Long Term Flood Mitigation Plan for Medicine Lake Road & Winnetka Avenue Area

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Outline

- Brief project history/background
- Outline the steps in the long term flood mitigation plan development & conclusions
- Discuss the project goals
- Summarize the recommended plan
- Next steps
* Based on XP-SWMM modeling utilizing the Allis 14 precipitation depths and nested storm distribution
Flooding is a long-standing issue in the area.

- Area developed in the mid-1960’s
- 1970’s – significant flooding around DeCola Ponds E & F
- 1984 – settlement; property owners control and operate the DeCola Pond F outlet
- 1987 Superstorm
What’s been done so far?

- City of New Hope
  - 2006: Terra Linda Drive feasibility study
  - 2008: Construction of improvements

- City of Golden Valley
  - 2011-2012: DeCola Ponds Area Flood Mitigation Study
  - Public, Staff, & Council meetings

- Cities of Golden Valley, New Hope, & Crystal
  - 2014-2016: Medicine Lake Road and Winnetka Avenue Area Long Term Flood Mitigation Plan
  - Jointly-funded
  - Community consensus
  - Public, Staff, & Council meetings
Medicine Lake Road and Winnetka Avenue Area Long Term Flood Mitigation Plan

- **Project Goals:**
  - Reduce flood damages and flood risk
  - Provide reliable transportation and emergency response – public safety

- **Completed in phases:**
  - Phase 1 – Initial assessment and selection of flood mitigation alternatives
  - Phase 2 – Determine cost of preferred flood mitigation alternatives & implementation strategies

- Discussed results, built consensus, proceeded with next steps until the plan was agreed upon by the three cities
Phase 1 – What did we learn?

- 23% increase in precipitation for TP-40 to Atlas 14 (new requirement)
- There are 39 structures at-risk of flooding during the 100-year event
  - Multifamily residential
  - Single family residential
  - Commercial
- Flood storage within the watershed needs to be a major focus of the plan to reduce flood elevations
39 Existing At-Risk Structures

At-Risk Structures*

* At-Risk structures determined by low opening survey and XP-SwMM modeling results utilizing the Atlas 14 precipitation depths and nested storm distribution

** Inundation area mapping is approximate based on XP-SwMM modeling results and 2007 National Geocetic Survey elevation data

Figure 2-1

KEY FLOOD AREAS & AT-RISK STRUCTURES
Medicine Lake Road and Winnetka Avenue
Flood Mitigation Plan
Cities of Golden Valley, New Hope, and Crystal
Phase 2: Long Term Flood Mitigation Alternatives

- Focused Analysis on 3 Alternatives as “starting points”:
  - **Alternative 1: Do Nothing (Existing Conditions)**
  - **Alternative 2: Acquisition and Flood Proofing Only (No Additional Flood Storage)**
    - Estimated cost: $12.3 million
    - Does not meet study goals
    - Does not reduce flooding at Medicine Lake Road (public safety issue)
    - Significant impact to neighborhood (acquisitions)
  - **Alternative 3: Flood Mitigation Projects (Maximize Flood Storage – 14 locations), followed by acquisition and flood proofing as necessary**
    - Estimated cost: $27.5 million
    - Meets study goals
    - Preserves neighborhood integrity/community around the DeCola Ponds
    - High cost
Recommended Flood Mitigation Plan (Alternative 2.5)

- 8 of the 14 projects from Alternative 3 were included in Alternative 2.5
- Implementation of flood storage/mitigation projects at targeted locations throughout the watershed
  - 2 project locations will require acquisition of commercial/multifamily properties for project construction
- Flood proofing and/or voluntary acquisition (of remaining at-risk properties)
The proposed flood storage results in significant decreases in flood elevations.

<table>
<thead>
<tr>
<th>Flood Area Description</th>
<th>Existing Conditions</th>
<th>Alt 2.5</th>
<th>Change in Flood Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine Lake Road/ Rosalyn Court</td>
<td>905.1</td>
<td>901.8</td>
<td>-3.3 ft</td>
</tr>
<tr>
<td>DeCola Pond A, B &amp; C</td>
<td>902.6</td>
<td>901.8</td>
<td>-0.8 ft</td>
</tr>
<tr>
<td>DeCola Pond D</td>
<td>902.7</td>
<td>899.2</td>
<td>-3.5 ft</td>
</tr>
<tr>
<td>DeCola Pond E &amp; F</td>
<td>896.2</td>
<td>894.0</td>
<td>-2.2 ft</td>
</tr>
</tbody>
</table>

Plus, the plan achieves the goal of reducing flood depths to 1.5 – 2.0 feet of flooding on Medicine Lake Road during the 100-year event.
## Flood Risk Reduction – By The Numbers

<table>
<thead>
<tr>
<th>Property</th>
<th>Existing Conditions</th>
<th>Alternative 2.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>At-Risk Structure¹ Potential Voluntary Acquisition²</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>At-Risk Structure¹ Acquisition (for Project Construction)</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>At-Risk Structure¹ Flood Proofing²</td>
<td>19</td>
<td>23</td>
</tr>
<tr>
<td>No Flood Risk³</td>
<td>0</td>
<td>12</td>
</tr>
</tbody>
</table>

1 – Main structures (residential, multifamily residential, industrial, commercial)
2 – Acquisition assumed when flooding >3 ft; flood proofing when flooding <3 ft; For properties identified for acquisition, flood proofing may be possible but will need to be investigated at each location
3 – Low opening elevation above 100-year flood level
25 Remaining At-Risk Structures

* At-Risk structures determined by low opening survey and XP-SWMM modeling results utilizing the Atlas 14 precipitation depths and nested storm distribution
** Inundation area mapping is approximate based on XP-SWMM modeling results and 2007 National Geodetic Survey elevation data

Figure 3-3
REMAINING AT-RISK STRUCTURES
ALTERNATIVE 2.5
Medicine Lake Road and Winnetka Avenue
Flood Mitigation Plan
Cities of Golden Valley, New Hope, and Crystal
## Estimated Planning Level Costs of Flood Mitigation Projects

<table>
<thead>
<tr>
<th>Cumulative Flood Mitigation Project Est. Costs⁴</th>
<th>Voluntary Acquisition Est. Costs¹,²,⁴</th>
<th>Flood Proofing Est. Costs²,⁴</th>
<th>Total Est. Costs³,⁴</th>
</tr>
</thead>
<tbody>
<tr>
<td>$20,440,000</td>
<td>$1,020,000</td>
<td>$900,000</td>
<td>$22,360,000</td>
</tr>
</tbody>
</table>

1 – Acquisition costs for potential/voluntary acquisitions only; acquisition for project construction included in the flood mitigation project costs
2 – Acquisition and flood proofing costs assume full implementation of flood mitigation projects and the associated reduction in flood elevations
3 – Total project cost at full implementation of Alternative 2.5 flood mitigation projects
4 – Planning level costs – due to uncertainty of concept design, actual costs may range from -20% to +40%
# Recommended Implementation Order of Flood Mitigation Projects

<table>
<thead>
<tr>
<th>Project Order*</th>
<th>Project Name (Location)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Liberty Crossing Conveyance/Storage (Golden Valley)</td>
</tr>
<tr>
<td>2</td>
<td>Expansion of Pennsylvania Woods and DeCola Ponds B&amp;C (Golden Valley)</td>
</tr>
<tr>
<td>3</td>
<td>Storage at Isaacson Industrial Parcel and Park/Diversion from DeCola Pond F (Golden Valley)</td>
</tr>
<tr>
<td>4</td>
<td>Storage at Rosalyn Court (New Hope)</td>
</tr>
<tr>
<td>5</td>
<td>Storage at SEA School (Golden Valley)</td>
</tr>
<tr>
<td>6</td>
<td>Expansion of Storage at Yunker Park (Crystal)</td>
</tr>
<tr>
<td></td>
<td>Voluntary Acquisition &amp; Flood Proofing</td>
</tr>
</tbody>
</table>

*Actual sequencing of projects is flexible and will vary depending on opportunities and funding.
Projects are already underway...

- **Liberty Crossing Development Site** – ~$4.6 million
  - Golden Valley is working with the Liberty Crossing developer to incorporate flood mitigation and future conveyance (construction underway)
  - Established a tax increment financing (TIF) district to begin generating funds
Projects are already underway...

- **Rosalyn Court**
  - New Hope is looking into feasibility of subsurface storage in the drive and parking areas of the development

- **Yunker Park**
  - Crystal looking into better utilizing storage within park
Potential Funding Sources

- ~ 50% from City funds, stormwater utilities, Hennepin County, and beneficiaries (those immediately at-risk of flooding)
- Cities are pursuing state bonding funds
- Other grants (flood damage reduction, brownfields, natural resources, Clean Water Fund)

**BCWMC 2018-2022 CIP projects**

- BC-2/BC-8: Sandburg Road and Louisiana Avenue Water Quality Improvement and Flood Reduction Project ($501,000 in 2019 & 2020)
- BC-10: DeCola Ponds and Medicine Lake Road Subwatershed Flood Reduction Project ($1,300,000 in 2022 & 2023)