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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
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http://www.gis.iastate.edu/gisf/projects/conservation-practices
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Best Management Practices
Digitized by ISU and IaDNR

Grassed Waterways
(Actual)

- Potential Selected HUC12
- Selected HUC12

BMPs
- Grassed Waterway
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Best Management Practices
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Pond Dams
(Actual)

- Potential Selected HUC12
- Selected HUC12

BMPs
- Pond Dam
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Stripcropping
(Actual)

BMPs
Stripcropping

Potential Selected HUC12
Selected HUC12
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Terraces
(Actual)

- Potential Selected HUC12
- Selected HUC12

BMPs
- Terrace
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WASCOBs (Aggregated)

BMPs
WASCOBs per sqmi
- 0.46 - 1.00
- 1.01 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00
- 4.01 - 5.00
- 5.01 - 6.00
- 6.01 - 7.00
- 7.01 - 8.00
- 8.01 - 9.00
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Data Sources:
ISU / Iowa DNR
BMP Mapping Project

Legend
- Pond Dam
- Terrace
- Water and Sediment Control Basin
- Contour Buffer Strips
- Stripcropping
- Grassed Waterway
- MID-URN Area
- Stream Centerlines

West Nishnabotna Watershed
White-Cloud West Nishnabotna
HUC12 Existing BMPs

West Nishnabotna Watershed

The University of Iowa
C. Maxwell Stanley Hydraulics Laboratory
Iowa City, Iowa 52242
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## Existing BMPs for HUC-12 Candidates

<table>
<thead>
<tr>
<th>HUC-12 Name</th>
<th>Contour Buffer Strip (ac/sqmi)</th>
<th>Grassed Waterway (ac/sqmi)</th>
<th>Pond Dams (#/sqmi)</th>
<th>Stripcropping (ac/sqmi)</th>
<th>Terraces (mi/sqmi)</th>
<th>WASCOBs (#/sqmi)</th>
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<td>1.0</td>
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<td>3.9</td>
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<td>4.1</td>
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<td>7.5</td>
<td>2.9</td>
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</table>

<table>
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<th>HUC-12 Name</th>
<th>Contour Buffer Strip (ac)</th>
<th>Grassed Waterway (ac)</th>
<th>Pond Dams (#)</th>
<th>Stripcropping (ac)</th>
<th>Terraces (mi)</th>
<th>WASCOBs (#)</th>
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<td>Honey Creek</td>
<td>14.5</td>
<td>46.8</td>
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<td>202.6</td>
<td>85.0</td>
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</tbody>
</table>
Hydrologic Assessment

- Iowa’s Flood Hydrology and Water Quality
- Conditions in each IWA Watershed
  - Hydrology
  - Geology and Soils
  - Topography
  - Land Use
  - Instrumentation/Data records
- BMPs: Existing and Potential
- Hydrologic Model
- Watershed Scenarios
Hydrologic Assessment – What is Being Prepared for the WMA?

- Climate and Historical Streamflow Assessments
  - Average Rainfall
  - Streamflow Patterns
    - Streamflow by Month
    - Peak Flooding Tendencies
    - Streamflow Trends
  - Floods of Record
  - Discuss Abnormal Weather

30-year Average Annual Precipitation for Iowa (1981-2010)

Climate is what you expect; Weather is what you get
Hydrologic Assessment – What is Being Prepared for the WMA?

- Data Sets That Describe Watershed Characteristics
  - Geology & Soils
  - Land Use
  - BMP Mapping (ISU, DNR)
  - Topography

- Instruments/Data Records
  - Streamflow
  - Rainfall
Agricultural Conservation Planning Framework (ACPF)

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/

Analyze landscape and runoff conditions and suggest potential sites for conservation practices.
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Existing (ISU, DNR)

Potential (ACPF, IIHR)
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Hydrologic Assessment – What is Being Prepared for the WMA?

Develop and run watershed-scale hydrologic models (HEC-HMS) to estimate watershed responses to rainfall events

- Modeler breaks the watershed down into manageable and representative user defined areas (called subbasins)
- Simulate hydrologic processes using a mathematical approach
- Compare simulated results to observed streamflow (where known) to assess model performance
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**The Iowa Watershed Approach**

**Hydrologic Model Development Review**

- West Nishnabotna: 1,650 square miles
- East Nishnabotna: 1,150 square miles

Subbasins Delineated
What Happens When It Rains?

- Rainfall
- Catchment Model
- Runoff
- Losses and Infiltration
- Surface Depression Storage
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East Nishnabotna: Atlantic USGS Gage (2014 Calibration Event)
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West Nishnabotna: Randolph USGS Gage (2014 Validation Event)
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- Calibrated/Validated Hydrologic Model Uses:
  - Identification of High Runoff Potential Areas
  - Analysis of Flood Mitigation Strategies
    - Increasing Infiltration
    - Distributed Storage
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Data Collection & Monitoring
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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/