



Attachment 4

Pre-Disaster Mitigation Plan

SMITHFIELD

Analysis of hazard risk involving the community of Smithfield revealed that there is potential risk resulting from **earthquakes, flood, steep slopes and wildfire**. These hazards have varying potential to impact life, property, infrastructure, agriculture, and environmental features within the municipal boundary. See *the following tables* for more detailed descriptions of potential losses associated with each natural hazard analyzed in the risk assessment.

Table 87: Smithfield Potential Loss Figures

Natural Hazards

Current Development

Earthquake. Hazard mapping identifies several structures and infrastructure at risk from surface fault rupture. There are two forks of the fault damage zone that run parallel along the eastern bench of the Cache-Wasatch Mountains. This threatens development along the jurisdiction’s far eastern boundary, and also along the secondary fault line that bisects the area between U.S. 91/Main Street and the eastern boundary of the jurisdiction.

Smithfield, UT, Residential & Commercial Development at Risk						
Hazard Type	~Residents at Risk*	Residential Units at Risk		Commercial Units at Risk		
		# Units	\$ Value**	# Units	\$ Value**	\$ Potential Revenue Loss***
Dam Failure	0	0	0	0	0	0
Faults	1,160	358	85,751,065	2	386,861	1,377,434
Wildfire	6,600	2,037	371,562,670	40	14,372,411	27,548,680
Flood	632	195	38,263,597	11	2,309,198	7,575,887
Liquefaction	0	0	0	0	0	0
Landslide	19	6	1,705,658	0	0	0
Slope	382	118	29,701,233	0	0	0
Poorly Drained Soils	0	0	0	0	0	0

* Based on average persons per owner household for Cache County from 2013 American Community Survey, which is 3.24.
 ** Current Market Value per parcel, including building and land values. Data was provided by Cache County IT personnel.
 *** Based on average sales, receipts, or value of shipments of firms with or without paid employees, per firm (\$688,717 per firm). Derived from 2007 Survey of Business Owners for Cache County, US Census Bureau.

Smithfield, UT, Infrastructure at Risk										
Hazard Type	Infrastructure at Risk									
	Railroad Lines		Natural Gas Lines		Electrical Power lines		Roads		Canals	
	# of Miles	\$ Value¹	# of Miles	\$ Value²	# of Miles	\$ Value³	# of Miles	\$ Value⁴	# of Miles	\$ Value⁵
Dam Failure	0	0	0	0	0	0	0	0	0	0
Faults	0	0	0	0	0	0	7.51	3,942,750	1.61	2,415,000
Wildfire	0.55	825,000	0	0	0.02	2,540	13.68	7,182,000	7.89	11,835,000
Flood	0.15	225,000	0.09	126,000	0	0	3.99	2,094,750	3.42	5,130,000
Liquefaction	2.86	4,290,000	0	0	0.42	53,340	63.91	33,552,750		0
Landslide	0	0	0	0	0	0	0.07	36,750	0	0
Slope	0	0	0	0	0.09	11,430	1.07	561,750	0.51	765,000
Poorly Drained Soils	0	0	0	0	0	0	0	0	0	0

¹ Based on figures from 2009 Pre-Disaster Mitigation Plan for Bear River Region, Utah.

² Based on average replacement cost estimates for gas lines ranging from 2-inches-20 inches in diameter. These cost are based solely on labor and material costs, and may vary based on time, scope, and site specific variations (Questar, May 2015).

³ Based on estimates from Logan Light and Power, 2015.

⁴ Based on estimates derived from an average 28' wide, 4" thick asphalt county road with gravel subgrade replacement. Cache County, 2015.

⁵ Based recent Cache County and regional project cost estimates, 2015.

Smithfield, UT, Critical Facilities at Risk					
Hazard Type	Critical Facilities Types				
	Emergency Services/Law Enforcement	Schools/Public Facilities	Health Care Facilities	Places of Worship	Infrastructure
Dam Failure					
Faults				1 place of worship	
Wildfire	Smithfield Fire and EMS, Smithfield Fire Department, Smithfield Police		Smithfield Clinic, Summit Clinic	1 place of worship	7 broadband anchors
Flood					
Liquefaction	Smithfield Police Department, Smithfield Fire and EMS, Smithfield Fire Department	Birch Creek Elementary, Sunrise School, Sky View High, Summit School	Smithfield Health Clinic, Summit Clinic	9 places of worship	15 broadband anchors, 1 dam
Landslide					
Slope					1 dam
Poorly Drained Soils					

Note: Critical facilities were identified using multiple data sources including: Utah AGRC, UDOT, Utah Division of Water Resources, and public and community leader input.

Smithfield, UT, Agricultural Features at Risk					
Hazard Type	Lands at Risk			Farms & Barns****	
	Agriculture Production*	Farm Land**	Grazing***	Century Farms	Historic Barns
	# of Acres			# of Farms	# of Barns
Dam Failure	0	0	0	0	0
Faults	105.82	396.17	0	0	0
Wildfire	56.03	888.8	0	0	1
Flood	14.93	156.9	0	0	0
Liquefaction	0	0	0	0	0
Landslide	0	1.68	0	0	0
Slope	54.44	0	0	0	0
Poorly Drained Soils	0	0	0	0	0

* Lands that are currently associated with agricultural activities involving water related land use, as described in the 2007 Utah Division of Water Resources, *Water Related Land Use* dataset.
 **Lands that are suitable for farming purposes based on soil type and composition, as describe in the 2013 Natural Resource Conservation Service, SSURGO datasets.
 *** Lands currently associated with grazing allotments identified as part of the Grazing Improvement Program (Utah AGRC, 2012)
 **** Based on data compiled by the Bear River Association of Governments.

Smithfield, UT, Environmental & Recreational Features at Risk						
Hazard Type	Environmental Features at Risk			Recreational Features at Risk		
	Wetland/ riparian	Lakes	Streams	Parks	Trails	Amenities
	# of Acres		# of Miles	# of Acres	# of Miles	# of Amenities
Dam Failure	0	0	0	0	0	0
Faults	1.25	1.25	2.38	14.23	0	0
Wildfire	2.4	1.14	3.71	66.62	0	0
Flood	5.28	0	3.57	0	0	0
Liquefaction	0	0	0	63.37	0	0
Landslide	0	0	0.06	0	0	0
Slope	0	0.3	0.67	14.24	0.03	0
Poorly Drained Soils	0	0	0	0	0	0

Note: Total acres of land and miles of streams and trails were identified using multiple datas sources including: Utah AGRC, U.S. Fish and Wildlife Service, U.S. Forest Service, U.S. Geological Survey, Utah Division of Water Resources, and public and community leader input.

Flood. Hazard mapping identifies several residential structures and infrastructure at risk from flooding in the 100 year floodplain. There are over 200 structures in the floodplain, with the majority in the Summit Creek drainage through the middle of town. However, in post-settlement history the impacts to Smithfield residences have been minimal from Summit Creek. During the 1983 flooding that impacted nearly the whole state; Smithfield did experience some rising flows in Summit Creek that were contained by sandbagging. There are also some structures in the floodplain in the drainage north of Saddleback Road.

Steep Slopes. Hazard mapping identifies significant risk from steep slopes in much of the jurisdiction's eastern bench area. There are also steep slope risks that extend into the jurisdiction on both sides of the Smithfield Canyon/Summit Creek drainage.

Wildfire. Hazard mapping identifies moderate-to-high wildfire risk areas along the jurisdiction's eastern bench and extending into the urban canopy.

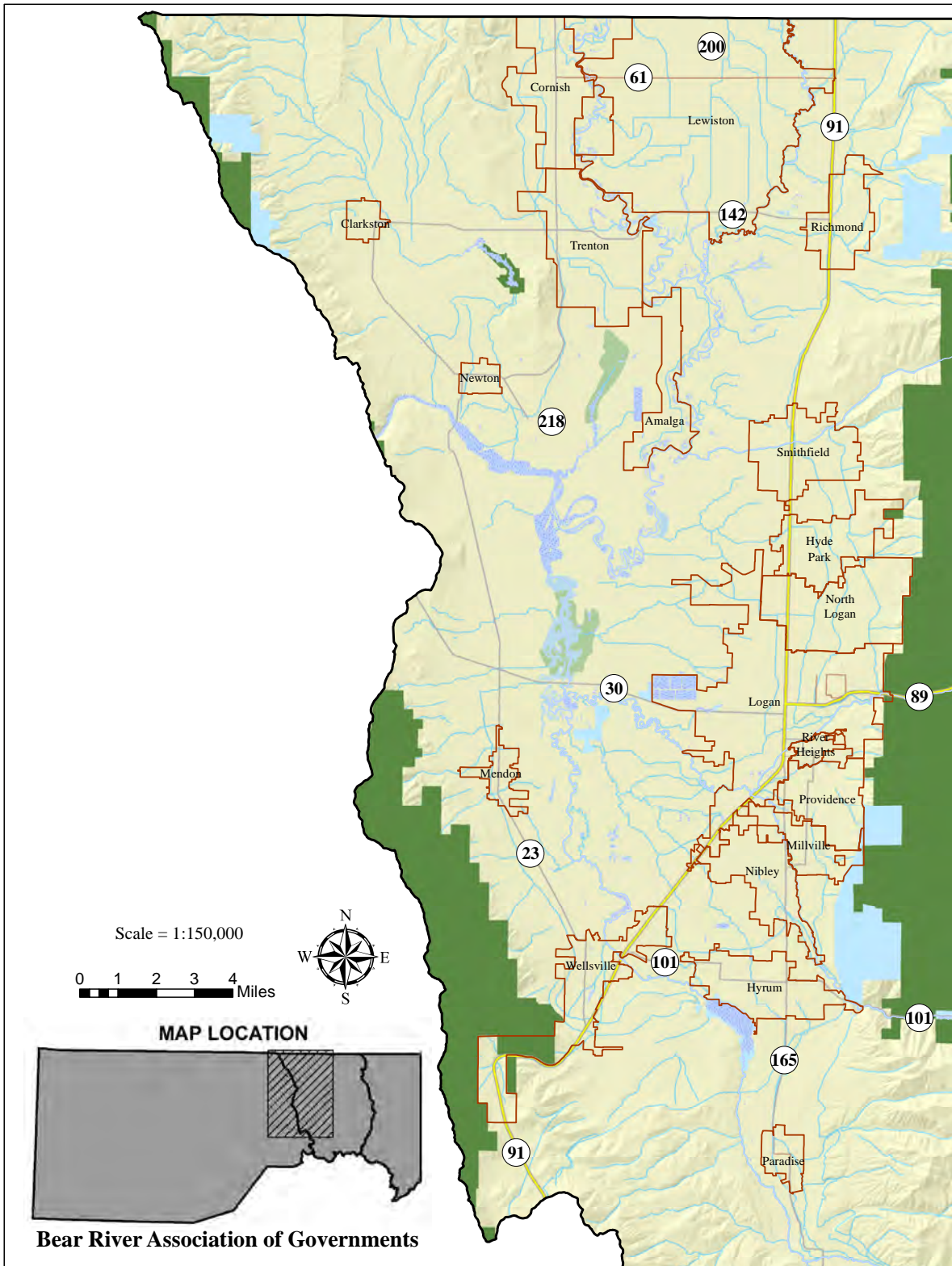
Future Development

No concerns involving potential future development within Smithfield were reported by city representatives.

Hazard Mitigation Strategies

Table 88: Smithfield City Mitigation Strategies

SMITHFIELD - COMMUNITY MITIGATION STRATEGIES										
Protecting Current Residents and Property										
Jurisdiction	Hazard	Goal	Action	Action (For NFIP Compliance, if Applicable)	Priority (High, Medium, Low)	Time-frame (Year)	Potential Funding Sources	Responsible Entity	Estimated Cost	Resources
Smithfield	Wildfire	Protect current residents and property	Identify, map, and assess potential wildfire hazard areas.	N/A	Medium	2020	CIB, City	Smithfield, Utah FFSL	\$3,000	City Fire Agency, State Fire Marshal, FEMA
Smithfield	Flooding	Protect current residents and property	Increase awareness of floodplain and erosion risk areas within the city.	N/A	High	2017	City	Smithfield, Utah DEM	\$2,000	City, Geologic Survey, USU
Smithfield	Earthquake	Protect current residents and property	Update ordinances, planning and city codes to reduce earthquake risks.	N/A	Medium	2018	City	Smithfield, UGS	\$1,000	City, FEMA, ICC
Smithfield	Landslide	Protect current residents and property	Update city ordinances to mitigate development in landslide hazard areas.	N/A	Medium	2020	CIB, City	Smithfield, UGS	\$1,500	Geologic Survey, Utah State University, State of Utah
Smithfield	Drought	Protect current residents and property	Update city ordinance to encourage drought tolerant landscaping	N/A	Medium	2018	City, DWQ, CIB	Smithfield, Utah Climate Center, USU	\$2,000	City, DWQ, RWAU
Smithfield	Drought	Protect current residents and property	Monitoring the water supply and its functions can save water in the long run through creating a drought ordinance.	N/A	High	2017	City, CIB or DWQ	Smithfield, Utah Climate Center, USU	\$2,000	City RWAU, CIB, DWQ
SMITHFIELD - COMMUNITY MITIGATION STRATEGIES										
Protecting Future Residents and Property										
Jurisdiction	Hazard	Goal	Action	Action (For NFIP Compliance, if Applicable)	Priority (High, Medium, Low)	Time-frame (Year)	Potential Funding Sources	Responsible Entity	Estimated Cost	Resources
Smithfield	Wildfire	Protect future residents and property	Update city ordinances to create a wildfire overlay zone including special conditions for developments in these areas.	N/A	Medium	2025	CIB, City, FEMA	Smithfield, Utah FFSL	\$2,000	FEMA, City, State Fire Marshal, City Fire Department
Smithfield	Flooding	Protect future residents and property	Update, enforce and follow the cities general plan to reduce development in the flood plain.	N/A	High	2016	CIB, City	Smithfield, Utah DEM	\$40,000	CIB, City
Smithfield	Earthquake	Protect future residents and property	Adopt and enforce building codes to reduce earthquake damage to structures.	N/A	High	2016	City	Smithfield, UGS	\$1,500	City, ICC
Smithfield	Landslide	Protect future residents and property	Improve data and mapping of landslide areas located in the city.	N/A	Medium	2020	City, State of Utah, CIB	Smithfield, UGS	\$10,000	Geologic Survey, Utah State University, State of Utah
Smithfield	Drought	Protect future residents and property	Update ordinance and general plan to require a percentage of landscaping to be low water use or xeriscaping.	N/A	High	2020	City, DWQ, RWAU, Irrigation Companies	Smithfield, Utah Climate Center, USU	\$5,000	City, CIB, DWQ, RWAU
Smithfield	Drought	Protect future residents and property	Update subdivision regulations to encourage or require new developments to utilize secondary water.	N/A	High	2018	City	Smithfield, Utah Climate Center, USU	\$1,500	City, RWAU, DWQ



Bear River Association of Governments



Data Source: County and municipal boundaries, roads, streams, and lakes maintained by Utah AGRC. Land ownership layer from Utah School & Institutional Trust Lands Administration (SITLA), 2010.

The information on this map was derived from digital databases by BRAG GIS. Care was taken in the creation of this map but is provided "as is." BRAG cannot accept any responsibility for any errors, omissions, or positional accuracy, and therefore, there are no warranties which accompany this product. Although information from land surveys may have been used in the creation of this product, in no way does this product represent a land survey. Users are cautioned to field verify information in this product before making any decisions.

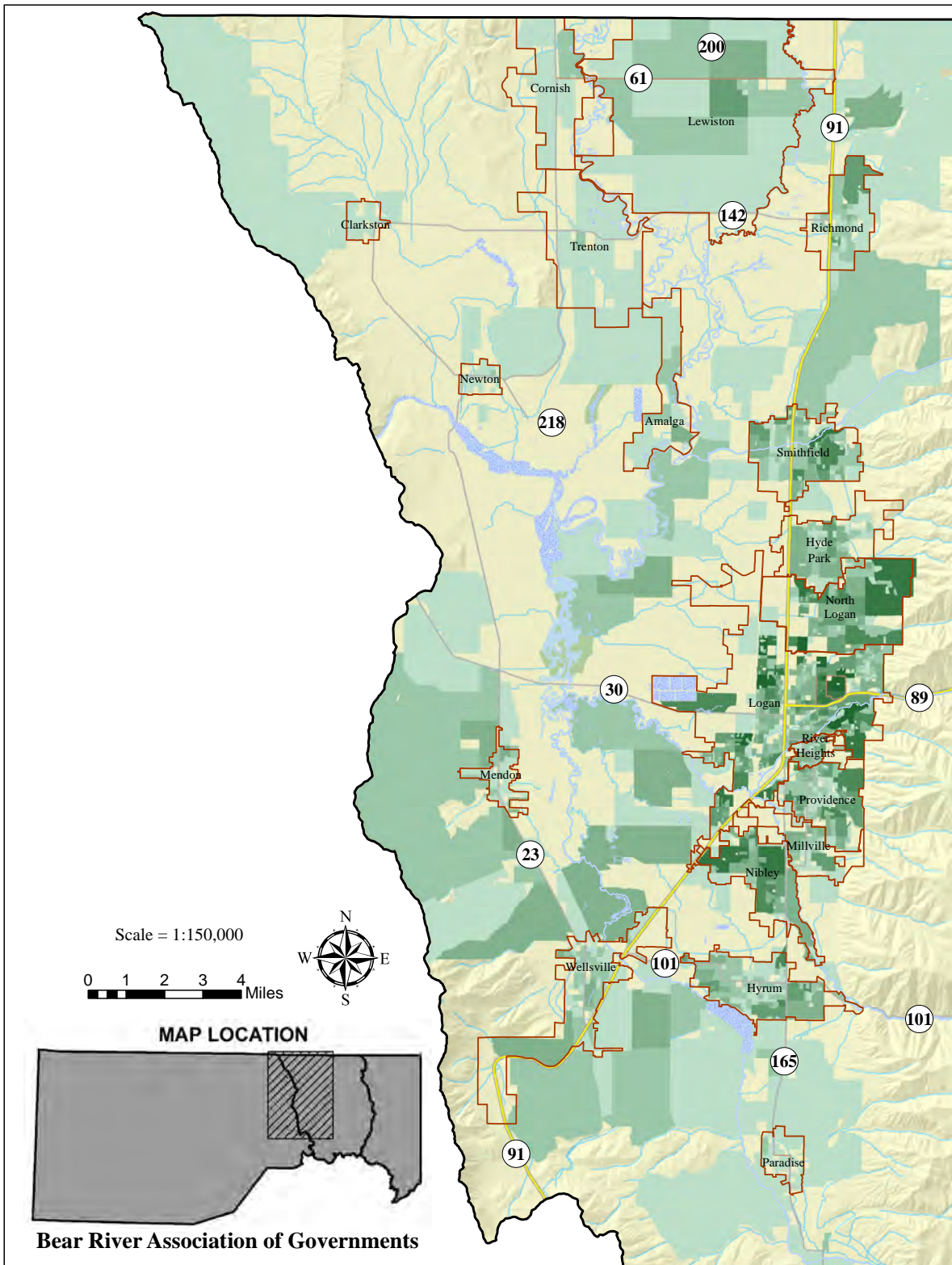
Legend

- County Boundary
- Municipal Boundaries
- Major Roads
- Streams
- Lakes

Land Ownership

- Private
- State Lands
- Federal Lands

CACHE COUNTY - Land Ownership



Bear River Association of Governments



Data Source: County and municipal boundaries, roads, streams, and lakes maintained by Utah AGRC. County population was derived from US Census Bureau, 2010.

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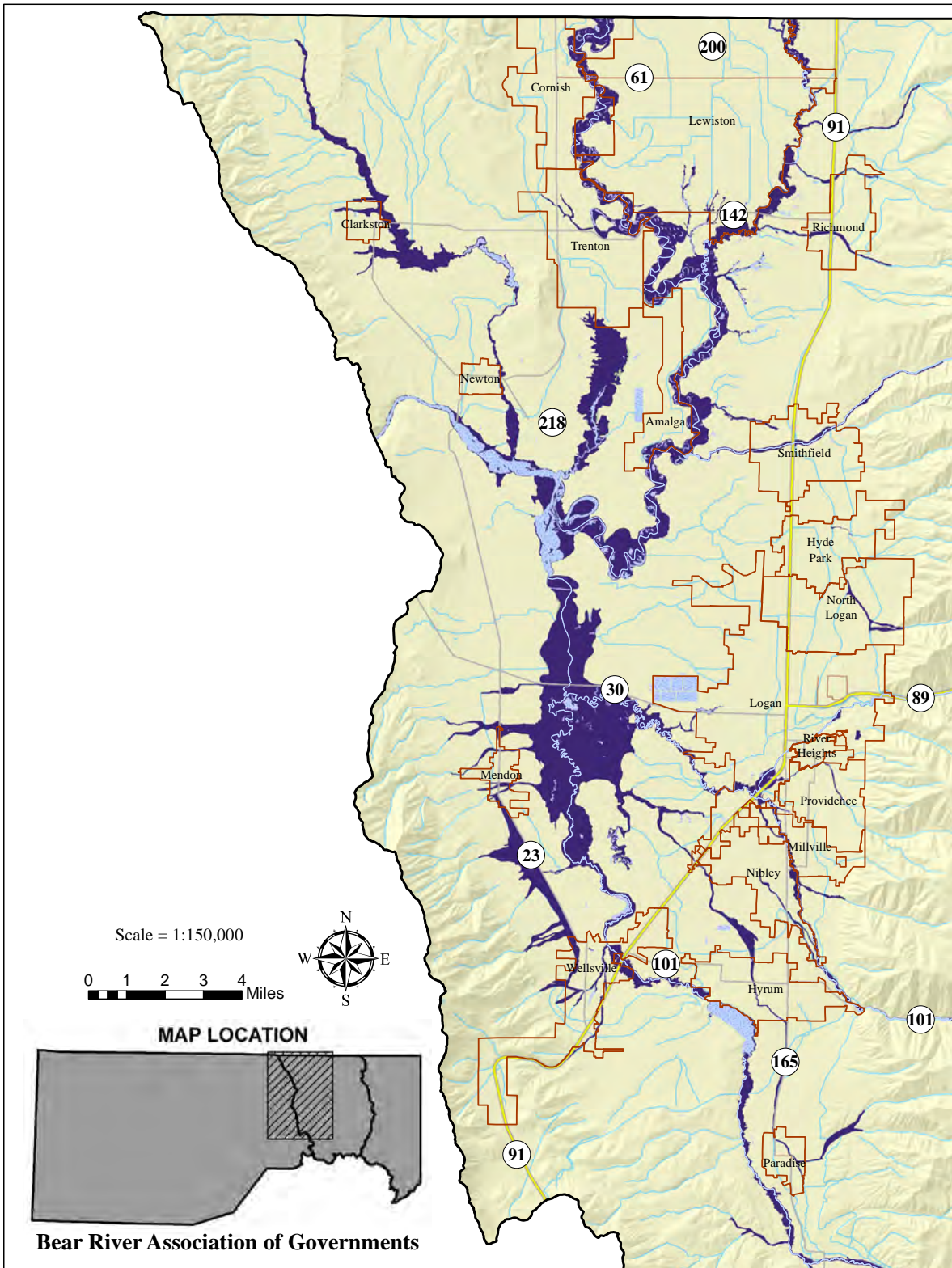
- County Boundary
- Municipal Boundaries
- Major Roads
- Streams
- Lakes

Population Density

*Persons per census block

- 0 - 15
- 15 - 44
- 44 - 83
- 83 - 143
- 143 - 229
- 229 - 357
- 357 - 605
- 605 - 1067

CACHE COUNTY - Population Density



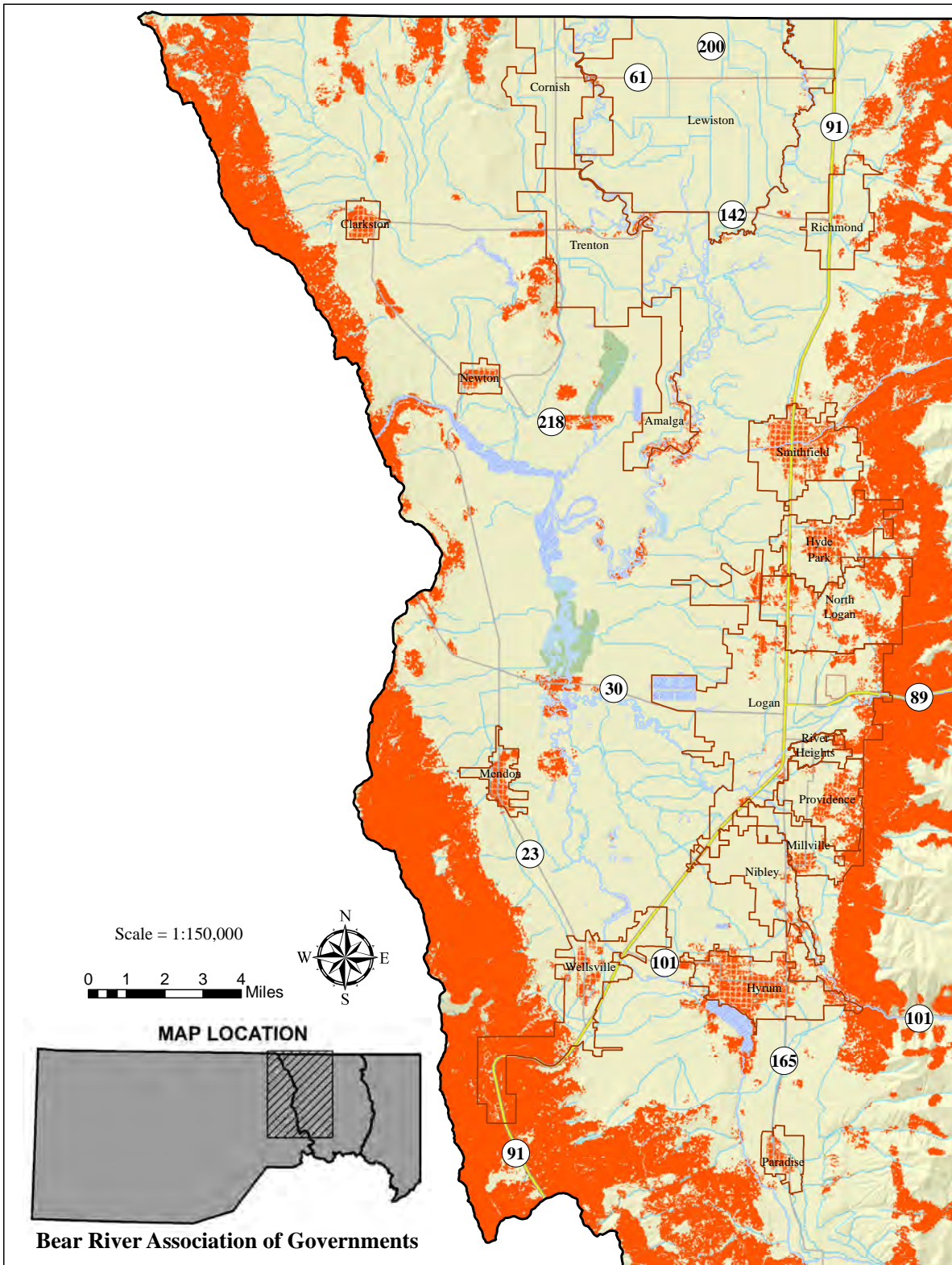
Data Source: County and municipal boundaries, roads, streams, and lakes maintained by Utah AGRC. Flood layer digitized from FEMA FIRM maps, 2010.

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Legend

- County Boundary
- Municipal Boundaries
- Major Roads
- Streams
- Lakes
- FEMA Flood Zone

CACHE COUNTY - FEMA Flood Zone



Bear River Association of Governments



Data Source: County and municipal boundaries, roads, streams and lakes maintained by Utah AGRC. Fire hazard data from the Oregon Department of Forestry study "West Wide Wildfire Risk Assessment, 2013". Combines moderate to high wildfire risk based on the Fire Risk Index (FRI).

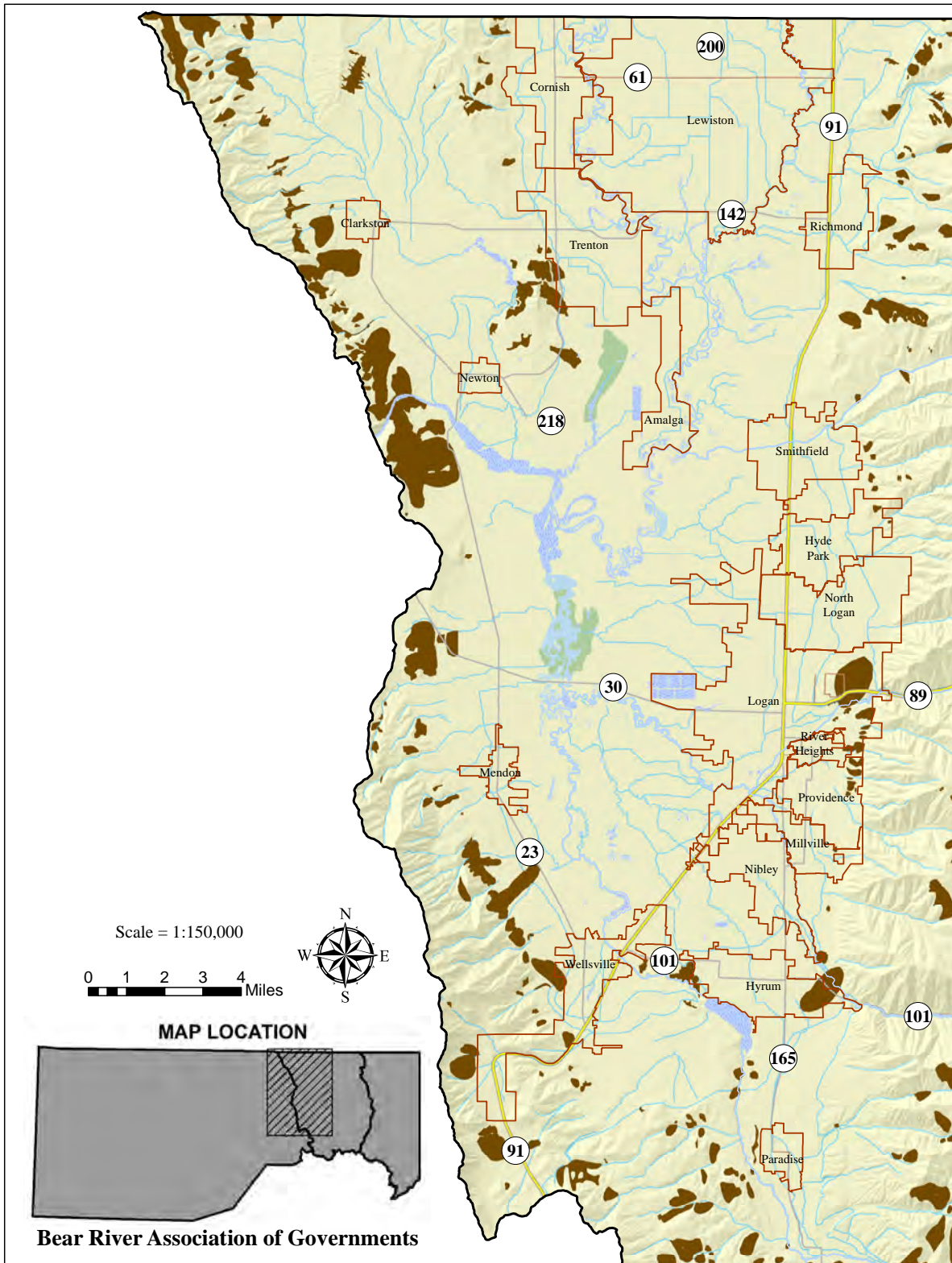
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- Legend**
- County Boundary
 - Municipal Boundaries
 - Major Roads
 - Streams
 - Lakes

Fire Risk

- Moderate to High

CACHE COUNTY - Wildfire Hazard



Bear River Association of Governments



Data Source: County and municipal boundaries, roads, streams, and lakes maintained by Utah AGRC. Data obtained from the Utah Geological Survey showing landslide deposits, landslide scarps, and debris-flow travel paths, 2010.

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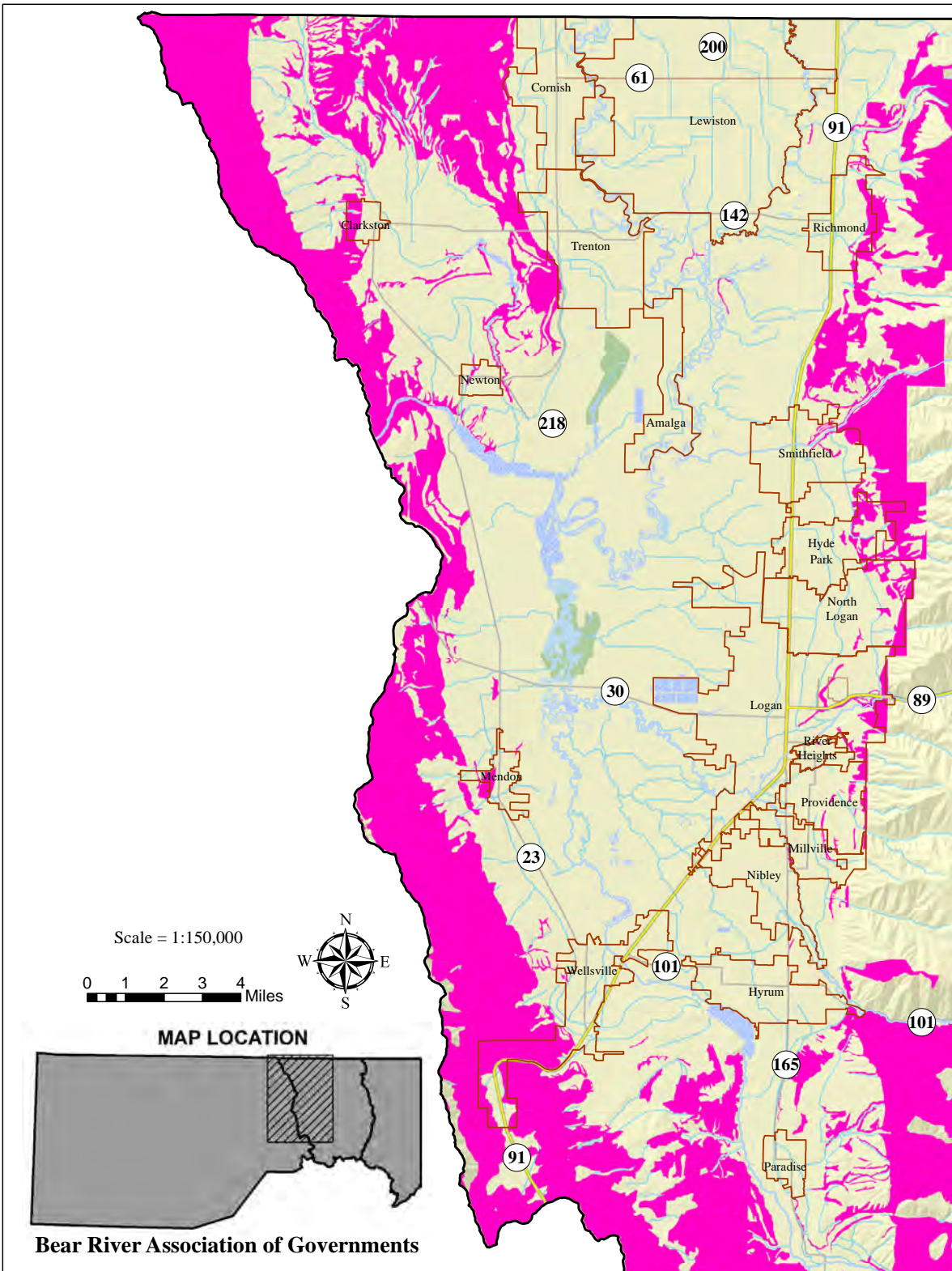
Legend

- County Boundary
- Municipal Boundaries
- Major Roads
- Streams
- Lakes

Landslides

- Deposits, scarps, and debris-flow travel paths

CACHE COUNTY - Landslides



Data Source: County and municipal boundaries, roads, streams, and lakes maintained by Utah AGRC. Step slopes derived from NRCS SSURGO Soils Database 2013 - 20% slope and higher.

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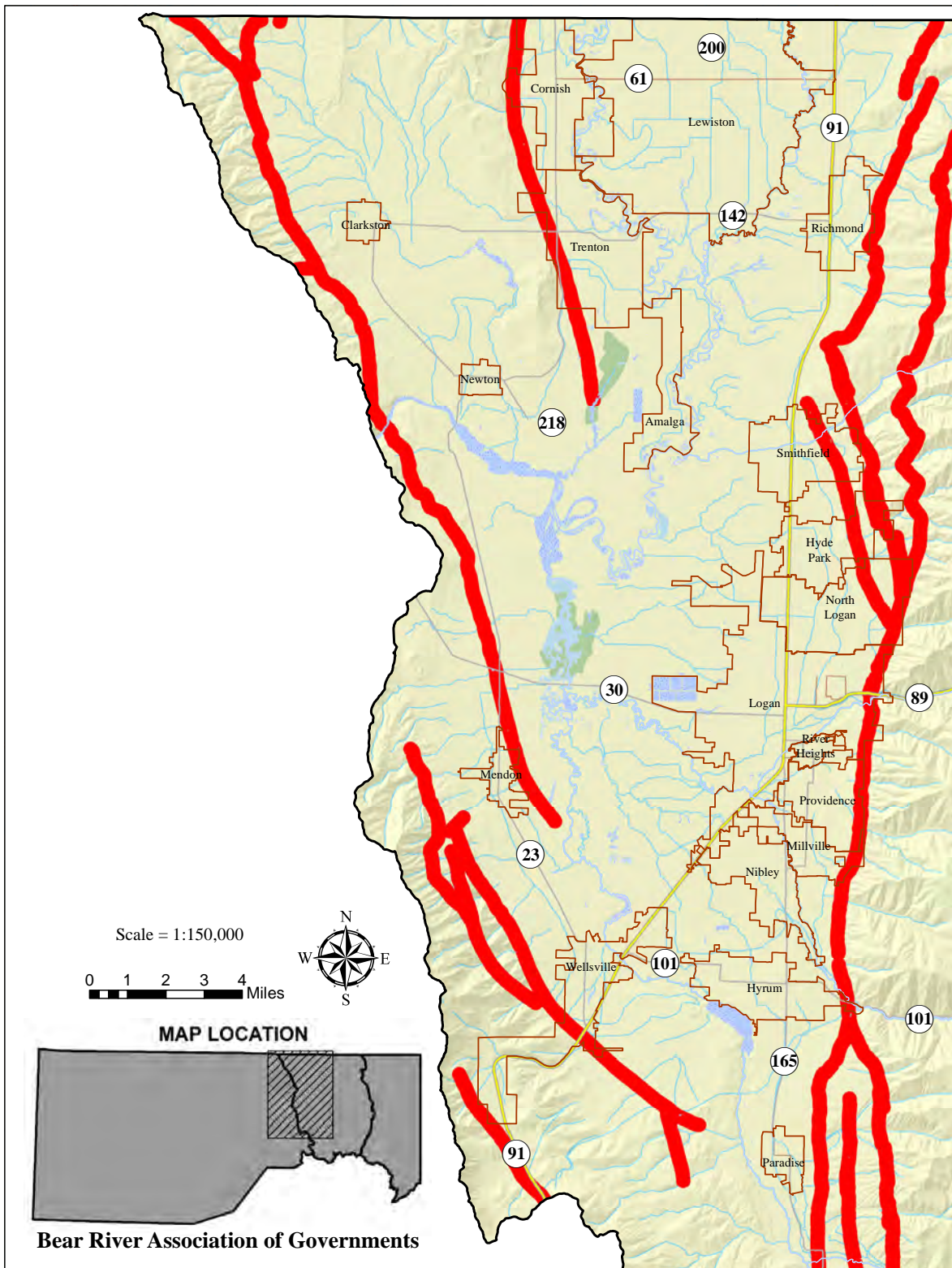
Legend

- County Boundary
- Municipal Boundaries
- Major Roads
- Streams
- Lakes

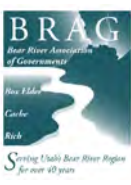
Step Slopes

- 20% slope and higher

CACHE COUNTY - Step Slopes



Bear River Association of Governments



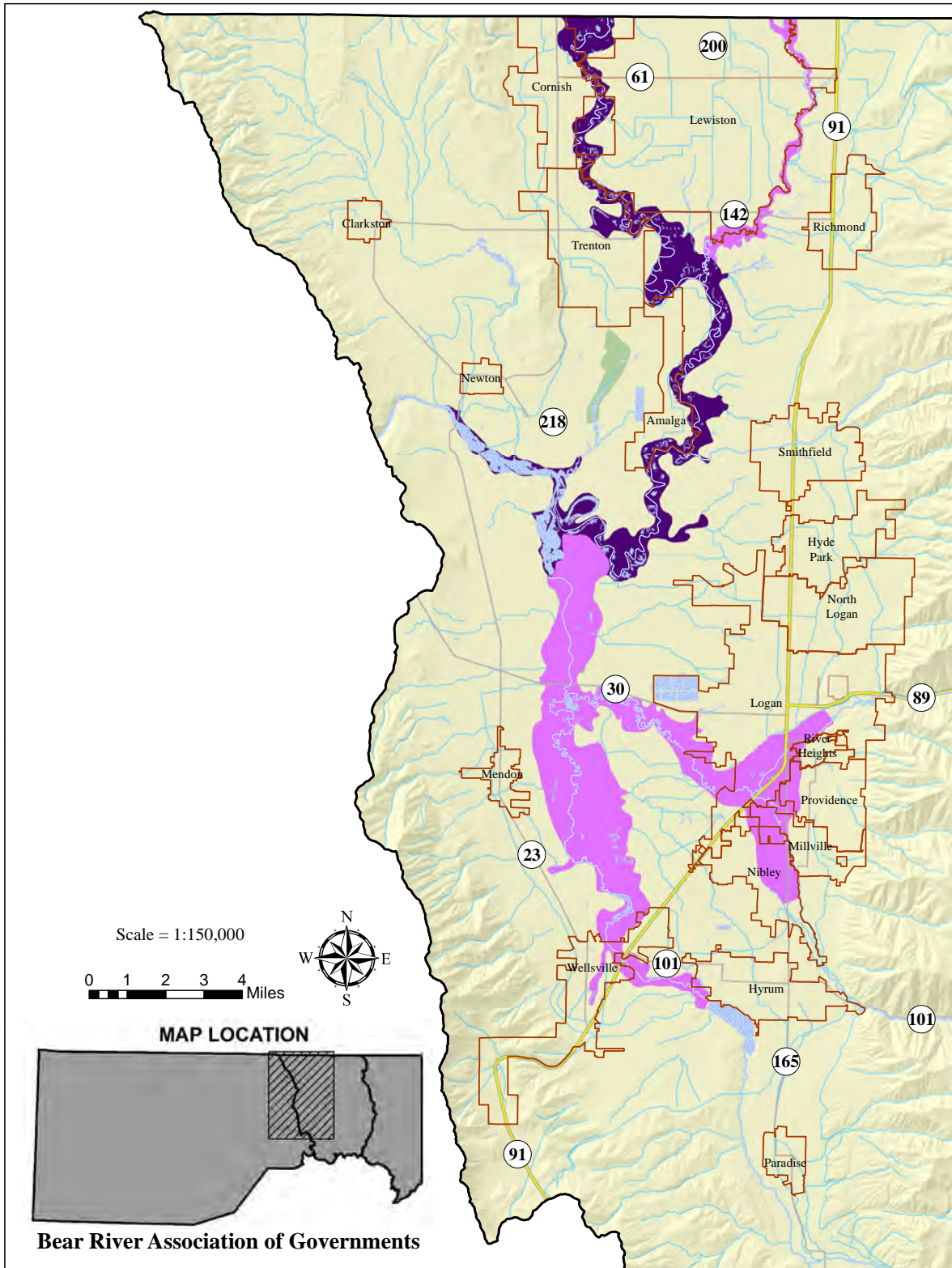
Data Source: County and municipal boundaries, roads, streams, and lakes maintained by Utah AGRC. Quaternary faults and folds were taken from the U.S. Geological Survey, 2004. Buffers of 1000 feet on both sides of faults/folds were considered damage zones for this analysis.

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Legend

- County Boundary
- Municipal Boundaries
- Major Roads
- Streams
- Lakes
- Quaternary Fault Damage Zones

CACHE COUNTY - Geological Faults



Data Source: County and municipal boundaries, roads, streams, and lakes maintained by Utah AGRC. Liquefaction potential was digitized and published by the Utah AGRC, 2001.

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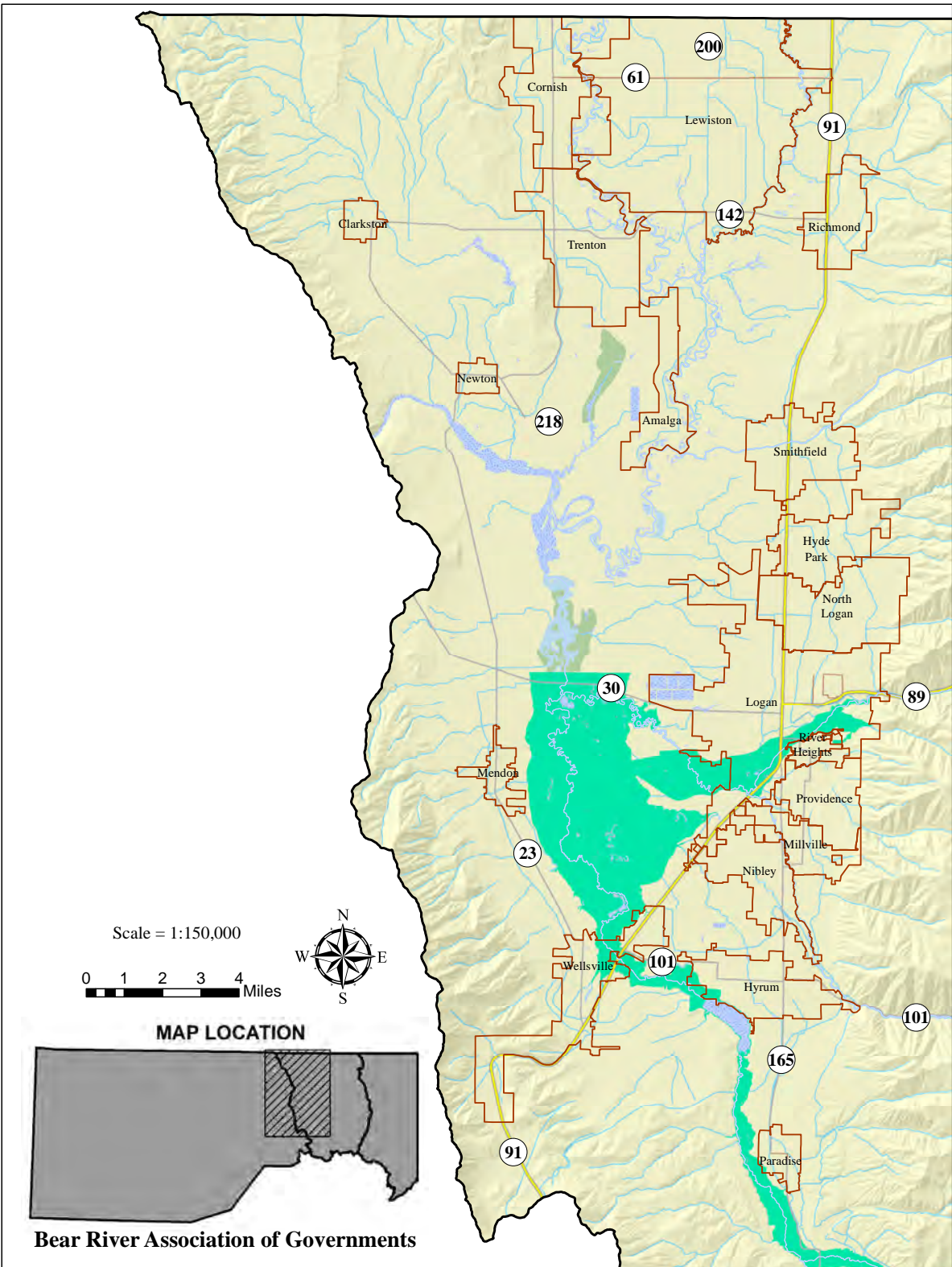
Legend

- County Boundary
- Municipal Boundaries
- Major Roads
- Streams
- Lakes

Liquefaction Potential

- Moderate to High
- High

CACHE COUNTY - Liquefaction Potential



Bear River Association of Governments



Data Source: County and municipal boundaries, roads, streams, and lakes maintained by Utah AGRC. Dam inundation areas provided by Utah Division of Water Rights, 2008.

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Legend

- County Boundary
- Municipal Boundaries
- Major Roads
- Streams
- Lakes

Dam Inundation Areas

- Probable Maximum Flood area resulting from complete dam failure.

CACHE COUNTY - Dam Failure