What Has Limited the Risk of Damages in Western Cook County? Good Policy or Good Luck?

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Overview/Background

- MWRD was granted Stormwater Management Authority for Cook County in 2004
- Part of the enabling legislation required the creation of Detailed Watershed Plans for six watersheds in Cook County
- In February 2011, all six DWPs were completed and studies identified total existing conditions damages from regional flooding or erosion to be $966,096,000
Total Existing Conditions Damages by Watershed

Total Existing Conditions Damages = $966,096,000

- Calumet-Sag Channel, $53,301,000
- Little Calumet River, $74,867,000
- Upper Salt Creek, $8,311,000
- Poplar Creek, $7,995,000
- North Branch Chicago River, $352,827,000
- Lower Des Plaines River, $468,795,000
## DWP Calculated Damages

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Existing Conditions Damage/Mi²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poplar Creek</td>
<td>$95,749</td>
</tr>
<tr>
<td>Upper Salt Creek</td>
<td>$151,109</td>
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<tr>
<td>Little Calumet River</td>
<td>$333,966</td>
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<tr>
<td>Calumet-Sag Channel</td>
<td>$352,987</td>
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<tr>
<td>Lower Des Plaines River</td>
<td>$2,534,027</td>
</tr>
<tr>
<td>North Branch of Chicago River</td>
<td>$2,940,225</td>
</tr>
</tbody>
</table>
Why Do The Damages Vary?

• History/Patterns of Development
  – Availability of studies
  – Implementation of Regulations and Ordinances

• % Undeveloped Land/Open Space

• Hydrology of Watershed

• Regional Flood Control Structures
Watershed Timeline

1971-72  The NRCS (SCS) and MWRD Mapped Floodplains in the Watershed
1972    MWRD updates its Sewerage Permit Application to Require Detention
1973-74 MWRD Built Three Regional Flood Control Facilities on South Branch of Poplar Creek
1976    The NRCS Completed the “Poplar Creek Watershed Flood Water Management Plan”
1978-84 FIS Completed for Communities in the Watershed
1999    MWRD Updated Detention Requirements
2005    MWRD Starts Stormwater Management Program
MWRD Permits Issued
1976 Plan Recommendations

• Land treatment program (for SE/SC)
• Purchase of 435 acres of floodplain lands as open space
• Purchase 215 acres of wetlands plus 165 acres of buffers
• Adopt floodplain regulations
• Floodproof six buildings
• Construct Levee in Elgin and replace bridge
• Channel maintenance program
100-Year Inundation Risk

- FEMA Zone A and AE total 4,356 acres in the study area
- DWP 100-year inundation area totals 5,038 acres in the study area (16% increase)
1972 Mapping with 2008 DFIRM Zone AE
Development Respecting Established Floodplains
1971 Mapping with 2008 DFIRM Zone AE
Converting Developed Land to Open Space (sometimes)
Additional Damages Since 1976 Study
(majority are mobile homes)

1976 128 structures identified as damaged in the 100-year event (69 mobile homes, 59 permanent structures)

2010 244 Structures identified as damaged in the 100-year event (140 mobile homes, 104 permanent structures)

(only for Poplar Creek watershed)
1976
Forest Preserve
Land Use/Hydrology

Map showing land use categories in McHenry County, Lake County, Kane County, and DuPage County. The map includes color-coded areas for different land use categories such as Agricultural, Commercial/Industrial, Forest/Open Land, Institutional, Residential, Transportation/Utility, Water/Wetland.
Stream Gage Location
Poplar Creek Peak Flows

100-year Statistical Flow (LPIII through 1976) = 1,090 cfs

Regression Equations = 1,710 cfs (standard error 35-50%)

Diversion begins at 900 cfs
Regional Flood Control

• Three flood control basins constructed in Streamwood between 1973 and 1974
• No current damages on Poplar Creek South Branch (Primarily Streamwood)
Conclusions

• Large areas of the floodplain are contained in open space.
• Most development occurred after earliest flood studies were completed, respected floodplain boundaries and included detention.
• Hydrologic techniques did not underpredict flood flows too badly by modern standards.
• Ongoing efforts to buyout properties and restore open space to the floodplain have reduced damages.
• Flood control facilities designed almost 40 years ago provide protection from the 100-year event.