

Case 1: Louisville Kentucky

Many typical needs and challenges

- Economic revitalization
- Historical flooding
- Social justice issues
- Environmental degradation
 - “Greasy Ditch”
 - Stream dredging / concrete lining
 - Filling of floodplain

Louisville Kentucky



- **River town founded in early 1800's**
 - “Bottom lands” of the Ohio river
- **Today largest metropolitan area in Kentucky**
 - 2000 census population > 1,000,000
 - Major manufacturing hub for the region
 - General Electric
 - Ford motor company
 - United Parcel Service



Louisville's History of Flooding

- 1937 - Worst Flood of Record
- 1945 - Devastating Flood
 - Floodwaters 11ft deep
- 1964 - Major Flood
 - Failure to Close Floodgate
- 1983 - SW Louisville
 - Floodwaters 10ft deep / Sewers backup
- 1992 - Flooding
 - Flood proofing
- 1997 - 100 Year plus event
 - 26.6 ft above normal
- ***Today - Flooding continues to be a problem***



Louisville, Kentucky

In FEMA special flood hazard area

- 1,400,000,000 in infrastructure (w/o levee)
- 0,695 homes and businesses
- 5,675 flood insurance policies
- Protecting \$717,000,000
- Flood insurance claims paid
 - 3000 claims
 - \$40,000,000



Solutions To Historical Problems

- 1930's Combined Sewers
- 1940's thru 80's
 - Separate sanitary sewers
 - Regional Wastewater Treatment Facilities
 - Floodwalls - 37 miles of floodwalls
- 1990'S Programmatic Solutions
 - Floodplain Ordinances
 - CRS
 - Watershed Planning
- Today
 - ***FEMA centric program***



- 24-ft dia Combined Sewer

Louisville Metro's

FEMA Centric Strategy

1986 MSD

- Designated Floodplain Management Agency

1994 FEMA CTP

- Cooperating Technical Partner
- GIS Integrated Floodplain mapping
- On-line H/H Model Mgmt
- Online floodplain determinations

1997 Expanded Federal Partnership

- USACE: 3 Major flood control projects

2003-04 HMGP/ PDM

- 48 Floodplain Buyouts
- 6 Buyouts 100% Local \$

2004 to Present

- HAZUS Beta Community
- CRS Class 3 Community
- Proactive Ordinances
 - Local Regulatory
 - Floodplain Volume Compensation
- Green Infrastructure

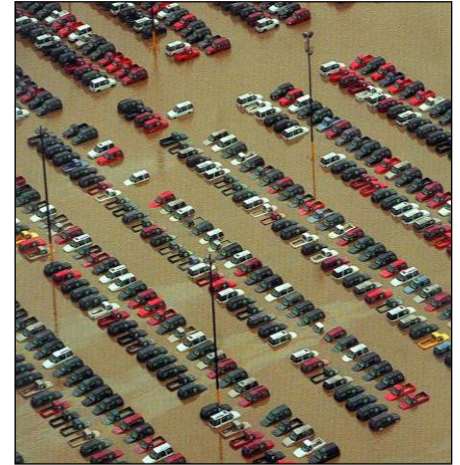
Louisville's / FEMA's Stage “Renaissance Zone”

Re-development Initiative

- Federal / State / Local
- Economic Engine for the Region
 - 3500+ Acres within Pond Crk Watershed
 - 50%+ Located within Floodplain

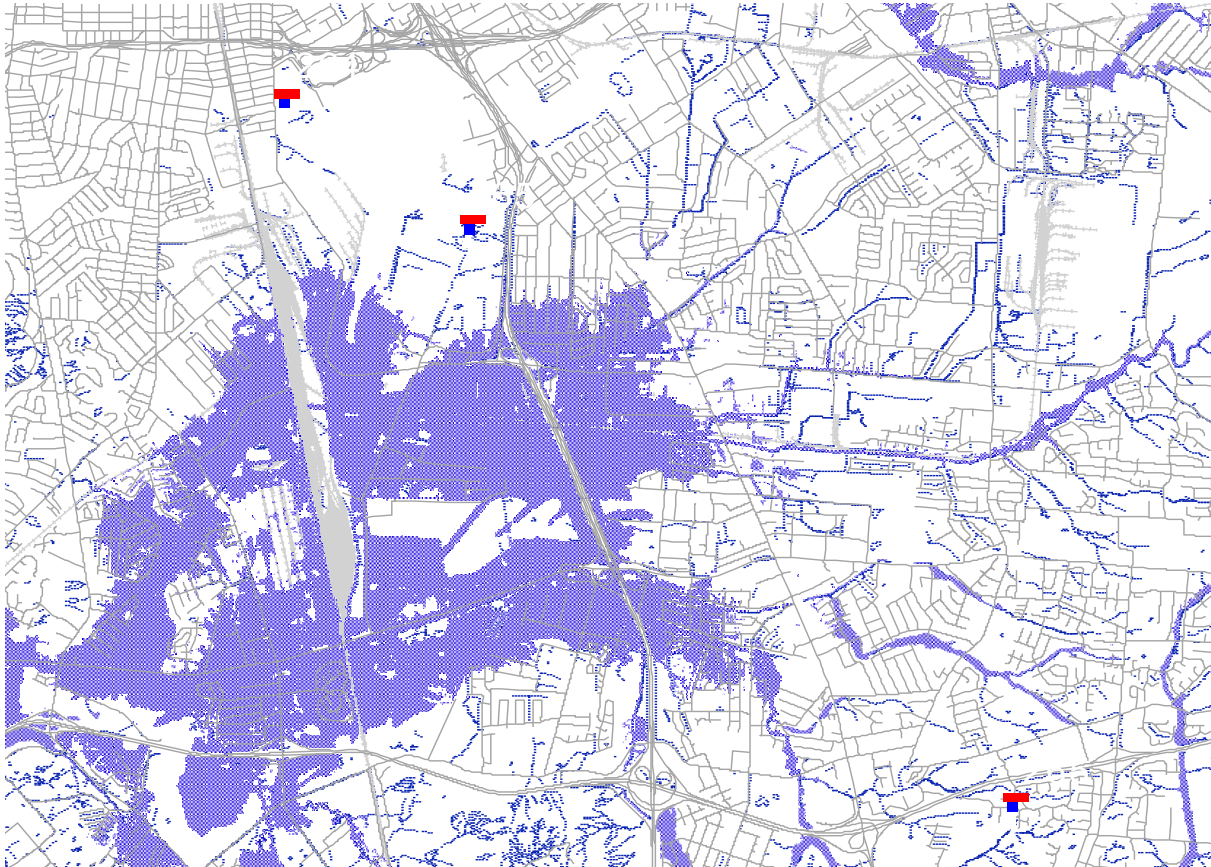
Partners

- Existing: Airport Authority / UPS Regional Hub / GE Appliance Ford Motor Co. / Waste Management
- New FEMA



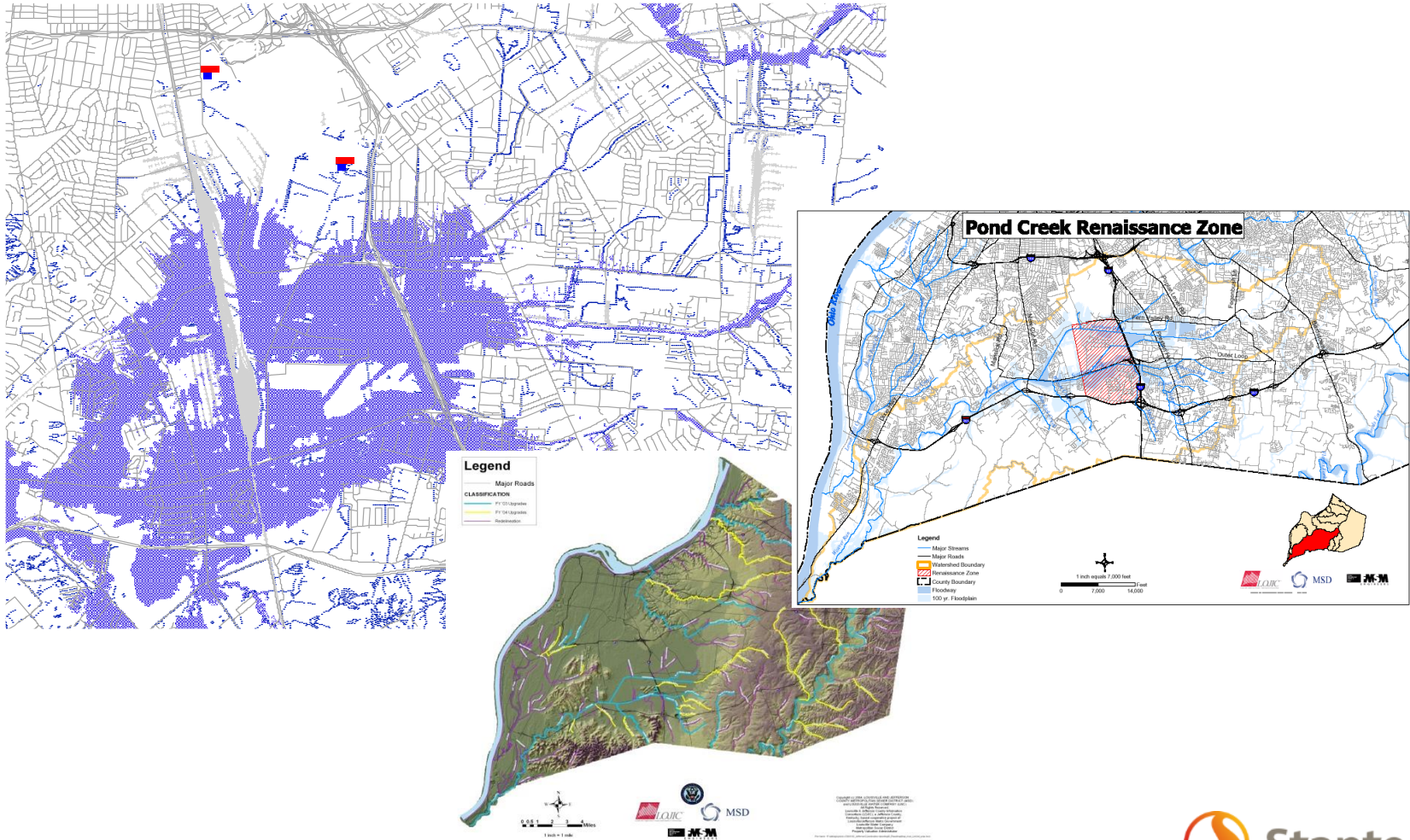
*March 1997 Flood of the Ford Motor Company in the
Pond Creek Watershed*

Louisville's and FEMA's Stage "Renaissance Zone"



March 1997 Flood - Pond Creek

MSD's and FEMA's Stage Renaissance Zone vs. Pond Creek Watershed



MSD's and FEMA's Stage

Renaissance Zone / Pond Creek Watershed

The Concept:

Sustained Development

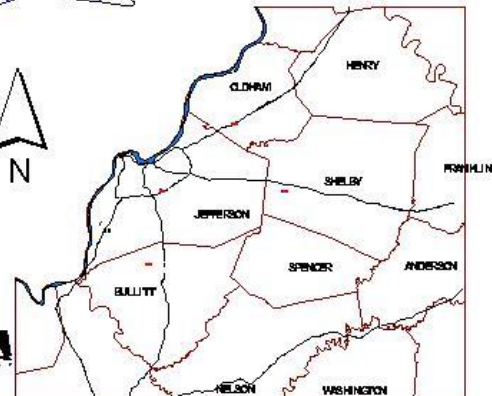
Pond Creek Watershed Major Businesses
Jefferson County, Kentucky

Pond Creek
Watershed

Copyright (c) 1999, LOUISVILLE AND JEFFERSON
COUNTY METROPOLITAN SEWER DISTRICT (MSD)
and LOUISVILLE WATER COMPANY (LWC)
All Rights Reserved.

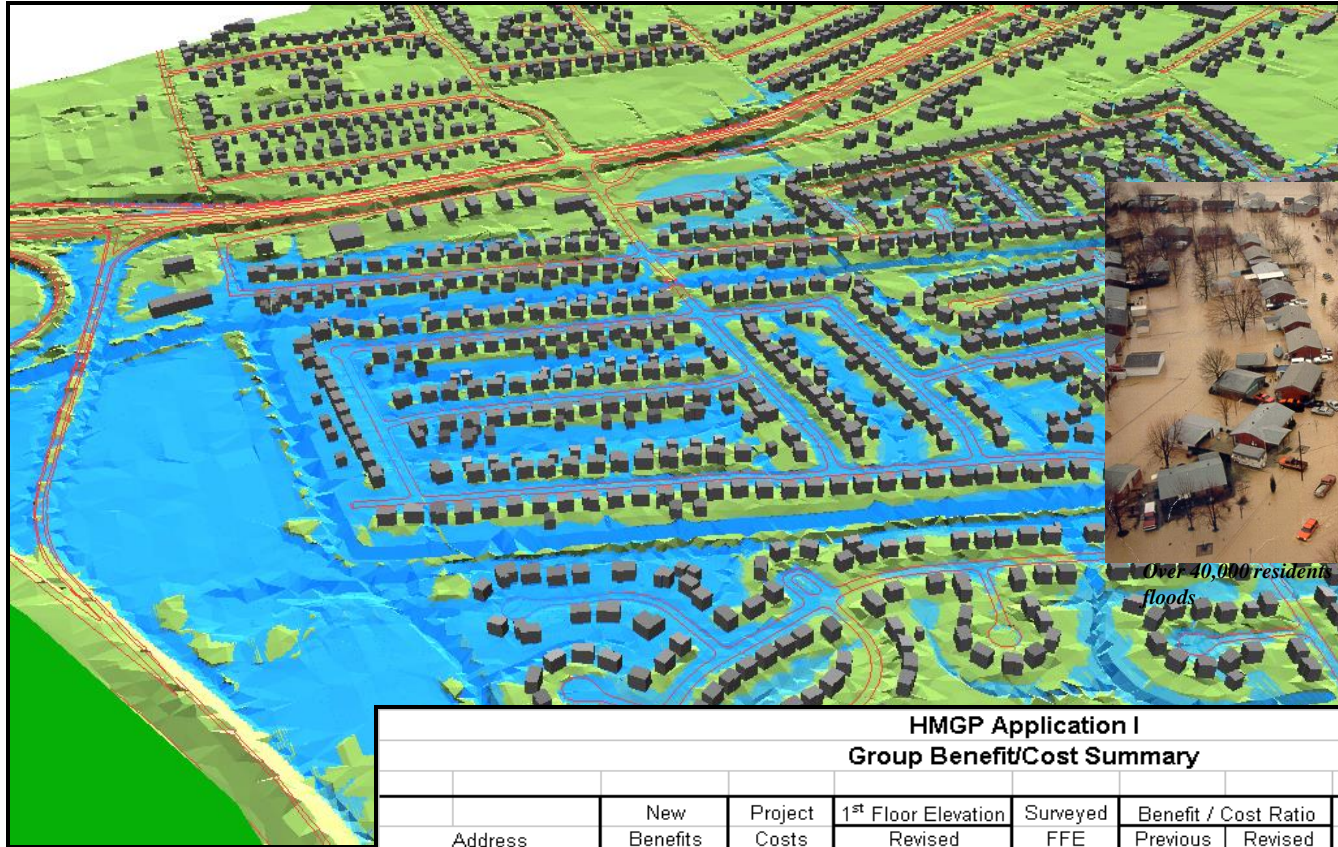


MSD



FEMA Centric Strategy

CTP – Updated GIS / Surveys / H/H Models



Over 40,000 residents were impacted in the 1997
floods

HMGP Application I
Group Benefit/Cost Summary

Address	New	Project	1 st Floor Elevation	Surveyed	Benefit / Cost Ratio		Other
	Benefits	Costs	Revised	FFE	Previous	Revised	Information
8300 Woodsman Ct	\$129,741	\$73,626	462.10	-	3.45	1.76	no elevation certificate, crawl space
8303 Woodsman Ct	\$8,324	\$92,495	464.70	464.44	6.12	0.09	elevation certificate available, crawl space
8305 Woodsman Ct	\$3,651	\$90,963	465.10	-	3.92	0.04	elevation certificate available, crawl space
606 Ruben Ln	\$248,084	\$124,633	-	456.68	1.83	1.99	no elevation certificate, slab
702 Ruben Ln	\$5,235,396	\$172,019	-	450.31	2.01	30.43	no elevation certificate, basement
704 Ruben Ln	\$457,673	\$100,109	-	455.51	1.17	4.57	no elevation certificate, slab
Total	\$6,082,869	\$653,845					

Pond Creek / Neighborhood Master Planning

Pond Creek Renaissance Zone- Existing & Future Basins

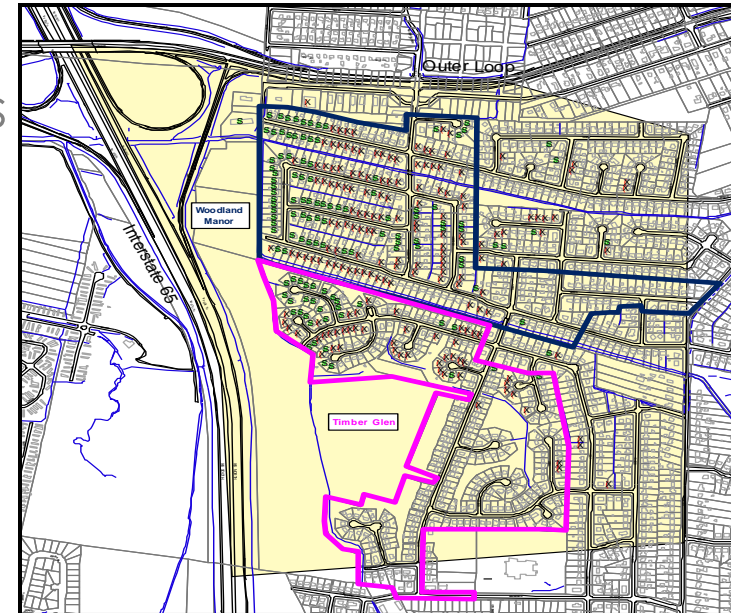


FEMA Centric Strategy

ID neighborhood vulnerabilities / risks

- Detailed survey
- Calculate frequency of flooding
- Depth of flooding
- Home depth damage analyses
- Document historical damages / claims

Neighborhood Analysis



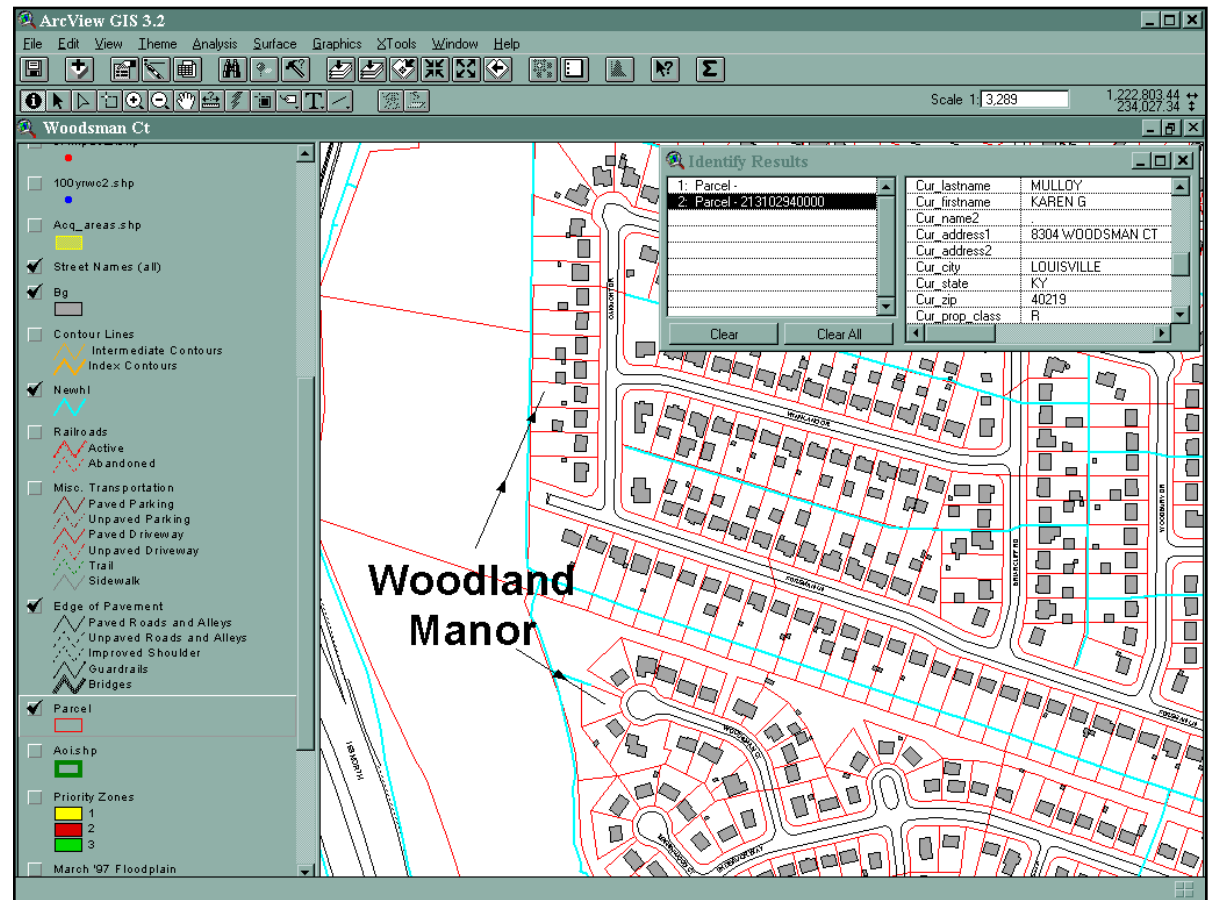
FEMA Centric Strategy

Developed benefit – cost analyses

Woodland Manor

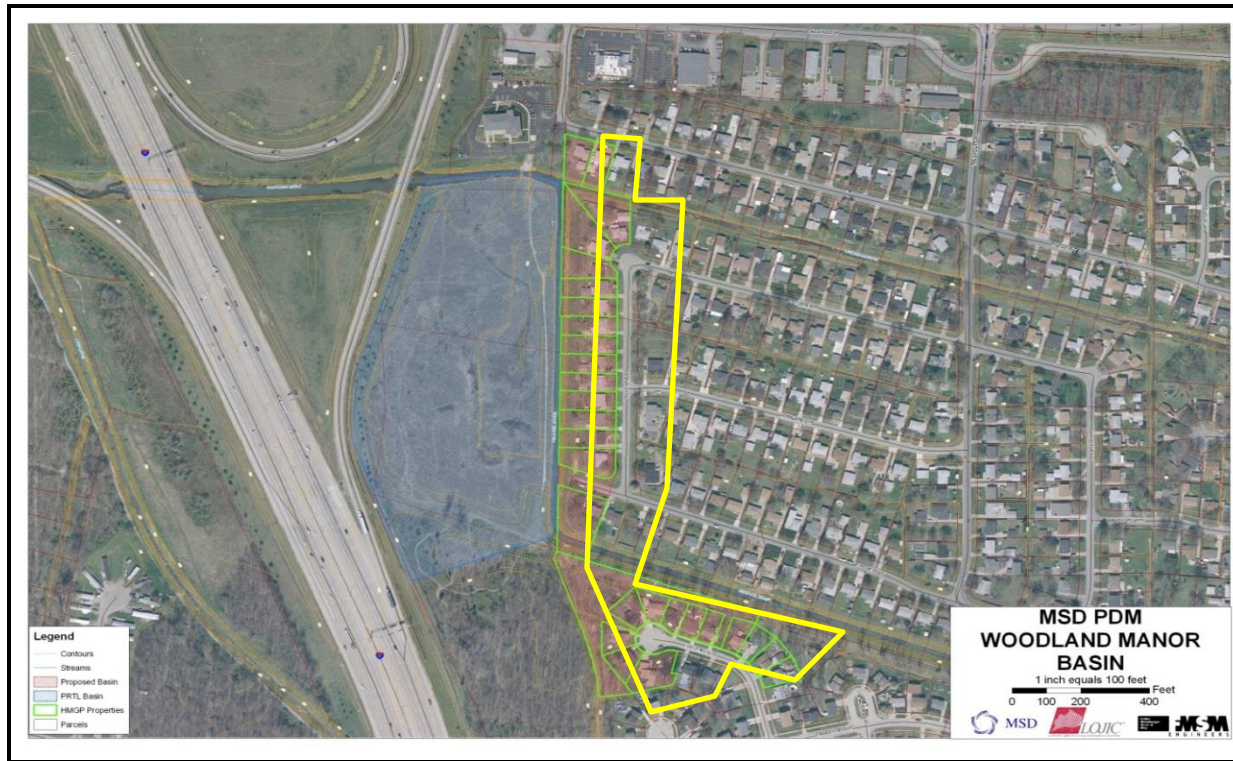
FEMA automated benefit- cost analysis

- Individual BCA
- Aggregated BCA



FEMA Centric Strategy

Woodland Manor – FEMA HMGP grants



- **32 Buy-outs**
 - 10-yr floodplain
- **Flood control basins**
 - 38 ac.-ft. storage
 - 125 homes reduced risk
- **Wet-land mitigation**
 - 6-8 acres of new wetlands
- **Stream restoration**
- **Green space**
 - Trails

Grants 4 and 6 - **HMGP** grant - \$2.500,000

Damages avoided \$5.0 million (10yr. analysis)

Louisville – FEMA Centric Benefits

FEMA: Cooperating Technical Partner

- Map Modernization Grant 1 - \$1,400,000
- **New accurate county-wide digital FIRMs**
 - 4019 primary structures outside floodplain
 - 961 primary structures mapped within floodplain
 - \$176,500,000 newly qualify for NFIP
- **424 miles of streams mapped**
 - 87 stream miles new detailed hydraulic models
 - 386 sq. mi. land-use based hydrologic models
 - 31 miles of levees assessed
 - \$3 B infrastructure mapped behind levees

Louisville – FEMA Centric Benefits

Grant 2&3 - **HMGP/ FMA** Buyout

- Grant - \$982,000
- 12 High-risk floodway fringe homes
- Damages avoided \$2.6 M (10-yr) analysis).

Grant No. 5 - **HMGP** Buyout

- Grant: \$1.24 M grant
- Reduced risk for 17 at risk 10-yr. FIRM homes

Grant No. 7 – **PDM** Aganza Flood Control Basin

- Grant - \$1.7 million
- Reduced risk - 55 at risk homes
- Avoided damages Ford Motor / homes \$5.5M (10-yr. analysis)

Regional Flood Control: Aganza Basin



➤ Costs

- Construction \$2,000,000
- Prop. Value \$4,000,000
- Engineering \$425,000

➤ Benefits

- Flood Storage
860 acre-feet
- Environmental Restoration
80 acres wetlands
2000 lf stream restor.
- Revenue @ \$0.40/cf
\$15,000,000

➤ Return on Investment

- Cost / Benefit
230%

Louisville – FEMA Centric Benefits

Community Rating System (CRS)

- Louisville's CRS rating = 3
 - CRS rating = 40% reduction flood insurance premium
- CRS rating = SAVINGS
 - 5,675 existing policy owners > \$340,000 / yr.
 - Available savings = +/- \$700,000 / yr.
 - w/ 10,695 eligible policies

Louisville – FEMA Centric Benefits

Benefits realized - Enhanced Economy

- 2/3 of previously flood prone property in Renaissance Zone now being developed.
- \$80M net increase property values
- >1000 new jobs
- \$59M new taxable real estate
- \$700,000 / yr. - local tax revenue increase
- \$4M / yr. - Kentucky tax revenue increase

Louisville Kentucky



- Many typical needs and challenges
 - Economic revitalization
 - Historical flooding
 - Social justice issues
 - Environmental degradation
 - “Greasy Ditch”
 - Stream dredging / concrete lining
 - Filling of floodplain