A vision for a more resilient Iowa

The Iowa Watershed Approach

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Iowa Grant Award: $96,887,177
How can we stay informed about the East/West Nishnabotna project?

How can we learn about projects in other watersheds?

What data is/will be available and where can it be accessed?
The Iowa Watershed Approach:
Reducing Flooding and Advancing Water Quality

HUD Disaster Resilience Grant to Iowa: $96.9 million
The Iowa Watershed Approach (IWA) is a vision for Iowa's future that voluntarily engages stakeholders throughout the watershed to achieve common goals, while moving toward a more resilient state.

Nine Participating Watersheds:
- Clear Creek Watershed
- Dubuque/Bee Branch Watershed
- East Nishnabotna Watershed
- English River Watershed
- Middle Cedar Watershed
- North Raccoon Watershed
- Upper Iowa Watershed
- Upper Wapsipinicon Watershed
- West Nishnabotna Watershed
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http://iwa.iowawis.org/app/
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Flooding trends in Iowa and across the Midwest
Trends in floods and heavy rainfall events
Trends show more floods in recent decades
Trends show more frequent floods and heavy rainfall

- Increased flooding
- Increased heavy rainfall
Conclusions

• An increase in frequency, not magnitude, of flood events is detectable from observational records.

• Similar results are found when analyzing discharge and rainfall.

• However, directly attributing changes in discharge, precipitation, and temperature to human impacts on climate is very challenging to do using only observational records.
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Physically-based Modelling
Lumped Parameter Modelling

- Still simulates these processes using a systematic, mathematical approach
- Modeler breaks the watershed down into manageable and representative user defined areas (called subbasins)
- Modeling software then solves systems of equations for each process in each subbasin and then routes the water balances through the watershed
Lumped Parameter Modelling

- Modeler identifies where water flows on the landscape (the stream network) and then breaks the watershed down into manageable and representative user defined areas (called subbasins)
Lumped Parameter Modelling

West Nishnabotna
1,650 square miles

East Nishnabotna
1,150 square miles

Subbasins
Delineated
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Lumped Parameter Modelling

- Watershed breakdown includes:
  - Lake/Reservoir Outlets that Regulate Discharge
  - Known Discharge (or Stage) Measurement Locations
  - Points of Interest

- West Nishnabotna Model:
  - 475 Subbasins Delineated
  - Average of approx. 3.5 square miles

- East Nishnabotna Model:
  - 439 Subbasins Delineated
  - Average of approx. 2.6 square miles

- IFC is currently in process of obtaining storage-discharge relationships for Lakes/Reservoirs and finalizing initial model setup
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Monitoring
Existing BMPs

Digitized at Iowa State University GIS Facility, in cooperation with IA DNR GIS personnel

October 13, 2016
Existing BMPs

- Water and Sediment Control Basin
- Terrace
- Pond Dam
- Stripcropping
- Contour Buffer Strips

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Agricultural Conservation Planning Framework: Staff Creek Watershed

Conservation Practices:
- Drainage Water Management
- Grassed Waterways
- Buffer Strips
- Water and Sediment Control Basins (WASCOBs)
- Nutrient Removal Wetlands
- Saturated Buffers

Further Information:
http://northcentralwater.org/acpf/
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Grassed Waterways
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Nutrient Removal Wetlands
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IWA Program Timeline

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<th>Watersheds Requiring WMA Formation</th>
<th>Year 1</th>
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- WMA formation
- Hydrologic Assessment
- Watershed Plan
- Select Implementation Sites
- Project Design
- Project Construction/Implementation
- Sensor Deployment
- Baseline Data Collection and Analysis
- Detailed Model Development and Scenario Analysis
- Evaluation of Projects
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