

# Infrastructure Master Planning/Asset Management

Todd Feland, Public Works Director  
April 11, 2012



# Mayor's State of the City Address- 2012

The address focused on “Keeping The Grand Forks Promise”, which Brown said is more than just a promise – it’s a commitment that Grand Forks is making good on every day.

Mayor Brown said the Grand Forks Promise is the one thing that clearly distinguishes our quality of life. “Simply put, the Grand Forks Promise enables every resident, business, family or organization the opportunity to grow,”

## Grand Forks Promise

- Safe Environment
- Affordable & Competitive Place to Live & Do Business
- Commitment to Youth
- Rich Cultural & Health Experiences
- Opportunities to be Engaged



# Major Infrastructure Needs on the Planning Horizon

## Water

- Residuals Management Facilities
- Significant New Water Treatment Plant Project
- O&M Considerations for New Facilities
- Miscellaneous Rehabilitation

## Wastewater

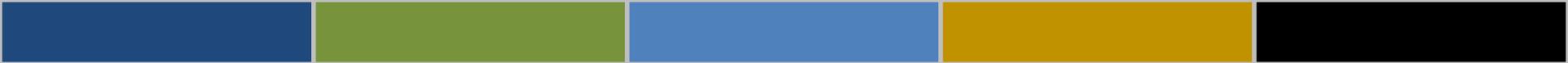
- New Pump Station and Redundant Forcemain Expansion Projects
- EGF Interconnect
- Biosolids Management
- Direct Discharge
- Miscellaneous Rehabilitation

## Stormwater

- Regional Stormwater Management Facilities
- Significant O&M Cost Impacts Associated w/ New Facilities
- Miscellaneous Rehabilitation

## Streets

- Major Capacity/System Expansion Projects
- Deferred Maintenance and Rehabilitation Deficiencies
- FHWA and Local Match Funding Concerns
- Special Assessment Considerations



# Major Infrastructure Needs on the Planning Horizon

## Sanitation

- Pay –As- You- Throw Concepts
- Landfill/Baling Facility Redevelopment

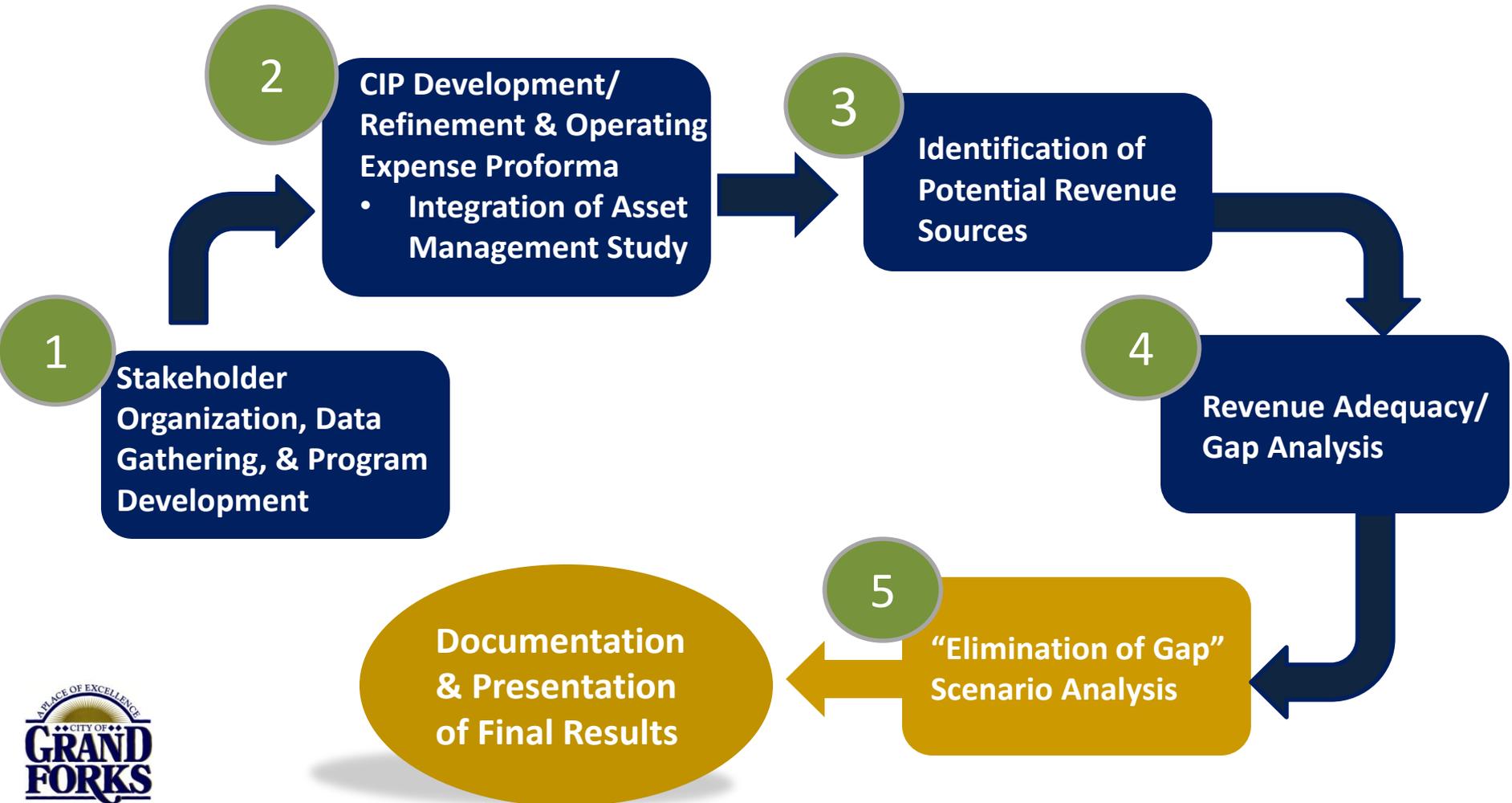
## Public Transportation

- Transit Development Plan Update
- Fixed Route Service Modifications
- DAR/Senior Rider Service Modifications
- Transit Facility Renovation
- Regionalization Transit Pilot

## Central Garage

- Fleet Mate Introduction with all PW Department Divisions
- Fleet Management Systems

# Infrastructure Master Planning Study Approach



# What Asset Management Means to us!

Having a Funding Strategy

Data Backing Up Budgets

Knowing Levels of Service

Determining Risk & Criticality

Condition and Failure Modes

Defining Critical Assets

Project Prioritization

Operations Optimization

Having a Data Registry

Knowing Life Cycle & Replacement Costs

Knowing Asset Life

Forecasting Measures

Determine Risk & Criticality

# The Asset Management Framework for the City of Grand Forks Encompasses the EPA's 10 step Process

1

Develop  
Asset Registry

2

Assess  
Condition,  
Failure  
Modes

3

Determine  
Residual Life

4

Determine  
Life Cycle &  
Replacement  
Costs

5

Set Target  
Levels of  
Service (LOS)

6

Determine  
Business Risk  
("Criticality")

7

Optimize  
O&M  
Investment

8

Optimize  
Capital  
Investment

9

Determine  
Funding  
Strategy

10

Build AM Plan

# Effective Utility Management

Product Quality

Customer Satisfaction

Stakeholder Understanding  
& Support

Employee & Leadership  
Development

Financial Viability

Operational Optimization

Infrastructure Stability

Operational Resiliency

Community Stability

Water Resource Adequacy

## 5 Principles of Utility Management

Leadership

Strategic Business Planning

Organizational Approaches

Measurement

Continual Improvement Management  
Structure

# Conduct Asset Management Group Management Meetings

Overall the Asset Management Steering Groups will form with subject matter groups and group leaders

- Develop effective management principles, roles, and responsibilities
- Develop team leaders, employee members, and specific subject matters
- Example: Adam Jonasson, GIS Coordinator, will be asked to lead a team to discuss and come up with solutions for implementing “smart tablets” into field/facility operations

# Ms4 Regulations Considerations

Impacts on Public Policy

Interdepartmental Operations

Strategic Planning

Organizational Change

# Public Policy Considerations



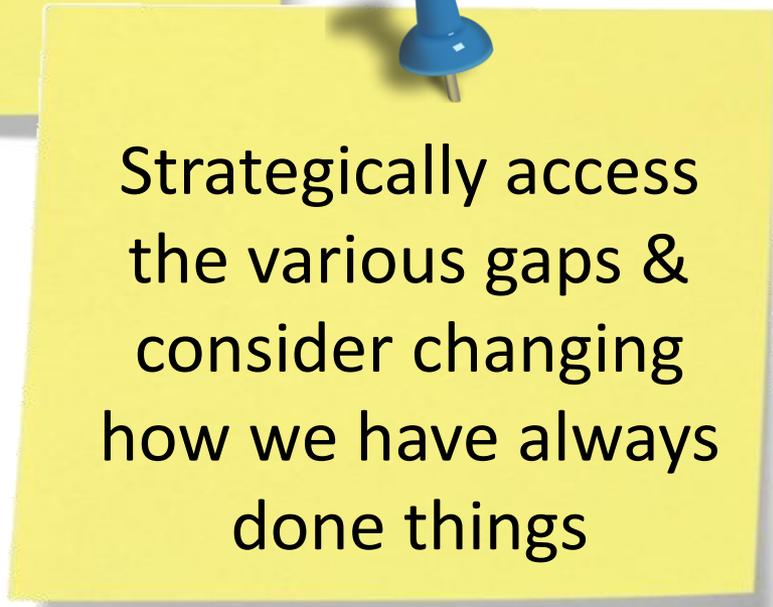
Regulations  
Require Change



Address  
Unfunded  
Mandates



Additional  
Operational  
Requirements



Strategically access  
the various gaps &  
consider changing  
how we have always  
done things

# Asset Management (Capital & Human Assets)

Providing sustainable performance  
at the lowest life-cycle cost

A way of thinking and a set of  
specific practices

The more the assets are understood,  
the better they are managed

**RIGHT** Infrastructure

**RIGHT** Time

**RIGHT** Place



# Revenue/Adequacy Gap Analysis



## Objectives:

- *Determine whether existing funding/revenues will adequately meet projected revenue requirements for the 10-year planning horizon*
- *Identify “Gap” in which projected funding/revenues do not meet projected revenue requirements*

# STORMWATER

Utility Revenue Adequacy



# Existing Utility Revenues/Expenditures (2011 Budget)

\$1.8 M

Operating  
Revenue

\$1.3M

O & M  
Expenses

\$0.5 M

Debt  
Service

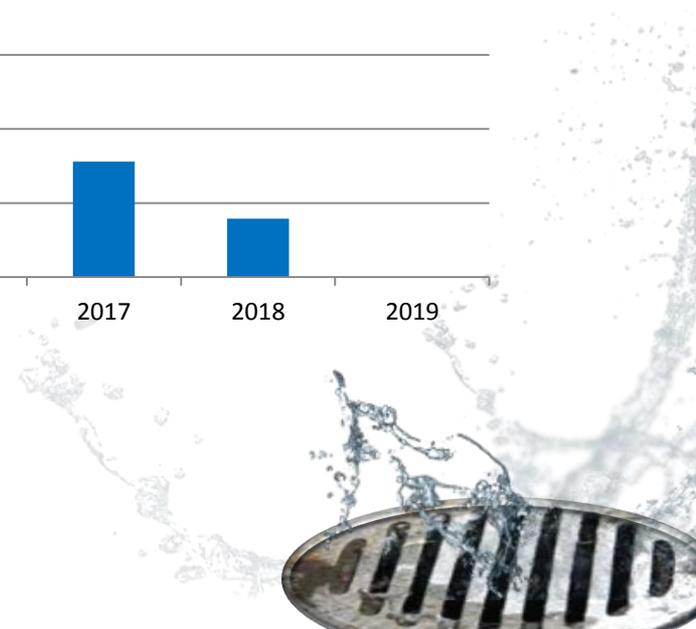
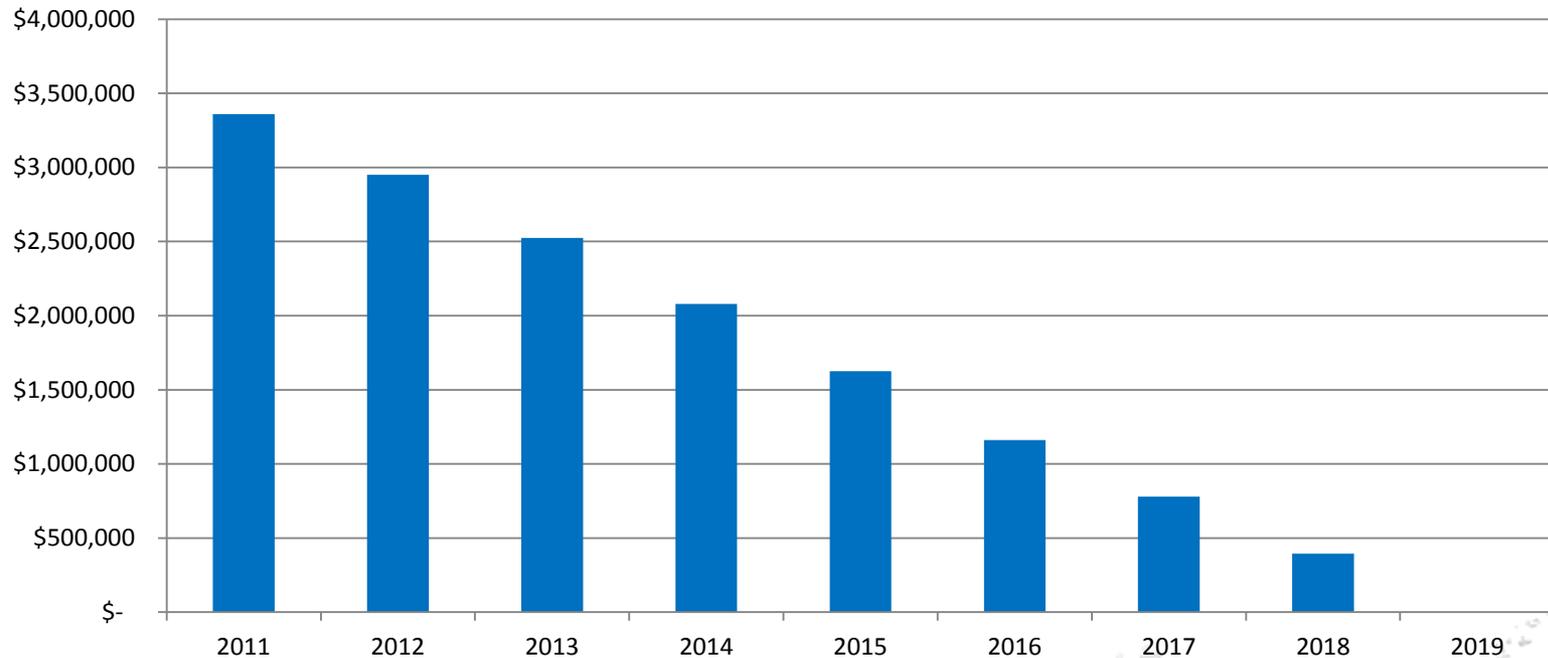
\$0.1 M

Revenue  
Funded Capital



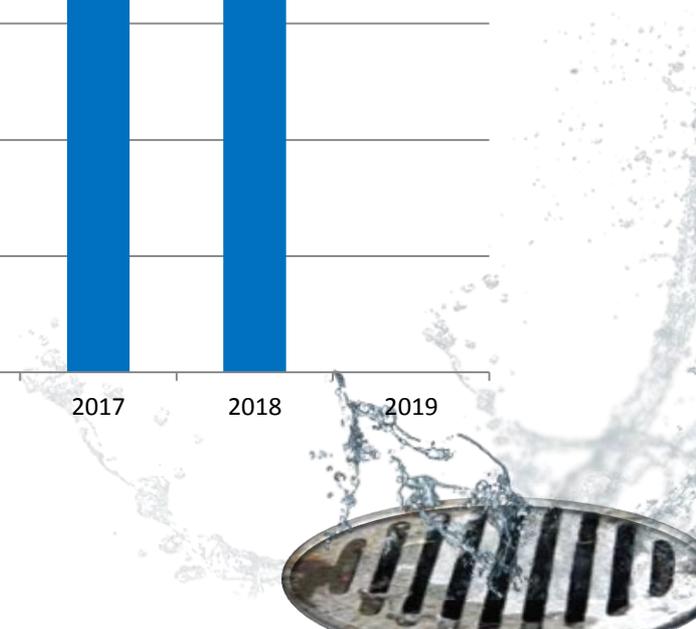
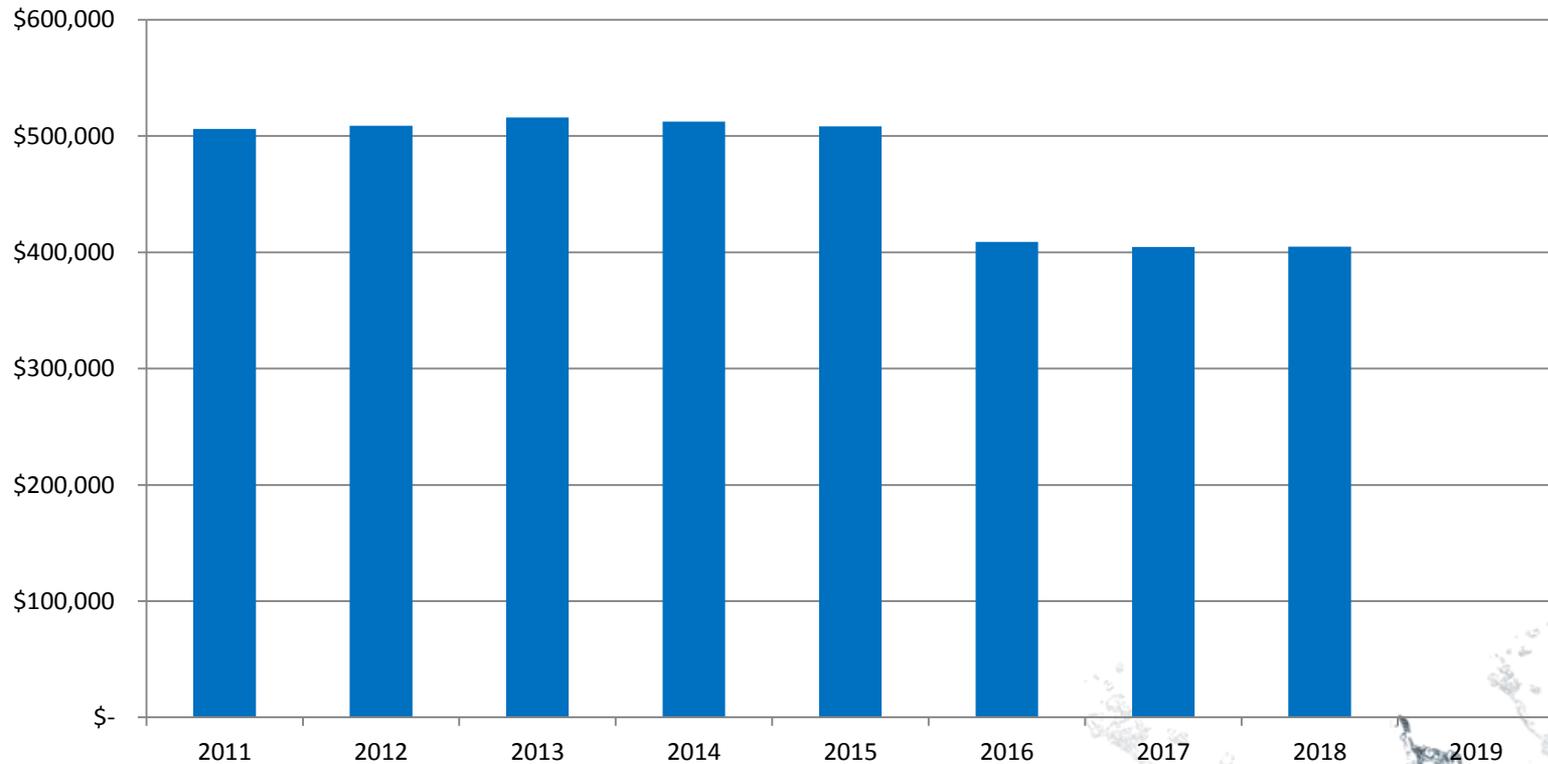
# Existing Debt Service

Storm Water Utility Existing Debt  
Beginning of Year Outstanding Principal



# Existing Debt Service

Storm Water Utility - Existing Debt  
Annual Principal and Interest



# Major Challenges



## Regional Stormwater Pond Implementation

- Interior Flood Control
- Water Quality Control



## Aging Infrastructure



## Ongoing Asset Management

# Stormwater Capital

## Stormwater Collection

	Funding Source	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	SUBTOTAL (2011 \$)
Storm Sewer Repair	Storm Water Revenue	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$1,000,000
Vactor Sewer Cleaner	Storm Water Revenue	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$150,000

- \* No New Major Conveyances
- \* Asset Management Incorporated Into Existing Rehab Budget



# Stormwater Capital

## Stormwater Pump Station Rehabilitation

	Funding Source	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	SUBTOTAL (2011 \$)
Pump Station Repair	Storm Water Revenue	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$300,000
Station 100 Rehab	Special Assessment								\$183,400			\$183,400
Station 184 Rehab	Special Assessment									\$420,000		\$420,000
Station 189 Rehab	Special Assessment										\$260,400	\$260,400
Station 190 Rehab	Unknown - NDDOT Station		\$168,500									\$168,500
Station 192 Rehab	Unknown - NDDOT Station			\$97,300								\$97,300
Station 193 Rehab	Special Assessment				\$134,400							\$134,400
Station 194 Rehab	Unknown - NDDOT Station	\$168,000										\$168,000
Telemetry Upgrade	Storm Water Revenue							\$450,000				\$450,000

- \* No New Major Storm Stations
- \* Asset Management Incorporated Into Existing Rehab Budget



# Stormwater Capital

## Flood Station Rehabilitation

	Funding Source	2021	SUBTOTAL (2011 \$)
Flood Station 206 Rehab	Future Flood Assessments	\$242,200	\$242,200

- Flood Stations are not anticipated to require significant rehabilitation until year 2021. It is anticipated that an annual rehab cost of \$500K to \$600K annually could be required for a 6 year term thereafter.
- All flood assessments from 2011 and are expected to be utilized to fund future flood protection capital maintenance.
- An estimate of the balance of these assessments at the time of required capital maintenance expenditures is currently being generated



# Stormwater Major Drivers

**Regional Stormwater Pond  
Implementation**

**Significant O&M Cost Impacts  
associated with New Facilities**

# Regional Pond Approach Overview

## *City's Current BMP Implementation Strategy*

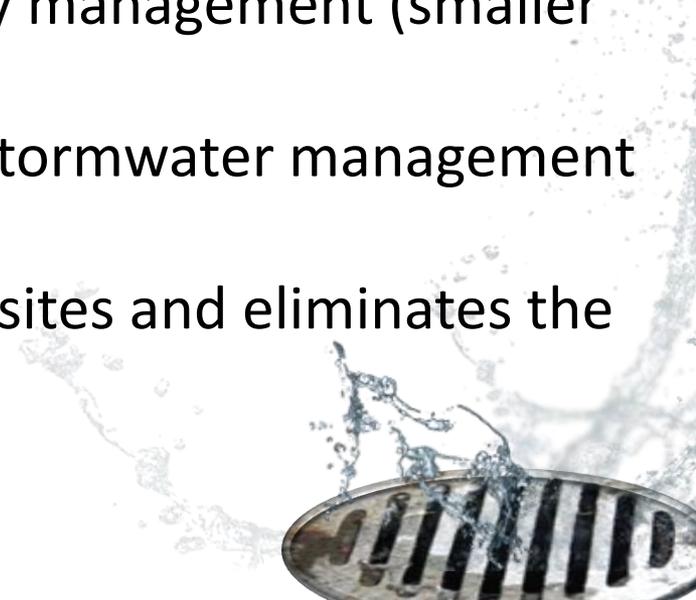
- Requires smaller infrastructure on a site by site basis
- Does not extend benefit beyond the initial development
- Will require more ponds to be built throughout community (greater O&M burden)
- Currently funded by special assessments



# Regional Pond Approach Overview

## ***Benefits of Regional BMP Infrastructure Approach***

- Mutually beneficial public-private partnership to fund flood hazard/water quality mitigation
- Generally more economical and effective than if stormwater is controlled on a site by site basis
- Common point of water quality/quantity management (smaller O&M burden)
- Assists in the assurance of appropriate stormwater management BMP design
- Provides greater flexibility on individual sites and eliminates the need for BMP O&M on-site



# Regional Pond Approach Overview

25

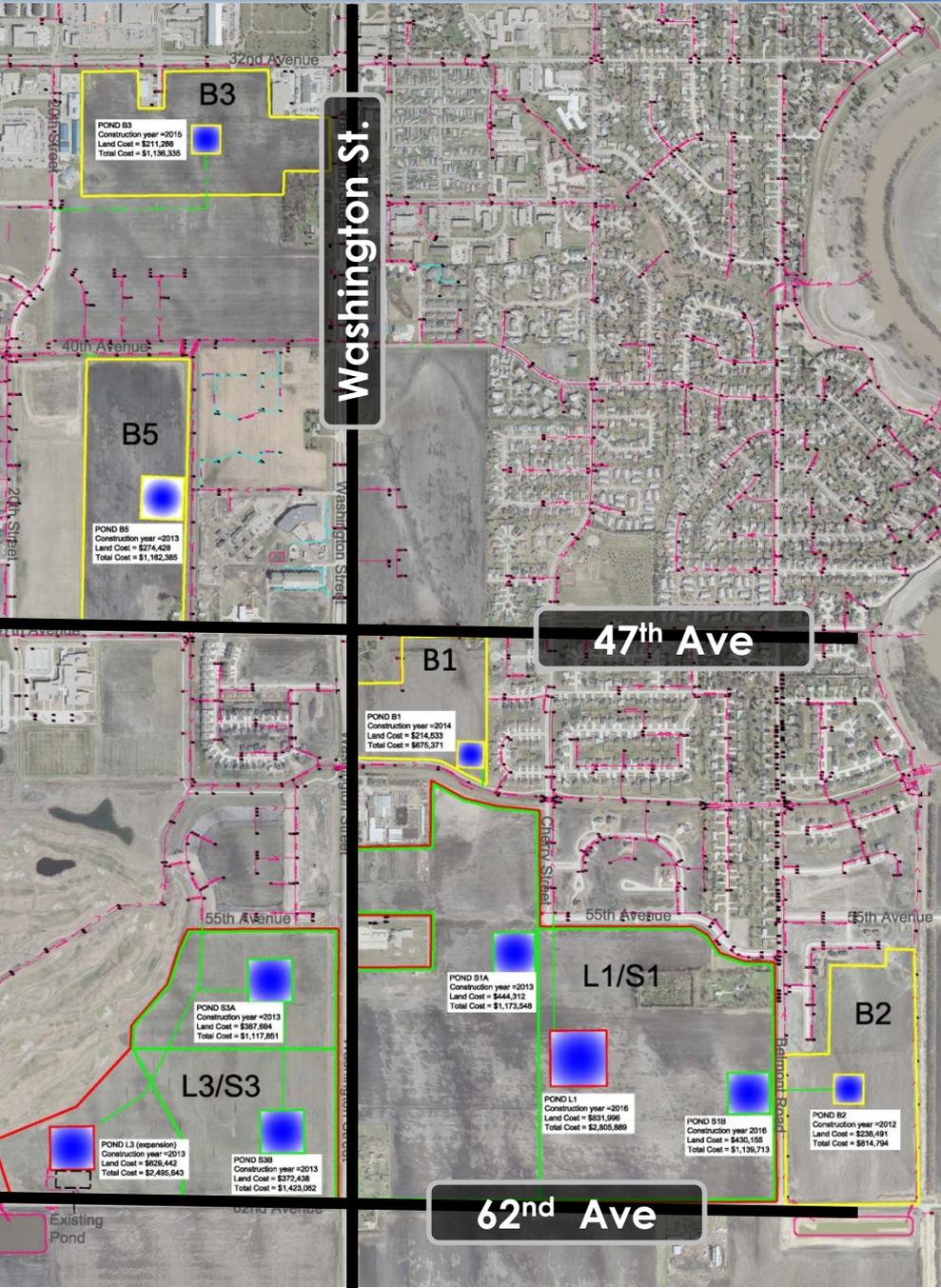
## *Challenges of Regional BMP Infrastructure Approach*

- Greater common land requirements
- Larger capital projects required
- Public-private partnership structuring
- Construction of facilities is often sporadic, making appropriate revenue stream planning difficult



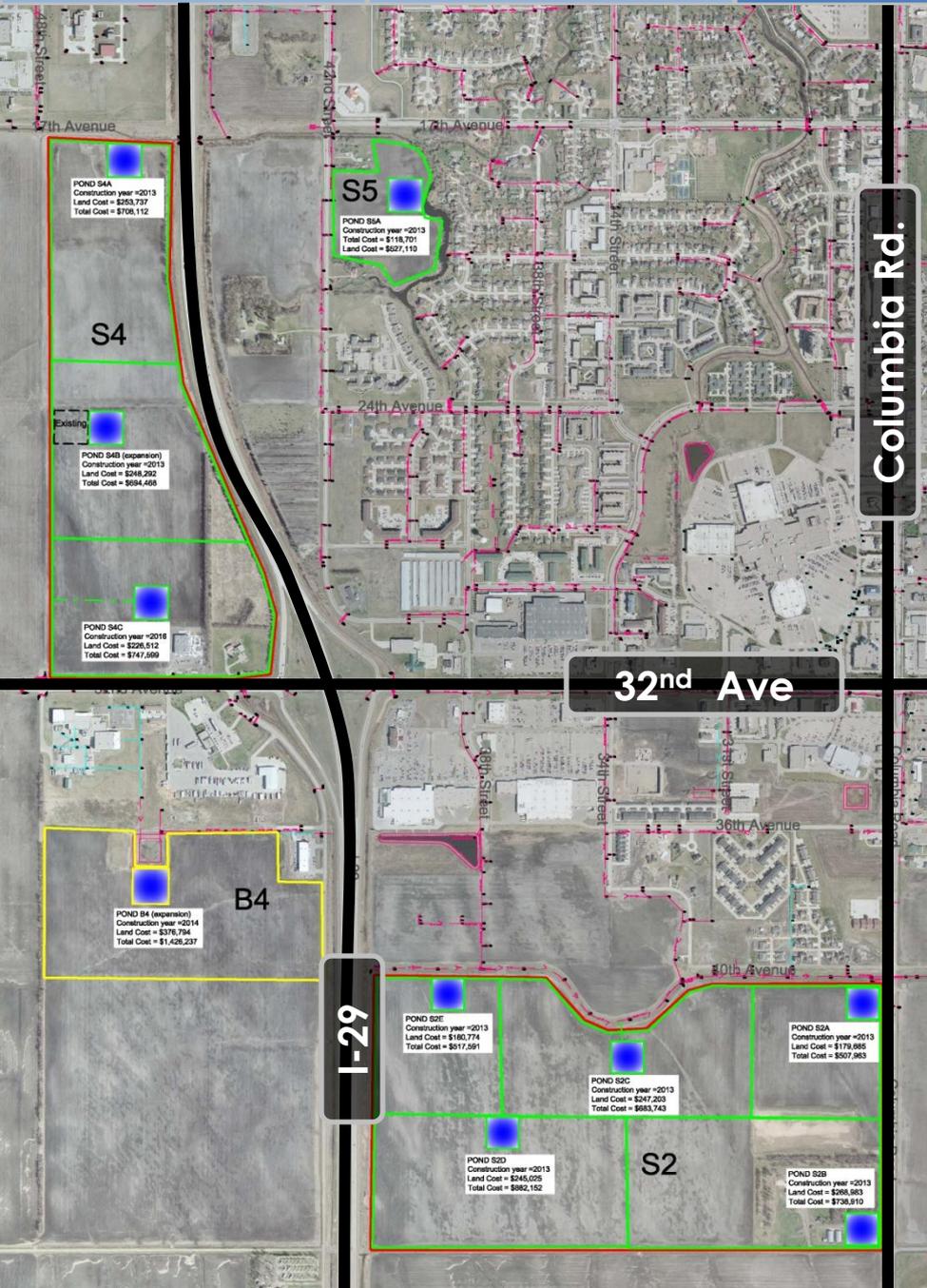
# Key Assumptions

- Existing debt to be paid off in 2018 (\$405K annually)
- 3% rate increases applied in Baseline Scenarios
- Dedicated Land for Regional Ponds and considerations of utilizing a portion of existing 8% park dedication
- Two regional pond implementation strategies considered
  - Small and Large
- All large pond service areas include phased construction of infrastructure
- All ponds debt funded through special assessment districts (upfront and future)



# Regional Pond Locations (South Area)





# Regional Pond Locations (West Area)



# Small Pond Special Assessments

Pond	Construction Year	Benefitted Acres	BMP Construction - Acres Assessed											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	
B1	2015	28.3				28.3								28.3
B3	2016	50.4					10				10			20
B4	2015	75.5				15					15			30
B5	2015	53				20		20			13			53
S1A	2013	125		25		25		25		25		25		125
S1B	2017	119						25		25		25		75
S2A	2016	34					34							34
S2B	2019	66								33		33		66
S2C	2013	58		30		28								58
S2D	2020	67									15			15
S2E	2018	34							34					34
S3A	2014	40			20			20						40
S3B	2017	49						25			24			49
L4 - P1	2014	167			25		25		25		25			100
L4 - P2	2020	167									25			25
S5A	2016	22					22							22

**Average Annual Platting Rate = 75 acres\***

\*Current 10-year annual average = 55 acres

# Large Pond Special Assessments

Pond	Construction Year	Benefitted Acres	BMP Construction - Acres Assessed										
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
B1	2015	28.3				28.3							28.3
B3	2016	50.4					10			10			20
B4	2015	75.5				15				15			30
B5	2015	53				20		20		13			53
L1 - P1	2013	252		25		25		25		25		25	125
L1 - P2	2019	252								25		25	50
L2 - P1	2013	266		25		25		25		25		25	125
L2 - P2	2019	266								25		25	50
L3 - P1	2014	127			25		25		25		25		100
L3 - P2	2020	127									25		25
L4 - P1	2014	167			25		25		25		25		100
L4 - P2	2020	167									25		25
S5A	2016	22					22						22

**Average Annual Platting Rate = 60 acres\***

\*Current 10-year annual average = 55 acres

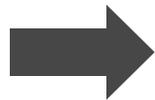


# Stormwater Capital

## TOTAL Stormwater Collection, Pumping, and Ponding

2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
\$2,041,758	\$1,931,473	\$2,628,137	\$1,529,654	\$2,815,729	\$479,228	\$1,061,075	\$962,018	\$565,000	\$647,600

TOTAL (2011 \$)



**\$14,661,672**



# Stormwater Utility Incremental OM&R

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Regional Stormwater Ponds	\$29,949	\$59,898	\$89,847	\$119,796	\$149,745	\$159,728	\$169,711	\$179,694	\$179,694	\$179,694

**TOTAL (2011 \$)**



**\$1,317,756**



# Gap Closure Toolbox

Asset Management  
CIP and O&M Refinement

Grants

Rate Adjustment

Bonding Strategies

Special Assessments

Sales Tax

Other

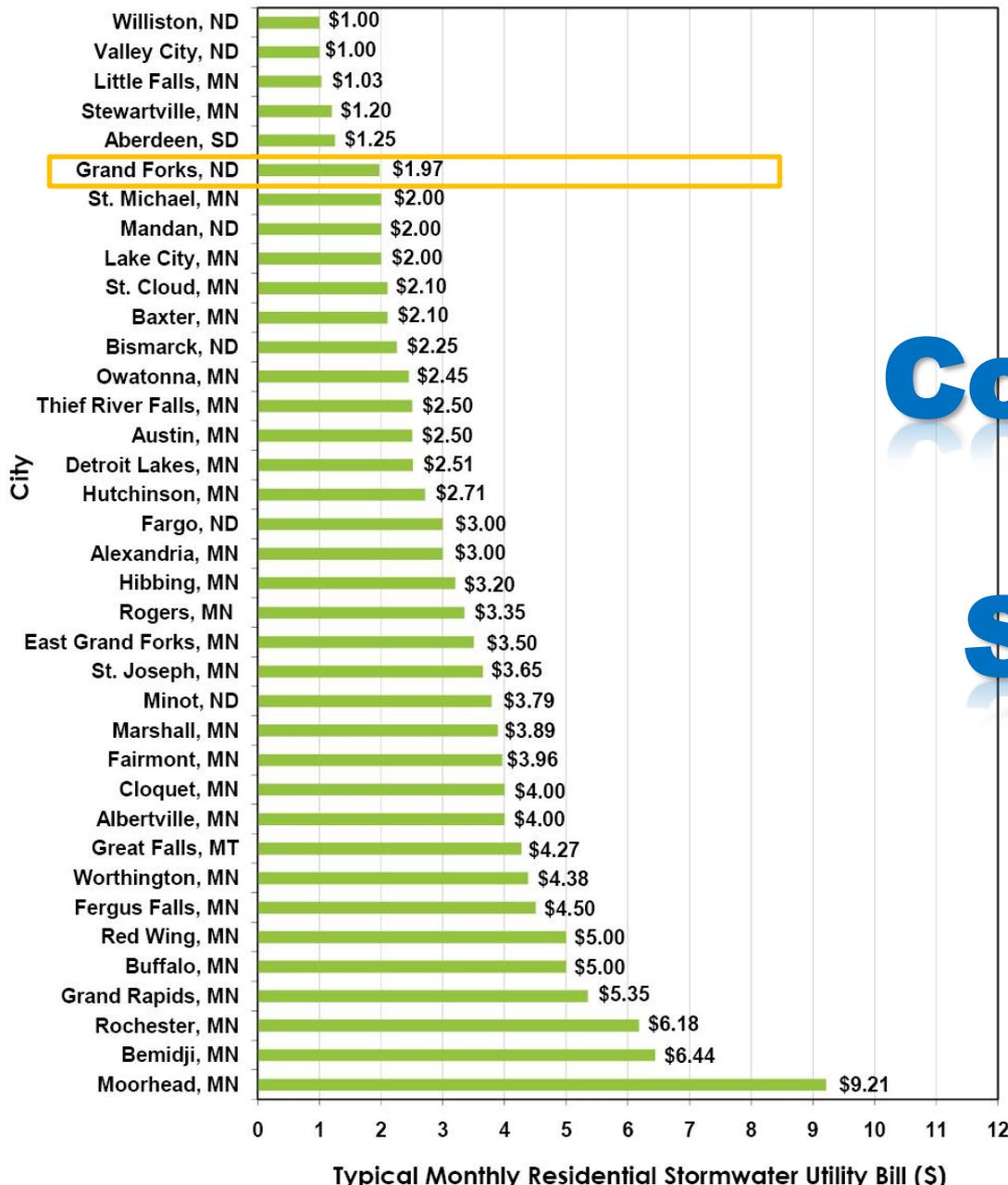
Developer Funded Infrastructure and  
Development Charges

# Gap Closure Toolbox

	In-lieu of Construction Fees	Capitalization Recovery Fees	Impact Fees	Developer Extension/ Latecomer Fees
Fundamental Purpose of Charge	Generate revenue to defray a portion of the cost of Regional Facilities	Recover a fair share of the prior public investment from developers	Mitigate the cost of individual development impacts by building public off-site improvements where impacts can't be solved on-site.	Fair and equitable cost apportioning amongst developers
Developer Option for Onsite Storage	Yes	No	No	No
Timing of improvements versus when the charges are collected	Varies	Developers pay for previously built capacity (improvements first, charges 2 <sup>nd</sup> )	Varies	Payments made by current developer to reimburse early developers for prior facility construction
Advantages	Potential to collect adequate and equitable revenue stream Planning costs recovered	Planning costs recovered	Resource for non-traditional impact mitigation	Method for developer reimbursement by other developers
Disadvantages	Cash flow/Construction timing sporadic; detailed record keeping required	Cash flow timing sporadic; detailed record keeping required; Covers Capital Costs only	Research/data/records (Impact must be measurable/ certain/ definable/quantifiable cost to maintain conditions)	Record keeping

## STORMWATER CHARGES

(Excluding Minneapolis/St. Paul Metro)



# Regional Comparison of Existing Stormwater Rates



# Other Considerations

**Identified Gap does not include consideration of funding reserves**

- Operating Reserve
  - 90 days O&M Expense
- Capital Reserve
  - 15% of average annual CIP

## **Transfers out to General Fund**

- Statutory limit: Not more than 20 percent of the gross receipts of the Utility for the fiscal year in which the transfer is made