The Iowa Watershed Approach: Marrying Flood Mitigation and Water Quality Improvement for a More Resilient Landscape

National Nonpoint Source Meeting
November 7, 2018

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Iowa DNR / Watershed Improvement Section
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Flood-related FEMA Disaster Declarations 1988-2016

Declarations
- 0 - 5
- 6 - 10
- 11 - 15
- Above 15

1. Texas 1765
2. Missouri 1347
3. Kentucky 1242
4. Iowa 951
5. Virginia 948
6. Louisiana 889
7. North Carolina 824
8. Tennessee 787
9. Florida 762
10. Oklahoma 736
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National Disaster Resilience Competition

- Funder: US Dept. of Housing and Urban Development, in collaboration with the Rockefeller Foundation
- Funding level: $1B; CDBG; Superstorm Sandy
- Applicant: State of Iowa, Iowa Economic Development Authority (IEDA)
- Iowa Watershed Approach program developed by IFC in consultation with many, many partners
NDRC Qualifications

- Presidential Declared Major Disaster in 2011, 2012, or 2013
- Benefit to low to moderate income (LMI) areas
- Environmental and/or infrastructure most impacted and distressed and unmet recovery needs areas (MID-URN) present
Iowa Watershed Approach: $96,887,177
IWA Goals

- Reduce flood risk
- Improve water quality
- Increase resilience
- Engage stakeholders
- Assist vulnerable populations
- Develop a replicable program
IWA Project Description

- Establish WMAs
- Hire project coordinators
- Develop hydrologic assessments and watershed plans
- Build flood mitigation / water quality improvement projects
- Monitor and evaluate
- Assess project benefits
Project Budget

- $39.8 M – cities/infrastructure
- $31.5 M – design & construct practices
- $17 M – TA & training/modeling/data collection/outreach
- $4.6 M – grant administration
- $3.9 M – watershed planning and local staff
- $96.8 M - Total
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Priority subwatersheds selected

NDR - IWA BMP Implementation Areas

Legend
- MID-URN Environmental Area
- MID-URN Infrastructure Area
- Original BMP Implementation Area
- BMP Implementation Area Added 8/2/2018

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Modeling and Assessment Tools

Develop and run **watershed-scale hydrologic models (GHOST)** to estimate watershed responses to rainfall events

- Physically-based model
- Breaks the watershed down into manageable and representative user defined areas
  - 40 acres @ HUC-8
  - 5-10 acres @ HUC-12
- Quantify the impact of existing and potential BMPs
- All HUC-8 modeling completed
- HUC-12: ongoing
Iowa BMP Mapping Project

Hillshade showing narrow base terraces

Pond dam on hillshade

Images provided by: Calvin Wolter, GIS Analyst. Iowa Department of Natural Resources
Iowa BMP Mapping Project

Upper Clear Creek

HUC12: 070802090101
Agricultural Conservation Planning Framework (ACPF)

http://northcentralwater.org/acpf/
BMP Mapping + ACPF

Upper Clear Creek

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<th>Marengo</th>
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Watershed Planning Process

• Form Watershed Management Authority
  • Creates urban/rural alliance
• Organize governing board
• Hire project coordinator
• Hire planning consultant
• Hire project engineer
• Develop HUC-8 watershed plan (flood mitigation/water quality)
  • Develop targeted HUC-12 9-element plans
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North Raccoon WMA Membership

Municipalities
- Clive
- Fonda
- Glidden
- Grimes
- Lake City
- Lake View
- Lakeside
- Laurens
- Lidderdale
- Lohrville
- Nemaha
- Newell
- Perry
- Storm Lake
- Van Meter

County Governments & SWCDs
- Boone
- Buena Vista
- Calhoun
- Carroll
- Dallas
- Greene
- Pocahontas
- Polk
- Sac
- Webster
- Madison (SWCD only)

Legend
- North_Raccoon_Watershed
- Municipal Members
- County Members
- County Government & SWCD
- SWCD Only
Implement flood-mitigation projects
Practice Applications
Received/Under Review

Practices

- **Total = 240/~$2.4 M**
- Ponds – 52
- Grade Stabes – 13
- Road Structures – 5
- Oxbows – 4
- Wetlands – 8
- WASCOBS – 137
- Terraces – 6
- Grassed Waterways – 11
- Buffer Strips – 4
Nearly $40 M invested in urban projects in Dubuque, Coralville, & Storm Lake
Data Collection & Monitoring

- 20 Hydrostation Sites:
  - Rainfall
  - Wind speed/direction
  - Soil moisture
  - Soil temperature
  - Shallow groundwater

- 10 Water Quality Sites
  - Nitrate
  - pH
  - Temperature
  - Specific conductance
  - Turbidity
  - DO
  - Discharge (USGS gage)
Developing a Flood Resilience Action Plan to facilitate connection of watershed plan and flood hazard mitigation planning.
Flood resilience is the ability of a community within a watershed to plan and act collectively, using local capacities to mitigate, prepare for, respond to, and recover from a flood.
Social vulnerability at the intersections of flood risk – Vinton

Census Tract: 9603

Watershed: Middle Cedar
County: Benton County
Population: 5330

Top Vulnerability Indicators
Age 65 or Older (%): 21.0%
Children (%): 22.1%
Disabled (%): 15.6%

Download Data Table: Vulnerability Table
Existing flood mitigation projects protecting the community of Vinton
Potential flood mitigation projects that could further protect Vinton
Partnerships support the IWA!

North Raccoon WMC group photo
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Iowa Watershed Approach Website

www.iowawatershedapproach.org
The IWA Project can raise awareness about watershed issues…

Somebody told me it was frightening how much topsoil we are losing each year, but when I told that story around the campfire, nobody got scared.

Jack Handey

To build urgency and encourage action!
Thank You!

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