Agenda

1. Welcome and Introductions
2. Presentation
3. Group Activity
4. Group Feedback
5. Wrap-Up and Next Steps
Project Overview
Why We Are Here

Identify Problem
- Frequent flooding
- Erosion and bank stability issues
- Impacted riparian ecosystem

Review
- Fixes have been studied in the past but no specific projects selected

Make a Plan
- In 2018, the County and Cities determine the need to develop a unified approach

Identify Projects
- Identify specific project alternatives to implement for the plan
The Why *(challenges in the watershed)*

Belmont Creek Flood Management Plan - Community Meeting
Identified flood resiliency measures

- Erosion control
- Debris removal
- Detention basins
- Culverts
- Flood walls

The How (upcoming process)
Flood Resiliency Measures

High Effectiveness for Flood Resiliency and Protection

Moderate Effectiveness for Flood Resiliency and Protection
Flood Resiliency Measures

- Erosion control
- Debris removal
Flood Resiliency Measures

Surface detention basins

Underground detention basins
Flood Resiliency Measures

Culverts

Flood walls
Project Objectives

- Flood protection
- Water quality
- Green Infrastructure
- Groundwater Recharge
- Permitting requirements
- Resilience to climate change
- Construction/maintenance costs
- Grants/Funding Partnerships
Effects on Community

Long-term Benefits:

✓ Ensuring creekside properties are not subject to erosion
✓ Decreased flood risk to businesses and roadways in the Harbor Industrial Business Area (no flooding in a 50-year storm)
✓ Saving local taxpayer dollars by avoiding costly flood-related damage
✓ Improved natural habitat along Belmont Creek
✓ Resilience to a changing environment

Short-term Costs:

✓ Detention basins built into parking lots or recreational fields of local universities, schools, and parks, requiring construction work
✓ Construction on roadways in the Harbor Industrial Business Area
Flood Protection

Implement:
• Conveyance improvements or
• Multiple detention basins or
• A combination

Before

After

50-year storm flood limits
100-year storm flood limits

ALTERNATIVE 2 HYDROGRAPH (ALL DETENTION BASINS)
50 YEAR, 6 HOUR STORM
Schedule

**Fall 2017**
- Review previous studies
- Site reconnaissance

**Winter 2017–2018**
- Develop project alternatives

**Summer 2018**
- Stakeholder Meetings
- Business Meeting #1
- Preliminary design

**Fall/Winter 2018**
- Develop implementation plan and funding strategy
- Community Meeting
- Business Meeting #2
- Finalize Flood Management Plan
Group Activity
Ground Rules

- Respect opinions you may not share
- Show common conversational courtesy
- Speak up, but share the time we have together with other voices
- Have fun!
Direction

- In groups, discuss and decide how much you value each of the Project Objectives.
- When it’s your group’s turn, place stickers in up to three boxes to indicate your top three preferences for a Project Objectives.
- Use the post-its to write:
  - What you *like* about Belmont Creek amenities
  - *Concerns or questions* about the objectives
  - Place post-it note in the appropriate objective column when it’s your group’s turn
## Group Activity

<table>
<thead>
<tr>
<th>Flood Protection</th>
<th>Groundwater Recharge</th>
<th>Protect and Enhance Water Quality</th>
<th>Green Infrastructure</th>
<th>Resiliency to Climate Change</th>
<th>Construction Cost</th>
<th>Operation and Maintenance</th>
<th>Grants/Funding Partnerships</th>
<th>Constructability</th>
</tr>
</thead>
</table>
Group Report Out
Project Alternatives

PRELIMINARY ALTERNATIVE 1: RC8 CULVERT BYPASS LINE. LOCALIZED OPERATION AND MAINTENANCE, AND FLOODWALL

PRELIMINARY ALTERNATIVE 4: REINFORCED CONCRETE BOX CULVERT BYPASS LINE

PRELIMINARY ALTERNATIVE 3: LOCALIZED OPERATION AND MAINTENANCE OF CULVERTS

PRELIMINARY ALTERNATIVE 2B AND 2C: NOTRE DAME DE NAMUR UNIVERSITY SOFTBALL AND SOCCER FIELD (Detention)

PRELIMINARY ALTERNATIVE 2F: ADDITIONAL POTENTIAL DETENTION LOCATIONS

PRELIMINARY ALTERNATIVE 2F: TWIN PINES PARK (Detention)

PRELIMINARY ALTERNATIVE 2F: CARLINGTON HIGH SCHOOL (Detention)

PRELIMINARY ALTERNATIVE 2A: HIDDEN CANYON PARK (Detention)
# Project Alternatives

<table>
<thead>
<tr>
<th>Alternatives</th>
<th>Flood Protection</th>
<th>Groundwater Recharge</th>
<th>Protect and Enhance Water Quality</th>
<th>Green Infrastructure</th>
<th>Resiliency to Climate Change</th>
<th>Construction Cost</th>
<th>Operation and Maintenance</th>
<th>Grants/Funding Partnerships</th>
<th>Constructability</th>
<th>Local Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 1: Conveyance Improvements (Bypass RCB, Floodwalls, O&amp;M)</td>
<td>water drops</td>
<td>water drops</td>
<td>water drops</td>
<td>green</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>🛠️</td>
<td>Close portions of Harbor Blvd and construction nuisance for extended period of time.</td>
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<tr>
<td>Alternative 2: Detention Basins</td>
<td>water drops</td>
<td>water drops</td>
<td>water drops</td>
<td>green</td>
<td>$$</td>
<td>$</td>
<td>$$</td>
<td>$$$</td>
<td>🛠️</td>
<td>Unable to use portions of facility for a few months</td>
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<tr>
<td>Alternative 3: Detention Basins + Floodwalls + O&amp;M</td>
<td>water drops</td>
<td>water drops</td>
<td>water drops</td>
<td>green</td>
<td>$$$</td>
<td>$$$</td>
<td>$$$</td>
<td>$$$</td>
<td>🛠️</td>
<td>Unable to use portions of facility for a few months</td>
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<tr>
<td>Alternative 4: Conveyance Improvements + Detention Basins</td>
<td>water drops</td>
<td>water drops</td>
<td>green</td>
<td>green</td>
<td>$$$$$</td>
<td>$$$$$</td>
<td>$$$$$</td>
<td>$$$$$</td>
<td>🛠️</td>
<td>All of the above</td>
</tr>
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</table>
## Cost-Benefit Comparison

<table>
<thead>
<tr>
<th>PRELIMINARY ALTERNATIVE</th>
<th>COST OF PRELIMINARY ALTERNATIVE</th>
<th>PROPERTIES PROTECTED</th>
<th>TOTAL VALUE OF PROPERTIES PROTECTED**</th>
<th>PRELIMINARY BENEFIT/COST RATIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 50 year, 6 hour storm protection*</td>
<td>$7,234,988</td>
<td>41</td>
<td>$206,531,482</td>
<td>28.5</td>
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<tr>
<td>2 - 50 year, 6 hour storm protection*</td>
<td>$59,824,809</td>
<td>41</td>
<td>$206,531,482</td>
<td>3.5</td>
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<td>3 (Includes Alternative 2) - 50 year, 12 hour storm protection*</td>
<td>$60,564,187</td>
<td>57</td>
<td>$300,386,710</td>
<td>5.0</td>
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<td>4 (Includes Alternative 3) - 100 year, 12 hour storm protection*</td>
<td>$67,157,920</td>
<td>102</td>
<td>$633,777,056</td>
<td>9.4</td>
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Discussion
Next Steps
Next Steps

- Additional meetings with affected landowners and the community → share additional feedback
- Selection of a final alternative—a combination of flood resiliency measures—based on community input and performance on selected criteria
- Development of preliminary and final designs
THANK YOU!

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