

## Agenda

- The Challenge
- The Response – Cost Saving Options
- Council and Advisory Committee Questions/Comments
  
- Next Steps
- Questions/Comments

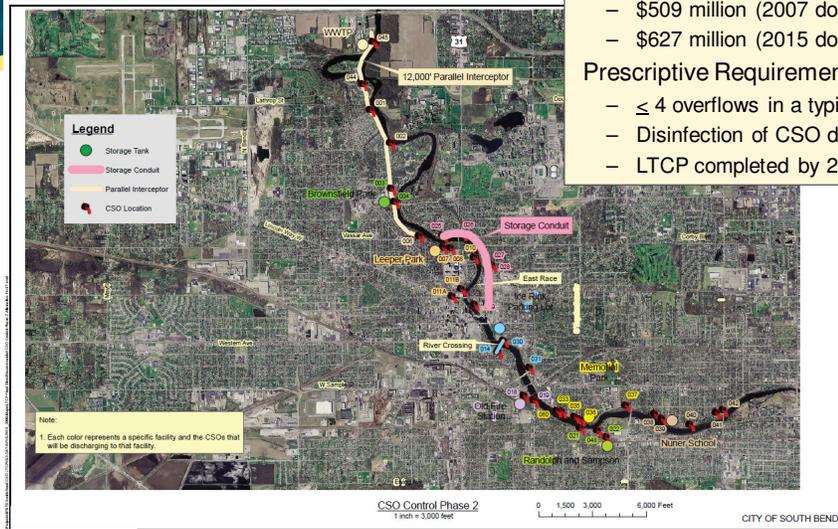
## The Challenge

## The Challenge

- Protect water quality in the St. Joseph River
- Reduce the cost of compliance for the current consent decree
- Build community support for a program with broad benefits to the community



## 2012 Consent Decree



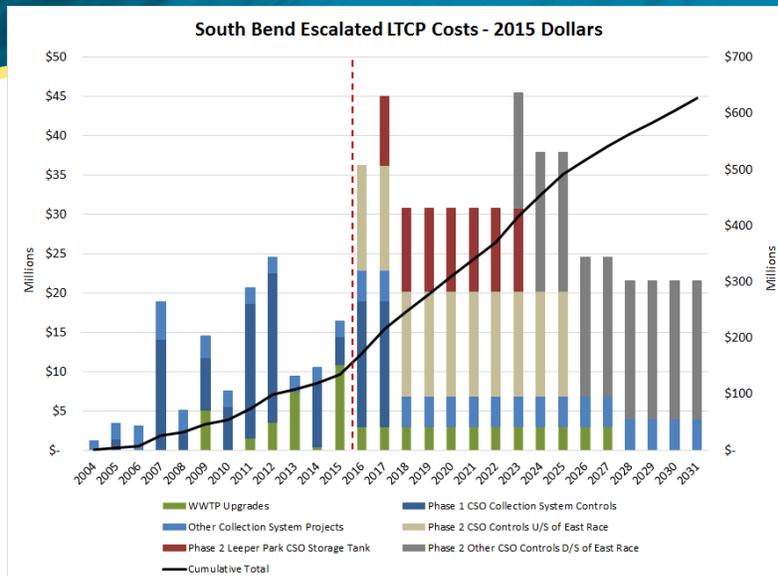
### Original Consent Decree

- \$509 million (2007 dollars)
- \$627 million (2015 dollars)

### Prescriptive Requirements

- ≤ 4 overflows in a typical year
- Disinfection of CSO discharges
- LTCP completed by 2031

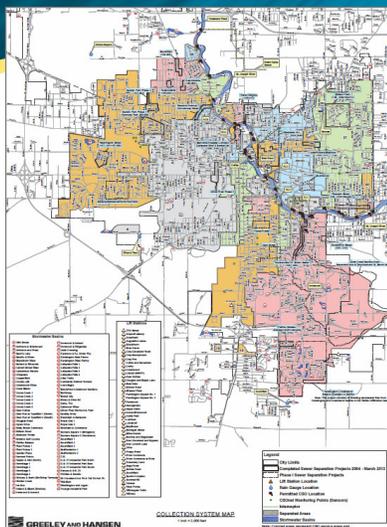
## The time for action is now



## Remaining Long Term Control Plan Costs

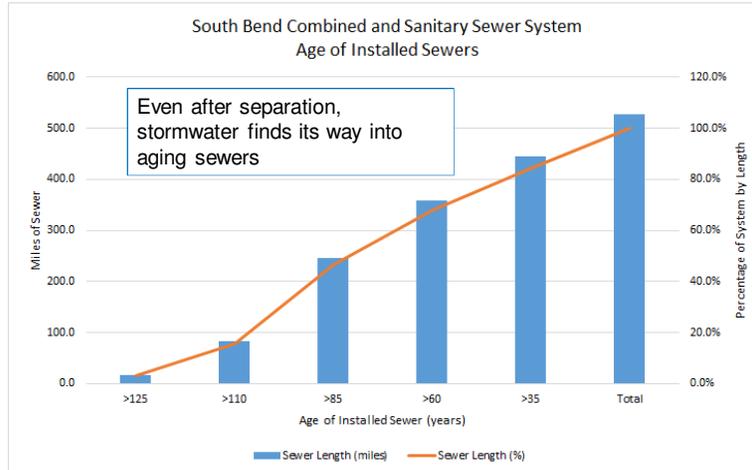
Baseline LTCP Projects	Escalated Baseline Cost (2015 Dollars)	Revised Cost (2015 Dollars)
2012 LTCP Total Escalated to 2015	\$627,000,000	
LTCP Projects Completed/In Progress	\$148,000,000	
Remaining LTCP Projects		
- WWTP Upgrades	\$30,000,000	\$58,000,000
- CSO Collection System Controls/Projects	\$87,000,000	\$104,000,000
- Phase 2 CSO Controls	\$361,000,000	\$551,000,000
- Estimated Remaining Costs	\$479,000,000	\$713,000,000

## South Bend Wastewater Collection System

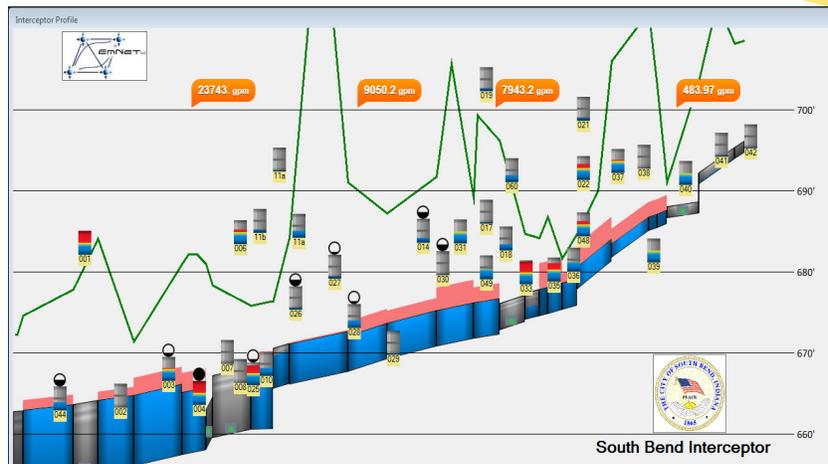


- Large number of CSOs: 36
- Long reach of river (miles): ± 9.5
- Large contributing area (acres): 10,700
- Aging sewer system: > 80 miles of sewer more than 100 years old
- Single, restrictive interceptor

## Aging South Bend Sewer Infrastructure



## Restrictive South Bend Interceptor Sewer



## CSO Discharge Volumes St. Joseph River Communities

	South Bend	Mishawaka	Elkhart
2012 Total CSO Volume (Million Gallons)	446.1	4.7	89.5
2013 Total CSO Volume (Million Gallons)	713.7	22.2	177.6
<b>Total 2012-2013 CSO Volume (Million Gallons)</b>	<b>1159.8</b>	<b>26.9</b>	<b>267.0</b>
	<b>79.8%</b>	<b>1.9%</b>	<b>18.4%</b>

## Current LTCP Issues

### Expensive

- High capital and operating costs

### Inflexible

- Large number of tanks constrains operational flexibility

### Disruptive

- Permanent facilities planned for multiple park areas
- Extensive network of consolidation sewers required

### Creates Risk

- Multiple disinfection facilities required throughout community

## The Response – Cost Saving Options

### The Approach

Better Data

Better Tools

Better Solutions

## Refined Long Term Control Plan

1. **GRO** - Comprehensive program to reduce volume and rate at which stormwater enters the wastewater collection system
2. **R&M** - Prioritized program of sewer system inspection and rehabilitation/ replacement to keep stormwater out of the collection system
3. **Smarter Sewers** - Expanded use of technology to maximize performance of the existing collection system and refine design criteria for major infrastructure
4. **Infrastructure** - Strategic, phased implementation of wet weather storage capacity and overflow disinfection systems

## Green Cost Saving Options: Green Stormwater Infrastructure (GSI)

- Citywide GSI Program (Private)
  - Public Education Program
  - Promote GSI on private property
  - Limited direct cost savings, but positive community engagement at low cost
  - Example: downspout disconnection, rain barrel, sump pump disconnect programs



## Green Cost Saving Options: Green Stormwater Infrastructure (GSI)



Images from: City of Philadelphia Green Streets Design Manual - 2014, Landscapeonline.com, City of Dubuque

- Targeted GSI Program (Public)
  - Capital Projects
  - Basin Specific
  - Tied to specific cost savings objective
  - Example: Nuner School area

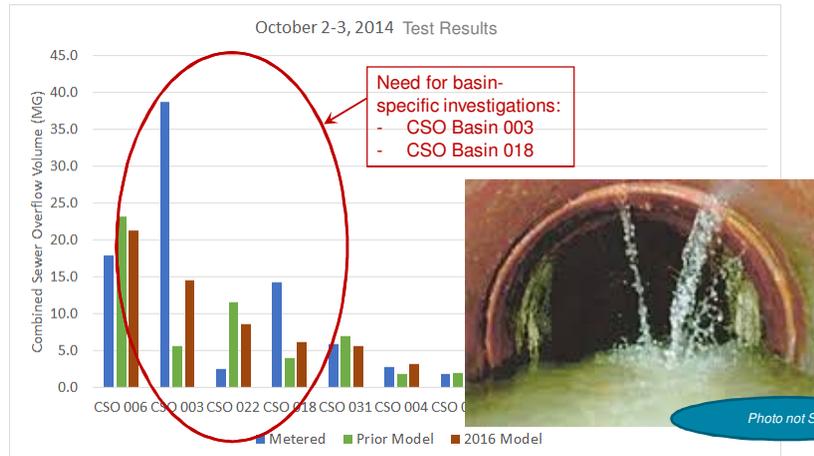


## Green Stormwater Infrastructure as Alternative to Nuner Tank or New Interceptor

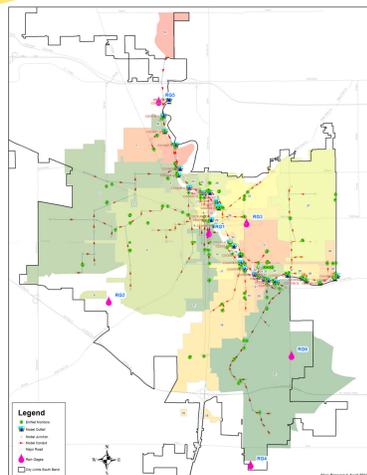


**Nuner Tank Area**  
 Total Area: 236 Acres  
 Combined Area: 132 Acres  
 GSI req'd to offset 0.3 MG storage: ± 5 acres

## Cost Savings Options: Trunk Sewer Inspection and Rehabilitation/Replacement



## Cost Savings Options: Smarter Sewers



- Ongoing Monitoring
  - Rain gauges
  - Flow monitors
  - Level monitors
  - River water quality monitoring
- New Opportunities
  - Expanded real-time control
  - Real-time bacteria levels
  - Bacteria differentiation
  - Focus on quantity and quality



## Targeted Green/ Tunnel Alternative

- Rock Tunnel from Nuner School area to WWTP
  - Segment A: Nuner to Howard Park
  - Segment B: Howard Park to WWTP
- Multiple Dropshafts vs. Consolidation Sewer
- Overflow/Disinfection Points
  - Segment A: Howard Park
  - Segment B: WWTP + Howard Park

## Targeted Green/ Reduced Tunnel Alternative

- Rock Tunnel from Memorial Park to Brownfield Park
  - Segment A: Memorial Park to Howard Park
  - Segment B: Brownfield Park to Howard Park
- U/S and D/S Consolidation Sewer
- Overflow/Disinfection Points
  - Segment A: Howard Park
  - Segment B: Brownfield Park + Howard Park

### Refined Long Term Control Plan - Savings

Feature	Baseline LTCP	Targeted Green/ Tank Alternative	Targeted Green/ Tunnel Alternative	Targeted Green/ Reduced Tunnel Alternative
WWTP Capacity (MGD)	100	77	77	77
Storage Volume (MG)	25.3	26.0	38.0	35.6
Consolidation Sewer (ft)	41,600	30,000	22,500	31,800
River Crossing Improvements	1	3	0	0
Overflow/ Disinfection Points	9	4	2	2
Pump Stations	9	4	2	2
Parks Impacted	7	2	1	2
Estimated Remaining Capital Cost (millions of 2015 Dollars)	\$713	\$450 - \$500	\$600 - \$650	\$400 - \$450
Potential Cost Savings (millions of 2015 Dollars)	\$ -	\$215 - \$265	\$65 - \$115	\$265 - \$315

### Refined Long Term Control Plan - Benefits

- Reduced Cost

  - Lower capital and operating costs
- More Flexible Operation

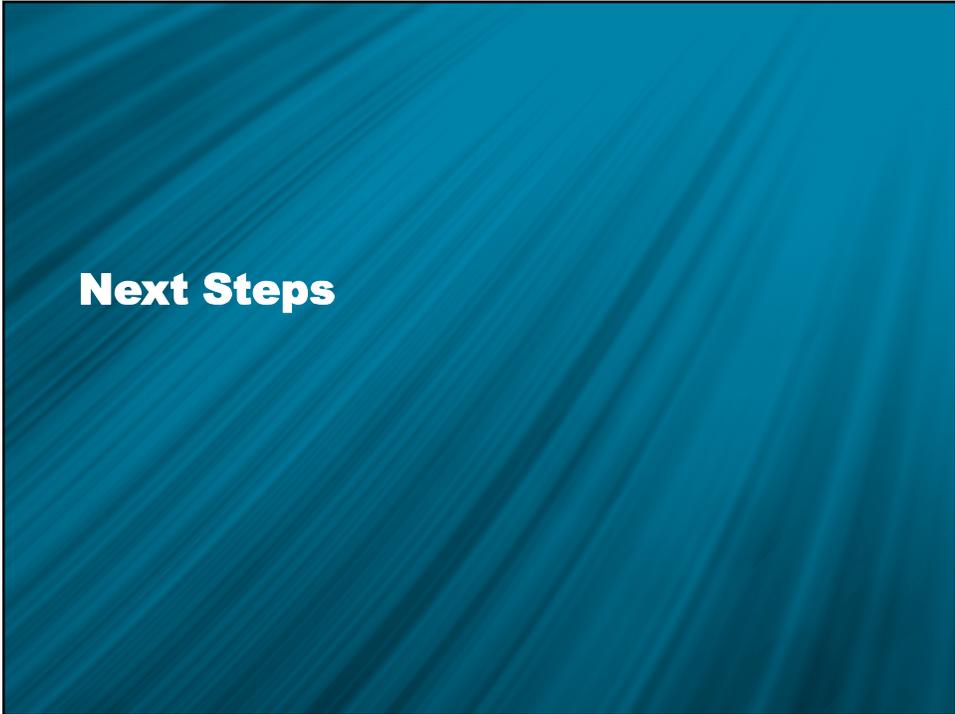
  - Tunnel and/or WWTP storage provide operational flexibility
- Less Disruptive

  - Permanent facilities required for fewer park areas
  - Reduced network of consolidation sewers required
- Less Operational Risk

  - Fewer (1-3) disinfection facilities required within the community

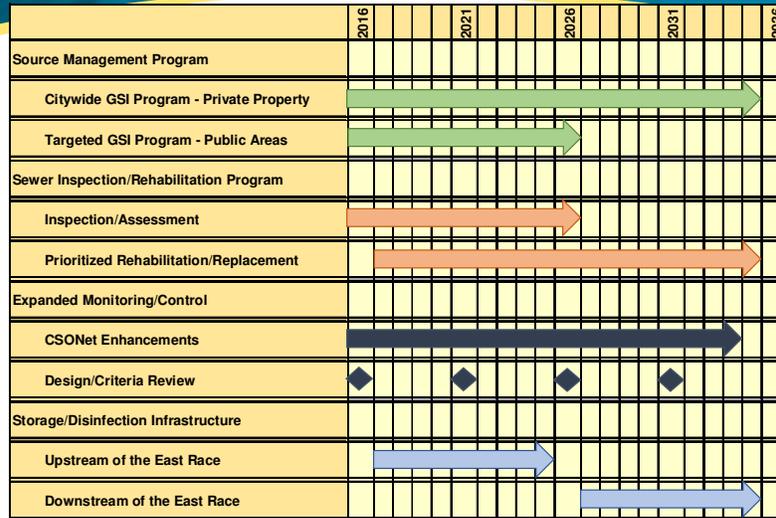


**Council and Advisory Committee  
Questions and Comments**



**Next Steps**

## Targeted Green Long Term Control Plan - Schedule



## Next Steps

- Feasibility level analysis of Targeted Green Alternatives
- Targeted program of sewer inspection/rehabilitation
  - Priority Basins: CSO Basins 018, 003, 037
- Public Education Program – GSI Implementation on Private Property
- Targeted program for GSI Implementation on Public Property
  - Priority Basins: CSO Basins 38, 39, 40, 41, 42
- Phase 1 – Post Implementation Monitoring and Analysis
- Basin-specific Analysis/Preliminary Design of Improvements Upstream of East Race

