

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

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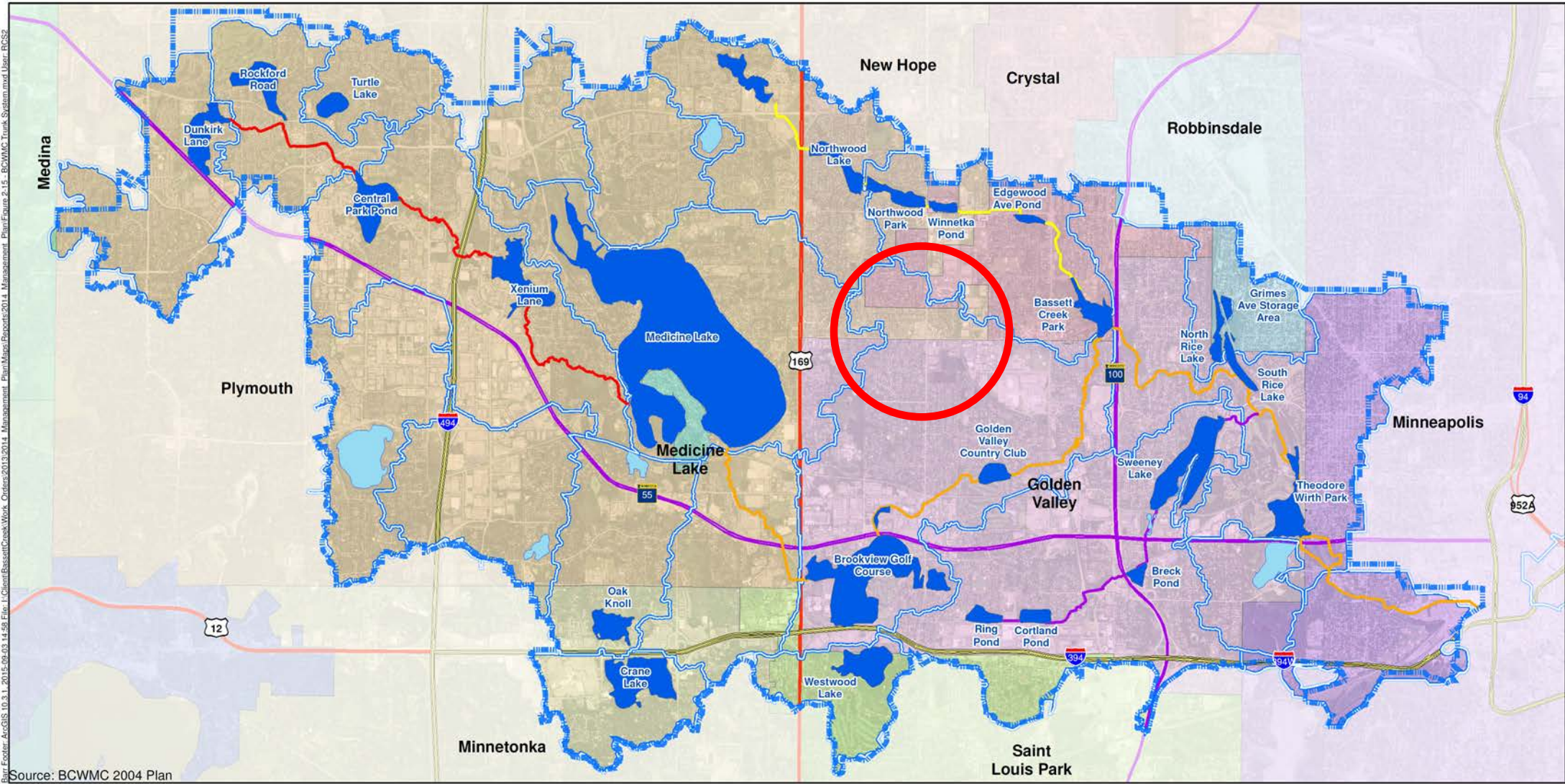
Outline

- 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



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Source: BCWMC 2004 Plan

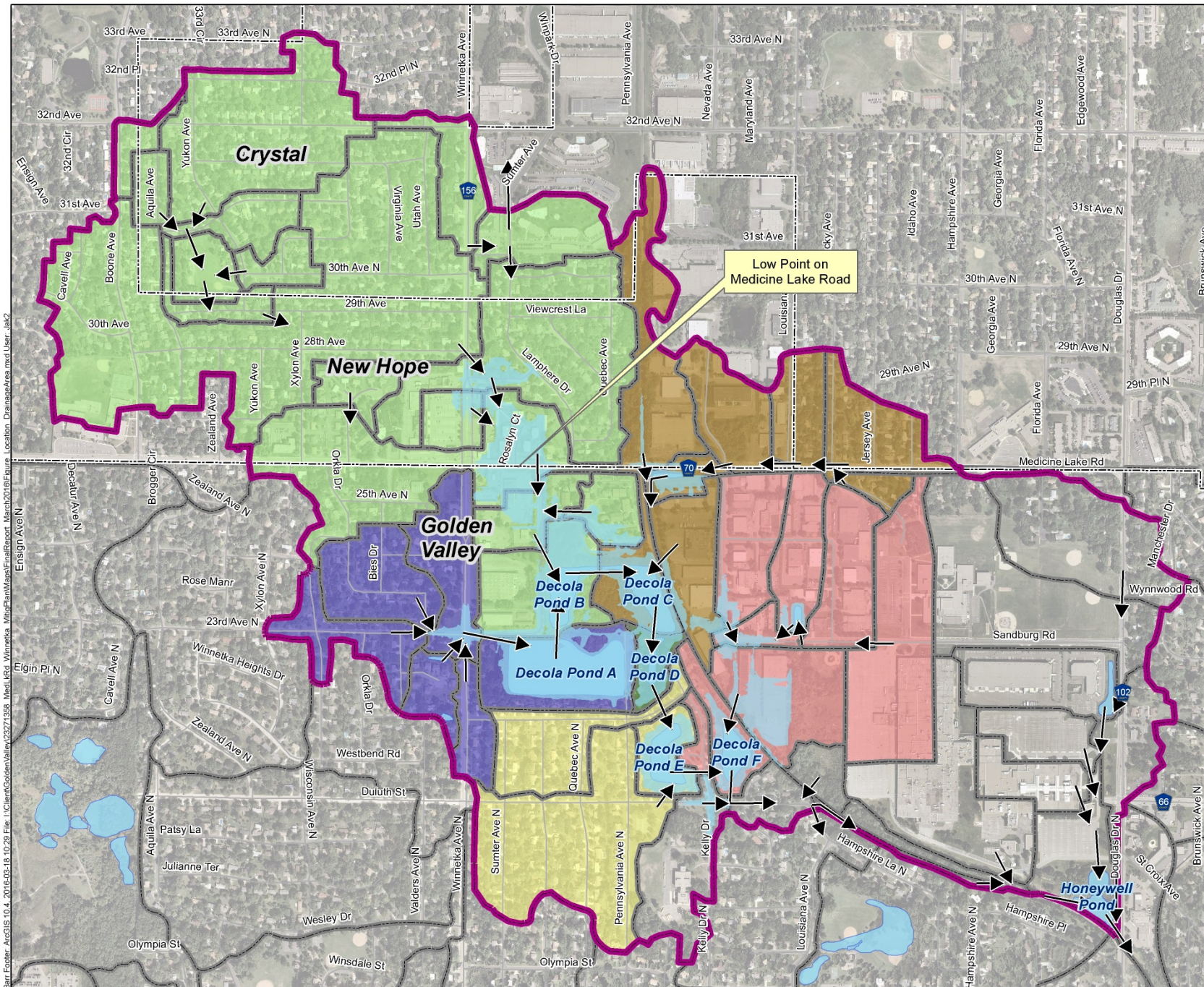


-  BCWMC Jurisdictional Boundary
-  Major Subwatersheds
- Trunk System Components**
-  Main Stem Bassett Creek
-  North Branch Bassett
-  Plymouth Creek
-  Sweeney Branch Bassett Creek
-  Designated Water Quantity and Water Quality Storage Facilities (From Fig. 15 of 2004 Plan)



Figure 2-15

BCWMC TRUNK SYSTEM
 Bassett Creek Watershed
 Management Commission
 2015 Management Plan



- Flow Direction
- Study Area
- Municipality
- 100-Year Flood Inundation Area*
- Subwatersheds
- Streets
- Ponds and Wetlands
- Decola Pond A
Direct WS = 66 ac
Total WS = 66 ac
- Decola Pond B
Direct WS = 306 ac
Total WS = 372 ac
- Decola Pond C
Direct WS = 79 ac
Total WS = 451 ac
- Decola Pond D
Direct WS = 4 ac
Total WS = 455 ac
- Decola Pond E
Direct WS = 57 ac
Total WS = 512 ac
- Decola Pond F
Direct WS = 93 ac
Total WS = 605 ac

* Based on XP-SWMM modeling utilizing the Atlas 14 precipitation depths and nested storm distribution

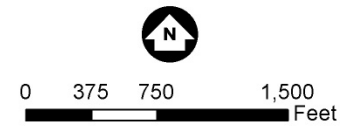


Figure 1-1

PROJECT AREA
 Medicine Lake Road and Winnetka Avenue
 Flood Mitigation Plan
 Cities of Golden Valley, New Hope, and Crystal



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Flooding is 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
- More recent flooding events (2002, 2006, 2010)



Flood water debris line at Rosalyn Court from a 2.5 inch rain event in July 2015

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



DeCola Pond F

Medicine Lake Road and Winnetka Avenue Area Long Term Flood Mitigation Plan



High water at DeCola Pond A, Golden Valley

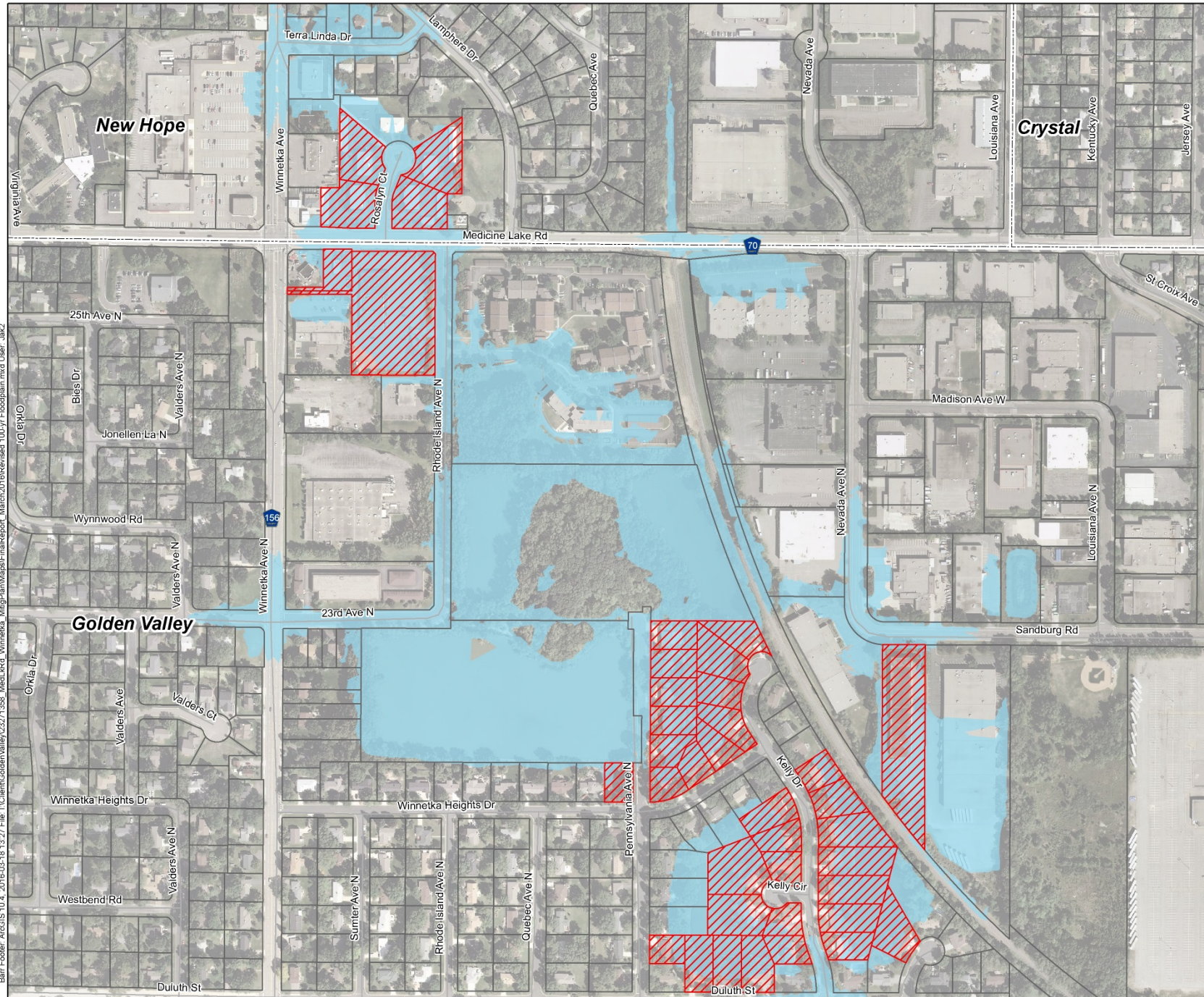
- Project Goals:
 - Reduce flood damages and flood risk
 - Provide reliable transportation and emergency response – public safety
- Completed in phases:
 - Phase 1 – Initial assessment and selection of flood mitigation alternatives
 - Phase 2 – Determine cost of preferred flood mitigation alternatives & 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*
-  Streets
-  Parcels
-  Municipality
-  100-Year Flood Inundation Area**

* 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

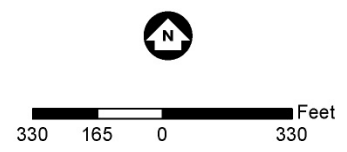


Figure 2-1

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



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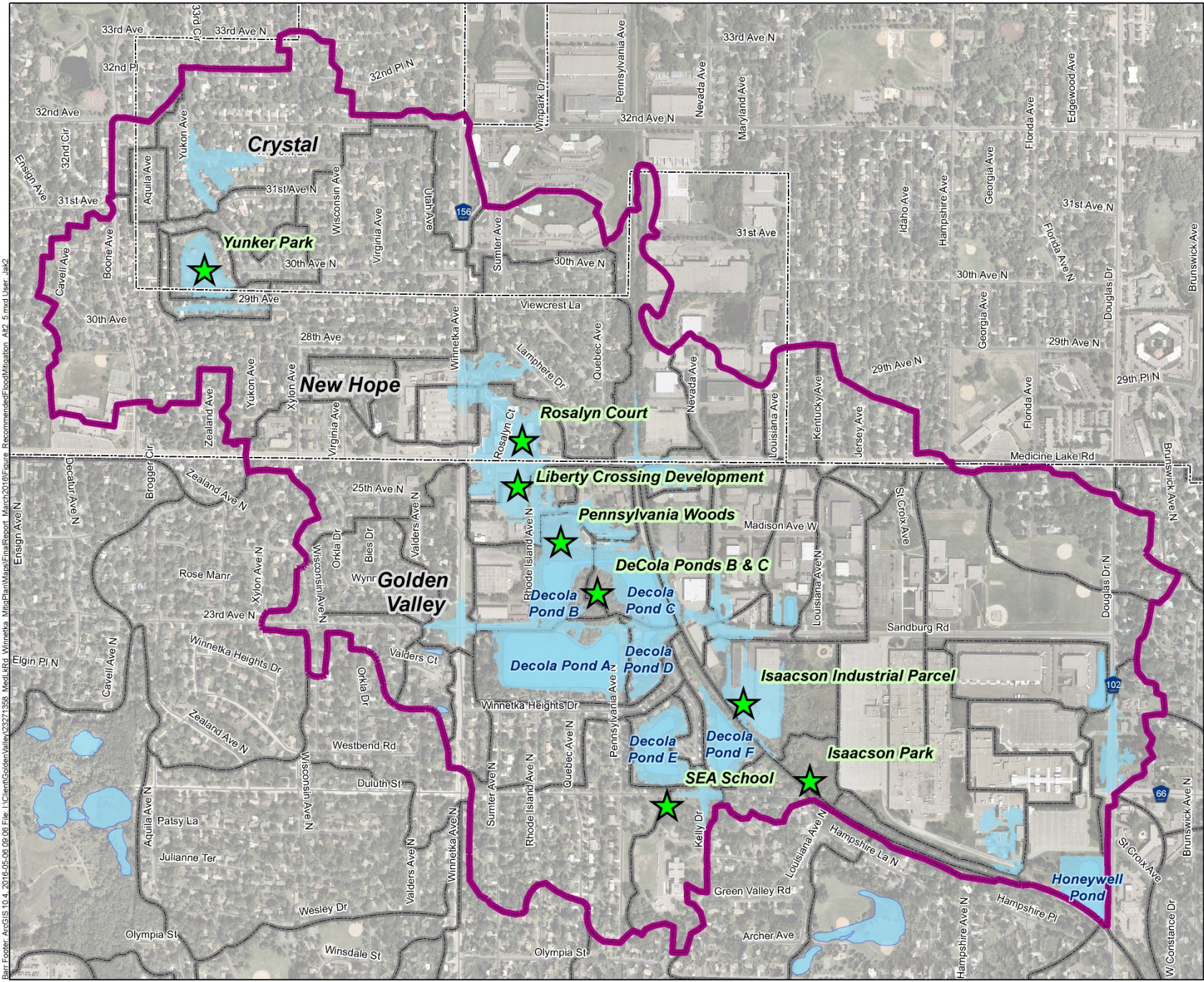
Phase 2:








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)



-  Recommended Flood Storage (Alternative 2.5)
-  Study Area
-  Municipality
-  100-Year Flood Inundation Area*
-  Subwatersheds
-  Streets
-  Ponds and Wetlands

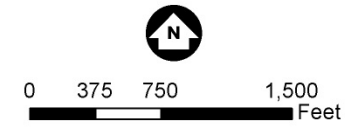


Figure 3-2

RECOMMENDED FLOOD MITIGATION PROJECTS (ALTERNATIVE 2.5)
 Medicine Lake Road and Winnetka Avenue
 Flood Mitigation Plan
 Cities of Golden Valley, New Hope, and Crystal



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The proposed flood storage results in significant decreases in flood elevations....

Flood Area Description	Existing Conditions	Alt 2.5	Change in Flood Elevation
Medicine Lake Road/ Rosalyn Court	905.1	901.8	-3.3 ft
DeCola Pond A, B & C	902.6	901.8	-0.8 ft
DeCola Pond D	902.7	899.2	-3.5 ft
DeCola Pond E & F	896.2	894.0	-2.2 ft

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

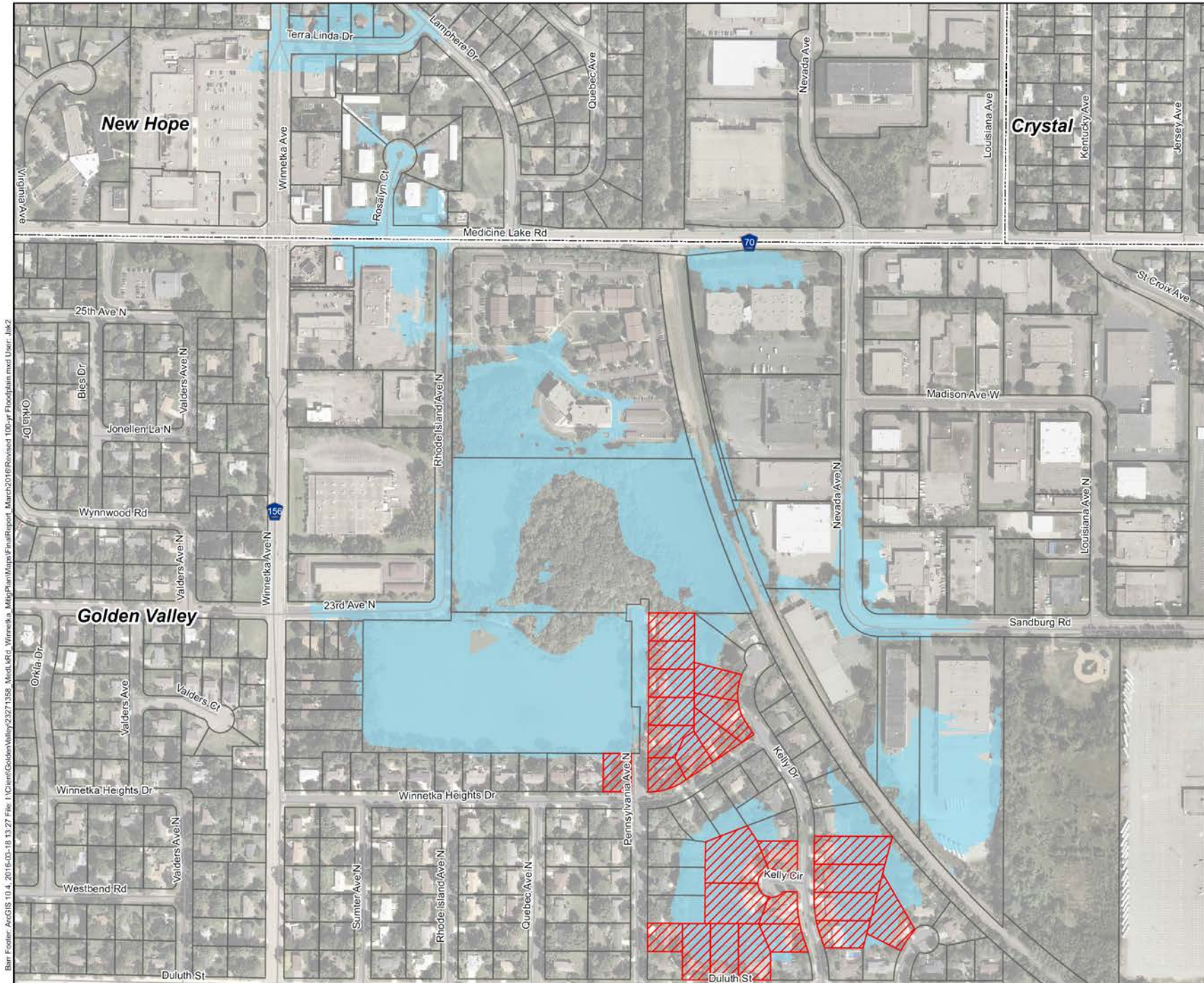
Flood Risk Reduction – By The Numbers

Property	Existing Conditions	Alternative 2.5
At-Risk Structure ¹ Potential Voluntary Acquisition ²	20	2
At-Risk Structure ¹ Acquisition (for Project Construction)	0	2
At-Risk Structure ¹ Flood Proofing ²	19	23
No Flood Risk ³	0	12

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*
-  Streets
-  Parcels
-  Municipality
-  100-year Flood Inundation Area**

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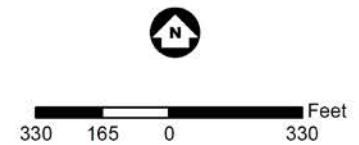


Figure 3-3

REMAINING AT-RISK STRUCTURES
 ALTERNATIVE 2.5
 Medicine Lake Road and Winnetka Avenue
 Flood Mitigation Plan
 Cities of Golden Valley, New Hope, and Crystal



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Estimated Planning Level Costs of Flood Mitigation Projects

Cumulative Flood Mitigation Project Est. Costs ⁴	Voluntary Acquisition Est. Costs ^{1,2,4}	Flood Proofing Est. Costs ^{2,4}	Total Est. Costs ^{3,4}
\$20,440,000	\$1,020,000	\$900,000	\$22,360,000

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%

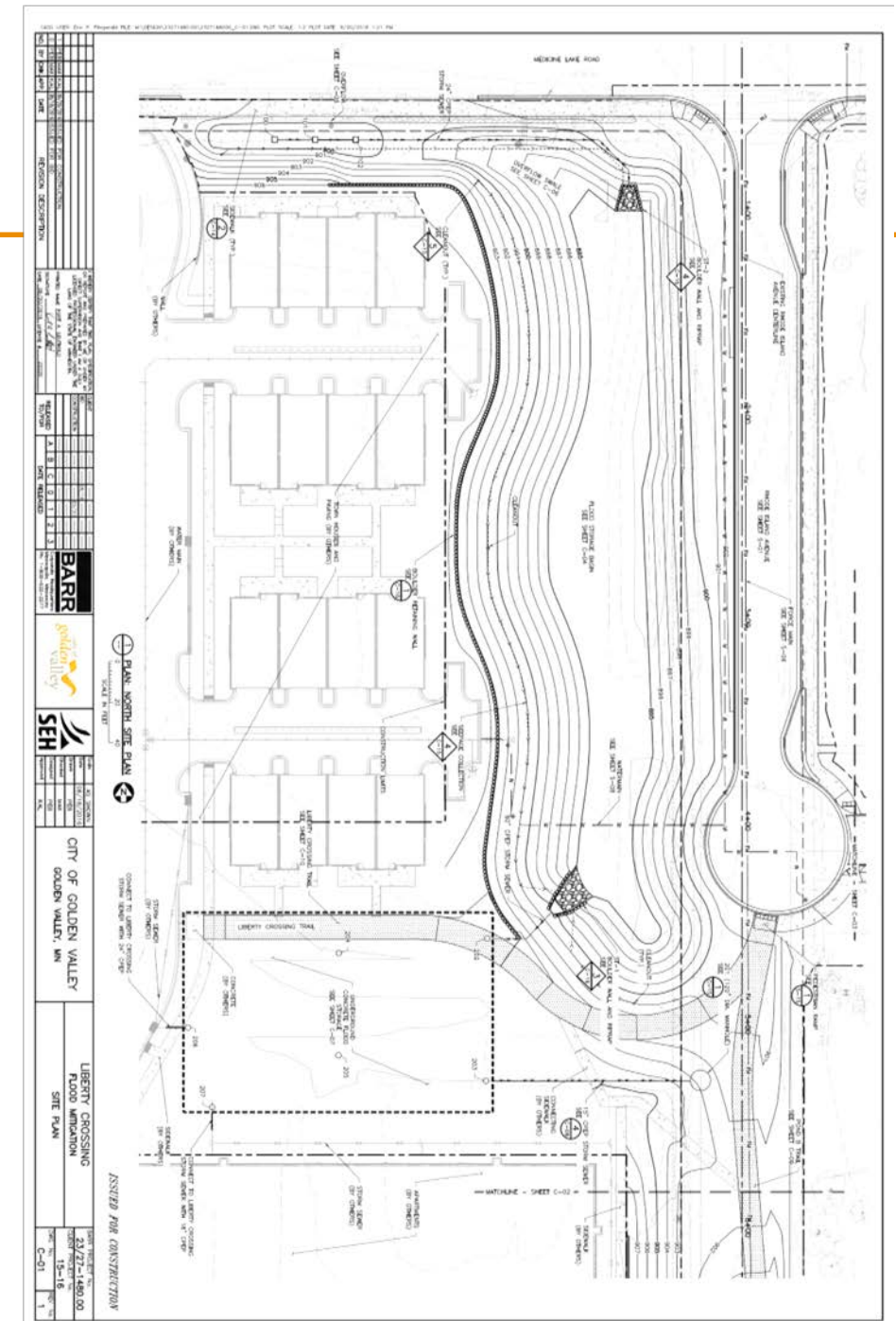
Recommended Implementation Order of Flood Mitigation Projects

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

**Actual sequencing of projects is flexible and will vary depending on opportunities and funding.*

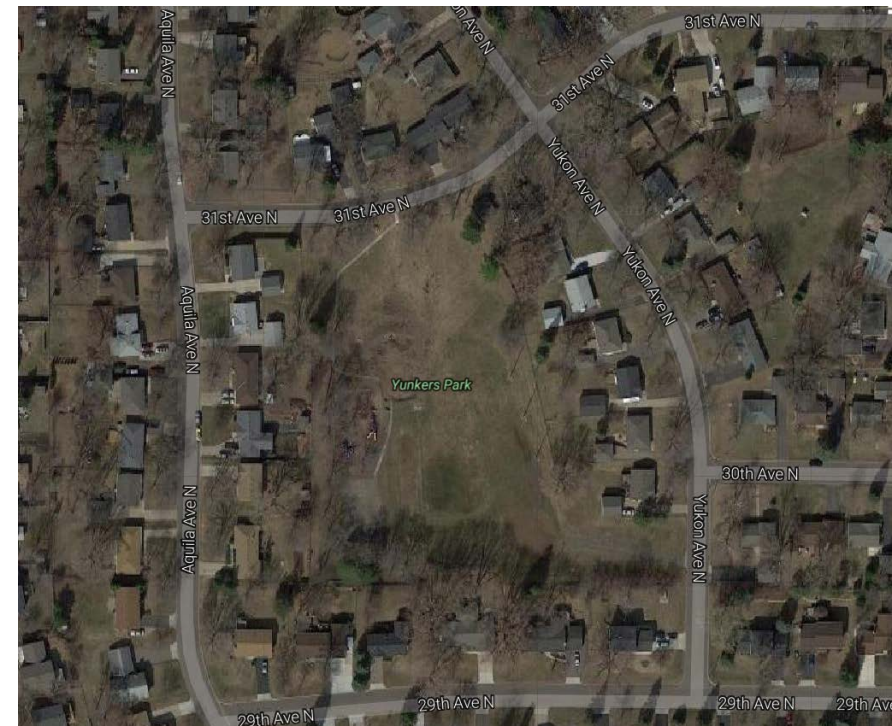
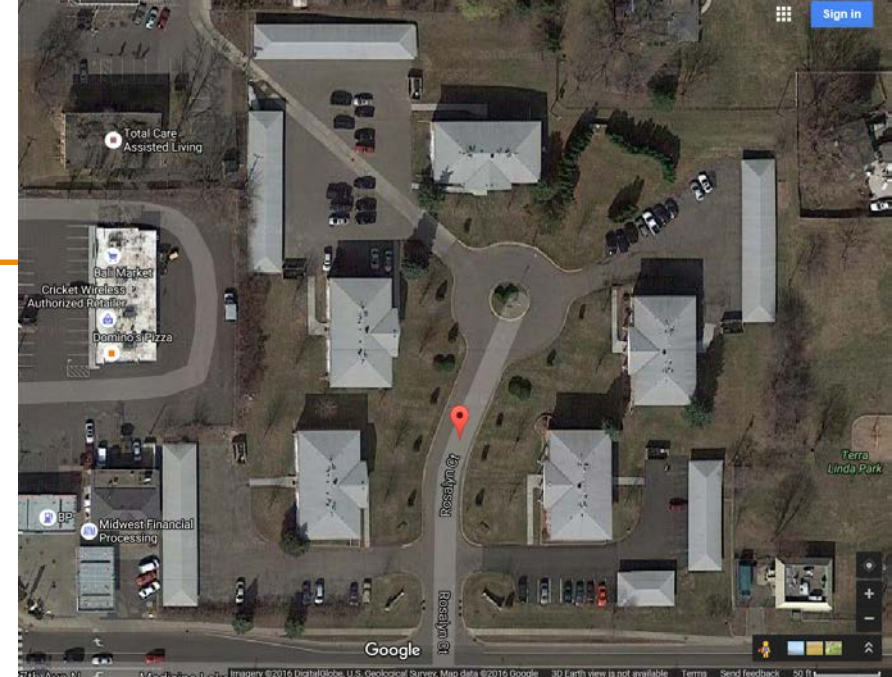
Projects are already underway...

- 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)