

My Sewer System is 50 Years Old. Now What?

Town of Dunn Sanitary District No. 3
Plans for the Future

Town of Dunn Sanitary District No. 3

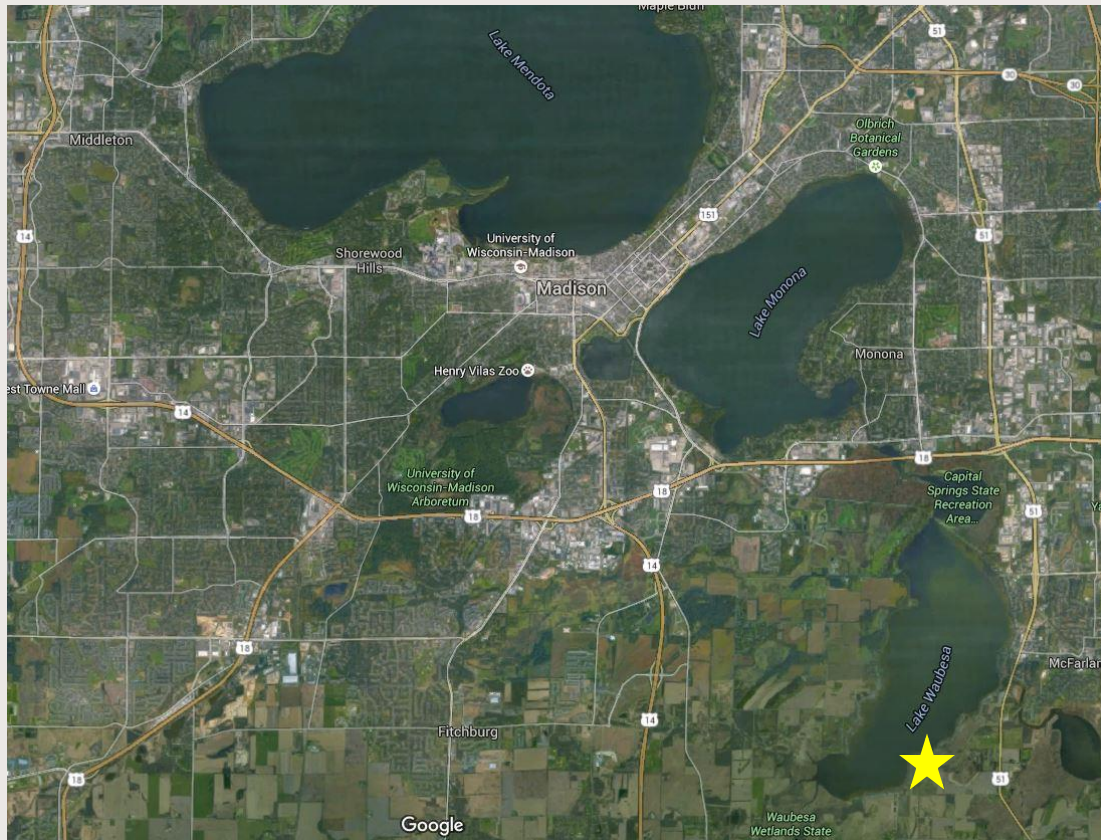


Image courtesy of Google maps

Sanitary District Overview

- Established in 1960's
- Four Construction Phases
- Three Person Board
- Wastewater Treatment by Madison Metropolitan Sewerage District
- Contract Most Operations
- Construction Bonds Paid Off but Aging Infrastructure

Sewer Mains Along Lakeshore



Gravity Sewer Mains and Manholes

Pipe Diameter (inches)	Quantity (linear feet)
8	35,133
10	1,983
12	4,556
15	1,032
18	593
Total	43,297

180 Four Foot Diameter
Manholes

Lift Stations

	No. 1	No. 2	No. 3
Design Capacity (GPM/TDH)	600 / 41 feet	500 / 63 feet	300 / 35 feet
Pump Motor (HP)	15	20	7.5
Percentage of District Served	95%	78%	11%



Lift Station 2 Site



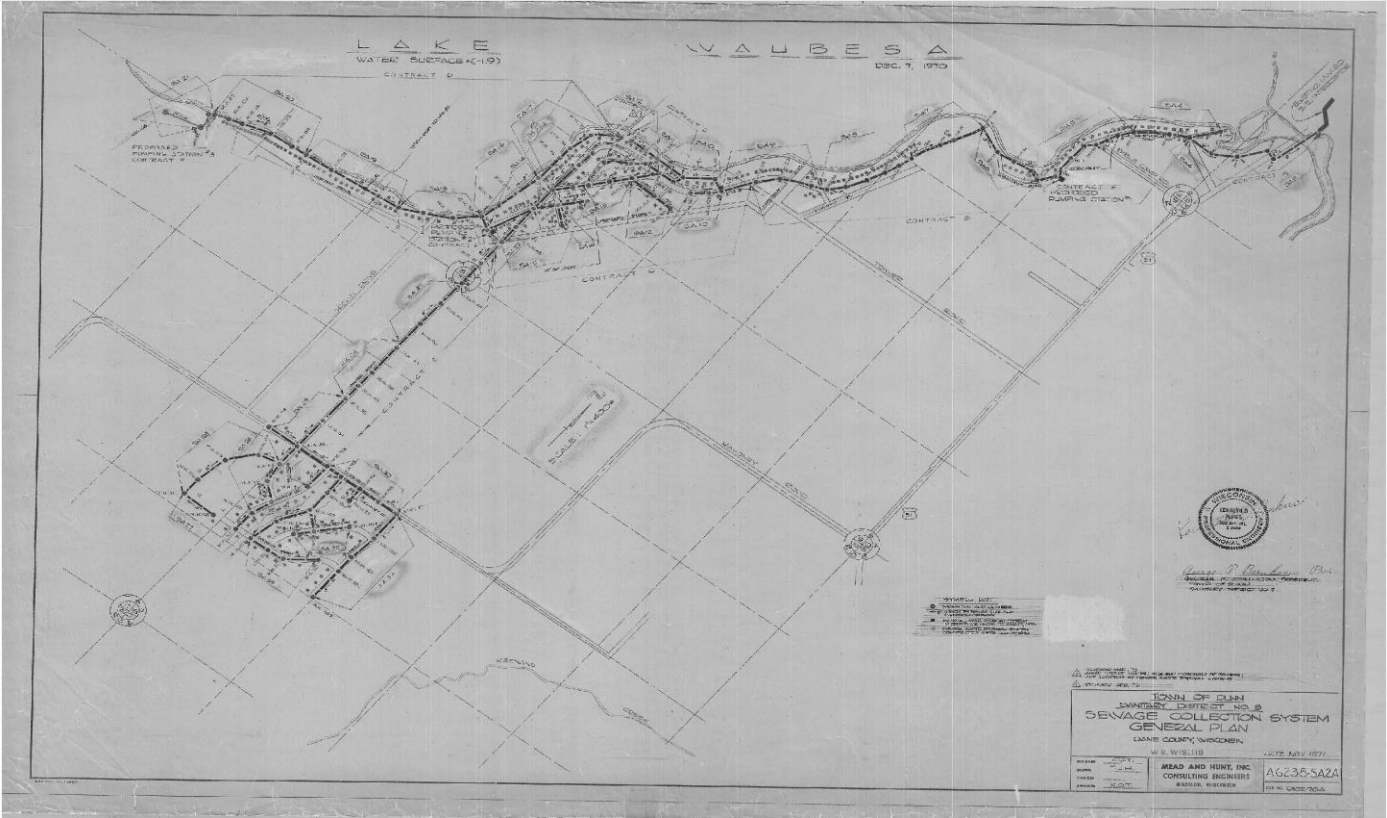
Force Mains

Pipe Diameter (inches)	Quantity (liner feet)
8	1,810
10	940
12	870
Total	3,620

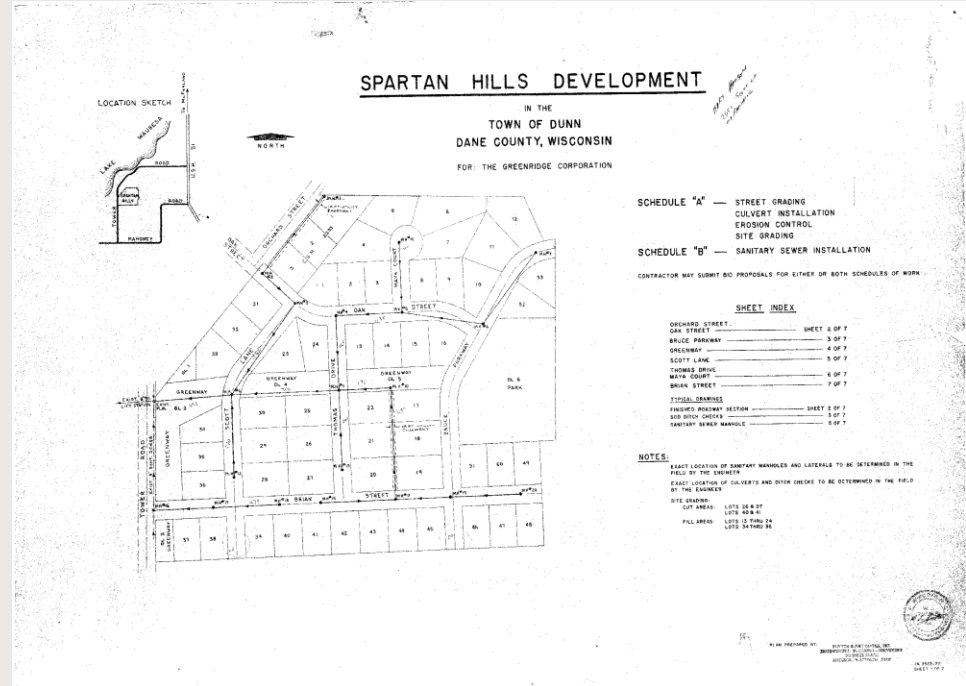
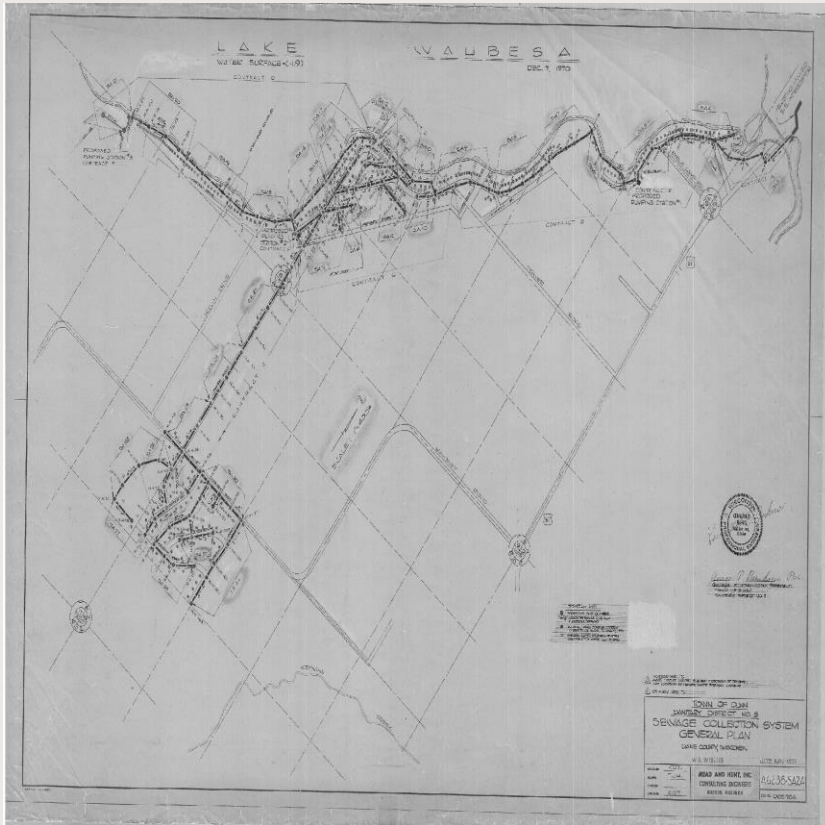
System Assessment

- Establish What You Have
- Condition
- Determine Criticality of Assets
- Existing and Future Flow Rates
- Capacity Issues

Existing System Mapping



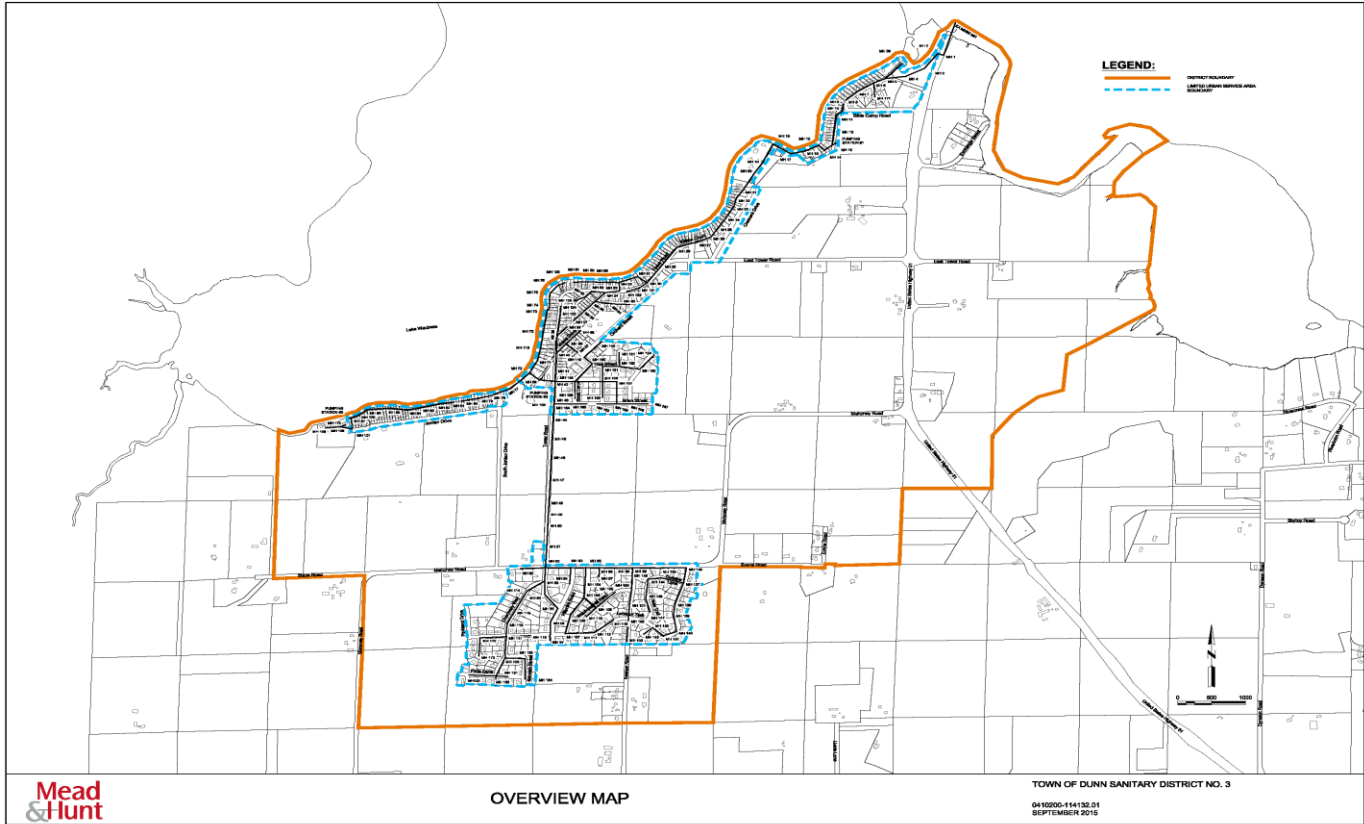
Existing System Mapping with Addition



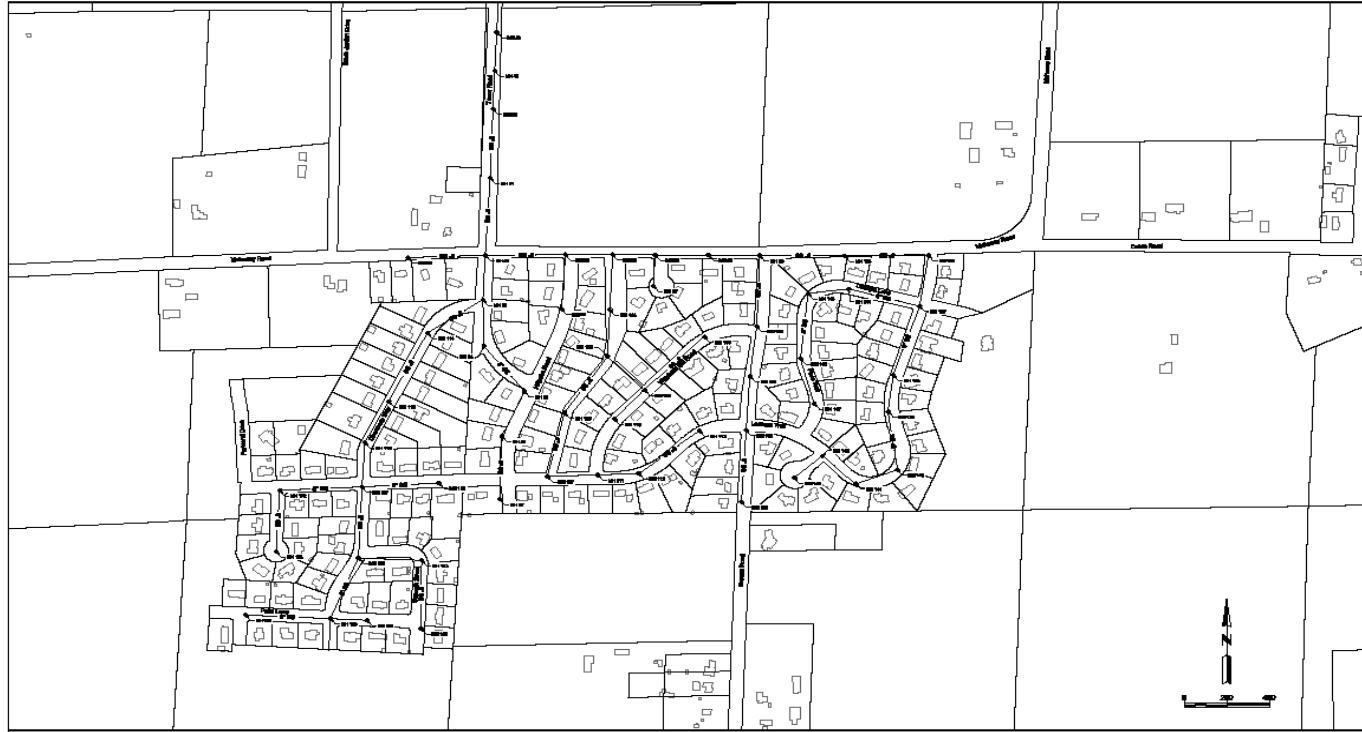
New System Map

- Each Manhole has Unique Number
- Clear Identification for Inspections
- Future Cleaning and Televising

New System Map



Subsection Map



Locate and Inspect Manholes



Photo Documentation of Manholes



Access to Some Manholes Was Challenging



Manholes with Upper Access Compartment



Examples of Defects



Review Existing Sewer Main Video

- District was televising “25%” of system per year
- Review of video revealed approximately 20% of system had not been televised in past 10 years
- Missing sections were televised and defects were rated

Lift Station Inspections



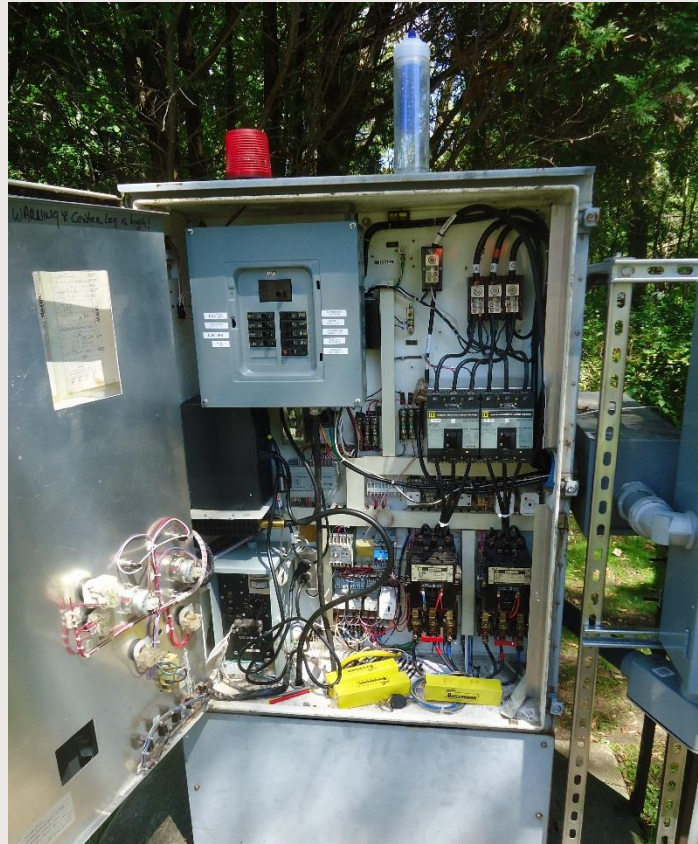
Wet Well



Dry Well



Control Panel



Lift Station Records

- Maintenance Records from MMSD
- Service History
- Elapsed Time Meter Data

Identify Critical Infrastructure



- River Crossing
- Lift Stations
- Sewer Mains In or Near Lake

Existing Flow

	Lift Station 1	Lift Station 2	Lift Station 3
Daily Average Flow (gpd)	63,000	50,700	10,300
Peak Daily Flow (gpd)	216,000	193,200	39,600
Peak Hourly Flow (gpm)	240	180	110
Peaking Factor (Peak Day/Average Day)	3.4	3.8	3.8

Capacity

	Capacity	Current Peak Hourly Flow	Percentage of Capacity Utilized
Lift Station 1	600 gpm	240 gpm	40%
Lift Station 2	500 gpm	180 gpm	36%
Lift Station 3	300 gpm	120 gpm	40%
18" Gravity Sewer	1,540 gpm	612 gpm	39%
15" Gravity Sewer	1,120 gpm	612 gpm	55%
12" Gravity Sewer	730 gpm	240 gpm	33%
10" Gravity Sewer	623 gpm @ 0.4%	500 gpm	80%
8" Gravity Sewer	543 gpm @ 1.0%	120 gpm	22%

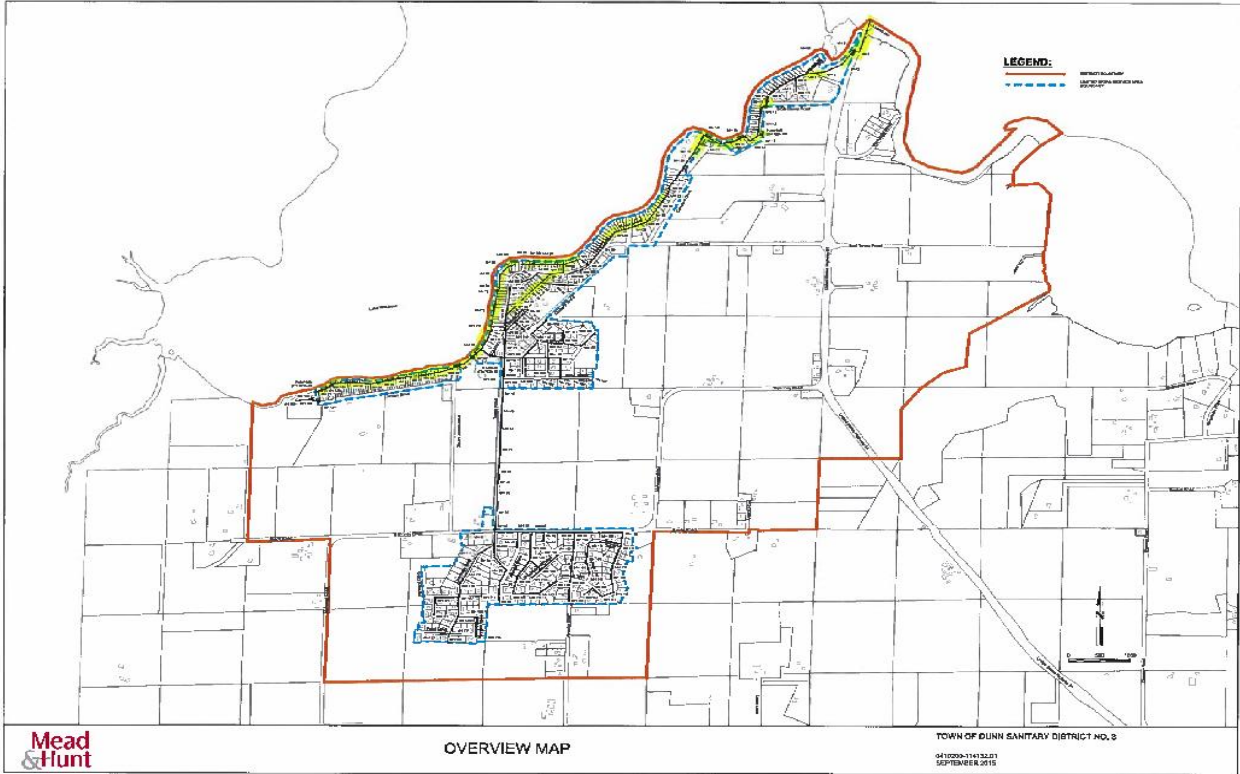
Capital Improvement Plan

- Phase One – Critical Infrastructure and Urgent Repairs
- Phase Two – Lift Stations
- Phase Three – Repairs to Remaining Collection System

Phase One

- Slip Line Critical Sections
- Excavate and Relay Significant Sags
- Grout MH Walls
- Replace MH Lids with Open or No Pick Holes

Phase One Map



Manhole Grouting



Phase One Costs

Repair	Quantity	Unit Cost	Cost
Slip Line 18"-8"	4,093 feet	\$100-30/LF	\$527,030
Reinstall Laterals	104	\$700/Each	\$72,800
Relay Sewer	872 feet	\$150-120/LF	\$115,050
Replace MH Cover	60	\$200/Each	\$12,000
Replace MH Casting	6	\$1,000/Each	\$6,000
Adjust or Raise Casting	18	\$1,000/Each	\$18,000
Grout MH	264 VF	\$1,000-200/VF	\$124,800
Contingency, Engineering, and Administration			\$306,488
Total			\$1,182,168

Phase Two

- Paint Lift Stations
- Replace Screening Box in Lift Station No. 3
- Replace Control Panels

Phase Two Costs

Repair	Quantity	Unit Cost	Cost
Lift Station Painting	Lump Sum	\$28,000	\$28,000
Replace Screening Box LS 3	Lump Sum	\$7,000	\$7,000
Replace Control Panels	3	\$20,000/Each	\$60,000
Contingency, Engineering, and Administration			\$33,250
Total			\$128,250

Phase Three

- Slip Line Remaining Sewer Sections
- Replace MH Lids with Open Pick Holes

Phase Three Costs

Repair	Quantity	Unit Cost	Cost
Slip Line 8"	4,655 feet	\$50-30/LF	\$143,830
Reinstall Laterals	163	\$700/Each	\$44,100
Replace MH Cover	55	\$200/Each	\$11,000
Contingency, Engineering, and Administration			\$69,626
Total			\$268,556

Next Steps

- Adjust Sewer Rates Based on Capital Improvement Plan
- Identify Funding Sources –
 - Clean Water Fund
 - State Trust Fund
 - Private Bank
 - Focus on Energy
- Incorporate Information into CMOM
- Continue Funding Equipment Replacement Fund

Thanks

- Town of Dunn Sanitary District No. 3
- Madison Metropolitan Sewerage District
- McCann's Underground
- Wisconsin Wastewater Operators Association

Questions?



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