

Citizens Advisory Committee Meeting #6

South Bend's
Combined Sewer Overflow
Long-Term Control Plan



June 30th 2016



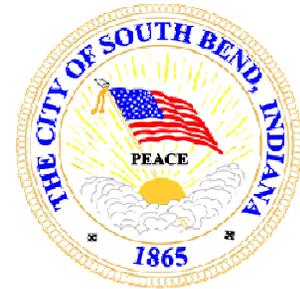
Agenda:

TIME/SUBJECT	DISCUSSION LEADER
5:30 PM – 5:35 PM Welcome, Agenda Review	Kieran Fahey, City
5:35 PM – 5:45 PM Mayor’s Update	Mayor Buttigieg
5:45 PM – 5:55 PM Overview of OptiSWMM Analysis	Tim Ruggaber, EmNet
5:55 PM – 6:10 PM Response to Technical Questions	Joe Johnson, MWH Tim Ruggaber, EmNet Kieran Fahey, City
6:10 PM – 6:30 PM Long Term Control Plan Financial Considerations	Carol Malesky, MWH Eric Walsh, Umbaugh
6:30 PM – 6:45 PM St. Joseph River Aquatic Community Survey	Daragh Deegan, City of Elkhart
6:45 PM – 6:50 PM Bowman Creek Ecosystem Overview	Alicia Czarnecki, Notre Dame Intern
6:50 PM – 7:00 PM Questions/Open Discussion	All
7:00 PM Adjourn	

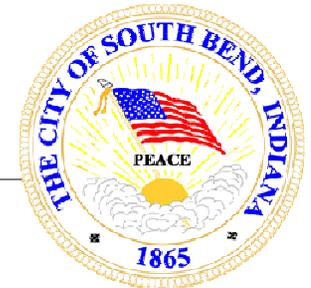
New Team, New Vision, New multi-fronted Approach

Driven by: An initiative to improve water quality and alleviate many wastewater concerns by focusing on these Four areas:

1. GSI- Getting the Rain Out
2. Repairing and Maintaining
3. Smarter Sewers
4. Building New Infrastructure



State of the City Speech



Referring to the LTCP“...when it comes to our federally mandated plan (for) City sewers to comply with the clean water act. With hundreds of millions of dollars of spending required, we will be using every tool available to us—technical, legal, and political—to minimize the impact this work will have on ratepayers.”

- Mayor Pete Buttigieg, January 2016.

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Overview of OptiSWMM Analysis

Analysis Goal

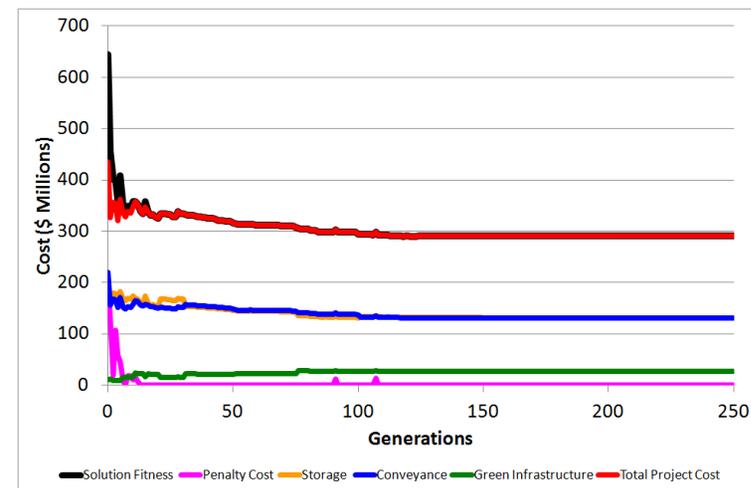
- Move the goal from a specified level of service to COST and E. COLI
- Develop optimal plan for several levels of service
- Get the BEST plan, which may not be the cheapest

No Stone Unturned

- Sharpen sewer model
- Integrate sewer model with river model
- Come up with every possible option
 - Retention Tanks
 - Tunnel
 - Green Infrastructure
 - Sewer Separation
 - Flow Rerouting
 - Pipe Expansion
 - Others
- Price out each option

No Stone Unturned

- Start with current level of service
- Model thousands of combinations using optimization engine
 - Estimated Cost
 - Water Quality Impact
- Human review to select final plan
- Repeat with next level of service



Result

- Get the BEST plan for each level of service
- Know what levers we actually have

Focus on the problem: Cleaning the St. Joe

- Begin focusing actual E. coli entering and in the St. Joe
- Determine where the E. coli in the river is coming from
 - Humans
 - Birds
 - Other animals
- Determine how it is entering the river
 - When is the worst sewage entering the river?
 - Where is the worst offender?
- Analysis now underway

Response to Technical Questions

Inflow and Infiltration

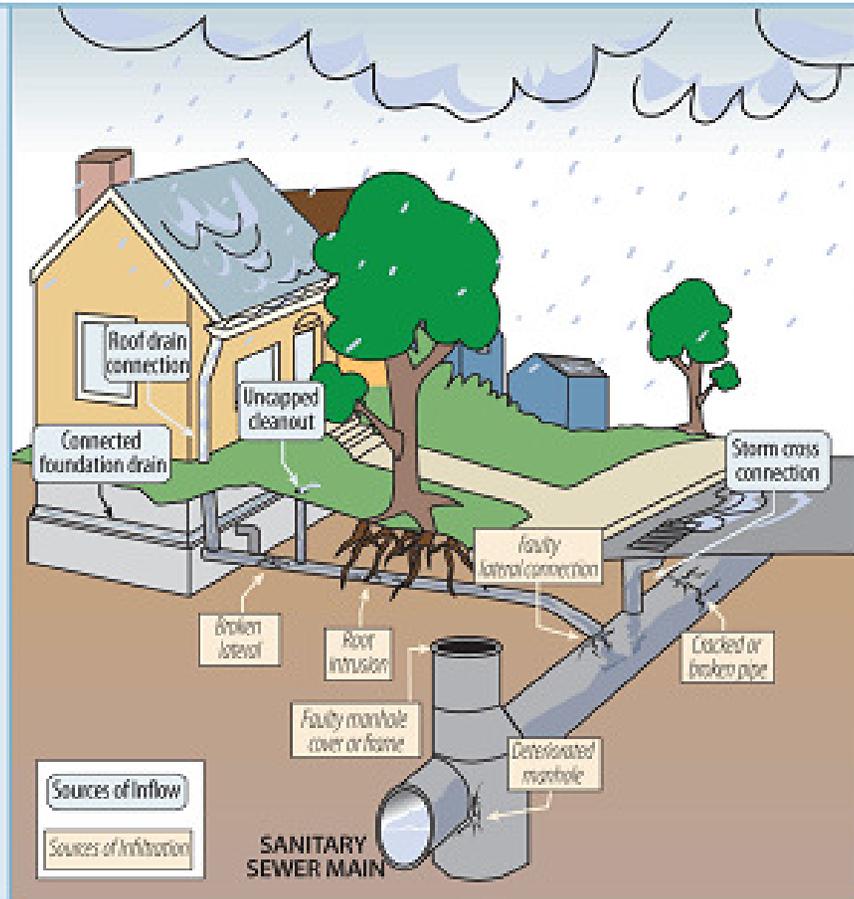
Sources of Inflow and Infiltration

What is I&I?

I&I stands for inflow and infiltration.

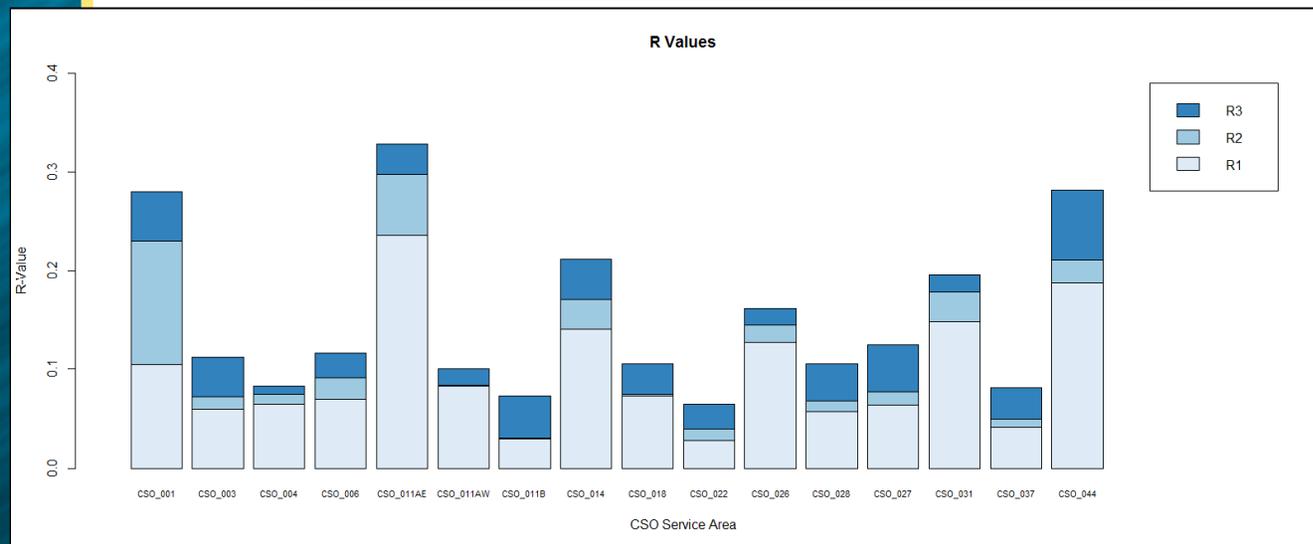
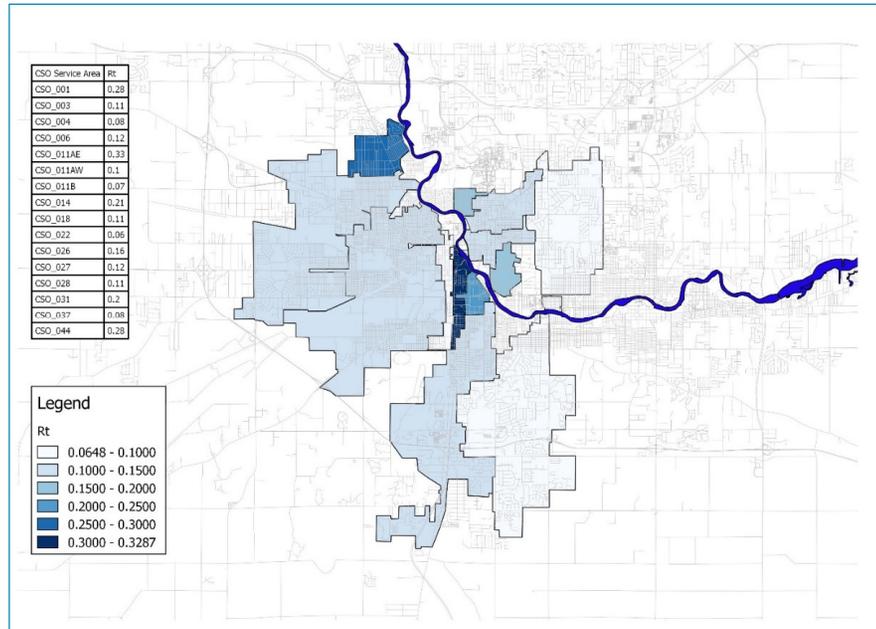
Inflow is the flow of stormwater into the sanitary sewer system through connections like roof drains, foundation drains, and basement sump pumps.

Infiltration is groundwater seeping into sewer pipes, including private sewer laterals, through cracks and broken pipe joints.



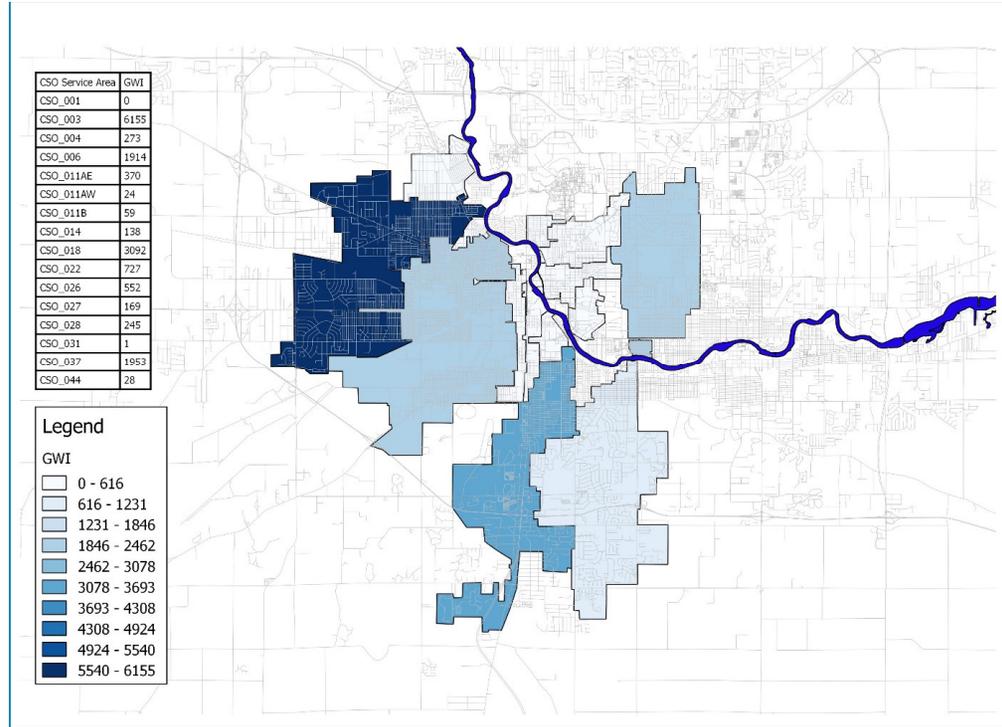
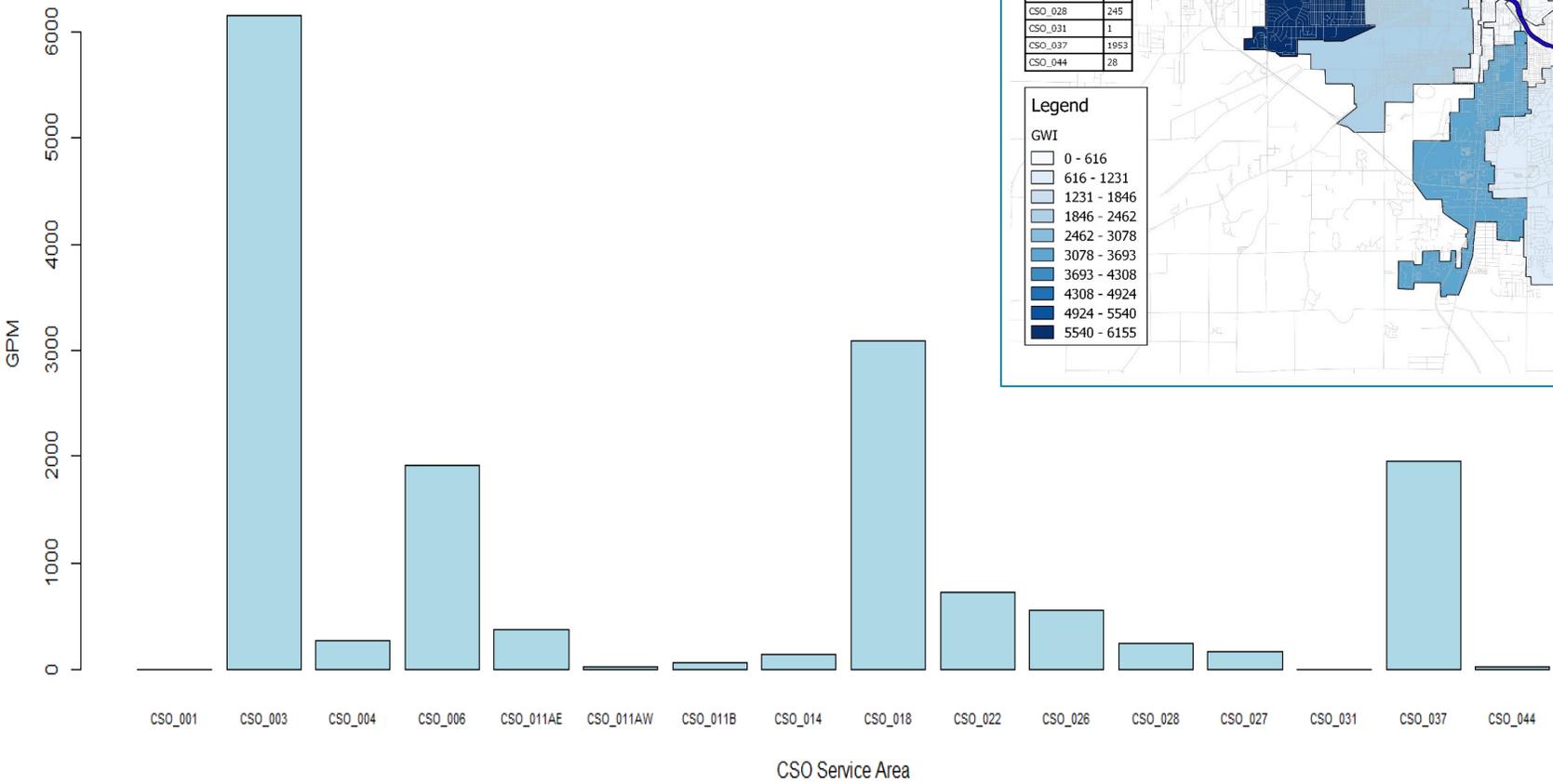
ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers

South Bend Inflow



South Bend Infiltration

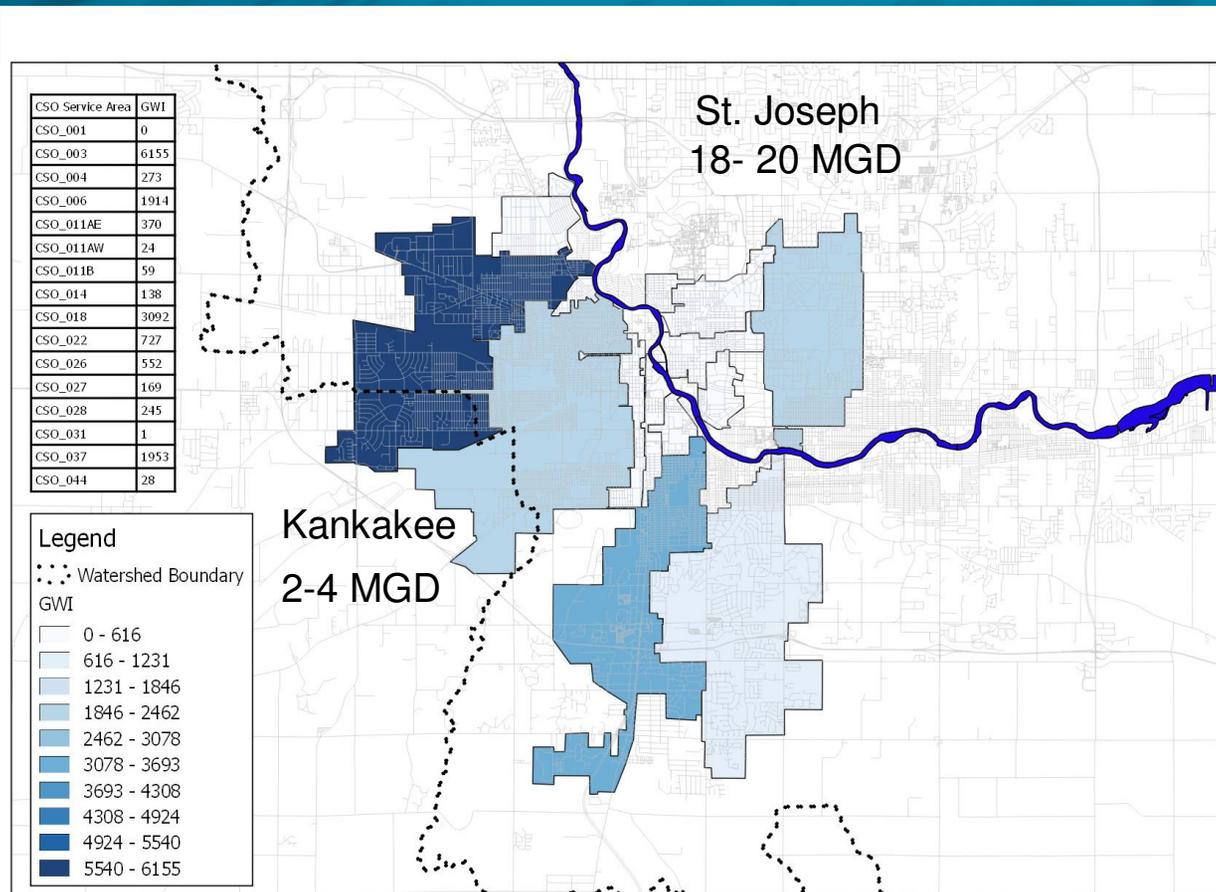
Ground Water Infiltration



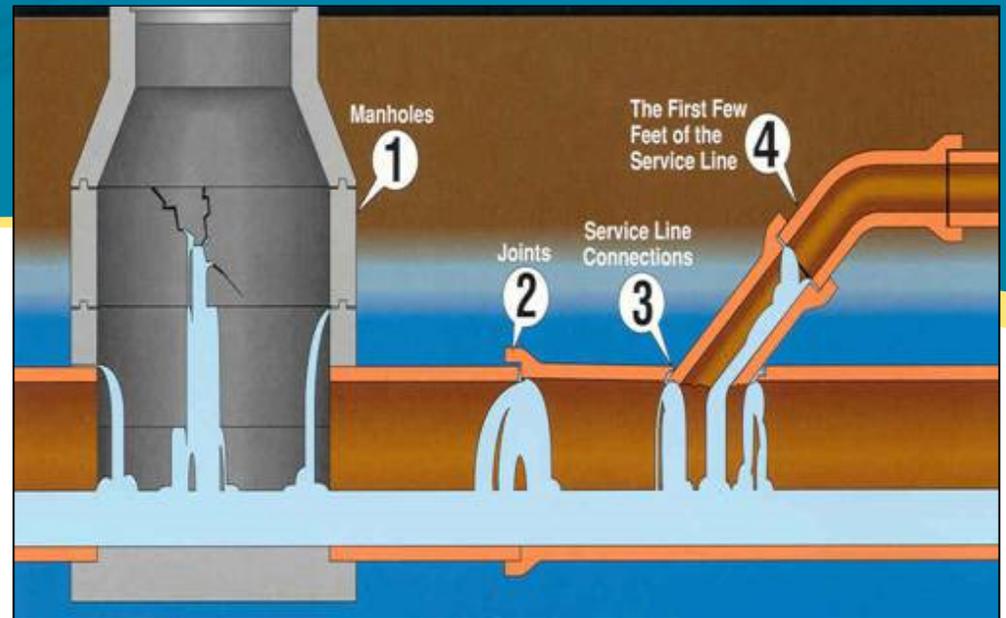
Some Numbers

- Water sent into homes/businesses = ~16-18 MGD
- Wastewater received at plant in dry weather = 36 MGD
- ~ 22-23 MGD of groundwater entering the plant
- 16 MGD coming from 3 areas (CSOs 3, 18, and 37)
- Current plant capacity is 77 MGD

Infiltration by Watershed



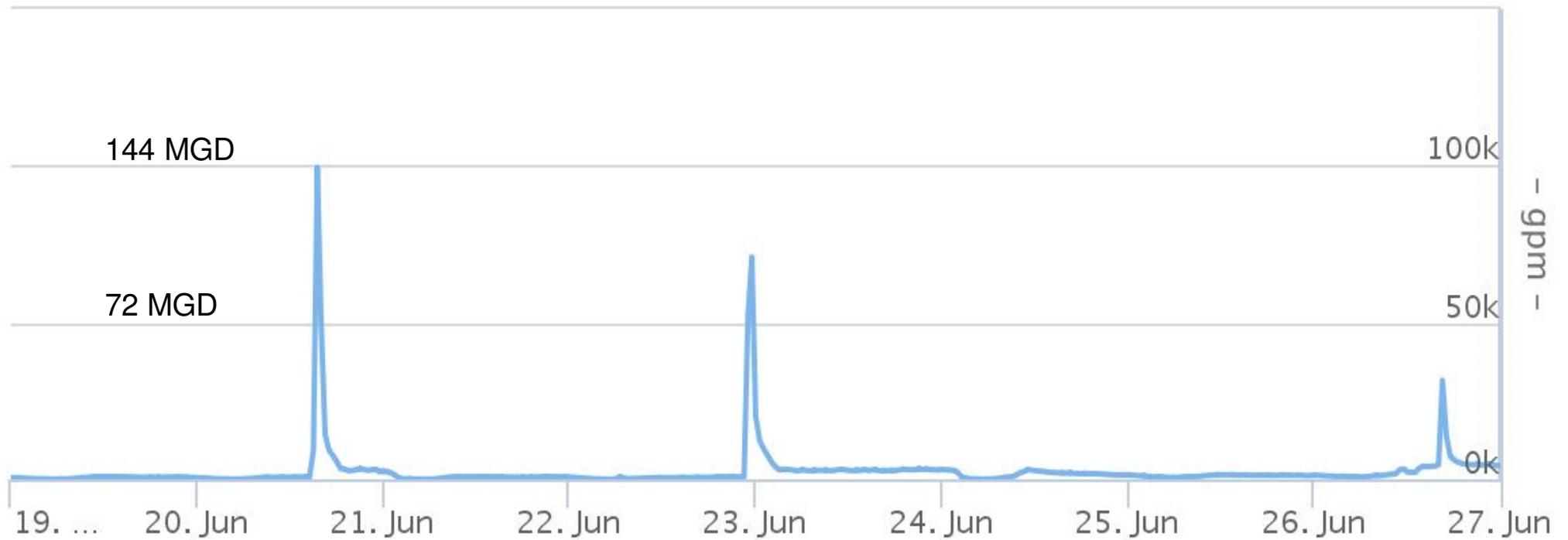
Infiltration Remediation



- Sewer lining and manhole lining
 - Fixes large cracks and holes well
 - Water table rises
 - Water seeps in at the next joint, often private laterals
- Infiltration programs typically only reduce infiltration by 10-30 %

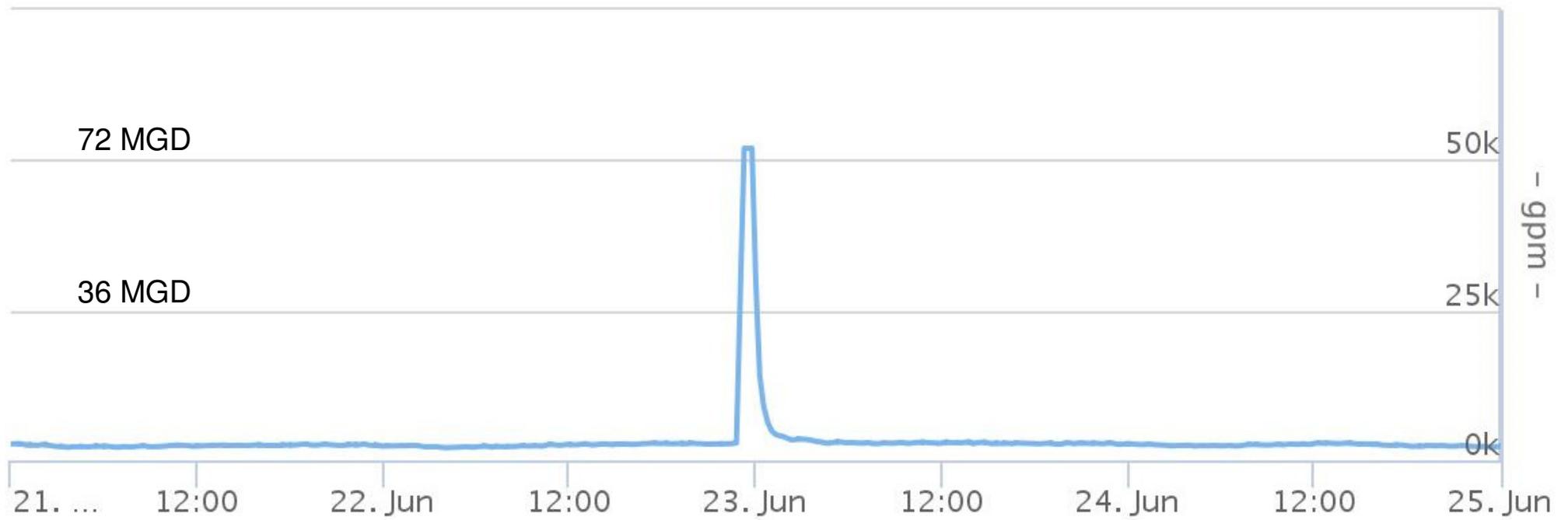
CSO 22 Flow

19-Jun-2016 to 26-Jun-2016



CSO 18 Flow

21-Jun-2016 to 24-Jun-2016

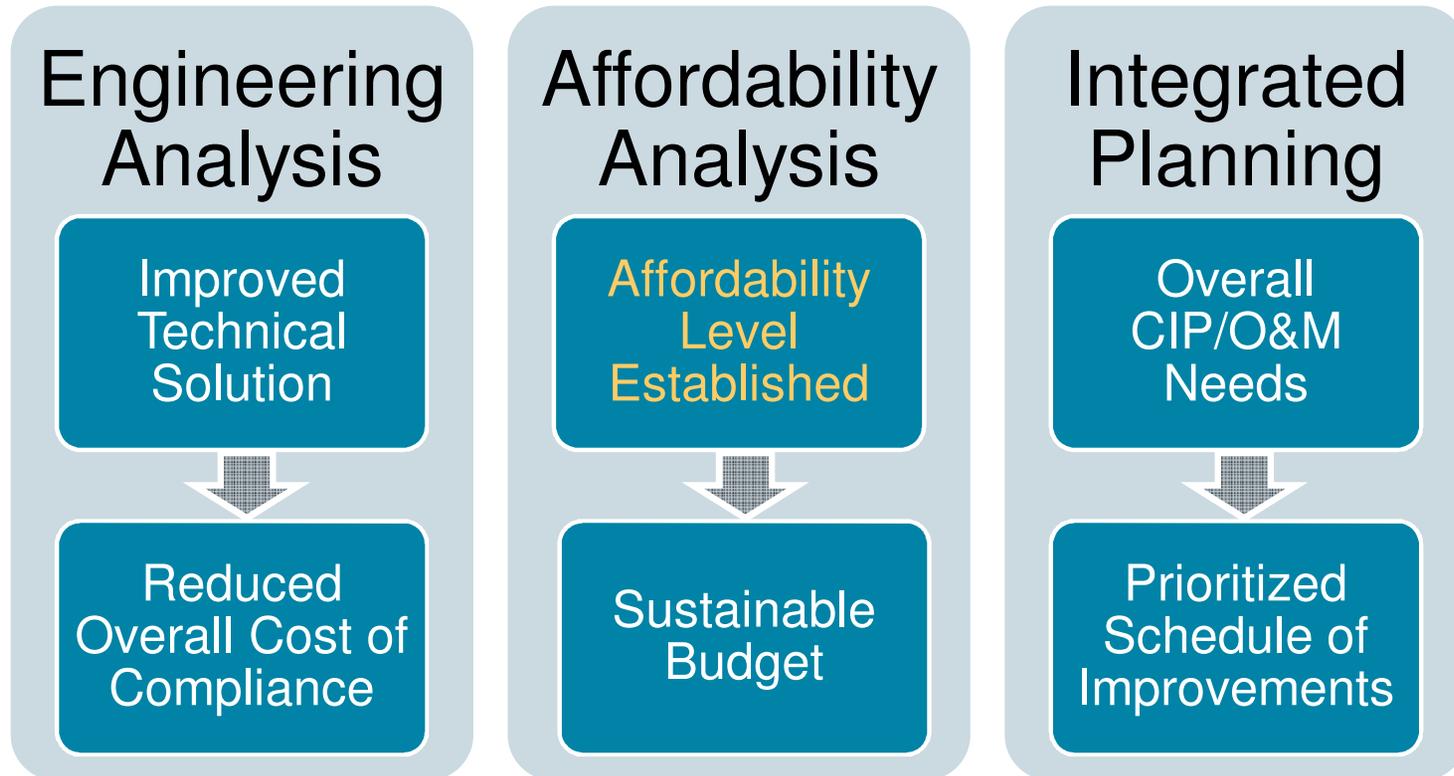


Current Actions

- South Bend is televising CSO 3 and CSO 18 service areas
- Looking for major points of infiltration
- Bowman Creek investigation
- Installation of groundwater monitors
 - Correlate with sewer monitors

Response to Financial Questions

LTCP Re-evaluation



Long-Term Control Plan Alternatives

	2015 FCA	Revised Baseline LTCP	March 2016 Alternative
LTCP Total Capital Cost	\$627.2	\$863.5	\$627.8
2004 – 2015 Expenditures	\$136.2	\$148.9	\$148.9
Remaining CIP	\$491.0	\$714.6	\$478.9

All costs are in millions of 2015 dollars

Key Assumptions for 2016 Update

Current (2015) O&M of \$21.3 M

Does not include any stormwater costs

Annual Capital (2015) of \$15.1 M

Existing debt service of \$9.7 M, annual capital outlay of \$5.4 M

Total Remaining CIP – March 2016 Alt of \$478.9 M
(in 2015 dollars)

\$627.7 M of total consent decree costs, less \$148.8 M already spent

Future O&M Increase of \$5.9 M

Additional O&M assumed to be 1.23% of LTCP

Key Assumptions for 2016 Update

Funding aims to finance 100% of LTCP

Financing at 4.5% for 20 years

Projected financing based on historical index

Residential Share of 62.3%

Residential share based on flow, I&I allocated based on accounts and flow

Households at 44,028

Includes households from the City of South Bend, Town of New Carlisle, Town of Roseland, and customers served residing within St. Joseph County

MHI of \$37,063

Weighted to include all customers and adjusted to 2015 dollars

Phase 1: Residential Indicator

- O&M, Capital, and Debt Service**

	2015 FCA	Revised Baseline LTCP	March 2016 Alternative
Current Costs	\$36,389,943	\$36,389,943	\$36,389,943
<u>Projected Costs</u>	<u>43,786,949</u>	<u>63,727,790</u>	<u>42,706,194</u>
Total Costs	\$80,176,892	\$100,117,732	\$79,096,136
Residential Share	\$49,947,871	\$62,370,434	\$49,274,591
Number of Households	44,028	44,028	44,028
Cost per Household	\$1,134	\$1,417	\$1,119
Weighted & Adjusted MHI	\$37,063.00	\$37,063.00	\$37,063.00
Residential Indicator	3.1%	3.8%	3.0%

High Financial Impact

LTCP Rate Impact Reduction Strategies

- Reduce Overall Cost of LTCP
 - Re-Evaluation Effort: Constrained by terms of existing Consent Decree
- Target Optimal Funding Strategy
 - Strategic mix of debt and pay-as-you go
 - Debt Management: Structure LTCP funding around retirement of existing debt
 - Leverage subsidized and/or historically low interest rate opportunities

Rate Impact Baseline

- Starting Point (Today)
 - Average Residential Customer
 - Approx. 560 cf (4,200 gal.) discharge per month
 - Monthly Sewer Bill = \$45.63
 - Sewage Works
 - Annual Revenue = \$37M (@ 2016 rates)

LTCP Strategic Financial Planning

- Goal = Maximize every dollar collected from Sewage Works customers
 1. Cash Fund Portion of LTCP
 - Reduce financing costs (interest)
 - Bond Coverage Requirements
 2. Strategic Timing/Structure of Debt Issuance
 - Existing debt annual payments reduce from \$9.3M (2016) to \$4M (2028)
 - Replace old debt payments with new debt payments

LTCP Strategic Financial Planning (Cont'd)

3. Maximize Low Interest Rate Opportunities

The Impact of Interest Rates

(20 Year Fixed Rates)

	<u>Normal Market</u> <u>Rates</u>	<u>Current Market</u> <u>Rates</u>	<u>SRF Subsidized</u> <u>Rates</u>
Annual Interest Rates	4.5%	2.8%	2.0%
Borrowing Capacity of \$1M Annual Payment	\$13M	\$15.2M	\$16.5M

Funding Option Sensitivity Illustration

- Assumed additional annual revenues = \$5M
- Term of repayment = 20 years
 - Impact to average customer = \$6-\$7/mo.
- **LTCP Funding Generated:**

SRF Subsidized Borrowing Program	\$82.5M
Market Rate Tax Exempt Borrowing	\$65.0M
Additional Funding Capacity*	<u>\$17.5M</u>

* Equivalent to 21% grant funding.

St. Joseph River Aquatic Community Survey
Bowman Creek Ecosystem Overview



Bowman Creek Educational Ecosystem Citizens Advisory Committee Presentation

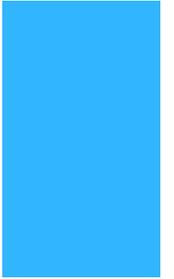
Thursday, June 30 2016

+ Bowman Creek - A Sandbox for Innovation



+ Projects - Summer 2016

- Rain Gardens
- Vacant Lot Optimization Matrix
- Tree and Native Plant Nursery
- Ravina Park Bridge
- Streetscape and Urban Design
- Deep Dive Teams
- Arduino Workshops
- Individual Research
- Individual Job Enrichment Projects



+ Rain Garden Research



+ GIS Vacant Lot Optimization (VLO)

