

VILLAGE OF SHOREWOOD

Sewer System Information Meeting, April 6, 2011

TONIGHT'S AGENDA

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- Implementation Status
- Consultant Roster
- Facility Plan Goals
- Recommended Facility Plan Projects
- Financial Summary
- Next Steps

IMPLEMENTATION STATUS

4

- Facility Plan framework was presented to the public in February
- Four consulting engineering firms were assigned specific areas of the Village
- Each was charged with
 - ▣ development of solutions in ADDITION to those presented in earlier meetings
 - ▣ Refinements to solutions and cost estimates
 - ▣ Recommendations

CONSULTANT ROSTER

5

- The Village undertook a competitive selection process to select the region's pre-eminent engineers to work on this project:
 - ▣ Strand Associates – Basin 1
 - ▣ Baxter & Woodman – Basin 6
 - ▣ Ruckert-Mielke – Combined Area South
 - ▣ Clark Dietz – Combined Area North
- Three meetings, countless emails, and many great ideas generated

FACILITY PLAN GOALS

6

- **GOAL 1 - Provide basement back-up protection for 2 inches of rain in 1 hour throughout the Village by 2015**
- **GOAL 2 - Reduce Inflow and Infiltration (I&I) in separated area by 40% by 2035 and 80% long-term, for back-up protection for 4 inches of rain in 1 hour**
- **GOAL 3 - Separation of the sanitary and storm sewer in the combined area will be completed by 2035, resulting back-up protection against a minimum of 4 inches per 1 hour in this area**
- **GOAL 4 - Reduce street flooding throughout the Village to provide a minimum of 2 feet freeboard during 3 inch per hour rainfall by 2020.**

RECOMMENDED PROJECTS

Basin 1 Sanitary Sewer Improvements

7

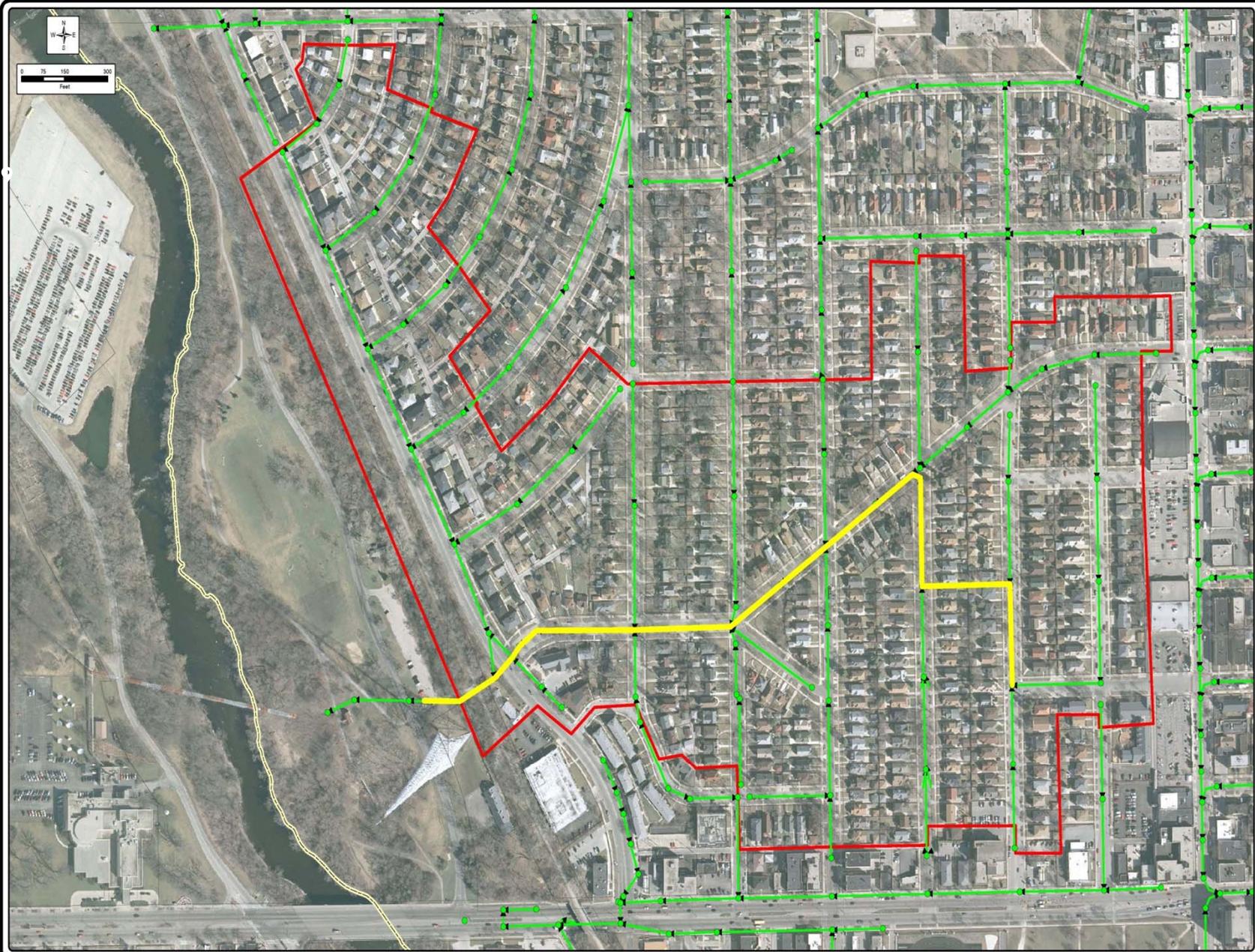
- Additional Sanitary Sewer capacity reduces basement backup risk and fulfills GOAL 1
- Three additional routes analyzed
- Success criteria same in all alternatives, what varies is routes and complexity
- Cost – Benefit considerations point to the upsizing of existing pipes instead of re-configuring the system
- Improvements extend to Wilson Drive instead of ending at Ardmore Ave.
- Potential by-pass locations identified

RECOMMENDED PROJECTS

Basin 1 Sanitary Sewer Improvements

8

- Improvements will be designed to allow for future re-configuration of the system
- An inflow and infiltration (I/I) study is currently being completed to identify areas with the highest I/I in the basin
- Private laterals will be tested and repaired during construction



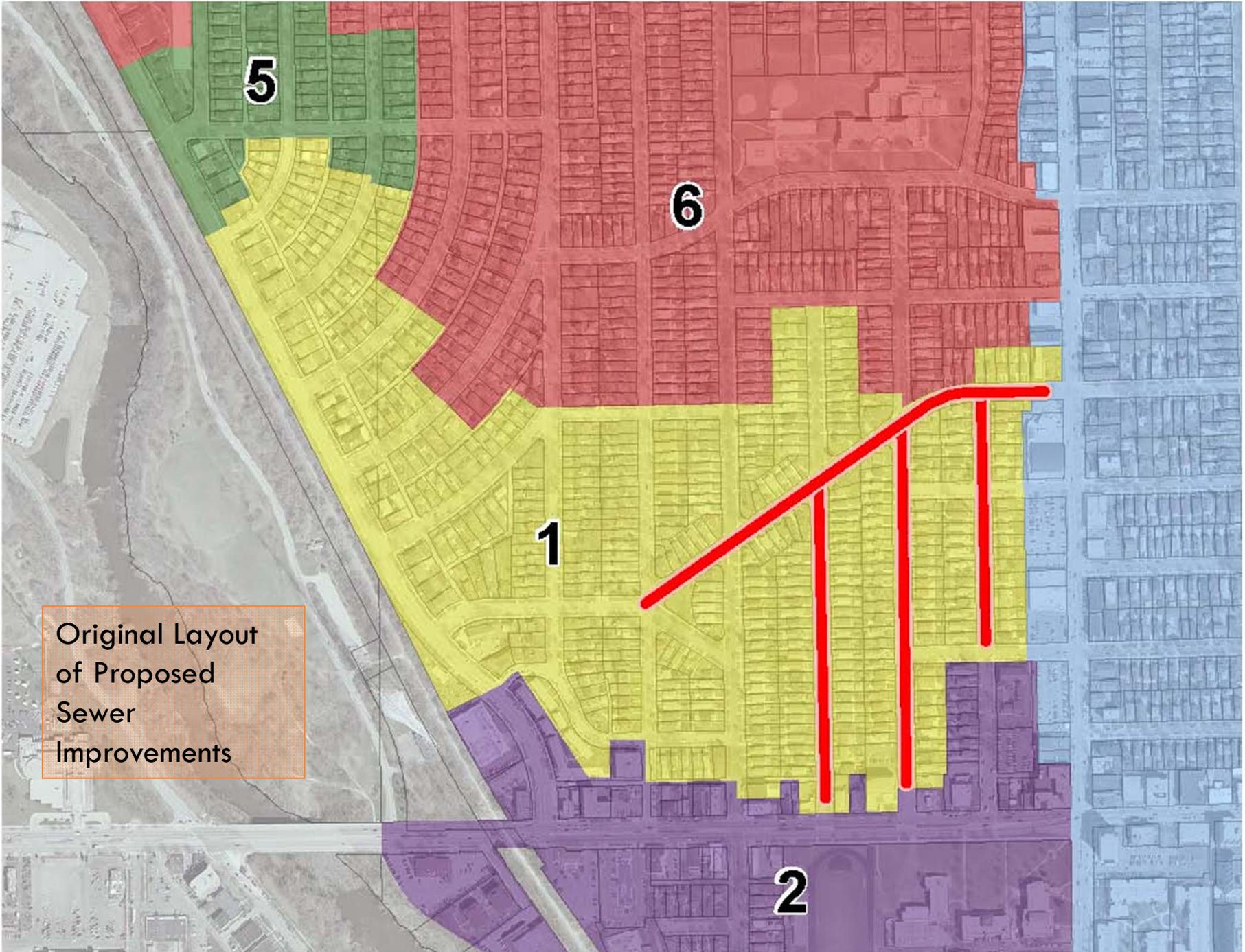
BASIN 1 - PROPOSED SANITARY IMPROVEMENTS

VILLAGE OF SHOREWOOD
MILWAUKEE COUNTY, WISCONSIN



FIGURE 1
3646.002

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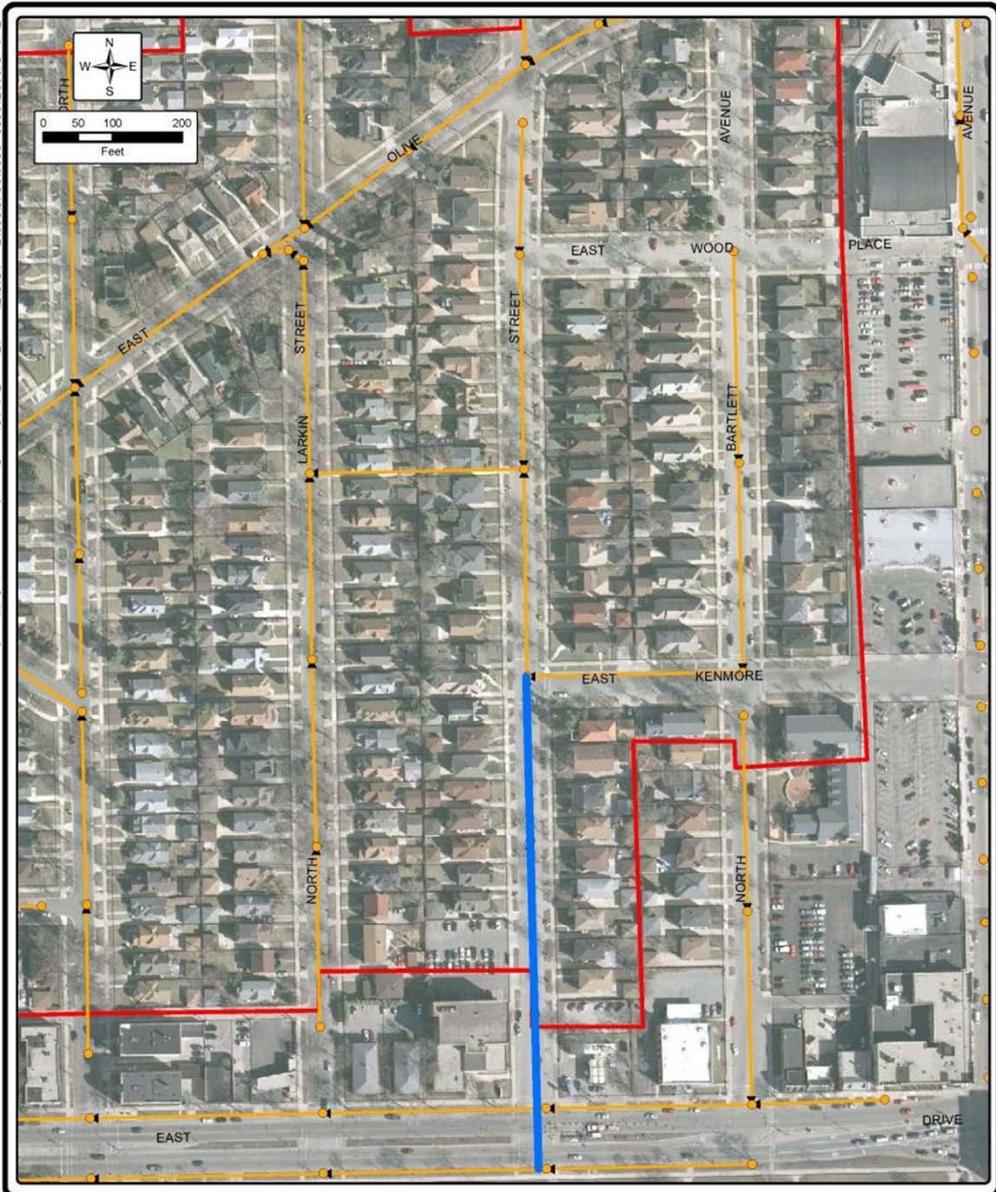
RECOMMENDED PROJECTS

Basin 1 Storm Drainage Improvements

11

- Increased drainage capacity fulfills GOAL 4
- New storm sewer construction that drains Newhall Street to Capitol Drive
- Similar to the drainage solutions presented earlier in the process
- Existing Storm Laterals will be tested and repaired during construction

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BASIN 1 - PROPOSED STORM SEWER IMPROVEMENTS

VILLAGE OF SHOREWOOD
MILWAUKEE COUNTY, WISCONSIN

STRAND
ASSOCIATES, INC.
ENGINEERS

FIGURE 2
3646.002



RECOMMENDED PROJECTS

Basin 6 Sanitary Sewer Improvements

13

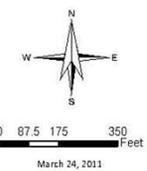
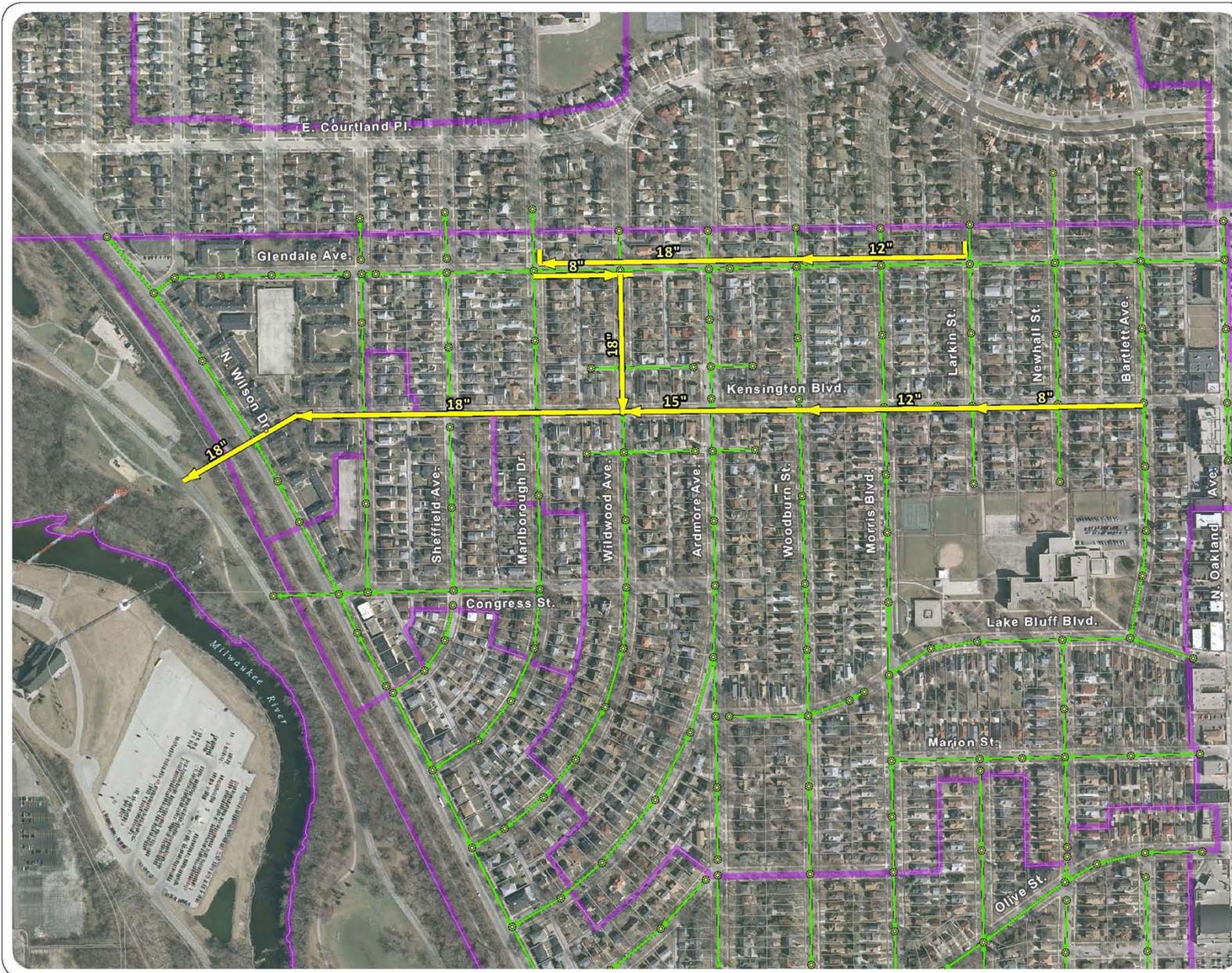
- Additional Sanitary Sewer capacity reduces basement backup risk and fulfills GOAL 1
- Four additional routes analyzed, including lift station
- Success criteria same in all alternatives, what varies is routes and complexity
- Cost – Benefit considerations point to creating a NEW connection to the MIS
- New by-pass locations identified

RECOMMENDED PROJECTS

Basin 6 Sanitary Sewer Improvements

14

- Improvements will be designed to allow for future re-configuration of the system
- An inflow and infiltration (I/I) study is currently being IMPLEMENTED
- Private laterals will be tested and repaired during construction



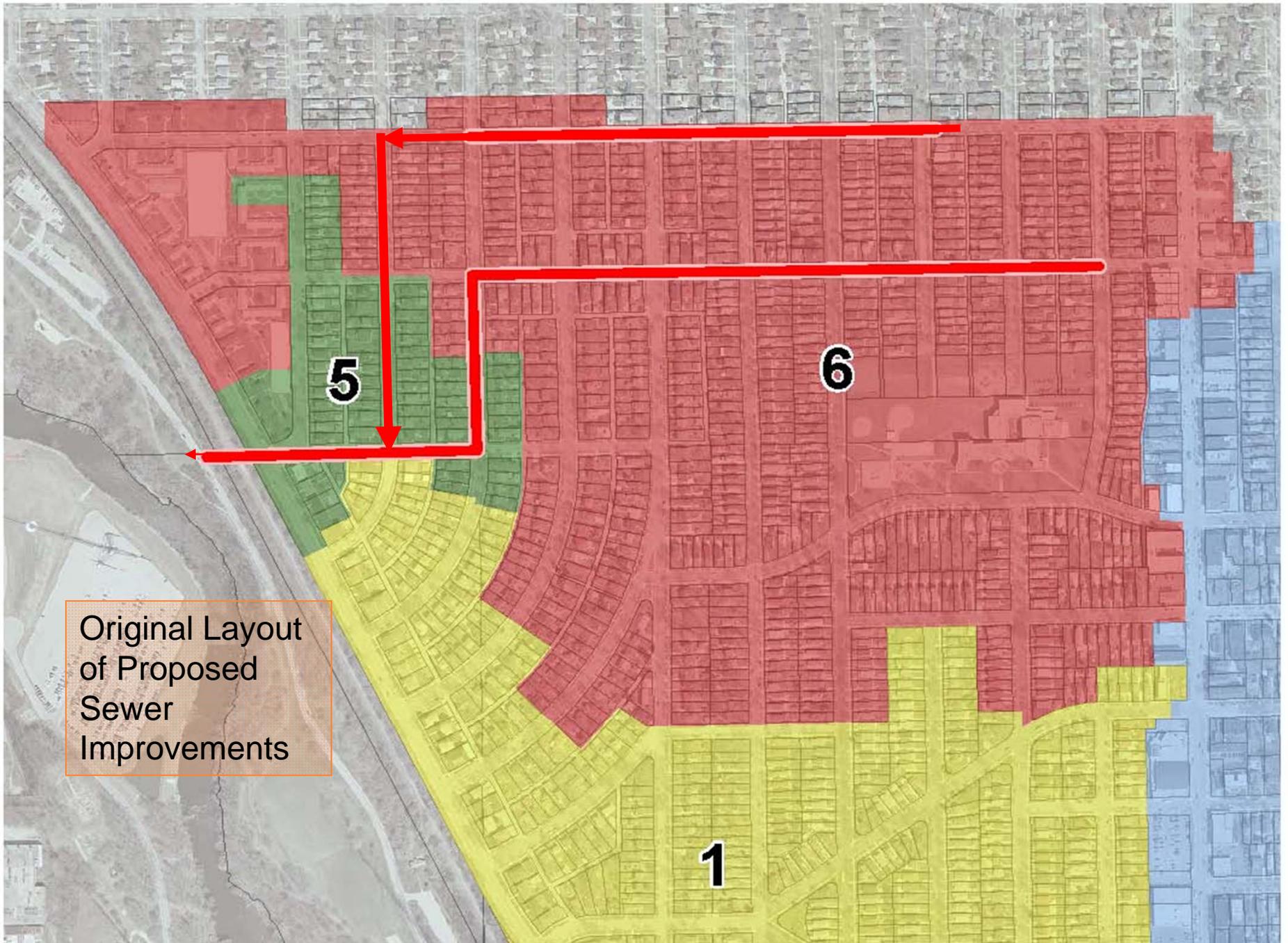
- Legend**
- Proposed Improvements Sanitary Pipes
 - Existing Sanitary Sewer Sanitary Pipes
 - Sanitary Manholes
 - Sewer Shed Basins

VILLAGE OF SHOREWOOD, WISCONSIN

BASIN 6
PRELIMINARY DESIGN MEMO

FIGURE 3
KENSINGTON
ALTERNATE ROUTE





Original Layout
of Proposed
Sewer
Improvements

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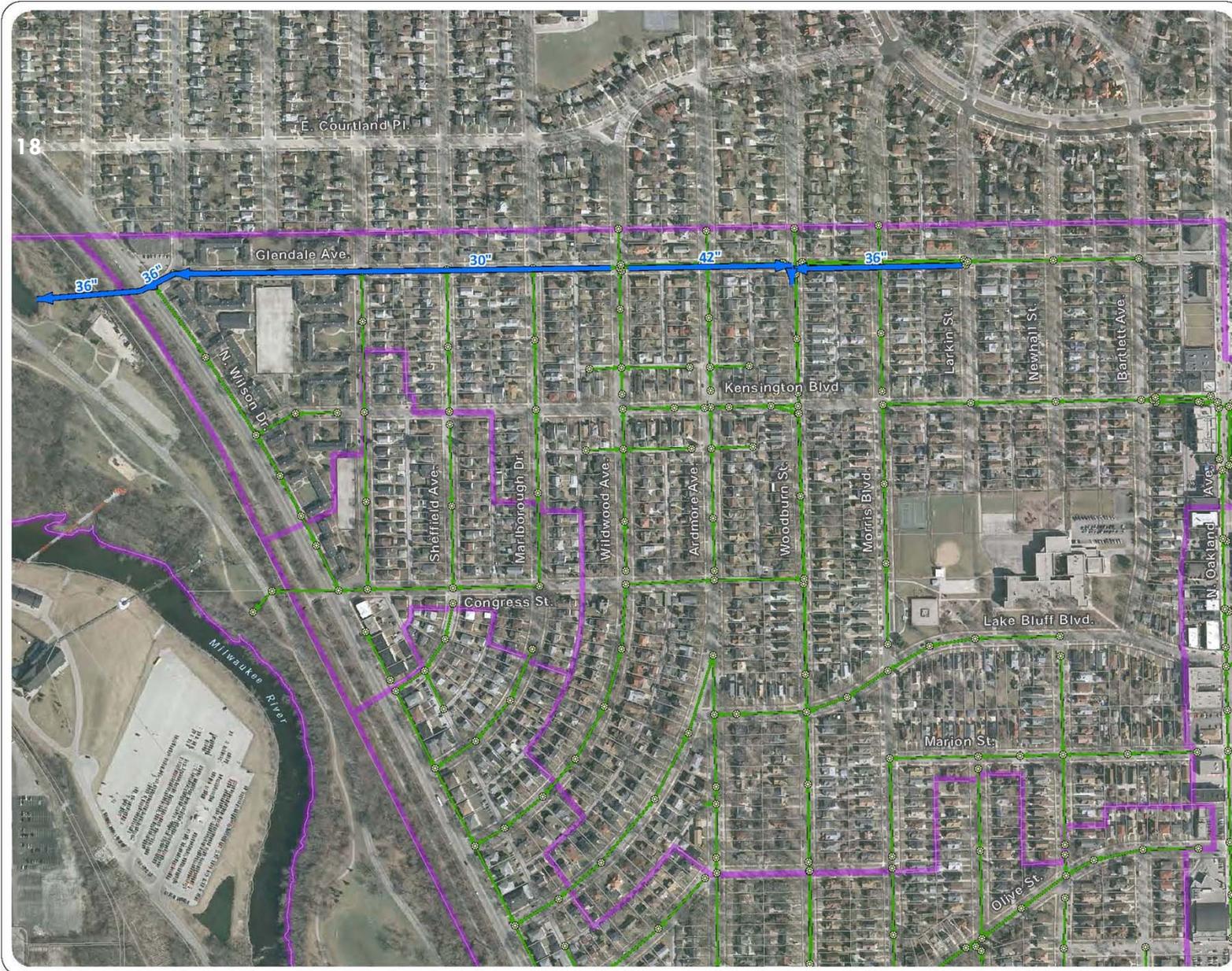
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RECOMMENDED PROJECTS

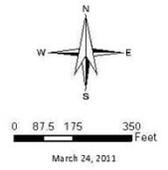
Basin 6 Storm Drainage Improvements

17

- Increased drainage capacity fulfills GOAL 4
- New storm sewer construction that drains Glendale Avenue to Milwaukee River
- Similar to the drainage solutions presented earlier in the process
- Existing Storm Laterals will be tested and repaired during construction



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- Legend**
- Proposed Improvements
 - Storm Pipes
 - Existing Storm Sewer
 - Storm Pipes
 - Storm Structures
 -
 - Sewer Shed Basins
 -

**VILLAGE OF
SHOREWOOD,
WISCONSIN**

**BASIN 6
PRELIMINARY DESIGN
MEMO**

**FIGURE 2
FACILITY PLAN
ALTERNATIVE**



RECOMMENDED PROJECTS

Combined Area South

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- Fulfills GOAL 3 by reducing basement backup risk by diverting rain runoff away from combined sewers
- Separation achieved by NEW Storm Sewer Construction
- New storm sewer outfall to Milwaukee River at Menlo Boulevard extended
- Will grow to provide storm drainage service to the south portion of the Combined Sewer Area

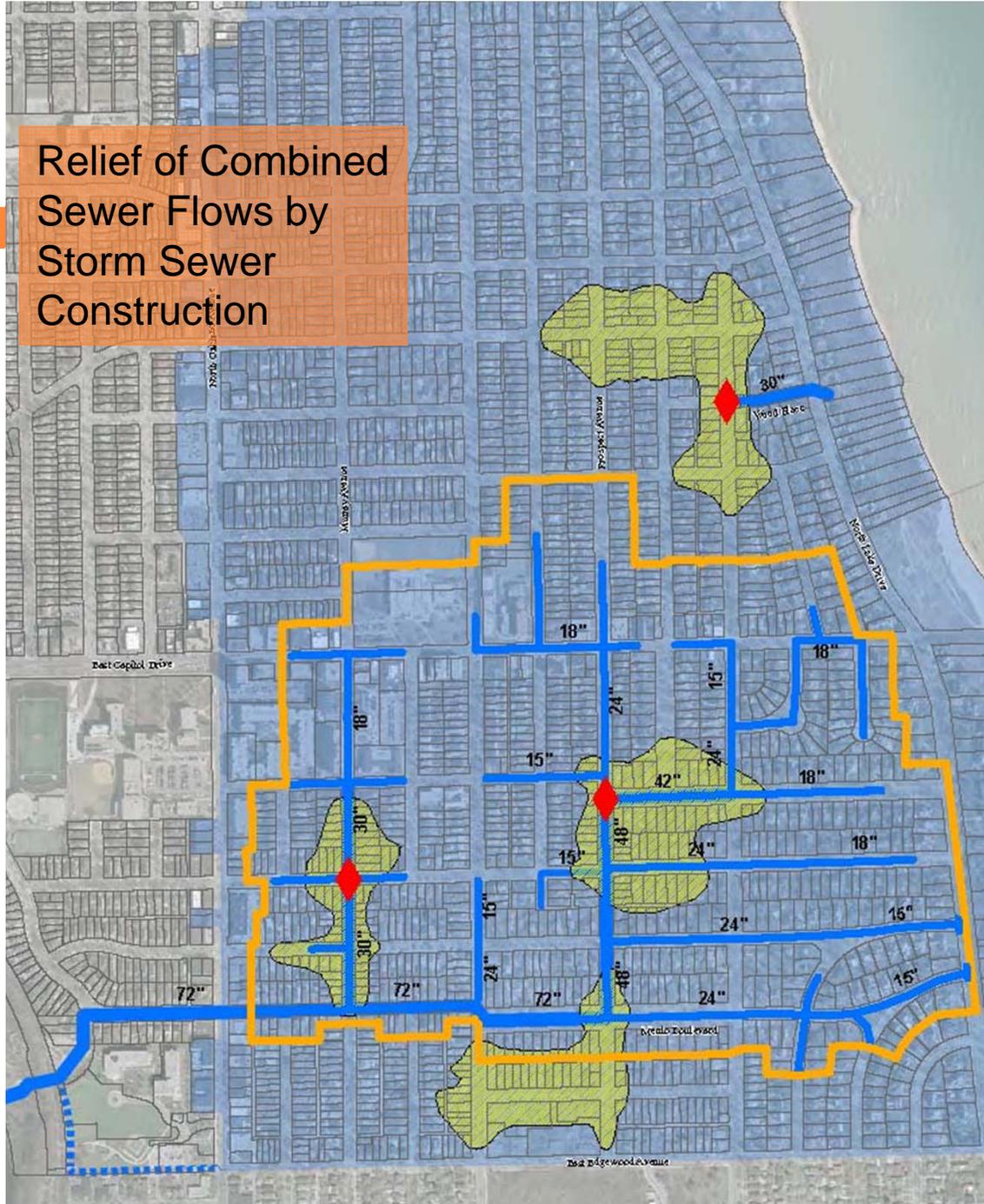
RECOMMENDED PROJECTS

Combined Area South, Highlights

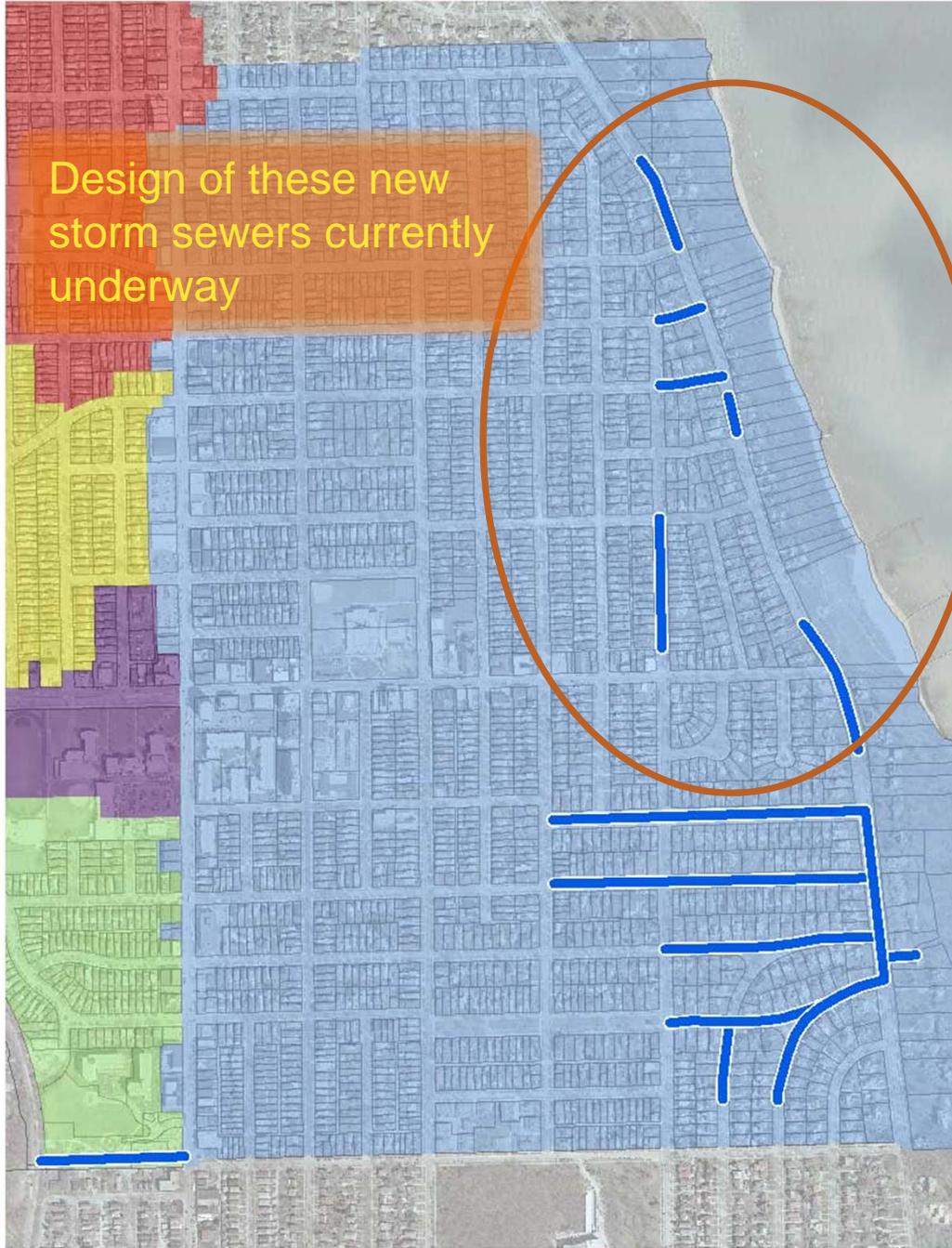
20

- New storm outlet to the Milwaukee River for Menlo Boulevard, Murray Avenue and Prospect Avenue
- New combined sewer overflows at: Murray Avenue and Beverly Avenue Prospect Avenue and E. Shorewood Boulevard E. Wood Place and Downer Avenue
- New drainage-way from Oakland Avenue and Edgewood Avenue to the Milwaukee River storm outlet
- New storm sewers in “virtual” separation area north of Menlo Boulevard and south of Jarvis Street
- Uncouple Milwaukee combined sewers from Shorewood combined sewers at Edgewood Avenue and Maryland Avenue

Relief of Combined Sewer Flows by Storm Sewer Construction



Design of these new storm sewers currently underway



RECOMMENDED PROJECTS

Combined Area North

23

- Fulfills GOAL 3 by providing capacity increase in combined sewers
- Service level increase in the area north of Olive
- Retains the by-pass feature for added protection from basement backups
- Existing Storm Laterals will be tested and repaired during construction
- New Laterals or drainage collection systems will be evaluated for streets without storm pipes



Alternate 2 Combined Sewer Upgrades

SUMMARY RECOMMENDED PROJECTS

By Service Area

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- Basin 1: \$2.09 million
 - ▣ Sanitary Sewer Improvements \$1.85 million
 - ▣ Storm Sewer Improvements \$0.24 million

- Basin 6: \$6.58 million
 - ▣ Sanitary Sewer Improvements \$4.20 million
 - ▣ Storm Sewer Improvements \$2.38 million

- Separated Area Subtotal \$8.67 million

SUMMARY RECOMMENDED PROJECTS

By Service Area

26

- Combined Area South: \$17.18 million
 - Milwaukee River Outfall \$7.98 million
 - New Storm Sewers \$6.65 million
 - Storm Laterals/Sump Drains \$2.55 million

- Combined Area North: \$2.94 million
 - Combined Sewer Reconstruction \$2.94 million

- Combined Area Subtotal \$20.12 million

SUMMARY RECOMMENDED PROJECTS

By Construction Type



Construction Type	Cost
Sanitary Sewer	\$6.05 million
Combined Sewer	\$2.94 million
Storm Sewer	\$19.80 million
	\$28.79 million

PUBLIC PROJECTS FINANCIAL SUMMARY

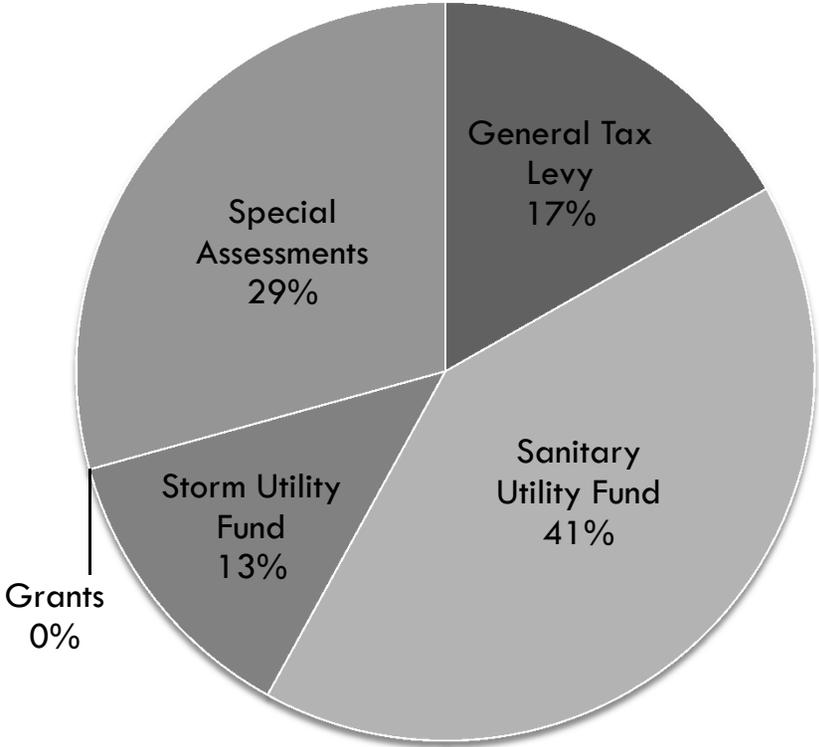
Project Type	Facility Plan	Revised Facility Plan
Basin 1	\$2.30 million	\$2.09 million
Basin 6	\$4.32 million	\$6.58 million
Combined – North	\$11.58 million	\$2.94 million
Combined – South	\$14.40 million	\$17.20 million
	\$32.60 million	\$ 28.81 million

PRIVATE PROJECTS FINANCIAL SUMMARY

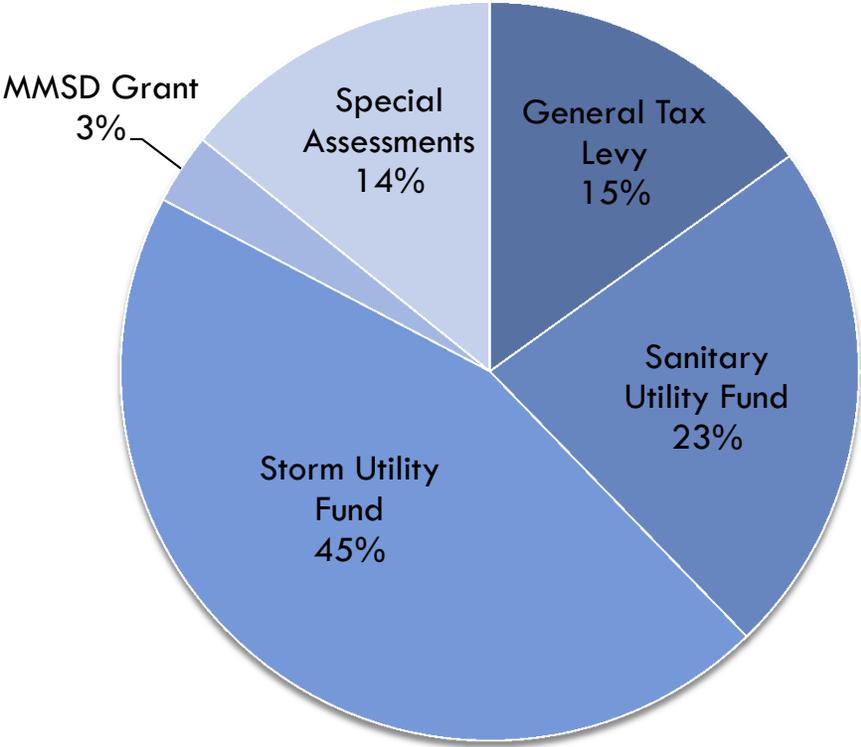
Project Type	Facility Plan	Revised Facility Plan
Separated Area – Lateral Rehab Program	\$8.10 million 1,350 homes @ \$6,000 ea. 2011-2026	\$3.00 million 500 homes @ \$6,000 ea. 2012-2021
Separated Area – Foundation Drain Disconnect Program	\$2.50 million 2011-2035	\$0.40 million 2012-2021
Combined Area – Lateral Construction	\$11.50 million All homes – sanitary laterals Long-term	\$11.50 million All homes – storm laterals Long-term
Annual Lining Program	-	\$1.75 million
	\$ 22.10 million	\$ 16.65 million

FUNDING SOURCES

Facility Plan



Revised Facility Plan



NEXT STEPS

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- Finalize the Comprehensive Facility Plan and combine consultant's work into single report
- Refine Financial Data
- Work with MMSD and DNR to present Comprehensive Facility Plan
- Conduct meeting with the Public and Village Board to approve Comprehensive Facility Plan for submittal to the DNR
- Direct Staff to begin implementation