,350 a month from March to December 2024 in VAMS. The backlog has since improved. However, corrective work-order dates were reset to February 2024 regardless of how long the orders had been open. Several MMSD personnel interviewed expressed concern about limitations on their access to Veolia's asset-history data.

In several instances in 2018, Veolia would not cooperate with an MMSD maintenance inspection, but there is no evidence that happened at any other time and by 2023 inspections were taking place regularly.

Safety, Security and Emergency Management

Veolia is responsible for safety and security programs, for preparing and updating manuals, providing training, coordinating committees, writing procedures, conducting annual audits and providing reports on time. Most of these requirements were consistently met.

Veolia must also require employees and subcontractors to comply with all safety laws and take all reasonable precautions to prevent injuries, including locking out equipment before entry. Except for one serious incident in October 2018, Veolia appears to have complied with this requirement. During the 2018 incident, a third-party contractor entered a biosolids dryer that was not properly locked out, de-energized and checked to replace blades inside the dryer. An operator started the equipment while the third-party contractor was inside and he was injured. Occupational Safety and Health Administration (OSHA) fines were levied. No similar incidents have occurred since.

Veolia must ensure day-to-day safety procedures are followed, including lockout/tagout, confined space entry, fall protection and lone work, in both daily activities and on projects. Injury and near miss reporting must be encouraged. Some Veolia employees interviewed said they hesitated to report injuries due to fear of discipline and that they were required to meet near miss reporting quotas.

To mitigate combustible dust hazards, Veolia must clean the dewatering, drying and silo facilities daily, keep dust below 1/16th of an inch and carry out a full Super Clean three times during the contract term. Veolia and MMSD employees consistently reported poor housekeeping in the area. OSHA complaints were filed in 2016 and 2021. MMSD's 2025 inspections found dust and housekeeping problems.

With respect to security, Veolia is required to keep security monitoring, paging and phone systems working and is not allowed to remove equipment from service without MMSD authorization. Employee interviews indicated some of this equipment was not working, although they were not aware whether MMSD had provided the necessary authorization to decommission it.

Security awareness training and the OSHA 10-hour safety training is to be provided within 30 days of hire of every new employee. Veolia's environmental, health, and safety Peer Audit of the whole system is to be conducted every two years. Records show safety and security training was provided but the Peer Audit results were not available.

Veolia must also review and update an emergency plan annually and they met this requirement.

Permits, Capacity and Wet Weather

Veolia met most requirements for permits, capacity and wet weather. The main exception was treatment capacity at South Shore.

Effluent Quality

As noted in the Performance Standards section Veolia met the contract requirements for operating the two WRFs within the WPDES permit effluent limits almost all the time.

Combined Sewer Overflows (CSOs) and Sanitary Sewer Overflows (SSOs)

MMSD's existing WPDES permit allows up to six combined sewer overflows a year, or at least 85% capture of wet-weather flow. Sanitary sewer overflows are prohibited. DNR must be notified of an SSO within 24 hours, followed by a written report within five days. The same notification and written-report deadlines apply to bypasses and plant overflows.

CSOs stayed within the limit every year since 2018 although in 2018 the count was exactly at 6 (Table 2). SSOs were reported every year except 2023. About half were rainfall driven, the result of inflow and infiltration into laterals on private property or sanitary sewers. Others were caused by Veolia operations. Four plant overflow or bypass events occurred. Veolia paid MMSD compensation for the 2018 overflow at South Shore. An internal root cause analysis found that inadequate shift turnover contributed to one of the 2025 South Shore overflows.

Table 2: CSOs, SSOs and Plant Overflows/Bypasses Reported from 2018 to 2026

Year	CSOs	SSOs	Plant Overflows/ Bypasses
2026 to date	3	1 (6 sites)	
2025	1	3	2 (South Shore)
2024	1	1	1 (Jones Island power failure)
2023	1	0	

Year	CSOs	SSOs	Plant Overflows/ Bypasses
2022	1	1	
2021	2	3	
2020	2	2	
2019	2	1	
2018	6	3	1 (South Shore)
Total	**19**	**15**	**4**

Notes:

CSO Data Sources - MMSD 5-day letters to DNR: 4/14, 8/1 and 9/3/2026 (2026), MMSD Annual CSO Reports (2018-2025)

SSO Data Sources - MMSD notice to DNR, 4/24/2026 (2026), EPA ECHO (2020-2025), MMSD Compliance Maintenance Annual Reports (2018-2019)

Veolia must update the SSO and CSO Response Plan each year and provide annual conveyance system reports. This requirement was met until 2023, but records were not available to demonstrate that it was met after that year.

Air Quality Permits

Veolia partially met the air quality requirements. MMSD holds the air permits, while the contract specifies Veolia must meet permit requirements at both plants. Veolia must operate air pollution control systems and emission units according to their malfunction prevention plans. It must report each air permit excursion or exceedance at least monthly. Emission inventories, source tests, semi-annual monitoring reports and annual compliance reports must be filed in time for MMSD review, and records must be certified as true, accurate and complete. Jones Island received state warning letters in 2021 and 2023, and three years included self-reported deviations. No penalties were assessed and no high-priority violations were recorded. Veolia's corrective actions included daily log checks, a revised Standard Operating Procedures (SOP) and operator training.

Sampling and Quality Assurance/Quality Control (QA/QC) Plan

Veolia must collect all permit-required samples and deliver them to MMSD's laboratory under chain-of-custody. They must also analyze pH and residual chlorine and certify the results of those tests. The sampling program and QA/QC plan must be updated each year.

The records identify a May 2022 state monitoring violation for 'Analysis not Conducted.' A separate June 2024 incident at South Shore involved chlorine residual testing. An operator logged a final effluent result of 0.1 mg/L; the permit limit was 0.038 mg/L. The log sheet requires an interference test for results above 0.04 mg/L, but that test was not performed. A second sample produced a result of 0.03 mg/L, which was reported. Veolia identified 'Operator error as the primary root cause,'

disqualified the operator until retraining, and committed to retrain all operators on chlorine residual analysis by September 2024. QA/QC and Sampling Program updates were filed in 2026.

Examination of MMSD and Veolia sampling and laboratory analysis results was outside the scope of this audit.

WRF (Plant) Capacity

Veolia met the requirements concerning prior written approval and timely written notice of reduced plant capacity. The contract requires timely written notice of reduced capacity so that wet-weather decisions reflect current conditions. A separate requirement calls for monthly lists of planned activities that could affect plant capacity. That requirement was not enforced.

Reported capacity reductions reflected two types of limitations: hydraulic limitations from equipment being out of service, and process limitations from an inability to treat influent effectively enough to meet effluent targets. South Shore was below its design capacity in 328 of 405 weeks (81%). Its capacity was at or below 150 MGD in 55 weeks and at or below 110 MGD in 18 weeks, reaching a low of 40 MGD in February 2019. Jones Island was below its design capacity in 193 of 405 weeks (48%). In most days, these design capacities are much larger than the actual wastewater flows treated. Monthly lists of planned activities affecting capacity were not provided.

Before 2016, Veolia replaced ferric chloride with ferrous chloride and later cut polymer use, which reduced treatment efficiency and affected biosolids processing. After the resulting disputes, the contract barred Veolia from cutting O&M spending in ways that reduced design capacity or treatment without MMSD's written consent. Veolia generally returned to its earlier polymer doses. South Shore continued to experience treatment capacity reductions that could not be fully explained by equipment or structures out of service for capital projects.

Wet Weather Management

Before wet weather, the contract specifies that Veolia must:

- Put critical equipment and tanks in service,
- Raise sludge wasting rates,
- Start south shore step feed,
- Calculate current plant capacity from units in service and sludge settling,
- Enter the adjusted capacity into the wet weather algorithm, and
- Share the information with MMSD for use in determining when to initiate bypasses or overflows.

During wet weather events, Veolia must work with MMSD to operate the system to maximize the volume of wastewater captured, stored, conveyed and treated, run the ISS pumps when plant capacity allows and make in-plant diversions only with MMSD consent. Veolia generally met these requirements.

Biosolids and Milorganite

The contract obligates Veolia to produce the annual amount of Milorganite (including Greens Grade) that MMSD specifies and to produce according to a monthly contract schedule. Since 2018, Veolia met the annual production goals. Veolia is also required to report Milorganite production, inventory and quality data accurately and with a few minor exceptions, they did.

Milorganite frequently failed to meet the contract's particle-size standard. The standard requires at least 95% of shipments in a month to be within screen limits. Since March 2018, Classic Milorganite fell below that threshold in 93 of 100 months. Greens Grade fell below it in 84 of the 98 months with data. Off-specification product containing excessive fines was blended and bagged.

With respect to Milorganite quality, standards were set for nitrogen, iron, moisture, fecal coliform and Polychlorinated Biphenyls (PCBs). Nitrogen values were met in most months. The iron standard was loosened and then met in subsequent months. Moisture, fecal coliform and PCB limits were met.

Off-spec Milorganite was reported in 2018 and 2025 and was stored and disposed of.

Veolia is also required to keep the South Shore plate-and-frame presses operable and available and use them as needed to manage the storage volume of plant solids. Press cake produced was to be disposed of at Veolia's cost. The plate-and-frame presses were run seven times between 2016 and 2023. Veolia contested the requirement that they pay for disposal of the cake and MMSD settled and shared the cost. Shared costs for cake disposal were also incurred between January 2024 and June 2026. Veolia and MMSD employees interviewed suggested Veolia is no longer maintaining the equipment. In 2026 Veolia planned to rent a portable dewatering system because it was cheaper than running the presses.

Veolia must also land-apply cake produced at the South Shore in compliance with the WPDES permit and applicable laws. A DNR notice of non-compliance was issued for land application in late 2022 to two Racine County farm fields.

Veolia is required to maintain dryer availability and redundant equipment so that biosolids drying can occur continuously. This led to a firm capacity limit of 10 of 12 dryers available unless out of service due to MMSD capital projects or MCRRs not due to Veolia's fault and a requirement that daily dryer outage records be reported to MMSD. More than two dryers were found to be frequently out of service throughout the period from March 2018 to June 2026.

Reporting and Submissions

Veolia's required operations and maintenance reports often had problems with completeness, timeliness and accuracy. Many were incomplete or inaccurate, and some were late. Veolia corrected the errors after MMSD review. In some monthly operating reports, a statement that requirements were met conflicted with supporting text describing exceptions. Reports also frequently referred readers to other reports or documents. Some of those supporting documents were not included in the materials provided for this audit.

As-built drawings and Operations and Maintenance Manual updates were rarely provided in a timely manner.

Service fee allocation reports were generally timely, although MMSD granted extensions in 2018, 2019 and 2022. Commodity and spare parts lists were logged mainly in January and July rather than quarterly, as required. Projected budget and electrical power budgets were submitted by the due dates.

Records retention was disorganized and some emails were deleted due to mailbox size limitations. MMSD access to some types of records was limited and depended on knowing who to ask, which was complicated by turnover.

Monthly contract meetings to review the Monthly Reports were held diligently throughout the period since March 2018.

Capital Improvement Participation

Veolia must designate a full-time on-site Capital Project Coordinator responsible for Veolia participation in capital project work and Veolia-managed MCRRs. Veolia has met this requirement.

The contract also requires Veolia to provide informed input throughout MMSD's capital projects. It must send knowledgeable staff prepared to contribute to planning, design and construction meetings. Detailed written comments on MMSD documents are due within two weeks of a request. Veolia must also solicit and pass on written comments from union-represented operations and maintenance employees for each proposed Capital Project and MCRR. Several Veolia and MMSD employees reported reduced participation: fewer Veolia representatives attend meetings, fewer written comments are submitted, and less verbal input is shared, especially from union-represented employees. Veolia employees confirmed that they often do not have time to attend capital project meetings. Meetings, training, SOP updates and lockout/tagout procedures take staff away from regular duties and often require overtime. Veolia cited this when it requested additional trades positions which were granted in Amendment 6. Veolia must plan operations during construction, including interim strategies, isolation of sewers and equipment, draining and cleaning, so MMSD projects can proceed. Several MMSD employees stated they have encountered Veolia staffing constraints when attempting to schedule work and review lockout/tagout procedures. Difficulties establishing isolations due to small valves not functioning properly have impacted the capital project work even further.

MMSD employees described multiple commissioning and handover situations in which Veolia did not meet the requirements for new assets. Veolia must review O&M manuals and training materials, enter new assets in the maintenance management system, and maintain them according to the manuals. The Commissioning Engineer position added through Amendment 6 is intended to take responsibility for this work. According to the employees interviewed, O&M manuals were not reviewed and updated, and Veolia staff did not attend equipment and process training scheduled by MMSD or its consultants. Entry of new assets in the maintenance management system was significantly delayed. In some cases, no preventive maintenance work orders were created; in

others, inappropriate orders were copied from different types of equipment instead of being developed from the manuals.

Veolia must prepare the annual Capital Project and MCRR request report and this requirement was consistently met in a timely manner.

Veolia is also required to maintain and enforce warranties on Veolia-procured equipment and projects, give prompt notice of warranty claims and deliver a warranty list every quarter. Interviewees suggested that notice of warranty claims was sometimes delayed but no documentation was available during the audit to verify this statement. No warranty lists were available to be reviewed.

Other Obligations

This section summarizes other contractual requirements that do not fit into the categories defined above.

Cooperation with MMSD

Veolia must maintain a business-like, responsive relationship with MMSD and give MMSD and its agents unlimited access and full cooperation. Site rules must not restrict access or require escorts, and MMSD must have access to employees for capital-project input. Several MMSD employees said Veolia employees had told them they were not allowed to speak to or share information with MMSD. During our site visit, one Veolia employee told the audit team that they could get in trouble if they talked with them without the Shift Supervisor's permission. No documented evidence was found to verify that Veolia employees had been instructed not to talk to MMSD or third parties.

Media Relations, Community Outreach and Tours

Veolia is required to obtain MMSD approval before any media contact and is not allowed to use MMSD names or logos without consent. Veolia must also give system tours and continue the public education program and they have met all of these requirements.

Odor Control

Veolia must minimize odors, run odor reduction equipment at design efficiency, and supply odor media and chemicals at non-ISS sites and must respond to odor complaints within two hours. Relatively few odor complaints appear to be received, and Veolia appears to have complied with these requirements although MMSD did agree to share some odor control related costs.

Information Technology and Cybersecurity

Information technology requirements have evolved substantially since the original Veolia contract in 2008, and even since the 2016 extension agreement was signed in 2018. The contract requirements have not kept up with MMSD's needs and Veolia did not fully meet its obligations to manage, operate and maintain the information technology and operations technology assets and systems.

The contract assigns Veolia responsibility for managing, operating and maintaining the plant and conveyance networks and taking reasonable steps to protect them from intrusion. Veolia must implement manufacturer-recommended software and firmware upgrades and keep no more than two versions behind the current release unless MMSD approves otherwise in writing. Annual reports must identify software licenses in use, software two or more versions behind, and end-of-support hardware. Despite Veolia meeting the letter of some of these requirements, MMSD assumed responsibility for much of the information technology assets and services as its needs evolved.

Energy Management

Veolia is also required to operate to reduce energy use and cost, maximize landfill and digester gas, run the Energy Management Team and power management program, and file an annual report on continuing improvements. While both MMSD and Veolia employees spoke about the need to minimize energy costs, no documentation was available during the audit to verify Veolia's energy management performance. Interviewees stated MMSD made the decisions about when to buy power.

MMSD Oversight of the Contract Terms

Was MMSD oversight of the contract terms adequate? ***Partially.***

MMSD made WPDES permit compliance its highest oversight priority, and Veolia consistently met the permit requirements. Other compliance highlights covered several contract areas. For preventive maintenance work orders completed within 45 days, records show that the 95% standard was met in 96 reported months for both WRFs combined. Milorganite production met MMSD's instructions for tonnage, moisture content, pathogens, PCBs and silo limits. Cumulative sewer televising mileage was ahead of pace. Most financial, safety, security and training reports were delivered on time.

MMSD oversight was less effective in areas where Veolia repeatedly fell short of contract requirements. These included South Shore effluent standards, the 216-position staffing minimum, corrective repair time limits, Milorganite particle size, conveyance inspections, and the accuracy and completeness of monthly reports. Both MMSD and Veolia employees widely reported that preventive maintenance work orders were closed without the work being completed. Some Veolia and MMSD documentation supported these reports, but the available data does not definitively prove the practice happened. Veolia employees told our audit team that VAMS, which was implemented in 2024, has been configured so that a work order cannot be closed without labor being charged. Work orders also cannot be closed without a reason memo entered. MMSD receives a regular report of all work orders cancelled along with the reason memo. This explanation was not verified through system demonstration.

Many MMSD employees described the Contract Compliance Office as under-resourced given their critical role and not able to provide enough direct, on-site oversight of Veolia's activities. The contract is complex and over time the increase in corrective maintenance and MCRRs has significantly increased their workload.

Current and former MMSD employees who participated in the audit described two competing views of contract oversight. One view is that permit compliance is the appropriate priority and other contract requirements should matter less as long as permits are met. The other is that MMSD should enforce all contract requirements and should not pay full price when some are not met. The lack of shared understanding and agreement about these priorities is causing internal disagreements and eroding trust in MMSD leadership.

Since 2018, MMSD has repeatedly withheld payments to Veolia until issues were resolved and work was performed. This approach has cured faults after they occurred but has been less successful in preventing future faults. MMSD has also loosened two contract effluent quality standards and the Milorganite iron specification and paid or conceded significant sums on disputed items and situations where they assumed responsibility due to delays in MMSD capital projects or other MMSD actions. Penalties for failing to meet the staffing plan were not applied and notices were sent for defaults, but the remedies were not collected. MMSD employees identified missing enforcement provisions in the current contract that they believed prevented them from holding Veolia accountable in other areas.

MMSD leadership refers to its relationship with Veolia as a partnership. Both MMSD and Veolia employees stated that Veolia's attitude towards the relationship varied depending on the executive responsible for the local operation and what they perceived to be priorities or direction from Veolia corporate interests. They described past periods of antagonism where Veolia disputed MMSD findings, refused to answer questions and instructed employees not to talk to MMSD representatives or participate in MMSD meetings. MMSD employees uniformly agreed that collaboration had improved in the past year or so and credited the former Vice President/General Manager of Veolia Water Milwaukee for much of the improvement. MMSD employees expressed concern that MMSD's ability to hold Veolia or a different future Contract Operator accountable could continue to be undermined by reliance on this partnership approach.

Looking Beyond the Contract

To answer the MMSD Commission's third question, we evaluated eleven areas: safety, staffing and resource management, workplace culture and employee relations, falsification of records, operations, biosolids and Milorganite, maintenance, asset management, the capital program, IT systems and data, and contract management.

In each section, general findings are presented. Concerns raised by the people who contacted Common Ground are discussed. Context or comparisons with industry standards or peer utilities are presented where applicable.

Safety

Both MMSD and Veolia have strong worker safety programs. Veolia, as a private employer, is regulated by OSHA and maintains its own safety programs, training records, inspections and compliance documents. MMSD, as a public entity, reports to the Wisconsin Department of Safety and Professional Services (DSPS).

Safety Programs, Procedures and Oversight

Most Veolia and MMSD employees interviewed said they feel safe at work and that both organizations treat safety as a priority through policies, training, procedures and regular communication. Some Veolia employees saw room for more consistent safety practices across shifts, better awareness of hazards, and better communication between operations, maintenance, safety staff and management. The audit found no evidence that the facilities are broadly unsafe.

Equipment Conditions and Workplace Hazards

Safety orientation and training for employees and third-party contractors are provided and documented at the WRFs and conveyance facilities, and near misses are investigated. The audit team observed safety tailgate meetings and saw no unsafe conditions during the site visits.

Veolia and MMSD employees raised concerns about:

- Combustible dust in Milorganite operations and the risk of dryer fires,
- Unreliable alarms and instrumentation,
- Limited equipment redundancy and reliance on temporary workarounds,
- Deteriorating buildings,
- Safe access to equipment, fall protection and possible asbestos exposure, and
- Maintenance tasks that are difficult to perform safely because of how equipment is configured.

Some of these concerns were historical or undocumented. The combustible dust concern is supported by OSHA complaints in 2016 and 2021 and by MMSD's 2025 inspections (see Safety, Security and Emergency Management in Veolia Contract Compliance). The concerns were raised often enough to justify an independent safety assessment.

Safety Reporting, Documentation and Corrective Actions

Some employees said they reported safety concerns but were not told what action was taken. Others described outdated, duplicate or multiple versions of SOPs and O&M manuals.

Employees raised four concerns about lockout/tagout:

- Current operators and shift supervisors may not know the equipment well enough to write new procedures or reliably adapt existing ones.
- Former Veolia employees said planned lockouts are communicated to operators less thoroughly than in the past.
- Process areas are large, and busy operators may not know when third-party contractors or MMSD staff are working nearby.
- Valves that do not seal mean isolations often have to be extended to more equipment when the work is done. These field changes need careful checking.

These points were not fully documented, but both Veolia and MMSD employees raised them, and they match the valve problems described in Valve Exercising.

Some Veolia employees said they hesitated to report injuries for fear of discipline and that they were expected to meet near-miss reporting quotas. Whether or not anyone was penalized, this belief discourages reporting and limits management's ability to find and fix hazards.

Staffing, Event Response and Operational Communication

Interviewees described thin staffing on some shifts, employees working alone across large process areas, and limited access to qualified staff during equipment failures and emergencies. They also described weak communication between shifts, limited supervisory support, and uncertainty about equipment status, open maintenance issues and when to escalate.

The audit found no direct link between staffing levels and specific safety incidents. However, these conditions can slow hazard recognition and emergency response, particularly at night, on weekends and during unexpected equipment failures. Staffing is discussed further in the next section.

OSHA Compliance and Safety Performance

Public records show five OSHA inspections between 2009 and 2021. All were triggered by employee complaints about housekeeping, lockout/tagout, amputation hazards, respiratory protection and combustible Milorganite dust. Three complaints were upheld, with about $30,000 in fines levied. The most serious incident in the review period was the October 2018 dryer injury described in Safety, Security and Emergency Management; no similar incident has occurred since. The audit did not analyze injury rates or safety trends.

Proposed 2028 Contract

The proposed contract includes four safety provisions:

- The Contract Operator can identify, in its initial Safety Plan, work it cannot perform safely.
- Semi-annual facility inspections and a joint safety subcommittee, including MMSD safety staff, will review incidents and recommend improvements.
- MMSD may bar individuals from the WRFs or conveyance facilities for reasons including safety.
- Milorganite production areas must be cleaned daily to meet OSHA dust standards, with a measurable trigger of 1/16 inch of dust and stronger penalties.

Staffing and Resource Management

As described in Staffing and Training in Veolia Contract Compliance, Veolia did not consistently maintain the required 216 positions or keep the key positions and the positions added by Amendment 6 filled. Shortfalls began in 2018 and continued through the audit. This section covers what interviewees said about the effects.

Staffing Adequacy and Operational Impacts

Current and former Veolia employees, MMSD staff and union representatives described recurring vacancies, workforce reductions, difficulty recruiting and keeping staff, and gaps in coverage for absences. Some said work had been reassigned or outsourced and that some skilled trades positions had been cut. They linked these changes to more overtime, delayed preventive maintenance, temporary workarounds and unclear responsibilities.

Several people said they often work alone in situations they consider unsafe or are given work they do not feel trained or experienced enough to do without help. Operators described having to find a supervisor or manager before making operational decisions. Interviewees also pointed to turnover among Veolia managers and supervisors, said operators are much less experienced than in the past, and questioned whether some managers understand the work.

Veolia supervisors are sometimes required to cover more than one shift, which limits their availability. Some bargaining-unit employees said they would not apply for supervisory jobs because they would lose union representation and their protections.

Some interviewees described effective coordination and no unsafe conditions in their areas. The other accounts were not verified with records, but they were consistent across many interviews and with the staffing records. Together, they show that existing controls did not ensure adequate coverage or compliance with the contract's staffing requirements.

Resource Management and Employee Development

The contract requires Veolia to report overall staffing levels, but vacancies, how long they lasted and coverage on each shift were not tracked consistently. Interviewees also described gaps in process and equipment training and outdated or inconsistent documentation. Without reliable data on these points, neither MMSD nor Veolia can tell whether staffing is adequate, where workforce risks are emerging or how staffing decisions affect maintenance and safety.

Proposed Future Contract

The proposed contract adds positions, increases the number of key positions that must always be filled and gives MMSD a larger role in workforce planning. These changes should address some of the effects of the shortfalls since 2018. As noted in Contract Management, however, the draft sets position counts rather than coverage rules for each shift. Continued investment in technical training will be needed so that new employees are prepared and experienced staff keep their skills current.

Workplace Culture and Employee Relations

Many current Veolia and MMSD employees said they take pride in their work and have confidence in their colleagues. Some current and former employees of both organizations described low morale, and Veolia employees described high turnover among managers and supervisors. A few interviewees described a workplace culture they perceived as intimidating, including allegations of racial discrimination. Most of these situations involved people who no longer work for either

organization (see Limitations in Methodology), and the available documents did not allow the audit to confirm them. The audit team did not directly observe such behavior during site visits or interviews.

Reporting Channels and Employee Confidence

Both organizations have formal ways to raise concerns: management, Human Resources, union representatives, grievance procedures and safety processes. Confidence in these channels varied. Current and former Veolia employees criticized Veolia's management practices and handling of complaints. Current and former MMSD employees raised similar concerns about MMSD Human Resources, management and employee relations.

In both organizations, interviewees described:

- An expectation that concerns go through the management chain,
- Slow or dismissive responses from management or Human Resources, and
- Fear of retaliation, job loss or extra scrutiny after raising concerns.

Some Veolia employees said they were discouraged from talking directly to MMSD staff (see Cooperation with MMSD in Veolia Contract Compliance). Others described fair treatment and no retaliation. The interviews show low trust in complaint processes in parts of both organizations. They do not show that retaliation occurred or that these experiences were shared across either workforce.

Communication and Employee Relations

Interviewees in both organizations said they were reluctant to raise concerns or disagree openly and relied on union representatives or confidential channels instead. They were often unsure who was responsible for handling a complaint and received little feedback after raising one. Some described frustration and disengagement linked to staffing changes, workload, perceived unfair treatment and unprofessional conduct. Others said concerns were not handled with urgency, or that people with relevant knowledge were left out of discussions or did not attend when invited.

Human Resources Coordination and Training

MMSD and Veolia Human Resources staff said they have no contact with each other on workforce or employee-relations matters. There is no process for sharing information, aligning approaches to common problems or escalating issues between the two organizations. Veolia's investigation and disciplinary records are kept by its corporate office rather than locally. The audit found no evidence of regular Human Resources or employee-relations training in the work groups reviewed.

MMSD and Veolia have separate employment responsibilities, but without coordination, problems that affect both workforces can go unaddressed.

MMSD Human Resources

Several MMSD employees said they were reluctant to approach MMSD Human Resources and feared adverse employment actions if they did. Further complaints were raised in the audit

interviews and through the hotline, including concerns about classification and compensation methods, employee evaluations and leadership communications that may discourage public records requests or contact with the MMSD Commission. These complaints have not yet been investigated and do not establish wrongdoing or retaliation, but they are serious enough to warrant independent review. Recommendations for MMSD Human Resources are in the Recommendations section.

Proposed Future Contract

The proposed contract creates a neutral complaint channel and enforceable workplace-culture obligations for the Contract Operator:

- MMSD will provide a third-party ombudsperson for discrimination, harassment and whistleblower complaints, and the Contract Operator must post the contact information prominently.
- Anti-harassment training is required at hire and at least every two years.
- Persistent unaddressed workplace-culture complaints are listed as a contract default and subject to penalties.

These provisions apply only to the Contract Operator's workforce.

Falsification of Records

Several concerns related to falsification of records were identified by current and former MMSD and Veolia employees. Concerns attributed to Veolia included:

- Work orders deleted from the maintenance management system or rejected without reasons being documented.
- Work orders closed without work being performed. Note that this could have been done for legitimate reasons and with MMSD approval, but the audit was unable to verify the context.
- Work orders back dated to make it seem like high frequency preventive maintenance work was carried out on time.
- Assets removed from the maintenance management system to reduce the amount of work required. There could be legitimate reasons for removing assets, but the audit could not verify the details.
- Inaccurate operator credentials communicated to DNR.
- Milorganite test results and QC numbers were changed to meet product specifications prior to 2016.
- Capacity notices to MMSD were altered.
- Residual chlorine test results were reported incorrectly, or additional samples were taken until a pass was achieved.
- Incident, root cause and inspection reports were modified to obscure Veolia faults.

Partial corroboration from available documentation and multiple interview sources supported the issues related to work orders. The Milorganite and residual chlorine test results were partially supported in relation to specific incidents. There was no indication these concerns were current or widespread.

A few additional concerns related to MMSD laboratory and water quality test results were raised, although many people assured the audit team that these types of issues could not happen under current laboratory practices. The laboratory is also regularly audited.

Operations

The audit provided an overview of WRF and conveyance system operations. During the site visits the team observed reasonable operations management practices. Operations coordination and process control meetings were held at each WRF with thorough discussions of ongoing issues. Overnight issues and equipment out of service were reviewed. Daily priorities were set. No communication issues were observed. Shift transitions were very short due to recent Veolia policy changes requiring operators to clock in and out on time to prevent overtime charges. Given the short duration, a reasonable level of detail was communicated. The outgoing operator had a list of issues and concerns and reviewed those with the incoming operator. The operators use an electronic operator log system, and one supervisor indicated that shift turnover details are to be recorded in the logs, however the level of detail in those logs was not reviewed.

The audit team observed the SCADA system several times during the site visits. SCADA screens were hard to navigate. Most displayed instruments were working, but many alarms were active, some probably nuisance or false alarms. Veolia staff said much of the process can be automated, though some areas are run manually. The audit team could not verify the level of automation that was being used at the time of the site visits.

Operators can create work requests in the VAMS maintenance management system if they see equipment that is not working. The request goes to a Shift Supervisor to review it and make sure it is not a duplicate of a request previously entered. Once approved it is available to the maintenance supervisor and planner to schedule the work. Some operators reported they could not log in to check the status of the work order. This lack of feedback may have contributed to the concerns about corrective work orders not being completed.

Operators collect and analyze samples to assist with process control. They also collect samples for transport to the MMSD laboratory to be tested for regulatory compliance purposes. The only regulatory analysis performed by Veolia alone is effluent residual chlorine. Process sample results are stored in Hach WIMS, which also provides operational data reports.

Conveyance

The conveyance group is responsible for the sanitary and combined sewer systems, lift stations, deep storage tunnels (also referred to as the Inline Storage System, or ISS), relief sewer systems and the ISS tunnel pump station. The group is also responsible for the fixed flow monitoring and rain gauge systems. Conveyance operations are coordinated from the Central Control System (CCS)

control room, located at Jones Island. CCS controls the ISS tunnel pump station and directly sets the Jones Island influent flow by controlling the Jones Island influent gates. South Shore influent flow is not controlled from CCS; however, the CCS operators will impact South Shore flow by sending pumped ISS flow to it. Conveyance is managed differently than operations at the two WRFs because the facilities and strategies are more automated and MMSD plays a significant role in decision making during wet weather events. Weather conditions are monitored closely and pre-wet weather event preparations to ensure equipment availability and meet the requirement to capture and treat as much of the wet weather flows as possible are completed as needed.

The CCS operators also closely coordinate with the Jones Island and South Shore shift supervisors for flow management, and the Jones Island Powerhouse team to manage ISS pumping.

WRF Treatment Capacity

Jones Island is a Primary/Secondary treatment facility with a maximum daily hydraulic capacity of 330 MGD. If blending operations are initiated (blending raw sewage with primary effluent), capacity can rise to 390 MGD.

South Shore is a Primary/Secondary treatment facility with a maximum daily hydraulic capacity of 265 MGD. If bypass operations are initiated (bypassing aeration and secondary clarification), capacity can rise to 330 MGD.

These “nameplate” flow capacity figures assume all available equipment is in operation. At any given time, equipment or process areas may be out of service for maintenance or capital improvements. An equipment checklist and state point analysis system is used to determine hydraulic treatment capacity based on equipment or process areas being out of service. These checklists calculate the hydraulic capacity but may not address limitations associated with the effectiveness of the treatment process. This is discussed in more detail in the South Shore WRF section.

Jones Island WRF

WRF operators are divided by process area function, with separate teams for primary and secondary treatment, powerhouse and dewatering and drying (D&D). Note that there are no Anaerobic Digesters at Jones Island. Special Utility (SU) operators move around among process areas as needed and fill in for absent operators. A Shift Supervisor is always on duty at Jones Island.

At Jones Island, the D&D process presents the biggest operational challenge. Operators must balance the ratio of waste activated sludge (WAS) and digested sludge, which is critical to good Milorganite production. More detail about D&D is provided in the Biosolids and Milorganite Section.

The audit noted numerous examples of instrumentation out-of-service and not connected to the SCADA system. In some cases, there would be one set of instruments that were active and additional, previous installations of instruments that did not appear to be active. In other cases, physical instruments in place were simply no longer in service.

Liquid and biosolids process flow diagrams for Jones Island WRF are included in Appendix D.

South Shore WRF

The South Shore operators are divided by process area function, with separate teams for primary and secondary treatment, powerhouse and biosolids. Special Utility (SU) operators move around among process areas as needed and fill in for absent operators. Night shift at South Shore does not include a Shift Supervisor, that responsibility is held by the Jones Island Shift Supervisor.

At South Shore, the management of solids in the secondary sedimentation basins is the biggest operational challenge. Influent conditions at the plant are highly variable, with sudden peaks in BOD. Both Veolia and MMSD employees questioned whether high-strength industrial waste discharges are not being adequately controlled and recommended increased monitoring and enforcement. Secondary solids are often the limiting factor in plant capacity. The operators must manually watch sludge blanket levels closely to make sure they don't end up "spewing solids" (passing secondary solids over the weirs into the outfall). At the time of the audit, there was a significant capital project underway to improve the aeration basins at South Shore and Veolia is hopeful that the improvement will help with solids capacity.

Capacity at South Shore is often restricted by treatment process concerns rather than physical capacity. For example, the plant can be at flows above 110 MGD, but not near physical capacity and still have issues with solids carryover to the effluent (solids spewing). When that happens, the operators will throttle down the inlet gates to limit inflow. This will route some influent flow into the deep tunnel system as the influent backs up into the main interceptor pipe.

Another example was noted during the site visit. The operations team was having difficulty holding dissolved oxygen (DO) levels in the aeration basins although they were only running at half capacity. They restricted inlet flow down to about 55 MGD until they were able to control the process. The actual cause of this event was not clearly demonstrated, however in discussions with the South Shore Process Control Engineer, it appears to be related to high influent solids loads and filamentous bacteria blooms. When the audit team returned the next day, the operators were gradually increasing influent flow while maintaining the DO levels.

Liquid and biosolids process flow diagrams for South Shore WRF are included in Appendix D.

MMSD Industrial Pretreatment Program

Two permit obligations are solely the responsibility of MMSD rather than Veolia: mercury limits and the industrial pretreatment program. MMSD is responsible for two important aspects of WPDES permit compliance that do not involve Veolia. First, Veolia is exempted from responsibility for permit exceedances beyond their direct control. This specifically applies to mercury. MMSD collects the effluent samples tested for mercury and runs the industrial wastewater pretreatment program that controls industrial mercury sources. According to publicly available records, Jones Island samples have tested above the permit mercury limit twice: once in 2014 and once in 2023.

MMSD's pretreatment program must be run to EPA and DNR standards and must meet WPDES permit requirements, including enforcement against significant industrial users. An EPA evaluation of the pretreatment program appears in the public record in July 2024. A notice of violation was issued in September 2025 for MMSD's failure to enforce standards, local limits, and reporting requirements. Publicly available sources indicated that more than 15% of significant industrial users were non-compliant. The reported significant non-compliance continued from the third quarter of 2025 to the third quarter of 2026.

These permit infractions were not counted against Veolia in the compliance analysis presented in this report. Several MMSD and Veolia interviewees, as well as some written documentation, linked South Shore treatment limitations to variable influent, possibly due to unauthorized industrial discharges of high strength waste. These interviewees speculated that MMSD was historically reluctant to pursue enforcement against the industries. While these allegations could not be verified during the audit, the treatment challenges at South Shore have been sustained for more than ten years now.

Operations Specific Concerns

The main operations related concern raised to Common Ground was the reduced treatment capacity at South Shore. This concern is heightened because of the capacity numbers available through the MMSD website. Specifically, people see the capacity increasing and decreasing and they don't understand the reasons why. They also question why MMSD relaxed the effluent quality standards that apply to the contract. The concern that South Shore has run far below its design capacity for more than ten years was verified by numerous interviews, documentation and engineering reports.

Additional concerns are related to the operational consequences of equipment failures. Specific examples included: Interplant solids (IPS) pump failures and line obstructions, Jones Island bar screen failures, Jones Island high-level screw pump underperformance, Jones Island influent screening bypasses impacting IPS performance and South Shore digester fouling, and power generator breakdowns.

Concerns that Veolia was operating without enough staff overall and without enough qualified WRF operators were also raised. MMSD and Veolia employees agreed that the Veolia operations employees were well-trained and knowledgeable, but less experienced than operators who have retired in the last five years. They also noted the operators seemed extremely busy during shifts. A lack of available WRF operators was linked to failure to attend capital project meetings, not participating in equipment and process training, and not fully understanding or complying with new operational instructions. An operator being compelled to wait for a Shift Supervisor before making operational changes was also cited as causing an avoidable overflow. Operator capability to reliably review SOPs and lockout/tagout procedures was also questioned by some interviewees.

Proposed Future Contract

There are relatively few proposals for the new contract that deal directly with operations. There is a proposal to provide more detailed information to MMSD about what operations cost. This may help

increase efficiency but is not likely to increase effectiveness. A required Operator-in-Training role is being proposed to assist with workforce development, and DNR certification minimums are set as part of the Staffing Plan. Limitations on process chemical changes without MMSD approval are intended to control chemical changes being made to save costs at the expense of process integrity.

Biosolids and Milorganite

The biosolids generated at both Jones Island and South Shore are processed in a "back and forth" manner between the two facilities. As noted above, solids digestion is not done at Jones Island. Jones Island primary sludge is normally pumped to South Shore via the IPS pipeline, where it is blended with South Shore primary sludge and is anaerobically digested. The digested sludge is then combined with South Shore waste activated sludge and pumped back to Jones Island for dewatering and drying.

The D&D process begins with a sludge thickening process for Jones Island WAS and the digested/WAS blend from South Shore using gravity belt thickeners. The sludge is then blended and dewatered further using belt filter presses, then dried using sludge dryers. The dryers use natural gas or landfill gas to heat and dry the sludge.

The South Shore facility has additional dewatering capability that can be used when the Jones Island D&D facility is out of service for an extended period, such as during the annual maintenance shutdown. These capabilities include a dissolved air flotation thickener system, dewatering centrifuges, and plate-and-frame presses.

D&D is probably the biggest reliability risk across the two WRFs and the conveyance system. It was stated that D&D generates about 75% of the maintenance actions at the Jones Island facility. The maintenance and ongoing rehabilitation of the dryers was identified as a significant ongoing project during the audit. Belt filter presses and sludge pumps are also challenging to keep in service. Solids processing was reported to be well automated, although the automation is not always used. Operator training on new equipment is a high priority in this area. A week-long yearly shut down of the dryer building allows for intensive maintenance, including the Milorganite silos and ventilation bag houses.

Concerns raised that relate directly to biosolids processing include chemical changes (polymer cut and ferric to ferrous switch), interplant solids pumping failures, production of off-specification Milorganite, and Milorganite dust accumulation leading to dryer fires. The available documentation confirmed that the chemical changes and production of off-specification Milorganite happened at specific times in the past but does not suggest that these issues were widespread or repeated.

The Milorganite production incentive is preserved and strengthened in the proposed new contract. Responsibility for costs related to off-specification product shifts from the Contract Operator to MMSD, mildly weakening the incentive. MMSD will continue to specify the amount of Milorganite to be produced, and new more stringent performance standards will apply. Silo blending is barred unless directed by MMSD in writing, and Class B Biosolids may only be made at MMSD's direction. The proposed new contract fixes the management priority order as plant effluent quality first,

Milorganite production second, and digester gas production third. Day-to-day process operation stays with the Contract Operator, but every consequential decision related to biosolids is dependent on an MMSD direction right or a fixed contractual priority. Dryer availability is protected and new positions are included in the staffing plan to provide more consistent maintenance coverage. More stringent daily cleaning requirements are also proposed. The requirement to keep the plate-and-frame press at the South Shore operable and always available is retained. There is a future proposal for a new biosolids processing facility at South Shore to provide redundancy in the 2050 Facilities Plan, but that project will likely not be completed for at least ten years.

Maintenance

The audit was unable to comprehensively assess the current state of maintenance of the WRFs and conveyance facilities. During the site visits, the audit team observed reasonable maintenance management practices. Work was planned and coordinated. Tradespeople and managers appeared knowledgeable and professional. The general state of the process areas and systems appeared to be in reasonable repair although it was noted that some equipment was not being used or maintained but there was no signage or markings to reflect that. We had limited opportunities to investigate maintenance data being generated or how key performance indicators (KPIs) were being used. The focus seems to be on the time to complete both preventive and corrective work orders. To determine if the workforce itself is the right size and skill set/trade level, work order history, current backlog and service level expectations/metrics need to be known. These items could not be verified during the audit.

Veolia managers identified opportunities to optimize short term PMs to improve reliability. They believe quarterly and longer-term work orders are valuable but that many of the shorter frequency work orders do not add value. They noted that the current contract requires all the PMs to be completed according to the manufacturer's requirements regardless and so that is what Veolia is committed to do. In the conveyance system, there are requirements to televise and inspect the sewers, gates and structures, and Veolia completes them every year. Buildings and grounds maintenance was mentioned but it receives lower priority than process equipment or sewer inspections.

Vulnerabilities associated with aging infrastructure and lack of redundancy, especially for critical areas like the deep tunnel pump station, where equipment is difficult to repair, were identified. Much of the equipment was new 30 years ago and there is a concern that corrective maintenance needs are increasing and may accelerate as more equipment nears the end of its service life. Veolia is generally required to replace equipment with the same make and model and that can be a challenge to accomplish for older equipment and is not always the best solution.

Some bottlenecks are created by the MCRR process and negotiations between MMSD and Veolia over whether a particular repair will be above or below the $25,000 threshold, meaning that MMSD will need to absorb the cost. Equipment may not be repaired while waiting for that determination. Sometimes there are further delays because MMSD may decide not to proceed with an individual MCRR but to roll it into a capital project. Capital projects have much longer timelines to accommodate public procurement requirements for design and construction phases. When this

happens, equipment will not be available for extended periods of time and operations may be limited. Occasionally, these decisions will be reversed and the MCRRs will be completed after all. There is always a large backlog of MCRRs (about 150 projects) and they take a long time to complete (more than five years). Urgent projects can take as much as five months to complete.

The main storeroom is located at Jones Island. South Shore has a smaller storeroom. Parts are owned by MMSD and Veolia is only minimally involved in deciding which parts to stock and how many to keep on hand. Parts requests must be sent to MMSD for approval. Parts are usually available but Veolia experiences issues with obsolete parts no longer being supplied by the vendor and long lead times.

The Veolia Reliability Engineer position facilitates root cause analysis for equipment failures and works on capital project proposals. There are more opportunities to improve reliability and increase asset availability.

Several of the key concerns raised by the people who contacted Common Ground related to maintenance at the WRFs and conveyance sites. These included:

- Assets are being “run to fail” with only reactive corrective maintenance being performed and preventive maintenance being neglected,
- Redundancy is being compromised by equipment being out of service for long periods of time,
- Parts are not being ordered and lead times for receiving parts are being used to delay maintenance work or excuse failure to perform it,
- Assets are no longer maintained once they are tagged for replacement in a future capital project,
- Corrective work orders are deleted without justification,
- Incident reports are edited to mask errors or failure to complete required maintenance,
- Preventive work orders are being closed out without the work being completed,
- New equipment fails early because handover and preventive maintenance work order set up is not completed,
- Some critical assets are not in the maintenance management system and not included in the contract maintenance requirements,
- Lack of maintenance is causing safety issues, and
- Buildings are not being adequately maintained.

Lack of access to and understanding of maintenance systems and data, along with the transition from OWAM to VAMS, has made it difficult for MMSD and Veolia employees to definitively validate or refute many of these concerns. Available documentation, including letters, reports, emails and interview notes, supports most of these concerns in specific circumstances. Site visit observations did not support the concerns that parts are often not available, that lack of maintenance is causing safety issues and that buildings are generally not being adequately maintained.

While little evidence of Veolia employing a deliberate “run to fail” strategy was found, available documentation shows that during the period since 2018, preventive maintenance was sometimes not completed although it was reported as completed. Several sources indicated that more effort has been put into preventive maintenance since 2023 in response to increased pressure from MMSD. Timely completion of corrective maintenance and MCRRs continues to be a challenge. Several high-profile examples of new equipment failing early because of inadequate handoff processes and failure to complete preventive maintenance after commissioning were confirmed.

Proposed Future Contract

The proposed new contract includes several measures intended to clarify MMSD and Contract Operator responsibilities and strengthen MMSD’s oversight of maintenance activities and outcomes. Revised maintenance metrics are proposed. MMSD will be able to specify which sewer segments are cleaned, televised and serviced and have more control over prioritization of maintenance activities, as well as the right to use other contractors for some maintenance work. A single MMSD-owned maintenance management system (NEXGEN) will be used and all data entered or generated by the system will be available to MMSD. Maintenance data will be collected at the asset level. A single document repository will also ensure common MMSD and third-party contractor access to O&M Manuals, drawings and other records. Root cause analysis will be required. Every asset will be assigned a criticality score, and MMSD will have more input into the prioritization of critical assets. Cleaning and plant housekeeping requirements are strengthened. More significant consequences will apply when maintenance work is not done. Some buildings and grounds maintenance activities will be performed by MMSD using third-party contractors.

Asset Management

As the owner, MMSD manages the overall asset lifecycle. MMSD’s asset management program has developed significantly in the last few years. Condition assessments are being performed by both MMSD and Veolia. A risk register has been created, and a risk framework is being used to identify high-priority projects to address known risks and evaluate the potential for risk reduction associated with capital project proposals. The risk framework provides a consistent methodology for comparing different types of projects. Cost is also factored in, with the asset management team prioritizing projects that provide the most risk reduction per dollar spent. Detailed investigation of the risk framework or the scoring of individual projects was beyond the scope of this audit.

Other high-priority foundational initiatives related to asset management include the implementation of the new NEXGEN maintenance management system, developing workflow processes, updating asset criticality scores, and keeping asset data up to date as repairs are made and projects are completed.

The people who contacted Common Ground raised no concerns specific to asset management.

Proposed Future Contract

The proposed new contract contains four new requirements directly related to asset management. The first is to specify dedicated asset management staff with qualifications that extend beyond day-to-day maintenance management as part of the proposed staffing plan. In addition to these employees, two Maintenance and Asset Manager positions, one for the WRFs and one for conveyance, are to be designated as key positions that can never be vacant. Second, monthly joint desktop condition assessment meetings involving MMSD staff will coordinate Contract Operator staff performing condition assessments of selected assets, equipment and facilities to ensure they are completed. Third, the joint Maintenance Committee is specifically authorized to change the criticality designation of assets, assuming they can come to consensus. Criticality will drive repair clocks. Fourth, MMSD will have more control over how the Contract Operator performs MCRRs.

MMSD's proposed 2027 budget creates an Operations and Maintenance Division under a new Director. It will bring together contract administration, oversight of contract operations and maintenance, asset management, and major corrective maintenance and renewal.

Capital Program

MMSD's capital project needs are growing, driven by a variety of factors. Replacement of aging infrastructure, more severe storms resulting in flooding, more stringent regulatory requirements, higher labor and materials costs, and energy management are some of the main drivers. MMSD's current strategic and long-range plans include more investment than it can currently afford. MMSD employees explained that the proposed 2027 budget will delay some planned capital projects to remain within affordability constraints. These constraints will increase risks and highlight the importance of evaluating alternatives and selecting and prioritizing the highest value work and completing it as quickly as possible. Reaching consensus on the most critical infrastructure and ensuring adequate redundancy, even where equipment might be difficult to replace or repair, is more important than ever.

Some key concerns raised by the people who contacted Common Ground relate to MMSD's management of the capital program. First, with respect to the MCRRs, concerns that Veolia was delaying needed repairs until breakdowns were significant enough to exceed the $25,000 threshold so that MMSD would need to pay were partially verified. This was described as past practice and it was also noted that once troubleshooting began, teams would often determine that the needed repairs were more extensive than originally thought. Concerns about "double billing" by paying a third- party contractor to do work that Veolia should have done or paying Veolia twice for the same work were not verified by the available records. The consistent MCRR backlog and delays are impacting operational reliability. Timelines for design and construction of larger capital projects seem extremely long.

Proposed Future Contract

MMSD and Veolia employees understand that responsibility for the capital program rests with MMSD. Important Veolia obligations support timely and effective capital project work. Veolia's capital

project coordination resources are spread thin. The proposed new contract adds a second coordination position and designates the two Capital Project Coordinators as key positions, supported by both the Commissioning Engineer and the Reliability Engineer. Financial incentives are proposed to increase collaboration. New approaches are needed to ensure MMSD design consultants are provided with complete and accurate information about existing plant and system facilities. Operations and maintenance knowledge must be applied to design reviews. Input provided by operators and maintenance technicians must be effectively incorporated into designs. On-site capital project construction activities must be effectively supported and coordinated, including timely implementation of effective safety isolations.

IT Systems and Data

Both MMSD and Veolia are highly reliant on IT and operational technology (OT) systems and data. MMSD owns most of the technology and data, but has limited visibility into, and verification of, what the Contract Operator does with them. MMSD Information Technology Services has developed a sound plan for new IT applications. Many interviewees were looking forward to the new NEXGEN maintenance management system and praised the Trimble project management system. Challenges with the recent enterprise resource planning (ERP) system upgrade were acknowledged.

MMSD Data Oversight

MMSD oversight of conveyance operations data is effective, likely because of their significant role in wet weather event management. The Water Resources Program within the Water Quality Protection Division, is responsible for system monitoring and management of the resulting data. There is no parallel MMSD oversight of similar types of non-permit data collected from within the WRFs, although developing that function was recommended by interviewees. Data collected at the WRFs, including the data used in regulatory reporting, is not verified by MMSD.

Automation

Automation in the conveyance system was reported to be sufficient for operational needs and in good working order although the audit team could not verify this description through examination. The audit team did observe that most instrumentation shown in SCADA was working. Veolia employees reported that quite a bit of automation was available in the WRFs, although some areas were run manually and some data was still being collected using paper logs. There appear to be important opportunities to optimize alarm management and transition to more consistent automated operations.

Challenges

Challenges were identified with IT asset upkeep, cybersecurity, and consultation with IT during the development and delivery of capital projects. While the contract assigns Veolia responsibility, MMSD Information Technology Services have been involved in managing, maintaining and upgrading IT assets in the plants to ensure the work was done to MMSD standards. According to interviewees, MMSD built and programmed the plant network, but hand-offs to Veolia were rarely successful and

they believe Veolia lacked enough personnel with the necessary skillsets. This work was done by MMSD despite the boundaries of the existing contract. The proposals for the new contract formally transition the responsibility back to MMSD.

Cybersecurity

Interviewees reported cybersecurity risks associated with older equipment that was not effectively isolated from the internet although this was not verified. Weekly cybersecurity coordination meetings, vulnerability scans, equipment replacement projects, and software updates were identified as mitigation measures that had been implemented and lower risk scores were reported, but not verified.

IT Assets

Interviewees stated that many IT assets “fell through the cracks”. Veolia was only required to track assets with values over $ 5,000. Most IT equipment has no service-life record. Network equipment ran up to ten years past end of life, and some plant servers were very old. There are over 100 networks, and they are not centrally catalogued. As-built drawings are on paper and field changes are not documented. Network cabinet fans have been found dead or unplugged, cabinets have been left open, equipment has been abandoned, a ceiling leak impacts a network cabinet, a breaker is “broken in the on position”. Security cameras were not maintained, and MMSD is now funding a replacement project. Plant phones don’t work. The Jones Island overhead paging system was unplugged. About 30% of Jones Island and 70% of South Shore buildings were reported to have unreliable cellular coverage. Some of these items, including the lack of in-plant communication systems, might pose safety risks.

IT and OT Aspects of Capital Projects

Finally, interviewees reported concerns with lack of information technology and operational technology planning in MMSD and Veolia capital projects and MCRRs. They reported that MMSD-led projects have sometimes provided equipment without planning how it would be connected to plant networks or how it would be tested. Projects sometimes picked software without reference to previous purchases or existing standards. Roles and responsibilities were reported to be unclear.

Proposed Future Contract

Proposals for the future contract explicitly clarify and update MMSD’s and the Contract Operator’s responsibilities. All IP networks and systems at the facilities are owned by MMSD except for the Contract Operator's business network. Networks, network hardware, workstations and servers are MMSD’s property and will be maintained by MMSD. This formalizes the responsibilities MMSD has already assumed.

Keeping IT systems and hardware up to date is an express obligation on both sides. MMSD will patch and maintain the workstations, servers, and network equipment on its networks, with all operating systems maintained to a currently supported version and hardware replaced on a budgeted lifecycle. The Contract Operator must keep all systems it is responsible for regularly

updated with the latest security patches and within two major releases of the manufacturer's most recently published version, reporting installed versions annually. The one exception is the SCADA system. SCADA must use MMSD-supplied and owned dedicated engineering workstations.

MMSD will monitor patch levels and Common Vulnerabilities and Exposures (CVE) (publicly disclosed cybersecurity flaw) scores across servers, workstations, and network equipment. The Contract Operator must immediately notify MMSD of any security breaches, follow a specified incident response procedure, provide written reports by confirmed deadlines and report near misses monthly.

The Contract Operator must also provide all necessary IT hardware and licensing to its employees, including laptops, desktops, monitors, tablets, cellular phones, and conference room screens and will maintain ownership of this equipment after the term.

Enforcement penalties will be strengthened. These proposals should address most of the concerns raised.

Contract Management

During the audit, we reviewed information provided by MMSD about a process they carried out to identify opportunities for improvement before drafting the proposed new 2028 contract. A total of 109 recommendations for change were made by the participants. The audit team's comparison of the lessons learned with the new contract draft found that 67 (61%) were included, 37 (34%) were partially included and 5 (5%) were not included.

The audit team also asked MMSD employees how the proposed new 2028 contract would address the problems they see today. Employees interviewed commented on several of the changes MMSD included in the publicly available contract details. Most expected the new contract to be an improvement, but several doubted the changes would be sufficient or that they would be enforced successfully. Some of the key areas of positive change were:

Contract Staffing Levels (13 interviewees): MMSD employees described Veolia as short-handed, juggling too many priorities, unable to complete lower priority tasks and lacking skills and training to be effective in some areas. The 2028 contract draft sets a higher minimum staffing level, including more key positions that must always be filled. It defines an MMSD-defined minimum staffing plan with position counts for each role. A joint workforce planning function with career pathways, apprenticeships and workforce development staffing will be established.

MMSD Oversight at the WRFs (14 interviewees): MMSD employees said the Contract Compliance Office has too few people and should spend more time on direct inspections. The existing team has already been moved to offices at the WRFs. The 2028 draft specifies workspaces for them on-site and expands MMSD's right to inspect. An Amendment to the 2027 MMSD budget lays the groundwork to create a new Operations and Maintenance Division focused and increase the number of positions.

Maintenance of New Equipment (11 interviewees): MMSD employees noted that in the past, new assets were not added to the maintenance system, preventive maintenance work orders were not created, and O&M manuals were not updated. The 2028 draft continues enhanced support for the asset commissioning process and requires new assets and their maintenance tasks to be entered into the maintenance management system at turnover.

One Maintenance Management System Owned by MMSD (10 interviewees): MMSD has bought a new system that the 2028 draft requires both parties will use and have full access to. Employees support this as the best way to provide reliable data to resolve the concerns about whether enough maintenance and the right maintenance is being performed on various classes of assets. It will likely take time to fully implement and achieve enough practice change for both parties to be able to rely on the data.

MMSD Independently Verifying Maintenance (9 interviewees): With more inspections and full access to reliable maintenance management records, it should be possible to verify what the Contract Operator reports.

Contract Operator Paying for Early Asset Failures (10 interviewees): MMSD employees support making the Contract Operator pay when equipment fails early for lack of maintenance. The bar screen dispute was cited as an example of where employees believed it took much too long to resolve the issues.

Enforcement and Penalties (8 interviewees): The 2028 draft adds more stringent consequences for many contract specifications. Some MMSD employees see this as a positive development but also expressed doubt the new provisions will be used unless MMSD substantially changes its approach.

Repair Cost Threshold (7 interviewees): MMSD interviewees were split on the question of the effectiveness of the current $25,000 threshold. Some believed that the threshold led Veolia to let equipment fail so that MMSD would pay. Others worried that a dollar threshold would slow urgent repairs. The 2028 draft takes a different approach. Corrective maintenance is outside of the annual base fee and whether performed by Contract Operator personnel or not, MMSD would assume the cost, potentially creating a significant financial exposure.

Gap Analysis of the Proposed Future Contract

Four recurring gaps in the 2028 draft pose risks that should be considered or addressed during contract negotiations. These are:

- **Standards that cannot be verified.** The draft states several operating standards clearly but does not say how MMSD will confirm whether the Contract Operator met them or what happens if they are missed.
- **Remedies that are hard to use.** The current agreement shows why a remedy can exist on paper but still be difficult to use. The 2028 draft repeats some of the same remedies that have not been enforced. For example, capital program support, training, workforce development, procurement, community outreach, and maintenance management system performance all depends on evaluations MMSD must start every two years. Consequences are capped at one

high fee reduction. The proposal for the Maintenance Committee opens the possibility that the Contract Operator can veto a finding that it owes money.

- **Contract Operator-reported data that needs an independent check.** Most proposed maintenance measurements come from the Contract Operator's maintenance management system records. That is not automatically a problem because MMSD owns the system and the data. The risk arises when the same records are used to measure performance and to support payment.
- **Responsibilities that are not staffed or scheduled.** MMSD asked for coverage rules, but the draft mostly provides position counts. The only backstop is a unit process shutdown, which means slower off-hours response may not trigger any consequence. The proposed contract adds MMSD workload in several areas and additional resources will be needed to ensure enforcement.

Cost Exposure Created by the Proposed Future Contract

Under the 2016 Extension Agreement the Contract Operator paid the first $10,000 of each MCRR, raised to $25,000 by Amendment 1 effective August 1, 2022. The threshold excluded the Contract Operator's own labor, so crew hours were sunk cost while parts and subcontractors were paid in cash. The Contract Operator's exposure was capped and MMSD'ss was not: A $24,000 repair done on time would cost the Contract Operator $24,000, while the same asset allowed to fail and replaced at $200,000 would cost the Contract Operator $25,000 and the MMSD $175,000.

The 2028 draft removes the deductible. Corrective maintenance sits outside the Annual Base Fee, and Level A work under $50,000 is performed by Contract Operator staff and billed without prior authorization. Materials, rentals, and corrective spare parts are reimbursed at cost plus markup. This removes the old incentive to delay repairs. It also creates a new risk: corrective maintenance can grow without a direct contract measure of corrective volume or cost.

The risk comes from how labor hours can be classified. MMSD's pricing worksheet assumes a fixed number of hours per employee per year, and a fixed percentage of time spent on corrective maintenance. Preventive maintenance therefore earns no additional revenue at the margin. The same hour spent on a corrective work order bills at the fully loaded rate plus markup. Because the base fee does not fall when that happens, the Contract Operator earns the full loaded rate rather than only the markup. The strongest controls in the draft address individual large jobs, while the main exposure is many smaller jobs over time. Commission approval levels, competitive sealed bidding and MMSD's right to audit will all help control discrete transactions. They do not directly control large numbers of sub-$50,000 work orders, which could accumulate without triggering the controls.

DISCUSSION AND RECOMMENDATIONS

Research into public owner – private Contract Operator relationships in water and wastewater utilities indicated that outsourcing operations and maintenance does not outsource public accountability. Sources are provided in Appendix C. The private company operates under a time-limited agreement, while the public owner retains infrastructure ownership and core authorities over rates, service standards, public health, environmental compliance, and long-term stewardship. Clear responsibilities and effective information flows are essential in this type of model.

Best Practices

The most effective public owner – private Contract Operator arrangements have six characteristics:

- **Explicit reserved owner powers.** The owner retains control of policy, rates, budgets, permits, capital-program approval, asset standards, public communication, emergency step-in, audits, contract changes, and Contract Operator replacement.
- **A technically capable "intelligent owner."** The owner must independently understand plant and system performance, asset risk, costs, regulatory exposure, and Contract Operator proposals. The contract should not be self-regulating. It should include a dedicated contract-management mechanism, robust reporting, risk monitoring, change management, and early hand back planning.
- **Risk follows control.** Day-to-day operating, staffing, maintenance-execution, safety, and Contract Operator-caused compliance risk are normally assumed by the Contract Operator. Pre-existing asset defects, owner-directed changes, public-policy decisions, and risks that cannot reasonably be inspected or priced generally remain with or are shared with the owner.
- **Performance measures protect both today's service and tomorrow's assets.** Compliance, reliability, customer service, safety, cost, and environmental outcomes must be coupled with preventive maintenance, condition assessment, backlog, and lifecycle indicators. Financial penalties alone cannot detect or prevent asset deterioration.
- **Commercial transparency.** Open-book accounting, auditable pass-through costs, separate project financial statements, defined indexation, and pre-agreed change mechanisms are more important than an apparently low base fee.
- **Reversibility from day one.** Data, operating procedures, licenses, asset records, workforce knowledge, system access, and transition assistance must remain available so the owner can rebid, insource, or step in without service interruption. Hand back standards should be measurable and independently verified.

Best practices for public owners with private Contract Operators include:

- **Written Owner Requirements and Reserved Authorities.** Start with what cannot be delegated.

- **Deliberate Retained Organization.** Ensure the retained organization includes contract leadership, process engineering, maintenance/reliability, asset management, finance/audit, regulation, cybersecurity, emergency management, procurement, and public communications.
- **Create an independently validated baseline.** Inventory assets, condition, maintenance backlog, performance, staffing, energy/chemical consumption, regulatory status, and data quality before risk transfer.
- **Use output specifications and stewardship requirements.** Innovation should be allowed in operating methods, but not at the expense of maintenance, cybersecurity, data integrity, or asset resilience.
- **Design KPIs as an integrated assurance system.** Every financial or efficiency indicator should have companion compliance, service, safety, maintenance, and asset-condition measures.
- **Require project-level financial transparency.** Separate audited accounts, affiliate-transaction disclosure, open-book records, audit rights extending after contract expiry, and transparent reconciliation of pass-throughs address potential audit weaknesses.
- **Ensure extensions are earned**. Link options to sustained service, asset, data, workforce, and customer performance.
- **Exercise the exit plan periodically.** Test data export, emergency access, Contract Operator replacement, critical staffing, inventory, licenses, and operating procedures during the contract period.
- **Commission independent assurance on a cycle and before major decisions.** Include compliance, asset condition, maintenance effectiveness, financial controls, cybersecurity, and readiness for rebid or insourcing.
- **Preserve competitive tension.** Avoid proprietary systems, Contract Operator-only asset knowledge, perpetual license dependence, uncontrolled affiliate subcontracting, and noncompetitive extensions.

Warnings

Recurring failure modes and warning signs that should be mitigated include:

- **The contract is treated as self-monitoring.** Sparse owner staffing, reliance on Contract Operator dashboards, or inability to reproduce performance calculations independently.
- **Ambiguous cost boundaries.** Conflicting definitions of routine maintenance, capital repair, insurance, energy, chemicals, emergency costs, or owner-directed work.
- **Efficiency gains without asset-health constraints.** Falling costs accompanied by increasing corrective work, overdue PMs, obsolete spares, repeated failures, or declining residual life.
- **Weak project-level accounts.** Consolidated corporate reporting without a separately auditable local operating entity.

- **Blurred regulator and owner roles.** The Contract Operator becomes the primary interpreter of permits, asset needs, customer information, and capital priorities.
- **Penalty revenue or contract funds are poorly tracked.** Accounting and budget controls should clearly identify the accumulated use of financial penalties and balance of penalty revenues.
- **Late transition planning.** Early planning, measurable condition standards, independent inspections, and financial securities should be used to prevent the owner from inheriting deteriorated assets or experiencing service disruptions.
- **Collaboration suppresses challenge.** “Partnering” becomes a reason not to document defaults, enforce remedies, test costs, or commission independent reviews.

Implications for MMSD

MMSD already follows many of these practices. However, the audit found that several warning signs have appeared in its relationship with Veolia. Not all were proven, but MMSD employees believed they were present. These concerns included sparse owner staffing, reliance on Contract Operator reporting, conflicting maintenance definitions, unclear responsibilities, efficiency gains at the expense of asset life, contract penalties not leading to effective behavior change and collaboration suppressing independent verification.

Commission Governance

The elected Commission remains accountable even when operations are delegated. Public ownership means the governing body cannot outsource responsibility for public health, environmental compliance, affordability, asset stewardship, or continuity of essential services. Political oversight should continue to govern outcomes, risks and material decisions. The Commission should continue to approve policy, rates, budgets, major capital commitments, material contract amendments, extensions, waivers, settlements, step-in, termination, rebid and insourcing. Professional utility managers should continue to administer KPIs, invoices, deductions, work orders, staffing interfaces, complaints, claims and day-to-day communications. A formal “reserved-matters” schedule and delegation matrix should provide guidance to both the Commission and MMSD leadership.

Contract Operator self-reporting should continue to be supplemented by owner access to source data, periodic spot checks, technical inspections, reconciliation of deductions/incentives, independent asset-condition assessment, and escalation rights if confidence in Contract Operator information is lost. The Commission should continue to receive an exception-based dashboard detailing report trends, thresholds, unresolved exceptions, financial exposure and management responses. Public health, major environmental, cybersecurity, financial-distress and continuity events require immediate notification. An independent assurance function with a direct route to the Commission is recommended. The Commission should also have an opportunity to ensure MMSD remains a capable owner organization with an adequately resources standing contract-management

office, an empowered contract director, documented communications protocol, independent assurance plan and clear escalation thresholds.

Recommendations

The recommendations below are drawn from the findings presented in this report. Many build on improvements MMSD has already made or proposed for the 2028 contract; where that is the case, the recommendation is intended to make sure the change is implemented and enforced. Table 3 presents each recommendation along with the party expected to lead it and its suggested timing.

Governance and Commission Oversight

R1. Adopt a reserved-matters schedule and delegation matrix. The Commission should continue to approve policy, rates, budgets, major capital commitments, and material contract amendments, extensions, waivers, settlements, step-in, termination, rebid and insourcing decisions. MMSD management should administer KPIs, invoices, deductions, work orders, claims and day-to-day communications. A written schedule should define which decisions belong to each.

R2. Provide the Commission with an exception-based performance dashboard. At least quarterly, MMSD should report contract performance trends against thresholds, unresolved exceptions, waivers granted, financial exposure, deferred capital work and management responses. Public health, major environmental, cybersecurity, financial-distress and continuity events should be reported to the Commission immediately.

R3. Establish an independent assurance function. Commission independent reviews on a regular cycle and before major decisions such as extensions, rebid or insourcing. Reviews should cover contract compliance, asset condition, maintenance effectiveness, financial controls and cybersecurity, and report directly to the Commission.

R4. Adopt a contract enforcement policy. MMSD staff currently hold two competing views of oversight. A Commission-endorsed policy should state how each category of obligation will be monitored and enforced, who may grant waivers and how exceptions are documented. Permit compliance should remain the top priority, but other obligations should not be treated as optional.

R5. Document and report contract relaxations and settlements. Any relaxation of a contract standard, waiver, or settlement of a disputed claim above a defined value should be supported by a written rationale that identifies the consideration MMSD received and should be reported to the Commission.

R6. Disclose deferred capital needs and departures from risk rankings. Each budget cycle, MMSD should report to the Commission the capital projects deferred, the risks they were intended to reduce and the interim mitigation in place. When project priorities depart from the asset management risk framework's ranking, documented reasons should be provided.

Contract Administration and Enforcement

R7. Resource contract management to match the workload. Complete a workload analysis covering inspections, report reviews, corrective maintenance and MCRR volume, and claims, and use it to size the Contract Compliance Office within the proposed Operations and Maintenance Division. Designate a contract director with clear authority and escalation thresholds.

R8. Implement a written on-site inspection program. Using the expanded inspection rights and on-site workspace in the proposed 2028 contract, define the frequency and scope of inspections, including sampling of completed work orders, housekeeping, out-of-service equipment and safety conditions.

R9. Track every incident to closure. Maintain a register of default notices, liquidated damages, payment withholdings and disputed items showing whether each was collected, fixed or formally waived. Account for penalty revenue separately.

R10. Prepare to use the new contract's enforcement provisions. Several MMSD employees doubted that the stronger consequences in the 2028 draft would be applied. Develop procedures, templates and staff training so the new remedies are applied consistently from the first day of the new contract.

R11. Define the evidence of contract compliance for each obligation. In this audit, 21 obligations could not be verified and 21 more were indicated but not proven. For each obligation in the 2028 contract, specify the deliverable, data or record that demonstrates compliance, where it is kept and how MMSD will verify it. Require contract records, including email, to be retained under MMSD's retention schedule in an MMSD-accessible repository and delivered at contract end.

R12. Strengthen monthly reporting. Require each monthly report to include an exceptions table consistent with its compliance statements and to attach, rather than refer to, supporting documents. Return reports with internal inconsistencies for correction. Enforce existing requirements that are not being met, including monthly staffing-plan reports and monthly lists of planned activities affecting plant capacity.

R13. Adopt a relationship charter that separates collaboration from enforcement. Collaboration should not become a reason to leave defaults undocumented or remedies unenforced. A joint charter should set out how disagreements are raised and escalated and confirm that the Contract Operator's employees may speak freely with MMSD staff.

R14. Close out the lessons-learned recommendations. Document the disposition of the 5 lessons-learned recommendations not included and the 37 partially included in the proposed 2028 contract, so that any remaining gaps are deliberate decisions.

R15. Control the financial exposure of the new corrective maintenance model. The 2028 draft makes corrective maintenance an MMSD cost whether or not Contract Operator staff perform it. Establish approval thresholds, a process to attribute failures to Contract Operator fault, a dedicated budget line and trend reporting of corrective maintenance spending.

Safety

R16. Commission an independent safety assessment focused on the highest-risk hazards. Assess Jones Island, South Shore, and conveyance facilities. Give priority to combustible dust and dryer fire risk, lockout/tagout and equipment isolation, in-plant communication systems and alarm reliability. Also evaluate interview-reported concerns about fall protection, safe equipment access, confined spaces and asbestos. Risk-rank findings, assign them to responsible parties and track them to documented resolution.

R17. Verify lockout/tagout procedures and field isolation practices. Confirm that lockout/tagout procedures reflect current equipment configurations and isolation points. Require an independent check whenever an isolation must be expanded in the field because valves do not seal, and ensure operators are notified when third-party contractors or MMSD staff are working in their areas.

R18. Strengthen combustible dust controls in Milorganite areas. Verify compliance with daily cleaning and the 1/16-inch dust standard using a documented measurement method, inspect regularly, and apply the stronger enforcement provisions in the 2028 contract.

R19. Establish document control for SOPs and O&M manuals. MMSD should own the master repository of O&M manuals and drawings, consistent with the single document repository in the 2028 draft, and the Contract Operator should keep SOPs current. Document control should include assigned owners, periodic review, revision tracking, removal of outdated or duplicate versions, updates after equipment changes and training on significant changes. Interim procedures should be issued where approved documentation does not yet exist.

R20. Make injury and hazard reporting safe and closed-loop. Confirm that discipline policies and near-miss reporting targets do not discourage reporting of injuries or hazards. Each reported hazard should have a corrective action with an owner, due date and verification, and the person who reported it should be told the outcome. The joint safety subcommittee in the 2028 draft should review incidents and trends.

R21. Assess shift coverage, lone work and emergency response. Evaluate night and weekend coverage, employees working alone across large process areas, access to qualified personnel during equipment failures and emergencies, and supervisory coverage at South Shore at night. Establish lone-worker check-in procedures where needed.

R22. Integrate safety into maintenance, capital and commissioning decisions. Risk-assess equipment operating with impaired safeguards, reduced redundancy or temporary workarounds, and give priority to safety-related maintenance. Involve operations, maintenance and safety staff in design reviews, commissioning and turnover so hazards are identified before equipment enters service.

R23. Track and benchmark safety performance. Report injury rates, near misses, corrective-action closure and OSHA activity for both organizations to MMSD leadership at a set frequency and compare them with wastewater industry benchmarks where reliable data are available.

Workforce and Staffing

R24. Establish data-driven workforce planning for MMSD and contracted operations. Evaluate staffing requirements by facility, shift, function and critical skill, accounting for vacancies, retirements, overtime, emergency coverage, training needs and aging infrastructure. Support staffing and restructuring decisions, including the new Operations and Maintenance Division, with documented workload assessments, defined roles and communication plans. Review requirements at least annually and after material changes.

R25. Monitor contract staffing in detail and enforce shortfalls. Require monthly reporting of authorized, filled and vacant positions, vacancy duration, shift coverage, response times outside of regular hours and certifications, and review these metrics it alongside overtime, preventive maintenance backlog, equipment availability and safety events. Persistent shortfalls should trigger corrective-action plans and contractual remedies.

R26. Address supervisory coverage, succession and operator authority. Ask the Contract Operator to evaluate reliance on supervisors to cover multiple shifts and the barriers that discourage bargaining-unit employees from moving into supervisory roles. Define the actions operators may take without waiting for supervisor approval, since delayed decisions were linked to an avoidable overflow.

R27. Set technical training expectations. Set a minimum annual technical training target based on industry benchmark. Include whole-plant process training on how process areas affect one another, require attendance at training for new equipment, and require the annual training and succession report every year.

Workplace Culture, Employee Relations and Human Resources

R28. Commission an independent assessment of MMSD's Human Resources function. Evaluate organizational placement, reporting relationships, staffing, authority, confidentiality safeguards, accessibility and employee confidence, including access to executive leadership and, when appropriate, the Commission for significant employee-relations or ethics matters.

R29. Investigate outstanding employee complaints independently. Complaints raised in audit interviews and through the hotline should be investigated under oversight independent of the individuals whose decisions or conduct are questioned, and those individuals should have an opportunity to respond. Follow-up should confirm whether employees experienced adverse treatment after raising concerns.

R30. Provide an independent reporting channel for MMSD employees. Communicate how to reach Human Resources, alternative reporting channels, confidentiality limits and protections against retaliation. Provide an independent option for concerns involving Human Resources, senior management or conflicts of interest, parallel to the third-party ombudsperson proposed for Contract Operator employees in the 2028 contract.

R31. Strengthen complaint handling in both organizations. Concerns should be acknowledged promptly, assessed objectively, documented consistently, escalated when appropriate and resolved within set timeframes, with follow-up to the employee consistent with confidentiality requirements.

R32. Establish recurring Human Resources training. MMSD should provide onboarding and periodic training for employees, supervisors and managers on respectful workplace expectations, harassment and discrimination prevention, non-retaliation, complaint intake and escalation, and the roles of each reporting channel, with participation documented. The Contract Operator should meet the anti-harassment training requirements in the 2028 contract.

R33. Monitor workplace culture and involve employees in decisions. Periodically review employee feedback, turnover, grievances, exit interview themes and reporting-channel use for MMSD, and aggregate indicators for the Contract Operator's workforce, with actions documented. Include employees with relevant knowledge in decisions on staffing, work processes, safety and organizational change.

R34. Establish formal Human Resources coordination with the Contract Operator. Designate contacts and hold regular, documented meetings to share staffing, recruitment, turnover, training completion and aggregate employee-relations trends, with escalation paths and clear limits on sharing confidential personnel information.

R35. Clarify onsite Human Resources authority and local records. Ask the Contract Operator to define which recruitment, onboarding, training and employee-relations decisions its on-site Human Resources representative can make, which require corporate approval and how delays are escalated. Require records of investigations involving the Milwaukee workforce to be kept in a form that supports aggregate reporting and audit.

Records Integrity

R36. Build data-integrity controls into NEXGEN. Require audit trails for work order edits, cancellations, deletions and date changes, and a documented reason and MMSD-visible approval for removing assets from the system. MMSD should review cancelled and deleted work orders and asset removals at a set frequency. Where maintenance system records support payment, MMSD should independently check a sample before paying.

R37. Require complete reporting of test results and reports. All analytical results, including retests and required interference tests, should be recorded and reported with an explanation. Incident, root cause and inspection reports should be submitted to MMSD with their revision history.

Operations

R38. Set a shift turnover standard. Define the minimum content of shift turnovers, require it to be recorded in the electronic operator log and provide enough paid overlap time. Inadequate turnover contributed to the 2025 South Shore overflow, and current turnovers are very short.

R39. Implement a management of change process. Process chemical changes, control strategy changes, equipment modifications and field changes to lockout/tagout should be reviewed and approved before implementation, with documentation and training updated afterward.

R40. Improve alarm management and use of automation. Rationalize SCADA alarms to remove nuisance and incorrect alarms, remove or label abandoned instruments, determine why available automation is not used in some areas, and replace remaining paper logs.

R41. Make equipment and work order status visible. Maintain a current list, and field tags, for equipment that is out of service, abandoned or not planned for future use. Give operators access to check the status of work requests they submit.

Treatment Capacity and Industrial Pretreatment

R42. Commission a root-cause study of South Shore treatment capacity. South Shore was below design capacity in 81% of weeks, and the limitations are not fully explained by equipment out of service. Begin with a review of previously completed consulting studies. Examine influent loading, filamentous bacteria, secondary clarifier performance and operating practices, set a capacity restoration target and measure results after the aeration basin project.

R43. Correct industrial pretreatment program deficiencies. Address the September 2025 EPA notice of violation, increase monitoring of significant industrial users discharging to South Shore and report the significant non-compliance rate to the Commission quarterly until it is resolved.

R44. Explain plant capacity to the public. Explain on the MMSD website the difference between hydraulic capacity and treatment process capacity, why reported capacity changes, and why contract effluent standards were changed.

Biosolids and Milorganite

R45. Resolve the particle-size standard. Classic Milorganite missed the particle-size standard in 93 of 100 months. Either correct the process or formally revise the standard and then enforce it.

R46. Revisit the allocation of off-specification product costs. The 2028 draft shifts the cost of off-specification product from the Contract Operator to MMSD, which weakens the production incentive. Reconsider this allocation or pair it with an offsetting performance measure.

R47. Enforce dryer availability and fund a dewatering and drying reliability plan. More than two dryers were frequently out of service, and dewatering and dryers generate about 75% of Jones Island maintenance actions. Enforce the 10-of-12 dryer availability requirement and develop a reliability plan for dryers, belt filter presses and sludge pumps.

R48. Keep the plate-and-frame presses operable or formally approve an alternative. Any substitution of rented dewatering equipment for the South Shore plate-and-frame presses should require MMSD's written approval and a cost and reliability comparison.

Maintenance and Asset Reliability

R49. Set decision and completion targets for MCRRs. Set deadlines for determining whether a repair falls above or below the $25,000 threshold and for completing urgent MCRRs, and report backlog age to leadership. When an MCRR is folded into a capital project, require a documented interim risk and workaround plan.

R50. Start an inspection and exercising program for smaller valves. Add valves smaller than 12 inches that are needed for equipment isolation to an inspection and exercising program, prioritized by their role in isolation.

R51. Measure reliability, not only completion time. Add KPIs for critical-asset availability, backlog age, repeat failures, parts availability, and preventive maintenance completion by asset criticality. Jointly review whether short-interval preventive maintenance tasks add value, using asset criticality, with MMSD approval of any changes.

R52. Define criteria for alternatives to like-for-like replacement. Implement a management of change process (see R39) so that proposals can be quickly reviewed for risk and impact. Set written criteria for when replacement with a different make or model is acceptable, particularly for obsolete equipment.

Asset Management and Contract Transition

R53. Commission an independent baseline condition assessment. Before the current contract ends, assess capital assets against the starting inventory. This makes the return-of-assets obligation enforceable and gives the next contract a verified baseline.

start

R54. Reconcile the asset register before NEXGEN goes live. Identify assets missing from the maintenance management system, equipment out of service or abandoned, and inactive duplicate instruments, and assign criticality scores.

R55. Validate the maintenance data migration. Restore the original dates of corrective work orders that were reset to February 2024. Confirm VAMS work order controls through a system demonstration and make MMSD approval of the NEXGEN data conversion a formal milestone.

Capital Program

R56. Make equipment turnover a formal acceptance step. Before MMSD accepts new equipment, establish an asset commissioning process and procedures and require assets and preventive maintenance tasks to be entered in NEXGEN, O&M manuals reviewed, training attendance recorded and functional testing completed across the full operating range.

R57. Build operator input into design. Budget operations and maintenance staff time for design reviews in the staffing plan, track written comments including those of union-represented employees, and give design consultants complete and accurate information about existing facilities.

R58. Benchmark and shorten capital and MCRR delivery times. Compare MCRR and capital project durations with peer utilities, identify bottlenecks in design and procurement, and set target durations.

R59. Require IT and OT planning in capital projects. Require a plan at the design stage for network connections, testing, software standards and responsibilities for new equipment.

Information Technology, Operational Technology and Data

R60. Establish an MMSD plant data quality program. Create an MMSD function, modeled on the Water Resources Program's oversight of conveyance data, that independently spot-checks data reported from the plants, including data used in regulatory reporting.

R61. Inventory networks and IT assets. Catalog all plant networks and track IT assets over their service life regardless of value. Digitize as-built network drawings and document field changes.

R62. Review and if necessary, restore in-plant communications as a safety priority. Set a timeline to restore paging and plant phones and address unreliable cellular coverage.

R63. Sustain operational technology cybersecurity. Continue weekly coordination and vulnerability scanning, verify OT network segmentation, control removable media, and commission periodic independent OT security assessments.

Areas for Further Investigation

R64. Complete the reviews this audit could not perform. These include analysis of maintenance data once NEXGEN data are reliable; WRF process and SCADA records; MMSD laboratory results; financial records; a comparison of the capital plan with the 2050 Facilities Plan, Biosolids Management Plan and Energy Plan; energy management performance; and equipment warranty lists.

Summary of Recommendations

Table 3: Summary of Recommendations

#	Recommendation	Lead	Timing
Governance and Commission Oversight			
R1	Adopt a reserved-matters schedule and delegation matrix	Commission	Before 2028 contract start
R2	Provide the Commission with an exception-based performance dashboard	MMSD	Before 2028 contract start
R3	Establish an independent assurance function	Commission	Ongoing
R4	Adopt a contract enforcement policy	MMSD	Before 2028 contract start
R5	Document and report contract relaxations and settlements	MMSD	Ongoing
R6	Disclose deferred capital needs and departures from risk rankings	MMSD	Ongoing
Contract Administration and Enforcement			
R7	Resource contract management to match the workload	MMSD	Before 2028 contract start
R8	Implement a written on-site inspection program	MMSD	Before 2028 contract start
R9	Track every incident to closure	MMSD	Immediate
R10	Prepare to use the new contract's enforcement provisions	MMSD	During contract negotiations
R11	Define the evidence of compliance for each obligation	MMSD	During contract negotiations
R12	Strengthen monthly reporting	MMSD	Immediate
R13	Adopt a relationship charter that separates collaboration from enforcement	MMSD and Contract Operator	Before 2028 contract start
R14	Close out the lessons-learned recommendations	MMSD	Before 2028 contract start

#	Recommendation	Lead	Timing
R15	Control the financial exposure of the new corrective maintenance model	MMSD	During contract negotiations
Safety			
R16	Commission an independent safety assessment focused on the highest-risk hazards	MMSD	Immediate
R17	Verify lockout/tagout procedures and field isolation practices	Contract Operator (through contract)	Immediate
R18	Strengthen combustible dust controls in Milorganite areas	MMSD and Contract Operator	Immediate
R19	Establish document control for SOPs and O&M manuals	MMSD and Contract Operator	Before 2028 contract start
R20	Make injury and hazard reporting safe and closed-loop	Contract Operator (through contract)	Immediate
R21	Assess shift coverage, lone work and emergency response	MMSD and Contract Operator	Before 2028 contract start
R22	Integrate safety into maintenance, capital and commissioning decisions	MMSD and Contract Operator	Ongoing
R23	Track and benchmark safety performance	MMSD and Contract Operator	Ongoing
Workforce and Staffing			
R24	Establish data-driven workforce planning for MMSD and contracted operations	MMSD	Before 2028 contract start
R25	Monitor contract staffing in detail and enforce shortfalls	MMSD	Immediate
R26	Address supervisory coverage, succession and operator authority	Contract Operator (through contract)	Before 2028 contract start

#	Recommendation	Lead	Timing
R27	Set technical training expectations	Contract Operator (through contract)	Before 2028 contract start
Workplace Culture, Employee Relations and Human Resources			
R28	Commission an independent assessment of MMSD's Human Resources function	MMSD	Immediate
R29	Investigate outstanding employee complaints independently	MMSD	Immediate
R30	Provide an independent reporting channel for MMSD employees	MMSD	Immediate
R31	Strengthen complaint handling in both organizations	MMSD and Contract Operator	Ongoing
R32	Establish recurring Human Resources training	MMSD and Contract Operator	Ongoing
R33	Monitor workplace culture and involve employees in decisions	MMSD	Ongoing
R34	Establish formal Human Resources coordination with the Contract Operator	MMSD and Contract Operator	Before 2028 contract start
R35	Clarify onsite Human Resources authority and local records	Contract Operator (through contract)	Before 2028 contract start
Records Integrity			
R36	Build data-integrity controls into NEXGEN	MMSD and Contract Operator	Before 2028 contract start
R37	Require complete reporting of test results and reports	Contract Operator (through contract)	Immediate
Operations			
R38	Set a shift turnover standard	Contract Operator (through contract)	Immediate

#	Recommendation	Lead	Timing
R39	Implement a management of change process	MMSD and Contract Operator	Before 2028 contract start
R40	Improve alarm management and use of automation	MMSD and Contract Operator	Before 2028 contract start
R41	Make equipment and work order status visible	Contract Operator (through contract)	Immediate
Treatment Capacity and Industrial Pretreatment			
R42	Commission a root-cause study of South Shore treatment capacity	MMSD	Immediate
R43	Correct industrial pretreatment program deficiencies	MMSD	Immediate
R44	Explain plant capacity to the public	MMSD	Before 2028 contract start
Biosolids and Milorganite			
R45	Resolve the particle-size standard	MMSD	Before 2028 contract start
R46	Revisit the allocation of off-specification product costs	MMSD	Before 2028 contract start
R47	Enforce dryer availability and fund a dewatering and drying reliability plan	MMSD and Contract Operator	Before 2028 contract start
R48	Keep the plate-and-frame presses operable or formally approve an alternative	MMSD and Contract Operator	Immediate
Maintenance and Asset Reliability			
R49	Set decision and completion targets for MCRRs	MMSD	Before 2028 contract start
R50	Start an inspection and exercising program for smaller valves	MMSD and Contract Operator	Before 2028 contract start
R51	Measure reliability, not only completion time	MMSD and Contract Operator	Before 2028 contract start

#	Recommendation	Lead	Timing
R52	Define criteria for alternatives to like-for-like replacement	MMSD	Before 2028 contract start
Asset Management and Contract Transition			
R53	Commission an independent baseline condition assessment	MMSD	Before 2028 contract start
R54	Reconcile the asset register before NEXGEN goes live	MMSD and Contract Operator	Before 2028 contract start
R55	Validate the maintenance data migration	MMSD and Contract Operator	Before 2028 contract start
Capital Program			
R56	Make equipment turnover a formal acceptance step	MMSD and Contract Operator	Before 2028 contract start
R57	Build operator input into design	MMSD and Contract Operator	Before 2028 contract start
R58	Benchmark and shorten capital and MCRR delivery times	MMSD	Ongoing
R59	Require IT and OT planning in capital projects	MMSD	Before 2028 contract start
IT, OT and Data			
R60	Establish an MMSD plant data quality program	MMSD	Before 2028 contract start
R61	Inventory networks and IT assets	MMSD	Before 2028 contract start
R62	Restore in-plant communications as a safety priority	MMSD	Immediate
R63	Sustain operational technology cybersecurity	MMSD	Ongoing
Areas for Further Investigation			
R64	Complete the reviews this audit could not perform	MMSD	Ongoing

APPENDIX A

Explanation of Technical Terms

A. Contract and governance terms

Term	First appears	Suggested definition
Liquidated damages	Overall Conclusions	Amounts set in the contract that the contract operator must pay for specified failures, such as staffing shortfalls, without MMSD having to prove its actual loss.
Event of Default	Overall Conclusions	A contract breach serious enough to give MMSD defined remedies, which can include termination.
Company / Company Fault	Maintenance Standards	“Company” is the contract’s name for the contract operator. Company Fault means damage or failure caused by the contract operator’s actions or negligence.
2016 Extension Agreement and Amendments 1–6	Veolia Contract Compliance	The current contract between MMSD and Veolia and the six amendments made to it since. A short table of each amendment and what it changed would help readers.
Key position	Key Findings	A position the contract requires to be filled at all times.
Annual Base Fee	Cost Exposure (Contract Management)	The fixed annual fee MMSD pays the contract operator for routine operation and maintenance.
Level A work	Cost Exposure (Contract Management)	In the 2028 draft, corrective maintenance jobs under $50,000 that the contract operator performs with its own staff and bills without prior approval.
Deductible	Cost Exposure (Contract Management)	The share of each MCRR that the contract operator pays before MMSD’s share begins (the MCRR threshold).
Fully loaded rate	Cost Exposure (Contract Management)	An hourly labor rate that includes wages, benefits, overhead and profit.

Term	First appears	Suggested definition
Markup	Cost Exposure (Contract Management)	A percentage added to cost when the contract operator bills MMSD.
Unit process shutdown	Gap Analysis (Contract Management)	Shutting down one treatment step, such as a set of aeration basins or dryers.
Schedule 3; Schedule 18; Do-Not-Exercise list	Maintenance Systems and Records; Valve Exercising	Contract schedules listing maintenance metrics (Schedule 3) and valves that must be exercised each year (Schedule 18), and a list of valves excluded from exercising because they may fail if operated.
Super Clean	Safety, Security and Emergency Management	A full cleaning of the dewatering, drying and silo facilities to remove accumulated combustible dust, required three times during the contract term.
Reserved matters / delegation matrix	Commission Governance (Recommendations)	Decisions the Commission keeps for itself; and a table showing which decisions are made by the Commission, the Executive Director and staff.
Step-in	Best Practices	The owner's right to take over operations temporarily if the operator fails to perform.
Hand back	Priority Recommendations	The return of facilities, assets, records and systems to the owner at the end of a contract.
Insourcing; rebid	Best Practices	Bringing operations back under direct MMSD management; re-procuring the contract.
Open-book accounting; pass-through costs; indexation; affiliate transactions	Best Practices	Sharing actual costs with the owner; costs billed at actual cost without markup; annual adjustment of fees using a price index; transactions between the operator and companies it owns or is owned by.
Ombudsperson	Workplace Culture (Proposed Future Contract)	A neutral third party who receives and reviews employee complaints.
Bargaining unit	Staffing Adequacy and Operational Impacts	The group of employees represented by a union under a collective bargaining agreement.

Term	First appears	Suggested definition
Operator-in-Training	Operations (Proposed Future Contract)	An entry-level operator position for staff working toward state operator certification.
Commissioning Engineer; Reliability Engineer	Staffing Plan	Contract operator positions added by Amendment 6, responsible for bringing new equipment into service and for analyzing equipment failures and improving reliability.
Contract Compliance Office; Water Resources Program	Overall Conclusions; MMSD Data Oversight	The MMSD unit that oversees the operations contract; the MMSD program, within the Water Quality Protection Division, that monitors the conveyance system and its data.

B. Treatment process terms

Term	First appears	Suggested definition
Influent; effluent	Key Findings; Overall Conclusions	Wastewater entering a treatment plant; treated water leaving it.
Primary and secondary treatment; primary effluent	WRF Treatment Capacity	Primary treatment settles out solids. Secondary treatment uses microorganisms in aeration basins to remove dissolved organic matter, then settles them out in secondary clarifiers. Primary effluent is the water leaving primary treatment.
Aeration basin; secondary clarifier; sludge blanket; weir; outfall	South Shore WRF	Tank where air is added so microorganisms can treat wastewater; tank where those microorganisms settle; the layer of settled solids in a clarifier; the edge over which clarified water flows out of the tank; the pipe that discharges treated water to the lake.
Bypass; blending	WPDES Permit Compliance; WRF Treatment Capacity	Routing part of the flow around one or more treatment steps during very high flows. At Jones Island, blending combines flow that has had primary treatment only with fully treated flow before discharge.
Hydraulic capacity; process capacity; nameplate capacity; design capacity	WRF Treatment Capacity	The flow a plant can physically pass; the flow it can treat while meeting effluent limits; the capacity with all equipment in service; the capacity the plant was designed for.

Term	First appears	Suggested definition
State point analysis	WRF Treatment Capacity	A method of estimating how much flow secondary clarifiers can handle from the settling properties of the sludge.
Step feed; sludge wasting	Wet Weather Management	Distributing influent along the length of the aeration basins to protect the microorganisms during high flows; removing excess microorganisms (WAS) from the process.
Wet weather algorithm	Wet Weather Management	The calculation MMSD uses to decide when to store, divert or bypass flow during storms, based on current plant capacity.
Filamentous bacteria	South Shore WRF	Thread-like bacteria that can stop sludge from settling, reducing clarifier capacity.
BOD, TSS, fecal coliform, ammonia nitrogen, phosphorus	WPDES Permit Compliance	BOD and TSS are in the glossary. Fecal coliform: bacteria that indicate fecal contamination and show how well disinfection works. Ammonia nitrogen: a form of nitrogen that is toxic to fish and is removed by treatment. Phosphorus: a nutrient that causes algae growth.
Residual chlorine; interference test; chain-of-custody	Sampling and QA/QC Plan	Chlorine remaining in treated water after disinfection; a check for substances that cause a falsely high chlorine reading; a signed record of who handled a sample and when.
Exceedance; excursion	Overall Conclusions; Air Quality Permits	A result above a permit limit; a reading outside a permitted operating range.

C. Biosolids and Milorganite terms

Term	First appears	Suggested definition
Biosolids	Information Sources	Treated organic solids removed from wastewater.
Milorganite; Classic; Greens Grade	Executive Summary; Biosolids and Milorganite	MMSD's fertilizer made from heat-dried biosolids. Classic is the standard product; Greens Grade is a finer product for golf courses and turf.
Fines; screen limits	Biosolids and Milorganite	Particles smaller than the product size standard; the range of particle sizes measured by passing product through sieves.

Term	First appears	Suggested definition
Anaerobic digestion; digester gas	Jones Island WRF; Energy Management	Breaking down sludge with bacteria in sealed tanks without oxygen; the methane-rich gas produced, which can be used as fuel.
Dewatering; gravity belt thickener; belt filter press; centrifuge; dissolved air flotation thickener; plate-and-frame press	Biosolids and Milorganite	Equipment that removes water from sludge, in increasing order of dryness. Consider one sentence describing the whole sequence in the text instead of defining each.
Cake / press cake; land application; Class B biosolids	Biosolids and Milorganite	Dewatered sludge with the consistency of wet soil; spreading biosolids on farm fields as fertilizer; biosolids treated to reduce but not eliminate pathogens, which may be land applied under restrictions.
Silo; bag house	Biosolids and Milorganite	Storage bins for finished Milorganite; a fabric-filter system that captures dust from air before it is released.

D. Conveyance and wet weather terms

Term	First appears	Suggested definition
Conveyance system	Executive Summary	The sewers, tunnels, pump stations and control structures that carry wastewater to the two WRFs.
Interceptor; relief sewer; diversion structure; lift station	Conveyance; South Shore WRF	A large sewer that collects flow from local sewers; a sewer that carries excess flow during storms; a structure that sends flow to a different pipe or the tunnels; a pump station that lifts wastewater to a higher sewer.
Inflow and infiltration; laterals	CSOs and SSOs	Stormwater and groundwater that enter sanitary sewers through defects or improper connections; the private pipes that connect buildings to the public sewer.
Capture (85% capture)	CSOs and SSOs	The share of wet-weather flow in the combined sewer area that is stored and treated rather than overflowed.

Term	First appears	Suggested definition
Deep tunnel	South Shore WRF	Common name for the ISS.

E. Regulatory, safety, maintenance and IT terms

Term	First appears	Suggested definition
Industrial pretreatment program; significant industrial user; significant non-compliance	Key Findings; MMSD Industrial Pretreatment Program	MMSD's program for controlling what industries discharge to the sewers; an industry large enough or high-risk enough to need its own permit; a defined level of violation that requires enforcement.
Emission unit; malfunction prevention plan; emission inventory; source test	Air Quality Permits	Equipment that releases air pollutants; a plan to prevent and respond to equipment malfunctions that cause excess emissions; a yearly report of emissions; a direct measurement of emissions from a stack.
Lockout/tagout	Key Findings	Procedures for isolating and locking equipment from energy sources before maintenance so it cannot start unexpectedly.
Confined space; near miss; tailgate meeting; lone work	Information Sources; Safety	A space with limited entry and exit, such as a tank, that needs special entry procedures; an incident that could have caused injury but did not; a short safety briefing at the start of a shift or job; working without anyone else nearby.
Combustible dust	Key Findings	Fine dust that can ignite or explode when suspended in air. Milorganite dust is combustible.
Corrective maintenance; condition assessment; criticality; risk register; root cause analysis	Overall Conclusions; Maintenance; Asset Management	Repairs after equipment fails or is found defective; an inspection to rate equipment condition; a score for how serious a failure would be; a list of identified risks and how they will be managed; an investigation of why a failure occurred.
Like-for-like replacement	Recommendations (Maintenance)	Replacing equipment with the same make and model.

Term	First appears	Suggested definition
Televising	Maintenance Performance	Inspecting sewers with a remote camera.
Firmware; patching; end-of-support; segmentation; removable media; vulnerability scan	IT, OT and Data sections	Software built into devices; installing security updates; no longer updated by the manufacturer; separating networks so a breach in one cannot spread; USB drives and similar devices; an automated check for known security weaknesses.
Alarm management	Automation	A structured process for reducing and prioritizing control system alarms so operators can respond to the ones that matter.
Trimble	IT Systems and Data	Project management software used by MMSD for capital projects.

APPENDIX B

Common Ground Concerns Compared with Audit Findings

This table compares the concerns from Common Ground's June 9, 2026, report with the audit findings. Concerns are grouped under Common Ground's seven summary assertions, plus workplace culture, which runs through many accounts but is not one of the seven. Where several people raised the same point, they are combined in one row.

The status of the concerns is rated as follows.

- Confirmed: the audit findings support the concern.
- Partially confirmed: supported in specific instances, for part of the concern, or for the past but not the present.
- Not confirmed: the evidence examined did not support it or contradicted it.
- Not assessed: the audit does not examine the point or not enough information was available to verify it or contradict it.

	Confirmed	Partially confirmed	Not confirmed	Not assessed
Concerns (44)	5	21	8	10

Concern-by-Concern Comparison

Concern	Raised by	What the audit found	Status	Draft report section
1. Equipment is not properly maintained, and maintenance records and work orders are falsified or deleted				
Maintenance is poor; equipment is not fixed	WB2, 3, 4, 6, 10, 12, 17, 18, 20	Corrective work orders were often late; significant equipment was out of service for long periods; 83 of 149 new assets (2021–22) had no preventive maintenance tasks. Reports show the 45-day preventive maintenance standard was met in 96 of 99 months, and the site visit found reasonable maintenance practices in place.	**Partially confirmed**	Maintenance Performance; Maintenance Standards; Maintenance
Veolia “runs equipment to fail”	WB4, 10, 20	Little evidence of a deliberate run-to-fail strategy was found. Interviewees reported, and the audit partly verified past practice of letting repairs grow past the $10,000/$25,000 MCRR threshold so MMSD would pay.	**Partially confirmed**	Maintenance; Capital Program; Corrective Maintenance
Preventive maintenance reported as done but not done; records backdated (“pencil whipping”)	WB7, 17	Documents show preventive maintenance was sometimes reported complete when it was not. MMSD letters in 2022–23 said work orders were closed without work being done. Supported by documents and multiple interviews; no indication it is current or widespread. VAMS controls added in 2024 were described but not demonstrated.	**Partially confirmed**	Maintenance Systems and Records; Falsification of Records; MMSD Oversight
Work orders and completion reports “disappear”; deleted without reason	WB17	Partly supported by documents and interviews in specific instances. The 2024 system migration reset corrective work-order dates and complicates the audit trail.	**Partially confirmed**	Falsification of Records; Maintenance Systems and Records
MMSD has no system to verify that work orders are done; only one compliance person checks maintenance	WB4	The Contract Compliance Office is under-resourced, and MMSD cannot independently and effectively verify maintenance data or plant data.	**Confirmed**	MMSD Oversight; IT Systems and Data

Concern	Raised by	What the audit found	Status	Draft report section
Preventive maintenance staff cut from four to two; 40–50% of preventive work eliminated	WB17	Not enough data available to determine. Veolia managers said they want to drop some short-interval preventive maintenance work orders, but the contract requires all of them. Open preventive maintenance work orders rose sharply after the VAMS migration and have since fallen.	**Not assessed**	Maintenance
No parts inventory kept	WB12	The storeroom was well organized and parts are usually available. Parts are owned by MMSD. Problems with obsolete parts and long lead times were noted.	**Partially confirmed**	Maintenance; Buildings, Grounds and Fleet
Redundancy lost; no back-up when equipment fails	WB6, 20	Up to five of eight Jones Island bar screens were out at once (six are needed for full capacity); more than two dryers were frequently out of service; redundancy is limited at critical sites such as the tunnel pump station. The claim of “little or no redundancy” overall was not established.	**Partially confirmed**	Maintenance Standards; Biosolids and Milorganite; Maintenance
Half of plant generators do not run properly	WB17	Generator breakdowns are listed among concerns raised, but generator condition was not assessed.	**Not assessed**	Operations Specific Concerns
Equipment purchased or designed that never worked or is never used	WB3, 8, 12	Several high-profile cases of new equipment failing early because of poor handover, and missing preventive maintenance work orders were confirmed. Some equipment is no longer used or maintained but is not marked. Purchasing decisions were not examined.	**Partially confirmed**	Capital Project Support; Maintenance
Gauges broken; Northwest Side relief sewer not fixed, so diversions cannot be measured	WB18	Calibration records for monitoring sites were not available. Instruments not functioning were noted during the site visit. The specific sewer was not examined.	**Partially confirmed**	Maintenance Performance (Conveyance), Operations
Veolia earned a 10% markup on replacements, so repair was not in its interest	WB20	The markup was not examined. The repair-threshold incentive was partly validated (see above).	**Not assessed**	Capital Program; Contract Management

Concern	Raised by	What the audit found	Status	Draft report section
2. Equipment is allowed to deteriorate, so plants cannot run at full capacity, especially in storms				
South Shore never runs at full capacity	WB1, 4, 11, 17, 18	South Shore was below design capacity in 328 of 405 weeks (81%), at or below 150 MGD in 55 weeks and as low as 40 MGD. This has continued for more than ten years. It is not "never", but the concern is substantively confirmed.	**Confirmed**	WRF (Plant) Capacity; Operations
Both plants never run at full capacity	Summary; WB7, 8	Jones Island was below design capacity in 193 of 405 weeks (48%), mostly for equipment outages. Partly confirmed for Jones Island.	**Partially confirmed**	WRF (Plant) Capacity
Cause: Veolia changed treatment chemicals to save money, slowing treatment	WB1, 7, 11	Confirmed that Veolia replaced ferric chloride with ferrous chloride and cut polymer before 2016, which led to disputes and a contract ban on cost-cutting that reduces treatment. Veolia generally returned to earlier polymer doses. This concern applies more to the past.	**Partially confirmed**	WRF (Plant) Capacity; Biosolids and Milorganite
Cause: poor maintenance	Summary; WB7, 8	Equipment outages explain some capacity reductions, but South Shore limits are mainly process-related (solids carry-over, variable influent) and not fully explained by equipment.	**Partially confirmed**	WRF (Plant) Capacity; South Shore WRF
Veolia advertises capacities it cannot achieve; capacity notices altered	WB7	Veolia met the requirements for notice of reduced capacity. No support was found for altered notices. Public confusion is linked to the difference between hydraulic and process capacity shown on the MMSD website.	**Not confirmed**	WRF (Plant) Capacity; Falsification of Records; Operations Specific Concerns
MMSD relaxed effluent standards so Veolia would stay in compliance	WB11	Confirmed for contract standards (not permit limits): South Shore fecal coliform relaxed in 2022 (Amendment 1) and BOD in 2024 (Amendment 4). The Milorganite iron specification was also loosened.	**Confirmed**	Contract Effluent Quality; MMSD Oversight
April 2025 rain event caused an overflow to Lake Michigan	Summary	Two 2025 South Shore facility overflows are recorded; but it was not verified that reduced capacity increased the overflow.	**Partially confirmed**	CSOs and SSOs

Concern	Raised by	What the audit found	Status	Draft report section
South Shore has aging infrastructure	WB15	Much of the equipment is about 30 years old and nearing the end of its service life.	**Confirmed**	Context; Maintenance
3. Water quality and Milorganite reports are falsified				
Water quality reports falsified	WB9; Summary	Not supported. Interviewees said this could not happen under current laboratory practices, and the laboratory is regularly audited. Detailed examination of laboratory results were outside the audit scope. One related June 2024 incident was supported: an effluent chlorine result was retested without the required interference test and the passing result reported; Veolia attributed it to operator error and retrained operators.	**Not confirmed**	Falsification of Records; Sampling and QA/QC Plan; Limitations
Veolia falsified credentials of people certifying test results	WB16	In February 2018, two key Veolia staff lacked current operator certifications. Falsification of credentials was not established.	**Partially confirmed**	Qualified, Trained and Certified Operators; Falsification of Records
Staff told to destroy records	WB16	Not examined. Records retention was disorganized and some emails were deleted because of mailbox limits. No evidence of intentional destruction was found.	**Not confirmed**	Reporting and Submissions
Lab readings done 3 times but charged for 5	WB19	Not examined.	**Not assessed**	—
Milorganite QC numbers fudged (before 2016)	WB6	Supported for specific incidents before the audit period; no indication it continues.	**Partially confirmed**	Falsification of Records
Cost-cutting on chemicals produced unsalable Milorganite	WB7	Off-specification product was produced in 2018 and 2025 and disposed of. The particle-size standard was missed in 93 of 100 months and off-spec fines were blended. Chemical changes occurred before 2016.	**Partially confirmed**	Biosolids and Milorganite

Concern	Raised by	What the audit found	Status	Draft report section
PCB testing cut from daily to weekly to save money	WB5	PCB limits were met. Testing frequency was not reduced.	**Not confirmed**	Biosolids and Milorganite
4. Sewage discharged to the lake or diverted to the Deep Tunnel is not reported accurately				
Not all discharges to the lake are reported	WB3, 8; Summary	CSOs, SSOs and plant overflows were reported to DNR and are in EPA records; CSOs stayed within the permit limit every year. The audit found no evidence of unreported discharges but did not test reporting completeness. SSO/CSO response plan updates after 2023 were not available.	**Not confirmed**	CSOs and SSOs
Treated effluent has become more polluted over time	WB1	Permit limits were met almost all the time (two weekly exceedances in 100 months). South Shore periodically missed stricter contract standards. Long-term trends were not analyzed.	**Partially confirmed**	WPDES Permit Compliance; Contract Effluent Quality
Veolia does not care about discharges to the lake	WB16	An attitude, not testable. Veolia met wet-weather operating requirements.	**Not assessed**	Wet Weather Management
5. Workers endure unsafe working conditions				
Unsafe working conditions	Summary; WB17	Both safety programs are strong and no unsafe conditions were seen on site. Specific hazards were supported: combustible dust (OSHA complaints 2016 and 2021; MMSD 2025 inspections), lockout/tagout and isolation problems, non-working in-plant phones and paging, and the 2018 dryer injury.	**Partially confirmed**	Safety; Safety, Security and Emergency Management; IT Assets
Plants are unsafe because of lack of maintenance	WB17	Site visit observations did not support this.	**Not confirmed**	Maintenance

Concern	Raised by	What the audit found	Status	Draft report section
Asbestos in ceiling tiles; ceilings crumbling in a South Shore building; unsafe-conditions report ignored	WB3	Asbestos was raised as an interview concern but not documented. Some areas need updating, but building maintenance was generally adequate at the time of the visit. The specific report was not traced.	**Not confirmed**	Equipment Conditions and Workplace Hazards; Buildings, Grounds and Fleet
6. Staffing levels are not maintained, and unqualified people are employed				
Veolia understaffs the plants	WB13, 17; Summary	Staffing was below the 216-position minimum in almost every month since 2018 (average about six vacancies), and key positions were vacant about 20% of the time. Whether this was done to save money was not assessed.	**Confirmed**	Staffing Plan; Staffing and Resource Management
Unqualified people fill operator and supervisor roles	WB7; Summary	Operators were described as well trained but much less experienced than before. Two key staff lacked current certification in 2018. Interviewees questioned some managers' qualifications. Unqualified hiring was not established.	**Partially confirmed**	Qualified, Trained and Certified Operators; Staffing Adequacy
Veolia replaces union workers with non-union people	WB13	Veolia met the contract requirement to recognize the unions. Interviewees reported some reassignment and outsourcing of trades work, which was not verified.	**Not confirmed**	Reporting (Staffing and Training); Staffing Adequacy
Employee stock plan excludes union members	WB14	Outside the audit scope.	**Not assessed**	—
7. MMSD does not properly monitor Veolia				
MMSD does not monitor Veolia properly; lets Veolia get away with everything	Summary; WB2, 20	Oversight of permit compliance was effective. Oversight was less effective for staffing, repairs, Milorganite specifications, reporting and IT: penalties were not applied, default remedies were not collected, and standards were loosened. "Everything" is an overstatement.	**Partially confirmed**	MMSD Oversight

Concern	Raised by	What the audit found	Status	Draft report section
MMSD legal staff were not interested in information provided	WB7	Not examined.	**Not assessed**	—
MMSD hires inexperienced junior engineers to run projects without supervision	WB8	Not examined. Long design timelines and weak coordination between planning, design and construction were noted.	**Not assessed**	Capital Program
Executive leadership is not held accountable	WB18	Outside the audit scope. Internal disagreement about oversight priorities is eroding trust in MMSD leadership.	**Not assessed**	MMSD Oversight
8. Workplace culture				
Fear, intimidation, retribution and abusive management at Veolia	WB3, 5, 6, 7, 13	Described consistently in interviews, with low trust in complaint processes in both organizations. Most specific cases involved people who have left and could not be verified. No harassment was observed.	**Partially confirmed**	Workplace Culture and Employee Relations
Employees never see or are not allowed to talk to MMSD staff	WB6	Several MMSD employees said Veolia staff told them they could not talk to MMSD, and one Veolia employee told the audit team the same. No written instruction was found.	**Partially confirmed**	Cooperation with MMSD
Micromanagement by Veolia management	WB15	Operators described having to get supervisor approval before acting, but micromanagement was not assessed as such.	**Not assessed**	Staffing Adequacy

APPENDIX C

Public Reference Materials

Regulatory and Compliance

- EPA Enforcement and Compliance History Online (ECHO) compliance reports: WPDES water permit (WI0036820), Jones Island and South Shore air permits
- EPA discharge monitoring report data, 2013 to 2026
- EPA WebFIRE air emissions records
- Wisconsin DNR WPDES and air permit records, and the operator certification lookup
- MMSD's WPDES permit and public notice

Overflows

- CSO five-day letters, August and September 2026
- 2025 CSO annual notice, 2026 overflow volumes, and the 2026 DNR CSO/SSO notice

MMSD Governance

- Commission meeting files (Legistar), 2016 to 2026
- Commission meeting records
- 2025 Ad Hoc O&M Contract Selection Committee records

Financial

- Annual comprehensive financial reports, 2020 to 2025
- Operations, maintenance and capital budgets, 2018 to 2026, and the 2027 proposed budget
- Wisconsin Policy Forum, "Milwaukee Metropolitan Sewerage District's Fiscal Condition: Downstream Accomplishments, Upstream Challenges". (2011)

Contracts

- 2028 O&M contract RFP (P-3216), with draft contract, exhibits, schedules and addenda
- O&M contracts from peer utilities

Reports and News

- Wisconsin Policy Forum, "Testing the Waters" (2022)
- County Supervisors' news release calling for an independent audit
- News coverage, 2017 to 2026 (about 115 articles, mostly the Milwaukee Journal Sentinel)

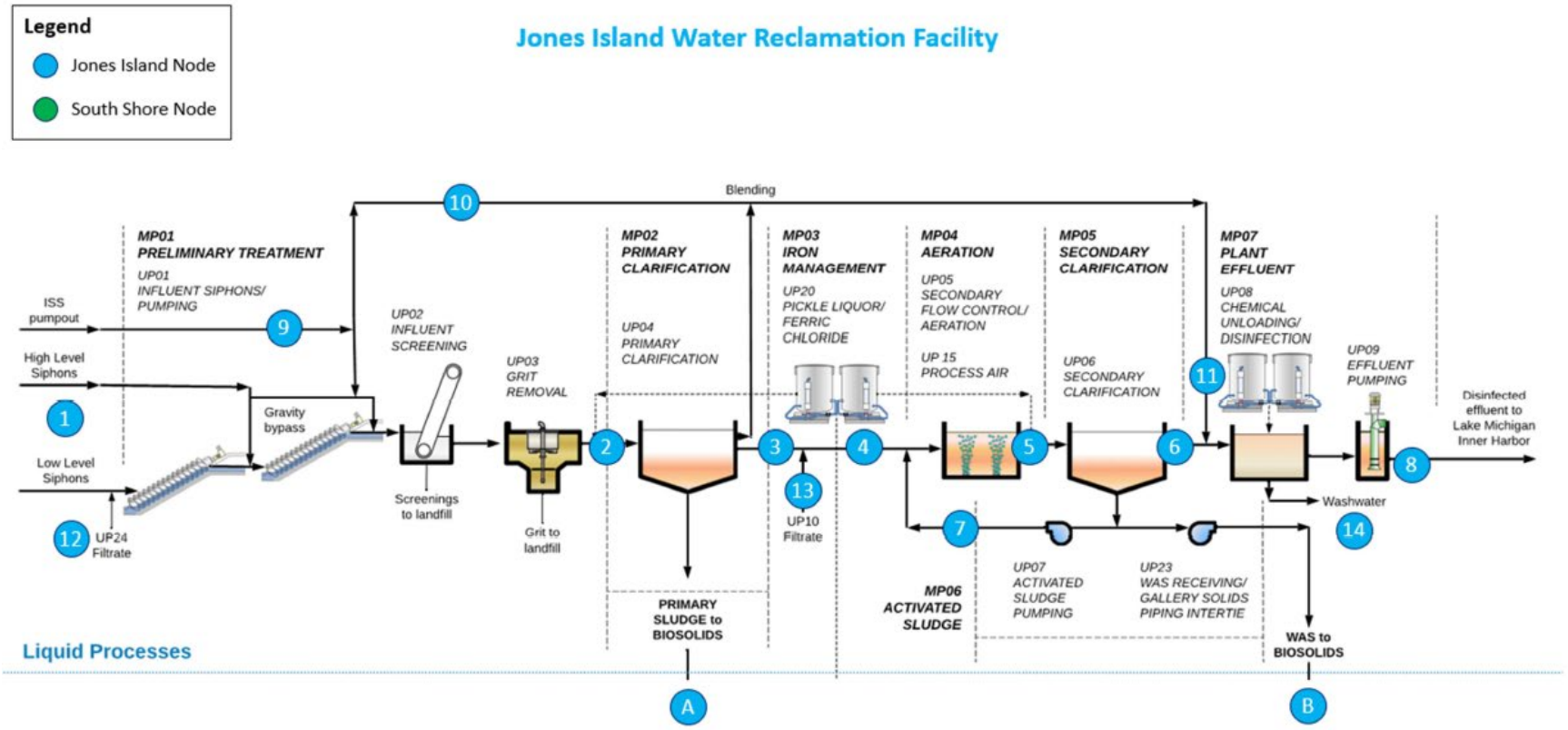
Contracted Operations Best Practices

- World Bank/GI Hub, PPP Contract Management Tool [managingpp....gihub.org], [cisa.gov]
- World Bank, Guidance on PPP Contractual Provisions (2019)
- GI Hub, Water Distribution PPP Risk Allocation Matrix [ppp-risk.gihub.org]
- SA Water and OECD/OPSI Adelaide materials [sawater.com.au], [oecd-opsi.org]
- Sofia concession documents and fourth amendment [sofiyskavoda.bg], [ncr.government.bg]
- World Bank Interagua concession record and Ecuador Controller General audit
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- CISA/EPA/FBI water-sector cybersecurity actions [19january2...ot.epa.gov]
- OECD, *Principles for Public Governance of Public-Private Partnerships* [legalinstr...s.oecd.org]
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- Federation of Canadian Municipalities, *Good Governance in Restructuring Water Supply* [iatp.org]
- French *Code général des collectivités territoriales*, delegated-public-service provisions
- City of Atlanta Auditor, private water-operation audits [mmsd.com], [atlaudit.org], [atlaudit.org], [atlaudit.org]
- South Australian Water Corporation, 2024-25 Annual Report [sawater.com.au]
- Sofia Municipal Council, Fourth Amendment to the Sofiyska Voda concession [sidesa.fr]
- Ecuador Contraloría General, 2025 special examination of the Interagua concession
- Ecuador National Assembly, 2026 water-oversight resolution [contraloria.gob.ec]
- Canadian Audit and Accountability Foundation, oversight of agencies, boards and authorities [caaf-fcar.ca]

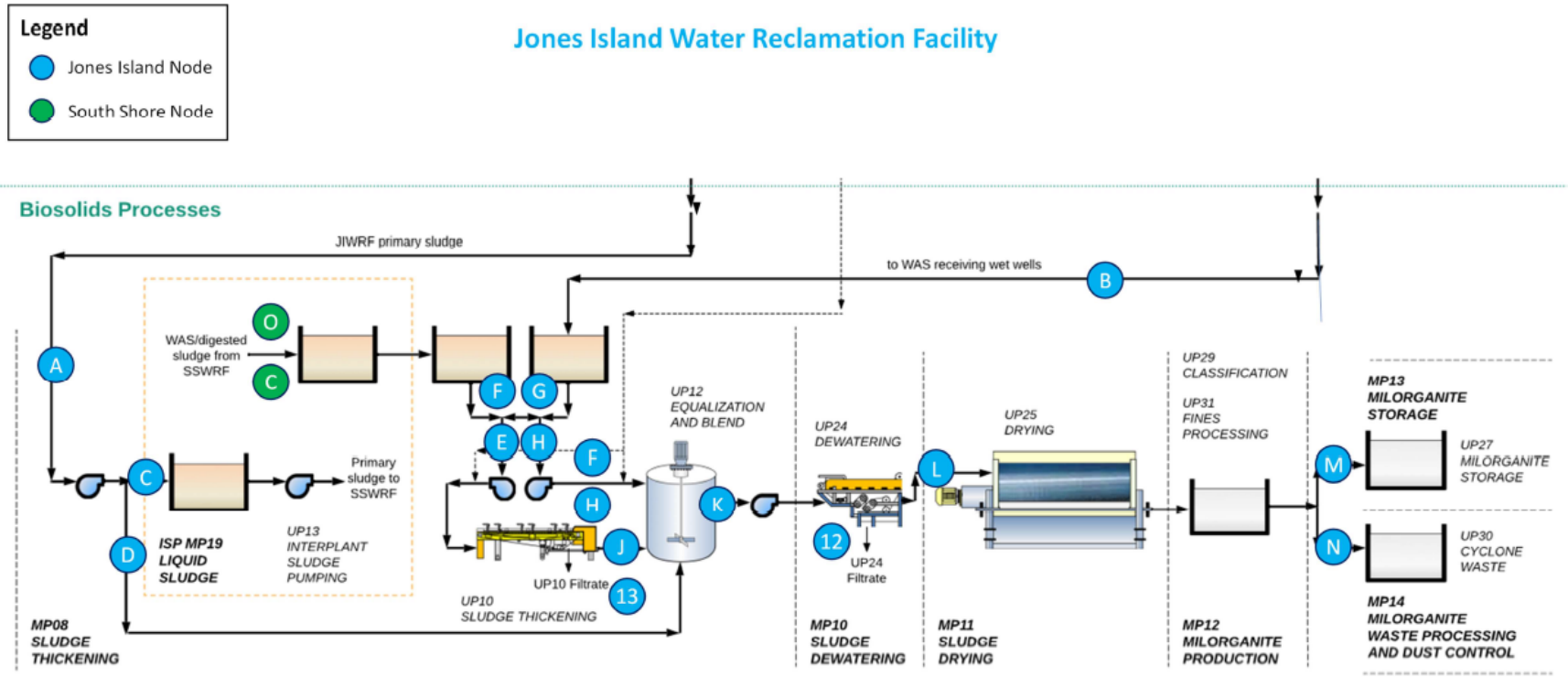
APPENDIX D

Process Flow Diagrams

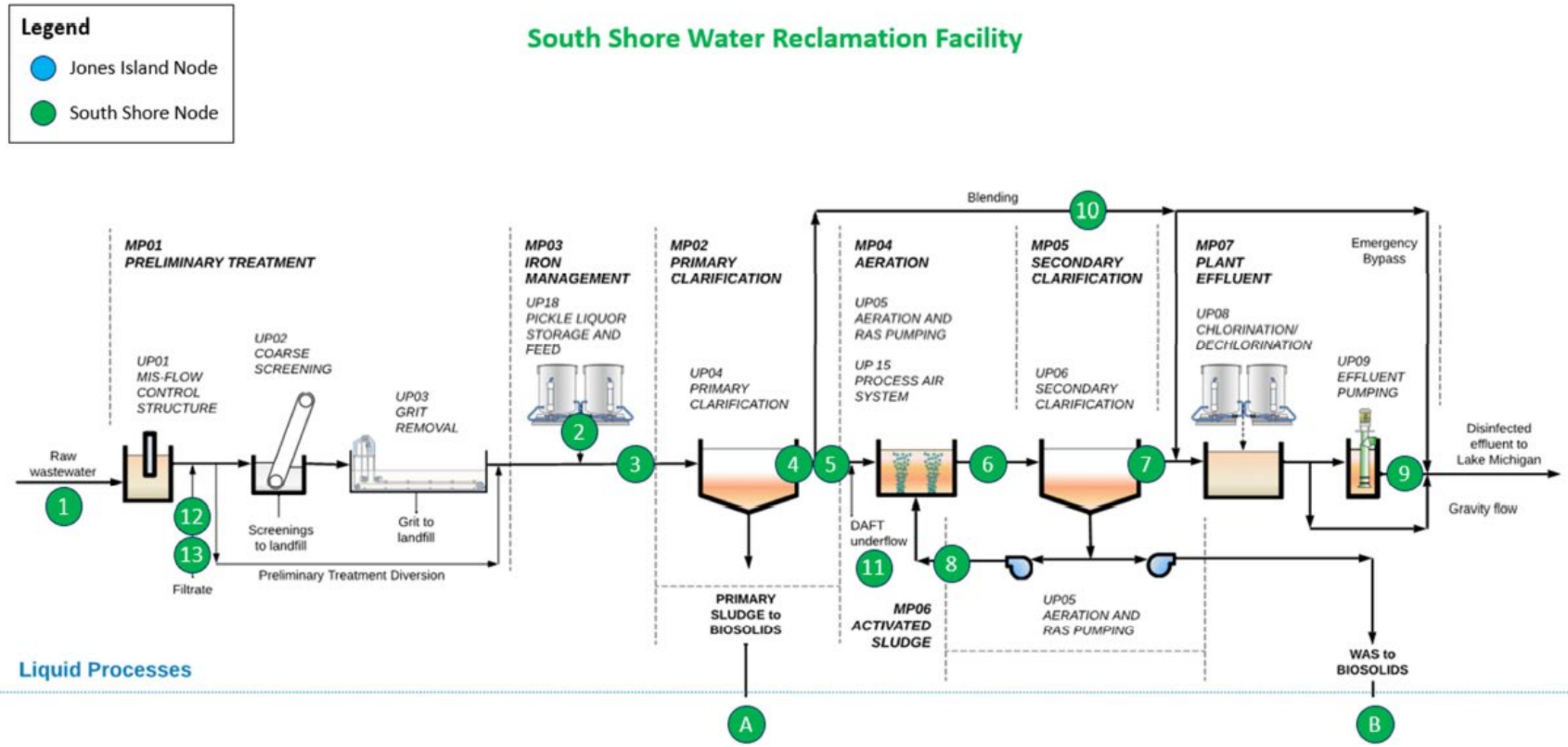
Jones Island Liquid Processes



Jones Island Biosolids Processes



South Shore Liquid Processes



South Shore Biosolids Processes

