A vision for a more resilient Iowa

The Iowa Watershed Approach

Ashlee Johannes
Iowa Watershed Approach Flood Resilience Program Coordinator
ashlee-johannes@uiowa.edu
Flood Resilience Program Goals and Current Products

The IWA Flood Resilience Program seeks to:
- Measure, visualize, and communicate flood resilience resources
- Enhance flood resilience content in formal watershed plans
- Improve social resources for flood resilience

Current available products for select towns:
- Interactive flood damage estimations

Current products under development:
- Flood Resilience Action Plans
- Interactive Social Vulnerability & Flood Risk Platform
- Pre-Disaster Mitigation Grant Preparation Assistance
- Town-Scale Resilience Case Studies
Interactive Flood Damage Estimations – Independence

**INDEPENDENCE**

- **River:** Wapsipinicon River
- **USGS Gauge:** 05421000 (reference)
- **Flood Level:** 12 ft
- **Date Created:** Jun 2014
- **Terms of Use:** provisional - not for regulatory use

**View Maps by**
- River Stage
- Annual Chance

**Flood Map Controller**
- **Stage:** 9 ft
- **Discharge:** 6020 cfs

**Flood Damage Estimate:**
- **Affected Buildings:** 3
- **Structure Damage:** $92,546
- **Content Damage:** $621,065
Interactive Flood Damage Estimations – Independence

INDEPENDENCE

River: Wapsipinicon River
USGS Gauge: 05421000 (reference)
Flood Level: 12 ft
Date Created: Jun 2014
Terms of Use: provisional - not for regulatory use

View Maps by
- River Stage
- Annual Chance

Flood Map Controller
Stage: 19 ft
Discharge: 24000 cfs

Flood Damage Estimate:
- Affected Buildings: 72
- Structure Damage: $961,247
- Content Damage: $3,079,664

www.iowawis.org
Map data ©2018 Google
Interactive Flood Damage Estimations – Independence

**Impact:** 619

**Damage estimate:**
- $8.9M buildings
- $18.9M contents
Developing a Flood Resilience Action Plan to facilitate connection of watershed plan and flood hazard mitigation planning.
TABLE OF CONTENTS

THE FLOOD RESILIENCE APPROACH
WATERSHED COMMUNITIES & ENVIRONMENT
FLOOD RESILIENCE ACTION RECOMMENDATIONS
A MULTI-BENEFIT APPROACH TO A WATERSHED FLOOD RESILIENCE ACTION PLAN
CREDITS
APPENDIX
“Lower-income people are among the least able to recover, yet they are often central to the economy and culture of a community.”

- THE INSTITUTE FOR SOCIAL AND ENVIRONMENTAL TRANSITION — INTERNATIONAL
Social vulnerability indicators help us prioritize actions

- % Black
- % Language barrier
- % Renters
- % Unemployed
- % Poverty
- % Children
- % Elderly
- % Hispanic
- % Low Education
- % Female head of household
- % Disabled
- % No vehicle access
Social Vulnerability Overlay – Upper Iowa
Social Vulnerability at the Intersections of Flood Risk - Decorah
Social Vulnerability at the Intersections of Flood Risk - Decorah
Social Vulnerability at the Intersections of Flood Risk - Decorah
Social Vulnerability at the Intersections of Flood Risk - Decorah
Social Vulnerability at the Intersections of Flood Risk - Decorah

**Census Tract: 9503**

- **Watershed:** Upper Iowa
- **County:** Winneshiek County
- **Population:** 3514

**Top Vulnerability Indicators**
- Renter: 34.5%
- Children: 71.3%
- Hispanic or Latino: 2.8%
PDM goal: To reduce population and structural risk to future hazard events

PDM awards planning and project grants and provides opportunities for public awareness and education about reducing flood impacts

PDM grants are funded annually by Congressional appropriations and are awarded on a nationally competitive basis

https://www.fema.gov/pre-disaster-mitigation-grant-program

The IWA Flood Resilience Team wants to provide social vulnerability narratives for PDM grant applications
Flood Resilience Program is making connections with local partners

Current Engagement in Upper Iowa
• Partnership with Luther College to carry out local programming
• County EMAs
• Freeport residents

Engagement in Other Watersheds
• Community organizations Active in Disaster (COADs) – e.g., Benton Co Recovery Coalition, LAP-AID, Johnson Co EOC
• Partnership with Hawkeye Area Community Action Program (HACAP) to enhance the 211 system for floods – almost 3,000 calls during September 2016 floods seeking essential resources
Flood resilience case studies will be developed for each watershed.
A vision for a more resilient Iowa

The Iowa Watershed Approach
Upper Iowa River Watershed Planning

Watershed Background
- Historical Conditions
- Current Conditions
- Natural resources
- Demographics
- Geology

Stakeholder Engagement
- Community Teams
- Landowner Meetings
- Public Meetings
- Survey
- Emergency Management

Connecting the Pieces
- Hydrologic Assessment
- Implementation Efforts
- Hazard Mitigation
- Resilience Team

GIS Analysis
- ACPF & BMP
- Road & Bridge Infrastructure
- Water Quality Data
- Cover Crop Analysis

WMA
- Goals & Vision
- Proposed Strategies
- Timeline
- Implementation
- Funding

Upper Iowa River Resiliency Plan
UIR GIS Analysis

- Agricultural Conservation Planning Framework (ACPF)
  - Iowa Flood Center & RC&D
- BMP Analysis
  - Iowa DNR & RC&D
- Road & Bridge Infrastructure
  - RC&D & County Engineers
ACPF, BMP, Road Infrastructure Analyses
UIR GIS Analysis

• Water Quality Analysis
  • https://data.upperiowariver.org/
Cover Crop Analysis

- Acres: 191,3486
- isAG: 1
- Shape_Length: 4617.22924
- Shape_Area: 773866.420175
- OBJECTID: 323
- F0BndID: F070801020503_323
- GenLU: C/S with Continuous Corn
- CropRotatn: BCCCBC
- CropSumry: C4B2
- CCCount: 2:6
- MixCount: 0:6
Why are cover crops important?

• Cover Crops + No-till increases organic matter in the soil by 0.1%/yr

• 0.1% soil organic matter increases water capacity by 2,000 gallons of water per acre

• 1 inch rainfall = 27,000 gallons of water per acre
Why are cover crops important?

• Average of 31% N reduction
• Average of 29% P reduction
Upper Iowa River Watershed Planning

Watershed Background
- Historical Conditions
- Current Conditions
- Natural resources
- Demographics
- Geology

Stakeholder Engagement
- Community Teams
- Landowner Meetings
- Public Meetings
- Survey
- Emergency Management

Connecting the Pieces
- Hydrologic Assessment
- Implementation Efforts
- Hazard Mitigation
- Resilience Team

GIS Analysis
- ACPF & BMP
- Road & Bridge Infrastructure
- Water Quality Data
- Cover Crop Analysis

WMA
- Goals & Vision
- Proposed Strategies
- Timeline
- Implementation Funding

Upper Iowa River Resiliency Plan