

Village of Bartlett Village-Wide Drainage Improvements

by

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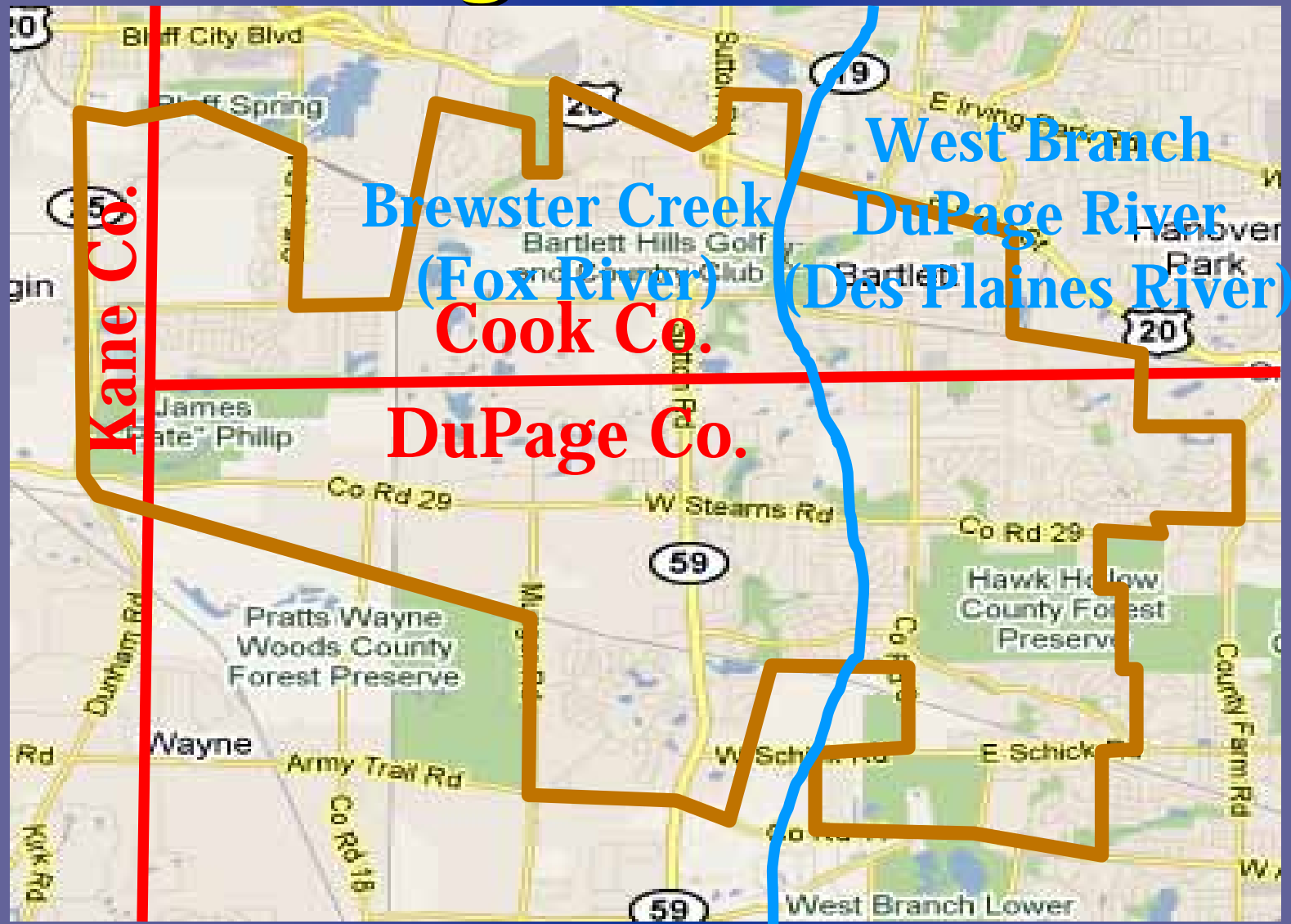
**Christopher B. Burke Engineering, Ltd
(CBBEL)**

Village of Bartlett



- Incorporated 1891
- Village Population
 - 1900 – 390
 - 1970 – 3,500
 - 2007 – 41,500
- 15 square miles
 - Residential
 - Commercial
 - Industrial
 - Open Spaces & Forest Preserves

Village of Bartlett



September 2008 Flood Event

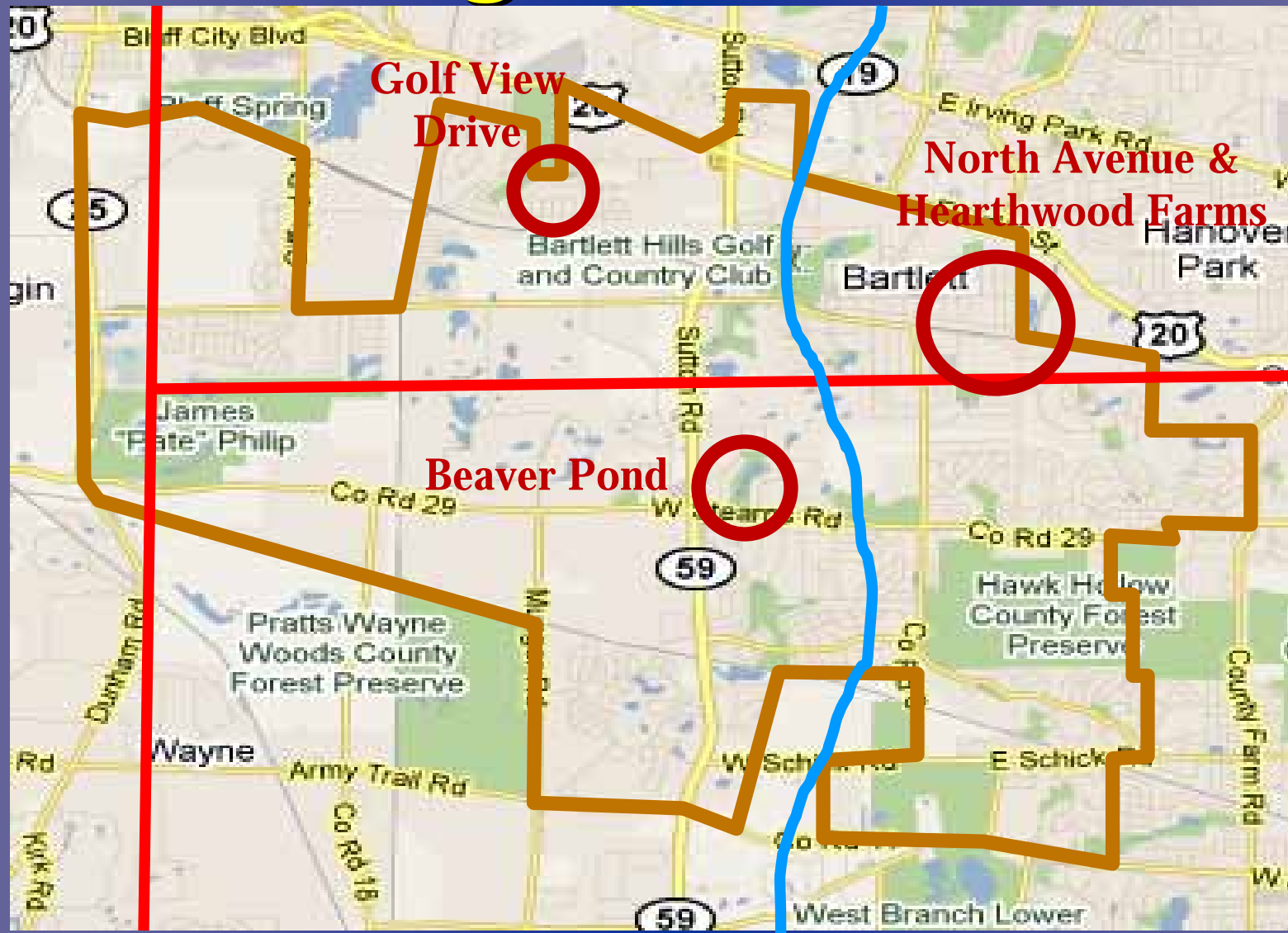
- September 13-15 2008
 - 8.8 inches of rain over 30 hours at Bartlett WWTP
 - Home weather stations report over 10 inches of rain
- 206 flood questionnaires returned
- Types of flooding reported*
 - Overland flow through windows or doors (68)
 - Seepage and Sump Pump failures (118)
 - Sanitary surcharge (39)

*some questionnaires reported multiple flooding types

Project Approach

- GIS-based categorization of flood questionnaires
- 3 “Major” study areas within Village
- Causes of flooding:
 - Residential areas built in the 1980s or earlier
 - Low entry elevations of homes below overland flow routes
- Drainage Improvements:
 - Short term and long term improvements
 - Storm sewers, flood storage, overland flow routes, etc.
- Inter-governmental cooperation and coordination
- Public meetings

Village of Bartlett

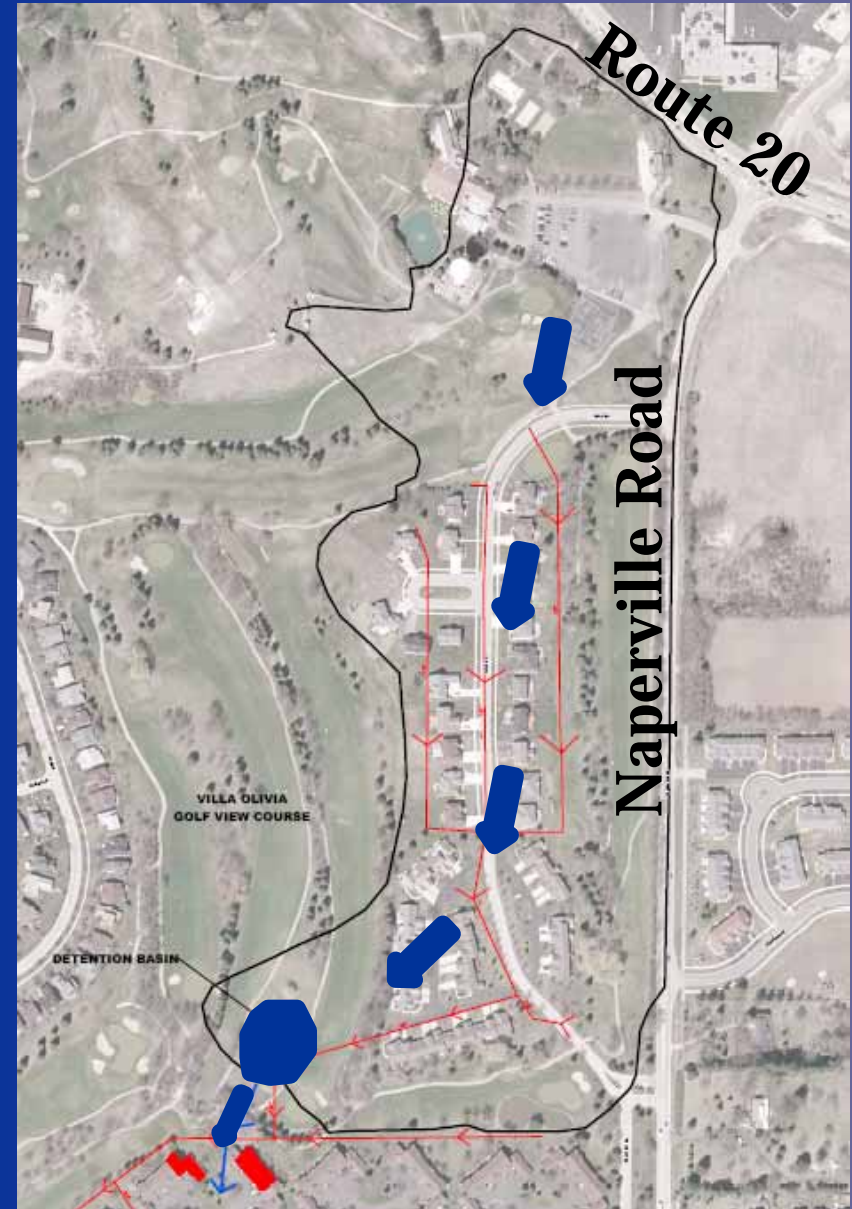


June 6, 2011

Bartlett Village-Wide Drainage
Improvements

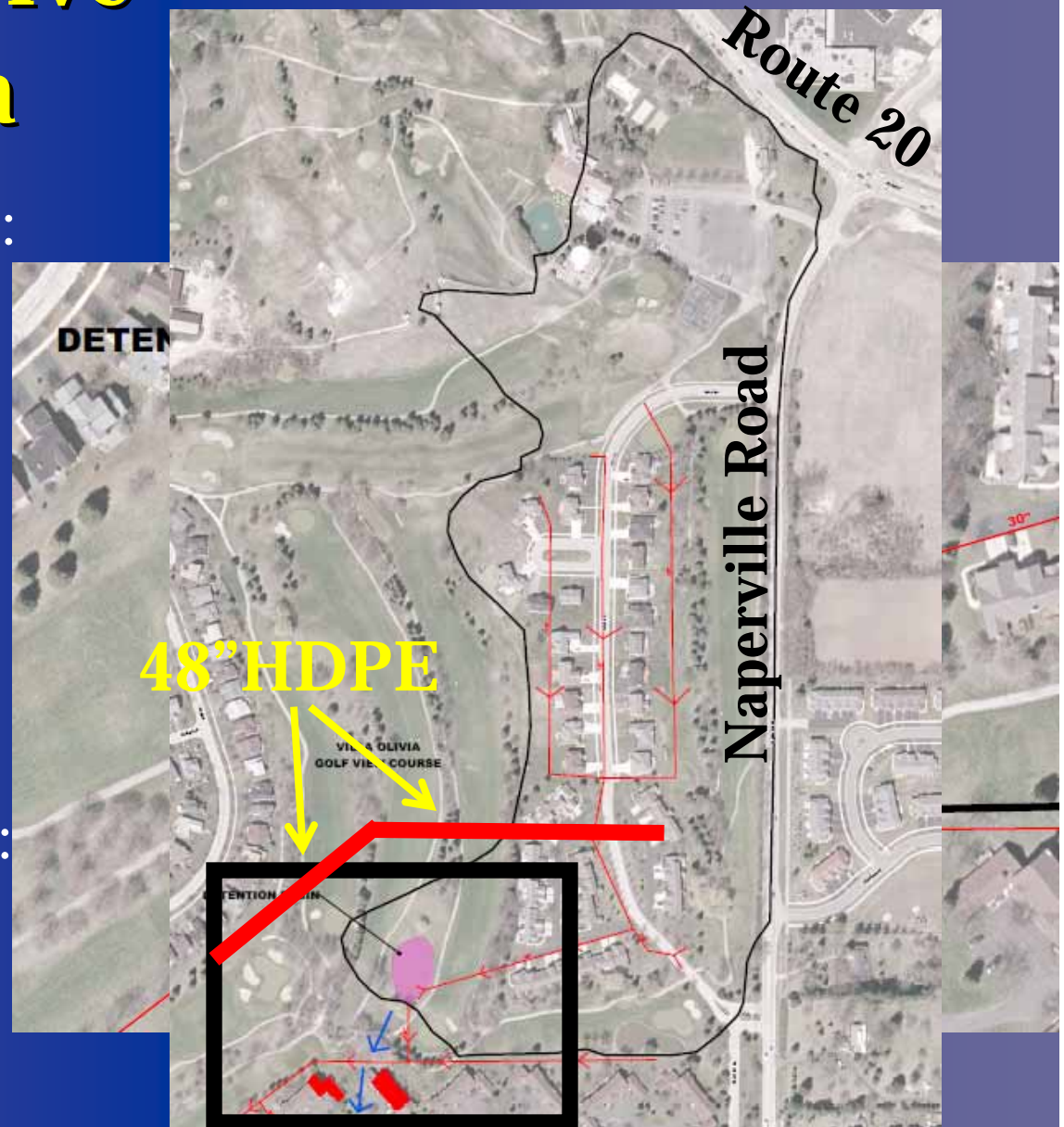
Golf View Drive Study Area

- 50 acres tributary to golf course detention pond
- Runoff from heavy rain exceeds detention basin capacity of 2.9 acre-ft
- Overland flow route blocked & water directed towards homes (10 impacted)
- XP-SWMM Analysis



Golf View Drive Study Area

- Short Term Improvement:
 - Residential Flood Proofing
 - Replace 24" RCP with 48" HDPE
 - Inlet structures
 - Overland flow route enhancement
 - 100-Yr level of protection
- Long Term Improvement:
 - Upstream storage

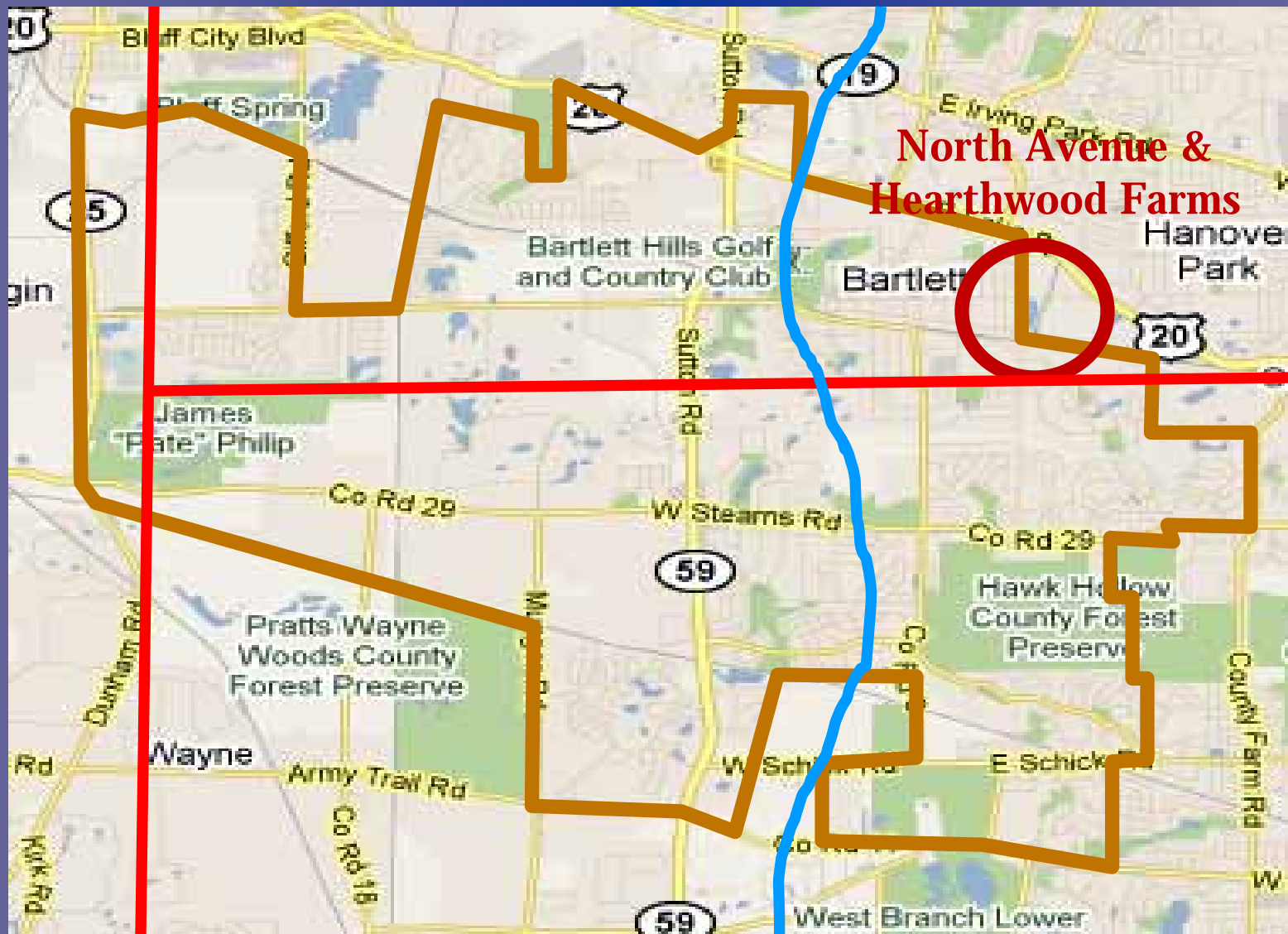


Golf View Drive Study Area

- Short Term Solution
Started October 2009
 - Utility coordination
 - Adjacent residential structures
 - 12-foot wide construction corridor
 - Landscaping
 - Construction Cost = \$135,000
 - Village Funding



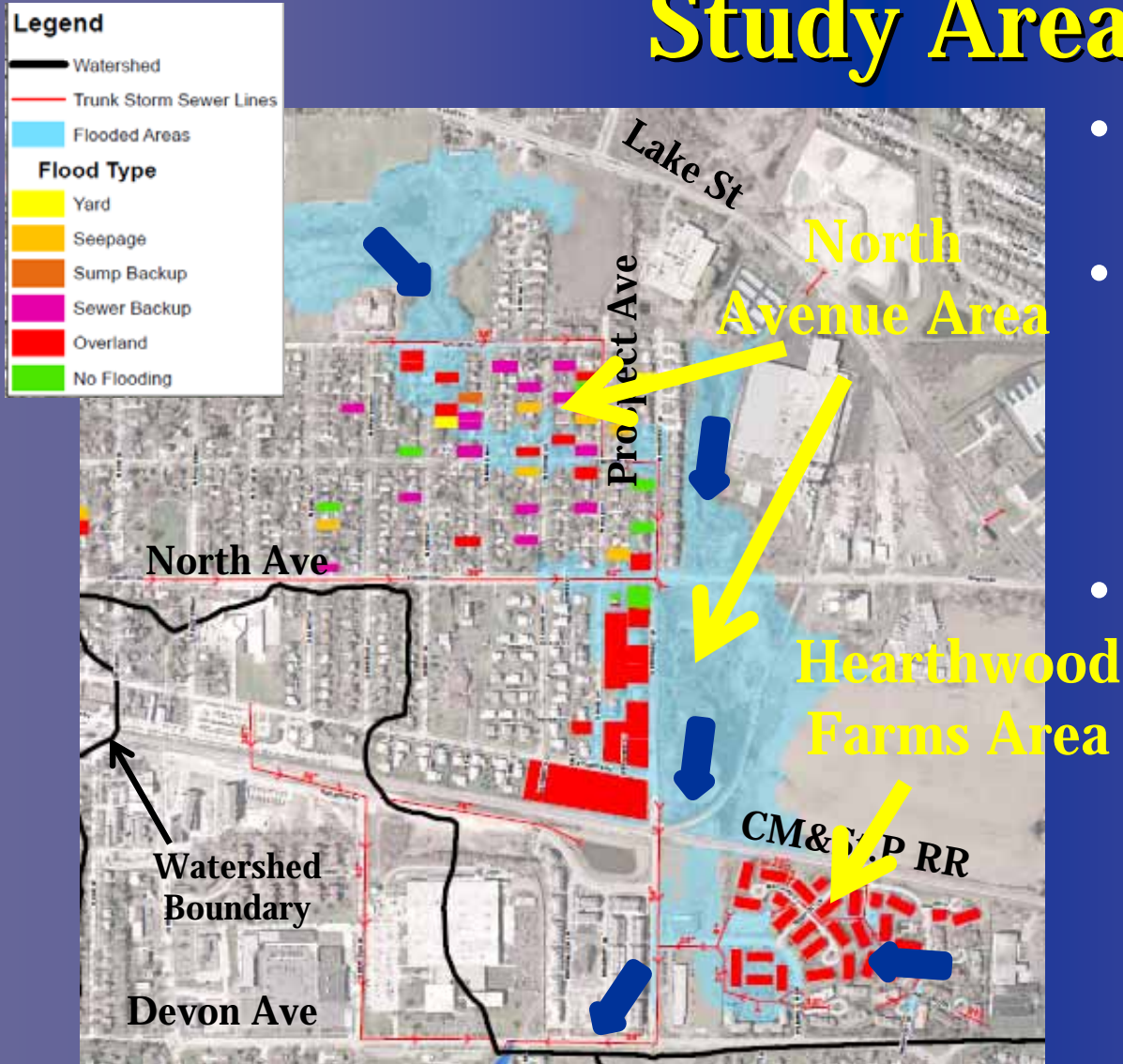
North Avenue/Hearthwood Farms



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Bartlett Village-Wide Drainage
Improvements

North Avenue & Hearthwood Farms Study Area



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Bartlett Village-Wide Drainage Improvements

- Watershed size = 2.1 mi²
- Drainage area includes Villages of Bartlett, Streamwood and Hanover Park
- Drainage problems
 - Insufficient storm sewer capacity
 - Historic overland flow path blocked by railroad
 - Water flooded low areas and entered adjacent residences

North Avenue/ Hearthwood Farms Study Area

- September 2008
 - 46 residential structures with surface water flooding
 - Several below 10-year flood elevation



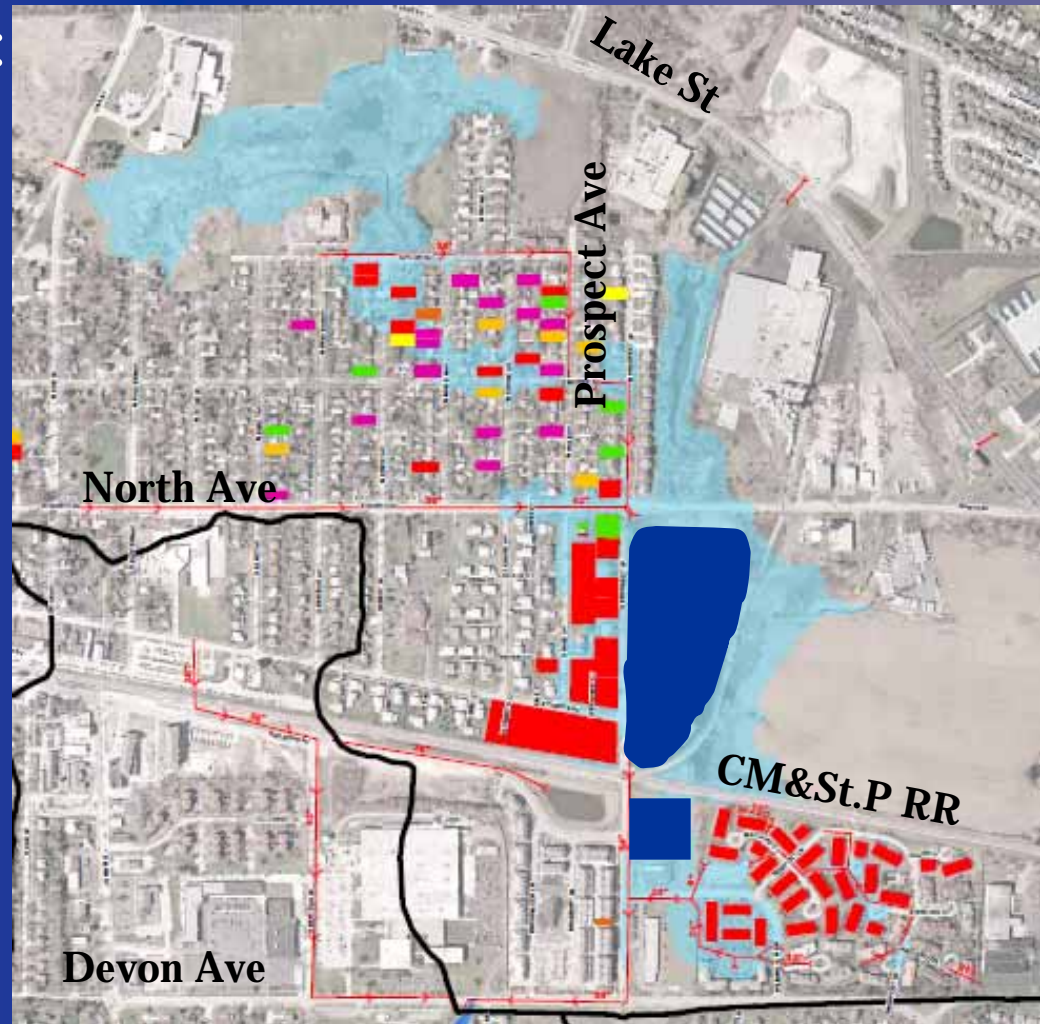
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Bartlett Village-Wide Drainage
Improvements

North Avenue/ Hearthwood Farms Study Area

- Short Term Improvement:
 - Beaver Relocation
 - Phase 1 Flood Storage
 - 10 acre-ft
 - Storm sewer
- Long Term Improvement:
 - Phase 2 Flood Storage
 - 75 acre-ft
 - Hearthwood Farms Flood Storage
 - 16 acre-ft



North Avenue/ Hearthwood Farms Study Area

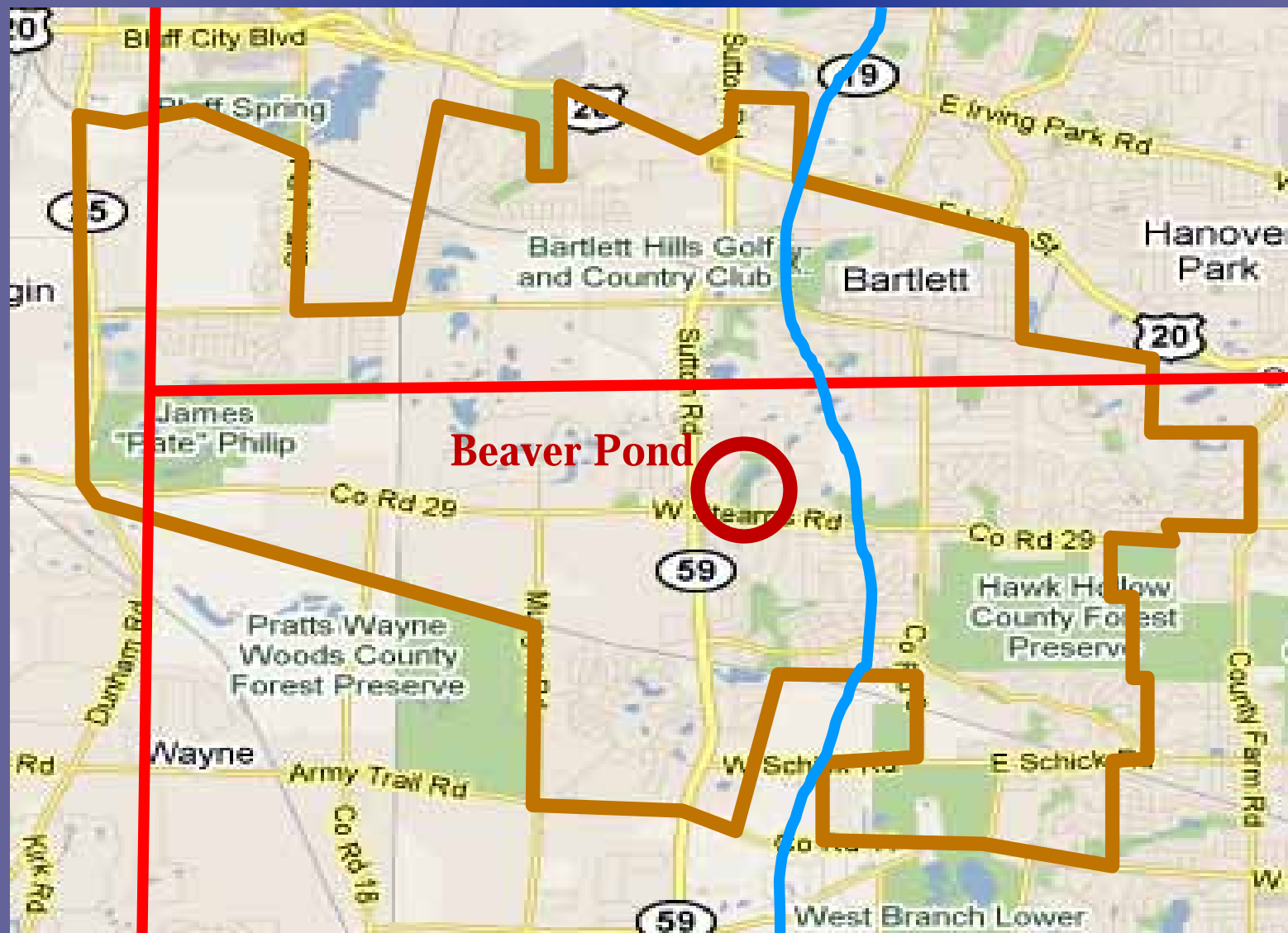
- Short Term (Phase 1)
improvement started June 2009
 - IGA with Village of Streamwood
 - XP-SWMM Modeling
 - Design plans and wetland permitting
 - 16,000 cy excavation
 - Construction completed November 2010
 - Construction Cost = \$342,000
 - Village Funding



North Avenue/ Hearthwood Farms Study Area

- Long Term Improvement
 - Phase 2 Flood Storage
 - Wetland permitting
 - 118,000 cy excavation
 - Estimated cost = \$2.5M
 - Hearthwood Farms Flood Storage
 - Land Acquisition
 - 26,000 cy excavation
 - Storm sewer upgrades
 - Gas transmission pipeline
 - Estimated Cost = \$2.0M
 - Applying for State and Federal Funding

Beaver Pond Study Area

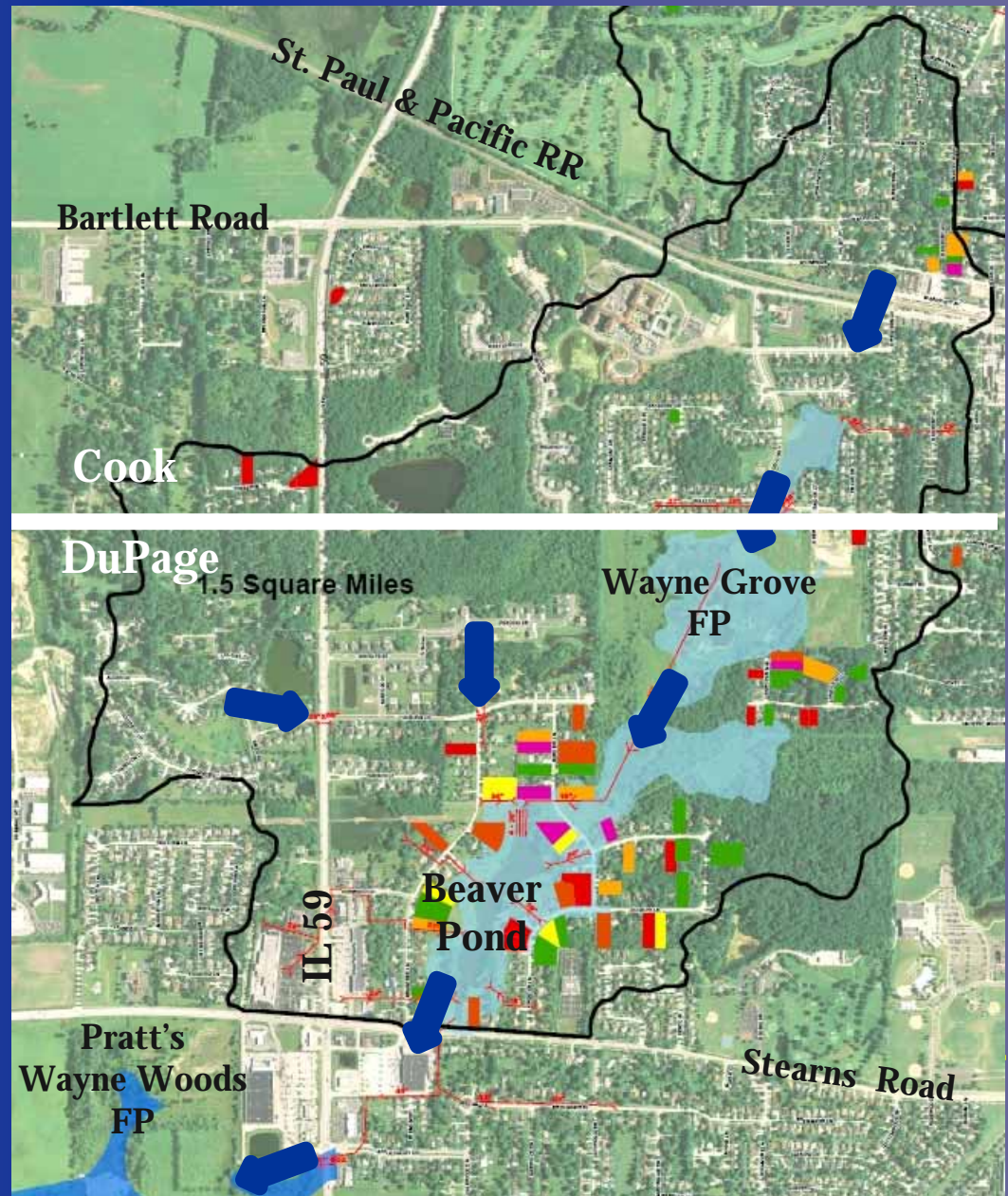


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Bartlett Village-Wide Drainage
Improvements

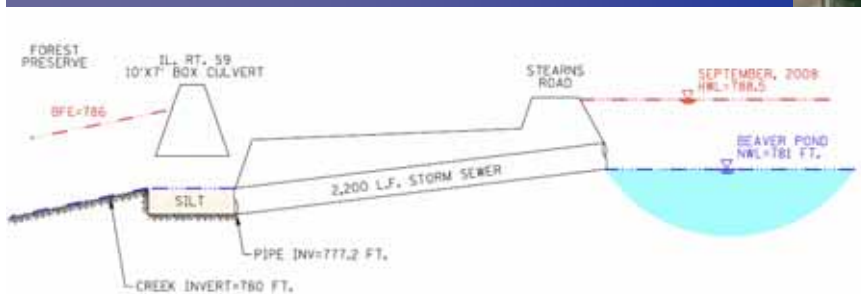
Beaver Pond Study Area

- Watershed = 1.5 mi²
- Headwaters of Brewster Creek
- Drainage pattern from north to south
- Drainage outlets into DuPage County Forest Preserve
 - Wayne Grove Forest Preserve
 - Pratt's Wayne Woods Forest Preserve



Beaver Pond Study Area

- Pipe outlet below downstream channel invert
- No safe overland flow route
- Finite storage in Beaver Pond



Beaver Pond Study Area

- 11 homes at or below September 2008 flood elevation
- 6 additional homes surrounded by water on 3 or more sides
- 51 homes isolated for days from flooded roads



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Bartlett Village-Wide Drainage
Improvements

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Beaver Pond Study Area

Short Term Drainage Improvements

- Short Term Improvements:
 - Inter-governmental coordination
 - DuPage County, FP, Village, DuDOT, IDOT
 - Drain tile repairs by Forest Preserve
 - Forest Preserve District clearing of outlet channel in Pratt's Wayne Woods FP
 - Preparation of Watershed Plan

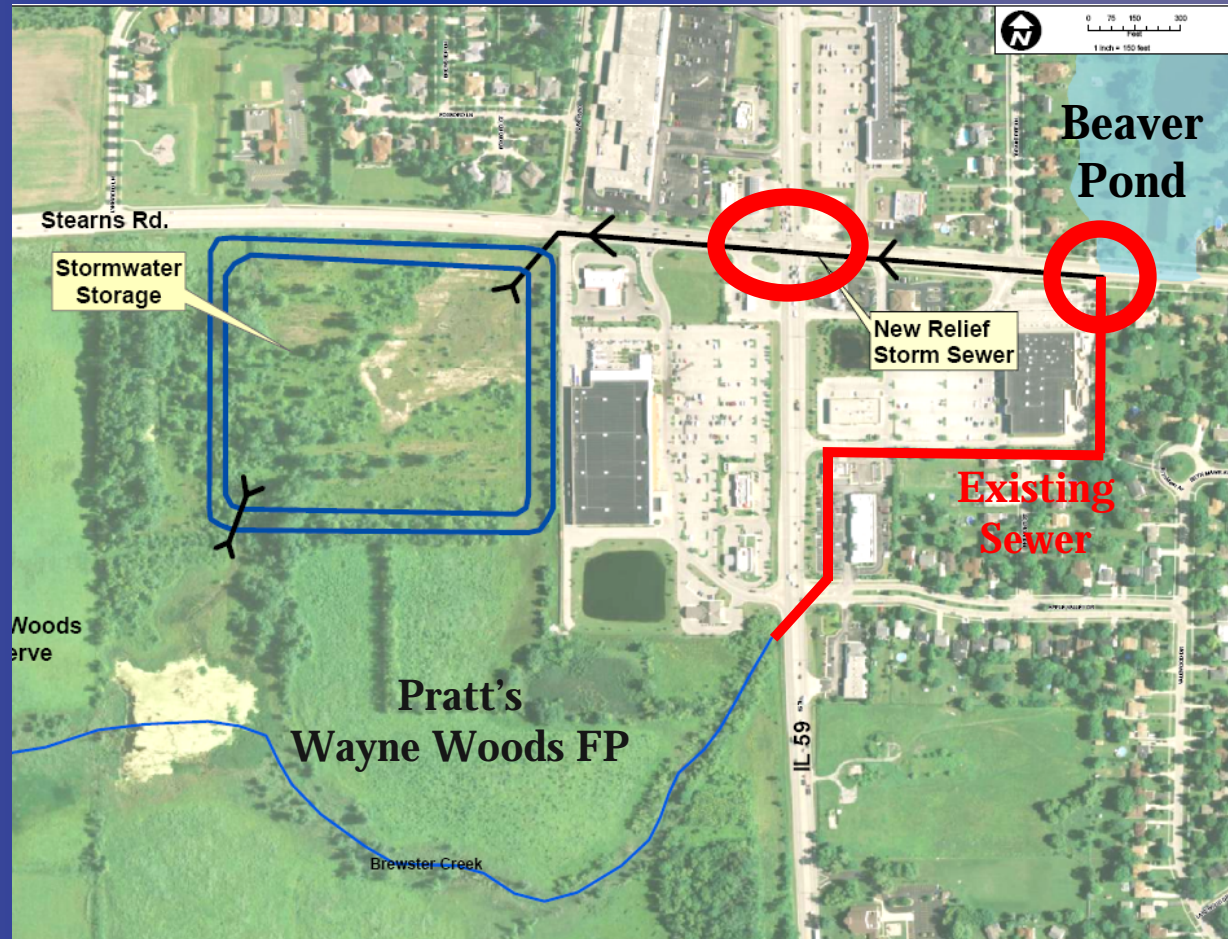


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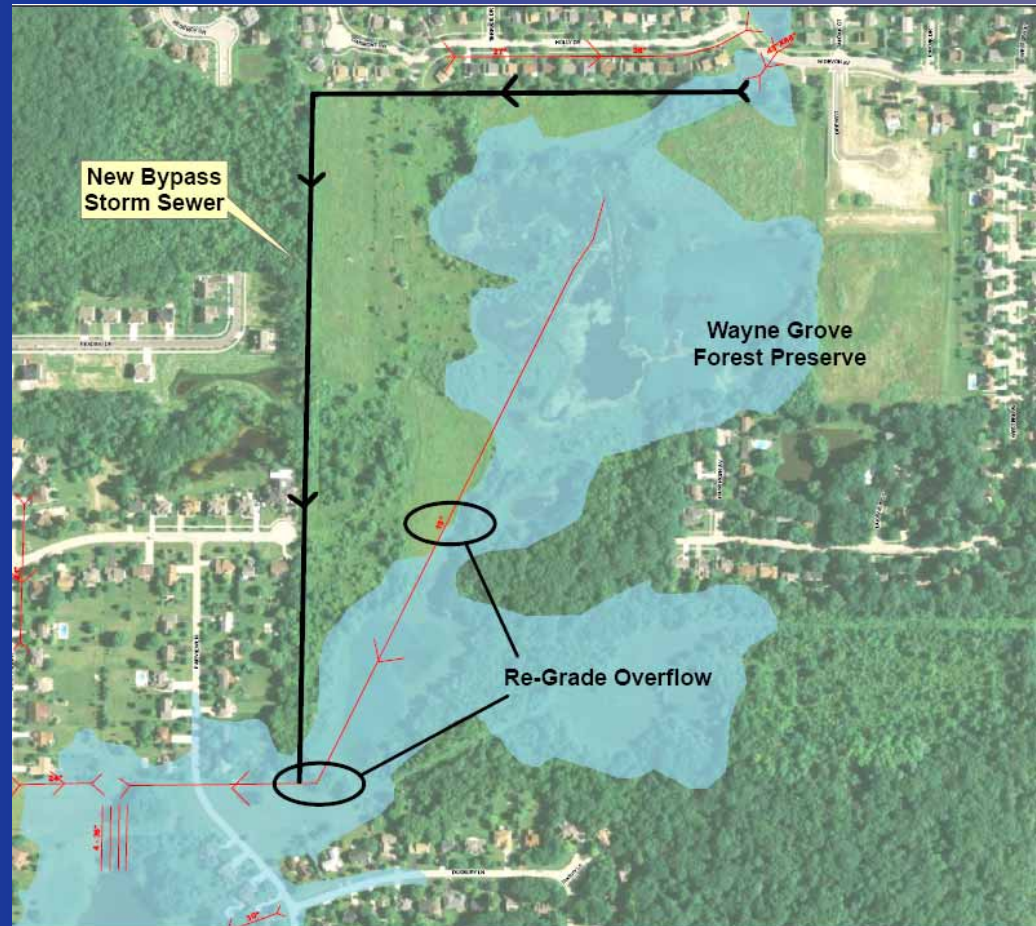
Beaver Pond Study Area

- Long Term Improvement:
 - 2,600 l.f. 60-inch RCP under Stearns Road
 - Control Weir
 - 55 acre-ft flood storage facility on FP property
 - Estimated Cost = \$5.0M
 - Estimated Fall 2011 Letting



Beaver Pond Study Area

- Long Term Improvement
 - 3,600 lf storm sewer (15-inch HDPE)
 - Re-graded overflow routes
 - Estimated Cost = \$500,000
 - Estimated Fall 2011 Letting



Project Summary

- Identification of Study Areas
 - Golf View Drive
 - North Avenue/Hearthwood Farms
 - Beaver Pond
- Development of Short Term and Long Term Improvements
- Inter-Governmental Cooperation