



Memorandum

date: March 02, 2019

to: **Heart of the Valley Metropolitan Sewerage District**
Dave Casper, Commission President
Commissioners
Brian Helminger, Manager (file copy)
Kevin Skogman, Superintendent

cc: (none)

from: **Strategic Municipal Services, Inc.**
Scott M. Schramm, PE, PLS
David Schlichting, PE

re: **WORK PLAN SUMMARY (2019)**
Priority Action Plan - Interceptor System
Heart of the Valley Metropolitan Sewerage District
Outagamie County, Wisconsin

Summary

- A. Background and Problem Statement
- B. Goals / Objectives
- C. Timeline

A. Background and Problem Statement

1. The District owns and operates a gravity interceptor sewer system that generally includes 5 1/2 miles of interceptor sewer and 9 meter stations (MS).
2. Regular 5-year televisive inspections (2015) noted significant change to pipe wall and structure conditions (compared with 2010). Aggressive Microbial Induced Corrosion (MIC) removed an average of 3/8 - inch concrete materials.

B. Goals / Objectives. The following summarizes key goals for 2019. In general the steps will identify atmosphere and waste stream chemical and microbiology relationships to support decisions.

1. Key **Questions** include the following:

question 1: what mitigation options could cost effectively lower parameters and significantly slow MIC

- question 2 are there unique community characteristics that contribute to unusual MIC and what cost effective options could control them
- question 3 what is the current state of the interceptor. What is "broke" and "how bad". What role do CIPP lining and coating structures have to preserve the infrastructure.
- question 4: what are baseline and seasonal trends, and major sources of MIC parameters at the MS and select manhole structures.
- question 5: why is there aggressive MIC when there are historical elevated DO levels (dissolved oxygen). What are the main driving biochemistry relationships.

2. The following summarizes key **Objectives and Goals**:

- a. Direct all **flow** from **MS4-7** to the **34-inch siphon** (4-8 weeks). Monitor up and downstream air (**OdaLogs**) before, during and after redirecting flow. Test representative grab samples (stream) for parameters relating to MIC. The test would occur before **Great Lakes TV Seal (GLTS)** performs the planned televised inspection. GLTS would flush and clean the siphon. Flow would subsequently be redirected to the 6 / 16 - inch siphons.

GOALS:

Goal 1: Confirm the very low flow rate and long hydraulic retention time (HRT) were significant contributing factor to the aggressive MIC (manholes **16 to 9**).

Goal 2: Install weirs and gates (**Structures 39 and 42**) to further improve siphon operations.

- b. **Biochemistry.** Evaluate atmosphere / wastestream conditions and microbiology to identify key mechanisms and relationships contributing to MIC. Install sample "tabs" in key structures for a two (2) month period (~July - August). Laboratory test the tabs generally for DNA and enzyme indicators to identify the type, relative population, and activity levels.

GOAL: Identify the microbiology and bio-chemistry relationships contributing to the MIC. Identify which mitigation options could effectively reduce MIC parameters and significantly lower MIC corrosion rates.

- c. **Continue Monitoring Pilot** for at least 3 quarters (including annual warm season) at the meter stations and key manhole locations. Use OdaLog air monitors to record atmospheric H₂S (and methane). Field and lab test water samples for key MIC relationships.

GOAL: Identify baseline and seasonal trend relationships that contribute to MIC.

- d. Review **Community** trunk and interceptor sewers, lift station and forcemains, drinking water, industries and landfill records as they relate to sulfur, H₂S, and MIC.



GOAL: Identify collection system conditions and locations that contribute to MIC.
Compare with pilot monitoring data.

C. Timeline

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|--|-------------------------------------|
| 1. late winter to early Spring (~ May +/-) | test 34", continue monitoring pilot |
| 2. ~ May +/- | GLTS televisive and clean 34" |
| 3. June - August | monitoring pilot with biochemistry |
| 4. > August | evaluate data, recommend actions |
| 5. 4th quarter | decide, CWF pre-application |
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We welcome the opportunity to further discuss these items at your convenience.

enc: as noted

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