Lower Republican Custom Watershed Discovery Meeting

March 15, 2022

While we are waiting, please enter your name and community in the chat box!

FEMA

Kansas Department of Agriculture
Division of Water Resources

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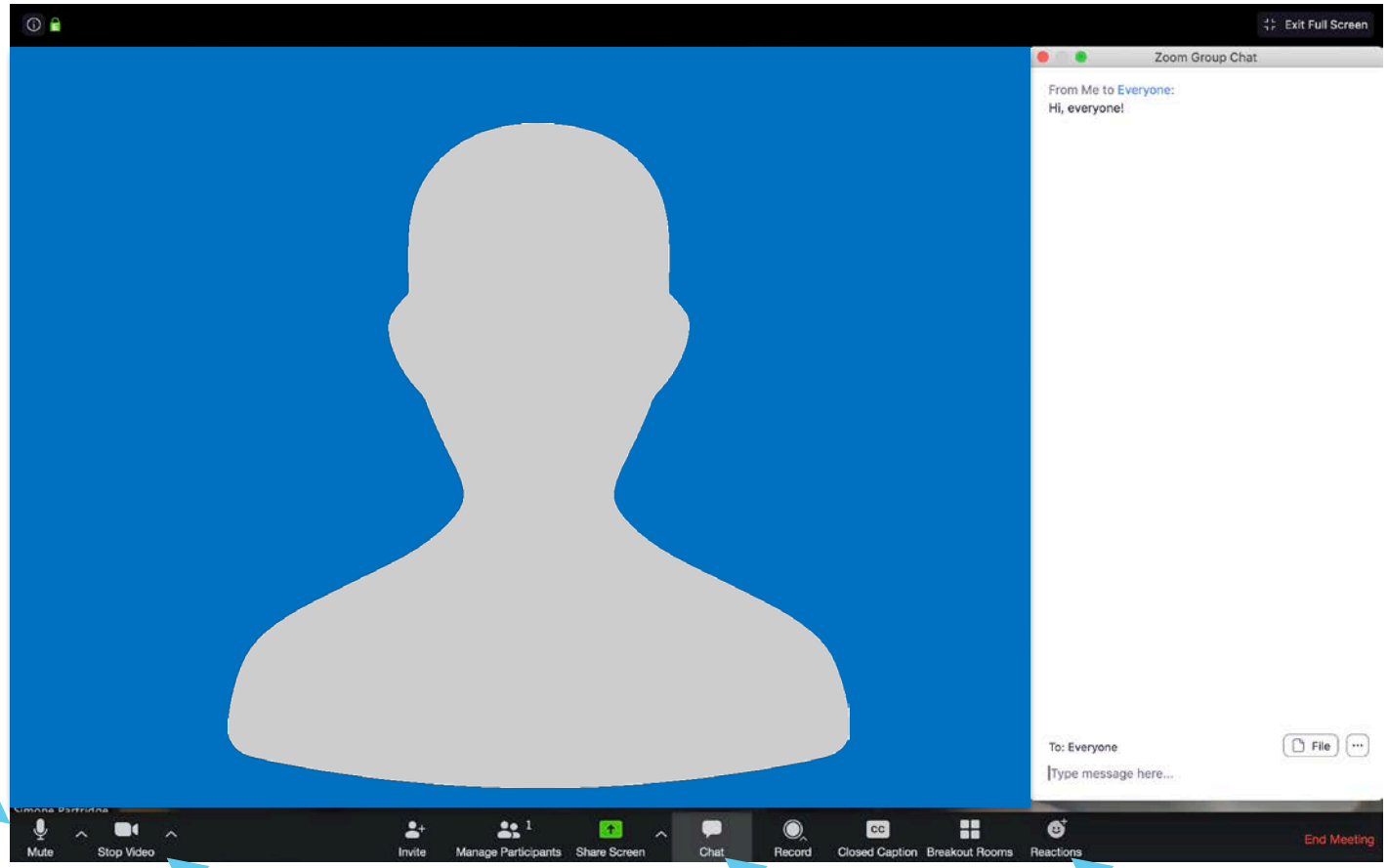
Thank you for joining us today!

Your input is very important to this work.

Zoom Features



Mute / Unmute

Start your Video

Use the Chat Feature

Reactions

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Rules of the Road

- Attendees may be muted during the presentation, to help eliminate background noise.
- Check out the chat to ask questions during the presentation! Or feel free to “raise your hand.” We will pause for questions and unmute the lines at various stopping points.
- For technical difficulties: send a private chat to Joanna Rohlf or email *Joanna.Rohlf@ks.gov*.
- We’ll be recording this webinar for those who aren’t able to attend today.

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Introductions

Kansas Department of Agriculture

Tara Lanzrath, *CFM*
Floodplain Mapping Coordinator

Joanna Rohlf, *CFM*
Floodplain Mapping Specialist

William Pace, *CFM*
Floodplain Mapping Specialist

Steve Samuelson, *CFM*
State NFIP Coordinator

Cheyenne Sun Eagle,
NFIP Specialist

AECOM Technical Services, Inc.

Daniel Curley
Project Manager

Hayden Edwards,
Engineer

Dani Holloran
Graduate Water Resources Engineer

Katie Bryant, PE, CFM
Engineer

FEMA Region VII

Andy Megrail, *Regional Project Officer*

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Today's Goals

Review	Review WHY WE DO THIS WORK
Share	Share WHERE WE ARE NOW & what the data is telling us about flood risk
Discuss	Discuss how WE CAN HELP
Preview	Preview the PLANNED WORK AHEAD and how we propose doing it.
Next Steps	Discuss Next Steps and YOUR ROLE in the Process

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Why We Do This Work

FEMA Floodplain Mapping Program

- Risk Mapping, Assessment, and Planning (Risk MAP).
- Performed on a watershed basis.
- Consists of both Regulatory & Non-Regulatory Products.
- Through Risk MAP, we provide updated floodplain maps, as well as other (free!) data and tools that can help you plan to reduce your community's risk.

Risk MAP
Increasing Resilience Together

Planning: The "P" in Risk MAP

- The flood risk data from this work can – and should – inform your regional Hazard Mitigation Plan (HMP).
  - Region F: Clay, Cloud, Dickinson, Jewell, Mitchell, Republic, and Smith Counties
  - Region B: Phillips County
  - Region I: Geary & Riley Counties
  - Region K: Washington County

- Common themes in the regional plans:
  - Many incorporated communities located along major rivers/creeks with SFHA Zone A and some AE.
  - Little municipal development to impact floodplains.
  - Study drainage issues in flood prone areas and make recommendations for flood control measures, flood management procedures, and low-water crossing improvements.

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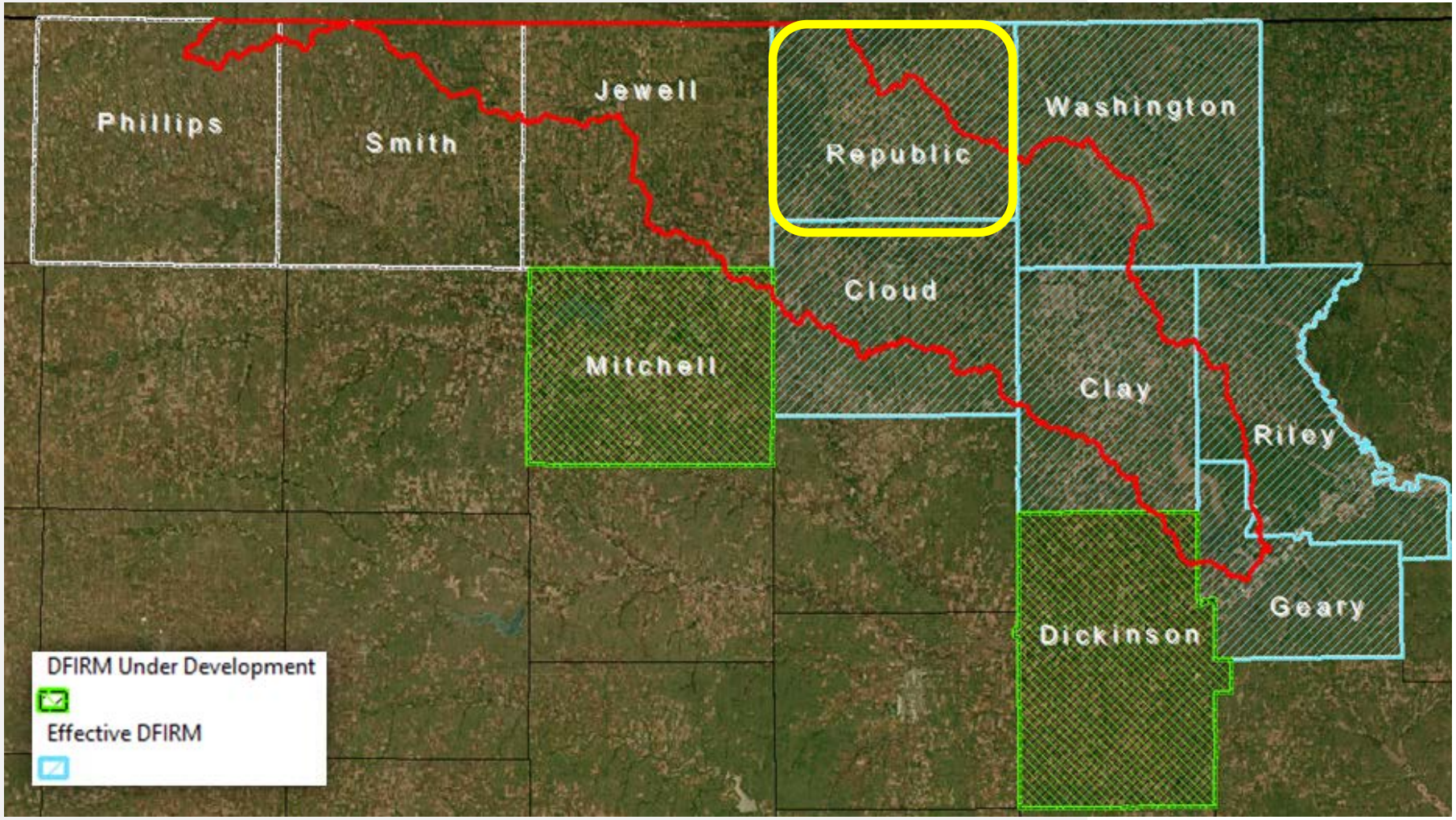
We Can Help with Technical Assistance!

Regulatory FIRM Status



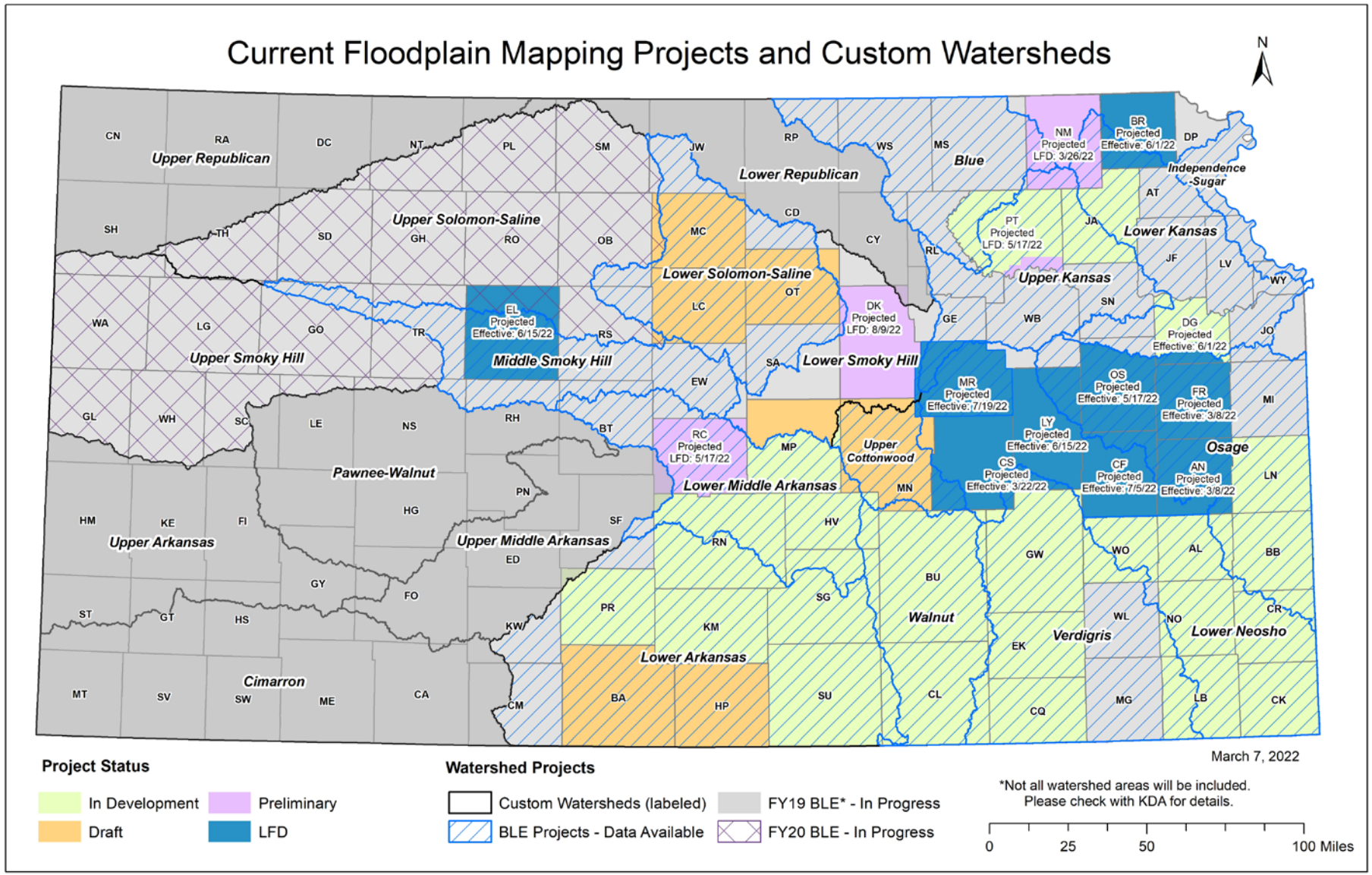
Republic County -

- Mapping Update to begin in 2024

Other Counties-

- TBD Based on Needs

We are doing this work across Kansas…



Participation in the National Flood Insurance Program

- Blue = Participates Red = Not Participating

- Cities of Agenda, Aurora, Belleville, Burr Oak, Clay Center, Clifton, Clyde, Concordia, Courtland, Cuba, Formosa, Fort Riley, Green, Jamestown, Jewell, Junction City, Linn, Mankato, Milford, Morganville, Palmer, Randall, Republic, Scandia, Vining, Wakefield, Webber.

- Clay, Cloud, Dickinson, Geary, Jewell, Phillips, Republic, Riley, Smith, and Washington Counties

Number of Flood Insurance Policies

- Clay County – 23
  - Clay Center – 10
  - Clifton – 0
  - Green - 0
  - Morganville – 11
  - Vining – 0
  - Wakefield - 0
- Cloud County – 8
  - Aurora – 0
  - Cyde – 1
  - Concordia – 35
  - Jamestown - 0
- Dickinson County - 24
- Geary County – 18
  - Junction City – 45
  - Milford – 0
- Jewell County – NP
  - Burr Oak – 1
  - Formoso – NP
  - Jewell – NP
  - Mankato – NP
  - Randall – NP
  - Webber – NP
- Phillips County - NP
- Republic County – 8
  - Agenda – 0
  - Belleville – 2
  - Courtland – 0
  - Cuba – 0
  - Republic – 0
  - Scandia - 16
- Riley County - 71
  - Fort Riley - 0
- Smith County - NP
- Washington County – 5
  - Linn – 0
  - Palmer - 0

Where We Are Now & What the Early Flood Risk Data is Telling Us

Base Level Engineering is Complete

- BLE is an engineering approach that provides an initial high-level (or "base line") understanding of flood hazards, with enough information for us to draft initial floodplain designations.

- We're starting to develop and share this initial data because we've learned that the earlier we start partnering with you, the more accurate the map.

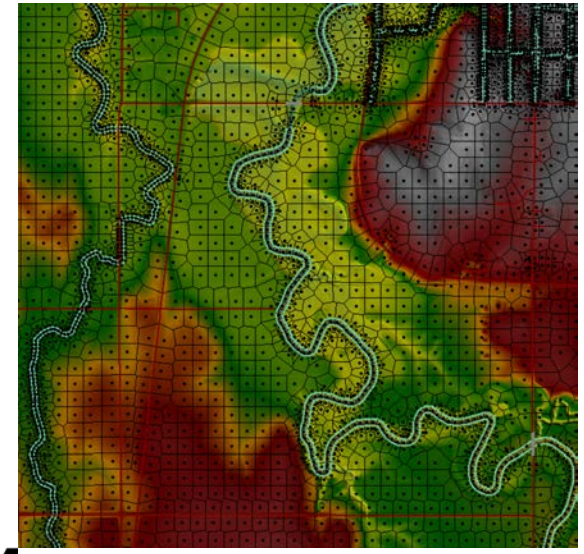
FLOODPLAIN: On the maps we create, the floodplains, also known as Special Flood Hazard Areas (SFHAs), are areas with high flood risk – where a flood of a certain level has a 1-percent chance of happening each year.

We Use 2D Hydraulic Modeling and LIDAR in our BLE

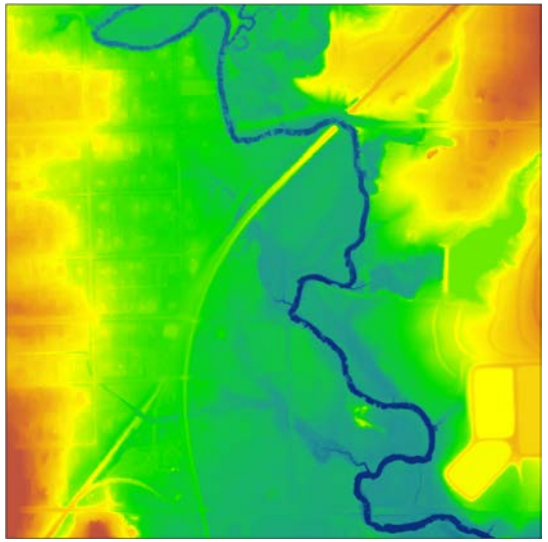
- Your current maps are done in one dimension (1D) and are based on 10-meter Digital Elevation Model

- Two-dimensional (2D) modeling and LIDAR- enhanced maps provide greater resolution and the ability to analyze how water moves across land using elevations and depth grids

2D



LiDAR



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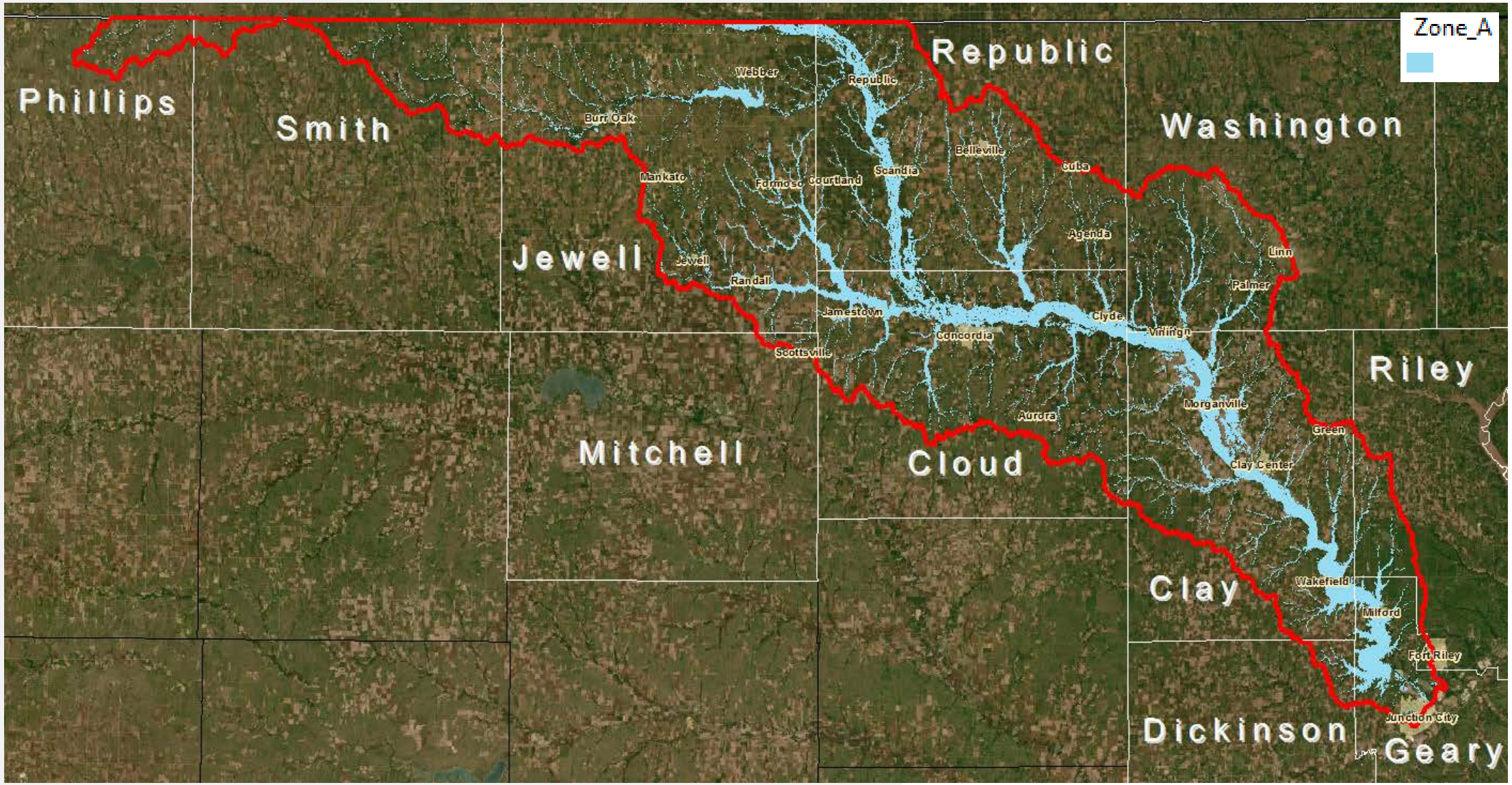
BLE Study Area

BLE floodplains are complete for this study area



Limitations of BLE Modeling

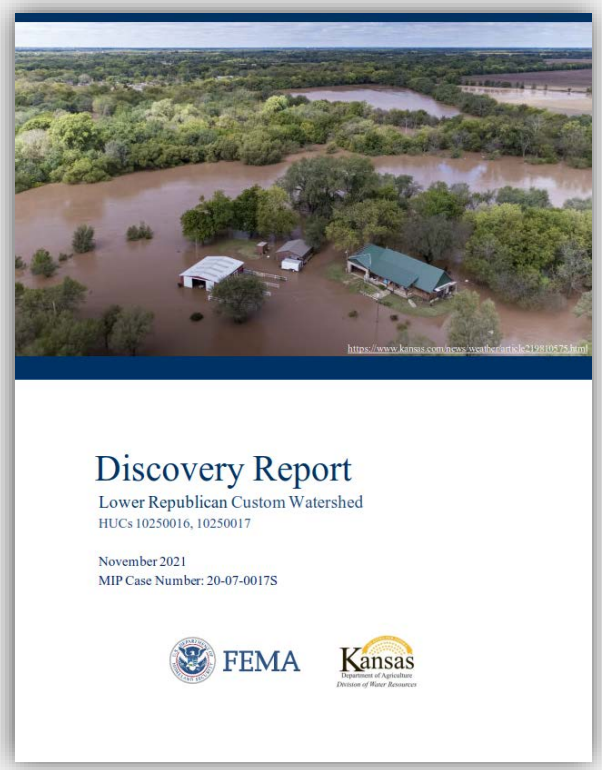
- Hydraulic structures, such as culvert and bridge openings, are not included
- Storm sewer networks in communities are not included
- Levees are not accurately modeled because closure structures are not included into the model to prevent backwater

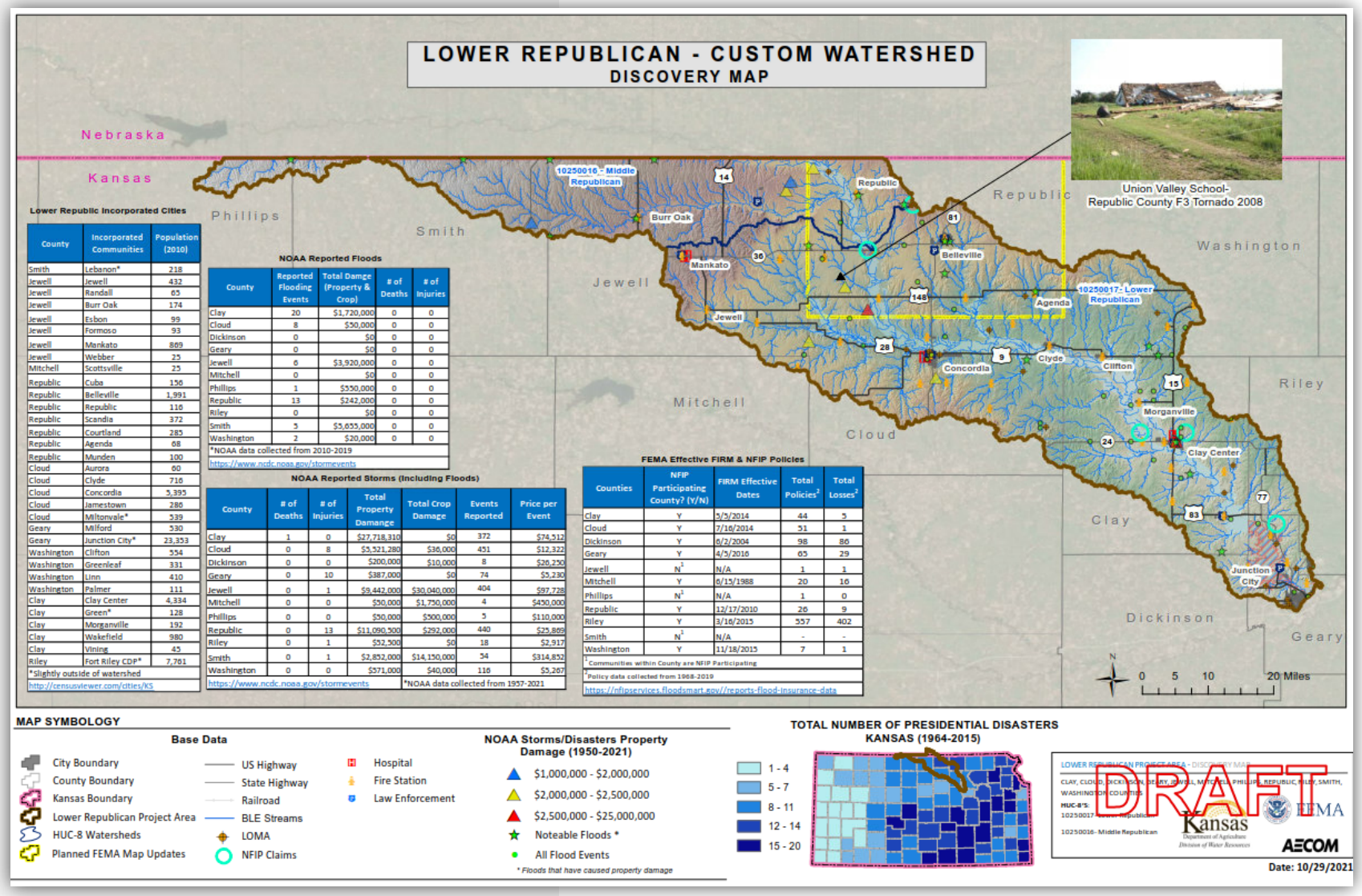
Where We Are Now: DISCOVERY

This is one of the most important phases of our work, where we:

- Review the flood risk information together and get your feedback;
- Identify the new data we might need to accurately update your flood risk; and
- Determine, with you, where mitigation (taking steps to reduce risk) makes sense for your community.

Discovery Reports and Maps





County	Incorporated Communities	Population (2010)
Smith	Lebanon*	218
Jewell	Jewell	432
Jewell	Randall	65
Jewell	Burr Oak	174
Jewell	Esbon	99
Jewell	Formoso	93
Jewell	Mankato	869
Jewell	Webber	25
Mitchell	Scottsville	25
Republic	Cuba	156
Republic	Belleville	1,991
Republic	Republic	116
Republic	Scandia	372
Republic	Courtland	285
Republic	Agenda	68
Republic	Munden	100
Cloud	Aurora	60
Cloud	Clyde	716
Cloud	Concordia	5,395
Cloud	Jamestown	286
Cloud	Miltonvale*	539
Geary	Milford	530
Geary	Junction City*	23,353
Washington	Clifton	554
Washington	Greenleaf	331
Washington	Linn	410
Washington	Palmer	111
Clay	Clay Center	4,334
Clay	Green*	128
Clay	Morganville	192
Clay	Wakefield	980
Clay	Vining	45
Riley	Fort Riley CDP*	7,701

*Slightly outside of watershed
http://censusviewer.com/cities/KS

County	Reported Flooding Events	Total Damge (Property & Crop)	# of Deaths	# of Injuries
Clay	20	$1,720,000	0	0
Cloud	8	$50,000	0	0
Dickinson	0	$0	0	0
Geary	0	$0	0	0
Jewell	6	$3,920,000	0	0
Mitchell	0	$0	0	0
Phillips	1	$550,000	0	0
Republic	13	$242,000	0	0
Riley	0	$0	0	0
Smith	5	$5,655,000	0	0
Washington	2	$20,000	0	0

*NOAA data collected from 2010-2019
https://www.ncdc.noaa.gov/stormevents

County	# of Deaths	# of Injuries	Total Property Damange	Total Crop Damage	Events Reported	Price per Event
Clay	1	0	$27,718,310	$0	372	$74,512
Cloud	0	8	$5,321,280	$36,000	451	$12,322
Dickinson	0	0	$200,000	$10,000	8	$26,250
Geary	0	10	$387,000	$0	74	$5,230
Jewell	0	1	$9,442,000	$30,040,000	404	$97,728
Mitchell	0	0	$50,000	$1,750,000	4	$450,000
Phillips	0	0	$50,000	$500,000	5	$110,000
Republic	0	13	$11,090,500	$292,000	440	$25,869
Riley	0	1	$52,500	$0	18	$2,917
Smith	0	1	$2,852,000	$14,150,000	54	$314,852
Washington	0	0	$571,000	$40,000	116	$5,267

https://www.ncdc.noaa.gov/stormevents
*NOAA data collected from 1957-2021

Counties	NFIP Participating County? (Y/N)	FIRM Effective Dates	Total Policies[2]	Total Losses[2]
Clay	Y	5/5/2014	44	5
Cloud	Y	7/16/2014	51	1
Dickinson	Y	6/2/2004	98	86
Geary	Y	4/5/2016	65	29
Jewell	N[1]	N/A	1	1
Mitchell	Y	6/15/1988	20	16
Phillips	N[1]	N/A	1	0
Republic	Y	12/17/2010	26	9
Riley	Y	3/16/2015	557	402
Smith	N[1]	N/A	-	-
Washington	Y	11/18/2015	7	1

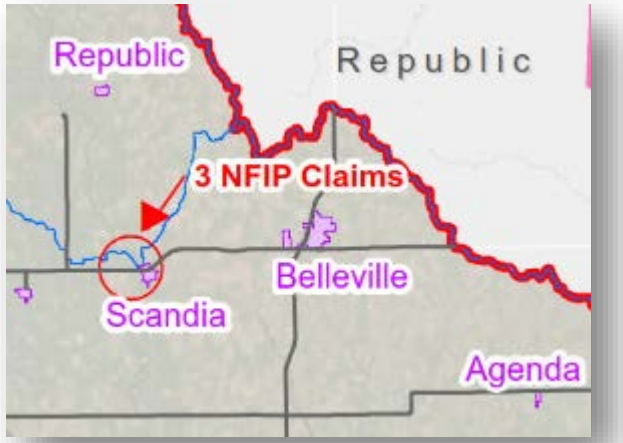
[1] Communities within County are NFIP Participating
[2] Policy data collected from 1968-2019
https://nfipservices.floodsmart.gov//reports-flood-insurance-data

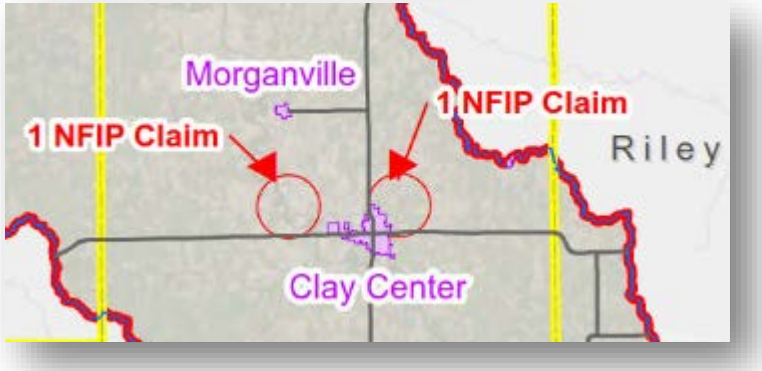
Repetitive Loss Structures

Insurable buildings for which the NFIP paid 2 or more claims of more than $1,000 in a 10-year period.

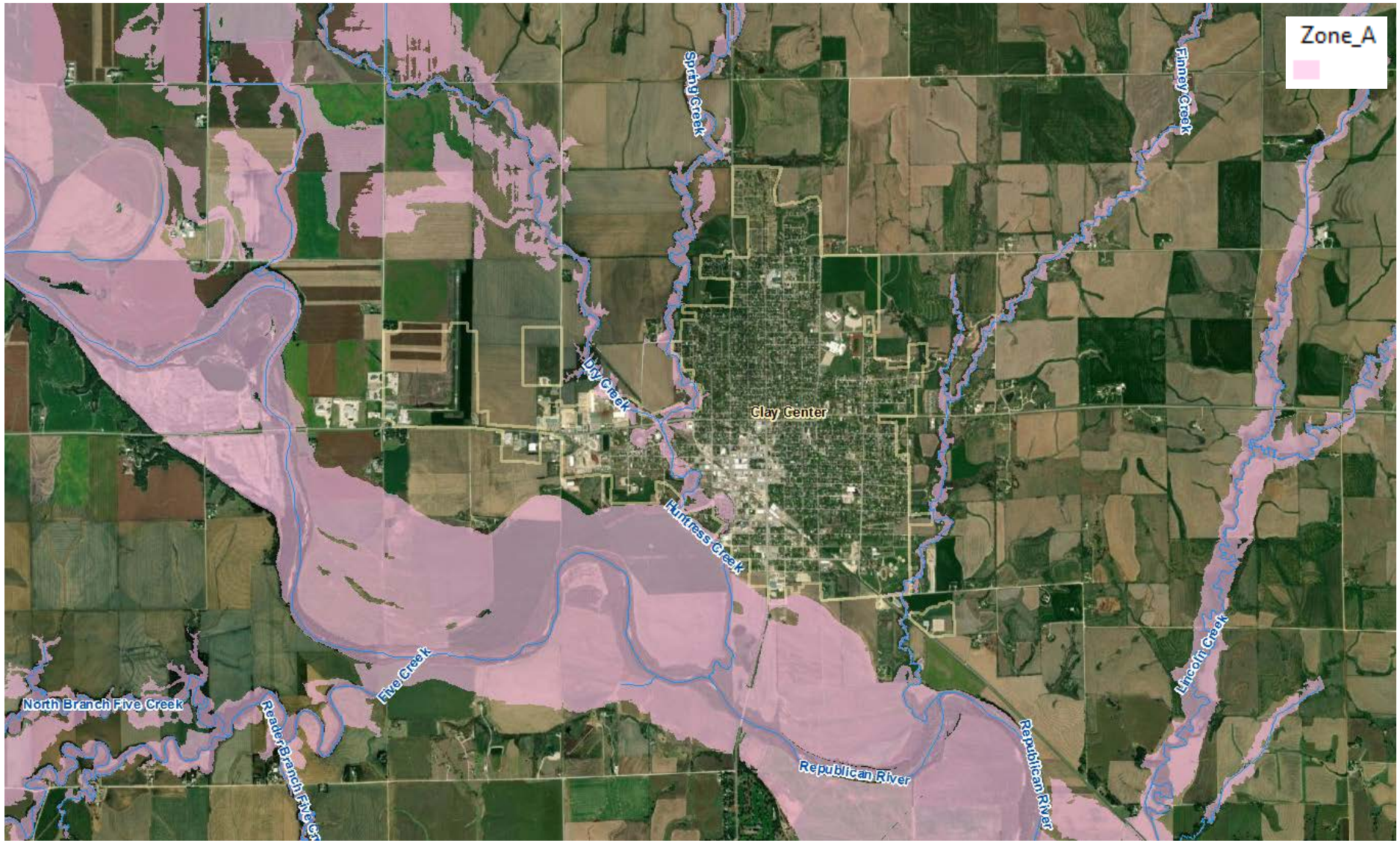
- One cluster of NFIP claims in Republic County
- Two NFIP claims in Clay County
- One NFIP claim in Geary County

NOTE: if you have an area where structures have been repeatedly damaged, we want to know! It's worth taking a closer look, and we might be able to help.





Draft Floodplains



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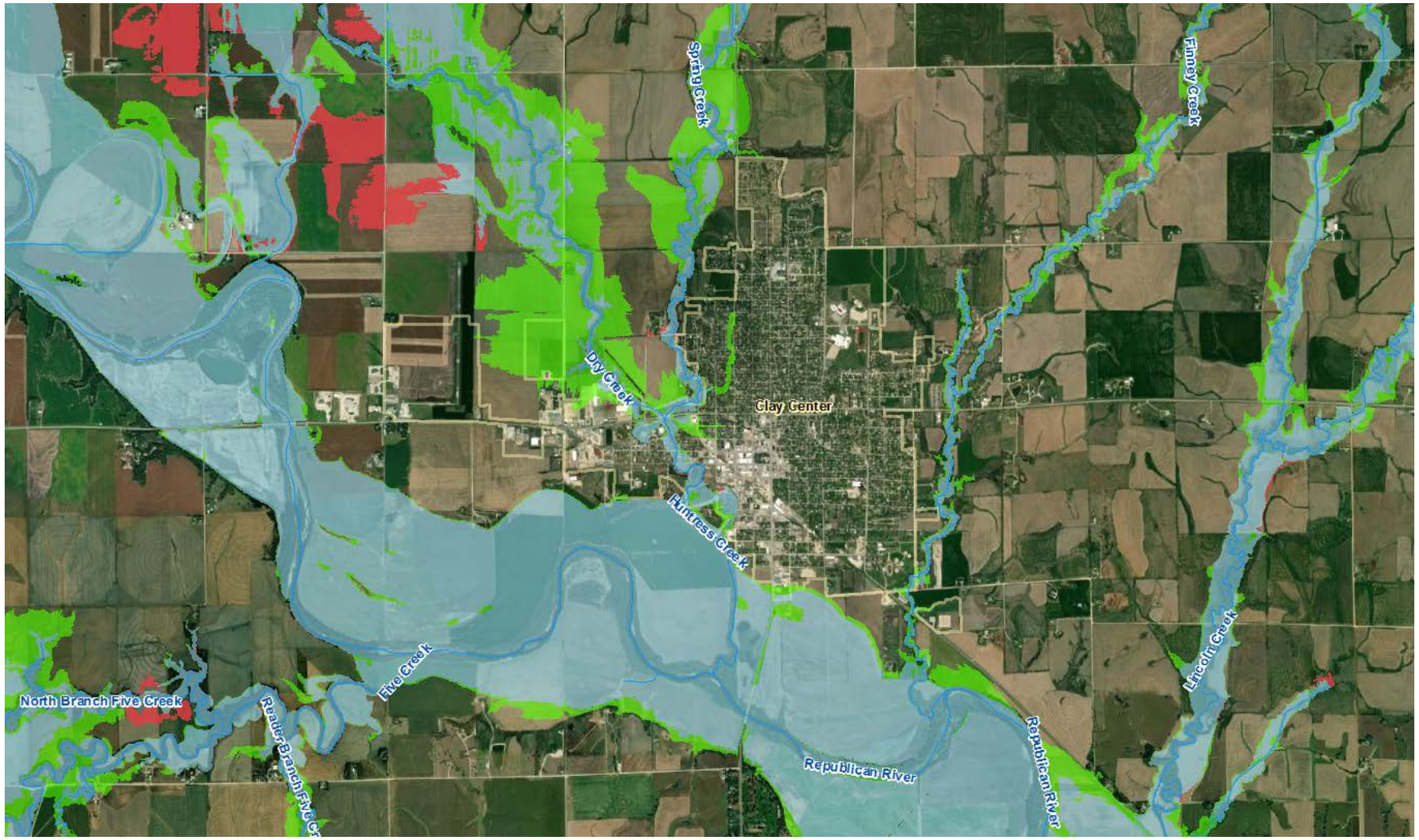
Changes Since Last Flood Insurance Rate Map (FIRM)

BLE Floodplain compared to Current Effective Floodplain

Blue: Same

Red:
New SFHA

Green:
Removed SFHA



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How We Can Help

“Mitigation Technical Assistance”

Some Ways We Can Help

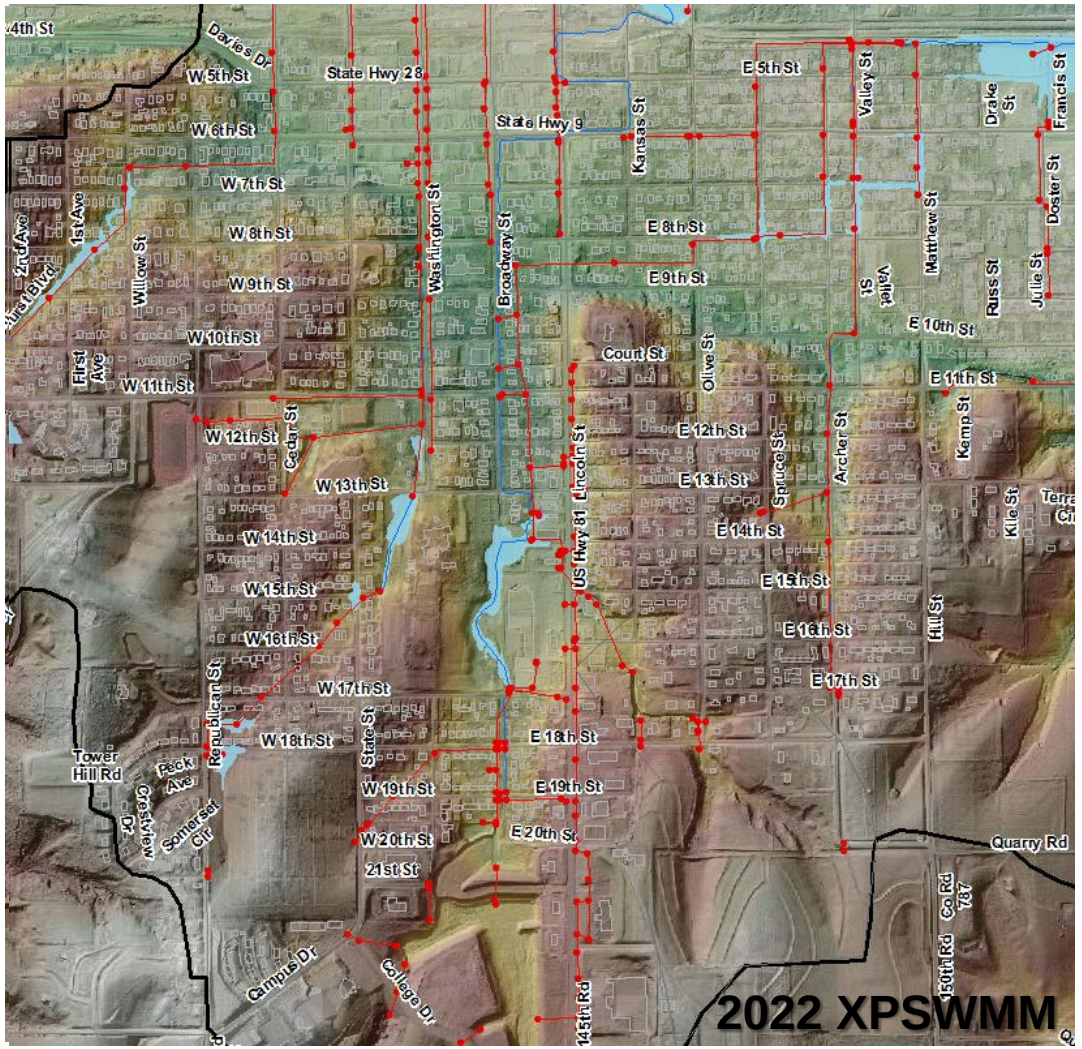
- Provide ideas on how to reduce flooding in trouble spots.
- Provide risk assessments for structures in your community, to help property owners understand the need for flood insurance, or to help you protect important public buildings.
- Use engineering analysis to show you what types of projects could reduce the impacts in floodprone areas.
- Assist with the Benefit-Cost Analysis if you are putting together a grant application.
- Support your participation in the Community Rating System.
- Help you explain flood risk and what it means to your community members.

You can visit the KDA website for more information, including a link to a fillable request form:

https://www.agriculture.ks.gov/divisions-programs/dwr/floodplain/mapping/technical-assistance

City of Concordia Technical Assistance Project
21st Dam and City Storm Sewer Model

Using XPSWM to model the City of Concordia sub-surface storm sewer system and 21st Street and Plum Road Dams resulted in lower water surface elevations compared to the 2D BLE study and the Effective FIRM.



Model Scenario	Structures in SFHA
2D BLE Zone A	248
XPSWMM 1D/2D (Depths Greater than 0.5 ft)	35

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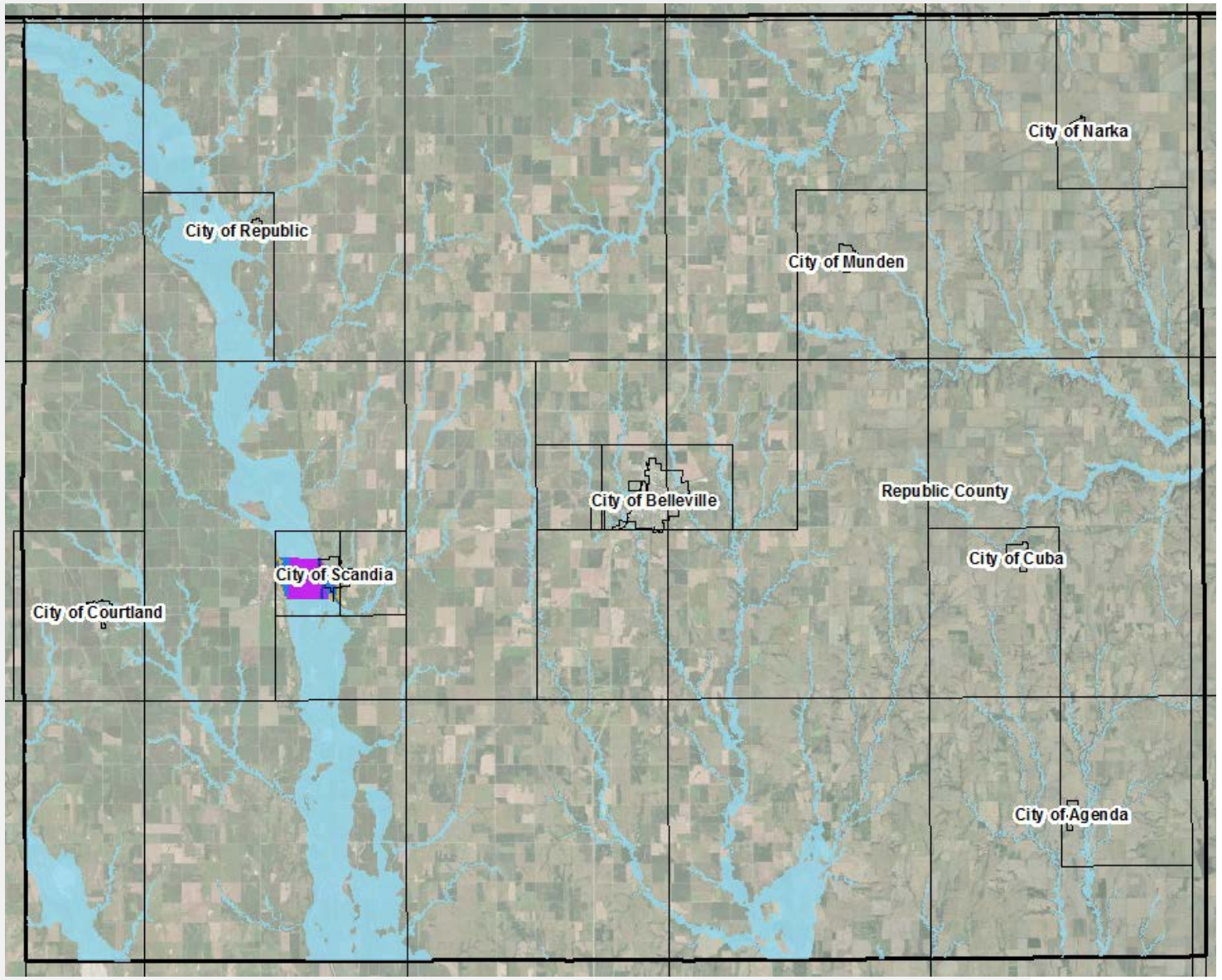
Preview of the Planned Work

Which We Call Our Data Development Scope

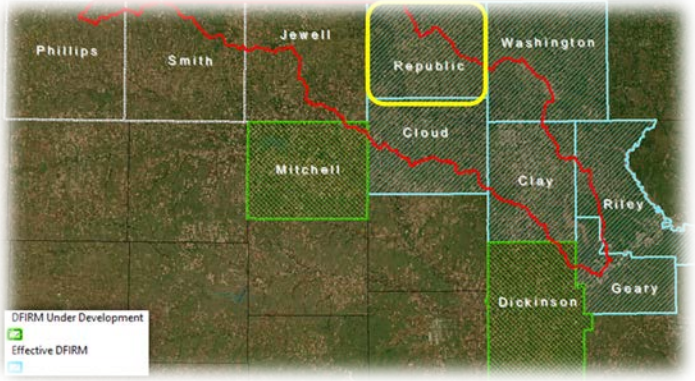
Where We Plan to Update Your Map

Preview of the Planned Work

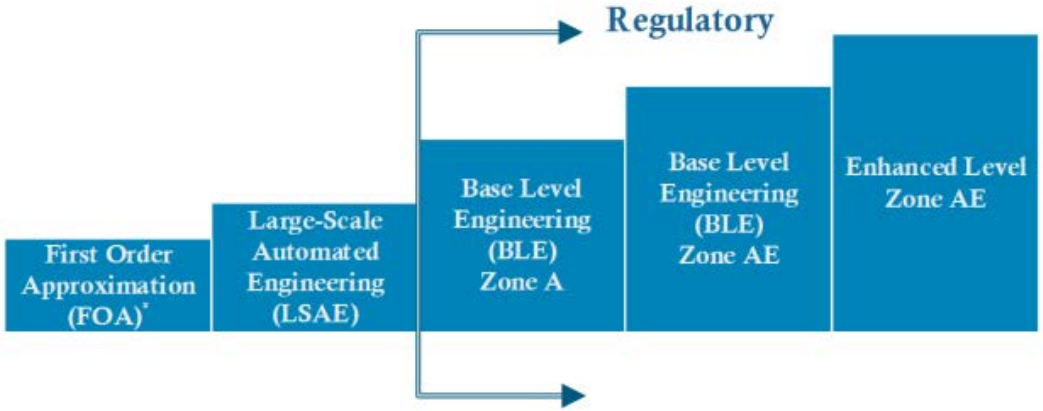


Republic County is tentatively planned for regulatory FIRM updates beginning in early 2024.

Other needs?



Data Development Scope



- **Zone A 2D BLE**
  - Additional Calibration to:
    - Gage Analysis for watershed
    - Rainfall-Runoff Modeling (HEC-HMS) in watershed
    - Historical Information
  - No Base Flood Elevations (BFEs) on the regulatory map, but available
  - Water Surface Elevation and Depth Grids generated
  - 2D Zone A BLE is easily scalable to enhanced Zone AE.

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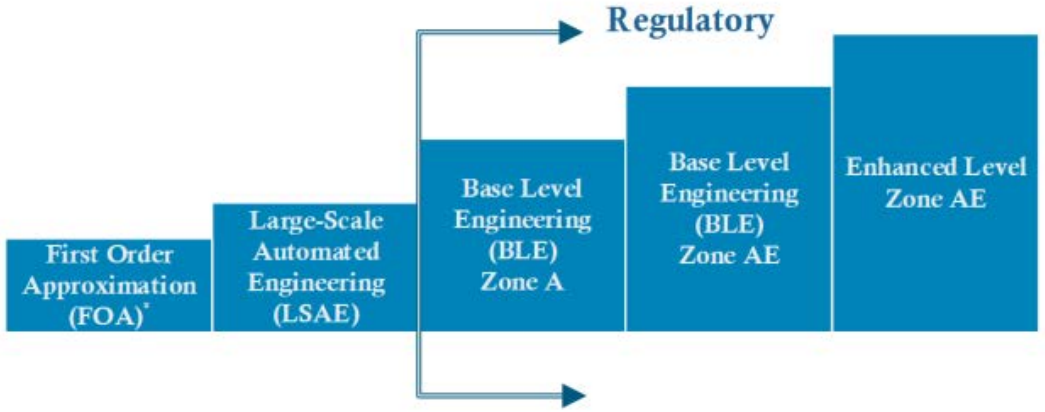
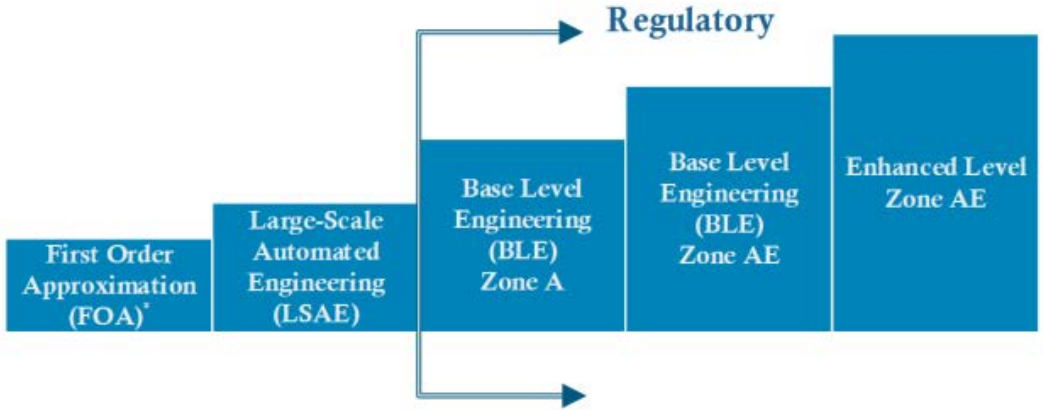
Data Development Scope



- **Zone AE**
  - Culvert and bridge openings are included in the modeling
  - Added detail to breaklines and land cover data in the modeling
  - Additional calibration to:
    - Gage Analysis
    - Rainfall-Runoff Modeling (HEC-HMS)
    - Historical Information
  - May have a floodway
  - Base Flood Elevations (BFEs) will be shown on the regulatory map
  - Water Surface Elevation and Depth Grids will be generated

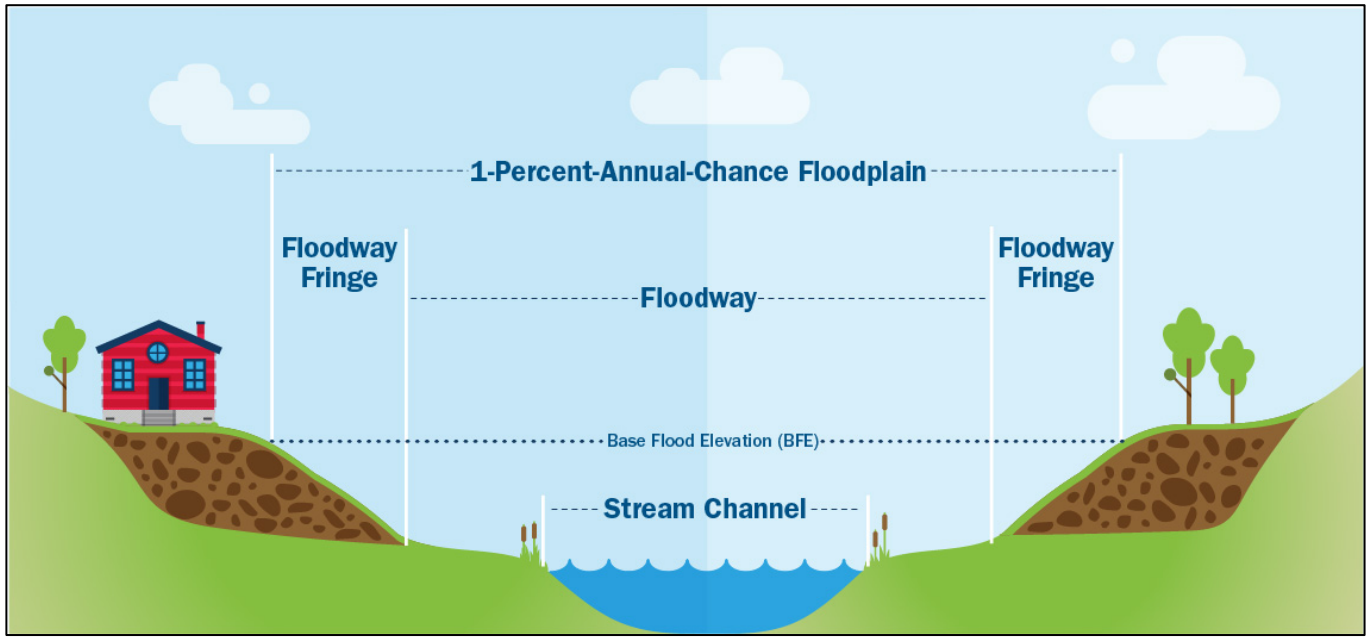
Data Development Scope

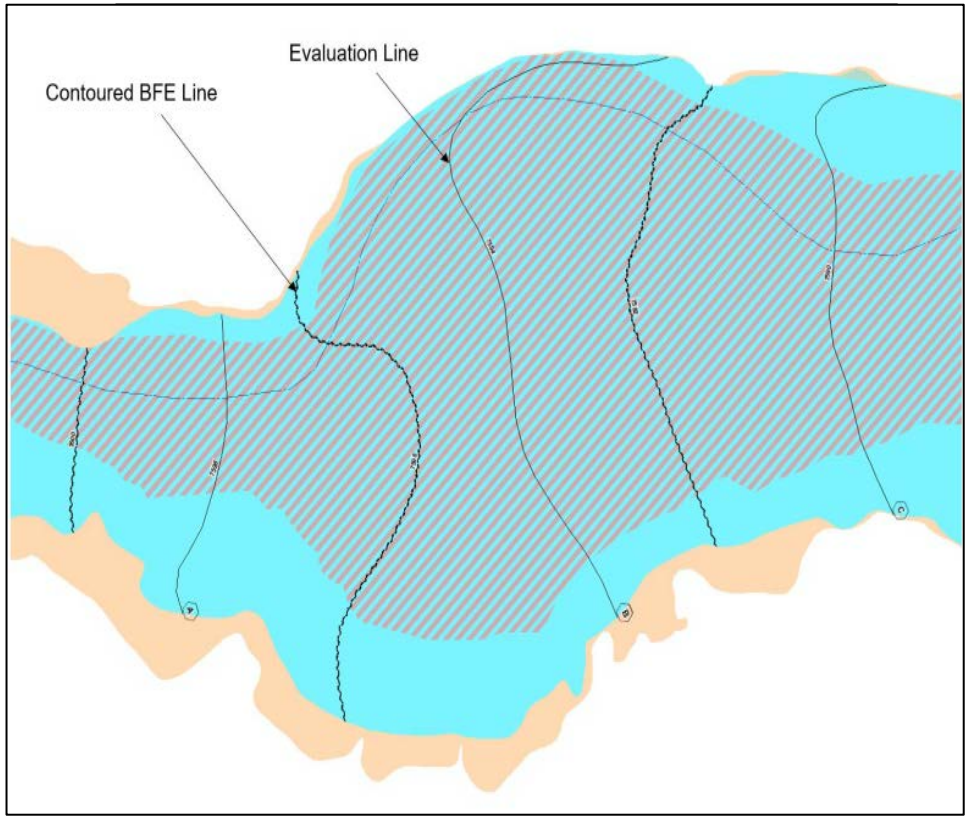


- **Static AE**
  - Static Elevations determined from:
    - Statistical Analysis of stage data
    - Rainfall-Runoff Modeling (HEC-HMS)
  - Base Flood Elevations (BFEs) will be shown on the regulatory map
  - Water Surface Elevation and Depth Grids will be generated

What is a Floodway?

- Zone AE: with or without a floodway
  - If there is a floodway on the current map, the new map must have a floodway
  - If there is not a current floodway, a floodway is optional





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Next Steps and Your Role in the Process

Project Timeline

Discovery Meeting: Today!

- *What data could contribute to making the map as accurate as possible?*
- *Revisit what flood risk reduction steps you are considering and how we can help!*
- *Provide feedback on data development scope, and mapping needs*

Data Development Work:

- *Republic County (Early 2024)*
- *Other Counties as needed (TBD)*

Your **review and feedback** on the draft maps

Project Timeline, continued

Once **feedback is received,** there is a public review of the draft maps

- *We'll need your help in getting the word out to your residents*

Preliminary Map Products

Post-Preliminary Processing

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STEP ONE: Provide Feedback on the BLE Maps

We want to incorporate your feedback into our work ahead.
This could include:

- Review BLE floodplains and comment
- Review stream extents and comment
- Provide information on community needs or areas of specific concern.
  - Intersections that often flood and stop traffic
  - Drainage problems
  - Parts of town where homes or businesses have flooded

How?

- Provide comments directly on the map (we'll show you how in a minute)
- Email this team
- Call one of us!

STEP TWO: Provide Insight and Data

Provide information that would be useful for our mapping team to be aware of.

- Are there areas of recent construction/development?
- Are there plans for new construction/development?
- Are there tricky areas that may require a closer look?
- Do you have projects underway, related to flooding, that we could help with?
- Do you have information you have about past flooding, such as high water marks?
- Do you have updated Aerial Imagery (We typically use the latest imagery from NAIP)?
- Do you have survey or as-built plan information (culverts, bridge openings, channel geometry)?
- Are there any revision approved for your previous map (Letters of Map Revision or Amendments)?

STEP THREE: Review Modeling Approach

Provide input on our proposed approach for the Data Development that will inform your regulatory map (also known as your Flood Insurance Rate Map, or FIRM)

- Comment period goes until 4/15/2022 (More time can be provided if needed)

Benefits of joining the NFIP!

- Property owners would be able to insure against flood losses
- Qualify for federal grants or loans for development
- Qualify for federal disaster assistance for damages caused by a flood
- Adoption of a floodplain management ordinance leads to smart development against flood risk

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Key Takeaways

- This process is going to take time.
- Your involvement will help us produce better maps!
  - Get the word out and encourage participation in this project.
  - Review information as it becomes available.

DON’T HESITATE TO CALL; WE ARE AVAILABLE.

Stay Informed

- Email List
  - Get us names, addresses, and titles
  - Will be main source of project updates

- Project Updates
  - When important milestones are reached
  - When action is necessary (reminders)

- Meetings
  - Five planned meetings
    - **For BLE/Discovery:** Kickoff (**DONE**), Discovery Meeting (**Today!)**
    - **For Regulatory Updates:** Flood Risk Review, Open House, Post-Preliminary CCO meeting
  - Others, as needed

Resources and Contact Information

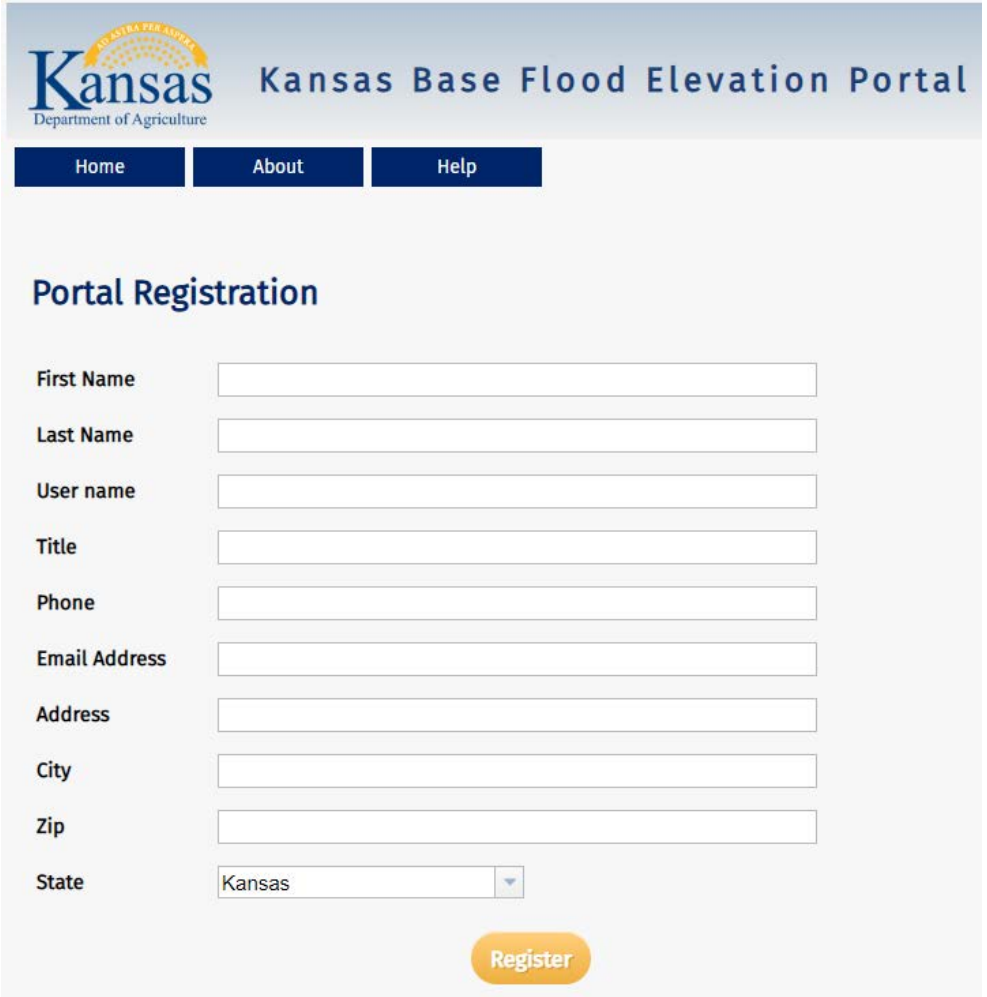
Online Project Information

- **Project Website**
  - Scoping Maps, Project Timeline, Meeting Presentations, Newsletters, Technical Reports, Web Review Map
  - https://agriculture.ks.gov/divisions-programs/dwr/floodplain/mapping/mapping-projects/lists/mapping-projects/
- **Web Review Map**
  - Review of BLE data
  - https://gis2.kda.ks.gov/gis/lower_republican/
  - This link will not be public facing until the project has been through Data Development
- **Story Maps**
  - Project Info
  - “Floodplain Current:” Mapping Process ‘Nuts and Bolts’

Base Flood Elevation Portal

For Zone A floodplains, you can request BFE data. Keep in mind, BLE data is subject to change.

https://maps.kgs.ku.edu/fpm_bfe/login.cfm



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Any Questions?

Interactive Map Review and Discussion

Web Map Link:
https://gis2.kda.ks.gov/gis/lower_kansas/

Community Identified Problems

- Communities that stated flooding as a concern were the Cities of Clifton, Jamestown, Randall, Scandia, and Wakefield

- Stated Areas of concern:
  - City of Wakefield – Milford Lake
  - City of Jamestown – Buffalo Creek
  - City of Randall – Buffalo Creek
  - City of Scandia – Republican River
  - City of Clifton – Ditch South of W Parallel St.

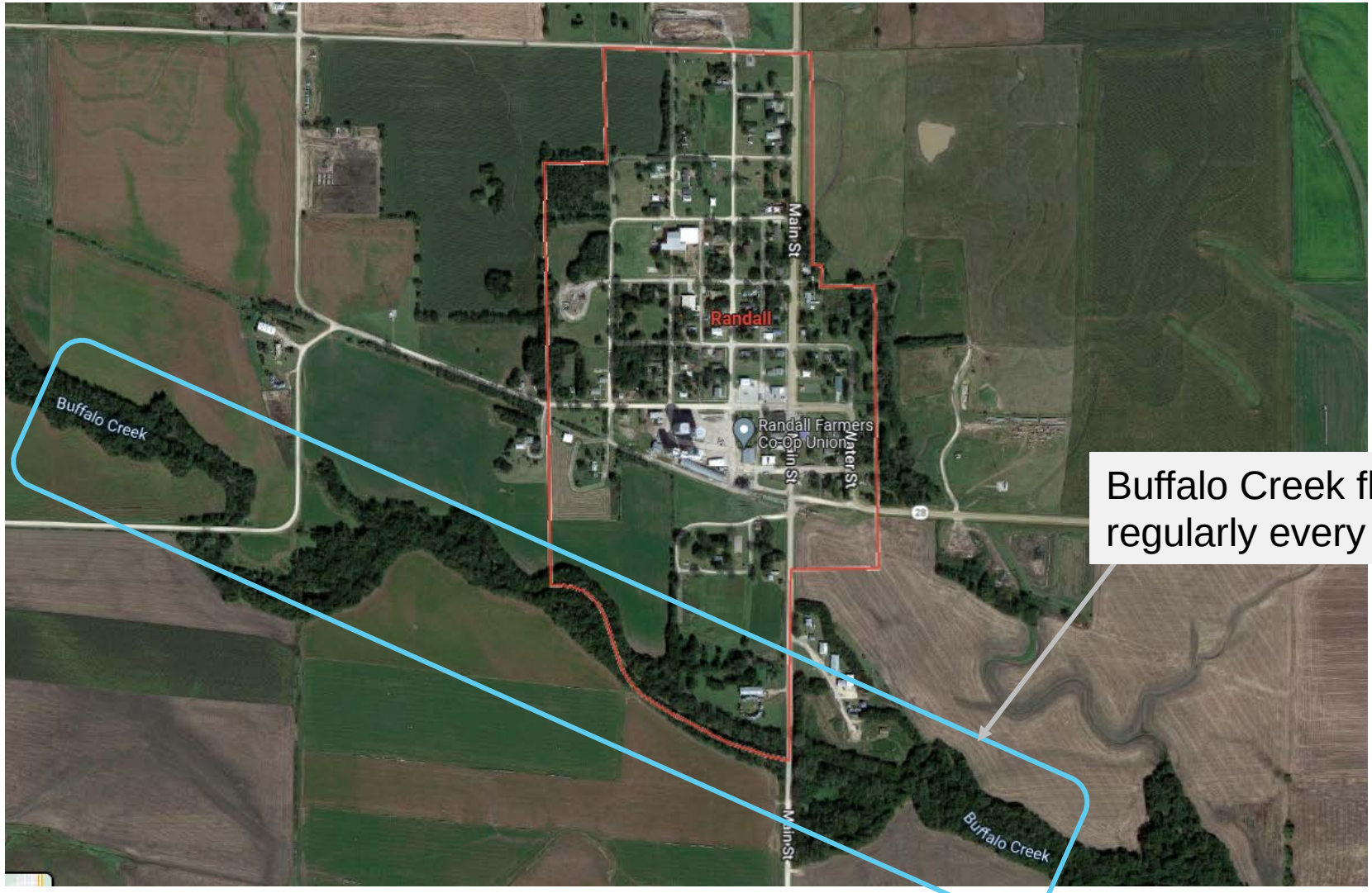
City of Wakefield – Milford Lake

Milford Lake 2019 Flooding-
- 30-33 feet high
- parts of town flooded (no houses)
- well field was close to flooding

Kansas Department of Agriculture Division of Water Resources

AECOM

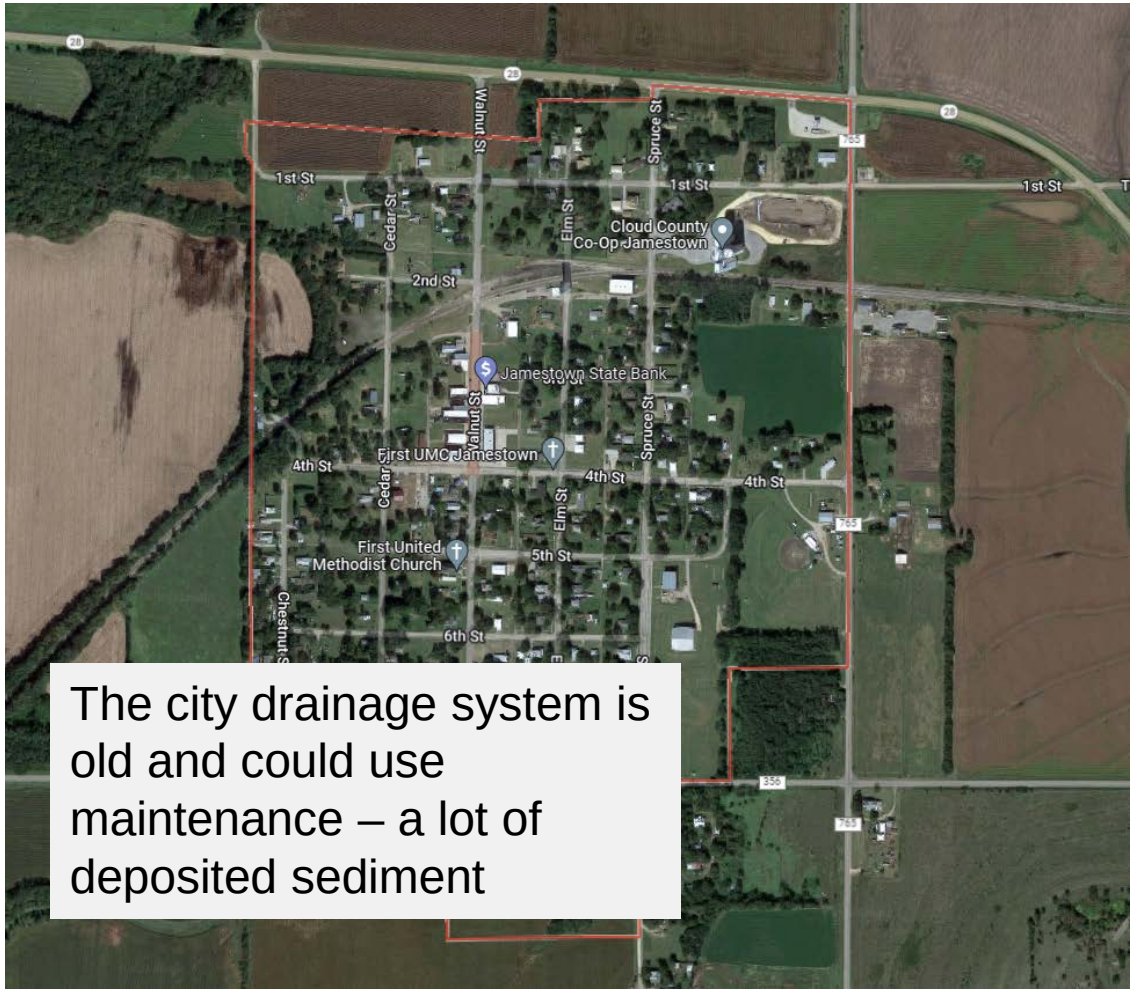
City of Randall – Buffalo Creek



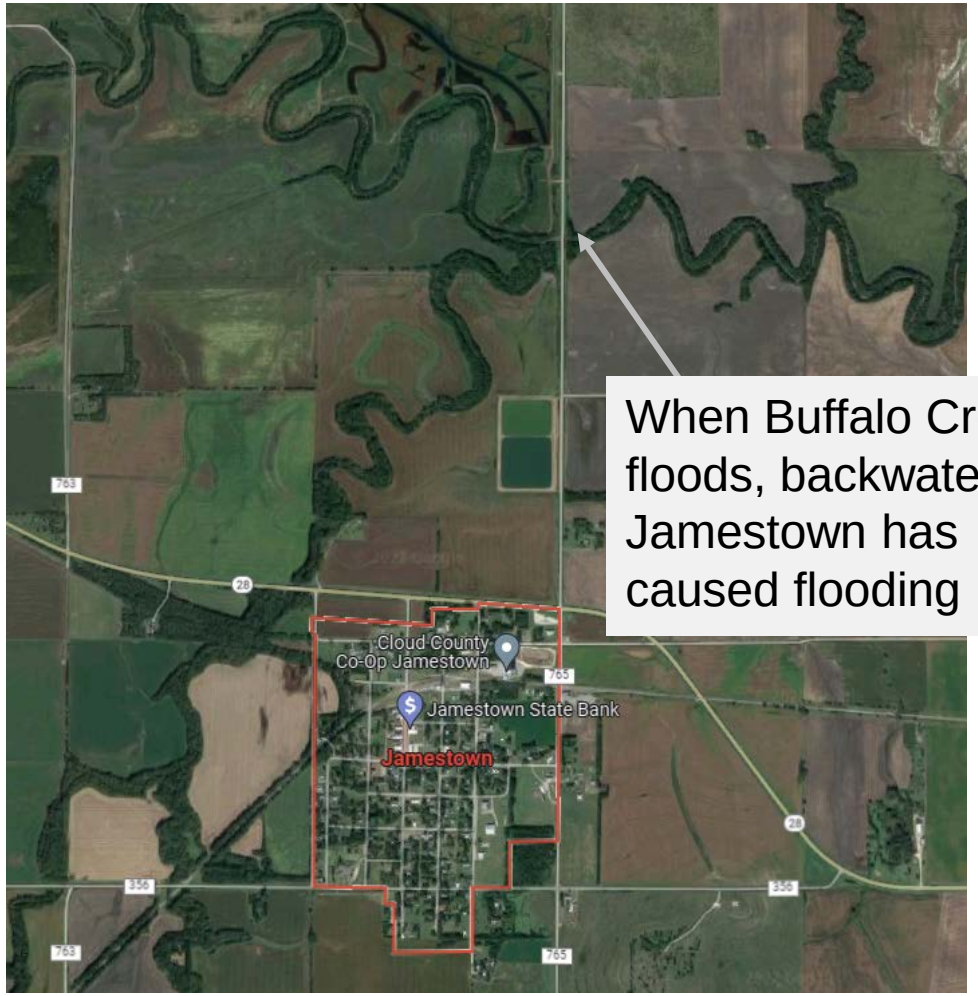
Kansas Department of Agriculture
Division of Water Resources

AECOM

City of Jamestown – Buffalo Creek



The city drainage system is old and could use maintenance – a lot of deposited sediment

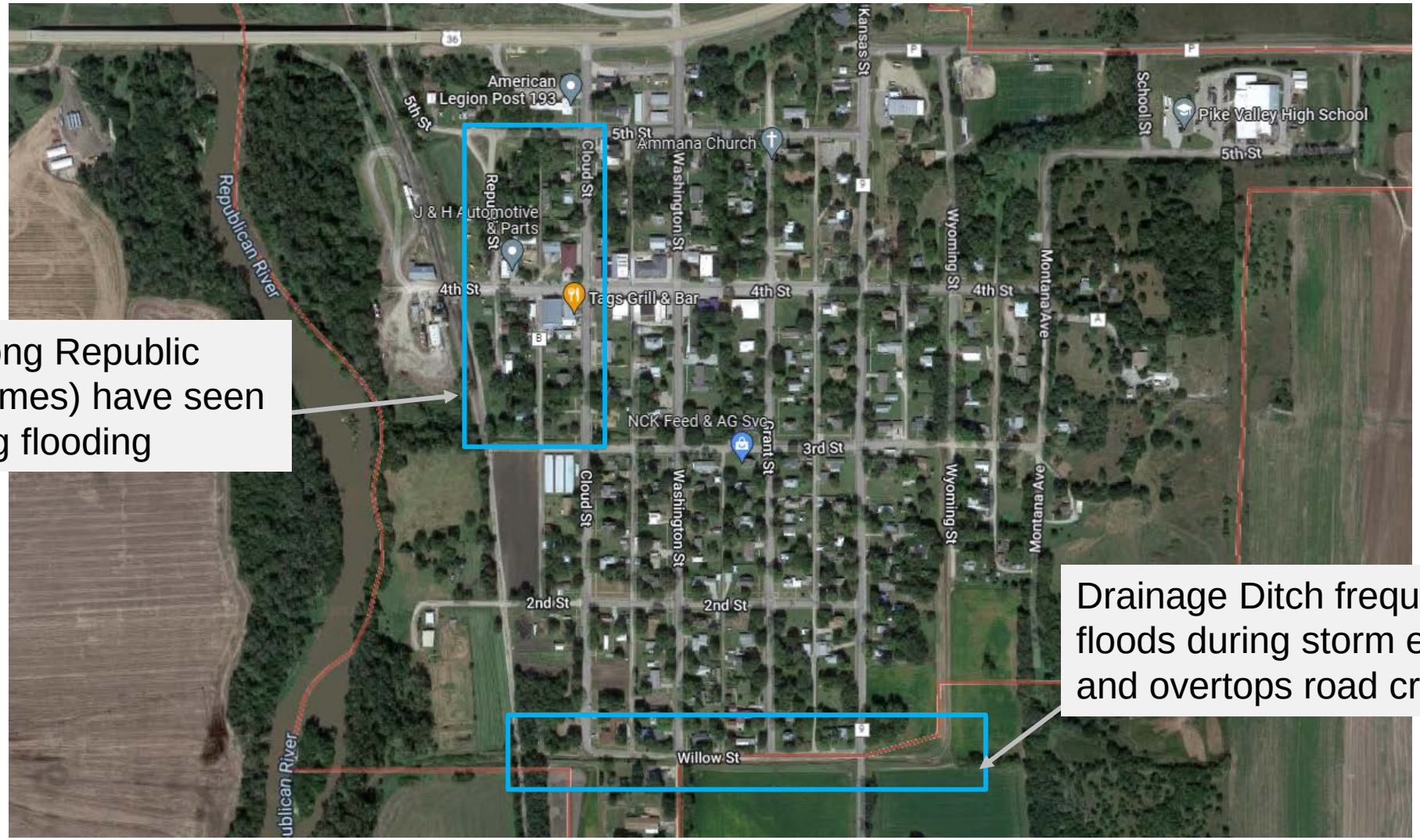


When Buffalo Creek floods, backwater into Jamestown has caused flooding

Kansas Department of Agriculture Division of Water Resources

AECOM

City of Scandia – Republican River



City of Clifton – Ditch South of W Parallel St.