Discovery Report

Upper Green-Great Divide Watershed, HUC 1404

Sub-Basins Included: 14040101, 14040102, 14040103, 14040104, 14040105, 14040106, 14040107, 14040108, 14040109, and 14040200

Counties Included: Lincoln, Sublette, Sweetwater, Uinta

Communities Included:

Town of Bairoil
Town of Big Piney
Town of Diamondville
Town of Granger
City of Green River
City of Kemmerer
Town of La Barge
Town of Lyman
Town of Marbleton
Town of Mountain View
Town of Opal
Town of Pinedale
City of Rock Springs
Town of Superior
Town of Wamsutter

States Included: Wyoming

September 2025 Draft

FEMA

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Executive Summary

Through its Risk Mapping, Assessment, and Planning (Risk MAP) Program, the Federal Emergency Management Agency (FEMA) works with federal, state, tribal, and local partners to identify flood hazards, raise flood risk awareness, and promote flood mitigation actions.

The Risk MAP lifecycle consists of a series of phases that culminate in an updated Flood Insurance Study (FIS). The first phase in this cycle is Discovery, during which FEMA identifies and prioritizes streams for updated FIS by reviewing the technical data available for the project area and gathering input from local stakeholders. For this Discovery project in Wyoming's Upper Green-Great Divide Watershed, FEMA identified streams in four counties: Lincoln, Sublette, Sweetwater, and Uinta. The technical data collected for this project included the Coordinated Needs Management Strategy (CNMS) geodatabase and locations of Letters of Map Change (LOMCs). Stakeholder input for the four counties was gathered during webinars and virtual meetings that took place in Spring 2023.

This project was funded in Fiscal Year (FY) 2022, began in January 2023, and was completed in October 2025. Table 1 (to be completed after the Discovery meeting) includes a summary of the total number of miles recommended for detailed and approximate study for each county.

Table 1. Total number of recommended miles for detailed and approximate study by county. *To be completed after the Discovery Meeting.*

County	Recommended Miles of Detailed Study	Recommended Miles of Approximate Study
Lincoln		
Sweetwater		
Sublette		
Uinta		

This project was completed by the Strategic Alliance for Risk Reduction II (STARR II) Joint Venture under the monitoring of FEMA Region VIII. Table 2 includes contact information for key project members.

Table 2. FEMA and STARR II points of contact.

Organization	Point of Contact	Email Address
FEMA Region VIII	Christine Gaynes, Study Manager	christine.gaynes@fema.dhs.gov
FEMA Region VIII	Zharif Mdazmi, Engineer	ahmad.mdazmi@fema.dhs.gov
STARR II	Jerri Daniels, Discovery Lead	jdaniels@dewberry.com
STARR II	Curtis Smith, Base Level Engineering (BLE) Production	curtis.smith@stantec.com

General Information

1. Objective

The objective of this Discovery project was to identify and prioritize streams for updated future FIS and accompanying Flood Insurance Rate Maps (FIRMs) in the following Wyoming counties: Lincoln, Sublette, Sweetwater, and Uinta. Discovery was conducted in conjunction with BLE data development. The BLE data collected was made available to communities during the Discovery phase of the Risk MAP process. Its preliminary flood hazard analysis results contributed to data visualization efforts used for stakeholder engagement. Streams recommended for future updated FIS were identified and prioritized for study through input from local stakeholders and analysis of geospatial datasets such as the CNMS.

2. Project Schedule

- Project Kickoff: January 2023
- BLE Analysis Started: February 2023
- BLE Analysis Completed: June 2025
- Draft Report Complete: October 2025
- Discovery Meeting Date: January 2026
- Report Final Draft: *To be determined after the Discovery meeting.*
- Discovery Phase Completion: *To be determined after the Discovery meeting.*

3. Project Footprint

The study area for this project is the extent of the Upper Green-Great Divide Hydrologic Unit Code (HUC) 4 Watershed (HUC 1404). It is composed of 10 HUC 8 sub-basins: 14040101, 14040102, 14040103, 14040104, 14040105, 14040106, 14040107, 14040108, 14040109, and 14040200. Although this watershed extends into Utah and Colorado, this Discovery project focused only on the portions located within Lincoln, Sublette, Sweetwater, and Uinta counties in Wyoming, which lie within the HUC 4 watershed boundary (outlined in red in Figure 1). This will be discussed in later sections of the Discovery report.

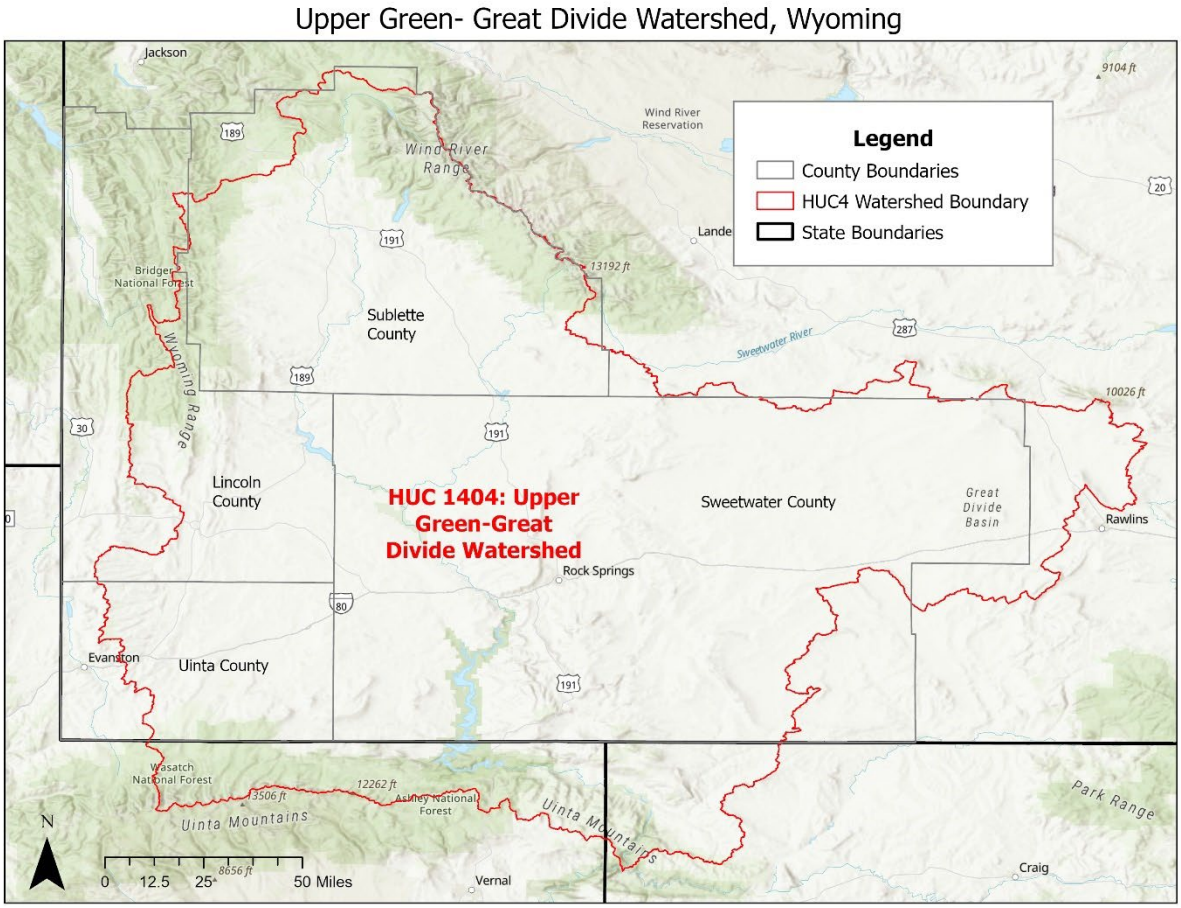

Figure 1. Discovery project footprint.

4. CNMS Miles

CNMS defines a streamlined process and framework for monitoring the validity and quality of all flood studies across the country. This leads to an accurate picture of our known and yet undetermined flood hazards and supports efficient distribution of resources allocated to flood mapping. The CNMS process uses 16 (seven critical and nine secondary) physical, climatic, and technical characteristics to evaluate whether the existing hazard information along a waterway accurately represents the current conditions of the watershed (see Table 3). Using data collected prior to this project's BLE analysis, STARR II identified the CNMS miles and their statuses (verified, unverified, and unknown) for further study. These are shown in Table 4. Much of the Upper Green-Great Divide HUC 4 Watershed was composed of unmapped streamlines prior to this study. As seen in Figure 3, a significant number of stream miles will be mapped after the completion of the study. Final study line work and mileage will be available after the updated mapping's effective date.

Table 3. CNMS elements used to evaluate existing hazard information along a waterway.

CNMS Elements for Evaluation	
Critical	**Secondary**
1. Major change in gage record since effective analysis. 2. Updated and effective peak discharges differ significantly. 3. Model methodology no longer appropriate. 4. Addition or removal of a major flood control structure. 5. Current channel reconfiguration outside effective Special Flood Hazard Area (SFHA). 6. Five or more new or removed hydraulic structures that impact Base Flood Elevations (BFEs). 7. Significant channel fill or scour.	1. Use of rural regression equations in urbanized areas. 2. Repetitive losses outside the SFHA. 3. Increase in impervious area within the sub-basin by more than 50 percent. 4. One to four new or removed hydraulic structures that impact BFEs. 5. Channel improvements or shoreline changes. 6. Availability of better topography/bathymetry. 7. Changes to vegetation or land use. 8. Significant storms with high water marks. 9. New regression equations.

Table 4. CNMS miles organized by county and status.

County	Federal Information Processing System (FIPs)	Stream Mileage Within Upper Green-Great Divide Watershed		
		Valid	Unverified	Total
Lincoln	56023	6.30	467.69	473.99
Sublette	56035	1.24	1099.38	1,100.62
Sweetwater	56037	6.85	496.75	503.60
Uinta	56041	1.16	651.69	652.85
	Total:	15.55	2,715.51	2,731.06

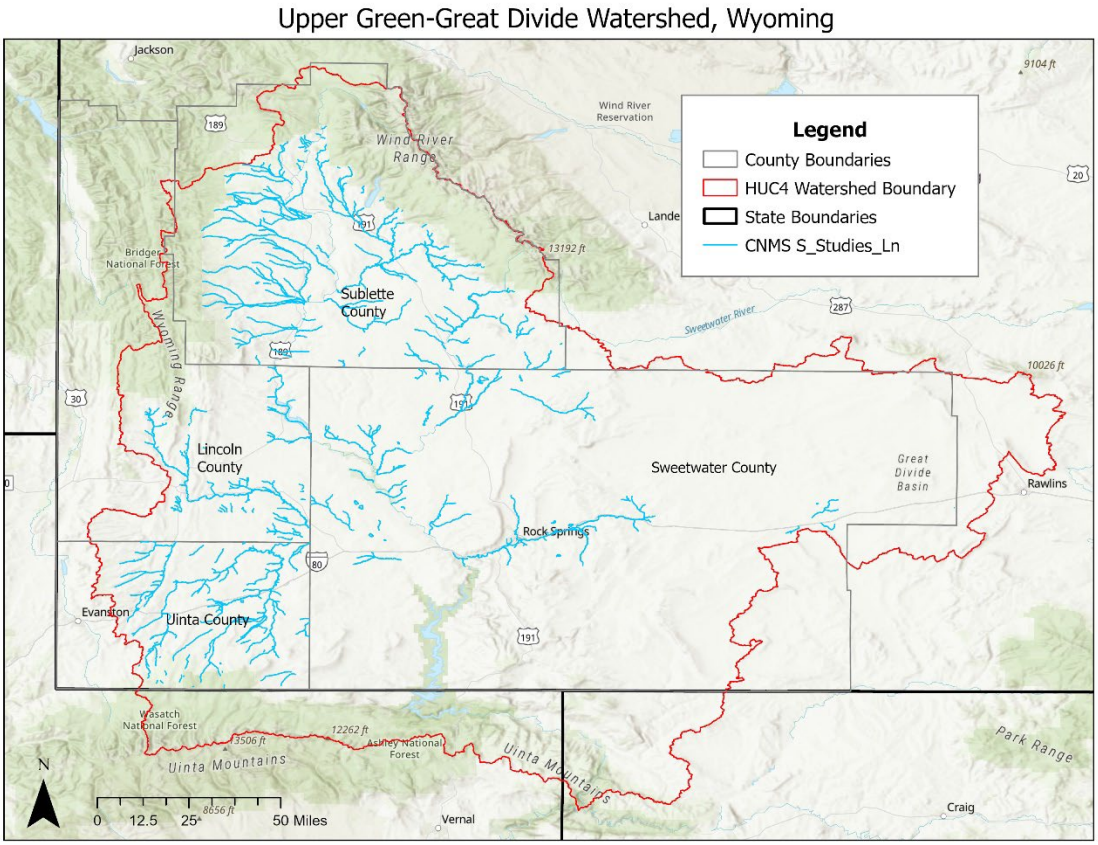

Figure 2. 2023 pre-BLE CNMS mileage.

5. Process

5.1. Discovery Process

Discovery is Phase 1 of the Risk MAP process and led by the Risk MAP Project Delivery Team (PDT), which typically consists of engineers, mapping and mitigation experts, and FEMA flood risk specialists. During Discovery, the PDT learns as much as they can about communities' hazards, challenges, and goals regarding flood risk. It also initiates data collection efforts, engages local officials and community leaders, and, if necessary, generates BLE data. PDT roles and contact information can be found in Appendix I: Resources.

Discovery includes two community-facing key activities: community knowledge and information sharing and the Discovery meeting:

- *Community Knowledge and Information Sharing:* The PDT engages local officials and other community stakeholders to collect relevant data and information. It also collects direct feedback on the community's flood risk challenges and concerns through research and interviews. The PDT then studies this information to learn more about the community's flood risks.
- *Discovery Meeting:* The goal of the Discovery meeting is to share data based on initial research and analysis. This meeting, which essentially functions as a joint working session, convenes community officials and stakeholders in fields related to flood risk and mitigation (e.g., floodplain management, emergency management, public works, land use planning, etc.). The PDT and meeting attendees review and validate the initial assessment data and information. Attendees may express concerns or questions that were unaddressed in the initial study. The PDT uses the information gathered during this meeting to determine if and where a Risk MAP study may benefit the community. This information is provided in a formal Discovery report at the end of the Discovery process and may be used in later Risk MAP phases to develop preliminary flood maps.

5.2. BLE Process

BLE is a method of developing flood risk information, such as flood extents, depth, probability, and velocity, using ground elevation data and modeling software. Focusing on areas that are either unmapped or lacking digital maps, BLE generates flood hazard information based on simplified hydrologic and hydraulic engineering methods that comply with FEMA's standards for flood risk projects. BLE data can be accessed and used prior to receiving or updating regulatory FIRMs. In some cases, information provided through BLE may be considered Best Available Information (BAI). For example, BLE should be used as BAI if BLE produces a higher BFE than the one on the effective FIRM. BLE may also be used as BAI if a community does not have regulatory data.

The two-dimensional (2D) BLE study conducted for the Upper Green-Great Divide Watershed focused on hydrologic and hydraulic modeling to assess flood risk in the region. This study, part of the Discovery phase of the Risk MAP process, supports regulatory efforts and emergency management by providing scalable and cost-effective flood risk assessments.

The Hydrologic Engineering Center's Hydrologic Modeling System (HEC-HMS) used in this BLE study focused on generating inflow hydrographs, graphs that show how much water would enter a system over time, using Stochastic Storm Transposition (SST) techniques. SST involves developing hypothetical storm models and flood frequency analyses based on historical data. The inflow hydrograph data served as the boundary conditions for the Hydrologic Engineering Center's River Analysis System (HEC-RAS) hydraulic models. This approach addressed data gaps in the study area where traditional information, such as precipitation-frequency data and United States Geological Survey (USGS) regression equations, was outdated or unavailable. By developing a suite of synthetic storms based on a 40-year gridded precipitation dataset, the modeling process captured realistic spatial and temporal precipitation patterns. These synthetic storms were then used to simulate runoff and generate probabilistic hydrographs, which represent a range of possible flood events. This ensured that the resulting inflows reflected the basin's hydrologic response under varying conditions, rather than relying solely on outdated statistical relationships or design storms.

The final deliverables of this BLE study included terrain data, calibrated HEC-HMS and HEC-RAS models, water surface elevation (WSEL) grids, depth grids, velocity grids, and draft FIRM database products. Seamless, study-wide raster and polygon floodplain products were created, with overlapping model domains to ensure consistency and facilitate final mapping.

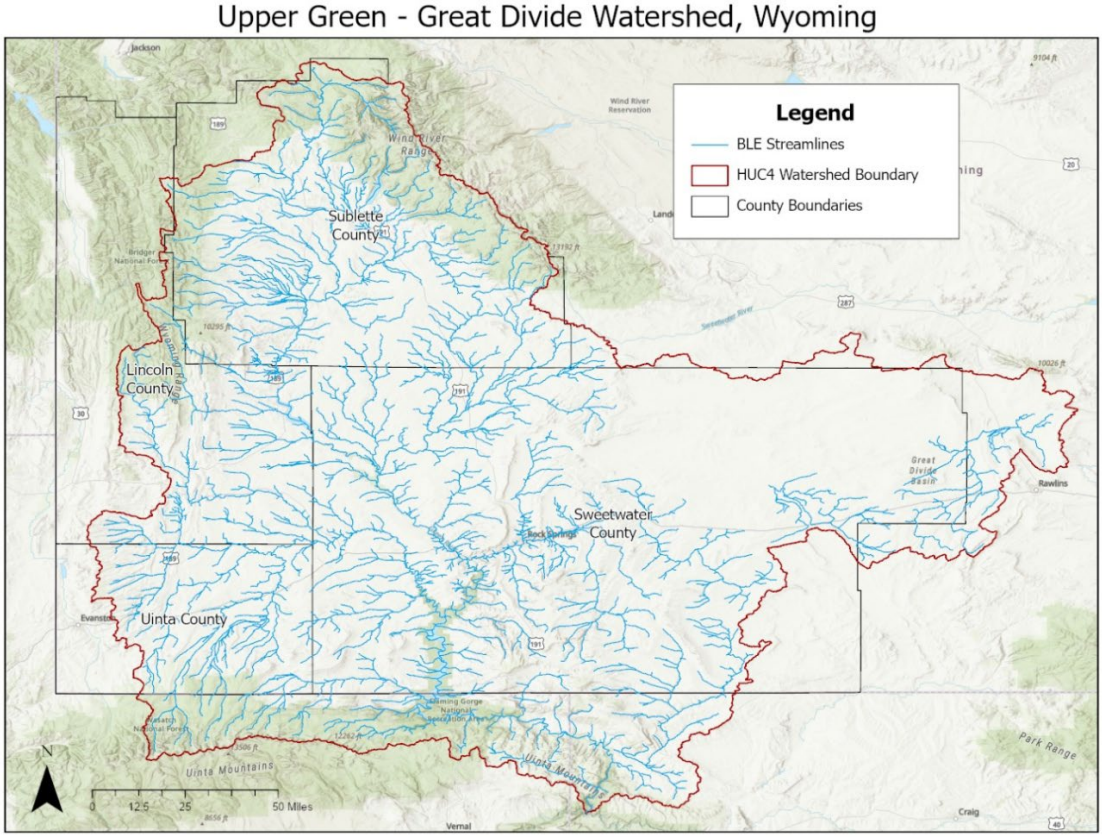

Figure 3. Streams identified through BLE in the Upper Green-Great Divide Watershed. The blank space in the western portion of the watershed contains HUC 10s that did not get mapped.

6. Community List

This scoping project included fifteen communities in Lincoln, Sublette, Sweetwater, and Uinta Counties. While Table 5 includes all communities that are either fully or partially in the Upper Green-Great Divide Watershed, this Discovery project focused solely on those within the four aforementioned counties (bolded in the table below). This geographic focus was determined because each of these four Wyoming counties is either completely or mostly within the study HUC 4 watershed, and the majority of the HUC 4 watershed is located in Wyoming.

Table 5. Communities in the Upper Green-Great Divide Watershed. Those in the study area are bolded.

Upper Green-Great Divide Watershed Communities by County and State	
Colorado	Moffat County
Utah	Summit County Daggett County *Town of Dutch John* *City of Manila*
Wyoming	Carbon County Fremont County **Lincoln County** ***Town of Diamondville*** ***City of Kemmerer*** ***Town of La Barge*** ***Town of Opal*** **Sublette County** ***Town of Big Piney*** ***Town of Pinedale*** ***Town of Marbleton*** **Sweetwater County** ***Town of Bairoil*** ***Town of Granger*** ***City of Green River*** ***City of Rock Springs*** ***Town of Superior*** ***Town of Wamsutter*** Teton County **Uinta County** ***Town of Lyman*** ***Town of Mountain View***

Watershed and Communities Overview

1. Climate and Geography

Lincoln, Sweetwater, and Uinta counties are characterized by their location in the Rocky Mountains, with elevations generally ranging between 3,000 and 6,000 feet. Sublette County is also characterized by its proximity to several mountain ranges: the Wyoming Range to the west and the Gros Ventre Range to the northwest. Elevations in Sublette County range between 6,280 and 13,400 feet. In all counties, a large percentage of their land is public (federally managed). This includes Bureau of Land Management (BLM) land, national parks and forests, and other types of public land.

The climate in southwestern Wyoming is cool and dry and categorized as semi-arid. Temperatures across the state are known to be extreme, with highs above 100°F in the summer and below 0°F in the winter. All seasons tend to be dry and cold except for spring, which experiences relatively high amounts of precipitation, most often in the form of snow.

Table 6. Average annual precipitation (inches), 1900-2024.[1]

County	Average Annual Precipitation (Inches)
Lincoln	19.77
Sublette	18.57
Sweetwater	9.40
Uinta	12.62

2. Demographics

2.1. Population

Table 7 shows the population for each of the four counties included in this Discovery project. Please note that the population and number of communities are representative of the entire county, *including portions outside of the project study area*.

Table 7. Population and number of communities in each county.[2]

County	Population	Number of Communities
Lincoln	19,581	9
Sublette	8,728	3
Sweetwater	42,272	6
Uinta	20,450	3
Total:	90,581	21

2.2. County Resources

All counties have basic Geographic Information System (GIS) capabilities that are accessible through each county's main website.

2.3. Land Use and Agriculture

The agriculture industry is Wyoming's third biggest employer and contributes over a billion dollars to the state economy annually.[3] As of 2022, Wyoming has 10,544 farms on 28.8 million acres of farmland. Table 8 details the number of farms and acres of farmland for each of the four study area counties.

Table 8. Number of farms and acres of farmland per county.[4]

County	Number of Farms	Acres of Farmland
Lincoln	698	364,892
Sublette	402	546,353
Sweetwater	219	1,370,042
Uinta	403	656,988
Total:	1,319	2,938,275

2.4. Recreation

Outdoor recreation is a large component of the tourism industry in these counties and attracts visitors in all seasons. Extensive public lands and parks make activities such as hunting, fishing, hiking, biking, camping, and winter sports such as skiing and snowmobiling easy to access.

3. Historic Flooding Issues

3.1. Presidential Disaster Declarations

Table 9 details presidential disaster declarations that have been issued for each county. The only disaster declarations shared by all four counties are one for a severe drought in 1977 and two issued during the COVID-19 pandemic in 2020.

Table 9. Presidential disaster declarations.[5]

Date	Disaster Title	Lincoln	Sublette	Sweetwater	Uinta
6/15/1977	Drought	X	X	X	X
8/31/2002	WY Commissary Ridge Fire	X			
7/22/2011	Severe Storms, Flooding, Landslides	X		X	X
7/29/2016	Tokawana Fire				X
9/18/2018	Roosevelt Fire		X		
3/13/2020	COVID-19 Pandemic	X	X	X	X
4/11/2020	COVID-19	X	X	X	X

3.2. Ice Jams

Ice jams are a flood hazard in Wyoming, but few instances have been recorded in recent decades. Only two ice jam flood events are recorded for Lincoln, Sublette, Sweetwater, and Uinta Counties in their respective Regional Hazard Mitigation Plans (HMPs): one in April 1984 and one in January 1985, both on the Bear River in Uinta County.[6]

4. Hazard Mitigation Plans

4.1. Summary of HMPs

The four counties in the study area fall under the scope of two multi-jurisdictional regional HMPs in the state of Wyoming: Region 4 and Region 5. Region 4 includes Lincoln, Sweetwater, and Uinta counties, while Region 5 includes Sublette and Fremont counties and the Wind River Reservation.

4.1.1. REGION 4: LINCOLN, SWEETWATER, AND UINTA COUNTIES[7]

Mission Statement: "Reduce or eliminate risk to human life and property from hazards."

Goals:

1. Strengthen public infrastructure.
2. Improve local mitigation capabilities.
3. Protect people and property and reduce economic losses from hazard events.
4. Reduce local costs of disaster response and recovery.
5. Increase public awareness and implementation of hazard mitigation.
6. Utilize FEMA's High Hazard Potential Dam (HHPD) Grant Program to reduce disaster risk from dam incidents.

4.1.2. REGION 5: SUBLETTE COUNTY[8]

Statement of Purpose: "This plan demonstrates the region and each county's and tribe's commitment to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources."

Goals:

1. Protect Life and Property. Implement activities that will protect lives and reduce property loss, which may occur as a result of natural or man-made hazards.
2. Increase Public Awareness. Provide resources for outreach and education programs to increase public awareness of risks associated with natural and man-made hazards.
3. Increase Knowledge. Gather information necessary to assess and develop plans to avoid and respond to risks and events associated with natural and man-made hazards.

4.2. Status

Table 10 provides an overview of regional HMPs for each county, including their adoption and expiration dates, titles, and current status. The Wyoming State HMP is also included.

Table 10. HMP details.

County	HMP Title	HMP Status	Approval Date	Plan Expiration
Lincoln	Wyoming Region 4 Regional HMP	Active	April 13, 2022	April 13, 2027
Sublette	Wyoming Region 5 HMP	Draft never finalized.	–	–
Sweetwater	Wyoming Region 4 Regional HMP	Active	April 13, 2022	April 13, 2027
Uinta	Wyoming Region 4 Regional HMP	Active	April 13, 2022	April 13, 2027
------	Wyoming State HMP[9]	Active; Undergoing update in September 2025 to succeed existing HMP after its expiration.	February 2021	February 2026

4.3. Identified Concerns

Community concerns were identified through existing HMPs. The most common concerns identified were drought, wildfire, and landslides/debris flows.

Table 11. Identified natural hazard concerns.

County	Natural Hazard Concerns
Lincoln	Drought, earthquakes, landslide/debris flow, wildfire
Sublette	Landslides, unstable soils, high winds, wildfires
Sweetwater	Drought, mine subsidence
Uinta	Dam failure, drought, wildfire

4.4. Hazard Mitigation Grants

Table 12 details the number of FEMA Hazard Mitigation Grant Program (HMGP) funding applications submitted and the amount of funding received by each county. All HMGP grants allocated require a 25%/75% cost share between local and federal funding agencies, respectively.

Table 12. FEMA HMGP funding applications submitted and funding received by county.

County	Program Area	Program FY	Project Amount	Obligation Date
Lincoln	HMGP	1999	$47,500	11/19/1999
Sublette	HMGP Post-Fire (PF)	2018	$0	8/19/2019
	HMGP PF	2018	$311,751.67	1/9/2020
	HMGP PF	2024	$231,000	Pending Review
Uinta	HMGP	2010	--	Funding Denied
	HMGP	2011	--	Funding Denied

4.5. Projects in Progress

The HMPs for Wyoming Regions 4 and 5 detail the mitigation actions taken by their respective communities since the publication of their 2017 HMPs. Many actions outlined in their 2017 HMPs are either completed, in progress, or ongoing. For more information on hazard mitigation projects, reach out to the appropriate Office of Emergency Management/Homeland Security contact below.

- Lincoln County: Jay Hokanson, jay.hokanson@lincolncountywy.gov
- Sublette County: Jim Mitchell, jmitchell@sublettecountywy.gov
- Sweetwater County: Jesse Moreno, morenoj@sweetwatercountywy.gov
- Uinta County: Josh Rasnake, jorasnake@uintacountywy.gov

5. Other County Plans

Lincoln, Sublette, Sweetwater, and Uinta Counties each have long-range planning initiatives that inform land use decisions. These plans and their key themes are detailed below.

5.1. Lincoln County

Natural Resource Management Plan (NRMP) (2021)[10]

Purpose: "This county NRMP serves as a basis for communicating and coordinating with the federal government and its agencies on land and natural resource management and use."

Key Themes:

- *Natural resource conservation:* The 1930s Dust Bowl brought the importance of natural resource conservation in Lincoln County to prominence. To protect natural resources such as minerals, ores, oil, and water, Lincoln County established the Lincoln and Star Valley Conservation Districts. The former includes parts of Kemmerer. The desire to protect natural resources could translate into support for responsible floodplain management practices.

- *Public land access:* Per the NRMP, "The County itself relies on access to federal lands to fulfill its statutory mandate to protect the health, safety, and general welfare of the people within its jurisdiction; including but not limited to fire protection, search and rescue, flood control, law enforcement, economic development, and the maintenance of County improvements."
- *Road access:* In the past, federal and state agencies have coordinated road closures without County input, which caused economic harm and impacted citizen and visitor enjoyment of the county's natural resources. The NRMP specifies the following as well-traveled BLM-designated roads within the county: Dry Creek Road, Dempsey Basin Road, Cokeville Stocktrail, and the IGO Road. This can inform the prioritization of areas for improvement, mitigation, and maintenance (i.e., prioritize the repair of roads that are more heavily used, such as these).

5.2. Sublette County

Comprehensive Plan (2003)[11]

Purpose: "The 2003 Sublette County Plan update to revise the Sublette County Comprehensive Plan was an effort by county leaders and citizens to address the county's present and future land use needs."

Key Themes:

- *Land use and development:* The Comprehensive Plan prioritizes the planning and location of new development in such a way as to avoid excessive costs in providing public services. It also encourages high-density residential development within a one-mile radius of the county's incorporated towns and commercial property development along major thoroughfares. The approximate locations of future residential and commercial developments can be predicted based on these land use and development policies.
- *Private property rights*: One of the county's values, as stated in their vision, is that "Sublette County shall remain free from excessive land use regulation and shall continue to be vigilant in the protection of private property rights." This support for private property rights should be considered in local floodplain management, particularly during outreach efforts.

5.3. Sweetwater County

Comprehensive Plan (2002)[12]

Key Themes:

- *Land use and development*: The Comprehensive Plan dictates that the county's land use guidelines and regulations ensure the protection of public health, safety, and welfare. It also encourages residential development in or adjacent to existing communities and industrial development adjacent to existing industry and near available facilities, services, and resources. The approximate locations of future residential and industrial developments can be predicted based on these land use and development policies.
- *Private property rights:* The county's Land Use Regulations state that an appropriate balance must be maintained between private property rights and the general public interest. This support for private property rights should be considered in local floodplain management, particularly during outreach efforts.

Growth Management Plan (2011)[13]

Key Themes:

- *Growth management:* As one of Wyoming's most populous counties, Sweetwater County is preparing for additional population growth and the development that comes with it. Using the Regional Water District's 1.5% population projection to determine how much growth will occur over the next 20 years, the county designated priority areas for growth management. The Growth Area boundary was mapped from existing data that indicates areas suitable for urban density development and the availability of utilities and other features. City Growth Areas, the areas around the cities of Rock Springs and Green River into which the cities project necessary growth in the foreseeable future, take into account political factors and are the subjects of the Land Use Plan and Transportation Plan included in this Growth Management Plan.
- *Land use and development:* The different maps included in the Growth Management Plan depict the Growth Area boundary, city limits, City Growth Area, existing and proposed land use patterns, current and proposed land use for proposed rezoning, utility service districts, and fire districts. These maps can be used to inform the prioritization of areas for improvement, mitigation, and maintenance.
- *Transportation:* The Growth Management Plan's Master Transportation Plan illustrates the Growth Management Area's arterial roads and major and minor collector roads. This plan can be used to inform the prioritization of transportation infrastructure for improvement, mitigation, and maintenance.

5.4. Uinta County

Comprehensive Plan (2011)[14]

Key Themes:

- *Natural environment protection:* One of Uinta County's goals is to protect sensitive areas and he natural environment. One of its land use policies is that the County "considers 'land' a non-renewable resource that should be managed in the best interest of current and future residents of the county." This information may be used as a backing for floodplain management efforts that support the preservation of the natural environment and/or the interest of county residents.
- *Urbanization:* Per another Uinta County policy, "'urbanizing areas' are those areas experiencing, or likely to experience, increased growth and development interest and pressure. Generally, urbanizing areas are adjacent to the existing communities of Evanston, Bear River, Urie, Mountain View, Lyman, and Fort Bridger…." This information can be used to predict the general areas where future development is likely to occur.

Data Analysis

1. National Flood Insurance Program (NFIP) Data

In this section, available NFIP data are listed for each community included in this Discovery project. Communities identified as participating or previously participating in the NFIP have been assigned unique Community Identification Numbers (CIDs). In the following tables, the county name followed by an asterisk (*) represents the unincorporated areas of that county.

1.1. Flood Insurance Rate Maps (FIRMs)

The majority of communities in the Upper Green-Great Divide Watershed have effective FIRMs. The FIRM effective dates are listed in Table 13 below. These FIRMs determine the flood insurance rates for different parts of a community. However, federal flood insurance is not available to communities not participating in the NFIP.

Table 13. NFIP status and Effective Map date.[15]

County	Community	CID	NFIP Status	Current Map Effective Date	SFHAs Present?
Lincoln	Diamondville, Town of	560034	Participating	11/16/2011	Yes
	Kemmerer, City of	560035	Participating	11/16/2011	Yes
	Opal, Town of	560098	Participating	11/16/2011	Yes
	La Barge, Town of	560108	Not participating	11/16/2011	Yes
	Lincoln County*	560032	Participating	11/16/2011	Yes
Sublette	Big Piney, Town of	560070	Participating	Unmapped	Unmapped
	Marbleton, Town of	560065	Not participating	Unmapped	Unmapped
	Pinedale, Town of	560049	Not participating	3/18/1986	Yes
	Sublette County*	560048	Participating	1/1/2008	Yes
Sweetwater	Bairoil, Town of	560120	Not participating	Unmapped	Unmapped
	Granger, Town of	560095	Not participating	2/26/1980	Yes
	Green River, City of	560050	Participating	6/20/2000	Yes
	Rock Springs, City of	560051	Participating	7/20/1998	Yes
	Superior, Town of	560125	Not participating	Unmapped	Unmapped
	Wamsutter, Town of	560111	Not participating	Unmapped	Unmapped
	Sweetwater County*	560087	Not participating	8/1/1978	Yes
Uinta	Lyman, Town of	560075	Participating	2/17/2010	No
	Mountain View, Town of	560092	Participating	2/17/2010	Yes
	Uinta County*	560053	Participating	2/17/2010	Yes

1.2. Letters of Map Change (LOMCs)

Several communities in the Upper Green-Great Divide Watershed have had updates made to their effective FIRMs, called LOMCs. These include Letters of Map Revision (LOMRs), Letters of Map Revision Based on Fill (LOMR-F), and Letters of Map Amendment (LOMAs). Revalidation Letters list previously issued LOMCs that will remain valid after a FIRM revision. They do not include LOMCs that have been incorporated into the new map, have been superseded by the new map, or are no longer valid. The number of LOMCs (categorized as either LOMR or LOMA) and Revalidation for each community is listed in Table 14 below. Dashes indicate an unmapped community.

Table 14. Number of LOMCs in each community.

County	Community	LOMR	LOMA	Revalidations
Lincoln	Diamondville, Town of	0	1	0
	Kemmerer, City of	0	1	1
	La Barge, Town of	0	0	0
	Opal, Town of	0	0	0
	Lincoln County*	0	18	1
	County Subtotal:	0	20	2
Sublette	Big Piney, Town of	-	-	-
	Marbleton, Town of	-	-	-
	Pinedale, Town of	1	3	0
	Sublette County*	1	9	0
	County Subtotal:	2	12	0
Sweetwater	Bairoil, Town of	-	-	-
	Granger, Town of	0	0	0
	Green River, City of	0	3	0
	Rock Springs, City of	8	17	0
	Superior, Town of	-	-	-
	Wamsutter, Town of	-	-	-
	Sweetwater County*	2	0	0
	County Subtotal:	10	20	0
Uinta	Lyman, Town of	0	0	0
	Mountain View, Town of	0	3	0
	Uinta County*	1	16	0
	County Subtotal:	1	19	0
	Watershed Total:	13	71	2

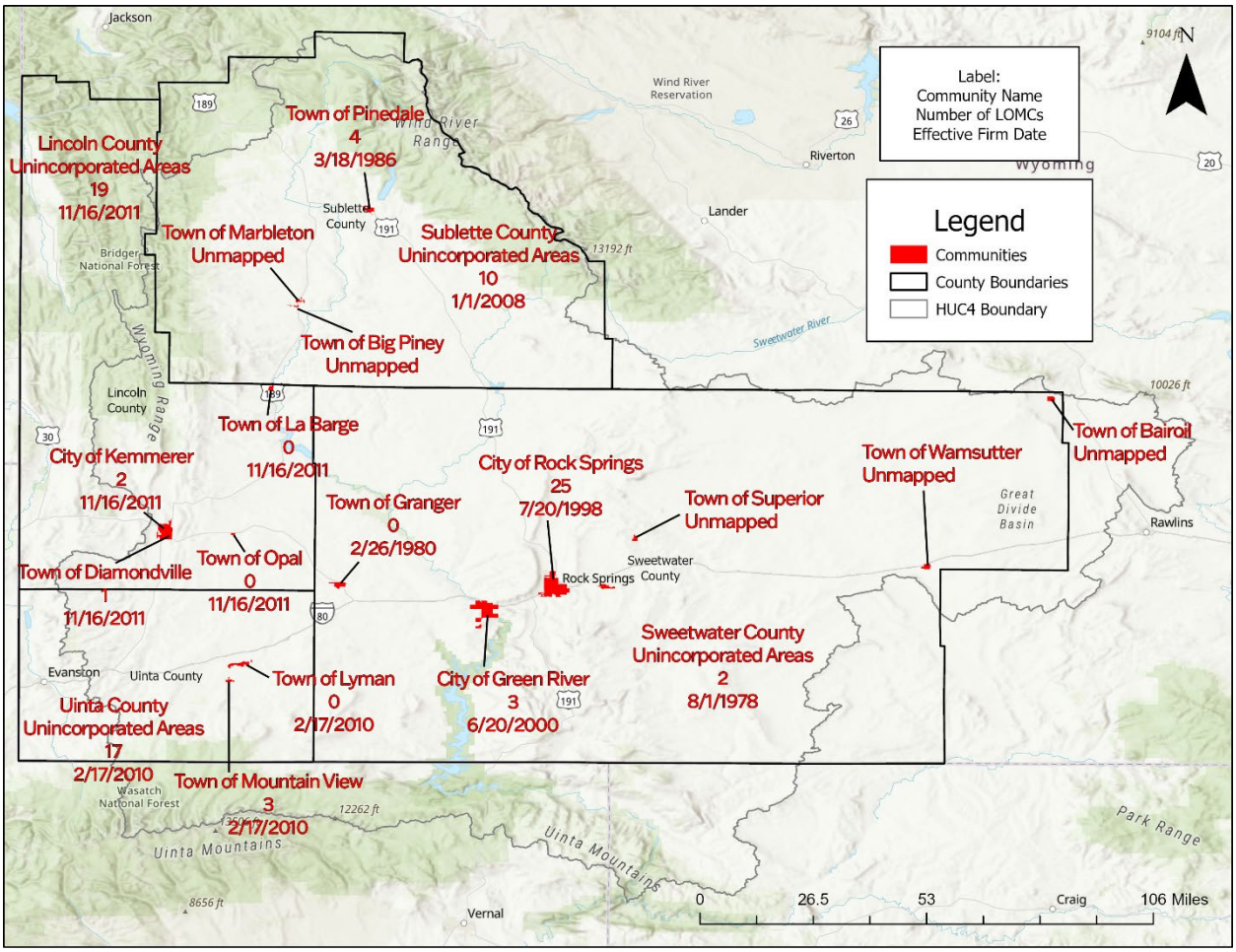

Figure 4. LOMCs and Effective FIRM dates.

1.3. Repetitive Loss Properties

A repetitive loss property is an NFIP-insured structure with two or more claims/losses resulting in claim payments (including building and contents) totaling more than $1,000 per claim that are recorded in any 10-year period. There are no repetitive loss properties recorded in the Upper Green-Great Divide Watershed.

Table 15. Flood insurance losses, premiums, and policy information by community.

County	Community	Repetitive Loss Properties	Total Premiums	Total Paid Losses Since 1978	Policies Since 1978
Lincoln	Lincoln County	0	$29,933	$36,200	43
	Diamondville, Town of	0	$880	0	2
	Kemmerer, City of	0	$2,435	0	2
	Opal, Town of	-	-	-	-
	La Barge, Town of	-	-	-	-
	Lincoln County*	0	$21,355	$36,200	33
Sublette	Sublette County	0	$4,561	$0	6
	Big Piney, Town of	-	-	-	-
	Marbleton, Town of	-	-	-	-
	Pinedale, Town of	-	-	-	-
	Sublette County*	0	$4,561	$0	6
Sweetwater	Sweetwater County	0	$113,920	$901,084	60
	Bairoil, Town of	-	-	-	-
	Granger, Town of	-	-	-	-
	Green River, City of	0	$26,004	$7,436	13
	Rock Springs, City of	0	$87,916	$893,648	47
	Superior, Town of	-	-	-	-
	Wamsutter, Town of	-	-	-	-
	Sweetwater County*	-	-	-	-
Uinta	Uinta County	0	$49,573	$10,133	62
	Lyman, Town of	-	-	-	-
	Mountain View, Town of	0	$11,060	$0	10
	Uinta County*	0	$23,524	$10,133	28

1.4. Community Assistance Visits (CAVs) and Community Assistance Contacts (CACs)

CAVs and CACs are visits to a community by a FEMA staff member or staff of a state agency on behalf of FEMA that serve the dual purpose of providing technical assistance to the community and assuring that the community is adequately enforcing its floodplain management regulations.

Table 16. CAC and CAV dates per community.

County	Community	CAV/CAC
Lincoln	Diamondville, Town of	CAC: 9/6/2017, CAV: 5/4/2004
	Kemmerer, City of	CAC: 9/6/2017, CAV: 5/4/2004
	Opal, Town of	CAC:1/24/2007, CAV: 6/4/2004
	La Barge, Town of	-
	Lincoln County *	CAC: 6/20/2022, CAV: 9/7/2017
Sublette	Big Piney, Town of	CAV: 5/30/2019
	Marbleton, Town of	-
	Pinedale, Town of	CAC: 5/30/2019, CAV: 6/11/2014
	Sublette County*	CAC: 8/25/2009, CAV: 5/29/2019
Sweetwater	Bairoil, Town of	-
	Granger, Town of	-
	Green River, City of	CAC: 10/17/2019, CAV: 6/22/2022
	Rock Springs, City of	CAC: 6/22/2022, CAV: 3/16/2022
	Superior, Town of	-
	Wamsutter, Town of	-
	Sweetwater County*	-
Uinta	Lyman, Town of	CAC: 3/3/1994, CAV: 7/6/2012
	Mountain View, Town of	CAC: 10/12/2017, CAV: 7/3/2012
	Uinta County*	CAC: 3/2/1994, 10/12/2017

2. Additional Data

2.1. Dams

Significant and High Hazard Potential Dams (HHPDs) are dams whose failure or misoperation would result in damage or loss of life and/or property, with hazard potential being the potential downstream impact in the event of a dam emergency. Table 17 details the number of significant hazard potential dams or HHPDs in the Upper Green-Great Divide Watershed by county.

Table 17. Significant- and high-hazard dams per county.

County	Number of Dams Considered Significant- or High-Hazard
Lincoln	5
Sublette	5
Sweetwater	16
Uinta	7
Total:	33

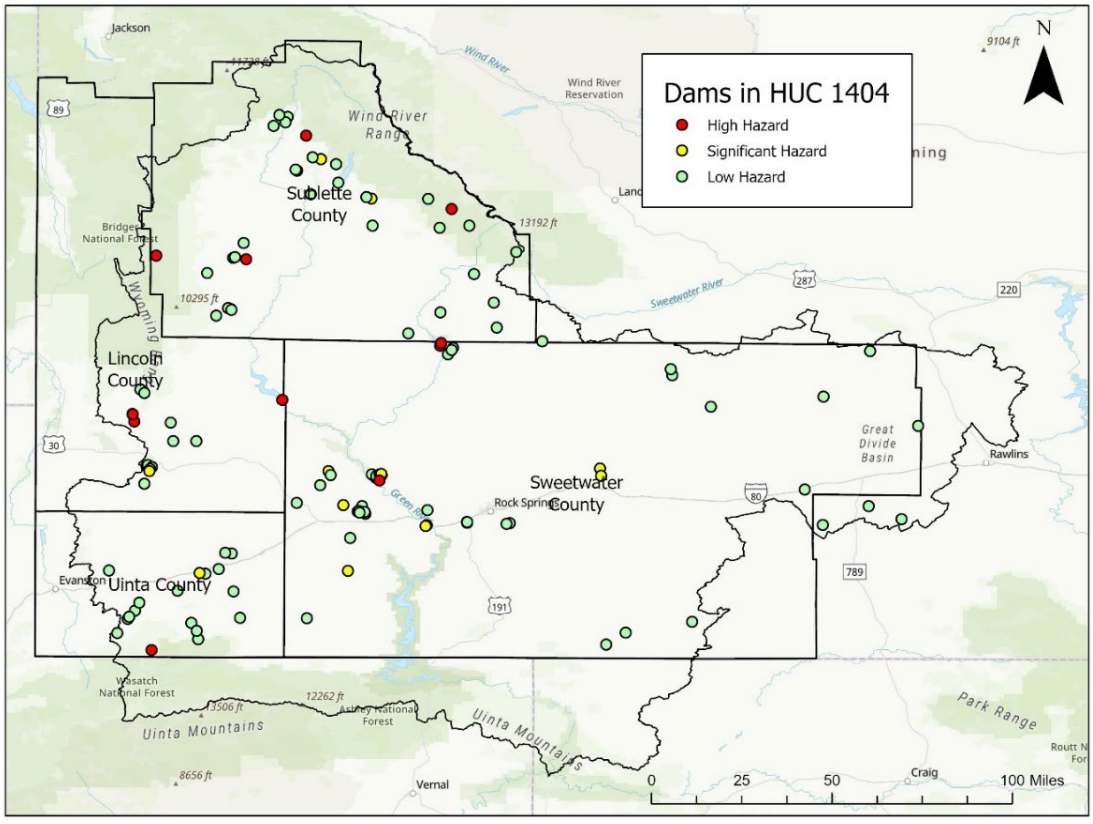

Figure 5. Map of dams by hazard level in the Upper Green-Great Divide Watershed.

2.2. Levees

In 1924, a levee was constructed along the south side of Bitter Creek between Pilot Butte Bridge and the confluence with Dead Horse Canyon Creek in Sweetwater County. This levee was the first major diversion of the Bitter Creek channel. Another levee was built along the east bank of Bitter Creek to protect the western part of the city. These improvements were not certified by United States Army Corps of Engineers (USACE), did not meet FEMA accreditation requirements, and thus are not reflected in the area's FIRM. A 2009 Levee Accreditation Feasibility Assessment determined that certification would be "problematic and would require extensive additional construction."[16]

During its Environmental Assessment review and Conditional Letter of Map Revision (CLOMR) consideration, FEMA determined that the levees along Dead Horse Canyon Creek needed to be accredited to ensure that the Bitter Creek Clean-Up Project remained in compliance with National Environmental Policy Act (NEPA) guidelines and continued to receive federal assistance. The Amended Final Environmental Assessment: Rock Springs Bitter Creek Clean-Up Project (2011) includes levee rehabilitation as an "Additional Proposed Action," which eventually evolved into the Dead Horse Levee Amendment to the Bitter Creek Construction Project—Phase 1.

Dead Horse Canyon Creek levee improvements were completed in 2012. Based on these improvements, FEMA approved an LOMR for the Dead Horse Canyon Creek area flood map, moving over 100 properties out of the SFHA. Though this map change occurred in 2012, the levee is not recorded in the National Levee Database. There are no other levees in this watershed recorded in the National Levee Database either.

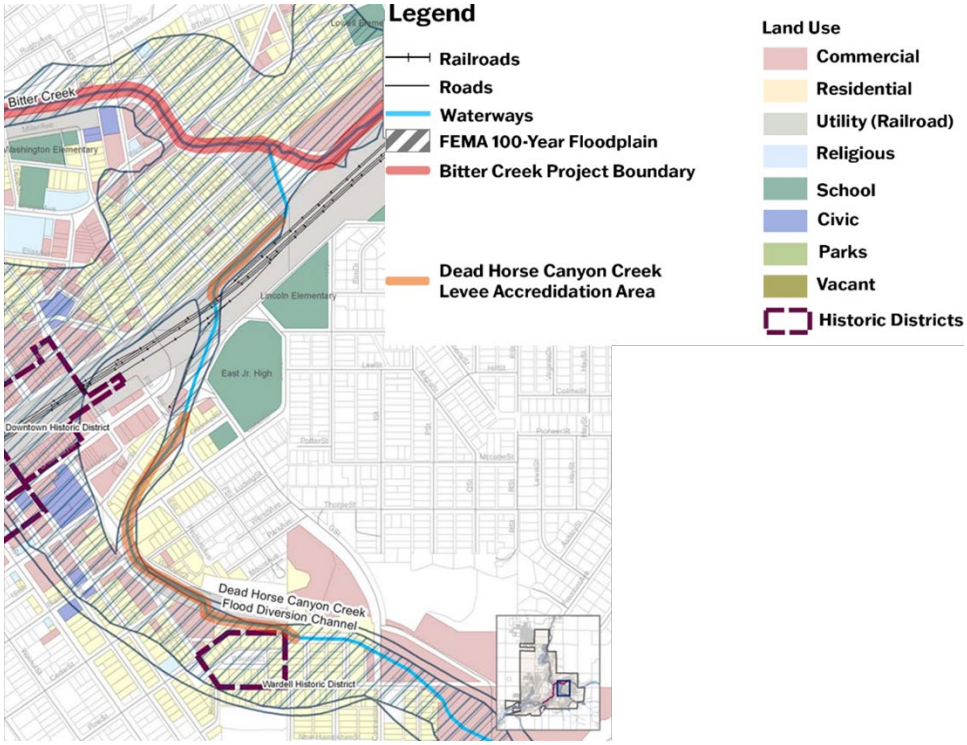

Figure 6. Rock Springs land use. Dead Horse Canyon Creek Levee Accreditation Area highlighted in orange.

2.3. Critical Facilities

Table 18 details the number of critical facilities in each county that are within the boundaries of the Upper Green-Great Divide Watershed. Per FEMA's definition, critical facilities include hospitals, fire stations, police stations, storage of critical records, and similar facilities. They should be given extra consideration when creating floodplain and emergency management plans.

Table 18. Number of critical facilities per county.

County	Number of Critical Facilities
Lincoln	119
Sublette	53
Sweetwater	94
Uinta	32
Total:	298

2.4. Engineering Data Review

2.4.1. LINCOLN COUNTY

Lincoln County's Incorporated and Unincorporated Areas have a Flood Insurance Study (FIS) Report, both with an effective date of November 2011. Detailed studies were completed for Smiths Fork, South Fork, Spring Creek, Hams Fork, and the Salt River (other flood-prone areas were studied using approximate methods). Flooding events in these areas are typically caused by excess snowpack and rapid melting. However, the rural characteristics of these regions typically lead to a lower incidence of repetitive or severe repetitive loss properties. There are a few temporary levees and dikes in the area. The dam at Kemmerer Reservoir is the only permanent flood control structure.

Hydrologic and hydraulic engineering methods included flood frequency flows for the 10-, 50-, 100-, and 500-year flood events with log-Pearson Type III gage analysis, where applicable. Water Surface Elevations (WSELs) were derived from HEC-2 data, the slope-area method, and normal depth analysis. Cross sections (XS) and Manning's "n" data came from field surveys, photographs, and topographic maps. Floodplains and floodways are delineated using WSELs for the 100- and 500-year floods and boundaries interpolated between XS by equal conveyance reduction.

2.4.2. SUBLETTE COUNTY

Sublette County has no official FIS report offered by FEMA's Map Service Center (MSC). There is a record of an effective Flood Hazard Map for the Town of Pinedale, whose latest FIS effective date is December 2024. There is no National Flood Hazard Layer for Sublette County.

2.4.3. SWEETWATER COUNTY

Sweetwater County Unincorporated Areas do not have an FIS, but there are reports for the Cities of Green River and Rock Springs. Green River's most recent effective date is June 2000; the original study was performed in March 1977 and revised in September 1998. The original FIS for the City of Rock Springs was prepared by the USACE under FEMA supervision in February 1985 and revised in June 1988. Baker Engineers, Inc. performed another revision for Killpecker and Bitter Creeks in February 1989. The current study has an effective date of July 1998.

Rock Springs typically experiences more flood damage than Green River, often caused by ice jams and rapid snowmelt. Historical damage to roads, railways, and streambanks has been recorded; residential damage has also been recorded, though minimal. Flood protection measures include earthen dams with reinforced dikes, a diversion near Pilot Butte Avenue, storm ditches, and temporary structures such as riprap, piles, and stonewalls. The FIS notes, "There are no Federal flood control projects that afford protection to Rock Springs."

Hydrologic and hydraulic engineering methods included flood frequency flows for the 10-, 50-, 100-, and 500-year flood events with log-Pearson Type III gage analysis, where applicable. WSELs were derived from HEC-2 data, the slope-area method, and normal depth analysis. XS and Manning's n data came from field surveys, photographs, and topographic maps.

Most floodplains and floodways are delineated using WSELs for the 100- and 500-year floods and boundaries interpolated between XS. The WSELs of areas subject to sheet flow are independent of those along streamways, as there are excessive natural overflow losses.

2.4.4. UINTA COUNTY

Uinta County has had four effective floodplain maps released, dated June 1978, January 1988, July 1989, and February 2010. Each was prepared by a different contractor, with FEMA and the Federal Insurance and Mitigation Administration (FIMA) as the primaries. Detailed studies were completed for Smiths Fork in the Town of Mountain View; Bear River in the City of Evanston; and Blacks Fork, Little Blacks Fork, and Groshon Creek in the Fort Bridger area. Flooding events in these areas are typically caused by excess snowpack and rapid melting, with occasional convective cloudbursts and frontal rainstorms. There is little mention of personal property damage in the County FIS. Flood protection measures are minimal, and the Stateline Dam and widening of the Smiths Fork River are the only Federal protections offered. Volunteers and communities provide additional protection, such as temporary levee construction.

Hydrologic and hydraulic engineering methods included flood frequency flows for the 10-, 50-, 100-, and 500-year flood events with log-Pearson Type III gage analysis, where applicable. WSELs were derived from HEC-2 data, the slope-area method, and normal depth analysis. XS and Manning's "n" data came from field surveys, photographs, and topographic maps. Floodplains and floodways are delineated using WSELs for the 100- and 500-year floods and interpolated boundaries between XS by equal conveyance reduction.

Table 19. Summary of hydrology and hydraulics (H&H) engineering data methodology for Upper Green-Great Divide Watershed communities' FIS. Dashes indicate that information was either unavailable or could not be found.

County	Study Date	Most Recent FIS Effective Date	Coverage Area	Streams	Hydrologic Engineering Methods	Hydraulic Engineering Methods
Lincoln	4/21/2010	11/16/2011	Town of Diamondville	**Detailed:** Hams Fork	–	–
			City of Kemmerer	**Detailed:** Hams Fork	▪ Log-Pearson Type III and regression analysis. All lakes and reservoirs nearby counted as negligible.	▪ WSEL from HEC-2; profiles for 10-, 50-, 100-, and 500-year floods; starting WSEL from normal depth analysis. ▪ XS data/Manning's n data from field survey and photographs.
			Unincorporated Areas	**Detailed:** Salt River **Approximate:** Bear River Blacks Fork Bridger Creek Green River Hams Fork LaBarge Creek Salt River Seven Mile Wash Snake River Twin Creek Willow Creek	▪ Frequency analysis using USGS PeakFQ with Bulletin 17B. Discharge prorated upstream based on drainage area, equation for discharge at sites with no gages prepared using USGS Water-Resources Investigations Report 88-4045.	▪ 100-year WSEL from Water-Surface Profile (WSPRO) for Salt River. ▪ Two hydraulic models: Downstream from confluence with Snake River. ▪ XS data from step-backwater method and survey. ▪ All based on unobstructed flow. ▪ Manning's n from field observation and verified coefficients.

County	Study Date	Most Recent FIS Effective Date	Coverage Area	Streams	Hydrologic Engineering Methods	Hydraulic Engineering Methods
Sublette	1/1/2008	–	Unincorporated Areas	–	–	–
	3/18/1986	–	Town of Pinedale	–	–	–
Sweetwater	6/20/2000	9/1998	City of Green River	Green River Bitter Creek	– ▪ Log-Pearson Type III and regression analysis using gage station at bottom of watershed because of topographic variations throughout watershed. ▪ Regression equation with revised basin average precipitation rate.	– ▪ XS and Manning's n data from field survey. ▪ HEC-RAS to determine WSEL using slope-area method. ▪ Based on unobstructed flow.
	7/20/1998	2/1989	City of Rock Springs	Bitter Creek Dead Horse Canyon Creek Killpecker Creek Sweetwater Creek Tributary No. 1 Tributary No. 2	▪ Frequency hydrographs from rainfall-runoff computations and statistical analysis of synthetic rainstorms. ▪ Used historical precipitation-frequency curves to develop data previously constructed from rainfall records. ▪ Areal reduction factors.	▪ HEC-2 backwater. ▪ XS upstream and downstream from bridges and culverts to establish backwater effects. Assisted by field survey and topographic maps. ▪ Manning's n from field survey. ▪ WSEL found using slope-area methods. ▪ Based on unobstructed flow.
	2/26/1980	–	Town of Granger	–	–	–

County	Study Date	Most Recent FIS Effective Date	Coverage Area	Streams	Hydrologic Engineering Methods	Hydraulic Engineering Methods
	8/1/1978		Unincorporated Areas	–	–	–
Uinta	6/15/1978	9/1/1977	Unincorporated Areas	All significant flooding sources	▪ Statistical analysis of gage data using log-Pearson Type III and regression analysis. Small lakes and rivers counted as negligible.	▪ XS and Manning's n data from field survey and aerial mapping. ▪ WSEL from HEC-2 and HEC-RAS. Normal depth analysis.
	7/4/1989	10/1/1981 (Hydrology Only)	Town of Mountain View	**Detailed:** Smiths Fork	▪ Discharge frequency using log-Pearson Type III analysis and unit hydrograph. Results calibrated to gage data.	–
		5/1/1987 (Hydraulics Only)	Town of Mountain View	**Detailed:** Smiths Fork	–	▪ XS and Manning's n data from field survey and aerial mapping. ▪ WSEL from HEC-2 and HEC-RAS. Normal depth analysis.
	2/17/2010	2007	Unincorporated Areas, Town of Bear River, City of Evanston, Town of Lyman, Town of Mountainview	**Approximate:** Bear River (Town of Bear River) **Detailed:** Bear River Little Blacks Fork Groshon Creek Blacks Fork Smiths Fork	▪ Bulletin 17B from regression equation and calibrated to match previous data	▪ XS and Manning's n data from field survey and aerial mapping ▪ WSEL from HEC-2 and HEC-RAS. Normal depth analysis.

2.5. Hazus Risk Assessment

Hazus is a nationally applicable, standardized methodology that estimates potential losses from earthquakes, hurricane winds, floods, and tsunamis. Hazus was developed by FEMA under contract with the National Institute of Building Sciences and is managed by FEMA's Natural Hazards Risk Assessment Program. Using state-of-the-art GIS software, Hazus combines inventory information, hazard extent and intensity data, and damage functions to display hazard data and estimate disaster impacts, such as structural damage and economic loss. The following sections contain Hazus-derived estimated loss data for the entire watershed, as well as each county and its respective communities.

2.5.1. OVERALL FINDINGS

Figure 7 illustrates the total economic loss in dollars estimated by Hazus from the BLE-derived 1% annual chance flood event. The map shows the Hazus results overlaid with BLE streams for areas within the Upper Green-Great Divide Watershed. Losses are less likely to be underestimated when using BLE data instead of effective data, as BLE may provide a greater amount of information on which to base loss values.

Determined by averaging the losses of Census block-level data, Hazus results indicate that economic loss from the 1% annual chance flood is most concentrated in the northern portion of the watershed (primarily the areas surrounding the Town of Pinedale), the central portion of the watershed (primarily around the City of Rock Springs), and along the southern portion of the watershed (primarily around the Town of Mountain View). The concentrations of flood loss correspond to the locations of the watershed's larger bodies of water (e.g., Willow Creek, New Fork River, Fremont Lake, Green River, Smith's Fork, etc.), as well as areas where more heavily developed land or high-value infrastructure intersects flood-prone areas with high flood depths. This indicates a need for improved flood mitigation efforts along these bodies of water, especially in developed and more populous areas. Possible measures to mitigate future flood damage include levees, stormwater detention ponds, and increased freeboard. Mitigation measures should be informed by a flood area's specific location and flood severity. There is significantly less flood loss in the eastern portion of the watershed, presumably due to its undeveloped, arid landscape and climate. The Hazus Flood Risk Assessment Results data layer overlaid with the BLE Streams data layer illustrates this correlation. Additionally, much of the land in the eastern Upper Green-Great Divide Watershed is either undeveloped or sparsely populated; there is thus less life and property at risk, and consequently, lower flood loss potential.

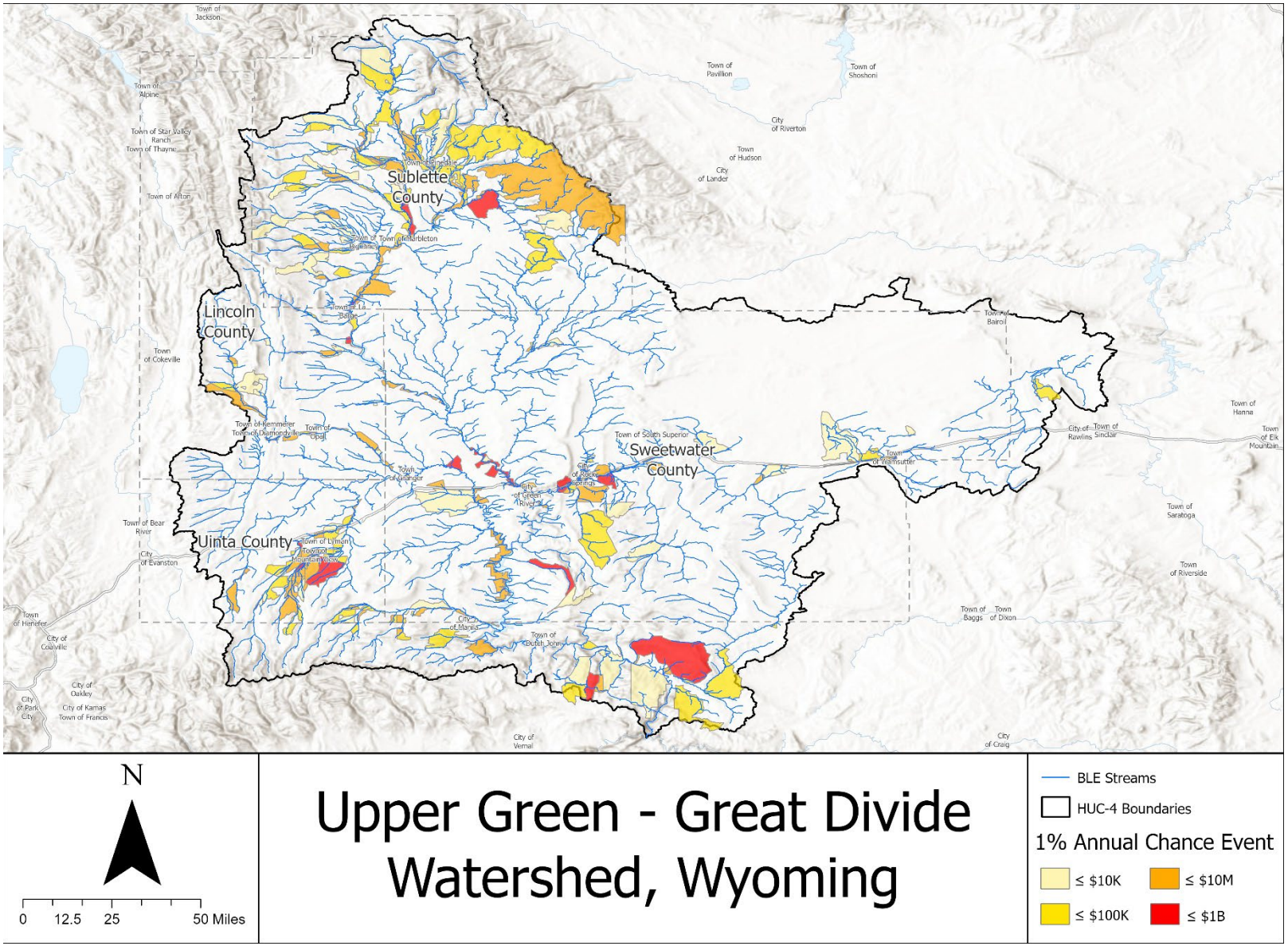

Figure 7. Hazus Flood Risk Assessment Results and BLE Streams in the Upper Green-Great Divide Watershed.

2.5.2. LINCOLN COUNTY

Table 20. Estimated total losses from the 1% flood event in dollars for Lincoln County.

Community	Total Losses for the 1%-Annual-Chance Flood Event	Per Capita Losses for the 1%-Annual-Chance Flood Event	Losses per Square Mile for the 1%-Annual-Chance Flood Event	Average Annualized Loss
Town of Diamondville	$84,524,000	$163,489	$72,242,735	$6,275,899
City of Kemmerer	$39,199,000	$16,484	$5,025,513	$2,482,351
Town of La Barge	$1,259,000	$3,187	$1,259,000	$120,874
Town of Opal	$5,193,000	$81,141	$5,193,000	$523,373
Unincorporated Areas	$10,321,000	$1,072	$2,532	$811,842
Lincoln County Totals:	$140,496,000	$265,373	$83,722,780	$10,214,339

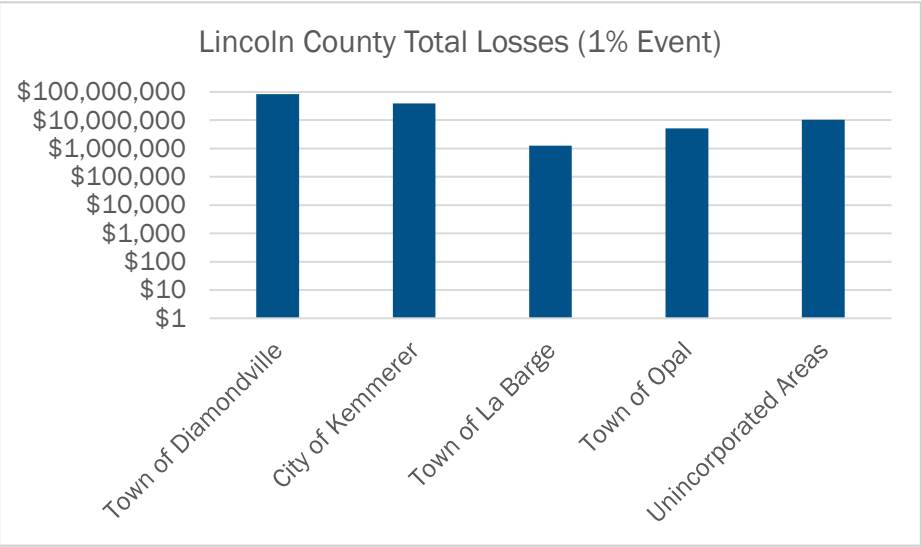

Figure 8. Estimated total losses from the 1% annual chance flood event in Lincoln County by community.

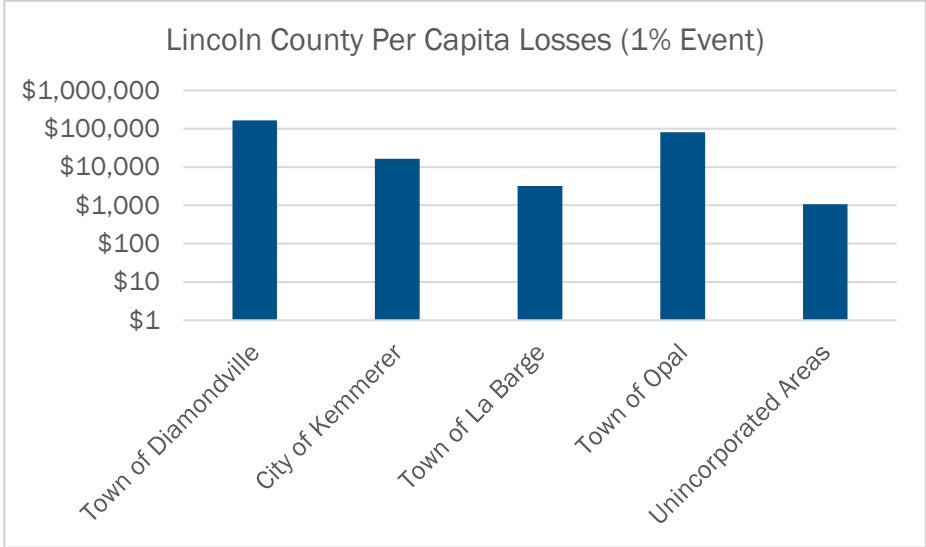

Figure 9. Estimated per capita losses from the 1% annual chance flood event in Lincoln County by community.

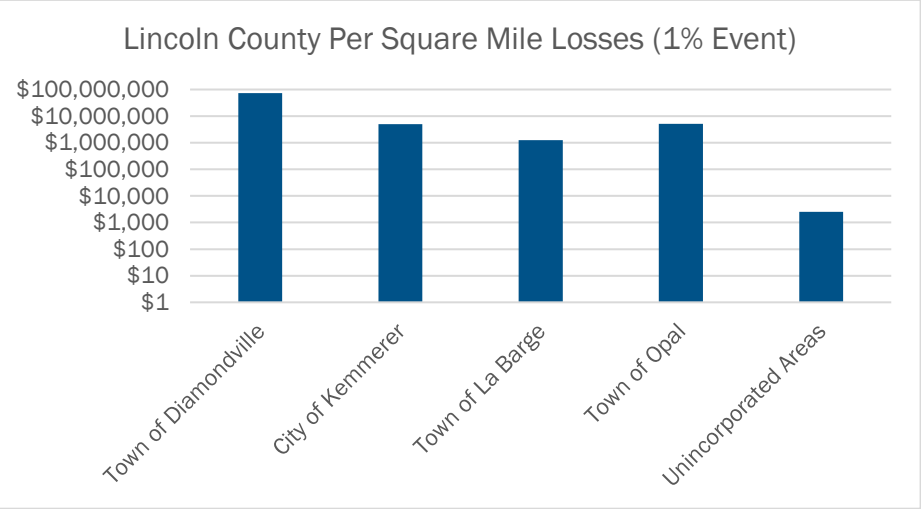

Figure 10. Estimated per square-mile losses from the 1% annual chance flood event in Lincoln County by community.

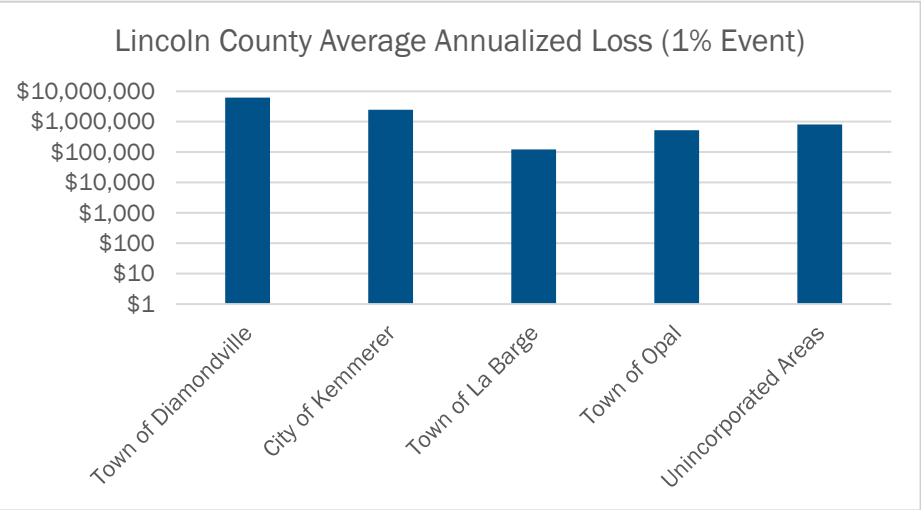

Figure 11. Estimated average annualized loss from the 1% annual chance flood event in Lincoln County by community.

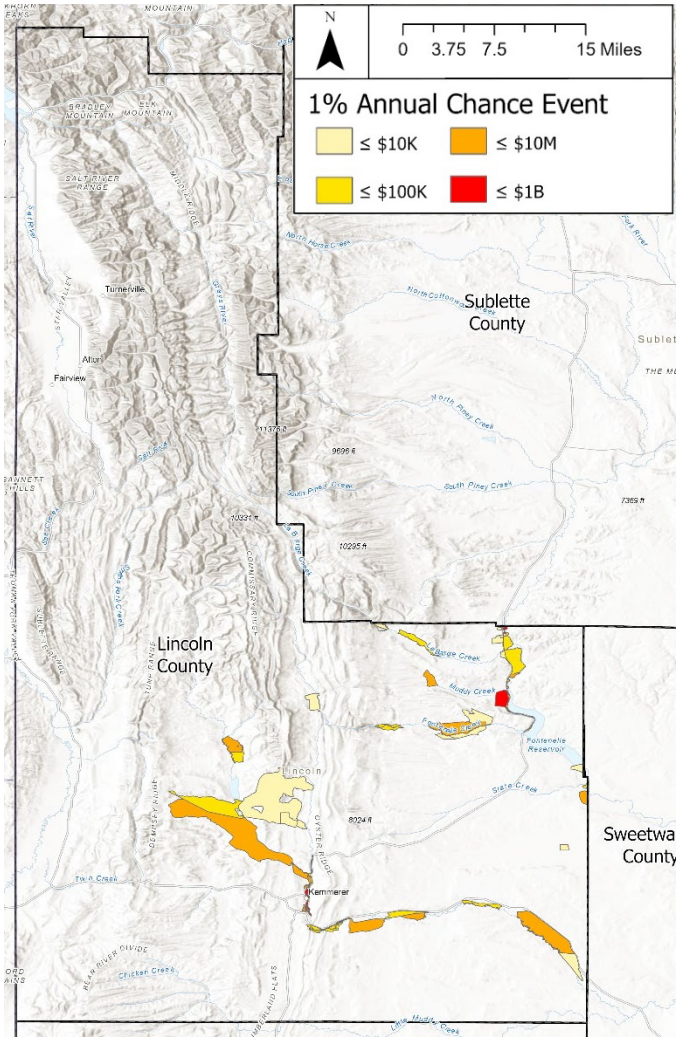

Figure 12. Flood Risk Assessment results for Lincoln County.

2.5.3. SUBLETTE COUNTY

Table 21. Estimated total losses from the 1% flood event in dollars for Sublette County.

Community	Total Losses for the 1%-Annual-Chance Flood Event	Per Capita Losses for the 1%-Annual-Chance Flood Event	Losses per Square Mile for the 1%-Annual-Chance Flood Event	Average Annualized Loss
Town of Big Piney	$813,000	$2,085	$813,000	$113,300
Town of Marbleton	$0	$0	$0	$0
Town of Pinedale	$2,897,000	$1,444	$1,341,204	$304,448
Unincorporated Areas	$29,588,000	$5,873	$6,058	$2,722,789
Sublette County Totals:	$33,298,000	$9,402	$2,160,262	$3,140,537

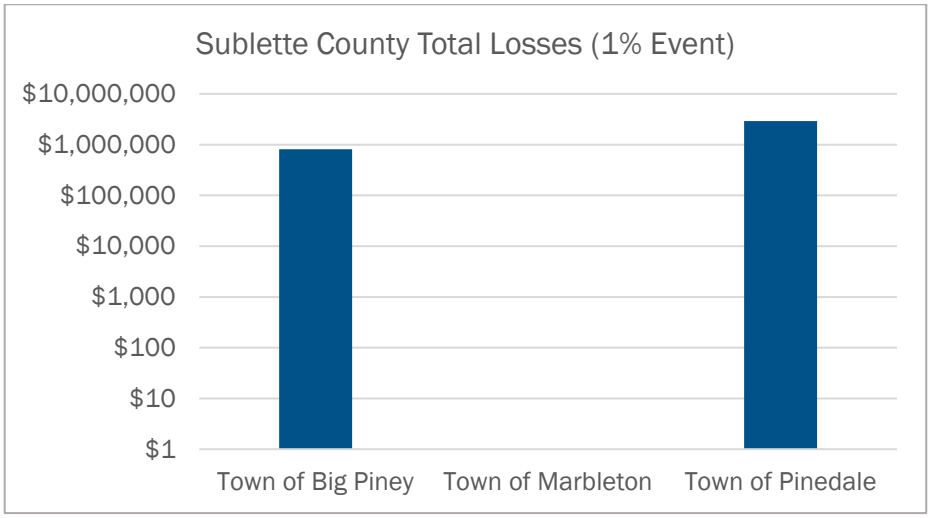

Figure 13. Estimated total losses from the 1% annual chance flood event in Sublette County by community.

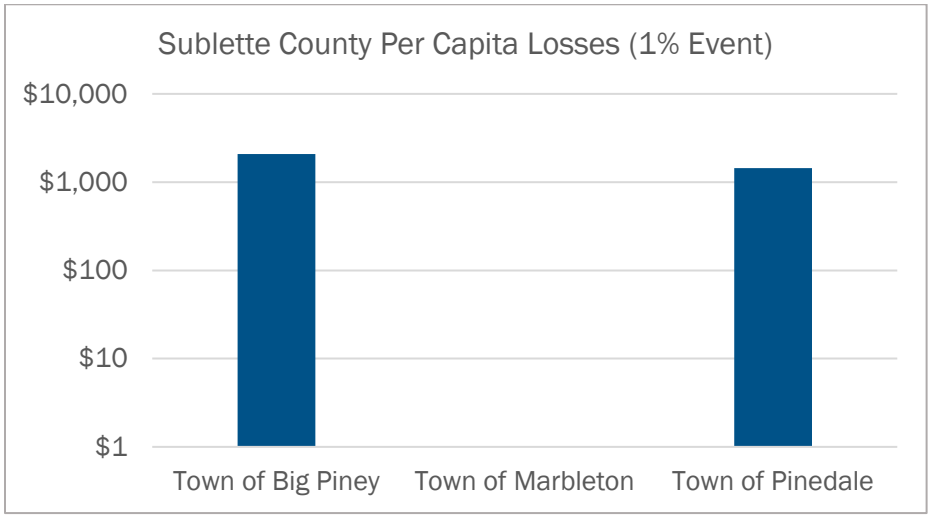

Figure 14. Estimated per capita losses from the 1% annual chance flood event in Sublette County by community.

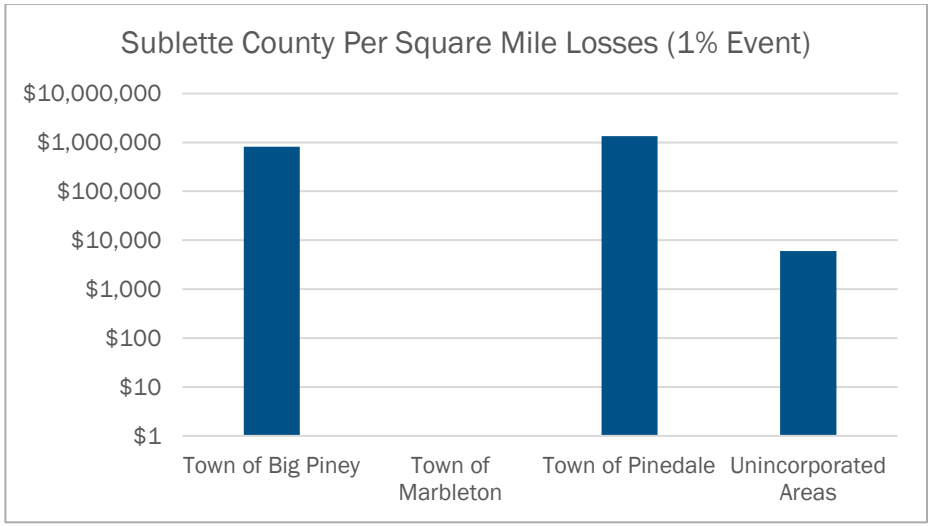

Figure 15. Estimated per square mile losses from the 1% annual chance flood event in Sublette County by community.

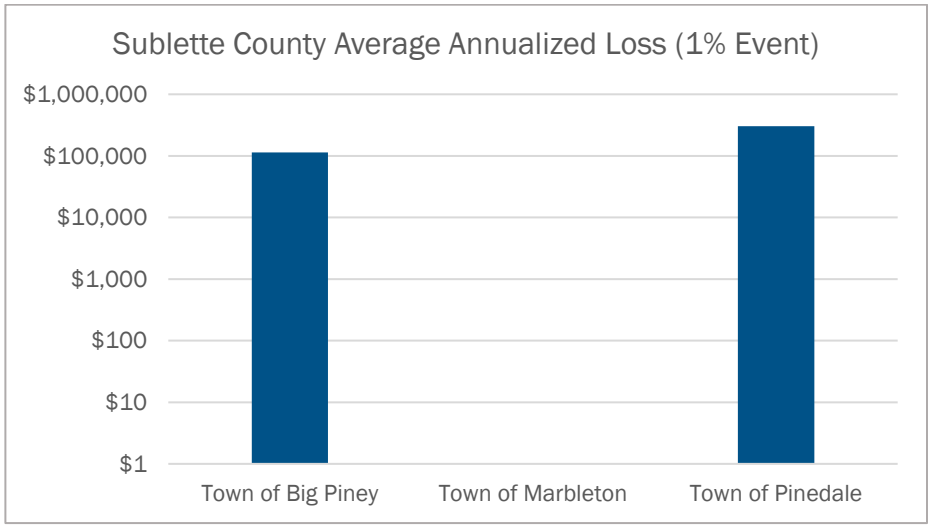

Figure 17. Estimated average annualized loss from the 1% annual chance flood event in Sublette County by community.

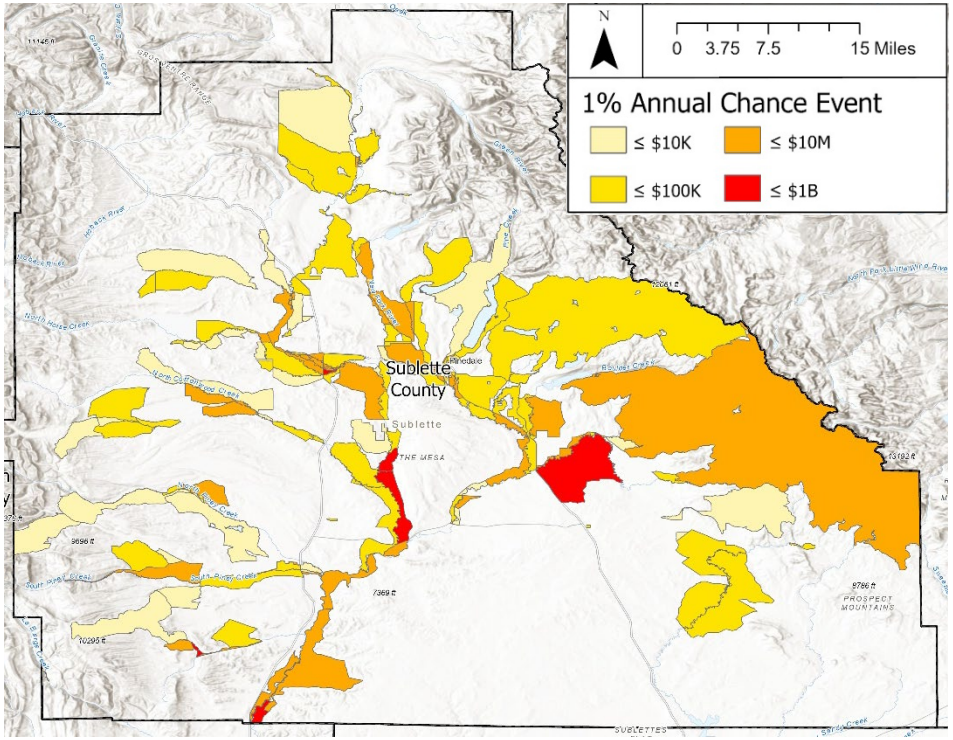

Figure 16. Flood Risk Assessment results for Sublette County.

2.5.4. SWEETWATER COUNTY

Table 22. Estimated total losses from the 1% flood event in dollars for Sweetwater County.

Community	Total Losses for the 1%-Annual-Chance Flood Event	Per Capita Losses for the 1%-Annual-Chance Flood Event	Losses per Square Mile for the 1%-Annual-Chance Flood Event	Average Annualized Loss
Town of Bairoil	$0	$0	$0	$0
Town of Granger	$4,830,000	$49,794	$1,866,306	$175,650
City of Green River	$53,181,000	$4,722	$3,954,817	$4,585,846
City of Rock Springs	$787,766,000	$34,300	$40,648,400	$46,352,458
Town of Superior	$1,907,000	$10,421	$1,705,725	$168,965
Town of Wamsutter	$7,608,000	$38,619	$4,423,256	$385,307
Unincorporated Areas	$89,091,000	$12,224	$8,577	$6,359,257
Sweetwater County Totals:	$944,383,000	$150,080	$52,607,081	$58,027,483

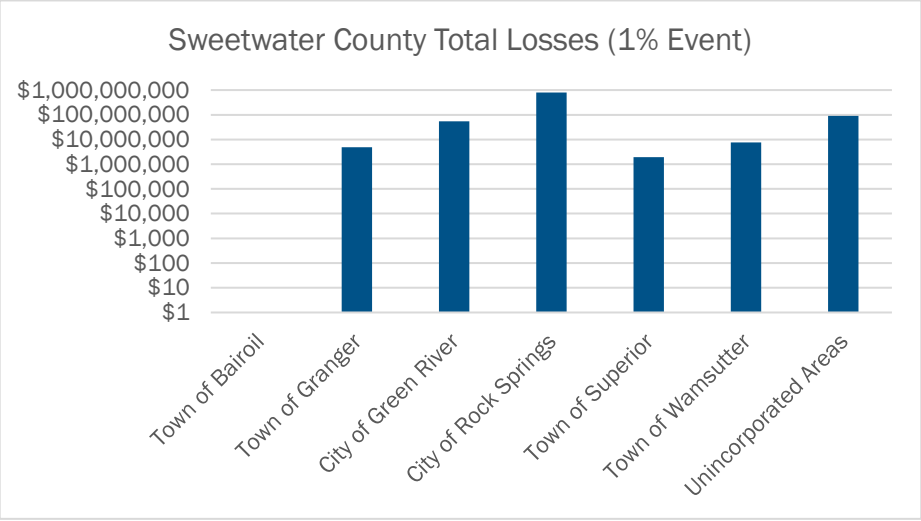

Figure 18. Estimated total losses from the 1% annual chance flood event in Sweetwater County by community.

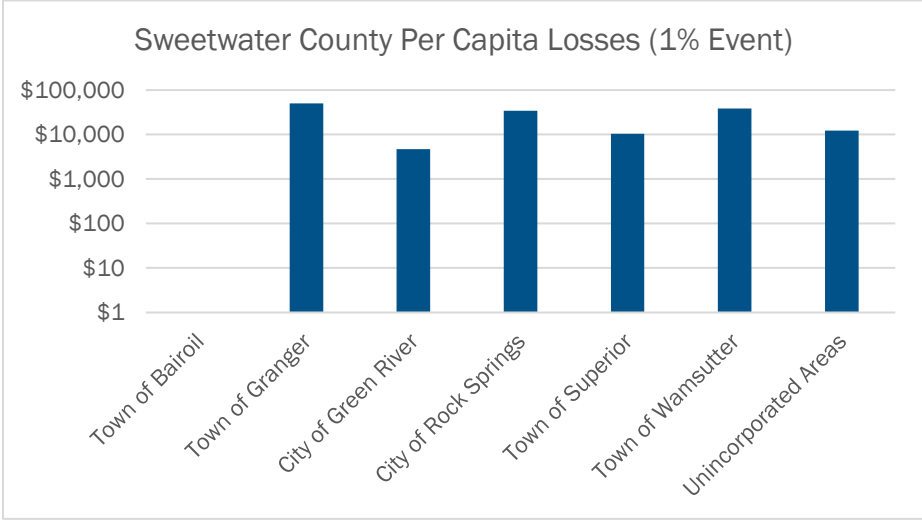

Figure 19. Estimated per capita losses from the 1% annual chance flood event in Sweetwater County by community.

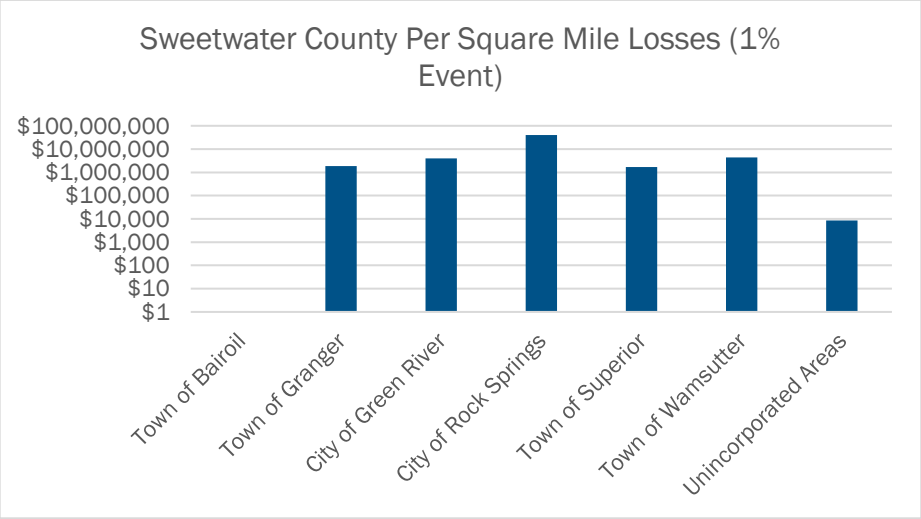

Figure 20. Estimated per square-mile losses from the 1% annual chance flood event in Sweetwater County by community.

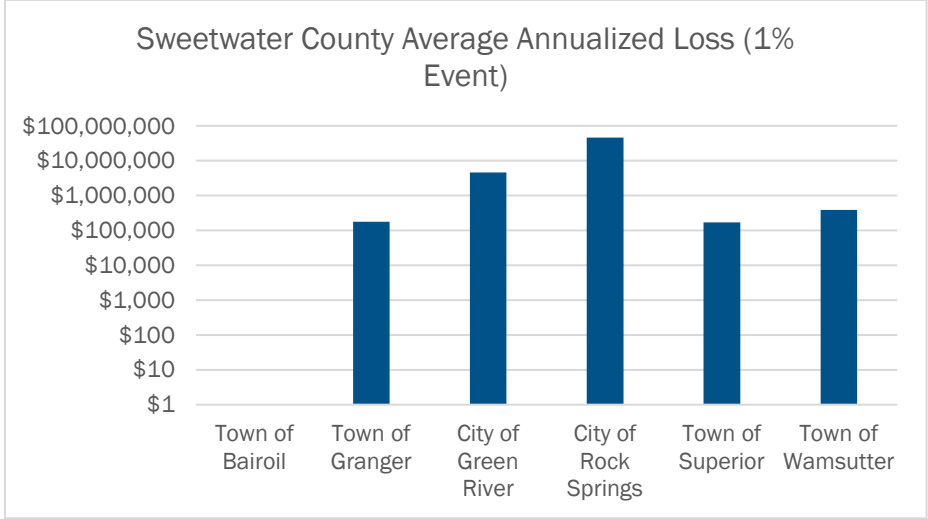

Figure 21. Estimated average annualized loss from the 1% annual chance flood event in Sweetwater County by community.

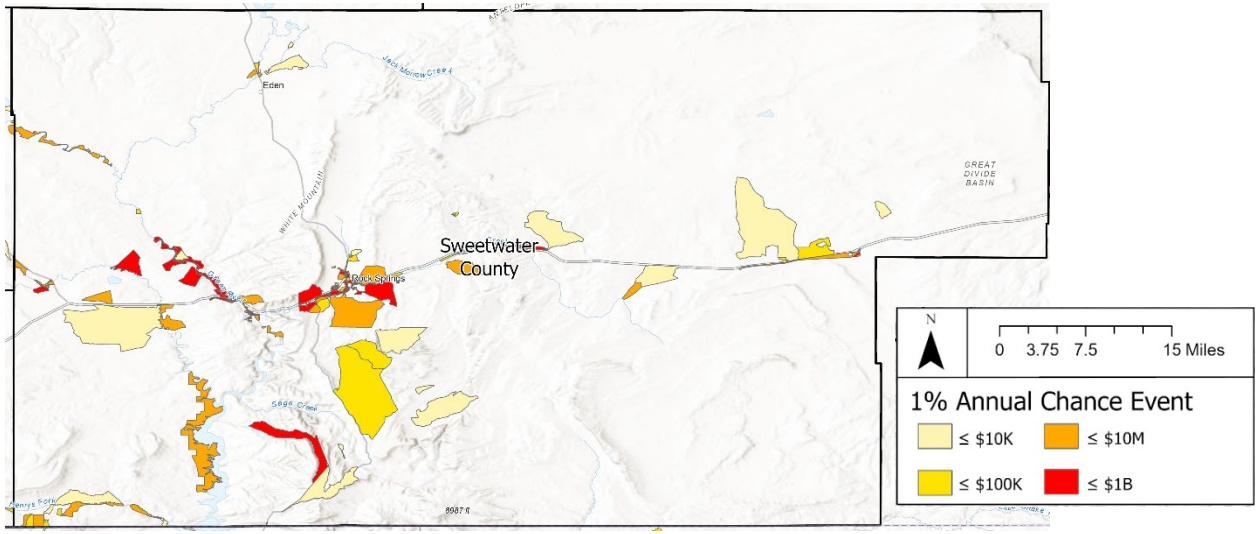

Figure 22. Flood Risk Assessment results for Sweetwater County.

2.5.5. UINTA COUNTY

Table 23. Estimated total losses from the 1% flood event in dollars for Uinta County.

County	Total Losses for the 1%-Annual-Chance Flood Event	Per Capita Losses for the 1%-Annual-Chance Flood Event	Losses per Square Mile for the 1%-Annual-Chance Flood Event	Average Annualized Loss
Town of Lyman	$0	$0	$0	$0
Town of Mountain View	$67,778,000	$53,453	$67,778,000	$6,724,159
Unincorporated Areas	$28,357,000	$5,934	$6,994	$2,741,287
Uinta County Totals:	$96,135,000	$59,387	$67,784,994	$9,465,446

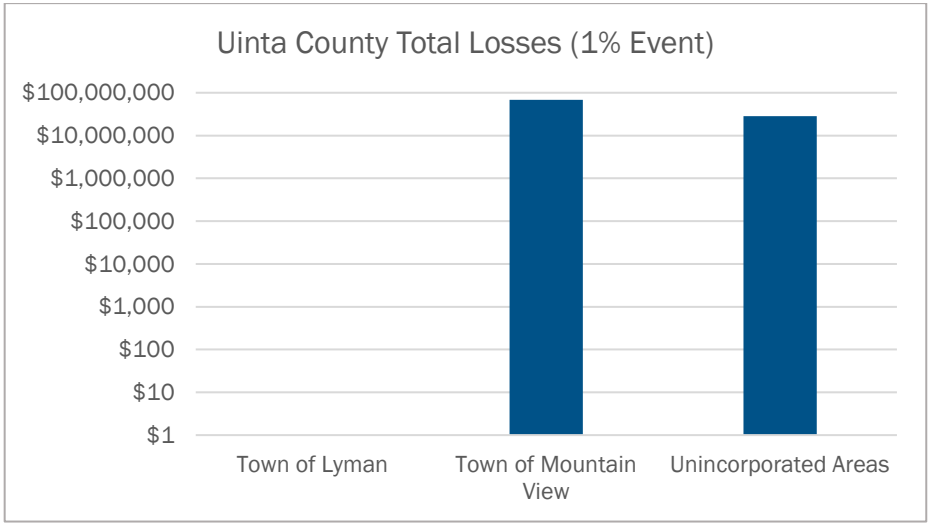

Figure 23. Estimated total losses from the 1% annual chance flood event in Uinta County by community.

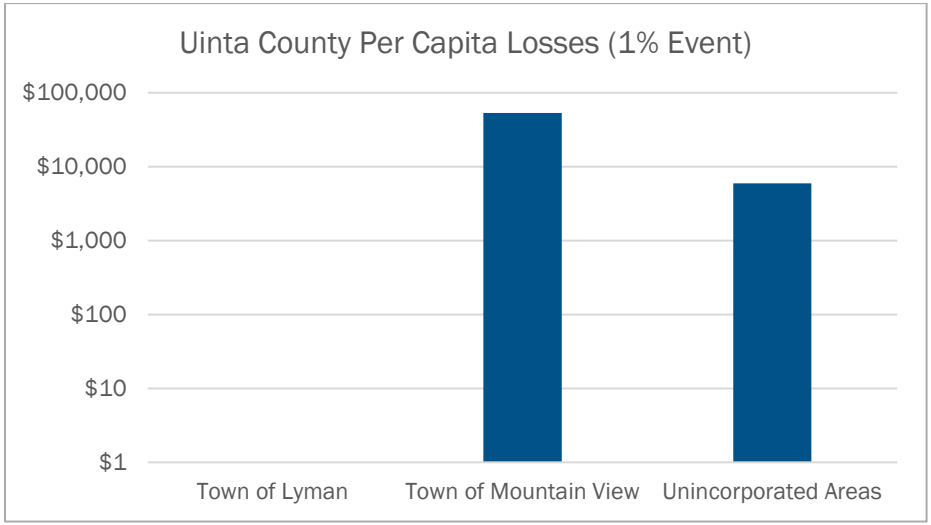

Figure 24. Estimated per capita losses from the 1% annual chance flood event in Uinta County by community.

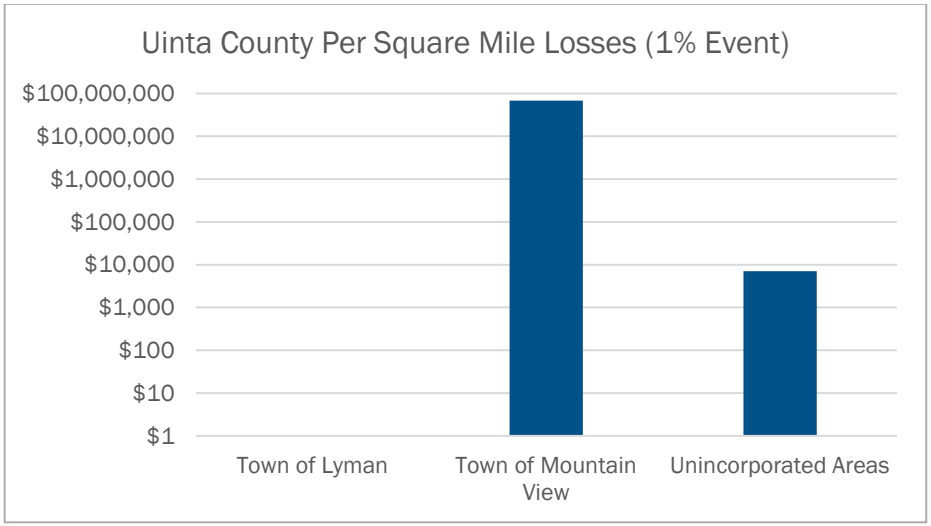

Figure 25. Estimated per square-mile losses from the 1% annual chance flood event in Uinta County by community.

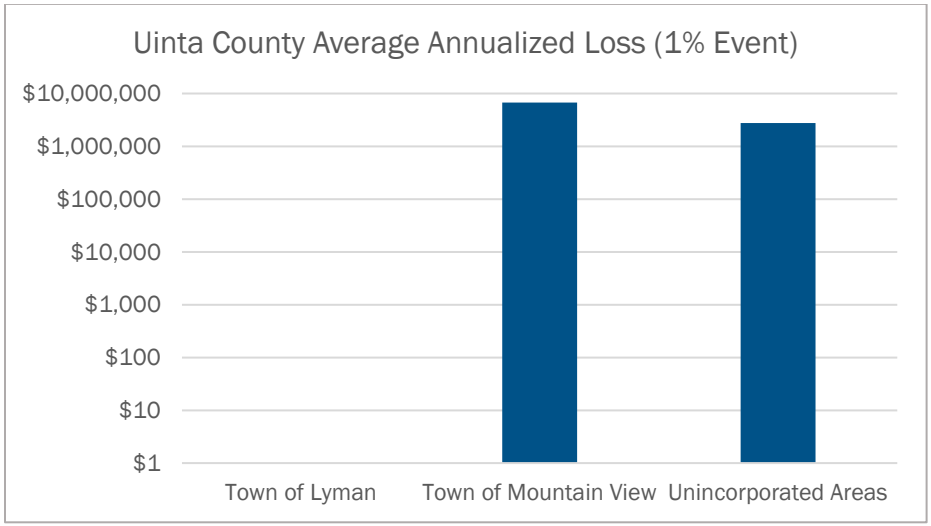

Figure 26. Estimated average annualized loss from the 1% annual chance flood event in Uinta County by community.

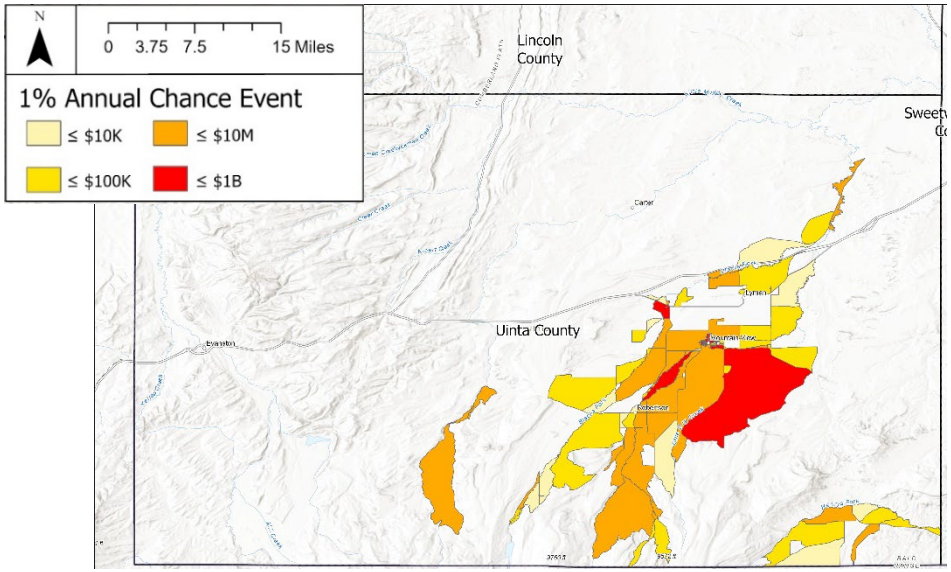

Figure 27. Flood Risk Assessment results for Uinta County.

Project Stakeholder Coordination

1. Prior Engagement Efforts

To be completed.

2. Stakeholder Identification

Relevant stakeholders for this Discovery project were identified primarily through the FEMA Enterprise Identity Management System (FEIMS). Through this system, the PDT identified a Chief Executive Officer (CEO) and a Floodplain Administrator (FPA) for each community (town, city, and unincorporated county) where the information was available. Common CEO titles included Mayor and Chairman, and common FPA titles included Clerk, Public Works Director, and County Planner. Throughout the Discovery process, additional stakeholders were identified by existing stakeholders and other PDT members.

The complete stakeholder list for Upper Green-Great Divide Discovery is included in Appendix I: Resources.

3. Pre-Discovery Meeting *(Draft)*

Prior to the Discovery Meeting, the PDT collected information on each community's demographic characteristics, flood history, and floodplain management efforts. Resources included FEIMS, the NFIP Community Status Book, and Census data. Individual county websites and stakeholders were consulted regarding their respective GIS capabilities, HMPs, and county-specific data.

The PDT then collected spatial data from a variety of online databases, including the Census Topologically Integrated Geographic Encoding and Referencing (TIGER) system, USGS, CNMS, National Bridge Inventory, National Levee Database, National Inventory of Dams, and Wyoming Department of Transportation. A complete list of data resources used in this Discovery project can be found in Appendix I: Resources.

Regular PDT meetings, which included members of STARR II, FEMA, and Wyoming's NFIP Coordinator, were held throughout the Discovery process to ensure quality and accuracy of the work being done.

3.1. Virtual Discovery Homepage

The format of the Discovery meeting (in-person, virtual, or hybrid) was undecided until a couple of months before the meeting, due to changes made by the federal administration limiting the travel of its employees, including FEMA. While waiting to finalize these logistical details, the PDT created a Virtual Discovery Homepage (https://discovery.region8pts.com/) to support stakeholders in their understanding of and participation in the Discovery process, regardless of meeting format. The Virtual Discovery Homepage, customized for the Upper Green-Great Divide Watershed, was made to mirror the stations typical of an in-person Discovery meeting: 1. What Is Risk MAP?, 2. What Is Base

Level Engineering?, 3. How Can You Use BLE Data for Floodplain Management?, and 4. Access and Comment on Your BLE Data. The Virtual Discovery Homepage also provides users with multiple ways to share their thoughts, learn more about Discovery in their community, and familiarize themselves with BLE and the NFIP.

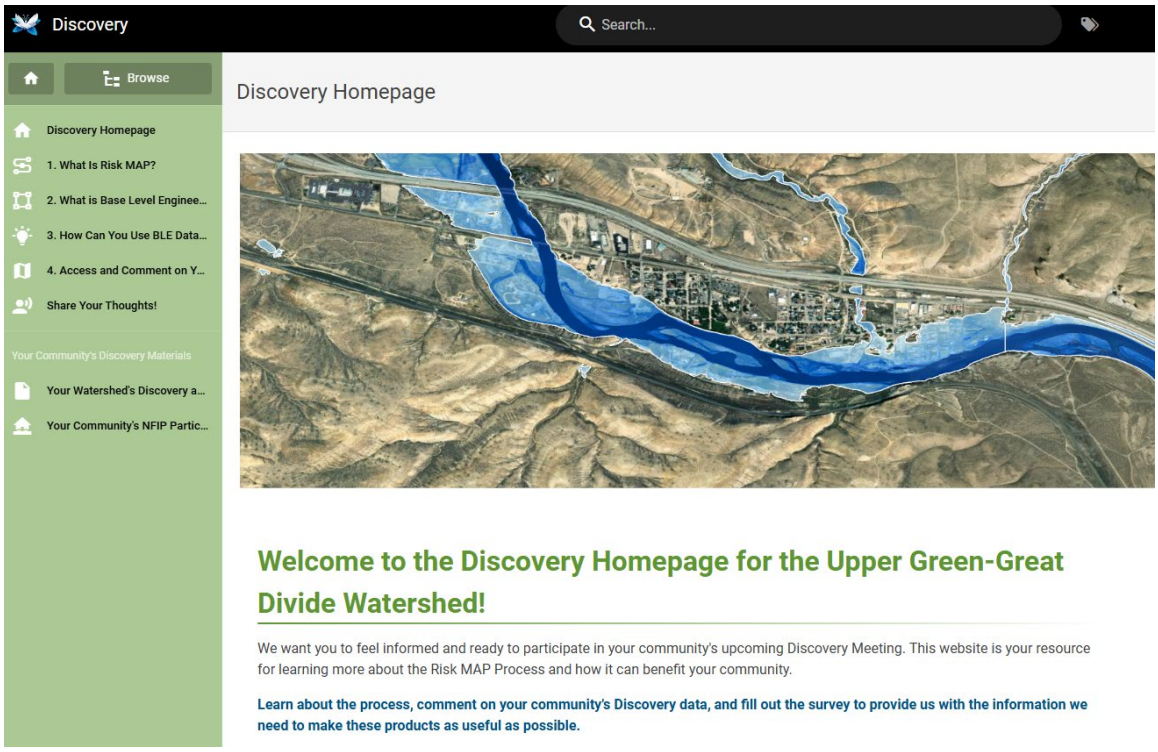

Figure 28. Virtual Discovery Homepage.

The Upper Green-Great Divide Watershed Discovery website displays newly studied BLE flood data for the watershed, along with current effective flood maps. The website presents valuable data for communities regarding updated floodplain extents, flood depth, and calculated flood risk related to economic losses due to flooding. Additionally, the website enables communities to submit location-specific comments in areas where the community is facing recurring or new flood-related challenges.

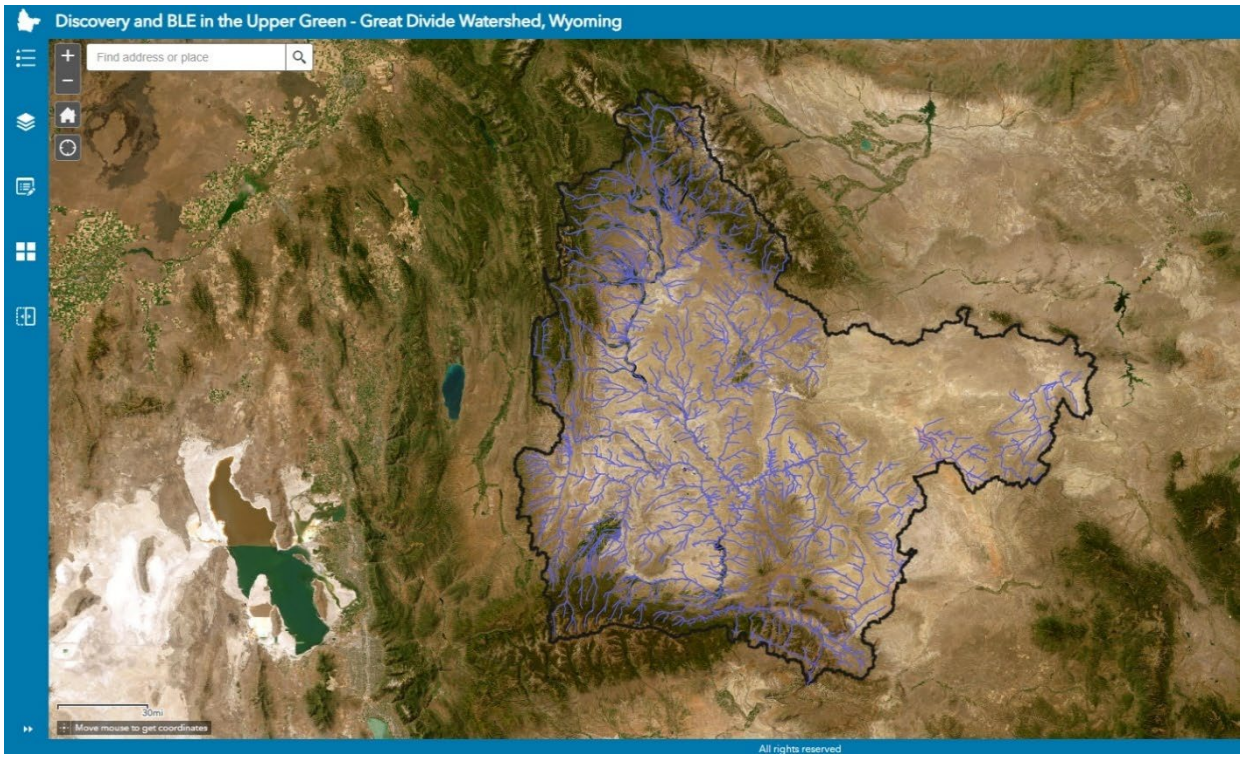

Figure 29. Upper Green-Great Divide Watershed Discovery Website.

In summer 2025, FEMA travel limitations were lifted, allowing representatives to attend the Discovery meeting in person. However, the PDT decided upon a virtual meeting format to make the meeting more easily accessible for stakeholders living in remote locations. The meeting date was set for January 12, 2026. The Virtual Discovery Homepage was made available to stakeholders two weeks before the Discovery meeting, was presented at the Discovery meeting, and remained open for comments for two weeks following the Discovery meeting. Comments collected via the Virtual Discovery Homepage prior to the Discovery meeting were incorporated into the Discovery meeting presentation.

3.2. Correspondence and Survey Form

The Discovery meeting invitation, adapted from a template on the FEMA Region 8 Resource and Training Library, was sent two weeks before the meeting date. It included a brief overview of the meeting's purpose, the date and time, and the link to join the virtual meeting. The invitation also included a link to the Virtual Discovery Homepage and encouraged recipients to explore it and submit comments prior to the meeting. The embedded comment form allowed users to share their views on community priorities, concerns, barriers, and areas of interest. Lastly, the invitation included a link to RSVP to the Discovery meeting and contact information for those with additional questions. One week after the email was sent, members of the PDT made phone calls to each community's invitees to remind them of the upcoming event and encourage their participation.

Discovery Meetings

1. Stakeholder Engagement

To be completed after the Discovery meeting.

Table 24. Stakeholder meetings and community attendance. *To be completed after the Discovery meeting.*

County	Meeting Date	Communities Invited to Discovery Meetings
Lincoln		
Sublette		
Sweetwater		
Uinta		

2. Summary of Stakeholder Needs and Comments

2.1. Community Feedback

To be completed after the Discovery meeting.

2.2. Flood Mapping Needs

To be completed after the Discovery meeting.

2.3. Mitigation and Risk Reduction Needs

To be completed after the Discovery meeting.

2.4. Training, Planning, and Outreach Support Needs

To be completed after the Discovery meeting.

3. Recommendations for Future Risk MAP Project Scope

3.1. Scoping Recommendations

To be completed after the Discovery meeting.

Table 25. Scoping recommendation spatial elements. *To be completed after the Discovery meeting.*

Scoping Recommendation Categories	Description

Table 26. Scoping recommendation categories. To be completed after the Discovery meeting.

Variable	Attribute Name in Geodatabase	Description

Appendix I: Resources

1. Project Delivery Team

Role	Name	Contact
FEMA Region VIII		
Study Manager	Christine Gaynes	christine.gaynes@fema.dhs.gov
Engineering/Technical Lead	Zharif Mdazmi	ahmad.mdazmi@fema.dhs.gov
Floodplain Management and Insurance Point of Contact	Peter Reinhardt	peter.reinhardt@fema.dhs.gov
Planning Lead	Ariana Borello	ariana.borrello@fema.dhs.gov
State of Wyoming		
State NFIP Coordinator	Aaron Birkemeier	aaron.birkemeier1@wyo.gov
State Grants/Finance Section Chief	Ashley Paulsrud	ashley.paulsrud@wyo.gov
State Hazard Mitigation Officer	Justin Markiewicz	Justin.Markiewicz@wyo.gov
STARR II		
Task Order Manager	Jon Pink	jpink@dewberry.com
BLE Production Project Manager	David Sutley	dsutley@dewberry.com
BLE Production	Curtis Smith	Curtis.Smith@stantec.com
BLE Production	Jason Schneider	jason.schneider@stantec.com
Discovery Project Manager	Jerri Daniels	jdaniels@dewberry.com
Discovery Support	Wyline Minot	wminot@dewberry.com
Discovery Support	Mikayla Zeitlin	mzeitlin@dewberry.com
Discovery GIS Lead	Claire Pollard	cpollard@dewberry.com
GIS Support	Payton Karr	pkarr@dewberry.com
Outreach Support	Katie Gronsky	kgronsky@dewberry.com
Community Engagement and Risk Communications	Natalie Kretzschmar	natalie.kretzschmar@ogilvy.com

2. CEOS and FPAs

Role		Name	Contact
Lincoln County			
Chief of Staff		Stephen Allen	stephen.allen@lincolncountywy.gov
Emergency Manager, Lincoln County		Jay Hokanson	jay.hokanson@lincolncountywy.gov
Town of Diamondville	Mayor	Clint Bowen	tclerk@diamondvillewyo.com
	Planning and Zoning Board Chairwoman	Jeanie Cattelan	tclerk@diamondvillewyo.com
City of Kemmerer	Mayor	Robert Bowen	rbowen@kemmerer.org
	City Administrator	Brian Muir	bmuir@kemmerer.org
	Public Works Director	Chad Nielson	cnielson@kemmerer.org
Town of La Barge	Mayor	Larry Stepp	clerk@townoflabarge.org
	Public Works Director	Zach Bohm	clerk@townoflabarge.org
Town of Opal	Mayor	Mary Hall	townofopal@gmail.com
	Public Works Director	Gary Hutchinson	townofopal@gmail.com
Sublette County			
Chairman, County Commissioners		Lynn Bernard	lynn.bernard@sublettecountywy.gov
County Administrator		Jeness Saxton	jeness.saxton@sublettecountywy.gov
Planning and Zoning Administrator		Haley Ruland	hayley.ruland@sublettecountywy.gov
Town of Big Piney	Mayor	Shane Voss	townofbigpineywy@gmail.com
	Water/Sewer, Public Works	Nikolas Hernandez	townofbigpineywy@gmail.com
Town of Marbleton	Mayor	Jim Robinson	marbletontown@hotmail.com
	Public Works Director	Todd Brown	tbrown43@live.com

Role		Name	Contact
Town of Pinedale	Mayor	Matt Murdock	mattmurdock@townofpinedale.us
	Director of Public Works	Abram Pearce	abrampearce@townofpinedale.us
Sweetwater County			
Chairman, County Commissioners		Keaton West	westk@sweetwatercountywy.gov
Director, Land Use		Eric Bingham	binghame@sweetwatercountywy.gov
Town of Bairoil	Mayor	Lowell Clawson	townfb@outlook.com
	Water/Sewer License Operator	Debra Good	307-324-7653
Town of Granger	Mayor	Anselmo Valerio	clerk@townofgranger.com
	Water Plant Operator	Mark Gillespie	clerk@townofgranger.com
City of Green River	Mayor	Pete Rust	prust@grwyo.org
	City Administrator	Reed Clevenger	rclevenger@grwyo.org
	Environmental Systems Superintendent	Jason Palmer	jpalmer@grwyo.org
City of Rock Springs	Mayor	Max Mickelson	mayor@rswy.net
	City Planner	Chandler Marsh	city_planner@rswy.net
Town of Superior	Mayor	Richelle Johnson	townclerk@superiorwyoming.net
	Clerk/Treasurer	Anita Vaughn	townclerk@superiorwyoming.net
Town of Wamsutter	Mayor	Larry “Chip” Roney	mayor@wamsutter-wy.org
	Public Works Director	Jose Espinoza	town@wamsutter-wy.org
Uinta County			
Chairman, County Commissioners		Mark Anderson	mark.anderson@uintacountywy.gov
GIS Coordinator/Department Head		Gary Welling	gary.welling@uintacountywy.gov
Town of Lyman	Mayor	Shane Hooton	mayor@lymanwy.com

Role		Name	Contact
	Public Works Director	Jared Crane	jared.crane@lymanwy.com
Town of Mountain View	Mayor	Bryan Ayres	admin@mtnwy.com
	Public Works Director	Jacob Porter	admin@mtnwy.com

3. Other Discovery Partners

Role	Name	Contact
State		
WY Department of Transportation Bridge Program, Hydraulic Engineer	Jeri Yearout	jeri.yearout@wyo.gov
WY Game and Fish Department, Fiscal Division Chief	Dirk Miller	dirk.miller@wyo.gov
WY Office of State Land and Investments Field Services Division, Assistant Director	Ben Bump	ben.bump@wyo.gov
WY State Engineer's Office, Administrator	Jeff Cowley	jeff.cowley@wyo.gov
WY State Forestry Division, WY State Forester	Kelly Norris	kelly.norris@wyo.gov
WY State GIS Coordinator	Sage Sheldon	sage.sheldon@usda.gov
WY Water Development Office, Director	Jason Mead	jason.mead@wyo.gov
WY Water Development Office, Deputy Director	Barry Lawrence	barry.lawrence@wyo.gov
WY Water Development Office, Project Manager	Mabel Jones	mabel.jones1@wyo.gov
Federal		
BLM High Desert District Office, District Manager	Jason Gay	jgay@blm.gov
U.S. Fish and Wildlife Service WY Ecological Services Field Office, WY Field Supervisor	Tyler Abbott	tyler_abbott@fws.gov
USACE Civil Works	Bradley Hoefer	bradley.r.hoefer@usace.army.mil
	Laurel Hamilton	laurel.j.hamilton@usace.army.mil
	Derek Schriner	derek.schriner@usace.army.mil
	Tony Krause	tony.d.krause@usace.army.mil

Role	Name	Contact
WY Office of Homeland Security FEMA Integration Team, Risk Analyst (GIS)	Kristopher Felt	kristopher.felt@fema.dhs.gov
County		
Lincoln County GIS/IT Department, Director	Destry Dearden	destry.dearden@lincolncountywy.gov
Lincoln County Emergency Management, Public Information Officer	Stephen Malik	stephen.malik@lincolncountywy.gov
Lincoln County Engineer	Amy Butler	amy.butler@lincolncountywy.gov
Lincoln County Engineering/GIS Analyst	Kimberly Guinta	kimberly.guinta@lincolncountywy.gov
Lincoln County Planning Director	Ken Kuluski	ken.kuluski@lincolncountywy.gov
Sublette County Commissioner	Mack Bradley	mack.bradley@sublettecountywy.gov
Uinta County Planning and Zoning/GIS, GIS Coordinator/Department Head	Gary Welling	gary.welling@uintacounty.org
Nonprofits and Third-Party Firms		
Old Glory Engineering, Principal Engineer	Austin Gilbert	austin@oldgloryengineering.com
Petroleum Association of WY, President	Pete Obermueller	pete@pawyo.org
The Nature Conservancy, WY Director of Science	Corinna Riginos	corinna.riginos@tnc.org
WY Association of Municipalities, Executive Director	Ashley Garpstreith	ashley@wyomuni.org
WY Association of Conservation Districts, Watershed Coordinator	Carmen Horne-McIntyre	watershed.coordinator@conservewy.com
WY County Commissioners Association, Executive Director	Jerimiah Rieman	jrieman@wyo-wcca.org
WY County Commissioners Association, Natural Resources Policy Analyst	Triston Rice	triston.rice@conservewy.com

4. Data Resources

Data Category	Map Element or Data Type	Source	Link	Date Last Updated (or Date Accessed If Unavailable)
Community and Watershed Information				
Community Characteristics	Demographics	U.S. Census Bureau Community Profiles	Census.gov	September 2025 (Accessed)
	General Geography and Climate Information	Regional and State HMPs	WY State HMP	February 2021 (Updated)
			WY Region 4 HMP	January 2022 (Updated)
			WY Region 5 HMP	August 2022 (Updated)
	Agriculture	U.S. Department of Agriculture (USDA) 2017 Census of Agriculture	Lincoln County Profile	2017 (Updated)
			Sublette County Profile	2017 (Updated)
			Sweetwater County Profile	2017 (Updated)
			Uinta County Profile	2017 (Updated)
	GIS Capabilities	Official County Websites	Lincoln County	October 2025 (Accessed)
			Sublette County	2021 (Updated)
			Sweetwater County	October 2025 (Accessed)
			Uinta County	October 2025 (Accessed)
			Lincoln County	October 2025 (Accessed)

Data Category	Map Element or Data Type	Source	Link	Date Last Updated (or Date Accessed If Unavailable)
	Community Concerns and Emergency Management Resources	County Emergency Management Webpages	Sublette County	October 2025 (Accessed)
			Sweetwater County	October 2025 (Accessed)
			Uinta County	October 2025 (Accessed)
	Emergency Management Contacts	WY Office of Homeland Security	County Contacts	2019 (Updated)
Watershed-Wide Data	Insurance Information and Paid Losses	FEMA	NFIP Community Information System (*Link to come)*	September 2022 (Accessed)
	FIRM and LOMC Information	FEMA	MSC	October 2025 (Accessed)
	FIS Reports	FEMA	MSC	October 2025 (Accessed)
	Disaster Declarations	FEMA	OpenFEMA	February 2023 (Accessed)
	Historical Flooding Issues	Regional HMPs	WY Region 4 HMP	January 2022 (Updated)
			WY Region 5 HMP	August 2022 (Updated)
	Ice Jams	USACE and Regional HMPs	Ice Jam Database	October 2025 (Accessed)
			WY Region 4 HMP	January 2022 (Updated)
			WY Region 5 HMP	August 2022 (Updated)

Data Category	Map Element or Data Type	Source	Link	Date Last Updated (or Date Accessed If Unavailable)
	Recreation Areas	USGS	Protected Areas Database of the U.S.	July 2022 (Updated)
Other Information	Community Status Book Information	FEMA	NFIP Community States Book	March 2022 (Updated)
	Community Census Information	U.S. Census Bureau	TIGER/Line Shapefiles	September 2025 (Accessed)
	Risk Assessment Data	Discovery Report Hazus Flood Risk Assessment	Data Analysis Section 2.5. Hazus Risk Assessment	September 2025 (Updated)
Map Elements				
Boundaries	State, County, and Community Boundaries	U.S. Census Bureau	TIGER/Line Shapefiles	September 2025 (Accessed)
	HUC 4 and HUC 8 Watershed Boundaries	USGS	National Hydrography Products	October 2023 (Updated)
	Additional HUC 4, 8, 10, and 12 Boundaries	USGS	Technical Scope Data	February 2023 (Accessed)
	Incorporated Cities and Towns (2023)	WY Department of Revenue	Maps and GIS Data	2025 (Updated)
	Colorado Counties	USDA and Colorado State University	ColoradoView	February 2023 (Accessed)

Data Category	Map Element or Data Type	Source	Link	Date Last Updated (or Date Accessed If Unavailable)
	Colorado Municipal Boundaries	USDA and Colorado State University	ColoradoView	February 2023 (Accessed)
	Utah Counties	Utah Geospatial Resource Center	Boundaries Data Index	February 2023 (Accessed)
	Utah Municipal Boundaries	Utah Geospatial Resource Center	Boundaries Data Index	February 2023 (Accessed)
Features	Rivers and Other Flooding Sources	FEMA	CNMS Viewer	July 2025 (Updated)
	Structures	USACE	National Structure Inventory	2025 (Updated)
	Bridges	U.S. Department of Transportation	National Bridge Inventory	August 2025 (Updated)
	Levees	USACE	National Levee Database	October 2025 (Accessed)
	Dams	USACE	National Inventrory of Dams	2020 (Updated)
	USGS Gages	USGS	National Water Information System	October 2025 (Updated)
	Roadways	USGS	The National Map Viewer	November 2022 (Updated)
	Water Bodies and Wetlands	U.S. Fish and Wildlife Service	National Wetlands Inventory	February 2023 (Accessed)
	Federal Lands	U.S. Census Bureau	TIGER/Line Shapefiles	September 2025 (Accessed)
		USGS	GIS Data Download	February 2023 (Accessed)

Data Category	Map Element or Data Type	Source	Link	Date Last Updated (or Date Accessed If Unavailable)
	CNMS Status	FEMA	CNMS Viewer	July 2025 (Updated)
	Critical Facilities	USGS	National Structures Dataset	August 2025 (Updated)
	Hazard Mitigation Strategy Status	FEMA	HMP Status Viewer	February 2023 (Accessed)
	Repetitive Loss Areas	FEMA	OpenFEMA Datasets	March 2025 (Accessed)
	Average Annualized Loss	FEMA	OpenFEMA Datasets	March 2025 (Accessed)
	Observation Points	National Weather Service	GIS Downloads	February 2023 (Accessed)
	National Land Cover Dataset	Multi-Resolution Land Characteristics Consortium	Data Downloads	February 2023
	Statewide NFHL Data (BFEs, Effective Flood Zones)	FEMA	NFHL	2024 (Updated)

Appendix II: Acronyms and Abbreviations

2D	Two-Dimensional
AOMI	Area of Mitigation Interest
BAI	Best Available Information
BLE	Base Level Engineering
BLM	Bureau of Land Management
CAC	Community Assistance Contact
CAV	Community Assistance Visit
CEO	Chief Executive Officer
CID	Community Identification Number
CLOMR	Conditional Letter of Map Revision
CNMS	Coordinated Needs Management Strategy
FEIMS	FEMA Enterprise Identity Management System
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIMA	Federal Insurance and Mitigation Administration
FIS	Flood Insurance Study
FIPS	Federal Information Processing Standard
FPA	Floodplain Administrator
FY	Fiscal Year
GIS	Geographic Information System
HEC-HMS	Hydrologic Engineering Center Hydrologic Modeling System
HEC-RAS	Hydrologic Engineering Center River Analysis System
H&H	Hydrology and Hydraulics
HHPD	High Hazard Potential Dam
HMGP	Hazard Mitigation Grant Program
HMGP-PF	Hazard Mitigation Grant Program Post-Fire
HMP	Hazard Mitigation Plan
HUC	Hydrologic Unit Code
LOMA	Letter of Map Amendment
LOMC	Letter of Map Change

LOMR	Letter of Map Revision
LOMR-F	Letter of Map Revision based on Fill
MSC	Map Service Center
NCEI	National Centers for Environmental Information
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NRMP	Natural Resource Management Plan
PDT	Project Delivery Team
Risk MAP	Risk Mapping, Assessment, and Planning
SFHA	Special Flood Hazard Area
SST	Stochastic Storm Transposition
STARR II	Strategic Alliance for Risk Reduction
TIGER	Topologically Integrated Geographic Encoding and Referencing
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WSEL	Water Surface Elevation
WSPRO	Water-Surface Profile
XS	Cross-Section

Appendix III: Glossary of Terms

1-Percent Annual Chance Flood: The flood having a 1-percent chance of being equaled or exceeded in any given year. This is the regulatory standard also referred to as the "100-year flood" or "base flood". The base flood is the national standard used by the National Flood Insurance Program (NFIP) and all Federal agencies for the purposes of requiring the purchase of flood insurance and regulating new development. Base Flood Elevations (BFEs) are typically shown on Flood Insurance Rate Maps (FIRMs). (FEMA)

Approximate Study: Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no BFEs or flood depths are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply. An approximate study is represented on a FIRM as Zone A. (FEMA)

Average Annualized Loss (AAL): AAL is the estimated long-term value of losses to the general building stock averaged on an annual basis for a specific hazard type. Annualized loss considers all future losses for a specific hazard type resulting from possible hazard events with different magnitudes and return periods averaged on a "per year" basis. Like other loss estimates, AAL is an estimate based on available data and models. Therefore, the actual loss in any given year can be substantially higher or lower than the estimated annualized loss. (FEMA)

Base Flood Elevation (BFE): The computed elevation to which floodwater is anticipated to rise during the base flood. BFEs are shown on FIRMs and on the Flood Profiles in the FIS report. The BFE is a regulatory requirement for the elevation or flood proofing of structures. The relationship between the BFE and a structure's elevation determines the flood insurance premium. (FEMA)

Base Level Engineering (BLE): A watershed-wide engineering modeling method that uses high-resolution ground topography, automated model building techniques, and manual model review. BLE allows an engineer to perform large-scale modeling at a fraction of the effort. BLE provides modeling needed to assess unknown and unverified flood hazard areas. (FEMA)

Coordinated Needs Management Strategy (CNMS): A FEMA Geographic Information System (GIS) tool that identifies and tracks the lifecycle of mapping requests and needs for the flood hazard mapping program. (FEMA)

Dam: An artificial barrier that has the ability to impound water, wastewater, or any liquid-borne material, for the purpose of storage or control of water. (Federal Energy Regulatory Commission)

Declared Disaster: Local and state governments share the responsibility for protecting their citizens and for helping them recover after a disaster strikes. In some cases, disasters are beyond the capabilities of local, state, and tribal governments. In 1988, the Stafford Act was enacted to support local, state, and tribal governments and their citizens when disasters overwhelm and exhaust their resources. This law, as amended, established the process for requesting and obtaining a Presidential Emergency or Disaster Declaration, defined the type and scope of assistance available from the

Federal Government, and set the conditions for obtaining assistance. Steps for a Disaster Declaration include: (1) Local government responds, supplemented by neighboring communities and volunteer agencies. (2) If the local government is overwhelmed, the State responds, (3) Damage assessments are completed to determine total losses and recovery needs, (4) Disaster Declaration is requested by the governor of the state or by a tribal Chief Executive Officer (CEO), (5) Based on damage assessments, FEMA evaluates the request, and then (6) the President approves or denies the request. (FEMA)

Detailed Study: A flood hazard mapping study done using hydrologic and hydraulic methods that produce BFEs, floodways, and other pertinent flood data. Detailed study areas are shown on the FIRM as Zones AE, AH, AO, AR, A99, A1-A30, and in coastal areas Zones V, VE, and V1-30. (FEMA)

Flood Insurance Rate Map (FIRM): The official map of a community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community. (FEMA)

Flood Insurance Study (FIS): A compilation and presentation of flood risk data for specific watercourses, lakes, and coastal flood hazard areas within a community. When a flood study is completed for the NFIP, the information and maps are assembled into an FIS. The FIS report contains detailed flood elevation data depicted in flood profiles and tables. (FEMA)

Hazard Mitigation Grant Program (HMGP): The HMGP provides grants to states or tribes and local governments (as sub-grantees) to implement long-term hazard mitigation measures after a major disaster declaration. Each state or tribe (if applicable) administers the HMGP in its jurisdiction. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Individual homeowners and businesses may not apply directly to the program; however, an eligible applicant or sub-applicant may apply on their behalf. (FEMA)

HUC (Hydrologic Unit Code): The United States Geological Survey (USGS) divides and subdivides the area of the United States into successively smaller hydrologic units, which are classified into four levels: regions, sub-regions, accounting units, and cataloging units. The hydrologic units are arranged or nested within each other, from the largest geographic area (regions) to the smallest geographic area (cataloging units). Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to eight digits based on the four levels of classification in the hydrologic unit system. (USGS)

Hydraulics: The science that deals with fluids in motion and is used to determine how a quantity of water will flow through a channel or floodplain. For purposes of floodplain analysis, hydraulics is the study of floodwaters moving through the stream and the floodplain. (FEMA)

Hydrology: The science that encompasses the occurrence, distribution, movement, and properties of the waters of the earth and their relationship to the environment within each phase of the hydrologic

cycle. The water cycle or hydrologic cycle, is a continuous process by which water is purified by evaporation and transported from the earth's surface (including the oceans) to the atmosphere and back to the land and oceans. (USGS)

Letter of Map Amendment (LOMA): A LOMA is an official amendment, by letter, to an effective NFIP map. A LOMA establishes a structure and/or property's location in relation to the Special Flood Hazard Area (SFHA). LOMAs are usually issued because a structure and/or property has been inadvertently identified as being in the floodplain but is on natural high ground above the BFE or outside of the mapped floodplain as shown on the FIRM. Because a LOMA officially amends the effective NFIP map, it is a public record that the community must maintain. Any LOMA should be noted on the community's master flood map and filed by FIRM panel number in an accessible location. (FEMA)

Letter of Map Change (LOMC): A general term used to refer to the several types of revisions and amendments to FEMA maps that can be accomplished by letter. They include LOMAs, Letters of Map Revision (LOMRs), and Letters of Map Revision based on Fill (LOMR-Fs). (FEMA)

Letter of Map Revision (LOMR): FEMA's modification to an effective FIRM. LOMRs are generally based on the implementation of physical measures that affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodway, the effective BFEs, and/or the SFHA. The LOMR officially revises the FIRM and associated tables/Flood Profiles as applicable in the FIS report. (FEMA)

Letter of Map Revision Based on Fill (LOMR-F): A LOMR-F is FEMA's modification of the SFHA shown on the FIRM based on the placement of fill outside the existing regulatory floodway. (FEMA)

Levee: A man-made structure designed to contain or control the flow of water. Levees are constructed from earth, compacted soil, or artificial materials, such as concrete or steel. To protect against erosion and scouring, earthen levees can be covered with grass and gravel or hard surfaces like stone, asphalt, or concrete. (FEMA)

Mitigation: Any cost-effective action taken to eliminate or reduce the long-term risk to life and property from natural and technological hazards, including, but not limited to, flooding. Flood mitigation measures include elevation, flood proofing, relocation, demolition, or any combination thereof. (FEMA)

Repetitive Loss (RL) Property: An RL property is any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling ten-year period since 1978. An RL property may or may not be currently insured by the NFIP. (FEMA)

Risk Mapping, Assessment, and Planning (Risk MAP) Program: The FEMA program that provides communities with flood risk information and tools to support mitigation planning and risk reduction actions. (FEMA)

Special Flood Hazard Area (SFHA): SFHAs are high-risk areas subject to inundation by the base (1-percent-annual-chance) flood; they are also referred to as 1-percent-annual-chance floodplains, base floodplains, or 100-year floodplains. (FEMA)

Stakeholder: An individual or group that has an interest in a decision or proposed action. A stakeholder may have none, one, or more of the following roles: has authority or decision-making power over some aspect of the project, is affected by the outcome of the project, will be a part of implementing the project, and/or can stop or delay the project (through litigation or other means). A project may have multiple stakeholders, and these stakeholders often have conflicting interests and want competing outcomes. (FEMA)

Watershed: A watershed is a basin-like landform defined by highpoints and ridgelines that descend into lower elevations and stream valleys. A watershed carries water from the land after rain falls and snow melts. Drop by drop, water is channeled into soils, aquifers, creeks, and streams, making its way to larger rivers and eventually the sea. (Watershed Atlas)

Appendix IV: Endnotes

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