

UIRWMA | Agenda - Minutes

Meeting date time 11/8/2018 Business Meeting 5:00-5:15 PM Presentations 5:15 | Meeting location Winneshiek County Courthouse Annex building, 201 West Main St., Decorah.

BUSINESS MEETING – Attended by John Beard, Mark Jensen, Andy Carlson, Jack Knight, and Dan Byrnes

1) Agenda topic *Call Meeting to Order* | **Presenter** John Beard

2) Agenda topic *Approval of Minutes 8/9/18 meeting* | **Presenter** John Beard

Discussion:

Action items	Motion	Second
Approve Minutes from 8/14/18 meeting	Mark Jensen	Dan Byrnes

Minutes Approved 8/9/18 meeting

3) Agenda topic *Set Next Meeting Time/Date and Adjourn Business Meeting* | **Presenter** John Beard

Discussion:

Action items	Motion	Second
Meeting Date: <i>Thursday March 14 @ 7pm</i> Location: <i>Winneshiek County Courthouse Annex Building</i>	Jack Knight	Andy Carlson

Presentations:

University of Iowa Center for Evaluation and Assessment (CEA):

- **Julie Kearney** - Meeting Attendee Survey Results from 8/9/18
-

Luther College:

- **Rachel Brummel** – Preliminary Survey Results & Themes from the Freeport Case Study
-

Update from Northeast Iowa RC&D:

- *Upper Iowa River Watershed Plan Development Update*
-

Upper Iowa River WMA Coordinator Update:

- **Matt Frana** – Concerns with Building Water Retention Structures in Karst Bedrock & Site Prioritization

Upper Iowa IWA Quarterly Meeting Survey Findings

August 9, 2018

The Center for Evaluation and Assessment (CEA) conducted a survey at the August 9, 2018 meeting of the Upper Iowa River Watershed Management Authority in Decorah, IA. The purpose of the survey was to learn more about meeting attendees' perceptions of their watershed management authority, its progress in the IWA, and its ongoing needs. The CEA invited all meeting attendees (not including IWA staff/partners) to complete a paper and pencil survey. Of the nine people present, six completed a survey for a response rate of 66%.

The WMA

The first section of the survey asked participants about their perceptions of the WMA meetings, the Iowa Watershed Approach, and about their perceptions of the of the project's progress. Table 1 reports the findings.

Table 1

Attendees' Perceptions of their WMA

Items	Frequencies					I don't know/No opinion
	Strongly Disagree 1	2	3	4	Strongly Agree 5	
The information presented at today's meeting was meaningful to our WMA.	0	0	0	2	4	0
In general, the information presented during WMA meetings is useful for our WMA.	0	0	0	3	3	0
Our WMA is on track to improve flood mitigation in the watershed.*	0	0	1	2	2	0
Our WMA is on track to improve water quality in the watershed.*	0	0	1	3	1	0

N=6 except where indicated *N=5.

In general, responses were positive, with most people agreeing that the information presented during that meeting and at other meetings is meaningful and useful for their WMA. [The information presented at that day's meeting included Project Coordinator Matt Frana's update, Northeast Iowa Resource Conservation & Development update on watershed plan development, and Todd Duncan's (Natural Resources Conservation Service) presentation on soil health.] Although one person was neutral on the question of whether the WMA was on track to improve flood mitigation and water quality in their watershed, most people agreed that their watershed was on track to improve flood mitigation and water quality.

Respondents were also asked a series of open-ended questions related to their WMA and the IWA in their watershed.

What is (are) your primary motivation(s) to work with your WMA?

All six respondents answered this item, but one person said only that they did not live in the watershed. The other five provided the following list of their motivations (several respondents provided more than one motivation) for working with the WMA.

Respondents said they were motivated to (with frequency in parentheses if greater than one):

- Work on flood mitigation (2)
- Improve water quality (2)
- Improve resilience
- Improve sustainability
- Be part of the effort (to address flooding and water quality issues)
- Address soil loss problems
- Improve the overall health of the community and ecosystem
- Represent their member group of the wma
- Improve fishing

What is the best way for your WMA to share information with the public? (circle all that apply)

Five survey participants provided at least one response to this item. [The number of respondents who selected the response is in parentheses.]

- Newspaper (4)
- Public meeting (4)
- Website (4)
- Mailing (3)
- Email (1)

*What **specific actions** would you like to see take place in your watershed in the next few months?*

Five people responded to this item (83%). All five respondents said they would like to see conservation projects on the ground.

*What **specific actions** would you like to see take place in your watershed in the next four years?*

Five people also responded to this item (83%). As in the shorter term goal, three people said they would like to see more conservation projects built in the next few years. Respondents also mentioned the following:

- More alternative agricultural practices (2)
 - One person mentioned prairie strips and soil health and the other said no-till and cover crops.
- “Investment in better land use by local businesses”
- Continued education for farmers and public

*What **specific barriers** (if any) do you see to achieving the actions above?*

All six people responded to this item (100%). Five of the six respondents mentioned money or the farm economy as a barrier to achieving the desired actions. Their responses included mentions of “low commodity prices,” “farm money is tight,” and “fear of change in tight ag market.” Two respondents

spoke in terms of the economy making it difficult for farmers to prioritize conservation and soil health over their immediate financial needs.

Another respondent named people “not believing, understanding, or feeling too scared to make changes because of perceived risks” as a barrier. Other responses included producers’ “slow adaptation to change” and “bad presidential advice.”

WMA Progress on IWA

Meeting attendees were asked to reflect on the rate of progress by their WMA on IWA work. They were asked to use the seven-point scale shown below to indicate what they thought of their current progress, with “1” indicating that “Things are moving **too slow**,” “4” indicating that “The group’s progress is **just right**,” and “7” indicating that “Things are moving **too fast**.” All six respondents provided an answer to this item. Findings are reported below in Table 2.

Table 2

WMA Meeting Attendees’ Perception of Current Progress

	Things are moving <i>too slow.</i>			The group’s progress is <i>“just right.”</i>			Things are moving <i>too fast.</i>		I don’t know.	
	1	2	3	4	5	6	7	DK	Mean <i>SD</i>	
Upper Iowa	0	1	2	2	1	0	0	0	3.5 1.05	

As shown in Table 2, three people indicated that the IWA work is progressing at a pace that is “just right” or a little too fast and three people indicated that the IWA work is moving a little too slowly.

WMA Needs

Survey respondents were also asked about the areas in which their WMA could use additional support or training, and if offered, whether they would attend training in those areas. Table 3 reports the findings.

Table 3

Perceived WMA Training Needs

Areas	Frequencies		
	Yes	No	Would Attend Training
Best management practice implementation (n=5)	5	0	1
Understanding watershed hydrology (n=5)	5	0	1
Local policy or ordinance development (n=5)	2	3	0

Pursuing additional funding for the WMA (n=5)	5	0	0
Outreach and engagement to encourage more participation (n=4)	4	0	0

Respondents indicated strongest interest in their WMA receiving training in best management practices, understanding watershed hydrology, and pursuing additional funding for their WMA, but respondents were also interested in training in outreach and engagement to encourage more participation. The only area in which some respondents indicated specifically that they were *not* interested in training was in local policy or ordinance development, although two people said they were interested in that topic for training. Only one person indicated interest in attending any of these trainings and that respondent was interested in attending training in two of the five topics suggested.

What other training or technical support (if any) does your WMA need?

One person responded to this item saying that their watershed needs more monitoring and gauging stations.

2016 Flood Experiences in the Upper Iowa Watershed

Preliminary Findings from Watershed Survey and Freeport Case Study

Rachel Brummel, Jon Jensen, Steve Holland, Britt Rhodes,
Samantha Clements, Jonathan Rivera
November 8, 2018



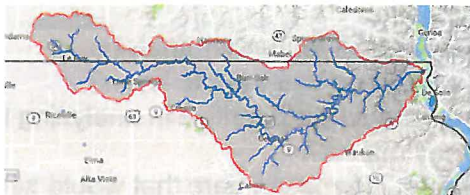
OUTLINE



Photo source: Iowa Watershed Approach

- Our Role - Community Flood Vulnerability & Resilience
- Methods & Preliminary Findings
 - Watershed-wide Survey
 - Freeport Case Study
- Questions

WATERSHED SURVEY:



Financial & Displacement Burden Assessment

SURVEY GOALS:

BROADER UNDERSTANDING of FLOOD IMPACTS & RESPONSES

- Diversity of Flooding Experiences
- Indirect Impacts
 - Ex: Lost work, transportation, childcare
- Direct Impacts
 - Home & property, ag, belongings
- Displacement Particulars
- Adaptation → building resilience?
- Demographics: Vulnerabilities?

SURVEY OF RESIDENTS: UNDERSTANDING FLOOD IMPACTS IN THE UPPER IOWA WATERSHED



WHAT IS A WATERSHED?

A WATERSHED IS THE AREA OF LAND WHERE ALL OF THE WATER THAT FALLS WITHIN AND DRAINS OFF OF IT ENDS UP AT A COMMON OUTLET. EVERYONE WHO LIVES IN THE DARKENED AREA ABOVE LIVES IN THE UPPER IOWA WATERSHED

Survey Methods

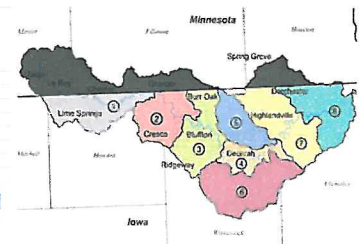
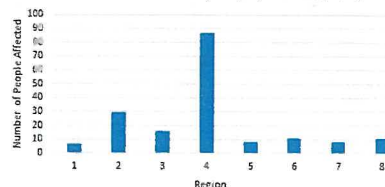


- Address-based sampling: Random Sample of 2250 addresses
- Public Awareness - newspaper & radio
- Response Rate = 21.5% returned, 470 useable surveys

Preliminary Findings: Direct Impacts

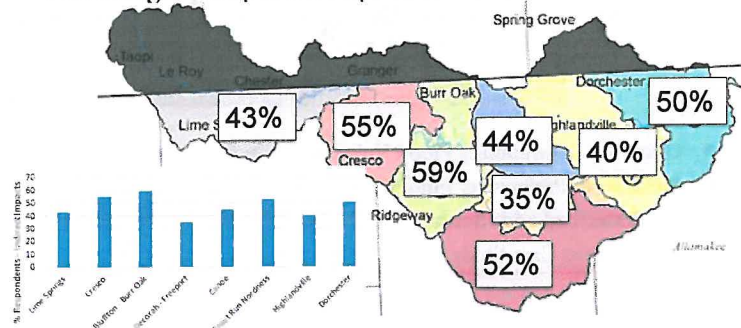
- 38% of respondents indicated their home or property flooded

Was your building or property flooded during the 2016 flood events in any way? (Direct Impacts)



Preliminary Findings: Direct Impacts

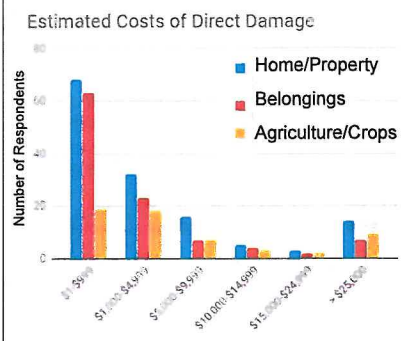
- Percentage of impacted respondents varies across watershed



Preliminary Findings: Financial Burdens

Indicating Flood Damage:

Home/Property- 29%
Belongings - 22%
Agriculture/Crops - 12%



Preliminary Findings: Indirect Impacts

- 44% experienced indirect impacts of flooding



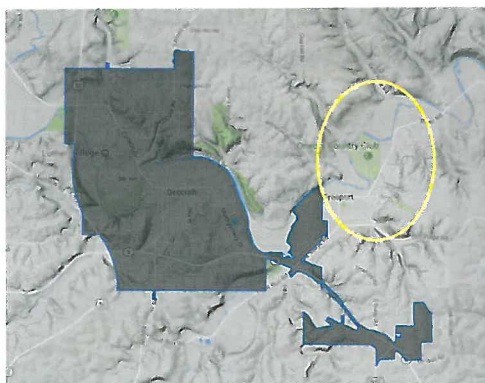
- Driving Alternative Routes - 27%
- Missing Work - 11%
- Loss of/Change in Utilities - 11%

Discussion of the Survey

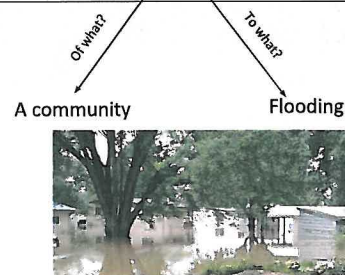
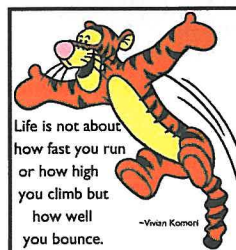
- Questions?
- Feedback/ideas for further analysis
 - What else do you want to know?
 - What should we prioritize in analyzing the survey results?
 - Is there information here that would help with the watershed plan?

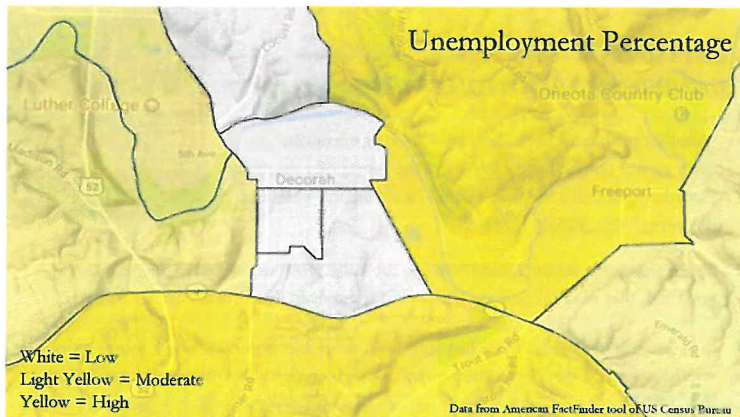
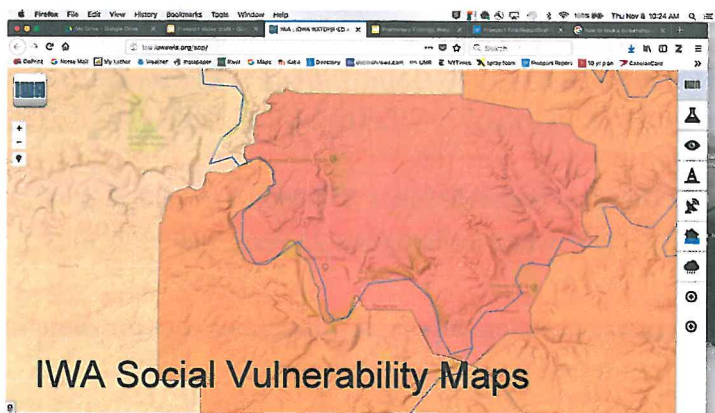
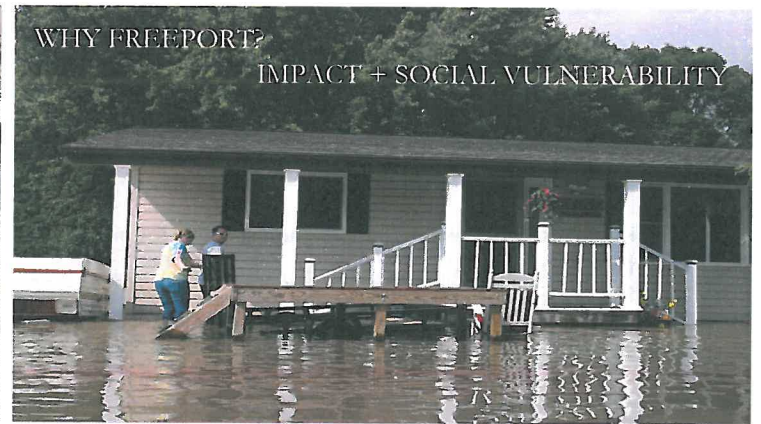
UIR Watershed Case Study:

Freeport



Resilience is the ability of a system or community to survive disruption and to anticipate, adapt, and flourish in the face of change





GOALS: Freeport Case Study



- Understand better what happened in Freeport to mitigate future impacts in Freeport and elsewhere
- Assess impacts, networks, and resources available for response
- Determine actions that might increase resilience for future events.

METHODS - FREEPORT INTERVIEWS

- **16 interviews:** 14 residents of Freeport and two key informants (members of county level emergency response)
- **Semi-structured interviews** (30-90 minutes) with a list of open-ended questions
- **Interview questions:** flooding stories, support networks, adaptation & adjustments, lessons learned

THEMES from FREEPORT Case Study

- Impact
- Response
- Resilience
- Challenges



METHODS - ANALYSIS of Interviews

- Interviews were **transcribed and evaluated** to identify repeated themes and concepts
- Transcripts were **coded using Nvivo 12** software for themes such as “Adaptability,” “Impacts & Functions,” and “Networks.”
- Our results present **themes most commonly reported** amongst interviewees

THEMES: IMPACT

*SUBSTANTIAL ECONOMIC IMPACT
for ECONOMICALLY VULNERABLE*



“I think we probably spent \$54,000 to rebuild, and we paid \$56,500 when we bought it 23 years ago” (FR_FR01).

“He was planning on retiring September...but for some reason it wasn’t meant to be” (FR_FR03).

THEMES: IMPACT

Indirect ECONOMIC IMPACT: Lost work/income



- “I can’t go to work. I have nothing. This is what I have: the clothes on my back”. And I was in no emotional state to go in the first place” (FR_FR01)
- “I probably lost 2 weeks of income” (FR_FR06).

THEMES: IMPACT

SIGNIFICANT EMOTIONAL IMPACT



Photo source: MPR

- “Another problem I have...kind of PTSD, or whatever, every time it rained. I still can’t stand the sound of a dripping faucet because that’s the first sound I heard when I went into the house” (FR_FR04).
- “I remember the school asking how are the kids? How are the kids? And you know, you think they’re okay; they say they’re okay, but deep down, are they?” (FR_FR12)
- “It’s an awful feeling ... I was just getting comfortable with rain. You know, 8 years and I thought, “Okay, I can sleep now;” Now, I am right back to where I was before” (FR_FR07).

THEMES: IMPACT

DISPLACEMENT

- “I think being homeless was hard very, very hard to realize... that all my life I had a home and in a half an hour it was taken away” (FR_FR03).
- “We’ve never been back. You know, I just can’t go back” (FR_FR02).
- “It was at least six months before we got any semblance of a decent routine” (FR_FR08)

THEMES: RESPONSE

IMPORTANCE OF INFORMAL SOCIAL NETWORKS IN RESPONSE/RECOVERY



“I think the city of Freeport itself had a lot of people going around knocking on doors and things” (FR_FR02).

“Anytime we, one of us, could find out something, then we’d tell another one and then they tell another one until the word spread” (FR_FR03).

THEMES: RESPONSE

FORMAL and INFORMAL NETWORKS IMPORTANT at DIFFERENT STAGES

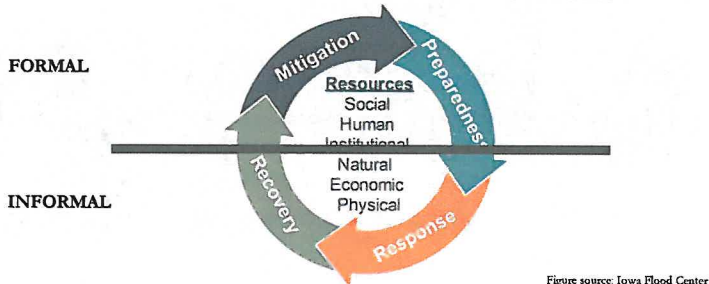


Figure source: Iowa Flood Center

THEMES: RESILIENCE

IMPROVE COMMUNICATION



Overall, residents of Freeport reported **feeling uninformed** about the decisions and response process taken by **emergency management personnel**.

- “So there were things that we were not aware of...like some of the early warnings like the flood alerts and that kind of stuff on your phone... I didn't know that existed. I didn't know that you could buy a thing in your basement that could tell you when the moisture level changes, so I learned about all those things afterwards” (FR_FR13).

THEMES: RESILIENCE

ENHANCE EDUCATION

“Maybe there should be big forums where people can go and we can learn. I think we also have to educate ourselves on knowing what's available and what we are responsible for, because in finding out, we are responsible for a whole lot more than we even knew” (FR_FR12).

THEMES: RESILIENCE

MONITORING AND NOTIFICATION



- “One suggestion that I could make is that there could be another hydraulic meter out by the golf course” (FR_FR02).
- “And I wish there was either the fire alarm, or the tornado drill thing, or six o'clock whistle, whatever you want to call it. I wish that was louder, and I wish if there was a chance, just like they ring it for tornados, why I can't it be rung for floods?” (FR_FR03)

CHALLENGES

CULTURE OF INEVITABILITY:
IS ADAPTATION POSSIBLE?



“...they could not have done anything. It was way too fast”
(FR_FR03).

“It’s a Mother Nature situation, you know?” (FR_FR01).

A SILVER LINING

- “I say the best thing is if you can laugh, and find the funny things, and the beautiful things. The flood was ugly, but oh, we met [good] people and became friends” (FR_FR03)
- “I’ve learned how important community and friendships are. I’ve learned, you know, it’s okay to rely on others. It’s okay to get help. I’ve learned to be more aware of what’s going on around you as far as community and what they’re doing” (FR_FR12).
- “Our neighborhood is so close. We are going to have a one year anniversary the day of...the flood...We are having a picnic” (FR_FR03).

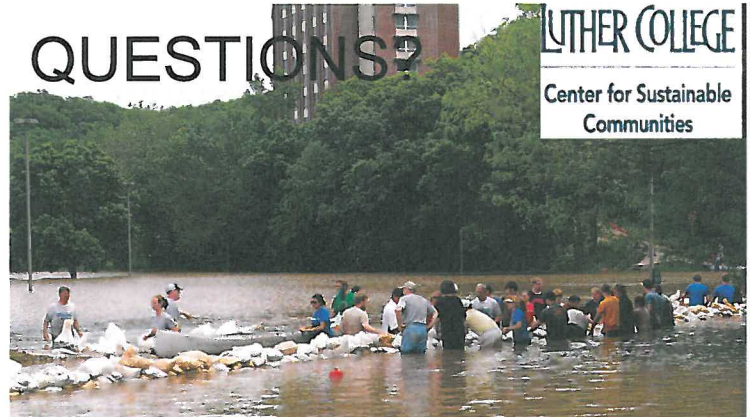
CHALLENGES

A FORGOTTEN COMMUNITY?
UNINCORPORATED AREAS

“I mean, we’re not the richest people, but we’re not the poorest people. But we’re good people. We work hard, we go and shop all over Decorah, we pay our taxes, and we take care of our property and... I just don’t like the fact that I have no representation and no voice in so many of what’s going on here. And yet, I am considered Decorah” (FR_FR07)

“We don’t get priority out here and that’s always been obvious since I moved here. We’re an appendage they don’t like to have. I don’t care if they annex us I’ll pay the taxes. That wouldn’t bother me. Go ahead” (FR_FR07)

QUESTIONS?



Part 1: Understanding your Home, Property, or Business

1. This survey is intended for residents or business owners in the Upper Iowa Watershed. Do you currently live in or own a business in the Upper Iowa River Watershed at the address to which this survey was sent?

☐ Yes

☐ No (if "No" → explain in the "Additional Comments" box and return survey in envelope)

2. How long have you lived at the address to which this survey was mailed? _____ years

3. Which of the following describes your home/property? *[check all that apply]*

☐ In town

☐ Farmland

☐ Woodland

☐

☐ Rural home

☐ Business

☐ Grassland/Prairie/Pasture

Other _____

4. Do you rent or own your current home?

☐ Rent (if you rent → skip to question "6")

☐ Own

5. If you own your home, what is the approximate value of your home and property, including land and any outbuildings?

☐ Less than \$50,000

☐ \$100,000-\$299,999

☐ \$500,000-\$749,000

☐ \$1 million or more

☐ \$50,000-\$99,999

☐ \$300,000-\$499,999

☐ \$750,000-\$999,999

6. How much land is associated with your home/property?

→ If you rent, this will be how much land that is available for your use along with your dwelling or business

→ If you own, this means how much land is included in the value of the property you referred to in question 5.

☐ Less than 0.5 acre

☐ 100-249 acres

☐ 0.5 – 9.9 acres

☐ 250-499 acres

☐ 10-49.9 acres

☐ 500 acres or more

☐ 50-99.9 acres

Additional Comments: Please feel free to share anything else that you think will help us better understand your home, business, or property in the Upper Iowa Watershed:

7. Approximately how large is your home or business?

☐ Less than 1,000 ft²

☐ 1,000-1,499 ft²

☐ 2,000-2,499 ft²

☐ 2,500-2,999 ft²

☐ 3,500-3,999 ft²

☐ 4,000-4,499 ft²

8. If this address is a residence:

How many people currently live in your household?

Number of Adults (18 or older) _____

Number of Children (younger than 18) _____

Part 2: Understanding the Indirect Impacts of the 2016 Flooding Events: In this section, we ask for ways flooding may have affected your household or business, ***even if your property was not flooded***. In places, we ask you to estimate dollar amounts - it may be challenging to come up with exact numbers, but go with your gut and give your best estimate!

9. In the 2016 floods, did you or anyone in your household experience any of the following?

FLOOD-IMPACTED ACTIVITY (check boxes if you experienced)	How or to what degree did this affect you and your household or business?	How much do you estimate this change cost you and others at this address?
<input type="checkbox"/> Driving <u>alternate routes or driving more than usual</u> due to closed or impacted roads or any other flood-related reason	Approximately how many miles more than usual do you think you and others in your household drove? _____ miles	<input type="checkbox"/> \$0 <input type="checkbox"/> Less than \$10 <input type="checkbox"/> \$10-\$99 <input type="checkbox"/> \$100-\$199 <input type="checkbox"/> \$200-\$499 <input type="checkbox"/> \$500-\$999 <input type="checkbox"/> \$1,000-\$2,499 <input type="checkbox"/> More than \$2,500
<input type="checkbox"/> Not working or not being able to work	Approximately how many hours of work did you and others in your household or business miss? _____ hours	<input type="checkbox"/> \$0 <input type="checkbox"/> Less than \$10 <input type="checkbox"/> \$10-\$99 <input type="checkbox"/> \$100-\$199 <input type="checkbox"/> \$200-\$499 <input type="checkbox"/> \$500-\$999 <input type="checkbox"/> \$1,000-\$2,499 <input type="checkbox"/> More than \$2,500
<input type="checkbox"/> Unable to attend school (K12, college/ university or continuing ed of any kind)	Approximately how many days of school were missed - in total - by members of this household? _____ days	<input type="checkbox"/> \$0 <input type="checkbox"/> Less than \$10 <input type="checkbox"/> \$10-\$99 <input type="checkbox"/> \$100-\$199 <input type="checkbox"/> \$200-\$499 <input type="checkbox"/> \$500-\$999 <input type="checkbox"/> \$1,000-\$2,499 <input type="checkbox"/> More than \$2,500
<input type="checkbox"/> Loss of business or income	Comments:	<input type="checkbox"/> \$0 <input type="checkbox"/> Less than \$10 <input type="checkbox"/> \$10-\$99 <input type="checkbox"/> \$100-\$199 <input type="checkbox"/> \$200-\$499 <input type="checkbox"/> \$500-\$999 <input type="checkbox"/> \$1,000-\$2,499 <input type="checkbox"/> More than \$2,500
<input type="checkbox"/> Loss of rental income	Comments:	<input type="checkbox"/> \$0 <input type="checkbox"/> Less than \$10 <input type="checkbox"/> \$10-\$99 <input type="checkbox"/> \$100-\$199 <input type="checkbox"/> \$200-\$499 <input type="checkbox"/> \$500-\$999 <input type="checkbox"/> \$1,000-\$2,499 <input type="checkbox"/> More than \$2,500
<input type="checkbox"/> Changes in eating habits, food shopping habits or food availability	Comments:	<input type="checkbox"/> \$0 <input type="checkbox"/> Less than \$10 <input type="checkbox"/> \$10-\$99 <input type="checkbox"/> \$100-\$199 <input type="checkbox"/> \$200-\$499 <input type="checkbox"/> \$500-\$999 <input type="checkbox"/> \$1000-\$2,499 <input type="checkbox"/> More than \$2,500
<input type="checkbox"/> Loss or change in utility services: power/electricity, phone coverage, water, garbage collection, etc.	Comments:	<input type="checkbox"/> \$0 <input type="checkbox"/> Less than \$10 <input type="checkbox"/> \$10-\$99 <input type="checkbox"/> \$100-\$199 <input type="checkbox"/> \$200-\$499 <input type="checkbox"/> \$500-\$999 <input type="checkbox"/> \$1,000-\$2,499 <input type="checkbox"/> More than \$2,500
<input type="checkbox"/> Changes in child care or child care arrangements	Comments:	<input type="checkbox"/> \$0 <input type="checkbox"/> Less than \$10 <input type="checkbox"/> \$10-\$99 <input type="checkbox"/> \$100-\$199 <input type="checkbox"/> \$200-\$499 <input type="checkbox"/> \$500-\$999 <input type="checkbox"/> \$1,000-\$2,499 <input type="checkbox"/> More than \$2,500
<input type="checkbox"/> Impacts on health or wellness (injury, sickness, emotional or mental health impacts)	Comments:	<input type="checkbox"/> \$0 <input type="checkbox"/> Less than \$10 <input type="checkbox"/> \$10-\$99 <input type="checkbox"/> \$100-\$199 <input type="checkbox"/> \$200-\$499 <input type="checkbox"/> \$500-\$999 <input type="checkbox"/> \$1,000-\$2,499 <input type="checkbox"/> More than \$2,500

<input type="checkbox"/> Other <hr/>	Comments:	<input type="checkbox"/> \$0 <input type="checkbox"/> Less than \$10 <input type="checkbox"/> \$10-\$99 <input type="checkbox"/> \$100-\$199 <input type="checkbox"/> \$200-\$499 <input type="checkbox"/> \$500-\$999 <input type="checkbox"/> \$1,000-\$2,499 <input type="checkbox"/> More than \$2,500
<input type="checkbox"/> Other <hr/>	Comments:	<input type="checkbox"/> \$0 <input type="checkbox"/> Less than \$10 <input type="checkbox"/> \$10-\$99 <input type="checkbox"/> \$100-\$199 <input type="checkbox"/> \$200-\$499 <input type="checkbox"/> \$500-\$999 <input type="checkbox"/> \$1,000-\$2,499 <input type="checkbox"/> More than \$2,500

Part 3: Direct impacts of 2016 Flooding on your HOME, BUSINESS, PROPERTY and HOUSEHOLD or FARM

10. Was your building or property flooded during the 2016 flood events?

☐ Yes → (if “Yes” continue to question “11”)

☐ No → (if “No” skip to “**Part 4: Becoming more Resilient to Floods**” / question “24” in middle of the next page)

11. During the 2016 floods, what was the primary source of flooding in your home/property: *[check only one]*

☐ River/creek/lake overflow (flood waters)

☐ Rain

☐ Sewer backup

☐ Rising groundwater

☐ Broken water pipes

☐

Other _____

12. Please briefly describe what happened during the 2016 floods in your home/business or on your property:

13. Estimate the damages to your HOME/BUSINESS and PROPERTY. Please consider all damages related to your home and associated property, such as landscaping features, driveways, and any outbuildings such as garages/sheds/barns.

☐ \$0 ☐ \$1-\$999 ☐ \$1,000-\$4,999 ☐ \$5,000-\$9,999 ☐ \$10,000-\$14,999 ☐ \$15,000-\$24,999 ☐ >\$25,000

14. Estimate the damages to your BELONGINGS. Please consider all items in and around your home, such as clothing, furniture, and electronics, as well as cars, recreational vehicles, and other machinery.

☐ \$0 ☐ \$1-\$999 ☐ \$1,000-\$4,999 ☐ \$5,000-\$9,999 ☐ \$10,000-\$14,999 ☐ \$15,000-\$24,999 ☐ >\$25,000

15. Estimate the damages to your AGRICULTURAL LAND or CROPS. Please consider impacts such as damaged crops and lost livestock, loss of topsoil, and damaged landscape features such as terraces.

☐ \$0 ☐ \$1-\$999 ☐ \$1,000-\$4,999 ☐ \$5,000-\$9,999 ☐ \$10,000-\$14,999 ☐ \$15,000-\$24,999 ☐ >\$25,000

16. Did you or anyone in your household lose any of the following in the flood (indicate “yes” by checking the box):

☐ Pictures

☐ Irreplaceable objects such as memorabilia and family heirlooms

☐ Pets

☐ Other irreplaceable items: _____

17. What were the LARGEST SOURCES of FUNDING for repairs/replacement to your home, property, belongings, or farm? Indicate your top three by placing a "1, 2 or 3" next to the three top sources of funding.

Bank account/cash/check/debit Non-profit/Church/Charity Friends or Co-workers
 Insurance Settlement Crowd-funding (e.g. GoFundMe) Government Assistance
 Bank Loan Family Credit Card

18. How much TIME DID PEOPLE VOLUNTEER in cleaning up or repairing your property?

About how many hours do you estimate that you and your family worked? hours

About how many hours do you estimate that non-family members worked? hours

Additional comments on direct impacts of flooding (additional space also on back page):

EVACUATION and DISPLACEMENT:

19. Were you displaced from your home or business during the 2016 flooding events?

☐ No (if "No" go to Question 23)

☐ Yes (If "Yes" go to Question 20)

20. For those who were DISPLACED: What caused or prompted you to leave? [check all that apply]:

☐ I received an evacuation notice

☐ Water was threatening my property

☐ Other

☐ I was worried about being stuck or stranded

☐ There was water in my home or business

☐ Other

21. For those who DID EVACUATE: When you evacuated your home, where did you stay and how long?

Location	#days/weeks/mos.	Location	#days/weeks/mos.
<input type="checkbox"/> A designated shelter (church, etc.)		<input type="checkbox"/> with family in your community	
<input type="checkbox"/> Hotel		<input type="checkbox"/> with family outside your community	
<input type="checkbox"/> with a friend		<input type="checkbox"/> Other	
<input type="checkbox"/> with a coworker		<input type="checkbox"/> Other	

22. How long was it before you returned to your home permanently? days/weeks/months (circle one)

23. For those who DID NOT EVACUATE:

If you stayed in your home during the worst flood threat or actual flooding, why did you stay? [check all that apply]:

☐ I did not feel threatened

☐ I was worried about my pets

☐ I wanted to protect my property

☐ Minimal water was in my dwelling

☐ I have special health needs

☐ Others in my household have special needs

☐ It was not safe to leave

☐ I did not know where to go

☐ Other

Part 4: Becoming More Resilient to Floods:

The following questions help us understand ways that you may have responded to flooding, as well as thoughts about what actions might better allow your household and our communities to bounce back after flooding.

24. Did you or anyone in your household make improvements to your home or property to better prepare for or prevent future flood impacts?

TYPE of CHANGE (check below)	Estimated Cost to You for Making this Change
------------------------------	--

<input type="checkbox"/> Earth moving/landscaping	<input type="checkbox"/> \$0	<input type="checkbox"/> \$1-\$999	<input type="checkbox"/> \$1,000-\$4,999	<input type="checkbox"/> \$5,000-\$9,999	<input type="checkbox"/> \$10,000-\$19,999	<input type="checkbox"/> \$20,000-\$34,999	<input type="checkbox"/> > \$35,000
<input type="checkbox"/> Tiling or drainage management	<input type="checkbox"/> \$0	<input type="checkbox"/> \$1-\$999	<input type="checkbox"/> \$1,000-\$4,999	<input type="checkbox"/> \$5,000-\$9,999	<input type="checkbox"/> \$10,000-\$19,999	<input type="checkbox"/> \$20,000-\$34,999	<input type="checkbox"/> > \$35,000
<input type="checkbox"/> Structural changes to your home	<input type="checkbox"/> \$0	<input type="checkbox"/> \$1-\$999	<input type="checkbox"/> \$1,000-\$4,999	<input type="checkbox"/> \$5,000-\$9,999	<input type="checkbox"/> \$10,000-\$19,999	<input type="checkbox"/> \$20,000-\$34,999	<input type="checkbox"/> > \$35,000
<input type="checkbox"/> Structural changes to other buildings	<input type="checkbox"/> \$0	<input type="checkbox"/> \$1-\$999	<input type="checkbox"/> \$1,000-\$4,999	<input type="checkbox"/> \$5,000-\$9,999	<input type="checkbox"/> \$10,000-\$19,999	<input type="checkbox"/> \$20,000-\$34,999	<input type="checkbox"/> > \$35,000
<input type="checkbox"/> Enrolling in conservation programs (e.g. EWP, CRP)	<input type="checkbox"/> \$0	<input type="checkbox"/> \$1-\$999	<input type="checkbox"/> \$1,000-\$4,999	<input type="checkbox"/> \$5,000-\$9,999	<input type="checkbox"/> \$10,000-\$19,999	<input type="checkbox"/> \$20,000-\$34,999	<input type="checkbox"/> > \$35,000
<input type="checkbox"/> Other: _____	<input type="checkbox"/> \$0	<input type="checkbox"/> \$1-\$999	<input type="checkbox"/> \$1,000-\$4,999	<input type="checkbox"/> \$5,000-\$9,999	<input type="checkbox"/> \$10,000-\$19,999	<input type="checkbox"/> \$20,000-\$34,999	<input type="checkbox"/> > \$35,000
<input type="checkbox"/> Other: _____	<input type="checkbox"/> \$0	<input type="checkbox"/> \$1-\$999	<input type="checkbox"/> \$1,000-\$4,999	<input type="checkbox"/> \$5,000-\$9,999	<input type="checkbox"/> \$10,000-\$19,999	<input type="checkbox"/> \$20,000-\$34,999	<input type="checkbox"/> > \$35,000

25. Did you or anyone in your household make other changes to better prepare for or prevent future flooding?

[check all that apply]:

☐ Buy flood insurance

☐ Buy groundwater insurance

☐

Other _____

☐ Start a phone tree with neighbors

☐ Make a household flood response plan ☐

Other _____

Additional comments on ways you adjusted after flooding (additional space also on back page):

Part 5: Understanding Your Household or Business

This information will help us understand how different types of households, families, and businesses are affected by flooding. Again, **this information is completely anonymous and confidential.**

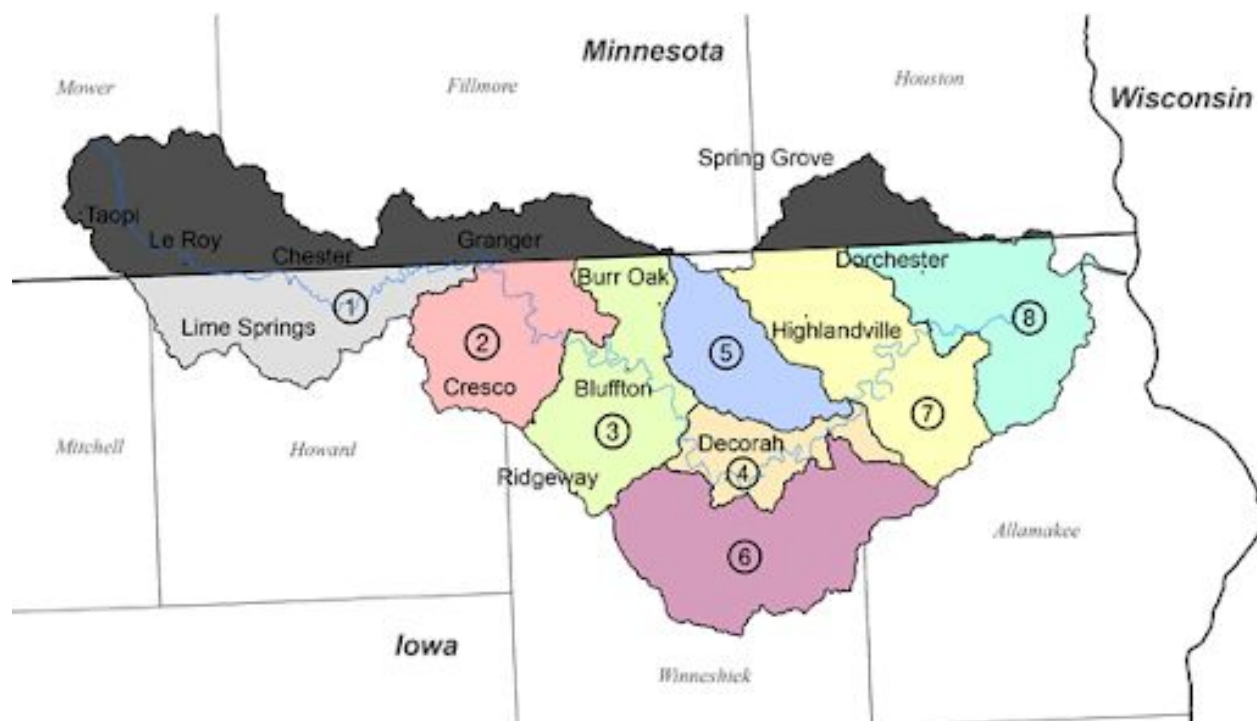
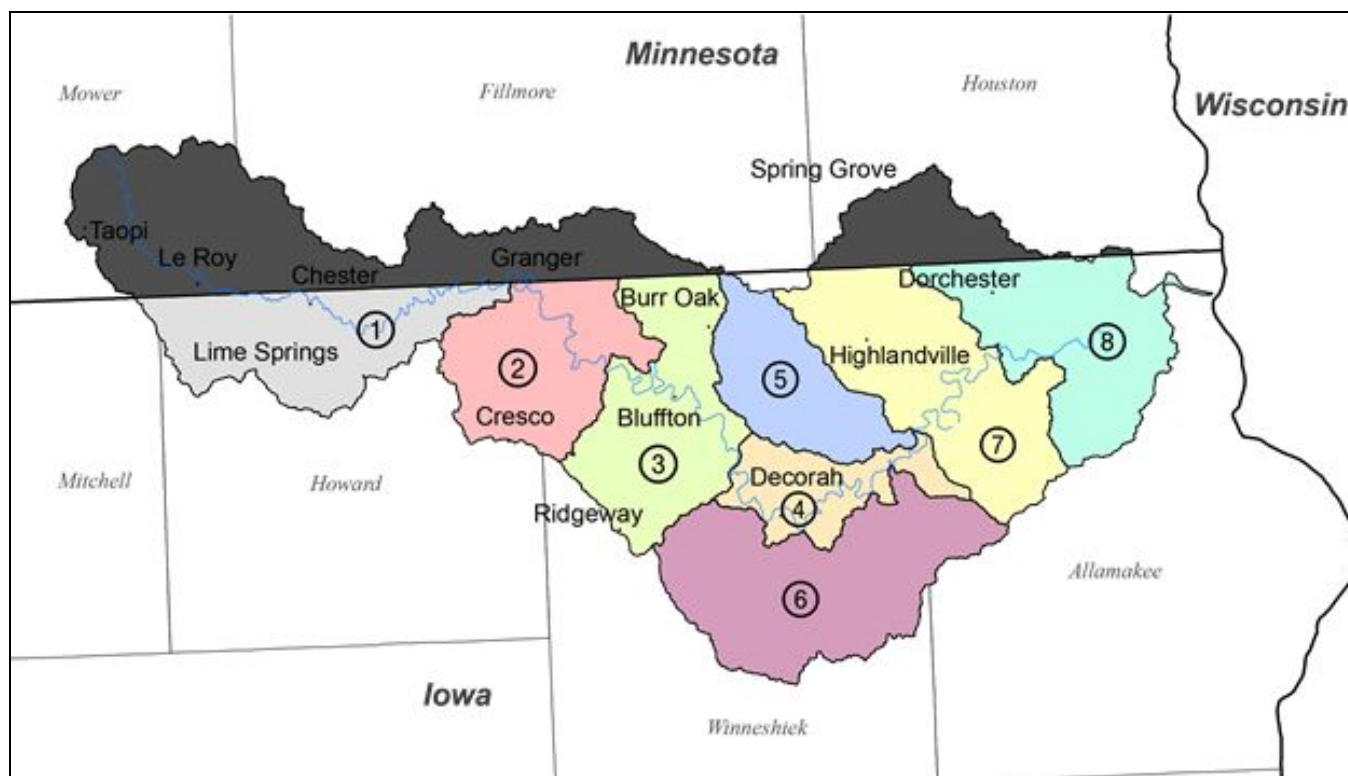
26. Describe the primary decision maker(s) in your household/business regarding issues like flooding and flood preparedness:

Age/Gender	Highest Level of Education	Employment Status	Years lived in the Upper Iowa River Watershed?
1. <input type="checkbox"/> 18-24 <input type="checkbox"/> 55-64 <input type="checkbox"/> 25-34 <input type="checkbox"/> 65-74 <input type="checkbox"/> 35-44 <input type="checkbox"/> 75-84 <input type="checkbox"/> 45-54 <input type="checkbox"/> 85+ <input type="checkbox"/> Female <input type="checkbox"/> Male	<input type="checkbox"/> Less than high school graduate <input type="checkbox"/> High school graduate or GED <input type="checkbox"/> 1+ year of college, no degree <input type="checkbox"/> Associates/ other 2 year degree <input type="checkbox"/> College graduate, 4 year degree <input type="checkbox"/> Graduate degree completed	<input type="checkbox"/> Unemployed <input type="checkbox"/> Retired <input type="checkbox"/> Part-time (5-20 hrs/week) <input type="checkbox"/> Part-time (21-39 hrs/week) <input type="checkbox"/> Full-time (40+ hrs/wk)	_____(# of years) Did this person contribute to filling out this survey? <input type="checkbox"/> No <input type="checkbox"/> Yes
2. <input type="checkbox"/> 18-24 <input type="checkbox"/> 55-64 <input type="checkbox"/> 25-34 <input type="checkbox"/> 65-74 <input type="checkbox"/> 35-44 <input type="checkbox"/> 75-84 <input type="checkbox"/> 45-54 <input type="checkbox"/> 85+ <input type="checkbox"/> Female <input type="checkbox"/> Male	<input type="checkbox"/> Less than high school graduate <input type="checkbox"/> High school graduate or GED <input type="checkbox"/> 1+ year of college, no degree <input type="checkbox"/> Associates/ other 2 year degree <input type="checkbox"/> College graduate, 4 year degree <input type="checkbox"/> Graduate degree completed	<input type="checkbox"/> Unemployed <input type="checkbox"/> Retired <input type="checkbox"/> Part-time (5-20 hrs/week) <input type="checkbox"/> Part-time (21-39 hrs/week) <input type="checkbox"/> Full-time (40+ hrs/wk)	_____(# of years) Did this person contribute to filling out this survey? <input type="checkbox"/> No <input type="checkbox"/> Yes

27. What was your annual gross household income from all sources before taxes in 2017?

- | | | | |
|---|---|---|---|
| <input type="checkbox"/> Less than \$15,000 | <input type="checkbox"/> \$25,000 to \$34,999 | <input type="checkbox"/> \$50,000 to \$74,999 | <input type="checkbox"/> \$100,000 to \$149,999 |
| <input type="checkbox"/> \$15,000 to \$24,999 | <input type="checkbox"/> \$35,000 to \$49,999 | <input type="checkbox"/> \$75,000 to \$99,999 | <input type="checkbox"/> \$150,000+ |

28. Please circle the number in the region where your residence or business falls. We are interested in how people in different parts of the Upper Iowa Watershed are impacted by flooding. We aren't linking your responses to your address (again, this is survey anonymous), so knowing broadly where you fall helps us understand different flood experiences.



29. Please share any additional comments, explanations, or details regarding your 2016 flood experience here:

30. Please leave your contact information if you are interested in being involved in this research further (follow-up interviews, etc) **or if you are interested in directly receiving a summary of the research**. Again, we will not be linking your name or contact information to your responses on your survey!

Contact Information:

Please indicate your interest *[check all that apply]*:

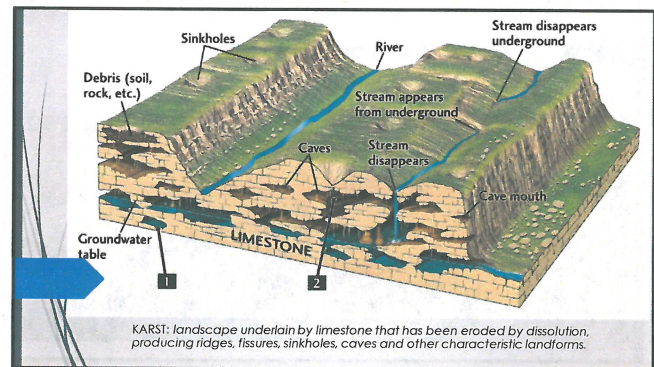
- ☐ I am interested in being involved in future research on flooding in the Upper Iowa Watershed
- ☐ I would like to receive a summary of this research

Thank you for taking the time to complete this questionnaire!

Please contact Rachel Brummel (brumra02@luther.edu, 563-387-1778) at Luther College with any additional questions.

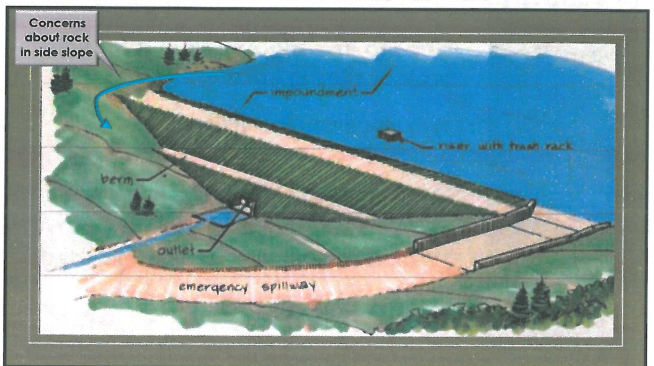
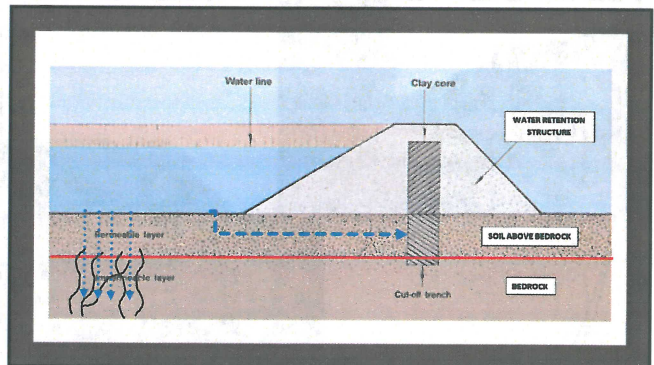
Concerns with Karst: building water retention structures & prioritizing sites

Matt Frana – Upper Iowa River Watershed Project Coordinator

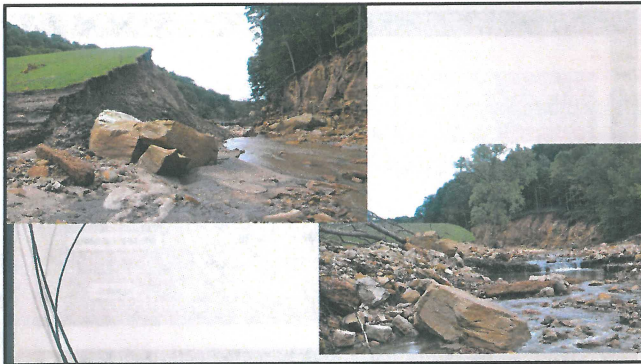


Building in Karst

- Can an effective core trench be put into the bedrock?
- How high of risk is there to create a sinkhole if water is ponded at the location?



What We Want to Avoid....



How to avoid project issues?

- Iowa NRCS – Soil Scientist, Engineers, and Geologist (Neil Sass, George Schaefer, Joe Thompson, Kathy Wolad)
- Iowa Geologic Survey – GIS maps and geologic advice (Ryan Clark and Jason Vogelgesang)
- IDNR – GIS maps (Andy Asell)
- MN dept of Ag – Experience working in karst/investigation procedures – (Kevin Kuehner)
- Luther College – contacts and information (Jodi Betlage, Eric Blazek, Colin Betts)
- Private Engineers – How they have investigated/handled karst construction in the past. What they would do.

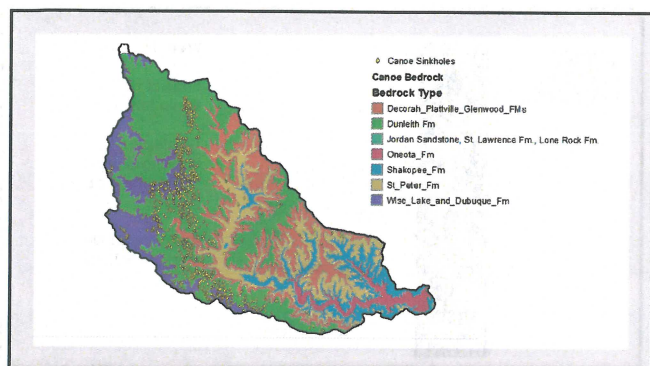


Steps to investigate water retention project sites in karst:

- 1) In office GIS evaluation
- 2) Preliminary field investigation
- 3) Geotechnical investigation if needed.

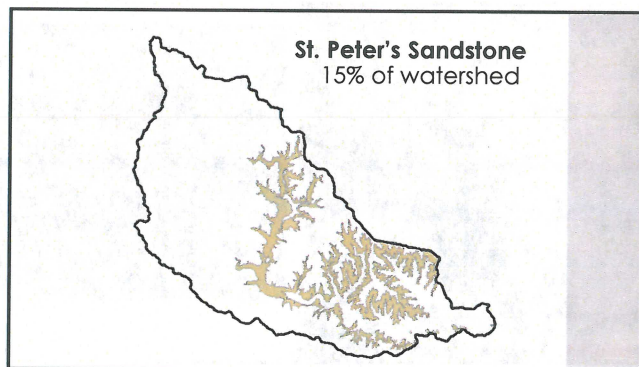
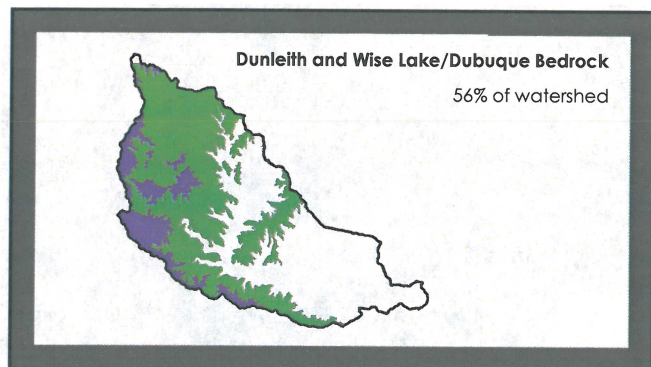
In office GIS evaluation

- What kind of bedrock below structure?
- How many sinkholes close by?
- Nearby well driller's log data.
- What is the potential impact of structure?
 - Size of drainage area being controlled.



Sinkhole occurrences in different types of bedrock...

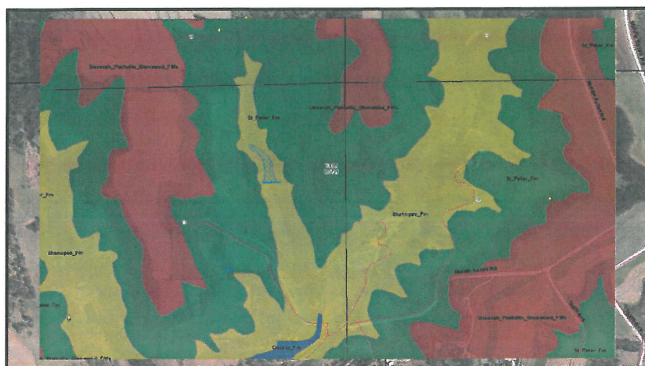
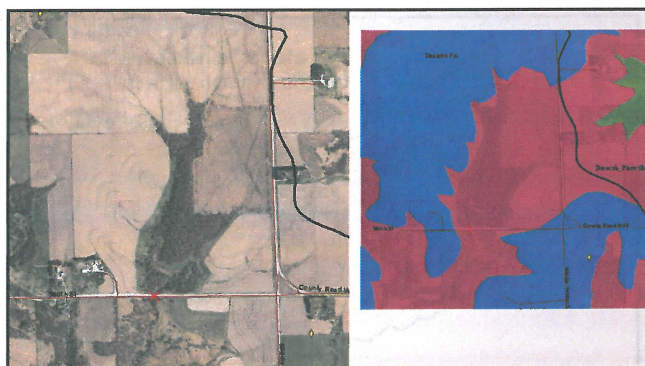
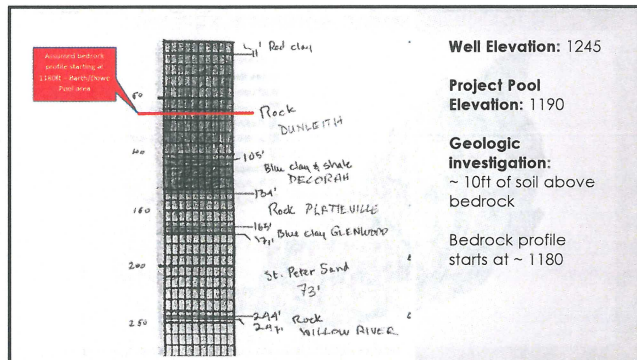
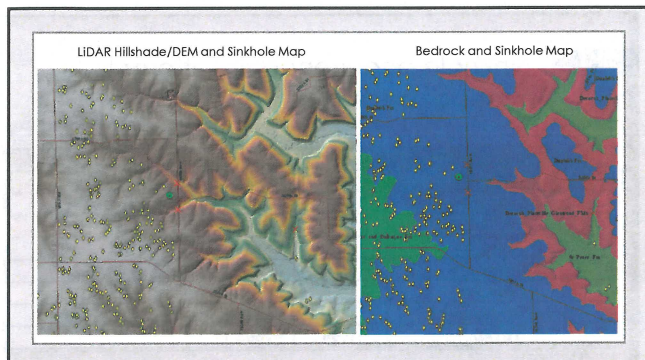
Bedrock	Sinkholes	Acres	1 sinkhole every _____ acres
Dunleith Fm	1244	18798.5	15.1
Decorah, Plattville, Gle	15	7028	468.4
Wise Lake and Dubug	221	5174.2	23.4
St Peter Fm	23	6203.1	269.7
Shakopee Fm	2	3705.4	1852.7
Oneota Fm	1	1667.28	1667.28
Jordan Sandstone Fm.	0	6.23	
TOTAL	1506	42583	



In office GIS evaluation: What kind of bedrock below structure?

- Extra caution in areas mapped as Wise Lake/Dubuque or Dunleith.
 - High occurrence of sinkholes in this type of bedrock.
- Extra caution with sites with a high occurrence of sinkholes.
- Avoid sites near sinkholes.
- Avoid project sites mapped as sandstone (St. Peters Sandstone).
 - Easily dissolves or erodes.
 - Has had issues with sinkhole formation and structure failure.





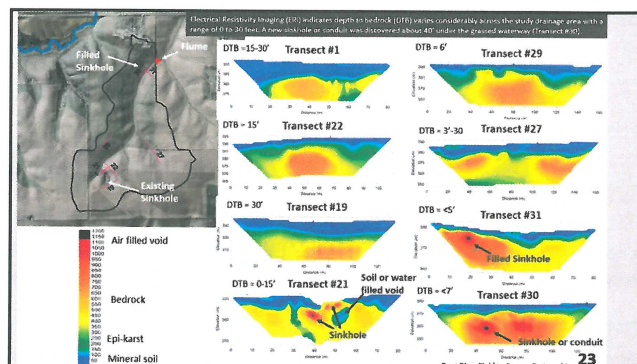
On site investigation:

- Depth to bedrock
- Landowner knowledge
- Soil type (construction material)

NRCS suggests a backhoe to properly investigate some locations.

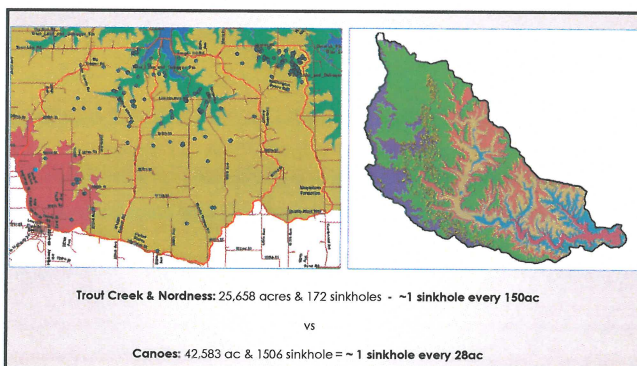
Geotechnical Investigation

- Drill/Bore (\$2K - \$5K per site)
- Electrical Resistivity Imaging (ERI) (\$5K-\$10K per site)
- Can be hired through Private Engineer
- Iowa Geological Survey (IGS) has the equipment - IIHR - Hydrosience & Engineering | University of Iowa
- NRCS is looking into



Moving forward:

- Be more selective with project sites before spending time surveying and site investigation.
- Higher priority to:
 - Sites without exposed bedrock
 - sites without permanent pool of water.
- Line up backhoe for site investigations – contract through PE
- Information that would be useful:
 - A more detailed depth to bedrock layer if possible
 - Potential of partnership with Iowa Geological Survey since connected with IIHR – Hydrosience & Engineering | University of Iowa?



QUESTIONS?

Matthew Frana

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