

# Department of Public Works Sewer Maintenance Fund (SMF)



Sewer Condition Report  
Capital Improvement Committee (CIC)  
June 25, 2014

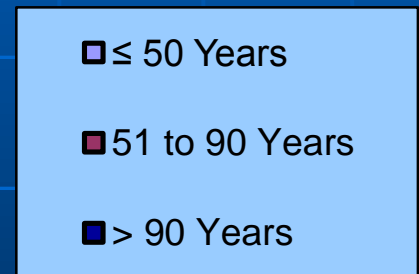
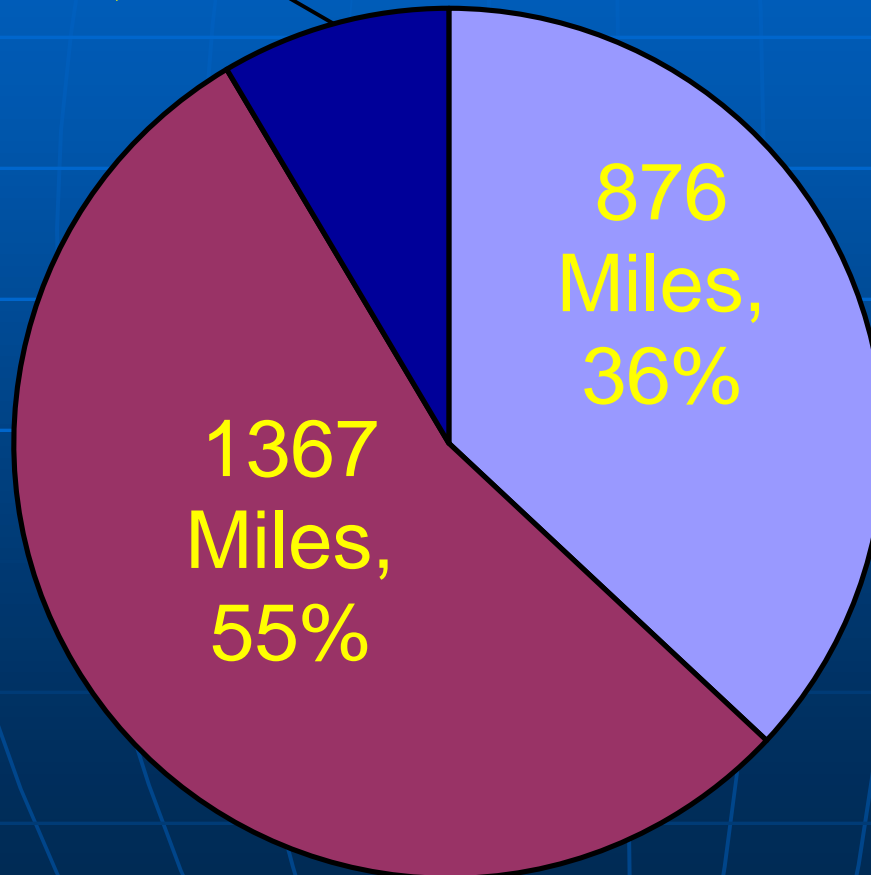
# Total Sewer Mileage

<b>Types of Sewers</b>	<b>Total</b>	<b>≤ 21" Diameter</b>	<b>&gt; 21" Diameter and ≤ 48" Diameter</b>	<b>&gt; 48" Diameter and ≤ 54" Diameter</b>	<b>&gt; 54" Diameter</b>
	<b>(miles)</b>	<b>(miles)</b>	<b>(miles)</b>	<b>(miles)</b>	<b>(miles)</b>
<b>Combined</b>	<b>551.0</b>	<b>311.5</b>	<b>169.3</b>	<b>11.7</b>	<b>58.5</b>
<b>Sanitary</b>	<b>944.0</b>	<b>932.0</b>	<b>12.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Storm</b>	<b>966.0</b>	<b>644.5</b>	<b>241.5</b>	<b>13.7</b>	<b>66.3</b>
<b>Total</b>	<b>2,461.0</b>	<b>1,888.0</b>	<b>422.8</b>	<b>25.4</b>	<b>124.8</b>

# Sewers by Age

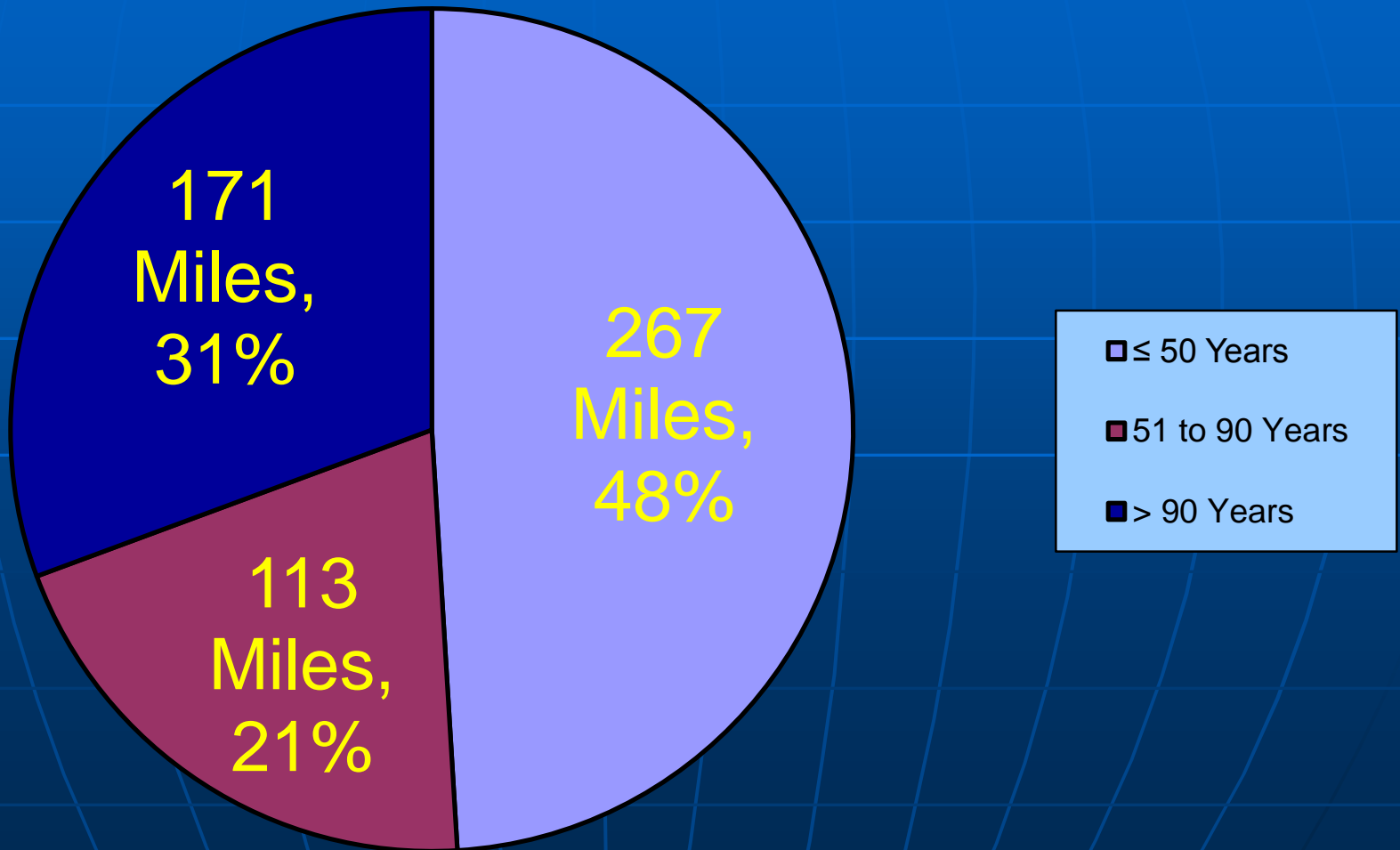
Total Miles: 2,461

218  
Miles, 9%



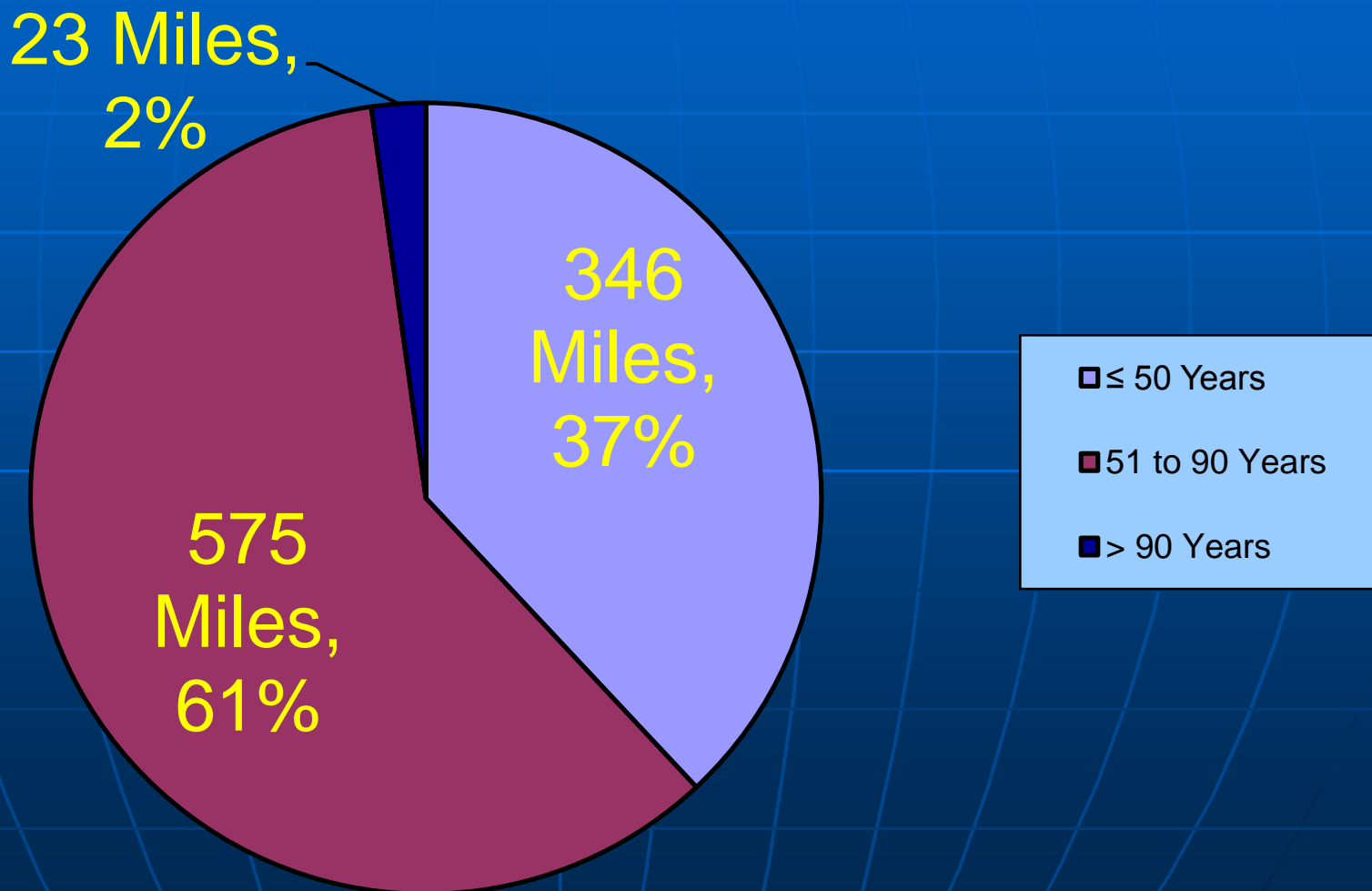
# Combined Sewers by Age

Total Miles: 551



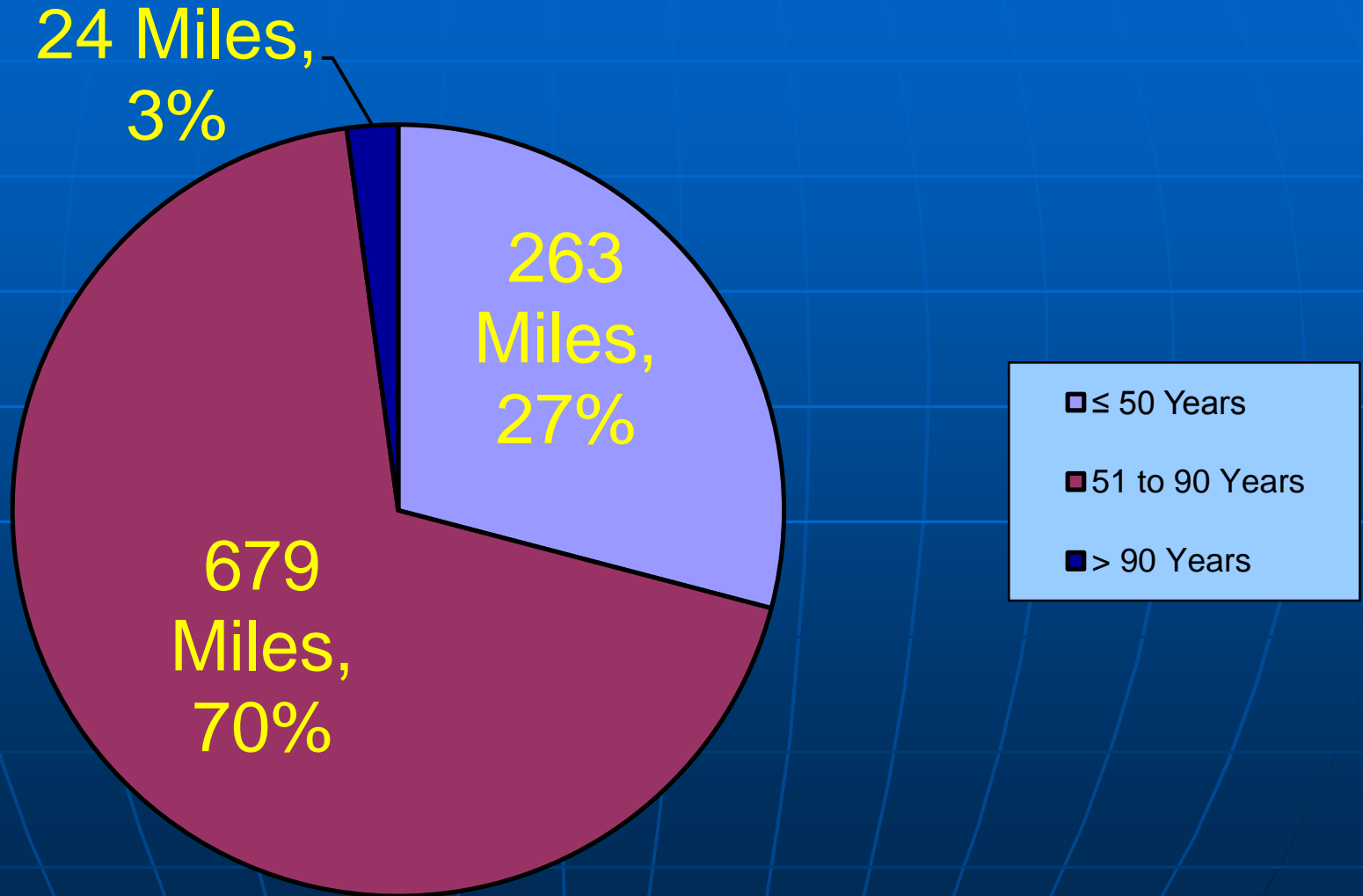
# Sanitary Sewers by Age

Total Miles: 944



# Storm Sewers by Age

## Total Miles: 966



# Sewer Exams within last 5 years



# Sewer Exams Frequency for Condition Assessment

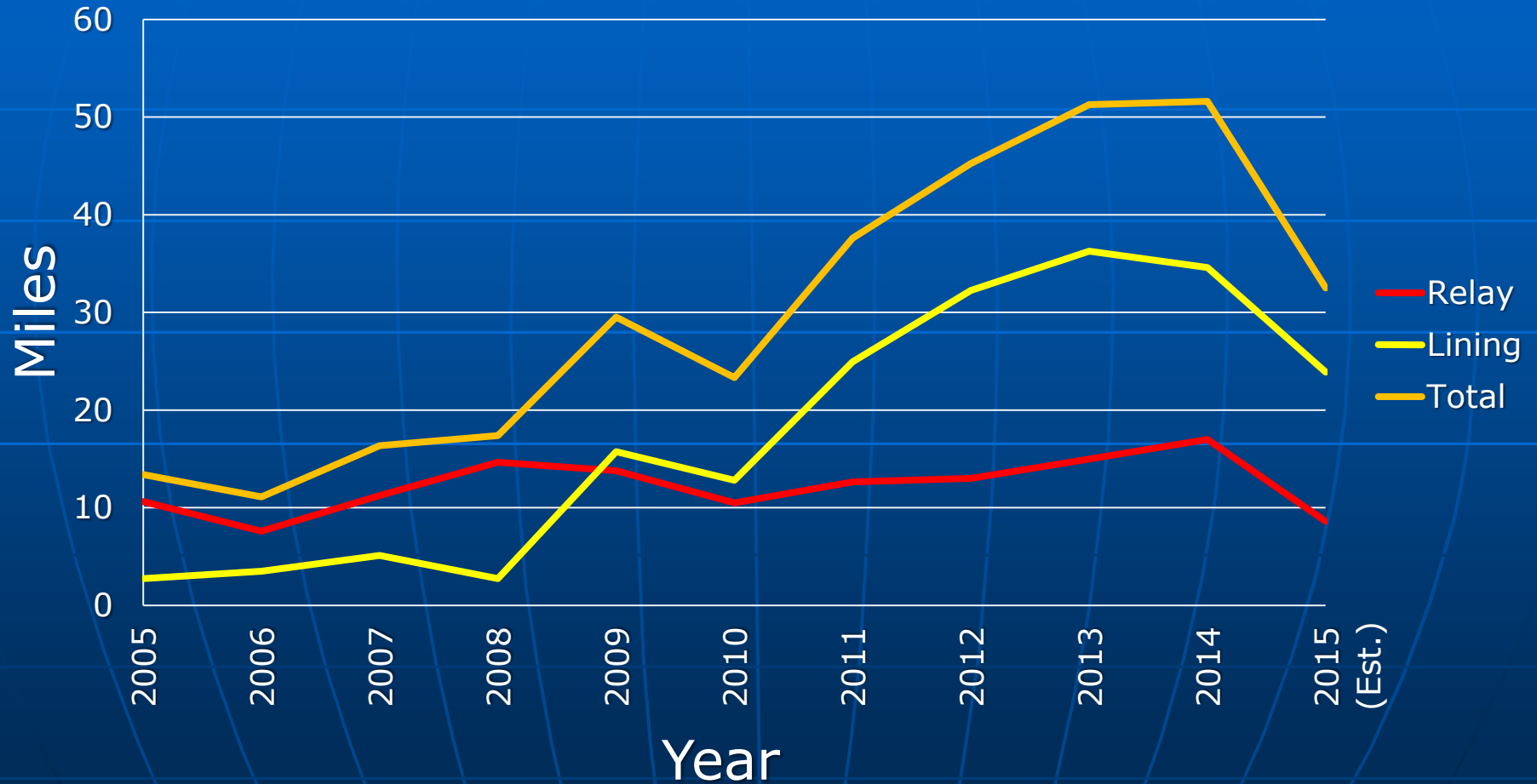
- 100 Years and Older .....5 years
- 75 to 99 Years Old.....15 years
- 50 to 74 Years Old.....25 years
- Less than 50 years old are not examined unless needed for sewer back-up complaints or paving projects



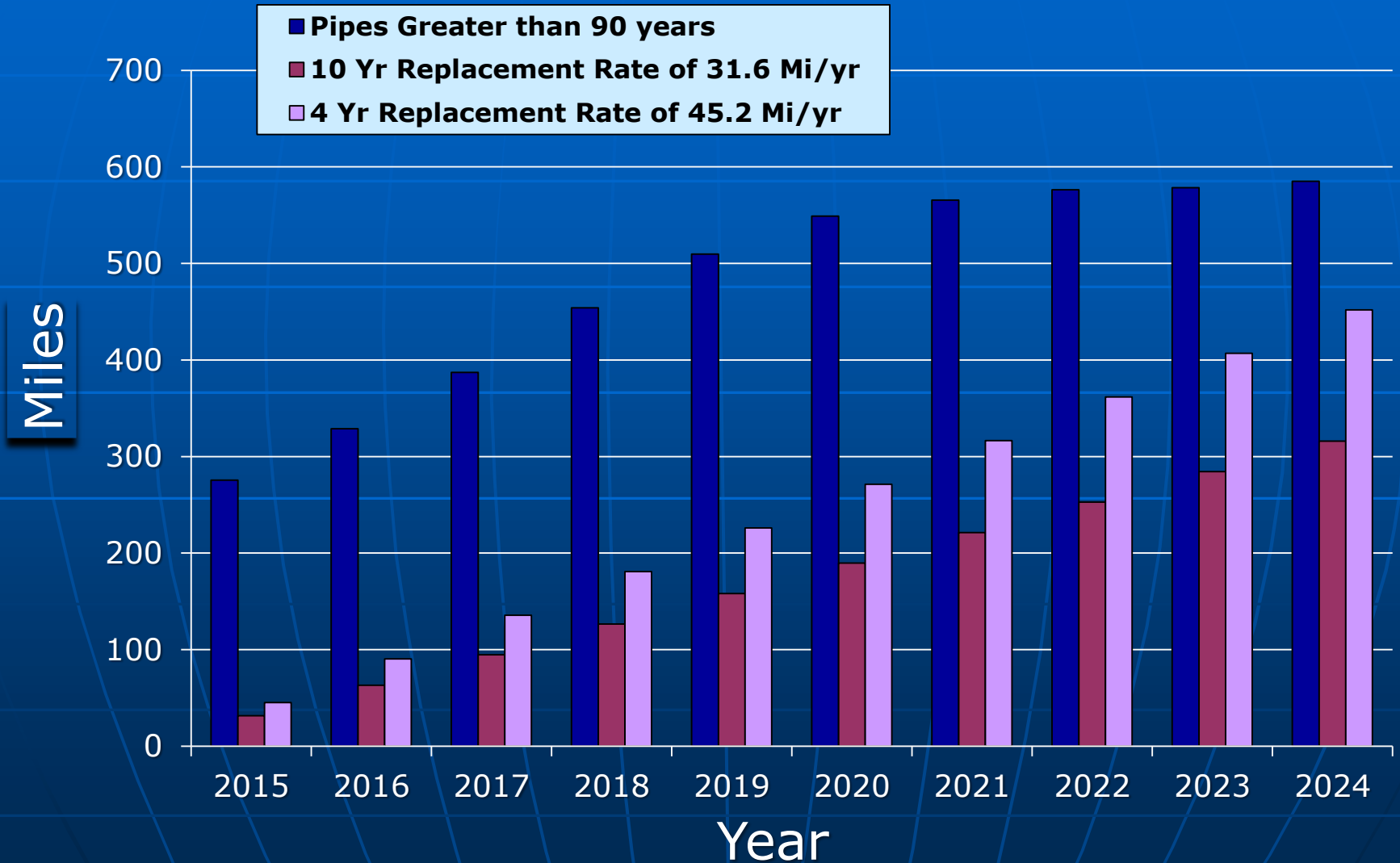
# Sewer Replacement Program

- Sewer Mains selected for replacement based on:
  - Index Rating based on Sewer Exams
  - Existing Hydraulics – Sewer back-up investigations
  - Paving Projects

# 2005-2015 Sewer Replacement



# Future Sewer Lengths Needed To Be Rehabilitated That Are Greater Than 90-Years Old



# Sewer Replacement Information

- 218 miles of sewers are greater than 90-years old
- 2,461 miles of sewer are in the City
  - Annual replacement rate: 31.6 miles (10 year average)
  - Estimated useful sewer life cycle is 90 years
  - Required replacement rate: 27.3 miles
- Current 4 year average for replacement rate using lining & replacement methods is 45.2 miles/year, which allows us to meet this need.

# 2014 Major Projects

- Area bounded by W. Oklahoma Ave., W. Howard Ave., S. 63<sup>rd</sup> St., and S. 95<sup>th</sup> St. (CIPP) \$3.1 M
  - CIPP – 70,000 ft of 8 inch diam. sanitary sewer circa 1950's
- N. 27<sup>th</sup> St. and W. Locust St. \$2.4 M
  - Relay 2,900 ft of 60 inch dia. combined sewer (110 years old)
- Area bounded by W. Congress St., W. Hampton Ave., N. 34<sup>th</sup> St., and N. 50<sup>th</sup> St. (CIPP) \$2.3 M
  - CIPP - 49,000 ft of 8, 10, and 12 inch diam. sanitary sewer
- N. Story Pkwy. – 120 ft East of N. Pinecrest St. to Parkway Dr. \$1.4 M
  - Sanitary and storm relay and relocation

\* Cured-in-place lining (CIPP)

# 2015 Major Projects

- Area bounded by W. Villard Ave., W. Hampton Ave., N. Sherman Blvd., and W. Fond du Lac Ave. \$3.8 M
  - CIPP – 84,000 ft of 8 - 18 inch diam. sanitary sewer
- Area bounded by W. Hampton Ave., W. Capitol Dr., N. Green Bay Dr., and N. 33<sup>rd</sup> St. \$3.0 M
  - CIPP – 60,000 ft of 8 - 15 inch diam. sanitary sewer
- Area bounded by W. Congress St., W. Hope St., N. 27<sup>th</sup> St., and SOO Line Railroad \$3.0 M
  - 2,000 ft 48" X 72" new storm sewer
- W. Keefe Ave. – N. 18<sup>th</sup> St. to N. 22<sup>nd</sup> St. \$2.2 M
  - CIPP 2,100 ft of 60 inch dia. combined sewer (104 years old)
- Area bounded by W. Congress St., W. Capitol Dr., N. 35<sup>th</sup> St. and N. 50<sup>th</sup> St. \$1.5 M
  - CIPP - 32,000 ft of 8, 10, and, 12 inch diam. sanitary sewer

\* Cured-in-place lining (CIPP)

# 4 - Year Flood Mitigation Priority Areas Project

- 18 areas of priority were identified
- Since 2010...
  - \$18.5M spent for 68 miles of sewer lining or replacement
  - Private sanitary lateral linings have been completed in multiple areas
- Dineen Park Neighborhood
  - Located south of W. Capitol Dr. between N. 60<sup>th</sup> St. and W. Appleton Ave.
  - Repeated occurrences of surface flooding in the past 10 years.
  - Working with Milwaukee County.
  - Storm water detention pond proposed in Dineen Park to provide a 25 or 50-year "level of service".



# Status of Private Property I&I Reduction Projects

- Work completed on 2nd Lateral Lining Project:  
Clemens School Neighborhood - W. Capitol Dr. to W. Congress St.  
and N. 36<sup>th</sup> St. to N. 42<sup>nd</sup> St.
  - Approximately \$2.2M spent for lining of 359 properties' laterals
    - Funded through MMSD Private Property I/I Program
    - An average cost of \$ 6100 per property
  - Work on this project began in March of 2013
  - Work was completed on October 30, 2013





# Status of Private Property I&I Reduction Projects (Cont.)

- Foundation Drains Disconnection Pilot Project
  - Location: N. 86<sup>th</sup> St. – W. Center St. to W. Chambers St.
  - 61 properties are in the pilot area
  - As of this date, 30 consents have been obtained
  - Project to be bid in August 2014



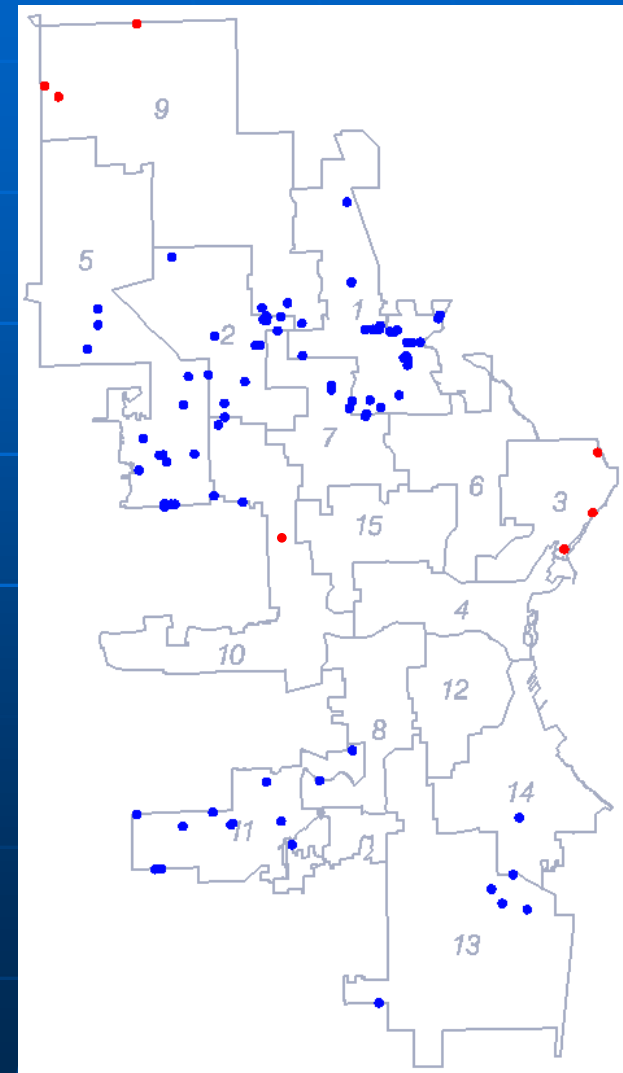
The Palmer Valve in the basement will be removed.



Foundation drains will be connected to the sump crock.

# Status of Sanitary Pump Rehabilitation Project

- Sanitary Bypass Pump and Lift Station Locations
  - The City owns and maintains two types of pumping facilities, sanitary bypass pumps and sanitary lift stations.
    - Bypass Pumping Stations (83)
    - Lift Stations (7)
  - Bypass pumps are located in areas where there has been a history of backwaters.
  - Lift stations are located where gravity sewer service is not available, usually in low-lying areas.



# Status of Sanitary Pump Rehabilitation Project

## ■ Inspections

- City has contracted with a private firm to perform a check of all bypass pumps and lift stations on a monthly basis.
- Contractor makes 35 assessments for each site.
- Provides City with a written report.
- Field managers can use this information for establishing priorities for troubleshooting work.
- Engineers use this information for future pump rehab projects.

# Status of Sanitary Pump Rehabilitation Project

## ■ Bypass Pump Wet Testing

- City has contracted with a private firm to perform “wet testing” of bypass pumping sites.
  - This testing simulates a high water event by isolating and filling pump manholes with clean water.
  - A comprehensive test, evaluates all components working together.
  - Identifies deficiencies that may not be apparent during a monthly inspection.
  - Results from this testing provide us with excellent feedback on the readiness of our bypass pumps.
  - Testing is a high level of Asset Management.
  - All sites are wet tested bi-annually, critical sites tested annually.



# Status of Sanitary Pump Rehabilitation Project

## ■ Bypass Pump Rehabilitation

- The City lets contracts annually to perform significant repair or replacement of bypass pump sites and lift station components.
  - Major Rehab typically includes replacement of pump and manhole.
  - Minor Rehab typically includes electrical components, such as level sensors, communications, logic controllers, etc.

<u>Year</u>	<u>Major Rehab</u>	<u>Minor Rehab</u>
2007	3	0
2008	4	0
2009	3	12
2010	8	0
2011	5	25
2012	4	15
2013	3	12
2014	6	7
2015 (proj.)	4	10

- Trend towards more minor rehab indicative of results of pump wet testing and inspection.

# TMDL Development

- Total Maximum Daily Load (TMDL) is the amount of a pollutant a waterbody can receive and still meet water quality standards.
- Work underway on TMDLs to address the TSS, bacteria and phosphorus-related impairments in the Menomonee, Milwaukee, and Kinnickinnic River watersheds and the estuary area.
- Draft TMDL allocation was completed and information was delivered to Wisconsin Department of Natural Resources (DNR) on December 31, 2013 for its internal review.

# TMDL Development

- Projected TMDL development schedule summary:
  - Water quality modeling completed December 2013
  - Draft allocated loads for stakeholder Summer 2014
  - Final TMDL to WDNR / USEPA November/  
December 2014
  - Implementation plan development December 2014

# 2014 Bioswale Projects

- N. 27<sup>th</sup> St. – W. Capitol Dr. to W. Roosevelt Blvd.
- N. 107<sup>th</sup> St. – W. Good Hope Rd. to W. Brown Deer Rd.
- S. 27<sup>th</sup> St. – W. Oklahoma Ave. to W. Howard Ave.
- N. Sherman Blvd. – W. Auer St. to W. Congress St.
- W. Hampton Ave. – N. Green Bay Rd. to N. Teutonia Ave.
- Highland Community School – 1706 W. Highland Ave.





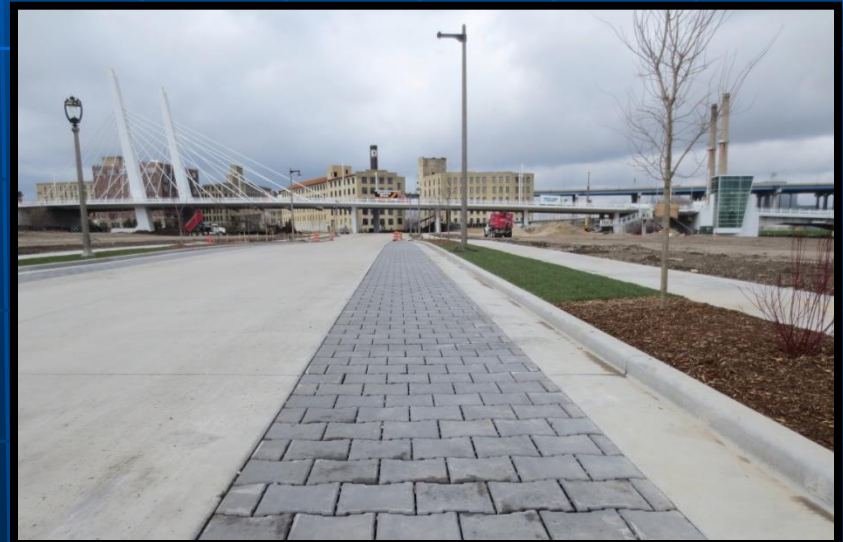
# Permeable Paver Projects

- 2013 – Freshwater Way
  - S. 2<sup>nd</sup> St. to S. 6<sup>th</sup> St.
- 2014 – East Greenfield Avenue
  - C&NW Railroad Right of Way to the Kinnickinnic River
- 2014 – Porous Sidewalk Projects
  - North 72<sup>nd</sup> Street from West Locust Street to West Burleigh Street
  - North Edison Street from East Highland Avenue to East Juneau Avenue

PaveDrain System



Freshwater Way PaveDrain Parking Lanes



# Great Lakes Restoration Initiative Shoreline Cities Green Infrastructure Grant (EPA Funded)

- Through the efforts of Mayor Tom Barrett and the office of the Commissioner of Public Works, the U.S. Environmental Protection Agency has awarded the City a \$1 million Great Lakes Restoration Initiative grant to fund green infrastructure projects to improve water quality in Lake Michigan.
- The City will use the funding to construct permeable pavers in various alleys, porous sidewalks and a permeable parking at Central Garage at 2142 West Canal Street.
- These green infrastructure projects will aid the city in meeting its TMDL requirements.

QUESTIONS ?