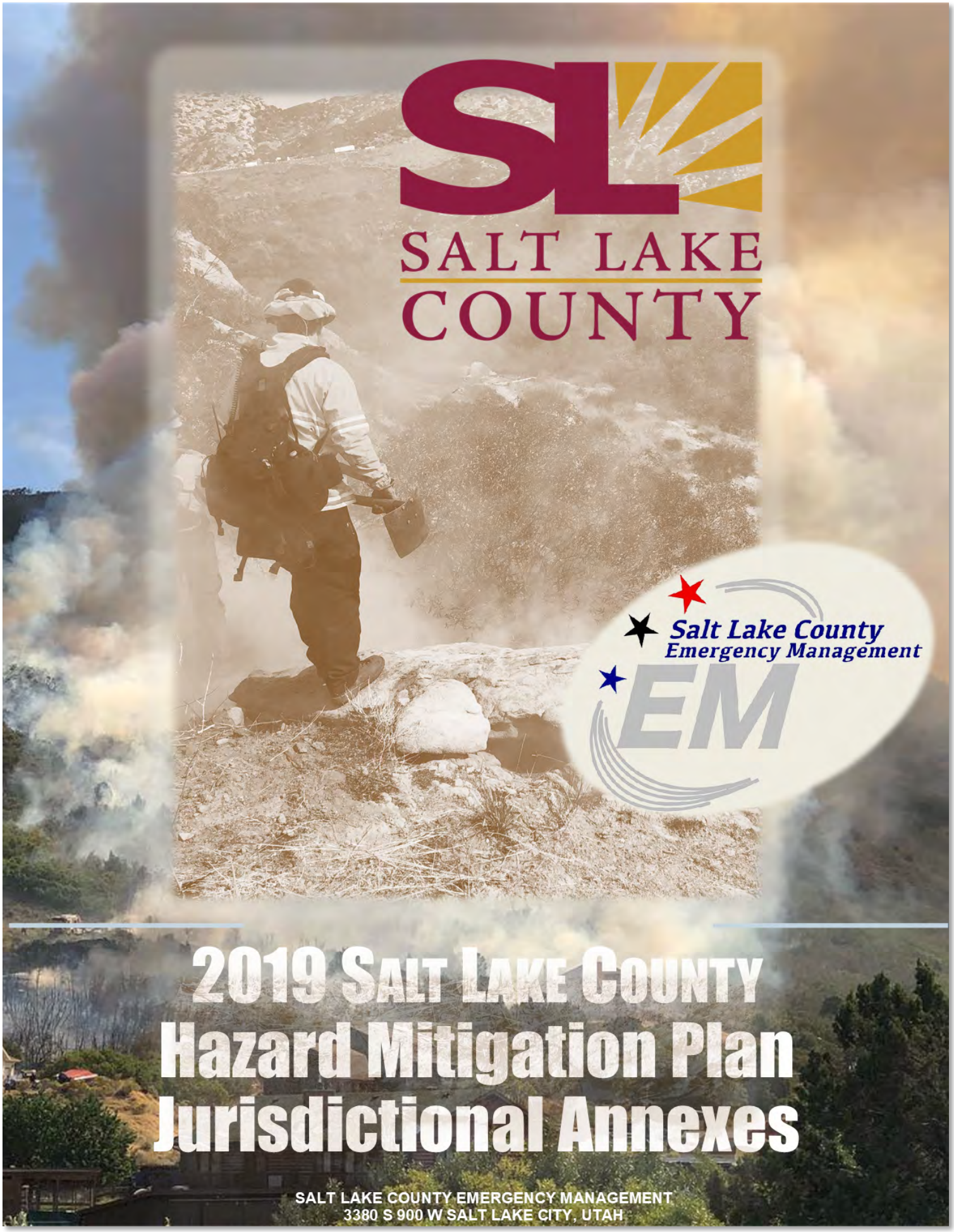


2019 Salt Lake County Hazard Mitigation Plan Jurisdictional Annexes

SALT LAKE COUNTY EMERGENCY MANAGEMENT
3380 S 900 W SALT LAKE CITY, UTAH

Contents

2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: Town of Alta

Hazard Mitigation Plan Point of Contact

Primary Point of Contact
Name: Chris Cawley Title: Emergency Manager Department: Alta Emergency Management Address: 10220 Little Cottonwood Canyon Rd, Alta, UT 84092 Office Phone: 801-363-5105 Cell Phone: 603-731-8074 Email Address: chris@townofalta.com Website: https://townofalta.com/

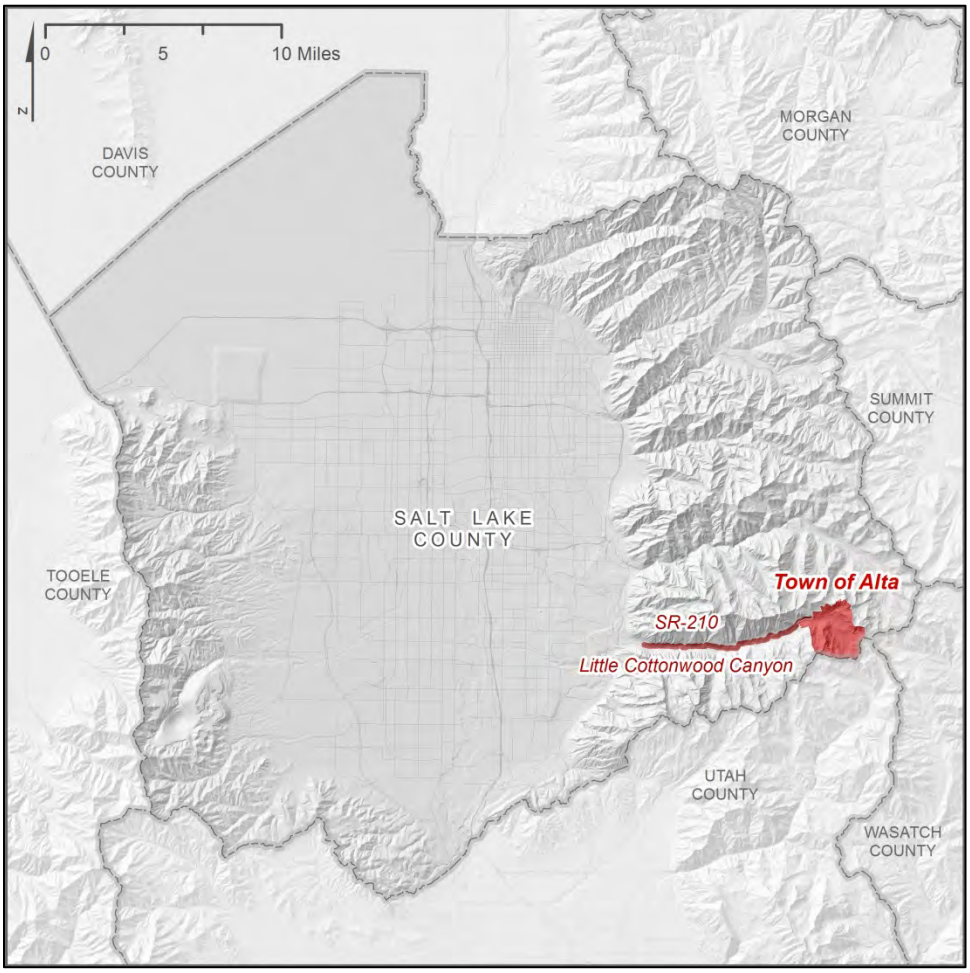
Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

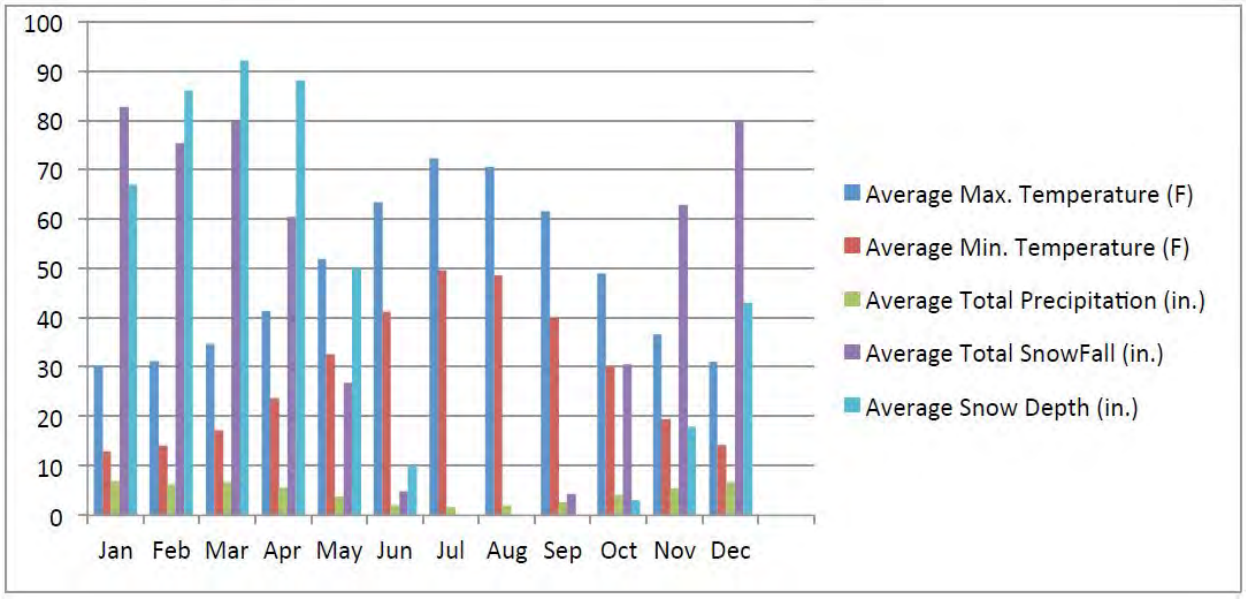
- **Date of Incorporatio**n: 1970
- **Current Population:** 383
- **Population Growth:** Alta's official census population has been quite stable over time and is not projected to increase substantially, as residential development is limited by US Forest Service (USFS) ownership of roughly 80% of land in Alta.
- **Location and Description:** The Town of Alta is located in the southeastern corner of Salt Lake County, at the top of Little Cottonwood Canyon in the central Wasatch Mountains. The boundaries of this tiny municipality generally traverse the alpine ridgelines at the head of a deep cleft in the Wasatch Front, encompassing 4.1 square miles of rugged mountainous terrain. Alta is most notably home to Alta Ski Area, and much of the land within the Town's jurisdiction is open space used by the ski area for commercial skiing. The western boundary of Alta is directly east of Snowbird Ski and Summer Resort, in unincorporated Salt Lake County. The highest elevation in the Town of Alta is 11,068' atop Mt. Baldy, and the center of town is roughly 8600' above sea level.
- **Brief History:** Alta was first inhabited in the 1860s after silver ore was discovered by early explorers. A period of economic growth followed in the 1870s when Alta was the site of one of the United States' most productive silver mines. Alta endured cycles of boom and bust consistent with its mining economy for decades, and suffered catastrophe from large fires and avalanches throughout its early history. In 1939, thanks in part to a tax-relief deal between one of the last miners in Alta and Salt Lake County for hundreds of acres to be donated to USFS, Alta Ski Area opened its first chairlift. Today Alta is world-famous for its high alpine scenery, its perfect ski terrain and natural snow, and its simple, rustic community vibe.
- **Climate:** Climate in Alta is characterized by a long snowy season between November and May, during which time an annual average of 500" of snowfall is measured at 9600' above sea level. Temperatures during this elongated "winter" season can reach well below 0° and severe storm cycles often persist for several days, featuring heavy snowfall and strong winds. Snow cover can linger on upper elevation slopes until August, although the months of June, July, August and September sometimes feature daytime high temperatures approaching 80°F. Summer weather in Alta is generally sunny and mild, although periods of monsoonal thunderstorm activity are not uncommon.
- **Governing Body Format:** The town is presided over by a 5 member town council. The mayor is the presiding member of the council and is the chief executive of the administration.

- **Development Trends:** Private property in Alta is largely "built out" under current zoning, although roughly 20 single family homes may be developed in the future. Alta Ski Area works with USFS to develop ski area facilities and may pursue additional commercial development in the future, although no substantial additional development is planned at this time.

Map: Town of Alta



Graph: Town of Alta Temperature, Precipitation, and Snow Depth



Capability Assessment

The town maintains a full-time staff of 12 and part-time staff of up to 7 individuals, depending on the season. The Assistant Town Administrator is the Town's designated Emergency Manager amongst numerous other responsibilities. Hazard Mitigation Planning efforts are led by the Assistant Town Administrator position and supported by the Town Marshal position.

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY				
	Local Authority Exists to Develop and Implement/ Enforce?	**A Jurisdiction-Specific Code, Ordinance and/or Requirement Currently Exists?**	**Rely on the County's Codes, Ordinances & Requirements**	**Comments**

Codes, Ordinances, & Requirements				
Building Code Development and Enforcement	Yes	Yes	No	The town applies the UT building code like every other local jurisdiction
Zonings Ordinance(s)	Yes	Yes	-	The town has its own zoning ordinance
Subdivision Ordinance(s)	Yes	Yes	No	The town applies some county regulations by reference
Stormwater Management Program	Yes	Yes	No	
Floodplain Ordinance(s)	N/A	No	-	There is a very small amount of identified floodplain in Alta, but it is assumed to be a mapping error.
Post Disaster Recovery Program and Ordinance(s)	Unsure	No	Yes	
Real Estate Disclosure Ordinance(s)	No	No	-	
Growth Management	Yes	-	-	
Site Plan Review Requirements	Yes	Yes	Yes	Various other agencies are involved in reviewing development site plans
Planning Documents				
General or Comprehensive Plan	Yes	Yes	No	
Capital Improvement Plan	Yes	Yes	No	The town is required by the state to have a plan in order to place funds in a capital account
Economic Development Plan	Yes	No	Yes	
Disaster Planning Documents				
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	Yes	No	The Town of Alta developed an EOP in 2011. It has not undergone a major update since that time.
Post-Disaster Recovery Plan	Yes	No	Yes	
Continuity of Operations Plan	Yes	No	Yes	
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter	Yes	Yes	No	The town is a key component in the UDOT

Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section				SR 210 Highway Avalanche Safety Plan.

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Yes

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	Full Time	Town Administrator, Assistant Town Administrator, Building Official (contract), engineering contractor
Engineers or professionals trained in building or infrastructure construction practices	Yes	Contractor	contract water/sewer system operators, contract for services of city engineer
Planners or engineers with an understanding of natural hazards	Yes	Full time, contractor	Administration and contract engineer
Personnel skilled or trained in GIS applications	Yes	Part Time	
Emergency manager	Yes	Part Time	EM is a part-time component of the Assistant Town Administrator position
Grant writers	Yes	Part Time	

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	Administration
Who is your jurisdiction's floodplain administrator? (department/position)	The town has not formally designated a floodplain administrator
Are any certified floodplain managers on staff in your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	No
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System (CRS)	No	-	-
Public Protection/ISO	Yes	3X	July 2015
NWS StormReady	No	-	-

Jurisdiction-Specific Hazards and Risks

NOAA Natural Hazards 2014-2019

The Natural Hazard Events Table lists all past occurrences of natural hazards within the jurisdiction from 2014-2019. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 0 policies were enforced (FEMA, 2019).
- The Town of Alta does participate in the National Flood Insurance Program (FEMA, 2019). The city will continue to participate in the NFIP through various efforts including but not limited to floodplain management, ordinance development and review, technical assistance, compliance inspections, and community education on flood hazards.

TABLE: RECENT NATURAL HAZARD EVENTS

(NOAA Data with additions from the jurisdiction representatives. Winter storm event data was included if the storm event produced more than 10 inches of snow in 12 hours.)

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Landslide	Debris flow on SR 210 down-canyon from Alta damaged roadway and utilities, resulting in restrictions on SR 210 for 2 days.		08/08/2019	No reported damages within Alta boundary
Landslide	Debris flow in the Culps/Emma Ridges area damaged USFS road providing access to "West Grizzly" homes, clogged culverts, debris on SR 210 within Alta.		08/03/2019	
Heavy Snow	19 inches of snow at Alta Ski Lifts		4/15/2019	
Heavy Snow	26 inches of snow at Alta Ski Lifts		4/6/2019	
Heavy Snow	24 inches of snow at Alta Ski Lifts		3/28/2019	
Heavy Snow	15 inches of snow at Alta Ski Lifts		3/23/2019	
Heavy Snow	32 inches of snow at Alta Ski Lifts		3/13/2019	
Winter Storm	35 inches of snow at Alta Ski Lifts		3/6/2019	
Heavy Snow	15 inches of snow at Alta Ski Lifts		3/1/2019	
Heavy Snow	16 inches of snow at Alta Ski Lifts		2/13/2019	
Heavy Snow	61 inches of snow at Alta Ski Lifts		2/3/2019	
Winter Storm	23 inches of snow at Alta Ski Lifts		1/21/2019	
Winter Storm	42 inches of snow at Alta Ski Lifts		1/16/2019	
Winter Storm	26 inches of snow at Alta Ski Lifts		1/5/2019	
Heavy Snow	24 inches of snow at Alta Ski Lifts		11/23/2018	
Winter Storm	26 inches of snow at Alta Ski Lifts		3/17/2018	
Winter Storm	30 inches of snow at Alta Ski Lifts		3/2/2018	
Heavy Snow	24 inches of snow at Alta Ski Lifts		2/18/2018	

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Winter Storm	18 inches of snow at Alta Ski Lifts		1/19/2018	
Winter Storm	20 inches of snow at Alta Ski Lifts		4/24/2017	
Winter Storm	26 inches of snow at Alta Ski Lifts		4/7/2017	
Winter Storm	15 inches of snow at Alta Ski Lifts		3/5/2017	
Winter Storm	22 inches of snow at Alta Ski Lifts		2/27/2017	
Winter Storm	45 inches of snow at Alta Ski Lifts		2/21/2017	
Winter Storm	Winds were strong through the storm, with peak recorded gusts of 76 mph at Alta Ski Area Alta - MT Baldy sensor.		2/6/2017	
Winter Storm	33 inches of snow at Alta Ski Lifts		1/22/2017	
Winter Storm	28 inches of snow at Alta Ski Lifts		1/20/2017	
Winter Storm	15 inches of snow at Alta Ski Lifts		1/3/2017	
Winter Storm	25 inches of snow at Alta Ski Lifts		1/1/2017	
Winter Storm	20 inches of snow at Alta Ski Lifts		12/23/2016	
Winter Storm	25 inches of snow at Alta Ski Lifts		12/15/2016	
Winter Storm	40 inches of snow at Alta Ski Lifts		11/27/2016	
Winter Storm	20 inches of snow at Alta Ski Lifts		3/13/2016	
Winter Storm	14 inches of snow at Alta Ski Lifts		1/29/2016	
Winter Storm	12 inches of snow at Alta Ski Lifts		12/24/2015	
Winter Storm	42 inches of snow at Alta Ski Lifts		12/21/2015	
Winter Storm	34 inches of snow at Alta Ski Lifts		12/13/2015	
Winter Storm	34 inches of snow at Alta Ski Lifts		4/14/2015	
Winter Storm	20 inches of snow at Alta Ski Lifts		3/2/2015	
Winter Storm	26 inches of snow at Alta Ski Lifts		1/12/2015	
Winter Storm	23 inches of snow at Alta Ski Lifts		12/28/2014	
Winter Storm	21 inches of snow at Alta Ski Lifts		12/25/2014	

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Winter Storm	28 inches of snow at Alta Ski Lifts		12/20/2014	
Winter Storm	30 inches in new snow		11/22/2014	Avalanche mitigation work resulted in an avalanche hitting a condominium and damaging an exterior deck.
High Wind	58 mph wind gusts were recorded at the base of Alta Ski Lifts. Near Alta Ski Lifts and Snowbird Ski and Summer Resort, multiple large trees were knocked down by these winds.		5/11/2014	$10,000 in property damage.
Winter Storm	28 inches of snow at Alta Ski Lifts		2/5/2014	
Winter Storm	12 inches of snow at Alta Ski Lifts		1/9/2014	

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community
Members of the community over 65 years old	25
Members of the community under 18 years old	13
Members of the community that identify as having disability status	12
Members of the community that speak English less than "very well"	0
Members of the community living below the poverty line	73
The number of mobile homes in the community	0
Members of the community without health insurance	3
Occupied housing units with tenants without a vehicle	5
Housing units without heating fuel	0

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

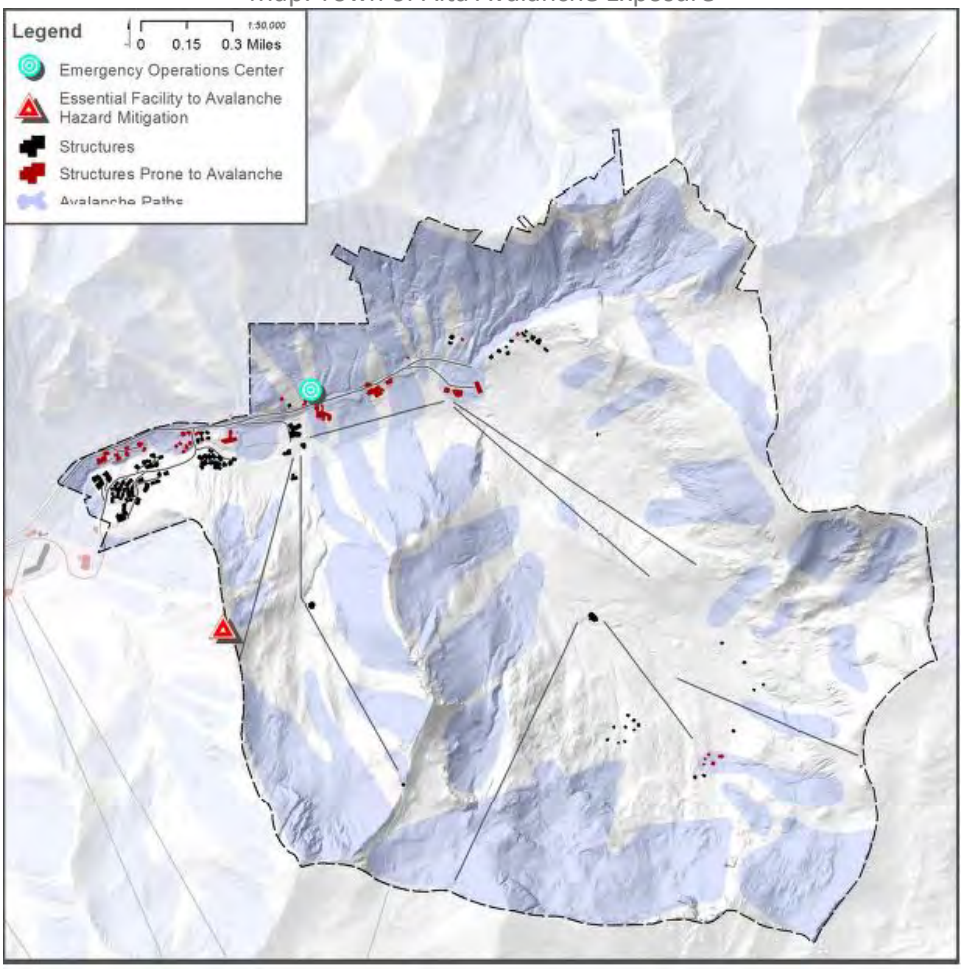
Avalanche: Exposure to snow avalanches is the Town of Alta's defining natural hazard. Significant portions of downtown Alta exist in the run-out zone of historic avalanche paths, and

most of Alta Ski Area is in avalanche terrain. Furthermore, Alta's only transportation corridor, Utah State Highway 210, carries the highest avalanche hazard-rating index of any major roadway in the country, and it is not uncommon for avalanches to bury the roadway, closing all vehicular access to Alta.

The history of human settlement in upper Little Cottonwood Canyon is rife with stories of destruction by large avalanches. Several times during the period of mining that occurred in Alta during the 19th and early 20th centuries, avalanches wiped out entire villages and mining infrastructure. In the 1940's, Alta was the birthplace of American avalanche science, and it was in Alta that the practice of using explosives to intentionally trigger avalanches—instead of allowing them to release unexpectedly—was first used in the United States.

Today, the Town of Alta relies on a partnership between the Utah Department of Transportation Avalanche Safety Program (UDOT), USFS, the Alta Ski Lifts Company, Snowbird Ski Area, and the Salt Lake County Unified Police Department (UPD) to conduct avalanche hazard mitigation with military artillery. UDOT and the two ski areas are responsible for avalanche hazard forecasting, and when those entities agree that hazard is sufficient for mitigation to take place, the Alta Marshal's Office and UPD enact a closure of highway 210, along with the restriction of "interlodge" travel, meaning that all persons must remain inside a building while hazard mitigation is conducted. Personnel from the ski areas and from UDOT are responsible for firing military artillery at avalanche starting zones, and when a firing mission is completed, public safety officials often conclude that it is safe for highway traffic and interlodge travel to resume. In some circumstances, such as a hazard mitigation mission conducted during a prolonged storm cycle, interlodge travel restrictions may remain in place even after a mission, until hazard abates, or until another mission is advisable. In some circumstances, UDOT contracts with a local business, Wasatch Powderbird Guides, to provide helicopter-assisted avalanche hazard mitigation services, but this option is only viable when weather conditions allow for the operation of helicopters.

Map: Town of Alta Avalanche Exposure



The last major event in which a structure in the Town of Alta was damaged by an avalanche was in March of 2002, when an avalanche hit the Alta Peruvian Lodge, a hotel on the west end of Town, burying 14 vehicles, removing a fire escape, and inundating lower level hotel rooms with avalanche debris. More recently, smaller avalanches have impacted residential properties along the Alta-Snowbird Bypass Road, with minor damages in some cases, and avalanches have damaged parked vehicles along SR 210.

Dam Failure: Salt Lake City Public Utilities owns and maintains a dam at Cecret Lake, which was rebuilt in 2018, in the southeastern portion of the Town of Alta. The Town is seeking an updated inundation map and emergency action plan for the Cecret Lake Dam; however, the inundation map for the old dam shows that ski area base facilities could be inundated in a catastrophic failure of Cecret Lake Dam.

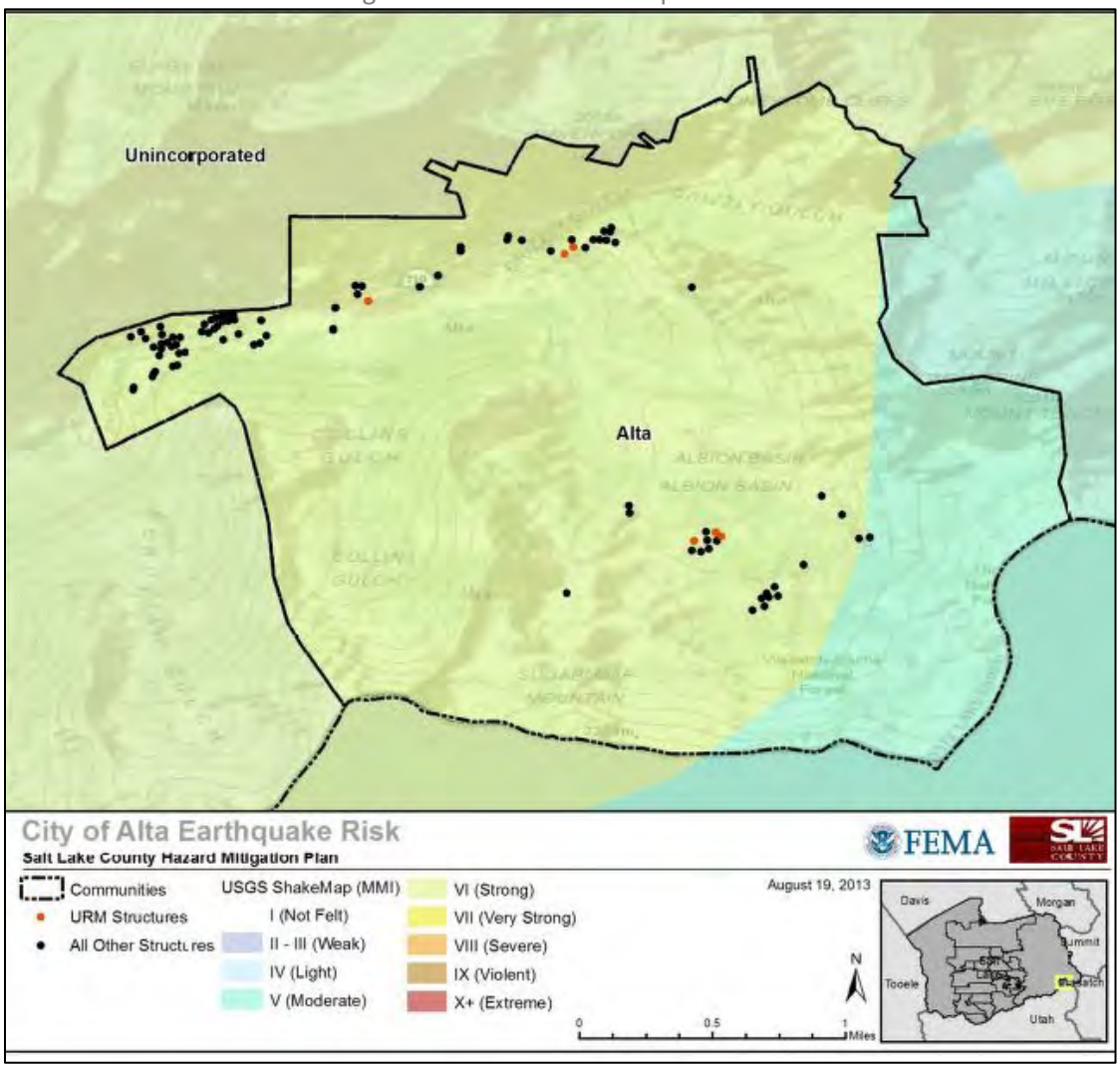
Map: Cecret Lake Dam Inundation Map

Drought: Alta is a tiny municipality with limited residential or commercial water usage, and thanks to its location at high elevation, near the source of an abundant watershed, Alta's direct susceptibility to drought is fairly low. However, prolonged, year-round drought sufficient to limit the volume of natural snowfall in Alta could have a serious effect on Alta's economy, which depends on cold temperatures and regular snowstorms to attract local and destination skiers. Furthermore, as all of Alta lies within municipal watershed controlled by Salt Lake City, the Town purchases water as part of a surplus water agreement with SLC, which stipulates that the contract may be cancelled for various reasons, including the need for SLC to supply water to its own local customers.

Earthquake: The Wasatch Front urban corridor is at risk of a major earthquake. Although a major earthquake originating in the Wasatch Fault would cause significant ground shaking in Alta, information provided by Salt Lake County and the United States Geologic Survey indicates that major earthquakes along the Wasatch Fault or other active regional faults would not be felt as

strongly in Alta as in other areas of Salt Lake County. Soil liquefaction potential has not been mapped rigorously in the Town of Alta.

Figure. Town of Alta Earthquake Risk

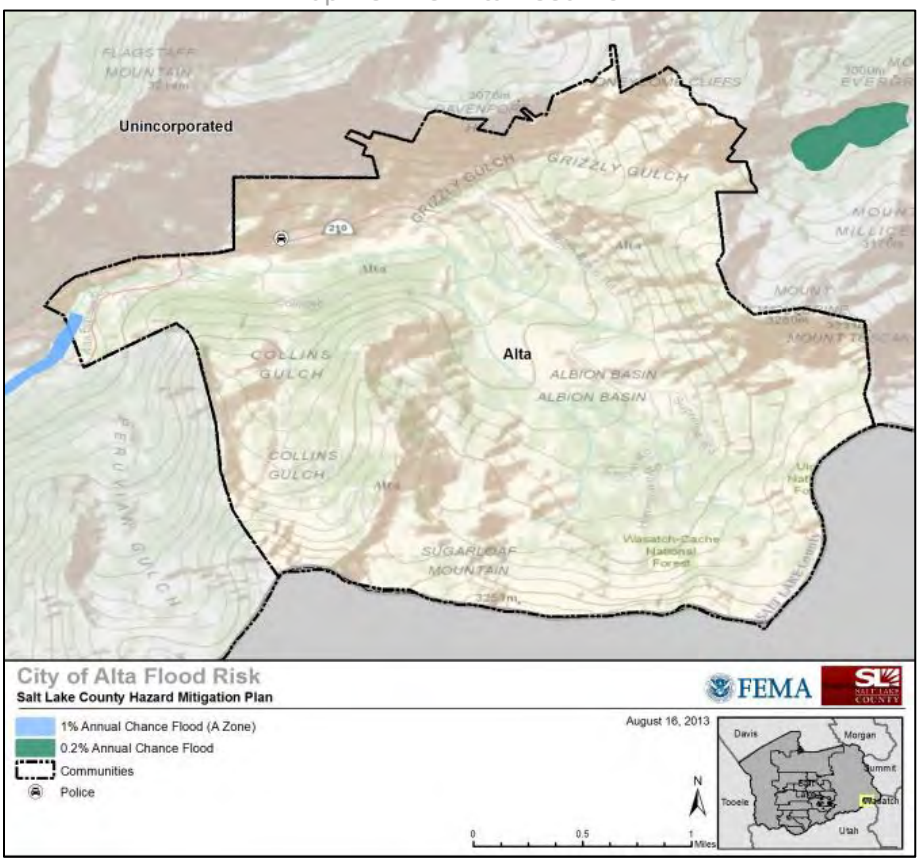


Secondary hazards possibly associated with a major earthquake in Alta are numerous. A major earthquake occurring during a period of high avalanche hazard could trigger numerous destructive avalanches at once. If this were to take place when interlodge travel was not restricted, as it is when avalanche hazard mitigation is being conducted, property damage and loss of life could be severe. A large earthquake could easily trigger landslides that would affect the highway 210 corridor, which is Alta's only point of access for outside emergency response agencies.

There are nine unreinforced masonry buildings in the Town of Alta. All but one of these buildings are single family homes or seasonal cabins. Assessed values of these properties vary from less than $100,000 to $1.2 million.

Flood: The Town of Alta has a very small area of identified floodplain, and there is no development permissible in that area due to it being directly adjacent to Little Cottonwood Creek. Nevertheless, minor property damage has occurred during periods of rapid snowmelt, or when small landslides have obstructed drainage culverts along minor tributaries to Little Cottonwood Creek. The unlikely event of a failure of Cecret Lake dam could cause inundation of high traffic areas as well as a small quantity of structures.

Map: Town of Alta Flood Risk



Infestation: Spruce Bark Beetle and Mountain Pine Beetle are both present in Alta trees and tree stands. Balsam Wooly Adelgid is an infestation currently affecting Sub-Alpine Fir in the Central Wasatch Mountains, and could have a severe impact on forest health in Alta and thus lead to increased wildfire hazard and other environmental impacts.

Landslide/Problem Soils: Steep mountain slopes surround the Town of Alta, and this topography lends itself to the phenomenon of downslope movement of earthen material. Rock falls and topples are downslope movements of loosened blocks or boulders from a bedrock area. These generally occur along steep canyons with cliffs, deeply incised stream channels in bedrock, and steep bedrock road cuts.

Occasionally, severe summer rainstorms lead to landslides and debris flows that damage SR 210 in Alta and down-canyon. In August of 2019, several sequential storms damage culverts, trapped vehicles in debris, and lead to a 2-day closure of SR 210 to the general public. When these events affect drainages containing elements of Alta's mining history—open tunnels, overburden piles,

etc.—they can release higher levels of heavy metals into the watershed, which could have impacts on local and regional water quality.

Map: Town of Alta Problem Soils

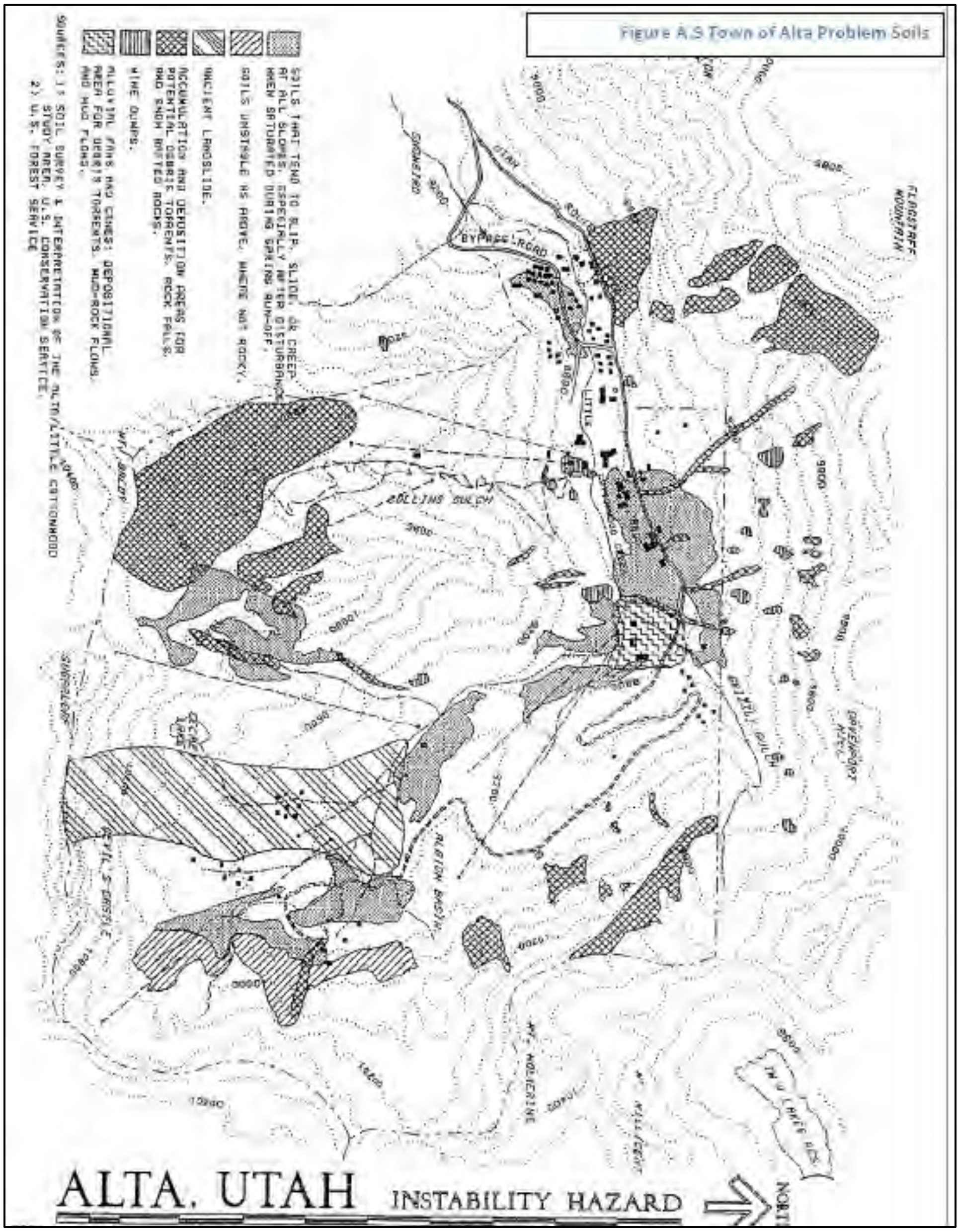
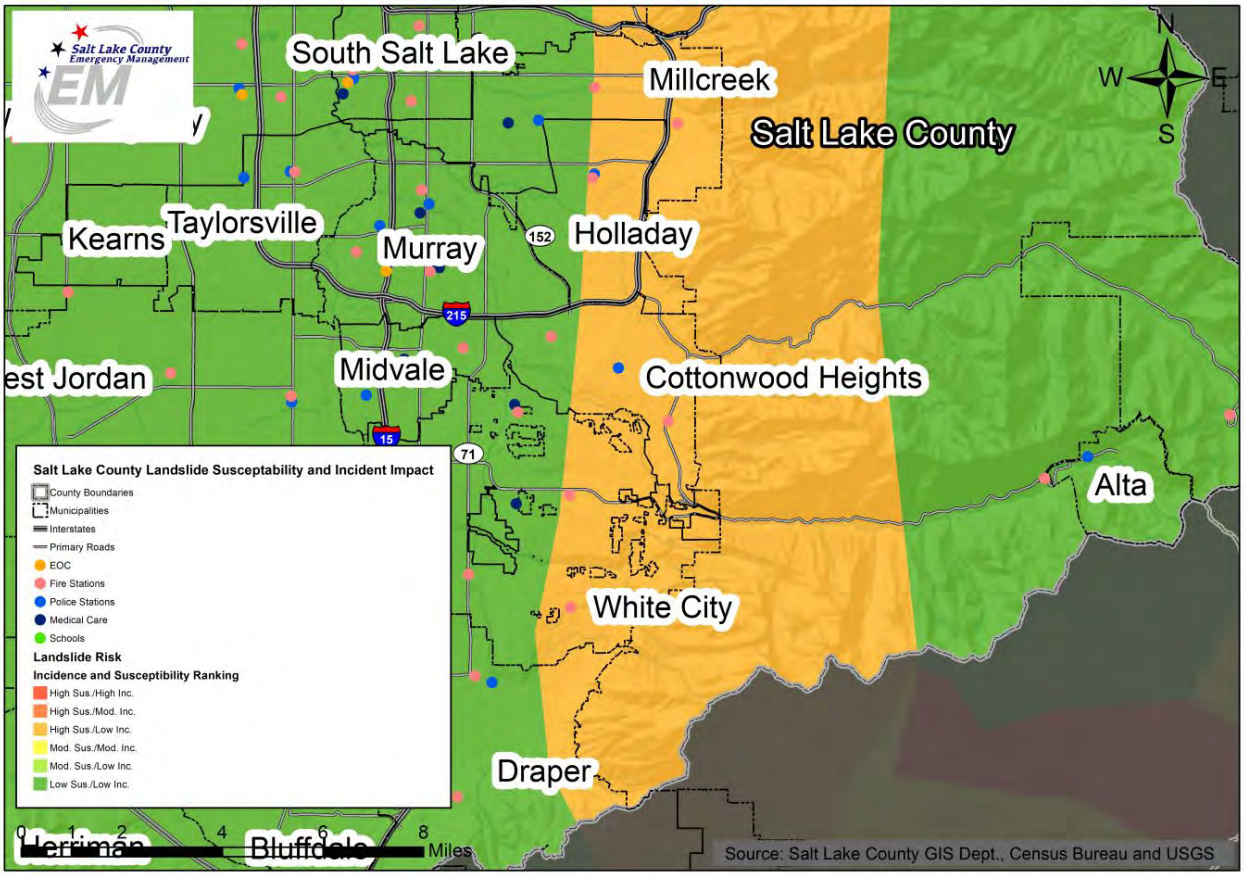


Figure A.5 Town of Alta Problem Soils

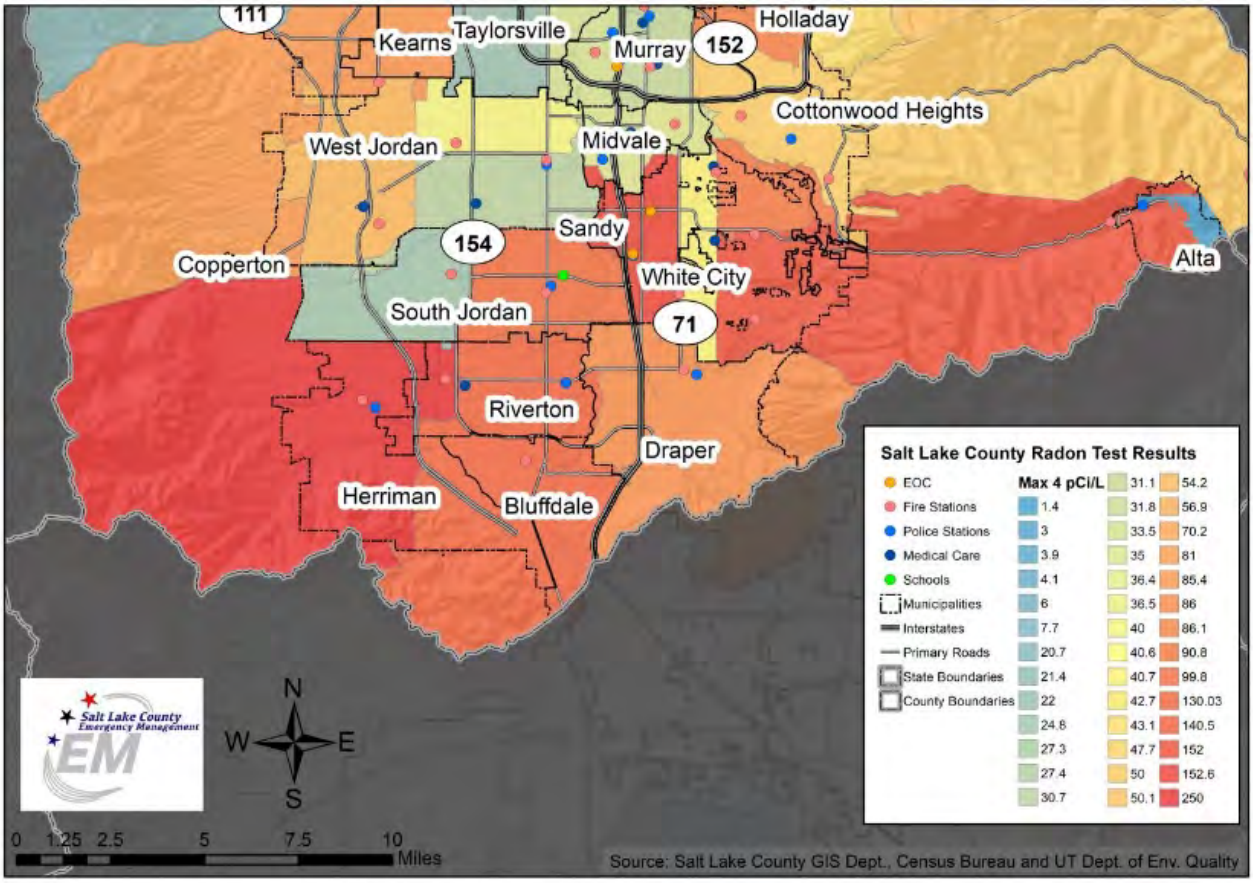
Map: Landslide Susceptibility and Incident Impact Potential with Critical Facilities



Pandemic: On a regular basis, potentially catastrophic public health issues are raised in the mainstream media and there is a possibility of a regional or national pandemic arriving in Alta, where visiting guests arrive from around the world and may have been exposed to contagious conditions elsewhere. The Town of Alta has not made formal plans for response to an outbreak of infectious disease, but if an outbreak were to occur, the Town will work with outside agencies to communicate essential information and acquire assistance. The Town of Alta has limited medical capabilities, with a small, seasonal, private clinic and a regional fire authority outpost providing the only local response capabilities, so as in many other cases, resources for quarantine or evacuation will have to come from elsewhere.

Radon: The Town of Alta has not identified areas in which exposure to radon gas is likely, and current information from outside agencies indicating regional radon prevalence do not provide specific information regarding Alta's likely radon gas exposure. However, regional geologic conditions are consistent with the likely presence of radon gas, and many households in Salt Lake County have tested positive for high levels of radon gas.

Map: Radon with Critical Facilities



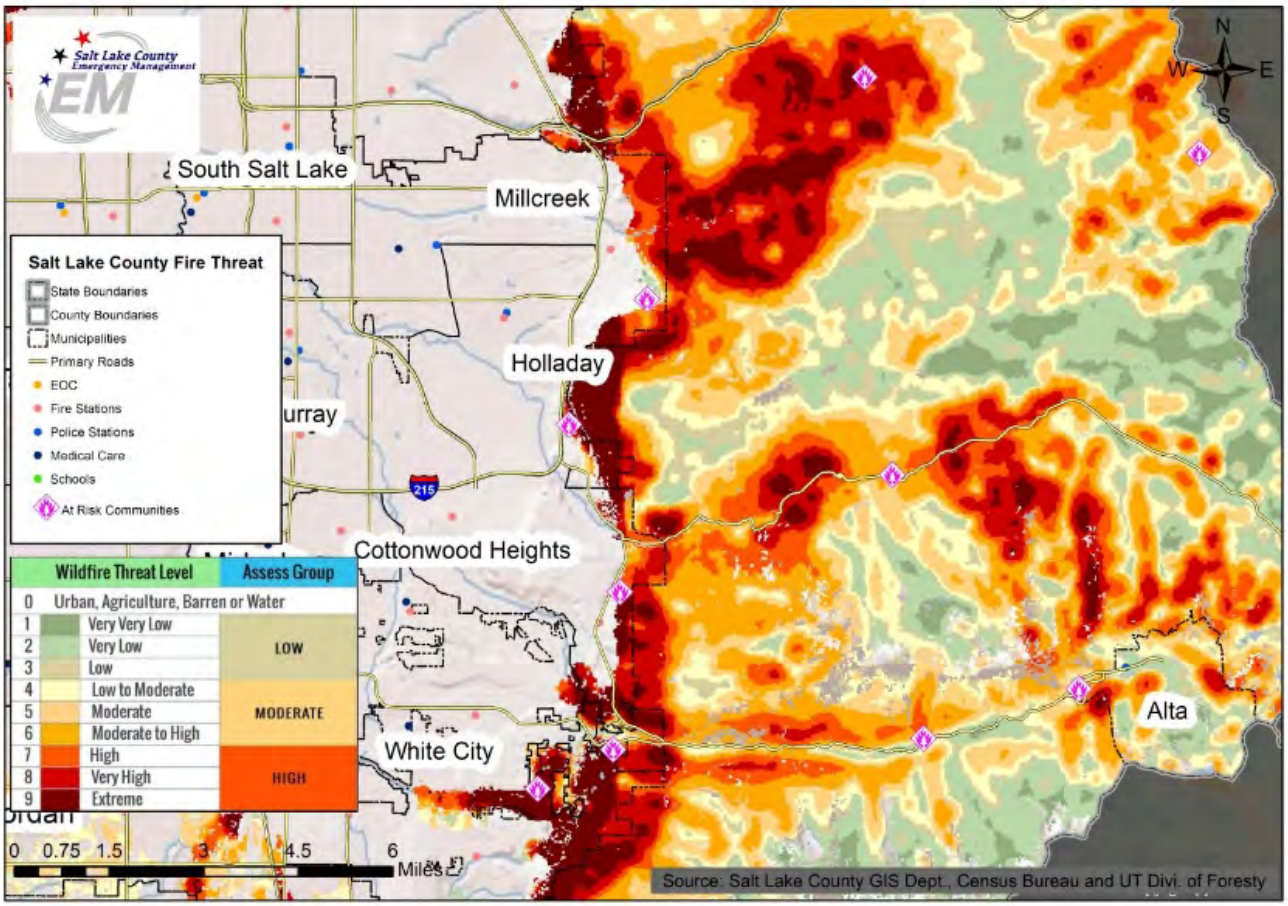
Severe Weather: The most common severe weather events in Alta are significant winter storms, which often result in periods of elevated avalanche hazard. Alta is world-renowned as a place where winter storms deposit enormous snow totals, and those storms are often accompanied by sustained winds near hurricane-force, with gusts over 100 mph. Although many Alta skiers prefer to be skiing during a major snow storm, sometimes weather is so severe that ski lifts cannot run, and when avalanche hazard becomes too high as a result of heavy snow and high wind, the ski area closes operations and the public is required by the Town of Alta Marshal to remain indoors until avalanche hazard is mitigated. The Alta landscape is often transformed by massive winter storms, with rows of parked cars and even unattended structures occasionally completely entombed in snow. During ski season, Alta Ski Area can host as many as 7,000 skiers on a very busy day, and peak ski area days that coincide with winter storms can exacerbate the impacts from winter storms to roadway operations and other public safety considerations. Winter storms that produce 10 or more inches in a 12-hour period are considered a significant event.

Severe winter storms often result in hazardous roadway conditions on the steep, winding, narrow highway 210, and when road surface conditions deteriorate at the end of a busy day at Alta and Snowbird, traffic accidents can cause epic backups. When such backups take place during times of escalating avalanche hazard, the possibility that natural avalanches will affect the roadway and potentially bury vehicles and their occupants can be a critical situation. The Town of Alta supports past, currently ongoing, and future studies of alternative transportation solutions and roadway improvement strategies, in the interest of reducing possible roadway avalanche incidents, and in reducing the need to close highway 210 to perform avalanche hazard mitigation.

Alta is also susceptible to non-winter weather events, such as rain, hail, and lightning storms. Significant rain events can cause landslides in ravines and stream channels which can damage highway 210, and which have occasionally caused property damage in the Town of Alta. Because of Alta's high elevation, extreme heat is not considered a likely hazard.

Wildfire: The Town of Alta has not experienced significant wildfire in its modern history. Typically, Alta's cool summer temperatures and very short warm season prevent critical fire conditions from developing. However, all Alta development is within the wildland-urban interface, and in a prolonged, severe drought, wildfire could impact Alta. Additionally, the loss of forested acreage within Alta Ski Area could constitute a significant economic loss to the Town of Alta, as ski area operations could be compromised.

Map: Wildfire Threat Level with Critical Facilities



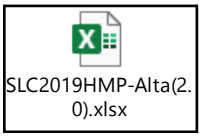
HAZMAT: Hazardous materials accidents can occur in Alta in more common ways—as part of a traffic or industrial accident—or in somewhat unique ways, such as when a landslide altered the flow of water from one of Alta's many open mine tunnels and increased heavy metal loading into Little Cottonwood Creek.

Terrorism and Civil Disturbance: Alta Ski Area hosts thousands of skiers per day on busy days which could make it susceptible as a mass-gathering area.

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Severe Winter Weather	3	18	54
Severe Weather	3	17	51
Wildfire	2	24	48
Avalanche	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Cyber Attack	2	17	34
Drought	2	13	26
Terrorism	1	25	25
Landslide and Slope Failure	2	12	24
Hazardous Materials Incident	1	14	14
Flooding	1	13	13
Dam Failure	1	13	13
Civil Disturbance	1	10	10
Tornado	1	7	7
Radon	2	3	6

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.



Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	High	3		Avalanche	Medium	2	6
Dam Failure	Low	1		Dam Failure	Low	1	3
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Low	1	3
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Low	1		Flooding	Low	1	3
Hazardous Materials Incident	Low	1		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Medium	2		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	Medium	2		Radon	Low	1	3
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	Medium	2		Wildfire	High	3	9

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	Medium	2	2		Avalanche	Medium	2	4
Dam Failure	Low	1	1		Dam Failure	Low	1	2
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Medium	2	4
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Low	1	1		Flooding	Medium	2	4
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	High	3	6
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Medium	2	4
Severe Winter Weather	High	3	3		Severe Winter Weather	Medium	2	4
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	Low	1	2
Wildfire	High	3	3		Wildfire	High	3	6

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**	**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)	**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)	**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)	**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)	**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)
Avalanche	High	3	3
Dam Failure	Low	1	1
Drought	Low	1	1
Civil Disturbance	Medium	2	2
Cyber Attack	Medium	2	2
Earthquake	High	3	3
Flooding	Medium	2	2
Hazardous Materials Incident	Medium	2	2
Landslide and Slope Failure	Medium	2	2
Public Health Epidemic/ Pandemic	High	3	3
Radon	No Impact	0	0
Severe Weather	Low	1	1
Severe Winter Weather	Medium	2	2
Terrorism	High	3	3
Tornado	Low	1	1
Wildfire	High	3	3

Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Unlikely	0	0
Dam Failure	Medium	2	6
Drought	Low	1	3
Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	6
Earthquake	High	3	9
Flooding	Low	1	3
Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	9
Radon	Unlikely	0	0
Severe Weather	Unlikely	0	0
Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	9
Tornado	Unlikely	0	0
Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Low potential that this hazard could be catastrophic (Impact Factor = 1)
Unlikely—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Update TOA Ordinance to promote fuel mitigation and structural defensibility	2019	Goal 7: Advocate, support, and promote the use of laws and local regulations and ordinances aimed to mitigate hazards and to enhance resiliency.	Wildfire	Town	UFA	High	Low	TOA Budget	medium	3 years	Reduce structure ignitability
Support UFA fuels mitigation on residential/commercial properties	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 5: Ensure and promote ways to increase government and private sector continuity of services during and after a disaster.	Wildfire	UFA	Town	High	Low	UFA Budget	high	ongoing	Reduce structure ignitability
Maintain/improve water storage and distribution system	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Wildfire, drought, earthquake, etc.	Town	SLCO SA#3	High	High	BRIC Grant/PDM TOA Water fund	medium	5 years	Improve WUI response capability

Improve culverts along SR 210, Michigan City Road, additional storm water management features	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Landslide/Severe Weather	Town/UDOT	USFS	Medium	Medium	BRIC Grant PDM, UDOT	medium	5 years	Reduce impacts to roadway, protect access to TOA water storage facility
Seek best available data regarding the severity shaking during major earthquake	2019	Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.	Earthquake	Town	UGS/FEMA	High	Low	--	high	1 year	Refine earthquake impact scenario
Support UDOT Remote Avalanche Control System (RACS) implementation	2019	Goal 3: Enhance and protect the communication and warning/notification systems in the County.	Avalanche	UDOT	Town, ski areas	Medium	High	UDOT	high	5 years	Eliminate overhead fire w/ artillery, improve avalanche mitigation program efficiency
Support UDOT avalanche detection system improvements	2019	Goal 3: Enhance and protect the communication and warning/notification systems in the County.	Avalanche	UDOT	Town, ski areas	Medium	High	UDOT	medium	5-10 years	Improve avalanche hazard forecasting

Seek new inundation map for improved Cecret Lake Dam	2019	Goal 3: Enhance and protect the communication and warning/notification systems in the County. Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.	Dam Failure	SLC/DNR		Medium	Low	--	low	2 years	Refine dam failure impact awareness

Mitigation Table - Ongoing Actions

Action	Year Initiated	2019 Status	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group	2009	Ongoing and will continue to be ongoing in the future	1 – Improve and maintain communications capabilities for emergency operations 1.3 – Conduct communications Strategic Planning	All Hazards	Town	Utah Communications Authority	Medium	Medium	Local	Medium	Ongoing	The Town of Alta makes necessary communications upgrades as needs arise and budget/other funding sources allow
Identify and implement additional hazard monitoring capabilities.	2009	Ongoing and updated in 2019 to include	2 – Improve awareness and analysis of hazards 2.2 – Improve	All Hazards	Town	State of Utah	High	High	Federal and state (PDM, HMA)	High	Ongoing	This is especially important for Avalanche

Install remote avalanche explosive capability in the Canyon.		avalanche mitigation	and expand hazard monitoring capabilities									detection and monitoring.
Compile inventory of mutual-aid agreements and memoranda of understanding (MOU) and identify deficiencies	2009	Ongoing	4 – Improve response capabilities through mutual-aid agreements 4.1 – Utilize mutual-aid agreements in accordance with National Incident Management System (NIMS) requirements	All Hazards	Town		Medium	Low	Local	Medium	Ongoing	The Town works closely with SLCo UPD and UFA to maintain current mutual aid agreements 2019: Develop MOUs with agencies called out in the EOP/ESFs. Help partnering entities establish agreements that will enable them to get reimbursed during a declaration
Coordinate with existing public education programs such as the American Red Cross, Utah Living with Fire, be Ready Utah, the National Weather Service, etc.	2009	Ongoing	5 – Increase citizen safety through improved hazard awareness 5.1 – Establish a comprehensive public education program	All hazards	Town		Medium	Low	Local	Medium	Ongoing	Town staff is planning a “shake-out” activity for 2015, pursing neighborhood “Firewise” programs, and works constantly with other agencies responsible for avalanche hazard mitigation to

												forecast avalanche hazard and execute communication regarding avalanche hazard mitigation activities and related public safety issues.
Continue to encourage water conservation utilizing and promoting outreach material from all water districts in the County	2009	Ongoing	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Drought	Town		High	Low	Local	High	Ongoing	Water conservation will always be prioritized as planning and ordinance review continues in Alta.
Repair, maintain and improve water distribution infrastructure to prevent loss from leakage, breaks, etc	2009	Ongoing	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Drought	Town	County	High	Medium-High	BRIC/ PDM	High	Ongoing	The Town contracts with Salt Lake County Service Area #3 for operation, maintenance, and capital improvement planning of its water system.
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures	2009	Ongoing	1 – Protection of life and property before, during and after a flooding event 1.2 – Encourage appropriate flood control measures,	Flooding	Town	Contractors	High	High	PDM	High	Ongoing	The Town of Alta works with other local service providers to identify drainage culverts in need of maintenance and repair.

			particularly in new developments									
Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of storm water and flood control systems	2009	Ongoing	1 – Protection of life and property before, during and after a flooding event 1.3 – Provide maintenance, repairs and improvements to drainage structures, storm water systems and flood control structures	Flooding	Town	Contractors	High	High	PDM	High	Ongoing	See above
Identify and assess structures for deficiencies	2009	Ongoing	2 – Reduce threat of unstable or inadequate flood control structures 2.1 – Reduce potential for failure of flood control structures	Flooding	Town	Contractors	High	High	PDM	High	Ongoing	See above
Modify structures as needed to address deficiencies	2009	Ongoing	2 – Reduce threat of unstable or inadequate flood control structures 2.1 – Reduce potential for failure of flood control structures	Flooding	Town	Contractors	High	High	PDM	High	Ongoing	See above
Assist Forest Service Utah Avalanche Forecast Center	2009	Ongoing	1 – Reduce threat of loss of life or property	Severe Weather	Town		Medium	Low	Local	HMedium	Ongoing	Next to severe weather, avalanche hazard is our

and other organizations in promoting avalanche hazard awareness for backcountry users			due to extreme weather events 1.3 – Encourage safe practices in avalanche prone areas									most prevalent natural hazard in the Town of Alta. Promoting public safety and reducing exposure to avalanche hazard is one of our foremost challenges.. Alta does not publicize UAC forecasts, but much of our winter-season public safety program hinges on UDOT Avalanche Safety forecasts and necessary access closures relating to the UDOT program.
Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential	2009	Ongoing	1 – Reduce or eliminate the threat of slope failure damage 1.2 – Monitor historic landslide areas	Slope Failure	Town	USGS	High	Low	Local	High	Ongoing	Building official consults with UGS as needed
Utilize recommendations provided by the State Geological Hazards Working Group to address land-use and planning for new developments	2009	Ongoing	1 – Reduce or eliminate the threat of slope failure damage 1.3 – Address landslide hazards in new sub-divisions	Slope Failure	Town	USGS	High	Low	Local	High	Ongoing	See above

Provide waste removal, such as chipping of green waste by public works, following designated fuel clearing day/week	2009	Ongoing	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.1 – Assist homeowners with creating defensible space near structures in WUI areas	Wildland Fire	Town	Contractor	Medium	High	Grants would be needed	Low	Ongoing	Insufficient staff time and financial resources
Work with experts and communities to develop or update evacuation plans	2009	Ongoing	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.2 – Improve evacuation capabilities for WUI areas	Wildland Fire	Town	County and State Transportation	High	Low	Local	High	Ongoing	Local evacuation plans hinge on whether or not SR210 is operable; plans for major transportation improvements will dictate future changes in our evac plans.
Evaluate transportation network and address needed improvements to facilitate evacuation and emergency response	2009	Ongoing	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.2 – Improve evacuation	Wildland Fire	Town	County and State Transportation	High	Low	Local	High	Ongoing	See above

			capabilities for WUI areas									
Support Current Avalanche Hazard Mitigation Interagency Partnerships	2014	Ongoing	Establishment of lift-served skiing on open slopes on the north side of Little Cottonwood Canyon in the Town of Alta. Installation of Gaz-ex remote detonation devices, 9 of which are currently in place on Mt. Superior above the Snowbird Village, outside of the Town of Alta boundaries. Gaz-ex devices cost roughly $200,000 each for materials and installation, and a large number of individual devices would be required to provide the same level of hazard mitigation currently provided by artillery. Installation of snow fences in avalanche path starting zones above the Town	Avalanche	Town		High	Low	Town of Alta General Fund	High	Ongoing	Staff time for communications and enforcement of interlodge travel restrictions.

			of Alta. Many of the paths that affect the Town of Alta originate uphill and outside of the Town of Alta boundaries.									

Mitigation Table - Completed and Removed Actions

Category	Year Initiated	Goal/Objective	Action	Status	Comments
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	1 – Conduct an inventory and assessment of communications equipment and systems and identify needs	Complete	
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	2 – Conduct Training and awareness activities on communication equipment, tools, and systems	Complete	
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	3 – Establish agreements to share communications equipment between agencies involved in emergency operations	Complete	
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	4 – Establish notification capabilities and procedures for emergency personnel	Complete	
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.2 – Maintain communications capabilities for critical facilities	1 – Evaluate vulnerability of critical communications systems	Complete	
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.2 – Maintain communications capabilities for critical facilities	2 – Establish redundancy for dispatch centers and other critical communications	Complete	

All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.3 – Conduct communications Strategic Planning	1 – Establish a coordinating group to address long-term communication needs and implementation strategies	Complete	
All Hazards	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	1 – Utilize GIS to identify facilities and infrastructure at risk	Complete	
All Hazards	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	2 – Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment resources and redundancy, and adequate emergency procedures	Complete	
All Hazards	2009	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	1 – Establish and enforce appropriate planning, zoning, and building code ordinances	Complete	
All Hazards	2009	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	2 – Ensure current hazard ordinances are available for viewing online	Complete	
Dam Failure	2009	1 – Include dam failure inundation in future County and City planning efforts 1.1 – Review current State dam safety information on all identified high hazard dams in the County	1 – Include dam inundation maps in current County, City and Special Service District Emergency Operations Plans	Complete	
Dam Failure	2009	1 – Include dam failure inundation in future County and City planning efforts 1.1 – Review current State dam safety information on all identified high hazard dams in the County	2 – Utilize inundation maps to identify potential evacuation areas and routes	Complete	
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	4 – Implement water-saving devices and practices in public facilities	Complete	

Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	6 – Coordinate public safety water use, such as hydrant testing	Complete	
Flooding	2009	1 – Protection of life and property before, during and after a flooding event 1.1 – Provide 100% availability of the National Flood Insurance Program	1 – Assist Cities with NFIP application	Complete	
Flooding	2009	1 – Protection of life and property before, during and after a flooding event 1.1 – Provide 100% availability of the National Flood Insurance Program	2 – Encourage Communities to actively participate in NFIP	Complete	
Flooding	2009	1 – Protection of life and property before, during and after a flooding event 1.2 – Encourage appropriate flood control measures, particularly in new developments	1 – Determine potential flood impacts and identify areas in need of additional flood control structures	Complete	
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.1 – Maintain status as a StormReady Community	2 – Maintain Contact with NWS prior to re-application in 2010	Complete	
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.2 – Increase awareness of information services provided by NWS	1 – Meet with NWS representative on an annual basis to receive information on new services and alerts available	Complete	
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.2 – Increase awareness of information services provided by NWS	2 – Assist NWS in making other agencies and departments aware of available resources	Complete	
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	3 – Assess existing water flow capabilities, both public and private, and address deficiencies	Complete	
All Hazard	2009	2 – Improve awareness and analysis of hazards 2.2 – Improve and expand hazard monitoring capabilities	Integrate existing hazard monitoring networks in emergency operations centers. Utilize sensors such as weather stations, stream gages, seismograph stations, road conditions, etc.	Complete	State did this

2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: Bluffdale

Hazard Mitigation Plan Point of Contact

Primary Point of Contact
Name: Natalie Hall Title: Emergency Manager Address: 2222 West 14400 South Bluffdale, UT 84065 Office Phone 801-254-2200 Cell Phone: 801-633-6833 Email Address: nhall@bluffdale.com Website: http://www.bluffdale.com/186/Emergency-Management

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** October 1978
- **Current Population:** 14,699 (2018 estimates). The population density is the smallest in the County.
- **Population Growth:** The population has almost doubled from 2010 (7,619) to 2018 estimates with a population percent change from April 1, 2010, to July 1, 2018, of 93.2% (Census).
- **Location and Description:** The City of Bluffdale is located at the south end of Salt Lake County and is home to wide-open spaces, dramatic mountain views of the Wasatch Range, and a significant stretch of the Jordan River. Bluffdale is only 20 miles south of Salt Lake City and 25 miles north of Provo, giving it a unique location between Utah's two largest counties. Bluffdale encompasses 10.22 sq mi (26.47 km2), which is all land (no water). The average elevation is 4,436 ft (1,352 m). Bluffdale is bounded by Lehi to the south, Herriman to the west, Riverton to the north, and Draper to the east. The Jordan River is the city's most prominent natural feature, cutting approximately through the center of the community. The west side of the city sits on a high bluff above the Jordan River. The Jordan River provides a physical division and a geographic challenge to the city's provision of services.
- **Brief History:** Bluffdale, named for its geography of bluffs and dales, was first settled in 1848–1849 when the area was originally part of West Jordan. On July 29, 1858, Orrin Porter Rockwell paid five- hundred dollars to Evan M. Green for sixteen acres of land near to the Crystal Hot Lakes (adjacent to the present Utah State Prison). This land included a hotel with dining facilities, stable, brewery, and pony express station. It was not until the canals were constructed that more settlers arrived. The canal system grew to include seven canals in Bluffdale. As the community expanded, the Bluffdale area became part of South Jordan, then Riverton. In 1883 the Bluffdale School Precinct was formed from parts of Herriman, South Jordan, and Draper. On August 1, 1886, the Bluffdale Ward of The Church of Jesus Christ of Latter-day Saints was organized with Lewis H.Mousley as Bishop. For a short time, the town was called Mousley. Some of the early buildings included an adobe church, built-in 1887–1888, a tithing house, and a three-room schoolhouse constructed in 1893 (Bluffdale).
- **Climate:** The summer high temperature is around 93, and the low winter temperature is 21. On average, Bluffdale receives 15 inches of rain and 34 inches of snow each year (Best Place).

- **Public Services:** Many County utilities pass through the City of Bluffdale.. Because Bluffdale lies at the narrowest point between the Wasatch and Oquirrh mountain ranges, many utilities are located here. These utilities and other infrastructure (CIKR) significantly influence the City's land uses. These include a heavily used Union Pacific Railroad and UTA rail line running north-south; Camp Williams Road (also running north-south); Interstate-15 and Bangerter Highways; and a major canal that is the effective western boundary of the community. In addition, six other canals, several aqueducts, two major power corridors, regional arterials and highways, and a major gas line corridor create obstacles and shape land use opportunities.
- **Governing Body Format:** In the state of Utah, Bluffdale is currently classified as a fifth-class city. Bluffdale City's form of government is Council / Manager. Bluffdale has a part-time Mayor and five part-time City Council members. The City Manager is full-time and works under the direction of the Mayor and Council.
- **Development Trends:** The entire Wasatch Front is under tremendous growth pressure, with the Wasatch Front Regional Council projecting a 67% increase in population by 2040. Bluffdale's 2014 Capital Facilities Plan (CFP) uses a detailed methodology to project population in connection with projected future land use in the City. Based on the CFP, Bluffdale's population will grow to nearly 40,000 by the year 2035. At this point, the City will be at full build-out (given its current future land use planning and the associated dwelling densities). More detailed information about population projections is included in the CFP document. Population growth is expected to increase dramatically with the new housing developments presently under construction. The major population growth center in Bluffdale will be the east side of the City, between I-15 and the railroad tracks, where the heaviest growth is expected to occur between approximately 2015 and 2025, and then tapering off as Bluffdale nears build-out.

Capability Assessment

The city maintains a full-time staff of zero and part-time staff of one individual. Natalie Hall is the City's designated Emergency Manager. Hazard Mitigation Planning efforts are led by the Emergency Manager position and supported by the Engineering Department and Planning Department positions.

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY				
	Local Authority Exists to Develop	**A Jurisdiction-Specific Code,**	**Rely on the County's Codes,**	**Comments**

	and Implement/ Enforce?	Ordinance and/or Requirement Currently Exists?	Ordinances & Requirements	
Codes, Ordinances, & Requirements				
Building Code Development and Enforcement	Yes	No	Yes	
Zonings Ordinance(s)	Yes	Yes	No	
Subdivision Ordinance(s)	Yes	Yes	No	
Stormwater Management Program	Yes	Yes	Yes	
Floodplain Ordinance(s)	Yes	Yes	No	
Post Disaster Recovery Program and Ordinance(s)	Yes	No	No	
Real Estate Disclosure Ordinance(s)	No	No	No	
Growth Management	Yes	Yes	No	
Site Plan Review Requirements	Yes	Yes	No	
Planning Documents				
General or Comprehensive Plan	Yes	Yes	Yes	
Capital Improvement Plan	Yes	Yes	No	
Economic Development Plan	Yes	Yes	No	
Disaster Planning Documents				
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	Yes	Yes	
Post-Disaster Recovery Plan	Yes	No	No	
Continuity of Operations Plan	Yes	Yes	Yes	
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire	Yes	Yes	Yes	

Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section				

TABLE: FISCAL CAPABILITY	
Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	No

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	Full Time	Planners and Engineers
Engineers or professionals trained in building or infrastructure construction practices	Yes	Full Time	
Planners or engineers with an understanding of natural hazards	Yes	Full Time	
Personnel skilled or trained in GIS applications	Yes	Full Time	
Emergency manager	Yes	Part Time	

Grant writers	Yes	Part Time	Each department is responsible for writing their own grants

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	Engineering
Who is your jurisdiction's floodplain administrator? (department/position)	Michael Fazio
Are any certified floodplain managers on staff in your jurisdiction?	Trained CFM but not certified.
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	No
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	We participate and work toward a better CRS Classification.

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System (CRS)	Yes	-	-
Public Protection/ISO	-	-	-
NWS StormReady	-	-	-

Jurisdiction-Specific Hazards and Risks

The *Natural Hazard Events Table* lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 8 policies were in force with total coverage of $2,625,000 and total written premium and FPF of $3,366 (FEMA, 2019).

- City of Bluffdale does participate in the National Flood Insurance Program (CID # 490247) and the last FIRM map for the area was issued on 09/25/09 (FEMA, 2019). The new map is in the final stages of completion.
- The city will continue to participate in the NFIP through various efforts including but not limited to floodplain management, ordinance development and review, technical assistance, compliance inspections, and community education on flood hazards.

TABLE: RECENT NATURAL HAZARD EVENTS (NOAA Data with additions from the jurisdiction representatives)

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Winter Storm	Over 150 accidents or stranded motorists were reported in the Salt Lake Valley, and at least 1,500 customers were without power at some point during the event, with many of those in Bluffdale and Draper.	-	12/13/2015	-
Flash Flood	Bluffdale was the end location for the event	-	9/14/2013	-
High Wind	63 mph at Bluffdale	-	3/26/2012	$20,000 property damage
Flash Flood	Rainfall of 1.1 inches in 30 minutes inundated storm drains and resulted in numerous reports of basement flooding.	-	8/3/2007	$45,000 property damage
High Wind	52 knot winds	-	6/5/2007	-
Flash Flood	A canal above Bluffdale overflowed, sending a wall of water and mud into a subdivision,	-	9/6/2002	$200,000 property damage

	flooding at least 10 homes.			

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community
Members of the community over 65 years old	583*
Members of the community under 18 years old	4,272
Members of the community that identify as having disability status	477
Members of the community that speak English less than "very well"	58
Members of the community living below the poverty line	316
The number of mobile homes in the community	0
Members of the community without health insurance	762
Occupied housing units with tenants without a vehicle	29
Housing units without heating fuel	0

*The number of community members over 65 years is likely higher than the number provided by the ACS 2017.

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Flooding: Flooding events can have an impact on school openings and with a large population under 18 years old, coordination will be needed to ensure educational attainment is not impacted by flooding events. Floods are related to an excess of snowmelt, rainfall, or failure of natural or engineered impoundments onto riverbanks and adjacent floodplains. Floodplains are lowland areas near rivers, lakes, reservoirs, and low terrain urban areas that are subject to recurring floods. Flooding occurs when the peak discharge, or rate of flow in cubic feet per second (cfs) is larger than the channel of the river or storm sewer capacity. Flooding events may yield temporary evacuation and relocation needs, depending on the damage. In Bluffdale, as in many other communities, floods are typically localized events. Possible causes in Bluffdale include:

- Runoff from heavy rain on the hills west of Bluffdale such as Wood Hollow
- Breaching of one of the canals that run through Bluffdale
- Obstructed or clogged storm drains

- Jordan River overflowing its banks

Flood damage includes saturation of land and property, erosion, deposition of mud and debris, and property damage from fast flowing water. Most injuries and deaths occur from fast moving floodwaters, while most property damage results from inundation by sediment-filled water.

The main potential flood source in Bluffdale is the Jordan River. There are three residential structures in the 0.2% annual chance flood zone that are located near this river.

The City of Bluffdale has no repetitive loss properties identified in the National Flood Insurance Program (NFIP).

Bluffdale City participates in the National Flood Insurance Program (NFIP). In order to continue to comply with the program, the city adopts floodplain management requirements and enforces those requirements by issuing certificates for new construction. The certificates allow the city to regulate construction in Special Flood Hazard Areas (SFHAs). The GIS and the engineering division department in the city has updated floodplain identification and mapping in order to facilitate issuing certificates or responding to any public requests for information. The city coordinates with Salt County during flood events and monitors current snow pack to evaluate the possibility of flooding conditions.

Figure. City of Bluffdale FEMA Flood Risk Map

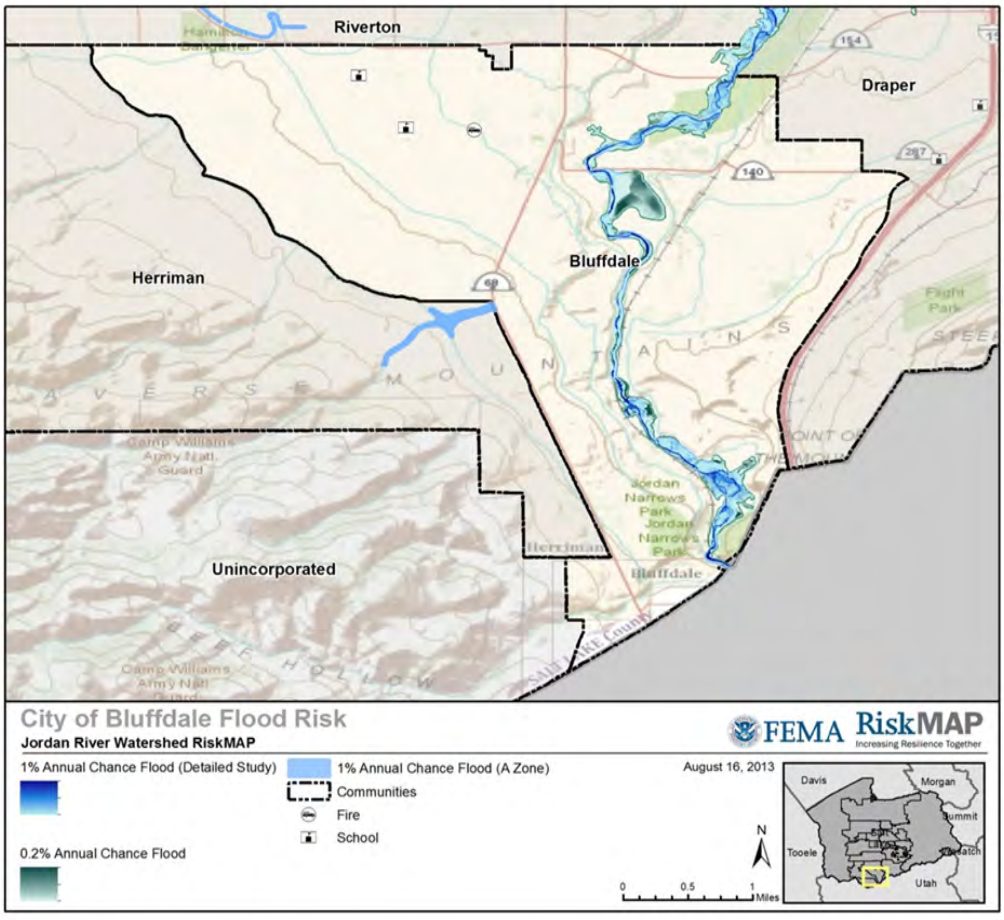


Table 1. Bluffdale Flood Loss Estimates

Structure Occupancy Type	11% Annual Chance Structure Exposure	1% Annual Chance Building and Contents Loss	0.2% Chance Structure Exposure	0.2% Chance Building and Contents Loss
Residential	0	0	3	$2,070,290.00
Total	0	0	3	$2,070,290.00

Table. Areas of Risk and Mitigation Interest

The Welby-Jacobs Canal was not designed for stormwater collection. Flood discharge from upstream drainages and recent developments enters the canal system.
The Welby-Jacobs Canal is elevated and could be impacted by ground shaking associated with earthquakes.
Wood Hollow is a drainage that currently has no SFHA depicted on the FIRM. However, the City recognizes the potential impacts of current and future development pressures and would like to have the drainage studied to ensure flood conveyance to the Jordan River.

Extreme Temperatures: Winter events are more frequent than high-temperature events. Of specific concern for this hazard is the elderly and people without insurance. Health side effects are common with extreme temperature events, particularly for those over 65 years.

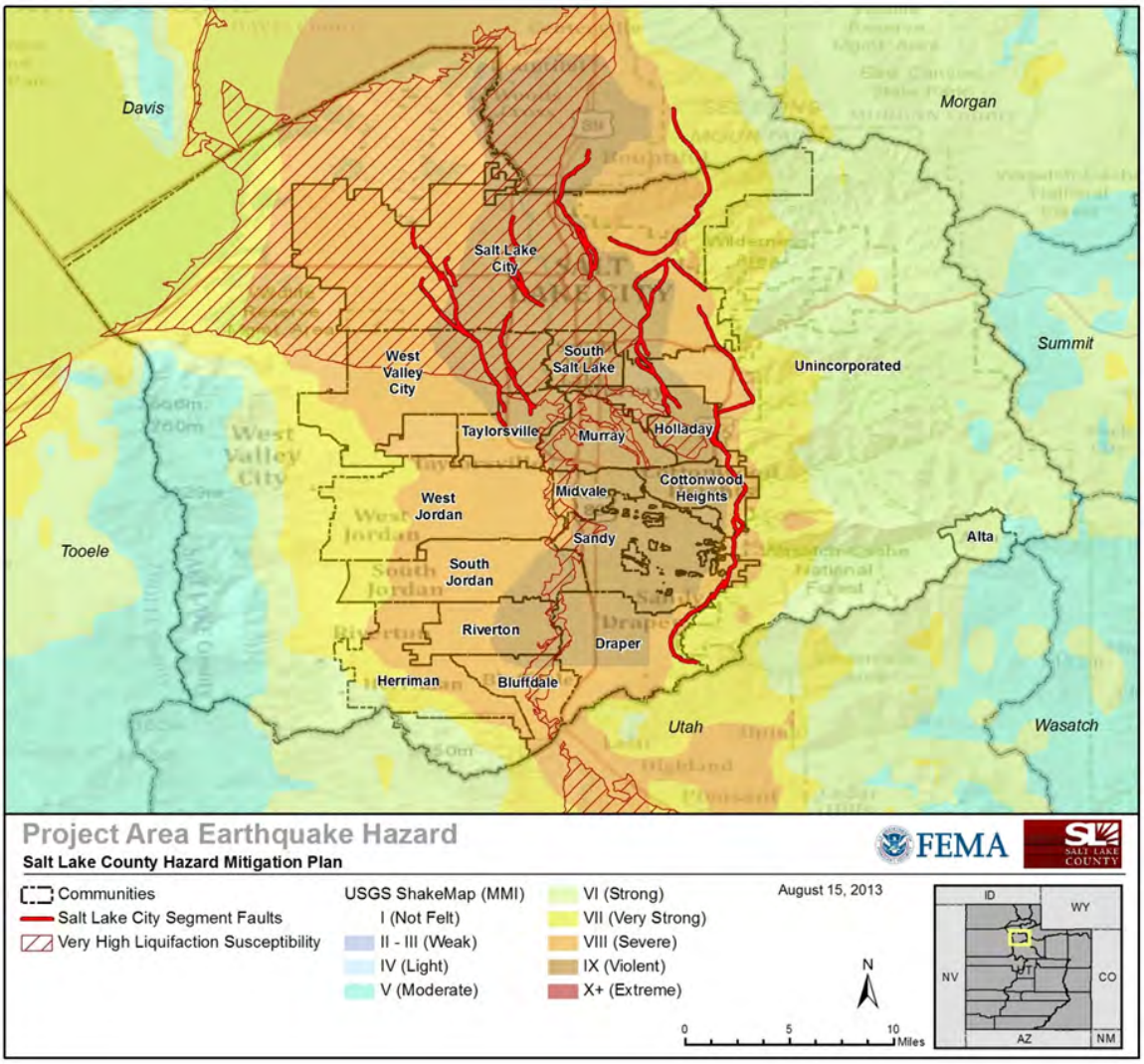
Dam Failure: The Jordan River flows through Bluffdale from south to north. In this area, several diversion structures (small dams) direct part of the river flow into irrigation canals that supply water for farming and irrigation in Salt Lake County. The risk of flooding from the failure of one of these dams is low because the dam is less than 20 feet high. Salt Lake County Flood Control District should have information on the flooding risk of these structures. A diversion dam failure will affect the delivery of irrigation water to farmers and homes increasing the risk of crop failure if the dam breaks in the summer months. The diversion dams and canals are owned and managed privately. Each canal company has a risk assessment for their canals.

Drought: Bluffdale City has large swings in temperature and in precipitation amounts during any year and is highly susceptible to drought. Drought can be especially problematic for farmers and sustaining farmland areas in Bluffdale. If drought conditions occur the City would restrict the use of water for outdoor landscaping. The cost benefit for reducing or restricting the use of water during a drought is the prolonged use of water for more beneficial use as farming to produce crops and sustain animal life.

Earthquake: Utah's earthquake hazard is greatest within the Intermountain Seismic Belt (ISB), which extends 800 miles from Montana to Nevada and Arizona, and trends from north to south through the center of Utah (The Wasatch Fault, UGS PIS 40). The ISB contains the Wasatch fault; one of the longest and most active normal faults in the world, with a potential for earthquake

with a magnitude up to 7.5. The largest earthquakes in Utah occur in the ISB, where at least 35 earthquakes of magnitude 5.0 or greater have occurred since 1850 (UNHH, 2008).

Figure. Bluffdale's Earthquake Hazard ranges from Very Strong to Violent



The segment of the Wasatch Fault that most clearly affects Bluffdale lies at the base of the foothills to the east, commonly referred to as the "Point of the Mountain." The faulting of this segment would be felt most strongly in the eastern section of Bluffdale, which lies just west of I-15 and south of 14600 South. The increase in new building at this location means more homes will be affected if this fault ruptures.

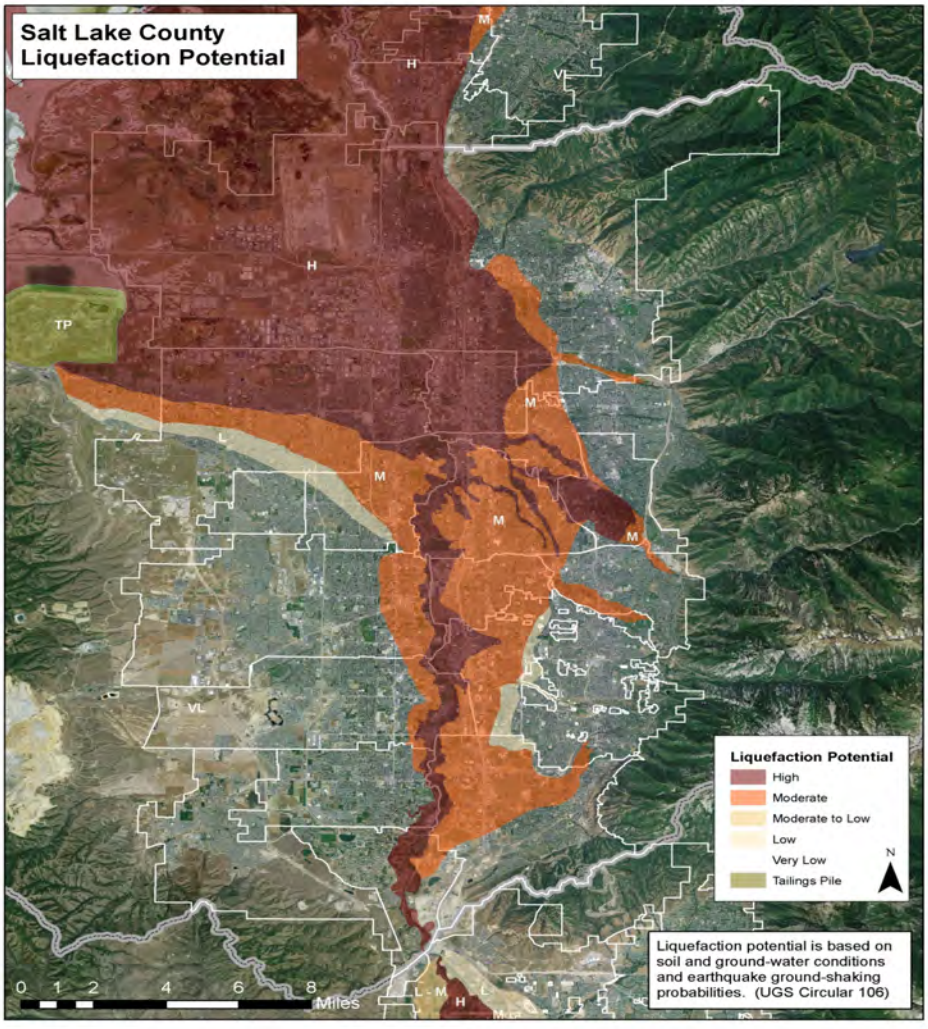
Of significant concern in Bluffdale are the many critical infrastructure facilities, which serve both Salt Lake and Utah Counties. Those facilities include very large water lines, large irrigation canals, utilities, power, railroads, major transportation routes, and a major natural gas line.

Large areas of ground surrounding the Jordan River are at risk for soil liquefaction during an earthquake. Liquefaction can occur when water-saturated, cohesionless, sandy soils are

subjected to ground shaking. The soils "liquefy" or become like quicksand, lose bearing capacity and shear strength, and readily flow on the gentlest of slopes. Liquefaction is common in areas of shallow ground water and sandy or silty sediments. Liquefaction can produce lateral spreading and flows, where surface soil layers break up and move independently. Displacement of up to 3 feet may occur, accompanied by ground cracking and differential vertical displacement. Soil may move downhill, pulling apart roads, buildings, pipelines and buried utilities. Bearing capacity will lessen and can cause buildings to settle or tip, while lightweight buoyant structures such as empty storage tanks may "float" upward. Liquefaction can also cause foundation materials beneath earth fill dams to liquefy and fail, flooding by ground water in low-lying areas, the backup of gravity fed systems, and possible sand boils. Sand boils are deposits of sandy sediment ejected to the surface during an earthquake along fissures. Liquefaction can occur during earthquakes of magnitude 5.0 or greater (UNHH, 2008).

Bluffdale City requires a geotechnical investigation for any structure or home built. The liquefaction potential is shown in this investigation.

Figure. Bluffdale's Liquefaction Potential



Tornado: Although infrequent, Bluffdale City is subject to severe damage resulting from tornadoes and extremely high winds often called microburst winds.

Severe Weather: The potential for severe weather is a reality in Bluffdale City and the surrounding region. These weather events are not isolated to any climatic season, but rather can occur at any time during the year. During the spring and summer months, heavy rains can fall upon soils in a desert climate that may not readily percolate creating surface runoff, mudslides, debris flow, flooding, and other water-related damage. During the winter months, heavy snowfall is possible. While Bluffdale City is typically self-reliant in weather-related events, severe weather may require assistance from outside agencies.

Winter weather systems and snowstorms over northern Utah can have a dramatic effect on regional commerce, transportation, and daily activity and are a major forecast challenge for local meteorologists. Bluffdale City will continue to identify new methods to minimize the impact of winter storms, but it is not possible to prepare for all winter storm events.

Although infrequent, Bluffdale City is subject to severe damage resulting from tornadoes and extremely high winds often called microburst winds. As recent as August 11, 1999, a category F2 tornado touched down in the downtown Salt Lake City area, killing one person and injuring at least 100 people. The tornado caused widespread power outages as well as large-scale debris mainly from downed tree limbs. The community needs to be prepared and ready to respond to wind-related weather.

Wildfire: Given the proximity to the mountains, wildfires have the potential to cause limited damage and loss of life and property through fire events. While limited in probable location, fires can occur within the borders of the urban fabric of the community or as wildfires in the hillside areas south and west of the community. Each incident may require a unique response. Fires can occur within the urban fabric of the community or as wildfires in the hillside areas south and west of the community. Each incident may require a unique response.

The potential for structure and wildfires is increased by lightning events. When severe electrical storms are anticipated, the City Manager may request a heightened level of observation by city personnel.

Utah's fire season typically occurs during the warmer and drier months between May and October. Although traditionally most wildfires have been caused naturally, mostly by lightning, as development encroaches on the hillsides and lower slopes of the Wasatch and Oquirrh Mountains, wildfires caused by humans will likely increase. Education and careful preparation are necessary to protect life and personal property in vulnerable areas. Bluffdale works continually to incorporate a Wildland Interface Zone mitigation plan. Other programs such as the Firewise Communities program may be used to educate residents about the dangers of wildfire and help them prepare for these types of disasters.

Public Health: The city has a high concentration of wildlife which heightens the potential for an animal disease outbreak. On a regular basis, potentially catastrophic public health issues are raised in the mainstream media and the possibility of a national pandemic, local epidemic such as the Hantavirus, or a wide array of other health-related matters is real. Planning for these events is well beyond the ability of Bluffdale City, but if an outbreak were to occur, the City will be expected to provide accurate information in an immediate fashion. In the event of a public health emergency, the City Manager will determine the appropriate measure of municipal response. The

City Manager may choose to activate the EOC and use all means necessary to inform residents and business owners.

In partnership with local and state public health officials, other federal agencies, medical and public health professional associations, infectious disease experts from academia and clinical practice, and international and public service organizations, Bluffdale City will incorporate all reasonable strategies to educate its residents and prepare for a measured response in the instance of a public health emergency.

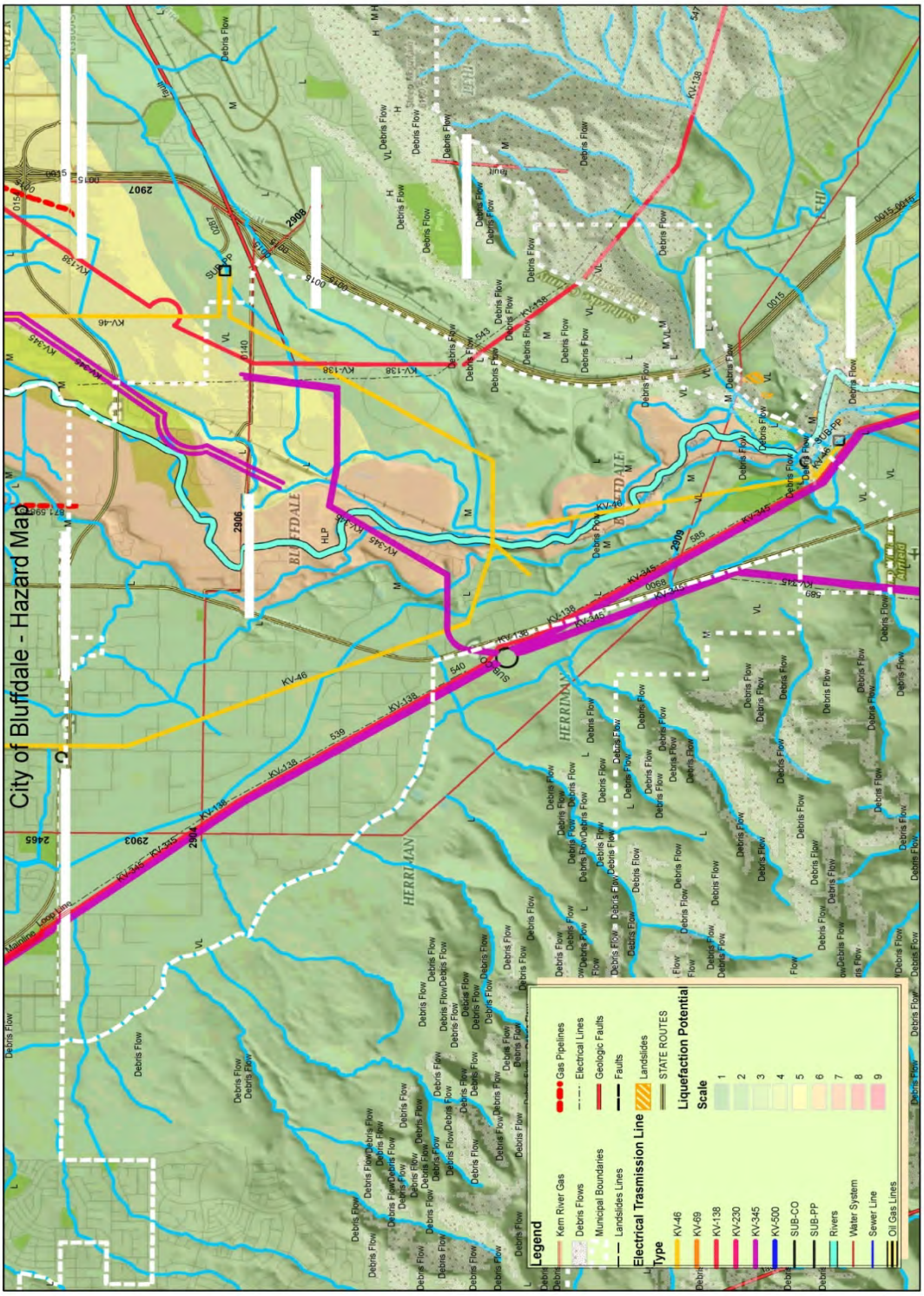
Radon: High levels of radon are found in the area. Radon is a radioactive gas that has no smell, taste, or color. It comes from the natural decay of uranium that is found in nearly all rock and soil. When geologic conditions are favorable, the potential increases for high indoor levels of radon. Outdoor radon levels never reach dangerous concentrations because air movement scatters radon into the atmosphere. Radon is a hazard in buildings because the gas collects in enclosed spaces. Radon decays into radioactive particles that can be trapped in the lungs when inhaled. These particles release small bursts of energy that damage lung tissue and may lead to lung cancer. Radon is the second leading cause of lung cancer in the United States.

HAZMAT: Hazardous materials move through the area through multiple avenues, including the train and Redwood Rd and I-15. A spill during transport is a concern.

Avalanche: The likelihood of avalanches impacting Bluffdale is extremely minimal. There are no adjacent mountains steep enough to be of concern and no historical avalanche activity in our community.

Landslide: Some areas are at risk of impact from a landslide including 14600th South and Highway 140 and parts of the community subdivision. Numerous geologic hazards exist in Bluffdale and throughout the Salt Lake Valley that could result in an emergency or disaster. Earthquake hazards are likely to include ground shaking, ground rupture, tectonic deformation, liquefaction, seismically induced slope failures and phenomena related to ground-water effects. Wildfires can remove necessary vegetation, which can result in unstable soils for extended periods of time. The most proactive approach to minimize geologic hazard is to avoid development in inappropriate areas. The potential for geologic events can be partially mitigated through proper placement of development. Each incident may require a unique response from Bluffdale City.

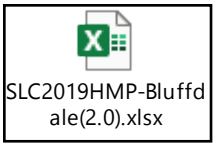
Figure. City of Bluffdale Hazards Map



Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Severe Winter Weather	3	16	48
Severe Weather	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Wildfire	2	19	38
Flooding	2	17	34
Cyber Attack	2	17	34
Hazardous Materials Incident	2	14	28
Drought	2	14	28
Radon	3	9	27
Terrorism	1	25	25
Landslide and Slope Failure	2	11	22
Dam Failure	1	17	17
Tornado	1	11	11
Civil Disturbance	1	8	8
Avalanche	1	3	3

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.



Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1		Avalanche	Low	1	3
Dam Failure	Low	1		Dam Failure	Low	1	3
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Low	1	3
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Medium	2		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	High	3	9
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	Medium	2		Wildfire	Medium	2	6

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	No Impact	0	0		Avalanche	No Impact	0	0
Dam Failure	Low	1	1		Dam Failure	High	3	6
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Low	1	2
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	Medium	2	4
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	High	3	6
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Low	1	2
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	Low	1	1		Wildfire	High	3	6

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**	**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)	**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)	**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)	**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)	**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)
Avalanche	No Impact	0	0
Dam Failure	Low	1	1
Drought	Medium	2	2
Civil Disturbance	Medium	2	2
Cyber Attack	Medium	2	2
Earthquake	High	3	3
Flooding	Medium	2	2
Hazardous Materials Incident	Medium	2	2
Landslide and Slope Failure	Low	1	1
Public Health Epidemic/ Pandemic	High	3	3
Radon	No Impact	0	0
Severe Weather	Low	1	1
Severe Winter Weather	Medium	2	2
Terrorism	High	3	3
Tornado	Low	1	1
Wildfire	High	3	3

Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Unlikely	0	0
Dam Failure	Medium	2	6
Drought	Low	1	3
Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	6
Earthquake	High	3	9
Flooding	Low	1	3
Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	9
Radon	Unlikely	0	0
Severe Weather	Unlikely	0	0
Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	9
Tornado	Unlikely	0	0
Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Low potential that this hazard could be catastrophic (Impact Factor = 1)
Unlikely—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

Action	Year Initiated	Goal/ Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Conduct a Slope Study	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Landslide/ Slope Failure	City of Bluffdale	Utah Department of Transportation	Medium	Medium $150,000	Grants and local funding	High	2026	The slope: https://www.google.com/maps/@40.4869924,-111.9216236,242m/data=!3m1!1e3 It is currently owned and managed by the Utah Department of Transportation. In 2020 it will be turned over to the City of Bluffdale. Currently, an inclinometer and a piezometer have been installed to measure water and earth movement. The slope is below a canal and train tracks owned by Union Pacific and the Utah Transit Authority. Below the slope are many homes. A study ($150,000) needs to be conducted to see how to best move the road and stabilize the slope. This road is one of the main thoroughfares for the City of Bluffdale and is essential for transportation, evacuation access East to West. The cost of mitigation is until the study is conducted.
Increase drinking water storage	2019	Goal 5: Ensure and promote ways to increase government and private sector continuity of	All-Hazards, Extreme Heat, Wildfire	City of Bluffdale	Jordan Valley Water Conservancy District	High	High ($15 million)	Grants and local funding	High	2026	Adding drinking water storage to the City of Bluffdale water system is a high priority. Bluffdale purchases water from the Jordan Valley Water Conservancy District. As the City of Bluffdale continues to grow, the need for water has increased. The City will be

		services during and after a disaster.									building 3 new drinking water storage tanks at three different locations in the City. This will include miles of transmission mains. This project will take several years and many phases to complete.
Conduct a HAZMAT Flow Study	2019	Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.	Hazardous Materials Release	City of Bluffdale	N/A	Medium	Medium	Grants and local funding	High	TBD	

Mitigation Table - Ongoing Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Conduct Training and awareness activities on communication equipment, tools, and systems	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	All Hazards	Emergency Management	High	Low	Local	Medium	Completed / Ongoing	Bluffdale participates in training and exercises designed to practice using communication tools and equipment. Example: City

										uses its amateur radio volunteers
Establish agreements to share communications equipment between agencies involved in emergency operations	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	All Hazards	Emergency Management and Communications	Medium	Low	Local	Medium	Ongoing	Bluffdale continues to expand these agreements.
Establish redundancy for dispatch centers and other critical communications	2009	1 – Improve and maintain communications capabilities for emergency operations 1.2 – Maintain communications capabilities for critical facilities	All Hazards	Emergency Management and Communications	Medium	Medium	Local	Medium	Completed / Ongoing	Bluffdale relies on the Valley Emergency Communications Center (VECC) for dispatch services. They coordinate with other PSAPS to provide redundancy.
Establish a coordinating group to address long-term communication needs and implementation strategies	2009	1 – Improve and maintain communications capabilities for emergency operations 1.3 – Conduct communications Strategic Planning	All Hazards	Emergency Management and Communications	Medium	Low	Local	Medium	Ongoing	These meetings are on-going.
Acquire, upgrade, and/or integrate communications equipment and systems as	2009	1 – Improve and maintain communications capabilities for	All Hazards	Emergency Management and Communications	Medium	Low	Local	Medium	Ongoing	Bluffdale has upgraded existing equipment and purchased new equipment to

determined by coordinating group		emergency operations 1.3 – Conduct communications Strategic Planning								maintain operability
Integrate existing hazard monitoring networks in emergency operations centers. Utilize sensors such as weather stations, stream gauges, seismograph stations, road conditions, etc.	2009	2 – Improve awareness and analysis of hazards 2.2 – Improve and expand hazard monitoring capabilities	All Hazards	Emergency Management and Communications	High	Medium	Local	Medium	Completed / Ongoing	New technologies have been added to the EOC and exploring new options.
Implement improvements to address concerns identified in assessment	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	All Hazards	Emergency Management	High	High	Federal grants such as HMA and local funding	High	In Process	
Compile inventory of mutual-aid agreements and memoranda of understanding (MOU) and identify deficiencies	2009	4 – Improve response capabilities through mutual-aid agreements 4.1 – Utilize mutual-aid	All Hazards	Emergency Management	High	Low	Local	High	Completed/ Ongoing	Bluffdale has formal agreements for Police, Fire, and Water

		agreements in accordance with National Incident Management System (NIMS) requirements								
Pursue and implement needed mutual-aid agreements	2009	4 – Improve response capabilities through mutual-aid agreements 4.1 – Utilize mutual-aid agreements in accordance with National Incident Management System (NIMS) requirements	All Hazards	Emergency Management	Medium	Low	Local	Medium	Completed/ Ongoing/In Process	
Provide education regarding all natural hazards through live trainings, as well as web-based, print and broadcast media	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – establish a comprehensive public education program	All Hazards	Emergency Management	High	Low	Local	High	Completed/ Ongoing	Bluffdale Emergency Management provides several public education classes for groups to discuss the hazards in the community and what residents can do to be prepared
Develop education programs to target specific groups including homeowners, developers, schools and people with special needs	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – Establish a comprehensive	All Hazards	Emergency Management	Medium	Low	Local	Medium	Completed/ Ongoing	Bluffdale's education programs are customizable for all kinds of groups and available to all members of the community

		public education program								
Coordinate with existing public education programs such as the American Red Cross, Utah Living with Fire, be Ready Utah, the National Weather Service, etc.	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – Establish a comprehensive public education program	All Hazards	Emergency Management and Communications	High	Low	Local	High	Completed/ Ongoing	Bluffdale has worked with Be Ready Utah, American Red Cross and other groups to present to the citizens of our community
Establish and enforce appropriate planning, zoning, and building code ordinances	2009	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	All Hazards	Emergency Management and Zoning	High	Low	Local	High	Completed/ Ongoing	Bluffdale enforces all current ordinances and building codes including ordinances like our Flood Damage Prevention and Land Disturbance ordinances.
Emergency Managers will coordinate with local water districts/public utilities to support ongoing conservation efforts	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Drought	Emergency Management	Medium	Low	Local	Medium	Completed/ Ongoing	

Investigate feasibility of implementing an incentive program to encourage the use of low-flow appliances and fixtures in homes and businesses	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Drought	Emergency Management and Public Works	Medium	Medium	Local and County funding	Medium	Completed/ Ongoing	Bluffdale has a variety of incentive programs that it offers to its residents related to water conservation. We have a tiered pricing structure to promote conservation
Implement water-saving devices and practices in public facilities	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Drought	Emergency Management and Public Works	High	Medium	Local, state, and federal funding	Medium	Completed/ Ongoing	Bluffdale has implemented several projects including using secondary and reuse water to irrigate public parks instead of culinary water
Repair, maintain and improve water distribution infrastructure to prevent loss from leakage, breaks, etc.	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Drought	Emergency Management and Public Works	High	Medium	Local, state, and federal funding	High	Completed/ Ongoing	The Bluffdale Water Division responds immediately to all reports of leaks and performs regular system maintenance, including actively monitoring for leaks, theft of services, etc.
Coordinate public safety water use, such as hydrant testing	2009	1 – Reduce and prevent hardships	Drought	Emergency Management and Public Works	High	Low	Local	Medium	Completed/ Ongoing	The Bluffdale Water Division coordinates all water use, including the

		associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County								testing of hydrants in partnership with the fire department
Coordinate with water districts to plan for, develop and/or expand secondary water	2009	1 – Reduce and prevent hardships associated with water shortages 1.3 – Encourage development of secondary water systems	Drought	Emergency Management and Public Works	High	High	Local, state, and federal funding	Medium	Completed/ Ongoing	Bluffdale continues to encourage the development of secondary water, where feasible. With every road project we add reuse lines.
Encourage Communities to actively participate in NFIP	2009	1 – Protection of life and property before, during and after a flooding event 1.1 – Provide 100% availability of the National Flood Insurance Program	Flooding	Emergency Management	High	Low	Local	High	Completed/ Ongoing	Bluffdale actively participates in the NFIP
Determine potential flood impacts and identify areas in need of additional flood control structures	2009	1 – Protection of life and property before, during and after a flooding event 1.2 – Encourage appropriate flood control measures, particularly in	Flooding	Emergency Management, Engineering, and Public Works	High	Medium	Local, state, and federal funding	High	Completed/ Ongoing	The City Engineer and Public Works Director regularly review the impact of development and the need for flood control infrastructure and make

		new developments								recommendations as needed
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures	2009	1 – Protection of life and property before, during and after a flooding event 1.2 – Encourage appropriate flood control measures, particularly in new developments	Flooding	Emergency Management, Engineering, and Public Works	High	High	Local, state, and federal funding	High	Completed/ Ongoing	The City Engineer and Public Works Director oversee the construction of flood control structures
Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of storm water and flood control systems	2009	1 – Protection of life and property before, during and after a flooding event 1.3 – Provide maintenance, repairs and improvements to drainage structures, storm water systems and flood control structures	Flooding	Emergency Management, Engineering, and Public Works	High	High	Local, state, and federal funding	High	Completed/ Ongoing	The Division of Public Works Department continues to maintain and repair all drainage systems in the City
Identify and assess structures for deficiencies	2009	2 – Reduce threat of unstable or inadequate flood control structures 2.1 – Reduce potential for	Flooding	Emergency Management, Engineering, and Public Works	High	High	Local, state, and federal funding	Medium	Completed/ Ongoing	

		failure of flood control structures								
Modify structures as needed to address deficiencies	2009	2 – Reduce threat of unstable or inadequate flood control structures 2.1 – Reduce potential for failure of flood control structures	Flooding	Emergency Management and Public Works	High	High	Local, state, and federal funding	High	Completed/ Ongoing	The City Engineering Division in cooperation with the Public Works Department make repairs as needed to deficient structures
Assist NWS in making other agencies and departments aware of available resources	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.2 – Increase awareness of information services provided by NWS	Severe Weather	Emergency Management	Medium	Low	Local	High	Completed/ Ongoing	Bluffdale supports the NWS efforts for education and outreach and makes internal departments aware of NWS resources
Utilize recommendations provided by the State Geological Hazards Working Group to address land-use and planning for new developments	2009	1 – Reduce or eliminate the threat of slope failure damage 1.3 – Address landslide hazards in new sub-divisions	Slope Failure	Emergency Management, Public Works, Engineering, and GIS	Medium	Medium	Local	High	Completed/ Ongoing	Bluffdale Engineering and Planning reviews recommendations as provided pertaining to development within the City
Work with experts and communities to develop or update evacuation plans	2009	2 – Improve safety from wildfire hazards through planning, protective actions and	Wildland Fire						Ongoing	

		improved fire response capabilities 2.2 – Improve evacuation capabilities for WUI areas								
Determine potential flood impacts and identify areas in need of additional flood control infrastructure. Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures. Provide maintenance, repairs, and improvements to drainage structures, storm water systems, and flood control structures. Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of storm water and flood control	2014	Goal 1 Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Flood	Public Works, Planning, Engineering	High	High - $35,000.00	City budget	Medium-High	Now and ongoing	

systems. Reduce threat of unstable or inadequate flood control structures. Identify, assess, and modify as needed. Educate home and property owners regarding the risks of flooding. Identify potential flooding of Wood Hollow, Beef Hollow, and Rose Creek drainages. Continue to enforce floodplain regulations as they apply to new housing developments.										
Continue our work toward preparing our community to be storm ready, including: 1.Receive information from NWS annually of new services and alerts as available. 2.Include in our Neighborhood Emergency Plan the importance of caring	2014	Goal 1 Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Severe Weather	Emergency Management, Public Works, Fire Department	High	Low - $11,000	City budget	Medium-High	Now and ongoing	

for our older residents who will need help during severe weather. 3.Continue to educate all residents about how to prepare for severe weather.										
Continue to urge resident preparation through seasonal articles in the monthly newsletter Create evacuation plans for high risk areas Continue to assess existing water flow capabilities and address deficiencies. Continue to keep Wildland-Urban Interface as an important element to our development and insure that developers follow our city code for road accessibility and availability of water flow for fire response.	2014	Goal 4 Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters.	Wildfire	Emergency Management, Public Works, Police, Fire	Medium	Low - $15,000	City budget	Medium	Now and ongoing	

Mitigation Table - Completed and Removed Action

Category	Year Initiated	Goal / Objective	Action	Status	Comments
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.2 – Maintain communications capabilities for critical facilities	1 – Evaluate vulnerability of critical communications systems	Completed	Bluffdale evaluates areas of vulnerability and develops solutions to ensure communication systems or alternate solutions are viable Example: The development of a second / redundant radio system for the Police, Fire, and Public Works Departments
All Hazards	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	1 – Utilize GIS to identify facilities and infrastructure at risk	Completed	In 2012 Bluffdale GIS, Fire and Emergency and Risk Management personnel did an extensive hazard and risk assessment on all structures in the city to evaluate their level of risk.
All Hazards	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	2 – Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment resources and redundancy, and adequate emergency procedures	Completed	In 2012 Bluffdale GIS, Fire and Emergency and Risk Management personnel did an extensive hazard and risk assessment on all structures in the city to evaluate their level of risk
All Hazards	2009	5 – Increase citizen safety through improved hazard awareness	2 – Incorporate information about cascading effects of hazards in education programs	Completed	Information is included in all presentations on the effects of cascading hazards

		5.1 – Establish a comprehensive public education program			
All Hazards	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – Establish a comprehensive public education program	4 – Utilize maps and similar products on County EM website and other media to educate public on areas at risk to hazards	Completed	Bluffdale GIS personnel have compiled and made available hazard maps to help educate the public on potential hazards in the city
All Hazards	2009	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	2 – Ensure current hazard ordinances are available for viewing online	Completed	All current Bluffdale ordinances are available online at: http://www.sterlingcodifiers.com/ codebook/index.php?book_id=974&keywords=bluffdale
Dam Failure	2009	1 – Include dam failure inundation in future County and City planning efforts 1.1 – Review current State dam safety information on all identified high hazard dams in the County	1 – Include dam inundation maps in current County, City and Special Service District Emergency Operations Plans	Completed	
Dam Failure	2009	1 – Include dam failure inundation in future County and City planning efforts 1.1 – Review current State dam safety information on all	2 – Utilize inundation maps to identify potential evacuation areas and routes	Completed	

		identified high hazard dams in the County			
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.2 – Address agricultural water shortages in the County	1 – Set up livestock water rotation in areas of agricultural use	Not applicable	This is not applicable to Bluffdale
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	1 – Identify structures at risk to earthquake damage	Completed	In 2012 Bluffdale GIS, Fire and Emergency and Risk Management personnel did an extensive hazard and risk assessment on all structures in the city to evaluate their level of risk
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	2 – Research feasibility of an incentive program for retrofitting privately-owned buildings, particularly unreinforced masonry	Not Applicable	Bluffdale does not have funding to support this type of program.
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	3 – Complete seismic rehabilitation/retrofitting projects of public buildings at risk	Not Completed	We are working to replace the Public Works Building

Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.2 – Improve public education regarding earthquake risks to unreinforced masonry buildings	1 – Provide educational materials to unreinforced masonry home and business owners	Not Completed	There are very few URM homes and businesses located in Bluffdale that would make this activity cost effective for the City to engage in. Bluffdale supports county level efforts to share this type of information
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.3 – Improve Seismic Hazard understanding and seismic resistance of CUWCD Red Butte Dam in Salt Lake County.	1 – Procure Engineering Consultant to perform the nonstructural design and geotechnical assessment and review.	Not Completed / Not Applicable	Not applicable to Bluffdale as the referenced dam is located in another jurisdiction.
Flooding	2009	1 – Protection of life and property before, during and after a flooding event 1.1 – Provide 100% availability of the National Flood Insurance Program	1 – Assist Cities with NFIP application	Not Applicable	
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.1 – Maintain status as a StormReady Community	1 – Maintain Hazardous Weather Operations Plan according to StormReady requirements	Not Completed / Not Applicable	Bluffdale does not have a Weather Operations Plan and does not participate in the StormReady program. This is a Salt Lake County level program

Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.1 – Maintain status as a StormReady Community	2 – Maintain Contact with NWS prior to re-application in 2010	Not Completed / Not Applicable	Bluffdale does not have a Weather Operations Plan and does not participate in the StormReady program. This is a Salt Lake County level program
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.4 – Examine the vulnerability of patrons at large event venues to extreme weather events	1 – Work with NWS to develop large event venue weather safety and evacuation procedures	Not Completed	Bluffdale has not developed a large event venue weather safety plan and/or evacuation procedures with the NWS
Slope Failure	2009	1 – Reduce or eliminate the threat of slope failure damage 1.1 – Reduce the threat of slope failures following wildfires	1 – Develop protocol for working with State and Federal agencies in reducing the impact of post-fire debris flow hazard	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Slope Failure	2009	1 – Reduce or eliminate the threat of slope failure damage 1.2 – Monitor historic landslide areas	1 – Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	1 – Community education on wildfire hazard 1.1 – Reduce risk from wildfire through education programs	1 – Increase public awareness through “Firewise” program	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable

Wildland Fire	2009	1 – Community education on wildfire hazard 1.1 – Reduce risk from wildfire through education programs	2 – Educate homeowners on the need to create defensible space near structures in WUI	Not Completed / Not Applicable	
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.1 – Assist homeowners with creating defensible space near structures in WUI areas	1 – Designate and promote county-wide annual initiative for clearing fuels	Not Completed / Not Applicable	
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.1 – Assist homeowners with creating defensible space near structures in WUI areas	2 – Provide waste removal, such as chipping of green waste by public works, following designated fuel clearing day/week	Not Completed / Not Applicable	
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.2 – Improve evacuation	2 – Evaluate transportation network and address needed improvements to facilitate evacuation and emergency response	Completed	Bluffdale has an adequate transportation network to support evacuation and emergency response

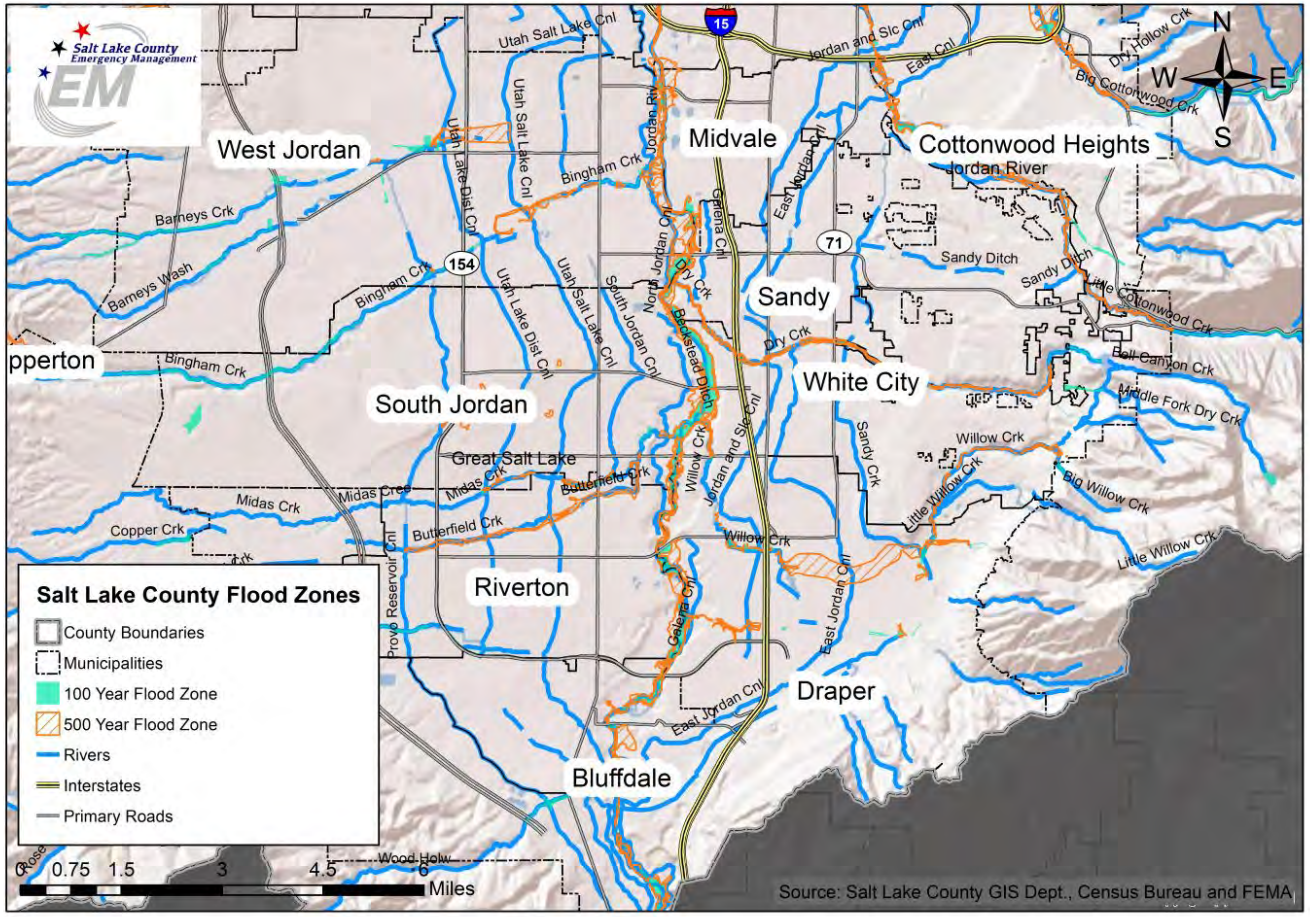
		capabilities for WUI areas			
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.3 – Improve addressing system in WUI areas to facilitate emergency response	1 – Identify all facilities, businesses, and residences, particularly in the canyons, and assign addresses according to current county addressing standards	Completed	Addressing of structures in Bluffdale is complete
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.3 – Improve addressing system in WUI areas to facilitate emergency response	2 – Incorporate improved addresses in fire-dispatch and other databases	Completed	Addressing of structures in Bluffdale is complete
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	1 – Reduce fuels around publicly owned structures	Not Applicable	

Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	2 – Implement fire breaks and other protective measures	Not Applicable	
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	3 – Assess existing water flow capabilities, both public and private, and address deficiencies	Completed	The Bluffdale water system meets and/or exceeds requirements for providing water flow for firefighting purposes in the City
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	4 – Assist communities in developing Community Wildfire Protection Plans or similar plans	Not Applicable	
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities	1 – Adopt the Utah Wildland-Urban Interface Code	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable

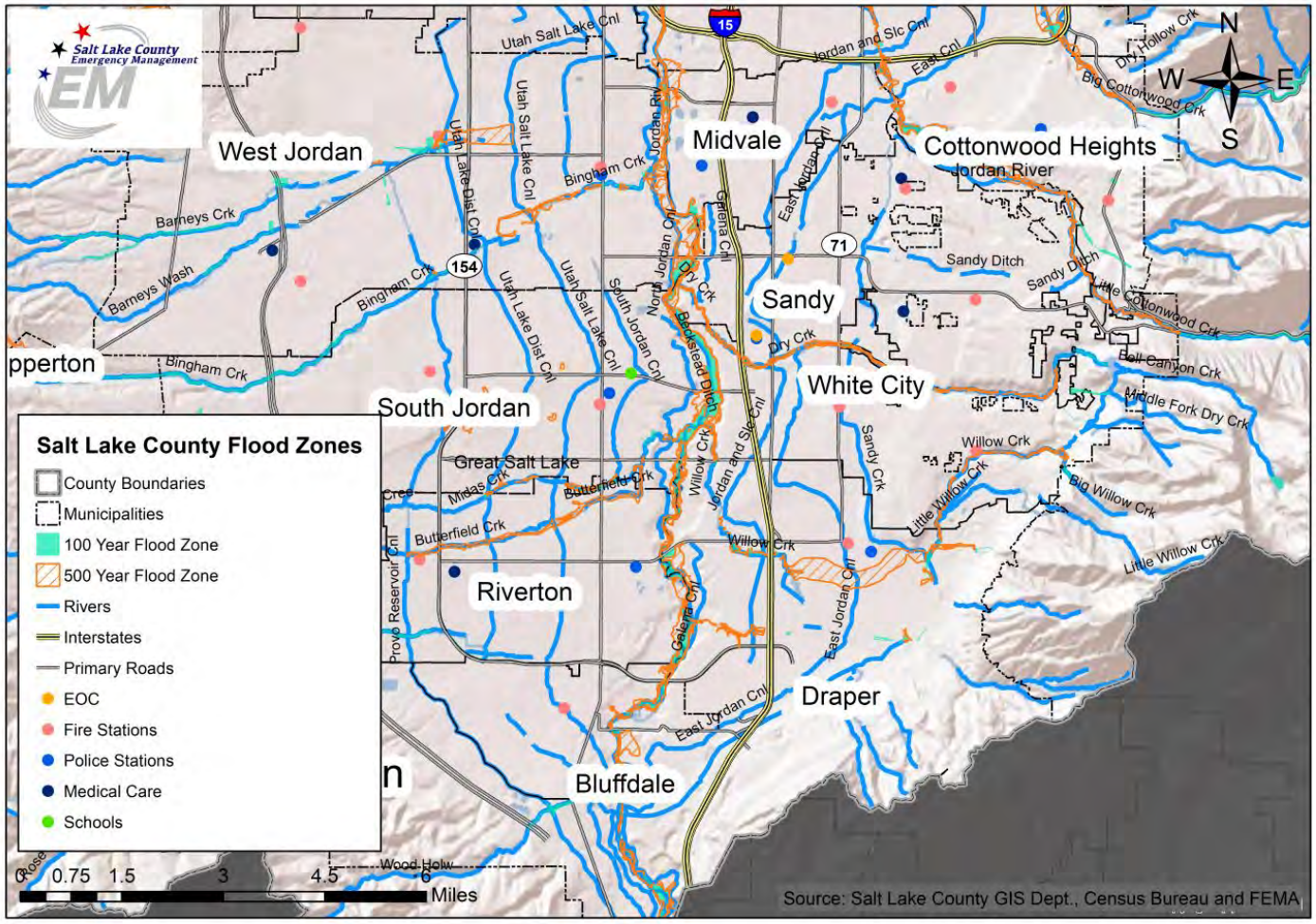
		2.5 – Encourage proper development practices in the WUI			
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.5 – Encourage proper development practices in the WUI	2 – Define wildland-urban interface and develop digital maps of the WUI	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable

Jurisdiction Maps

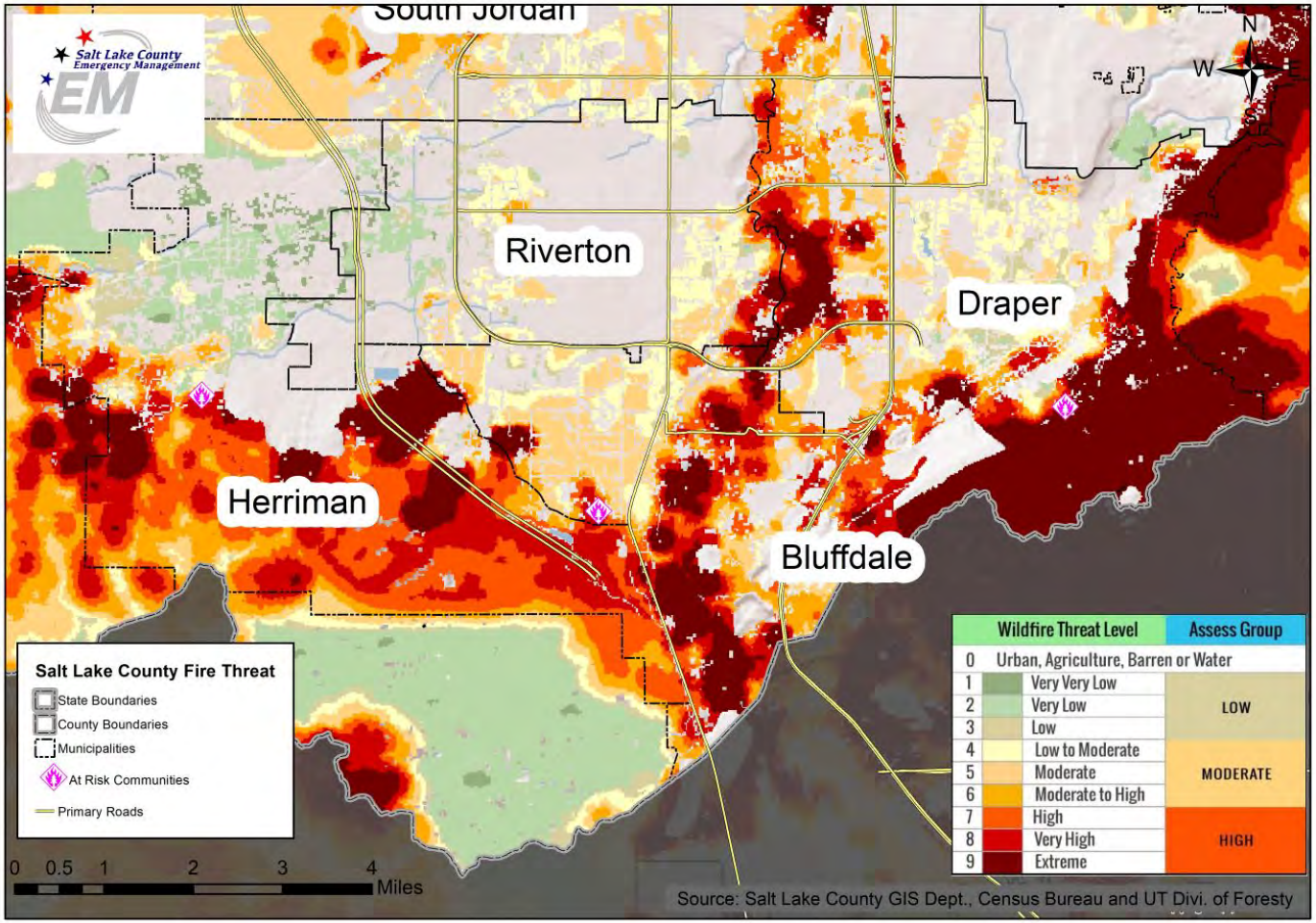
Map: 100 Year and 500 Year Flood Zone



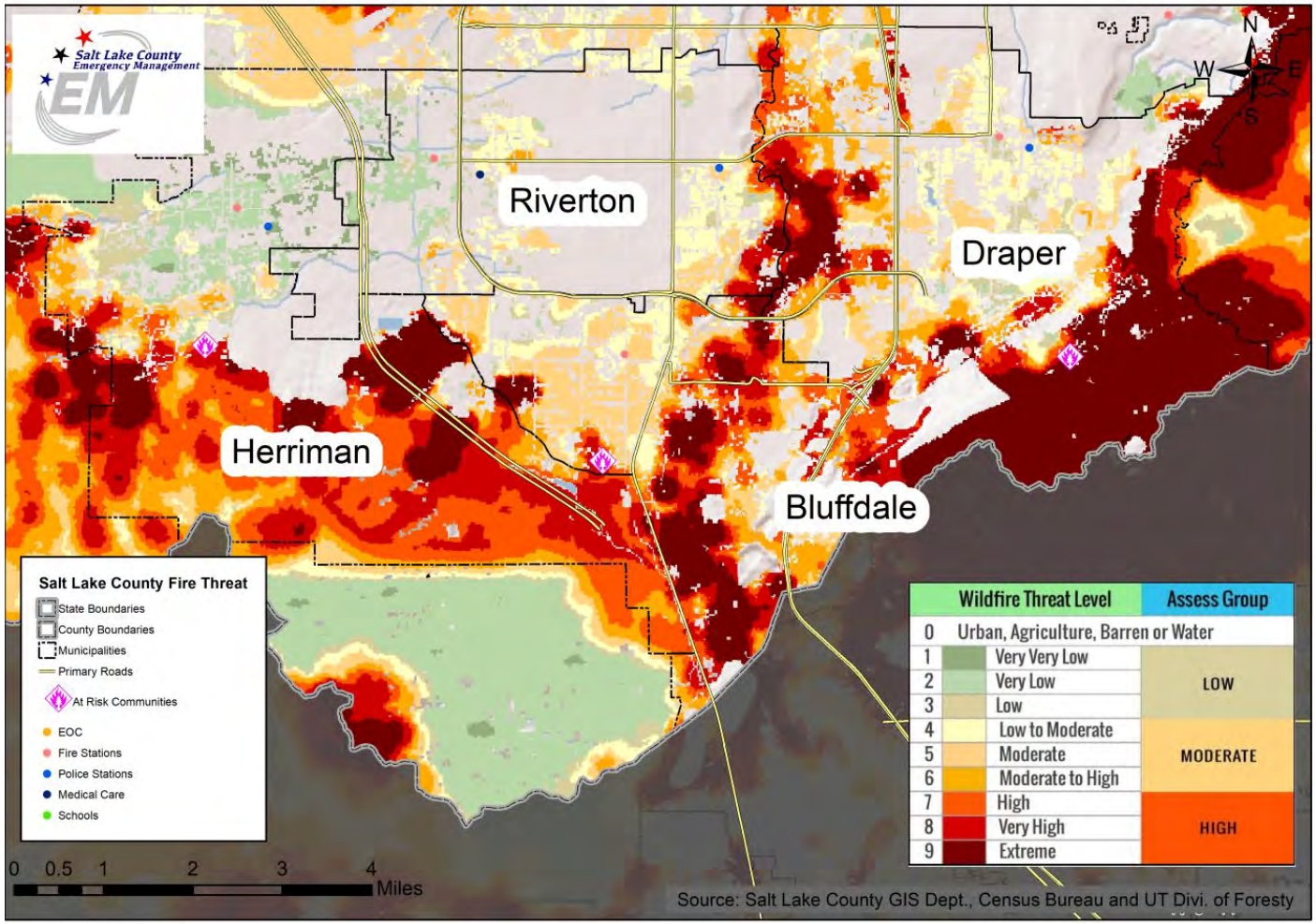
Map: 100 Year and 500 Year Flood Zone with Critical Facilities



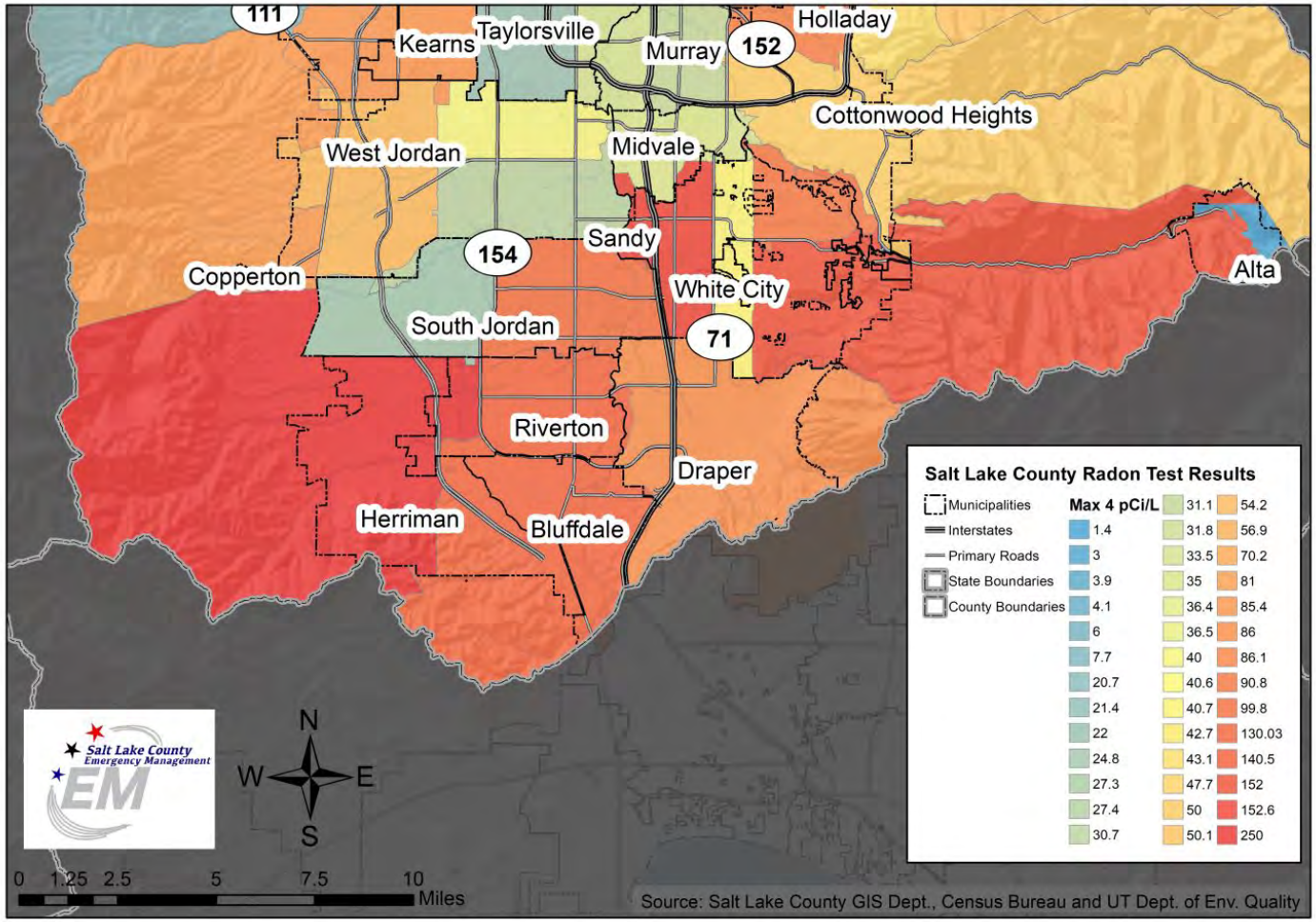
Map: Wildfire Threat Level



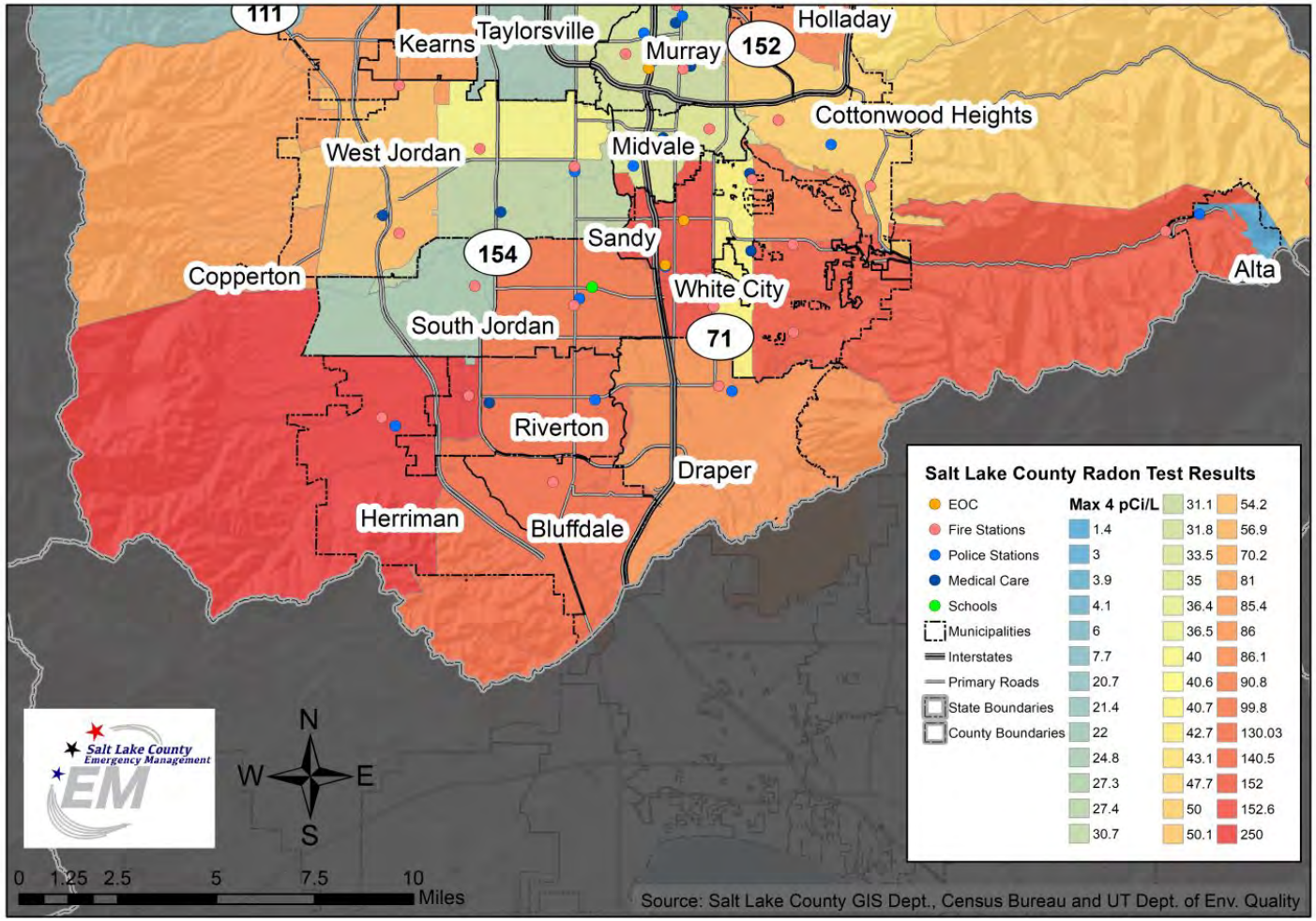
Map: Wildfire Threat Level with Critical Facilities



Map: Radon


111
Kearns
Taylorsville
Murray
152
Holladay
Cottonwood Heights
West Jordan
Midvale
Sandy
154
Copperton
White City
Alta
South Jordan
71
Riverton
Draper
Herriman
Bluffdale
Salt Lake County Radon Test Results
Municipalities
Interstates
Primary Roads
State Boundaries
County Boundaries
Max 4 pCi/L
1.4
3
3.9
4.1
6
7.7
20.7
21.4
22
24.8
27.3
27.4
30.7
31.1
31.8
33.5
35
36.4
36.5
40
40.6
40.7
42.7
43.1
47.7
50
50.1
54.2
56.9
70.2
81
85.4
86
86.1
90.8
99.8
130.03
140.5
152
152.6
250
Salt Lake County Emergency Management
EM
N
W
E
S
0 1.25 2.5 5 7.5 10
Miles
Source: Salt Lake County GIS Dept., Census Bureau and UT Dept. of Env. Quality

Map: Radon with Critical Facilities



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: Brighton

Hazard Mitigation Plan Point of Contact

Primary Point of Contact	Alternate Point of Contact
Name: Dan Knopp **Title:** Mayor **Office Phone:** 801-244-0366 **Email Address:** dan@silverforklodge.com	**Name:** Jeff Bossard **Title:** Council Member **Cell Phone:** 435-647-7941 **Email Address:** jeffboss1620@gmail.com

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation**: Brighton is working on incorporation for January 1, 2020, to officially be a town. On November 6, 2018, residents of the area voted for incorporation. The community was settled in 1871. Brighton is a part of the Municipal Services District (MSD). After incorporation, the town will have six months to decide if they will remain under the Municipal Services District or have services for the town provided through another avenue.
- **Current Population:** Approximately 260 residents. No Census data currently exists for Brighton; however, an estimation of the population is from 180-260. While the year-round population is low, Brighton is a resort area that hosts thousands of guests from around the world during peak ski-season.
- **Population Growth:** As mentioned above, the year-round population is likely below 300; however, when the area incorporates, Census data will be collected and provide population changes over time.
- **Location and Description:** Brighton is 35 miles from the Salt Lake City Airport and has a base elevation of 8,755 feet and a top elevation of 10,500 feet. Brighton is a resort community located at the top of Big Cottonwood Canyon and covers an area of 10,238.8 acres. The Brighton Ski Resort and the Solitude Mountain Resort are located in Brighton. Brighton is on public lands. All of the resort's land is part of the Wasatch-Cache National Forest, meaning the whole resort is open to the public year-round, though tickets must be purchased to use the lifts (Brighton Resort).
- **Brief History:** Brighton Ski Resort was the first ski resort in Utah, started in 1936, and one of the first in the United States. Brighton is not a typical resort town and focuses on top-notch trails over amenities. Most skiers are from Utah, and the majority of the visitors stay in the Salt Lake area instead of Brighton.
- **Climate:** Climate in Brighton is characterized by a long snowy season between November and May, during which time an annual average of 500" of snowfall is measured. Temperatures during this elongated "winter" season can reach near 0°F, and severe storm cycles often persist for several days, featuring heavy snowfall and strong winds. Snow cover can linger on upper elevation slopes until August, although the months of June, July, August, and September sometimes feature daytime high temperatures approaching 80°F. Summer weather in Brighton is generally sunny and mild, although periods of monsoonal thunderstorm activity are not uncommon (Brighton Resort).
- **Governing Body Format:** The incorporation of Brighton in 2020 will follow with a governing body establishment.
- **Development Trends:** Brighton is a local favorite for skiing due to its affordability, terrain, and top snow quality (Ski Utah). Medical services are available in the area in case of injury (Brighton Resort). Solitude Ski Resort currently has condos in the parking lot and is

potentially working on another development in the smaller parking lot. The town takes up 2/3 of the canyon. While water is bountiful, water rights limit developments. There are 17 water companies and any development requires a letter from the particular company that regulates that area. The water rights are tightly controlled by the County since the water from the area is a critical component of providing water to the rest of the County.

Capability Assessment

The city maintains a full-time staff of zero and part-time staff of 2 individuals. The Mayor is the jurisdiction's designated Emergency Manager. Hazard Mitigation Planning efforts are led by the Mayor and supported by the Town Council members.

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY				
	Local Authority Exists to Develop and Implement/ Enforce?	**A Jurisdiction-Specific Code, Ordinance and/or Requirement Currently Exists?**	**Rely on the County's Codes, Ordinances & Requirements**	**Comments**
Codes, Ordinances, & Requirements				
Building Code Development and Enforcement	No	No	Yes	Utilize County Code/Ordinance/Plan
Zonings Ordinance(s)	No	No	Yes	Utilize County Code/Ordinance/Plan
Subdivision Ordinance(s)	No	No	Yes	Utilize County Code/Ordinance/Plan
Stormwater Management Program	No	No	Yes	Utilize County Code/Ordinance/Plan
Floodplain Ordinance(s)	No	No	Yes	Utilize County Code/Ordinance/Plan

Post Disaster Recovery Program and Ordinance(s)	No	No	Yes	Utilize County Code/Ordinance/Plan
Real Estate Disclosure Ordinance(s)	Yes	Yes	Yes	Town and County codes are utilized
Public Health and Safety Program Requirements	No	No	Yes	Utilize County Code/Ordinance/Plan
Site Plan Review Requirements	No	No	Yes	Utilize County Code/Ordinance/Plan
Planning Documents				
General or Comprehensive Plan	No	No	Yes	Utilize County Code/Ordinance/Plan
Habitat Conservation Plan	No	No	Yes	Utilize County Code/Ordinance/Plan, Salt Lake City Plan, and USFS (Forest Service) Plan
Disaster Planning Documents				
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	Yes	Yes	Town utilizes County Plan
Post-Disaster Recovery Plan	Yes	Yes	Yes	Town utilizes County Plan
Continuity of Operations Plan	Yes	Yes	Yes	Town utilizes County Plan
Public Health Plan	No	No	Yes	
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	Yes	Yes	Yes	Town utilizes County Plan

TABLE: FISCAL CAPABILITY	
Financial Resources	Accessible or Eligible to Use?
Authority to Levy Taxes for Specific Purposes	Yes

User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	No
State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes (from County)	Part Time	MSD
Engineers or professionals trained in building or infrastructure construction practices	Yes (from County)	Part Time	MSD
Planners or engineers with an understanding of natural hazards	Yes (from County)	Part Time	MSD
Surveyors	Yes (from County)	Part Time	County
Personnel skilled or trained in GIS applications	Yes (from County)	Part Time	County
Emergency manager	Yes (from County)	Part Time	County

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	Public Works SLCO
Who is your jurisdiction's floodplain administrator? (department/position)	Public Works
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	No – not complete
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	No
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS	No

Classification? If not, is your jurisdiction interested in joining the CRS program?	

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System (CRS)	No	-	-
Public Protection/ISO	No	-	-
NWS StormReady	No	-	-

Jurisdiction-Specific Hazards and Risks

NOAA Natural Hazards 2014-2019

The Natural Hazard Events Table lists all past occurrences of natural hazards within the jurisdiction from 2014-2019. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 0 policies were enforced (FEMA, 2019).
- Brighton does not participate in the National Flood Insurance Program (FEMA, 2019).
- The city is newly incorporated and plans to participate in the NFIP through formalizing floodplain management and developing ordinances.

TABLE: RECENT NATURAL HAZARD EVENTS
(NOAA Data with additions from the jurisdiction representatives)

Type of Event	**Description**	**FEMA Disaster Number (if applicable)**	**Date**	**Preliminary Damage Assessment**
Heavy Snow	22 inches of snow at Brighton Resort		4/15/2019	
Heavy Snow	18 inches of snow at Brighton Resort		4/6/2019	
Heavy Snow	18 inches of snow at Brighton Resort		3/28/2019	
Heavy Snow	12 inches of snow at Brighton Resort		3/23/2019	

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Heavy Snow	14 inches of snow at Brighton Resort		3/13/2019	
Winter Storm	69 mph winds		3/6/2019	
Heavy Snow	17 inches of snow at Brighton Resort		3/1/2019	
Heavy Snow & High Wind	13 inches of snow at Brighton Resort and 85 mph		2/13/2019	
Heavy Snow	71 inches of snow at Brighton Resort		2/3/2019	
Winter Storm	22 inches of snow at Brighton Resort		1/21/2019	
Winter Storm & High Wind	45 inches of snow at Brighton Resort and 68 mph		1/16/2019	
Winter Storm	37 inches of snow at Brighton Resort		1/5/2019	
Heavy Snow	31 inches of snow at Brighton Resort		11/23/2018	
Winter Storm	25 inches of snow at Brighton Resort		3/17/2018	
Winter Storm	30 inches of snow at Brighton Resort		3/2/2018	
Heavy Snow	23 inches of snow at Brighton Resort		2/18/2018	
Winter Storm	17 inches of snow at Brighton Resort		1/19/2018	
Winter Storm	17 inches of snow at Brighton Resort & 80 mph		4/7/2017	
Winter Storm	26 inches of snow at Brighton Resort (16 inches just in the daytime hours).		2/27/2017	

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Winter Storm	17 inches of snow at Brighton Resort with strong winds		2/6/2017	
Winter Storm	43 inches of snow at Brighton Resort with strong winds at the start of the storm		1/22/2017	
Winter Storm	23 inches of snow at Brighton Resort		1/20/2017	
Winter Storm	38 inches of snow at Brighton Resort		1/10/2017	
Winter Storm	24 inches of snow at Brighton Resort		1/3/2017	
Winter Storm	31 inches of snow at Brighton Resort		1/1/2017	
Winter Storm	27 inches of snow at Brighton Resort with strong winds		12/23/2016	
Winter Storm	38 inches of snow at Brighton Resort with strong winds		12/15/2016	
Winter Storm	29 inches of snow at Brighton Resort with strong winds		12/8/2016	
Winter Storm	40 inches of snow at Brighton Resort		11/27/2016	
Winter Storm	20 inches of snow at Brighton Resort		3/13/2016	
High Wind	The winds impacted several mountain resorts, which either had to shut down some of their lifts or close early. Several downed trees were reported across the area, particularly at Brighton Resort.		2/17/2016	

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Winter Storm	14 inches of snow at Brighton Resort		1/29/2016	
Winter Storm	Snowfall totals in the Wasatch Mountains were impressive, with many locations reporting 3-4 feet of new snow. The highest total was at Brighton Resort, which received 76 inches of snow at its 9500 foot crest.		12/21/2015	
Winter Storm	33 inches of snow at Brighton Resort		11/27/2015	
Winter Storm	22 inches of snow at Brighton Resort		4/14/2015	
Winter Storm	24 inches of snow at Brighton Resort		3/2/2015	
Winter Storm	25 inches of snow at Brighton Resort		1/12/2015	
Winter Storm	18 inches of snow at Brighton Resort		12/28/2014	
Winter Storm	14 inches of snow at Brighton Resort		12/25/2014	
Winter Storm	18 inches of snow at Brighton Resort		12/20/2014	
Winter Storm	30 inches in new snow	-	11/22/2014	-
High Wind	58 mph wind gusts were recorded at the base of Brighton Resort. Near Brighton Resort and Snowbird Ski and Summer Resort, multiple large trees were knocked down by these winds.		5/11/2014	$10,000 in property damage.
Winter Storm	47 inches of snow at Brighton Resort		2/5/2014	

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Winter Storm	17 inches of snow at Brighton Resort		1/9/2014	

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below. Brighton is working to become a town in 2020. Once demographic information is collected, the table below can be completed using the best available data, particularly Census and American Community Survey data.

Factors	Number in Community
Members of the community over 65 years old	N/A
Members of the community under 18 years old	N/A
Members of the community that identify as having disability status	N/A
Members of the community that speak English less than "very well"	N/A
Members of the community living below the poverty line	N/A
The number of mobile homes in the community	N/A
Members of the community without health insurance	N/A
Occupied housing units with tenants without a vehicle	N/A
Housing units without heating fuel	N/A

*While the population is less than 300 year-round, potentially up to 20,000 people may visit the area on the weekend. With only one way in and out of Brighton, this poses severe challenges and risk.

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Dam Failure: 3 dams are in the area and two are over 100 years old. The dams are made of concrete. Twin Lakes (holds 300 million gallons - built in 1914) would be the most damaging if it fails. Silver Lakes is visited in the summer by 300-400 people each day. Mary Dam (holds 240 million gallons - built in 1915) would also cause significant damage to the Girl Scout Camp if it failed, as well as other camps in the area. In the summer, 100-200 kids may be in the area. If the dams failed, warning time would be at most a couple of minutes for some area.

Winter Storms: These storms are extremely common in Brighton. Winter storm events that have the greatest impact are during times when the road is open and a number of visitors (ski visits) are in the area. Winter storms that drop ten or more inches in a 12-hour period would be a significant event. In the spring, spring runoff can be damaging to the canyon. The most damaging occurred in 1983.

Avalanche: Avalanches have the potential to close the roads (SR190). The biggest hazard and economic concern would be for SR190 to be closed off and isolate the town. Utah Department of Transportation provides mitigation for avalanches. The Ski Resorts have private insurance for an avalanche.

Landslide: Silver Fork and Honeycove Canyon are the most populated areas, and homes and roads could be susceptible to landslide flow. Steep mountain slopes surround the Town of Brighton, and this topography lends itself to the phenomenon of downslope movement of earthen material. Rockfalls and topples are downslope movements of loosened blocks or boulders from a bedrock area. These generally occur along steep canyons with cliffs, deeply incised stream channels in bedrock, and steep bedrock road cuts.

Earthquake: The Wasatch Fault is at the mouth of the canyon, and a significant earthquake could cut the canyon off from the rest of the County. Secondary hazards possibly associated with a major earthquake in Brighton are numerous. A major earthquake occurring during a period of high avalanche hazard could trigger numerous destructive avalanches at once. Landslides would also be a concern.

Flooding: Runoff, in addition to flooding from Big Cottonwood Creek, could cause significant flooding in the area. The event in 1983, where snow fell and then temperatures went up to the 90s and rain occurred, is the most catastrophic flooding event to hit the area.

Wildfire: This is probably the number one hazard of concern in the area. Brighton is an isolated community surrounded by a national forest. Even though the elevation is high, which leads to copious annual precipitation amounts, a large regional fire could impact the area. There are two campgrounds in the area

Severe Weather: The most common severe weather events in Brighton are significant winter storms, which often result in periods of elevated avalanche hazard. Brighton is world-renowned as a place where winter storms deposit enormous snow totals, and those storms are often accompanied by sustained winds near hurricane-force, with gusts over 100 mph. Although many Brighton skiers prefer to be skiing during a major snowstorm, sometimes weather is so severe that ski lifts cannot run, and when avalanche hazard becomes too high as a result of heavy snow and high wind, the ski area closes operations and the public is required by the Town of Brighton Marshal to remain indoors until avalanche hazard is mitigated. The Brighton landscape is often transformed by massive winter storms, with rows of parked cars and even unattended structures occasionally completely entombed in snow. Severe winter storms often result in hazardous roadway conditions. When road surface conditions deteriorate at the end of a busy day at Brighton, traffic accidents can cause epic backups. When such backups take place during times of escalating avalanche hazard, the possibility that natural avalanches will affect the roadway and potentially bury vehicles and their occupants can be a critical situation. Brighton is also susceptible to non-winter weather events, such as rain, hail, and lightning storms. Significant rain events can cause landslides in ravines and stream channels. Because of Brighton's high elevation, extreme heat is not considered a likely hazard.

High Winds: High winds can damage utilities and interrupt ski and road operations. Trees getting knocked down could interrupt debris flow in Big Cottonwood Creek.

Public Health: The town is an international skiing destination, and this could lead to infectious diseases being brought to the area from travelers.

Radon: Some areas may have an elevated risk for radon, but most areas are of low concern.

Hazardous Materials Release: The accidental release could have a regional impact on the watershed, water supply, and create transportation delays. Everyone in Brighton has to use propane, and the transport of propane to the area would be a concern if a spill occurred.

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Wildfire	2	30	60
Severe Winter Weather	3	18	54
Avalanche	3	17	51
Severe Weather	3	17	51
Public Health Epidemic/ Pandemic	2	21	42
Cyber Attack	2	17	34
Dam Failure	1	30	30
Drought	2	13	26
Landslide and Slope Failure	2	13	26
Terrorism	1	25	25
Hazardous Materials Incident	1	14	14
Flooding	1	13	13
Civil Disturbance	1	10	10
Tornado	1	7	7
Radon	2	3	6

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.

SLC2019HMP-Brighton(2.0).xlsx

Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	High	3		Avalanche	Medium	2	6
Dam Failure	Low	1		Dam Failure	High	3	9
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Low	1	3
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Low	1		Flooding	Low	1	3
Hazardous Materials Incident	Low	1		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Medium	2		Landslide and Slope Failure	Medium	2	6
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	Medium	2		Radon	Low	1	3
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	Medium	2		Wildfire	High	3	9

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	Medium	2	2		Avalanche	High	3	6
Dam Failure	High	3	3		Dam Failure	High	3	6
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Medium	2	4
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Low	1	1		Flooding	Medium	2	4
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Medium	2	4
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Medium	2	4
Severe Winter Weather	High	3	3		Severe Winter Weather	Medium	2	4
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	Low	1	2
Wildfire	High	3	3		Wildfire	High	3	6

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**		**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)		**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)		**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)		**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)		**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	High	3	3		Avalanche	Unlikely	0	0
Dam Failure	High	3	3		Dam Failure	High	3	9
Drought	Low	1	1		Drought	Low	1	3
Civil Disturbance	Medium	2	2		Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	2		Cyber Attack	Medium	2	6
Earthquake	High	3	3		Earthquake	High	3	9
Flooding	Medium	2	2		Flooding	Low	1	3
Hazardous Materials Incident	Medium	2	2		Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Medium	2	2		Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	3		Public Health Epidemic/ Pandemic	High	3	9
Radon	No Impact	0	0		Radon	Unlikely	0	0
Severe Weather	Low	1	1		Severe Weather	Unlikely	0	0
Severe Winter Weather	Medium	2	2		Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	3		Terrorism	High	3	9
Tornado	Low	1	1		Tornado	Unlikely	0	0
Wildfire	High	3	3		Wildfire	High	3	9

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**	**Catastrophic Factor**—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)	**High**—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)	**Medium**—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)	**Low**—Low potential that this hazard could be catastrophic (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)	**Unlikely**—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

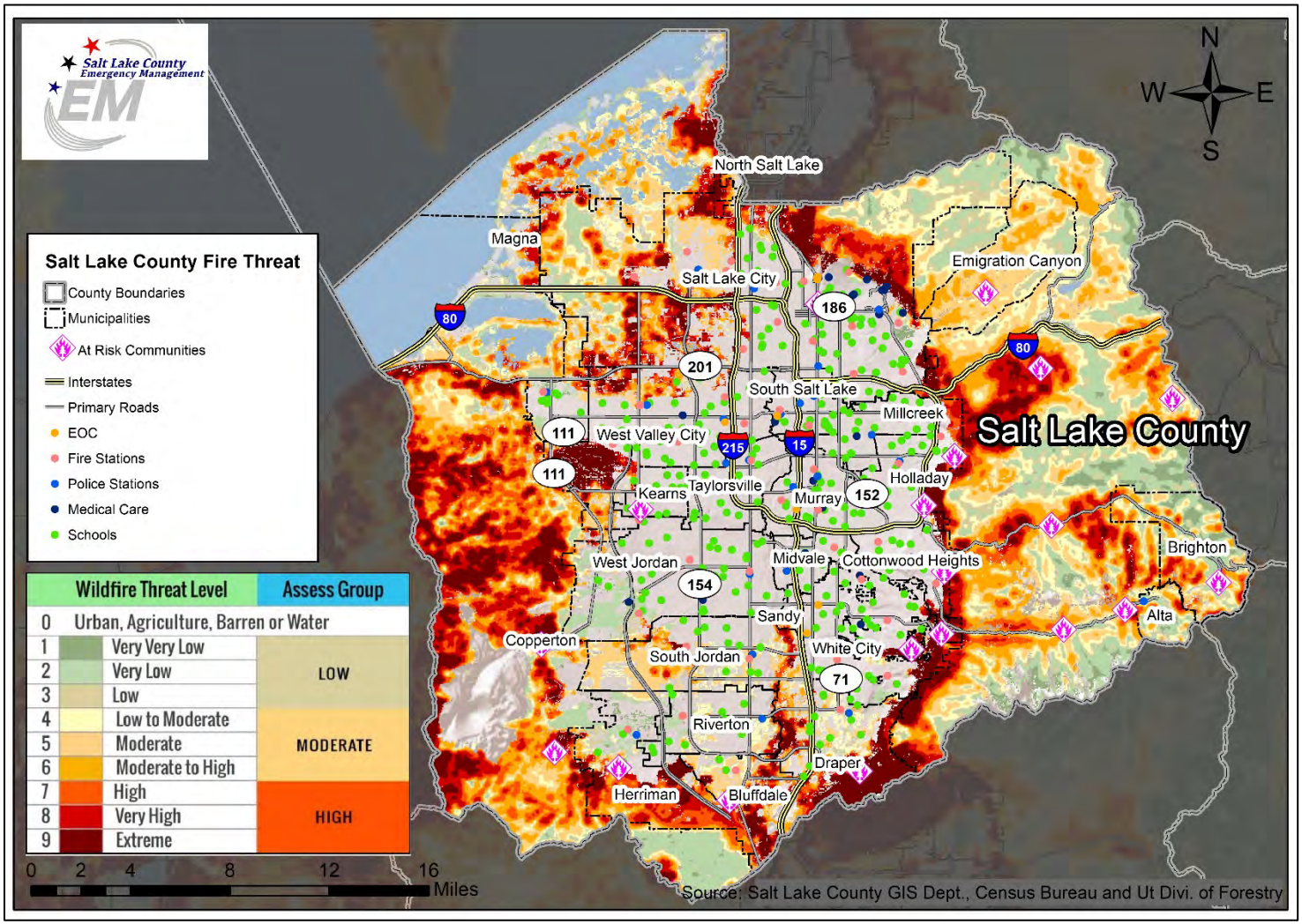
Action	Year Initiated	Goal/ Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Remove debris from the 14 miles of Big Cottonwood Creek to enhance the natural flow	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Flood (Riverine), Flooding (Urban/Flash Flooding), Severe Thunderstorm, Severe Winter Storm	Brighton	Neighboring jurisdictions, Salt Lake County	High	High	HMA/PDM Grant or other federal funds	High	Ongoing	
Install three (3) horn notification/ warning systems	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 3: Enhance and protect the communication and warning/notification systems in the County.	All-Hazards	Brighton	N/A	High	Medium	Local Budget and County or State Grants	Medium	2025	
Bury powerline to decrease power outage potential and to mitigate the potential for wildfires	2019	Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	All-Hazards	Brighton	Utilities	High	High	HMA/PDM Grant or other federal funds	Medium	2030	
Continue to participate in Firewise, including strict fire codes and	2019	Goal 4: Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public	Wildfire	Brighton	UFA	Medium	Low	Local Budget	High	Ongoing	

programs with the fire department		entities to mitigate and become more resilient to disasters.									
Trim trees to reduce potential to spark fires and decrease power outage potential	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	All-Hazards, especially Wildfire	Brighton	UFA	Medium	Low	Local Budget and County or State Grants	Medium	Ongoing	

Mitigation Table - Ongoing Actions

Not applicable since Brighton did not participate as an incorporated jurisdiction in 2014.

Jurisdiction Maps



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: Cottonwood Heights

Hazard Mitigation Plan Point of Contact

Primary Point of Contact	Alternate Point of Contact
Name: Paul Brenneman **Title:** Emergency Manager **Department:** Emergency Preparedness Coordination **Address:** 2277 Bengal Blvd, Cottonwood Heights, UT 84121 **Office Phone:** 801-944-7100 **Cell Phone:** **Email Address:** pbrenneman@ch.utah.gov **Website:** http://www.cottonwoodheights.utah.gov/your-government/administrative-services/emergency-preparedness-coordination	**Name:** Julie Sutch **Title:** Assistant Emergency Manager **Department:** Emergency Preparedness Coordination **Address:** 2277 Bengal Blvd, Cottonwood Heights, UT 84121 **Office Phone:** 801-944-7100 **Cell Phone:** **Email Address:** jsutch@ch.utah.gov Website: http://www.cottonwoodheights.utah.gov/your-government/administrative-services/emergency-preparedness-coordination

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** January 14, 2005
- **Current Population:** 34,117 (Census v2018)
- **Population Growth:** 1.6% (from April 1, 2010, to July 1, 2018)
- **Location and Description:** At an elevation of 4,900 feet above sea level, the city is located along the foothills of the Wasatch Mountains.
- **Brief History:** Big Cottonwood Canyon was the main source of logs and lumber for the homes of the pioneers in the Salt Lake Valley and this area became an overnight stopping point for the lumber wagons. The area also became an overnight stop for the wagons bringing granite out of Little Cottonwood Canyon for the building of the Salt Lake Temple and many other buildings. Soon there was a store, post office, brewery and tavern along Big Cottonwood Creek near the place where the Old Mill stands today. Among the earliest settlers of the area were six colorful brothers, the “Butler Brothers” who were lumbermen – complete with wagons, teams, and sawmills. There were also four McGhie brothers and their families. Legend has it that they called a town meeting to organize their community. There was one more Butler than McGhie at the meeting; therefore, the community was named “Butler” rather than “McGhie.” Natives differ on this name; some say it was named “Butlerville,” and others say the “Ville” was just a nickname. Officially the area is called “Cottonwood Heights” by Salt Lake County, but it is still called Butler or Butlerville by some.
- **Climate:** The climate is generally semiarid with a series of extremes occurring throughout the winter and summer seasons. Most precipitation occurs during the winter and spring months, with an average annual precipitation of 9 inches of rain and 48.4 inches of snow. In winter, temperatures can plunge to minus 10°F. Winter also brings snowstorms that regularly result in a foot or more of snow. In summer, temperatures can be in the upper 90s. These hot temperatures are moderated by low humidity that can drop into the single digits at times.
- **Public Services:** Cottonwood Heights was incorporated on January 14, 2005, out of the southeastern area of unincorporated Salt Lake County. The 2010 census reported a population of 33,433 residents. Current estimates place the population at 34,117. The City encompasses 9.24 square miles. It is known as the city between the canyons because it is located at the foot of the Wasatch Mountain Range between Big Cottonwood and Little

Cottonwood canyons. These two canyons are home to Salt Lake Valley's four major ski resorts: Alta, Brighton, Solitude and Snowbird. Each of these ski resorts has an international clientele and reputation.

The quality of life in Cottonwood Heights is very high with many cultural and recreational activities available within the city or in near proximity. Cottonwood Heights values highly its reputation as a well-maintained residential and business community. The preservation of quality of life is of utmost importance to residents and business owners. Cottonwood Heights views itself as a city where residents, businesses, and government come together to create an attractive, safe, well-groomed community and where people are proud to live, learn, work, recreate, and do business. The City presents with a stunning backdrop of the Wasatch Mountains and associated canyons and trails. Residents place a high value on the natural elements of hillsides, streams, natural open spaces and parks. The residents occupy a variety of residential dwellings in harmony with thriving commercial areas.

Cottonwood Heights is home to many corporate headquarters. At 2.5 million square feet of Class A and B office space, the City has one of the largest amounts of premium high rise office space in Salt Lake Valley. Office campuses include Union Park, Old Mill Corporate Center, and Cottonwood Corporate Center. These business parks provide important regional centers of employment providing jobs to many Cottonwood Heights residents. The City is home to the corporate offices of Extra Space Storage, JetBlue Airways, Instructure, MasterControl, and SanDisk.

As the gateway to the valley's largest ski resorts and with easy access to valley-wide transportation systems, Cottonwood Heights welcomes visitors. The City strives to attract businesses that will serve the needs of residents, promote the attractive image and appearance of the community, support and increase the general income and prosperity of the City, strengthen existing business centers, and complement the City's location as the gateway to the canyons.

- **Governing Body Format:** Cottonwood Heights has a Council/Manager form of government, which is an alternate form of government under state law. This form of government is different from state and federal governments, which have separate legislative and executive departments. The Council/Manager form of government has a legislative body consisting of four council members and a mayor, who acts as chairman of the council. The mayor also serves as the representative of the city in signing legal documents and at city events of various kinds. The council and mayor select and hire a city manager whose responsibilities are defined by state statute. The city manager is the chief administrative officer for the city and is responsible for enacting the council's policies and hiring additional personnel. State statute directs that the city has a city attorney, city treasurer, city recorder, and city finance officer. The duties for these positions are defined by statute and the appointees must be approved by the city council. When needed, the city council will act as the Community Development and Renewal Agency (CDRA). The Community Development and Renewal Agency was created to undertake or promote urban renewal, economic development, and community development within the geographic boundaries of the city. The CDRA will meet as necessary or at least once a year.
- **Development Trends:** The City serves as a sub-regional market to the Greater Salt Lake Metropolitan area, providing class A office, world-class outdoor, recreational amenities, and well-established residential neighborhoods. Currently, the City's six largest employers

are Jet Blue Airways Corporation (Leisure, Travel), INstructure Inc (Learning Technology), Canyons School District (Education), Extra Space Management (Retail Storage), Regence Blue Cross Blue Shield (Insurance), and Western Digital (Technology). The City has a high concentration of office parks with limited industry users. As with many other communities in Salt Lake County, the City has not been immune from the effects of the domestic and international economic slowdown. Economic development in the City has been very active in recent years but still struggles in the highly competitive recruitment of some major businesses.

Capability Assessment

The city maintains a full-time staff of 81 and 25 part-time employees. The city has a designated Emergency Manager. Hazard Mitigation Planning efforts are led by the Emergency Manager position and supported by the Assistant Emergency Manager.

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY				
	Local Authority Exists to Develop and Implement/ Enforce?	**A Jurisdiction-Specific Code, Ordinance, and/or Requirement Currently Exists?**	**Rely on the County's Codes, Ordinances & Requirements**	**Comments**
Codes, Ordinances, & Requirements				
Building Code Development and Enforcement	Yes	-	-	
Zonings Ordinance(s)	Yes	Yes	-	
Subdivision Ordinance(s)	Yes	Yes	-	
Floodplain Ordinance(s)	Yes	Yes	-	
Post Disaster Recovery Program and Ordinance(s)	No	-	-	

Real Estate Disclosure Ordinance(s)	-	No	-	
Growth Management	Yes	Yes	-	
Site Plan Review Requirements	Yes	Yes	-	
Planning Documents				
General or Comprehensive Plan	Yes	Yes	-	
Capital Improvement Plan	Yes	-	-	
Economic Development Plan	Yes	Yes	-	
Disaster Planning Documents				
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	-	-	Currently under review and update
Post-Disaster Recovery Plan	No	-	-	
Continuity of Operations Plan	No	-	-	
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	No	-	-	

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes - Property Tax
User Fees for Water, Sewer, Gas or Electric Service	Yes - Stormwater and Telecom Fee
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes

Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	N/A

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	Full-time	4 Full-time Planners and 2 Full-time Engineering Staff
Engineers or professionals trained in building or infrastructure construction practices	Yes	Part-time	Building Official (contracted)
Planners or engineers with an understanding of natural hazards	Yes	Full-time	Engineering Staff and Consultant
Personnel skilled or trained in GIS applications	Yes	Full-time	GIS Specialist
Emergency manager	Yes	Part-time	
Grant writers	Yes	N/A	Function of other staff positions

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	City Engineer/Public Works
Who is your jurisdiction's floodplain administrator? (department/position)	Public Works Director/City Engineer
Are any certified floodplain managers on staff in your jurisdiction?	No-City Engineer is in progress
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	None Known
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No/Undecided

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System (CRS)	No		
Public Protection/ISO	Yes	3	2015
NWS StormReady	No		

Jurisdiction-Specific Hazards and Risks

The information provided below was solicited from the jurisdiction and supported by NOAA and other relevant data sources.

The *Natural Hazard Events Table* lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 38 policies were in force with total coverage of $12,235,000 and total written premium and FPF of $19,779 (FEMA, 2019).
- Cottonwood Heights does participate in the National Flood Insurance Program (CID # 490028), and the last FIRM map for the area was issued on 09/25/09 (FEMA, 2019).
- The city will continue to participate in the NFIP through various efforts including but not limited to floodplain management, ordinance development and review, technical assistance, compliance inspections, and community education on flood hazards.

TABLE: RECENT NATURAL HAZARD EVENTS
(NOAA Data with additions from the jurisdiction representatives)

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Heavy Snow	5 inches in snowfall in Cottonwood Height	-	3/28/2019	-
Heavy Snow	16 inches in Cottonwood Heights	-	3/13/2019	-
Heavy Snow	7 inches in Cottonwood Heights	-	3/1/2019	-

Heavy Snow	5 inches in Cottonwood height	-	2/13/2019	-
Heavy Snow	18 inches in Sandy and Cottonwood Heights	-	1/21/2019	-
Hail	Quarter- to half-dollar-sized hail	-	6/18/2018	-
Winter Storm	11 inches in Cottonwood Heights	-	3/3/2018	-
Heavy Snow	23 inches in Cottonwood Heights	-	2/18/2018	-
Winter Storm	16 inches in Cottonwood Heights	-	1/19/2018	-
Winter Storm	15 inches in Cottonwood Heights	-	2/21/2017	-
Winter Storm	16 inches in eastern Cottonwood Heights	-	1/20/2017	-
Winter Storm	14 inches in Cottonwood Heights	-	12/23/2016	-
Winter Storm	6 inches in Cottonwood Heights	-	11/28/2016	-
Winter Storm	10 inches in Cottonwood Heights	-	12/24/2015	-
Winter Storm	23 inches in Cottonwood Heights	-	12/13/2015	-
Winter Storm	6 inches in Cottonwood Heights	-	12/25/2014	-
Flooding	Significant flood event		June 2010	

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community
Members of the community over 65 years old	5,118
Members of the community under 18 years old	7,506
Members of the community that identify as having disability status	1,501
Members of the community that speak English less than "very well"	3,616
Members of the community living below the poverty line	1,774
The number of mobile homes in the community	81
Members of the community without health insurance	2,286
Occupied housing units with tenants without a vehicle	406
Housing units without heating fuel	26

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Dam Failure: Two main watercourses traverse the city, Little Cottonwood Creek and Big Cottonwood Creek. Both creeks have numerous dams upstream, which are out of the city boundaries but have the potential to impact the city if failures occur.

Winter Storms: The High East Bench suffers from winter storms.

Blizzards: Blizzards routinely impact the city, which is further exacerbated when snow removal resources are strained.

Extreme Cold: Extreme cold often accompanies a winter storm or is left in its wake. Prolonged exposure to the cold can cause frostbite or hypothermia and can become life-threatening. Infants and the elderly are most susceptible. Pipes may freeze and burst in homes or buildings that are poorly insulated or without heat. The NWS will issue a Wind Chill Advisory for the Salt Lake County area when wind and temperature combine to produce wind chill values of 18°F below zero to 25°F below zero. Each winter and summer, it can be expected that Cottonwood Heights will experience several days of extreme heat or cold events.

Extreme Heat: Given the history in Salt Lake County and Cottonwood Heights, extreme temperature events will continue to occur annually. Heat disorders generally have to do with a reduction or collapse of the body‘s ability to shed heat by circulatory changes and sweating or a chemical (salt) imbalance caused by too much sweating. When heat gain exceeds the level the

body can remove, or when the body cannot compensate for fluids and salt lost through perspiration, the temperature of the body's inner core begins to rise, and heat-related illness may develop. Elderly persons, small children, chronic invalid, those on certain medications or drugs, and persons with weight and alcohol problems are particularly susceptible to heat reactions, especially during heat waves in areas where moderate climate usually prevails.

Earthquake: Because the occurrence of earthquakes is probable in Utah and the historical earthquake record identifies earthquake activity along the Wasatch Mountains, it is likely that Cottonwood Heights will experience an earthquake in the future. Additionally, numerous fault lines, including the Wasatch Fault, intersect along the Wasatch Blvd. corridor, which has multiple businesses and residences.

Drought: Given the geographic location of the planning area, it is probable the city will experience future drought conditions. According to historical data, Cottonwood Heights has experienced several periods of drought.

Flooding: Localized stormwater flooding at some location in Cottonwood Heights generally occurs on an annual basis. The extent of damage varies. Cottonwood Heights has experienced flooding along Cottonwood Creek as recently as 2010, which is also a historical flooding issue. However, the city does not have any repetitive loss properties. Cottonwood Heights has identified flood-prone areas and reviews any potential development in these areas. In addition, the city works with watershed officials to mitigate obstructions during spring runoff to minimize the chance of flooding.

Landslides/Slope Failure: The extreme eastern edge of the city has several areas that have issues related to slope failure. Minor landslides will likely continue in susceptible areas as a result of post-fire conditions or when heavy precipitation occurs.

Avalanche: There is no recorded history of avalanches occurring within city limits. Except within limited areas, the topography of the city is well below the slopes of 25-50 degrees on which data indicate that 98 percent of all avalanches occur.

Severe Weather: Each winter and summer, it can be expected that Cottonwood Heights will experience several days of extreme heat or cold events. The elderly population, which is over 5,000, is most susceptible to health effects from these events.

Wildfires: Given the geography, Cottonwood Heights is at risk of future fires due to the numerous wildland-urban interface (WUI) areas throughout the city. Generally, the fire season extends from spring to late fall. Fire conditions arise from a combination of hot weather, an accumulation of vegetation, and low moisture content in air and fuel. These conditions, especially when combined with high winds and years of drought, increase the potential for a wildfire to occur. The wildfire risk is predominantly associated with the wildland-urban interface, areas where development is interspersed or adjacent to landscapes that support wildland fire. A fire along this wildland-urban interface can result in major losses of property and structures. Significant wildfires can also occur in heavily populated areas. Rangeland and grassland fires are a concern in the eastern portion of Cottonwood Heights County, including areas of the city, due to increased residential development in semi-urban and rural areas.

Public Health Epidemic/Pandemic: A pandemic is a global disease outbreak. Pandemic flu is a virulent human flu that causes a global outbreak, or pandemic, of serious illness. A flu pandemic

occurs when a new influenza virus emerges for which people have little or no immunity, and for which there is no vaccine. This disease spreads easily person-to-person, causes serious illness, and can sweep across the country and around the world in a very short time. The U.S. Centers for Disease Control and Prevention has been working closely with other countries and the World Health Organization to strengthen systems to detect outbreaks of influenza that might cause a pandemic and to assist with pandemic planning and preparation.

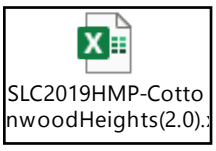
An especially severe influenza pandemic could lead to high levels of illness, death, social disruption, and economic loss. Impacts could range from school and business closings to the interruption of basic services such as public transportation, health care, and the delivery of food and essential medicines. Since the hazard can affect 50-100% of the planning area, it was given an extensive geographic extent rating.

Although scientists cannot predict when the next influenza pandemic will occur or how severe it will be, wherever and whenever it starts, everyone around the world will be at risk. If an influenza pandemic does occur, many age groups would likely be seriously affected. The greatest risks of hospitalization and death—as seen during the last two pandemics in 1957 and 1968 as well as during annual outbreaks of influenza—will be to infants, the elderly, and those with underlying health conditions. However, in the 1918 pandemic, most deaths occurred in young adults. Few people, if any, would have immunity to the virus.

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Severe Winter Weather	3	16	48
Severe Weather	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Wildfire	2	19	38
Flooding	2	17	34
Cyber Attack	2	17	34
Hazardous Materials Incident	2	14	28
Drought	2	14	28
Radon	3	9	27
Terrorism	1	25	25
Landslide and Slope Failure	2	9	18
Dam Failure	1	17	17
Tornado	1	11	11
Civil Disturbance	1	11	11
Avalanche	1	3	3

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.



Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1		Avalanche	Low	1	3
Dam Failure	Low	1		Dam Failure	Low	1	3
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Medium	2	6
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Medium	2		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	High	3	9
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	Medium	2		Wildfire	Medium	2	6

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	No Impact	0	0		Avalanche	No Impact	0	0
Dam Failure	Low	1	1		Dam Failure	High	3	6
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Low	1	2
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	Medium	2	4
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Medium	2	4
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Low	1	2
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	Low	1	1		Wildfire	High	3	6

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**		**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)		**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)		**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)		**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)		**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)
Avalanche	No Impact	0	0
Dam Failure	Low	1	1
Drought	Medium	2	2
Civil Disturbance	Medium	2	2
Cyber Attack	Medium	2	2
Earthquake	High	3	3
Flooding	Medium	2	2
Hazardous Materials Incident	Medium	2	2
Landslide and Slope Failure	Low	1	1
Public Health Epidemic/ Pandemic	High	3	3
Radon	No Impact	0	0
Severe Weather	Low	1	1
Severe Winter Weather	Medium	2	2
Terrorism	High	3	3
Tornado	Low	1	1
Wildfire	High	3	3

Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Unlikely	0	0
Dam Failure	Medium	2	6
Drought	Low	1	3
Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	6
Earthquake	High	3	9
Flooding	Low	1	3
Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	9
Radon	Unlikely	0	0
Severe Weather	Unlikely	0	0
Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	9
Tornado	Unlikely	0	0
Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Low potential that this hazard could be catastrophic (Impact Factor = 1)
Unlikely—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Investigate potential buy-out of specific properties that reside in high-risk areas due to earthquake fault.	2019	Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Earthquake	Cottonwood Heights	N/A	High	High	Grants (PDM)	Medium	Long-term	
Update and retrofit stormwater infrastructure to meet seismic standards and increased resiliency	2019	Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Earthquake	Cottonwood Heights	N/A	High	High	Local Funds, Grants	High	Long-term	
Develop a Debris Management Plan	2019	Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	All Hazards	Cottonwood Heights	N/A	High	Low	Local Funds	Medium	Long-term	
Procure generators and necessary hookups for key critical facilities, such as, but not limited to: the Public Works Yard, potential shelter locations and Long-	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before,	All Hazards	Cottonwood Heights	N/A	High	Medium	Local Funds, Grants	High	Long-term	

term Care facilities. Procure additional mobile generators.		during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.									

Mitigation Table - Ongoing Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Lead	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Conduct Training and awareness activities on communication equipment, tools, and systems	2009 [Ongoing in 2014]	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	All-Hazards	Cottonwood Heights	Medium	Medium	Local Funds, Grants	Medium	Ongoing	Monthly radio checks with key staff. Radio club implementation at all planned special events to improve communications
Provide centralized access to geographic data to emergency planners and responders	2009 [Ongoing in 2014]	2 – Improve awareness and analysis of hazards 2.1 – Improved Quality and Access to digital geographic (GIS) hazards data	All-Hazards	Cottonwood Heights	Medium	Medium	Local Funds, Grants	Medium	Ongoing	New server is being implemented

Utilize GIS to identify facilities and infrastructure at risk	2009 [Ongoing in 2014]	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	All-Hazards	Cottonwood Heights	Medium	Medium	Local Funds, Grants	Medium	Ongoing	
Assess critical facilities [specifically schools and churches] for hazard exposure, structural weaknesses, power, communications and equipment resources and redundancy, and adequate emergency procedures	2009 [Ongoing in 2014]	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	All-Hazards	Cottonwood Heights	High	High	Local Funds, Grants	Medium	Ongoing	Grant funding dependent
Compile an inventory of mutual-aid agreements and memoranda of understanding (MOU) and identify deficiencies	2009 [Ongoing in 2014]	4 – Improve response capabilities through mutual-aid agreements 4.1 – Utilize mutual-aid agreements in accordance with the National Incident Management System (NIMS) requirements	All-Hazards	Cottonwood Heights	Medium	Medium	Local Funds, Grants	Medium	Ongoing	Emergency Manager is identifying MOU's for renewal
Pursue and implement needed mutual-aid agreements	2009 [Ongoing in 2014]	4 – Improve response capabilities through mutual-aid agreements 4.1 – Utilize mutual-aid agreements in	All-Hazards	Cottonwood Heights	Medium	Medium	Local Funds, Grants	Medium	Ongoing	Develop emergency contracts

		accordance with the National Incident Management System (NIMS) requirements								Points of Distribution MOU with schools.
Provide education regarding all-natural hazards through live trainings, as well as web-based, print and broadcast media	2009 [Ongoing in 2014]	5 – Increase citizen safety through improved hazard awareness 5.1 – establish a comprehensive public education program	All-Hazards	Cottonwood Heights	High	Low	Local Funds, Grants	Medium	Ongoing	This is one of 5 strategic goals for the emergency operations program
Develop education programs to target specific groups including homeowners, developers, schools and people with special needs	2009 [Ongoing in 2014]	5 – Increase citizen safety through improved hazard awareness 5.1 – establish a comprehensive public education program	All-Hazards	Cottonwood Heights	High	Low	Local Funds, Grants	Medium	Ongoing	Community events incorporate EM into program
Enforce appropriate planning, zoning, and building code ordinances	2009 [Ongoing in 2014]	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	All-Hazards	Cottonwood Heights	Medium	Low	Local Funds, Grants	Medium	Ongoing	
Continue to encourage water conservation utilizing and promoting outreach material from all water districts in the County	2009 [Ongoing in 2014]	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Drought	Cottonwood Heights	Medium	Low	Local Funds, Grants	Medium	Ongoing	City promotes green activities including water conservation

Implement water-saving devices and practices in public facilities	2009 [Ongoing in 2014]	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Drought	Cottonwood Heights	Medium	Medium	Local Funds, Grants	Medium	Ongoing	
Provide information on landscaping alternatives for persons subject to green area requirements	2009 [Ongoing in 2014]	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Drought	Cottonwood Heights	Medium	Low	Local Funds, Grants	Medium	Ongoing	
Coordinate with water districts to plan for, develop and/or expand secondary water	2009 [Ongoing in 2014]	1 – Reduce and prevent hardships 1 – Reduce and prevent hardships associated with water shortages 1.3 – Encourage development of secondary water systems	Drought	Cottonwood Heights	Medium	Medium	Local Funds, Grants	Medium	Ongoing	
Identify structures at risk to earthquake damage. Conduct an assessment	2009 [Ongoing in 2014]	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	Earthquake	Cottonwood Heights	High	High	Local Funds, Grants	High	Ongoing	
Research feasibility of an incentive program for retrofitting privately-owned buildings, particularly unreinforced masonry	2009 [Ongoing in 2014]	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	Earthquake	Cottonwood Heights	High	Low	Local Funds, Grants	High	Ongoing	

Complete seismic rehabilitation/ retrofitting projects of public buildings at risk	2009 [Ongoing in 2014]	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	Earthquake	Cottonwood Heights	High	High	Local Funds, Grants	High	Ongoing	Assess school districts
Provide educational materials to unreinforced masonry home and business owners	2009 [Ongoing in 2014]	1 – Reduce earthquakes losses to infrastructure 1.2 – Improve public education regarding earthquake risks to unreinforced masonry buildings	Earthquake	Cottonwood Heights	Medium	Low	Local Funds, Grants	Medium	Ongoing	
Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of stormwater and flood control systems	2009 [Ongoing in 2014]	1 – Protection of life and property before, during and after a flooding event 1.3 – Provide maintenance, repairs, and improvements to drainage structures, stormwater systems and flood control structures	Flood	Cottonwood Heights	High	High	Local Funds, Grants	High	Ongoing	
Identify and assess structures for deficiencies	2009 [Ongoing in 2014]	2 – Reduce the threat of unstable or inadequate flood control structures 2.1 – Reduce the potential for failure of flood control structures	Flood	Cottonwood Heights	High	High	Local Funds, Grants	High	Ongoing	
Maintain Hazardous Weather Operations Plan according to StormReady requirements	2009 [Ongoing in 2014]	1 – Reduce threat of loss of life or property due to extreme weather events	Severe Weather	Cottonwood Heights	Medium	Low	Local Funds, Grants	Medium	Ongoing	

		1.1 – Maintain status as a StormReady Community								
Develop protocol for working with State and Federal agencies in reducing the impact of post-fire debris-flow hazard	2009 [Ongoing in 2014]	1 – Reduce or eliminate the threat of slope failure damage 1.1 – Reduce the threat of slope failures following wildfires	Slope Failure	Cottonwood Heights	Medium	Low	Local Funds, Grants	Medium	Ongoing	State Wildfire Pre – attack plan
Increase public awareness through "Firewise" program	2009 [Ongoing in 2014]	1 – Community education on wildfire hazard 1.1 – Reduce risk from wildfire through education programs	Wildland Fire	Cottonwood Heights	High	Medium	Local Funds, Grants	High	Ongoing	Spring efforts will include information for residents and businesses
Educate homeowners on the need to create defensible space near structures in WUI	2009 [Ongoing in 2014]	1 – Community education on wildfire hazard 1.1 – Reduce risk from wildfire through education programs	Wildland Fire	Cottonwood Heights	High	Low	Local Funds, Grants	High	Ongoing	
Assist communities in developing Community Wildfire Protection Plans or similar plans	2009 [Ongoing in 2014]	2 – Improve safety from wildfire hazards through planning, protective actions, and improved fire response capabilities 2.4 – Complete wildfire protection projects	Wildland Fire	Cottonwood Heights	High	Low	Local Funds, Grants	High	Ongoing	
Work with experts and communities to develop or update evacuation plans.	2014	Improve safety from wildfire hazards through planning, protective actions, and improved fire response capabilities.	Wildland Fire	Cottonwood Heights	High	Medium	Local Funds, Grants	High	Ongoing	

		Improve evacuation capabilities for WUI areas.								
Identify all facilities, businesses, and residences, particularly in the canyons, and assign addresses according to current county addressing standards.	2014	Improve safety from wildfire hazards through planning, protective actions, and improved fire response capabilities. Improve addressing system in WUI areas to facilitate emergency response.	Wildland Fire	Cottonwood Heights	High	Medium	Local Funds, Grants	High	Ongoing	
Incorporate improved addresses in fire-dispatch and other databases.	2014	Improve safety from wildfire hazards through planning, protective actions, and improved fire response capabilities. Improve addressing system in WUI areas to facilitate emergency response.	Wildland Fire	Cottonwood Heights	High	Medium	Local Funds, Grants	High	Ongoing	

Mitigation Table - Completed and Removed Actions

Category	Year Initiated	Action	Comments
All-Hazards	2009	1 – Conduct an inventory and assessment of communications equipment and systems and identify needs	Cottonwood Heights continues to enhance communications by outfitting mobile command center
All-Hazards	2009	3 – Establish agreements to share communications equipment between agencies involved in emergency operations	
All-Hazards	2009	4 – Establish notification capabilities and procedures for emergency personnel	Multiple avenues to reach staff are in place

Dam Failure	2009	1 – Include dam inundation maps in current County, City, and Special Service District Emergency Operations Plans	This is an unlikely event in Cottonwood Heights
Dam Failure	2009	2 – Utilize inundation maps to identify potential evacuation areas and routes	
Drought	2009	3 – Investigate feasibility of implementing an incentive program to encourage the use of low-flow appliances and fixtures in homes and businesses	
Drought	2009	1 – Set up livestock water rotation in areas of agricultural use	
Earthquake	2009	1 – Procure Engineering Consultant to perform the nonstructural design and geotechnical assessment and review.	
Flooding	2009	1 – Determine potential flood impacts and identify areas in need of additional flood control structures	
Flooding	2009	2 – Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures	
Severe Weather	2009	1 – Assist Forest Service Utah Avalanche Forecast Center and other organizations in promoting avalanche hazard awareness for backcountry users	
Slope Failure	2009	1 – Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential	
Wildland Fire	2009	1 – Work with experts and communities to develop or update evacuation plans	Wildfire pre-attack plan has designated routes
Wildland Fire	2009	2 – Evaluate transportation network and address needed improvements to facilitate evacuation and emergency response	
Wildland Fire	2009	1 – Identify all facilities, businesses, and residences, particularly in the canyons, and assign addresses according to current county addressing standards	

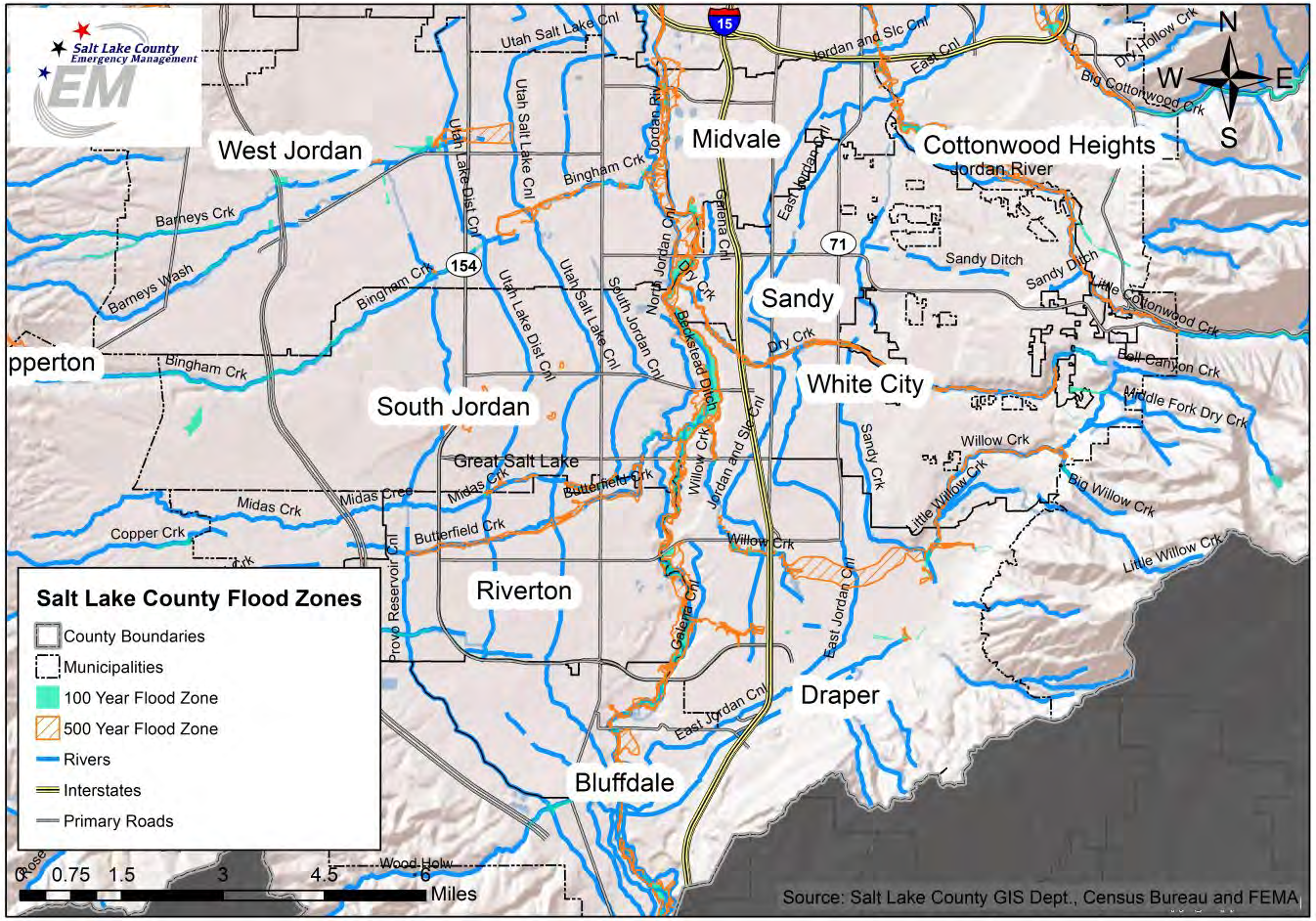
Wildland Fire	2009	2 – Incorporate improved addresses in fire-dispatch and other databases	
Wildland Fire	2009	1 – Reduce fuels around publicly owned structures	
Wildland Fire	2009	2 – Define wildland-urban interface and develop digital maps of the WUI	
All-Hazards	2014	Establish redundancy for dispatch centers and other critical communications systems.	
All-Hazards	2014	Establish a coordinating group to address long-term communication needs and implementation strategies.	
All-Hazards	2014	Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group.	
All-Hazards	2014	Establish a coordinating group to address geographic data issues.	
All-Hazards	2014	Integrate existing hazard monitoring networks in emergency operations centers. Utilize sensors such as weather stations, stream gauges, seismograph stations, road conditions, etc.	
All-Hazards	2014	Utilize GIS to identify facilities and infrastructure at risk.	
Dam Failure	2014	Include dam inundation maps in current County, City, and Special Service District Emergency Operations Plans.	
Dam Failure	2014	Utilize inundation maps to identify potential evacuation areas and routes.	
Drought	2014	Investigate feasibility of implementing an incentive program to encourage the use of low-flow appliances and fixtures in homes and businesses.	
Drought	2014	Implement water-saving devices and practices in public facilities.	
Drought	2014	Repair, maintain, and improve water distribution infrastructure to prevent loss from leakage, breaks, etc.	

Drought	2014	Coordinate public safety water use, such as hydrant testing.	
Drought	2014	Provide information on landscaping alternatives for persons subject to green area requirements.	
Drought	2014	Set up livestock water rotation in areas of agricultural use.	
Drought	2014	Coordinate with water districts to plan for, develop, and/or expand secondary water systems.	
Earthquake	2014	Procure an Engineering Consultant to perform the nonstructural design and geotechnical assessment and review. CUWCD staff will procure contractor and/or install nonstructural bracing per consultant's design.	
Severe Weather	2014	Maintain Hazardous Weather Operations Plan according to StormReady requirements.	
Severe Weather	2014	Maintain contact with NWS prior to re-application in 2010.	
Severe Weather	2014	Assist Forest Service Utah Avalanche Forecast Center (FSUAC) and other organizations in promoting avalanche hazard awareness for backcountry users.	
Severe Weather	2014	Work with the NWS to develop large event venue weather safety and evacuation procedures.	
Slope Failure	2014	Develop protocol for working with State and Federal agencies in reducing the impact of post-fire debris-flow hazard.	
Slope Failure	2014	Coordinate with Utah Geological Survey and other agencies to understand current slope failure threats/potential.	
Slope Failure	2014	Utilize recommendations provided by State Geologic Hazards Working Group to address land-use and planning for new developments.	
Wildland Fire	2014	Designate and promote countywide annual initiative for clearing fuels.	

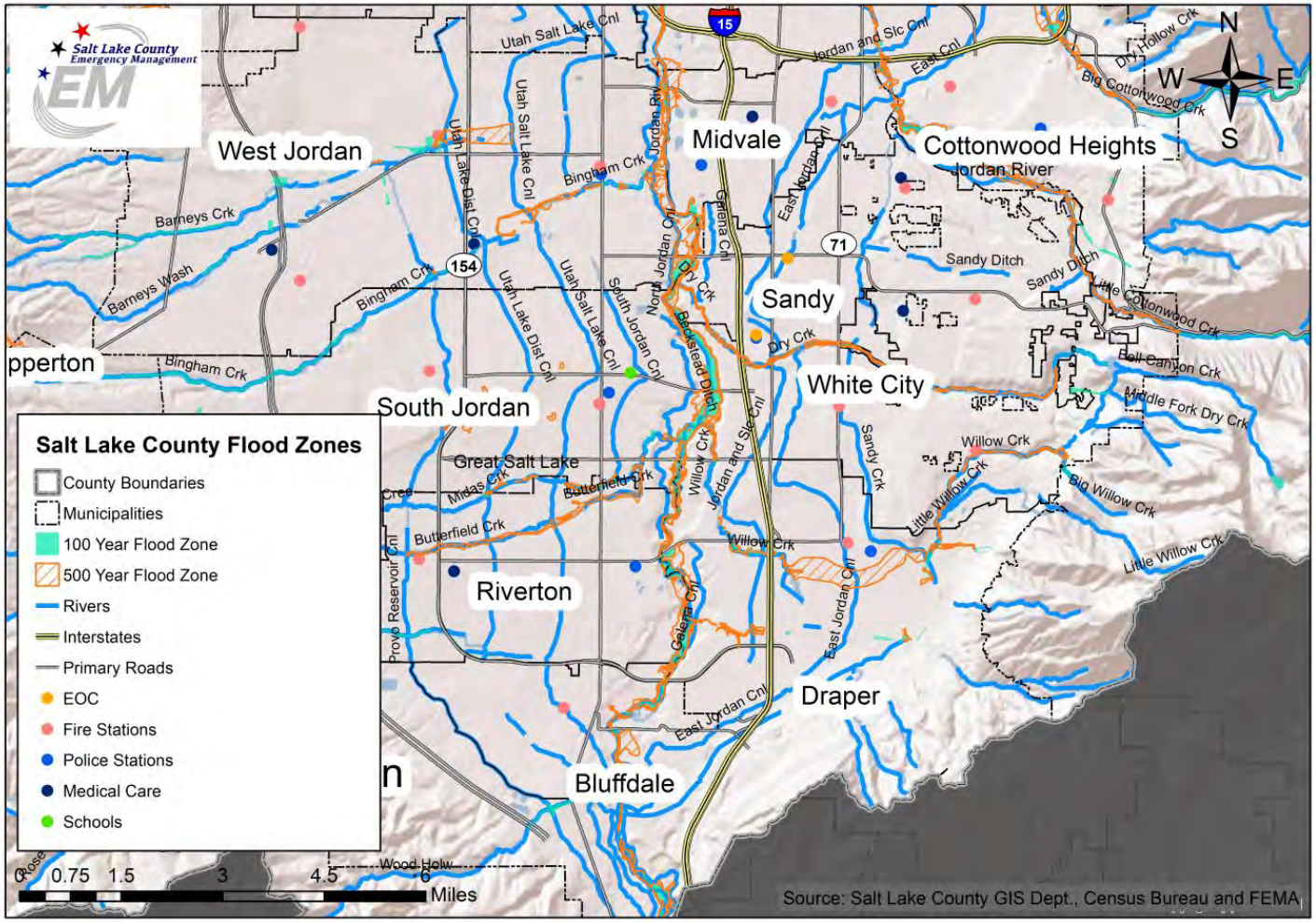
Wildland Fire	2014	Evaluate transportation network and address needed improvements to facilitate evacuation and emergency response.	
Wildland Fire	2014	Reduce fuels around publicly owned structures.	
Wildland Fire	2014	Implement firebreaks and other protective measures.	
Wildland Fire	2014	Assess existing water flow capabilities, both public and private, and address deficiencies.	
Wildland Fire	2014	Adopt the Utah Wildland-Urban Interface Code (Code addresses proper road accessibility, availability of water flow for fire response, etc.)	

Jurisdiction Maps

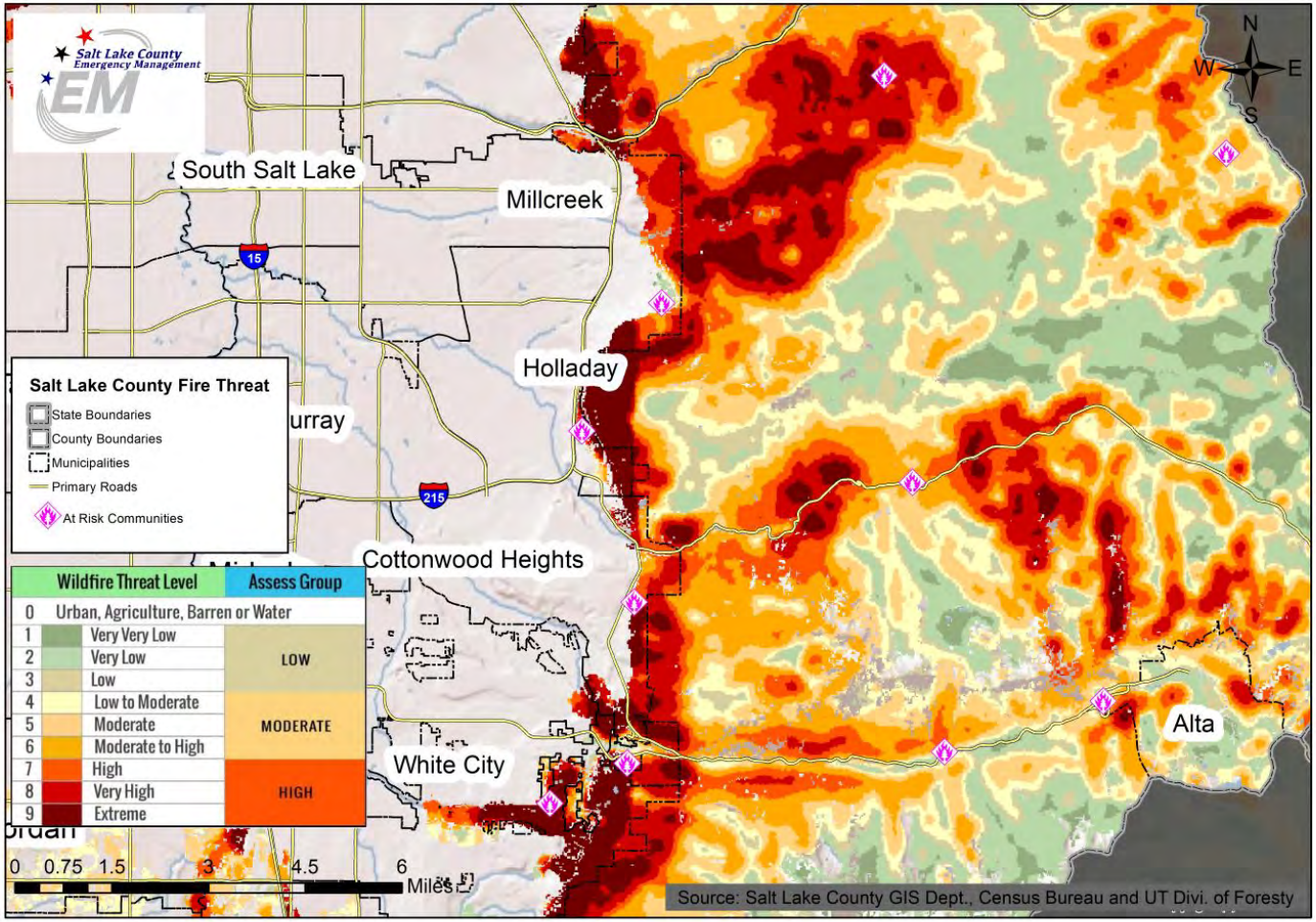
Map: 100 Year and 500 Year Flood Zone



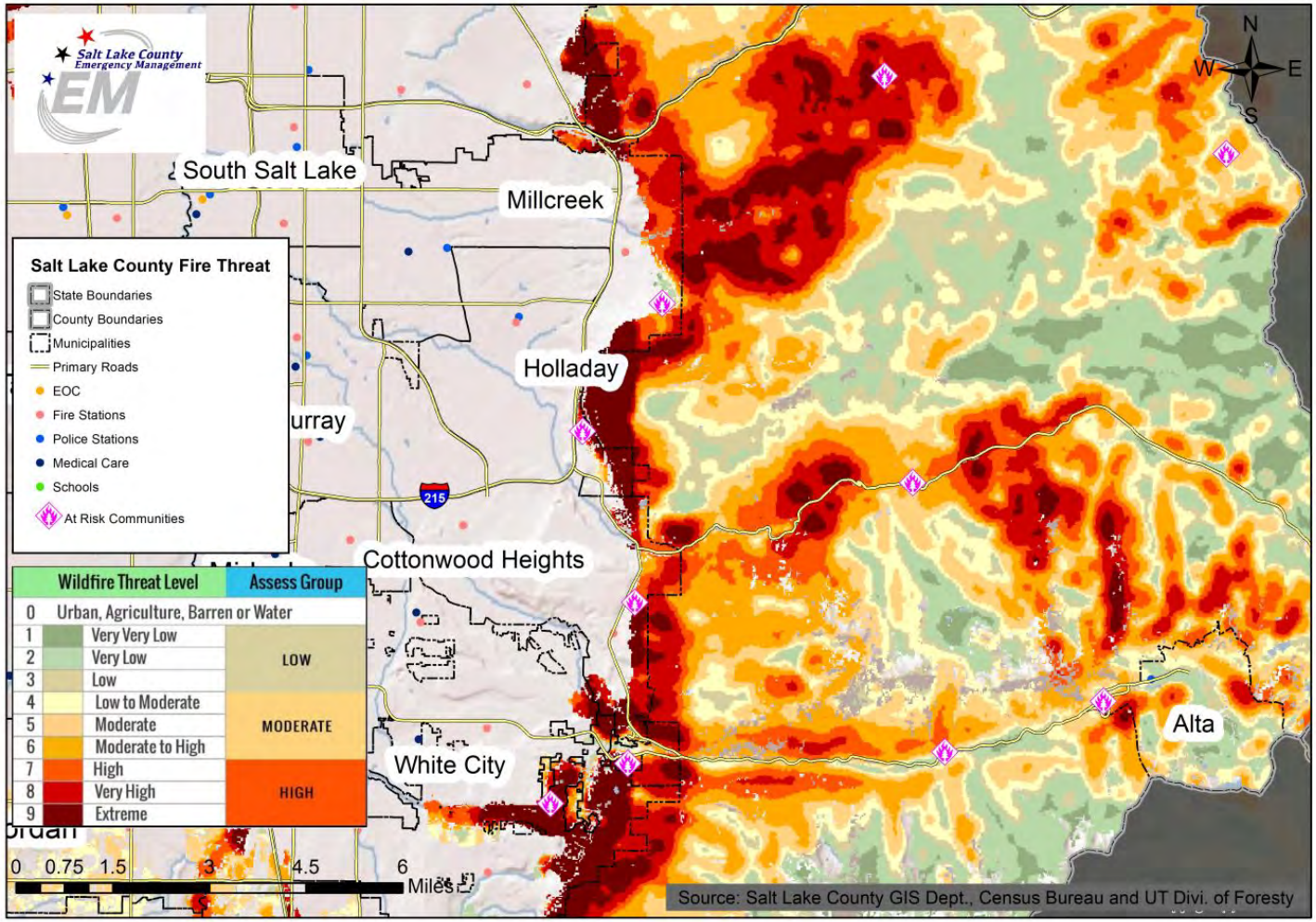
Map: 100 Year and 500 Year Flood Zone with Critical Facilities



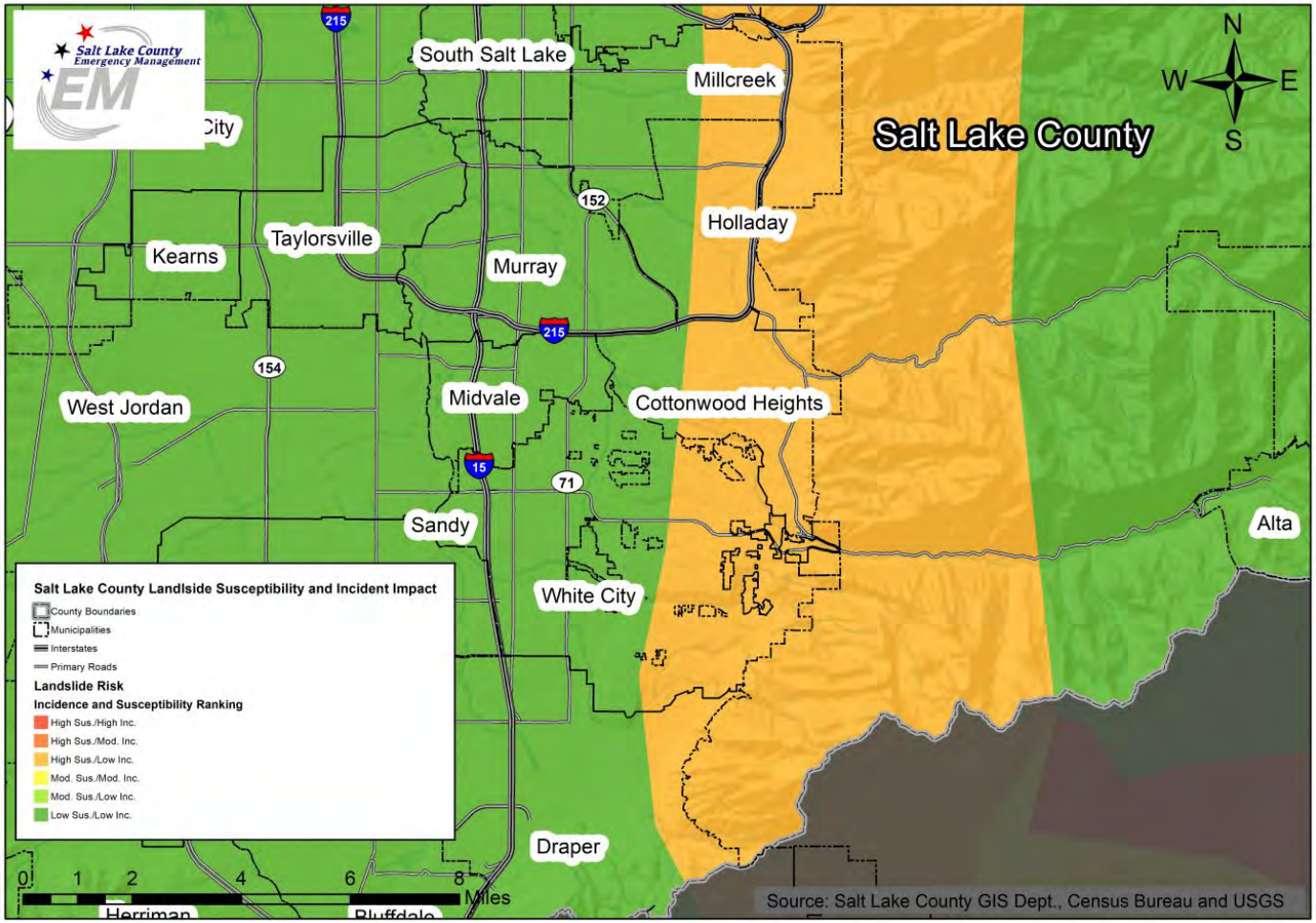
Map: Wildfire Threat Level



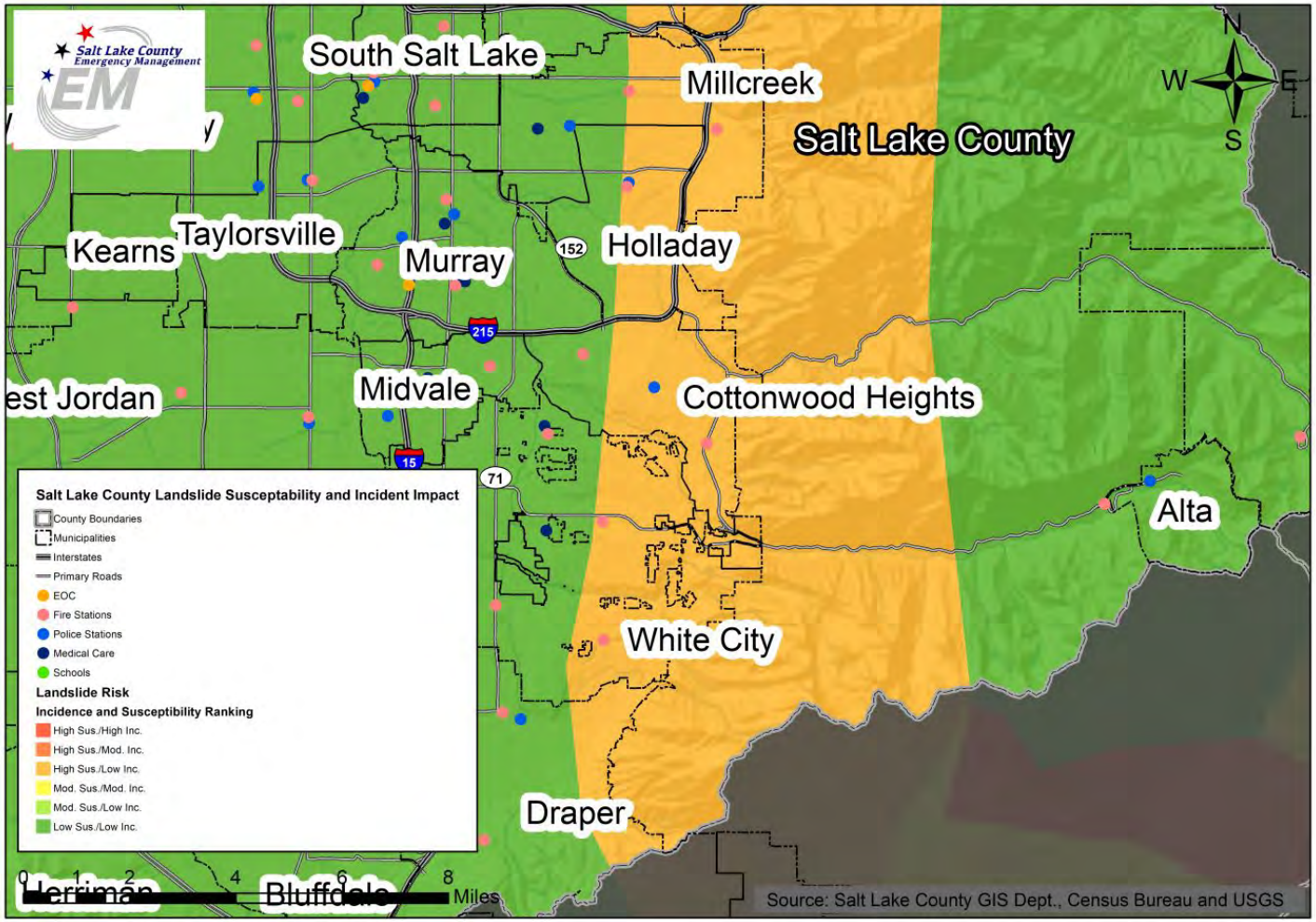
Map: Wildfire Threat Level with Critical Facilities



Map: Landslide Susceptibility and Incident Impact Potential



Map: Landslide Susceptibility and Incident Impact Potential with Critical Facilities



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: Draper City

Hazard Mitigation Plan Point of Contact

Primary Point of Contact	Alternate Point of Contact
Name: Robert Lambert **Title:** Battalion Chief/Emergency Manager **Department:** Draper Fire Department/Emergency Preparedness **Address:** 14324 S Firehouse Road **Office Phone:** 385-695-7199 **Cell Phone:** (801) 831-7366 **Email Address:** robert.lambert@draper.ut.us **Website:** https://www.draper.ut.us/451/Emergency-Preparedness	**Name:** Bart Vawdrey **Title:** Deputy Fire Chief **Department:** Draper Fire Department **Address:** 14324 S Firehouse Road **Office Phone:** (385) 557-2802 **Email** **Address:** bart.vawdrey@draper.ut.us **Website:** https://www.draper.ut.us/451/Emergency-Preparedness

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** 1978
- **Current Population:** 48,319 (Census v2018)
- **Population Growth:** The population grew 14.3% from April 1, 2010 (42,274) to July 1, 2018 (Census).
- **Location and Description:** Draper is located in the southeast quadrant of Salt Lake County and in the northwest quadrant of Utah County. Draper covers 30.3 square miles. Draper City is strategically located in the southeast corner of the Salt Lake Valley, with the Wasatch Mountain Range on the east and the Traverse Mountain Range on the south. The city is 18 miles south of Salt Lake City and 28 miles north of Provo. The Salt Lake International Airport is 21 miles north of the city. Draper is located 20 minutes from world-class skiing at Alta, Snowbird, Brighton and Solitude and 30 minutes to Park City and Deer Valley ski areas. The city owns more than 3,200 acres of open space in Corner Canyon and SunCrest. This pristine mountain land is located in the foothills and canyons of Draper and on top of the Traverse Ridge Mountain Range. Draper City has more than 90 miles of cycling, hiking and equestrian trails, with easy access trails from residential neighborhoods.
- **Brief History:** When incorporated in1978 as a City, Draper was a small farming community of 4,500 residents situated on two square miles, but the area had been settled much earlier by Mormon pioneers under the direction of Brigham Young. In the fall of 1849, under the direction of Mormon Pioneer leader Brigham Young, Ebenezer Brown, the son of Scottish immigrants brought his cattle to graze the tall grass-fed by mountain streams in the unsettled area known as South Willow Creek. The following spring, Ebenezer brought his wife Phoebe and their large family. Together they raised and fattened cattle to sell to immigrants heading to the goldfields of California. That same year the Browns invited Phoebe's brother, William Draper III, his wife Elizabeth, a midwife/doctor, and their seven children to join in farming the area. The area grew rapidly and by the end of 1852, 20 families called South Willow Creek home. In 1854, the first post office was established. The town was named Draperville in honor of William Draper III, who was also the first presiding elder of the small Mormon congregation in town.
- **Climate:** Draper has an average annual temperature of 53.7°F and receives 15.69 inches of rain.

- **Public Services:** The City has organized a Draper City Emergency Preparedness Committee to look at long-range planning and preparedness.
- **Governing Body Format:** Draper City's form of government is Council / Manager. Draper has a part-time Mayor and five part-time City Council members. The City Manager is full-time and works under the direction of the Mayor and Council. In the state of Utah, Draper is currently classified as a third-class city.
- **Development Trends:** Draper is characterized by a mixture of land uses. Draper has commercial, industrial, residential, agricultural, vacant land and 4,500 acres of open space areas within its boundaries. The open space area is used for recreational purposes by residents of Draper and the surrounding communities and has many multi-use trails and areas within. Draper is home to the main customer service center and campus of eBay, the tech call center of PGP Corporation, the call center of Musician's Friend, and the headquarters of 1-800 Contacts. Draper is also home to Utah's first Ikea store located in the intermountain west, which opened in spring 2007. The Church of Jesus Christ of Latter-day Saints (Mormons) constructed a temple in Draper that was dedicated on March 20, 2009. The growth surge that Draper has experienced from 1990 to the present is the largest in volume and geographic extent the city has ever experienced. This growth period occurred when the city quickly changed from a rural, agricultural town into a full-fledged suburban city. During this time the city has experienced strong surges of relatively unrestrained growth. In terms of the geographic location of this growth, 75% of the new housing units have been built in the southeastern part of the city. Increasingly the new housing is being built in the fringe areas as properties near central city are nearing build-out. A very large portion of this growth has been focused on a series of medium to large master planned developments spread across the southern parts of the city. The growth in business facilities (office, warehousing, retail, and manufacturing) has been concentrated in areas both east and west of the I-15 freeway and along 123rd south corridor. This growth has included redevelopment, greater diversity in users and building types, more expensive construction and both the import of new businesses as well as the growth of existing businesses. The strongest future business growth areas are expected to be in the vicinity of the major north/south corridors (along the I-15 Freeway corridor from Sandy to the Point of the Mountain) and the major east/west corridors (114th South, 118th South State, and 123rd South and the Bangerter Highway), and the Town Center area. The mix of businesses will probably continue to diversify and the demand for more services to fulfill the needs of both the local population and business communities will increase.

Capability Assessment

The City maintains a full-time staff of 222 and part-time staff of 148 individuals. The Deputy Chief and Battalion Chief is the City's designated Emergency Manager. Hazard Mitigation Planning efforts are led by Battalion Chief position and supported by Deputy Fire Chief and City Manager positions.

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY				
	Local Authority Exists to Develop and Implement/ Enforce?	**A Jurisdiction-Specific Code, Ordinance and/or Requirement Currently Exists?**	**Rely on the County's Codes, Ordinances & Requirements**	**Comments**
Codes, Ordinances, & Requirements				
Building Code Development and Enforcement	Yes	Yes	Yes	
Zonings Ordinance(s)	Yes	Yes	Yes	
Subdivision Ordinance(s)	Yes	Yes	Yes	
Stormwater Management Program	Yes	Yes	Yes	
Floodplain Ordinance(s)	Yes	Yes	Yes	Adopted 2005, Updated 2009
Real Estate Disclosure Ordinance(s)	-	-	Yes	
Growth Management	Yes	Yes	Yes	
Site Plan Review Requirements	Yes	Yes	Yes	
Planning Documents				
General or Comprehensive Plan	Yes	Yes	-	
Capital Improvement Plan	Yes	Yes	-	
Economic Development Plan	Yes	Yes	-	
Disaster Planning Documents				
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	Yes	Yes	
Post-Disaster Recovery Plan	Yes	Yes	Yes	

Continuity of Operations Plan	Yes	-	Yes	
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	Yes	-	Yes	

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes
Other	N/A

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	Full Time	Draper Building-Zoning
Engineers or professionals trained in building or infrastructure construction practices	Yes	Full Time	Draper Building-Zoning
Planners or engineers with an understanding of natural hazards	Yes	Full Time	Draper Building-Zoning
Personnel skilled or trained in GIS applications	Yes	Full Time	Draper GIS
Emergency manager	Yes	Full Time	Fire BC and Draper Fire
Grant writers	No	N/A	

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

What department is responsible for floodplain management in your jurisdiction?	Draper Building-Zoning
Who is your jurisdiction's floodplain administrator? (department/position)	Zoning
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No/Yes

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System (CRS)	-	-	-
Public Protection/ISO	Yes	2	June 2019
NWS StormReady	-	-	-

Jurisdiction-Specific Hazards and Risks

The *Natural Hazard Events Table* lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 53 policies were in force with total coverage of $15,355,000 and total written premium and FPF of $23,543 (FEMA, 2019).
- Draper City does participate in the National Flood Insurance Program (CID # 490244) and the last FIRM map for the area was issued on 09/25/09 (FEMA, 2019).
- The city will continue to participate in the NFIP through various efforts including but not limited to floodplain management, ordinance development and review, technical assistance, compliance inspections, and community education on flood hazards.

TABLE: RECENT NATURAL HAZARD EVENTS
(NOAA Data with additions from the jurisdiction representatives)

Type of Event	**Description**	**FEMA Disaster Number (if applicable)**	**Date**	**Preliminary Damage Assessment**

Winter Storm	8 inches in Draper	-	1/21/2019	-
Winter Storm	13.5 inches in Draper	-	1/19/2018	-
High Wind	68 mph at Draper	-	3/5/2017	100,000 property damage.
Hail	quarter-sized hail	-	7/19/2016	-
High Wind	59 mph in Draper	-	3/13/2016	-
Winter Storm	widespread power outages	-	12/13/2015	-
High Wind	72 mph in Draper	-	4/22/2014	500,000 property damage.
Orson Smith Trailhead Fire		-	6/12/2014	-
Winter Storm	7 inches in Draper	-	12/19/2013	-
Winter Storm	6 inches of snow in Draper	-	3/22/2013	-
Winter Storm	8 inches in Draper	-	1/27/2013	-
High Wind	These winds caused damage at a shopping center in Draper, blowing out two large windows.	-	3/26/2012	20,000 in property damage
Bell Canyon Fire	Not a huge fire	-	8/15/2011	-
Flooding		-	2011	-
Flood and Debris Flow		-	8/19/2010	-
Debris Flow		-	7/21/2009	-
High Wind	extensive roof damage to several homes in the Draper area was reported	-	3/29/2009	-
Corner Canyon Fire		-	8/8/2008	680 acres burned but no homes impacted.

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community
Members of the community over 65 years old	3,181
Members of the community under 18 years old	15,470
Members of the community that identify as having disability status	2,141
Members of the community that speak English less than "very well"	902
Members of the community living below the poverty line	2,368
The number of mobile homes in the community	60*
Members of the community without health insurance	2,869
Occupied housing units with tenants without a vehicle	176
Housing units without heating fuel	29

*The number of residents in mobile homes is likely higher. The primary mobile home park in the area is the Mountain Shadows Mobile Home Park.

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Avalanche: The likelihood of avalanches impacting Draper City is limited. The area on the east side of the City is adjacent to the Wasatch Mountains and has slopes 25 degrees or greater, but there has been no historical avalanche activity in that area of the City. Small slides have occurred in unpopulated areas.

Dam Failure: The Draper Irrigation Company has a storage reservoir located at the mouth of Corner Canyon, which is classified as a dam by the State of Utah. The impacts of the failure of this storage reservoir could have an impact on residential areas within the City. Any dam failures in other areas of Utah would have little impact on Draper, except for the potential impact on water supplies.

Drought: Draper City has large swings in temperature and in precipitation amounts during any year and is susceptible to drought. The City encourages landscaping that is friendly to the desert climate of Utah and when drought conditions occur the City would restrict the use of water for outdoor landscaping. The table below shows average temperatures and precipitation amount for Draper City by month.

Table. Draper City Average Temperature Table

Month	Temp. (min)	Temp. (max)	Temp. (avg)	Precipitation

January	-2°F	58°F	29°F	1.3"
February	5°F	66°F	35°F	1.1"
March	15°F	74°F	43°F	1.9"
April	21°F	90°F	50°F	2.1"
May	30°F	93°F	61°F	1.3"
June	39°F	100°F	70°F	1.4"
July	54°F	105°F	82°F	0.2"
August	46°F	103°F	78°F	0.5"
September	35°F	96°F	66°F	1.2"
October	27°F	86°F	52°F	1.4"
November	4°F	75°F	42°F	0.9"
December	0°F	59°F	29°F	1.4"

Earthquake: Earthquake hazards are likely to include ground shaking, ground rupture, tectonic deformation, liquefaction, seismically induced slope failures and phenomena related to ground-water effects. Of significant concern, many high priority public and private buildings and many critical infrastructure facilities are located within or across the major fault zones in the region. These facilities include very large waterlines, large irrigation canals, utilities, railroads, and major transportation routes. However, the potential damage is not limited to fault zone areas. Fine-grained, lake-bottom sediments are common in western Draper and are susceptible to liquefaction-induced ground failure during a large earthquake. Each incident may require a unique response from Draper City and in the instance of a major earthquake outside assistance will be necessary. Utah's earthquake hazard is greatest within the Intermountain Seismic Belt (ISB), which extends 800 miles from Montana to Nevada and Arizona, and trends from north to south through the center of Utah (The Wasatch Fault, UGS PIS 40). The ISB contains the Wasatch fault; one of the longest and most active normal faults in the world, with a potential for an earthquake with a magnitude up to 7.5. The largest earthquakes in Utah occur in the ISB, where at least 35 earthquakes of magnitude 5.0 or greater have occurred since 1850 (UNHH 2008).

Severe Thunderstorms: Potential for severe weather is high and Draper and not specific to any one climatic season.

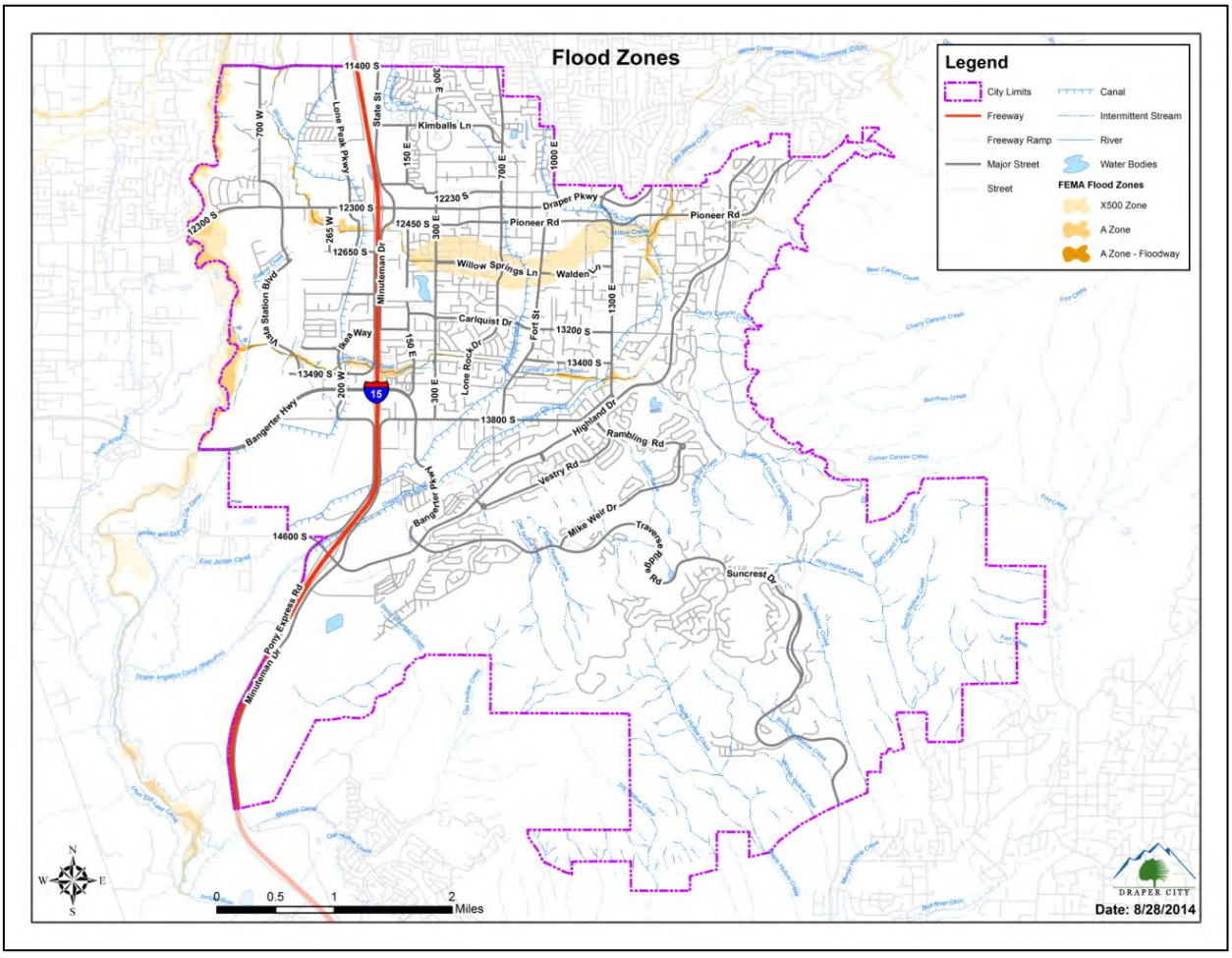
Tornado and High Winds: Wind speeds in Draper are annually higher than national averages and microburst winds are common. They are particularly high at the point of the mountain.

Flood: Although located in a semi-arid region, Draper City is subject to thunderstorms and snowmelt flooding. Areas that may be impacted by thunderstorm and snowmelt flooding include Bear Canyon Neighborhood, Springdale Way near the foothills, and Corner Canyon Creek. Additionally, while the potential is small, the Jordan River, which runs west of I-15 from North to South on the west side of Draper, could overtop due to thunderstorms, severe weather, and rapid snowmelt. Several streams run through the City of Draper and converge with the Jordan River that runs along the western border. Thirty-seven (37) structures are vulnerable to the 1% annual

chance event and there is additional development planned in the 1% annual chance floodplain. The following Areas of Mitigation Interest were identified by the City of Draper and through FEMA's GIS flood exposure analysis:

- The Bear Canyon neighborhood encroaches into the natural floodplain. During high flows, certain parts of the neighborhood experience flooding along historic flow paths.
- In 2011, houses along Springdale Way near the foothills experienced mudflows, flooding, and debris flow from small drainages coming off the foothills.
- Along Corner Canyon Creek, downstream of I-15, there is planned commercial development in the SFHA. The City is considering flood detention and an irrigation facility as well as a culvert or channelization for Corner Canyon Creek at 1100 East.
- The Draper Elementary School is vulnerable to the 0.2% annual chance flood.

Figure. The City of Draper's Flood Zones

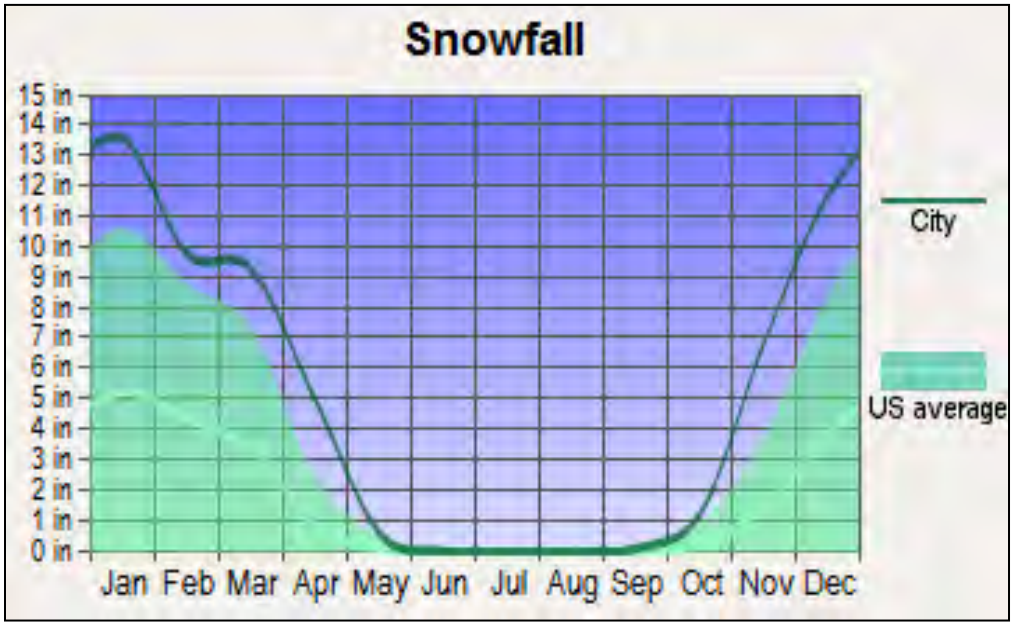


Landslide and Problem Soils: Numerous geologic hazards exist in Draper and throughout the Salt Lake Valley that could result in an emergency situation or disaster. Steep mountains adjacent to the city create a potential for landslides, debris flows, rock falls, and snow avalanches. Draper has experienced landslide-debris flow in the past. Steep slopes on the east and south side of Draper also lend to the high potential for landslides and slope failure. Buildings along the ridgetops of some areas increase the potential of slides due to added weight and hill disturbance.

Severe Weather: The potential for severe weather is a reality in Draper City and the surrounding region. These weather events are not isolated to any climatic season, but rather can occur at any time during the year. During the spring and summer months, heavy rains can fall upon soils in a desert climate that may not readily percolate creating surface runoff, mudslides, debris flow, flooding, and other water-related damage. During the winter months, heavy snowfall is possible, especially in higher elevations of the community. While Draper City is typically self-reliant in weather-related events, severe weather may require assistance from outside agencies.

Winter Storms: Corner Canyon and Suncrest Area receive large amounts of snow which can cause business interruption, including interrupting village services, such as Police, Fire, and Public Works tasks. Winter weather systems and snowstorms over northern Utah can have a dramatic effect on regional commerce, transportation, and daily activity and are a major forecast challenge for local meteorologists. This challenge is heightened in Draper City because of the wide variety of local climatic features, such as significant elevation changes, atypical wind patterns, and mountainous slopes located immediately adjacent to city boundaries. These local features can impact the severity of winter storms. Winter Storms additionally bring colder temperatures which can adversely impact the elderly population. Additionally. Draper has a number of community members without health insurance which would impact medical care.

Figure. The City of Draper's Average Snowfall



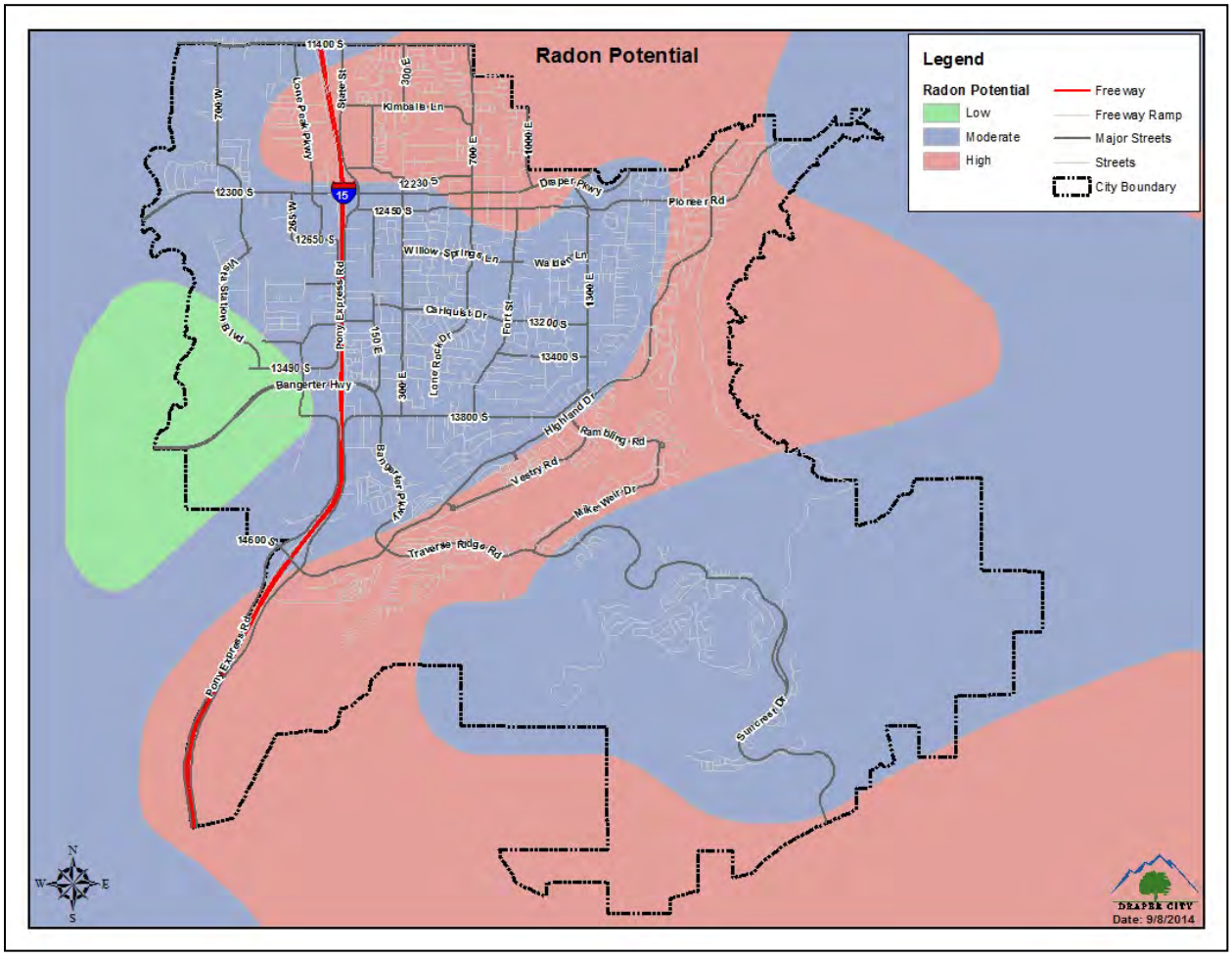
Wildfire: Perhaps the most likely and significant hazard in Draper City is the potential for damage and loss of life and property through fire events. The terrain of steep slopes adds to the dangers and difficulties of wildfire suppression. Many homes on the east and south sides of Draper have a high potential of being impacted by wildfires. Fires can occur within the urban fabric of the community or as wildfires in the hillside areas of the community and mountainous areas adjacent to the city. Each incident may require a unique response from Draper City. The potential for structure and wildfires is increased by lightning events. Wildfires can remove necessary vegetation, which can result in unstable soils for extended periods of time. Utah's fire season typically occurs during the warmer and drier months between May and October. Although

traditionally most wildfires have been caused naturally, mostly by lightning, as development encroaches on the hillsides and lower slopes of the Wasatch Mountains, wildfires caused by humans will likely increase.

Public Health: The number of community members that believe in not vaccinating their kids (anti-vaxxers) is a troubling public health concern.

Radon: Draper is at moderate to high risk for Radon exposure.

Figure. The City of Draper's Radon Potential



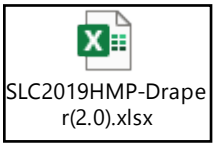
Cyber Attack: Cyberattacks could interrupt government work, public safety, and critical infrastructure operation.

Hazardous Materials: While Draper City has minimal hazardous materials stored in the city, I-15 is the main Interstate for some large hazardous materials transportation.

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Wildfire	3	19	57
Severe Winter Weather	3	16	48
Severe Weather	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Flooding	2	17	34
Cyber Attack	2	17	34
Hazardous Materials Incident	2	14	28
Drought	2	14	28
Radon	3	9	27
Terrorism	1	25	25
Landslide and Slope Failure	2	11	22
Dam Failure	1	22	22
Tornado	1	11	11
Civil Disturbance	1	11	11
Avalanche	1	3	3

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.



Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1		Avalanche	Low	1	3
Dam Failure	Low	1		Dam Failure	Medium	2	6
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Medium	2	6
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Medium	2		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	High	3	9
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	High	3		Wildfire	Medium	2	6

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	No Impact	0	0		Avalanche	No Impact	0	0
Dam Failure	Medium	2	2		Dam Failure	High	3	6
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Low	1	2
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	Medium	2	4
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	High	3	6
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Low	1	2
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	Low	1	1		Wildfire	High	3	6

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**	**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)	**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)	**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)	**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)	**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	No Impact	0	0		Avalanche	Unlikely	0	0
Dam Failure	Medium	2	2		Dam Failure	Medium	2	6
Drought	Medium	2	2		Drought	Low	1	3
Civil Disturbance	Medium	2	2		Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	2		Cyber Attack	Medium	2	6
Earthquake	High	3	3		Earthquake	High	3	9
Flooding	Medium	2	2		Flooding	Low	1	3
Hazardous Materials Incident	Medium	2	2		Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	3		Public Health Epidemic/ Pandemic	High	3	9
Radon	No Impact	0	0		Radon	Unlikely	0	0
Severe Weather	Low	1	1		Severe Weather	Unlikely	0	0
Severe Winter Weather	Medium	2	2		Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	3		Terrorism	High	3	9
Tornado	Low	1	1		Tornado	Unlikely	0	0
Wildfire	High	3	3		Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**	**Catastrophic Factor**—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)	**High**—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)	**Medium**—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)	**Low**—Low potential that this hazard could be catastrophic (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)	**Unlikely**—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

Action	Year Initiated	Goal/ Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Conduct Seismic Retrofitting	2019	Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Earthquake	Draper Emergency Management	Public Works	High	High	Local Funds, Grants	High	2030	
Design Wildfire Evacuation Plan and Route designations	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	All Hazards	Draper Emergency Management		Medium	Medium	Local Funds, Grants	High	2025	
Install Notification System to Alert the Public	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 3: Enhance and protect the communication and warning/notification systems in the County.	All Hazards	Draper Emergency Management		High	Medium	Local Funds, Grants	High	2025	
Bury Powerlines	2019	Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	All Hazards	Draper Emergency Management	Public Works	High	High	Local Funds, Grants	Medium	2030	
Increase Defensible Space and Wildfire Mitigation	2019	Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Flood (Riverine) and Flood (Urban/Flash Flooding)	Draper Emergency Management	Fire Department	Medium	High	Local Funds, Grants	Medium	2030	

Mitigation Table - Ongoing Actions

Action	Year Initiated	Goal/ Objective	Hazard(s)	Agency Lead	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment resources and redundancy, and adequate emergency procedures	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	All Hazards	City of Draper	High	High	Local Funds, Grants	High	Ongoing	Check yearly
Compile inventory of mutual-aid agreements and memoranda of understanding (MOU) and identify deficiencies	2009	4 – Improve response capabilities through mutual-aid agreements 4.1 – Utilize mutual-aid agreements in accordance with National Incident Management System (NIMS) requirements	All Hazards	City of Draper	Medium	Low	Local Funds, Grants	Medium	Ongoing	Continually update
Pursue and implement needed mutual-aid agreements	2009	4 – Improve response capabilities	All Hazards	City of Draper	Medium	Low	Local Funds, Grants	Medium	Ongoing	Updated (as needed)

		through mutual-aid agreements 4.1 – Utilize mutual-aid agreements in accordance with National Incident Management System (NIMS) requirements								
Provide education regarding all-natural hazards through live trainings, as well as web-based, print and broadcast media	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – establish a comprehensive public education program	All Hazards	City of Draper	Medium	Low	Local Funds, Grants	Medium	Ongoing	Offer different trainings each year
Repair, maintain, and improve water distribution infrastructure to prevent loss from leakage, breaks, etc.	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Drought	City of Draper	Medium	Medium	Local Funds, Grants	Medium	Ongoing	Continual (as needed)
Identify structures at risk to earthquake damage	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	Earthquake	City of Draper	High	High	Local Funds, Grants	High	Ongoing	Continual (as needed)

Complete seismic rehabilitation/ retrofitting projects of public buildings at risk	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	Earthquake	City of Draper	High	High	Local Funds, Grants	High	Ongoing	Update (as needed)
Provide educational materials to unreinforced masonry home and business owners	2009	1 – Reduce earthquakes losses to infrastructure 1.2 – Improve public education regarding earthquake risks to unreinforced masonry buildings	Earthquake	City of Draper	High	Low	Local Funds, Grants	High	Ongoing	Continually provide
Procure Engineering Consultant to perform the nonstructural design and geotechnical assessment and review.	2009	1 – Reduce earthquakes losses to infrastructure 1.3 – Improve Seismic Hazard understanding and seismic resistance of CUWCD Red Butte Dam in Salt Lake County.	Earthquake	City of Draper	High	High	Local Funds, Grants	High	Ongoing	Continual (as needed)
Determine potential flood impacts and identify areas in need of additional flood control structures	2009	1 – Protection of life and property before, during and after a flooding event 1.2 – Encourage appropriate flood	Flood	City of Draper	High	High	Local Funds, Grants	High	Ongoing	Continual (as needed)

		control measures, particularly in new developments								
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures	2009	1 – Protection of life and property before, during and after a flooding event 1.2 – Encourage appropriate flood control measures, particularly in new developments	Flood	City of Draper	High	High	Local Funds, Grants	High	Ongoing	Continual (as needed)
Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of stormwater and flood control systems	2009	1 – Protection of life and property before, during and after a flooding event 1.3 – Provide maintenance, repairs and improvements to drainage structures, stormwater systems, and flood control structures	Flood	City of Draper	High	High	Local Funds, Grants	High	Ongoing	Continual (as needed)
Identify and assess structures for deficiencies	2009	2 – Reduce threat of unstable or inadequate flood control structures 2.1 – Reduce potential for failure of flood control structures	Flood	City of Draper	High	High	Local Funds, Grants	High	Ongoing	Continual (as needed)
Modify structures as needed to address deficiencies	2009	2 – Reduce threat of unstable or	Flood	City of Draper	High	High	Local Funds, Grants	High	Ongoing	Continual (as needed)

		inadequate flood control structures 2.1 – Reduce potential for failure of flood control structures								
Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential	2009	1 – Reduce or eliminate the threat of slope failure damage 1.2 – Monitor historic landslide areas	Slope Failure	City of Draper	Medium	Low	Local Funds, Grants	Medium	Ongoing	Ongoing coordination
Increase public awareness through "Firewise" program	2009	1 – Community education on wildfire hazard 1.1 – Reduce risk from wildfire through education programs	Wildland Fire	City of Draper	High	Low	Local Funds, Grants	High	Ongoing	Ongoing community outreach
Educate homeowners on the need to create defensible space near structures in WUI	2009	1 – Community education on wildfire hazard 1.1 – Reduce risk from wildfire through education programs	Wildland Fire	City of Draper	High	Low	Local Funds, Grants	High	Ongoing	Ongoing community outreach
Work with experts and communities to develop or update evacuation plans	2009	2 – Improve safety from wildfire hazards through planning, protective actions, and improved fire response capabilities	Wildland Fire	City of Draper	High	Medium	Local Funds, Grants	High	Ongoing	Ongoing coordination

		2.2 – Improve evacuation capabilities for WUI areas								
Evaluate transportation network and address needed improvements to facilitate evacuation and emergency response	2009	2 – Improve safety from wildfire hazards through planning, protective actions, and improved fire response capabilities 2.2 – Improve evacuation capabilities for WUI areas	Wildland Fire	City of Draper	High	Medium	Local Funds, Grants	High	Ongoing	Continual (as needed)
Reduce fuels around publicly owned structures	2009	2 – Improve safety from wildfire hazards through planning, protective actions, and improved fire response capabilities 2.4 – Complete wildfire protection projects	Wildland Fire	City of Draper	Medium	Medium	Local Funds, Grants	Medium	Ongoing	Ongoing reduction
Assess existing water flow capabilities, both public and private, and address deficiencies	2009	2 – Improve safety from wildfire hazards through planning, protective actions, and improved fire response capabilities 2.4 – Complete wildfire protection projects	Wildland Fire	City of Draper	Medium	Medium	Local Funds, Grants	Medium	Ongoing	Continual (as needed)

Assist communities in developing Community Wildfire Protection Plans or similar plans	2009	2 – Improve safety from wildfire hazards through planning, protective actions, and improved fire response capabilities 2.4 – Complete wildfire protection projects	Wildland Fire	City of Draper	Medium	Low	Local Funds, Grants	Medium	Ongoing	Continual (as needed)
Establish Firewise Community Program for SunCrest and the entire East Bench.	2014 [Modified in 2019]	Goal 4 Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters.	Wildland Fire	Draper City Emergency Preparedness, Draper City Public Works, Unified Fire Authority and State of Utah	High This will prevent the loss of human life and economic and property losses.	Medium $200,000 to $250,000	$216,000 Grant from the State of Utah	High	Ongoing	The SunCrest residential community area located on Traverse Ridge, which divides Utah and Salt Lake County and is a Wildland Interface Zone, has a high potential for wildland fires. The City has worked with the community, Unified Fire Authority and the State of Utah in putting a program in place to educate residents and measures to reduce wildland fires in the area. Potential natural hazards covered by this mitigation action are wildfires and drought.
Continue to Enforce Master Drainage Plan Requirements	2014	Goal 1 Protect the lives, health, and safety of the citizens of Salt Lake County	Flood	Draper City Engineering Division and Draper City Public Works Department	High This will prevent the loss of human life and	Medium Developer-based funding under specific	Developer-based funding under specific plan requirements	Medium	Ongoing	The Draper City requires drainage plans as part of the approval process for all specific plans and large development projects, as determined by the

		before, during, and after a disaster.			economic and property losses.	plan requirements				City's Public Works Director and City Engineer. The master drainage plan should consider cumulative regional drainage and flooding mitigation. The intent of a master drainage plan is to ensure that the overall rate of runoff from a project does not exceed pre-development levels. If necessary, this objective shall be achieved by incorporating run-off control measures to minimize peak flows and/or assistance in financing or otherwise implementing comprehensive drainage plans. Potential natural hazard covered by this mitigation action is flooding.
Continue Utah Shakeout Activities to Promote Earthquake Awareness	2014	Goal 4 Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters.	Earthquake	Emergency Manager, Police Department, and the City's Emergency Preparedness Committee	High This will help to prevent the loss of human life and property losses when a major	Low $5,000 to $10,000 annually	City budget	High	Ongoing	Draper City participates in the Utah Shakeout activities annually. This event promotes earthquake awareness of the residents, businesses, and City employees. This annual event allows the City to practice setting up its Emergency Operation Center

					earthquake event occurs.					and its process of communicating with neighborhoods and businesses throughout the City for other hazard events such as a dam failure, infestation, pandemic, floods, and severe weather conditions. Potential natural hazards covered by this mitigation action are earthquakes, a dam failure, infestation, pandemic, floods and severe weather conditions.
Purchase Hazard Public Notification Boards	2014	Goal 3 Enhance and protect the communication and warning/notification systems in the County.	All Hazards	Draper City Public Works Department and Police Department	Medium	Medium 1 signs @ $35,000 each = $35,000	Departmental operational budgets or grant funding	Low	Fiscal year 2015/ 2016	Consider purchase additional mobile, self-contained changeable message signs to pre-alert motorists to avoid “real-time” traffic, weather, fire or other hazard events. Potential natural hazards covered by this mitigation action are severe weather conditions, wildfires, flooding, avalanche and landslides. The City currently has one mobile sign that has been beneficial in notifying the public of potential hazards.

										These mobile signs provide the ability for City forces to aid emergency response crews by dispatching mobile sign units to be stationed at critical locations to alert motorists and citizens of potential hazard areas. Purchasing an additional sign will allow for better routing of nonessential vehicle traffic that may impede the delivery of critical health and safety services and ultimately result in quicker overall response delivery times. This will prevent the loss of human life and economic and property losses.
Educate Residents and Businesses through the Draper City Website and Twitter	2014	Goal 4 Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters.	All Hazards	Public Relation Officer, Emergency Manager, Draper City Building Inspection Division and Draper City Community Development Department		Low $5,000 annually	City budget	High	Ongoing	Draper City's website is an excellent tool to educate and notify residents, businesses, and the general public of potential natural hazards and how to mitigate them. The City's twitter account is also a tool that can be used to inform residents, businesses and the general public of

										hazard events in progress. The City will update its website as needed with documents, maps and information regarding potential natural hazards that could impact Draper City. Potential natural hazards covered by this mitigation action are avalanche, dam failure, drought, earthquake, flood, infestation, landslide, problem soils, pandemic, radon, severe weather conditions and wildfires.

Mitigation Table - Completed and Removed Actions

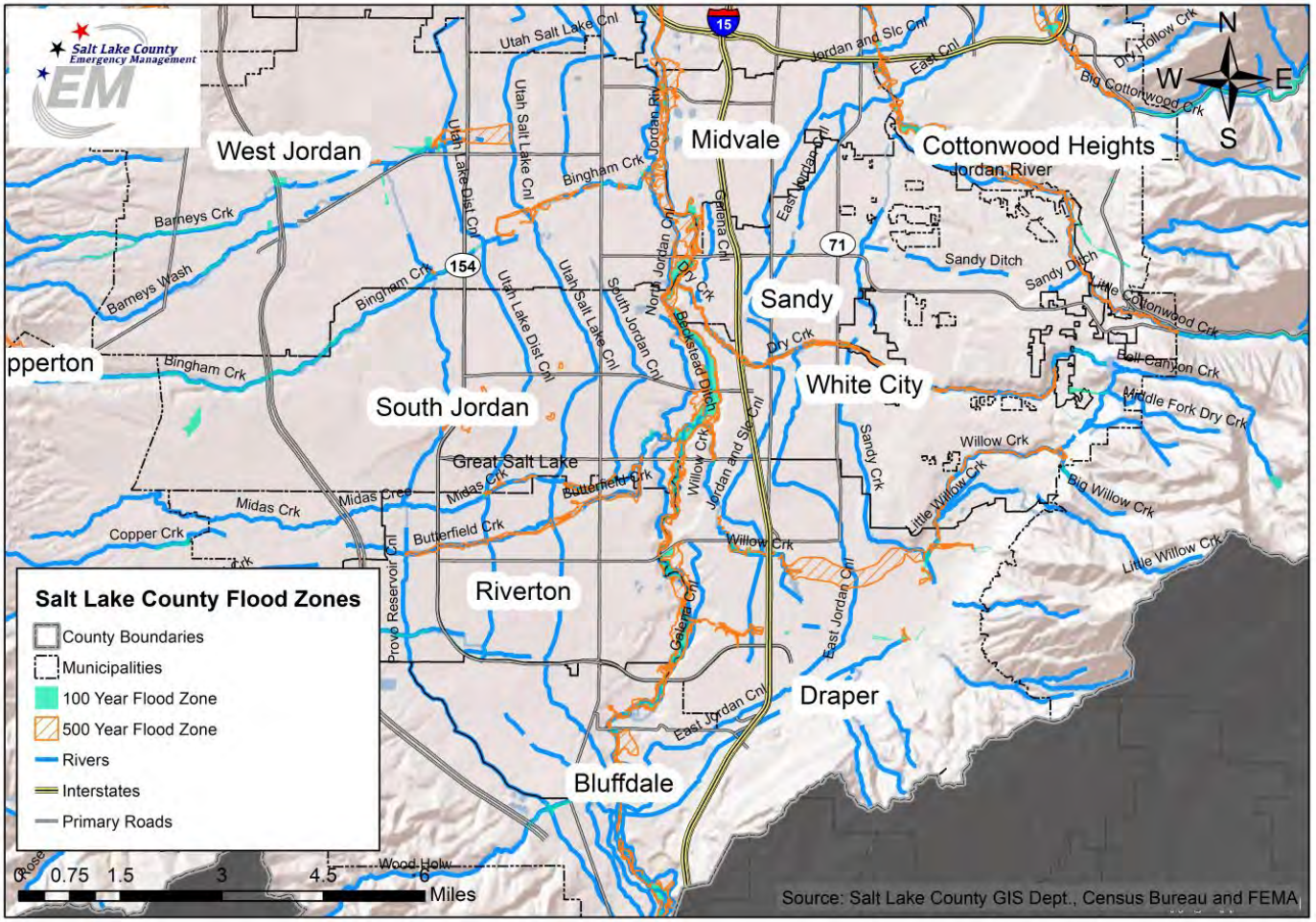
Category	Year Initiated	Action	Status	Comments
All Hazards	2009	2 – Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group	Not completed	Included in other mitigation action
All Hazards	2009	1 – Establish a coordinating group to address geographic data issues	Not applicable	Coordinate with county
All Hazards	2009	1 – Integrate existing hazard monitoring networks in emergency operations centers. Utilize sensors such as weather stations, stream gauges, seismograph stations, road conditions, etc.	Not completed	Included in other mitigation action
All Hazards	2009	2 – Identify and implement additional hazard monitoring capabilities.	Not completed	Included in other mitigation action
All Hazards	2009	2 – Incorporate information about cascading effects of hazards in education programs	Not completed	Included in other mitigation action

All Hazards	2009	3 – Develop education programs to target specific groups including homeowners, developers, schools and people with special needs	Not completed	Included in other mitigation action
Dam Failure	2009	1 – Include dam inundation maps in current County, City, and Special Service District Emergency Operations Plans	Not completed	Coordinate with county
Dam Failure	2009	2 – Utilize inundation maps to identify potential evacuation areas and routes	Not completed	Included in other mitigation action
Drought	2009	2 – Emergency Managers will coordinate with local water districts/public utilities to support ongoing conservation efforts	Not completed	Included in other mitigation action
Drought	2009	3 – Investigate feasibility of implementing an incentive program to encourage the use of low-flow appliances and fixtures in homes and businesses	Completed	
Drought	2009	4 – Implement water-saving devices and practices in public facilities	Not completed	Funding constraints
Drought	2009	7 – Provide information on landscaping alternatives for persons subject to green area requirements	Completed / Ongoing	
Drought	2009	1 – Set up livestock water rotation in areas of agricultural use	Not applicable	No longer relevant
Drought	2009	1 – Coordinate with water districts to plan for, develop and/or expand secondary water	Not Completed	Included in other mitigation action
Earthquake	2009	2 – Research feasibility of an incentive program for retrofitting privately-owned buildings, particularly unreinforced masonry	Not completed	Funding constraints
Flooding	2009	1 – Assist Cities with NFIP application	Not applicable	Participate in NFIP
Flooding	2009	2 – Encourage Communities to actively participate in NFIP	Not applicable	Participate in NFIP
Severe Weather	2009	1 – Maintain Hazardous Weather Operations Plan according to StormReady requirements	Not completed	Use different system
Severe Weather	2009	2 – Maintain Contact with NWS prior to re-application in 2010	Not applicable	Application passed
Severe Weather	2009	1 – Meet with NWS representative on an annual basis to receive information on new services and alerts available	Not completed	Coordinate with county
Severe Weather	2009	2 – Assist NWS in making other agencies and departments aware of available resources	Not Completed	Coordinate with county
Severe Weather	2009	1 – Assist Forest Service Utah Avalanche Forecast Center and other organizations in promoting avalanche hazard awareness for backcountry users	Not Applicable	No longer relevant

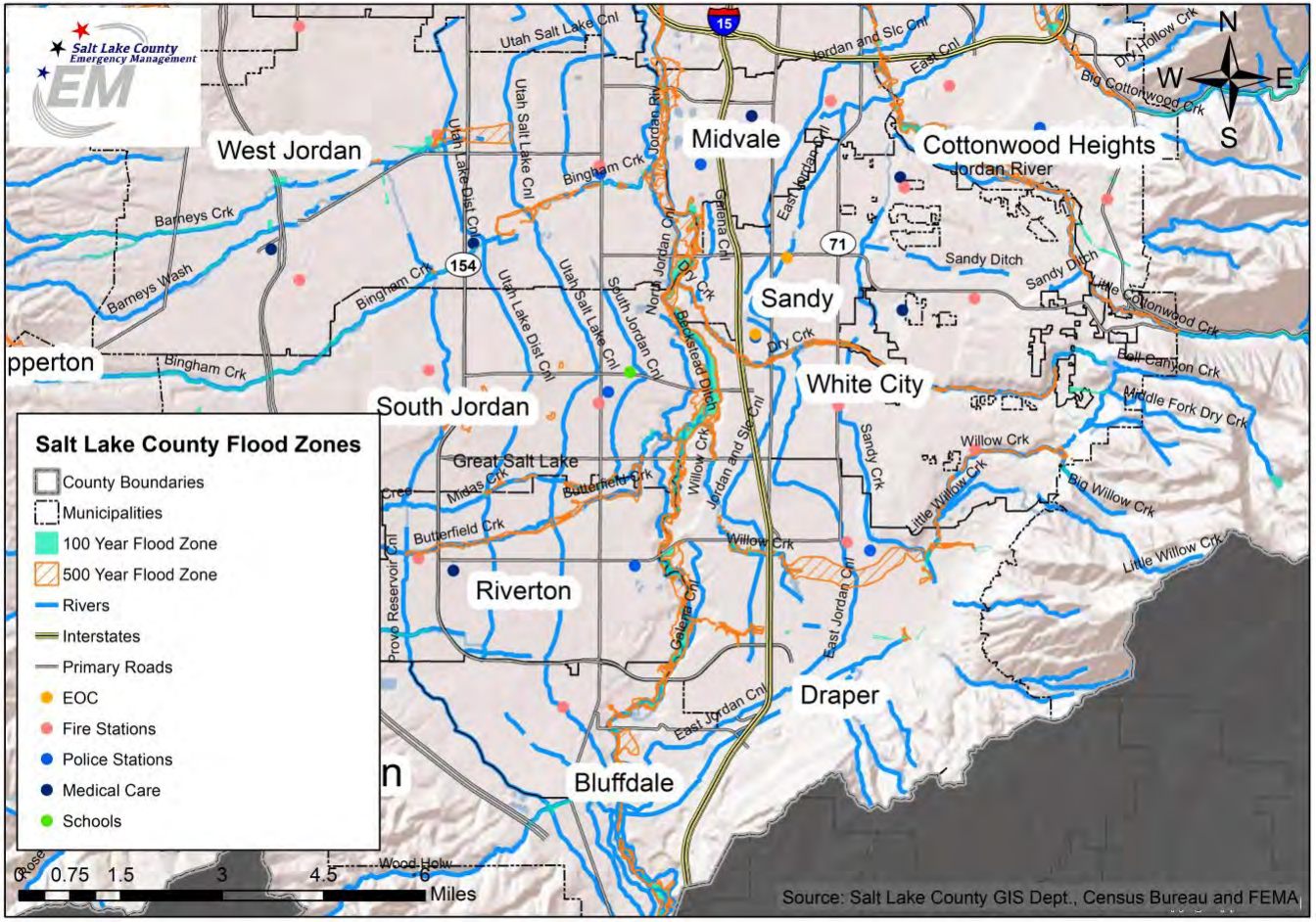
Severe Weather	2009	1 – Work with NWS to develop large event venue weather safety and evacuation procedures	Not Completed	Coordinate with county
Wildland Fire	2009	1 – Designate and promote county-wide annual initiative for clearing fuels	Not applicable	Coordinate with county
Wildland Fire	2009	2 – Provide waste removal, such as chipping of green waste by public works, following designated fuel clearing day/week	Not completed	Funding constraints
Wildland Fire	2009	1 – Identify all facilities, businesses, and residences, particularly in the canyons, and assign addresses according to current county addressing standards	Not applicable	Included in other mitigation action
Wildland Fire	2009	2 – Incorporate improved addresses in fire-dispatch and other databases	Not applicable	Included in other mitigation action
Wildland Fire	2009	2 – Implement fire breaks and other protective measures	Not completed	Funding constraints
Wildland Fire	2009	1 – Adopt the Utah Wildland-Urban Interface Code	Not completed	Coordinate with county
Wildland Fire	2009	2 – Define wildland-urban interface and develop digital maps of the WUI	Not completed	Included in other mitigation action

Jurisdiction Maps

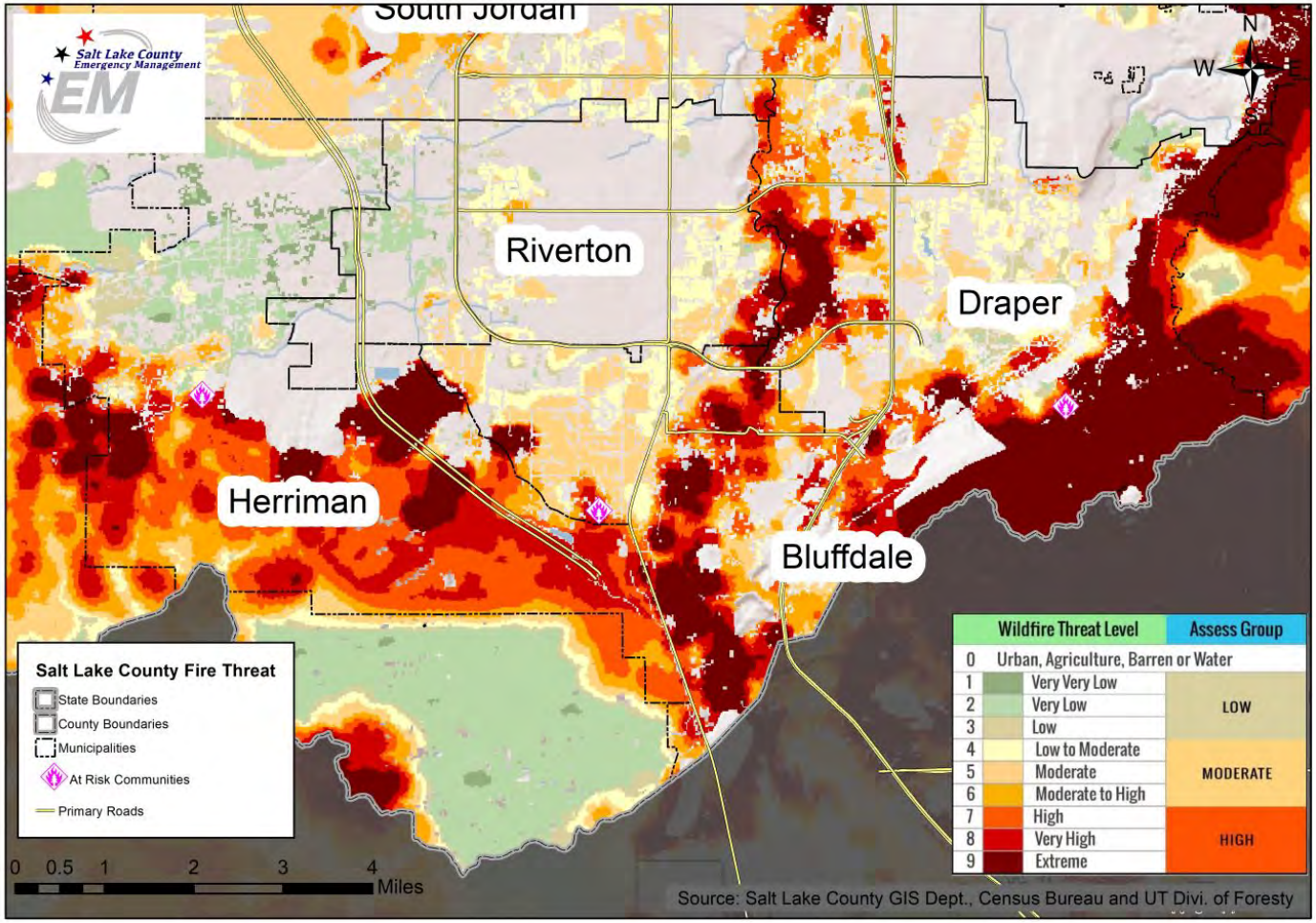
Map: 100 Year and 500 Year Flood Zone



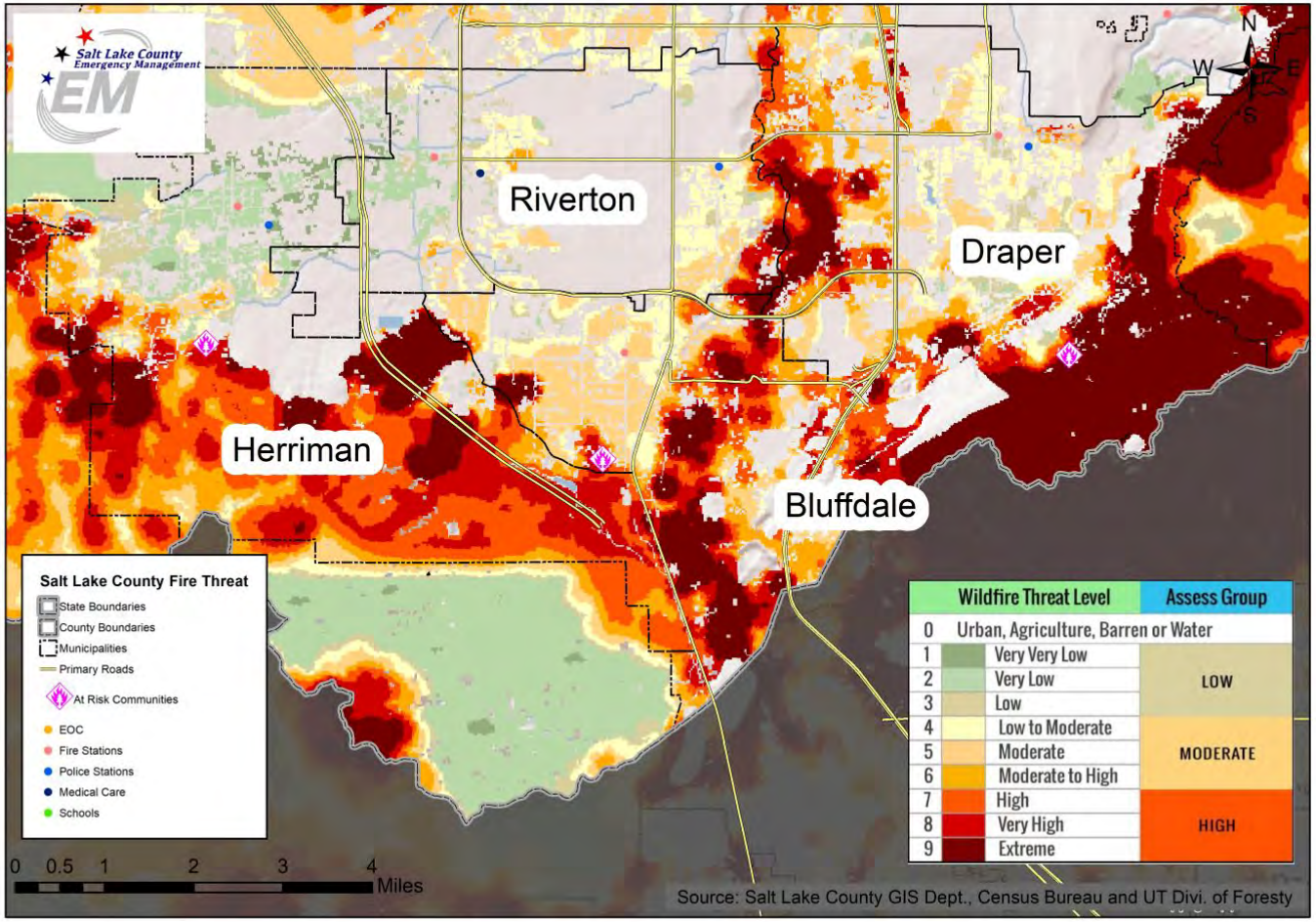
Map: 100 Year and 500 Year Flood Zone with Critical Facilities



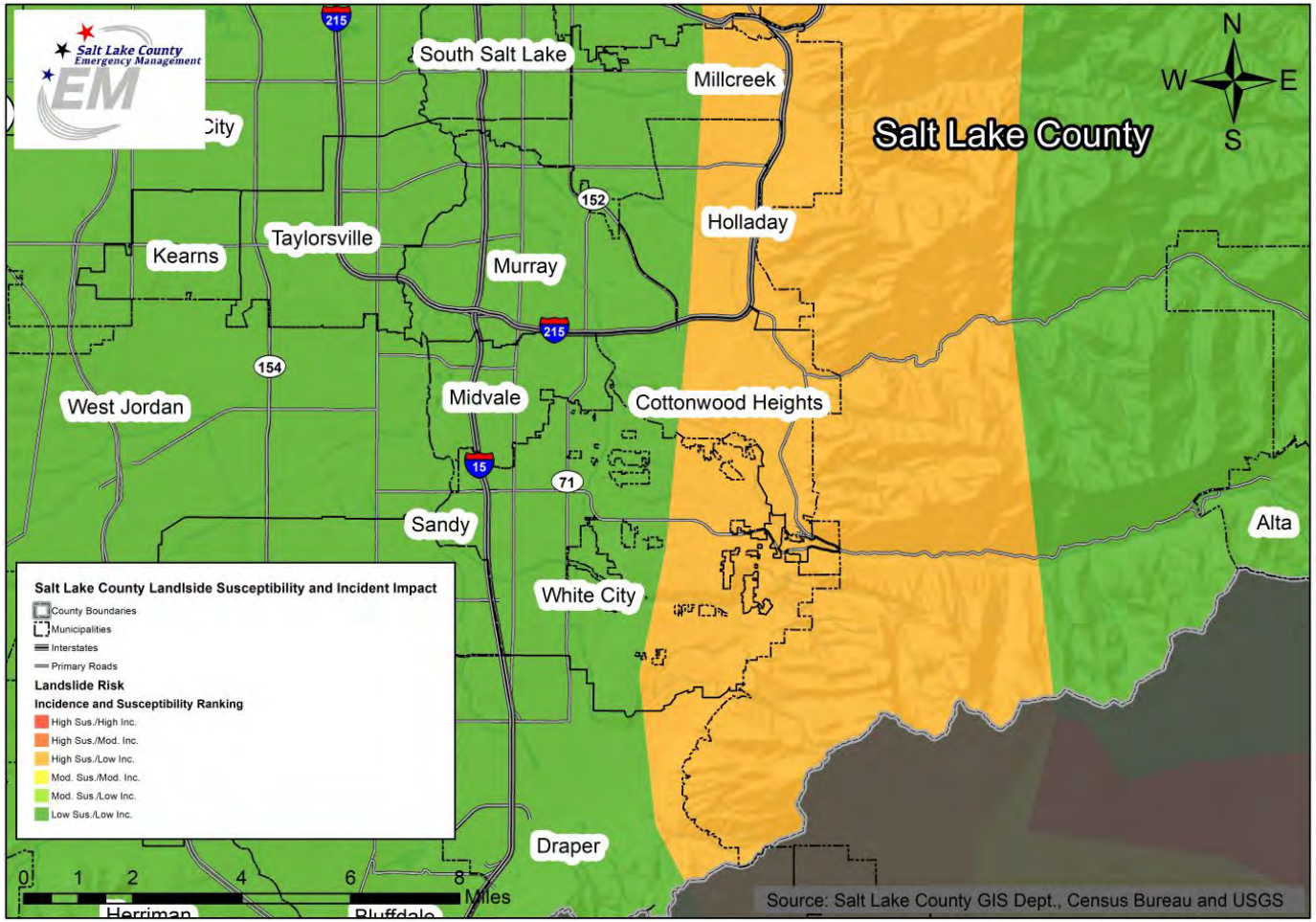
Map: Wildfire Threat Level



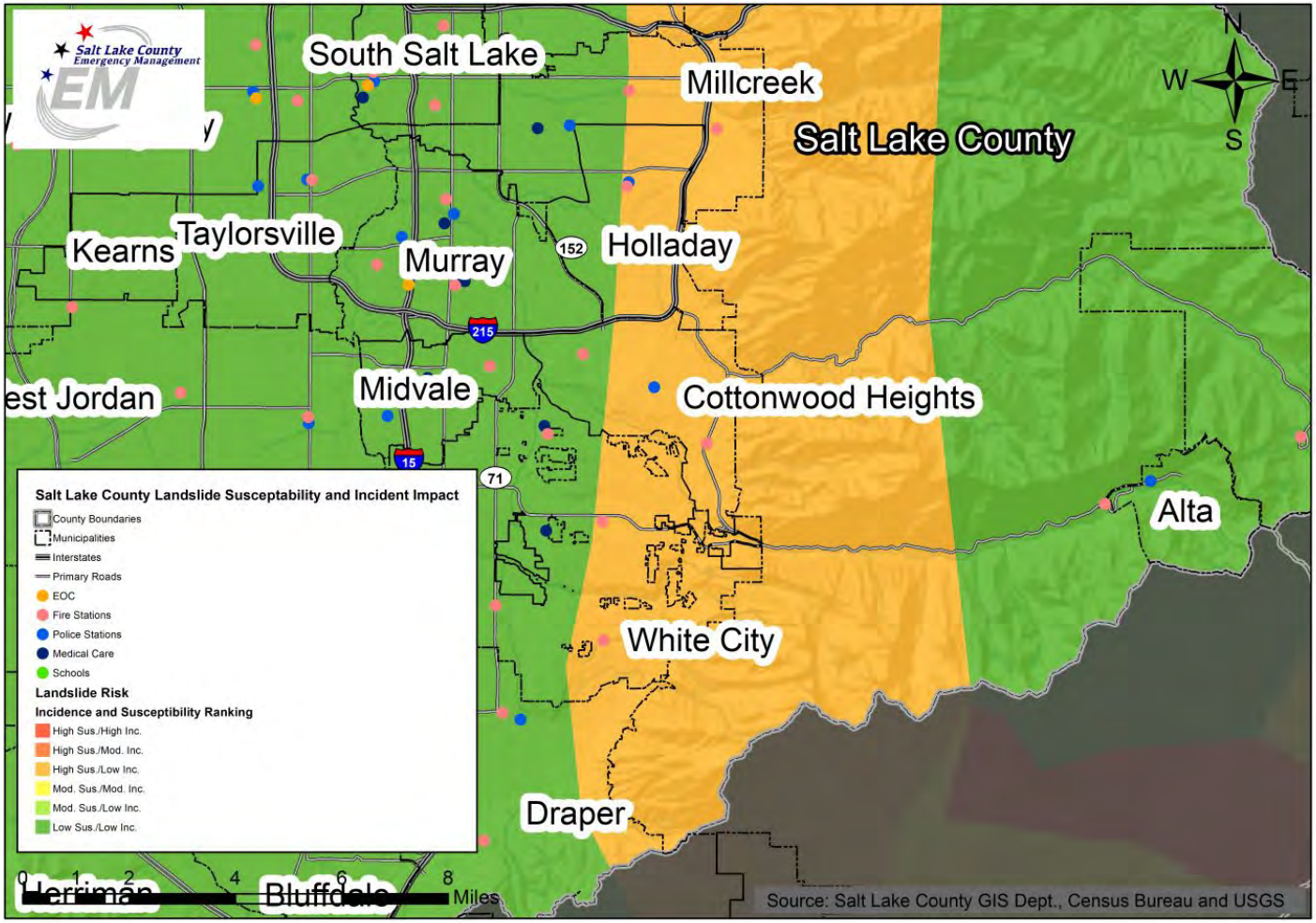
Map: Wildfire Threat Level with Critical Facilities



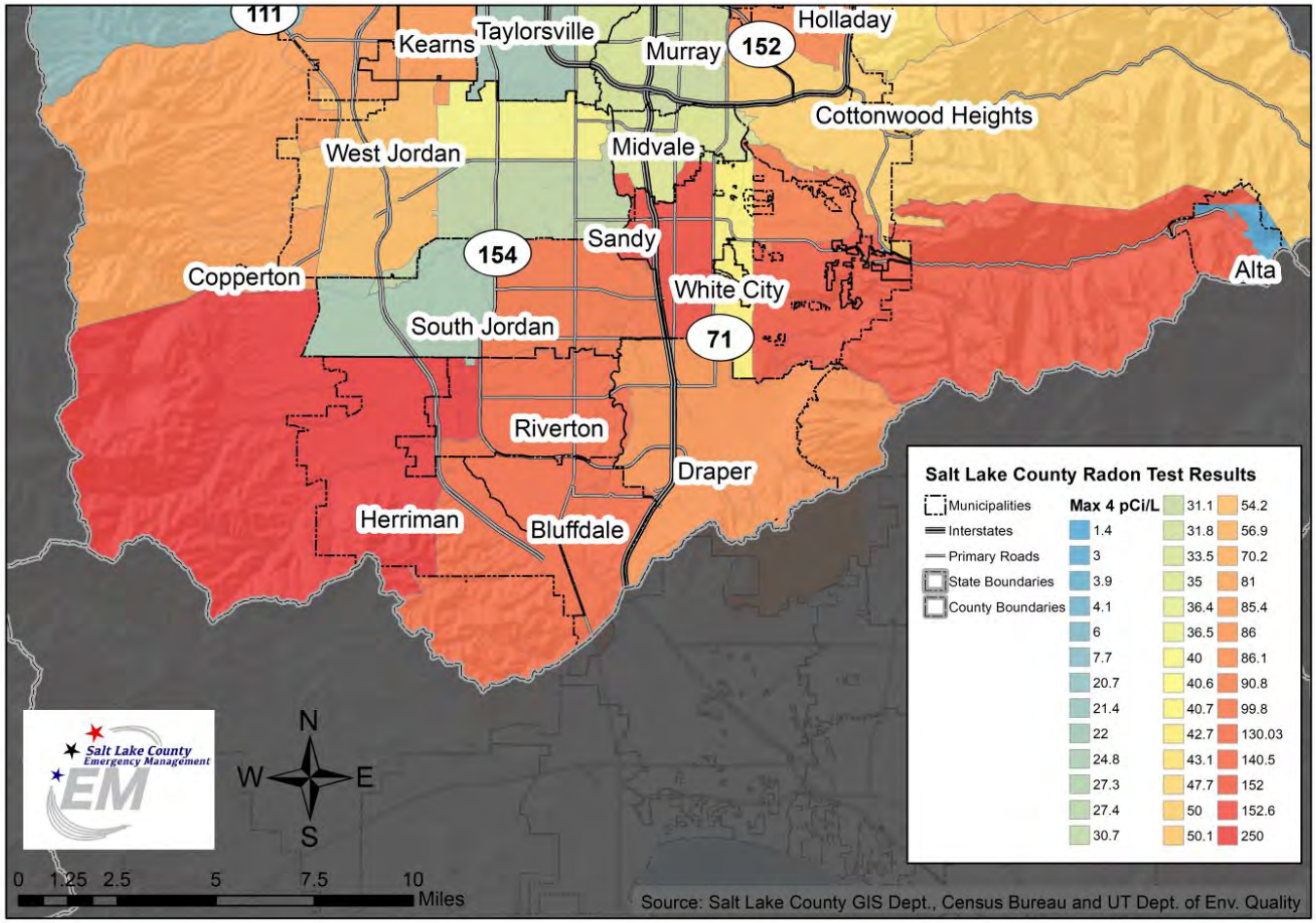
Map: Landslide Susceptibility and Incident Impact Potential



Map: Landslide Susceptibility and Incident Impact Potential with Critical Facilities



Map: Radon


111
Kearns
Taylorsville
Murray
152
Holladay
Cottonwood Heights
West Jordan
Midvale
Sandy
154
Copperton
White City
Alta
South Jordan
71
Riverton
Draper
Herriman
Bluffdale
Salt Lake County Radon Test Results
Municipalities
Interstates
Primary Roads
State Boundaries
County Boundaries
Max 4 pCi/L
1.4
3
3.9
4.1
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20.7
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24.8
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27.4
30.7
31.1
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40.6
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42.7
43.1
47.7
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50.1
54.2
56.9
70.2
81
85.4
86
86.1
90.8
99.8
130.03
140.5
152
152.6
250
Salt Lake County Emergency Management
EM
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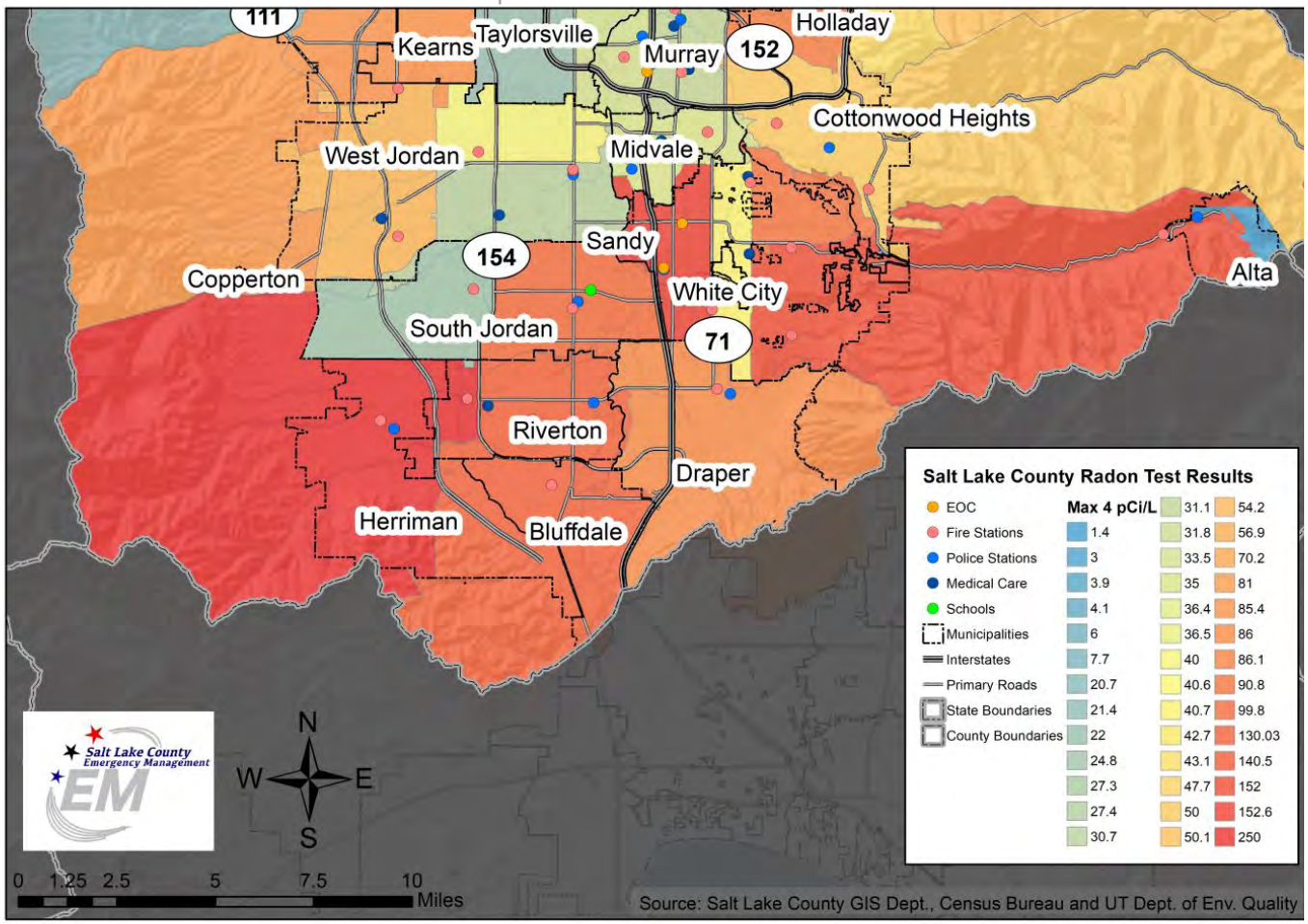
0 1.25 2.5 5 7.5 10
Miles
Source: Salt Lake County GIS Dept., Census Bureau and UT Dept. of Env. Quality

Map: Radon with Critical Facilities



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: Herriman City

Hazard Mitigation Plan Point of Contact

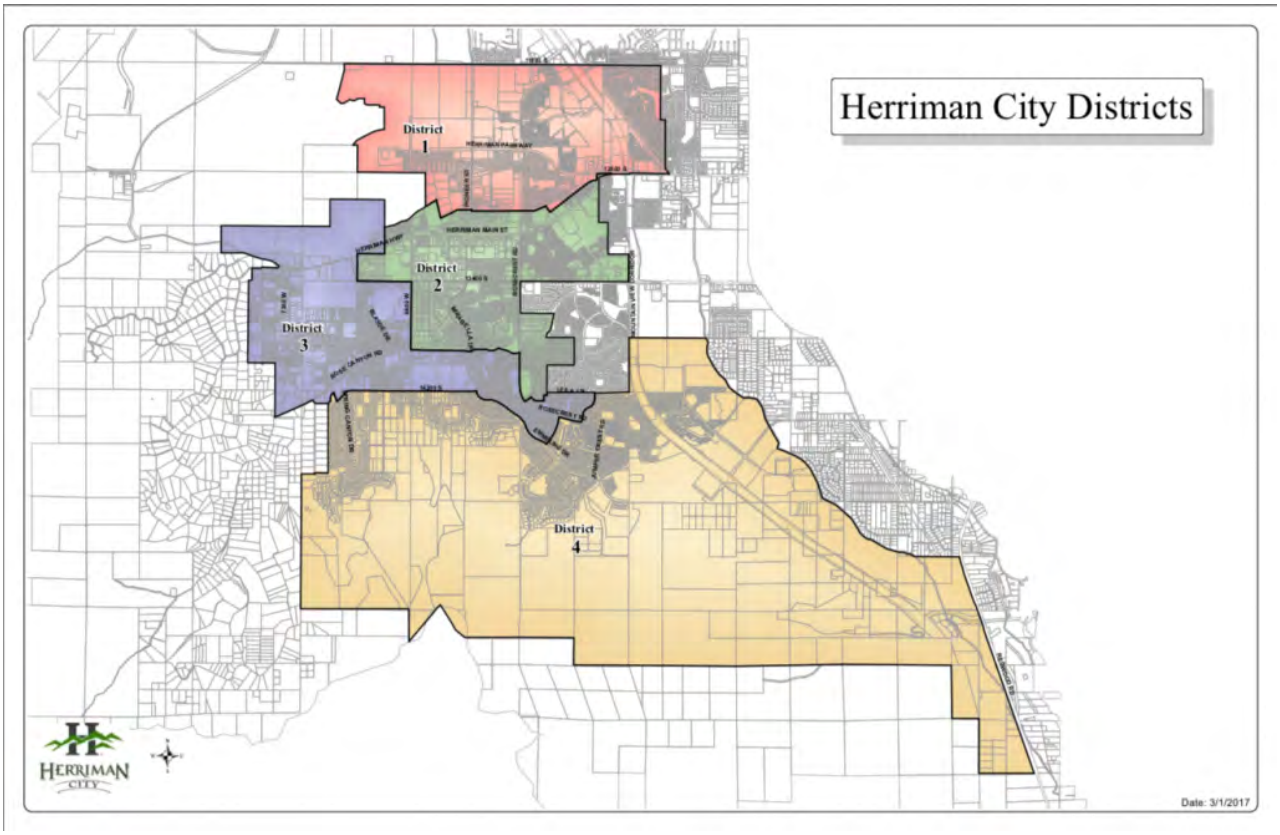
Primary Point of Contact	Alternate Point of Contact
Name: Monte Johnson **Title:** Emergency Manager **Department:** Emergency Management **Address:** 5355 West Herriman Main Street, Herriman, Ut 84096 **Office Phone:** (801) 727-0935 **Cell Phone:** (801) 703-6018 **Email Address:** mjohnson@herriman.org **Website:** https://www.herriman.org/be-ready-herriman/	**Name:** Tina Giles **Title:** Emergency Management Coordinator **Department:** Emergency Management Address: 5355 West Herriman Main Street, Herriman, Ut 84096 **Office Phone:** (801) 727-0939 **Cell Phone:** (801) 889-6563 **Email Address:** tgiles@herriman.org **Website:** https://www.herriman.org/be-ready-herriman/

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** 1999 and became a city on April 19, 2001.
- **Current Population:** 44,877 (Census v2018) and the Herriman City Planning Department estimate as of July 1, 2019, was 58,287.
- **Population Growth:** The City's fast growth in recent years makes the projecting population particularly challenging. With a total population of only 1,523 in 2000, the population increased to 21,785 by the 2010 Census, which is a 245% annual growth rate and a thirteen-fold increase in population during the period. Recent estimates put the City's 2018 population at just over 44,500. Conservative estimates by the Governor's Office of Planning and Budget (GOPB) project continued growth at the highest rate of any city in Salt Lake County. The City has quickly changed from a rural, agricultural town into a full-fledged suburban city with the dominant residential market of large-lot homes giving way to a more diversified housing type and retail and business centers beginning to take shape. The City still has hundreds of contiguous acres available for future development (Census and Herriman City Community Development)
- **Location and Description:** Adjacent to Herriman City on the west are the Oquirrh Mountains and the Bingham Canyon/Rio Tinto Copper Mine. To the south is Camp Williams nestled in the South Hills, which separates Herriman from Utah County. Adjacent to Herriman on the east is Riverton; to the north is South Jordan. Herriman has developed commercial and residential areas as well as significant agricultural holdings and 2,412 acres of open space and an additional 214 acres of park space within its boundaries. This open space is reserved for recreational purposes and currently has many multi-use trails.
- **Brief History:** Originally called Butterfield, the town was established in 1849 by Thomas Jefferson Butterfield, John Jay Stocking, Robert Cowan Petty, and Henry Harriman. In 1854, an adobe Fort was constructed in the area, in order to protect settlers from hostile native tribes. Fort Herriman, as it was called, was soon disbanded, yet the small settlement remained for more than 130 years. Local residents earned a living through dryland farming, sheep and cattle ranching, and as employees at the nearby mines and smelters. Many people who did not live in Herriman grazed their livestock here. For a period of time, Herriman became home to some of the largest sheep operations west of the Mississippi River.
- **Climate:** Herriman has an average annual temperature of 53.7°F and receives 20 inches of rain and 68 inches of snow.

- **Public Services:** The city is currently updating its General Plan. The city provides the majority of public services within the city. Important to hazard mitigation, the city does have stormwater, health, secondary water, GIS, public safety, and "Be Ready Herriman" services.The city is currently updating its General Plan. Important to hazard mitigation, the city does have stormwater, health, secondary water, GIS, public safety, and "Be Ready Herriman" services.
- **Governing Body Format:** The city has an elected mayor and four districts, with each having an elected official. The city has a strong manger-council form of government.



- **Development Trends:** Once considered an isolated and far-flung locale, Herriman has emerged as one of the most desirable and fastest-growing communities in the region. In the 1980s and 1990s development pressure suddenly increased, resulting in the town's incorporation in 1999. Between 2000 and 2010 the pace of change and development was particularly furious, as Herriman went from being the 111th-largest incorporated place in Utah to the 32nd-largest (Herriman City Community Development)

Capability Assessment

The city maintains a full-time staff of 160 and part-time staff of 80 individuals. The Operations Director is the City's designated Emergency Manager. Hazard Mitigation Planning efforts are led by the Operations Director position and supported by Public Works Director positions.

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is

presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY				
	Local Authority Exists to Develop and Implement/ Enforce?	**A Jurisdiction-Specific Code, Ordinance and/or Requirement Currently Exists?**	**Rely on the County's Codes, Ordinances & Requirements**	**Comments**
Codes, Ordinances, & Requirements				
Building Code Development and Enforcement	Yes	Yes	No	
Zonings Ordinance(s)	Yes	Yes	No	
Subdivision Ordinance(s)	Yes	Yes	No	
Stormwater Management Program	Yes	Yes	No	
Floodplain Ordinance(s)	Yes	Yes	No	
Post Disaster Recovery Program and Ordinance(s)	No	No	-	
Real Estate Disclosure Ordinance(s)	No	N0	No	
Growth Management	Yes	Yes	Yes	
Site Plan Review Requirements	Yes	Yes	No	
Public Health and Safety Program and Requirements	No	No	Yes	
Environmental Protection Program and Requirements	Yes	Yes	Yes	
Planning Documents				

General or Comprehensive Plan	Yes	Yes	No	
Capital Improvement Plan	Yes	Yes	No	
Economic Development Plan	Yes	No	No	
Disaster Planning Documents				
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	Yes	-	
Post-Disaster Recovery Plan	No	No	-	
Continuity of Operations Plan	No	No	-	
Public Health Plans	No	No	Yes	
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	N/A	-	-	

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State/Federal Sponsored Grant Programs	Yes

Development Impact Fees for Homebuyers or Developers	Yes
Other	

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	Full Time	Director of Planning/City Engineer
Engineers or professionals trained in building or infrastructure construction practices	Yes	Full Time	Building Officer
Planners or engineers with an understanding of natural hazards	Yes	Full Time	City Engineer
Surveyors	No		
Personnel skilled or trained in GIS applications	Yes	Full Time	Engineering Department
Emergency manager	Yes	Part Time	Operations Director
Grant writers	Yes	Part Time	Communications Department

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	Engineering
Who is your jurisdiction's floodplain administrator? (department/position)	Engineering/City Engineer
Are any certified floodplain managers on staff in your jurisdiction?	Yes
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	No
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: COMMUNITY CLASSIFICATIONS

	Participating?	Classification	Date Classified
Community Rating System (CRS)	No	-	-
Public Protection/ISO	No	-	-
NWS StormReady	No	-	-

Jurisdiction-Specific Hazards and Risks

The Natural Hazard Events Table lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 12 policies were in force with total coverage of $3,502,000 and total written premium and FPF of $4,671 (FEMA, 2019).
- Herriman City does participate in the National Flood Insurance Program (CID # 490252), and the last FIRM map for the area was issued on 9/25/09 (FEMA, 2019).
- The city will continue to participate in the NFIP through various efforts including but not limited to floodplain management, ordinance development and review, technical assistance, compliance inspections, and community education on flood hazards.

TABLE: RECENT NATURAL HAZARD EVENTS
(NOAA Data with additions from the jurisdiction representatives)

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Winter Storm	9 inches of snow	-	3/13/2019	-
Winter Storm	9 inches of snow	-	12/1/2018	-
High Country Estates Fire	Wildland Urban Interface Fire		2018	
Rose crest Fire	Also, had the 611 acres Rosecrest Fire in June 2012, lost multiple homes in the unincorporated county but all these fires were a direct threat to Herriman residents and infrastructure.	-	2018	-

Hail	1-inch diameter hail	-	8/23/2017	-
Thunderstorms and Flooding	Damage to the basement of a private residence	-	9/29/2014	
Thunderstorms and Flooding	Damage to Herriman High School from flooding	-	9/13/2014	
Winter Storm	10 inches of snow	-	12/19/2013	$40,000 in property damage
Thunderstorms and Flooding	In Herriman, floodwaters entered an apartment complex, impacting about 18 apartment units	-	9/14/2013	$100,000
Pinyon Fire	Wildland Urban Interface Fire	-	2012	-
Machine Gun Fire	Wildland Urban Interface Fire	-	9/19/2010	-
Hail	0.75-inch diameter hail	-	6/6/2010	-

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community
Members of the community over 65 years old	1,101
Members of the community under 18 years old	13,012
Members of the community that identify as having disability status	1,308
Members of the community that speak English less than "very well"	481
Members of the community living below the poverty line	898
The number of mobile homes in the community	10
Members of the community without health insurance	2,100

Occupied housing units with tenants without a vehicle	78
Housing units without heating fuel	0

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Dam Failure: Herriman has a 20 million gallon open irrigation reservoir located at 14940 south 5390 west Herriman, which is classified as a dam by the State of Utah. The unlikely catastrophic failure of this storage reservoir would impact a residential area with the loss of property and the potential loss of life. Juniper Canyon Dams, Blackridge Reservoir Dam, and Kennecott Stormwater Dams all have potential flooding impacts on the area if a failure occurs. Any dam failures in other areas of Utah would have little impact on Herriman, except for the potential impact on water supplies.

Drought: Herriman City's semi-arid climate has large swings in temperature and precipitation amounts during any year and is susceptible to drought. The table below shows average temperatures and precipitation amount for Herriman City by month.

Table. Herriman City Average Temperature Table

Month	Temp. (min)	Temp. (max)	Temp. (avg)	Precipitation
January	-2°F	58°F	29°F	1.3"
February	5°F	66°F	35°F	1.1"
March	15°F	74°F	43°F	1.9"
April	21°F	90°F	50°F	2.1"
May	30°F	93°F	61°F	1.3"
June	39°F	100°F	70°F	1.4"
July	54°F	105°F	82°F	0.2"
August	46°F	103°F	78°F	0.5"

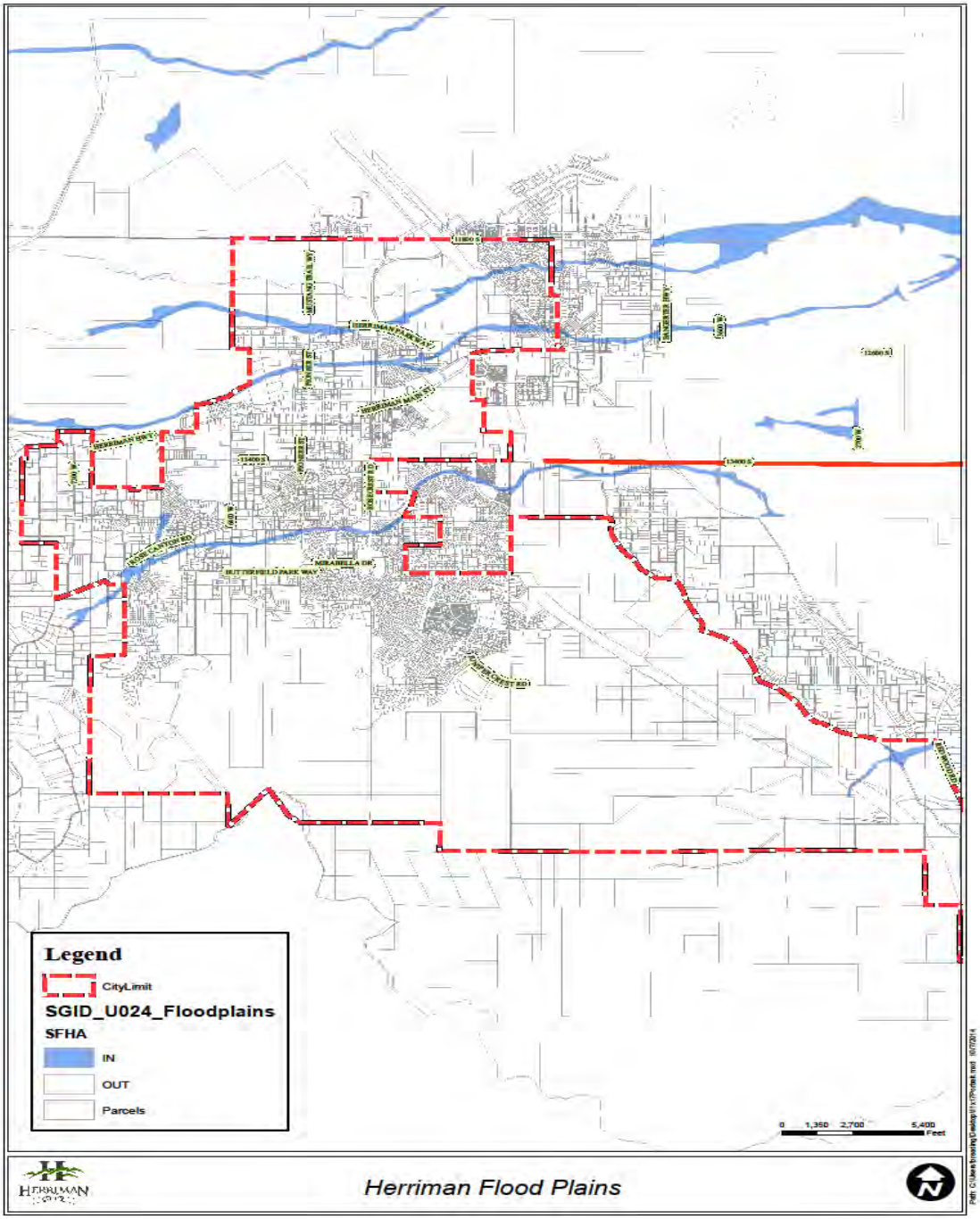
September	35°F	96°F	66°F	1.2"
October	27°F	86°F	52°F	1.4"
November	4°F	75°F	42°F	0.9"
December	0°F	59°F	29°F	1.4"

Earthquake: Of significant concern, many high priority public and private buildings and many critical infrastructure facilities are located within or across the major fault zones in the region. These facilities include very large waterlines, large irrigation canals, utilities, railroads, and major transportation routes. Additionally, high-pressure gas, four or more story housing complexes, underground utilities, road connectivity, bridges, Kennecott issues, and water tanks could all be affected. However, the potential damage is not limited to fault zone areas. Fine-grained, lake-bottom, and sediments are common throughout the Salt Lake Valley and are susceptible to liquefaction-induced ground failure during a large earthquake. Each incident may require a unique response from Herriman City, and in the instance of a major earthquake, outside assistance will be necessary. Perhaps the natural hazard with the potential for the most deadly outcome in Herriman is a high magnitude earthquake.

Flooding: Flooding in the area is considered urban or flash flooding, as riverine flooding is not a concern. Sheet flows across fields and sediment/debris basins at the canyons are prone to flooding. Although located in a semi-arid region, Herriman City is subject to thunderstorms and snowmelt flooding. Herriman has a history of small scale flooding almost annually. However, these flood sites are not typically in the Federal Emergency Management Agency (FEMA) defined flood hazard area, but rather, as sheet flow from significant storm events. These flood events generally follow areas of transition from open farm field or hillside to new development. New regulations have required new developments to adhere to standards and specifications to limit flooding concerns. Herriman has a significant area of foothills that also have a history of wildfires. These sloped burn scars are vulnerable to debris loaded high-intensity storm runoff

Herriman City does not have any repetitive loss properties due to flooding identified under the National Flood Insurance Program (NFIP). The city's Community Development Director oversees enforcement of floodplain management requirements adopted by the City, including regulating new construction in Special Flood Hazard Areas (SFHAs), floodplain identification, and mapping, including any local requests for map updates; and description of community assistance and monitoring activities.

Figure. The City of Herriman's Flood Zones

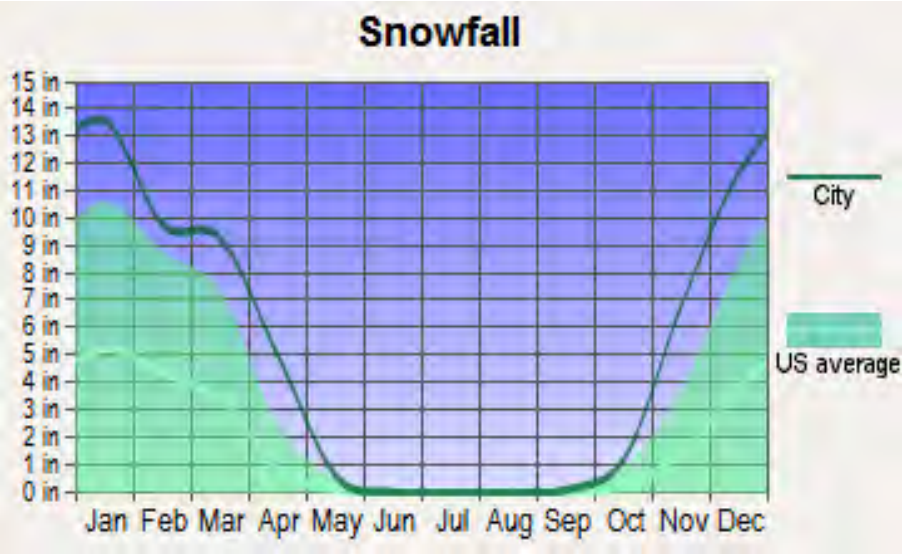


Landslide: Although Herriman has steep-sloped hills within its boundaries and within close proximity to its residents, the physical configuration internal to these features is largely soil impacted binding rock on top of solid rock. Therefore, the probability of a Landslide in Herriman only exists in Kennecott.

Winter Storms: Intense, snowstorms can have a dramatic effect on regional commerce, transportation, and daily activity and negatively impact all emergency response. Intense,

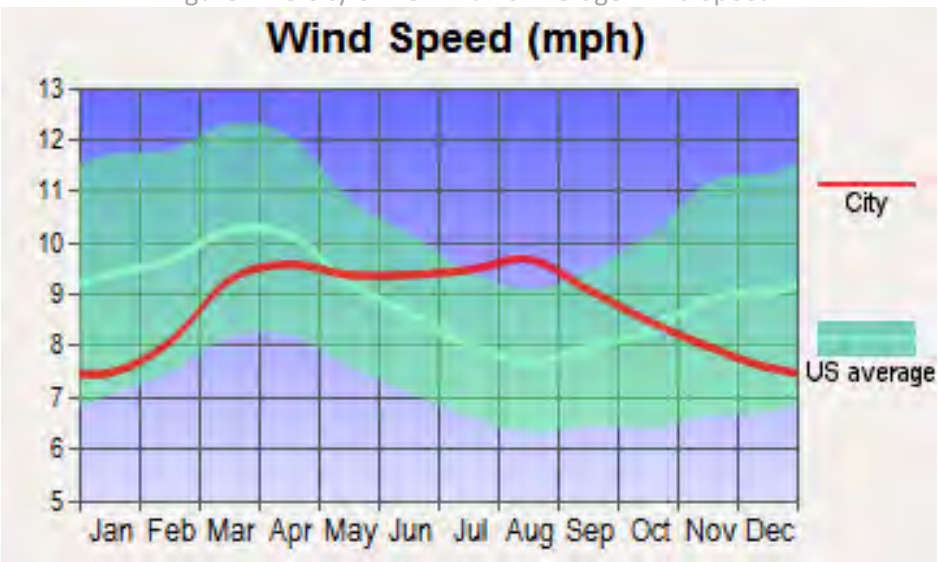
snowstorms can have a dramatic effect on regional commerce, transportation, and daily activity and negatively impact all emergency response.

Figure. The City of Herriman's Average Snowfall



Severe Weather and High Wind: The potential for severe weather is a reality in Herriman City and the surrounding region. The city incurs damage from extremely high winds, often called microburst winds, and the residents in mobile homes are particularly vulnerable to these events. Flash floods and lightning strikes (that could cause fires) can occur.

Figure. The City of Herriman's Average Wind Speed



Avalanche: Potential only exists along trails in the backcountry.

Radon: Radon is found throughout the city.

Public Health: Primary health concerns include algae in the Blackridge, the potential for a contaminated water supply, anti-vaccination supporters, as well as concerns regarding mental health issues within the community.

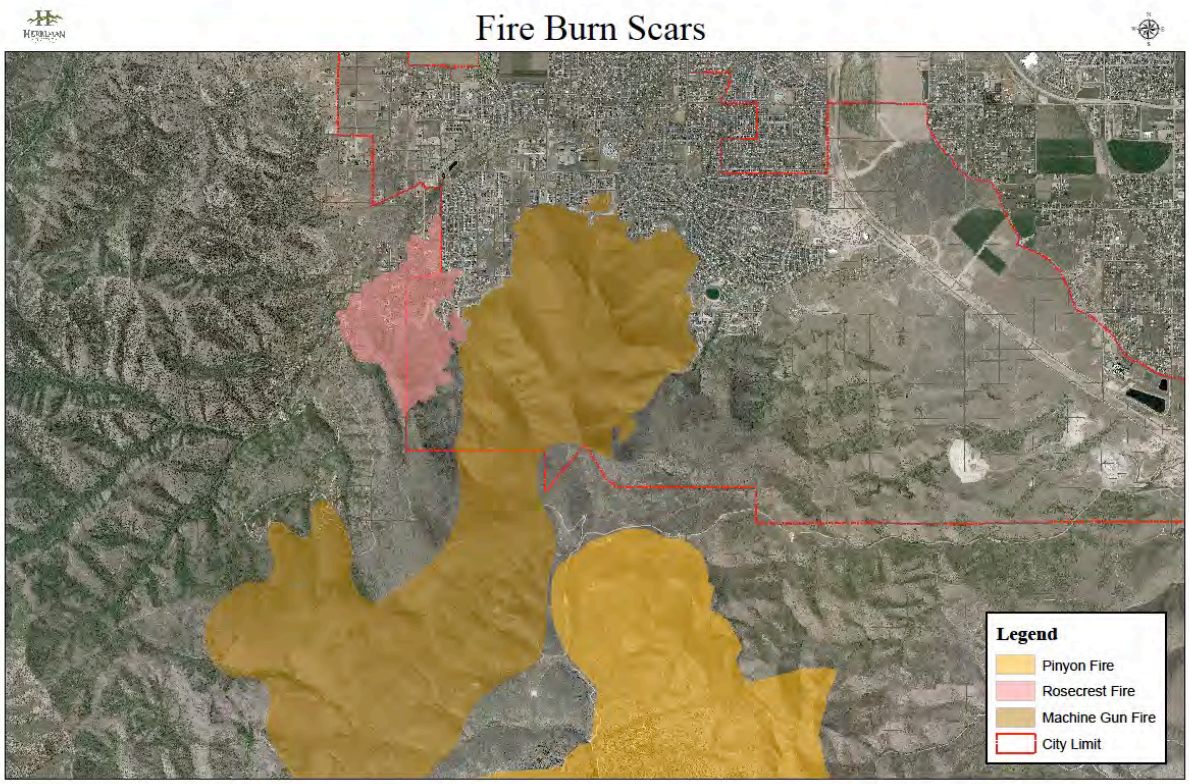
Cyber Attack: *The city continually manages and mitigates cyberattacks. Around 2014, a data breach in the school system occurred and the release of financial and juvenile information was a concern. Additionally, cyberattacks would most likely impact the city data server and access to water tank controls.*

Hazardous Materials Release: Multiple HAZMAT travel through or are housed in the city, including fluoride and chloride at the water storage sites, such as the Jordan Valley Water Conservancy District Plant. Kennecott, Camp Williams, and Mountain View Corridor haul materials through the City.

Terrorism: Active shooters are a concern for Herriman schools and government facilities. Additionally, the city is located close to an Army Base, NSA, and Kennecott, which could all be targets.

Wildfire: One of the most likely and significant hazards in Herriman City is the potential for damage and loss of life and property through fire events. Fires can occur within the urban fabric of the community or as wildfires in the hillside areas of the community and mountainous areas adjacent to the city. Each incident type will require a unique response. Obviously the most feared and damaging is a large scale wildfire. Unfortunately, Herriman has a history of wildfires occurring every few years.

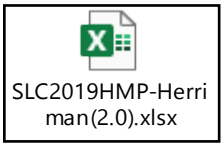
Figure. The City of Herriman's Wildfire map



Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Wildfire	3	17	51
Severe Winter Weather	3	16	48
Severe Weather	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Flooding	2	17	34
Cyber Attack	2	17	34
Hazardous Materials Incident	2	15	30
Drought	2	14	28
Radon	3	9	27
Terrorism	1	25	25
Dam Failure	1	16	16
Tornado	1	11	11
Landslide and Slope Failure	1	9	9
Civil Disturbance	1	8	8
Avalanche	1	3	3

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.



Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1		Avalanche	Low	1	3
Dam Failure	Low	1		Dam Failure	Medium	2	6
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Low	1	3
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Low	1		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	High	3	9
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	High	3		Wildfire	Medium	2	6

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	No Impact	0	0		Avalanche	No Impact	0	0
Dam Failure	Low	1	1		Dam Failure	Low	1	2
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Low	1	2
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	Medium	2	4
Hazardous Materials Incident	Medium	2	2		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Medium	2	4
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Low	1	2
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	Medium	2	2		Wildfire	Medium	2	4

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**	**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)	**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)	**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)	**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)	**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	No Impact	0	0		Avalanche	Unlikely	0	0
Dam Failure	Low	1	1		Dam Failure	Medium	2	6
Drought	Medium	2	2		Drought	Low	1	3
Civil Disturbance	Medium	2	2		Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	2		Cyber Attack	Medium	2	6
Earthquake	High	3	3		Earthquake	High	3	9
Flooding	Medium	2	2		Flooding	Low	1	3
Hazardous Materials Incident	Medium	2	2		Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	3		Public Health Epidemic/ Pandemic	High	3	9
Radon	No Impact	0	0		Radon	Unlikely	0	0
Severe Weather	Low	1	1		Severe Weather	Unlikely	0	0
Severe Winter Weather	Medium	2	2		Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	3		Terrorism	High	3	9
Tornado	Low	1	1		Tornado	Unlikely	0	0
Wildfire	Medium	2	2		Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**	**Catastrophic Factor**—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)	**High**—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)	**Medium**—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)	**Low**—Low potential that this hazard could be catastrophic (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)	**Unlikely**—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

Action	Year Initiated	Goal/ Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Fire protection: Fuel mitigation in foothills to protect existing development. Install fire breaks, clear fuels in drainage, grazing, property acquisition to protect from new developments.	2019	Goal 1: Protect the lives, health, safety, and property of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Wildfire	Herriman City	TBD	High	High	State and Federal Grants	High	TBD	Fuel mitigation in foothills to protect existing development. Install fire breaks, clear fuels in drainage, grazing, property acquisition to protect from new developments.
Flash Flooding Protection	2019	Goal 1: Protect the lives, health, and safety of the citizens of	Dam Failure, Flood (Urban/Flash Flooding), Landslide/Slope Failure,	Herriman City	Dam Safety	Medium (Structure protection and life	High ($5,000,000)	State and Federal Grants	High	TBD	Construct debris basins in foothills above new developments.

Action	Year Initiated	Goal/ Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
		Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Hazardous Materials Release			safety protection)					

Mitigation Table - Ongoing Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
1 – Conduct an inventory and assessment of	2009	1 – Improve and maintain communications	All Hazards						Completed /Ongoing	Herriman continues to improve and maintain its

communications equipment and systems and identify needs		capabilities for emergency operations 1.1 – Improve communication capabilities								communications capabilities. Example: Upgrade and purchase 30 new radios and 12 HAM radios during the planning period
2 – Conduct Training and awareness activities on communication equipment, tools, and systems	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	All Hazards						Completed /Ongoing	Herriman participates in training and exercises designed to practice using communication tools and equipment. Example: Monthly meetings at ST123 to conduct exercises.
3 – Establish agreements to share communications equipment between agencies involved in emergency operations	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	All Hazards						Ongoing	No formal agreements exist to share communications equipment, but communications equipment can be shared as part of other mutual aid agreements that are in place
4 – Establish multi-agency notification capabilities and procedures for emergency personnel	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	All Hazards						Ongoing	Herriman continues to work on notification tools and procedures to be in harmony with changing technology and equipment

2 – Establish redundancy for dispatch centers and other critical communications	2009	1 – Improve and maintain communications capabilities for emergency operations 1.2 – Maintain communications capabilities for critical facilities	All Hazards						Completed / Ongoing	Herriman relies on the Valley Emergency Communications Center (VECC) for dispatch services. They coordinate with other PSAPS to provide redundancy.
1 – Establish a coordinating group to address long-term communication needs and implementation strategies	2009	1 – Improve and maintain communications capabilities for emergency operations 1.3 – Conduct communications Strategic Planning	All Hazards						Ongoing	No formal coordinating group exists yet, but Herriman engages in discussions with other jurisdictions and the county regarding this issue
2 – Pursue and implement needed mutual-aid agreements	2009	4 – Improve response capabilities through mutual-aid agreements 4.1 – Utilize mutual-aid agreements in accordance with National Incident Management System (NIMS) requirements	All Hazards						Complete/ Ongoing/In Process	Herriman has a MAA for Police, Fire, and Public Works.
1 – Provide education regarding all natural hazards through live trainings, as	2009	5 – Increase citizen safety through improved hazard awareness	All Hazards						Completed / Ongoing	Herriman Emergency Management provides several public education classes for groups to

well as web-based, print and broadcast media		5.1 – establish a comprehensive public education program								discuss the hazards in the community and what residents can do to be prepared
2 – Incorporate information about cascading effects of hazards in education programs	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – Establish a comprehensive public education program	All Hazards						Ongoing	Information is included in all presentations on the effects of cascading hazards
3 – Develop education programs to target specific groups including homeowners, developers, schools and people with special needs	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – Establish a comprehensive public education program	All Hazards						Completed / Ongoing	Herriman education programs are customizable for all kinds of groups and available to all members of the community
4 – Utilize maps and similar products on County EM website and other media to educate public on areas at risk to hazards	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – Establish a comprehensive public education program	All Hazards						Ongoing	Herriman GIS personnel have compiled and made available hazard maps to help educate the public on potential hazards in the city
5 – Coordinate with existing public education programs such as the American Red Cross,	2009	5 – Increase citizen safety through improved hazard awareness	All Hazards						Completed / Ongoing	Herriman has worked with Be Ready Utah and other programs to make presentations in Herriman and will

Ready, Set, Go!, Fire Adapted Communities or Firewise, Be Ready Utah, the National Weather Service, etc.		5.1 – Establish a comprehensive public education program								continue to invite them to events and other activities in the community
1 – Establish and enforce appropriate planning, zoning, and building code ordinances	2009	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	All Hazards						Completed / Ongoing	Herriman enforces all current ordinances and building codes, including ordinances like our Flood Damage Prevention and Land Disturbance ordinances.
2 – Ensure current hazard ordinances are available for viewing online	2009	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	All Hazards						Ongoing	Herriman is working on having the current hazard ordinances for viewing online
1 – Include dam inundation maps in current County, City, and Special Service District Emergency	2009	1 – Include dam failure inundation in future County and City planning efforts	Dam Failure						Ongoing	The inundation map for the dam at Black Ridge Reservoir is included in the City's Emergency Management Plans

Operations Plans		1.1 – Review current State dam safety information on all identified high hazard dams in the County								
1 – Continue to encourage water conservation utilizing and promoting outreach material from all water districts in the County	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Drought						Completed / Ongoing	Herriman is working with Jordan Valley Water Conservancy District to provide materials on this topic
1 – Identify structures at risk to earthquake damage	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	Earthquake						Ongoing	Herriman GIS, Fire and Emergency and Risk Management personnel are working on hazard and risk assessment on all structures in the city to evaluate their level of risk
2 – Encourage Communities to actively participate in NFIP	2009	1 – Protection of life and property before, during and after a flooding event 1.1 – Provide 100% availability of the National Flood Insurance Program	Flooding						Completed / Ongoing	Herriman actively participates in the NFIP

		1.2 Apply and become eligible to participate in the Community Rating System.								
1 – Determine potential flood impacts and identify areas in need of additional flood control structures	2009	1 – Protection of life and property before, during and after a flooding event 1.2 – Encourage appropriate flood control measures, particularly in new developments	Flooding						Completed / Ongoing	The City Engineer and Public Works Director regularly review the impact of development and the need for flood control infrastructure and make recommendations as needed
2 – Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures	2009	1 – Protection of life and property before, during and after a flooding event 1.2 – Encourage appropriate flood control measures, particularly in new developments	Flooding						Completed / Ongoing	The City Engineer and Public Works Director oversee the construction of flood control structures Example: Significant construction efforts to ensure all the debris basins, flood retention ponds, energy dissipaters or other flood control structures are functioning
1 – Establish maintenance and repair programs to remove debris,	2009	1 – Protection of life and property before, during	Flooding						Completed / Ongoing	The Stormwater Division of the Public Works Department continues to maintain and repair

improve resistance and otherwise maintain effectiveness of stormwater and flood control systems		and after a flooding event 1.3 – Provide maintenance, repairs and improvements to drainage structures, stormwater systems, and flood control structures								all drainage systems in the City
1 – Identify and assess structures for deficiencies	2009	2 – Reduce threat of unstable or inadequate flood control structures 2.1 – Reduce potential for failure of flood control structures	Flooding						Completed / Ongoing	The City Engineering Division in cooperation with the Public Works Department regularly review and inspect City-owned infrastructure and make recommendations as needed
2 – Modify structures as needed to address deficiencies	2009	2 – Reduce threat of unstable or inadequate flood control structures 2.1 – Reduce potential for failure of flood control structures	Flooding						Completed / Ongoing	The City Engineering Division in cooperation with the Public Works Department make repairs as needed to deficient structures
1 – Develop a protocol for working with State and Federal agencies in reducing the impact of post-	2009	1 – Reduce or eliminate the threat of slope failure damage 1.1 – Reduce the threat of slope	Slope Failure						Ongoing	Herriman is working with State and Federal agencies in reducing the impact of post-fire debris-flow hazard

fire debris-flow hazard		failures following wildfires								
1 – Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential	2009	1 – Reduce or eliminate the threat of slope failure damage 1.2 – Monitor historic landslide areas	Slope Failure						Ongoing	Herriman Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential
1 – Increase public awareness through "Firewise" program	2009	1 – Community education on wildfire hazard 1.1 – Reduce risk from wildfire through education programs	Wildland Fire						Ongoing	Herriman is working with the "Firewise" programs to ensure the public's safety in this matter and the Community Wildfire Protection Plan (CWPP) is under review.
2 – Educate homeowners on the need to create defensible space near structures in WUI	2009	1 – Community education on wildfire hazard 1.1 – Reduce risk from wildfire through education programs	Wildland Fire						Ongoing	Herriman is – Educating homeowners on the need to create defensible space near structures in WUI
1 – Designate and promote county-wide annual initiative for clearing fuels	2009	2 – Improve safety from wildfire hazards through planning, protective actions, and improved fire response capabilities 2.1 – Assist homeowners with creating	Wildland Fire						Ongoing	Herriman promotes county-wide annual initiative for clearing fuels

		defensible space near structures in WUI areas								
2 – Provide waste removal, such as chipping of green waste by public works, following designated fuel clearing day/week	2009	2 – Improve safety from wildfire hazards through planning, protective actions, and improved fire response capabilities 2.1 – Assist homeowners with creating defensible space near structures in WUI areas	Wildland Fire						Ongoing	Herriman Provide waste removal, such as chipping of green waste by public works, following designated fuel clearing day/week
1 – Work with experts and communities to develop or update evacuation plans	2009	2 – Improve safety from wildfire hazards through planning, protective actions, and improved fire response capabilities 2.2 – Improve evacuation capabilities for WUI areas	Wildland Fire						Ongoing	Herriman works with experts and communities to develop or update evacuation plans
2 – Evaluate transportation network and address needed improvements to facilitate evacuation and emergency response	2009	2 – Improve safety from wildfire hazards through planning, protective actions, and improved fire	Wildland Fire						Ongoing	Herriman is working on an adequate transportation network to support evacuation and emergency response

		response capabilities 2.2 – Improve evacuation capabilities for WUI areas								
1 – Identify all facilities, businesses, and residences, particularly in the areas, and assigned addresses according to current county addressing standards	2009	2 – Improve safety from wildfire hazards through planning, protective actions, and improved fire response capabilities 2.3 – Improve addressing system in WUI areas to facilitate emergency response	Wildland Fire						Ongoing	Addressing of structures in Herriman has not been completed yet
2 – Incorporate improved addresses in fire-dispatch and other databases	2009	2 – Improve safety from wildfire hazards through planning, protective actions, and improved fire response capabilities 2.3 – Improve addressing system in WUI areas to facilitate emergency response	Wildland Fire						Ongoing	Addressing of structures in Herriman has not been completed yet
1 – Reduce fuels around publically	2009	2 – Improve safety from wildfire hazards	Wildland Fire						Ongoing	Herriman is working on completing this

owned structures		through planning, protective actions, and improved fire response capabilities 2.4 – Complete wildfire protection projects								
2 – Implement fire breaks and other protective measures	2009	2 – Improve safety from wildfire hazards through planning, protective actions, and improved fire response capabilities 2.4 – Complete wildfire protection projects	Wildland Fire						Ongoing	Herriman Implements fire breaks and other protective measures
4 – Assist communities in developing Community Wildfire Protection Plans or similar plans	2009	2 – Improve safety from wildfire hazards through planning, protective actions, and improved fire response capabilities 2.4 – Complete wildfire protection projects	Wildland Fire						Ongoing	The Community Wildfire Protection Plan is currently under review (as of 11/2019)
2 – Define wildland-urban interface and	2009	2 – Improve safety from wildfire hazards	Wildland Fire						Ongoing	Herriman is working to define wildland-urban interface and

develop digital maps of the WUI		through planning, protective actions, and improved fire response capabilities 2.5 – Encourage proper development practices in the WUI								develop digital maps of the WUI. These actions are being linked to the CWPP.
Drinking Water Trailer	2015	Consider purchasing a mobile, self-contained drinking water trailer. The trailer will be used to accommodate the residents' emergency needs for water.	Emergency Response	Herriman City Public Works Department and Police Department	The city will be providing the residents with the necessary water they will need for a time while other resources can help.	20,000	Water Department	Low	Ongoing	
Continue to Enforce Building Codes, Development Codes and Zoning Ordinance	2014	The Herriman City requires that construction complies with the adopted building codes and the zoning and development ordinances adopted by the City. The City has experienced tremendous growth since incorporation in 1999 and will	Earthquake	Herriman City Building Inspection Division, Herriman City Community Development Department, and Herriman City Engineering Division.	This will prevent the loss of human life and economic and property losses.	Developer-based funding under specific plan requirements	Developer-based funding under specific plan requirements	Medium	Ongoing	

		continue to grow in future years.								
Continue Utah Shakeout Activities to Promote Earthquake Awareness	2014	Herriman City participates in the Utah Shakeout activities annually. This event promotes earthquake awareness of the residents, businesses, and City employees. This annual event allows the City to practice setting up its Emergency Operation Center and its process of communicating with neighborhoods throughout the City.	Earthquake	Emergency Manager, Police Department, and the City's Emergency Preparedness Committee	This will prevent the loss of human life and economic and property losses.	$3,000 to $8,000 annually	City budget	High	Ongoing	
Continue to Enforce Storm Drain Master Plan Requirements	2014	The Herriman City requires drainage plans as part of the approval process for all specific plans and large development projects as determined by the City's Public Works Director and City Engineer. The master drainage	Flood	Herriman City Engineering Division and Herriman City Public Works Department	This will prevent the loss of human life and economic and property losses.	Developer-based funding under specific plan requirements	Developer-based funding under specific plan requirements	Medium	Ongoing	

		plan should consider cumulative regional drainage and flooding mitigation. The intent of a master drainage plan is to ensure that the overall rate of runoff from a project does not exceed pre-development levels. If necessary, this objective shall be achieved by incorporating run-off control measures to minimize peak flows and/or assistance in financing or otherwise implementing comprehensive drainage plans.								
Establish Firewise Community Program for Herriman	2014	The Herriman residential area, located next to Camp Williams is a Wildland Interface Zone and has a high potential for wildland fires. The City has worked with the community, Unified Fire	Wildfire	Herriman City Emergency Preparedness, Herriman City Public Works, Unified Fire Authority and State of Utah	This will prevent the loss of human life and economic and property losses.	$100,000 to $150,000	$216,000 Grant from the State of Utah	High	Ongoing	

		Authority and the State of Utah to put a program in place to educate residents and measures to reduce wildland fires in the area.								

Mitigation Table - Completed and Removed Actions

Category	Year Initiated	Goal / Objective	Action	Status	Comments
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.2 – Maintain communications capabilities for critical facilities	1 – Evaluate vulnerability of critical communications systems	Completed	Herriman evaluates areas of vulnerability and develops solutions to ensure communication systems or alternate solutions are viable Example: The development of a second/redundant radio system for the Police, Fire, and Public Works Departments
Dam Failure	2009	1 – Include dam failure inundation in future County and City planning efforts 1.1 – Review current State dam safety information on all identified high hazard dams in the County	2 – Utilize inundation maps to identify potential evacuation areas and routes	Completed	The inundation map for the dam at Black Ridge Reservoir is included in the City's Emergency Management Plans
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	2 – Research feasibility of an incentive program for retrofitting privately-owned buildings, particularly unreinforced masonry	Not Completed	Herriman does not have funding to support this type of program
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure	3 – Complete seismic rehabilitation/retrofitting projects of public buildings at risk	Not Completed	Due to the age of the City's public buildings (most having been built in the last 15 years) there are no major retrofit or rehabilitation projects needed at this time in Herriman

		1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure			
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.2 – Improve public education regarding earthquake risks to unreinforced masonry buildings	1 – Provide educational materials to unreinforced masonry home and business owners	Not Completed	There are very few URM homes and businesses located in Herriman that would make this activity cost-effective for the City to engage in. Herriman supports county level efforts to share this type of information
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.3 – Improve Seismic Hazard understanding and seismic resistance of CUWCD Red Butte Dam in Salt Lake County.	1 – Procure Engineering Consultant to perform the nonstructural design and geotechnical assessment and review.	Not Completed/Not Applicable	Not applicable to Herriman as the referenced dam is located in another jurisdiction.
Flooding	2009	1 – Protection of life and property before, during and after a flooding event 1.1 – Provide 100% availability of the National Flood Insurance Program	1 – Assist Cities with NFIP application	Not Completed/Not Applicable	Herriman has been a participating community in the NFIP since 2008
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.1 – Maintain status as a StormReady Community	1 – Maintain Hazardous Weather Operations Plan according to StormReady requirements	Not Completed/Not Applicable	Herriman does not have a Weather Operations Plan and does not participate in the StormReady program. This is a Salt Lake County level program
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.1 – Maintain status as a StormReady Community	2 – Maintain Contact with NWS prior to re-application in 2010	Not Completed/Not Applicable	Herriman does not have a Weather Operations Plan and does not participate in the StormReady program. This is a Salt Lake County level program
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events	1 – Work with NWS to develop large event venue weather safety and evacuation procedures	Not Completed	Herriman has not developed a large event venue weather safety plan

		1.4 – Examine the vulnerability of patrons at large event venues to extreme weather events			and/or evacuation procedures with the NWS
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions, and improved fire response capabilities 2.4 – Complete wildfire protection projects	3 – Assess existing water flow capabilities, both public and private, and address deficiencies	Completed	Herriman's water system meets and/or exceeds requirements for providing water flow for firefighting purposes in the City

2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: City of Holladay

Hazard Mitigation Plan Point of Contact

Primary Point of Contact	Alternate Point of Contact
Name: Julie Harvey Title: Municipal Emergency Management Planner Department: City Manager Address: 4580 S. 2300 E. Holladay, UT 84117 Office Phone: (801) 2728-9450 Cell Phone: (385) 377-7772 Email Address: jharvey@unifiedfire.org Website: http://cityofholladay.com/services/emergency-preparedness/	Name: Gina Chamness Title: City Manager Department: City Manager Address: 4580 S. 2300 E. Holladay, UT 84117 Office Phone: (801) 2728-9450 Cell Phone: (801) 699-0286 Email Address: gchamness@cityofholladay.com Website: http://cityofholladay.com/government/

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation**: November 30, 1999. Subsequently, an area north and east of the original boundaries of Holladay were annexed into the City in October of 2002.
- **Current Population**: 30,697 (Census v2018)
- **Population Growth**: The population grew 1.9% from April 1, 2010 (30,127) to July 1, 2018 (Census).
- **Location and Description**: The City of Holladay is bounded South by I-215, on the west by Highland Drive to Van Winkle Expressway, Van Winkle Expressway to 1300 East, 1300 East to Murray-Holladay Road, Murray-Holladay Road, east to Highland Drive, Highland Drive north to 3900 South, 3900 Southeast to 2700 east, 2700 East south to 4430 South, east to Wasatch Blvd, south on Wasatch Blvd. to about 6710 South, west to Big Cottonwood Canyon Road and about 3000 East, west to I-215. The boundary east of Wasatch Blvd. at approximately 66th South to take in the Heughs Canyon area, which otherwise would have been isolated and landlocked.
- **Brief History**: On July 29, 1847, a group of pioneers known as the Mississippi Company, led by John Holladay, entered the Salt Lake Valley. Within weeks after their arrival, they discovered a free-flowing, spring-fed stream, which they called Spring Creek (near Kentucky Avenue). While most of the group returned to the Fort in the Great Salt Lake for the winter, two or three men-built dugouts along this stream and wintered over. Thus, this became the first village established away from Great Salt Lake City itself. In the spring, a number of families hurried out to build homes and tame the land. There were numerous springs and ponds here and grasses and wildflowers were abundant, making this a most desirable area for settlement. When John Holladay was named as a branch president for the Church of Jesus Christ of Latter-day Saints, the village took upon itself the name of Holladay's Settlement or Holladay's Burgh. As homes were built, commercial ventures developed, first at the intersection of Highland Drive and Murray-Holladay Road, with David Brinton's Mercantile Co-op and Brinton-Gunderson's Blacksmith Shop. As the community grew, businesses tended to move east of the intersection of Holladay Boulevard and Murray-Holladay Road, where more of the residents lived. Neilson's Store and Harper-Bowthorpe Blacksmith Shop were popular and well-frequented businesses for

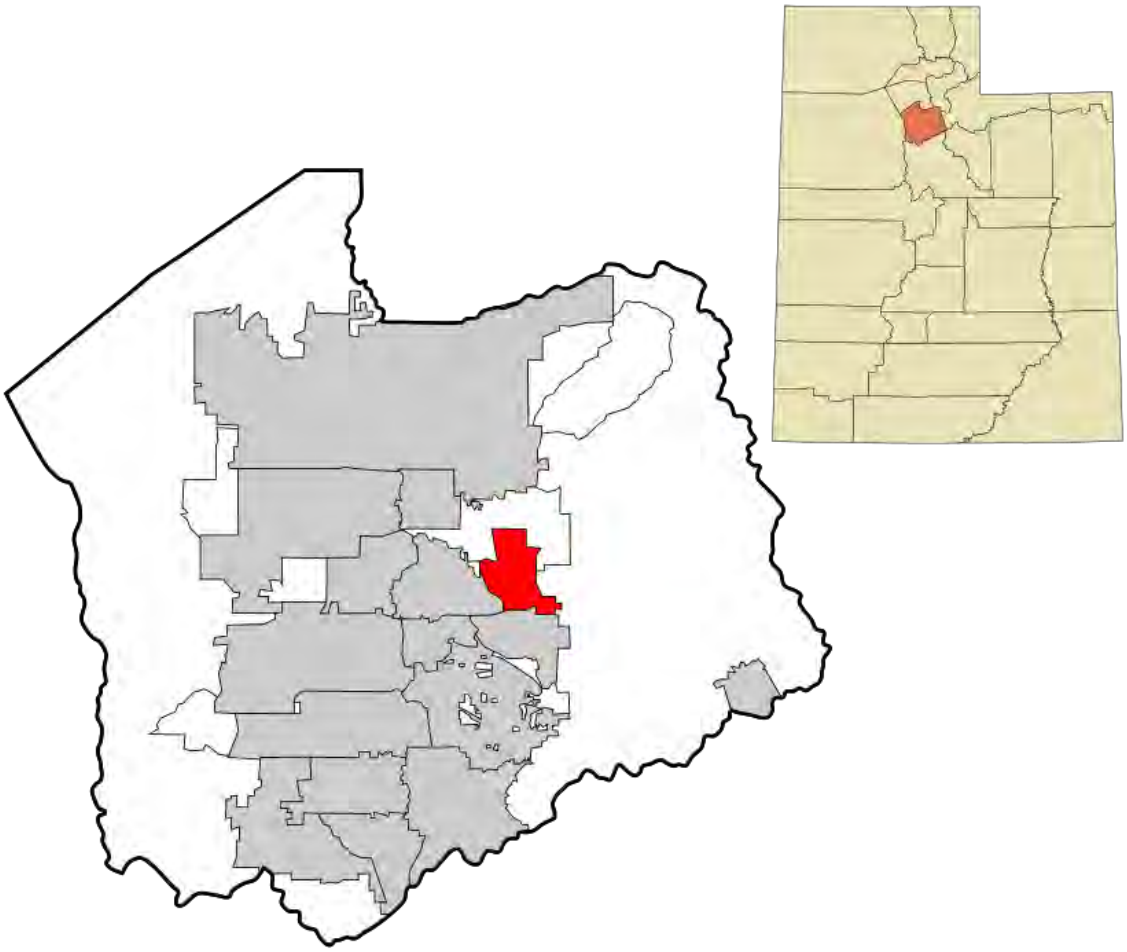
many years. Favorable conditions for agriculture, orchards and businesses allowed for continued growth over the years. The Holladay and Cottonwood communities were unincorporated areas of Salt Lake County and about 24 years ago efforts were made by a dedicated group of citizens to incorporate as a separate entity, but area citizens voted against incorporation by a narrow margin. Salt Lake County, the Utah Supreme Court and/or the Utah State Legislature frustrated subsequent efforts and citizens weren't allowed another incorporation vote until May 4, 1999. On that day, a better-informed and smaller citizenry voted by over 83% to approve incorporation and the City of Holladay was officially incorporated on November 30, 1999.

- **Climate**: The average high temperature is 92 and the average low is 24. Also, on average, the city receives 20 inches of rain and 52 inches of snow every year (Best Places).
- **Public Services**: One of the main reasons the city was incorporated was to control Planning and Zoning (City of Holladay). In addition to that department, the Emergency Preparedness program offers an emergency notification system and has multiple plans including a flood plain, preparing seniors, and a wildfire plan (City of Holladay).
- **Governing Body Format:** COUNCIL-MANAGER FORM OF GOVERNMENT
  In this form of government, a city manager is the chief executive officer of the city or town and has the following powers and duties prescribed by the state law, including the power to appoint individuals to municipal offices and positions. The city manager runs the day to day operations of the city and all employees report to this individual. The mayor in this form of government is a ceremonial mayor only. The mayor chairs the council and votes on all issues as a full voting member of the council. The council is the legislative policy making body of the city. The manager is hired and can be fired by the council. Council members may not have any administrative or executive functions in the city or town.
- **Development Trends**:
  - **Millrock Economic Development Area (EDA) Bond**.
    The City has a $8.474 million bond which helped reimburse the Developer to improve the retaining walls and water and sewer lines along with the Lion Lane connection to Millrock and to help for the purchase of the Knudsen Park property. The Lion Lane extension allowed Phases III and IV of Millrock Technology Park to be completed prior to the real estate crash in 2008. The bond has a 15-year term, which will be paid off in December 2020. The annual debt payment is $639,000. The entire amount of this debt is paid from the property tax increment generated from the Millrock EDA. (In other words, the EDA Project pays for itself. Without this bond, only Phases I and II would exist today.)

  - **City Hall and Fire Station Bond**
    The City has a $9.2 million bond debt from the purchase and remodeling of City Hall (the old Holladay Elementary School) and the construction of a new fire station. It is a 20-year bond, which will be paid off in 2031. The annual debt payment is $627,000. That debt is paid from the City's General Fund.

  - **Impact of the Cottonwood Mall Redevelopment**
    The redevelopment project has had little impact upon the City's property tax receipts, because of the multi-million-dollar investment in infrastructure has increased the assessed value of the land. The old mall was over 40 years old and fully depreciated. Thus, the City is still receiving about the same amount of property tax from the Cottonwood Mall as it did in 2007. As to sales tax, the City has clearly seen a decrease in the amount of sales tax, but it is difficult to determine how much of that decrease was due to the redevelopment of the Cottonwood Mall, and how much was due to the

global economic downturn that occurred at the very same time. City sales tax receipts are still down about 15% from what they were in at the peak in 2007, but the City has always had a balanced budget, and we are seeing a steady increase in sales tax receipts (Holladay City Community Development).



Capability Assessment

The city maintains a full-time staff of 16 and part-time staff of 6 individuals. The Emergency Manager is the city's designated Emergency Manager. Hazard Mitigation Planning efforts are led by the Emergency Manager position and supported by the Planning and City Manager positions.

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications

under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY			
	Local Authority Exists to Develop and Implement/ Enforce?	**The Codes, Ordinances & Requirements Currently Exists?**	**Comments**
Codes, Ordinances, & Requirements			
Building Code Development and Enforcement	Yes	Yes	
Zonings Ordinance(s)	Yes	Yes	
Subdivision Ordinance(s)	Yes	Yes	
Stormwater Management Program	Yes	Yes	
Floodplain Ordinance(s)	Yes	Yes	
Post Disaster Recovery Program and Ordinance(s)	Yes	No	
Real Estate Disclosure Ordinance(s)	No	No	
Growth Management	Yes	Yes	Growth management is handled by zoning
Site Plan Review Requirements	Yes	Yes	
Public Health and Safety Program Requirements	Yes	Yes	Chapter 9.98; Adoption of Salt Lake County Health
Environmental Protection Program and Requirements	Yes	Yes	Various ordinances address different aspects of environmental protection.
Planning Documents			
General or Comprehensive Plan	Yes	Yes	
Capital Improvement Plan	Yes	In process	
Habitat Conservation Plan	Yes	No	
Economic Development Plan	Yes	Yes	
Disaster Planning Documents			
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	No	Recently hired an EM who is working on it
Post-Disaster Recovery Plan	Yes	No	Recently hired an EM who is working on it
Continuity of Operations Plan	Yes	No	Recently hired an EM who is working on it

Public Health Plans	Yes	No	Recently hired an EM who is working on it
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	Yes	No	Recently hired an EM who is working on it

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Community Development Block Grants	No
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Not eligible for block grants according to planning

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	3 full time (FT) planners 1 part time (PT) engineer	Planning
Engineers or professionals trained in building or infrastructure construction practices	Yes	1 PT engineer	
Planners or engineers with an understanding of natural hazards	Yes	3 FT planners 1 PT engineer	
Surveyors	Yes	Contract if needed	
Personnel skilled or trained in GIS applications	Yes	FT	Planning
Emergency manager	Yes	PT	City Manager Started December 2019
Grant writers	Yes	FT	City Manager

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	Community Development Director
Who is your jurisdiction's floodplain administrator? (department/position)	Community Development Director
Are any certified floodplain managers on staff in your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No

Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes, but might be out of date due to improvements made post-2011 floods
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Unknown
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	Not currently

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System (CRS)	No	-	-
Public Protection/ISO	No	-	-
NWS StormReady	No	-	-

Jurisdiction-Specific Hazards and Risks

NOAA Natural Hazards 2014-2019

The Natural Hazard Events Table lists all past occurrences of natural hazards within the jurisdiction from 2014-2019. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 35 policies were in force with total coverage of $12,753,000 and total written premium and FPF of $34,855 (FEMA, 2019).
- The City of Holladay does participate in the National Flood Insurance Program (CID # 490253) and the last FIRM map for the area was issued on 09/25/09 (FEMA, 2019). The city will continue to participate in the NFIP through various efforts including but not limited to floodplain management, ordinance development and review, technical assistance, compliance inspections, and community education on flood hazards.

TABLE: RECENT NATURAL HAZARD EVENTS
(NOAA Data with additions from the jurisdiction representatives)

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Winter Storm	Major winter storm event that closed schools in the area		2/2019	
Heavy Snow	4 inches in Holladay	-	3/1/2019	-
Winter Storm	11 inches in Holladay		3/3/2018	-
High Wind	Tree limbs were damaged across the Salt Lake	-	6/12/2017	$40,000 property damage.

	Valley, including a large branch that fell onto and damaged a home in Holladay.			
Hail	Hail the size of pennies	-	6/13/2016	-
Hail	Hail the size of pennies	-	5/19/2016	-
High Wind		-	4/13/2014	-
Winter Storm	Schools closed		2/2014	
Winter Storm	19 inches in Holladay	-	1/10/2013	-
Winter Storm	8 inches in Holladay	-	3/2/2012	-
Flooding	Heavy Rain - Big Cottonwood Creek	-	2011	-

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community
Members of the community over 65 years old	5,544
Members of the community under 18 years old	7,812
Members of the community that identify as having disability status	2,667
Members of the community that speak English less than "very well"	670
Members of the community living below the poverty line	1,424
The number of mobile homes in the community	26*
Members of the community without health insurance	2,013
Occupied housing units with tenants without a vehicle	328
Housing units without heating fuel	21

**Census data may be incorrect regarding the number of mobile homes in the city.*

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are relevant and unique to the municipality.

Cyber Attack: A cyber-attack against government offices is always a potential threat. Adopting adequate safety processes and procedures, maintaining system security, having system and data redundancy, and developing policies and procedures are the first line of defense.

Dam Failure: The City of Holladay does not have any dams or debris ponds in the City. There are three small dams in Big Cottonwood Canyon that deliver water to the Big Cottonwood Creek, which flows through the City. Big Cottonwood Creek as has a debris basin on the creek just outside of Holladay in Cottonwood Heights Reservoir. These three dams and one debris pond are the responsibility of Salt Lake County Flood Control. The City of Holladay does not have any dams

or debris ponds in the City. There are three small dams in Big Cottonwood Canyon that deliver water to the Big Cottonwood Creek that flows through the City and a debris basin on the creek just outside of the City in Cottonwood Heights. These three dams and one debris pond are the responsibility of Salt Lake County Flood Control and the City does not have any responsibility for them.

Earthquake: Holladay sits on the Wasatch Front Fault Line. Of primary concern is the significant amount of unreinforced masonry (URMs) buildings in Holladay, including City Hall. The stability of City Hall could be enhanced through retrofitting. Additionally, educating residents on mitigation actions that can reduce damage during an earthquake is an urgent need. Seismic activity can potentially cause irrigation canal failures by either liquefaction of the bottom, collapse of the sides, or both. Several bridges are in need reinforcement or of retrofitting to culverts to preserve the transportation network. The City's use of irrigation canals as a storm water system may exacerbate damage during seismic activity. Fault zones pose the threat of earthquakes, while steep mountains adjacent to the City create a potential for landslides, debris flows, rock falls, and snow avalanches. Limited communication or lack of communication capabilities due to damaged infrastructure may occur during and after an earthquake. The City lacks public works equipment, which would be needed in the event of an earthquake. Some geologic hazards exist in the City of Holladay and the surrounding area, which can constrain land use. Of primary concern is the significant amount of unreinforced masonry (URMs) in the residential area and City Hall. The stability of City Hall could be enhanced through retrofitting and residents need more education on the potentially significant impact on URM homes. A canal failure is also a possibility for the area during seismic activity. Another concern is the lack of public works equipment in town, which would be needed in the event of an earthquake. Additionally, several bridges are in need of retrofitting to culverts to preserve the transportation network. The lack of a stormwater system is also a concern for drainage following any seismic activity. Active fault zones pose the threat of earthquakes, while steep mountains adjacent to the City create a potential for landslides, debris flows, rock falls, and snow avalanches. Limited communication or lack of communication capabilities is always a shortfall during an emergency.

Extreme Cold and Heat: The city has a large senior population, especially in the Cottonwoods area. The senior population is more at risk for adverse health impacts from extreme temperatures, especially when outdoors or during an extended power outage.

Flood: Although located in a semi-arid region, the City of Holladay is subject to cloudbursts and snowmelt floods. As mentioned in the earthquake section, several bridges need reinforcement or t to be rebuilt to culverts. Some of the bridges are: 6200 S, west of Holladay Blvd; and, Highland Rd at Big Cottonwood Creek. The Heughs Canyon -Cottonwood Canyon Cove area is prone to flooding. The City uses irrigation canals as also lacks a stormwater system and current facilities are limited mainly to historical laterals. Other hazards can increase flooding potential, including an earthquake or landslide that compromises infrastructure, such as a canal failure. Additionally, the bridges over the Old Canal System are potential flood hazards and needs to be repaired or retrofitted to reduce infrastructure damage. Some of those canals are: Salt Lake Canal at 5600 S, west of Highland Rd and the Upper Canal.

Hazardous Materials Release: I-215 runs north to south on the east side of Holladay thousands of vehicles pass through the city daily. It is difficult to know what types of hazards may be released from a transportation vehicle so the city will focus on having a reliable and redundant communication system and an evacuation plan to safely move citizens away from a hazard as quickly as possible.

Landslide: The areas most susceptible to landslides are the Heughs Canyon-Canyon Cove area and Wasatch Boulevard.

Public Health Epidemic/Pandemic: According to the Healthy Salt Lake website, less than 43% of the adult population in the City of Holladay receive an influenza vaccination. The lack of vaccinations could lead to a population decimating outbreak.

Radon: High level of radon in the community. The community needs more education on radon

Severe Weather: Microbursts have caused tree damage on properties. Additionally, Holladay Blvd. and Wasatch Blvd. are prone to impact from these events due to the significant number of trees. Power lines are also not buried and prone to wind damage.

Terrorism: While an isolated incident of terrorism could impact any of the schools, businesses, or government offices in the city, the likelihood of mass terrorism is unlikely due to there being no large-scale athletic venues, government buildings or similar locations where an act of terrorism typically occurs.

Tornado and High Winds: The city has a large number of old trees, which are susceptible to wind events.

Wildfire: The Cottonwood Canyon Cove is considered a wild urban interface (WUI). Of particular concern are the narrow private driveways and roads and low water pressure in the Cottonwoods Area, which makes fighting a fire harder. Better landscaping and improved building materials that are more fire-resistant are needed.

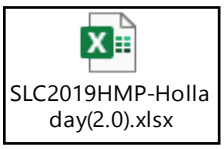
Winter Storms: Snowstorms can have a dramatic effect on regional commerce, transportation, trees, and daily activity and are a major forecast challenge for local meteorologists.

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Severe Winter Weather	3	16	48
Severe Weather	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Flooding	2	17	34
Cyber Attack	2	17	34
Wildfire	2	15	30
Hazardous Materials Incident	2	14	28
Drought	2	14	28
Radon	3	9	27
Terrorism	1	25	25
Landslide and Slope Failure	2	10	20
Dam Failure	1	18	18

Tornado	1	11	11
Civil Disturbance	1	11	11
Avalanche	1	3	3

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.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Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1		Avalanche	Low	1	3
Dam Failure	Low	1		Dam Failure	Low	1	3
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Medium	2	6
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Medium	2		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	High	3	9
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	Medium	2		Wildfire	Low	1	3

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	No Impact	0	0		Avalanche	No Impact	0	0
Dam Failure	Medium	2	2		Dam Failure	High	3	6
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Low	1	2
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	Medium	2	4
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Medium	2	4
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Low	1	2
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	Low	1	1		Wildfire	High	3	6

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**	**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)	**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)	**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)	**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)	**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	No Impact	0	0		Avalanche	Unlikely	0	0
Dam Failure	Low	1	1		Dam Failure	Medium	2	6
Drought	Medium	2	2		Drought	Low	1	3
Civil Disturbance	Medium	2	2		Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	2		Cyber Attack	Medium	2	6
Earthquake	High	3	3		Earthquake	High	3	9
Flooding	Medium	2	2		Flooding	Low	1	3
Hazardous Materials Incident	Medium	2	2		Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Medium	2	2		Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	3		Public Health Epidemic/ Pandemic	High	3	9
Radon	No Impact	0	0		Radon	Unlikely	0	0
Severe Weather	Low	1	1		Severe Weather	Unlikely	0	0
Severe Winter Weather	Medium	2	2		Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	3		Terrorism	High	3	9
Tornado	Low	1	1		Tornado	Unlikely	0	0
Wildfire	Medium	2	2		Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**	**Catastrophic Factor**—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)	**High**—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)	**Medium**—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)	**Low**—Low potential that this hazard could be catastrophic (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)	**Unlikely**—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Bury power lines.	2019	Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	All-Hazards	Holladay	Utilities	High	High	HMA/PDM Grant or other federal funds	Medium	2030	Microbursts and heavy early snow fall (before the leaves have fallen) have caused tree damage and potentially can affect powerlines. Holladay Blvd., Wasatch Blvd, and Holladay Rd. are prone to impact from these events due to the significant number of trees.
Develop a robust cyber security program, incorporating components of the NIST Cybersecurity Framework	2019	Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. Goal 5: Ensure and promote ways to increase	Cyber Attack	Holladay	IT Contractor	High	Medium	Local Budget	High	2 years	

		government and private sector continuity of services during and after a disaster.									
Increase adult influenza vaccination rates to the Healthy Salt Lake target rate. Currently the rate is 70%	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 4: Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters.	Public Health Epidemic/ Pandemic	Holladay	SLCo Public Health	High	Medium	Grants, local budget	High		
Develop an outreach program to encourage residence to strengthen structures that are built of unreinforced masonry.	2019	Goal 4: Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more	Earthquake	Holladay		Medium	Low	Local Budget	High	1 year	

		resilient to disasters.									
Road surface improvements	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	All-hazards	Holladay		High	High	Grants, GO Bonds, Stormwater Fee, Property tax	High	2020-2030 (10 Years)	
Retrofit City Hall	2019	Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. Goal 5: Ensure and promote ways to increase	Earthquake	Holladay		High	High	HMA/PDM Grant or other federal funds	High	2030	Portions of the building are unreinforced and/or could be seismically retrofitted.

		government and private sector continuity of services during and after a disaster.									
Canal bank stabilization (such as, but not limited to: netting and/or wire mesh)	2019	Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Flooding	Holladay	Upper Canal Water Co.	Medium	Medium	HMA/PDM Grant or other federal funds	Medium	Long-term	Ongoing water loss through the bottom of the canal leads to compromised soil integrity. Saturated and compromised soil will be at a greater risk of liquefaction during a seismic event

Mitigation Table - Ongoing Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Continue to encourage water conservation utilizing and promoting Jordan Valley Water Conservation outreach material, information from Salt Lake City Department of	2009	Goal 1Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Drought	Holladay Emergency Management		High	Low	Local	High	Ongoing	Reduce hardships associated with water shortages. Limit unnecessary consumption of water throughout the City.

Public Utilities and the State of Utah's "Slow the Flow" program.											
Develop outreach document specific to fire resistant natural vegetation.	2009	Goal 4 Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters.	Drought	Holladay Emergency Management		High	Low	Local	High	Ongoing	Study the areas and determine which fire-resistant natural vegetation can be used in these areas of concern.
Assess current communications and interoperable emergency/warning systems.	2009	Goal 3 Enhance and protect the communication and warning/notification systems in the County	Earthquake	Holladay Emergency Management	Communications	Medium	Low	Local	High	Ongoing	Increase and harden emergency and non-emergency communication systems. Provide redundancies in communication systems. Valley Emergency Communications Center (VECC) has been working with cities in the county to update communications, focusing on specific systems, which has included some or all of the following capabilities: • Radio system updated for 800 MHz, Ultra-High Frequency

											(UHF), Very High Frequency (VHF) and Amateur frequencies. • Agency listing with gateway devices, which enable disparate communications systems to link. • VECC paging server capability to text message multiple units/personnel. • Listing of Public Safety Satellite telephones in the County. VECC Dialogic Emergency Notification System, a reverse 911 system used to notify public or for notification of response agencies.
Ensure current natural hazard ordinance(s) are online, linked to Emergency Services website, and easily accessible and can be download. Provide personal, CERT and amateur radio	2009	Goal 7 Advocate, support, and promote the use of laws and local regulations and ordinances aimed to mitigate hazards and to enhance resiliency.	Earthquake	Holladay Emergency Management	Planning and Zoning	High	Low	Local	High	Ongoing	The City of Holladay is part of the countywide earthquake loss reduction and safety education programs. Improve public education regarding earthquake risks and train Community Emergency Response Teams to improve quality of public

training for the citizens of the City.											response to an earthquake.
The City of Holladay is participating in NFIP (National Flood Insurance Program).	2009	Protection of life and property before, during, and after a flooding event. Encourage participation in the National Flood Insurance Program	Flood	Holladay Emergency Management		Medium	Low	Local	Medium	Ongoing	
Update & digitize floodplain maps.	2009	Protection of life and property before, during, and after a flooding event. Provide current FIRMs for emergency planners.	Flood	GIS	Holladay Emergency Management	Medium	Low	Local	Medium	Ongoing	
Develop protocol for working with State and Federal agencies in developing impact of post fire debris flow hazard.	2009	Reduce or eliminate the threat of landslide damage. Reduce the threat of landslides/debris flow following wild fires.	Landslide	Holladay Emergency Management	Fire and Planning and Zoning	Medium	Low	Local	Medium	Ongoing	
Create outreach materials (what to do when severe weather strikes) specific to this group and insert the information the into City-wide newspaper, and	2009	Reduce the threat of life loss due to severe weather. Address Citywide needs of special populations that may be impacted	Severe Weather	Holladay Emergency Management		Medium	Low	Local	Low	Ongoing	The City of Holladay is part of Unincorporated Salt Lake County outreach program with materials for severe weather mitigation planning.

phone books specific to 55 age group developed by County Aging services.		by severe weather conditions.									
Encourage avalanche preparedness for backcountry users.	2009	Reduce the threat of life loss due to severe weather. Prevent damage to critical facilities from Lighting.	Severe Weather	Holladay Emergency Management		Medium	Low	Local	Medium	Ongoing	The City of Holladay does not have avalanches.
Public awareness through "Fire Wise" programs.	2009	Wildfire community education. Reduce overall risk from wild fire through education programs.	Wildland Fire	Holladay Emergency Management	Fire	Medium	Low	Local	High	Ongoing	This objective has been partially accomplished by the development and implementation of the Regional Wildfire Protection Plan that the County participated in. The City of Holladay is part of the Unified Fire Authority in Salt Lake County and is included in the ”Fire Wise” planning process.
Create defensible space.	2009	Wildfire community education. Educate homeowners on the need to create open space free of burnable fuels near structures in urban wild land areas.	Wildland Fire	Fire	Holladay Emergency Management	High	Medium	Local and HMA grants	High	Ongoing	The Regional Wildfire Protection Plan has been a catalyst for the City of Holladay’s building ordnances in these areas and encourages the creation of a defensible space on all properties next to wildlands.
Continue to support and take part in annual Utah Shakeout exercises	2014	Goal 1 Protect the lives, health, and safety	Earthquake	Emergency Manager, Emergency Manage		High This will help to	Local - $2,000 annually	City budget	High	Ongoing	The City continues to enforce building codes on new construction and encourages upgrades on

to promote earthquake awareness.		of the citizens of Salt Lake County before, during, and after a disaster.		Committee, Police Department, Fire Department, and Citizen Corps.		prevent the loss of human life and property losses when a major earthquake occurs.					all remodels. The City participates in the annual Utah Shakeout activities. This event promotes earthquake awareness for the residents, businesses community and City employees. The Shakeout allows the City to practice setting up its Emergency Operation Center and its process of communicating with neighborhoods and business throughout the City. The community volunteers are encouraged to practice C.E.R.T. skills and amateur radio license operators are asked to set nets to practice their skills.
Continue to enforce building codes, development of new codes and zoning ordinances as needed or state codes are updated.	2014	Goal 7 Advocate, support, and promote the use of laws and local regulations and ordinances aimed to mitigate hazards and to enhance resiliency.	Earthquake	City of Holladay Community Development Department.		High This will prevent the loss of human life and economic and property losses	Low - Developer-base funding under specific plan requirements.	Developer-base funding under specific plan requirements.	High	Now and long term	The City requires that construction complies with the adopted building codes and the zoning and development ordinances adopted by the City. A potential natural hazard covered by this mitigation action is earthquake.
Continue to execute training and exercise programs	2014	Goal 6 Advocate, support, and promote the	Earthquake	Emergency Management Committee		High	Low - Less than $1,000 annually	City budget	High	Ongoing	The City of Holladay regularly administers training and participates

		continued coordination and integration of disaster planning efforts throughout the County.				This will help prevent the loss of human life and property losses					in exercises. These events provide participants with opportunities to learn of duties and practices that would be used during a real life major emergency or disaster situation. Coordination of operations would be exercised and allow Holladay Emergency Management to identify the areas of higher and lower performance and how to best improve their efforts.
Educate residents and business through public information and events	2014	Goal 4 Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters.	Earthquake	Emergency Management Committee and Citizen Corps Council		Medium This will help prevent the loss of human life and property losses	Low - Less than $1,000 annually	City budget	Medium	Ongoing	The City of Holladay takes great care to get the appropriate information out to the residents and businesses in the community. Through news media and the City web site information on preparedness distributed. The City also encourages the community to attend one or more of the many emergency preparedness fairs that are held in the valley.
Continue to work Salt Lake County Flood Control.	2014	Goal 6 Advocate, support, and promote the continued coordination and	Flooding	City of Holladay, Salt Lake County Public Works and Salt		Medium - This will help to prevent the loss of human life	Low - $10,000 annually	City budget	Medium	Ongoing	The City contracts with Salt Lake County Public Works for flood control. They are the responsible agency for the maintenance of the Big

		integration of disaster planning efforts throughout the County.		Lake City Department of Public Works		and property losses when a major or minor flooding occurs.					Cottonwood Creek and Salt Lake City Department of Public Utilities is responsible for the maintenance of the Salt Lake Jordan canal. The City is responsible for the maintenance of Upper Canal. The City has staff that maintains the Upper. Salt Lake Public Works under contract work with other potential flooding from heavy rainstorms in the City
Continue to enforce building codes/water disposal codes	2014	Goal 7 Advocate, support, and promote the use of laws and local regulations and ordinances aimed to mitigate hazards and to enhance resiliency.	Flooding	City of Holladay Community Development Department.		High This will prevent the loss of human life and economic and property losses	Low - Developer-base funding under specific plan requirements.	Developer-base funding under specific plan requirements.	High	Ongoing	The City requires that construction complies with the adopted building codes and the zoning and development ordinances adopted by the City. A potential natural hazard covered by this mitigation action is flooding.
Continue enforce development codes	2014	Goal 7 Advocate, support, and promote the use of laws and local regulations and ordinances aimed to mitigate hazards and to enhance resiliency.	Flooding	Community Development Department		High This will help prevent the loss of human life and property losses	Low - Less than $1,000 annually	City budget	High	Ongoing	The City of Holladay regularly reviews potential flooding hazards

Educate residents and business through public information	2014	Goal 5 Ensure and promote ways to increase government and private sector continuity of services during and after a disaster.	Flooding	Community Development Department		Medium - This will help prevent the loss of human life and economic and property losses.	Low - Less than $1,000 annually	City budget	Medium	Ongoing	The City of Holladay takes great care to get the appropriate information out to the residents and businesses in the community. Through news media and the City web site information.

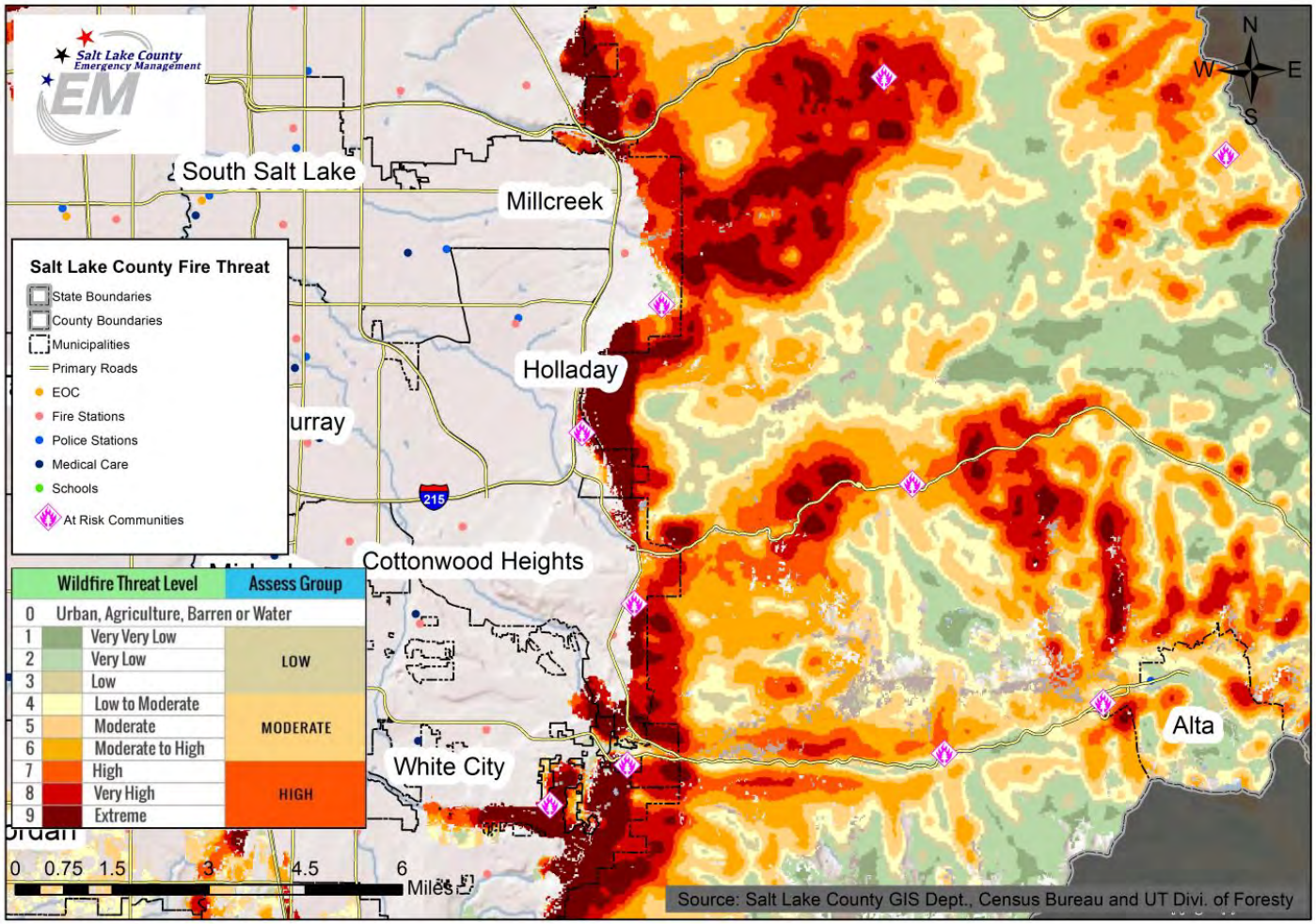
Mitigation Table - Completed and Removed Actions

Category	Year Initiated	Goal/Objective	Action	Status	Comments
Earthquake	2009`	Increase and harden emergency and non-emergency communication systems. Priority HIGH Ensure adequate coordination of disaster response and recovery activities.	Increase and harden emergency and non-emergency communication systems.	Completed	
Earthquake	2009	The information was updated by the Utah Geological Survey and provided to the City. Portions are available in the Statewide Geographic Database rather than on County GIS. The Central Utah Water Conservancy District has developed GIS based maps of the Red Butte Dam area in northeastern Salt Lake County that identifies earthquake hazards from ground shaking (peak ground acceleration), fault rupture, liquefaction, and landslides for both the 500 year and 2,500 year seismic events.	Update current earthquake maps (liquefaction and fault) and incorporated into the County GIS system. The City of Holladay has access to the County GIS system.	Completed	
Flood	2009	Protection of life and property before, during, and after a flooding event. Priority MEDIUM, Identify Citywide canal systems.	Map and assess for structural integrity canal systems in the City.	Completed	
Flood	2009	Reduce threat of unstable canals throughout the City. Priority LOW, identify dry dams/reservoirs that may have the potential for failure.	Map and assess for structural integrity canal systems in the City.	Not Relevant.	

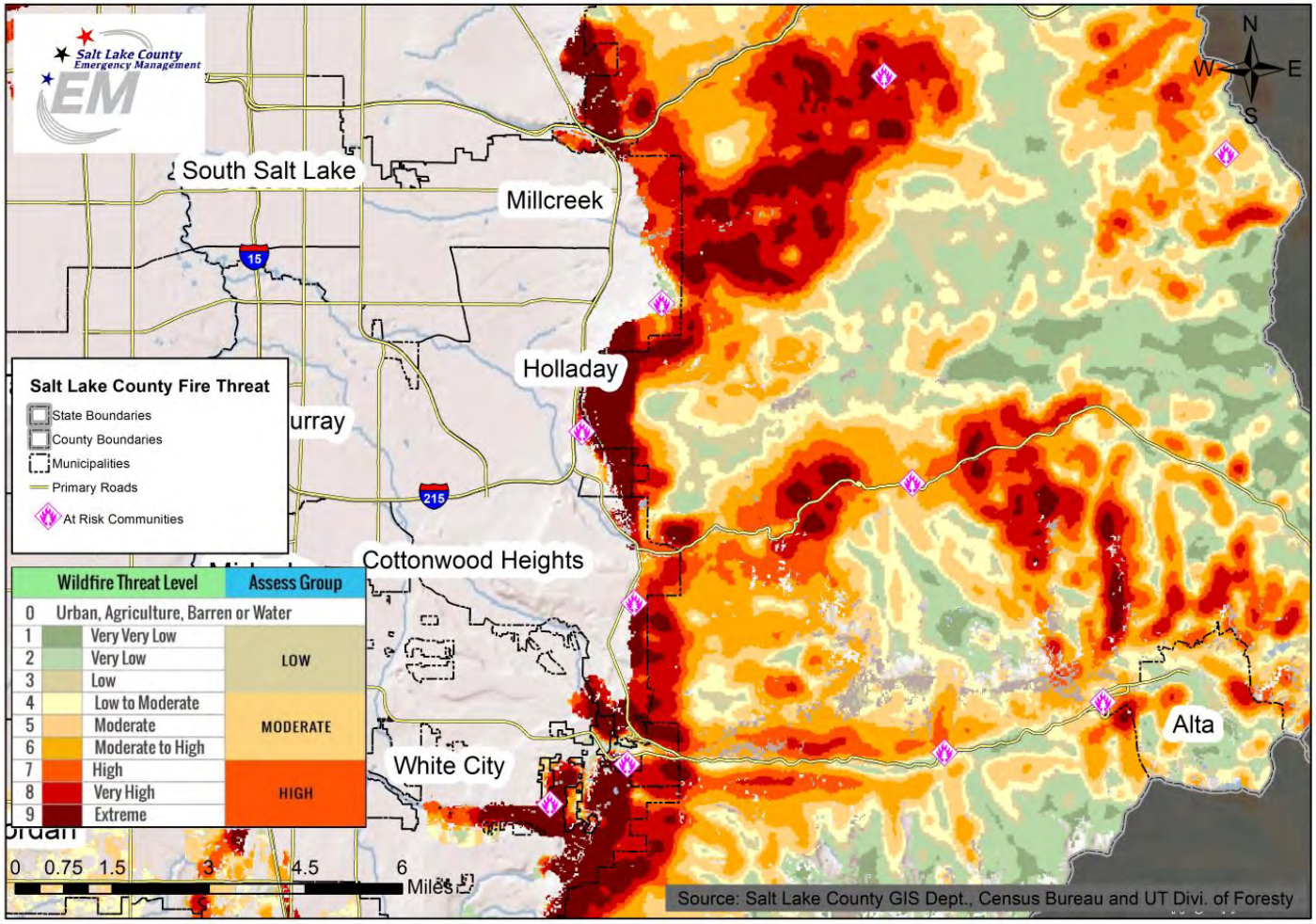
Landslide	2009	Reduce or eliminate the threat of landslide damage. Priority MEDIUM Monitor historical landslide areas.	There are no historical landslide areas in the City.	Completed	
Landslide	2009	Reduce or eliminate the threat of landslide damage. Priority MEDIUM, Improve public awareness regarding high-risk landslide areas.	There are no historical landslide areas in the City.	Completed	
Severe Weather	2009	Reduce the threat of life loss due to severe weather. Priority LOW. Become National Weather Service (NWS) "Storm Ready Community".	Contact NWS/SLC Office and begin process of becoming a Storm Ready Community.	Completed	The City of Holladay participates in the Storm Ready Community program. The City qualifies as participating by contracting with unincorporated Salt Lake County as part of their program.
Severe Weather	2009	Reduce the threat of life loss due to severe weather. Priority LOW. Become National Weather Service (NWS) "Storm Ready Community".	Contact NWS/SLC Office and begin process of becoming a Storm Ready Community.	Completed	The NWS, national weather system and the Utah Department of Transportation cooperate to provide this information.

Jurisdiction Maps

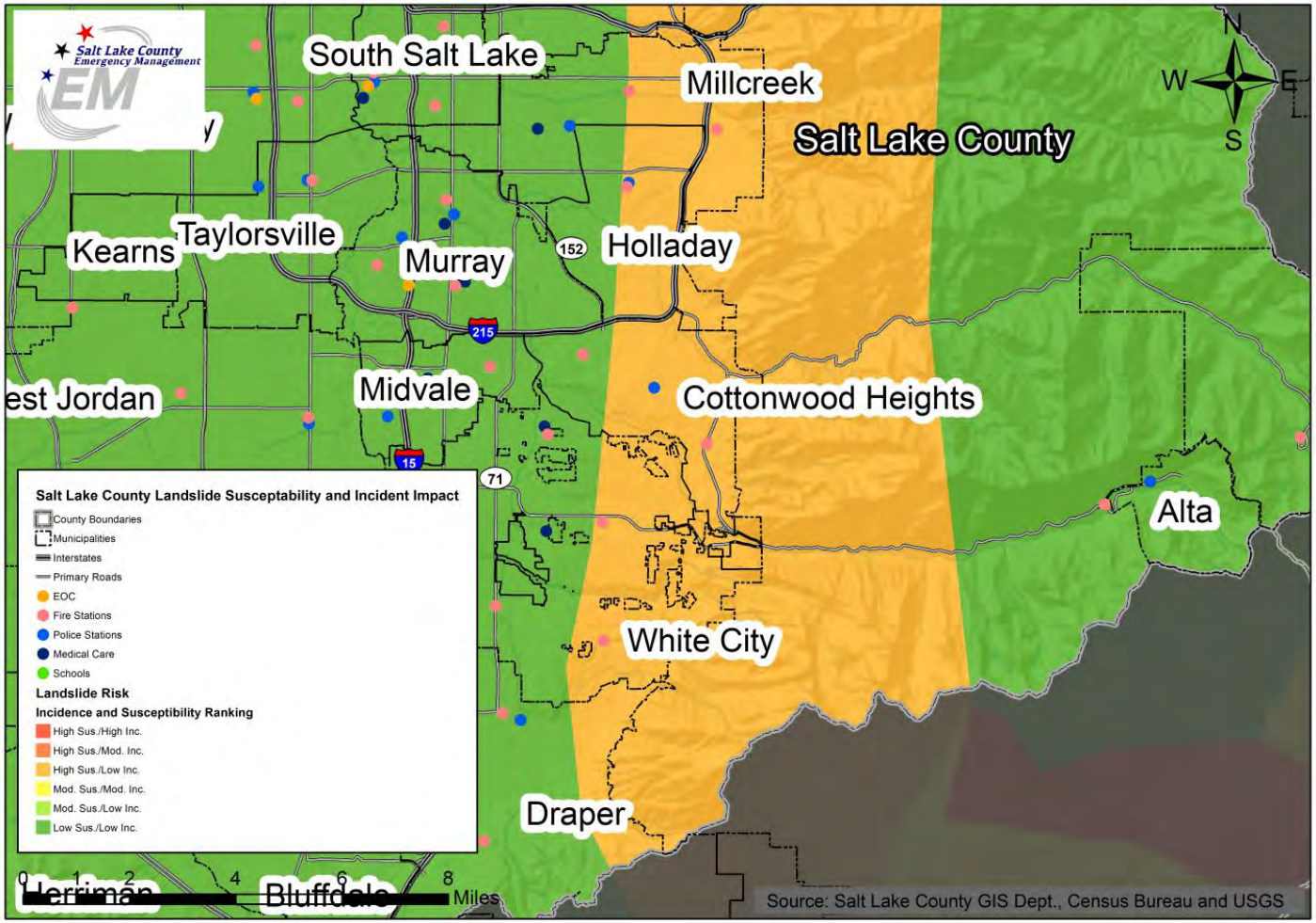
Map: Wildfire Threat Level with Critical Facilities



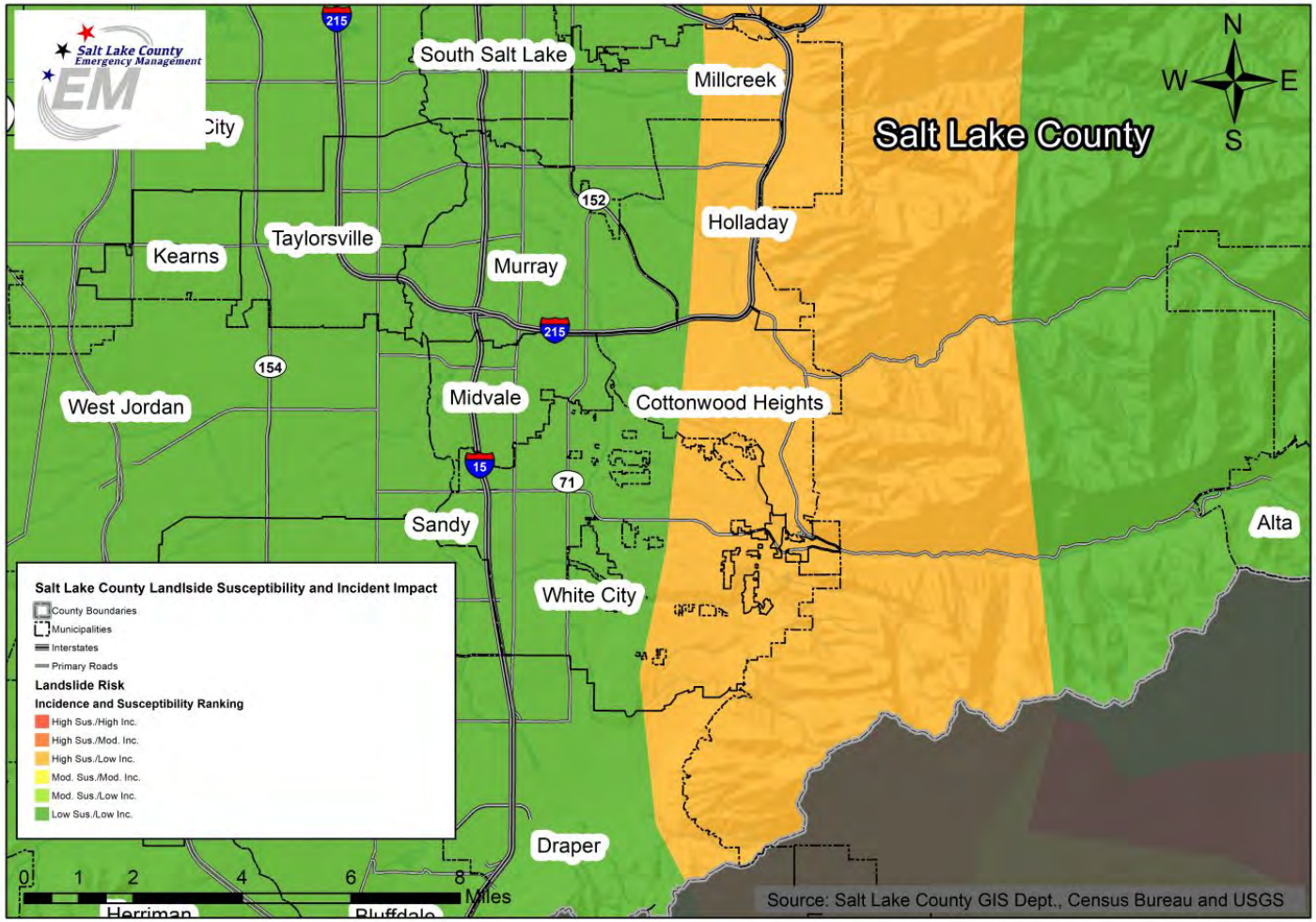
Map: Wildfire Threat Level



Map: Landslide Susceptibility and Incident Impact Potential



Map: Landslide Susceptibility and Incident Impact Potential with Critical Facilities



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: Midvale City

Hazard Mitigation Plan Point of Contact

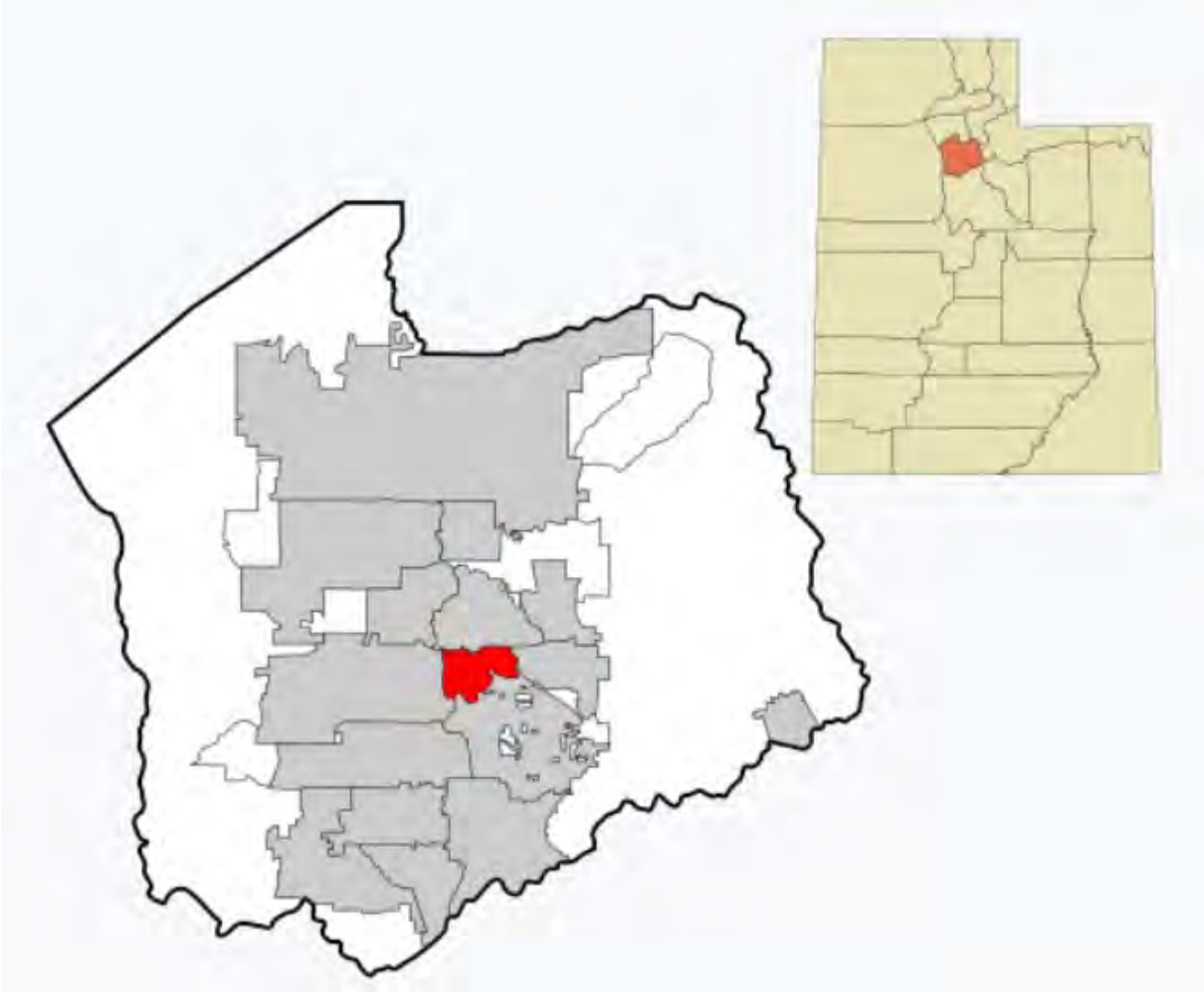
Primary Point of Contact	Alternate Point of Contact
Name: Bryce Haderlie Title: Assistant City Manager and Admin Director Municipal Emergency Management Planner Department: Midvale Address: 7505 S Holden St Midvale, UT 84047 Office Phone: 801-597-5160 Email Address: brycehaderlie@gmail.com Website: https://www.midvalecity.org/departments/emergency-management	Name: Julie Harvey Title: Municipal Emergency Management Planner Department: Unified Fire Address: 7505 S Holden St Midvale, UT 84047 Office Phone: 907-229-8284 Email Address: jharvey@unifiedfire.org Website: https://www.midvalecity.org/departments/emergency-management

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Current Population:** 33,636 (Census v 2018)
- **Population Growth:** The population grew 20.1% from April 1, 2010 (27,999) to July 1, 2018 (Census).
- **Location and Description:** Midvale City is located in the middle of the Salt Lake Urbanized Metropolitan Area comprising the Wasatch Front just twelve miles south of downtown Salt Lake City and some fifteen miles from four mountain resorts defined as Ski City.
- **Brief History:** The eastern part of the city started as an agricultural neighborhood, and the western areas formed mining and milling settlement, each relying on the other for sustenance, protection, social interaction, and commerce. The area was then known as Bingham Junction, and was an important midpoint along the rail between mining in Little Cottonwood Canyon to the east and Bingham Canyon to the west. With the discovery of silver in Little Cottonwood Canyon and in Bingham Canyon, new people rushed to be a part of the growing business and industry located in the middle valley in Midvale City. Along with industry came the hotels, boarding houses, saloons, schools, and the people who made Midvale City's Old Town a center of the community(Midvale).
- **Climate:** The average high temperature is 93 degrees and the average low temperature is 24 degrees. On average, Midvale receives 18 inches of rain and 42 inches of snow a year (Best Places).
- **Public Services:** Midvale City began the Community-Building-Community Initiative (CBC) in 1998 to improve the general well being of Midvale residents. The CBC is a collaborative effort that brings together the stakeholders in the Midvale community, including the residents, in the planning process.
- **Governing Body Format:** Midvale City operates under a traditional form of government and is a City of the third class as determined by Utah law. Hence, it is governed by a six-member Council comprised of five Council Members and a Mayor. The Mayor votes only to break a tie-vote of the Council. The Mayor serves as the Chief Executive Officer and the City Manager serves as Chief Administrative Officer overseeing the day-to-day administrative functions of the City.

- **Development Trends:** Midvale City is over 100 years old, but has experienced hundreds of millions of dollars in new investment these past few years. Within the six square miles comprising Midvale, there is a lot of activity. It's home to a growing population of over 33,000 residents, some 1,300 businesses, and a "day-time" population estimated around 25,000 workers. There are numerous retailers who take advantage of the strategic location that defines Midvale with its unparalleled access to the regional transportation system and its established trade areas. It's home to many top-performing locations, first in-state retailers, mom and pop shops, and one of kind locations (Midvale).



Capability Assessment

The Emergency Manager is the city's designated Emergency Manager. Hazard Mitigation Planning efforts are led by the Emergency Manager position and supported by the Planning and City Manager positions.

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below.

Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY			
	Local Authority Exists to Develop and Implement/ Enforce?	**The Codes, Ordinances & Requirements Currently Exists?**	**Comments**
Codes, Ordinances, & Requirements			
Building Code Development and Enforcement	Yes	Yes	
Zonings Ordinance(s)	Yes	Yes	
Subdivision Ordinance(s)	Yes	Yes	
Stormwater Management Program	Yes	Yes	
Floodplain Ordinance(s)	Yes	Yes	
Post Disaster Recovery Program and Ordinance(s)	Yes	No	
Real Estate Disclosure Ordinance(s)	Yes	No	
Growth Management	Yes	Yes	Through Zoning Laws
Site Plan Review Requirements	Yes	Yes	Throughout the code
Public Health and Safety Program Requirements	Yes	Yes	Uses Salt Lake County
Environmental Protection Program and Requirements	Yes	Yes and No	Different ordinances address different aspects of protecting the environment; there isn't a code
Planning Documents			
General or Comprehensive Plan	Yes	Yes	
Capital Improvement Plan	Yes	No	
Habitat Conservation Plan	No	No	
Economic Development Plan	Yes	Yes	Addressed in the General Plan

Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	Yes	Recently hired an EM who is working on it; 2016 plan still active
Post-Disaster Recovery Plan	Yes	No	
Continuity of Operations Plan	Yes	No	
Public Health Plans	Yes	Yes	The County Health department plans are used by Midvale City
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	Yes	Yes	Incorporated in the EOP

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes, but not eligible to use
Other	Not eligible for block grants according to planning

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	Full	Engineering Department
Engineers or professionals trained in building or infrastructure construction practices	Yes	Full	Engineering Department

Planners or engineers with an understanding of natural hazards	Yes	Full	Engineering Department
Surveyors	Yes	Contractor	
Personnel skilled or trained in GIS applications	Yes	Full	Engineering Department
Emergency manager	Yes	Part-time	City Manager contracted through UFA
Grant writers	Yes	Contractor	

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	Engineering
Who is your jurisdiction's floodplain administrator? (department/position)	City Manager
Are any certified floodplain managers on staff in your jurisdiction?	Yes
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	No
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System (CRS)	No	-	-
Public Protection/ISO	No	-	-
NWS StormReady	No (County participates)	-	-

Jurisdiction-Specific Hazards and Risks

The *Natural Hazard Events Table* lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0

- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 11 policies were in force with total coverage of $2,767,000 and total written premium and FPF of $6,193 (FEMA, 2019).
- Midvale City does participate in the National Flood Insurance Program (CID # 490211) and the last FIRM map for the area was issued on 4 09/25/09 (FEMA, 2019).
- The city will continue to participate in the NFIP through various efforts including but not limited to floodplain management, ordinance development and review, technical assistance, compliance inspections, and community education on flood hazards.

TABLE: RECENT NATURAL HAZARD EVENTS
(NOAA Data with additions from the jurisdiction representatives)

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Snow Storm	5 inches of snow	-	2/13/2019	-
High Wind	high winds knocked down power lines in Midvale, with over 2,000 customers losing power	-	10/20/2017	5,000 property damage.
Hail	dime-sized	-	8/13/2017	-
Hail	nickel-sized	-	6/23/2016	-
Flash Flood	Heavy rain over the Salt Lake Valley flooded six residential properties in Midvale and Sandy.		7/6/2013	$15,000 property damage
Flood	Damage was reported in homes, apartments and businesses		6/5/2010	$1,500,000 property damage

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community
Members of the community over 65 years old	2,571
Members of the community under 18 years old	8,294
Members of the community that identify as having disability status	2,581
Members of the community that speak English less than "very well"	2,921
Members of the community living below the poverty line	5,471
The number of mobile homes in the community	95
Members of the community without health insurance	5,326
Occupied housing units with tenants without a vehicle	829
Housing units without heating fuel	32

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Flooding: Although located in a semi-arid region, Midvale is subject to cloudbursts and snowmelt floods. Little Cottonwood Creek is the primary source of running water that has flooded in the past and could breach the banks in the area of the Fort Union offices and retail spaces. Mitigation work has been done in this area and the creek is monitored each spring during the heavy run-off. The Jordan River could present unique challenges due to bridge collapse or inundation, bank collapse, flooding of the banks, etc. This could impact east/west traffic flow and flooding of homes and businesses in lower elevations. Little Cottonwood Creek is a potential source of stormwater flash flooding from the canyons and/or valley rain. Underpasses at I-15 are another source of flooding concern. Transportation routes can be cut-off due to this type of event and coordination needs to be enhanced to ensure that pumps owned and operated by UDOT can be quickly activated in these circumstances. Canals and other waterways that are impacted by stormwater may be inundated under extreme storm volumes.

Earthquake: Midvale has a large number of unreinforced brick residences that poses a large problem in the event of a major earthquake. An earthquake is one of the major threats to the city with a number of faults running along the Wasatch Front in close proximity to the eastern border of the city. Other hazards from a seismic event could include bridge and overpass failure on I-15, I-215, intersecting streets, the railroad system, building and road failure from soil liquefaction or ground movement, and similar impacts to utilities and underground infrastructure. Bridge and road failures could literally divide the city in half at I-15 and movement west of the Jordan River could also be impacted by bridge failure. Above ground hazardous material and fuel storage tanks, apartments, schools and areas of high-population are also high-risk properties that may require intense emergency service or rescue efforts. Collapsed structures, urban rescue, clear and open transportation routes, and debris containment and removal are the primary activities and concerns related to an earthquake that the city would need to address. The City will need to establish

adequate interlocal agreements to obtain adequate heavy equipment and operators to deal with debris management and removal. The City is home to the IHC medical warehouse that supplies resources to IHC hospitals and clinics throughout the valley. Ensuring adequate transportation routes in and out of that facility will be a critical obligation.

Winter Storms: Winter storms usually cause power outages that can last up to several days. Home heating becomes a major problem. Each year Midvale has several devastating fires from homeowners using unsafe heating units. The City provides snow removal operations on city-owned streets. Depending on the duration and frequency of a storm(s) the operations may become delayed or hampered. Primary and collector transportation routes will be the first focus on neighborhoods as a second priority. Overhead power lines can be damaged by snow or falling trees and branches which could impact building occupancy.

Drought: Midvale is prone to cyclical droughts. These droughts have been severe enough to require mandatory water rationing. A short- or long-term drought could affect Midvale either by impacting the limited wells that we have in the city or the Jordan Valley Water Conservancy District where most of our water is purchased. Water rationing would be the first source of action that the city would take which would start with landscape water and could expand to other discretionary uses of culinary water. The city has ample water storage for fire-flows and daily fluctuations in demand but interruptions or failures in the water supply or system could prompt aggressive rationing in a local area or city-wide depending on the circumstances. Ensuring that the city has an adequate communication plan will be essential to ensuring that water is rationed correctly under these circumstances.

Problem Soils: Midvale is prone to areas of collapsible soil.

Avalanche: Midvale does not have any terrain within the city limits that would be conducive to avalanches. Avalanches in the Big and Little Cottonwood Canyons could impact local roads and businesses if they created long term shutdowns.

Dam Failure: There are no known hazards from dam failure that would impact Midvale directly.

Extreme Cold: Depending on the length of the cold and severity, heated shelters for citizens who lose heat may be necessary as well as having PPE's for city staff that are required to work outdoors. Power failure is also another impact from extreme cold when electrical distribution systems are and heating equipment is pushed to extremes and routinely fail.

Extreme Heat: High heat can create a variety of hazards ranging from heat-stroke and heat-related illnesses to at-risk citizens and pets, expansion control issues with roads, sidewalks and other transportation routes, air-conditioning system failure with buildings occupied by at-risk citizens as well as specialized equipment and mechanical devices that rely on regulated temperatures.

Landslide/Slope Failure: Midvale does not have terrain susceptible to large landslides or slope failure. Banks and slopes along waterways and lot excavations are the most likely to occur through an earthquake or saturated soils. No specific sites have been identified that require mitigation efforts. Banks along the Jordan River could fail if flooding occurs.

Severe Thunderstorm: Little Cottonwood Creek is a potential source of stormwater flash flooding from the canyons and/or valley rain. Underpasses at I-15 are another source of flooding concern.

Transportation routes can be cut-off due to this type of event and coordination needs to be enhanced to ensure that pumps owned and operated by UDOT can be quickly activated in these circumstances. Lightening can become a hazard to residents outdoors at pools and other gathering places, or to equipment and electronics susceptible to electrical surges.

Tornado/High Wlnd: While tornados in the Salt Lake valley are rare (Aug. 11, 1999), high winds can create large debris fields and block roads with downed trees and limbs. High profile vehicles blowing over on I-15 are another potential hazard that could impact city streets with diverted traffic.

Wildfire: There are not many urban interface areas in Midvale that would be susceptible to wildfires. The Jordan River corridor is the most likely area that a fire could occur. Firework regulations is the primary form of mitigation for this hazard and code enforcement will need to focus on controlling flammable material in urban interface sites.

Public Health: It is difficult to predict what type of public health hazard could impact Midvale. Working with schools and businesses will be necessary to limit the flow of people and contact between individuals that could spread disease and illness. The City will defer to the Salt Lake County Health Department and CDC for direction on these types of issues. Having sufficient PPE's and equipment for city staff will be necessary to ensure that they can continue to work and function as needed.

Radon: While radon is a known element in Utah and a hazard to human health, mitigation efforts will be addressed through the building codes adopted by the State and individual efforts of citizens.

Civil Disorder/Riot: Civil disorder and riots are possible but not viewed as a high probability in Midvale since there are no large-scale athletic venues, government buildings or similar locations where riots typically occur.

Cyber Attack: The threat of a cyber-attack against individual businesses and or government offices is always a potential threat. Adopting adequate safety processes and procedures, maintaining system security and developing policies and procedures are the first line of defense.

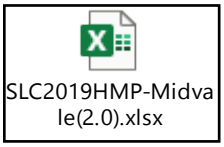
Hazardous Materials Release: Of all possible threats to Midvale, this is probably one of the most likely to impact the community. This is due to the fact that I-15 and US 89 (State Street) runs north to south through the city and I-215 runs east to west with tens of thousands of vehicles passing through the city daily. The railway system and switching yard that runs through the western half of the city, and a number of fuel and hazardous material storage facilities also pose possible threats. It is difficult to know what types of hazards may be released from a transportation vehicle so the city will focus on having a reliable and redundant communication system and an evacuation plan to safely move citizens away from a hazard as quickly as possible.

Terrorism: While an isolated incident of terrorism could impact any of the schools, businesses, or government offices in the city, the likelihood of mass terrorism is unlikely in Midvale due to the fact that there are no large scale athletic venues, government buildings or similar locations where an act of terrorism typically occurs. Terrorism activities towards the road, rail, and other transportation routes pose a threat. It is unclear if fuel and hazardous materials storage facilities could be a terrorist target but it should not be ruled out.

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Severe Winter Weather	3	16	48
Severe Weather	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Hazardous Materials Incident	2	18	36
Cyber Attack	2	17	34
Flooding	2	14	28
Drought	2	14	28
Terrorism	1	25	25
Dam Failure	1	21	21
Radon	3	6	18
Tornado	1	12	12
Wildfire	1	10	10
Civil Disturbance	1	8	8
Landslide and Slope Failure	1	7	7
Avalanche	1	0	0

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.



Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1		Avalanche	No Impact	0	0
Dam Failure	Low	1		Dam Failure	Medium	2	6
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Low	1	3
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Low	1	3
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Low	1		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	Medium	2	6
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	Low	1		Wildfire	Low	1	3

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	No Impact	0	0		Avalanche	No Impact	0	0
Dam Failure	Low	1	1		Dam Failure	High	3	6
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Low	1	2
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Low	1	1		Flooding	High	3	6
Hazardous Materials Incident	Medium	2	2		Hazardous Materials Incident	Medium	2	4
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Low	1	2
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Low	1	2
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	Low	1	1		Wildfire	Low	1	2

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**	**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)	**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)	**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)	**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)	**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	No Impact	0	0		Avalanche	Unlikely	0	0
Dam Failure	Medium	2	2		Dam Failure	Medium	2	6
Drought	Medium	2	2		Drought	Low	1	3
Civil Disturbance	Medium	2	2		Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	2		Cyber Attack	Medium	2	6
Earthquake	High	3	3		Earthquake	High	3	9
Flooding	Low	1	1		Flooding	Low	1	3
Hazardous Materials Incident	High	3	3		Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	3		Public Health Epidemic/ Pandemic	High	3	9
Radon	No Impact	0	0		Radon	Unlikely	0	0
Severe Weather	Low	1	1		Severe Weather	Unlikely	0	0
Severe Winter Weather	Medium	2	2		Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	3		Terrorism	High	3	9
Tornado	Medium	2	2		Tornado	Unlikely	0	0
Wildfire	Low	1	1		Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**	**Catastrophic Factor**—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)	**High**—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)	**Medium**—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)	**Low**—Low potential that this hazard could be catastrophic (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)	**Unlikely**—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Ensure that city emergency communication systems (radios, signal boosters, etc.) are functioning and ready for use.	2019	Goal 3: Enhance and protect the communication and warning/notification systems in the County.	All-Hazards	IT	Public Works, UPD, UFA	High	Low ($6,000)	General Fund	High	2020	Functional communication system in an emergency
Gather and update GIS data on city infrastructure to ensure smooth operations during emergency operations.	2019	Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.	All-Hazards	Engineering/GIS	Midvale Public Works and Community Development	High	High ($154,000)	General Fund	High	Ongoing	Educated and prepared staff and public
Update and ensure that mutual aid agreements and contacts are in place for emergency response operations. This includes other government agencies, private	2019	Goal 5: Ensure and promote ways to increase government and private sector continuity of services during and after a disaster.	All-Hazards	City Manager	City Attorney	Medium	Low ($5,000)	General Fund	Medium	Ongoing	Mutual Aid Agreements and Contracts

businesses, etc. so that resources are available and ready when needed.											
SCADA system for water and sewer system readings and backup generator systems for sewer lift stations.	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	All-Hazards	Midvale Public Works Dept	Midvale IT	High	High ($240,000)	Utility Funds	High	2020	Monitoring and Control of water and sewer utilities and backup power for sewer lift stations
Separate storm water from irrigation ditches.	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Flooding, Hazardous Materials	City Engineer	Public Works	High	High ($300,000)	Storm Water Utility Fee	High	3-5 years	
Develop a robust cyber security program, incorporating components of the NIST	2019	Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Cyber Attack	IT		High	Medium	Local	High	2 years	

Cybersecurity Framework		Goal 5: Ensure and promote ways to increase government and private sector continuity of services during and after a disaster.									
Increase adult influenza vaccination rates to the Healthy Salt Lake target rate. Currently the rate is 70%	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 4: Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters.	Cyber Attack Public Health Epidemic/ Pandemic	EM	SLCo Public Health	High	Medium	Federal or CDC grants, local budget	High	2 years	

Mitigation Table - Ongoing Actions

Action	Year Initiated	Goal/ Objective	Hazard(s)	Agency Lead	Benefit	Cost	Funding Source	Priority	Timeframe	Comment
Establish redundancy for dispatch centers and other critical communications	2009	1 – Improve and maintain communications capabilities for emergency operations. 1.2 – Maintain communications	All Hazards	Midvale EM	Medium	High	Local, State, HMA and other Federal Grants	Medium	Ongoing	

		capabilities for critical facilities.								
Provide education regarding all natural hazards through live trainings, as well as web-based, print and broadcast media	2009	5 – Increase citizen safety through improved hazard awareness. 5.1 – establish a comprehensive public education program.	All Hazards	Midvale EM	Medium	Low	Local	Medium	Ongoing	
Incorporate information about cascading effects of hazards in education programs	2009	5 – Increase citizen safety through improved hazard awareness. 5.1 – establish a comprehensive public education program.	All Hazards	Midvale EM	Medium	Low	Local	Medium	Ongoing	
Develop education programs to target specific groups including homeowners, developers, schools and people with special needs	2009	5 – Increase citizen safety through improved hazard awareness. 5.1 – establish a comprehensive public education program.	All Hazards	Midvale EM	Medium	Low	Local	Medium	Ongoing	
Utilize maps and similar products on County EM website and other media to educate public	2009	5 – Increase citizen safety through improved hazard awareness. 5.1 – establish a comprehensive	All Hazards	Midvale EM, GIS, and Engineering					Ongoing	

on areas at risk to hazards		public education program.								
Coordinate with existing public education programs such as the American Red Cross, Utah Living with Fire, be Ready Utah, the National Weather Service, etc.	2009	5 – Increase citizen safety through improved hazard awareness. 5.1 – establish a comprehensive public education program.	All Hazards	Midvale EM	Medium	Low	Local	Medium	Ongoing	Revising Plan
Establish and enforce appropriate planning, zoning, and building code ordinances	2009	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	All Hazards	Midvale EM and Zoning/Code	Medium	Low	Local	Medium	Ongoing	Revising Plan
Utilize inundation maps to identify potential evacuation areas and routes	2009	1 – Include dam failure inundation in future County and City planning efforts 1.1 – Review current State dam safety information on all identified high hazard dams in the County	Dam Failure	Midvale EM and GIS	Medium	Low	Local	Medium	Ongoing	Emergency Manager

Continue to encourage water conservation utilizing and promoting outreach material from all water districts in the County	2009	1 – Include dam failure inundation in future County and City planning efforts. 1.1 – Review current State dam safety information on all identified high hazard dams in the County.	Drought	Midvale EM and Water Department	Medium	Low	Local	Medium	Ongoing	Water Department
Emergency Managers will coordinate with local water districts/public utilities to support ongoing conservation efforts	2009	1 – Include dam failure inundation in future County and City planning efforts. 1.1 – Review current State dam safety information on all identified high hazard dams in the County.	Drought	Midvale EM and Public Works	Medium	Low	Local	Medium	Ongoing	Revising Plan
Investigate feasibility of implementing an incentive program to encourage the use of low-flow appliances and fixtures in homes and businesses	2009	1 – Include dam failure inundation in future County and City planning efforts. 1.1 – Review current State dam safety information on all identified high hazard dams in the County.	Drought	Midvale EM and Water Department	Medium	Medium	HMA and other federal grants	Medium	Ongoing	
Implement water-saving devices and practices in public facilities	2009	1 – Include dam failure inundation in future County and City planning efforts. 1.1 – Review current State dam safety	Drought	Midvale EM and Water Department	Medium	High	Federal grants	Medium	Ongoing	Water Department

		information on all identified high hazard dams in the County.								
Repair, maintain and improve water distribution infrastructure to prevent loss from leakage, breaks, etc.	2009	1 – Include dam failure inundation in future County and City planning efforts. 1.1 – Review current State dam safety information on all identified high hazard dams in the County.	Drought	Midvale EM, Sewer Department, and Water Department	High	Medium	Local and HMA funds	Medium	Ongoing	
Coordinate public safety water use, such as hydrant testing	2009	1 – Include dam failure inundation in future County and City planning efforts. 1.1 – Review current State dam safety information on all identified high hazard dams in the County.	Drought	Midvale EM and Water Department	Medium	Low	Local	Medium	Ongoing	Working on Public Education campaign
Provide information on landscaping alternatives for persons subject to green area requirements	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Drought	Midvale EM	Medium	Low	Local	Medium	Ongoing	Coordinate with City mission

Provide educational materials to unreinforced masonry home and business owners	2009	1 – Reduce earthquakes losses to infrastructure 1.2 – Improve public education regarding earthquake risks to unreinforced masonry buildings	Earthquake	Midvale EM and Building Department	Medium	Low	Local	Medium	Ongoing	Develop information to educate businesses and home owners
Procure Engineering Consultant to perform the nonstructural design and geotechnical assessment and review.	2009	1 – Reduce earthquakes losses to infrastructure 1.3 – Improve Seismic Hazard understanding and seismic resistance of CUWCD Red Butte Dam in Salt Lake County.	Earthquake	Engineering	Medium	High	Federal and state grants	Medium	Ongoing	
Assist Cities with NFIP application	2009	1 – Protection of life and property before, during and after a flooding event 1.1 – Provide 100% availability of the National Flood Insurance Program	Flood	Engineering/State	High	Low	Local	High	Ongoing	
Encourage Communities to actively participate in NFIP	2009	1 – Protection of life and property before, during and after a flooding event 1.1 – Provide 100% availability of the National Flood Insurance Program	Flood	Engineering/State	High	Low	Local	High	Ongoing	

Identify and assess structures for deficiencies	2009	2 – Reduce threat of unstable or inadequate flood control structures 2.1 – Reduce potential for failure of flood control structures	Flood	Engineering	High	High	Local and federal funds	High	Ongoing	
Modify structures as needed to address deficiencies	2009	2 – Reduce threat of unstable or inadequate flood control structures 2.1 – Reduce potential for failure of flood control structures	Flood	Building Dept.	High	High	HMA and other federal funds	High	Ongoing	
Maintain Hazardous Weather Operations Plan according to StormReady requirements	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.1 – Maintain status as a StormReady Community	Severe Weather	Midvale EM	High	Low	Local	High	Ongoing	Revisions ongoing
Maintain Contact with NWS prior to re-application	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.1 – Maintain status as a StormReady Community	Severe Weather	Midvale EM	Medium	Low	Local	Medium	Ongoing	Revising Plan
Meet with NWS representative on an annual	2009	1 – Reduce threat of loss of life or property due to	Severe Weather	Midvale EM	High	Medium	Local, County,	High	Ongoing	Revising Plan

basis to receive information on new services and alerts available		extreme weather events 1.2 – Increase awareness of information services provided by NWS					and State			
Assist NWS in making other agencies and departments aware of available resources	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.2 – Increase awareness of information services provided by NWS	Severe Weather	Engineering, Water, and City EM	Medium	Low	Local	Medium	Ongoing	
Work with NWS to develop large event venue weather safety and evacuation procedures	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.4 – Examine the vulnerability of patrons at large event venues to extreme weather events	Severe Weather	Engineering, Water, and City EM	High	Medium	Local, County, State and HMA funds	High	Ongoing	
Midvale will implement the "Firewise" program in conjunction with the UFA.	2014	Goal 1 Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Wildland Fire	EM and Fire	High	Low	Local	High	Ongoing	
Midvale has a large number of	2014	Goal 1	Earthquake	Midvale EM	High	Low	Local	High	Ongoing	Midvale Emergency Management will

unreinforced brick residences poses a large problem in the event of a major earthquake.		Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.								present the "Fix the Bricks" program. This program is part of the Salt Lake City and State of Utah effort to mitigate the effects of a large-scale earthquake by minimizing post earthquake personal injury and requirement for outside assistance
Canal Mapping will be discussed at the yearly Emergency Managers Meeting and a subcommittee will be formed on earthquake impacts.	2014	Goal 1 Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Flood	Midvale EM	High	Low	Local	High	Ongoing	Midvale Emergency Management will apply for grants for flood mitigation assistance. As each jurisdiction has already identified their flood prone areas through HAZUS and RiskMAP we will utilize existing reports to help prepare plans for mitigation and application for funding.
Our jurisdiction will implement the "Fire is everyone's Fight" program through community outreach.	2014	Goal 4 Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters.	Severe Weather	Midvale EM	High	Low	Local	High	Ongoing	Severe weather is inevitable. The best mitigation practice is the timely communication of the event and actions that can be taken to minimize the effects. The biggest threat of severe weather is winter storms. Winter storms usually cause power outages that can last

										up to several days. Home heating becomes a major problem. Each year Midvale has several devastating fires from homeowners using unsafe heating units.
Midvale Emergency Management will work with the County Health Department to assist them in designing their mitigation programs for dealing with pandemics.	2014	Goal 1 Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Pandemic	Midvale EM	High	Low	Local	High	Ongoing	"The Salt Lake County Health Department (SLCo HD) continues to improve its emergency response capacity by planning, training, exercising and working with partners and municipalities throughout the county. The SLCoHD Emergency Management Bureau takes the lead within the department and involves all health department staff through planning, training, drills and exercises. The health department follows the principles of Emergency Management: to plan for, respond to, recover from, and mitigate natural and manmade emergencies and disasters. Our goal is

										to do the most good for the most people in the shortest amount of time. “
Emergency Management will conduct a special presentation on “Slow the Flow” to encourage residents to take advantage of the free “Water Check” program.	2014	Goal 4 Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters.	Drought	Midvale EM	High	Low	Local	High	Ongoing	Midvale is prone to cyclical droughts. These droughts have been severe enough to require mandatory water rationing.
Midvale Emergency Management will conduct a half day seminar to educate citizens in procuring radon testing kits. A presentation from the Health department will be made.	2014	Goal 4 Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters.	Radon	Midvale EM	High	Low	Local	High	Ongoing	When radon becomes trapped in buildings and homes, people breath the radon into their lungs and the gas becomes trapped. The Environmental Protection Agency (EPA) has determined that a level of 4.0 piC/L action level of radon is dangerous for human health. Utah Radon Levels are at or above this level on average.
Midvale Emergency Management will participate in a half-day seminar with the authors of	2014	Goal 1 Protect the lives, health, and safety of the citizens of Salt Lake County before,	Earthquake	Midvale EM	High	Low	Local	High	Ongoing	Midvale is prone to areas of collapsible soil.

the book Geologic Hazards of the Magna Quadrangle, Utah, authored Jessica J. Castleton, Ashley Elliott, Greg N. McDonald to determine testing and mitigation techniques that can be implemented.		during, and after a disaster.								

Mitigation Table - Completed and Removed Actions

Category	Year Initiated	Goal / Objective	Action	Status	Comments
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	1 – Conduct an inventory and assessment of communications equipment and systems and identify needs	Complete	
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	2 – Conduct Training and awareness activities on communication equipment, tools, and systems	Complete	
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations	3 – Establish agreements to share communications equipment between agencies involved in emergency operations	Complete	

		1.1 – Improve communication capabilities			
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	4 – Establish notification capabilities and procedures for emergency personnel	Complete	Revising
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.2 – Maintain communications capabilities for critical facilities	1 – Evaluate vulnerability of critical communications systems	Complete	Revising
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.3 – Conduct communications Strategic Planning	1 – Establish a coordinating group to address long-term communication needs and implementation strategies	Complete	
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.3 – Conduct communications Strategic Planning	2 – Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group	Incomplete	Seeking new revenue & Funding
All Hazards	2009	2 – Improve awareness and analysis of hazards 2.1 – Improved Quality and Access to digital geographic (GIS) hazards data	1 – Establish a coordinating group to address geographic data issues	Complete	Contract Company
All Hazards	2009	2 – Improve awareness and analysis of hazards 2.1 – Improved Quality and Access to digital geographic (GIS) hazards data	2 – Examine current data availability and sharing capabilities, evaluate needs, and identify shortcomings	Complete	“

All Hazards	2009	2 – Improve awareness and analysis of hazards 2.1 – Improved Quality and Access to digital geographic (GIS) hazards data	3 – Update and expand data on hazards, critical facilities, and critical infrastructure according to assessed needs	Complete	“
All Hazards	2009	2 – Improve awareness and analysis of hazards 2.1 – Improved Quality and Access to digital geographic (GIS) hazards data	4 – Provide centralized access to geographic data to emergency planners and responders	Complete	“
All Hazards	2009	2 – Improve awareness and analysis of hazards 2.2 – Improve and expand hazard monitoring capabilities	1 – Integrate existing hazard monitoring networks in emergency operations centers. Utilize sensors such as weather stations, stream gages, seismograph stations, road conditions, etc.	Complete	Revisions
All Hazards	2009	2 – Improve awareness and analysis of hazards 2.2 – Improve and expand hazard monitoring capabilities	2 – Identify and implement additional hazard monitoring capabilities.	Complete	Revisions
All Hazards	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	1 – Utilize GIS to identify facilities and infrastructure at risk	Complete	Contract company
All Hazards	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	2 – Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment resources and redundancy, and adequate emergency procedures	Complete	Contract company

All Hazards	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	3 – Implement improvements to address identified in assessment	Complete	Contract company
All Hazards	2009	4 – Improve response capabilities through mutual-aid agreements 4.1 – Utilize mutual-aid agreements in accordance with National Incident Management System (NIMS) requirements	1 – Compile inventory of mutual-aid agreements and memoranda of understanding (MOU) and identify deficiencies	Complete	Contract company
All Hazards	2009	4 – Improve response capabilities through mutual-aid agreements 4.1 – Utilize mutual-aid agreements in accordance with National Incident Management System (NIMS) requirements	2 – Pursue and implement needed mutual-aid agreements	Complete	Contract company
All Hazards	2009	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	2 – Ensure current hazard ordinances are available for viewing online	Incomplete	Revising
Dam Failure	2009	1 – Include dam failure inundation in future County and City planning efforts 1.1 – Review current State dam safety information on all identified high hazard dams in the County	1 – Include dam inundation maps in current County, City and Special Service District Emergency Operations Plans	Not relevant	
Drought	2009	1 – Reduce and prevent hardships associated with water shortages	1 – Set up livestock water rotation in areas of agricultural use	Not relevant	

		1.2 – Address agricultural water shortages in the County			
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.3 – Encourage development of secondary water systems	1 – Coordinate with water districts to plan for, develop and/or expand secondary water	Complete	Water Districts MOU
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	1 – Identify structures at risk to earthquake damage	Complete	Building department
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	2 – Research feasibility of an incentive program for retrofitting privately-owned buildings, particularly unreinforced masonry	Incomplete	Redevelopment planning
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	3 – Complete seismic rehabilitation/retrofitting projects of public buildings at risk	Incomplete	Planning on going
Flooding	2009	1 – Protection of life and property before, during and after a flooding event 1.2 – Encourage appropriate flood control measures, particularly in new developments	1 – Determine potential flood impacts and identify areas in need of additional flood control structures	Complete	Revisions on going with the State
Flooding	2009	1 – Protection of life and property before, during and after a flooding event	2 – Address identified problems through construction of debris basins, flood retention ponds, energy	Complete	SLCo. Public Works/ City PW

		1.2 – Encourage appropriate flood control measures, particularly in new developments	dissipaters or other flood control structures		
Flooding	2009	1 – Protection of life and property before, during and after a flooding event 1.3 – Provide maintenance, repairs and improvements to drainage structures, storm water systems and flood control structures	1 – Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of storm water and flood control systems	Complete	City PW
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.3 – Encourage safe practices in avalanche prone areas	1 – Assist Forest Service Utah Avalanche Forecast Center and other organizations in promoting avalanche hazard awareness for backcountry users	Not Relevant	
Slope Failure	2009	1 – Reduce or eliminate the threat of slope failure damage 1.1 – Reduce the threat of slope failures following wildfires	1 – Develop protocol for working with State and Federal agencies in reducing the impact of post-fire debris flow hazard	Not Relevant	
Slope Failure	2009	1 – Reduce or eliminate the threat of slope failure damage 1.2 – Monitor historic landslide areas	1 – Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential	Not Relevant	
Slope Failure	2009	1 – Reduce or eliminate the threat of slope failure damage 1.3 – Address landslide hazards in new sub-divisions	1 – Utilize recommendations provided by the State Geological Hazards Working Group to address land-use and planning for new developments	Not Relevant	
Wildland Fire	2009	1 – Community education on wildfire hazard 1.1 – Reduce risk from wildfire through education programs	1 – Increase public awareness through “Firewise” program	Not Relevant	

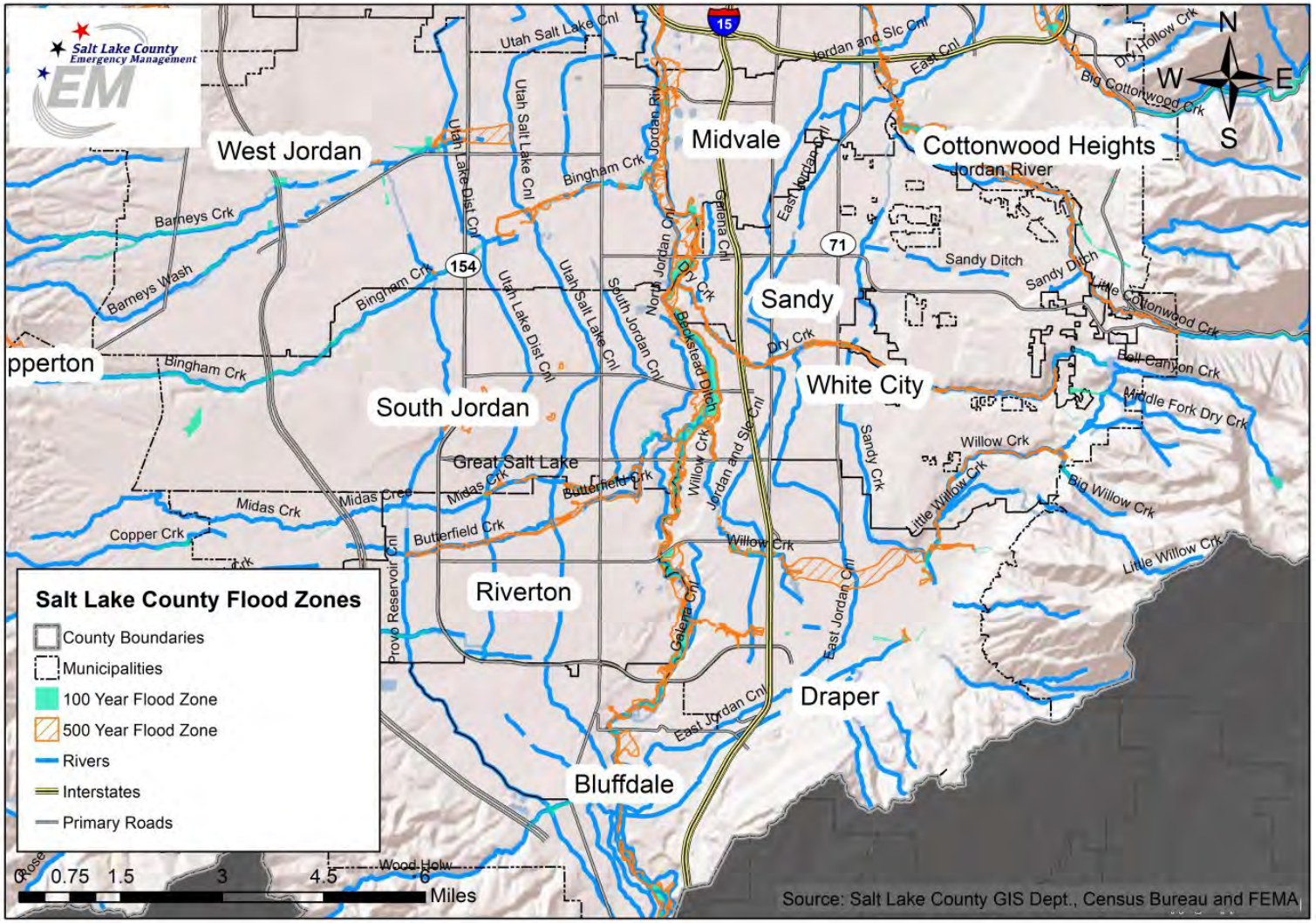
Wildland Fire	2009	1 – Community education on wildfire hazard 1.1 – Reduce risk from wildfire through education programs	2 – Educate homeowners on the need to create defensible space near structures in WUI	Not Relevant	
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.1 – Assist homeowners with creating defensible space near structures in WUI areas	1 – Designate and promote county-wide annual initiative for clearing fuels	Not Relevant	
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.1 – Assist homeowners with creating defensible space near structures in WUI areas	2 – Provide waste removal, such as chipping of green waste by public works, following designated fuel clearing day/week	Not Relevant	
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.2 – Improve evacuation capabilities for WUI areas	1 – Work with experts and communities to develop or update evacuation plans	Not Relevant	
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.2 – Improve evacuation capabilities for WUI areas	2 – Evaluate transportation network and address needed improvements to facilitate evacuation and emergency response	Not Relevant	
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning,	1 – Identify all facilities, businesses, and residences, particularly in the canyons, and assign addresses	Not Relevant	

		protective actions and improved fire response capabilities 2.3 – Improve addressing system in WUI areas to facilitate emergency response	according to current county addressing standards		
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.3 – Improve addressing system in WUI areas to facilitate emergency response	2 – Incorporate improved addresses in fire-dispatch and other databases	Not Relevant	
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	1 – Reduce fuels around publically owned structures	Not Relevant	
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	2 – Implement fire breaks and other protective measures	Not Relevant	
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	3 – Assess existing water flow capabilities, both public and private, and address deficiencies	Not Relevant	
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning,	4 – Assist communities in developing Community Wildfire Protection Plans or similar plans	Not relevant	

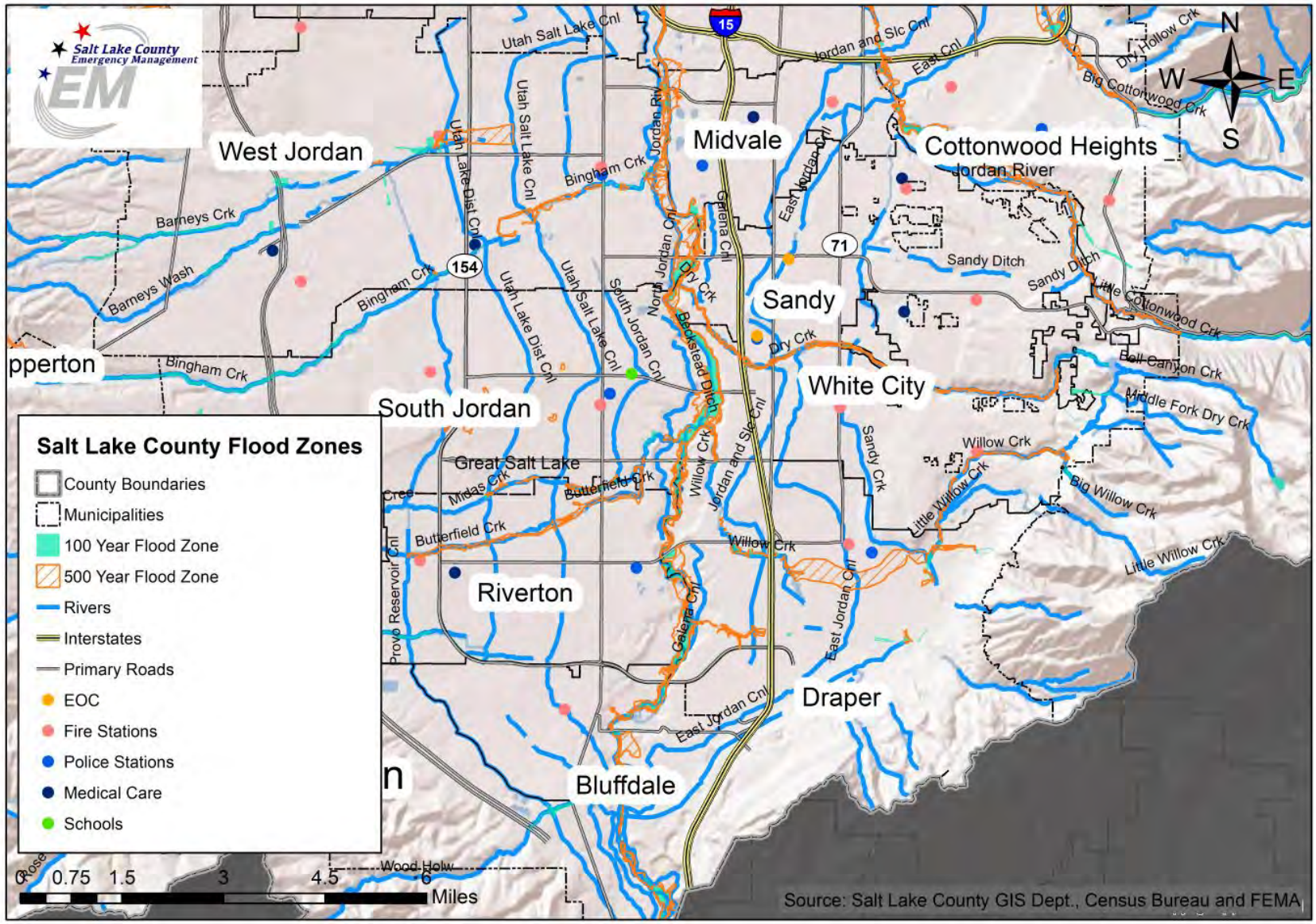
		protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects			
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.5 – Encourage proper development practices in the WUI	1 – Adopt the Utah Wildland-Urban Interface Code	Not Relevant	
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.5 – Encourage proper development practices in the WUI	2 – Define wildland-urban interface and develop digital maps of the WUI	Not Relevant	

Jurisdiction Maps

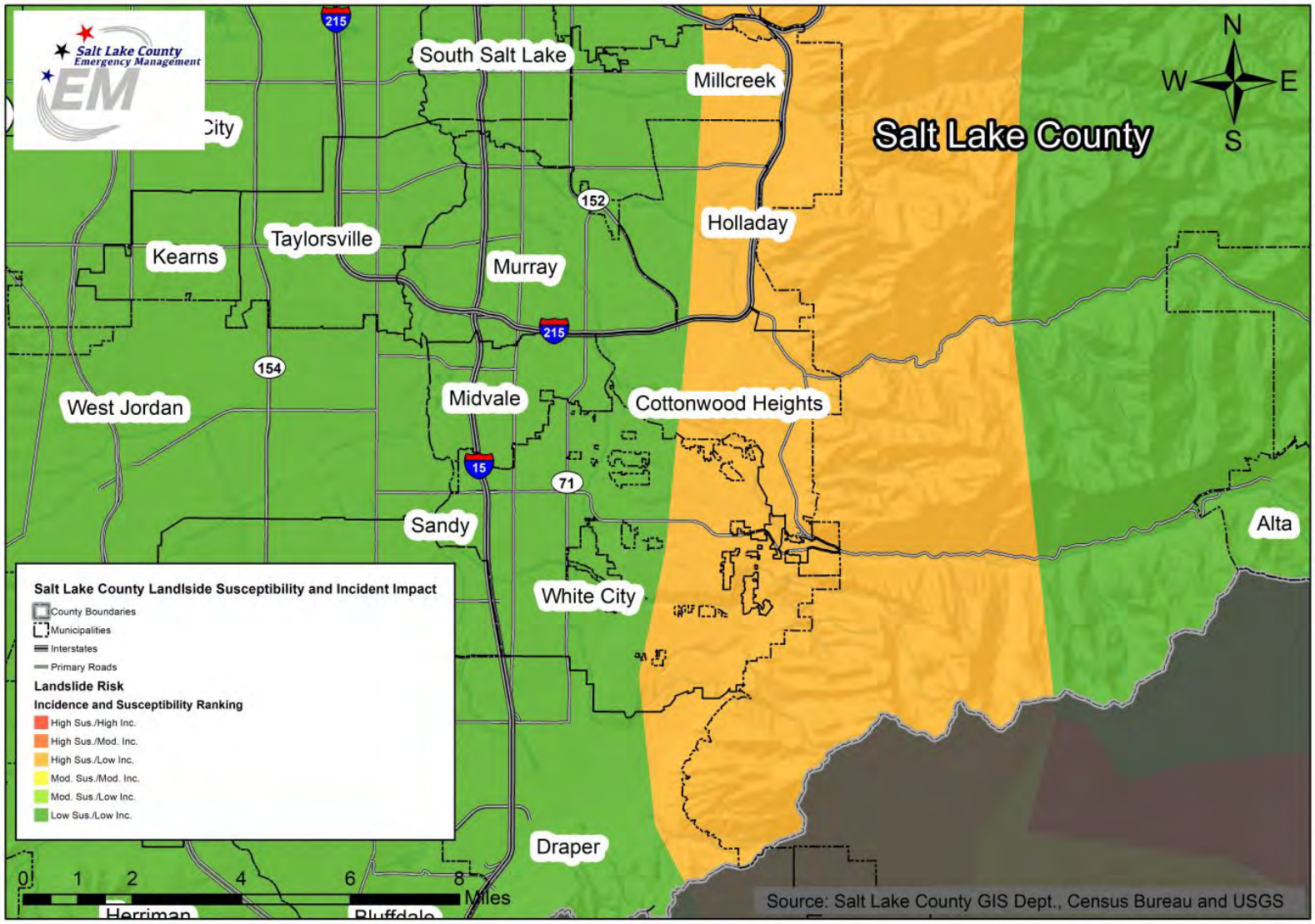
Map: 100 Year and 500 Year Flood Zone



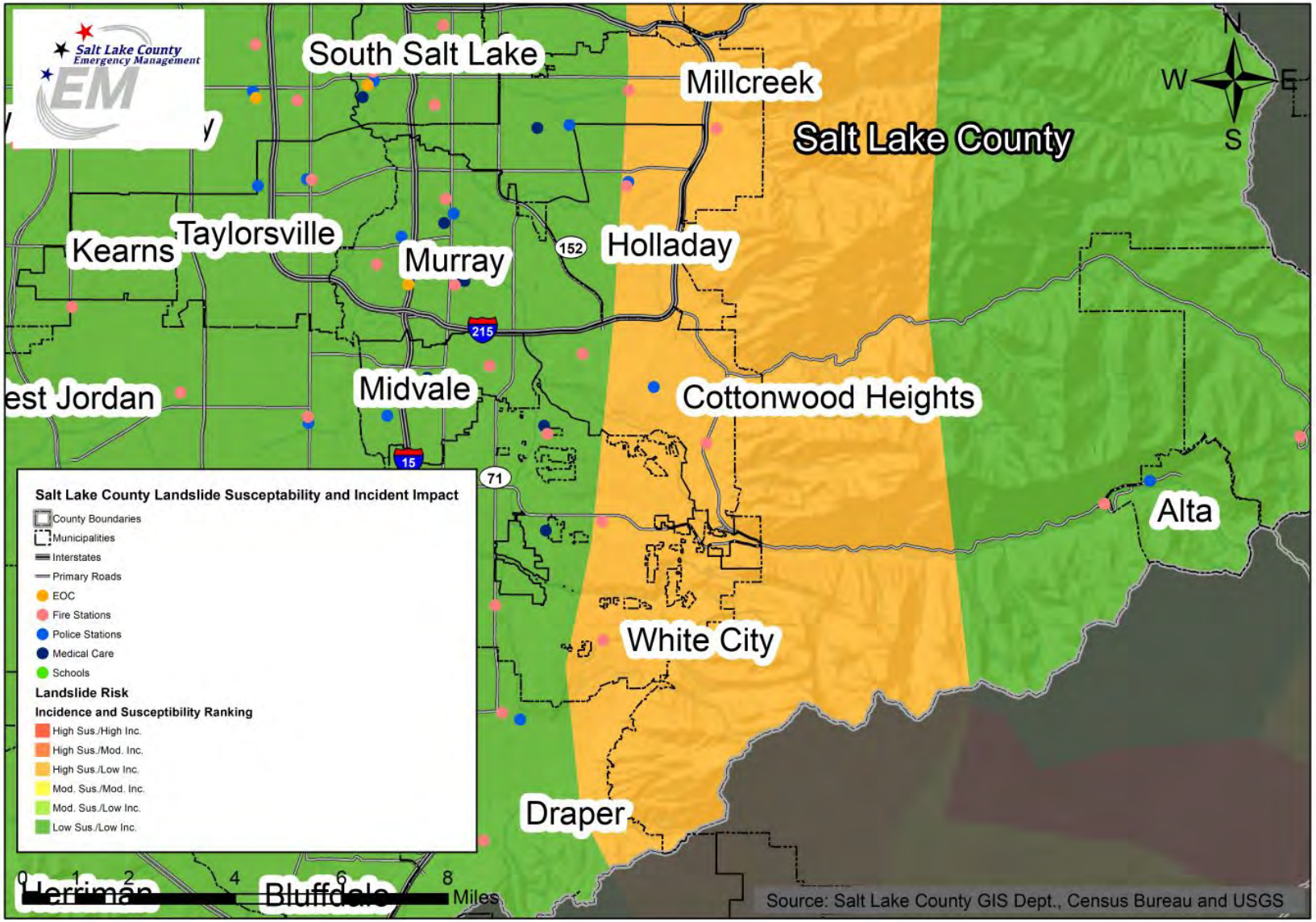
Map: 100 Year and 500 Year Flood Zone with Critical Facilities



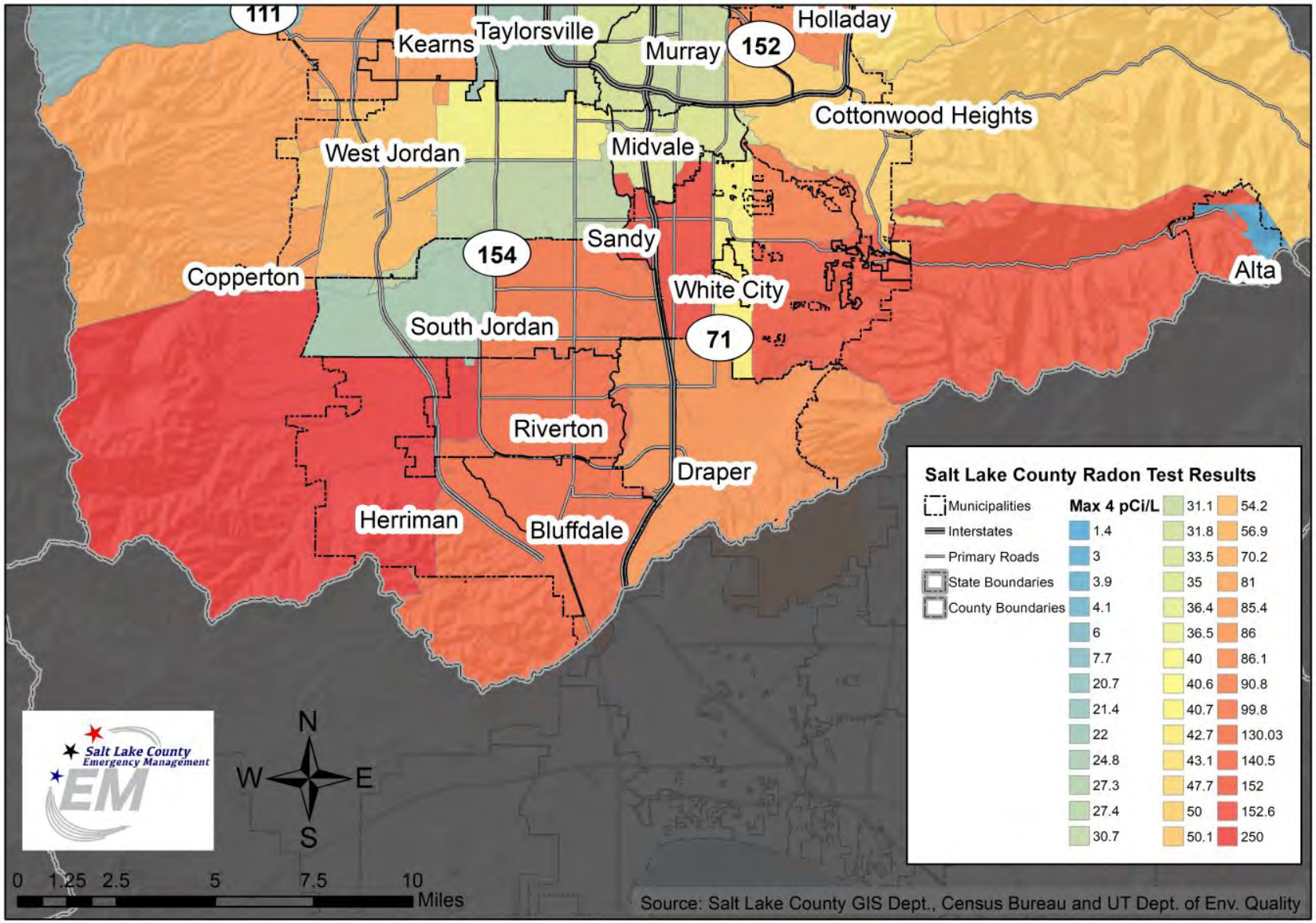
Map: Landslide Susceptibility and Incident Impact Potential



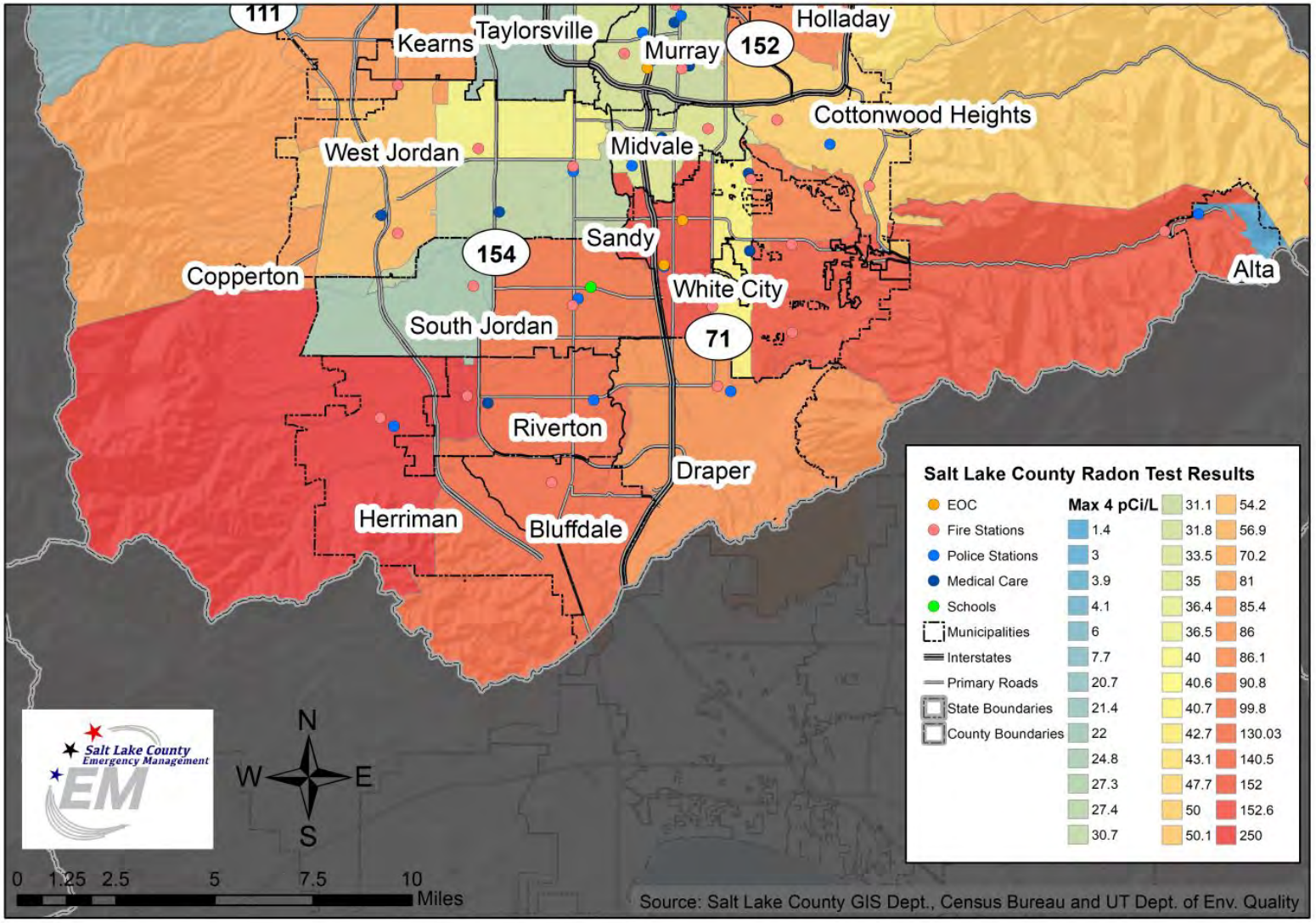
Map: Landslide Susceptibility and Incident Impact Potential with Critical Facilities



Map: Radon


111
Kearns
Taylorsville
Murray
152
Holladay
Cottonwood Heights
West Jordan
Midvale
Sandy
154
Copperton
White City
Alta
South Jordan
71
Riverton
Draper
Herriman
Bluffdale
Salt Lake County Radon Test Results
Municipalities
Interstates
Primary Roads
State Boundaries
County Boundaries
Max 4 pCi/L
1.4
3
3.9
4.1
6
7.7
20.7
21.4
22
24.8
27.3
27.4
30.7
31.1
31.8
33.5
35
36.4
36.5
40
40.6
40.7
42.7
43.1
47.7
50
50.1
54.2
56.9
70.2
81
85.4
86
86.1
90.8
99.8
130.03
140.5
152
152.6
250
Salt Lake County Emergency Management
EM
N
W
E
S
0 1.25 2.5 5 7.5 10
Miles
Source: Salt Lake County GIS Dept., Census Bureau and UT Dept. of Env. Quality

Map: Radon with Critical Facilities



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: City of Millcreek

Hazard Mitigation Plan Point of Contact

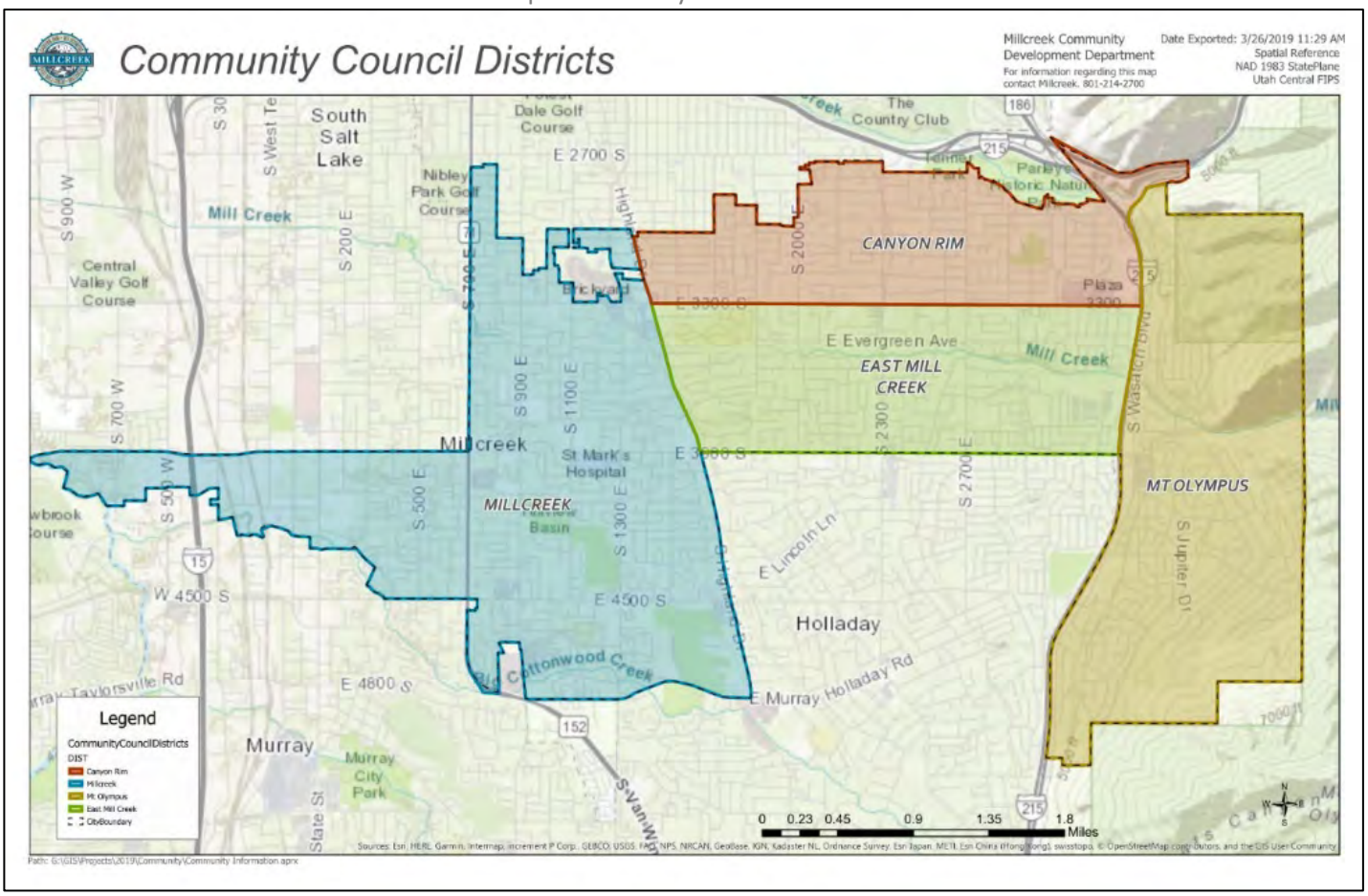
Primary Point of Contact	Alternate Point of Contact
Name: Andrew Clark Title: Emergency Manager Department: Millcreek Office of Emergency Management Address: 3330 South 1300 East, Millcreek, UT 84106 Office Phone: (801) 214-2715 Cell Phone: (801) 688-8608 Email Address: aclark@millcreek.us Website: Millcreek.us	Name: Rita Lund Title: Director of Communications Department: Communications Department Address: 3330 South 1300 East, Millcreek, UT 84106 Office Phone: (801) 214-2707 Cell Phone: (801) 550-5474 Email Address: rlund@millcreek.us Website: Millcreek.us

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** December 28, 2016
- **Current Population:** 61,270 (Census v2018)
- **Population Growth:** According to the U.S. Census Bureau, the population of Millcreek doubled from 30,377 to 62,139 people from 2000 - 2010, due to the consolidation of the East Mill Creek, Canyon Rim, and Mt. Olympus census-designated places (CDP) with the Millcreek CDP. The population has since remained relatively stable, only declining slightly according to the 2015 population estimates from the University of Utah.
- **Location and Description:** Millcreek is located between Salt Lake City and South Salt Lake in the North and Murray and Holladay in the South. It is a largely suburban city, totaling 13.7 sq miles (all land). Millcreek is split into four Community Council Districts, as can be seen in the map below.

Map: Community Council Districts



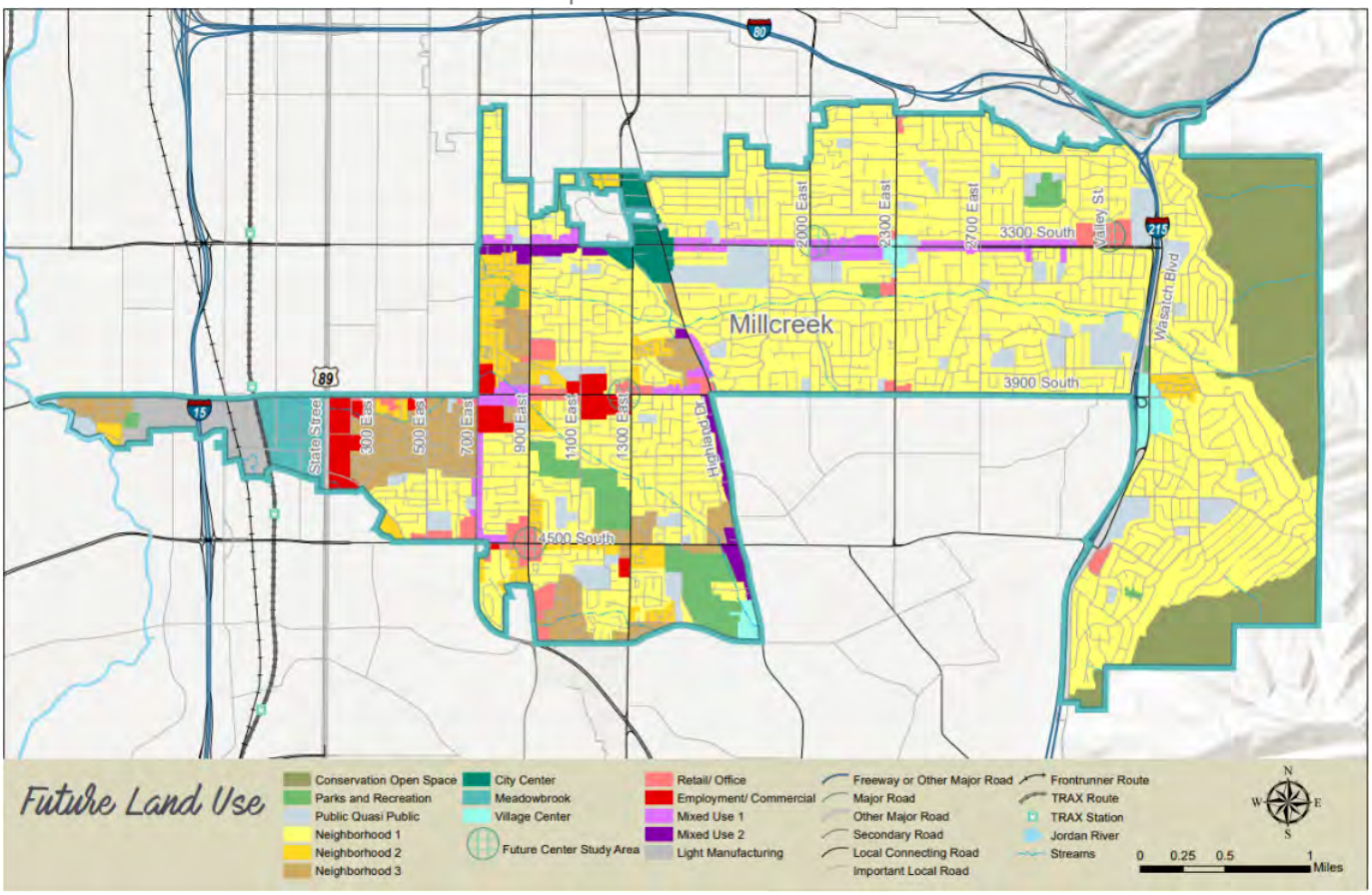
- **Brief History:** The way west was marked by a string of mills built by John Neff, who, in his lifetime, was responsible for building more than 30, but the most enduring of these was the mill built in 1847 in East Mill Creek. This mill became a vital resource to the local community until it was eventually torn down and the land donated to the LDS church. By the 1980s, most of the area now in Millcreek was built out and known by various names, including East Mill Creek, Canyon Rim, and Mount Olympus. The area remained one of the most populous unincorporated areas of Salt Lake County, until the 2016 election when residents established a city government in advance of official incorporation.
- **Climate**: Millcreek gets an average of 58 inches of snow and 21 inches of rain every year. The July high temperature is 91 and the January low is 23 (Best Places).

Table: Climate in Millcreek

	Millcreek, Utah	United States
Rainfall	20.8 in.	38.1 in.
Snowfall	57.9 in.	27.8 in.
Precipitation	91.0 days	106.2 days
Sunny	228 days	205 days
Avg. July High	91.4°	85.8°
Avg. Jan. Low	23.0°	21.7°
Comfort Index (higher=better)	7.1	7
UV Index	4.7	4.3
Elevation	4285 ft.	2443 ft.

- **Governing Body Format:** The Millcreek City Council consists of four members elected by district and the mayor elected at-large. The Mayor is the chief executive officer of the City, a voting member of the Council, and the Council Chair. City departments include City Services, Communications and Programs, Community Development, Economic Development, Finance, Human Resources, Public Safety, and Public Works.
- **Development Trends:** The City of Millcreek adopted its first General Plan as of 2019, a major step forward in guiding the development of the City. Through conversations with the Millcreek community, seven vision themes for future development were identified: unique neighborhoods, vibrant gathering places, a thriving economy, great connections, health and environment, the outdoor lifestyle, and enhanced culture.

Map: Future Land Use in Millcreek



Capability Assessment

The city maintains a full-time staff of 37 and part-time staff of 2 individuals. The Emergency Manager is the city's designated Emergency Manager. Hazard Mitigation Planning efforts are led by Andrew Clark, Emergency Manager, and supported by Rita Lund, Director of Communications and Programs.

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the Legal and Regulatory Capability Table below. The assessment of the jurisdiction's fiscal capabilities is presented in the Fiscal Capability Table below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the Administrative and Technical Capability Table below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the National Flood Insurance Program Compliance Table below. Classifications under various community mitigation programs are presented in the Community Classifications Table below.

TABLE: LEGAL AND REGULATORY CAPABILITY			
	Local Authority Exists to Develop and Implement/ Enforce?	**Rely on the County's Codes, Ordinances & Requirements**	**Comment**
Codes, Ordinances, & Requirements			
Building Code Development and Enforcement	Yes	No	
Zonings Ordinance(s)	Yes	No	
Subdivision Ordinance(s)	Yes	No	
Stormwater Management Program	Yes	No	
Floodplain Ordinance(s)	Yes	No	
Post Disaster Recovery Program and Ordinance(s)	No	Yes	
Growth Management	No	-	
Site Plan Review Requirements	Yes	No	
Planning Documents			

General or Comprehensive Plan	Yes	No	
Capital Improvement Plan	Yes	No	
Economic Development Plan	Yes	No	
Disaster Planning Documents			
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	No	-	In progress
Post-Disaster Recovery Plan	No	-	In progress
Continuity of Operations Plan	No	-	In progress
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	No	Yes	In progress

TABLE: FISCAL CAPABILITY	
Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes

Other	NA

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	Available?	Full Time/Part Time/Other	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Full Time	Public Works/Engineering
Engineers or professionals trained in building or infrastructure construction practices	Yes	Full Time	Engineering
Planners or engineers with an understanding of natural hazards	Yes	Full Time	Engineering
Personnel skilled or trained in GIS applications	Yes	Full Time	Public Works
Emergency manager	Yes	Full Time	Emergency Management and Communications
Grant writers	Yes	Full Time	Communication

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	Public Works/Engineering
Who is your jurisdiction's floodplain administrator? (department/position)	Engineering/Stormwater
Are any certified floodplain managers on staff in your jurisdiction?	Yes, Stormwater Engineer
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	No, not at the moment
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No, but we are interested in joining

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**

Community Rating System (CRS)	No	-	-
Public Protection/ISO	-	-	-
NWS StormReady	No	SL County	-

Jurisdiction-Specific Hazards and Risks

NOAA Natural Hazards 2014-2019

- The Natural Hazard Events Table lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:
- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 0 policies were enforced (FEMA, 2019).
- The City of Millcreek does participate in the National Flood Insurance Program (CID # 490231) (FEMA, 2019).
- The city will continue to participate in the NFIP through various efforts including but not limited to floodplain management, ordinance development and review, technical assistance, compliance inspections, and community education on flood hazards.

TABLE: RECENT NATURAL HAZARD EVENTS
(NOAA Data with additions from the jurisdiction representatives)

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Heavy Snow	13 inches in Millcreek		3/13/2019	
Winter Storm	11 inches in Upper Millcreek		1/21/2019	
Winter Storm	15.5 inches in Millcreek		3/3/2018	
Winter Storm	13.5 Upper Millcreek		1/19/2018	
Winter Storm	8 inches in Millcreek		2/21/2017	
Winter Storm	14 inches in Upper Millcreek		12/23/2016	
Avalanche	A group of skiers was skiing along Gobblers Knob, between Big Cottonwood and Millcreek Canyons, on the afternoon of January 21. An avalanche, about 600 feet wide, was triggered, and two of the skiers were caught.		1/21/2016	

	One skier was partially buried and sustained minor injuries. The other skier, a 49-year-old male, was fully buried by the avalanche. He did not have a pulse when others dug him out of the snow, and he was pronounced dead later that day when all attempts to resuscitate him proved unsuccessful.			
Winter Storm	21 inches in Upper Millcreek; power outages around the County		12/13/2015	
Winter Storm	14 inches in Upper Millcreek; 118 car crashes in the County resulting in 16 injuries		4/14/2015	
Winter Storm	8 inches in Millcreek and automobile accidents widespread in the County with 13 injuries		3/2/2015	
Winter Storm	12 inches in Upper Millcreek		12/25/2014	
Winter Storm	8.5 in Millcreek		12/7/2013	

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community
Members of the community over 65 years old	9,386
Members of the community under 18 years old	13,438
Members of the community that identify as having disability status	7,211
Members of the community that speak English less than "very well"	2,948
Members of the community living below the poverty line	6,048
The number of mobile homes in the community	72
Members of the community without health insurance	6,326
Occupied housing units with tenants without a vehicle	1,585
Housing units without heating fuel	25

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only

addresses the hazards and their associated impacts that are relevant and unique to the municipality.

Winter Storms: These storms commonly occur at least once a year, likely more. A significant portion of the community has an increased vulnerability to winter storms, including the elderly and individuals with limited resources. Surviving winter storms requires access to certain resources and mechanisms for remaining warm. Individuals that cannot access these resources, primarily due to economic inaccessibility will need support from the city and County. The significant population of mature trees in the area is also susceptible to damage from severe winter weather.

Avalanche and Landslide: The most vulnerable areas include those that have steep terrain, high precipitation, high earthquake potential, and high population density, and heavy backcountry use. Given the border of the Wasatch Mountains, Millcreek is susceptible to avalanches and landslides.

Earthquake: The Wasatch Front urban corridor is considered to be at risk of a major earthquake, with the most likely culprit being the Wasatch Fault, which runs north to south along the foot of the western slope of the Wasatch Mountains. Secondary hazards possibly associated with a major earthquake in the city are numerous. A major earthquake occurring during a period of high avalanche hazard could trigger numerous destructive avalanches at once and landslides. 65% of building stock is unreinforced masonry. Of this stock, 80% is residential. Also, of concern are the two major splitting faults running through the New City Center. Given the URM building stock and the fault locations, a major earthquake could yield high damage to building and utility failures. Another concern is evacuation for the neighborhood east of Wasatch Blvd.

Flooding: The city is bordered by the Jordan River. Federal Emergency Management Agency (FEMA) has rated floodplains along the Jordan River and its tributaries for expected flood heights and areas susceptible to 100-year flood-frequency inundation. Flash flooding can occur either during a heavy rainfall event or rapid snowmelt. Riverine flooding also can come from Mill Creek, Parley's Creek, Neff's Creek, Big Cottonwood, and the several irrigation canals and ditches. Recently, flooding occurred in the expanded Neff's Creek Floodplain. Flooding is also worse due to the undersized and deteriorating stormwater infrastructure that is also incomplete and not connected in certain areas. An area prone to flooding is the East Bench of Grandeur Park and Mount Olympus. Another area is the swamp at 4500 S. Murray-Holladay Rd.

Wildfire: The western portion of the city is next to conservation open space, which creates a WUI - wildland-urban interface. Wildfires in this area have the potential to spread to the surrounding neighborhood, especially during the dry season. The eastern border of the city is considered a WUI and managed by the Forest Service Wilderness. Wooded Stream Channels are also a concern. Other areas of concern are Grandeur Park, Mount Olympus, Mill Creek, Parley's Creek, Big Cottonwood Creek, and Big Cottonwood Park.

Dam Failure: If Little Dell fails, I-80/I-215 would be impacted.

Extreme Temperatures: Extreme high and low temperatures adversely impact the aging population and is a concern because the jurisdiction has the 2nd highest population of elderly/aging populous in the County and over 55 care and assisted living centers. The area also has a significant homeless population. Also, the area has a major hospital that would need to remain operational with a surge in patients or a power failure.

Landslide/Slope Failure: There are FLOZ areas throughout the city and post-wildfire impact areas have an increased chance of landslides. Areas of primary concern are Neffs Canyon and Canyon Rim edge of Parley's Nature Park.

Tornado/High Winds: The above-ground power lines and mature trees, if damaged, could yield power and infrastructure damage.

Severe Thunderstorm: The Eastern Bench is most heavily impacted by thunderstorm and utility impact can occur.

Cyber Attack: The city digital infrastructure is the most likely target of a digital attack.

Public Health: The area is home to communities that would be more vulnerable to a pandemic or epidemic. These communities may have less access to resources and include refugee, immigrant, and homeless community members. The high elderly population would also be of concern due to their potential to be more susceptible to diseases. Also, the community also has a major hospital and a high number of assisted living facilities.

Hazardous Materials Release: The West Side Industrial Area (West Temple - 300 Nest) houses multiple hazardous materials. Another concern is the Fertilizer Plant on banks of Big Cottonwood Creek. Additionally, HAZMAT transportation happens on the I-80/I-275 and through the utility pipelines. Several years ago, a chemical truck overturned in Parley's Canyon and required evacuation.

Terrorism: Of primary concern for a terrorist attack are the Power sub-stations, Jewish Synagogue on Heritage Way, and the water tanks.

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Severe Winter Weather	3	16	48
Severe Weather	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Wildfire	2	19	38
Flooding	2	17	34
Cyber Attack	2	17	34
Hazardous Materials Incident	2	14	28
Drought	2	14	28

Radon	3	9	27
Terrorism	1	25	25
Dam Failure	1	13	13
Tornado	1	11	11
Civil Disturbance	1	11	11
Landslide and Slope Failure	1	9	9
Avalanche	1	9	9

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.

Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1		Avalanche	Low	1	3
Dam Failure	Low	1		Dam Failure	Low	1	3
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Medium	2	6
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Low	1		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	High	3	9
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	Medium	2		Wildfire	Medium	2	6

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	Low	1	1		Avalanche	Medium	2	4
Dam Failure	Low	1	1		Dam Failure	Low	1	2
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Low	1	2
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	Medium	2	4
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Medium	2	4
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Low	1	2
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	Low	1	1		Wildfire	High	3	6

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**		**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)		**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)		**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)		**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)		**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1	1		Avalanche	Unlikely	0	0
Dam Failure	Low	1	1		Dam Failure	Medium	2	6
Drought	Medium	2	2		Drought	Low	1	3
Civil Disturbance	Medium	2	2		Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	2		Cyber Attack	Medium	2	6
Earthquake	High	3	3		Earthquake	High	3	9
Flooding	Medium	2	2		Flooding	Low	1	3
Hazardous Materials Incident	Medium	2	2		Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	3		Public Health Epidemic/ Pandemic	High	3	9
Radon	No Impact	0	0		Radon	Unlikely	0	0
Severe Weather	Low	1	1		Severe Weather	Unlikely	0	0
Severe Winter Weather	Medium	2	2		Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	3		Terrorism	High	3	9
Tornado	Low	1	1		Tornado	Unlikely	0	0
Wildfire	High	3	3		Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**		**Catastrophic Factor**—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)		**High**—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)		**Medium**—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)		**Low**—Low potential that this hazard could be catastrophic (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)		**Unlikely**—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Install Debris Basin and/or Storm Drain/Culvert	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 4: Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters.	Flood (Riverine), Landslide/Slope Failure	US Forest Service	Salt Lake County, Millcreek City Emergency Management and Public Works Departments	High (Prevent flooding and landslides)	High	FEMA, Utah State, Salt Lake County, Salt Lake City	High	Long-term	Reduce flooding from Neffs Canyon by installing debris basin and/or large storm drain/culvert.
Hazardous Materials Removal	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and	Hazardous Materials Release, Public Health (Pandemic/Epidemic)	Millcreek	Salt Lake County Health Administration and UFA	High (loss avoided includes Death, Property, and Spread of Toxic Chemicals)	High ($20,000,000 - $50,000,000)	FEMA, State, UFA, County-City Funds	High	2025	Removal hazardous materials on West Temple, 400 West, South 3300 and South 4500.

		infrastructure during disasters. Goal 3: Enhance and protect the communication and warning/notification systems in the County. Goal 4: Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters. Goal 5: Ensure and promote ways to increase government and private sector continuity of services during and after a disaster. Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning									

		efforts throughout the County. Goal 7: Advocate, support, and promote the use of laws and local regulations and ordinances aimed to mitigate hazards and to enhance resiliency.									
Reinforce Masonry and Chimneys	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. Goal 4: Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters	All-Hazards	Millcreek	City	High (Loss of life and property damage)	Medium	FEMA, State, and County funds	High	Long-term	Reinforce masonry and chimneys to prevent older homes from collapsing.

		Goal 7: Advocate, support, and promote the use of laws and local regulations and ordinances aimed to mitigate hazards and to enhance resiliency.									
Install Generators at Assisted Living Centers	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 4: Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters. Goal 5: Ensure and promote ways to increase government and private sector continuity of services during and after a disaster.	Extreme Cold and Extreme Heat	Millcreek	Salt Lake County Emergency Management	High (Loss of life and displacement)	Medium	FEMA, UFA/EM, Millcreek	High	Short-term	Install generators at assisted living facilities and enact evacuation plans in case of extreme heat or cold.
Generators and hookup installation for	2019	Goal 1: Protect the lives, health, and safety of the citizens	All-Hazards	Millcreek	Salt Lake County, Millcreek City	Medium	High	HMA/PDM Grant or other	Medium	Short-term	

publicly owned and critical facilities		of Salt Lake County before, during, and after a disaster. Goal 4: Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters. Goal 5: Ensure and promote ways to increase government and private sector continuity of services during and after a disaster.			Emergency Management and Public Works Departments			federal funds			
Conduct a Hazardous Materials Flow Study	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Hazardous Materials	Millcreek	Millcreek City Emergency Management	Medium	Medium	HMA/PDM Grant or other federal funds	Medium	Long-term	

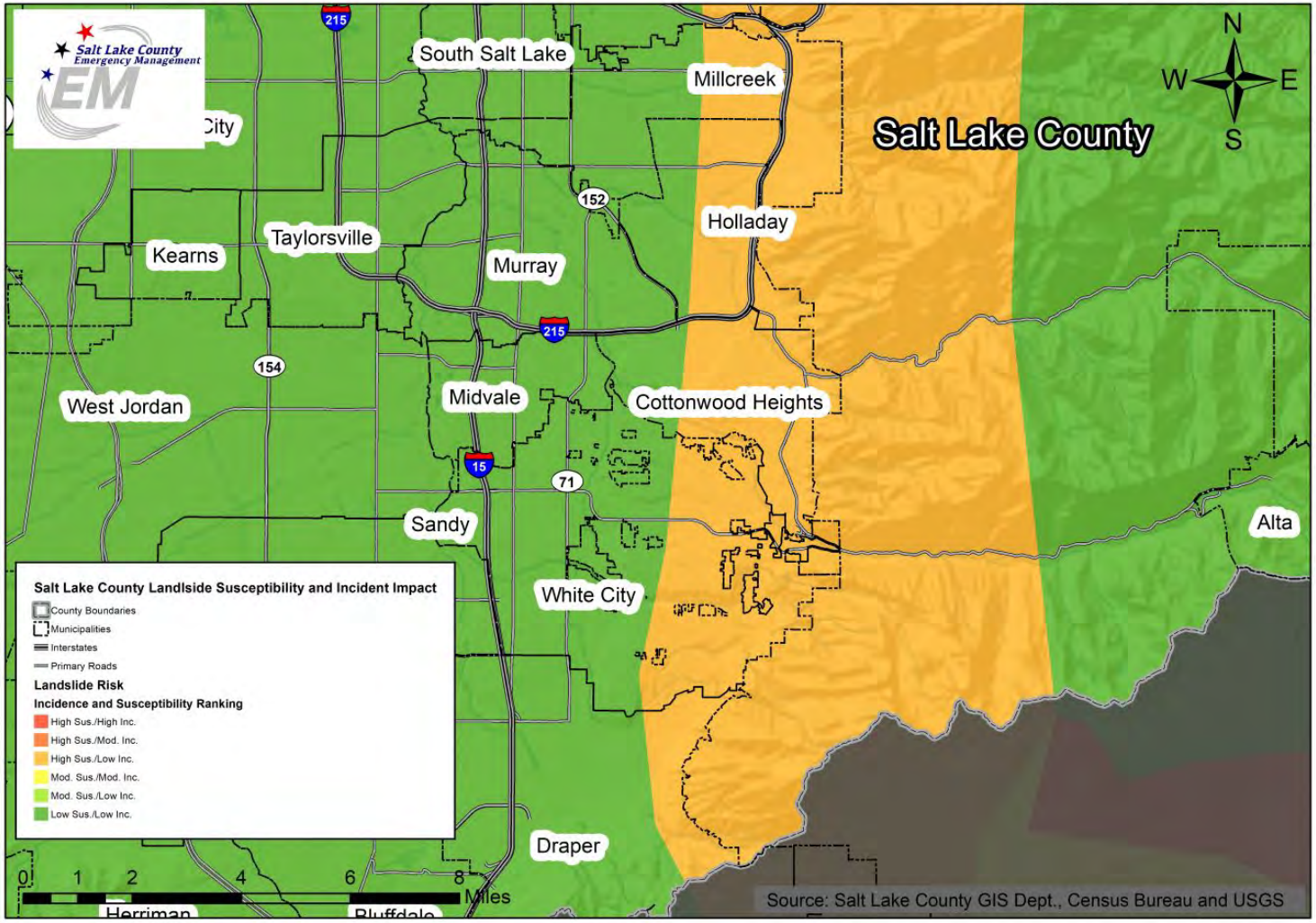
Draft a WUI Plan with fire mitigation goal development including defensible space	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Wildfire	Millcreek	Millcreek City Emergency Management, Salt Lake County	Medium	Medium	HMA/PDM Grant or other federal funds	Medium	Long-term	

Mitigation Table - Ongoing Actions

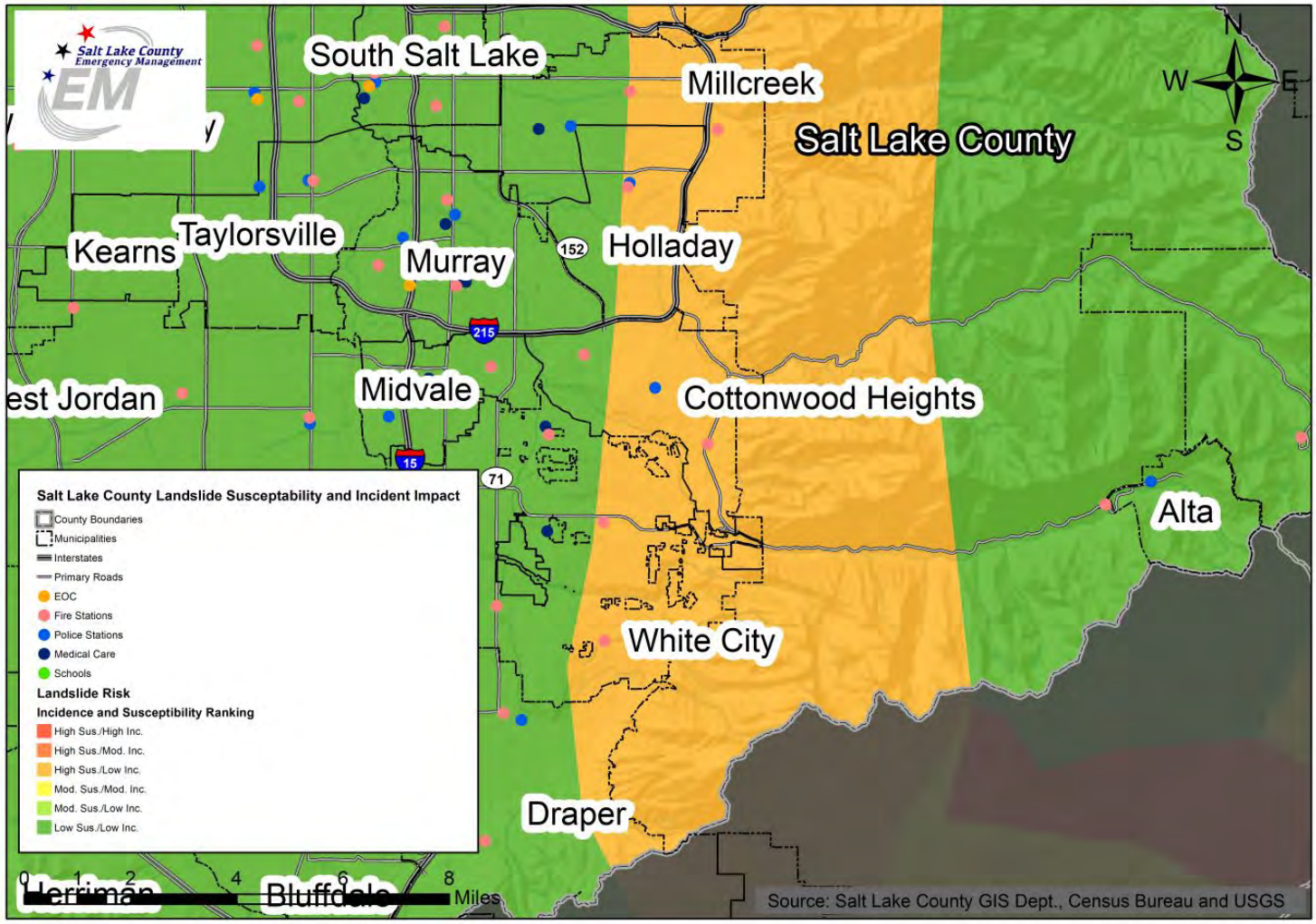
Not applicable since Millcreek did not participate as an incorporated jurisdiction in 2014.

Jurisdiction Maps

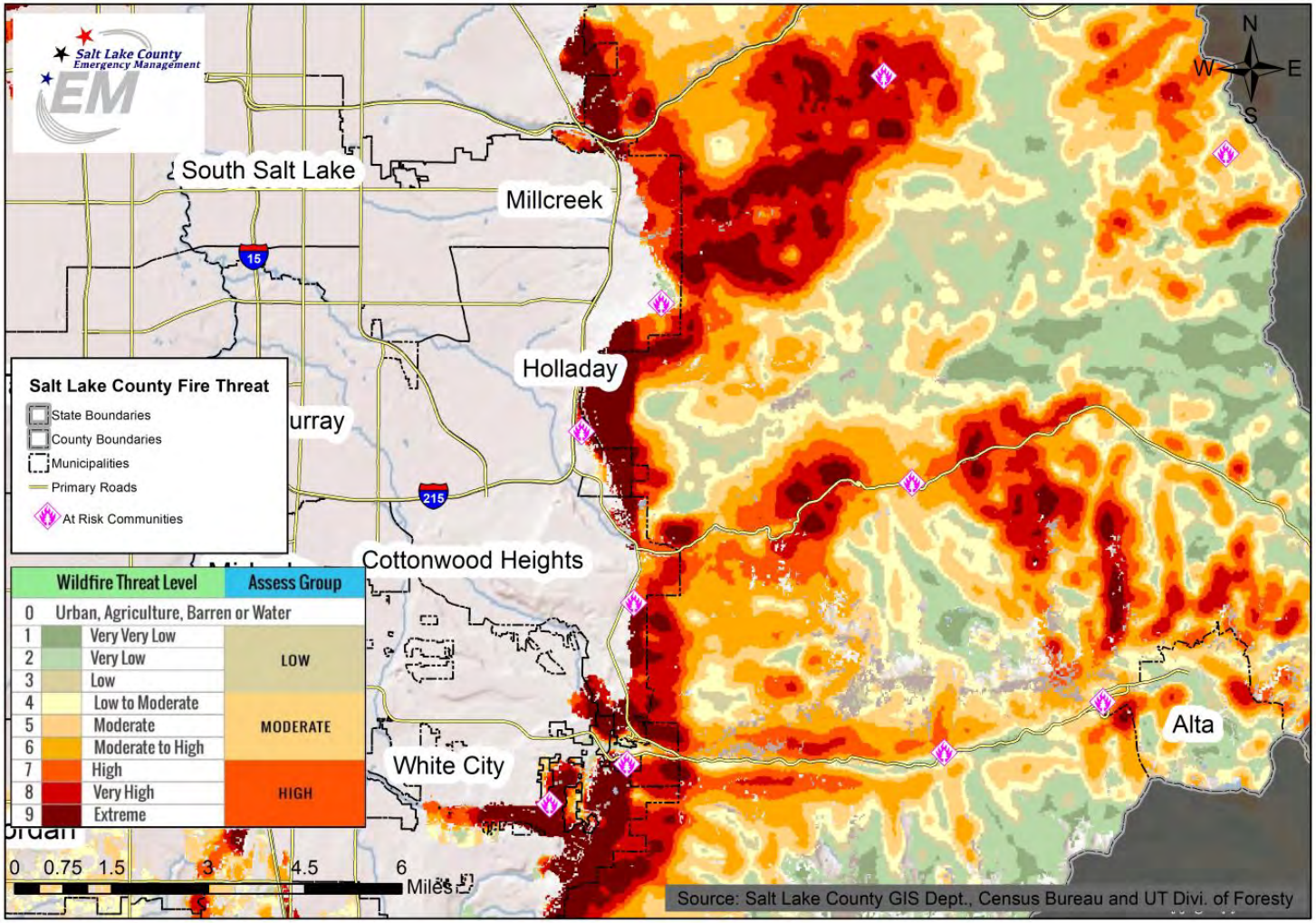
Map: Landslide Susceptibility and Incident Impact Potential



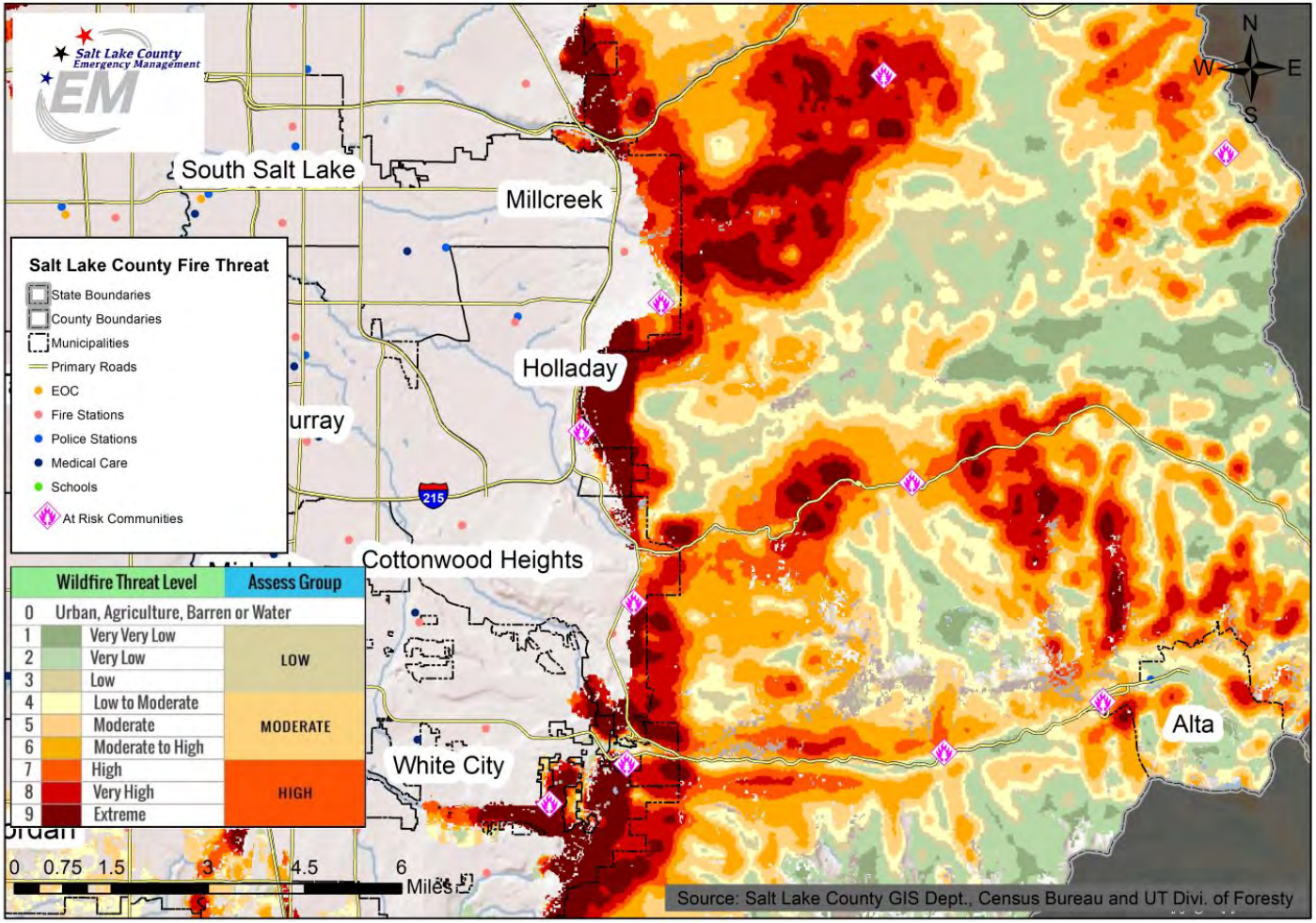
Map: Landslide Susceptibility and Incident Impact Potential with Critical Facilities



Map: Wildfire Threat Level



Map: Wildfire Threat Level with Critical Facilities



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: City of Murray

Hazard Mitigation Plan Point of Contact

Primary Point of Contact	Alternate Point of Contact
Name: Joey Mittelman Title: Assistant Chief, Fire Marshall, Emergency Manager Department: Emergency Preparedness (under Fire Department) Address: 40 E. 4800 S. Murray, UT 84107 Office Phone: Cell Phone: (801) 270-2424 Email Address: jmittelman@murray.utah.gov Website: https://www.murray.utah.gov/1174/Emergency-Preparedness	Name: Jeff Puls Title: Paramedic, Assistant Emergency Manager Department: Emergency Preparedness (under Fire Department) Address: 40 E. 4800 S. Murray, UT 84107 Cell Phone: (928) 606-6620 Website: https://www.murray.utah.gov/1174/Emergency-Preparedness

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** The County recognizes November 25, 1902, as the official incorporation date and the city was officially recognized as a Third Class City by the State of Utah on January 3, 1903.
- **Current Population:** 49,308 (Census v2018)
- **Population Growth:** The population grew 5.6% from April 1, 2010 (46,685) to July 1, 2018 (Census).
- **Location and Description:** Located on the Wasatch Front in Salt Lake County, Murray covers 12.29 square miles. Murray consists of three distinct geographical areas: the City, which represents the incorporated City within the City limit boundaries; the Sphere of Influence, which corresponds to the City's existing Sphere of Influence; and the study area, which includes unincorporated Salt Lake County lands outside of the City's Sphere of Influence. Murray is characterized by mostly urbanized land uses.
- **Brief History:** The Mormon pioneers came to the Salt Lake Valley in 1847. A pioneer group called the Mississippi Saints arrived one year later and began to develop a scattered settlement in the south end of the valley in the fall of 1848. The area was distinguished by various names such as the Mississippi Ward, Cottonwood, Big Cottonwood, and South Cottonwood. Written history states that at least 20 families were living in the South Cottonwood area in the 1860's. The area remained agricultural until 1869 when a body of ore was found in Park City and additional ore was found in the Little Cottonwood Canyon. Because of its central location and access to the railroad, the first smelter was built in Murray in 1870 and Murray became the home of some of the largest smelters in the region over the next 30 years. The first official post office was established in 1870 as the South Cottonwood Post Office. The area changed over time as the railroad came in, smelting expanded, the territorial road (later known as State St.) was established, and trolley transportation was developed. A business district also began to develop along the transportation corridor. The City received its present name from the post office, which officially changed its name from South Cottonwood Post Office to Murray Post Office in 1883 after the territorial governor and civil war general, Eli Murray.

- **Climate:** The average high temperature is 92 degrees and the average low temperature is 24 degrees. On average, Midvale receives 19 inches of rain and 47 inches of snow a year (Best Places).
- **Public Services:** Through the years, Murray City's crews have responded to a number of disasters, including riverbank flooding, trees being toppled over by microburst winds, and various other weather-relation hazards (Murray).
    - Water and Waste Water: There are three separate entities/systems providing drinking transport water within the Murray City boundaries: 1) Murray City, 2) Jordan Valley Water Conservancy District (JVWCD), and 3) Salt Lake City Public Utilities (SLCPU) through Murray. The Murray City water system supplies water generally west of 900 East. The Murray City water system relies on well water as its predominant supply source producing about 84 percent of annual system water demand. Water for the water system in Murray City's service area is supplied by 8 springs and 19 wells. Each of these water sources is dependent on pumps and motors to deliver water to the water distribution system. The City has emergency standby generation power at six locations. The City has five tanks or reservoirs within its service area with a combined storage capacity of 12 million gallons to provide operating and emergency storage. In the event of an emergency, Murray City has an exchange agreement with SLCPU to provide water. The JVWCD and SLCPU water systems supply water generally east of 900 East. There are no water sources for these two entities located within Murray City. Rather, they provide retail delivery only.
    - Murray City Power: The City of Murray is unique in Salt Lake County as the only city in the county that has a municipally-owned power system. Murray City Power is the utility division that operates the power system in the 9.9 square mile service area, which includes 206 miles of transmission and distribution lines and a customer base of approximately 14,000 residential customers and 3,000 commercial customers. The system load peaks in the summer at just over 100 MW and 60 MW in the winter. Providing reliable energy to the homes and businesses of Murray City is important even in times of disaster, so Murray City installed three generators located at the central substation with a generating capacity of approximately 39 MW to help with system reliability. In normal operation, these generators are used as a peaking resource mostly in the summer months and remain idle until needed. In an emergency situation these generators can be used to provide emergency power to needed areas of the city as long as the natural gas supply is available.
    - Fire Station 81 was rebuilt and will be open in early 2020.
- **Governing Body Format:** Murray City initially created a Mayor-Council form of government. In 1911, a State law changed the form of government for cities of the First and Second Class in Utah from the old Council form to the Commission form of government. This form of government was again reversed in 1981. The City adopted the Mayor-Council form of government, which included an elected Mayor and five City Council members. To ensure staggered terms of the Council, an election is held every two years for half the Council members for four-year terms.
- **Development Trends:** As the hub of Salt Lake County, Murray City provides the solid foundation upon which truly great businesses thrive. The community's strong medical, transportation, retail/professional office, educational and community services provide a more than ideal setting for businesses. Murray City is home to Intermountain Medical Center, which is the largest Intermountain Healthcare facility in the state. Additionally, Fashion Place Mall is located within our City and is a significant contributor to sales tax revenue as one of the premier malls in the state. Loss of either of these employers would

result in thousands of displaced employees and sales tax revenue in the millions of dollars. Murray City has experienced significant growth in housing and commercial development. This growth is due in part to the City's proximity to light rail transportation and freeway access, the draw of our medical services community and an outstanding school district. The City has a reputation for being a safe, close-knit and friendly community in which to raise a family. Land within Murray City is becoming short in supply primarily due to land-locked boundaries. Future development will be restricted to infill construction projects and redevelopment of underutilized areas. Recent zoning changes encourage mixed-use projects and increased building height in certain commercial areas. Remodeling is occurring throughout the city. The Fashion Place Mall is being rebuilt/remodeled. The Intermountain Medical Center has started remodeling and the construction is anticipated to last for at least the next 5 years. Fire Station 81 is being torn down in January 2020 and the new City Hall will be built there. The new Fure Station 81 is currently being built and will be ready in January 2020.

Capability Assessment

The city maintains a full-time staff of 398 and part-time staff of 433 individuals. The Assistant Chief/Fire Marshal is the city's designated Emergency Manager. Hazard Mitigation Planning efforts are led by Assistant Chief/Fire Marshal position and supported by department heads and staff throughout the city.

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY			
	Local Authority Exists to Develop and Implement/ Enforce?	**A Jurisdiction-Specific Code, Ordinance and/or Requirement Currently Exists?**	**Comments**
Codes, Ordinances, & Requirements			
Building Code Development and Enforcement	Yes	Yes	IBC
Zonings Ordinance(s)	Yes	Yes	Updates continuously
Subdivision Ordinance(s)	Yes	Yes	With Zoning
Stormwater Management Program	Yes	Yes	
Floodplain Ordinance(s)	Yes	Yes	With state and national flood plain program
Post Disaster Recovery Program and Ordinance(s)	No	No	
Real Estate Disclosure Ordinance(s)	No	No	County-level
Growth Management	Yes	Yes	Future land development plan
Site Plan Review Requirements	Yes	Yes	

Public Health and Safety Program and Requirements	Yes	Yes	
Environmental Protection Program and Requirements	No	No	County and State departments
Planning Documents			
General or Comprehensive Plan	Yes	Yes	Always being updated
Capital Improvement Plan	Yes	Yes	10-year plan
Habitat Conservation Plan	No	No	
Economic Development Plan	Yes	Yes	Always being updated by CED
Disaster Planning Documents			
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	Yes	
Post-Disaster Recovery Plan	Yes	Yes	Only Mitigation
Continuity of Operations Plan	Yes	Yes	Built similar to other surrounding cities
Public Health Plans	No	No	
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	No	No	

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Community Development Block Grants	No
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes, with a vote
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Depends

State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	N/A

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	Full-time	Community and economic development
Engineers or professionals trained in building or infrastructure construction practices	Yes	Full-time	Public Works
Planners or engineers with an understanding of natural hazards	Yes	Full-time	Public Works
Surveyors	No	N/A	
Personnel skilled or trained in GIS applications	Yes	Full-time	4 in GIS
Emergency manager	Yes	Full-time	combination job as fire marshal
Grant writers	Yes	Full-time	combination job as fire marshal

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	No
Who is your jurisdiction's floodplain administrator? (department/position)	No, Maybe Salt Lake County or the state
Are any certified floodplain managers on staff in your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	No, but we could learn more
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No, but interested in learning more

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System (CRS)	No	-	-
Public Protection/ISO	Yes	Murray is an ISO class 3	8/2015
NWS StormReady	-	-	-

Jurisdiction-Specific Hazards and Risks

The *Natural Hazard Events Table* lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 144 policies were in force with total coverage of $28,837,900 and total written premium and FPF of $121,376 (FEMA, 2019).
- City of Murray does participate in the National Flood Insurance Program (CID # 490103) and the last FIRM map for the area was issued on 09/25/09 (FEMA, 2019). In order to continue to comply with the program, the city adopts floodplain management requirements and enforces those requirements by issuing certificates for new construction. The certificates allow the city to regulate construction in Special Flood Hazard Areas (SFHAs). The GIS and the engineering division department in the city has updated floodplain identification and mapping in order to facilitate issuing certificates or responding to any public requests for information. The city coordinates with Salt County during flood events and monitors current snow pack to evaluate the possibility of flooding conditions.
- Murray City joined the National Flood Insurance Program (NFIP) in 1985. NFIP Insurance data indicates that as of June 30, 2014, there were 140 flood insurance policies in force in the City with $24,569,100 of coverage. Of the 140 policies, 89 of the policies were in A zones (the remaining 51 were in B, C, and X zones). There have been 39 historical claims for flood losses totaling $262,314; most all were for residential properties in A zones but there have been claims in X zones. There were no known repetitive or severe repetitive loss structures.

TABLE: RECENT NATURAL HAZARD EVENTS (NOAA Data with additions from the jurisdiction representatives)

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Heavy Snow	7 inches of snow		3/13/2019	
High Wind	The gusts blew down multiple trees and one fell on a house in Murray. More than 7,500 power outages were reported.		4/16/2018	$50,000 property damage
High Wind	Large trees were knocked over and fell onto houses in Murray and Magna, and fence damage was also reported across the area		4/13/2017	$50,000 property damage

High Wind	The strongest gusts in Murray uprooted several trees, one of which fell on a home and damaged it. A shed was also damaged significantly.		1/8/2017	$10,000 property damage
Wildfire			3/31/2015	$20,000 property damage
Flood	Heavy rain during the early morning hours of August 20 led to flooding in West Jordan and Murray, with approximately 25 houses reporting some degree of flood damage. This flooding was most common in driveways, garages, and basements, with some homes receiving significant damage.		8/20/2014	$125,000 property damage
High Wind	The gusts blew down multiple trees and one fell on a house in Murray		4/22/2014	$50,000 property damage
Hail	0.75 diameter		8/20/2011	
Flood	Damage was reported in homes, apartments and businesses in Sandy, Cottonwood Heights, Murray and Midvale. Many of these buildings experienced flooding in backyards, basements, patios, and parking areas. Some damage in these areas was avoided due to an extensive sandbagging effort. Some of the most extensive flood damage occurred in areas of Murray Park, State Street near the park, and surrounding structures to the park, with water as deep as 4 to 5 feet reported in parts of Murray Park.		6/5/2010	$1,500,000 property damage

	It was in this area that the street flooding was most widespread; multiple lanes of traffic on State Street were closed due to flooding, with water as much as a foot deep in some spots. Flooding also occurred on Vine Street, one block west of State Street.			

Community Data to Utilize to Enhance Whole Community Resilience

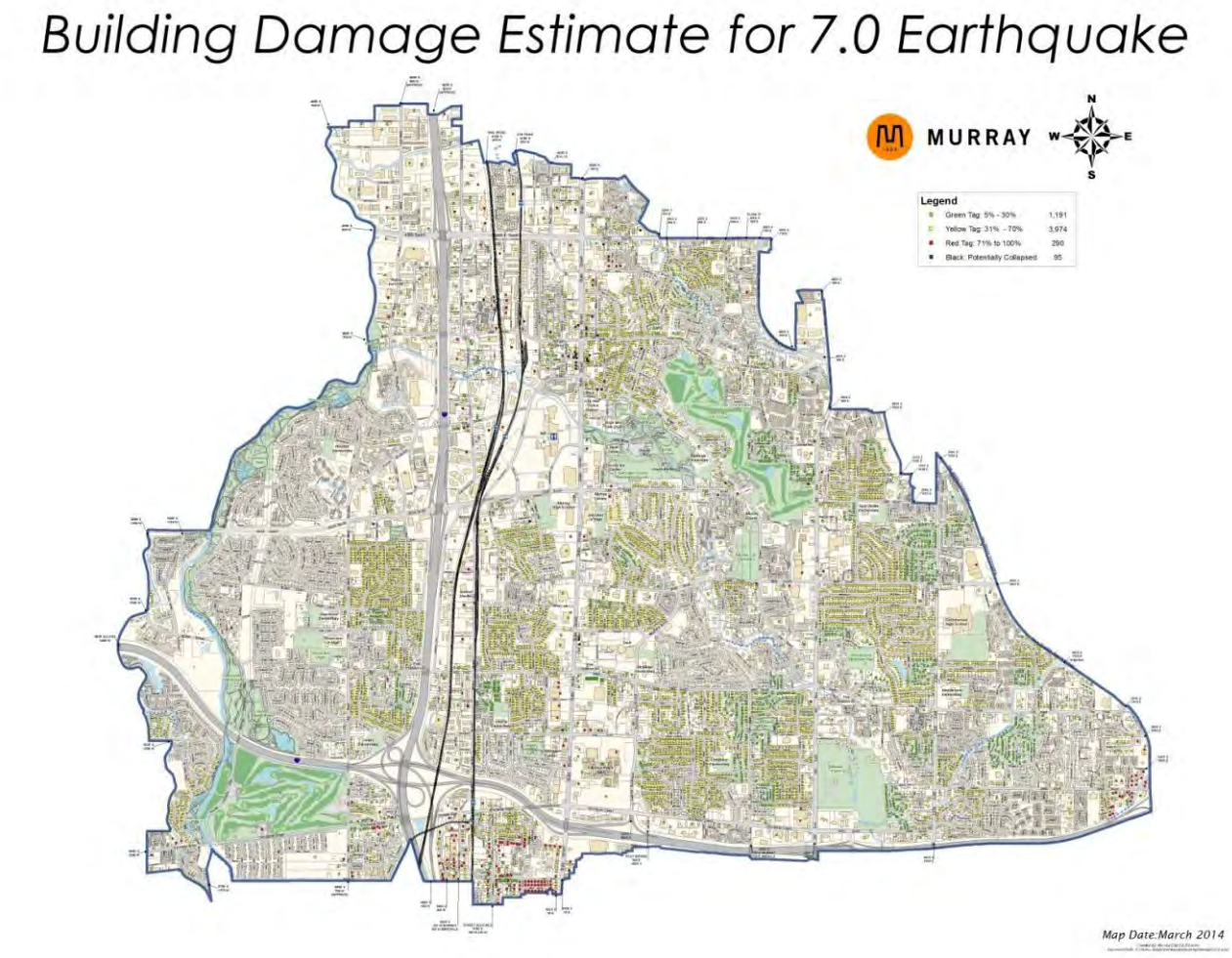
In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community
Members of the community over 65 years old	7,898
Members of the community under 18 years old	10,583
Members of the community that identify as having disability status	5,712
Members of the community that speak English less than "very well"	1,354
Members of the community living below the poverty line	5,311
The number of mobile homes in the community	501
Members of the community without health insurance	5,704
Occupied housing units with tenants without a vehicle	921
Housing units without heating fuel	9

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Earthquake: Murray is subject to similar seismic hazards compared to many other parts of the Salt Lake Valley. Several unreinforced masonry buildings are in Murray. Of particular concern to seismic activity due to their location is Fire Station 81, the City Hall Building, Power Department



Head Quarters, and Gas Turbine Plant. Liquefaction is one of the secondary hazards associated with an earthquake.

Vulnerability of people and infrastructure to earthquake hazards in Salt Lake County was obtained from the modeling program HAZUS-MH, completed by FEMA Region VIII.

Jurisdiction	*Total Building Economic Loss*	*Loss Ratio*	*Total Debris (tons)*
Murray	$ 1,777,099,237	25%	1,223,103

Jurisdiction	*Displaced Households*	*Individuals Seeking Public Shelter*	*Total Casualties*	*Life-Threatening Injuries and Fatalities*	*URM Count*
Murray	6,200	3,448	2,147	217	4,987

Jurisdiction	*Life-Threatening Ratio to Total Pop*	*URM Ratio to Total Structures*
Murray	0.467%	37%

Flood: The natural drainages within Murray City are the Jordan River, Little Cottonwood Creek, and Big Cottonwood Creek. Both of the Cottonwood Creeks flow northwest and join the Jordan River in the northwest region of the City. The Jordan River flows north along the west side of Murray City. The East Canal and Jordan and Salt Lake City Canal cut across the southeast corner of the City and flow to the northeast. Other areas of flooding include Wheeler Farm and Murray City Park. There is a lack of drainage by I-15 and Central. 900 East has drainage capacity issues.

Natural Drainages:

- Little Cottonwood Creek

  Little Cottonwood Creek flows through approximately 4.5 miles of Murray City from Union Park Avenue and I-215 to the Jordan River at 4800 S. The creek provides drainage for the Southeast, Central East, Central, and North Basins. It is conveyed through the City by a series of open channels and road crossing structures before discharging to the Jordan River after crossing Murray Boulevard.

- Big Cottonwood Creek

  Big Cottonwood Creek flows through approximately 4.2 miles of Murray City from 1300 E and 4705 S to the Jordan River at 4200 S. The creek provides drainage for the Northeast, East, and North Basins. It is conveyed through the City by a series of open channels and road crossing structures before discharging to the Jordan River after crossing 500 E.

- Jordan River

  The Jordan River flows through approximately 4.6 miles of Murray City along the western border of the City. The Jordan River provides drainage for the West, Central South, Central West, and North Basins.

- Jordan and Salt Lake City Canal

  The Jordan and Salt Lake City Canal flows through approximately 1.9 miles of Murray City from 900 E and I-215 northeast to Van Winkle. The canal provides drainage for the Southeast and Northeast Basins. The canal is conveyed through a series of open channels and culverts before exiting the City boundary. It must be noted that although the canal currently is part of the storm drainage system, especially for older irrigation pipes that also convey storm drain runoff, the canal cannot be used as an outlet for future storm drain projects.

Vulnerability Assessment

The following loss estimates were provided by FEMA Region VIII as part of the Mitigation Planning/Risk MAP partnership.

City	1% Annual Chance			0.2% Annual Chance		
	Structure Exposure	Building and Contents Loss*	Loss Ratio**	Structure Exposure	Building and Contents Loss	Loss Ratio
Murray	79	$1,382,712	0.020%	412	$23,160,899	0.33%

Structure exposure and Hazmat generated losses
Data not available for 1% annual chance loss calculation for x structures.
**Ratio of damages/losses by hazard and total building inventory.

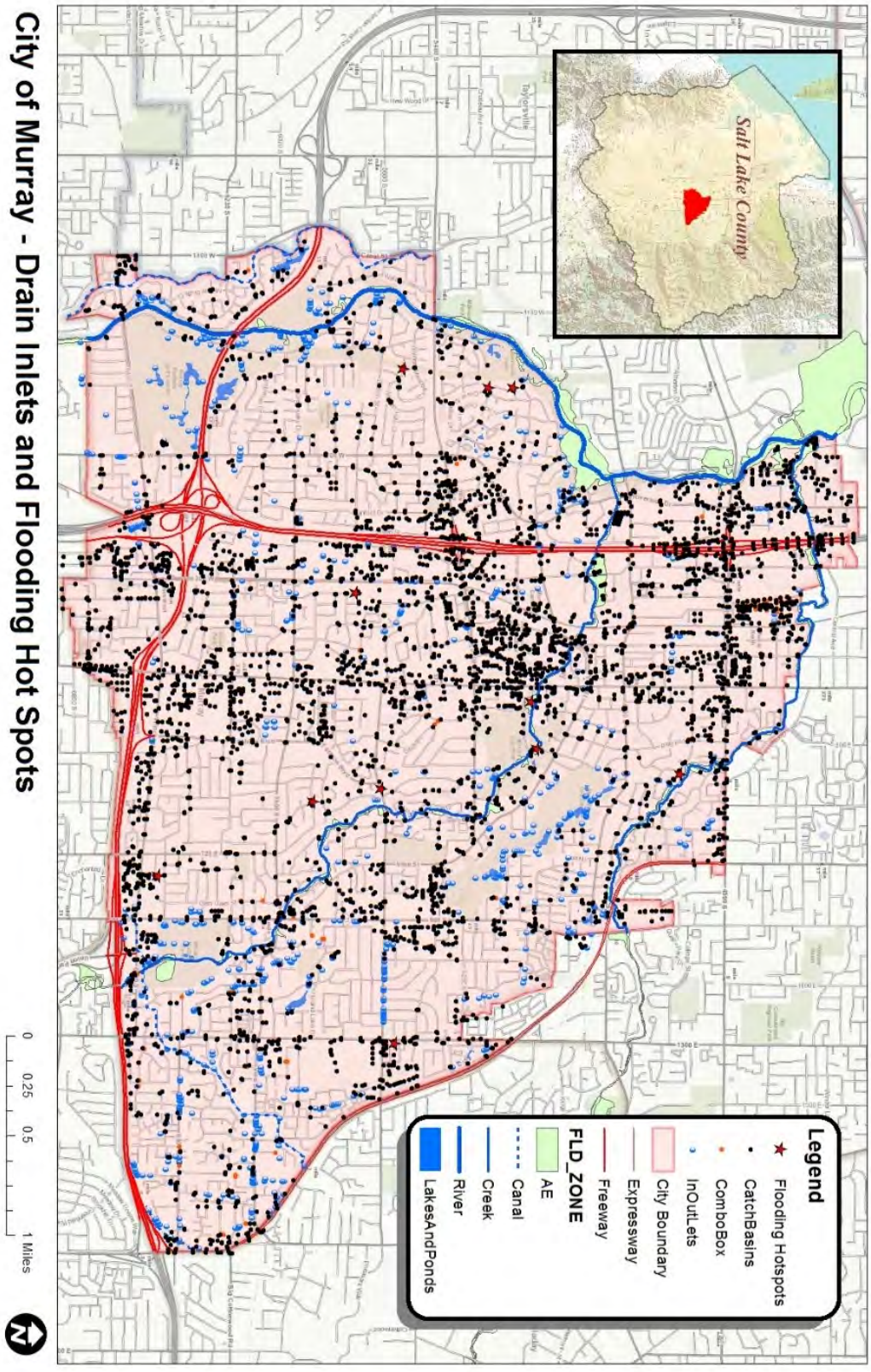


Figure. Murray City' Drain Inlet and Flooding Hot Spot Map

Following the rainstorm of September 1982 and the snowmelt floods of 1983, Salt Lake County passed a $33 million bond to combine with mitigation funds from FEMA. With these funds many flood control projects were constructed to repair damage to the creeks and rivers and to protect the citizens from future flooding events. Among the projects constructed was a detention basin at Wheeler Farm on Little Cottonwood Creek and improvements to the Creek Side Park detention Basin on Big Cottonwood Creek. In addition, numerous channel improvement projects were constructed, including, many thousands of feet of gabion baskets installed on Big and Little Cottonwood Creeks and the Jordan River.

Damaging floods occurred in 1983, 2010 and 2011. Listed below is a summary of these events:

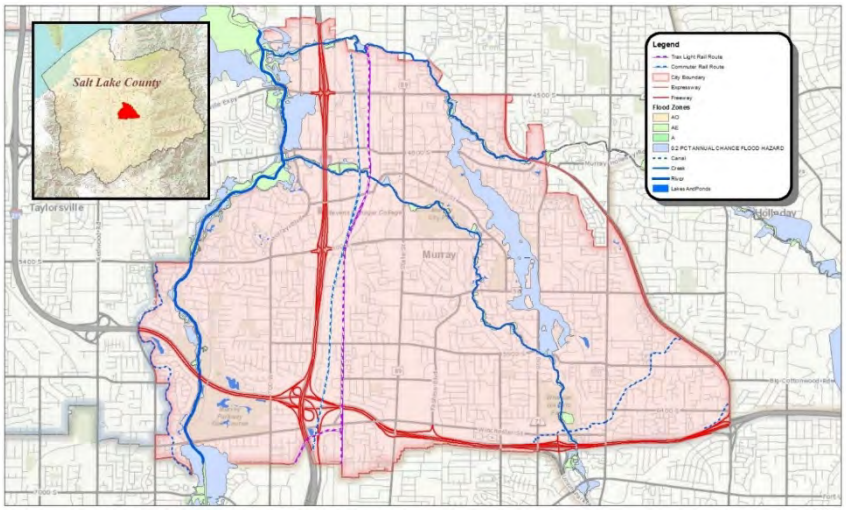
- **1983** – Great Salt Lake Tributaries between Ogden and Salt Lake City flooded due to rapid melting of snowpack having maximum-of-record water content on June 1. A disaster was declared by the President with damage at $621 million. Mitigation measures in Murray included modifications to and replacement of several bridges.
- **2010** – Cool temperatures during early to mid-spring delayed snowmelt runoff from Little and Big Cottonwood Creeks. June rainfall, along with rapidly increasing temperatures, occurred for several days in a row resulting in higher than average spring runoff.
- **2011** – During water year 2011, Utah experienced its wettest 90-day period in history (1948–2011) from March to May. Runoff for water year 2011 was characterized by a delay in the snowmelt runoff and above average total annual stream flow. Despite the above average snowpack, which lasted into the summer of 2011, runoff from snowmelt in 2011 did not create the widespread damage observed in 1983 and 2005. Cooler than normal temperatures resulted in slower snowmelt rates, which produced a prolonged and elevated runoff.

The table below illustrates precipitation at the Salt Lake International Airport and is representative of Murray City's precipitation.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Record Precipitation	3.23	4.89	3.97	4.90	4.76	3.84	2.57	3.66	7.04	3.91	3.34	4.37
Average Precipitation	1.37	1.33	1.91	2.02	2.09	0.77	0.72	0.76	1.33	1.57	1.40	1.23
Average Snowfall	13.6	9.9	9.1	4.9	0.6	0.0	0.0	0.0	0.1	1.3	7.0	12.0
Record Snowfall	50.3	32.1	41.9	26.4	7.5	0.0	0.0	0.0	4.0	20.4	33.3	35.2

Table. Murray City' Precipitation (in Inches)

Values at Risk



City of Murray's 100 and 500 Year Floodplains

	Zone A		Zone AE		0.2 pct. – 500 yr.	
Property Type	**# Of Parcels**	**Improved Values($)**	**# Of Parcels**	**Improved Value ($)**	**# Of Parcels**	**Improved Value ($)**
Office			10	19,517,800-26,691,400	12	31,213,700
Commercial			18	10,592,790	55	38,290,680
Industrial			44	15,591,980	82	24,406,350
Open Space			-	-	-	-
Residential			214	44,779,690	557	86,444,690
Total			**286**	**90,482,260**	**706**	**180,355,420**

	Zone AO		Shaded Zone X		Zone X	
Property Type	**# Of Parcels**	**Improved Value ($)**	**# Of Parcels**	**Parcels Value ($)**	**# Of Parcels**	**Improved Value ($)**
Office	-		-		-	-
Commercial	-		-		-	-
Industrial	-		-		-	-
Open Space	-		-		-	-
Residential	-		-		-	-
Total	**-**		-		-	-

Sources: Salt Lake County Assessor's Office
Digital Flood Insurance Rate Map Salt Lake County, Utah and Incorporated Areas, 2014, FEMA

	Total 100-Year Flood*				Total 500-Year Flood		Total Flood**	
Property Type	# Of Parcels		Improved Value ($)		# Of Parcels	Improved Value ($)	# Of Parcels	Improved Value ($)
Office	10	26691400-	19,517,800	26691400	12	31,213,700	22	50,731,500
	18	21704580	18	21704580				
	44	37604670	44	37604670				
	-	-	-	-				
	205	165918640	205	165918640				
	277	**251919290**	**277**	**251919290**				
Commercial	18	26691400	10,592,790	26691400	55	38,290,680	73	48,883,470
	18	21704580	18	21704580				
	44	37604670	44	37604670				
	-		-	-				
	-							
	205	165918640	205	165918640				
	277	**251919290**	**277**	**251919290**				
Industrial	44	26691400	15,591,980		82	24,406,350	126	39,998,330
	18	21704580	18	21704580				
	44	37604670	44	37604670				
	-	-	-	-				
	205	165918640	205	165918640				
	277	**251919290**	**277**	**251919290**				
Open Space	-	26691400	-	26691400	-	-	-	-
	18	21704580	18	21704580				
	44	37604670	44	37604670				
	-	-	-	-				
	205	165918640	205	165918640				
	277	**251919290**	**277**	**251919290**				
Residential	214	26691400	44,779,690	26691400	557	86,444,690	771	131,224,380
	18	21704580	18	21704580				
	44	37604670	44	37604670				
	-	-	-	-				
	205	165918640	205	165918640				
	277	**251919290**	**277**	**251919290**				
Total	**286**	26691400	**90,482,260**	26691400	**706**	**180,355,420**	992	**270,8**
	18	21704580	18	21704580				
	44	37604670	44	37604670				
	-	-	-	-				
	205	165918640	205	165918640				

	277	**251919290**	**277**	**251919290**			

Table. Count and Improved Value of Parcels in Floodplain by Type of Flood—Murray City
Sources: Salt Lake County Assessor's Office
Digital Flood Insurance Rate Map Salt Lake County, Utah and Incorporated Areas, 2014, FEMA
*Includes Zones A, AE, 0.2 pct., and AO
**Includes Shaded Zone X (500-year) and all 100-year flood zones

# Of Parcels		**Improved Value ($)**	**Estimated Contents Value ($)**	**Total Value ($)**	**Loss Estimate ($)**
100-Year Flood	286	90,482,260	***	***	***
500-Year Flood	706	270,837,680	***	***	***
Total Flood**	**992**	**361,319,940**	***	***	***

Table. Salt Lake County Flood Loss Estimates—Murray City
Sources: Salt Lake County Assessor's Office
Digital Flood Insurance Rate Map Salt Lake County, Utah and Incorporated Areas, 2014, FEMA
*Includes 500-year and 100-year flood data
**Includes Shaded Zone X (500-year) and all 100-year flood zones
*** Data Unavailable

Based on this analysis, the Murray City has assets at risk to the 100-year and greater floods. 286 improved parcels are within the 100-year floodplain for an estimated value of $90 million. An additional 706 improved parcels with an estimated valued of $271 million fall within the 500-year floodplain.

Applying the 20 percent damage factor as previously described, there is a 1 percent chance in any given year of a 100-year flood causing roughly $18 million in damage in the Murray City and a 0.2 percent chance in any given year of a 500-year flood causing roughly $72 million in damage (combined damage from both floods).

Limitations: This model includes many structures in the floodplains that are elevated at or above the level of the base-flood elevation, which will likely mitigate flood damage. Thus, the actual value of assets at risk may be lower than those included herein.

Population at Risk

Based on information from HAZUS-MH (Census 2010) and the digital flood insurance rate map, the following are at risk to flooding in the Murray City:

- 100-year flood: 2,727 people
- 500-year flood: 6,530 people
- Total flood: 9,257 people

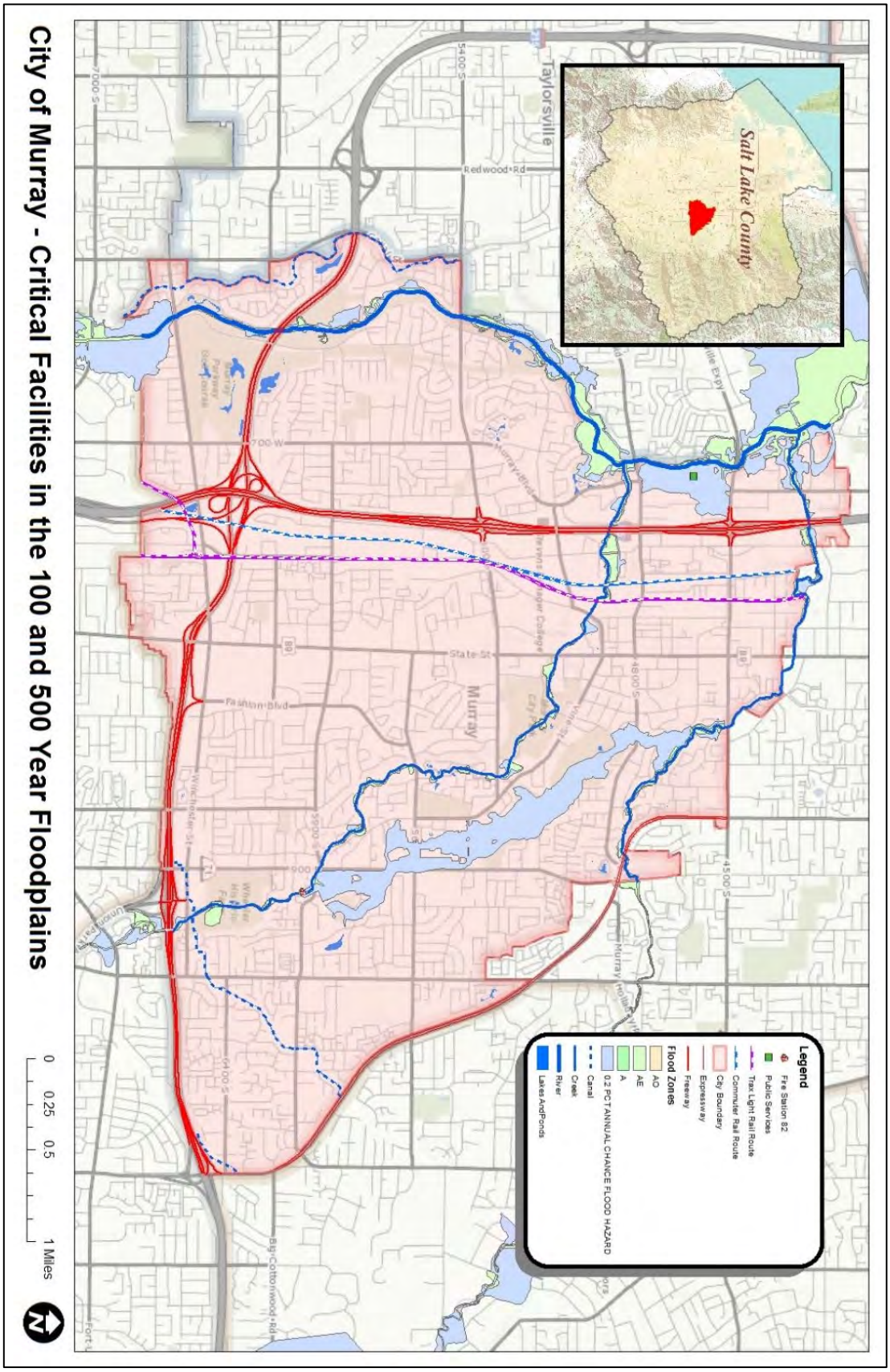
Critical Facilities at Risk

Critical facilities are those community components that are most needed to withstand the impacts of disaster as previously described. The table below lists the critical facilities in the City's 100- and 500-year floodplains, and the accompanying figure illustrates their locations. The impact to the community could be great if these critical facilities are damaged or destroyed during a flood event.

Critical Facility Type	100-Year Floodplain	500-Year Floodplain
Health Care Facilities	0	0
Schools and Day Care Centers	0	0
Residential Elderly Facilities	0	0
Fire Stations	0	1
Public Utilities	0	1
Total	**0**	**2**

Table. Critical Facilities in the 100- and 500-Year Floodplains: Murray City
Source: Murray City GIS

There are no critical facilities in the City's 100-year floodplain, but according to the risk assessment for the County, floods in Murray tend to be 500-year events. Thus, it is particularly important to note that the critical facilities in the 500-year floodplain are all facilities that serve vulnerable populations and thus should be given special attention.


City of Murray - Critical Facilities in the 100 and 500 Year Floodplains
Salt Lake County
Taylorsville
Redwood Rd
5400 S
7000 S
700 W
State St
Murray
Fashion Blvd
4800 S
4500 S
5900 S
6400 S
Big Cottonwood Rd
Legend
Fire Station 82
Public Services
Trax Light Rail Route
Commuter Rail Route
City Boundary
Espressway
Freeway
Flood Zones
AO
AE
A
0.2 PCT ANNUAL CHANCE FLOOD HAZARD
Canal
Creek
River
Lake And Ponds
0
0.25
0.5
1 Miles

Extreme Temperature: Extreme cold in the region has disrupted agriculture, farming, and crops. Especially vulnerable to extreme cold are the young, elderly, homeless and animals. Wind chill can further the effects of extreme cold. Extreme heat not only causes discomfort, but personal health can be affected through heat cramps, heat exhaustion or heat stroke, particularly affecting vulnerable populations such as the very young, elderly, poor, and homeless. Extreme heat places a substantial burden on power grids through the widespread use of evaporative coolers and air conditioning. This strain can lead to brownouts or blackouts leaving many without power.

Location	Occur in localized areas throughout the city. Although many severe weather phenomena generally have recognizable patterns of recurrence, it is difficult to identify exactly when and where the next event will take place.
Seasonal Pattern	Year round.
Conditions	Vary based on latitude, elevation, aspect and landforms.
Duration	Severe weather hazards generally last hours; some conditions can persist for days.
Secondary Hazards	Wildfire, flooding.
Analysis Used	National Climate Data Center, National Weather Service, Utah Avalanche Center, UDEM, local input, and review of historic events and scientific records.

Dam Failure: While no major dams are located within Murray City, a dam failure nearby could cause property damage within Murray's city limits.

Lake Mary–Phoebe and Salt Lake County Big Cottonwood Spencer's could potentially impact Murray City. The table below estimates the total area, population and buildings vulnerable to dam failure for Murray City.

City	Acres Affected	Population Affected	Structures in Inundation Areas	
			Residential (Replacement Value)	Commercial (Annual Sales)
Murray	1,066	7,423	3,324 $680,090,400	715 $550,016,335

Table. Vulnerability Assessment for Dam Failure, Murray City

The table below estimates infrastructure vulnerable to dam failure in Murray City. Provided are the number of units or total length of infrastructure vulnerable and the estimated replacement costs as provided by Murray City Public Services Department.

Item	Length (Miles) or Number of Units	Replacement Cost
Roadways	7.5 miles	$41,435,510
Roadway Bridges	7 bridges	$9,643,120

Railway Segments	2 miles	$2,297,896
Railway Bridges	0 bridges	$0
Water Distribution Lines	2500 feet	$237,500
Gas Lines	0 feet	$0
Sewer Lines	3000 feet	$360,000
Total Estimated Infrastructure Replacement Cost		**$53,974,026**

Table. Infrastructure Vulnerable to Dam Failure, Murray City

Location	Dam locations are located throughout the county, with most of the high and moderate hazard dams in the eastern and southern portion of the county.
Seasonal Conditions	*Rainy Day Failure:* Anytime *Sunny Day Failure:* Spring, late summer
Conditions	*Rainy Day Failure* happens mainly during heavy precipitation events, can have some warning time. *Sunny Day Failure* can happen anytime without warning.
Duration	Hours or days - depends on spillway type and area, maximum cubic feet per second (cfs) discharge, overflow or breach type and dam type.
Secondary Hazards	Raw sewage/health risk, electrical fires, gas spills.
Analysis Used	Review of BOR inundation maps and plans, FIS, Utah Division of Water Rights.

Problem Soils: There is no specific data or maps related to problem soils within the Murray City. However, there are isolated locations with high groundwater / saturated soils as well as areas that have unconfined fill material. These areas are usually identified in pre-development geotechnical studies and are typically mitigated prior to development. There are also highly corrosive soils in isolated areas of Murray that over time can impact steel water and gas pipelines.

The table below estimates infrastructure vulnerable for the isolated problem soils in Murray City. Provided are the number of units or total length of infrastructure vulnerable and the estimated replacement costs as provided by Murray City Public Services Department.

Item	Length (Miles) or Number of Units	Replacement Cost
Roadways	1.5 miles	$1,000,000
Roadway Bridges	0 bridges	$0
Railway Segments	0 miles	$0
Railway Bridges	0 bridges	$0

Water Distribution Lines	10,000 feet	$1,100,000
Gas Lines	6,500 feet	$750,000
Sewer Lines	5,000 feet	$600,000
Total Estimated Infrastructure Replacement Cost		**$3,450,000**

Table. Infrastructure Vulnerable to Problem Soils, Murray City

The table below estimates the total area, population and buildings vulnerable to problem soils in Murray City.

Incorporated Areas	Acres Affected	Population Affected	Structures in Hazard Areas	
			Residential (Replacement Value)	Commercial (Annual Sales)
Murray	5.5	25	2,350,000	850,000

Table. Vulnerability Assessment for Problem Soils, Murray City

Most of the hazards created by problem soil and rock can be reduced or avoided if they are understood and their extent is known. Recognizing where problem soil and rock are found and taking precautions to minimize their effects can reduce the need for costly corrective measures after damage to structures and roads has occurred. The majority of damage to structures results from human activities, usually through addition of water or by loading or excavation, which aggravate potentially unstable conditions. (UNHH 2008, SHMP 2011). All new construction typically requires a stamped and sealed soils report from a geo-technical engineer at the time of submittal for a building permit. The soils report will address the soils and outline the measures required for the soils to support the intended structure.

Location	Wasatch Mountains
Seasonal Conditions	Continuous.
Conditions	Conditions vary by geologic formation.
Duration	Minutes to Years.
Secondary Hazards	Flooding (broken water pipes), fire (broken gas pipes).
Analysis Used	Utah Geological Survey.

Wildfire: Wildfires have occurred by the Jordan River and are most likely to occur during the dry season when there is wind.

HAZMAT: In Murray, below the IMC, there are sealed off tailings at the old towers and the tailings need to be removed. Also of concern are the buildings on top of capped pipes.

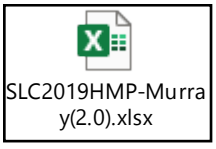
Severe Weather: The Little Cottonwood Plant supplies power to Murray and Murray sells 80% of the power to others. If power were to fail, Murray and other areas would be impacted.

Radon: Murray continues to monitor the situation in case any incidents arise.

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Severe Winter Weather	3	16	48
Severe Weather	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Flooding	2	19	38
Cyber Attack	2	17	34
Hazardous Materials Incident	2	14	28
Drought	2	14	28
Terrorism	1	25	25
Dam Failure	1	21	21
Radon	3	6	18
Tornado	1	12	12
Wildfire	1	10	10
Civil Disturbance	1	8	8
Landslide and Slope Failure	1	6	6
Avalanche	1	0	0

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.



Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1		Avalanche	No Impact	0	0
Dam Failure	Low	1		Dam Failure	Medium	2	6
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Low	1	3
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Low	1		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	Medium	2	6
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	Low	1		Wildfire	Low	1	3

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	No Impact	0	0		Avalanche	No Impact	0	0
Dam Failure	Low	1	1		Dam Failure	High	3	6
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Low	1	2
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	High	3	6
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Low	1	2
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Low	1	2
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	Low	1	1		Wildfire	Low	1	2

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**		**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)		**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)		**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)		**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)		**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	No Impact	0	0		Avalanche	Unlikely	0	0
Dam Failure	Medium	2	2		Dam Failure	Medium	2	6
Drought	Medium	2	2		Drought	Low	1	3
Civil Disturbance	Medium	2	2		Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	2		Cyber Attack	Medium	2	6
Earthquake	High	3	3		Earthquake	High	3	9
Flooding	Medium	2	2		Flooding	Low	1	3
Hazardous Materials Incident	Medium	2	2		Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	No Impact	0	0		Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	3		Public Health Epidemic/ Pandemic	High	3	9
Radon	No Impact	0	0		Radon	Unlikely	0	0
Severe Weather	Low	1	1		Severe Weather	Unlikely	0	0
Severe Winter Weather	Medium	2	2		Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	3		Terrorism	High	3	9
Tornado	Medium	2	2		Tornado	Unlikely	0	0
Wildfire	Low	1	1		Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**		**Catastrophic Factor**—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)		**High**—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)		**Medium**—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)		**Low**—Low potential that this hazard could be catastrophic (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)		**Unlikely**—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Structural Improvement in Public Buildings	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. Goal 4: Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters. Goal 5: Ensure and promote ways to increase government and private sector continuity of services during and after a disaster. Goal 6: Advocate, support, and promote the use of laws and local regulations and ordinances aimed to mitigate	Earthquake	Murray EM	Public Works	High (Loss of infrastructure and possible spread of asbestos)	High	HMA/PDM Grant or other federal funds	Medium	Long-term	Upgrade, retrofit, or replace non-reinforced public buildings.

		hazards and to enhance resiliency.									
Procure a generator for the assisted living facility and schools	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	All-Hazards	Murray EM	Public Works	High	Medium	Local and County Funds	High	Short-term	
Conduct Reinforcements for the Power Department Head Quarters	2019	Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. Goal 5: Ensure and promote ways to increase government and private sector continuity of services during and after a disaster.	Earthquake	Murray EM	Public Works	High	High	HMA/PDM Grant or other federal funds	Medium	Long-term	
Conduct a Flood Study, improve culverts and drainage, elevate roads and bridges, and build up burns.	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Flood	Murray EM	Public Works	High	High	HMA/PDM Grant or other federal funds	Medium	Long-term	
Remove tailings from the old towers	2019	Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	All-Hazards	Murray EM	Public Works	Medium	Medium	HMA/PDM Grant or other federal funds	Low	Short-term	

Mitigation Table - Ongoing Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Conduct training and awareness activities on communications equipment, tools, and systems.	2014	Improve and maintain communications capabilities for emergency operations. Improve communications capabilities	All Hazards	Murray Emergency Management		Medium	Medium - 80,000	Local and State	High	Ongoing	Need more personnel trained with amateur radio, currently working to try and get fire department members to take amateur radio class at a local university.
Improve EOC to allow for a more functional working environment during EOC activations.	2014	Improve and maintain communications capabilities for emergency operations. Improve communications capabilities	All Hazards	Murray Emergency Management		High	Medium - 80,000	Local and State	High	Ongoing	Have obtained EMPG Competitive grant which will allow for the purchase of another monitor, a speaker system in the EOC, and table and chairs for an additional work/break area.

Evaluate vulnerability of critical communications systems.	2014	Maintain communications capabilities for critical facilities. Evaluate vulnerability of critical communications systems.	All Hazards	Murray Emergency Management	Communications	High	Medium - 80,000	Local and State	High	Ongoing	Satellite phones have been purchased; need to train more members on their usage.
Establish redundancy for dispatch centers and other critical communications systems.	2014	Maintain communications capabilities for critical facilities. Evaluate vulnerability of critical communications systems.	All Hazards	Murray Emergency Management	Communications	High	Medium - 80,000	Local and State	High	Ongoing	Installing back-up server for the city.
Establish a coordinating group to address long-term communication needs and implementation strategies.	2014	Improve and maintain communications capabilities for emergency operations. Conduct Communications Strategic Planning.	All Hazards	Murray Emergency Management	Communications	Medium	Medium - 80,000	Local and State	High	Ongoing	The administrative staff of the fire department make up the group. Currently working with amateur radio volunteers to help determine which equipment is still needed.
Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group.	2014	Improve and maintain communications capabilities for emergency operations. Conduct Communications Strategic Planning.	All Hazards	Murray Emergency Management	Communications	High	Medium - 80,000	Local and State	High	Ongoing	An EMPG competitive grant has been awarded for 2014 to help update amatuer radio equipment as well as install speakers in EOC.

Provide education regarding all-natural hazards through live trainings, as well as web-based, print and broadcast media.	2014	Increase citizen safety through improved hazard awareness. Establish a comprehensive public education program.	All Hazards	Murray Emergency Management		Medium	Low - 20,000	Local	High	Ongoing	Mainly through CERT and Murray Journal Articles
Develop education programs to target specific groups including homeowners, developers, schools and people with special needs.	2014	Increase citizen safety through improved hazard awareness. Establish a comprehensive public education program.	All Hazards	Murray Emergency Management		Medium	Low - 20,000	Local	High	Ongoing	Yearly health safety fair and CERT program.
Ensure current hazard ordinances are available for viewing online.	2014	Minimize hazard impacts through the adoption of appropriate prevention measures. Ensure current hazard ordinances are available for viewing online.	All Hazards	Murray Emergency Management		High	Low - 20,000	Local	High		
Provide information on landscaping alternatives for persons subject to green area requirements.	2014	Limit unnecessary consumption of water throughout the County. Provide information on landscaping alternatives for persons subject to green area requirements.	Drought	Murray Emergency Management		Medium	High - 1,000,000	HMA grants and other federal grants	High	Ongoing	Information on Murray Website.
Identify structures at risk to earthquake damage.	2014	Reduce earthquakes losses to infrastructure. Encourage retrofit and rehabilitation of highly susceptible infrastructure.	Earthquake	Public Works	Murray Emergency Management	High	High - 3,000,000	HMA grants and other federal grants	High	Ongoing	
Research feasibility of an incentive program for retrofitting privately-owned buildings,	2014	Reduce earthquakes losses to infrastructure. Encourage retrofit and rehabilitation of highly susceptible infrastructure.	Earthquake	Public Works	Murray Emergency Management	Medium	High - 3,000,000	HMA grants and other federal grants	High		

particularly unreinforced masonry.											
Complete seismic rehabilitation/retrofitting projects of public buildings at risk.	2014	Reduce earthquakes losses to infrastructure. Encourage retrofit and rehabilitation of highly susceptible infrastructure.	Earthquake	Public Works	Murray Emergency Management	High	High - 3,000,000	HMA grants and other federal grants	High	Ongoing	Currently upgrading 2 schools to earthquake standards.
Procure an Engineering Consultant to perform the nonstructural design and geotechnical assessment and review. CUWCD staff will procure contractor and/or install nonstructural bracing per consultant’s design.	2014	Improve seismic hazard understanding and seismic resistance of Central Utah Water Conservancy District's (CUWCD) Red Butte Dam in Salt Lake County. Perform geotechnical assessment and review of Red Butte Dam to determine seismic hazard risk of slope failure on the outlet control structure and cyclic softening failure in the dam foundation soils. Perform a structural engineering analysis and design of nonstructural bracing/anchoring of piping and ancillary equipment in Red Butte Dam's flow control structure." Improve public education regarding earthquake risks to unreinforced masonry buildings	Earthquake	Public Works	Murray Emergency Management	High	High - 3,000,000	HMA grants and other federal grants	Medium		
Determine potential flood impacts and identify areas in need of additional flood control structures.	2014	Protection of life and property before, during and after a flooding event. Encourage appropriate flood control	Flood	Public Works	Murray Emergency Management	Medium	High - 500,000	State and Federal Grants	Medium	Ongoing	

		measures, particularly in new developments.									
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures.	2014	Protection of life and property before, during and after a flooding event. Encourage appropriate flood control measures, particularly in new developments.	Flood	Public Works	Murray Emergency Management	Medium	High - 500,000	State and Federal Grants	Medium	Ongoing	
Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of storm water and flood control systems.	2014	Protection of life and property before, during and after a flooding event. Provide maintenance, repairs and improvements to drainage structures, storm water systems and flood control structures.	Flood	Public Works	Murray Emergency Management	High	High - 500,000	State and Federal Grants	High	Ongoing	
Modify/upgrade structures and conveyances as needed to address deficiencies.	2014	Reduce threat of unstable or inadequate flood control structures. Reduce potential for failure of flood control structures.	Flood	Public Works	Murray Emergency Management	High	High - 20,000,000	HMA grants and other federal grants	High	Ongoing	Areas identified with capital improvement plan.
Maintain contact with NWS prior to re-application in 2010.	2014	Reduce threat of loss of life or property due to extreme weather events. Maintain status as a StormReady Community.	Severe Weather	Murray Emergency Management		Low	Low - 20,000	Local	Low		
Install larger and higher vent piping.	2014	The gas turbine plant as well as the compressor building for Murray City lack earthquake resistant construction as well as lack several safety systems for first responders. Install larger vent piping and a remotely activated valve to allow for the release of gas	Gas Turbine Plant	Public Works	Murray Emergency Management	High	High - 160,000	State and Federal Grants	High	Ongoing	Valve has been installed, but wiring to activate the valve is not in place.

		in the system during an emergency.									
Fix existing gas line connections that are earthquake resilient.	2014	The gas turbine plant as well as the compressor building for Murray City lack earthquake resistant construction as well as lack several safety systems for first responders. Fix gas line connections that would be less likely to leak during earthquakes.	Gas Turbine Plant	Public Works	Murray Emergency Management	High	High - 160,000	State and Federal Grants	High	Ongoing	Some connections have been improved. We have applied for a pre-mitigation grant to cover the costs.

Mitigation Table - Completed and Removed Actions

Category	Year Initiated	Goal / Objective	Action	Status	Comments
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.2 – Maintain communications capabilities for critical facilities	1 – Evaluate vulnerability of critical communications systems	Completed	Murray evaluates areas of vulnerability and develops solutions to ensure communication systems or alternate solutions are viable Example: Murray is looking into purchasing portable amateur radios to use in case the main radio system fails.
All Hazards	2009	2 – Improve awareness and analysis of hazards 2.2 – Improve and expand hazard monitoring capabilities	1 – Integrate existing hazard monitoring networks in emergency operations centers. Utilize sensors such as weather stations, stream gages, seismograph stations, road conditions, etc.	Not completed	Murray does not have any of the mentioned specialized sensors. However, The Murray emergency manager receives alerts from the USGS and NWS via text message and email.
All Hazards	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery	1 – Utilize GIS to identify facilities and infrastructure at risk	Completed	In 2012 Murray GIS, Fire and Emergency and Risk Management personnel did an extensive hazard and

		3.1 – Prevent damage to critical facilities and infrastructure			risk assessment on all structures in the city to evaluate their level of risk.
All Hazards	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	2 – Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment resources and redundancy, and adequate emergency procedures	Completed	In 2012 Murray GIS, Fire and Emergency and Risk Management personnel did an extensive hazard and risk assessment on all structures in the city to evaluate their level of risk. Example: Routes were established for crews to drive after a disaster in order to evaluate critical areas.
All Hazards	2009	4 – Improve response capabilities through mutual-aid agreements 4.1 – Utilize mutual-aid agreements in accordance with National Incident Management System (NIMS) requirements	1 – Compile inventory of mutual-aid agreements and memoranda of understanding (MOU) and identify deficiencies	Not completed	Murray needs to gather all MOUs into one location for easy reference.
All Hazards	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – Establish a comprehensive public education program	2 – Incorporate information about cascading effects of hazards in education programs	Completed	Information is included in all presentations on the effects of cascading hazards.
All Hazards	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – Establish a comprehensive public education program	4 – Utilize maps and similar products on County EM website and other media to educate public on areas at risk to hazards	Completed	Murray GIS personnel have compiled and made available hazard maps to help educate the public on potential hazards in the city.
All Hazards	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – Establish a comprehensive public education program	5 – Coordinate with existing public education programs such as the American Red Cross, Utah Living with Fire, be Ready Utah, the National Weather Service, etc.	Not completed	Murray has attended Be Ready Utah workshops and hopes to provide a presentation in Murray in the future.
All Hazards	2009	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	2 – Ensure current hazard ordinances are available for viewing online	Completed	Murray ordinances are available online at: http://murray.utah.gov/

Dam Failure	2009	1 – Include dam failure inundation in future County and City planning efforts 1.1 – Review current State dam safety information on all identified high hazard dams in the County	1 – Include dam inundation maps in current County, City and Special Service District Emergency Operations Plans	Completed	Dam inundation maps are included in emergency operation plans.
Dam Failure	2009	1 – Include dam failure inundation in future County and City planning efforts 1.1 – Review current State dam safety information on all identified high hazard dams in the County	2 – Utilize inundation maps to identify potential evacuation areas and routes	Not completed.	Dam inundation maps are included in emergency operation plans, however since risk is negligible, no evacuation routes have been identified.
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.2 – Address agricultural water shortages in the County	1 – Set up livestock water rotation in areas of agricultural use	Not Completed	This is not applicable to Murray.
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	1 – Identify structures at risk to earthquake damage	Completed	In 2012 Murray GIS, Fire and Emergency and Risk Management personnel did an extensive hazard and risk assessment on all structures in the city to evaluate their level of risk.
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.2 – Improve public education regarding earthquake risks to unreinforced masonry buildings	1 – Provide educational materials to unreinforced masonry home and business owners	Not Completed	Murray has not participated in this program; however the city supports county level efforts to share this type of information.
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.3 – Improve Seismic Hazard understanding and seismic resistance of CUWCD Red Butte Dam in Salt Lake County.	1 – Procure Engineering Consultant to perform the nonstructural design and geotechnical assessment and review.	Not Completed / Not Applicable	Not applicable to Murray as the referenced dam is located in another jurisdiction.
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.1 – Maintain status as a StormReady Community	1 – Maintain Hazardous Weather Operations Plan according to StormReady requirements	Not Completed / Not Applicable	Murray does not have a Weather Operations Plan and does not participate in the StormReady program. This is a Salt Lake County level program
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events	2 – Maintain Contact with NWS prior to re-application in 2010	Not Completed / Not Applicable	Murray does not have a Weather Operations Plan and does not participate in the StormReady

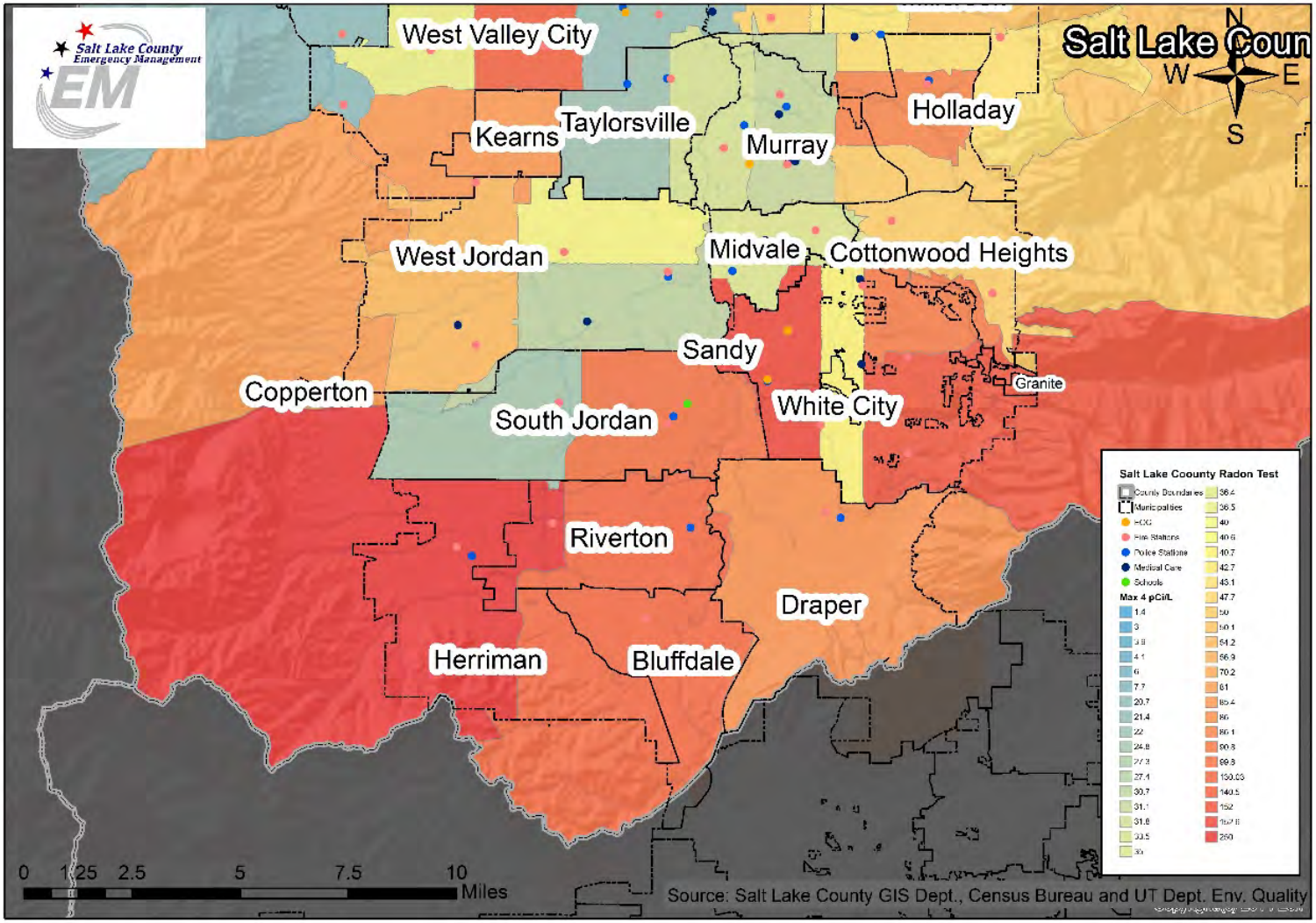
		1.1 – Maintain status as a StormReady Community			program. This is a Salt Lake County level program.
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.4 – Examine the vulnerability of patrons at large event venues to extreme weather events	1 – Work with NWS to develop large event venue weather safety and evacuation procedures	Not Completed	Murray has not developed a large event venue weather safety plan and/or evacuation procedures with the NWS
Slope Failure	2009	1 – Reduce or eliminate the threat of slope failure damage 1.1 – Reduce the threat of slope failures following wildfires	1 – Develop protocol for working with State and Federal agencies in reducing the impact of post-fire debris flow hazard	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable.
Slope Failure	2009	1 – Reduce or eliminate the threat of slope failure damage 1.2 – Monitor historic landslide areas	1 – Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable.
Wildland Fire	2009	1 – Community education on wildfire hazard 1.1 – Reduce risk from wildfire through education programs	1 – Increase public awareness through “Firewise” program	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable.
Wildland Fire	2009	1 – Community education on wildfire hazard 1.1 – Reduce risk from wildfire through education programs	2 – Educate homeowners on the need to create defensible space near structures in WUI	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable.
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.1 – Assist homeowners with creating defensible space near structures in WUI areas	1 – Designate and promote county-wide annual initiative for clearing fuels	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable.
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.1 – Assist homeowners with creating defensible space near structures in WUI areas	2 – Provide waste removal, such as chipping of green waste by public works, following designated fuel clearing day/week	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable.

Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.2 – Improve evacuation capabilities for WUI areas	1 – Work with experts and communities to develop or update evacuation plans	Not Completed	This is a very low probability event for the City and not applicable.
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.3 – Improve addressing system in WUI areas to facilitate emergency response	1 – Identify all facilities, businesses, and residences, particularly in the canyons, and assign addresses according to current county addressing standards	Completed	Addressing of structures in Murray is complete.
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.3 – Improve addressing system in WUI areas to facilitate emergency response	2 – Incorporate improved addresses in fire-dispatch and other databases	Completed	Addressing of structures in Murray is complete.
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	1 – Reduce fuels around publically owned structures	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable.
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	2 – Implement fire breaks and other protective measures	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable.
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	3 – Assess existing water flow capabilities, both public and private, and address deficiencies	Completed	The Murray water system meets and/or exceeds requirements for providing water flow for firefighting purposes in the City.
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	4 – Assist communities in developing Community Wildfire Protection Plans or similar plans	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable.

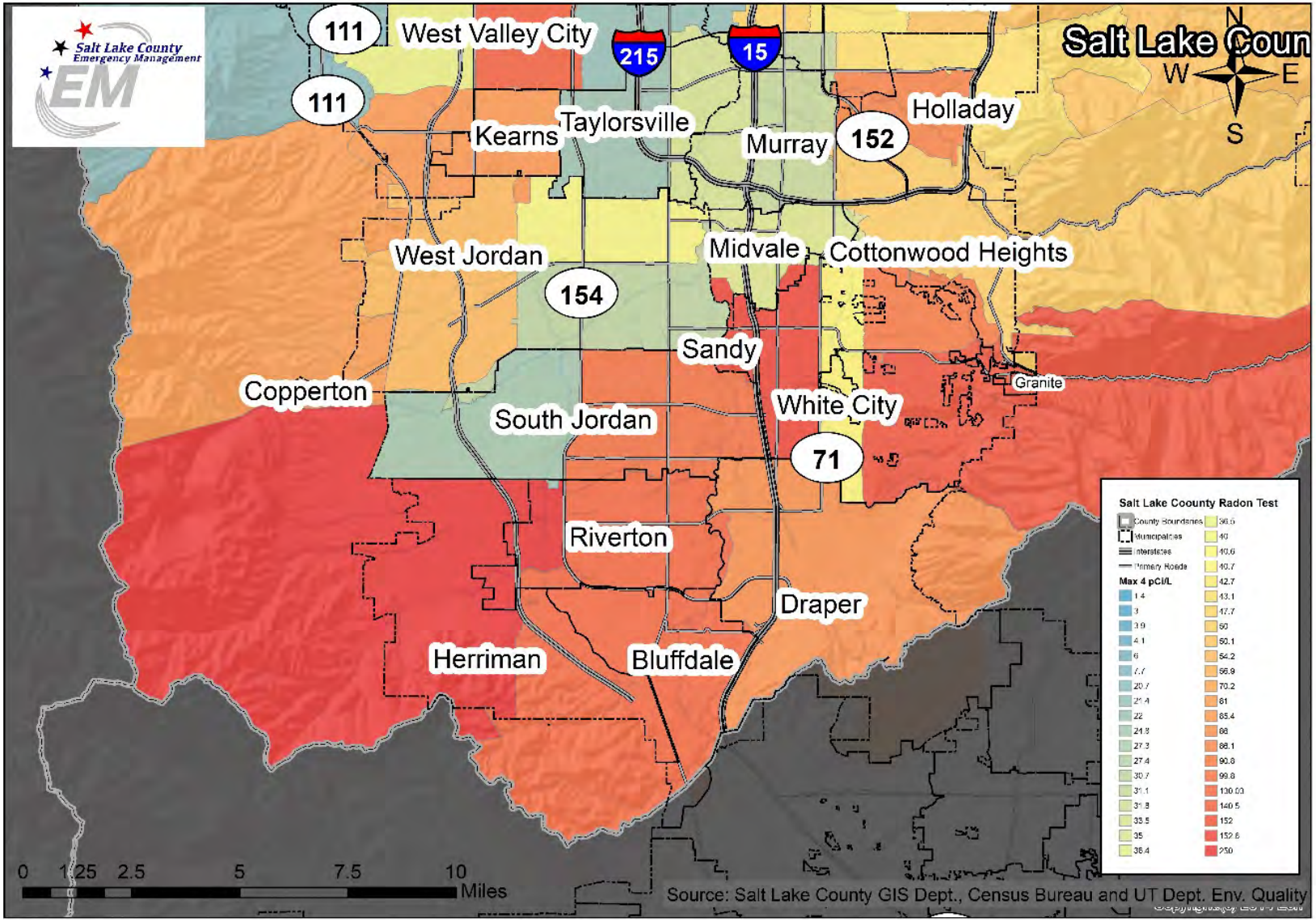
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.5 – Encourage proper development practices in the WUI	1 – Adopt the Utah Wildland-Urban Interface Code	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable.
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.5 – Encourage proper development practices in the WUI	2 – Define wildland-urban interface and develop digital maps of the WUI	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable.

Jurisdiction Maps

Map: Radon



Map: Radon with Critical Facilities



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: Riverton City

Hazard Mitigation Plan Point of Contact

Primary Point of Contact	Alternate Point of Contact
Name: Scott Chatwin Title: Emergency Manager Department: Administration Address: 12830 South Redwood Road, Riverton Utah 84065 Office Phone: 801-208-3119 Cell Phone: 801-860-9259 Email Address: schatwin@rivertonutah.gov Website: https://www.rivertonutah.gov/	Name: Trace Robinson Title: Public Works Director Department: Public Works Address:12525 South 4150 West, Riverton Utah 84096 Office Phone:801-208-3137 Email Address: trobinson@rivertonutah.gov Website: https://www.rivertonutah.gov/

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** July 3, 1967
- **Current Population:** 44,419 (V2018 estimate)
- **Population Growth:** The population grew an estimated 14.4% from the April 2010 Census to July 2018 estimates from 38,753 to 44,419 (Census).

2018 Population	2010 Population Estimate	Estimated % Change 2010-2014	2018 # of Housing Units	2014 Estimated # of Housing Units	Estimated % change 2010-2014
44,419	38,754	4.36%	11,212	11,089	2.63%

- **Location and Description:** The city has a total area of 12.6 square miles (32.6 km²). Riverton shares city borders with South Jordan to the north, Draper to the east, Bluffdale to the south, and Herriman to the west. The city is located in the southwestern corner of the Salt Lake Valley (Census).
- **Brief History:** The first people that lived in the area that is now Riverton settled in the 1850s. They lived in crude, widely scattered, dugout homes along the river bottoms. Archibald Gardner was the largest landowner, and he might have been the first to live on Riverton land, though early accounts disagree. Because of this, the land along the Jordan River and the surrounding area was called Gardnerville. Due to the lack of irrigation water, initial growth was slow. However, the town began to grow as settlers developed a cooperative to build a ditch, which later resulted in a canal that opened cultivation, which attracted new residents. Riverton later became incorporated into a town in 1948 and a city of the third class on July 3, 1967.
  By 1914, Riverton began to prosper as an agricultural community, due to additional water and people. Riverton's business district also thrived. In 1879, a judicial precinct was established, and the settlement's name was officially changed from Gardnerville to Riverton by Judge Charles Smith. The first meetinghouse was constructed in 1879, which served as a church, a schoolhouse, and a community meeting place. A new meetinghouse was planned, and the architect selected was Richard Kletting who also designed the Utah

State Capitol. The entire community worked to haul material, by wagons, including granite from Little Cottonwood Canyon. The Old Dome Church, which it became to be known, continued to be used by the residents until it was torn down in 1940.

Before the turn-of-the-century, Riverton farmers gradually changed from self-sufficient to commercial farming. They specialized in alfalfa, wheat, sugar beets, tomatoes, poultry, sheep, and dairy cows. At this time, the LDS Church began to store tithed produce and livestock on land located at 1150 West 12400 South. This area is now known as Tithing Hill. In 1912, electricity first came to Riverton and in 1913 the Salt Lake and Utah Railroad (Orem Line) was started and went through Riverton west of Redwood Road. It stretched from Salt Lake to Payson and was used as a commuter and freight line. Riverton had its own train depot and trains used this line from 1914 to 1945 after which the rails and ties, along with the depot, were torn down.

Riverton City has worked with residents to continue the traditions started many years before with the annual Town Days event and much more. With Riverton being located in the Salt Lake Valley, residents have quick access to many different types of recreational activities. The Wasatch Mountains, Ski Resorts and Utah Lake are just a short drive to satisfy our many active residents (Riverton website).

- **Climate:** The annual high temperature is 67.3F and low is 43.1F with an average temperature of 55.2F (US Climate Data). On average, Riverton gets 16 inches of rain and 43 inches of snow per year. While warmer than many places in Utah, Riverton gets an average of 133 days in which nighttime temperatures drop below freezing and correlated to being warmer than many places in Utah, Riverton has an average of 46 days that annually reach a temperature above 90F (Best Places).
- **Public Services:** Riverton City provides a full range of services to its residents and businesses. General governmental services provided by the City include building inspection, construction, and maintenance of street lighting, roadways, and parks, as well as recreation and cultural events. The City also provides utility services for culinary water, secondary water, sanitation, and stormwater. Recently, in July 2019, the Police department was created.
- **Governing Body Format:** Riverton, Utah is a city of the 3rd class as defined by Utah State Code, and operates as a “six-member council" form of government, which means there are six elected officials that make up the governing body including a mayor and five council members. [See: Utah Code § 10-3b-301.] City council members are elected for terms of four years. City council holds all authority to adopt ordinances, pass resolutions, adopt annual budgets, regulate zoning and land development, establish city fees, create long-range plans for city services and utilities, and set regulatory standards for the provision of other city services. The mayor serves as chair of the city council and chief executive officer of the city [See: Utah Code § 10-3b-302.]. On December 6, 2011, the Riverton City Council re-codified its municipal ordinances and reaffirmed the long-standing office of the City Manager. The City Manager now oversees the operational and day-to-day responsibilities of managing the cities, its employees, and its services. The City Manager is a full-time position that oversees all city departments and directly reports to the city council and mayor (Riverton Government Website).
- **Development Trends:** According to the Riverton City website, the city is one of the fastest-growing cities in America. Riverton has transformed from a rural farming town into a suburban city. Businesses, housing, and roads have replaced many of the farms and cattle ranges. The growth was supported by the opening of the Intermountain Riverton Hospital in November 2009 and more recently the Mountain View Village shopping center in 2018. The city anticipates continued growth and business expansion while maintaining the 30 community parks. Much like the rest of the southwestern corner of the Salt Lake

Valley, rapid growth in the community is anticipated in the coming years. Supporting the idea of growth was the elimination of business licensing fees in 2018 to encourage new businesses to come to the city.

Capability Assessment

The Emergency Management Coordinator is the Town's designated Emergency Manager. Hazard Mitigation Planning efforts are led by the Emergency Management Coordinator position and supported by the City Manager position.

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY	
	Local Authority Exists to Develop and Implement/ Enforce?
Codes, Ordinances, & Requirements	
Building Code Development and Enforcement	Yes
Zonings Ordinance(s)	Yes
Subdivision Ordinance(s)	Yes
Stormwater Management Program	Yes
Floodplain Ordinance(s)	Yes
Post Disaster Recovery Program and Ordinance(s)	No
Site Plan Review Requirements	Yes
Planning Documents	
General or Comprehensive Plan	Yes

Disaster Planning Documents	
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes
Post-Disaster Recovery Plan	No
Continuity of Operations Plan	No
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	Snow Removal Plan.

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Yes

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**

Planners or engineers with knowledge of land development and land management practices	Yes	Full Time	
Engineers or professionals trained in building or infrastructure construction practices	Yes	Full Time	
Planners or engineers with an understanding of natural hazards	Yes	Full Time	
Personnel skilled or trained in GIS applications	Yes	Full Time	
Emergency manager	Yes	Part Time	
Grant writers	Yes		

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	Public Works
Who is your jurisdiction's floodplain administrator? (department/position)	Tom Beesley
Are any certified floodplain managers on staff in your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	No
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**

Community Rating System (CRS)	No		
Public Protection/ISO	No		
NWS StormReady	No		

Jurisdiction-Specific Hazards and Risks

NOAA Natural Hazards 2014-2019

- The Natural Hazard Events Table lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:
- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 17 policies were in force with total coverage of $3,808,000 and total written premium and FPF of $5,642 (FEMA, 2019).
- Riverton City does participate in the National Flood Insurance Program (CID # 490104) and the last FIRM map for the area was issued on 09/25/09 (FEMA, 2019).
- The city will continue to participate in the NFIP through various efforts including but not limited to floodplain management, ordinance development and review, technical assistance, compliance inspections, and community education on flood hazards.

TABLE: RECENT NATURAL HAZARD EVENTS
(NOAA Data with additions from the jurisdiction representatives)

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment/ Event Narrative
Hail	1 inch in diameter hail	-	5/25/1996	
Heavy Snow	10 inches at Riverton	-	11/21/1999	
Thunderstorm Wind	Riverton reported a gust to 70 mph (61 kts)	-	8/21/2001	
Thunderstorm Wind	Severe thunderstorms brought strong winds	-	6/1/2002	
Flash Flood	Heavy thunderstorm downpours produced localized flash flooding and	-	9/6/2002	$200,000 in property damage

	caused $200,000 in Salt Lake County			
Hail	nickel size hail (0.88 inches in diameter)	-	8/10/2008	
Hail	penny-size hail (0.75 inches in diameter)	-	8/4/2010	
High Wind	59 mph at Riverton	-	3/26/2012	
Hail	penny-size hail (0.75 inches in diameter)	-	7/16/2013	
Hail	penny-size hail (0.75 inches in diameter)	-	8/20/2014	

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community
Members of the community over 65 years old	2,911
Members of the community under 18 years old	15,387
Members of the community that identify as having disability status	2,288
Members of the community that speak English less than "very well"	640
Members of the community living below the poverty line	1,776
The number of mobile homes in the community	75
Members of the community without health insurance	2,404
Occupied housing units with tenants without a vehicle	135
Housing units without heating fuel	0

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are relevant and unique to the municipality.

Extreme Temperatures: While only a small percentage of the population, the community 65 years and older are likely to face more health effects than the other residents. Riverton City has a higher annual temperature with some days reaching over 100F, which could cause stress on elderly individuals.

Severe Weather: The Riverton Hospital is an Intermountain Healthcare facility, and any weather event that effects power without properly planned back-up and mutual aid agreements with nearby hospitals could significantly impact the community. Additionally, while rare, events that require evacuation would need to be offered in multiple languages. Lastly, residents in mobile homes will need lead time to find shelter in the event of a severe wind event, which is not uncommon in the area. Every Year Riverton experiences various events related to severe weather. Most of these events are mitigated as a part of ongoing routine maintenance activities.

Based on historical evidence thunderstorms can strike anywhere in the region, mainly during the spring and summer months. Much of the valley's development has occurred on old alluvial fans from the canyon mouths. During heavy rain events, water and debris collect on these same alluvial fans, damaging residential, commercial property and infrastructure.

Canyon winds can bring wind gusts greater than 100 mph through the canyon mouths into the populated areas of the Wasatch Front. Winds are usually strongest near the mouths of canyons and have resulted in the loss of power and the inability to heat homes and businesses. Winds have also damaged roofs, destroyed and knocked down large trees and fences, overturned tractor trailers and railroad cars, and downed small airplanes.

Flooding: Riverton floods are typically localized events running out of mountain canyons or highly developed areas of the City. Flooding in Riverton is typically the result of excessive snowmelt runoff and/or heavy rainfall. Urban areas are also prone to flooding because urban development such as buildings, streets, and parking lots prevent water infiltration into the soil and greatly increase runoff. Undersized piping, manmade drainage channels, or debris that obstructs passageways may further contribute to flooding. Flood damage includes saturation of land and property, erosion, deposition of mud and debris, and fast flowing water.

The major waterways in Riverton include the Jordan River, Rose Creek, Midas Creek, South Jordan Canal, Utah and Salt Lake Canal, Utah Lake Distributing Canal, and the Jacob Welby Canal. The flows of the Jordan River from Utah Lake into Salt Lake County are controlled, and the flood potential is somewhat reduced upstream of the major Jordan River tributaries. The Canals are permitted and controlled by Salt Lake County.

Canal breach: Although not a natural hazard, the flood waters from a breached canal may behave similarly and cause similar types of damage to other flooding incidents. Riverton has irrigation canals that pass through the City including South Jordan Canal, Utah and Salt Lake Canal, Utah Lake Distributing Canal, and Welby Jacobs Canal. Most of these canals are trenched rather than built up bank type structures. There are concerns with bank stability of the South Jordan Canal in the area of Lovers lane. The City is monitoring seepage and stability of the banks in this area. The City is also working with the South Valley Sewer District and the South Jordan Canal Co. to identify hazards and rectify concerns.

Flooding Hazard Profile

Location	Largely in and along Jordan River, Rose Creek Midas Creek, Canals and failed storm drainage systems.
Seasonal Conditions	Spring, and Summer heavy rainfall, and spring snowmelt runoff.
Conditions	Thunderstorms w/heavy rainfall, extended wet periods.

Duration	Flooding can last anywhere from hours to days and even months.
Secondary Hazards	Raw sewage/health risk, electrical fires, gas spills.
Analysis Used	Review of FIS, FIRM, Army Corp of Engineers Flood Study.

Recent mitigation projects include the following:

- Foothills Regional Detention Basin Riverton Village Regional Detention Basin
- 3600 West Regional Detention Basin and Outfall Mountain View Regional Detention Basin and Outfall Rose Creek Channel Reconstruction a@ 4000 West Rose Creek Safety Project
- Lampton View Storm Drain Project

The following flood events are of notable significance:

- 2010 Sevier Thunderstorms resulting in the flooding of several homes
- 2007 Sevier Thunderstorms resulting in the flooding of several homes

NFIP

Riverton City has no repetitive loss claims due to flooding identified under the National Flood Insurance Program (NFIP).

The City's Community Development Director oversees enforcement of floodplain management requirements adopted by the City, including regulating new construction in Special Flood Hazard Areas (SFHAs); Floodplain identification and mapping, including any local requests for map updates; and Description of community assistance and monitoring activities.

The following loss estimates were provided by FEMA Region VIII, Sept 2013 as part of the Mitigation Planning/Risk MAP partnership.

Structure Exposure and HAZUS-Generated Losses

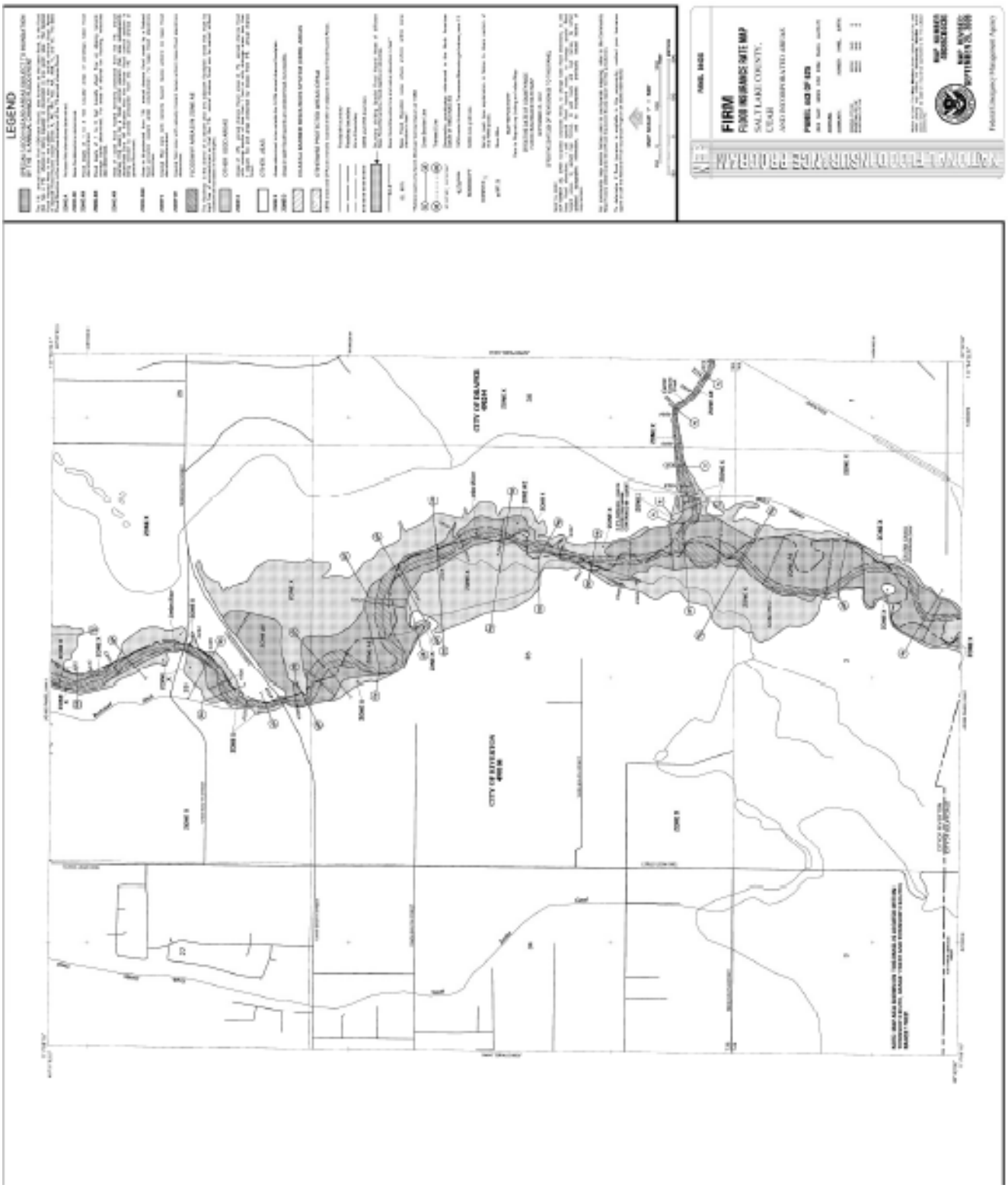
	1% Annual Chance			0.2% Annual Chance		
Jurisdiction		Building and Contents Loss*	Loss Ratio**	Structure Exposure	Building and Contents Loss	Loss Ratio
Riverton	2	$ 14,374	0.000%	102	$ 1,209,806	0.03%

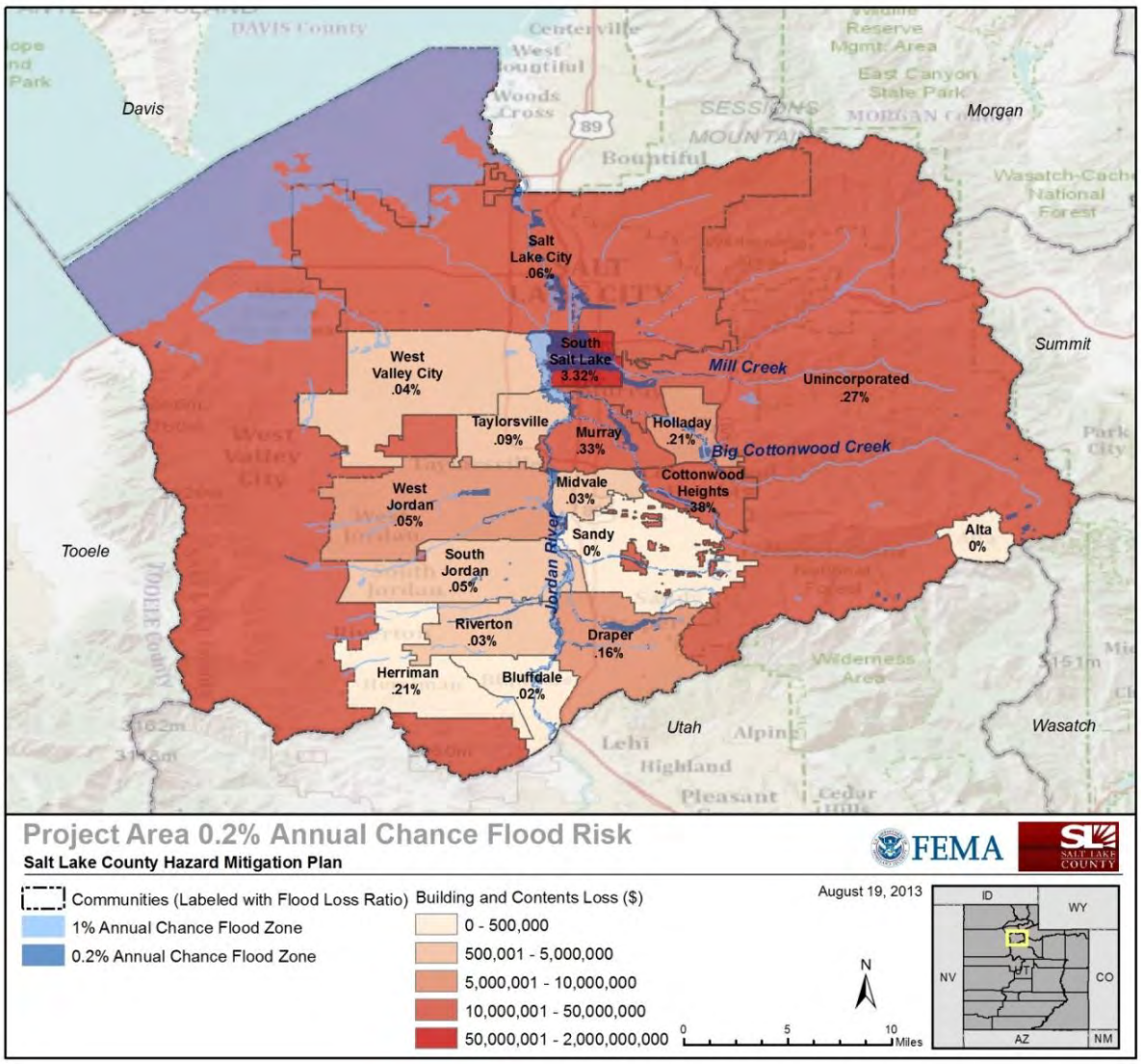
County Wide	
Population Exposure	
1% Annual Chance	7,421
0.2% Annual Chance	23,126

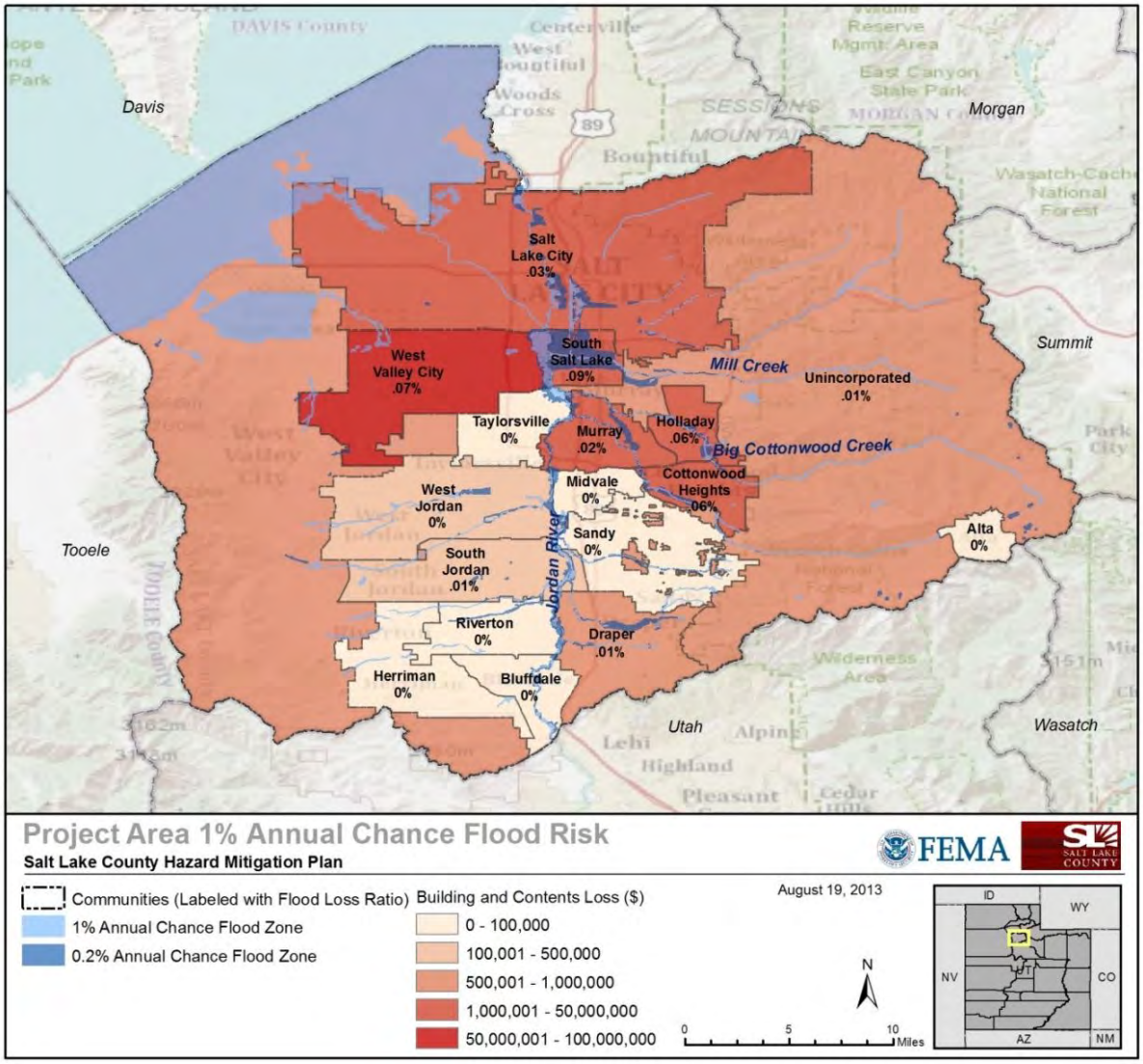
The following vulnerability assessment data for flooding in Salt Lake County is carried over from the WFRC Pre-Disaster Mitigation Plan and was obtained from HAZUS-MH**. Vulnerability was assessed for both 100-year (NFIP Zone A) and 500-year (NFIP Zone B or Zone X (shaded) flood

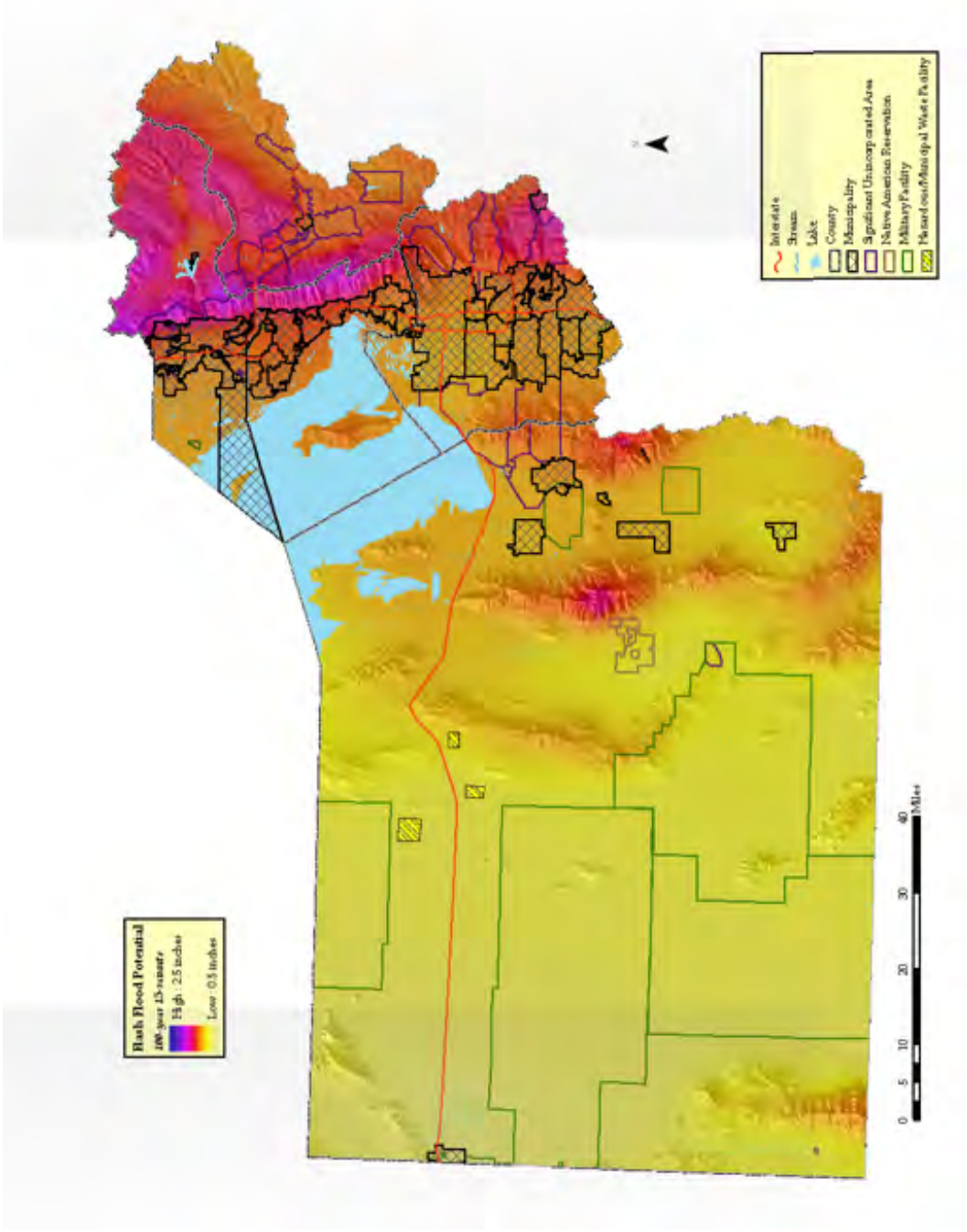
events. Analysis was completed using Digital Flood Insurance Rate Maps (DFIRM). Only streams that contained detailed flood cross-section data could be used. Flooding from the Great Salt Lake was not included. Consequently, the results should be considered conservative.

	Acres Flooded	**Population Displaced**	**Number of Structures in Floodplain**	
			Residential Units (Total Losses)	**Commercial/Industrial Units (Total Losses)**
100-year Flood	990.6	410	68 $15,367,860	46 $69,040,100
500-year Flood	1285.1	1,599	394 $143,637,730	57 $83,899,300


LEGEND
FIRM
FLOOD INSURANCE RATE MAP
SALT LAKE COUNTY,
UTAH
CITY OF HERRIMAN
CITY OF RIVERTON

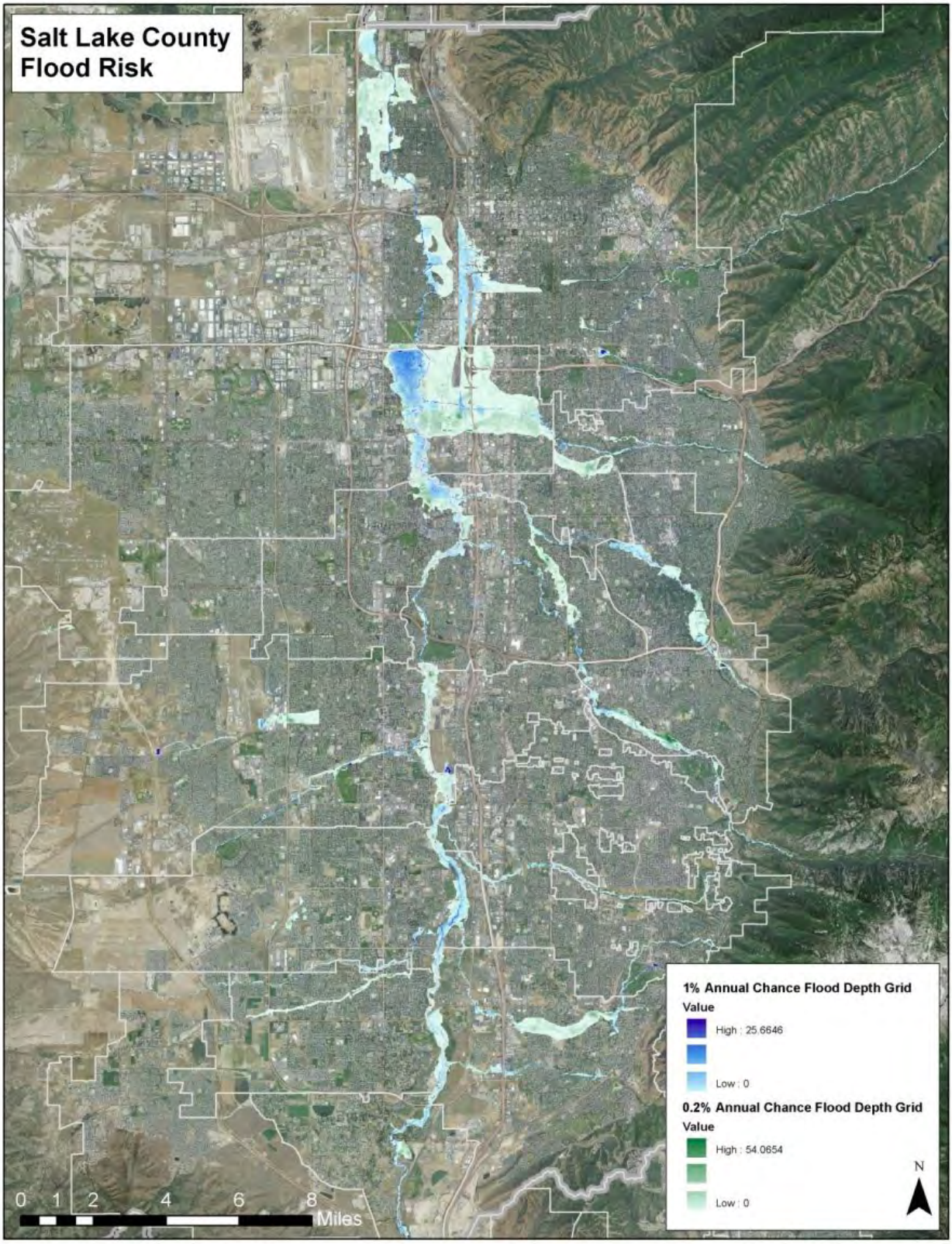

Davis
Morgan
Summit
Tooele
Utah
Wasatch
Salt Lake City .06%
West Valley City .04%
South Salt Lake 3.32%
Mill Creek
Unincorporated .27%
Taylorsville .09%
Murray .33%
Holladay .21%
Big Cottonwood Creek
Midvale .03%
Cottonwood Heights .38%
West Jordan .05%
Sandy 0%
Alta 0%
South Jordan .05%
Jordan River
Riverton .03%
Draper .16%
Herriman .21%
Bluffdale .02%
Project Area 0.2% Annual Chance Flood Risk
Salt Lake County Hazard Mitigation Plan
FEMA
Communities (Labeled with Flood Loss Ratio)
1% Annual Chance Flood Zone
0.2% Annual Chance Flood Zone
Building and Contents Loss ($)
0 - 500,000
500,001 - 5,000,000
5,000,001 - 10,000,000
10,000,001 - 50,000,000
50,000,001 - 2,000,000,000
August 19, 2013
N
0
5
10
Miles
ID
WY
NV
CO
AZ
NM


Davis
Morgan
Summit
Tooele
Utah
Wasatch
Salt Lake City .03%
West Valley City .07%
South Salt Lake .09%
Mill Creek
Unincorporated .01%
Taylorsville 0%
Murray .02%
Holladay .06%
Big Cottonwood Creek
Cottonwood Heights .06%
Midvale 0%
West Jordan 0%
Sandy 0%
Alta 0%
South Jordan .01%
Jordan River
Riverton 0%
Draper .01%
Herriman 0%
Bluffdale 0%
Project Area 1% Annual Chance Flood Risk
Salt Lake County Hazard Mitigation Plan
FEMA
Communities (Labeled with Flood Loss Ratio)
1% Annual Chance Flood Zone
0.2% Annual Chance Flood Zone
Building and Contents Loss ($)
0 - 100,000
100,001 - 500,000
500,001 - 1,000,000
1,000,001 - 50,000,000
50,000,001 - 100,000,000
August 19, 2013
N
0
5
10
Miles
ID
WY
NV
UT
CO
AZ
NM



11-FF

Regional Flash Flood Hazard (Source: NWS Hydrometeorological Design Studies Center)


Salt Lake County
Flood Risk
1% Annual Chance Flood Depth Grid
Value
High : 25.6646
Low : 0
0.2% Annual Chance Flood Depth Grid
Value
High : 54.0654
Low : 0
N
0 1 2 4 6 8
Miles

Landslide and Slope Failure: Landslides and debris flows are most common in the foothills area west of 4800 West and along the bench above the Jordan River; however, there is no significant reported history of Landslides in Riverton.

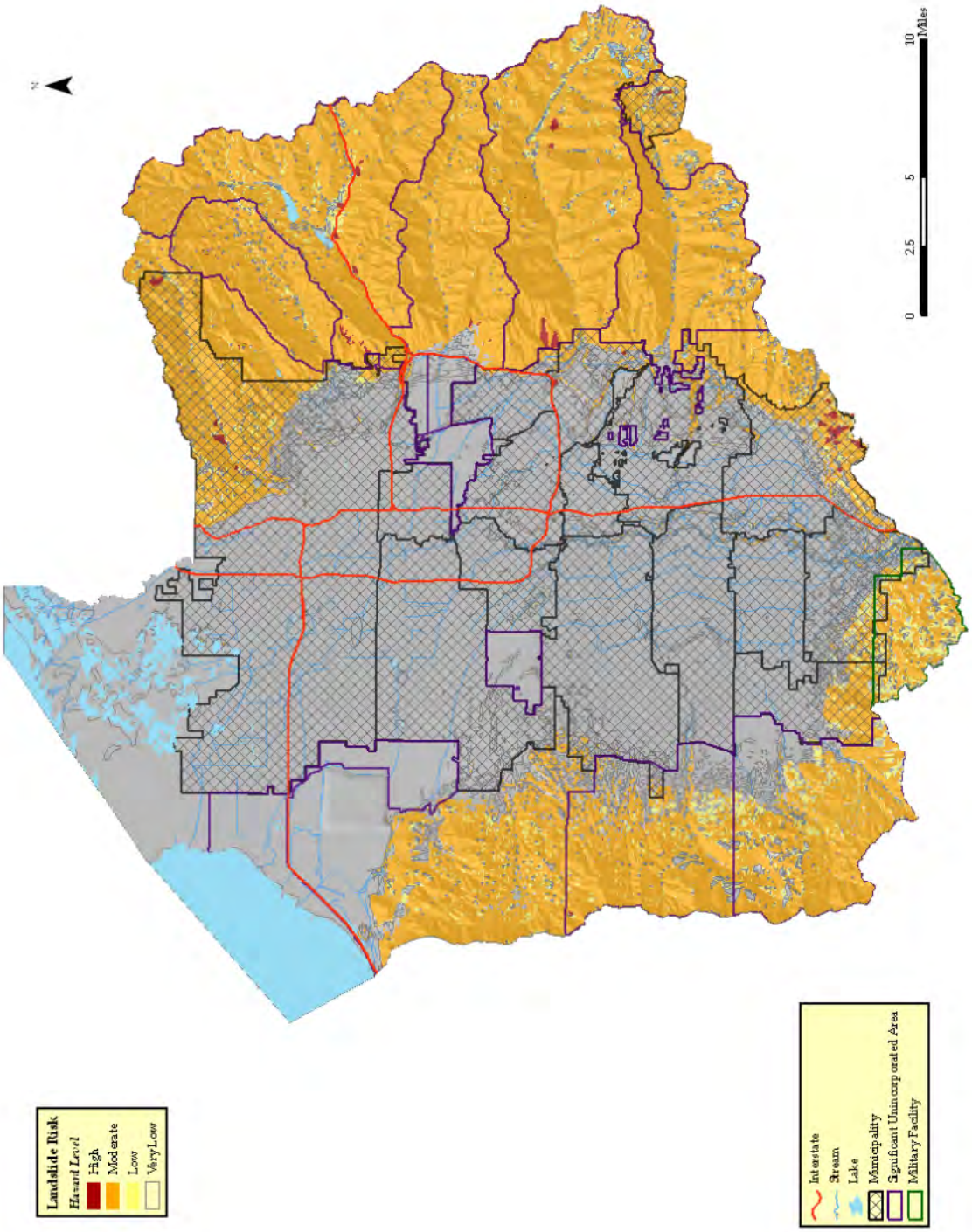
The Table below estimates infrastructure vulnerable to landslides in Riverton. Provided are the number of units or total length of infrastructure vulnerable and the estimated replacement costs as provided by HAZUS-MH lost estimation software. The second Table estimates the total area, population, and buildings vulnerable to landslides for individual cities. The Table also examines the same for unincorporated areas.

Item	Length (Miles) or Number of Units	Replacement Cost
Black Ridge Reservoir	1 Reservoir and Dam	
Lovers Lane	1 mile	$800,000
Water Distribution Lines	1 mile	$530,000
Sewer Lines	1 mile	$316,800
Total Estimated Infrastructure Replacement Cost		

Table. Infrastructure Vulnerable to Landslides, Riverton

Areas	Acres Affected	Population Affected	Structures in Areas of Moderate or Greater Hazard	
			Residential (Replacement Value)	Commercial (Annual Sales)
Riverton	87	422	102 $20,869,200	2 $120,490

Table. Vulnerability Assessment for Landslides, Riverton



Dam Failure: There are 3 dams located in Riverton and there is no record of dam failure incidents within Riverton. These dams were built and are maintained by the Riverton City Water

Department. The dams serve various functions such as flood control, water storage, and recreation. Two dams are owned solely by the City and Black Ridge Reservoir is jointly owned with Herriman City. It is the City's responsibility to maintain these dams, and the state regulates its safety. The dam safety hazard is classified as no threat to high risk by the State Engineer. Hazard ratings are determined by downstream uses; size, height and volume; and incremental risk/damage assessments. This classification is based upon the damage caused if the dam were to fail, not the dam's probability of failure. Therefore, the classification of a high hazard dam does not mean that the dam has a high probability of failure. Utah Division of Water Rights inspects high-hazard dams annually, moderate-hazard dams biennially, and low-hazard dams every five years (Living with Dams, UNHH 2008).

Dam Name	**Rating**
Riverton City – 3200 West Pond	High
Riverton City – 4200 West Pond	High
Riverton City – Black Ridge Reservoir	High

A Standard Operation Procedures and Emergency Action Plan has been developed for the 3200 West and 4200 West Irrigation Ponds. Copies of these plans are located at the Riverton City Water Shop located at 3323 Sanborn Drive and the Riverton City Public Works Building located at 12526 South 4150 West.

For the Black Ridge Reservoir there is an Operation Plan entitled "Riverton City/ Herriman City Black Ridge Reservoir Standard Operating Procedures and Emergency Action Plan". Copies of the plan can be found at the following locations:

Riverton City Public Works Building located at 12526 South 4150 West Riverton City Water Shop located at 3323 Sanborn Drive

Riverton City Hall (City Manager's Office) located at 12830 South Redwood Rd

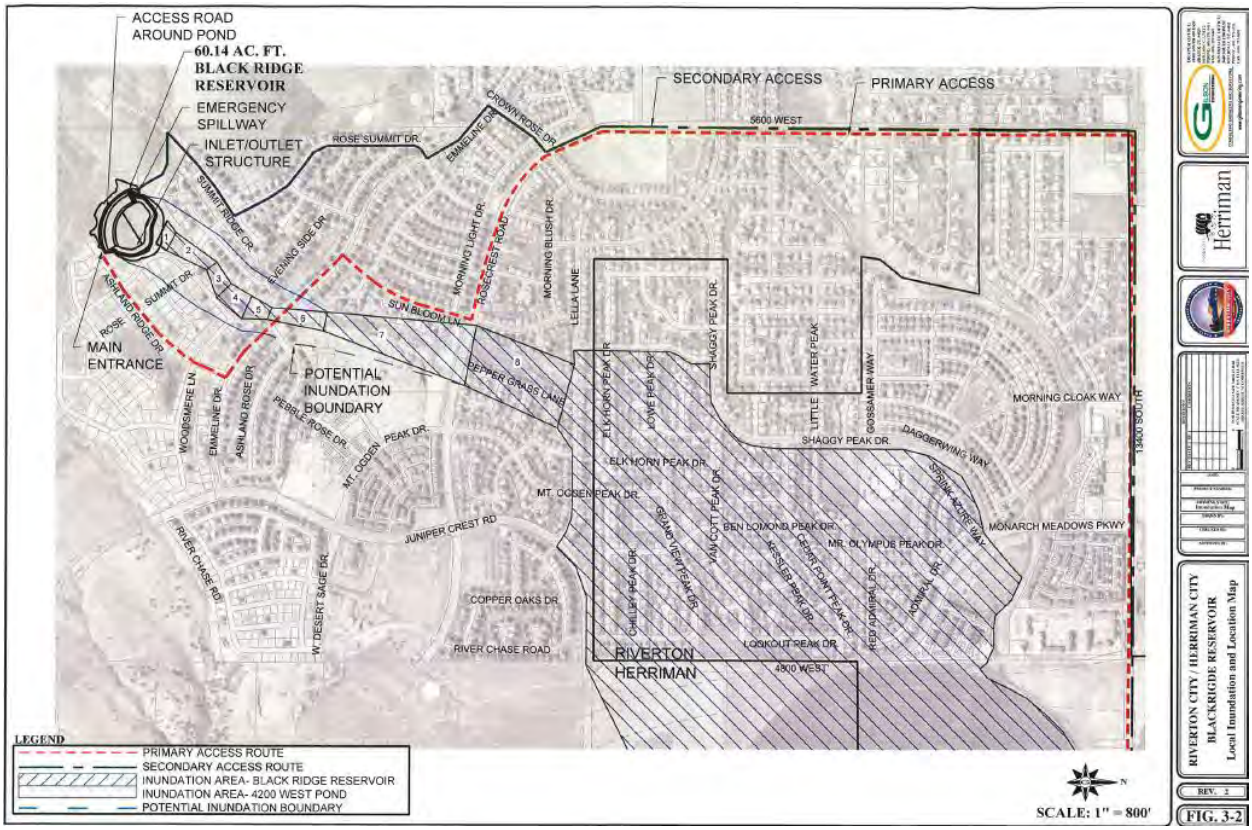
History

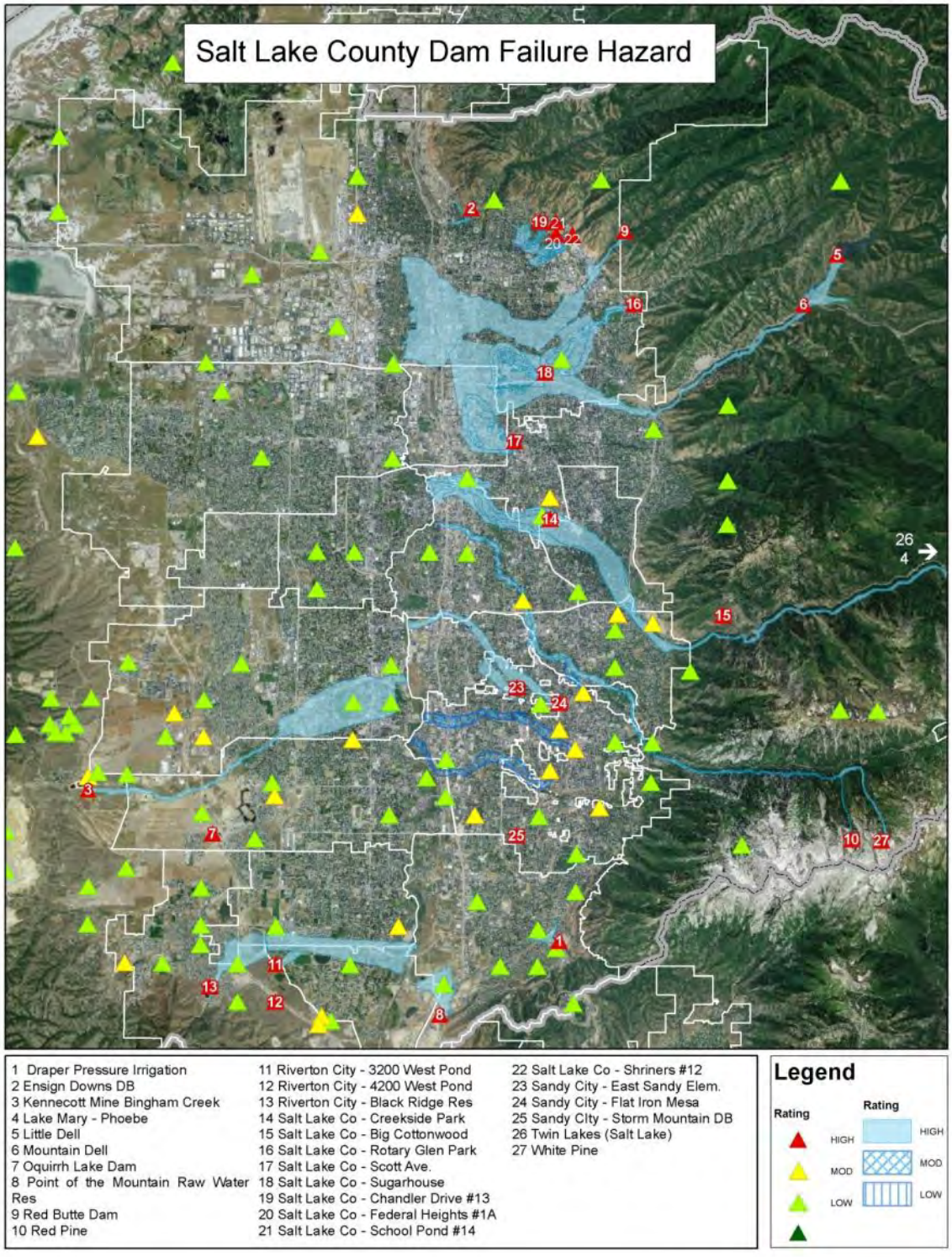
- There is no record of dam failure incidents within Riverton.

Due to the complexity and eminent disaster associated with a failure of the Black Ridge Dam, selected maps and flow charts from the plan have been added to this document for quick reference. This plan outlines the procedures and protocol for emergencies and contains the list of important contacts.

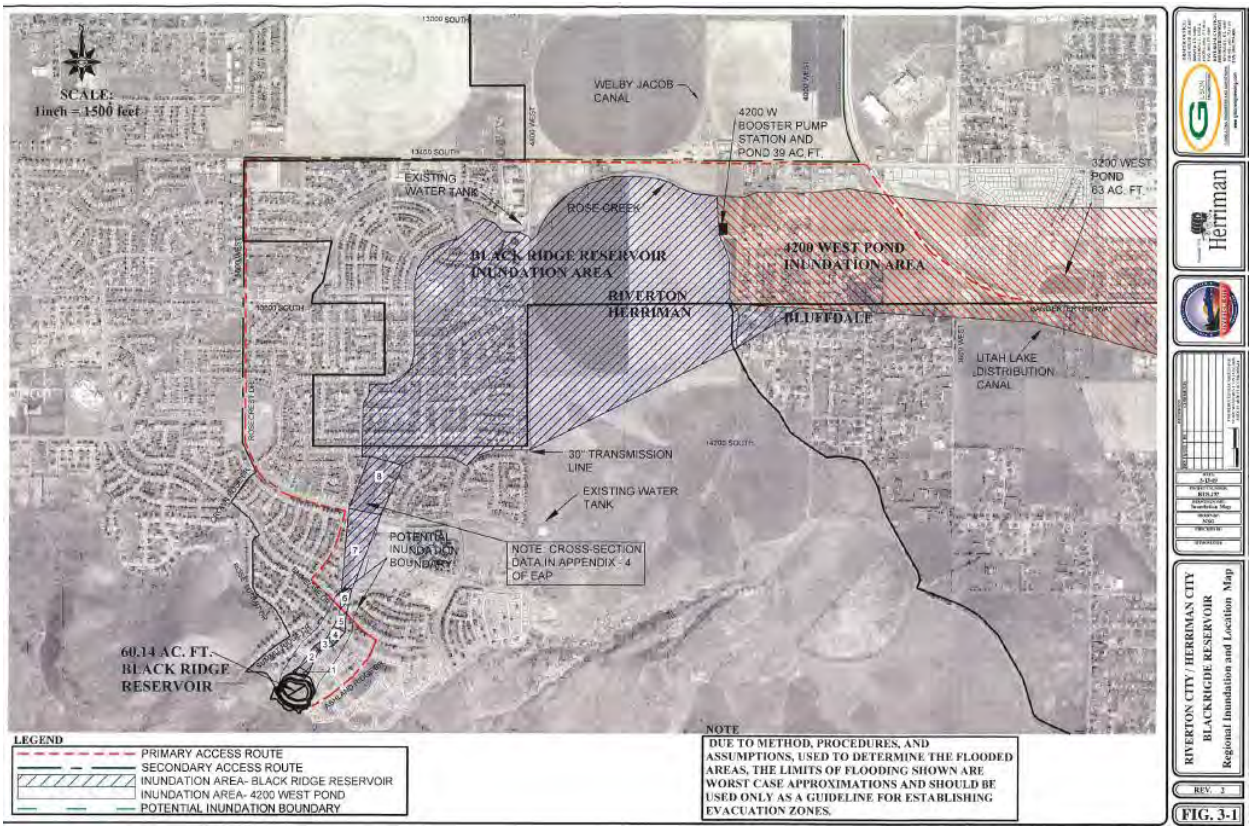
Below is the estimated damage for failure of the dams within Riverton City.

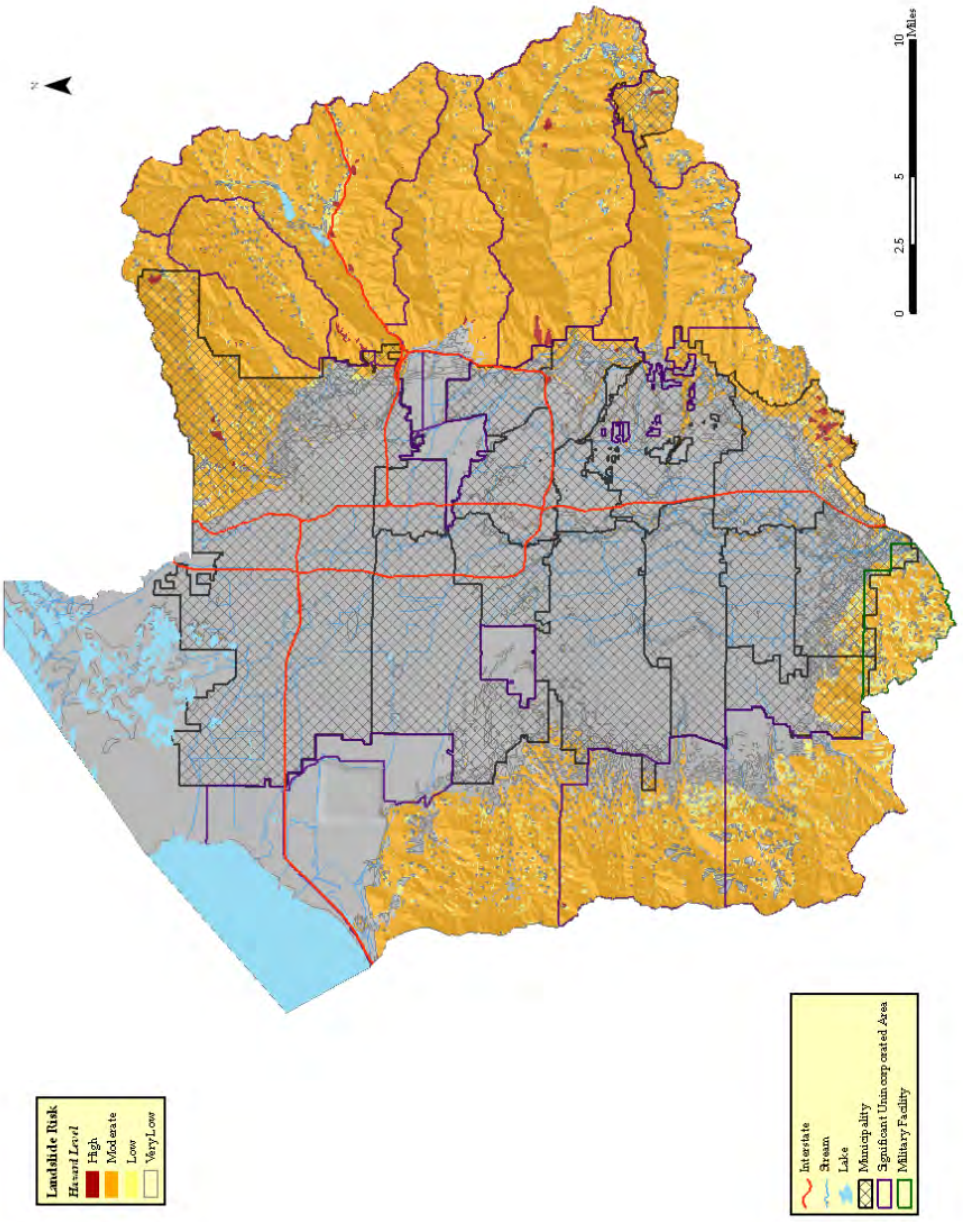
Incorporated Areas	**Acres Affected**	**Population Affected**	**Structures in Inundation Areas**	
			Residential (Replacement Value)	**Commercial (Annual Sales)**
Riverton	853	3,710	969 $198,257,400	28 $14,217,055


ACCESS ROAD
AROUND POND
60.14 AC. FT.
BLACK RIDGE
RESERVOIR
EMERGENCY
SPILLWAY
INLET/OUTLET
STRUCTURE
SECONDARY ACCESS
PRIMARY ACCESS
5600 WEST
ROSE SUMMIT DR.
CROWN ROSE DR.
EMMELINE DR.
SUMMIT RIDGE CR.
EVENING SIDE DR.
MORNING LIGHT DR.
ROSECREST ROAD
MORNING BLUSH DR.
LEILA LANE
SUMMIT DR.
ASHLAND RIDGE DR.
ROSE
MAIN
ENTRANCE
SUN BLOOM LN.
POTENTIAL
INUNDATION
BOUNDARY
PEPPER GRASS CANE
SHAGGY PEAK DR.
WATER PEAK
GOSSAMER WAY
MORNING CLOAK WAY
1300 SOUTH
SHAGGY PEAK DR.
DAGGERWING WAY
SPRING AZURE WAY
MONARCH MEADOWS PKWY
ELK HORN PEAK DR.
LOWE PEAK DR.
WOODSHERE LN
EMMELINE DR.
ASHLAND ROSE DR
PEBBLE ROSE DR.
MT. OGDEN PEAK DR.
MT. OSSEN PEAK DR.
JUNIPER CREST RD
BEN LOMOND PEAK DR.
MR. OLYMPUS PEAK DR.
GRAND VIEW PEAK DR.
VAN COTT PEAK DR.
DESERT POINT PEAK DR.
KESSLER PEAK DR.
RED ADMIRAL DR.
ADMIRAL DR.
CHILLY PEAK DR.
RIVER CHASE RD
W. DESERT SAGE DR.
COPPER OAKS DR
RIVER CHASE ROAD
RIVERTON
HERRIMAN
LOOKOUT PEAK DR.
4800 WEST
LEGEND
PRIMARY ACCESS ROUTE
SECONDARY ACCESS ROUTE
INUNDATION AREA- BLACK RIDGE RESERVOIR
INUNDATION AREA- 4200 WEST POND
POTENTIAL INUNDATION BOUNDARY
SCALE: 1" = 800'
RIVERTON CITY / HERRIMAN CITY
BLACKRIDGE RESERVOIR
Local Inundation and Location Map
REV. 2
FIG. 3-2



Map. Dam Hazard Map, Salt Lake County (Utah Division of Water Rights 2013)


SCALE:
1inch = 1500 feet
WELBY JACOB CANAL
4200 W BOOSTER PUMP STATION AND POND 39 AC FT.
3200 WEST POND 63 AC. FT.
EXISTING WATER TANK
ROSE CREEK
BLACK RIDGE RESERVOIR INUNDATION AREA
4200 WEST POND INUNDATION AREA
RIVERTON
HERRIMAN
BLUFFDALE
UTAH LAKE DISTRIBUTION CANAL
30" TRANSMISSION LINE
EXISTING WATER TANK
POTENTIAL INUNDATION BOUNDARY
NOTE CROSS-SECTION DATA IN APPENDIX - 4 OF EAP
60.14 AC. FT. BLACK RIDGE RESERVOIR
LEGEND
PRIMARY ACCESS ROUTE
SECONDARY ACCESS ROUTE
INUNDATION AREA- BLACK RIDGE RESERVOIR
INUNDATION AREA- 4200 WEST POND
POTENTIAL INUNDATION BOUNDARY
NOTE
DUE TO METHOD, PROCEDURES, AND ASSUMPTIONS, USED TO DETERMINE THE FLOODED AREAS, THE LIMITS OF FLOODING SHOWN ARE WORST CASE APPROXIMATIONS AND SHOULD BE USED ONLY AS A GUIDELINE FOR ESTABLISHING EVACUATION ZONES.
RIVERTON CITY / HERRIMAN CITY
BLACKRIGDE RESERVOIR
Regional Inundation and Location Map
REV 2
FIG. 3-1



Public Health Epidemic/Pandemic: No defined geographic extent. Pandemics can spread throughout the county/region/state & beyond. Riverton does only have one hospital which would be a major concern in the event of a widespread pandemic. Individuals, families, employers and communities will all experience difficulties dealing with community mitigation measures. Many problems will come from having children dismissed from schools and childcare programs. There are 15,387children less than 18 years old and likely enrolled in school in Riverton City. Secondary disruptions would occur for parents who would need to balance working with tending their children. Tertiary disruptions would occur for employers with absent employees that must stay

home to care for children and could potentially result in workplaces closing or reducing operations and limiting the availability of essential services. Additionally, 2,911 individuals are 65 years of age and would likely be more susceptible to adverse health effects from a pandemic.

Characteristics	Pandemic Severity Index				
	Category 1	Category 2	Category 3	Category 4	Category 5
Case Fatality Ratio (percentage)	<0.1	0.1-<0.5	0.5-<1.0	1.0-<2.0	>=2.0
Excess Death Rate (per 100,000)	<30	30-<150	150-<300	300-<600	>=600
Illness Rate (percentage of the population)	20-40	20-40	20-40	20-40	20-40
Potential Number of Deaths (based on 2008 population estimate*)	<312	312-<1,562	1,562-<3,125	3,125-<6,249	>=6,249
20th Century UT experience	Seasonal Influenza (illness rate 5-20%)	1957, 1968 Pandemic	None	None	1918 Pandemic

Table. Community Mitigation Plan, Appendix H to the Salt Lake Valley Health Department Pandemic Influenza Preparedness and Response Plan

*** 1,041,578 = Salt Lake County population, 2008 estimate, Utah Population Estimate Committee and the Governor's Office of Planning and Budget, 2008 Baseline Economic and Demographic Projections.**

Earthquake: Significant community assets with potential impacts by earthquake hazards were identified by the Planning Team and include:

- Riverton Public Works Building (EOC)
- Riverton Water Shop
- Riverton City Hall
- Water Tanks: Main Tank, High Tank & Garamandi Tank
- Intermountain Health Care Riverton Hospital
- UFA Fire Stations Located at: 12600 S 4150 W, 112662 S 300 W, and 13000 S 2700 W Riverton High School
- South Hills Middle School Oquirrh Middle School Riverton Elementary
- Southland Elementary Midas Creek Elementary
- Rose Creek Elementary Rosamond Elementary Kari Sue School
- Kauri Sue Hamilton School

Vulnerability Assessment

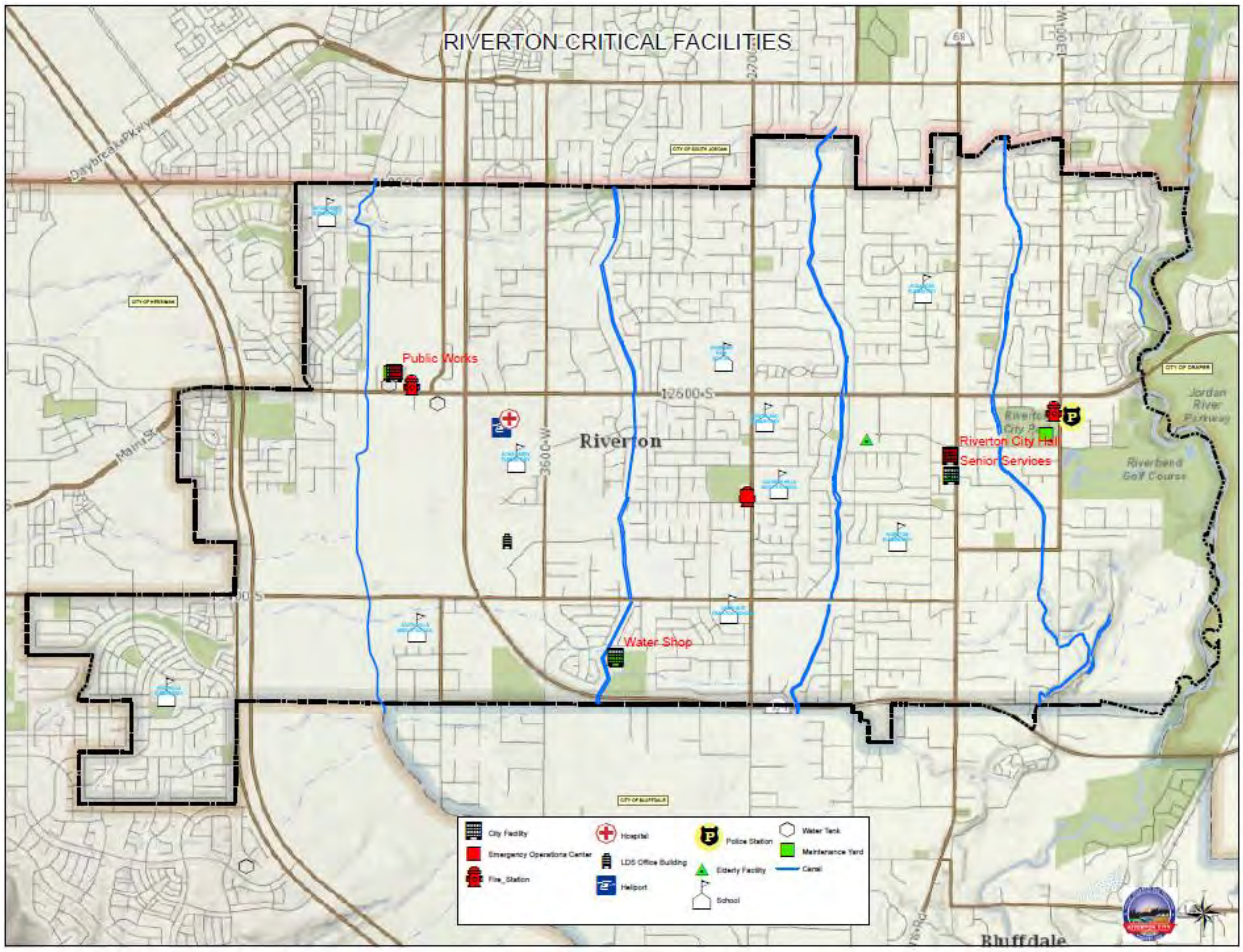
The following values are from the HAZUS analysis performed by WFRC for the 2009 Regional Mitigation Plan. Because no significant changes in the level of risk or the condition of infrastructure, these values are still considered valid estimates of potential impacts to earthquake in Riverton City. They are based on a probabilistic 2500-year event with a Richter magnitude of 7.1 as well as an arbitrary 5.9 event located near the county's most populated areas. These locations and magnitudes were chosen for their likelihood and proximity respectively. Default HAZUS-MH inventory for all infrastructure was used.

Vulnerability of people and infrastructure to earthquake hazards in Riverton City was obtained from the modeling program HAZUS-MH, completed by FEMA Region VIII.

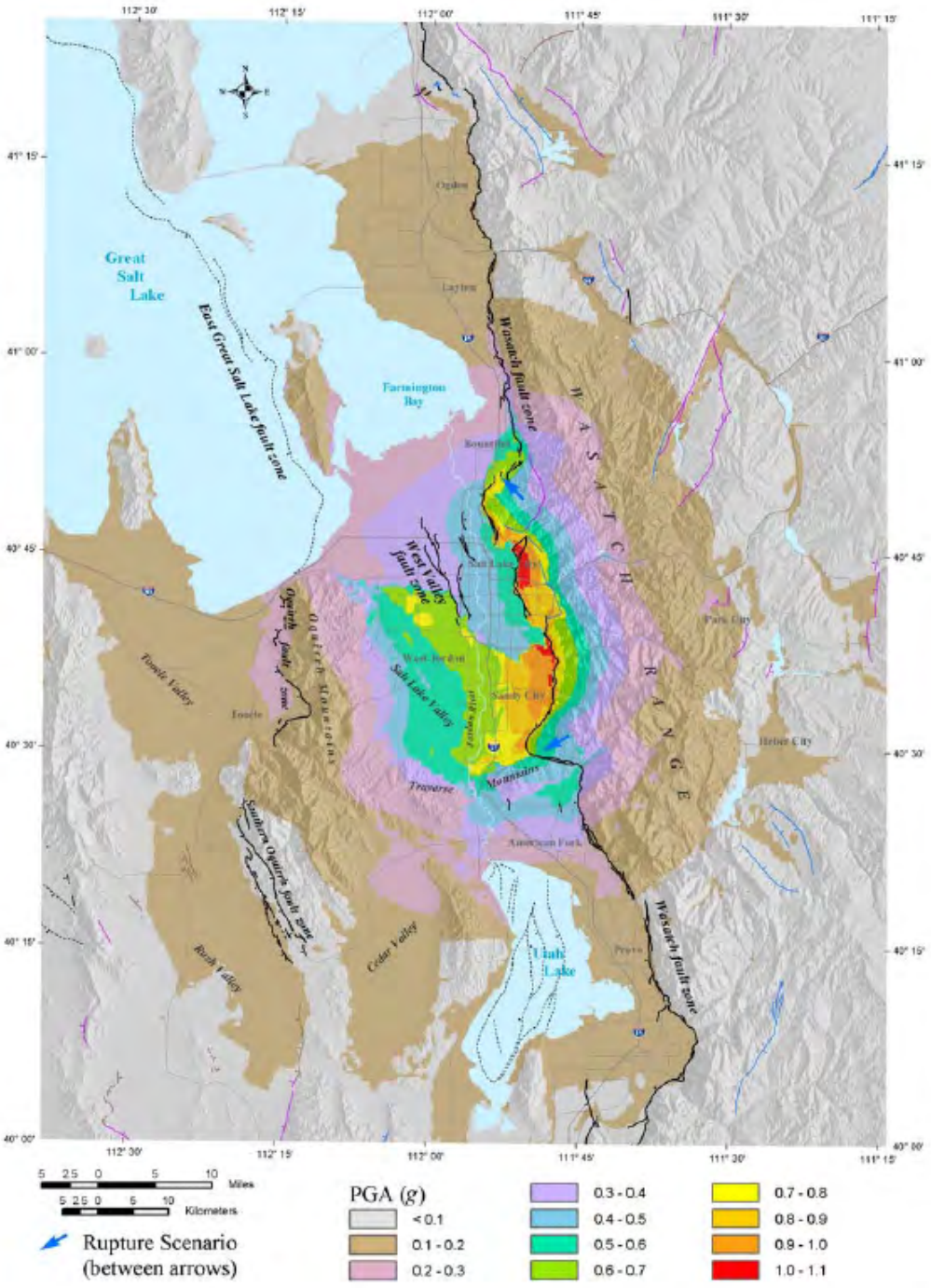
Jurisdiction	*Total Building Economic Loss*	*Loss Ratio*	*Total Debris (tons)*
Riverton	$ 252,898,310	7%	166,609

Jurisdiction	*Displaced Households*	*Individuals Seeking Public Shelter*	*Total Casualties*	*Life-Threatening Injuries and Fatalities*	*URM Count*
Riverton	393	260	100	10	596

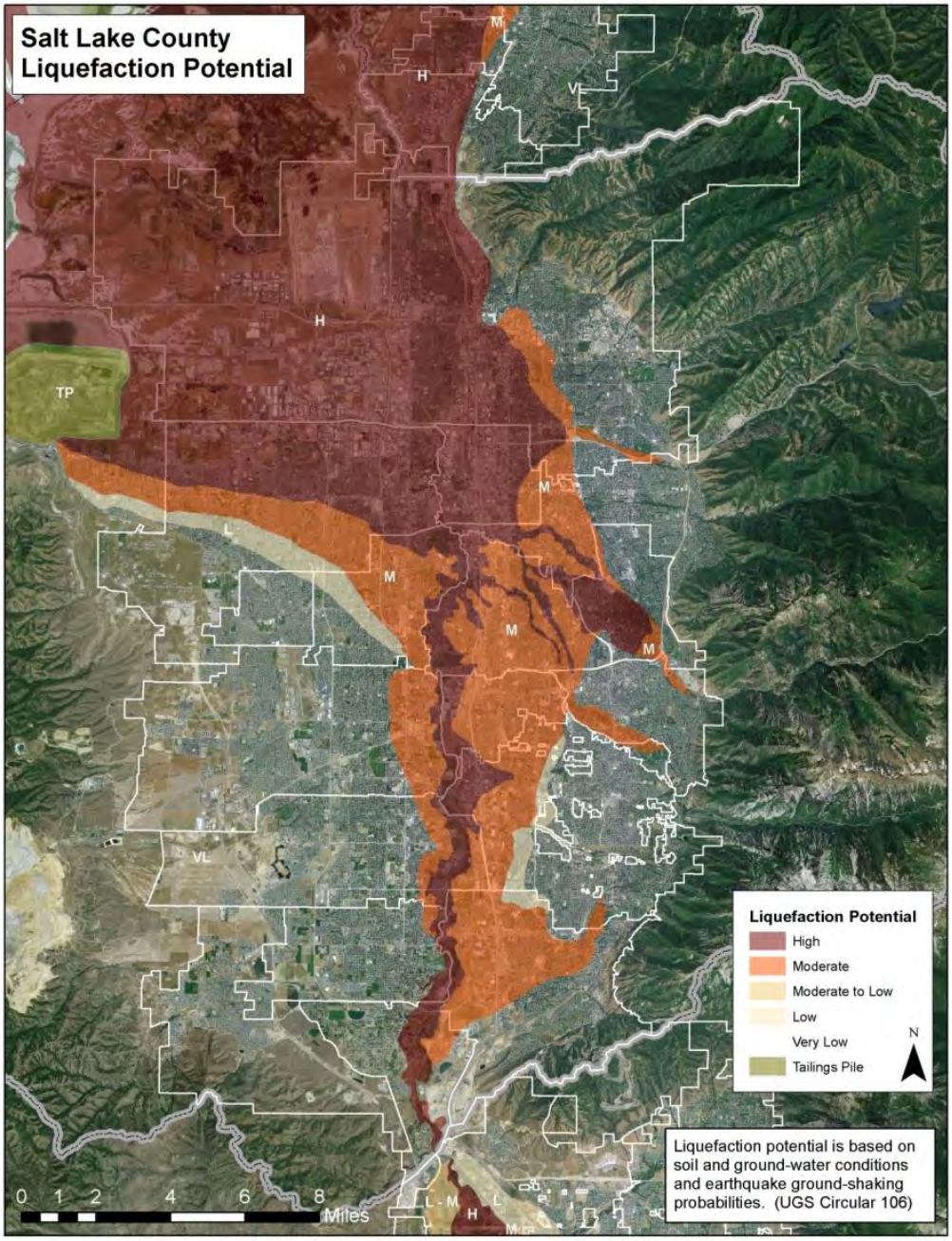
Jurisdiction	*Life-Threatening Ratio to Total Pop*	*URM Ratio to Total Structures*
Riverton	0.025%	6%



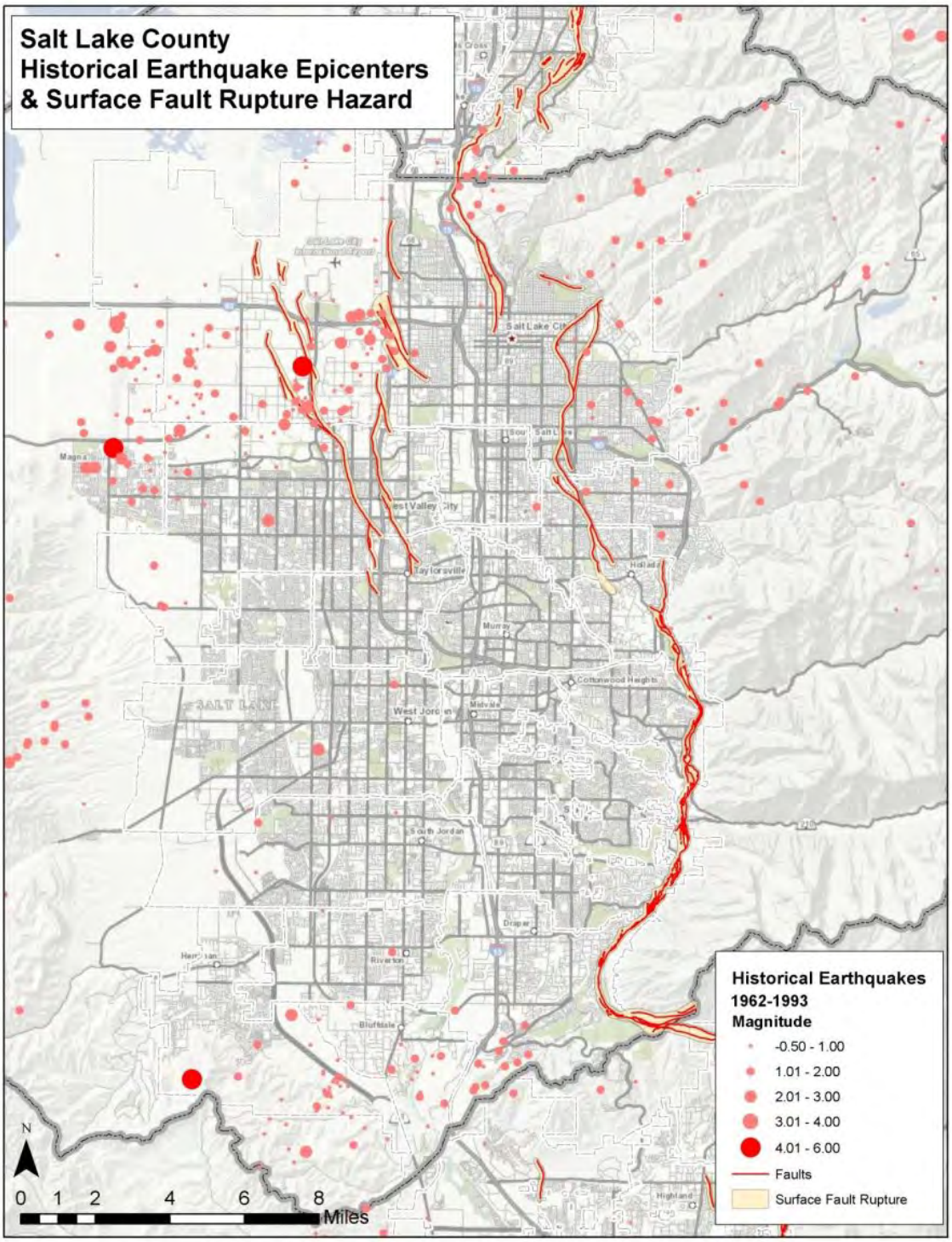
Map: Riverton Critical Facilities (LDS Church)



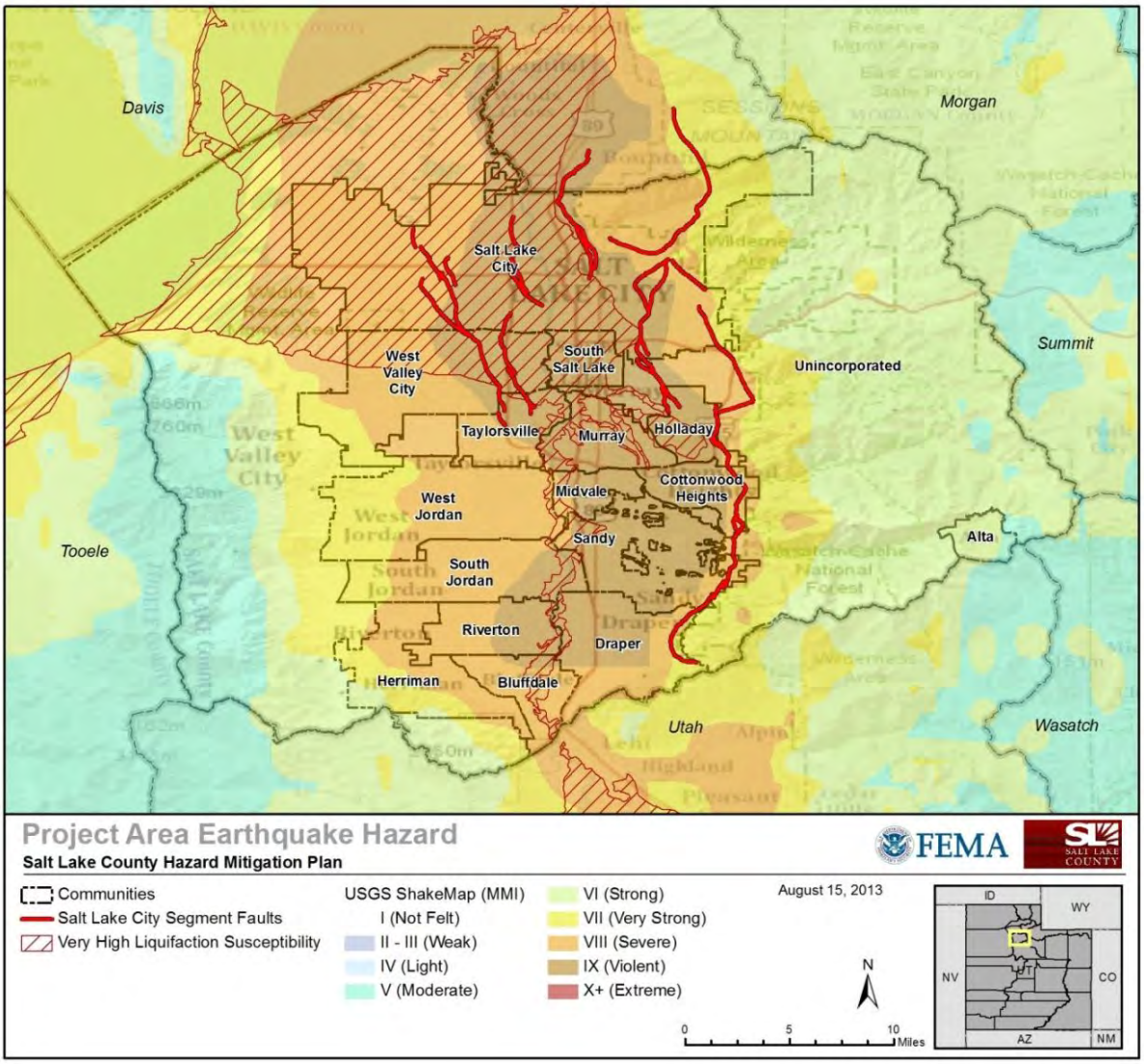
Map from Earthquake-Hazards Scenario for a M 7 Earthquake on the Salt Lake City Segment of the Wasatch Fault Zone, Utah, Utah Geological Survey Special Study 111, 2004



Map. Liquefaction Potential, Salt Lake County



Map 5. Salt Lake County Earthquakes, 1962-1993



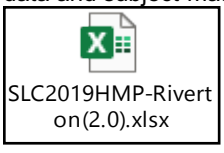
Drought: Due to the unpredictability of drought, it is difficult to identify the areas most threatened and to provide loss estimate values. Utah is the second driest state in the nation. Drought dramatically affects this area because of the lack of water for agriculture and industry, which limits economic activity, irrigation and culinary uses. The severity of the drought results in depletion of agriculture lands and deterioration of soils. In the Wasatch Front region, the risk of drought is high.

Problem Soils: The largest problem in Riverton deals with expansive and collapsible soils. These soils are usually found 4 to 13 feet from the surface and have been identified during the development process in Geotechnical Reports. Most of these types of soils are found between the Jordan River and 4800 West.

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Severe Winter Weather	3	16	48
Severe Weather	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Flooding	2	16	32
Cyber Attack	2	14	28
Hazardous Materials Incident	2	14	28
Drought	2	14	28
Radon	3	9	27
Terrorism	1	25	25
Dam Failure	1	22	22
Wildfire	2	10	20
Landslide and Slope Failure	2	9	18
Tornado	1	11	11
Civil Disturbance	1	8	8
Avalanche	1	0	0

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.



Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1		Avalanche	No Impact	0	0
Dam Failure	Low	1		Dam Failure	Medium	2	6
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Low	1	3
Cyber Attack	Medium	2		Cyber Attack	Medium	2	6
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Medium	2		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	High	3	9
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	Medium	2		Wildfire	Low	1	3

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	No Impact	0	0		Avalanche	No Impact	0	0
Dam Failure	Medium	2	2		Dam Failure	High	3	6
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Low	1	2
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	Medium	2	4
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Medium	2	4
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Low	1	2
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	Low	1	1		Wildfire	Low	1	2

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**	**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)	**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)	**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)	**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)	**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	No Impact	0	0		Avalanche	Unlikely	0	0
Dam Failure	Medium	2	2		Dam Failure	Medium	2	6
Drought	Medium	2	2		Drought	Low	1	3
Civil Disturbance	Medium	2	2		Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	2		Cyber Attack	Medium	2	6
Earthquake	High	3	3		Earthquake	High	3	9
Flooding	Low	1	1		Flooding	Low	1	3
Hazardous Materials Incident	Medium	2	2		Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	3		Public Health Epidemic/ Pandemic	High	3	9
Radon	No Impact	0	0		Radon	Unlikely	0	0
Severe Weather	Low	1	1		Severe Weather	Unlikely	0	0
Severe Winter Weather	Medium	2	2		Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	3		Terrorism	High	3	9
Tornado	Low	1	1		Tornado	Unlikely	0	0
Wildfire	Low	1	1		Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**	**Catastrophic Factor**—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)	**High**—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)	**Medium**—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)	**Low**—Low potential that this hazard could be catastrophic (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)	**Unlikely**—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Bury the canal and install piping and lining to open the canal	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Flood (Riverine and Urban/Flash Flooding)	Public Works	Riverton City EM	High	High	Grants or Local Funding	High	Long-term	The Eastside Canal (1300W) and South Jordan Canal (primarily southeast portion by the new development are prone to flooding. This project would strength the structural integrity of the canals.
Augment the bridges and canals to increase stormwater capacity	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	All-Hazards, primarily Flood (Riverine and Urban/Flash Flooding)	Public Works	Riverton City EM	High	High	Grants or Local Funding	High	Long-term	This project would ensure the bridges can be utilized by first responders during an emergency event and the bridges would not be flooded.
Increase stormwater culvert and collection area	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Flood (Urban/Flash Flooding)	Public Works	Riverton City EM	Medium	High	HMA/PDM Grant or other federal funds	Medium	Long-term	

		• Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.									

Mitigation Table - Ongoing Actions

Action	Year Initiated	Goal/ Objective	Hazard(s)	Agency Lead	Benefit	Cost	Funding Source	Priority	Timeframe	Comment
Establish Post-Disaster Action Plan for City Continuity of Operations Plan	2014	Goal 5 Ensure and promote ways to increase government and private sector continuity of services during and after a disaster.	All-Hazards	Riverton Emergency Management	High	Medium	HMA and County and state funds	High	Ongoing	Each City Department has been given the assignment to write SOP's for their day to day operations. These procedures are shared between departments and employees are being cross-trained in these procedures.
Train and Certify City Inspectors to Conduct Post-Disaster Damage Assessment	2014	Goal 1 Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	All-Hazards	Public Works and Riverton Emergency Management	High	Medium	General funds, HMA, and other County grants	High	Ongoing	In the event of an emergency where structural damage has been encountered, the Engineers, Building Inspectors, and Public Works inspectors will be paired to assess the stability and safety of the structure. Two Engineers have been trained in damage assessment. Over the next two years, the City will pursue and train the remainder of our assessment teams.
Setup and Operate City Emergency Operations Centers	2014	Goal 1 Protect the lives, health, and safety of the citizens of Salt	All-Hazards	Riverton Emergency Management	High	High	HMA and other federal grants	High	Ongoing	The City recently built a new Public Works Facility to house the City EOC. The Building was built with various training, conference, and meeting rooms to house the various

		Lake County before, during, and after a disaster.								branches of the operation center. The facility has a 1400 AMP generator and has multiple outbuildings, which can be used for various purposes during an emergency. Over the next 3 years or as budget dictates we will add equipment, supplies, and communication capabilities to the facility. Additional facilities will be identified and equipped in the future.
Update and Enhance Riverton City Communications Plans	2014	Goal 3 Enhance and protect the communication and warning/notification systems in the County.	All-Hazards	Communications	High	Medium	General funds and additional grants	High	Ongoing	In July of 2014, Riverton hired a full-time media and communications expert. One of the responsibilities of this position is to set up and provide multiple modes of communication for public outreach in the event of an emergency.
Complete City Culinary Water System Mapping and Models	2014	Goal 6 Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.	Flooding and Drought	Public Works and Water Resources Engineer	High	High	Local, state, and federal funds such as HMA	High	Ongoing	A great concern of the City is the protection of the Water System. March 2014 the City move the responsibility of all engineering related to the water system to the Public Works Department. July 2014, the City hired a Water Resources Engineer and began the process of updating the model and mapping the City Network. The process will identify weaknesses and be used to built redundancy in the system.
Complete Critical Storm Drain Facilities	2014	Goal 1 Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Flooding	Public Works	High	High	Local, state, and federal funds such as HMA	High	Ongoing	In 2011 Riverton hired a consultant to conduct a study a region of the City prone to flooding and property damage. This study was completed along with other studies conducted by the Engineering Division. From these studies, a list of capital improvement projects and procedures was generated and prioritized. These projects were placed on a 5 to 7-year project list

										which is being funded by the Stormwater Utility. Approximately $1,500,000 has been spent updating the City's infrastructure.
Train Personnel on emergency plans and SOP's	2014	Goal 6 Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.	All-Hazards	Riverton Emergency Management	High	Low	Local funds	High	Ongoing	Riverton City has multiple emergency plans and SOP's as it relates to Dam's, Severe Weather, and Flooding. The plans are only familiar to a few City Supervisors. The City will familiarize, train, and cross-train all maintenance and field personal in the emergency operation of these plans.
Implement a GPS Tracking System on City Maintenance Vehicles	2014	Goal 2 Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	All-Hazards	Riverton Emergency Management	Medium	High	General funds, state and federal grants	Low	Ongoing	In the event of emergency tracking resources and personnel is essential. The City has implemented a program to install real-time GPS tracking on its vehicles. To date, 16 vehicles have been equipped. Additional units will be installed as budget permits.
Conduct an inventory and assessment of communications equipment and systems and identify needs	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	All-Hazards	Riverton Emergency Management	Medium	Low	General	Medium	Ongoing	Riverton City continues to improve and maintain its communications capabilities
Conduct Training and awareness activities on communication equipment, tools, and systems	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	All-Hazards	Riverton Emergency Management	Medium	Low	General	Medium	Ongoing	Riverton City continues to participate in training and exercises designed to practice using communication tools and equipment
Examine current data availability and sharing capabilities, evaluate needs, and	2009	2 – Improve awareness and analysis of hazards 2.1 – Improved Quality and	All-Hazards	Riverton Emergency	Medium	Low	General	Medium	Ongoing	Riverton city GIS personnel actively participate in several coordinating

identify shortcomings		Access to digital geographic (GIS) hazards data		Management and GIS						groups that address issues associated with geographic data
1 – Integrate existing hazard monitoring networks in emergency operations centers. Utilize sensors such as weather stations, stream gages, seismograph stations, road conditions, etc.	2009	2 – Improve awareness and analysis of hazards 2.2 – Improve and expand hazard monitoring capabilities	All-Hazards	Riverton Emergency Management	Medium	Low	Local	Medium	Ongoing	Riverton City continues to educate and implement hazard monitoring networks in its Emergency Operations Center
Utilize GIS to identify facilities and infrastructure at risk	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	All-Hazards	Riverton Emergency Management and GIS	Medium	Medium	Local and HMA	Medium	Ongoing	As part of Riverton City Public Works facility an EOC component has been added to its infrastructure, efforts to complete other components of the EOC are in progress
Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment resources and redundancy, and adequate emergency procedures	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	All-Hazards	Public Works	Medium	Medium	Local and HMA	Medium	Ongoing	Riverton City continues to inspect
Implement improvements to address hazards	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to	All-Hazards	Riverton Emergency Management	High	High	HMA and other federal grants	High	Ongoing	Riverton is identifying options and opportunities to address issues

identified in the assessment		critical facilities and infrastructure								
Provide education regarding all-natural hazards through live trainings, as well as web-based, print and broadcast media	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – establish a comprehensive public education program	All-Hazards	Riverton Emergency Management	Medium	Low	Local	Medium	Ongoing	Riverton City attends and participates in community-based trainings
Utilize maps and similar products on County EM website and other media to educate public on areas at risk to hazards	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – establish a comprehensive public education program	All-Hazards	Riverton Emergency Management and GIS	Medium	Low	Local	Medium	Ongoing	Riverton City personnel are working to compile a make available hazard maps to help educate the public on potential hazards in the city
Coordinate with existing public education programs such as the American Red Cross, Utah Living with Fire, be Ready Utah, the National Weather Service, etc.	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – establish a comprehensive public education program	All-Hazards	Riverton Emergency Management	High	Low	Local	High	Ongoing	Riverton City educates the community by using programs such as Be Ready Utah to help educate the community during a variety of events
Emergency Managers will coordinate with local water districts/public utilities to support ongoing conservation efforts	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Drought	Riverton Emergency Management	Medium	Low	Local	Medium	Ongoing	Riverton City continues to educate citizens concerning water consumption

Provide information on landscaping alternatives for persons subject to green area requirements	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Drought	Riverton Emergency Management	Medium	Low	Local	Medium	Ongoing	Through social media, monthly newsletters Riverton City educates and offers information to citizens concerning water consumption
Identify structures at risk to earthquake damage	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	Earthquake	GIS, Fire, and Emergency Management	Medium	Medium	Local	Medium	Ongoing	Riverton City is working with GIS, Fire, Emergency Management on a Risk Management plan, on a risk management plan to evaluate their level of risk,
Determine potential flood impacts and identify areas in need of additional flood control structures	2009	1 – Protection of life and property before, during and after a flooding event 1.2 – Encourage appropriate flood control measures, particularly in new developments	Flooding	City Engineer and Public Works	Medium	Medium	Local	Medium	Ongoing	The City Engineer and Public Woks Director regularly review the impact of development and the need for flood control infrastructure and make recommendations as needed.
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures	2009	1 – Protection of life and property before, during and after a flooding event 1.2 – Encourage appropriate flood control measures, particularly in new developments	Flooding	City Engineer and Public Works	Medium	High	Local, state, and federal, such as HMA	Medium	Ongoing	The City Engineer and Public Works Director oversee the construction of flood control structures
Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain the effectiveness of	2009	1 – Protection of life and property before, during and after a flooding event 1.3 – Provide maintenance, repairs, and improvements to drainage structures,	Flooding	City Engineer and Public Works	High	High	Local, state, and federal, such as HMA	High	Ongoing	The Stormwater Division of the Public Works Department continues to maintain and repair all drainage systems in the City.

stormwater and flood control systems		stormwater systems and flood control structures								
Identify and assess structures for deficiencies	2009	2 – Reduce threat of unstable or inadequate flood control structures 2.1 – Reduce potential for failure of flood control structures	Flooding	City Engineer and Public Works	Medium	Medium	Local	Medium	Ongoing	The City Engineering Division in cooperation with the Public Works Department regularly review and inspect City owned infrastructure and make recommendations as needed
Modify structures as needed to address deficiencies	2009	2 – Reduce threat of unstable or inadequate flood control structures 2.1 – Reduce potential for failure of flood control structures	Flooding	City Engineer and Public Works	High	High	Local, state, and federal, such as HMA	High	Ongoing	The City Engineering Division in cooperation with the Public Works Department make repairs as needed to deficient structures
Assist NWS in making other agencies and departments aware of available resources	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.2 – Increase awareness of information services provided by NWS	Severe Weather	Riverton Emergency Management	Medium	Medium	Local	Medium	Ongoing	Riverton City supports the NWS efforts for education and outreach and makes internal departments aware of NWS resources
Assist Forest Service Utah Avalanche Forecast Center and other organizations in promoting avalanche hazard awareness for backcountry users	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.3 – Encourage safe practices in avalanche prone areas	Severe Weather	Riverton Emergency Management	Medium	Medium	Local	Medium	Ongoing	Riverton City supports the efforts for education and outreach

Mitigation Table – Completed and Removed Actions

Category	Year Initiated	Goal/Objective	Action	Status	Comments
All-Hazards	2009	4 – Improve response capabilities through mutual-aid agreements 4.1 – Utilize mutual-aid agreements in accordance with National Incident Management System (NIMS) requirements	1 – Compile inventory of mutual-aid agreements and memoranda of understanding (MOU) and identify deficiencies	Completed	Riverton has formal agreements for Police, Fire, and water.
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	1 – Set up livestock water rotation in areas of agricultural use	Removed	This is not applicable to Riverton City
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.3 – Encourage development of secondary water systems	1 – Coordinate with water districts to plan for, develop and/or expand secondary water	Completed	Riverton City has a secondary water system throughout the city
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	2 – Research feasibility of an incentive program for retrofitting privately-owned buildings, particularly unreinforced masonry	Removed	Riverton City does not have funding to support this type of program. Riverton does not intend to move this activity forward due to the limited number of URM structures in the community.
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	3 – Complete seismic rehabilitation/retrofitting projects of public buildings at risk	Removed	Due to the age of the City's public buildings, there are not major retrofit or rehabilitation projects needed at this time in Riverton City
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure	1 – Provide educational materials to unreinforced masonry home and business owners	Removed	There are very few URM homes and businesses located in Riverton that would make this activity cost-effective for the City to

		1.2 – Improve public education regarding earthquake risks to unreinforced masonry buildings			engage in. Riverton City support county-level efforts to share this type of information
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.3 – Improve Seismic Hazard understanding and seismic resistance of CUWCD Red Butte Dam in Salt Lake County.	1 – Procure Engineering Consultant to perform the nonstructural design and geotechnical assessment and review.	Removed	Not applicable to Riverton City
Flooding	2009	1 – Protection of life and property before, during and after a flooding event 1.1 – Provide 100% availability of the National Flood Insurance Program	1 – Assist Cities with NFIP application	Removed	While active in the NFIP, this mitigation action is no longer needed.
Flooding	2009	1 – Protection of life and property before, during and after a flooding event 1.1 – Provide 100% availability of the National Flood Insurance Program	2 – Encourage Communities to actively participate in NFIP	Removed	While active in the NFIP, this mitigation action is no longer needed.
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.1 – Maintain status as a StormReady Community	1 – Maintain Hazardous Weather Operations Plan according to StormReady requirements	Removed	Riverton City does not have a Weather Operations Plan and does not participate in the Storm Ready Program, This is a Salt Lake County-level program
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.1 – Maintain status as a StormReady Community	2 – Maintain Contact with NWS prior to re-application in 2010	Removed	Riverton City does not have a Weather Operations Plan and does not participate in the Storm Ready Program, This is a Salt Lake County-level program

Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.4 – Examine the vulnerability of patrons at large event venues to extreme weather events	1 – Work with NWS to develop large event venue weather safety and evacuation procedures	Removed	Riverton City has not developed a large event venue weather safety plan and/or evacuation procedures with the NWS
Slope Failure	2009	1 – Reduce or eliminate the threat of slope failure damage 1.1 – Reduce the threat of slope failures following wildfires	1 – Develop protocol for working with State and Federal agencies in reducing the impact of post-fire debris flow hazard	Removed	This is a very low probability event for the City and not applicable
Slope Failure	2009	1 – Reduce or eliminate the threat of slope failure damage 1.1 – Reduce the threat of slope failures following wildfires	1 – Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential	Removed	This is a very low probability event for the City and not applicable
Wildland Fire	2009	1 – Community education on wildfire hazard 1.1 – Reduce risk from wildfire through education programs	1 – Increase public awareness through “Firewise” program	Removed	Ended program due to very low probability in Riverton City and not applicable
Wildland Fire	2009	1 – Community education on wildfire hazard 1.1 – Reduce risk from wildfire through education programs	2 – Educate homeowners on the need to create defensible space near structures in WUI	Removed	Ended program due to very low probability in Riverton City and not applicable
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.1 – Assist homeowners with creating defensible space near structures in WUI areas	1 – Designate and promote county-wide annual initiative for clearing fuels	Removed	Not considered a threat to Riverton City
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective	2 – Provide waste removal, such as chipping of green waste by public works, following designated fuel clearing day/week	Removed	Not considered a threat to Riverton City

		actions and improved fire response capabilities 2.1 – Assist homeowners with creating defensible space near structures in WUI areas			
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.2 – Improve evacuation capabilities for WUI areas	1 – Work with experts and communities to develop or update evacuation plans	Removed	Not considered a threat to Riverton City
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.2 – Improve evacuation capabilities for WUI areas	2 – Evaluate transportation network and address needed improvements to facilitate evacuation and emergency response	Removed	Not considered a threat to Riverton City
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.3 – Improve addressing system in WUI areas to facilitate emergency response	1 – Identify all facilities, businesses, and residences, particularly in the canyons, and assign addresses according to current county addressing standards	Removed	Not considered a threat to Riverton City
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.3 – Improve addressing system in WUI areas to facilitate emergency response	2 – Incorporate improved addresses in fire-dispatch and other databases	Removed	Not considered a threat to Riverton City
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective	1 – Reduce fuels around publicly owned structures	Removed	Not considered a threat to Riverton City

		actions and improved fire response capabilities 2.4 – Complete wildfire protection projects			
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	2 – Implement fire breaks and other protective measures	Removed	Not considered a threat to Riverton City
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	4 – Assist communities in developing Community Wildfire Protection Plans or similar plans	Removed	Not considered a threat to Riverton City
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	3 – Establish agreements to share communications equipment between agencies involved in emergency operations	Complete	
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.3 – Conduct communications Strategic Planning	1 – Establish a coordinating group to address long-term communication needs and implementation strategies	Complete	
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	Establish agreements to share communications equipment between agencies involved in emergency operations	Removed	No formal agreements exist to share communications equipment can be shared as part of other mutual aid agreements that are in place

All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.2 – Maintain communications capabilities for critical facilities	Establish redundancy for dispatch centers and other critical communications	Removed	Riverton City relies on the Valley Communications Center (VECC) for dispatch services. They coordinate with other PSAPS to provide redundancy
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.3 – Conduct communications Strategic Planning	Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group	Completed	Riverton City recently received a new 800 mg license and purchased upgraded radios to assist with communications
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.3 – Conduct communications Strategic Planning	1 – Establish a coordinating group to address long-term communication needs and implementation strategies	Complete	
All Hazards	2009	2 – Improve awareness and analysis of hazards 2.1 – Improved Quality and Access to digital geographic (GIS) hazards data	4 – Provide centralized access to geographic data to emergency planners and responders	Complete	
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.2 – Increase awareness of information services provided by NWS	Assist NWS in making other agencies and departments aware of available resources	Complete	Riverton City supports the NWS efforts for education ad outreach and makes internal departments aware of NWS resources
Slope Failure	2009	1 – Utilize recommendations provided by the State Geological Hazards Working Group to address land-use and planning for new developments	Reduce or eliminate the threat of slope failure damage and address landslide hazards in new sub-divisions	Complete	Riverton City Engineering and planning reviews recommendations as provided pertaining to development within the city

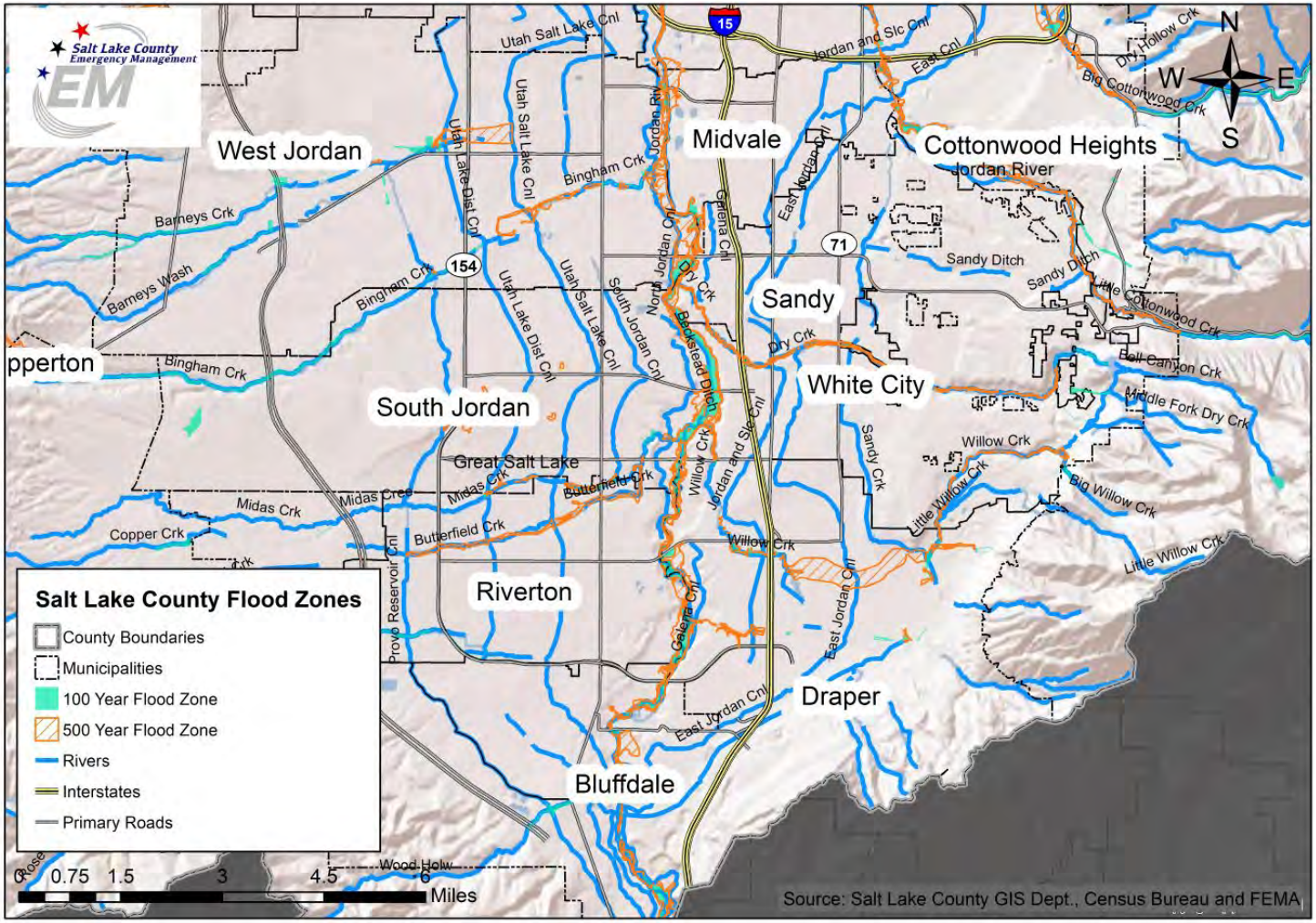
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	Assess existing water flow capabilities, both public and private, and address deficiencies	Complete	The Riverton City water system meets and or exceeds requirements for providing water flow for firefighting purposes in the City
All-Hazards	2009	4 – Improve response capabilities through mutual-aid agreements 4.1 – Utilize mutual-aid agreements in accordance with the National Incident Management System (NIMS) requirements	Pursue and implement needed mutual-aid agreements	Complete	Riverton City is working with outside agencies for Mutual-aid agreements
All-Hazards	2009	2 – Improve awareness and analysis of hazards 2.2 – Improve and expand hazard monitoring capabilities	Identify and implement additional hazard monitoring capabilities.	Complete	Riverton City continues to implement monitoring capabilities by increasing is data base to allow texting, and other types of social media
All-Hazards	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – establish a comprehensive public education program	Incorporate information about the cascading effects of hazards in education programs	Complete	Riverton City attends and participates in training and community outreach programs.
All-Hazards	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – establish a comprehensive public education program	Develop education programs to target specific groups including homeowners, developers, schools and people with special needs	Complete	Riverton City education programs are customizable for all kinds of groups and available to all members of the community
All-Hazards	2009	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	Establish and enforce appropriate planning, zoning, and building code ordinances	Complete	Riverton City enforces all current ordinance and building codes including ordinances like our Flood Damage Prevention and Land Disturbance ordinances

All-Hazards	2009	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	Ensure current hazard ordinances are available for viewing online	Complete	Riverton City continues to update and make available to the public through social media all changes and improvements to ordinances and codes
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Continue to encourage water conservation utilizing and promoting outreach material from all water districts in the County	Complete	Riverton City continues to educate and remind the importance of conservation with both culinary and secondary water systems
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Implement water-saving devices and practices in public facilities	Complete	Riverton City has installed a secondary water system throughout the city and is available to all residents. 90% of city parks are watered with secondary water
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Repair, maintain and improve water distribution infrastructure to prevent loss from leakage, breaks, etc.	Complete	Riverton City responds immediately to water breaks and leaks. Water department performs regular inspections of water system leaks as well as theft of services.
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Coordinate public safety water use, such as hydrant testing	Complete	Riverton City coordinates all water use, including the testing of hydrants in partnership with the fire department
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events	Meet with NWS representative on an annual basis to receive information on new services and alerts available	Complete	Riverton City participates in briefings provided by NWS

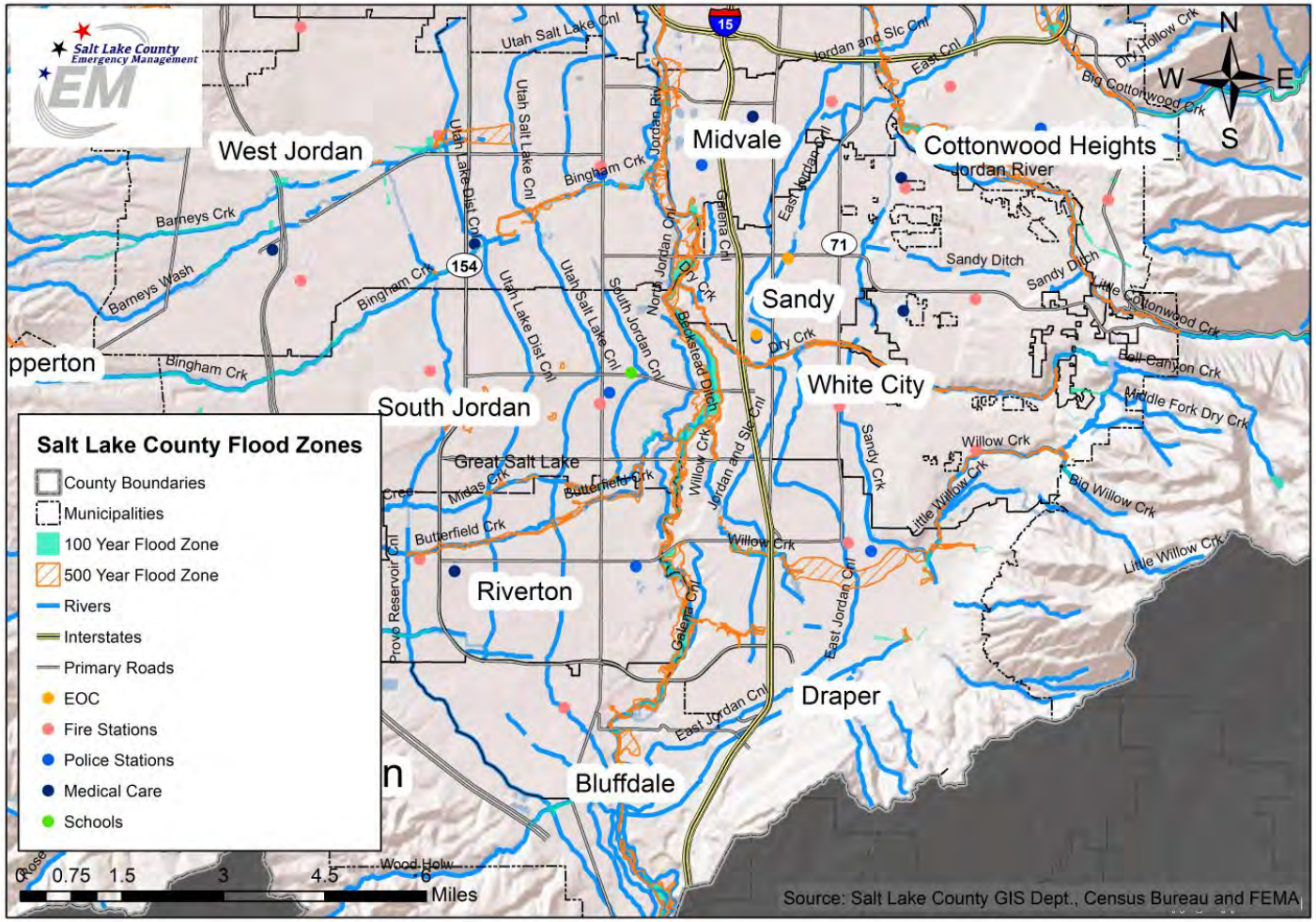
		1.2 – Increase awareness of information services provided by NWS			
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.2 – Increase awareness of information services provided by NWS	Assist NWS in making other agencies and departments aware of available resources	Complete	Riverton City supports the NWS efforts for education and outreach and makes internal departments aware of NWS resources
Slope Failure	2009	1 – Utilize recommendations provided by the State Geological Hazards Working Group to address land-use and planning for new developments	Reduce or eliminate the threat of slope failure damage and address landslide hazards in new sub-divisions	Complete	Riverton City Engineering and planning reviews recommendations as provided pertaining to development within the city
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	Assess existing water flow capabilities, both public and private, and address deficiencies	Complete	The Riverton City water system meets and or exceeds requirements for providing water flow for firefighting purposes in the City

Jurisdiction Maps

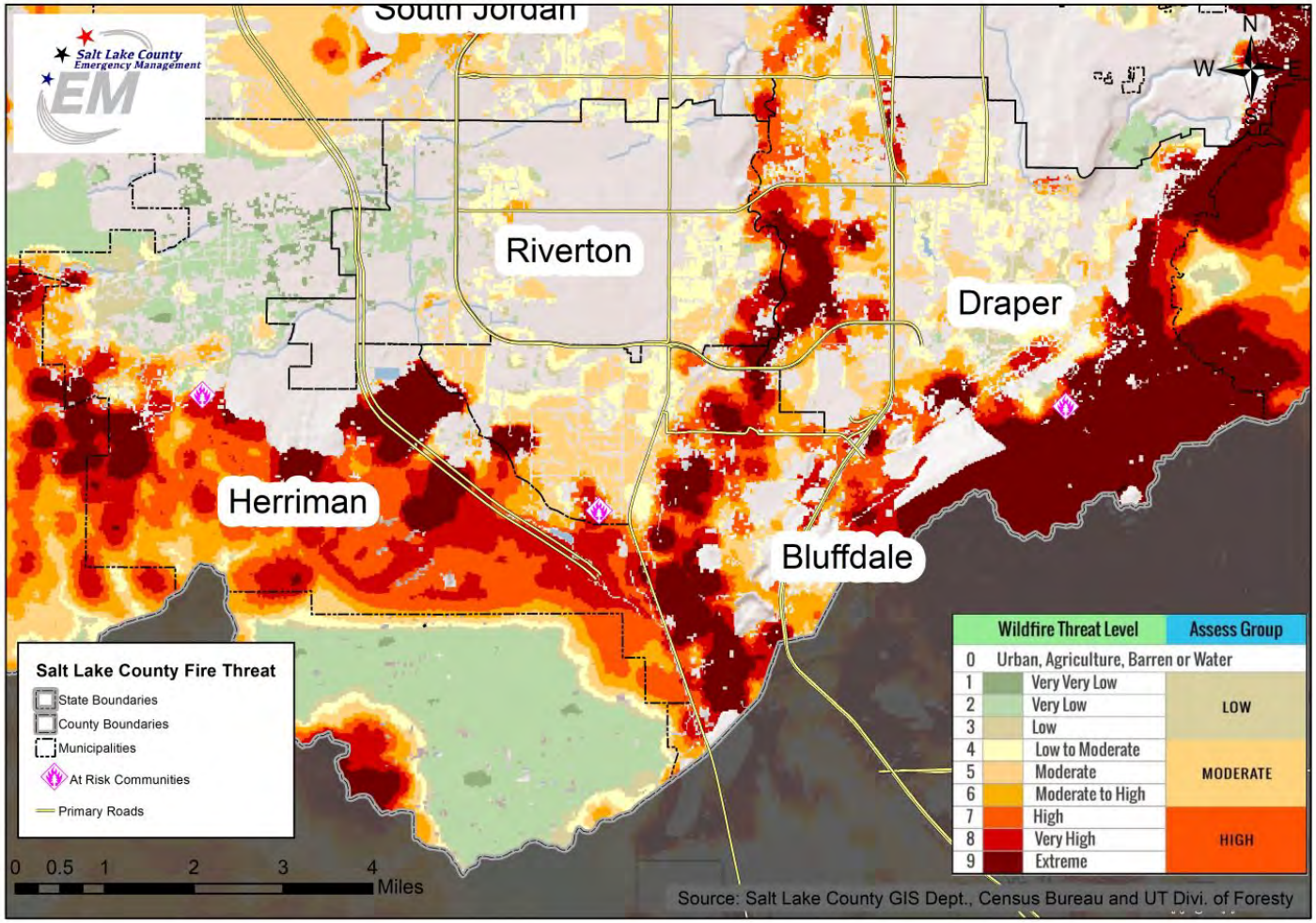
Map: 100 Year and 500 Year Flood Zone



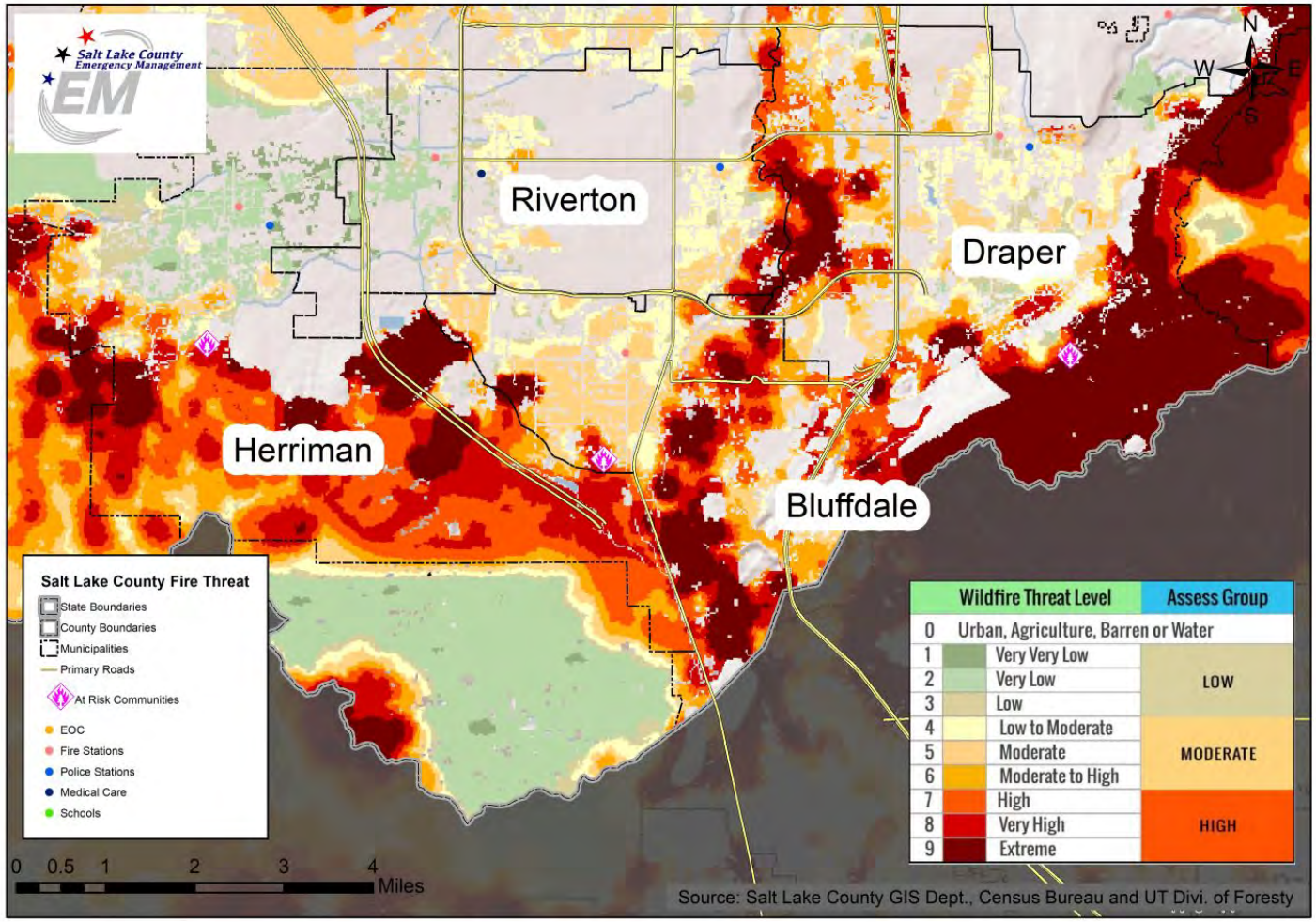
Map: 100 Year and 500 Year Flood Zone with Critical Facilities



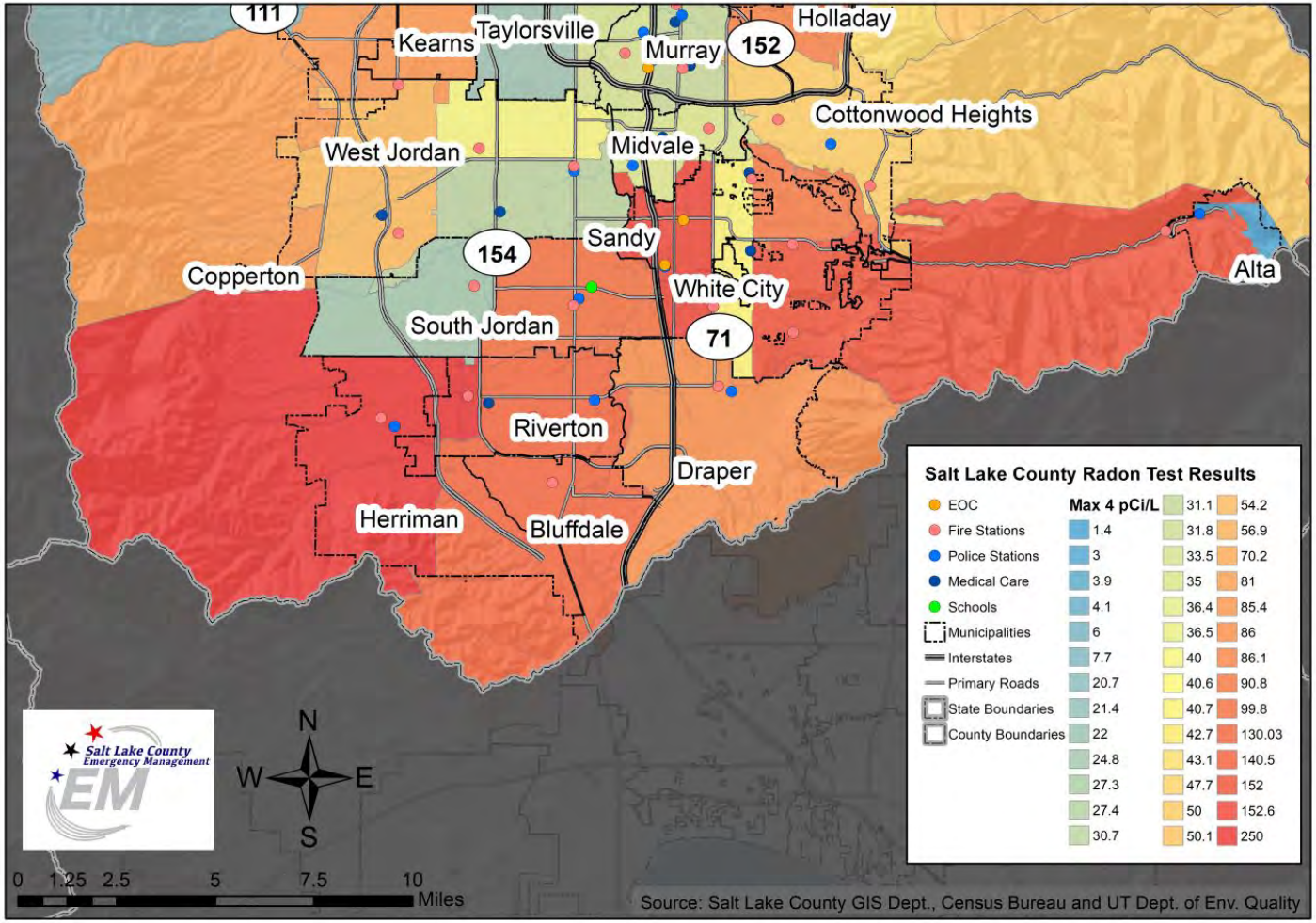
Map: Wildfire Threat Level



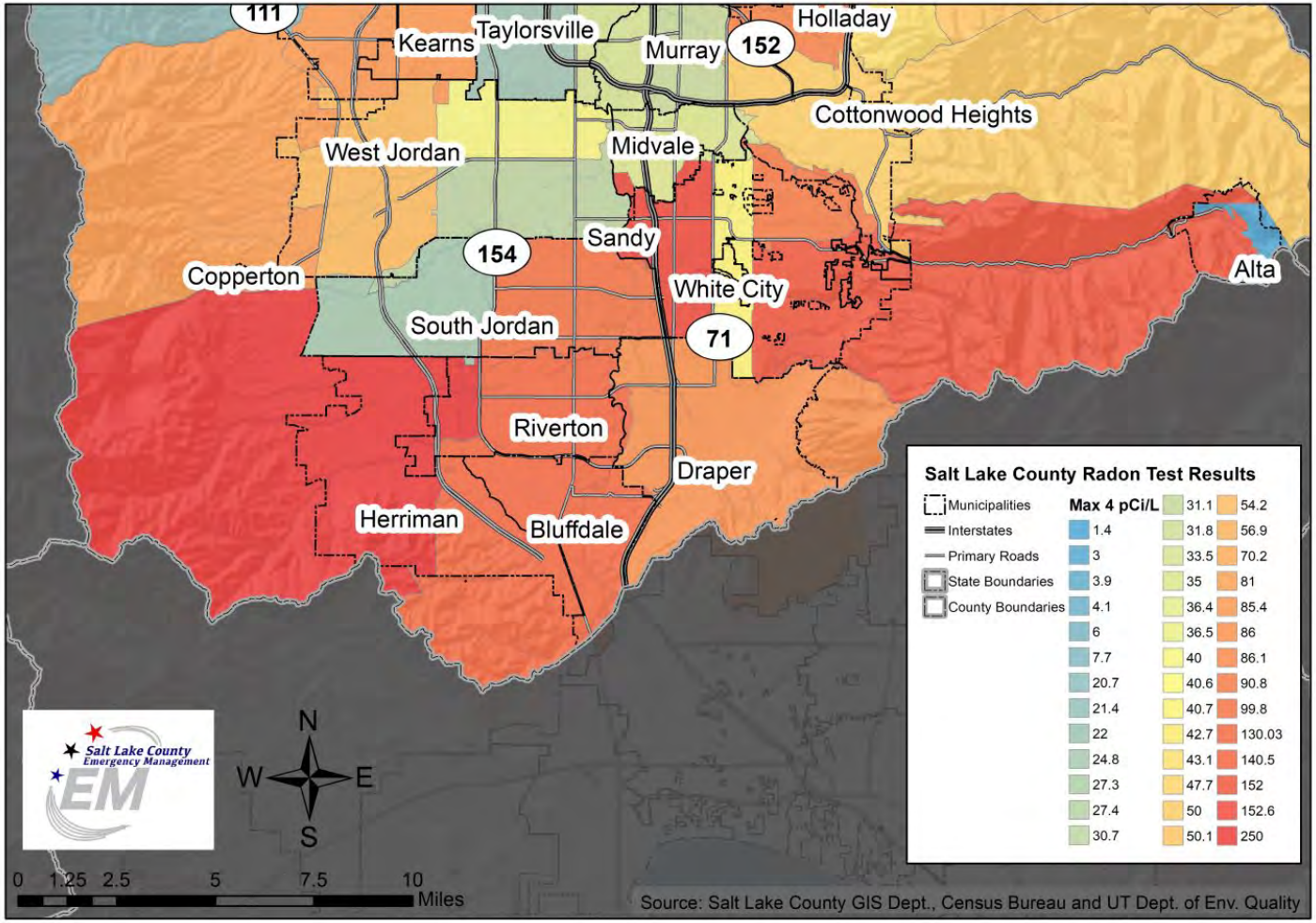
Map: Wildfire Threat Level with Critical Facilities



Map: Radon


111
Kearns
Taylorsville
Murray
152
Holladay
Cottonwood Heights
West Jordan
Midvale
Sandy
154
Copperton
White City
Alta
South Jordan
71
Riverton
Draper
Herriman
Bluffdale
Salt Lake County Radon Test Results
EOC
Fire Stations
Police Stations
Medical Care
Schools
Municipalities
Interstates
Primary Roads
State Boundaries
County Boundaries
Max 4 pCi/L
1.4
3
3.9
4.1
6
7.7
20.7
21.4
22
24.8
27.3
27.4
30.7
31.1
31.8
33.5
35
36.4
36.5
40
40.6
40.7
42.7
43.1
47.7
50
50.1
54.2
56.9
70.2
81
85.4
86
86.1
90.8
99.8
130.03
140.5
152
152.6
250
Salt Lake County Emergency Management
EM
N
W
E
S
0 1.25 2.5 5 7.5 10
Miles
Source: Salt Lake County GIS Dept., Census Bureau and UT Dept. of Env. Quality

Map: Radon with Critical Facilities



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: Salt Lake City

Hazard Mitigation Plan Point of Contact

Primary Point of Contact	Alternate Point of Contact
Name: Pam Lofgreen Title: Emergency Manager Department: Emergency Management Address: 475 South 300 East Office Phone: (801) 799-3601 Cell Phone: (801) 209-7310 Email Address: Pamela.Lofgreen@slcgov.com Website: https://www.slc.gov/em/	Name: Audrey Pierce Title: Critical Infrastructure Liaison Department: Emergency Management Address: 475 South 300 East Office Phone: (801) 799-3603 Cell Phone: (801) 403-9721 Email Address: Audrey.Pierce@slc.gov.com Website: https://www.slc.gov/em/

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** 1847
- **Current Population:** 200,591 (V2018 estimate)
- **Population Growth:** The population grew an estimated 7.6% from April 1, 2010 to July 1, 2018.

2018 Population	2010 Population Estimate	Estimated % Change 2010-2018	2017 # of Housing Units	2014 Estimated # of Housing Units
200,591	186,443	7.6%	83,676	80,969

Location and Description: Salt Lake City is located in the northeast corner of the Salt Lake Valley surrounded by the Great Salt Lake to the northwest and the steep Wasatch and Oquirrh mountain ranges on the eastern and southwestern borders, respectively. Its encircling mountains contain several narrow glacial and stream carved canyons. Among them, City Creek, Emigration, Millcreek, and Parley's border the eastern city limits. Salt Lake City has a total area of 110.4 mi² and an average elevation of 4,327 feet above sea level. The lowest point within the boundaries of the city is 4,210 feet near the Jordan River and the Great Salt Lake, and the highest is Grandview Peak, at 9,410 feet.

The Great Salt Lake is separated from Salt Lake City by extensive marshlands and mudflats. The metabolic activities of bacteria in the lake result in a phenomenon known as "lake stink", a scent reminiscent of foul poultry eggs, two to three times per year for a few hours. The Jordan River flows through the city and is drainage of Utah Lake that empties into the Great Salt Lake.

The Salt Lake Valley floor is the ancient lakebed of Lake Bonneville, which existed at the end of the last Ice Age. Several Lake Bonneville shorelines can be distinctly seen on the foothills or benches of nearby mountains.

Brief History: The city was founded in 1847 by Brigham Young, Isaac Morley, George Washington Bradley, and several other Mormon followers, who extensively irrigated and cultivated the arid valley. Immigration of international LDS members, mining booms, and the construction of the first transcontinental railroad initially brought economic growth, and the city was nicknamed the Crossroads of the West. It was traversed by the Lincoln Highway, the first transcontinental highway, in 1913, and presently two major cross-country freeways, I-15 and I-

80, intersect in the city. Salt Lake City has since developed a strong outdoor recreation tourist industry based primarily on skiing, and hosted the 2002 Winter Olympics. It is the industrial banking center of the United States.

Climate: The climate of the Salt Lake City area is typically characterized as semi-arid. Under the Köppen climate classification, Salt Lake City has a dry-summer continental climate (DSA), a relatively rare form of the continental climate where a region experiences dry summers and wet winters. The city experiences four distinct seasons. Both summer and winter are long, with hot, dry summers and cold, snowy winters. Spring is the wettest season, while summer is very dry.

The nearby Great Salt Lake is a significant contributor to precipitation in the city. The lake effect can help enhance rain from summer thunderstorms and produces lake-effect snow approximately 6 to 8 times per year, some of which can drop excessive snowfalls. It is estimated that about 10% of the annual precipitation in the city can be attributed to the lake effect.

Salt Lake City features large variations in temperatures between seasons. During summer, there is an average of 56 days per year with temperatures of at least 90 °F (32.2 °C), 23 days of at least 95 °F (35 °C), and five days of 100 °F (37.8 °C). However, the average daytime July humidity is only 22%. Winters are quite cold but rarely frigid. While there is an average of 127 days that drop to or below freezing, and 26 days with high temperatures that fail to rise above freezing, the city only averages 2.3 days at or below 0 °F (−17.8 °C). The record high temperature is 107 °F (42 °C), which occurred first on 26 July 1960 and again on 13 July 2002, while the record low is −30 °F (−34 °C), which occurred on 9 February 1933.

During mid-winter, strong areas of high pressure often situate themselves over the Great Basin, leading to strong temperature inversions. This causes air stagnation and thick smog in the valley from several days to weeks at a time and can result in the worst air-pollution levels in the U.S., reducing air quality to unhealthy levels.

Public Services: Given the nature of Utah's population concentration along the Wasatch Front, it is important that Salt Lake City support regional planning and maintain relationships with Salt Lake County and the other municipalities located in the county. Salt Lake City is a member of Utah's Pre-mitigation planning for the Wasatch Region, comprised of five counties, Salt Lake, Summit, Tooele, Davis, and Utah. The region representatives meet to coordinate activities and funding received from the state through the State Homeland Security Program. Salt Lake City has participated in area Gap Analysis and Threat Assessments and was funded to develop a Local Energy Assurance Plan. The City also has participated with the Regional Resilience and Assessment Program (RRAP) both to look at critical lifelines and their interdependencies, as well as to deeply examine the valleywide water systems and critical nodes. Numerous participating agencies within Salt Lake City, have also been a part of the Urban Area Security Initiative (UASI). The Urban Areas Security Initiative (UASI) Program assists high-threat, high-density Urban Areas in efforts to build and sustain the capabilities necessary to prevent, protect against, mitigate, respond to, and recover from acts of terrorism using a Whole Community Approach. Salt Lake County has received UASI funding for this mission in 2008, 2009, 2010, 2014, and 2017. The Urban Area Working Group (UAWG) includes Salt Lake County with representatives from public safety agencies, volunteer organizations, and the state for regional all-hazards planning, mitigation, response, and recovery. Salt Lake City Code Title 22 et al. Salt Lake City executives are responsible for carrying out plans and policies. City government must be prepared to participate in the post-disaster hazard mitigation team process and pre-mitigation planning as outlined in this document to effectively protect their citizens.

Governing Body Format: The city has an elected 7-member city council that sets the overall policy direction for the city, and helps decide where to focus resources by adopting annual budgets and ordinances. In Salt Lake City, the Mayor and Council are separate but equal branches of the government. The Mayor is the chief executive, and the City Council is the legislative body. Council Members serve four-year terms, work for the city part-time, and are paid. Each Council Member represents one of the city's seven geographical Council Districts of similar population size (SLC website).

Development Trends: As the capital of Utah, Salt Lake City is viewed as the economic and cultural hub of the state. The city continues to grow and expand its workforce and number of residents. The SLC website highlights numerous development projects currently underway in the city. Salt Lake City is still home to the headquarters of The Church of Jesus Christ of Latter-day Saints (LDS Church); however, less than 50% of Salt Lake City's residents are members of The Church of Jesus Christ of Latter-day Saints. This is a much lower proportion than in Utah's more rural municipalities; altogether, LDS members make up about 62% of Utah's population. Large family sizes and low housing vacancy rates, which have inflated housing costs along the Wasatch Front, have led to one out of every six residents living below the poverty line.

Capability Assessment

The City maintains a full-time staff of 2942 and part-time staff of 452 individuals. The SLC Emergency Management Program Director is the City's designated Emergency Manager. Hazard Mitigation Planning efforts are led by SLC Department Directors and supported by SLC Emergency Management Program positions.

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY				
	Local Authority Exists to Develop and Implement/ Enforce?	**A Jurisdiction-Specific Code, Ordinance and/or Requirement Currently Exists?**	**Rely on the County's Codes, Ordinances & Requirements**	**Comments**
Building Code Development and Enforcement	Yes	Yes	No	
Zonings Ordinance(s)	Yes	Yes	No	Code is adopted per Municipal Land Use Management Act.
Subdivision Ordinance(s)	Yes	Yes	No	Code is adopted per Municipal Land Use Management Act.
Stormwater Management Program	Yes	Yes	No	Phase 1 MS4 - UPDES Permit
Floodplain Ordinance(s)	Yes	Yes	No	Meets FEMA NFIP requirements
Post Disaster Recovery Program and Ordinance(s)	Yes	No	-	
Real Estate Disclosure Ordinance(s)	Yes	-	-	
Growth Management	Yes	-	-	
Site Plan Review Requirements	Yes	Yes	No	
Planning Documents				

General or Comprehensive Plan	Yes	Yes	No	
Capital Improvement Plan	Yes	Yes	No	
Economic Development Plan	Yes	Yes	No	
Disaster Planning Documents				
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	Yes	-	
Post-Disaster Recovery Plan	Yes	No	-	
Continuity of Operations Plan	Yes	Yes	No	
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	Yes	Yes	-	County's LEPC Plan; SLC specific earthquake annex;

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	-
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY

Staff/Personnel Resources	Available?	Full Time/Part Time/Other	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Full-Time	Community and Neighborhoods
Engineers or professionals trained in building or infrastructure construction practices	Yes	Full-Time	Community and Neighborhoods
Planners or engineers with an understanding of natural hazards	Yes	Full-Time	Community and Neighborhoods and Public Utilities
Personnel skilled or trained in GIS applications	Yes	Full-Time	SLC Information Management Systems/GIS Coordinator
Emergency manager	Yes	Full-Time	SLC Mayor's Office/EM Program/Director
Grant writers	Yes	Full-Time	

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	Department of Public Utilities
Who is your jurisdiction's floodplain administrator? (department/position)	SLCDPU/Flood Plain Administrator
Are any certified floodplain managers on staff in your jurisdiction?	Yes (3)
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	No - Not all flood risk is found in the hazard maps. There are other areas of flood risk that are managed in part by riparian ordinance and lowland ordinances. Updated Maps are needed in several areas - This is currently on the state RISK Map time line.
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Ongoing RISK map and state and federal training
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No - Interested in participation.

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System (CRS)	No	-	-
Public Protection/ISO	Yes	-	-
NWS StormReady	No	-	-

Jurisdiction-Specific Hazards and Risks

The Natural Hazard Events Table lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 163 policies were in force with total coverage of $47,848,8000 and total written premium and FPF of $145,067 (FEMA, 2019).
- Salt Lake City does participate in the National Flood Insurance Program (CID # 490105) and the last FIRM map for the area was issued on 08/02/12 (FEMA, 2019).
- The city will continue to participate in the NFIP through various efforts including but not limited to floodplain management, ordinance development and review, technical assistance, compliance inspections, and community education on flood hazards.

TABLE: RECENT NATURAL HAZARD EVENTS (NOAA Data with additions from the jurisdiction representatives)				
Type of Event	**Description**	**FEMA Disaster Number (if applicable)**	**Date**	**Preliminary Damage Assessment/Narrative**
Thunderstorm Wind	The Salt Lake City International Airport ASOS recorded a peak gust of 68 mph.	-	6/13/2019	
Thunderstorm Wind		-	5/6/2019	
Heavy Snow	2 inches of snow	-	4/6/2019	
Heavy Snow	12 inches of snow	-	3/28/2019	
Heavy Snow	8 inches of snow	-	3/13/2019	
Heavy Snow	14 inches of snow	-	2/3/2019	
Winter Storm	5.9 inches of snow	-	12/1/2018	

TABLE: RECENT NATURAL HAZARD EVENTS (NOAA Data with additions from the jurisdiction representatives)				
Type of Event	**Description**	**FEMA Disaster Number (if applicable)**	**Date**	**Preliminary Damage Assessment/Narrative**
Hail	1 inch in diameter	-		
Thunderstorm Wind	A maximum wind gust of 58 mph was recorded at the Salt Lake City International Airport Centerfield wind sensor	-	6/18/2018	
Flood		-	9/15/2017	$15,000 property damage.
Lightning	2 injured		7/26/2017	
Flash Flood		-	7/26/2017	$8,750,000 property damage.
High Wind		-	6/12/2017	$40,000 property damage.
High Wind		-	4/13/2017	$50,000 property damage.
Heavy Rain		-	3/23/2017	$20,000 property damage.
Winter Storm	8 inches of snow	-	1/20/2017	
Winter Storm	8.6 inches of snow	-	12/23/2016	
Thunderstorm Wind	67 mph wind gust was recorded by the SLC Airport Wind 3 sensor at Salt Lake City International Airport	-	12/16/2016	
Thunderstorm Wind	64 mph winds	-	5/6/2016	
High Wind	In Salt Lake City, scaffolding collapsed on an assisted living center being built; no one was injured, but debris from the incident covered the road and forced the closure of the northbound lanes of Foothill Drive and Parleys Way during the morning	-	2/17/2016	$200,000 property damage.

TABLE: RECENT NATURAL HAZARD EVENTS (NOAA Data with additions from the jurisdiction representatives)				
Type of Event	**Description**	**FEMA Disaster Number (if applicable)**	**Date**	**Preliminary Damage Assessment/Narrative**
	commute. At Salt Lake City International Airport, winds caused some flight delays, and seven flights were diverted to other cities. Power outages were common across the area due to downed trees and power lines.			
Flash Flood	Heavy rain brought road, parking lot, and basement flooding to the Sugarhouse and Foothill areas of Salt Lake City.	-	10/2/2015	$100,000 property damage.
High Wind	63 mph winds	-	8/7/2015	
High Wind	microburst	-	6/3/2015	
Thunderstorm Wind		-	5/6/2016	
High Wind	A semi-trailer was overturned on Interstate 215 in Salt Lake City, and several large trees were uprooted across the Salt Lake Valley. Winds also caused damage to many fences and yards across the area, including displacing sheds and knocking over at least one cinder block wall. Power outages occurred.	-	4/15/2015	$150,000 property damage.
Wildfire		-	4/15/2015	$50,000 property damage.

TABLE: RECENT NATURAL HAZARD EVENTS (NOAA Data with additions from the jurisdiction representatives)				
Type of Event	**Description**	**FEMA Disaster Number (if applicable)**	**Date**	**Preliminary Damage Assessment/Narrative**
High Wind	Winds caused power outages across the area, with over 4,000 customers in Salt Lake City temporarily losing power.	-	12/30/2014	$30,000 property damage.
Winter Storm	6 inches of snow	-	12/28/2014	
Winter Storm	5-7 inches of snow	-	12/25/2014	
High Wind		-	11/1/2014	$75,000 property damage.
Thunderstorm Wind	62 mph winds	-	9/26/2014	
High Wind		-	8/12/2014	$50,000 property damage.
High Wind		-	6/12/2014	$1,000 property damage.
High Wind		-	4/22/2014	$500,000 property damage.
Winter Storm		-	12/19/2013	$40,000 property damage
Winter Storm		-	1/10/2013	
Winter Storm	9 inches of snow in Salt Lake City	-	3/1/2012	
High Wind	59 mph winds	-	2/25/2012	
High Wind		-	12/1/2011	$250,000 in property damage
High Wind	Damage from this thunderstorm included large trees knocked down in the Avenues neighborhood of Salt Lake City	-	8/22/2010	$200,000 in property damages

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood and key factors are highlighted below: (ACS 2017)

Factors	Number in Community
Members of the community over 65 years old	20,611
Members of the community under 18 years old	40,676
Members of the community that identify as having disability status	18,989
Members of the community that speak English less than "very well"	16,810
Members of the community living below the poverty line	33,759
The number of mobile homes in the community	440 (additional 223 in a boat, RV, or Van)
Members of the community without health insurance	28,164
Occupied housing units with tenants without a vehicle	8,004
Housing units without heating fuel	292

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Flood: Extremely heavy rain causes urban flash flooding throughout the city. Areas to monitor include 13th South between 700 East and State Street, 700 West and North Temple Streets. Much of the city has impervious surfaces which can yield runoff and flooding problems. Flooding can also spread algal blooms into the city rivers and canals. The Wasatch Front has been susceptible to these types of events because of close proximity to the mountain ranges.

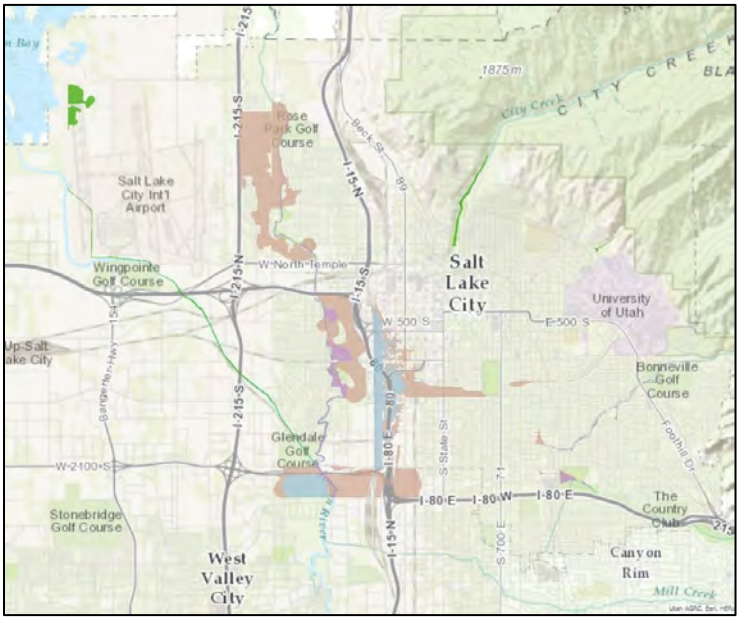
Much of the valley's development has occurred on old alluvial fans from the canyon mouths. During heavy rain events, water and debris collect on these same alluvial fans, damaging residential, commercial property and infrastructure.

Although located in a semi-arid region, Salt Lake City is subject to flash flooding due to heavy rainfall and rapid snowmelt. The Federal Emergency Management Agency (FEMA) has rated floodplains along the Jordan River and its tributaries for expected flood heights and areas susceptible to 100-year flood-frequency inundation. Significant flood mitigation measures were implemented following the major floods of 1983-84 that greatly reduced the flood threat to Salt Lake City. Of the many causes for flooding Salt Lake City's most likely event is from Post-fire debris flow flooding. Enhanced runoff conditions from a fire-damaged watershed can result in debris flow flooding. As fires burn, they destroy vegetation and leave soils in a hydrophobic state, resulting in greater peak flows.

Location

The Jordan River's four major northern tributaries (City, Red Butte, Emigration and Parley's Creeks) are diverted into storm sewers beneath the city. These storm sewers have sufficient capacity to handle the excessive runoff, but must be continually maintained to prevent debris from accumulating. Public works agencies have built debris basins, installed stream-bank protection, and regularly dredge stream channels to reduce flood hazards. Parley's Creek has flood storage capacity at Mountain Dell and Little Dell Reservoirs and is routed through a retention basin in Sugarhouse Park. Big and Little Cottonwood Creeks and have a number of smaller flood storage lakes and ponds providing some flood protection, such as Wheeler Historic Farm. In Salt Lake City, Emigration Creek and Red Butte Creek come together at 700 East and 1300 South and can be discharged in or bypass Liberty Park pond. Parley's Creek discharges to the 1300 South drain at State Street.

Areas to monitor include 13th South between 700 East and State Street, 7th West and North Temple Streets. Retention ponds are also used to store runoff from commercial and residential development areas.



Range of Magnitude

Flooding Hazard Profile

Location	Fire damaged areas where soil is in hydrophobic
Seasonal Conditions	Spring, heavy rainfall, and spring snowmelt runoff.
Conditions	Thunderstorms w/heavy rainfall, extended wet periods.
Duration	Flooding can last anywhere from hours to days and even months.
Secondary Hazards	Raw sewage/health risk, electrical fires, gas spills.

Analysis Used	Review of FIS, FIRM, Army Corp of Engineers Flood Study.

Past Occurrence

History: The following flood events are of notable significance:

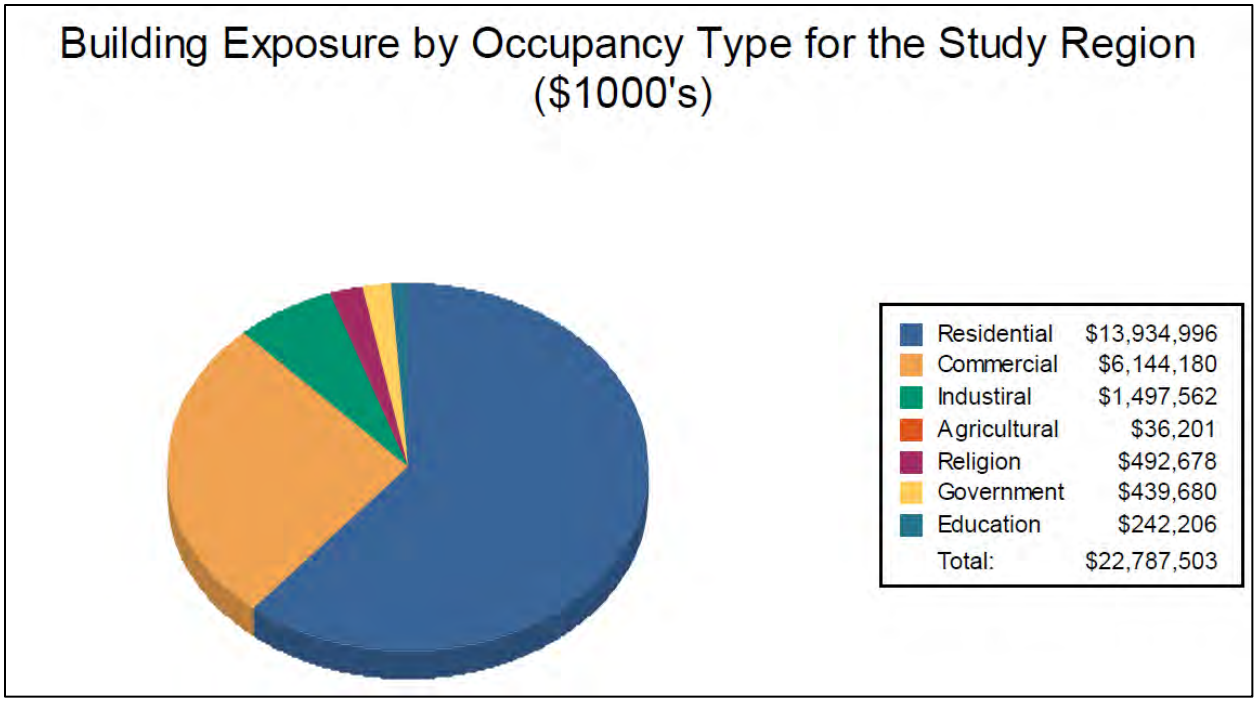
- **2011** - Large snowpack meant larger resulting spring runoff flows
- **2010** - Spring snowmelt combined with heavy rains caused several streams to overtop their banks
- **1987** – Great Salt Lake reached its all-time maximum water level (4211.6 feet)
- **1983** - Large snowpack was coupled with a rain-on-snow event, (City Creek diverted down State Street)
- **1983/1984** - Large snowpack overwhelmed Utah Lake and affected Jordan River downstream
- **1952** - Rapid melt of a large snowpack

Salt Lake City implemented mitigation efforts post 1983-84 floods and subsequently there are no repetitive loss claims due to flooding identified under NFIP.

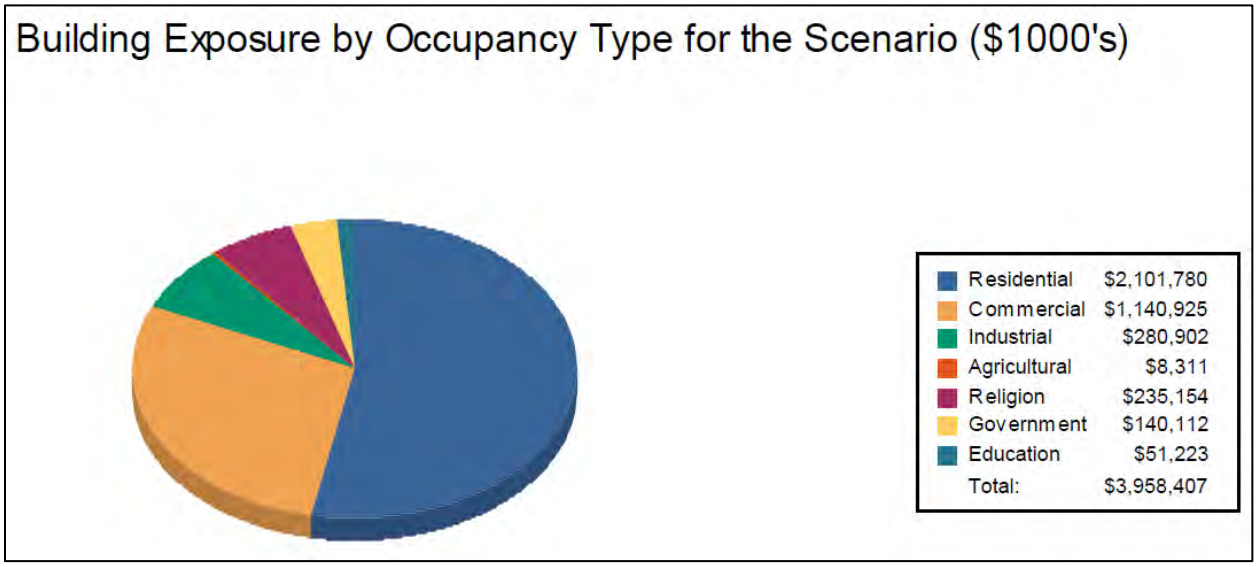
The City's Community Development Director oversees enforcement of floodplain management requirements adopted by the City, including regulating new construction in Special Flood Hazard Areas (SFHAs); Floodplain identification and mapping, including any local requests for map updates; description of community assistance and monitoring activities.

2019 HAZUS

HAZUS estimates that in Salt Lake City, there are 56,473 buildings in the region which have an aggregate total replacement value of 22,788 million dollars. For essential facilities, there are 10 hospitals in the region with a total bed capacity of 1,484 beds. There are 88 schools, 16 fire stations, 7 police stations and 3 emergency operation centers.



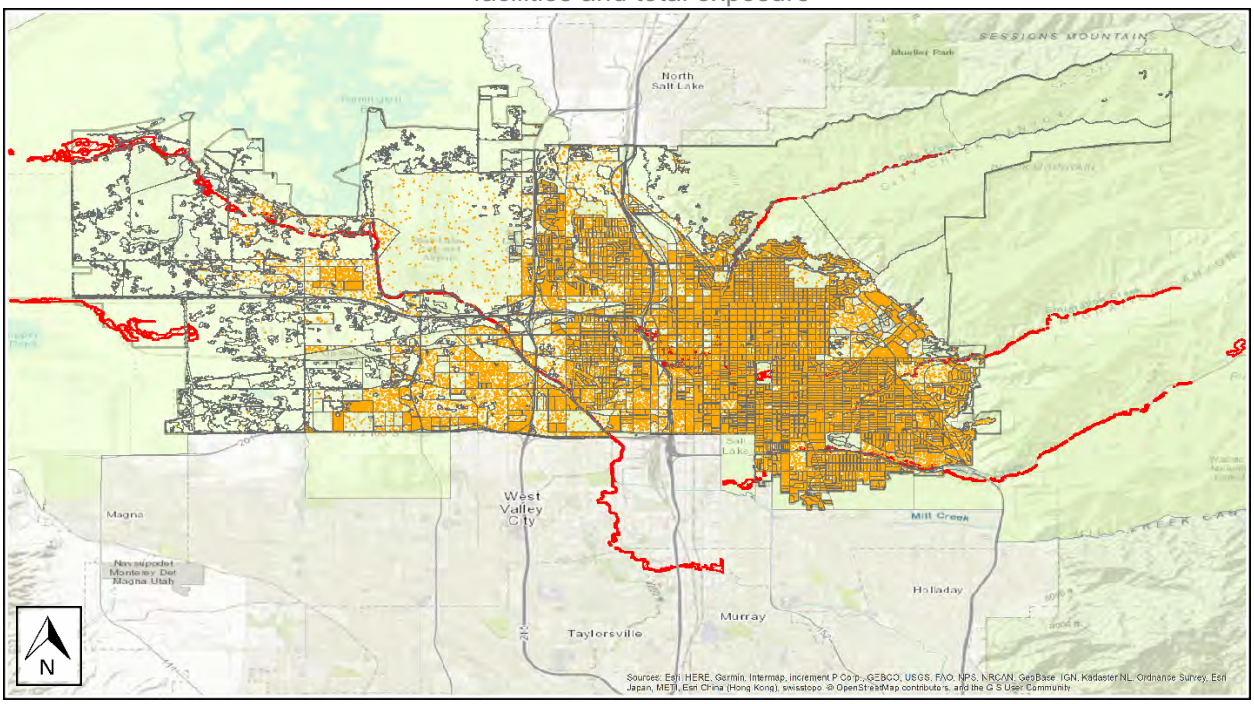
For the 100-year and 500-year flood scenario, building exposure was adjusted to $3,958,407.



100-year Flood HAZUS

Study Region Overview Map

Illustrating scenario flood extent, as well as exposed essential facilities and total exposure



HAZUS estimates that about 185 buildings will be at least moderately damaged. This is over 58% of the total number of buildings in the scenario. There are an estimated 14 buildings that will be destroyed.

Table: Expected Building Damage by Occupancy

	1-10		11-20		21-30		31-40		41-50		>50	
Occupancy	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	15	75	5	25	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0	0	0	0	0	0
Residential	212	54	142	36	17	4	4	1	3	1	14	4
Total	**227**		**147**		**17**		**4**		**3**		**14**	

Total Economic Loss (1 dot = $300K) Overview Map

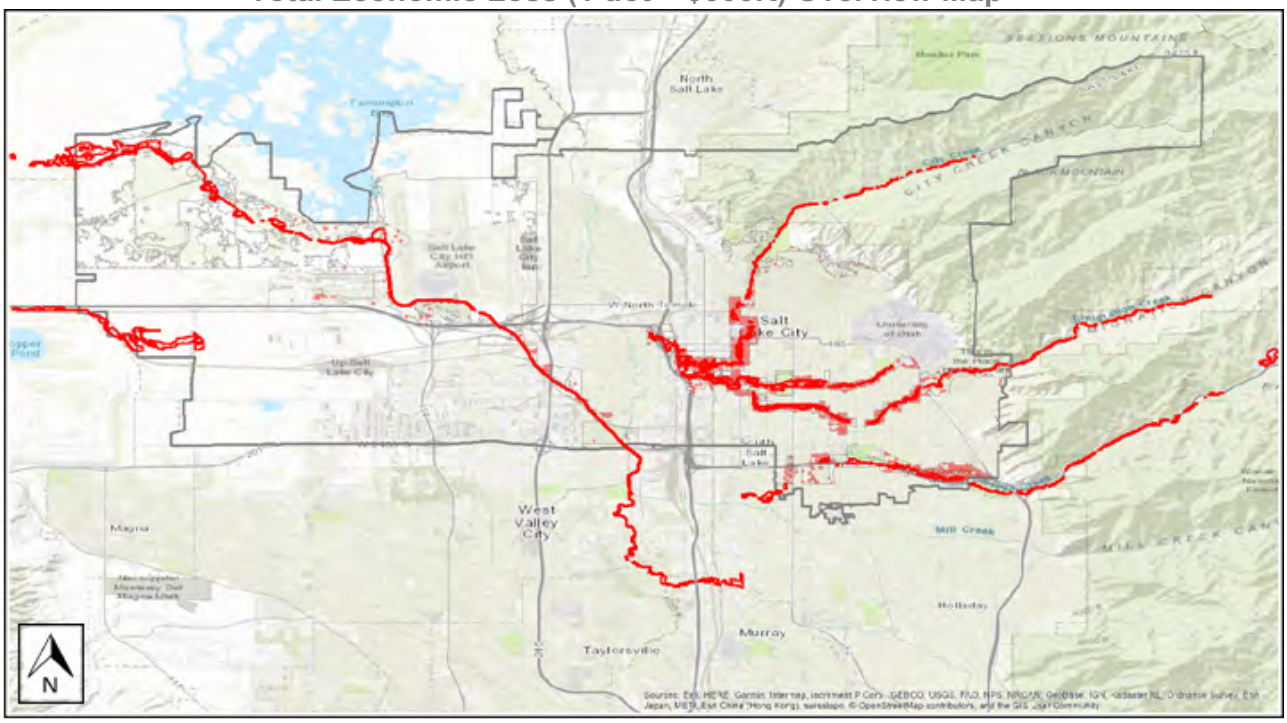


Table: Expected Building Damage by Building Type

	1-10		11-20		21-30		31-40		41-50		>50	
Building Type	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Concrete	6	75	2	25	0	0	0	0	0	0	0	0
Manuf. Housing	0	0	0	0	0	0	0	0	0	0	0	0
Masonry	40	60	25	37	1	1	0	0	0	0	1	1
Steel	2	100	0	0	0	0	0	0	0	0	0	0
Wood	179	54	119	36	16	5	4	1	2	1	13	4

Damage from flooding is not anticipated to any essential facilities, including the 1,484 hospital beds.

Table: Expected Damage to Essential Facilities

Classification	Total	At Least Moderate	At Least Substantial	Loss of Use
Emergency Operation Centers	3	0	0	0
Fire Stations	16	0	0	0
Hospitals	10	0	0	0
Police Stations	7	0	0	0
Schools	88	0	0	0

The model estimates 1,073 households (or 3,219 of people) will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 166 people (out of a total population of 186,440) will seek temporary shelter in public shelters.

The total economic loss estimated for the flood is 286.08 million dollars, which represents

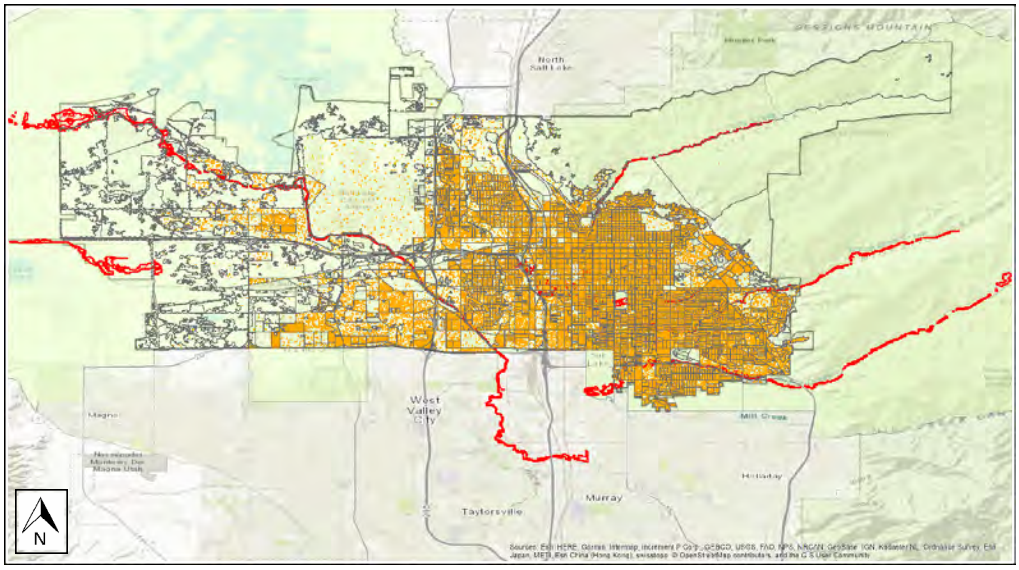
7.23% of the total replacement value of the scenario buildings. The total building-related losses were 77.17 million dollars. 73% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 22.26% of the total loss.

Table: Building-Related Economic Loss Estimates
(Millions of dollars)

Category/Area	Residential	Commercial	Industrial	Others	Total
Building Loss					
Building	26.02	7.33	0.73	0.68	34.76
Content	13.79	21.87	1.64	4.65	41.94
Inventory	0	0.20	0.26	0.01	0.47
Subtotal	39.81	29.40	2.63	5.34	77.17
Business Interruption					
Income	0.74	51.11	0.11	5.33	57.30
Relocation	14.38	17.13	0.16	3.81	35.49
Rental Income	6.99	11.32	0.02	0.80	19.14
Wage	1.76	59.45	0.21	35.56	96.99
Subtotal	23.88	139.01	0.51	45.51	208.91
All Total	63.69	168.41	3.14	50.85	286.08

500-year Flood HAZUS

Study Region Overview Map
Illustrating scenario flood extent, as well as exposed essential facilities and total exposure



HAZUS estimates that about 237 buildings will be at least moderately damaged. This is over 56% of the total number of buildings in the scenario. There are an estimated 15 buildings that will be destroyed.

Table: Expected Building Damage by Occupancy

	1-10		11-20		21-30		31-40		41-50		>50	
Occupancy	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	23	70	5	25	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0	0	0	0	0	0
Residential	286	56	178	35	24	5	5	1	5	1	15	3
Total	309		**188**		**24**		**5**		**5**		**15**	

Total Economic Loss (1 dot = $300K) Overview Map

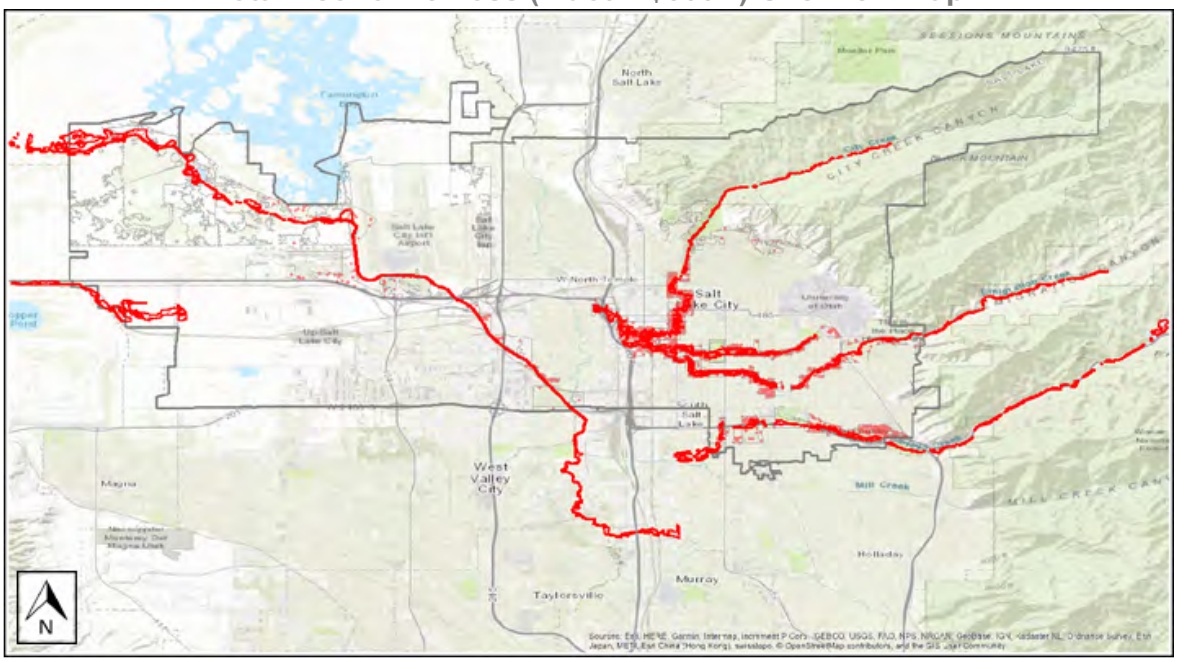


Table: Expected Building Damage by Building Type

	1-10		11-20		21-30		31-40		41-50		>50	
Building Type	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Concrete	8	67	4	33	0	0	0	0	0	0	0	0
Manuf. Housing	0	0	0	0	0	0	0	0	0	0	0	0
Masonry	56	62	32	35	1	1	0	0	0	0	2	2
Steel	3	75	1	25	0	0	0	0	0	0	0	0
Wood	241	55	150	34	23	5	5	1	4	1	13	3

Damage from flooding is not anticipated to any essential facilities, including the 1,484 hospital beds.

Table: Expected Damage to Essential Facilities

Classification	Total	At Least Moderate	At Least Substantial	Loss of Use
Emergency Operation Centers	3	0	0	0
Fire Stations	16	0	0	0
Hospitals	10	0	0	0
Police Stations	7	0	0	0
Schools	88	0	0	0

The model estimates 1,418 households (or 4,254 of people) will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 226 people (out of a total population of 186,440) will seek temporary shelter in public shelters.

The total economic loss estimated for the flood is 398.65 million dollars, which represents 10.07% of the total replacement value of the scenario buildings. The total building-related losses were 102.61 million dollars. 74% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 20.09% of the total loss.

Table: Building-Related Economic Loss Estimates
(Millions of dollars)

Category/Area	Residential	Commercial	Industrial	Others	Total
Building Loss					
Building	31.14	11.06	1.08	0.96	44.24
Content	16.59	32.25	2.46	6.42	57.73
Inventory	0	0.27	0.36	0.01	0.64
Subtotal	47.74	43.58	3.91	7.39	102.61
Business Interruption					
Income	1.2	73.76	0.21	6.69	81.87
Relocation	18.89	24.68	0.22	5.07	48.87
Rental Income	9.4	16.27	0.03	1.17	26.87
Wage	2.85	84.29	0.29	51	138.43
Subtotal	32.34	199	0.76	63.94	296.04
All Total	80.08	242.57	4.67	71.33	398.65

Severe Storms: Severe storms can include thunderstorms, lightning, hailstorms, heavy snow or rain. These storms are generally related to high precipitation events during the summer and winter months and can happen anywhere in the region. Damage can be extensive especially for agriculture, farming, and transportation systems; they can also disrupt business due to power outages.

Earthquake: While no major earthquakes have occurred in recent history, the Wasatch Fault poses the greatest threat (more than the West Valley Fault Zone and the East Great Salt Lake Fault Zone). Infrastructure failures, lifeline disruptions, and power outages, along with groundwater contamination and liquification, are potential resulting impacts. Additionally, a high number of unreinforced masonry (URM) buildings and high rise buildings are in the area and can be impacted by earthquakes. Major transportation routes and infrastructure could also be impacted on both a local and national scale, including airports, bridges, and major highways. The

city also has a high concentration of environmental contaminants that could be released during an earthquake.

The Wasatch Fault traces along the base of the Wasatch mountain range. It is made up of 10 segments that act independently, meaning that a part of the fault ruptures separately as a unit during an earthquake. The Salt Lake City Segment traverses Salt Lake County from north to south, roughly along the eastern foothills of the Wasatch Mountains. Within the Salt Lake City segment of the Wasatch Fault are three smaller segments from north to south known as Warm Springs Fault, Virginia Street Fault and the East Bench Fault. Earthquakes originating in any of the five Wasatch faults pose a direct threat to Salt Lake City.

Image of Fault Segments in Salt Lake City

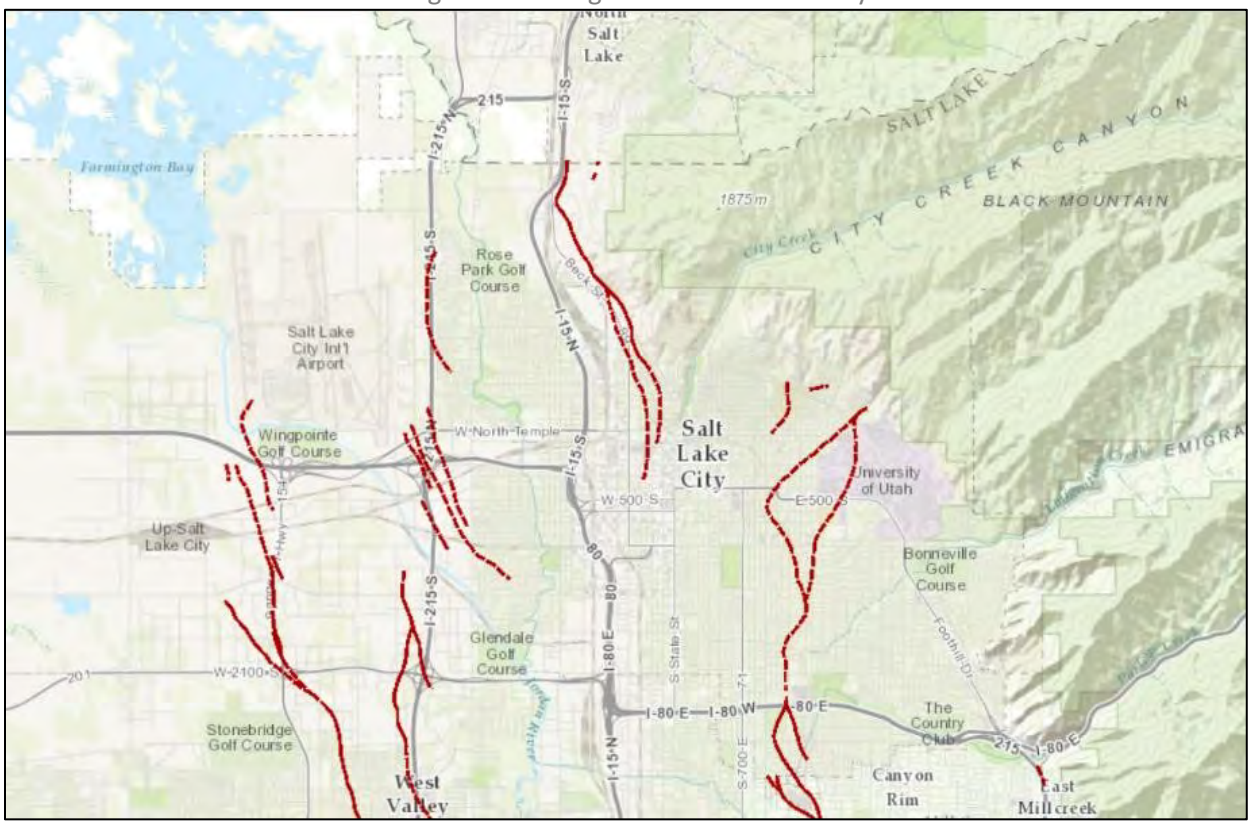


Table. Quaternary Faults, Salt Lake County (UGS 2002, UGS 2006) cal. Yr. B.P.=calendar years before present

Name	Fault Type	Length (km)	Time of Most Recent Deformation	Recurrence Interval
East Great Salt Lake fault zone, Antelope Island section	Normal	35	586 201/-241 cal yr B.P.	4,200 years
Wasatch fault zone, Salt Lake segment	Normal	43	1,300±650 cal yr B.P.	1,300 years
West Valley fault zone, Granger segment	Normal	16	1,500±200 cal yr B.P.	2,600-6,500 years
West Valley fault zone, Taylorsville segment	Normal	15	2,200±200 cal yr B.P.	6,000-12,000 years

Range of Magnitude

Utah experiences approximately 700 earthquakes each year, and approximately six of those have a magnitude 3.0 or greater. On average, a moderate, potentially damaging earthquake (magnitude 5.5 to 6.5) occurs every 10 years. Large earthquakes (magnitude 6.5-7.5) occur on average every 50 years (UNHH 2008). The history of seismic activity in Utah and along the Wasatch Front suggests that it is not a matter of "if" but “when” an earthquake will occur. The probability of a large earthquake occurring along the central segments of the Wasatch Front is 13 percent in 50 years, or 25 percent in 100 years. (The Wasatch Fault, UGS PIS 40)

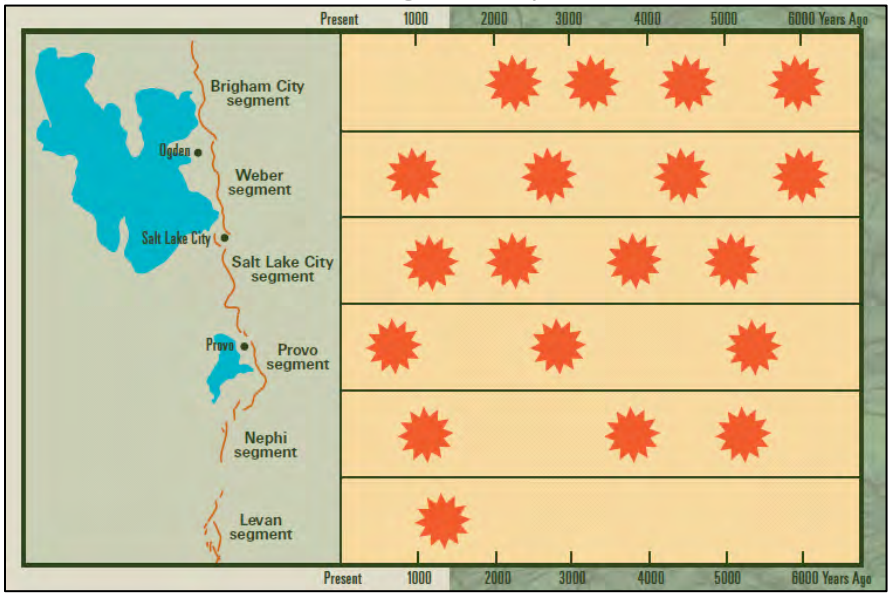
Earthquake Hazard Profile

Location	Fault Activity within the Wasatch area magnitude 5.0 or greater poses a direct threat to Salt Lake City.
Seasonal Pattern	None.
Conditions	Liquefaction potential within areas with shallow ground water. Soil that is comprised of old lakebed sediments. Historic movement along faults. Intermountain Seismic Zone, Wasatch Fault.
Duration	Actual ground shaking will be under one minute, aftershocks can occur for weeks or even months.
Secondary Hazards	Fire, landslide, rock falls, avalanche, flooding, hazardous material release, transportation and infrastructure disruptions, essential service disruptions (communications, utilities).
Analysis Used	Review of hazard analysis plans and other information provided by the University of Utah Seismograph Station, UGS, USGS, FEMA, UDEM, AGRC.

Past Occurrence

Although no surface-faulting earthquakes have occurred on the Wasatch fault in recent history, evidence of numerous prehistoric events exists in the geologic record (The Wasatch Fault, UGS PIS 40) The segments between Brigham City and Nephi have a composite recurrence interval (average time between earthquake events) for large surface-faulting earthquakes (magnitude 7.0-7.5) of 300-400 years. The average repeat time on an individual segment is 1,200-2,600 years. The most recent surface-faulting earthquakes occurred about 500 years ago on the Provo and Weber segments, and about 350 years ago on the Nephi segment. (UNHH 2008)

Table. Wasatch Fault Segments and Timeline of Major Ruptures
("The Wasatch Fault", Utah Geological Survey Public Information Series 40)



Significant earthquakes have occurred in Salt Lake County within the last 50 years. In 1962, a 5.2 Richter magnitude quake jolted the Magna area. In 1992, a magnitude 4.2 quake shook the southern portion of the County.

Liquefaction is one of the secondary hazards associated with an earthquake and affects nearly all of Salt City. The City is located atop the ancient Lake Bonneville lakebed, which is made up of unconsolidated sandy soils. Much of the valley is also subject to shallow ground water and a relatively high earthquake threat.

Future Occurrence

Other faults within Salt Lake County include the West Valley Fault Zone and the East Great Salt Lake Fault Zone. Each of these fault zones has much longer return interval (2,500 years or more) and is not expected to produce a major quake in the near future.

Potential Loss Estimates

Building Damage

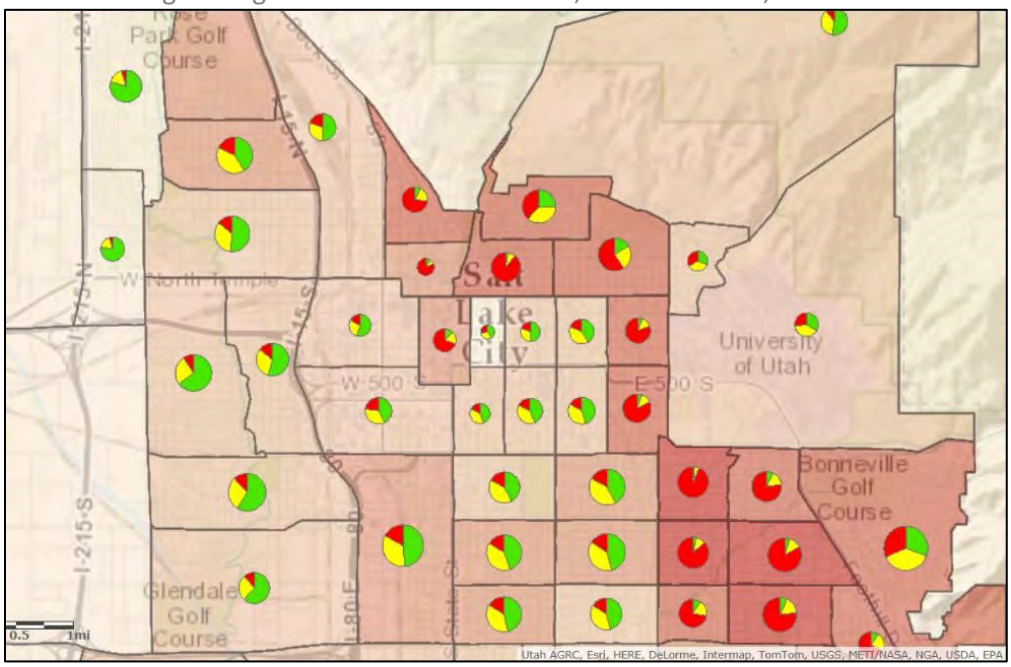
The 2013 HAZUS-MH is the most recent city-level data available and was utilized to classifies building damage into five states: none, slight, moderate, extensive and complete. The Table below lists the number of buildings by occupancy estimated to sustain moderate to complete levels of damage during an arbitrarily-determined Richter magnitude 5.9 (M5.9) earthquake scenarios or a probabilistic Richter magnitude 7.1 (M7.1) earthquake scenario. Also listed are the estimated monetary losses to structures, contents/inventory, and income.

Models show Salt Lake City will have $12,249,473,845 of total building economic loss and 7,966,834 tons of debris. As a result of our 32,341 unreinforced masonry buildings 35,786 households will be displaced, 21,629 individuals seeking public shelter, 13,698 casualties and 1,397 life threatening injuries and fatalities.

Table. Building Damage Counts and Estimated Losses using HAZUS MH

Category	Number of Structures with > 50% Damage		Category	Estimated Losses	
	Salt Lake M5.9	2500-yr M7.1		Salt Lake M5.9	2500-yr M7.1
Residential	30,342	157,705	Structural Losses	$519,320,000	$3,419,030,470
Commercial	1,896	5,199	Non-Structural Losses	$1,818,647,000	$12,331,504,070
Industrial	495	1,367	Content Losses	$719,709,000	$4,114,455,740
Government	167	475	Inventory Losses	$29,216,000	$175,756,410
Education	51	159	Income and Relocation Losses	$623,140,000	$3,263,449,580
Totals	32,951	164,905	Totals	**$3,710,032,000**	**$23,304,196,270**

Building Damage Estimates: Red 70-100%, Yellow 30-70%, Green 5-30%



Transportation and Utilities Damage

Damages to transportation and utility infrastructure are illustrated below. Infrastructure sustaining moderate or worse damage and estimated monetary losses are both shown.

Table. Damage to Transportation and Utilities

Category	Total	At Least Moderate Damage >50%		Estimated Losses	
		Salt Lake M5.9	2500-yr M7.1	Salt Lake M5.9	2500-yr M7.1
Waste Water Facilities	5	2	4	$44,008,000	$146,243,000
Waste Water Pipelines	3.975 km	637 leaks/breaks	14,005 leaks/breaks	$2,294,000	$50,416,000
Potable Water Pipelines	6,625 km	805 leaks/breaks	17,706 leaks/breaks	$2,900,000	$63,744,000
Natural Gas Pipelines	2,650 km	681 leaks/breaks	14,970 leaks/breaks	$2,452,000	$53,893,000
Electrical Power Facilities	7	3	7	$92,024,000	$343,874,000
Communication Facilities	42	9	34	$242,000	$1,478,000
Highway Bridges	698	126	496	$81,646,000	$468,944,000
Railway Bridges	17	0	8	$9,000	$358,000
Railway Facilities	6	0	6	$3,494,000	$7,525,000
Bus Facilities	2	0	2	$490,000	$1,157,000
Airport Facilities	3	0	3	$2,675,000	$7,450,000
Total Losses				$232,234,000	$1,145,082,000

Debris Removal

The table below shows how much debris would be generated by the earthquake and how many loads it would take to remove the debris, based on 25 tons per load. One truck can likely haul one load per hour. A second debris removal issue is landfill space. Fifty thousand tons at a weight-to-volume ratio of one ton per cubic yard would cover more than ten acres to a depth of three feet.

Table. Debris Generated/Number of Loads

Category	Salt Lake M5.9	2500-yr M7.1
Brick, Wood & Others	581,000 tons / 23,240 loads	3,356,000 tons / 134,240 loads
Concrete & Steel	1,195,000 tons / 47,800 loads	7,678,000 tons / 307,120 loads

Fires Following an Earthquake

Multiple ignitions and broken water mains following an earthquake can make firefighting nearly impossible. HAZUS-MH uses estimated building damages, loss of transportation infrastructure and estimated winds to calculate the estimated area that would be burned following an earthquake.

Table. Fire Following Event, Population Exposed, and Building Stock Exposed

Category	Number of Structures	
	Salt Lake M5.9	2500-yr M7.1
Ignitions	49	80
Persons Exposed	806	2,116
Value Exposed	$50,232,000	$120,188,000

Casualties

The table below estimates casualties likely to occur during each earthquake scenario. The nighttime scenario (2 a.m. local time) assumes a primarily residential concentration of persons, the daytime scenario (2 p.m. local time) a commercial concentration, and the commute scenario (5 pm. local time) a concentration of persons on commuting routes. Categories of casualties include those not requiring hospitalization (minor), those requiring treatment at a medical facility (major), and fatalities.

Table. Casualties

Night Event	Salt Lake M5.9	2500-yr M7.1	Day Event	Salt Lake M5.9	2500-yr M7.1	Commute Event	Salt Lake M5.9	2500-yr M7.1
Minor	1,024	10,475	**Minor**	1,883	17,110	**Minor**	1,432	13,442
Major	219	3,224	**Major**	502	6,192	**Major**	369	4,688
Fatalities	44	758	**Fatalities**	122	1,742	**Fatalities**	87	1,258

Extreme Temperatures: The city has a high homeless population that could be adversely impacted by extreme temperatures. Salt Lake City is considered one of the nation's biggest Urban Heat Islands, meaning temperatures can greatly increase in cemented areas. Extreme cold temperatures can also impact water pipelines.

Temperatures in Utah can reach the extreme ends of the thermometer. Winter months often experience temperatures below zero degrees Fahrenheit. Summer temperatures regularly reach into the nineties with many days above 100 degrees Fahrenheit. Drastic temperature changes also occur, even in matter of hours. Temperature swings in such a short period of time can cause severe emotional stress in people.

Sub-zero temperatures occur during most winters; however, prolonged periods of extremely cold weather are infrequent. An exception was January 2013, the coldest month on record for Salt Lake City since 1949, with a mean temperature of 19.4 degrees (10.1 degrees below normal), average daily maximum temperature of only 26.6 degrees, and extended periods of inversions. January is generally the coldest month of the year. Historically, extreme cold in the region has disrupted agriculture, farming and crops. Especially vulnerable to extreme cold are the young, elderly, homeless and animals. Wind chill can further the effects of extreme cold.

Extreme heat is “summertime weather that is substantially hotter and/or more humid than average for a location at that time of year”. Extreme heat not only causes discomfort, but personal health can be affected through heat cramps, heat exhaustion or heat stroke, particularly affecting vulnerable populations such as the very young, elderly, poor, and homeless. Extreme heat places a substantial burden on power grids through widespread use of evaporative coolers and air conditioning. This strain can lead to brownouts or blackouts leaving many without power.

While no extreme heat events have been recorded, July is the hottest month in Salt Lake City (averages 90F) followed by August (89F) (US Climate Data)***.*** The most at-risk population to heat events would be the elderly and at-risk populations who do not have air conditioning. Additionally, high temperatures have the potential to correlate to drought and wildfire conditions.

Wildfire: The portions of Salt Lake City that could experience a significant amount of destruction due to a wildland fire include the foothills and the bench areas on or near the Wasatch Range. These WUI areas are threatened most because of the number of forested lands and the increasing population growth spreading into the foothills. Another concern is vegetation type in these areas such as sagebrush, mountain scrub oak, cheatgrass, pinion and juniper trees, and rural and riparian vegetation. Sagebrush and mountain shrub burn hot and fast, spreads easily and is found throughout the county. During prime burning conditions (hot, dry and windy) the pinion juniper class will burn. A wildfire could impact watershed management, communication towers, and lead to evacuation challenges. there is no egress in City Creek Canyon.

Wildfires are particularly concerning in the wildland-urban interface. The wildland-urban interface (WUI) is the line, area or zone where structures or other human development meet or intermingle with undeveloped wildland or vegetative fuel. Homes, storage sheds, recreational facilities, transmission lines and other buildings may meet or intermingle with trees, brush, and grasses in the WUI. The three conditions that affect fire behavior are topography, vegetation and weather.

Topography: Topography includes factors such as slope, aspect and elevation. Fires spread faster upslope because fuels are closer to flames. Aspect influences fuel moisture content. Fuels

tend to be drier on south and west-facing slopes. Higher elevation is related to cooler temperatures and higher relative humidity, as well as changes in vegetative fuel types.

Vegetation: The type of vegetation has a major effect on how quickly a fire will spread. For example, light grasses burn rapidly, whereas heavy, dense fuels like Douglas fir burn slowly but with greater intensity. Different fuels burn at different rates of spread, intensity, and will resist control to different degrees.

Size, continuity and compactness also affect the fuel's rate of spread. Large fuels do not burn as readily as small fuels, and take more heat to ignite. Small fuels ignite easier and fire will spread more rapidly through them. Continuity describes how a fuel is arranged horizontally. Fuels that are broken up in patches burn unevenly and slower than uniform fuels. Compactness is how fuel is arranged vertically. Compact fuels burn slower than tall, deep fuels that have more oxygen available.

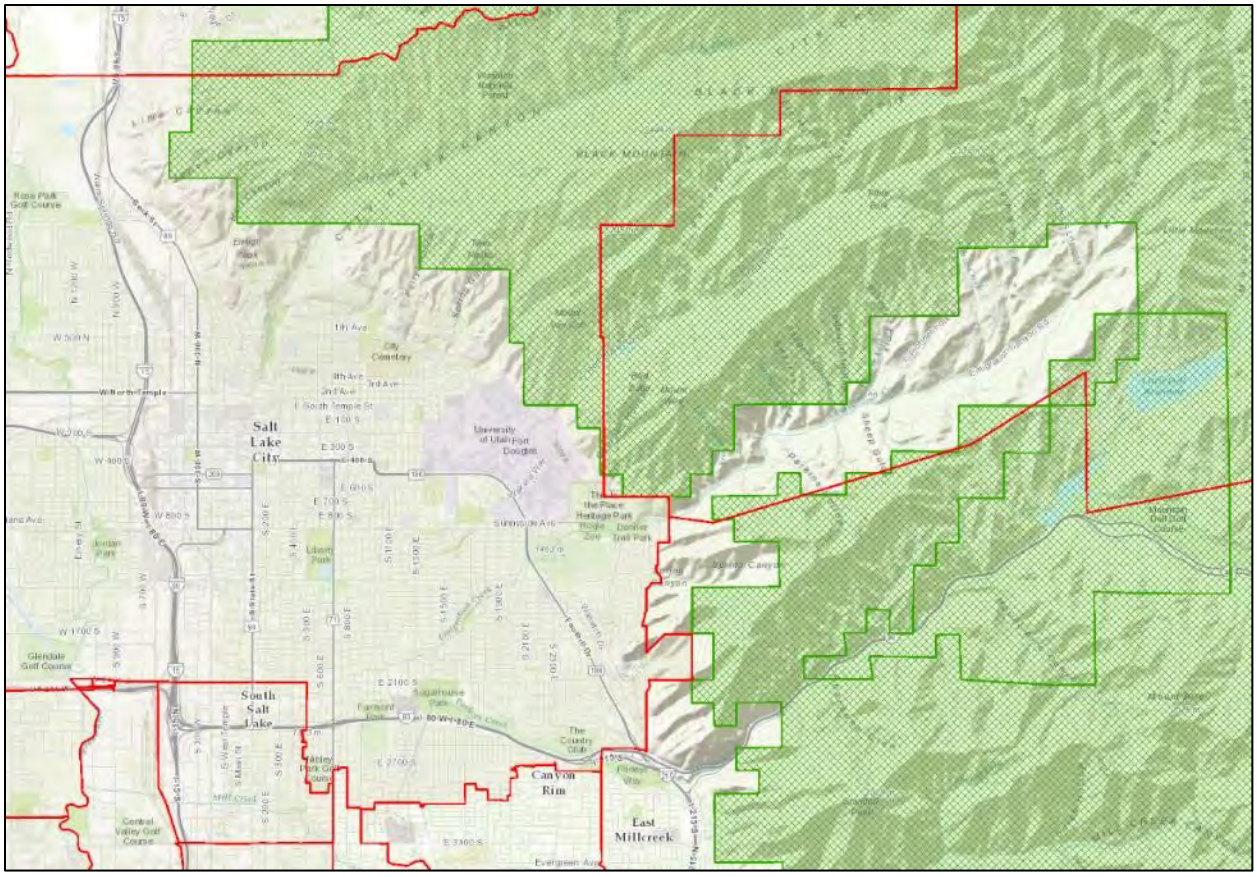
Weather: Weather (temperature, humidity, precipitation, and wind) affects the ease with which a fuel ignites, the intensity at which it burns, and how easy control may be. High temperatures heat fuels and reduce water content, which increases flammability. A decrease in relative humidity causes a proportionate decrease in fuel moisture, promoting easier ignition and more intense burning. Wind carries the heat from a fire into unburned fuels, drying them out and causing them to ignite easier. The wind may also blow burning embers into unburned areas ahead of the main fire that may start spot fires.

Wildfire removes vegetation that protects soil from excessive rainfall and resulting runoff. It also damages soil by making the soil hydrophobic, or water repellent. These conditions contribute to depletion of wildlife resources, soil erosion, water runoff, and in some cases severe slope failures and debris flows.

Providing adequate fire protection in the WUI can be difficult. Local suppression methods and resources may not be suited to wildfire suppression, and personnel can become easily overwhelmed when multiple structures are threatened simultaneously. Energy output from a wildfire may make protection of homes almost impossible and involves tremendous danger to firefighters and homeowners.

Location

The portions of Salt Lake City that could experience significant amount of destruction due to a wildland fire include the foothills and the bench areas on or near the Wasatch Range. These WUI areas are threatened most because of the amount of forested lands and the increasing population growth spreading into the foothills. Another concern is vegetation type in these areas such as sagebrush, mountain scrub oak, cheat grass, pinion and juniper trees, and rural and riparian vegetation. Sagebrush and mountain shrub burn hot and fast, spreads easily and is found throughout the county. During prime burning conditions (hot, dry and windy) the pinion juniper class will burn. The image below illustrates where Salt Lake City's WUI occurs and includes fire response boundaries (red lines) in conjunction with the forestry service areas (green patches).



Range of Magnitude

Past wildfires in Salt Lake City have had a significant impact on watersheds, resulting in slope failure, debris flows and other forms of erosion. State and local agencies have worked together to enhance ordinances and other measures to protect these watersheds.

Wildfire Hazard Profile

Location	Wildland-Urban Interface (WUI) zones near the foothills and in forested areas.
Seasonal Pattern	June-October.
Conditions	Areas affected by drought; heavily overgrown and dry brush and debris; lightning and human triggers.
Duration	Days to months; depends on climate and fuel load as well as resources (financial, manpower) to extinguish the fire.
Secondary Hazards	Landslides, debris flows/flash floods, erosion, traffic accidents, air pollution.
Analysis Used	Review of plans and data provided by US Forest Service, FFSL, FEMA, AGRC, County Hazard Analysis Plans, WWA, and UDEM.

Past Occurrence

Several notable wildfires have occurred in Salt Lake County since the last Mitigation Plan was completed. These include the Corner Canyon Fire in Draper City in August 2008, The Machine Gun fire in Herriman City in September, 2010, and the Rose Crest fire and Pinion Fire also in Herriman City in 2012. These fires prompted major fire response, required evacuations of large numbers of citizens, and created the threat of debris flows in following years. Even though these fires did not occur within Salt Lake City boundaries, the city's resources and capabilities were impacted due to mutual aid response. Recent wildfires within the City include the Ensign Peak grass fire that burned forty acres of hillside behind the Utah State Capitol, although swift action from responders prevented potential damage, injuries, or disaster.

Future Occurrence

As population growth continues, pressure to develop in WUI areas is likely to increase the threats associated with fire. Mitigation measures will need to be recognized and enforced to reduce these threats.

Vulnerability Assessment

The next two tables estimate the total area, population and buildings vulnerable to wildland fire for Salt Lake City. These values are based on the 2013 GIS analysis to account for population growth and new structures. Salt Lake County Assessor data and 2010 Census data were overlaid on the located within Moderate, High or Extreme wildfire risk. Wildfire Hazard Risk data is shown in the preceding map to determine population and structures.

Table. Population vulnerability and structures in areas of Moderate or Greater Hazard, based on BLM Wildfire Hazard data.

Incorporated Areas	Total Population Affected	Total Households	Total Structures	Residential (Total Assessed Value)	Commercial (Total Assessed Value)
Salt Lake City	2680	1095	611	410 $83,640,000	60 $209,789,232

Communities At Risk	Fire Occurrence	Fuels Hazards	Values Protected	Fire Protection Capability	Overall Score
Salt Lake City	2	3	2	1	8

Drought: While not unique from the rest of the County in susceptibility to drought, the main concern would be that much of the County relies on the water production and delivery from Salt Lake City which could drastically decline during a drought.

Range of Magnitude

Drought Hazard Profile:

Location	Countywide

Seasonal Conditions	Impacts typically noticeable in summer, conditions can be year round.
Conditions	Meteorological Drought: Lack of precipitation Agricultural Drought: Lack of water for crop production Hydrologic Drought: Lack of water in the entire water supply Socioeconomic Drought: Lack of water sufficient to support population
Duration	Months, Years
Secondary Hazards	Wildfire, dust storms, air quality.
Analysis Used	National Weather Service, Utah Climate Center, Utah Division of Water Resources, Newspapers, Local input.

Although the agricultural community is usually the most heavily impacted by drought, direct and indirect impacts extend into economic, social, or environmental sectors as well (UNHH 2008).

Times of extended drought can turn into socioeconomic drought, or drought that begins to affect the general population. When this occurs, reservoirs, wells and aquifers are low and conservation measures are required. Some forms of water conservation are water-use restrictions, implementation of secondary water or water recycling and xeriscaping. Other conservation options include emergency water agreements with neighboring water districts or transporting water from elsewhere.

Location

Utah is the second driest state in the nation. Drought dramatically affects this area because of the lack of water for agriculture and industry, which limits economic activity, irrigation and culinary uses. The severity of the drought results in depletion of agriculture lands and deterioration of soils. In the Wasatch Front region, the risk of drought is high.

Salt Lake City falls within two climatic regions: the North Central region (3), and the Northern Mountains region (5). Each of these regions has differing characteristics, but often experience similar drought periods. The two regions experience mild drought (PDSI ≥ -1) every 2.6-3.3 years, moderate drought (PDSI ≥ -2) every 3.7-5.2 years, and severe drought (PDSI ≥ -3) every 6.9-8.5 years. The Northern Mountain region typically experiences droughts less frequently (Utah Division of Water Resources 2007a). Conversely, the Northern Mountain region averages more severe drought conditions at its peak than the Western region. It may be Northern Mountains region simply has more water to lose as the Wasatch and Uinta Mountains receive much more precipitation on average.

Past Occurrence

The most severe drought period in recorded history for the North Central and Northern Mountains regions occurred in 1934 at the height of the Great Depression and during the same drought period (1930 to 1936) that caused the “Dust Bowl” on the Great Plains. The longest drought period varies from 11 years for the North Central region (1953-1963), and 6 years for the Northern Mountains (twice; 1900-1905 and 1987-1992) (Utah Division of Water Resources 2007a).

Vulnerability Assessment

Due to the unpredictability of drought, it is difficult to identify the areas most threatened and to provide loss estimate values. Utah is currently experiencing drought conditions, yet reports are not yet available on the impact of the current drought. However, historical drought records demonstrate that agriculture is typically the economic sector most impacted by drought (UHMP). The 2003 Economic Report to the Governor discusses some of the statewide economic impacts of a drought beginning in 1999. Since it is not known what the local impacts of the current drought will be, this report will serve as the best available loss estimate. It is expected droughts in the future will have similar losses.

High Winds: These events happen with relative frequency and can cause extended power outages and property damage. Above-ground power lines are particularly vulnerable during these events. In addition, residents that live in a mobile home or non-traditional homes like vehicles have a much higher risk of impact than those in traditional housing structures. According to the 2017 American Community Survey, there are approximately 440 mobile homes and 223 non-traditional housing structures within Salt Lake City.

Tornado: Historically, atmospheric conditions have not been favorable for tornado development in Salt Lake due to a dry climate and mountainous terrain. Utah is one of the lowest ranked in the nation for incidences of tornadoes with only one F2 or stronger tornado every seven years. Tornado distribution for the region suggests many tornadoes are funnel clouds aloft coming into contact with the increasing elevation of Salt Lake City's foothills and mountains. Despite this fact, interactions of the relatively cool air of the Great Salt Lake and relatively warm air of urban areas could create situations more favorable for tornado development. This phenomenon possibly contributed to the formation of the August 1999 Salt Lake City tornado. The $170 million in damages caused by this tornado make it the costliest disaster in Salt Lake history.

Winter Storms: Major winter storms can produce five to ten times the amount of snow in the mountains than in the valley locations. Heavy snow can cause a secondary hazard in avalanches.

These conditions can yield extended school closing and business interruption. Power disruption may occur and adversely impact the senior population. Winter weather can also have significant economic costs associated with snow removal, revenue and wage losses from road and airport delays or closures, flooding damage from rapid snowmelt, and agricultural and timber losses from frost and ice. Winter storms can pose a significant threat due to vehicle traffic accidents on icy roads, prolonged exposure to cold, damage to electrical, telephone or communication systems from ice or heavy snow accumulation, and indirectly related health threats such as individuals suffering heart attacks while shoveling snow. Prolonged exposure to cold can cause frostbite or hypothermia and can become life threatening.

Freezing Rain: Freezing rain is rare in Salt Lake City, but occurs on occasion. A freezing rain storm occurred along the Wasatch Front in the record cold January of 2013, causing the closure of all runways at the Salt Lake City International Airport and resulting in numerous traffic accidents.

Fog: Temperature inversions often occur during the winter months as a result of high pressure trapping cold air in the valley. These inversions keep cold, moist air trapped on the valley floor forming super-cooled fog. This fog can cause visibility restrictions and icy surfaces. Wind is needed to clear the inversion and fog. The Great Salt Lake has been shown to affect the prevalence of fog, especially when lake levels are high.

Landslide: Landslides and debris flows are most common in the foothills along the base of the Wasatch Mountain Range from wet climatic conditions. Some major landslide areas include the Grand View Peak rockslide in upper City Creek Canyon. As urbanization spreads into geologically unstable areas, the risk to life and property increases. An event of this nature could disrupt water production and delivery.

Slope instability has not been a major problem in the Salt Lake area. Yet, as development moves higher into the foothills and nearby canyons, slope stability is becoming a major issue affecting future development. Types of slope instability in the Salt Lake area include rock fall, debris flow and debris flood, rotational and transitional slumps, and earth flows. During the unusually wet springs of 1983 and 1984, numerous slope failures in the Wasatch Range resulted in debris flows and floods that caused extensive damage to urban areas north of Salt Lake City. Similar failures occurred in canyons adjacent to Salt Lake City, but none reached developed areas.

Location	Generally in canyon mouths and foothills and areas of recent wildfire activity (Map 11).
Seasonal Pattern	Spring and summer months.
Conditions	Usually caused by the stress release of over-weighted soils or loosening of rock and debris by wind, water or ground shaking.
Duration	Landslides/Rock falls: Hours to Months. Debris flows: Instantaneous.
Secondary Hazards	Flooding (natural dams), traffic accidents.
Analysis Used	Information and maps provided by UGS, UDEM, AGRC.

Past Occurrence

A cluster of historical landslides is visible from the hairpin turn in Bonneville Boulevard in lower City Creek Canyon in Salt Lake City. Movement of the largest and most damaging of these landslides has been monitored since June 1998 by the UGS and the Salt Lake City surveyor. Since June 1998, the toe of the landslide has moved about 24 feet, and the main scarp has offset the ground surface about the same amount. Like most recurrently active landslides in northern Utah, movement typically occurs between March and June as ground-water levels rise following the snowmelt. Four houses at the top of the slide are threatened, and efforts to protect one house have cost in excess of $300,000. In 2006 the landslide reactivated again, moving about 2 feet, despite drier-than-normal conditions in Salt Lake City. (Utah Hazard Mitigation Plan)

Subsidence is possible in City Creek, Emigration, Parley's, and Big Cottonwood Canyons due to the prevalence of dissolvable limestone. Subsidence can also occur in the Avenues area of Salt Lake City due to collapsible soils that are compactable upon wetting.

Table. Vulnerability Assessment for Landslides

Incorporated Areas	Acres Affected	Population Affected	Structures in Areas of Moderate or Greater Hazard	
			Residential (Replacement Value)	Commercial (Annual Sales)
Salt Lake City	15,701	15,762	6,327 $1,294,504,200	176 $47,480,280

Dam Failure: The city is responsible for multiple dams (Little Cottonwood Canyon, Big Cottonwood Canyon, Red Butte Dam, Little Dell, Mt Dell). The dam safety hazard is classified as no threat to high risk by the State Engineer. Hazard ratings are determined by downstream uses, size, height and volume, and incremental risk/damage assesments. The classification is based on the damage caused if the dam were to fail. If the BCC floods, the Salt Lake City Water TX Plant could be heavily impacted. There are 3 high-hazard dams located in Salt Lake City. These dams are built by different agencies, and may serve various functions such as flood control, water storage, recreation, and power generation.

Table. High and Moderate Hazard Dams,
Salt Lake City (Source: Utah Division of Water Rights)

Name	Rating
Little Dell	High
Mountain Dell	High
Red Butte Dam	High

Dam Failure Hazard Profile:

Location	Dam locations are located throughout the county, with most of the high and moderate hazard dams in the eastern and southern portion of the county (Map 13).
Seasonal Conditions	Rainy Day Failure: Anytime Sunny Day Failure: Spring, late summer
Conditions	Rainy Day Failure happens mainly during heavy precipitation events, can have some warning time. Sunny Day Failure can happen anytime without warning.
Duration	Hours or days - depends on spillway type and area, maximum cubic feet per second (cfs) discharge, overflow or breach type and dam type.
Secondary Hazards	Raw sewage/health risk, electrical fires, gas spills.
Analysis Used	Review of BOR inundation maps and plans, FIS, Utah Division of Water Rights.

Past Occurrence

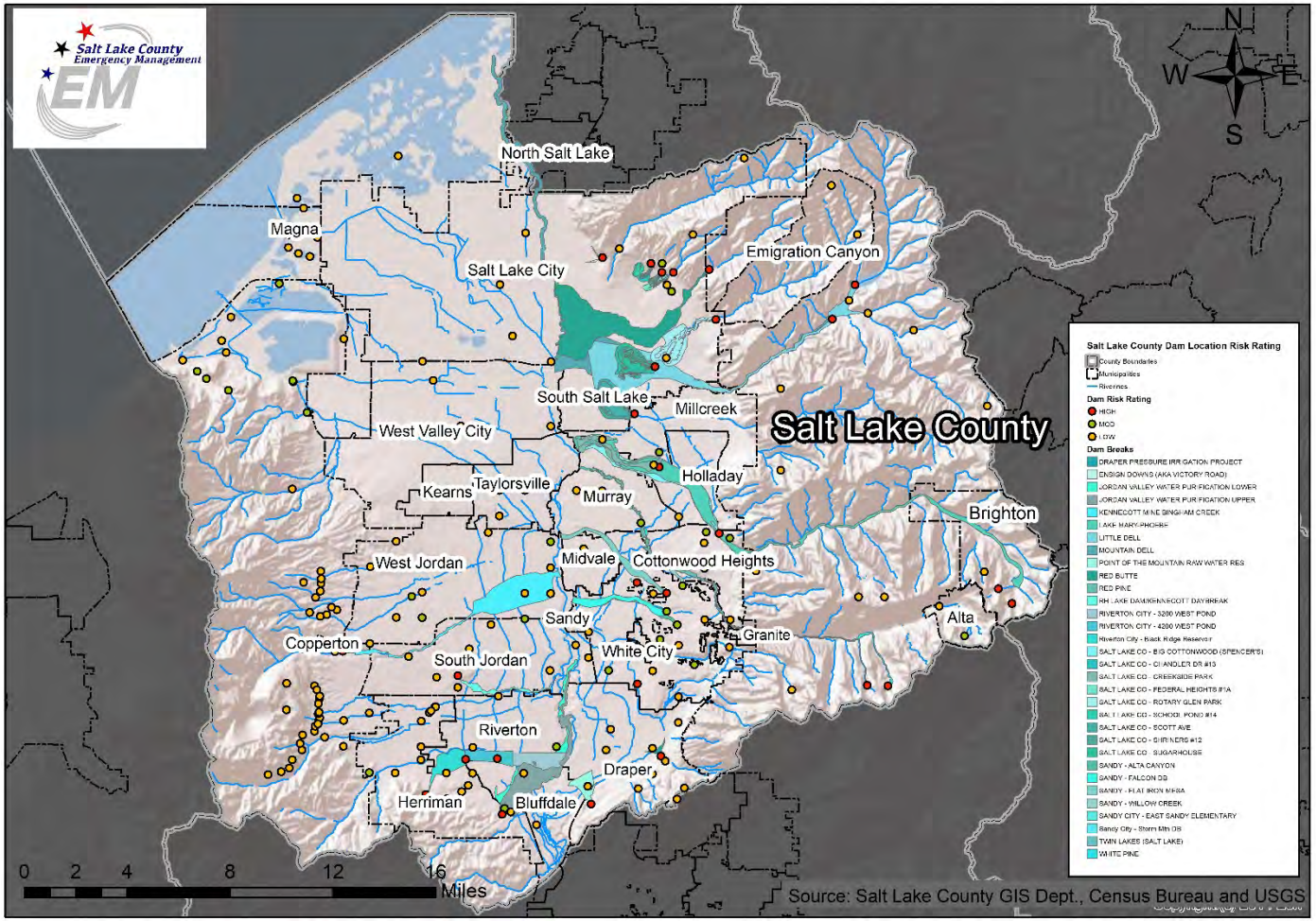
No record was found of dam failure incidents within Salt Lake City.

Vulnerability Assessment

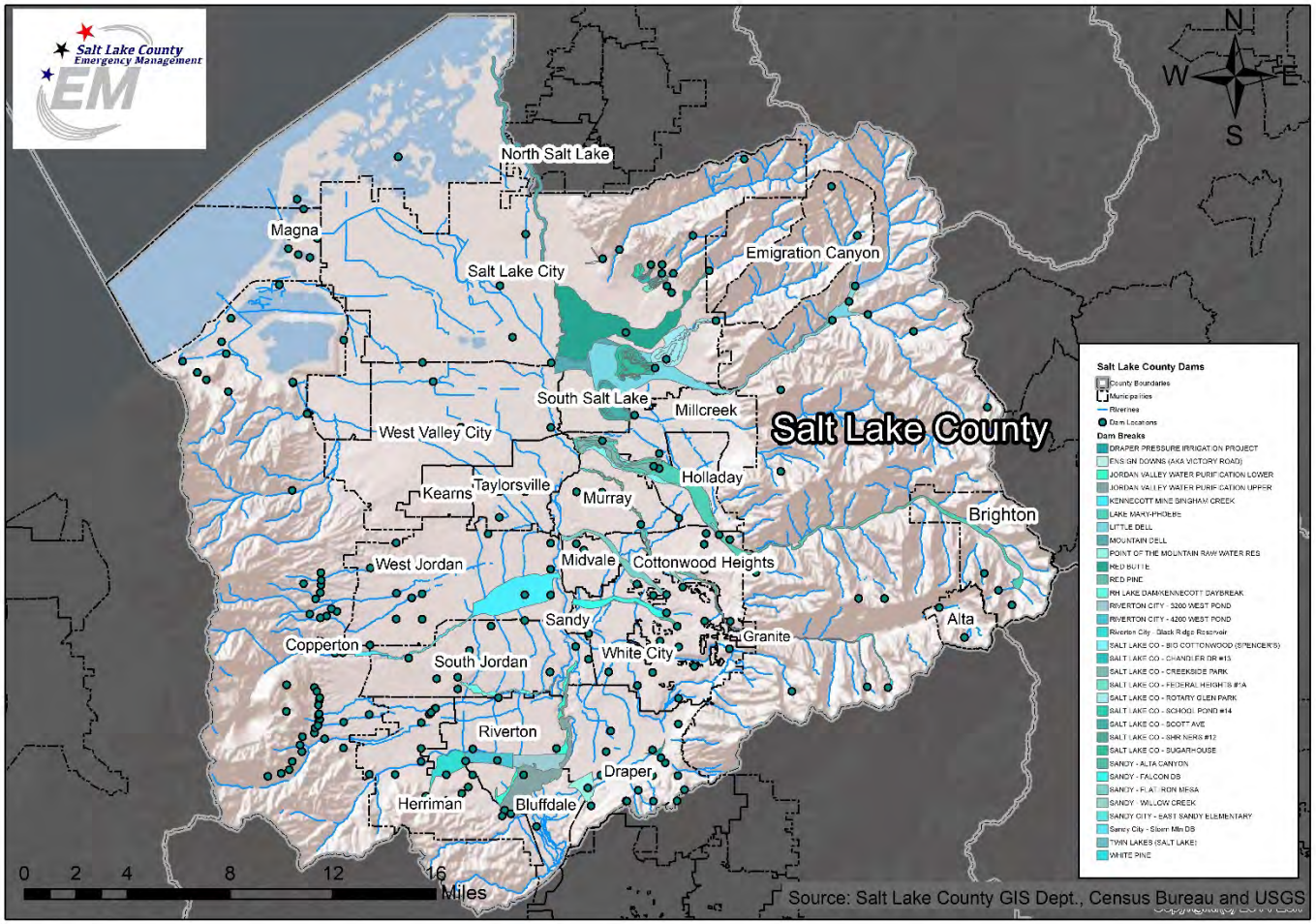
According to the Utah Hazard Mitigation Plan, a hazard evaluation designed by the Federal Energy Regulatory Commission FERC, compiled a ranking of high priority dams based on a number of variables which include: public access, population at risk, breach flow, inundation depth, and dam type. Three of the 50 highest priority dams are located within Salt Lake City.

1. Mountain Dell
2. Little Dell
3. Red Butte Dam

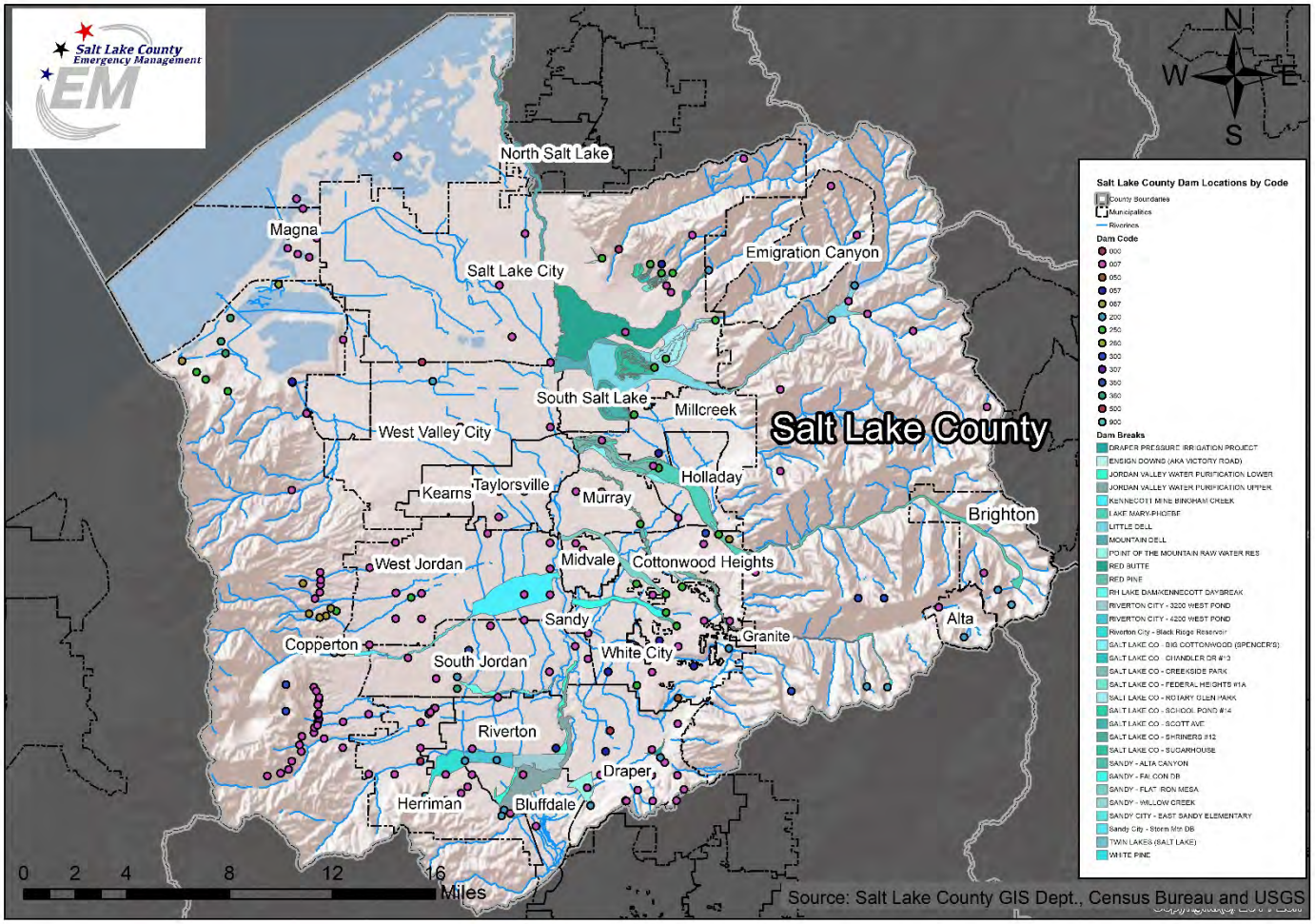
Map: Dam Risk Ranking



Map: Salt Lake County Dam



Map: Dam Location



Avalanche: The water facilities are at risk in the canyons and if the water management is impacted in Salt Lake City, the broader County would also be adversely impacted.

Public Health: The airport is an international airport, which could bring travelers to the area with infectious diseases. The city has a high number of research facilities. The high homeless population would be adversely impacted to a pandemic, as well as residents without healthcare access.

Civil Disorder: The city has a number of high profile figures, targets, and landmarks. Additionally, the city hosts large events and conferences. The state capital, as well as federal, county, and city buildings, including both political and religious sites, may all be vulnerable to violent protests.

Cyber Attack: The large utility infrastructure, as well as government and banking institutions could all be targeted and negatively impacted by a cyber attack.

Terrorism: The city has a dense population with many high priority/profile targets, including international church headquarters. Additionally, the city hosts a number of large events.

Hazardous Materials Release: Salt Lake City is home to industrial centers and bordering refineries. The city has 20 mill tons of HAZMAT materials, not including fuel. Additionally, the rail system through the city carries HAZMAT. In the city, there is also a nuclear reaction research facility. The following table contains data compiled by the Pipeline and Hazardous Materials Safety Administration of all the hazardous materials incidents within Salt Lake City within recent years.

Table. Salt Lake City Hazardous Materials Incidents

Incident Number	Date	Incident Street Address	City	Mode Of Transportation	Transportation Phase	Carrier	Total Damages
E-2014020157	2/4/2014	UNKNOWN	SALT LAKE CITY	FMCSA-HIGHWAY	LOADING	J. B. HUNT TRANSPORT, INC.	$1,000
X-2014030329	2/5/2014	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$2,500
X-2014120394	3/9/2014	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$2,464
I-2014040438	4/11/2014	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$2,000
I-2014040531	4/14/2014	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$2,000
I-2014050113	4/21/2014	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$2,000
I-2014050116	4/29/2014	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$2,000
X-2014120066	5/2/2014	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$3,126
I-2014050204	5/5/2014	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$2,000
I-2014050216	5/8/2014	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$2,000

I-2014060105	5/5/2014	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$2,000
I-2014070195	5/27/2014	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$2,000
X-2014070122	6/20/2014	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$3,200
I-2014080261	7/2/2014	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$2,000
I-2014070223	7/10/2014	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$3,500
X-2014080251	7/10/2014	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$3,500
X-2014080318	7/11/2014	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$968
I-2014090365	8/11/2014	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$2,000
I-2014090492	9/16/2014	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$2,000
I-2014120008	9/17/2014	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$2,000
I-2014020123	9/26/2014	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$2,552
I-2014010261	10/21/2014	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$5,000
I-2014110234	10/29/2014	2040 PARKWAY BLVD.	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UNITED PARCEL SERVICE CO.	$798
I-2015010233	11/19/2014	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$2,000
I-2014040437	11/28/2014	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$2,276
X-2014080319	12/19/2014	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$2,000
X-2015010162	12/20/2014	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$792
X-2015110077	1/5/2015	2410 SOUTH 2700 WEST	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	YRC WORLDWIDE INC.	$2,000
I-2015100323	3/3/2015	1973 West North Temple	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	R & L CARRIERS, INC.	$3,500
I-2015010302	3/18/2015	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$2,000
X-2015040386	3/18/2015	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$1,852
X-2015050315	3/19/2015	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$1,952
I-2015030480	3/25/2015	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT STORAGE	UPS FREIGHT SERVICES, INC.	$2,000

I-2015040170	3/30/2015	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT STORAGE	UPS FREIGHT SERVICES, INC.	$1,000
I-2015070348	3/30/2015	5178 WEST 150 SOUTH STREET	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	LANDSTAR INWAY, INC.	$4,000
I-2015040321	4/3/2015	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$2,000
E-2015040041	4/29/2015	1045 SOUTH 5500 WEST	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	YRC WORLDWIDE INC.	$3,800
X-2015060095	4/29/2015	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$1,526
X-2015060088	5/1/2015	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$1,526
I-2015060408	5/28/2015	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$2,000
I-2015060406	6/2/2015	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$2,000
E-2015080377	6/4/2015	2410 S 2700 WEST	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	YRC WORLDWIDE INC.	$2,800
I-2015060690	6/5/2015	500 S OF 600 N OFFRAMP- 2/10 M	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	FORELAND REFINING CORPORATION	$21,000
E-2015030316	6/17/2015	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	XPO LOGISTICS FREIGHT, INC.	$3,500
I-2015060374	6/21/2015	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$2,500
E-2015060339	7/2/2015	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS FREIGHT, INC.	$3,500
X-2015070429	7/3/2015	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$528
I-2015070364	7/8/2015	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$1,000
I-2015080392	8/4/2015	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
E-2015070036	8/15/2015	2781 West 2180 South	SALT LAKE CITY	FMCSA-HIGHWAY	LOADING	R & L CARRIERS, INC.	$3,500
I-2015090664	9/8/2015	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$1,500
I-2015100094	9/21/2015	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS FREIGHT SERVICES, INC.	$1,500
I-2015050009	9/28/2015	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$2,200
I-2015050253	9/28/2015	1045 SOUTH 5500 WEST	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	YRC WORLDWIDE INC.	$3,800
X-2015110087	10/3/2015	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$2,000
E-2015100606	10/12/2015	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS FREIGHT, INC.	$1,000

I-2015120183	11/23/2015	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
I-2015120432	12/13/2015	2410 S 2700 W	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	YRC WORLDWIDE INC.	$550
I-2016010030	12/30/2015	2900 CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
I-2016020054	12/31/2015	4375 WEST 1385 SOUTH	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	USF REDDAWAY INC.	$1,800
E-2016010200	1/12/2016	858 S. 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$3,500
E-2016010473	1/28/2016	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$2,500
E-2016020183	2/9/2016	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
E-2016020216	2/11/2016	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
X-2016020443	2/16/2016	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$510
E-2016030193	2/23/2016	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$2,000
E-2016020524	2/25/2016	384 WRIGHT BROTHERS DRIVE	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	UPS GROUND FREIGHT, INC.	$1,500
I-2016070003	4/15/2016	675 SOUTH GLADIOLA STRET	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	DAL SOGLIO 66, INC.	$26,649
E-2016040361	4/19/2016	2900 WEST CALIFORNIA AV	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$2,500
I-2016050001	4/19/2016	4375 WEST 1385 SOUTH	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	USF REDDAWAY INC.	$2,350
I-2016050080	4/26/2016	4375 WEST 1385 SOUTH	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	USF REDDAWAY INC.	$2,400
X-2016050362	4/27/2016	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$3,550
E-2016050413	5/23/2016	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$1,000
E-2016050526	5/27/2016	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
X-2016060393	6/10/2016	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$1,650
E-2016060258	6/10/2016	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$1,000
E-2016070101	6/23/2016	UNKNOWN	SALT LAKE CITY	FMCSA-HIGHWAY	LOADING	SAIA, INC.	$3,500
E-2016060579	6/24/2016	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$3,500
E-2016070158	7/1/2016	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$1,000

E-2016070502	7/11/2016	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS FREIGHT, INC.	$3,000
E-2016100166	7/17/2016	I-15 FRONTAGE ROAD NEAR W110 S	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	QUALITY CARRIERS, INC.	$5,512
X-2016070617	7/20/2016	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$4,500
E-2016080033	8/2/2016	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
E-2016080221	8/8/2016	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	LOADING	XPO LOGISTICS FREIGHT, INC.	$1,000
E-2016090263	9/12/2016	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
X-2016100398	10/10/2016	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$1,550
E-2016100428	10/10/2016	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,000
E-2016101129	10/17/2016	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
E-2016110039	10/25/2016	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,000
E-2016110213	11/7/2016	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
E-2016110328	11/11/2016	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$2,000
E-2016120233	12/6/2016	UNKNOWN	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	XPO LOGISTICS, LLC	$3,500
E-2017010058	12/6/2016	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
E-2016120326	12/23/2016	858 SOUTH 3760 WEST	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	XPO LOGISTICS FREIGHT, INC.	$1,000
E-2017020006	1/31/2017	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$3,500
E-2017020115	2/1/2017	858 SOUTH 3760 WEST	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$1,000
E-2017020355	2/14/2017	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	LOADING	UPS GROUND FREIGHT, INC.	$1,500
E-2017030197	3/6/2017	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
I-2017030199	3/7/2017	4375 W 1385 S	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	USF REDDAWAY INC.	$900
E-2017030263	3/8/2017	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
E-2017030289	3/10/2017	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$3,500
E-2017030659	3/27/2017	858 SOUTH 3760 WEST	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$3,000

E-2017040045	3/30/2017	423 WAKARA WAY	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	UPS GROUND FREIGHT, INC.	$2,500
E-2017050050	4/8/2017	I-80, MM 136	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$58,000
E-2017040311	4/11/2017	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,000
E-2017040424	4/21/2017	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$3,500
E-2017060063	5/25/2017	650 W 800 S	SALT LAKE CITY	FMCSA-HIGHWAY	LOADING	UNIVAR USA INC.	$40,889
E-2017050543	5/26/2017	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$2,500
E-2017050624	5/30/2017	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$2,000
I-2017060197	6/17/2017	5600 W 900 S	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	YRC WORLDWIDE INC.	$3,400
X-2017060663	6/17/2017	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$1,500
X-2017060680	6/20/2017	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$1,505
X-2017060684	6/23/2017	UNKNOWN	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$1,270
E-2017070040	6/26/2017	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
E-2017070041	6/26/2017	2900 CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
E-2017070213	7/5/2017	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS	$3,000
E-2017070354	7/7/2017	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
E-2017070504	7/11/2017	650 DAVIS ROAD	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UPRR EMPLOYEE HEALTH SYSTEMS	$1,520
E-2017070315	7/14/2017	UNKNOWN	SALT LAKE CITY	FMCSA-HIGHWAY	LOADING	R & L CARRIERS, INC.	$3,500
E-2017070471	7/13/2017	858 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$3,500
I-2017070238	7/18/2017	2425 3200 WEST	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	REDDAWAY	$3,450
E-2017070401	7/18/2017	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
E-2017080394	7/28/2017	650 DAVIS ROAD	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$1,850
I-2017080099	8/1/2017	4375 WEST 1385 SOUTH	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	USF REDDAWAY INC.	$600
E-2017080492	8/11/2017	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO CNW, INC.	$3,500

E-2017080475	8/17/2017	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
E-2017090147	8/30/2017	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
I-2017100016	9/19/2017	4375 W. 1385 S	SALT LAKE CITY	FMCSA-HIGHWAY	LOADING	REDDAWAY	$3,450
E-2017105397	10/30/2017	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	XPO LOGISTICS FREIGHT, INC.	$1,000
E-2017110410	11/3/2017	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$3,000
E-2017115034	11/8/2017	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	XPO LOGISTICS FREIGHT, INC.	$1,000
E-2017110599	11/9/2017	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$5,500
E-2017115100	11/14/2017	858 S. 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$1,200
E-2017125052	12/7/2017	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$3,000
E-2017125048	12/7/2017	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS FREIGHT, INC.	$1,000
E-2017125126	12/11/2017	650 DAVIS ROAD	SALT LAKE CITY	FRA-RAILWAY	IN TRANSIT	UNION PACIFIC RAILROAD COMPANY INC	$2,010
E-2018010188	12/17/2017	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,000
E-2018010231	12/19/2017	201 EB 900 W	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	UPS GROUND FREIGHT, INC.	$6,000
E-2017125150	12/27/2017	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	XPO LOGISTICS, LLC	$5,000
E-2017125048	12/7/2017	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS FREIGHT, INC.	$1,000
E-2018010188	12/17/2017	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,000
E-2018010629	1/26/2018	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$2,000
E-2018020185	2/2/2018	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
E-2018025061	2/5/2018	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	LOADING	XPO LOGISTICS, LLC	$4,500
E-2018025067	2/8/2018	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	XPO LOGISTICS, LLC	$1,000
E-2018035213	3/20/2018	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS FREIGHT, INC.	$3,501
E-2018045078	3/20/2018	N/A	SALT LAKE CITY	FMCSA-HIGHWAY	LOADING	XPO LOGISTICS FREIGHT, INC.	$3,500
E-2018045017	3/24/2018	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$1,916

E-2018045034	4/5/2018	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$1,000
E-2018040211	4/13/2018	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$2,000
E-2018040212	4/13/2018	2900 CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$2,000
E-2018050324	4/29/2018	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,000
E-2018051097	5/15/2018	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,000
E-2018050679	5/22/2018	858 S. 3760 W.	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$3,000
E-2018060317	5/22/2018	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS FREIGHT, INC.	$1,929
E-2018060445	6/14/2018	1711 SOUTH 4650	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	R L PARAMOUNT TRANSPORTATION SYSTEMS, INC.	$2,500
I-2018080388	6/21/2018	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
E-2018070068	6/27/2018	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS FREIGHT, INC.	$1,371
I-2018070097	6/28/2018	2810 WEST 2200 SOUTH	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	R & L CARRIERS, INC.	$2,500
E-2018070067	7/3/2018	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS FREIGHT, INC.	$2,000
I-2018080532	7/10/2018	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,000
E-2018080152	7/24/2018	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$2,500
I-2018080569	7/26/2018	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT STORAGE	UPS GROUND FREIGHT, INC.	$2,000
E-2018080231	7/27/2018	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	XPO LOGISTICS, LLC	$2,719
E-2018080114	7/30/2018	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$3,000
E-2018080611	8/9/2018	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$4,500
E-2018080350	8/10/2018	1750 SOUTH, 500 WEST, SUITE 70	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS FREIGHT, INC.	$4,500
I-2018090504	8/31/2018	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$2,000
I-2018100026	9/5/2018	4375 W 1385 S	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	USF REDDAWAY INC.	$600
I-2018090467	9/6/2018	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$2,500
E-2018100095	10/2/2018	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	XPO LOGISTICS FREIGHT, INC.	$4,500

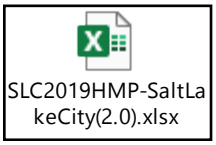
I-2018100392	10/16/2018	2900 WEST CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,000
E-2018100790	10/24/2018	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	XPO LOGISTICS FREIGHT, INC.	$1,000
E-2018110468	10/30/2018	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	XPO LOGISTICS FREIGHT, INC.	$8,500
E-2018110037	10/30/2018	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO CNW, INC.	$2,500
E-2018110419	11/8/2018	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS	$1,000
E-2018110500	11/19/2018	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	XPO LOGISTICS FREIGHT, INC.	$1,000
E-2018120339	12/5/2018	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO LOGISTICS, LLC	$4,500
I-2018120081	12/10/2018	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$2,500
I-2018120089	12/11/2018	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,000
I-2019020331	12/21/2018	2900 W CALIFORRIIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$3,500
I-2019020323	1/4/2019	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$2,500
I-2019020095	1/8/2019	4375 W 1385 S	SALT LAKE CITY	FMCSA-HIGHWAY	LOADING	USF REDDAWAY INC.	$800
I-2019020239	2/5/2019	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,250
I-2019030055	3/1/2019	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
I-2019030221	3/13/2019	4375 W1385 S	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	USF REDDAWAY INC.	$3,450
E-2019030671	3/21/2019	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	IN TRANSIT	XPO CNW, INC.	$4,000
I-2019040267	4/16/2019	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,500
I-2019040255	4/18/2019	2900 CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,250
I-2019040385	4/26/2019	2900 W CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$2,250
I-2019040255	4/18/2019	2900 CALIFORNIA AVE	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	UPS GROUND FREIGHT, INC.	$1,250
E-2019050333	5/8/2019	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	XPO CNW, INC.	$1,000
E-2019050784	5/21/2019	858 S 3760 W	SALT LAKE CITY	FMCSA-HIGHWAY	UNLOADING	XPO LOGISTICS FREIGHT, INC.	$1,000

Source: https://portal.phmsa.dot.gov/analytics/saw.dll?PortalPages

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Severe Winter Weather	3	16	48
Severe Weather	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Flooding	2	19	38
Wildfire	2	18	36
Cyber Attack	2	17	34
Hazardous Materials Incident	2	14	28
Drought	2	14	28
Radon	3	9	27
Civil Disturbance	2	13	26
Terrorism	1	25	25
Dam Failure	1	23	23
Tornado	1	11	11
Landslide and Slope Failure	1	11	11
Avalanche	1	7	7

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.



Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1		Avalanche	Low	1	3
Dam Failure	Low	1		Dam Failure	Medium	2	6
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Medium	2		Civil Disturbance	Medium	2	6
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Low	1		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	High	3	9
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	Medium	2		Wildfire	Medium	2	6

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	Low	1	1		Avalanche	Low	1	2
Dam Failure	Medium	2	2		Dam Failure	High	3	6
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Medium	2	4
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	High	3	6
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	High	3	6
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Low	1	2
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	Low	1	1		Wildfire	High	3	6

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**	**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)	**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)	**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)	**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)	**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1	1		Avalanche	Unlikely	0	0
Dam Failure	High	3	3		Dam Failure	Medium	2	6
Drought	Medium	2	2		Drought	Low	1	3
Civil Disturbance	Medium	2	2		Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	2		Cyber Attack	Medium	2	6
Earthquake	High	3	3		Earthquake	High	3	9
Flooding	Medium	2	2		Flooding	Low	1	3
Hazardous Materials Incident	Medium	2	2		Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	3		Public Health Epidemic/ Pandemic	High	3	9
Radon	No Impact	0	0		Radon	Unlikely	0	0
Severe Weather	Low	1	1		Severe Weather	Unlikely	0	0
Severe Winter Weather	Medium	2	2		Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	3		Terrorism	High	3	9
Tornado	Low	1	1		Tornado	Unlikely	0	0
Wildfire	Medium	2	2		Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**		**Catastrophic Factor**—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)		**High**—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)		**Medium**—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)		**Low**—Low potential that this hazard could be catastrophic (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)		**Unlikely**—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Seismic Retrofitting of URM buildings (public, residential, multi-family, and business)	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. • Goal 4: Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters. • Goal 5: Ensure and promote	Earthquake	Division of Emergency Management	TBD	Reduction in the number of injuries and deaths after earthquake	Varies	Varies	High	Ongoing over years	Scope to include promoting, enticing or facilitating the retrofit or rehabilitation of Unreinforced Masonry Buildings (URM) that are highly susceptible to severe damage or collapse and or otherwise posing a threat to the public during ground shake and extreme forces.

		ways to increase government and private sector continuity of services during and after a disaster. • Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County. • Goal 7: Advocate, support, and promote the use of laws and local regulations and ordinances aimed to mitigate hazards and to enhance resiliency.									
Conduct 1200 West Sewer Trunk Rehabilitation	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce	Earthquake, Extreme Cold, Extreme Heat, Flood (Urban/Flash Flooding), Severe Thunderstorm, Severe Winter Weather	Department of Public Utilities	N/A	High (loss avoidance, health and safety, critical facility support)	High ($12 million)	Wastewater Enterprise Fund	High	2025	Scope includes the rehabilitation of the 1200 West sewer trunk main.

		damages and disruptions to critical facilities, structures, and infrastructure during disasters. • Goal 5: Ensure and promote ways to increase government and private sector continuity of services during and after a disaster. • Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.									
Conduct the 2300 E-WILMINGTON AVE-YUMA ST Upsizing Project	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and	Flood (Urban/Flash Flooding), Severe Thunderstorm	Department of Public Utilities	N/A	High (public health, loss avoidance, flooding protection)	High ($2.5 million)	State and Federal Grants	High	TBD	Scope includes the upsizing of the 2300 E-WILMINGTON AVE-YUMA ST . sewer mains for capacity.

		infrastructure during disasters. • Goal 5: Ensure and promote ways to increase government and private sector continuity of services during and after a disaster. • Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.									
Conduct 2100 South Capacity Upgrades	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Flood (Urban/Flash Flooding), Severe Thunderstorm	Department of Public Utilities	N/A	High (public health, loss avoidance, flooding protection)	High ($5 million)	State and Federal Grants	High	TBD	Scope includes the upsizing of the 2100 S sewer main for capacity.

		• Goal 5: Ensure and promote ways to increase government and private sector continuity of services during and after a disaster. • Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.									
Conduct 1200 West Sewer Trunk Rehabilitation	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. • Goal 5: Ensure and promote ways to increase	Earthquake, Extreme Cold, Extreme Heat, Flood (Urban/Flash Flooding), Severe Thunderstorm, Severe Winter Weather	Department of Public Utilities	N/A	High (loss avoidance, health and safety, critical facility support)	High ($20 million)	Wastewater Enterprise Fund	High	2030	Scope includes the rehabilitation of the 1200 West sewer trunk main.

		government and private sector continuity of services during and after a disaster. • Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.									
Conduct Critical Facility Sewer Rehab and Reliability Project	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. • Goal 5: Ensure and promote ways to increase government and private sector continuity of	Earthquake, Extreme Cold, Extreme Heat, Flood (Urban/Flash Flooding), Severe Thunderstorm, Severe Winter Weather	Department of Public Utilities	N/A	High (loss avoidance, health and safety, critical facility support)	High ($15 million)	Wastewater Enterprise Fund	Medium	TBD	Scope includes the rehabilitation of collection sewers downstream of critical facilities and construction

		services during and after a disaster. • Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.									
Conduct South Temple Capacity Upgrades	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. • Goal 5: Ensure and promote ways to increase government and private sector continuity of services during and after a disaster.	Flood (Urban/Flash Flooding), Severe Thunderstorm	Department of Public Utilities	N/A	High (public health, loss avoidance, flooding protection	High ($1.5 million)	State and Federal Grants	High	TBD	Scope includes the upsizing of the south temple sewer main for capacity.

		• Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.									
Upgrade the SLCDPU Admin & Operations Center	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. • Goal 3: Enhance and protect the communication and warning/notification systems in the County. • Goal 4: Promote education and awareness programs, campaigns, and efforts	All-Hazards	Department of Public Utilities	N/A	High (Emergency response and support)	High ($35 million)	SLCDPU	High	TBD	Scope includes replacement of the SLCDPU Administration and Operations Facility's and and construction of an integrated Dispatch/SCADA/Emergency Response Center.

		designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters. • Goal 5: Ensure and promote ways to increase government and private sector continuity of services during and after a disaster. • Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.									
Conduct SCADA Communications and Security Improvements	2019	• Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. • Goal 5: Ensure and promote ways to increase	All-Hazards	Department of Public Utilities	N/A	High (Operational emergency response and response prioritization.)	Medium-High ($250,000 to $5 million)	County, State, or Federal Grants	High	TBD	Scope to include planning and buildout of SCADA infrastructure to promote web base alarming, monitoring capabilities, and communications. Work to include SCADA communications planning, cybersecurity assessment,

		government and private sector continuity of services during and after a disaster. • Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.									and security recommendations. Planning recommendations would include updates of the utility emergency response plan with recommendations for equipment staging locations, facilities and responses planning
Procure and Stage Items Needed for the Back-up Emergency Response Equipment Staging	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. • Goal 5: Ensure and promote ways to increase government and private sector continuity of	All-Hazards, Earthquake, Flood (Urban/Flash Flooding), Severe Thunderstorm	Department of Public Utilities	SLCo, Holiday, Milcreek, Cottonwood Heights	Medium (Emergency response time, reduction of infrastructure downtime)	High ($1-$5 million)	County, State, or Federal Grants	Low	TBD	Scope includes the purchase and staging of portable generators, portable pumps, bypass piping, and HDPE fusing equipment to support collections, distributions, and treatment facility emergency response. Work would include the construction of planned staging and operations support facilities throughout the City and County.

		services during and after a disaster. • Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.									
Mitigate fuels along east side of East Capitol Blvd to create defensible space	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Wildland Fire	Division of Emergency Management		Reduction in the amount of damage, injury, and death from wildland fire	TBD	TBD	TBD	TBD	
Mitigate fuels along north side of Northmont Way to create defensible space	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Wildland Fire	Division of Emergency Management		Reduction in the amount of damage, injury, and death from wildland fire	TBD	TBD	TBD	TBD	

		• Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.									
Mitigate fuels in home ignition zones on East Tomahawk Dr., Chandler Dr, and Kristianna Circle	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Wildland Fire	Division of Emergency Management		Reduction in the amount of damage, injury, and death from wildland fire	TBD	TBD	TBD	TBD	
Mow annual rye 25 ft. on either side of the Bonneville Shoreline Trail east of University of Utah	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to	Wildland Fire	Division of Emergency Management		Reduction in the amount of damage, injury, and death from wildland fire	TBD	TBD	TBD	TBD	

		critical facilities, structures, and infrastructure during disasters.									
Mow annual rye and mitigate around the shed north of Rotary Glen on This is the State Park.	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Wildland Fire	Division of Emergency Management		Reduction in the amount of damage, injury, and death from wildland fire	TBD	TBD	TBD	TBD	
Mitigate fuels for ingress / egress along Red Butte Canyon access road.	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure	Wildland Fire	Division of Emergency Management		Reduction in the amount of damage, injury, and death from wildland fire	TBD	TBD	TBD	TBD	

		during disasters.									
Mitigate fuels at the mouth of Emigration under the high rise buildings	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Wildland Fire	Division of Emergency Management		Reduction in the amount of damage, injury, and death from wildland fire	TBD	TBD	TBD	TBD	
Mitigate fuels along east side of Devonshire Road	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Wildland Fire	Division of Emergency Management		Reduction in the amount of damage, injury, and death from wildland fire	TBD	TBD	TBD	TBD	

Mitigate fuels for defensible space around the City Creek water treatment plant	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Wildland Fire	Division of Emergency Management		Reduction in the amount of damage, injury, and death from wildland fire	TBD	TBD	TBD	TBD	
Mitigate fuels for ingress/ egress along City Creek Canyon access road up to the Water Treatment Plant	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Wildland Fire	Division of Emergency Management		Reduction in the amount of damage, injury, and death from wildland fire	TBD	TBD	TBD	TBD	
Mitigate fuels and develop maintenance plan for FS lands in Red Butte Canyon outside of RNA.	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt	Wildland Fire	Division of Emergency Management		Reduction in the amount of damage, injury, and death from wildland fire	TBD	TBD		TBD	

		Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.									
Conduct firewise native seeding for the following Open Space properties: Popperton, Chandler, and Morris Meadows	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Wildland Fire	Division of Emergency Management		Reduction in the amount of damage, injury, and death from wildland fire	TBD	TBD			
Work on passing a local ordinance to allow homeowners to obtain a permit to conduct mitigation efforts on City property abutting their residential property.	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Wildland Fire	Division of Emergency Management		Reduction in the amount of damage, injury, and death from wildland fire	TBD	TBD	TBD	TBD	

		• Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. • Goal 7: Advocate, support, and promote the use of laws and local regulations and ordinances aimed to mitigate hazards and to enhance resiliency.									
Work with the State Dept of Natural Resources to establish NFPA Firewise communities in WUI areas (which carry independent mitigation requirements)	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. • Goal 7: Advocate, support, and	Wildland Fire	Division of Emergency Management		Reduction in the amount of damage, injury, and death from wildland fire	TBD	TBD	TBD	TBD	

		promote the use of laws and local regulations and ordinances aimed to mitigate hazards and to enhance resiliency.									
Work with homeowners to help them identify risks such as deteriorating power poles and work with them in finding solutions.	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Wildland Fire	Division of Emergency Management		Reduction in the amount of damage, injury, and death from wildland fire	TBD	TBD	TBD	TBD	
Acquire commercial grade chipper and dump trailer	2019	• Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. • Goal 5: Ensure and promote ways to increase government	All-Hazards	Division of Emergency Management		Additional equipment will aid in the achievement of multiple mitigation efforts throughout the county, as well as aid in the fulfillment of CWPP obligations.	TBD	Grants	TBD	TBD	

		and private sector continuity of services during and after a disaster.									

Mitigation Table - Ongoing Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Conduct Training and awareness activities on communication equipment, tools, and systems	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	All-Hazards	Salt Lake City Emergency Management	Communications	Medium	Low	Local	Medium	Ongoing	This has to be done on a regular basis for staffing purposes.
Establish a coordinating group to address geographic data issues	2009	2 – Improve awareness and analysis of hazards 2.1 – Improved Quality and Access to digital geographic (GIS) hazards data	All-Hazards	GIS	Salt Lake City Emergency Management	High	Medium	Local	High	Ongoing	A GIS position and capabilities were added to our EOC. A GIS working group has been established
Examine current data availability and sharing capabilities, evaluate needs, and identify shortcomings	2009	2 – Improve awareness and analysis of hazards 2.1 – Improved Quality and Access to digital geographic (GIS) hazards data	All-Hazards	GIS	Salt Lake City Emergency Management	Medium	Low	Local	Medium	Ongoing	GIS working group is trying to address these issue by forming a Common Operating Picture (COP).
Update and expand data on hazards, critical facilities, and critical infrastructure according to assessed needs	2009	2 – Improve awareness and analysis of hazards 2.1 – Improved Quality and Access to digital geographic (GIS) hazards data	All-Hazards	GIS	Salt Lake City Emergency Management	High	Low	Local	High	Ongoing	In conjunction with our other projects new data is added to the GIS layers
Provide centralized access to geographic data to emergency	2009	2 – Improve awareness and analysis of hazards	All-Hazards	GIS	Salt Lake City Emergency Management	High	Low	Local	High	Ongoing	See comment above on forming a COP

planners and responders		2.1 – Improved Quality and Access to digital geographic (GIS) hazards data									
Utilize GIS to identify facilities and infrastructure at risk	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	All-Hazards	GIS	Salt Lake City Emergency Management	High	Low	Local	High	Ongoing	GIS data used to estimate which buildings will fail and how much debris they will create. Data on URMs was used to create maps, planning tools and educational materials.
Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment resources and redundancy, and adequate emergency procedures	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	All-Hazards	Public Works	Salt Lake City Emergency Management	High	Low	Local	High	Ongoing	Gathered data while participating in various programs (LEAP, RRAP, etc.) to use in planning/response. Plan to implement use of IP gateway.
Implement improvements to address hazards identified in assessment	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	All-Hazards	Public Works	Salt Lake City Emergency Management	High	Low-High (project dependent)	Local and grants (as needed)	High	Ongoing	Having mobile command center capabilities. Keep 96hr supplies and equipment in various key locations for rapid access to after an event.
Compile inventory of mutual-aid agreements and memoranda of understanding (MOU) and identify deficiencies	2009	4 – Improve response capabilities through mutual-aid agreements 4.1 – Utilize mutual-aid agreements in accordance with National Incident Management	All-Hazards	Salt Lake City Emergency Management		Medium	Low	Local	Medium	Ongoing	Putting them in places that be readily accessed like the WebEOC library

		System (NIMS) requirements									
Pursue and implement needed mutual-aid agreements	2009	4 – Improve response capabilities through mutual-aid agreements 4.1 – Utilize mutual-aid agreements in accordance with National Incident Management System (NIMS) requirements	All-Hazards	Salt Lake City Emergency Management		Medium	Low	Local	Medium	Ongoing	Continue building mutual aid agreements
Provide education regarding all natural hazards through live trainings, as well as web-based, print and broadcast media	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – establish a comprehensive public education program	All-Hazards	Salt Lake City Emergency Management		Medium	Low	Local	Medium	Ongoing	Added a community preparedness coordinator to staff and we utilize several forms of outreach (fairs, workshops, web pages, social media, etc.)
Incorporate information about cascading effects of hazards in education programs	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – establish a comprehensive public education program	All-Hazards	Salt Lake City Emergency Management		Medium	Low	Local	Medium	Ongoing	Increasing Hazard awareness through our Fix the Bricks program and URM maps. Promote community participation in programs like SAFE neighborhoods
Develop education programs to target specific groups including homeowners, developers, schools and people with special needs	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – establish a comprehensive public education program	All-Hazards	Salt Lake City Emergency Management		Medium	Low	Local	Medium	Ongoing	Via Fix the Bricks and SAFE Neighborhoods
Coordinate with existing public education programs such as the American Red Cross, Utah Living with Fire, be Ready Utah, the National Weather Service, etc.	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – establish a comprehensive public education program	All-Hazards	Salt Lake City Emergency Management		Medium	Low	Local	Medium	Ongoing	We partner with the local Red cross and SLC district on SAFE Neighborhoods Program. We also promote other public educations programs; such as Be Ready Utah.

Establish and enforce appropriate planning, zoning, and building code ordinances	2009	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	All-Hazards	Planning and Zoning		High	Low	Local	High	Ongoing	Adopted current international building code
Complete seismic rehabilitation/retrofitting projects of public buildings at risk	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	Earthquake	Public Works	Salt Lake City Emergency Management	High	High	Federal and State grants such as HMA	High	Ongoing	
Maintain Hazardous Weather Operations Plan according to StormReady requirements	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.1 – Maintain status as a StormReady Community	Severe Weather	Salt Lake City Emergency Management		Medium	Low	Local	Medium	Ongoing	
Incorporate improved addresses in fire-dispatch and other databases	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.3 – Improve addressing system in WUI areas to facilitate emergency response	Wildland Fire	Fire	Salt Lake City Emergency Management	High	Low	Local	Medium	Ongoing	
Assess existing water flow capabilities, both public and private, and address deficiencies	2009	2 – Improve safety from wildfire hazards through planning, protective	Wildland Fire	Public Works	Salt Lake City Emergency Management	Medium	Low	Municipal	Medium	Ongoing	

		actions and improved fire response capabilities 2.4 – Complete wildfire protection projects									
Assist communities in developing Community Wildfire Protection Plans or similar plans	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	Wildland Fire	Fire	Salt Lake City Emergency Management	High	Low	Municipal	High	Ongoing	
Identify structures at risk to earthquake damage through HAZUS data and building inspections.	2014	Reduce earthquakes losses to infrastructure Encourage retrofit and rehabilitation of highly susceptible infrastructure	Earthquake	Public Works	Salt Lake City Emergency Management	Medium	Low	Municipal	High	Ongoing	
Provide educational materials to unreinforced masonry home and business owners. Particularly marketing Fix the Bricks Program to educate home and business owners about masonry reinforcement (update from 2009)	2014	Reduce earthquakes losses to infrastructure Improve public education regarding earthquake risks to unreinforced masonry buildings	Earthquake	Salt Lake City Emergency Management		Medium	Low	Municipal	Medium	Ongoing	Fix the Bricks was added to our community outreach materials and publications
Encourage communities to actively participate in NFIP (update from 2009)	2014	Protection of life and property before, during and after a flooding event Provide 100% availability of the National Flood Insurance Program (NFIP).	Flooding	Salt Lake City Emergency Management		High	Low	Municipal	Medium	Ongoing	Participate in NFIP as a community

Determine potential flood impacts and identify areas in need of additional flood control structures (update from 2009)	2014	Protection of life and property before, during and after a flooding event Encourage appropriate flood control measures, particularly in new developments.	Flooding	Public Works	Salt Lake City Emergency Management	Medium	Low	Municipal	Medium	Ongoing	Evaluated regularly
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures (updated from 2009)	2014	Protection of life and property before, during and after a flooding event Encourage appropriate flood control measures, particularly in new developments.	Flooding	Public Works	Salt Lake City Emergency Management	High	Low	Municipal	Medium	Ongoing	
Provide maintenance, repairs and improvements to drainage structures, storm water systems and flood control structures (updated from 2009)	2014	Protection of life and property before, during and after a flooding event	Flooding	Public Works	Salt Lake City Emergency Management	High	Low	Municipal	High	Ongoing	
Identify and assess structures for deficiencies (updated from 2009)	2014	Reduce threat of unstable or inadequate flood control structures Reduce threat of unstable or inadequate flood control structures	Flooding	Public Works	Salt Lake City Emergency Management	High	Low	Municipal	High	Ongoing	
Modify structures as needed to address deficiencies (updated from 2009)	2014	Reduce threat of unstable or inadequate flood control structures Reduce threat of unstable or inadequate flood control structures	Flooding	Public Works	Salt Lake City Emergency Management	High	Low	Municipal	High	Ongoing	

Increase public awareness through “Fire Wise” program (updated from 2009)	2014	Community education on wildfire hazard Reduce risk from wild fire through education programs	Wildland Fire	Salt Lake City Emergency Management	Fire	Medium	Low	Municipal	High	Ongoing	
Educate homeowners on the need to create defensible space near structures in WUI (updated from 2009)	2014	Community education on wildfire hazard Educate homeowners on the need to create defensible space near structures in WUI.	Wildland Fire	Salt Lake City Emergency Management	Fire	Medium	Low	Municipal	High	Ongoing	Part of Firewise
Provide waste removal, such as chipping of green waste by Public Works, following designated fuel clearing day/week (updated from 2009)	2014	Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities Assist homeowners with creating defensible space near structures in WUI areas.	Wildland Fire	Public Works	Salt Lake City Emergency Management and Fire	High	Low	Municipal	High	Ongoing	
Work with experts and communities to develop or update evacuation plans (updated from 2009)	2014	Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities Improve evacuation capabilities for WUI areas.	Wildland Fire	Salt Lake City Emergency Management		High	Low	Municipal	High	Ongoing	
Evaluate transportation network and address needed improvements to facilitate evacuation and emergency response (updated from 2009)	2014	Improve safety from wildfire hazards through planning, protective actions and improved fire	Wildland Fire	Salt Lake City Emergency Management	Transportation	High	Low	Municipal	High	Ongoing	

		response capabilities Improve evacuation capabilities for WUI areas.									
Reduce fuels around publicly owned structures (updated from 2009)	2014	Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities Complete wildfire protection projects	Wildland Fire	Fire	Salt Lake City Emergency Management	High	Low	Municipal	High	Ongoing	
Develop protocol for working with State and Federal agencies in reducing the impact of post-fire debris flow hazard (updated from 2009)	2014	Reduce or eliminate the threat of slope failure damage. Reduce the threat of slope failures following wildfires.	Wildland Fire	Fire	Salt Lake City Emergency Management	Medium	Low	Municipal	Medium	Ongoing	
Coordinate with Utah Geological Survey and other agencies to understand current slope failure threats/potential (updated from 2009)	2014	Reduce or eliminate the threat of slope failure damage Monitor historic landslide areas.	Wildland Fire	Salt Lake City Emergency Management	Public Works and GIS	High	Low	Municipal	Medium	Ongoing	
Utilize recommendations provided by State Geologic Hazards Working Group to address land-use and planning for new developments (updated from 2009)	2014	Reduce or eliminate the threat of slope failure damage Address landslide hazards in new sub-divisions.	Wildland Fire	Salt Lake City Emergency Management	Public Works and GIS	High	Low	Municipal	High	Ongoing	
Meet with NWS representative on an annual basis to receive information on new services and alerts available (updated from 2009)	2014	Reduce threat of loss of life or property due to extreme weather events Maintain status as a StormReady Community	Tornado	Salt Lake City Emergency Management		Low	Low	Municipal	Low	Ongoing	

Assist NWS in making other agencies and departments aware of available resources (updated from 2009)	2014	Reduce threat of loss of life or property due to extreme weather events Increase awareness of information services provided by NWS.	Tornado	Salt Lake City Emergency Management		Medium	Low	Municipal	Medium	Ongoing	
Work with the NWS to develop large event venue weather safety and evacuation procedures (updated from 2009)	2014	Reduce threat of loss of life or property due to extreme weather events Increase awareness of information services provided by NWS.	Tornado	Salt Lake City Emergency Management		High	Low	Municipal	High	Ongoing	
Implement water-saving devices and practices in public facilities (updated from 2009)	2014	Reduce and prevent hardships associated with water shortages Limit unnecessary consumption of water	Drought	Public Works	Salt Lake City Emergency Management	High	Low	Municipal	High	Ongoing	SLC policy that public facilities meet LEEDs silver standard at a minimum
Repair, maintain and improve water distribution infrastructure to prevent loss from leakage, breaks, etc. (updated from 2009)	2014	Reduce and prevent hardships associated with water shortages Limit unnecessary consumption of water	Drought	Public Works	Salt Lake City Emergency Management		Low	Municipal	High	Ongoing	
Coordinate public safety water use, such as hydrant testing (updated from 2009)	2014	Reduce and prevent hardships associated with water shortages Limit unnecessary consumption of water	Drought	Fire	Salt Lake City Emergency Management		Low	Municipal	High	Ongoing	
Provide information on landscaping alternatives for persons subject to green area	2014	Reduce and prevent hardships	Drought	Salt Lake City Emergency Management			Low	Municipal	High	Ongoing	

requirements (updated from 2009)		associated with water shortages Limit unnecessary consumption of water									

Mitigation Table - Completed and Removed Actions

Category	Year Initiated	Goal/Objective	Action	Status	Comments
All-Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	1 – Conduct an inventory and assessment of communications equipment and systems and identify needs	Completed	Capabilities were assessed and new communications systems have been implemented.
All-Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	3 – Establish agreements to share communications equipment between agencies involved in emergency operations	Completed	Some of the current systems are shared across the valley and have agreements for who is responsible for maintenance, etc.
All-Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	4 – Establish notification capabilities and procedures for emergency personnel	Completed	Completed procedures and capabilities outline
All-Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.2 – Maintain communications capabilities for critical facilities	1 – Evaluate vulnerability of critical communications systems	Completed	Evaluation completed
All-Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.2 – Maintain communications capabilities for critical facilities	2 – Establish redundancy for dispatch centers and other critical communications	Completed	New Integrated communications system across the valley.
All-Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.3 – Conduct communications Strategic Planning	1 – Establish a coordinating group to address long-term communication needs and implementation strategies	Completed	A group was formed that played a role in the systems we have now.
All-Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.3 – Conduct communications Strategic Planning	2 – Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group	Completed	A group was formed that played a role in the systems we have now.
All-Hazards	2009	2 – Improve awareness and analysis of hazards	1 – Integrate existing hazard monitoring networks in emergency operations centers. Utilize sensors such as weather	Removed	Upon further research, this action was not economically feasible

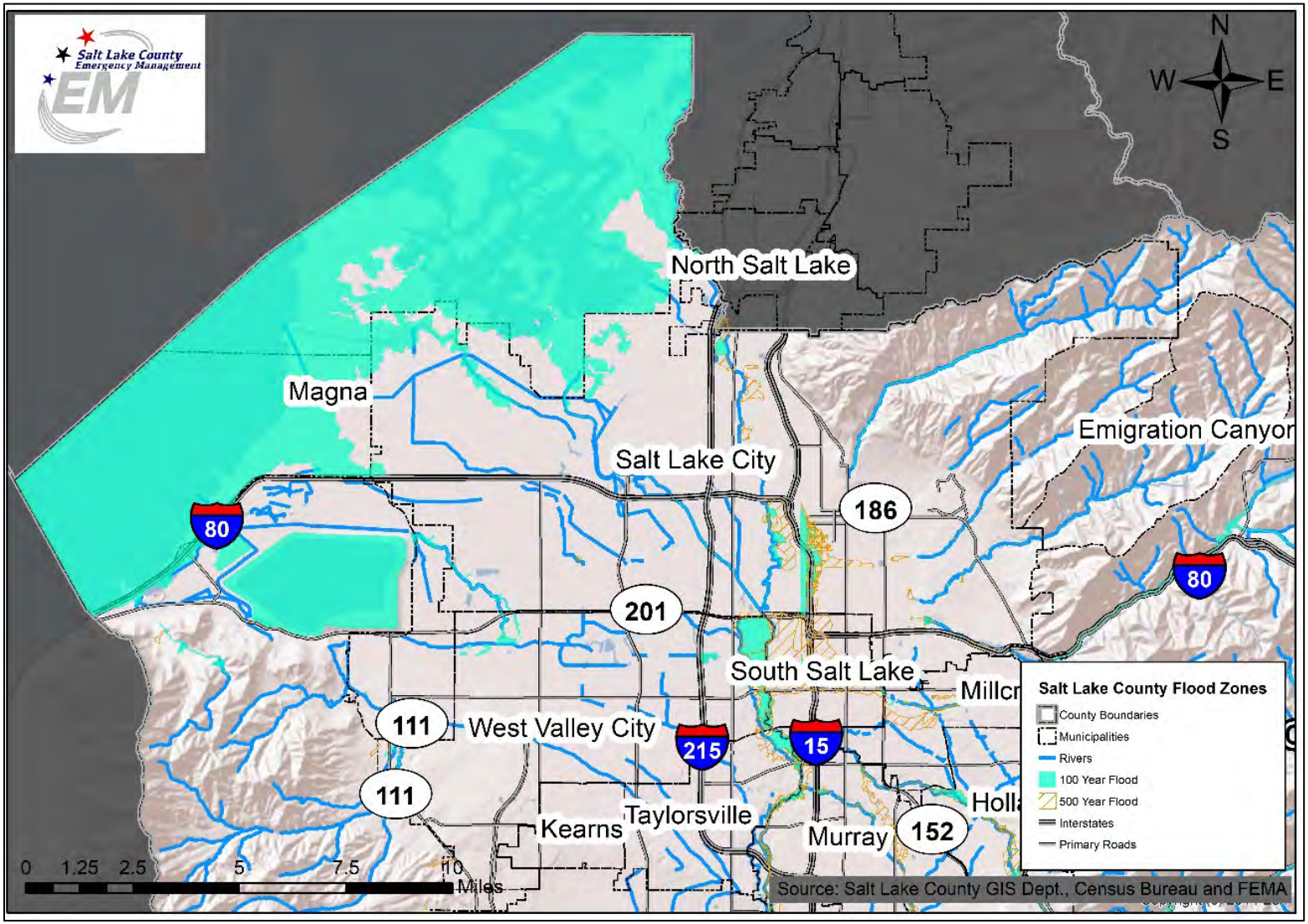
		2.2 – Improve and expand hazard monitoring capabilities	stations, stream gages, seismograph stations, road conditions, etc.		
All-Hazards	2009	2 – Improve awareness and analysis of hazards 2.2 – Improve and expand hazard monitoring capabilities	2 – Identify and implement additional hazard monitoring capabilities.	Removed	Upon further research, this action was not economically feasible
All-Hazards	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – Establish a comprehensive public education program	4 – Utilize maps and similar products on County EM website and other media to educate public on areas at risk to hazards	Removed	However we do post hazard maps and public outreach materials on our local jurisdictions webpage.
All-Hazards	2009	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	2 – Ensure current hazard ordinances are available for viewing online	Completed	Available online
Dam Failure	2009 & 2014 update	1 – Include dam failure inundation in future County and City planning efforts 1.1 – Review current State dam safety information on all identified high hazard dams in the County	1 – Include dam inundation maps in current County, City and Special Service District Emergency Operations Plans	Completed	Added to plans
Dam Failure	2009 & 2014 update	1 – Include dam failure inundation in future County and City planning efforts 1.1 – Review current State dam safety information on all identified high hazard dams in the County	2 – Utilize inundation maps to identify potential evacuation areas and routes	Completed	Added to evacuation plans
Drought	2009 & 2014 update	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	1 – Continue to encourage water conservation utilizing and promoting outreach material from all water districts in the County	Completed	Outreach material distributed
Drought	2009 & 2014 update	1 – Reduce and prevent hardships associated with water shortages	2 – Emergency Managers will coordinate with local water districts/public utilities to support ongoing conservation efforts	Completed	We coordinate regularly with our Public Utilities Department

		1.1 – Limit unnecessary consumption of water throughout the County			
Drought	2009 & 2014 update	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	3 – Investigate feasibility of implementing an incentive program to encourage the use of low-flow appliances and fixtures in homes and businesses	Completed	Investigation complete
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.2 – Address agricultural water shortages in the County	1 – Set up livestock water rotation in areas of agricultural use	Removed	After a benefit/time analysis, decided the mitigation action was no longer worth pursuing
Drought	2009 & 2014 update	1 – Reduce and prevent hardships associated with water shortages 1.3 – Encourage development of secondary water systems	1 – Coordinate with water districts to plan for, develop and/or expand secondary water	Removed	Upon further research, this action was not economically feasible
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	1 – Identify structures at risk to earthquake damage	Completed	Used data to create URM maps, planning tools and education materials.
Earthquake	2009 & 2014 update	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	2 – Research feasibility of an incentive program for retrofitting privately-owned buildings, particularly unreinforced masonry	Completed	Established Fix the Bricks Program
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.3 – Improve Seismic Hazard understanding and seismic resistance of CUWCD Red Butte Dam in Salt Lake County.	1 – Procure Engineering Consultant to perform the nonstructural design and geotechnical assessment and review.	Removed	Upon further research, this action was not economically feasible
Flooding	2009	1 – Protection of life and property before, during and after a flooding event 1.1 – Provide 100% availability of the National Flood Insurance Program	1 – Assist Cities with NFIP application	Removed	The cities are able to do their own applications with minimal assistance needed

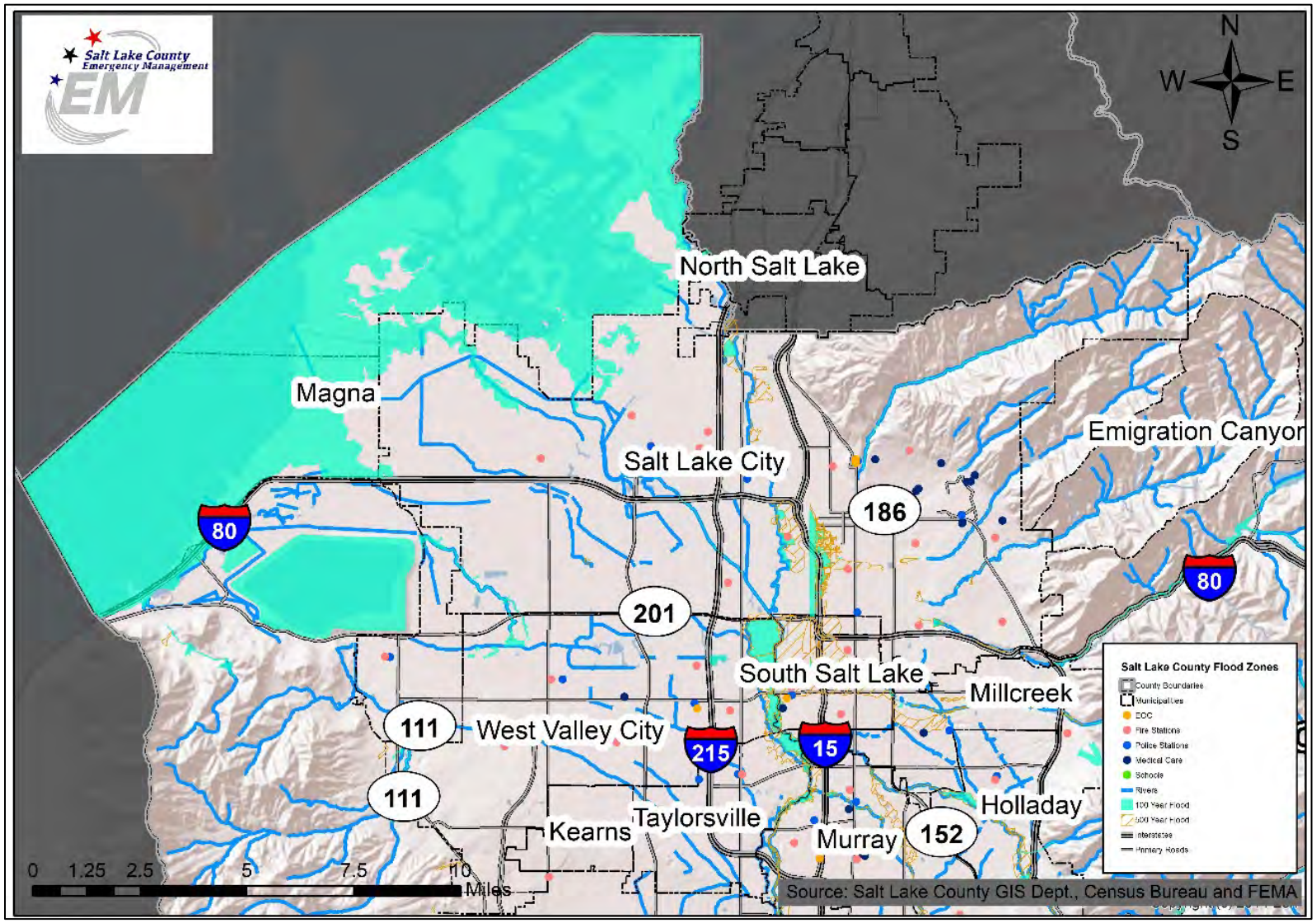
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.3 – Encourage safe practices in avalanche prone areas	1 – Assist Forest Service Utah Avalanche Forecast Center and other organizations in promoting avalanche hazard awareness for backcountry users	Removed	Benefit analysis demonstrated that time dedication to this activity was not needed
Wildland Fire	2009 & updated in 2014	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.1 – Assist homeowners with creating defensible space near structures in WUI areas	1 – Designate and promote county-wide annual initiative for clearing fuels	Removed	The County handles the promotion
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.3 – Improve addressing system in WUI areas to facilitate emergency response	1 – Identify all facilities, businesses, and residences, particularly in the canyons, and assign addresses according to current county addressing standards	Removed	The time needed to complete the listing was not feasible
Wildland Fire	2009 & updated in 2014	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	2 – Implement fire breaks and other protective measures	Removed	Upon further research, this action was not economically feasible
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.5 – Encourage proper development practices in the WUI	1 – Adopt the Utah Wildland-Urban Interface Code	Completed	Adopted
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.5 – Encourage proper development practices in the WUI	2 – Define wildland-urban interface and develop digital maps of the WUI	Completed	Finished defining the WUI

Jurisdiction Maps

Map: 100 Year and 500 Year Flood Zone



Map: 100 Year and 500 Year Flood Zone with Critical Facilities



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: City of Sandy

Hazard Mitigation Plan Point of Contact

Primary Point of Contact
Name: Jeffory Mulcahy Title: Emergency Manager Department: Emergency Management Address: 10000 Centennial Parkway, Sandy, UT 84070 Office Phone: (801) 568-7279 Cell Phone: (801) 558-8689 Email Address: jmulcahy@sandy.utah.gov Website: https://sandy.utah.gov/departments/emergency-management

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** 1893
- **Current Population:** 96,901 (Census v2018)
- **Population Growth:** The population grew 7.7% from April 1, 2010 (89,977) to July 1, 2018 (Census).
- **Location and Description:** Sandy is in the southeast quadrant of Salt Lake County. Sandy covers 22.3 square miles. Adjacent to Sandy City on its east is the Wasatch Mountains and the base of those mountains are within the boundaries of Sandy. Adjacent to Sandy City on its west is the Jordan River, which is the city boundary line between Sandy and West Jordan / South Jordan. Draper City borders Sandy to the South and Midvale and Cottonwood Heights border Sandy to the north. Sandy is characterized by a mixture of land uses, comprising commercial, industrial, residential, agricultural, vacant land and 2,000 acres of open space areas within its boundaries. The open space area is used for recreational purposes by residents of Sandy and the surrounding communities and has many multi-use trails and areas within.
- **Brief History:** The area was first used by nomadic bands of Paiute, Shoshone, and Bannock Indians who roamed along the base of the mountains as they traveled from their winter home at Utah Lake to their summer fishing grounds at Bear Lake. Permanent settlers first moved into Sandy during the 1860s and 1870s because of the availability of land in the less crowded southern end of the Salt Lake Valley. The original plat was essentially one square mile, situated on an alluvial terrace running north and south along the eastern edge of the Jordan River drainage system and paralleling the mountain range. Mining shaped Sandy's first four decades. The railroad was also significant in determining the course of Sandy's history. Built-in 1873, the railroad connected Sandy to Salt Lake City and facilitated the transportation of ore and other products both in and out of the area. A streetcar line in 1907 facilitated the transportation of locals to jobs in Salt Lake City, and the automobile later continued to serve that function. When the mines failed in the 1890s, Sandy faltered, then underwent a significant economic transformation into an agricultural community. The fact that Sandy did not disappear, like so many other mining towns that dwindled with their mother lodes, was due to its location, resources, and the spirit of its inhabitants.
- **Climate:** Sandy has an average annual temperature of 53.7°F and receives 15.69 inches of rain.

- **Public Services:** The Sandy City has a Sandy City Citizen Corps Council that is the connection between Sandy City and its residents with issues regarding emergency preparedness. Sandy City also facilitate Sandy Ready Your Business which promotes business readiness. Other services offered by the city include Animal Services, City Recorder Services, Community Development Services, Community Events Services, Finance & Purchasing, Fire Department Services, Human Resources, Justice Court, Parks & Recreation, Police Services, Public Utilities Services, and Public Works Services (Sandy City).
- **Governing Body Format:** Sandy is a Strong Mayor City of the First Class. Sandy has seven City Council representatives governing over it.
- **Development Trends:** Current development trends are aimed at not increasing the risk to hazards. One trend is that multi-family buildings are being built in the city. Sandy City is Utah's sixth-largest city. Sandy experienced tremendous growth both in land area and population during the past thirty years. The annexation of previously unincorporated land has resulted in growth from 6.6 square miles in 1970 to nearly 23 square miles today. Annexations combined with new construction resulted in population growth from 6,438 to 87,461 in that same time period. Many of the new homes built during the '70s and the '80s were bought by young families which resulted in one of the lowest median ages in the nation. In recent years, the population has aged as many of the children in young families have grown and left home. This demographic shift has had an effect on the city budget in such areas as declining participation in recreation programs and a reduced rate of growth in both sales tax revenue and state road funds which are based partially on population. Commercial growth, however, continues along the I-15 corridor which in turn continues to fuel a strong economy and tax base and provides job opportunities for residents. The I-15 corridor and TRAX light rail line on the west side of the city provide both access to downtown Salt Lake City (approximately 15 miles to the north) and the opportunity to be a commercial center for the south end of the valley. To address the growing needs of Sandy City and to accommodate regional growth, a vision for the creation of a city center has been developed, called the Cairns District. The Cairns Master Plan is a culmination of more than six years of planning to reimagine the future of Sandy's downtown area (a printer friendly version is also available). Design guidelines for the area are currently being developed based on the goals and policies outlined in this plan (Cairns Master Plan).

Capability Assessment

The City has an Emergency Manager. Hazard Mitigation Planning efforts are led by the Emergency Manager position.

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY				
	Local Authority Exists to Develop and Implement/ Enforce?	**A Jurisdiction-Specific Code, Ordinance and/or Requirement Currently Exists?**	**Rely on the County's Codes, Ordinances & Requirements**	**Comments**
Codes, Ordinances, & Requirements				
Building Code Development and Enforcement	Yes	Yes	No	
Zonings Ordinance(s)	Yes	Yes	No	
Subdivision Ordinance(s)	Yes	Yes	No	
Stormwater Management Program	Yes	Yes	Yes	
Floodplain Ordinance(s)	Yes	Yes	Yes	
Post Disaster Recovery Program and Ordinance(s)	Yes	No	Yes	
Real Estate Disclosure Ordinance(s)	No	No	No	
Growth Management	Yes	Yes	Yes	
Site Plan Review Requirements	Yes	Yes	No	
Planning Documents				
General or Comprehensive Plan	Yes	Yes	No	
Capital Improvement Plan	Yes	Yes	No	
Economic Development Plan	Yes	Yes	Yes	
Disaster Planning Documents				
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	Yes	No	

Post-Disaster Recovery Plan	Yes	Yes	No	
Continuity of Operations Plan	Yes	No	Yes	
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	Yes	Yes	No	

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Yes

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	Full Time	Comm Dev/Pub Works/Pub Utilities

Engineers or professionals trained in building or infrastructure construction practices	Yes	Full Time	Comm Dev/Pub Works/Pub Utilities
Planners or engineers with an understanding of natural hazards	Yes	Full Time	Pub Works/Pub Utilities
Personnel skilled or trained in GIS applications	Yes	Full Time	IT/Comm Dev/Pub Works/Pub Utilities
Emergency manager	Yes	Full Time	Administration/Emergency Mgr
Grant writers	No	NA	

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	Public Utilities
Who is your jurisdiction's floodplain administrator? (department/position)	Public Utilities/Chief Engineer
Are any certified floodplain managers on staff in your jurisdiction?	Yes
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	No
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System (CRS)	No	-	-
Public Protection/ISO	Yes	-	-
NWS StormReady	Yes	-	12/5/2018

Jurisdiction-Specific Hazards and Risks

The *Natural Hazard Events Table* lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 39 policies were in force with total coverage of $11,544,000 and total written premium and FPF of $16,110 (FEMA, 2019).
- The City of Sandy does participate in the National Flood Insurance Program (CID # 490106) and the last FIRM map for the area was issued on 09/25/09 (FEMA, 2019).
- The city will continue to participate in the NFIP through various efforts including but not limited to floodplain management, ordinance development and review, technical assistance, compliance inspections, and community education on flood hazards.

TABLE: RECENT NATURAL HAZARD EVENTS (NOAA Data with additions from the jurisdiction representatives)

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Heavy Snow	2 inches	-	4/6/2019	-
Heavy Snow	17 inches	-	3/1/2019	-
Water Contamination			2/2019	
Heavy Snow	6 inches	-	2/13/2019	-
Winter Storm	18 inches	-	1/21/2019	-
Winter Storm	6.5 inches	-	12/1/2018	-
Hail	Quarter- to half-dollar-sized hail	-	6/18/2018	-
Winter Storm	25 inches	-	2/18/2018	-
Winter Storm	16 inches	-	1/19/2018	-
High Wind & Winter Storm	66 mph & 10 inches	-	2/21/2017	-
Winter Storm	15 inches	-	1/20/2017	-
High Wind	66 mph	-	1/18/2017	10,000 property damage.
Winter Storm	12 inches		12/23/2016	

High Wind	72 mph; Power outages were common across the area due to downed trees and power lines.	-	2/17/2016	200,000 property damage.
Winter Storm	7 inches	-	12/24/2015	-
Hail	0.88	-	5/27/2015	-
Hail	0.88	-	5/18/2015	-
Winter Storm	12 inches; The worst conditions on roadways occurred on the morning commute of April 15, with 118 crashes reported, including 16 that resulted in injuries. During the evening commute on April 15, a woman was killed in a multicar crash on State Route 201 near the Interstate 80 on-ramp. The victim lost control of her vehicle on the snow-packed road, and was then rear-ended by another vehicle traveling the same route. In addition, a Utah Highway Patrol trooper was injured while responding to the scene.	-	4/14/2015	-
Winter Storm	14 inches	-	12/25/2014	-
High Wind	A tree with a diameter of approximately 3 inches was knocked down by thunderstorm winds in Sandy.	-	8/3/2014	1,000 property damage.

High Wind	60 mph	-	3/1/2014	-
Winter Storm	Power outages were common, with over 14,000 customers losing power. Along State Route 201, a utility pole broke, with power lines falling across the roadway. These power lines shut down the road for several hours in both directions.	-	12/19/2013	-
Flooding		-	2011	-
Wildfire		-	8/25/2011	-
Flooding and Debris Flow		-	8/19/2010	-

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community
Members of the community over 65 years old	11,624
Members of the community under 18 years old	25,579
Members of the community that identify as having disability status	7,281
Members of the community that speak English less than "very well"	2,746
Members of the community living below the poverty line	5,255
The number of mobile homes in the community	662 (additionally 15 in either a boat, RV, Van, or equivalent)
Members of the community without health insurance	7,058
Occupied housing units with tenants without a vehicle	1,199
Housing units without heating fuel	105

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Earthquake: Sandy has the potential for a large earthquake. Any building that sits on the fault line will be vulnerable. The hospital, water tanks, and a senior center are close to or on the fault line. Also of concern are the buildings built with unreinforced masonry (URM) which includes the homes in Historic Sandy neighborhood and Old City Hall (occupied by Parks and Recreation Department). Of significant concern, many high priority public and private buildings and many critical infrastructure facilities are located within or across the major fault zones in the region. These facilities include very large waterlines, large irrigation canals, utilities, railroads, and major transportation routes. However, the potential damage is not limited to fault zone areas. Fine-grained, lake-bottom sediments are common in Sandy and are susceptible to liquefaction-induced ground failure during a large earthquake. Each incident may require a unique response from Sandy City and in the instance of a major earthquake outside assistance will be necessary. Many homes in Sandy are without a vehicle, which would make evacuation difficult. In addition to earthquakes, steep mountains adjacent to the city create a potential for landslides, debris flows, rock falls, and snow avalanches.

Wildfire: Perhaps the most likely hazard in Sandy City is the potential for damage and loss of life and property through fire events. Dimple Dell Regional Park is the area with the highest potential for a wildfire. Additionally, the Wasatch is a concern. A lot of residents live in both of these areas. Fires can occur within the urban fabric of the community or as wildfires in the hillside areas of the community and mountainous areas adjacent to the city. Each incident may require a unique response from Sandy City. Although traditionally a majority of wildfires have been caused naturally, mostly by lightning, as development encroaches on the hillsides and lower slopes of the Wasatch Mountains, wildfires caused by humans will likely increase. Sandy City has adopted strict zoning and planning ordinances to help mitigate the hazard for wildfires. As the eastern border of the City lies within the urban-wildland interface, constant education and enforcement are practiced along with the communities in this area.

Flooding: Although located in a semi-arid region, Sandy City is subject to thunderstorms and snowmelt flooding. The development ordinances of the city require geotechnical studies to identify areas of shallow groundwater, artesian wells, and other water hazards. During high snow and rainfall years, the groundwater table can move closer to the surface. Flooding can also result from leakage of unlined irrigation canals, flood irrigation practices, and septic tank drain fields. Overflow from Little Cottonwood Creek causes homes to flood almost every year. Big Willow Creek, Little Willow Creek, and Rocky Mouth Creek also have the potential to flood houses nearby.

The development ordinances of the city require geotechnical studies to identify areas of shallow ground water, artesian wells, and other water hazards. During high snow and rain fall years, the groundwater table can move closer to the surface. Flooding can also result from leakage of unlined irrigation canals, flood irrigation practices, and septic tank drain fields.

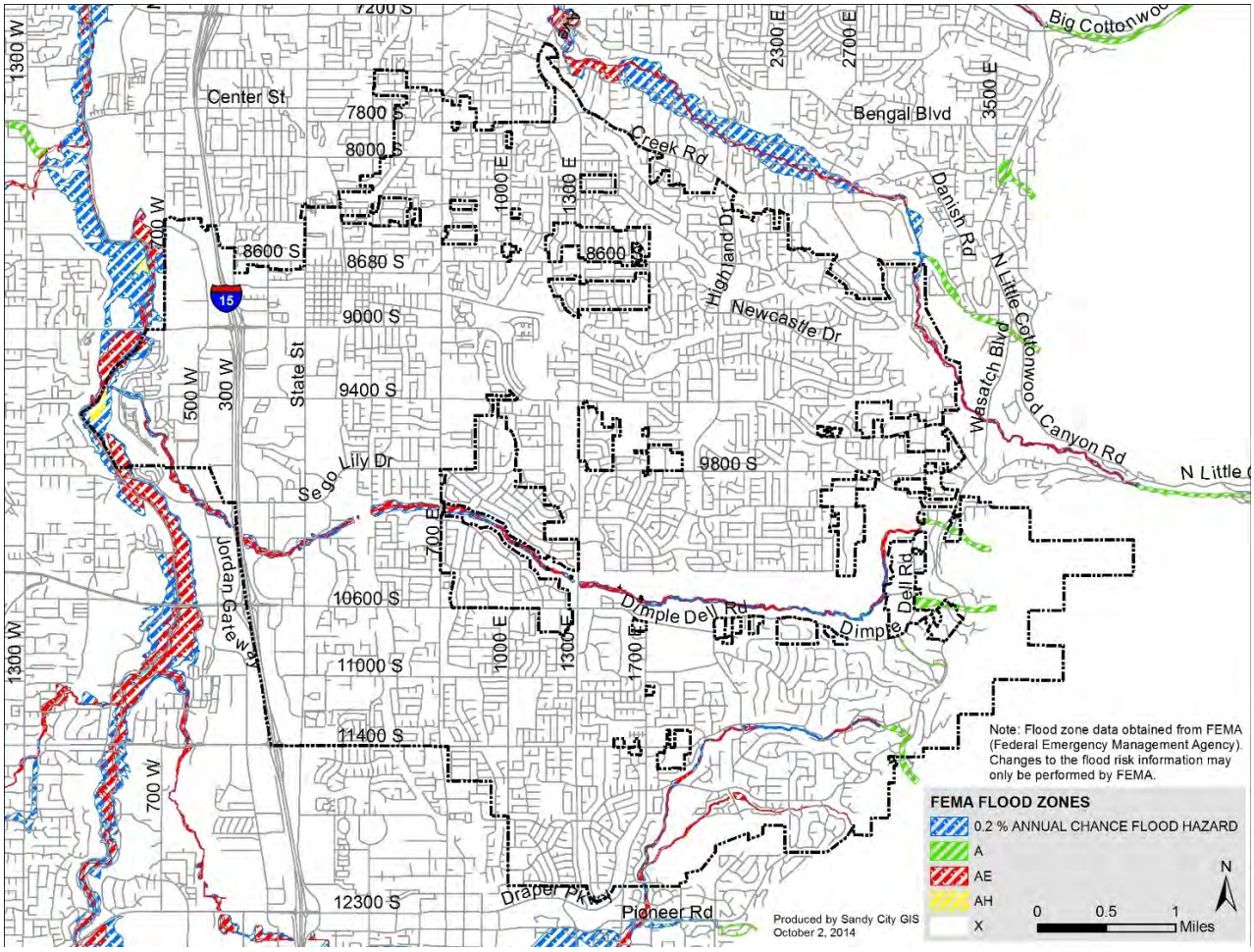
NFIP in Sandy City

Sandy City does not have any repetitive loss claims due to flooding identified under the National Flood Insurance Program (NFIP). Sandy City does participate in the NFIP.

Sandy City's Community Development Director and Public Utilities Director coordinate to enforce the floodplain management requirements adopted by the City, including:

1. Regulating new construction in Special Flood Hazard Areas (SFHAs)
2. Floodplain identification and mapping, including any local requests for map updates and descriptions of community assistance and monitoring activities.

Figure. The City of Sandy's Flood Zones



Jordan Watershed:

Salt Lake County created a Flood Risk Report for each city in the county in 2014. This report includes the flood risk assessment results of the Jordan Watershed Risk MAP Project. The Jordan River runs along the west border of Sandy City. A flood risk is defined as an accumulation of water over normally dry areas. Floods become hazards to people and property by inundating

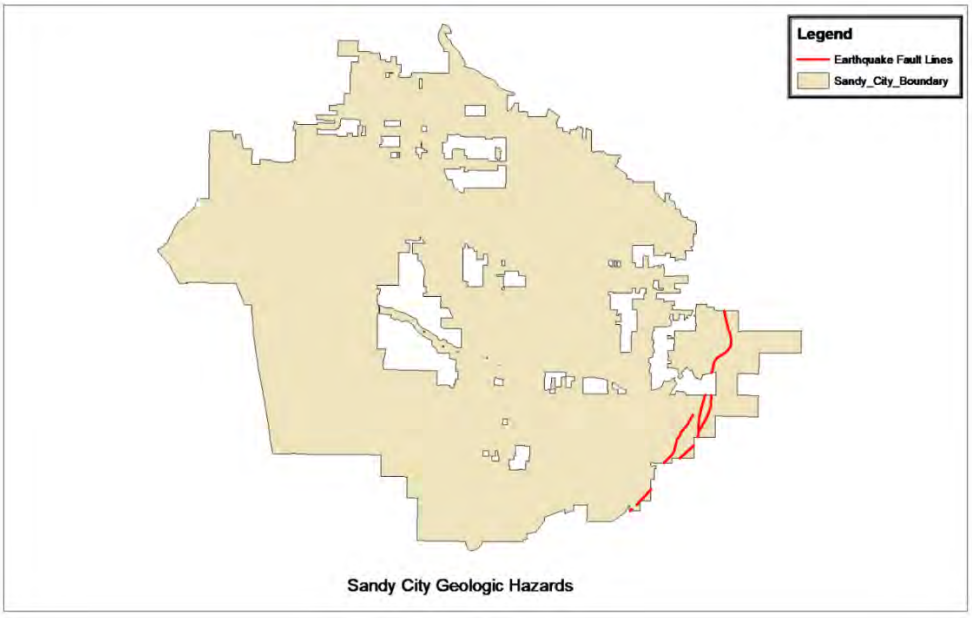
developed areas. Flood losses range from damage to landscaping and debris generation to building damage and injury or death.

Structure Occupancy Type	1% Annual Chance Structure Exposure	1% Annual Chance Building and Contents Loss	0.2% Chance Structure Exposure	0.2% Chance Building and Contents Loss
Commercial	-	-	56	$ 2,260,858
Residential	220	$ 5,541,815	447	$ 17,912,175
Total	**220**	**$ 5,541,815**	**470**	**$ 188,173,033**

Table . City of Sandy – Estimated Flood Loss Information

Landslide: Numerous geologic hazards exist in Sandy and throughout the Salt Lake Valley that could result in an emergency situation or disaster. While recent history there have not been any significant landslides, steep mountains adjacent to the city create a potential for landslides, debris flows, and rockfalls. Earthquake hazards are likely to include ground shaking, ground rupture, tectonic deformation, liquefaction, seismically induced slope failures and phenomena related to ground-water effects. Wildfires can remove necessary vegetation, which can result in unstable soils for extended periods of time. The most proactive approach to minimizing landslide impact is to avoid development in inappropriate areas. The potential for geologic events can be partially mitigated through proper placement of development. Each incident may require a unique response from Sandy City, and in the instance of a major mudslide or debris flow, outside assistance will be necessary.

Figure. The City of Sandy's Geologic Hazards



Winter Storms: Winter weather systems and snowstorms over northern Utah can have a dramatic effect on regional commerce, transportation, and daily activity and are a major forecast challenge for local meteorologists. This challenge is heightened in Sandy City because of the

wide variety of local climatic features, such as significant elevation changes, atypical wind patterns, and mountainous slopes located immediately adjacent to city boundaries. Sandy has one of the highest elevations in the whole County and from east to west, there is a 1,000 foot elevation difference. These local features can impact the severity of winter storms.

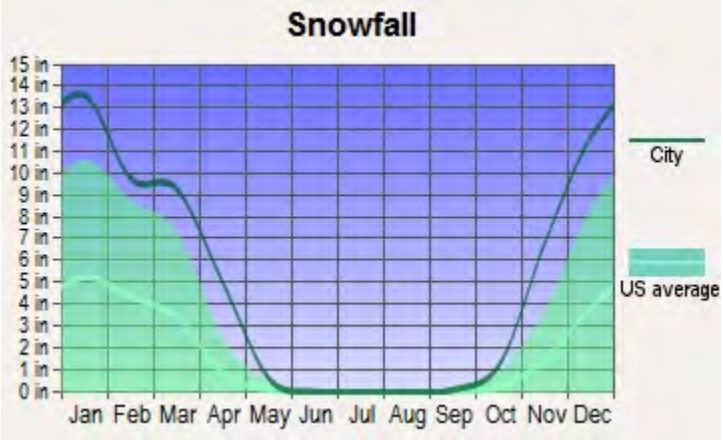


Figure. The City of Sandy's Average Snowfall

Severe Weather: The potential for severe weather is a reality in Sandy City and the surrounding region. These weather events are not isolated to any climatic season, but rather can occur at any time during the year. During the spring and summer months, heavy rains can fall upon soils in a desert climate that may not readily percolate creating surface runoff, mudslides, debris flow, flooding, and other water-related damage. During the winter months, heavy snowfall is possible, especially in higher elevations of the community. While Sandy City is typically self-reliant in weather-related events, severe weather may require assistance from outside agencies.

Avalanche: The likelihood of avalanches impacting Sandy City is primary in the area near the mouth of Little Cottonwood Canyon where homes are built and other highly susceptible areas that are in the unincorporated area. This is the area on the east side of the City that is adjacent to the Wasatch Mountains, but there has been no historical avalanche activity in that area of the City.

Dam Failure: The Sandy City Public Utilities maintains a waterway at Bell's Canyon Reservoir. The dam is on a regular maintenance and inspection schedule. There is no history of problems at this reservoir and in the event of failure, flooding would occur along the riverways.

Drought: Sandy City has large swings in temperature and in precipitation amounts during any year and is susceptible to drought. The City encourages landscaping that is friendly to the desert climate of Utah and when drought conditions occur the City would restrict the use of water for outdoor landscaping.

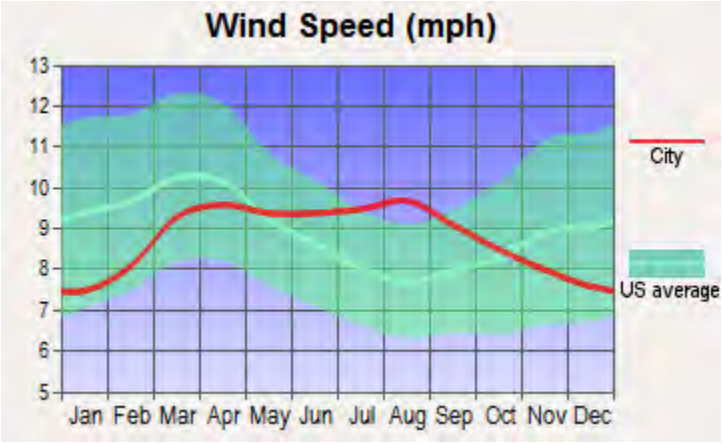
Sandy City Average Temperature Table

Month	Temp. (min)	Temp. (max)	Temp. (avg)	Precipitation
January	-2°F	58°F	29°F	1.3"
February	5°F	66°F	35°F	1.1"
March	15°F	74°F	43°F	1.9"

April	21°F	90°F	50°F	2.1"
May	30°F	93°F	61°F	1.3"
June	39°F	100°F	70°F	1.4"
July	54°F	105°F	82°F	0.2"
August	46°F	103°F	78°F	0.5"
September	35°F	96°F	66°F	1.2"
October	27°F	86°F	52°F	1.4"
November	4°F	75°F	42°F	0.9"
December	0°F	59°F	29°F	1.4"

Table. Sandy City Average Temperature Table

High Wind: Although infrequent, Sandy City is subject to severe damage resulting from tornadoes and extremely high winds often called microburst winds.



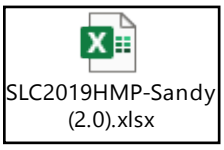
HAZMAT: Key facilities and assets are in a high hazard area for a HAZMAT incident. Rio Tinto Stadium, BD Medical, Expo Center, Mega Plex, High Rise, Light Rail Track, and other buildings in this corridor are of concern. BD Medical and Steris are of concern in this area given the materials that are onsite and potential for HAZMAT.

Public Health/Pandemic: In partnership with local and state public health officials, other federal agencies, medical and public health professional associations, infectious disease experts from academia and clinical practice, and international and public service organizations, Sandy City will incorporate all reasonable strategies to educate its residents and prepare for a measured response in the instance of a public health emergency.

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Severe Winter Weather	3	16	48
Severe Weather	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Wildfire	2	19	38
Flooding	2	17	34
Cyber Attack	2	17	34
Hazardous Materials Incident	2	14	28
Drought	2	14	28
Radon	3	9	27
Terrorism	1	25	25
Dam Failure	1	22	22
Landslide and Slope Failure	1	13	13
Tornado	1	11	11
Civil Disturbance	1	11	11
Avalanche	1	9	9

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.



Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1		Avalanche	Low	1	3
Dam Failure	Low	1		Dam Failure	Medium	2	6
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Medium	2	6
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Low	1		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	High	3	9
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	Medium	2		Wildfire	Medium	2	6

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	Low	1	1		Avalanche	Medium	2	4
Dam Failure	Medium	2	2		Dam Failure	High	3	6
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Low	1	2
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	Medium	2	4
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Medium	2	2		Landslide and Slope Failure	High	3	6
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Low	1	2
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	Low	1	1		Wildfire	High	3	6

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**	**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)	**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)	**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)	**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)	**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1	1		Avalanche	Unlikely	0	0
Dam Failure	Medium	2	2		Dam Failure	Medium	2	6
Drought	Medium	2	2		Drought	Low	1	3
Civil Disturbance	Medium	2	2		Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	2		Cyber Attack	Medium	2	6
Earthquake	High	3	3		Earthquake	High	3	9
Flooding	Medium	2	2		Flooding	Low	1	3
Hazardous Materials Incident	Medium	2	2		Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Medium	2	2		Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	3		Public Health Epidemic/ Pandemic	High	3	9
Radon	No Impact	0	0		Radon	Unlikely	0	0
Severe Weather	Low	1	1		Severe Weather	Unlikely	0	0
Severe Winter Weather	Medium	2	2		Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	3		Terrorism	High	3	9
Tornado	Low	1	1		Tornado	Unlikely	0	0
Wildfire	High	3	3		Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**		**Catastrophic Factor**—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)		**High**—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)		**Medium**—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)		**Low**—Low potential that this hazard could be catastrophic (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)		**Unlikely**—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Dry Creek Improvement Project	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County. Goal 7: Advocate, support, and promote the use of laws and local regulations and	Dam Failure, Extreme Heat, Flood, Severe Thunderstorm, Severe Winter Weather	Sandy City Public Utilities	Sandy City, Salt Lake County Flood Control	High	High ($1.1 million)	Sandy City and Salt Lake County Flood Control budgets, local, state, and federal (HMA) grants	High	2020	Sandy City is partnering with Salt Lake County Flood Control to complete flood control improvements for the Dry Creek Channel. The 1% annual chance storm runoff flows (100-year event) for Dry Creek through the Sandy City Cairns downtown area is 550 cubic feet per second (cfs). The existing box culvert located east of State Street and along 10200 South only has a capacity of approximately 00 cfs. Much of Cairns downtown area including the South Town Mall area could experience significant flooding under existing conditions in a 100-year event. The Sry Creek Improvements at 10300 South project includes installing a parallel box culvert and new inlet structure to provide the additional capacity. The improvements are

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
		ordinances aimed to mitigate hazards and to enhance resiliency.									critical to eliminate the current flooding potential and to accommodate the redevelopment plans in the Cairns downtown area. Construction on the project will begin January 2020 and will be completed May 2020.

Mitigation Table - Ongoing Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Provide education and outreach to residents and businesses located on the benches.	2014	Sandy City resides beneath the west-facing slopes of the Wasatch Mountains, with homes residing on the benches of those slopes. Threat of heavy snow and subsequent avalanche is a weak threat due to the amount of snow the valley typically receives, the distance and height of the mountains and the fact that the slope faces west. A large	Avalanche	Public Works, Public Information Office	Greater awareness of potential of avalanches and coordination of mitigation efforts with residents and the City.	None	N/A	Low	Ongoing	

		snowfall and avalanche, however, would have a moderate impact to the homes and infrastructure of neighborhoods on the benches.								
Work with the Sandy City Public Utilities Department to identify drainage pathways and seek cost/benefit analysis of placing diversion structures or add capacity for drainage.	2014	Work with the Sandy City Public Utilities Department to identify drainage pathways and seek cost/benefit analysis of placing diversion structures or add capacity for drainage.	Dam Failure	Public Utilities	Would allow for greater planning along flood plain and increase awareness regarding mitigation plans.	None	N/A	Low	Ongoing	
Development of a 5-year Water Conservation Plan	2014	Located in the heart of the intermountain west as part of the Great Salt Lake Valley, the City is in a desert climate defined by lack of water and periods of drought conditions. Measures must be taken to conserve water and to address water shortages for both culinary and agricultural uses.	Drought	Public Works				High	Ongoing	
Offer Annual Sprinkler Maintenance Workshops to promote efficient and effective watering of landscapes.	2014	Located in the heart of the intermountain west as part of the Great Salt Lake Valley, the City is in a desert climate defined by lack of water and periods of drought conditions. Measures must be taken to conserve water and	Drought	Public Works	Public education on how to maintain and operate a sprinkler system will help conserve water by avoiding waste from leaks and/or ineffective systems and practices.			Medium	Ongoing	Offered annually

		to address water shortages for both culinary and agricultural uses.								
Promotion of "Water Week" with elementary students to promote best management practices for water conservation.	2014	Located in the heart of the intermountain west as part of the Great Salt Lake Valley, the City is in a desert climate defined by lack of water and periods of drought conditions. Measures must be taken to conserve water and to address water shortages for both culinary and agricultural uses.	Drought	Public Works	Teaching elementary students about water conservation will help promote best management practices in the homes of residents and helps share information about how individuals can make a difference in conserving water.			Medium	Ongoing	Annually in May of each year.
Install automatic gas shut off fixtures on any City-owned buildings or structures with gas service/meter that do not have one currently.	2014	Install automatic gas shut off fixtures on any City-owned buildings or structures with gas service/meter that do not have one currently.	Earthquake	Administrative Services – Facilities Division	Automatic shut off valves will stop the flow of gas after a significant event if there is damage to the system. This could potentially save the structure from potential fire or a hazardous materials incident.	$50,000 - $100,000	General Fund, Grants	Low	Ongoing	Activity to be considered as part of any capital improvement project or as part of any building remodel, if warranted, or as funding is made available through specific grants as available.
Distribution of earthquake hazard preparedness / response information. Post such information on the City's website.	2014	Install automatic gas shut off fixtures on any City-owned buildings or structures with gas service/meter that do not have one currently.	Earthquake	Administrative Services – Emergency Management, Information Technology	Dissemination of information raises public awareness, resulting in a more knowledgeable community that is prepared for potential threats. It also helps build community support for other hazard mitigation efforts such as strong building codes and enforcement of existing codes such as the flood damage prevention ordinance.	< $5,000	General Fund	Medium	Ongoing	Distribution of earthquake related information is ongoing / continuous. Additional emphasis and effort will be placed on distribution of materials at some City sponsored events such as the annual Health, Safety & Preparedness fair.

Maintain community participation in the National Flood Insurance Program.	2014	Flooding risks exist in the community from a variety of sources, including; riverine flooding, infrastructure failures (canal breech, dam failure, water main rupture), and groundwater sources. Areas near the Jordan River are in a mostly undeveloped state.	Flood	Development Services	Participation in the National Flood Insurance requires the City to maintain and enforce a flood damage prevention ordinance and other regulatory authorities to minimize the effects of flooding to structures in the community. Enforcement of the ordinance will reduce the number of structures at risk of damage from flooding. Participation also aids in distributing public information and awareness of flood hazards.	< $5,000	General Fund	Medium	Ongoing	The City of Sandy is currently participating in the National Flood Insurance Program and intends to maintain its eligibility to participate during the next five-year period.
Distribution of flood hazard and flood preparedness / response information such as the "Flooding: What you should Know when Living in Utah" brochure which the City partnered in developing in 2014, or similar types of information. Post such information on the City's website.	2014	Flooding risks exist in the community from a variety of sources, including; riverine flooding, infrastructure failures (canal breech, dam failure, water main rupture), and groundwater sources. Areas near the Jordan River are in a mostly undeveloped state.	Flood	Administrative Services – Emergency Management, Information Technology	Dissemination of information raises public awareness, resulting in a more knowledgeable community that is prepared for potential threats. It also helps build community support for other hazard mitigation efforts such as strong building codes and enforcement of existing codes such as the flood damage prevention ordinance.	< $5,000	General Fund	Medium	Ongoing	Distribution of flood related information is ongoing / continuous. Additional emphasis and effort will be placed on distribution of materials at some City sponsored events such as the annual Health, Safety & Preparedness fair.
Update of the City's Stormwater Master Plan to include specific flood mitigation projects in flood prone areas of the City.	2014	Flooding risks exist in the community from a variety of sources, including; riverine flooding, infrastructure failures (canal breech, dam failure, water main rupture), and groundwater sources. Areas near the Jordan River are	Flood	Public Works, Development Services	Once updated, the Stormwater Master Plan will identify specific infrastructure needs that will help reduce the potential for flooding. The Plan will be used in determining priority based needs throughout the City. Funding for specific projects may come from	$50,000 - $100,000	General Fund, Enterprise Funds	High	Ongoing	Scheduled for completion.

		in a mostly undeveloped state.			a variety of sources and will appear as part of the capital improvements plan.					
Perform a comprehensive soil sample of slope areas of the City	2014	Sandy City resides at the base and in the foothills of the Wasatch Mountains. Hazard risks associated with landslide are moderate to severe. For this reason the Sandy City Building Officials, and Planning Department has made and continues to enforce strict regulations on building in areas susceptible to flooding. Continued study of landslide areas and zoning enforcement will be ongoing. Most of the land area of the City has been built out so there may be possible pressure to allow building on areas where landslides may be more likely to occur.	Landslide	Community Development	Provide greater leverage in denying building in susceptible areas.	$20,000 - $30,000	Grants, budget	Medium	Ongoing	1-5 years
Development of a Pandemic Response & Recovery Plan	2014	A pandemic is a global disease outbreak. A pandemic flu is a virulent human flu that causes a global outbreak, or pandemic, of serious illness. A flu pandemic occurs when a new influenza virus emerges for which people have little or no immunity,	Pandemic	Administrative Services – Emergency management, Fire Department - EMS	Having a response and recovery plan will help the City to be more prepared, identify potential protocols for response and implement strategies that prioritize public safety and help reduce the economic impacts on the City from the potential effects of a pandemic crisis.	< $5,000	General Fund, Grants	Medium	Ongoing	Annual Reviews

		and for which there is no vaccine. This disease spreads easily person-to-person, causes serious illness, and can sweep across the country and around the world in very short time. The City of Sandy is located in the middle of a larger urban area that is influenced by a tremendous amount of travel into and out of the area on a daily basis, making the area even more susceptible to potential situations where a pandemic may result.								
Creation of a radon hazard map showing potential areas of the community that may be affected by radon.	2014	Outdoor radon levels never reach dangerous concentrations because air movement scatters radon into the atmosphere. Radon is a hazard in buildings because the gas collects in enclosed spaces. Radon decays into radioactive particles that can be trapped in the lungs when inhaled. These particles release small bursts of energy that damage lung tissue and may lead to lung cancer.	Radon	Administrative Services – Emergency Management, Information Technology, Development Services	A map showing the extent of the hazard will be useful in helping residents determine if they should consider testing for radon and/or engaging in their own efforts to mitigate radon in their structures. The map will also help to raise awareness of the issue in the community.	< $5,000	General Fund	Medium	Ongoing	

Distribution of information on Radon. Post such information on the City's website.	2014	Outdoor radon levels never reach dangerous concentrations because air movement scatters radon into the atmosphere. Radon is a hazard in buildings because the gas collects in enclosed spaces. Radon decays into radioactive particles that can be trapped in the lungs when inhaled. These particles release small bursts of energy that damage lung tissue and may lead to lung cancer.	Radon	Administrative Services – Emergency Management, Information Technology	Dissemination of information raises public awareness, resulting in a more knowledgeable community that is prepared for potential threats. It also helps build community support for other hazard mitigation efforts such as strong building codes and enforcement of existing codes such as the flood damage prevention ordinance.	< $5,000	General Fund	Medium	Ongoing	Additional emphasis and effort will be placed on distribution of materials at some City sponsored events such as the annual Health, Safety & Preparedness fair.
Promote public education in the community regarding severe weather. Post such information on the City's website.	2014	Severe weather can have a significant impact on the community, affecting transportation, regional commerce, and other daily activities. Severe weather can cause significant damage to property and pose a risk to life safety.	Severe Weather	Administrative Services – Emergency Management, Information Technology	Dissemination of information raises public awareness, resulting in a more knowledgeable community that is prepared for potential threats. It also helps build community support for other hazard mitigation efforts such as strong building codes and enforcement of existing codes.	< $5,000	General Fund, Grants	Medium	Ongoing	Distribution of flood related information is ongoing / continuous. Additional emphasis and effort will be placed on distribution of materials at some City sponsored events such as the annual Health, Safety & Preparedness fair.
Support of community education programs that raise awareness and provide information to property owners on how to protect their structures from wildfire damage. Post such information on the City's website.	2014	Seen as a significant threat to the City of Sandy, the City has exposure in the eastern interface areas of the community. Utah's typical wildfire season is late May through October with lightning and miscellaneous human activities	Wildland Fire	Administrative Services – Emergency Management, Fire Department, Information Technology	Raised awareness of people who may determine to live in areas that are at risk for wildland fire.	< $5,000	General Fund, Grants	Low	Ongoing	Distribution of wildland fire related information is ongoing / continuous. Additional emphasis and effort will be placed on distribution of materials at some City sponsored events such as the annual Health, Safety & Preparedness fair.

		causing the majority of fires.								
Maintain a wildland fire response unit.	2014	Seen as a significant threat to the City of Sandy, the City has exposure in the eastern interface areas of the community. Utah's typical wildfire season is late May through October with lightning and miscellaneous human activities causing the majority of fires.	Wildland Fire	Fire Department	Provides the City with an initial response unit as well as the ability to support neighboring jurisdictions with their response efforts.	$100,000	General Fund, Grants	Low	Ongoing	A replacement wildfire response unit to be purchased.
Prohibit the use of fireworks in high risk areas.	2014	Seen as a significant threat to the City of Sandy, the City has exposure in the eastern interface areas of the community. Utah's typical wildfire season is late May through October with lightning and miscellaneous human activities causing the majority of fires.	Wildland Fire	Fire Department	Fireworks restrictions in high risk areas help reduce the potential for ignition sources and the need for additional response units.	Minimal	General Fund, Grants	Medium	Ongoing	Annually consider the need and issue restrictions as appropriate.
Training for firefighters in wildland firefighting.	2014	Seen as a significant threat to the City of Sandy, the City has exposure in the eastern interface areas of the community. Utah's typical wildfire season is late May through October with lightning and miscellaneous human activities causing the majority of fires.	Wildland Fire	Fire Department	While we only have a few firefighters that are "red card" certified, our firefighters could receive training in wildland fire so there are better able to assist if needed.	$50,000	General Fund, Grants	Low	Ongoing	Annual consideration.

Mitigation Table - Completed and Removed Actions

Category	Year Initiated	Goal / Objective	Action	Comments
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	2 – Conduct Training and awareness activities on communication equipment, tools, and systems	
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	3 – Establish agreements to share communications equipment between agencies involved in emergency operations	Need to complete
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	4 – Establish notification capabilities and procedures for emergency personnel	Included as part of the Sandy City EOP
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.2 – Maintain communications capabilities for critical facilities	1 – Evaluate vulnerability of critical communications systems	Done, in conjunction with Salt Lake City Dispatching
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.2 – Maintain communications capabilities for critical facilities	2 – Establish redundancy for dispatch centers and other critical communications	Handled by Dispatch Services throughout Salt Lake County
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.3 – Conduct communications Strategic Planning	1 – Establish a coordinating group to address long-term communication needs and implementation strategies	Sandy City Emergency Management Team

All Hazards	2009	2 – Improve awareness and analysis of hazards 2.1 – Improved Quality and Access to digital geographic (GIS) hazards data	1 – Establish a coordinating group to address geographic data issues	Sandy City GIS & Emergency Management Team
All Hazards	2009	2 – Improve awareness and analysis of hazards 2.1 – Improved Quality and Access to digital geographic (GIS) hazards data	2 – Examine current data availability and sharing capabilities, evaluate needs, and identify shortcomings	Sandy City GIS
All Hazards	2009	2 – Improve awareness and analysis of hazards 2.1 – Improved Quality and Access to digital geographic (GIS) hazards data	3 – Update and expand data on hazards, critical facilities, and critical infrastructure according to assessed needs	Sandy City GIS
All Hazards	2009	2 – Improve awareness and analysis of hazards 2.1 – Improved Quality and Access to digital geographic (GIS) hazards data	4 – Provide centralized access to geographic data to emergency planners and responders	Sandy City GIS, Sandy City Emergency Operations Center
All Hazards	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	1 – Utilize GIS to identify facilities and infrastructure at risk	Sandy City GIS
All Hazards	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	3 – Implement improvements to address identified in assessment	Facility improvements to critical infrastructure completed, on-going
All Hazards	2009	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	1 – Establish and enforce appropriate planning, zoning, and building code ordinances	Sandy City Community Development Department

All Hazards	2009	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	2 – Ensure current hazard ordinances are available for viewing online	Sandy City Community Development Department
Dam Failure	2009	1 – Include dam failure inundation in future County and City planning efforts 1.1 – Review current State dam safety information on all identified high hazard dams in the County	1 – Include dam inundation maps in current County, City and Special Service District Emergency Operations Plans	
Dam Failure	2009	1 – Include dam failure inundation in future County and City planning efforts 1.1 – Review current State dam safety information on all identified high hazard dams in the County	2 – Utilize inundation maps to identify potential evacuation areas and routes	
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	1 – Continue to encourage water conservation utilizing and promoting outreach material from all water districts in the County	Sandy City Public Utilities
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	2 – Emergency Managers will coordinate with local water districts/public utilities to support ongoing conservation efforts	Sandy City Public Utilities
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	3 – Investigate feasibility of implementing an incentive program to encourage the use of low-flow appliances and fixtures in homes and businesses	Sandy City Public Utilities
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	4 – Implement water-saving devices and practices in public facilities	Sandy City Parks and Recreation

Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	5 – Repair, maintain and improve water distribution infrastructure to prevent loss from leakage, breaks, etc.	Sandy City Public Utilities
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	6 – Coordinate public safety water use, such as hydrant testing	Sandy City Fire Department, Public Utilities
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	7 – Provide information on landscaping alternatives for persons subject to green area requirements	Sandy City Public Utilities
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.2 – Address agricultural water shortages in the County	1 – Set up livestock water rotation in areas of agricultural use	N/A
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.3 – Encourage development of secondary water systems	1 – Coordinate with water districts to plan for, develop and/or expand secondary water	No
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	1 – Identify structures at risk to earthquake damage	Sandy City GIS
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	2 – Research feasibility of an incentive program for retrofitting privately-owned buildings, particularly unreinforced masonry	Have not completed

Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.2 – Improve public education regarding earthquake risks to unreinforced masonry buildings	1 – Provide educational materials to unreinforced masonry home and business owners	
Flooding	2009	1 – Protection of life and property before, during and after a flooding event 1.2 – Encourage appropriate flood control measures, particularly in new developments	1 – Determine potential flood impacts and identify areas in need of additional flood control structures	Sandy City GIS, Sandy City Public Utilities
Flooding	2009	1 – Protection of life and property before, during and after a flooding event 1.2 – Encourage appropriate flood control measures, particularly in new developments	2 – Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures	Sandy City Public Utilities
Flooding	2009	1 – Protection of life and property before, during and after a flooding event 1.3 – Provide maintenance, repairs and improvements to drainage structures, storm water systems and flood control structures	1 – Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of storm water and flood control systems	Sandy City Public Utilities, Storm Water Division
Flooding	2009	2 – Reduce threat of unstable or inadequate flood control structures 2.1 – Reduce potential for failure of flood control structures	1 – Identify and assess structures for deficiencies	Sandy City Public Utilities
Flooding	2009	2 – Reduce threat of unstable or inadequate flood control structures 2.1 – Reduce potential for failure of flood control structures	2 – Modify structures as needed to address deficiencies	Sandy City Public Utilities
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.1 – Maintain status as a StormReady Community	1 – Maintain Hazardous Weather Operations Plan according to StormReady requirements	StormReady City

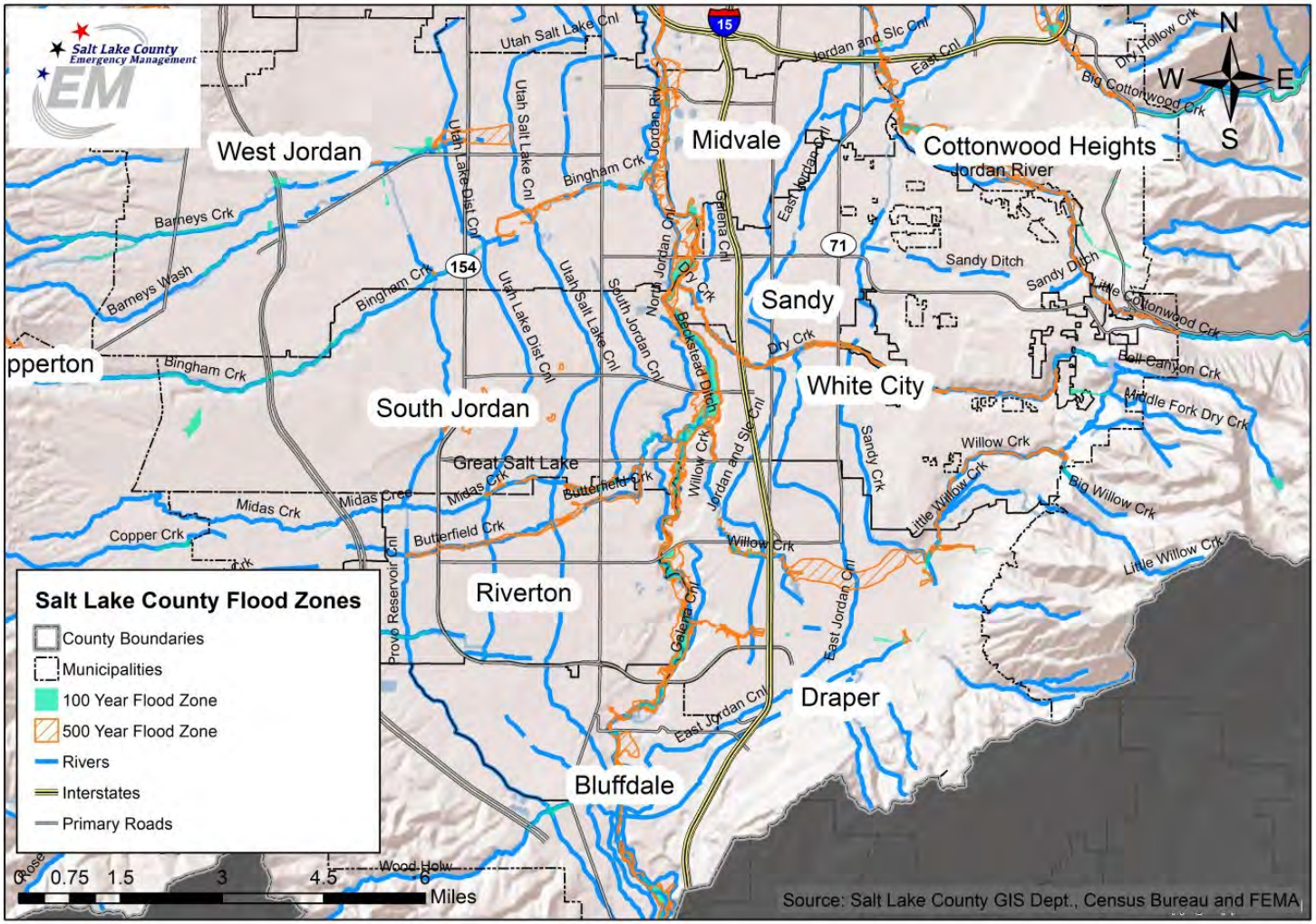
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.2 – Increase awareness of information services provided by NWS	2 – Assist NWS in making other agencies and departments aware of available resources	
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.3 – Encourage safe practices in avalanche prone areas	1 – Assist Forest Service Utah Avalanche Forecast Center and other organizations in promoting avalanche hazard awareness for backcountry users	On-going
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.4 – Examine the vulnerability of patrons at large event venues to extreme weather events	1 – Work with NWS to develop large event venue weather safety and evacuation procedures	Sandy City has a severe weather annex to the Emergency Operations Plan – need to update
Slope Failure	2009	1 – Reduce or eliminate the threat of slope failure damage 1.1 – Reduce the threat of slope failures following wildfires	1 – Develop protocol for working with State and Federal agencies in reducing the impact of post-fire debris flow hazard	
Slope Failure	2009	1 – Reduce or eliminate the threat of slope failure damage 1.2 – Monitor historic landslide areas	1 – Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential	Sandy City Community Development Department – Overlay Zones
Slope Failure	2009	1 – Reduce or eliminate the threat of slope failure damage 1.3 – Address landslide hazards in new sub-divisions	1 – Utilize recommendations provided by the State Geological Hazards Working Group to address land-use and planning for new developments	Sandy City Community Development Department – Overlay Zones
Wildland Fire	2009	1 – Community education on wildfire hazard 1.1 – Reduce risk from wildfire through education programs	1 – Increase public awareness through “Firewise” program	Sandy City Fire Department
Wildland Fire	2009	1 – Community education on wildfire hazard	2 – Educate homeowners on the need to create defensible space near structures in WUI	Sandy City Fire Department

		1.1 – Reduce risk from wildfire through education programs		
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.1 – Assist homeowners with creating defensible space near structures in WUI areas	2 – Provide waste removal, such as chipping of green waste by public works, following designated fuel clearing day/week	Sandy City Public Works Department – Spring and Fall Clean Up
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.2 – Improve evacuation capabilities for WUI areas	1 – Work with experts and communities to develop or update evacuation plans	Sandy City Fire Department
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.2 – Improve evacuation capabilities for WUI areas	2 – Evaluate transportation network and address needed improvements to facilitate evacuation and emergency response	On-going
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.3 – Improve addressing system in WUI areas to facilitate emergency response	1 – Identify all facilities, businesses, and residences, particularly in the canyons, and assign addresses according to current county addressing standards	Sandy City Community Development Department
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	1 – Reduce fuels around publically owned structures	Sandy City Parks and Recreation
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	2 – Implement fire breaks and other protective measures	Sandy City Fire Department

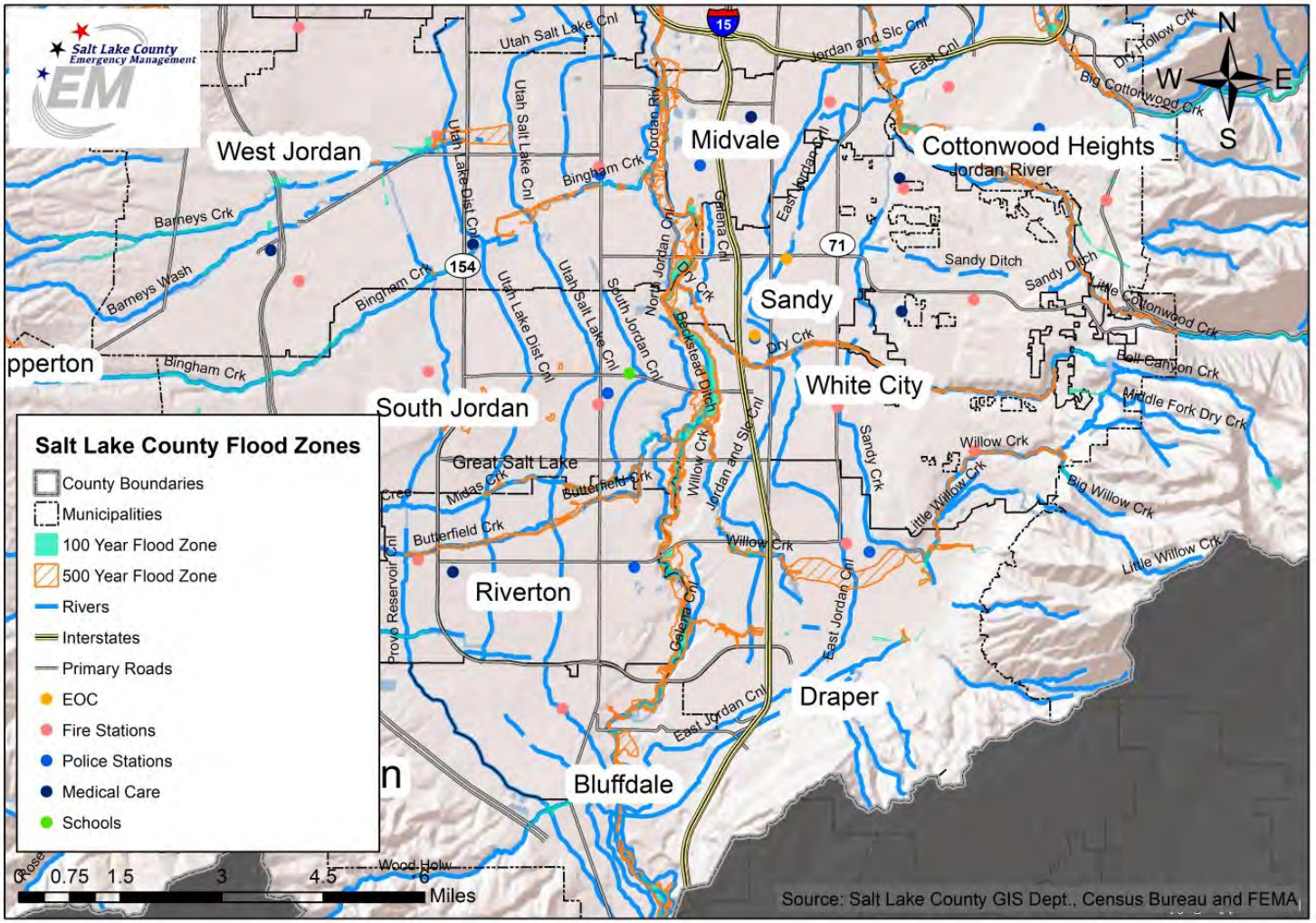
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	3 – Assess existing water flow capabilities, both public and private, and address deficiencies	Sandy City Public Utilities
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	4 – Assist communities in developing Community Wildfire Protection Plans or similar plans	Sandy City Fire Department
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.5 – Encourage proper development practices in the WUI	2 – Define wildland-urban interface and develop digital maps of the WUI	Sandy City GIS

Jurisdiction Maps

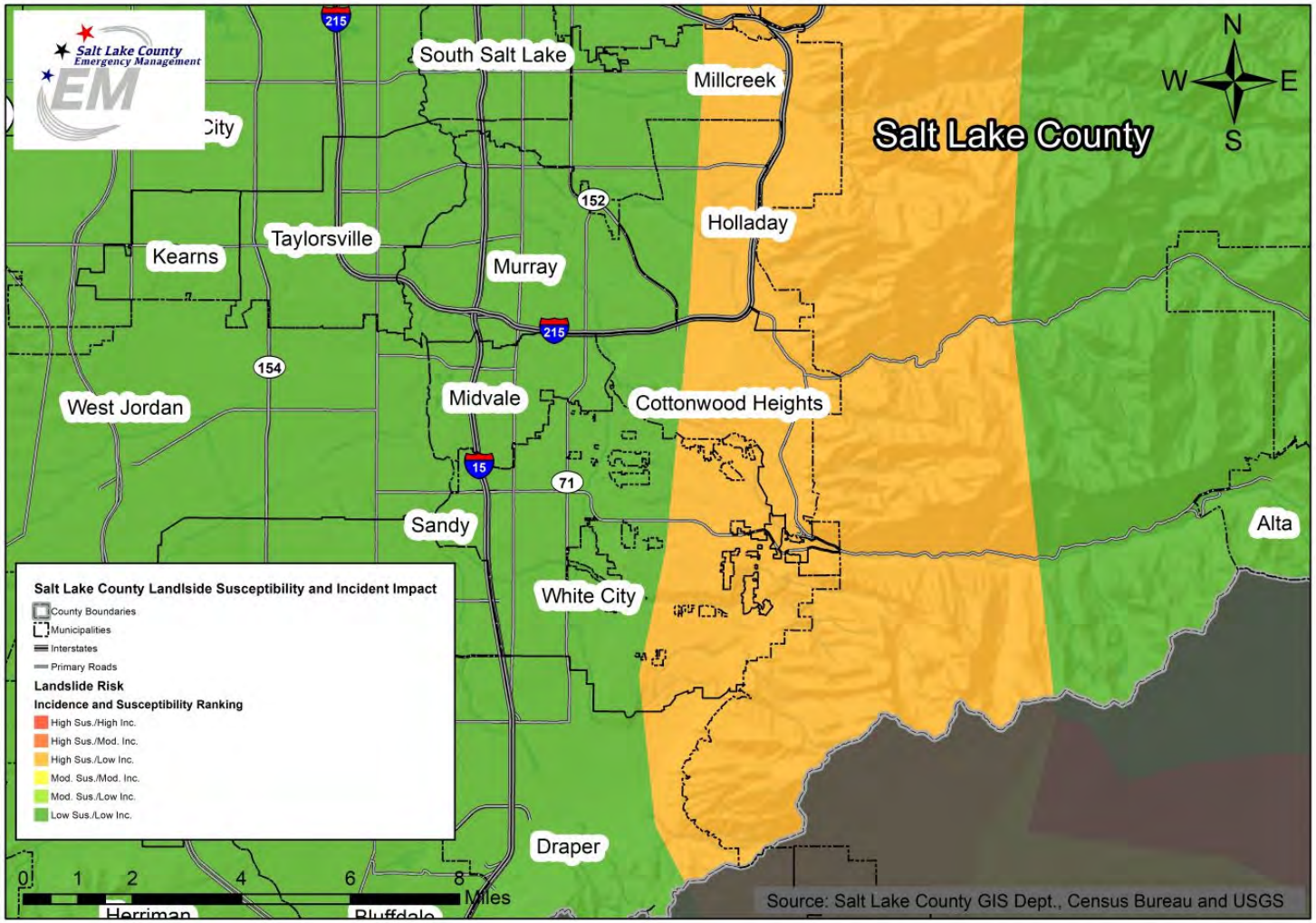
Map: 100 Year and 500 Year Flood Zone



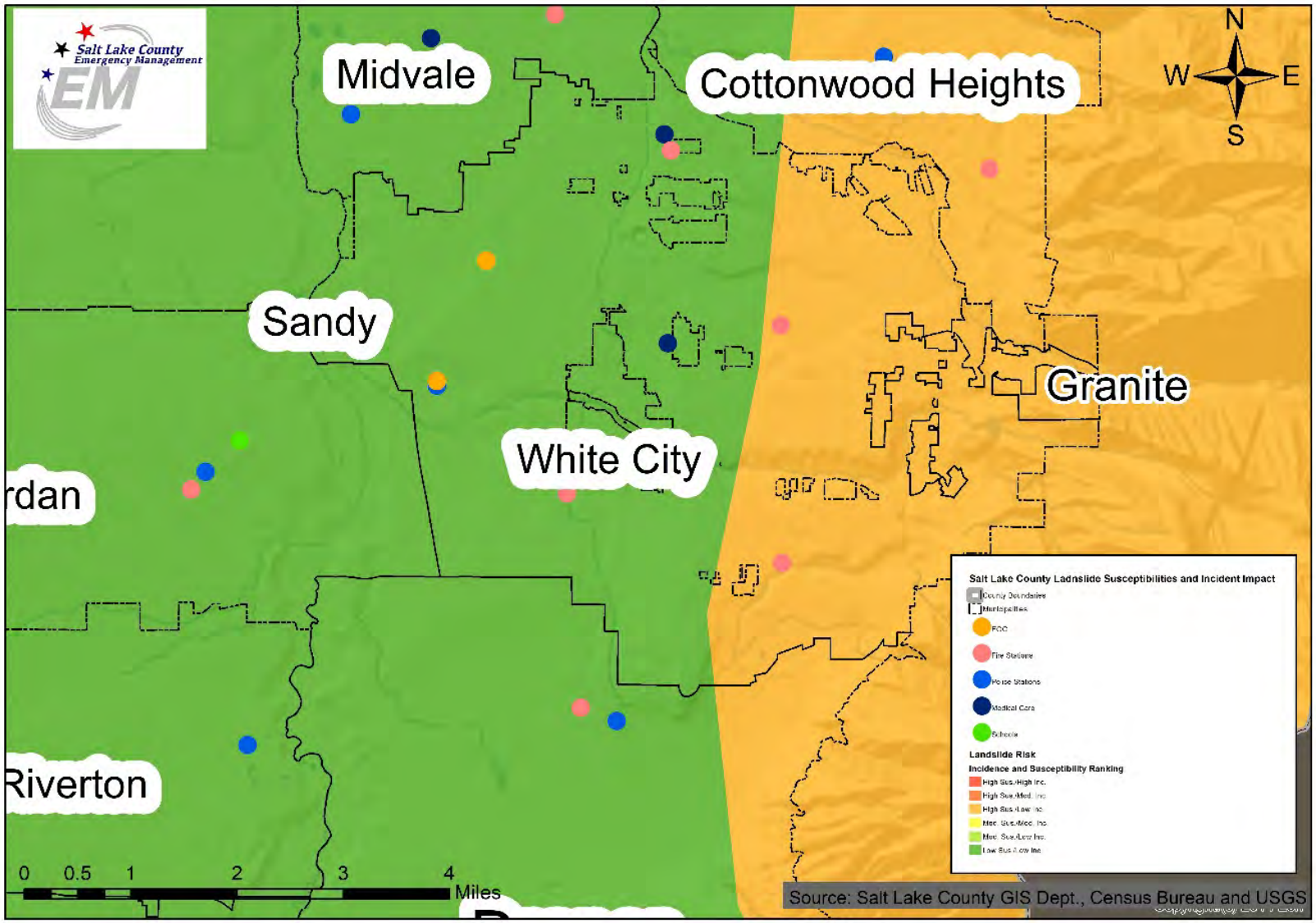
Map: 100 Year and 500 Year Flood Zone with Critical Facilities



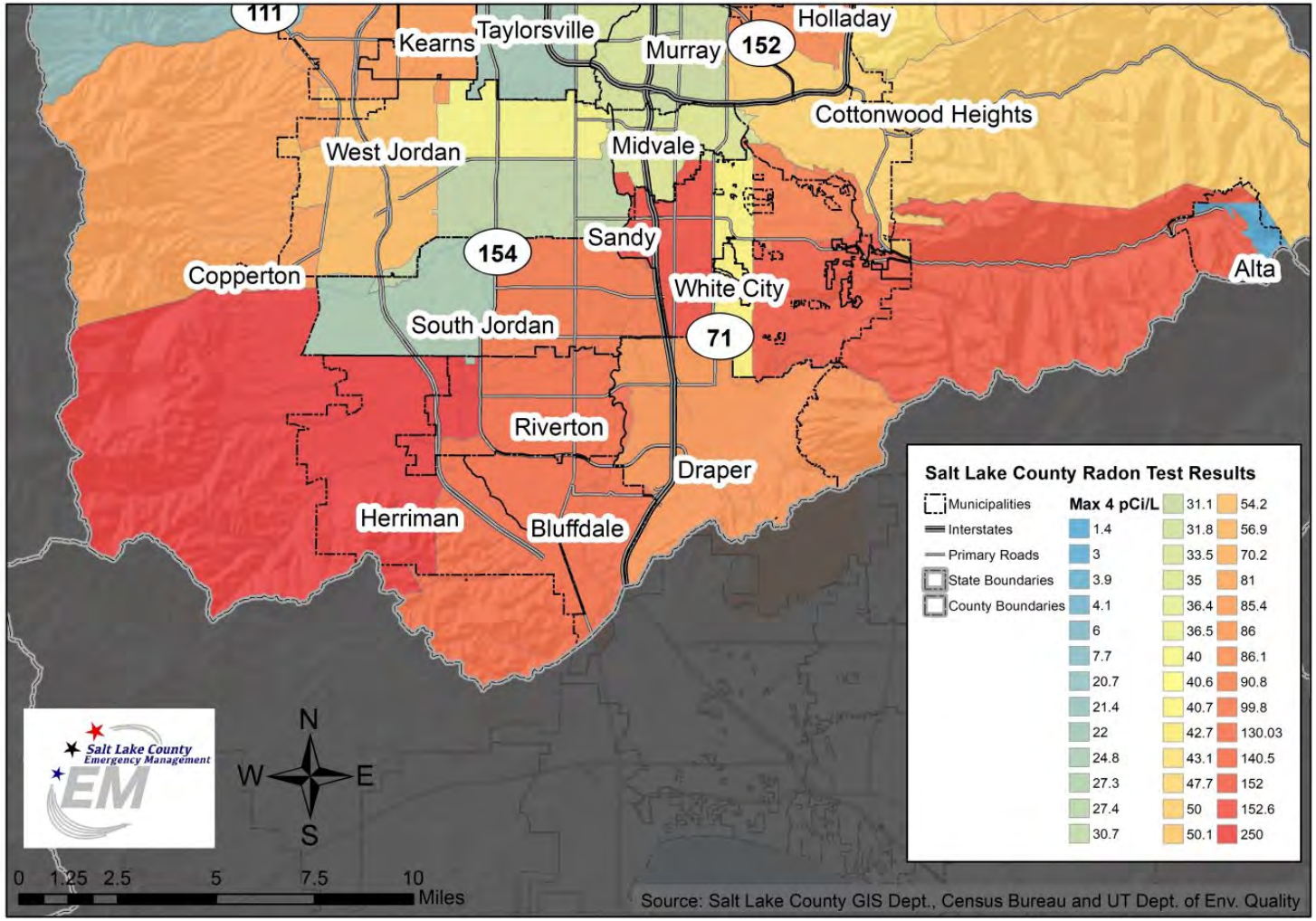
Map: Landslide Susceptibility and Incident Impact Potential



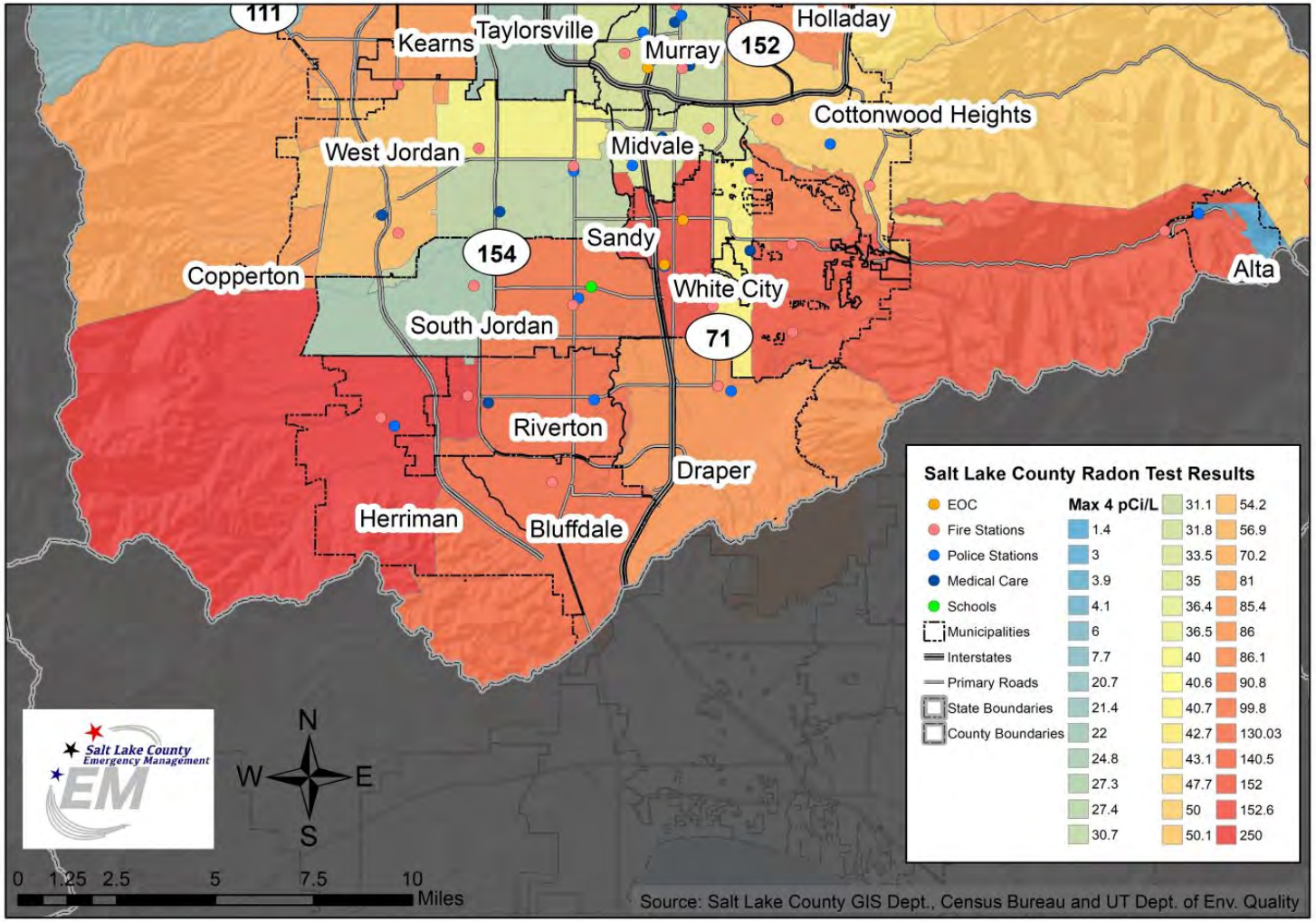
Map: Landslide Susceptibility and Incident Impact Potential with Critical Facilities



Map: Radon


111
Kearns
Taylorsville
Murray
152
Holladay
Cottonwood Heights
West Jordan
Midvale
Sandy
154
Copperton
White City
Alta
South Jordan
71
Riverton
Draper
Herriman
Bluffdale
Salt Lake County Radon Test Results
Municipalities
Interstates
Primary Roads
State Boundaries
County Boundaries
Max 4 pCi/L
1.4
3
3.9
4.1
6
7.7
20.7
21.4
22
24.8
27.3
27.4
30.7
31.1
31.8
33.5
35
36.4
36.5
40
40.6
40.7
42.7
43.1
47.7
50
50.1
54.2
56.9
70.2
81
85.4
86
86.1
90.8
99.8
130.03
140.5
152
152.6
250
Salt Lake County Emergency Management
EM
N
W
E
S
0 1.25 2.5 5 7.5 10
Miles
Source: Salt Lake County GIS Dept., Census Bureau and UT Dept. of Env. Quality

Map: Radon with Critical Facilities



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: City of South Jordan

Hazard Mitigation Plan Point of Contact

Primary Point of Contact
Name: Aaron Sainsbury Title: Emergency / Safety Manager Department: Address: 1600 W. Towne Center Drive | South Jordan, UT 84095 Office Phone: (801) 330-2902 Cell Phone: (801) 254-3742 Email Address: asainsbury@sjc.utah.gov Website: http://www.sjc.utah.gov/

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** 1935 (first settled in 1859)
- **Current Population:** 74,149 (Census V2018)
- **Population Growth:** The population grew approximately 46.9% percent from April 1, 2010 (50,473) to July 1, 2018 (74,149) (Census). South Jordan was primarily a rural farming community when it became incorporated as a town in 1935. In 1960, the population was 1,354, and by 1970 the population had more than doubled to 2,942. Housing gradually started to replace farmland as the population once again more than doubled by 1980 to 7,492 and nearly doubled by 1990 to 13,106. South Jordan's exponential growth since the early 1970s has brought all the challenges and opportunities of growth (SJC).
- **Location and Description:** South Jordan occupies 22.1 square miles in the southwestern portion of Salt Lake County. The City is located between the Cities of West Jordan to the north, Sandy to the East, Draper to the southeast, Riverton to the south, Herriman to the southwest and the Oquirrh Mountains on the west. Significant geographic features include the Jordan River near the City's eastern boundary which flows from south to north through the city. Elevations in South Jordan range from approximately 4,300 feet near the Jordan River and rises gently to about 5,200 feet at the City's western boundary on the slopes of the Oquirrh Mountains. The entire area is located in the area once covered by Lake Bonneville and as a result, the area is fairly flat and the soils are mostly old lakebed sediments. One notable exception is an old sandbar that creates a bluff like topography just west of the Bangerter Highway. South Jordan is centrally located between Provo and Ogden, the Wasatch Front Region. It extends westward from the interstate freeway, I-15, to state road U-111 and between about 9400 south and 11800 South. It is easily accessible by road, within minutes of the Salt Lake International Airport, and is intersected by rail line. Freeway ramps off of Interstate 15 are located at 10600 South and 11400 South. The valley's light rail system (TRAX) that has two stations to the western portion of the city. The commuter rail line connecting from Ogden to Provo also has a station in South Jordan.
- **Brief History:** South Jordan was settled in 1859 by Alexander and Catherine Lince Beckstead. Like many of the first settlers in the Salt Lake Valley, their first home was a cave dug out of the riverbank. These first homes were "a good-sized room" (14 ft. sq.),

dug into the hill, with large sun-dried adobe bricks on the front wall. Large logs covered with plants, willows, and mud and dirt formed the roof.

- **Climate:** The summer high temperature is around 92 and the winter low temperature is 22. On average, South Jordan receives 18 inches of rain and 44 inches of snow each year (Best Place).
- **Public Services:** Though residential development in the Salt Lake valley has mushroomed, South Jordan is committed to preserving its natural beauty. Along the banks of the Jordan River, South Jordan City is cooperating with other government, non-profit and private groups to set aside a significant area for the South Jordan Riverway Wildlife Enhancement project.
- **Governing Body Format:** South Jordan City is governed by a six-member council form of government. The City Council is composed of six members, one of whom is mayor. All members are elected by the residents of the City during a municipal election held every two years. Each seat consists of a four-year term. Councilmember terms are staggered. Two members and a mayor are elected at one time, and two years later the other three members are elected. The mayor and council are responsible for setting city policy and the City Manager is responsible for the day-to-day operations (SJC).
- **Development Trends:** Beginning in 1960, the City's population would double or nearly double every decade through the present day. South Jordan is experiencing tremendous population and commercial growth which is projected to continue. South Jordan has evolved from a community known for its agricultural land use to a community known for its residential use. Nearly two-thirds of the total acreage of the City is or is planned to be used for residential designations. The agricultural feel still exists through larger parcels that continue to be farmed and areas of exceptionally low-density residential. Beginning in 2003, the Daybreak-planned community building started. In total, the community will have a maximum of 20,000 residential units.
- **Critical Facilities and Infrastructure:** A critical facility may be defined as one that is essential in providing utility or direction either during the response to an emergency or during the recovery operation. Essential facilities are those that if damaged would have devastating impacts on disaster response and recovery. High potential loss facilities are those that would have a high loss or impact on the community. Transportation and lifeline facilities are the third category.

Critical Facilities and Infrastructure

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Essential Facilities at Risk (City Owned)

Facility	Location	Function
City Hall	1600 W Towne Center Drive	Emergency Operations Center
Public Safety Building	10655 South Redwood Road	Police Department Emergency Operations Center
Fire Station 61	10758 S Redwood Road	Fire / EMS / HAZMAT

Fire Station 62	4022 W South Jordan Parkway	Fire / EMS / Heavy Rescue
Fire Station 63	10451 South 1055 West	Fire / EMS
Fire Station 64	5443 West Lake Avenue	Fire / EMS
Public Works Building	10996 S Redwood Road	Public Works Emergency Operations Center
Animal Shelter	10882 S Redwood Road	Animal Services
Community Center	10778 S Redwood Road	Emergency Operations Center Possible Sheltering Location
City Hall Annex Building	1600 West Towne Center Drive	Emergency Operations Center Possible Sheltering Location
Gale Center	10300 S Beckstead Ln	Possible Sheltering Location
Mulligans	692 W South Jordan Parkway	

Essential Facilities at Risk (Non-City Owned)

Facility	Location	Function
Bingham High School	2160 W 10400 South	Possible Sheltering Location
Valley High School	325 W 11000	Possible Sheltering Location
South Jordan Middle School	10245 S 2700 West	Possible Sheltering Location
Elkridge Middle School	3659 W 9800 South	Possible Sheltering Location
Elk Meadows Elementary	3448 W 9800 South	Possible Sheltering Location
Jordan Ridge Elementary	2636 W 9800 South	Possible Sheltering Location
Monte Vista Elementary	11121 S 2700 West	Possible Sheltering Location
South Jordan Elementary	11205 S 1375 West	Possible Sheltering Location
Welby Elementary	4130 W 9580 South	Possible Sheltering Location
Daybreak Elementary	4544 W Harvest Moon Drive	Possible Sheltering Location
Eastlake Elementary	4389 W Isla Daybreak Rd	Possible Sheltering Location
Golden Fields Elementary	10252 South Split Rock Drive	Possible Sheltering Location

Salt Lake County Library	10673 S Redwood Road	
Salt Lake County Fair Grounds	2100 W 11400 South	Open Space / Possible Sheltering Location
South Jordan Health Center / University of Utah Hospital	5126 W Daybreak Pkwy	Medical Services

Essential Infrastructure at Risk

Facility	**Location**	**Function**
Tank 1A	<undisclosed for security>	Water Storage
Tank 1B	<undisclosed for security>	Water Storage
Tank 2	<undisclosed for security>	Water Storage
Tank 3A	<undisclosed for security>	Water Storage
Tank 3B	<undisclosed for security>	Water Storage
Tank 5A	<undisclosed for security>	Water Storage
Tank 5B	<undisclosed for security>	Water Storage
Tank 6	<undisclosed for security>	Water Storage
Tank 7/8	<undisclosed for security>	Water Storage
Semaphore	9790 South & 4000 West	Traffic Control
Semaphore	9800 South & 3200 West	Traffic Control
Semaphore	9800 South & 2700 West	Traffic Control
Semaphore	Shields Lane & 1300 West	Traffic Control
Semaphore	Shields Lane & 1000 West	Traffic Control
Semaphore	10600 South & 4000 West	Traffic Control
Semaphore	11400 South & 4000 West	Traffic Control
Semaphore	11800 South & 4000 West (Shared)	Traffic Control
Semaphore	11800 South & 3600 West (Shared)	Traffic Control
Semaphore	11800 South & 3200 West (Shared)	Traffic Control
Semaphore	11800 South & 2700 West (Shared)	Traffic Control
Semaphore	Shields Lane & Jordan Gateway (Shared)	Traffic Control
Canal Service Roads	Various	Service Access

Capability Assessment

The city maintains a full-time staff of 357 and part-time staff of 193 individuals. The Emergency/Safety Manager is the city's designated Emergency Manager. Hazard Mitigation Planning efforts are led by the City Mitigation Planning team position and supported by City Leadership.

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY			
	Local Authority Exists to Develop and Implement/ Enforce?	**A Jurisdiction-Specific Code, Ordinance and/or Requirement Currently Exists?**	**Comments**
Codes, Ordinances, & Requirements			
Building Code Development and Enforcement	Yes	Yes	
Zonings Ordinance(s)	Yes	Yes	
Subdivision Ordinance(s)	Yes	Yes	
Stormwater Management Program	Yes	Yes	
Floodplain Ordinance(s)	Yes	No	
Post Disaster Recovery Program and Ordinance(s)	Yes	Yes	
Real Estate Disclosure Ordinance(s)	No	No	
Growth Management	No	No	Zoning Ordinance
Site Plan Review Requirements	Yes	Yes	

Public Health and Safety Program and Requirements	No	No	Salt Lake County Coordinates
Environmental Protection Program and Requirements	Yes	Yes	
Planning Documents			
General or Comprehensive Plan	Yes	Yes	
Capital Improvement Plan	Yes	Yes	
Habitat Conservation Plan	No	N/A	BLM-UT
Economic Development Plan	Yes	Yes	
Disaster Planning Documents			
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	Yes	
Post-Disaster Recovery Plan	Yes	Yes	Part-3 EMP
Continuity of Operations Plan	No	No	
Public Health Plans	No	N/A	
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	Yes	Yes	

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Community Development Block Grants	No
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes

Withhold Public Expenditures in Hazard-Prone Areas	Yes
State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Use of Reserve Funds

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	Full Time	Engineering
Engineers or professionals trained in building or infrastructure construction practices	Yes	Full Time	Building
Planners or engineers with an understanding of natural hazards	Yes	Full Time	Engineering
Surveyors	Yes	Full Time	Engineering
Personnel skilled or trained in GIS applications	Yes	Full Time	Information Technology
Emergency manager	Yes	Full Time	Administrative Services
Grant writers	No	Full Time	Finance

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	Engineering
Who is your jurisdiction's floodplain administrator? (department/position)	City Engineer
Are any certified floodplain managers on staff in your jurisdiction?	Yes
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes

Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	No
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System (CRS)	No	-	-
Public Protection/ISO	No	-	-
NWS StormReady	No	-	-

Jurisdiction-Specific Hazards and Risks

The *Natural Hazard Events Table* lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 44 policies were in force with total coverage of $11,307,500 and total written premium and FPF of $17,548 (FEMA, 2019).
- The City of South Jordan does participate in the National Flood Insurance Program (CID # 490107) and the last FIRM map for the area was issued on 09/25/09 (FEMA, 2019).
- The city will continue to participate in the NFIP through various efforts including but not limited to floodplain management, ordinance development and review, technical assistance, compliance inspections, and community education on flood hazards.

TABLE: RECENT NATURAL HAZARD EVENTS
(NOAA Data with additions from the jurisdiction representatives)

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Heavy Snow	Widespread heavy snowfall due to a lake effect snow band		3/1/2019	
Hail	Quarter-sized hail		6/18/2018	
Hail			5/5/2018	
High Wind	Trees were uprooted		4/13/2017	
Winter Storm	10 inches		12/24/2015	
Flooding	In South Jordan, 11 homes in the Sunstone subdivision experienced basement flooding, with water several inches deep.		9/14/2013	$100,000 in property damage
Thunderstorm Wind	Multiple large trees were knocked down, including a few that fell on houses and caused damage to roofs.		6/12/2013	$50,000 in property damage
Slope Failure	A significant landslide triggered by mining		4/10/2013	

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
	activities occurred just west of South Jordan at the Kennecott Copper Mine.			
Earthquake	An earthquake with a magnitude of 2.3 and epicenter in South Jordan. Ground shaking felt over parts of the Salt Lake Valley		5/28/2007	
Flooding	Heavy rains ran across roadways and flooded a few parks in South Jordan.			
Earthquake	An earthquake with a magnitude of 2.1 and epicenter in South Jordan. Ground shaking felt over parts of the Salt Lake Valley		2/8/2006	
Heavy Snow	6 inches		2/4/2005	
Earthquake	Earthquake magnitude of 2.9 and epicenter in South Jordan		5/24/2001	
Winter Storm	Power outages were also noted in portions of South Jordan.		12/19/1998	
Earthquake	Earthquake magnitude of 4.7 and epicenter in South Jordan		2/20/1981	
Earthquake	Earthquake magnitude 2.2 and epicenter in South Jordan		12/17/1981	

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific details must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community
Members of the community over 65 years old	6,016
Members of the community under 18 years old	21,943
Members of the community that identify as having disability status	4,053
Members of the community that speak English less than "very well"	1,310
Members of the community living below the poverty line	1,878
The number of mobile homes in the community	0 (however, 26 reside in a boat, RV, van, or equivalent)
Members of the community without health insurance	3,216
Occupied housing units with tenants without a vehicle	494
Housing units without heating fuel	35

Jurisdiction-Specific Hazards and Impacts Summary

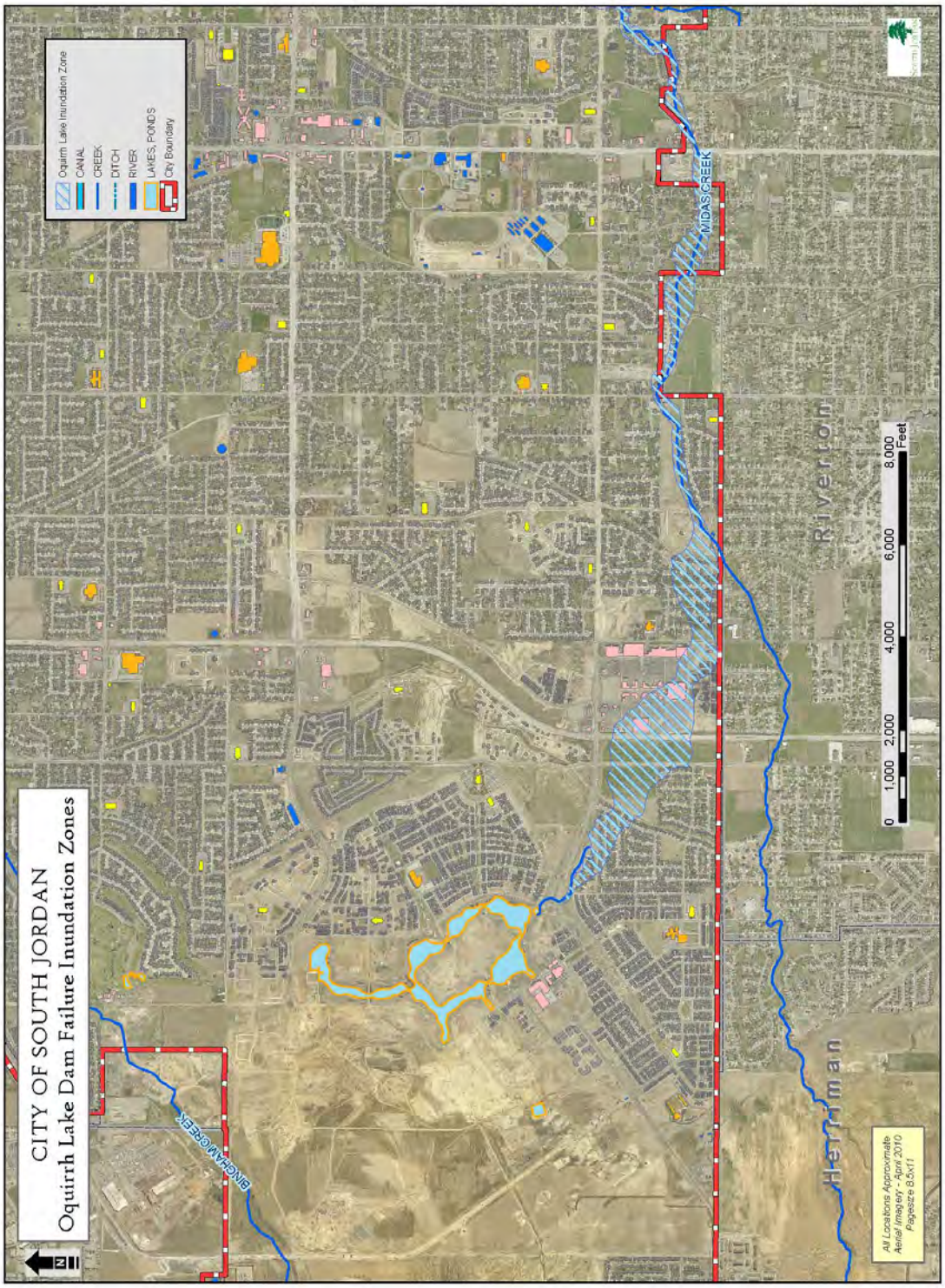
Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Dam Failure: The largest dam located in South Jordan is the Oquirrh Lake Dam located in the Daybreak Development area in the western portion of the city and is owned and operated by the Kennecott Land Company. The dam is classified as a “medium dam” due to its storage capacity and proximity to an urban population according to Utah Administrative Code Rules R655-12. However, due to the downstream location of residential structures and the Bangerter Highway, the State Engineer has classified the dam as a “High” hazard Dam.

Hydraulic and Structural Information

Year Built 2006
Structural Height: 17 Feet
Hydraulic Height: 11 Feet
Reservoir Area at Spillway Crest: Acres
Reservoir Storage at Spillway Crest: 800 Acft
Reservoir Storage at Dam Crest: 1100 Acft
Dam Crest Elevation: 4804 Feet MSL
Dam Crest Length: 230 Feet
Dam Crest Width: 20 Feet

FIGURE: Dam Inundation Area



Flooding: Riverine flooding can be expected along the Jordan River, Midas Creek, and Little Willow Creek. The potential for flooding also exists along the old channel of Bingham Creek (usually dry unless there is a storm), the Beckstead Ditch and any of the four canals which transverse the city (Welby Jacob Canal, Utah Distributing Canal, Utah Salt Lake Canal, & South Jordan Canal). Localized floods and flash flooding are possible in all areas of the City. Subsurface flooding problems near the Jordan River and eastern portions of the city. See the FEMA Flood Insurance Rate Map for details on other known mapped special flood hazard areas. An area has also been identified for potential inundation due to failure at the Oquirrh Lake Dam (See the Oquirrh Lake Dam Emergency Action Plan).

Historic Events in South Jordan:

- August 2013 - 21 homes affected by thunderstorm flooding on west side of South Jordan.
- December 2010 - Several homes were flooded from groundwater seeping into basements in the area of 1300 West.
- August 2007 - 30 homes affected by thunderstorm flooding on west side of South Jordan.

NFIP:

- FIRM #: 49035CIND0B Map Revision Date: September 25, 2009
- Panels that cover South Jordan include: 0416G, 0417G, 0436G, 0437G, 0441G, 0442G, 0429G, 0433G, and 0434G.
- There are no NFIP insured structures located in the jurisdiction that are considered repetitive flood loss properties. The City of South Jordan intends to continue participating in the NFIP and maintain its continued compliance with NFIP requirements.

Structures with a Specific Flooding Risk (as per FEMA FIRM)		
100 year floodplain (Zones A, AH, AO, AE)	count	%
Residential (Single Family Dwellings)	35	0.21
Residential (Accessory Buildings)	33	0.52
Commercial Businesses	4	1.72
Public (Accessory Buildings)	7	4.76
	Total	79
500 year floodplain (Zones X)	count	%
Residential (Single Family Dwellings)	130	0.78
Residential (Accessory Buildings)	53	0.83
Commercial Businesses	13	4.44
Commercial Businesses (Accessory Buildings)	1	0.43
Public (Accessory Buildings)	3	2.04
Total	200	

FIGURE: FLOOD ZONE

Earthquake: The entire city is at risk for ground shaking and certain areas are at risk for liquefaction. The residents that reside in non-traditional housing are especially at risk. The entire city is at risk for ground shaking. Certain areas are at risk for liquefaction; however, there is minimal chance for a significant surface rupture.

Historic Events in South Jordan:

- 2007 - 28 May: Earthquake with a magnitude 2.3 and epicenter in South Jordan. Ground Shaking felt over parts of the Salt Lake Valley
- 2006 - 8 Feb: Earthquake with a magnitude of 2.1 and epicenter in South Jordan. Ground shaking felt over parts of the Salt Lake Valley.
- 2001 - 24 May: Earthquake magnitude of 2.9 and epicenter in South Jordan
- 1981 - 20 Feb: Earthquake magnitude of 4.7 and epicenter in South Jordan
- 1981 - 17 Dec: Earthquake magnitude 2.2 and epicenter in South Jordan

Structures with a Liquefaction Specific Risk

High Risk	count	%
Church Accessory	1	1.85
Church Meetinghouse	1	2.70
Commercial Accessory	37	15.95
Commercial Business	33	11.26
Commercial Office	2	18.18
Commercial Utility	1	20.00
Public Accessory	24	16.33
Public Bldg	1	11.11
Public Utility	1	1.85
Residential Accessory	186	2.93
Residential Dwelling	518	3.11
Residential MDU	13	22.03
Total	818	

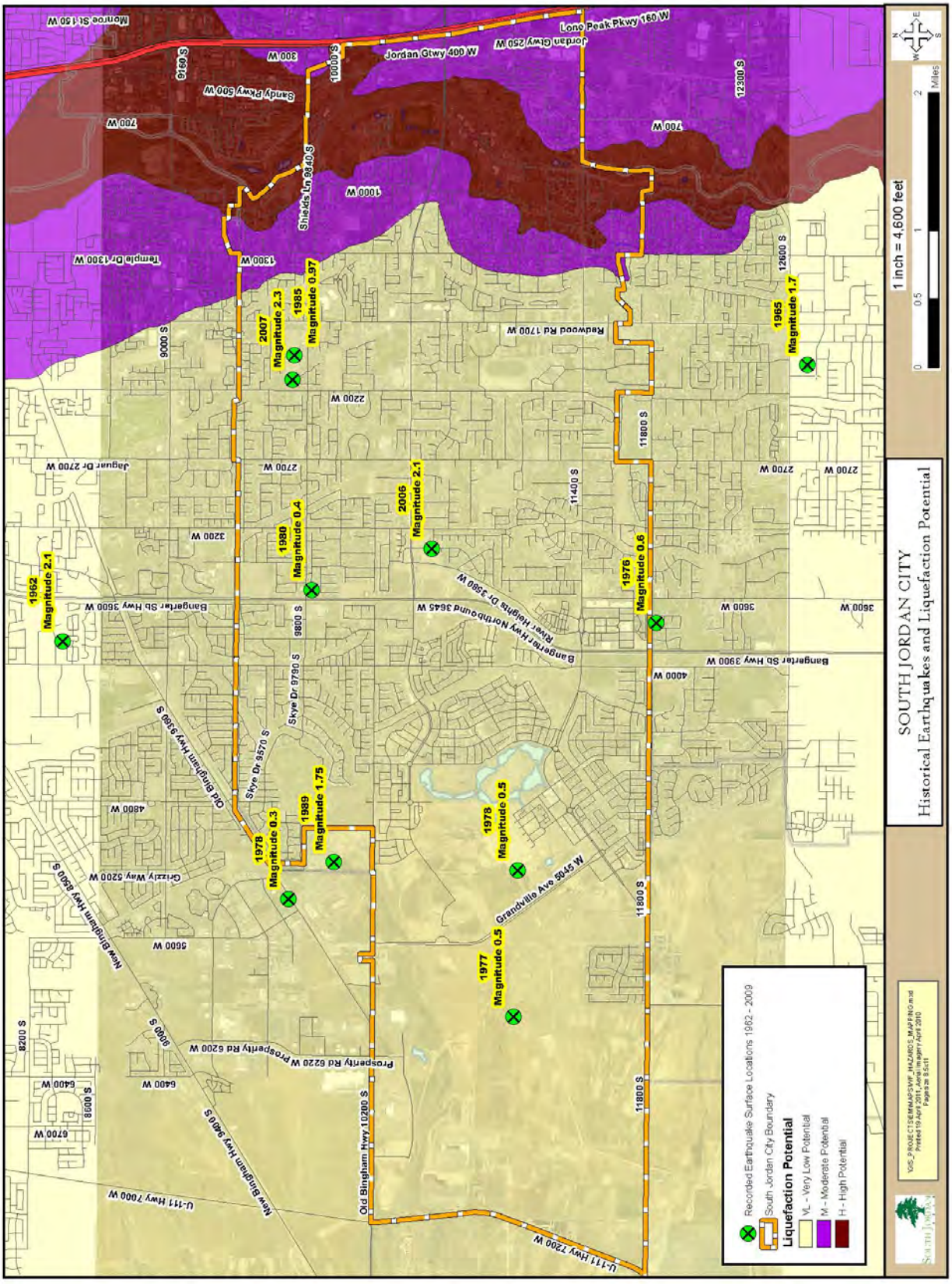
Moderate Risk		
Church Accessory	6	11.11
Church Meetinghouse	3	8.11
Church Temple	1	33.33

Commercial Accessory	72	31.03
Commercial Business	61	20.82
Commercial Office	1	9.09
Public Utility	1	1.85
Residential Accessory	1,095	17.25
Residential Clubhouse	1	5.88
Residential Dwelling	1,501	9.01
Residential MDU	37	62.71
School	2	10.53
School Accessory	1	1.27
Total	2,782	

Low Risk

All other buildings	20,444

FIGURE: LIQUEFACTION POTENTIAL



Slope Failure: Given South Jordan's relatively flat geography and location near the center of the Salt Lake Valley, this hazard is not common. Areas of the community that may be affected include the very western portions of the city at the foot of the Oquirrh Mountains near Bacchus Highway, and some areas near the Jordan River Corridor. There may be other areas that might have some unique geologic or geographic conditions where a slope failure may occur.

Wildfire: South Jordan does have some urban-wildland interface along the Jordan River and Bingham Creek and the western portions of the city. The areas of highest concern for wildfire are the undeveloped areas along the Jordan River where natural vegetation is abundant and the other undeveloped areas, open areas, some agricultural areas

Most events have been small grass and brush fires. No significant events have occurred.

Drought: Because of the fact that much of the community's drinking water comes from snowmelt, dry winter can have serious implications in terms of how much water is available for the following summer season. Most locations have sufficient water reservoirs to make it through one dry winter. The real problem becomes back to back dry winter seasons.

Historic Events in South Jordan:

- 1896 – 1907 Statewide drought conditions
- 1930 – 1936 Statewide drought conditions
- 1953 – 1965 Statewide drought conditions
- 1974 – 1978 Statewide drought conditions
- 1988 – 1993 Statewide drought conditions
- 1999 – 2003 Statewide drought conditions

High Wind: South Jordan has experienced high winds in the past and can expect future events. The residents that reside in non-traditional housing are especially at risk to wind events. One weather-related phenomenon that occurs that should be noted is that of weather-related inversions. These inversions tend to occur most often in the months of December, January and February when pockets of cold air become trapped in the valley between the Oquirrh Mountain range and the Wasatch Mountain range. These temporary inversions can last several days and lead to poor air quality for residents in the valley and restrictions placed on burning some types of fuels.

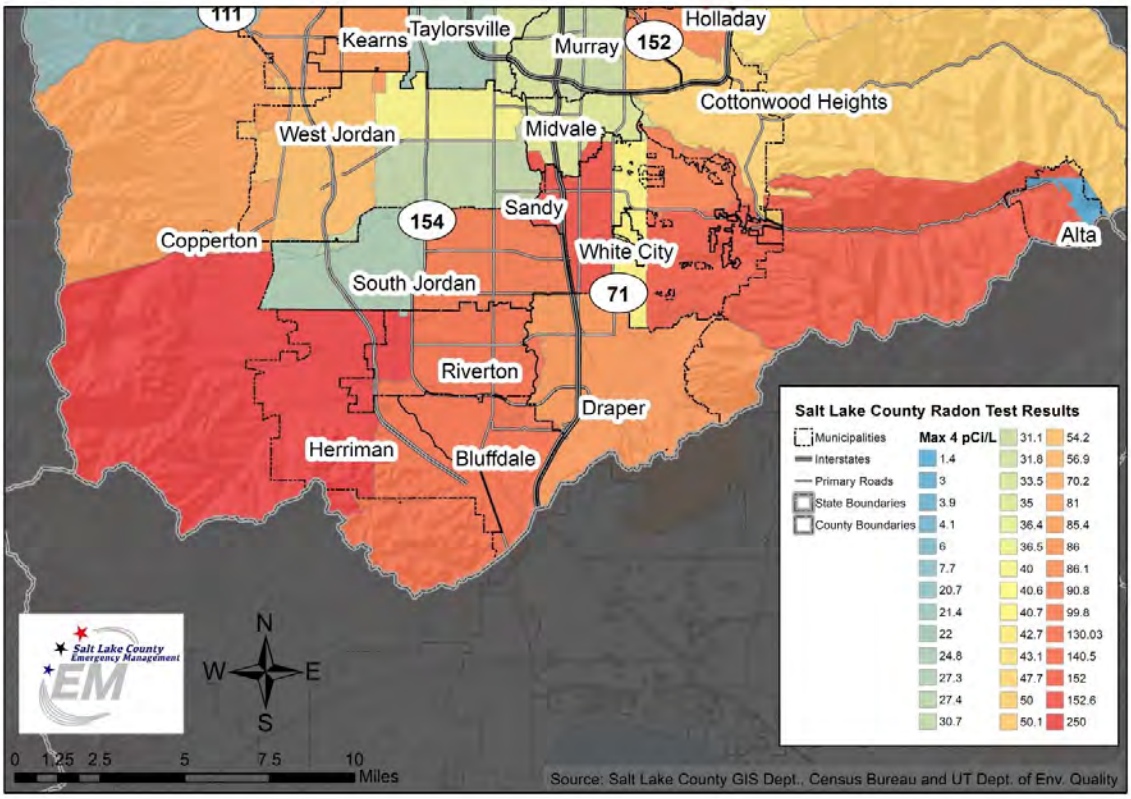
Severe Weather: South Jordan is well known for its rapid and often severe changes in weather. Severe weather common in the city includes winter storms, large scale wind events, thunderstorms, lightning, hail, tornadoes, flooding, and avalanches. While some types of these events can be predicted, others will occur with little or no warning.

One weather related phenomenon that occurs most often from December to February are inversions. These inversions tend occur when pockets of cold air become trapped in the valley between the Oquirrh Mountain range and the Wasatch Mountain range. These temporary inversions can last several days and lead to poor air quality for residents in the valley and restrictions placed on burning some types of fuels.

Thunderstorms occur in South Jordan on an annual basis. Sometimes the intensity of these storms can cause them to be quite destructive to property, create flash floods, and interrupt power services. The community members over 65 are particularly vulnerable to the impacts of life-sustaining supports interrupted by prolonged power outages.

Radon: The entire city is subject to this type of event, although its effects and severity may vary from one location to another. Radon is a radioactive gas released from the nuclear decay process of uranium and radium, which are trace elements of many soils.

FIGURE: RADON



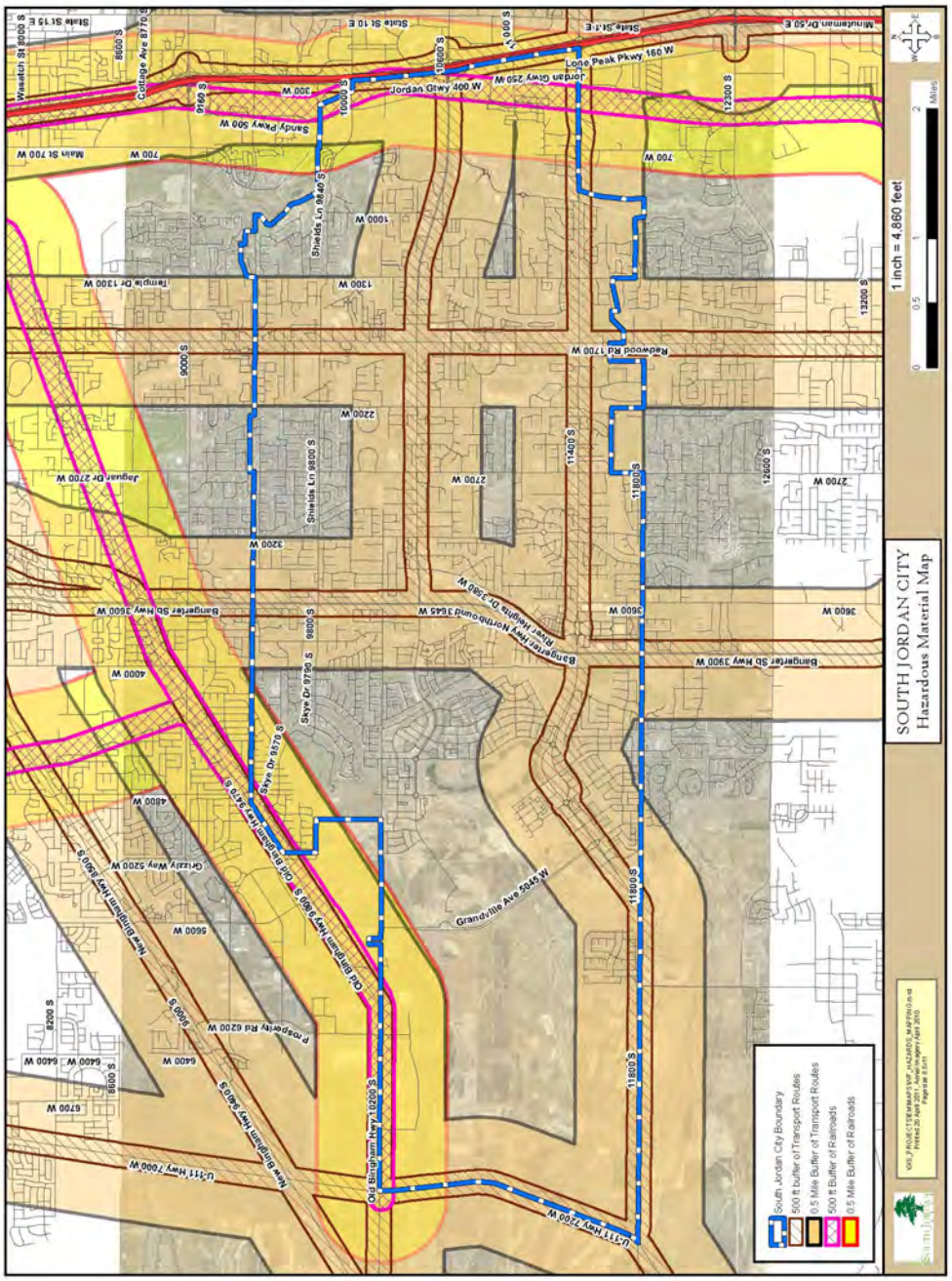
Pandemic: The potential for a pandemic to have a noticeable impact on the city has increased as worldwide travel and commerce in the area has increased.

Hazardous Materials: Spills can occur along the major roadways that run through the city.

Historic Events in South Jordan:

- 2000 Merit Medical

FIGURE: HAZMAT RISK (TRANSPORTATION)



Fallen Aircraft: South Jordan City lies in the flight paths of two airports, Salt Lake International and Airport #2. Under normal flight patterns most plans landing at these airports make their landing approach from south to north over the city. Other air traffic over the city includes helicopters and small aircraft for various purposes.

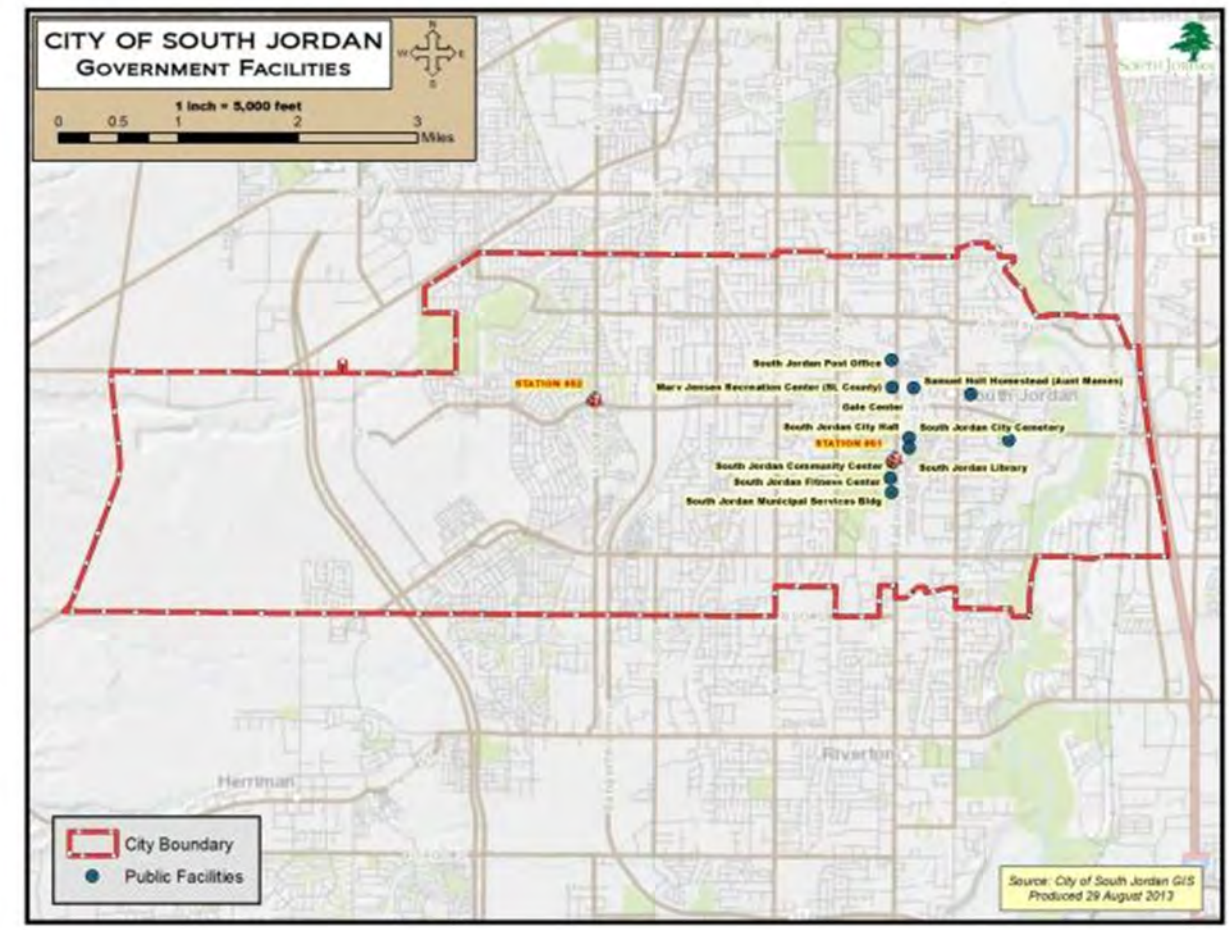
While not common, for planning purposes this hazard could also include any other falling objects such as meteor or asteroid, or any other large objects that could create a hazardous situation.

- Historic Events in South Jordan: June 2002 - Small plane crash in U-111 on west side of City

Terrorism: Public gathering places, community icons or monuments, government buildings, schools, churches, and commercial buildings may be potential targets.

Historic Events in South Jordan:

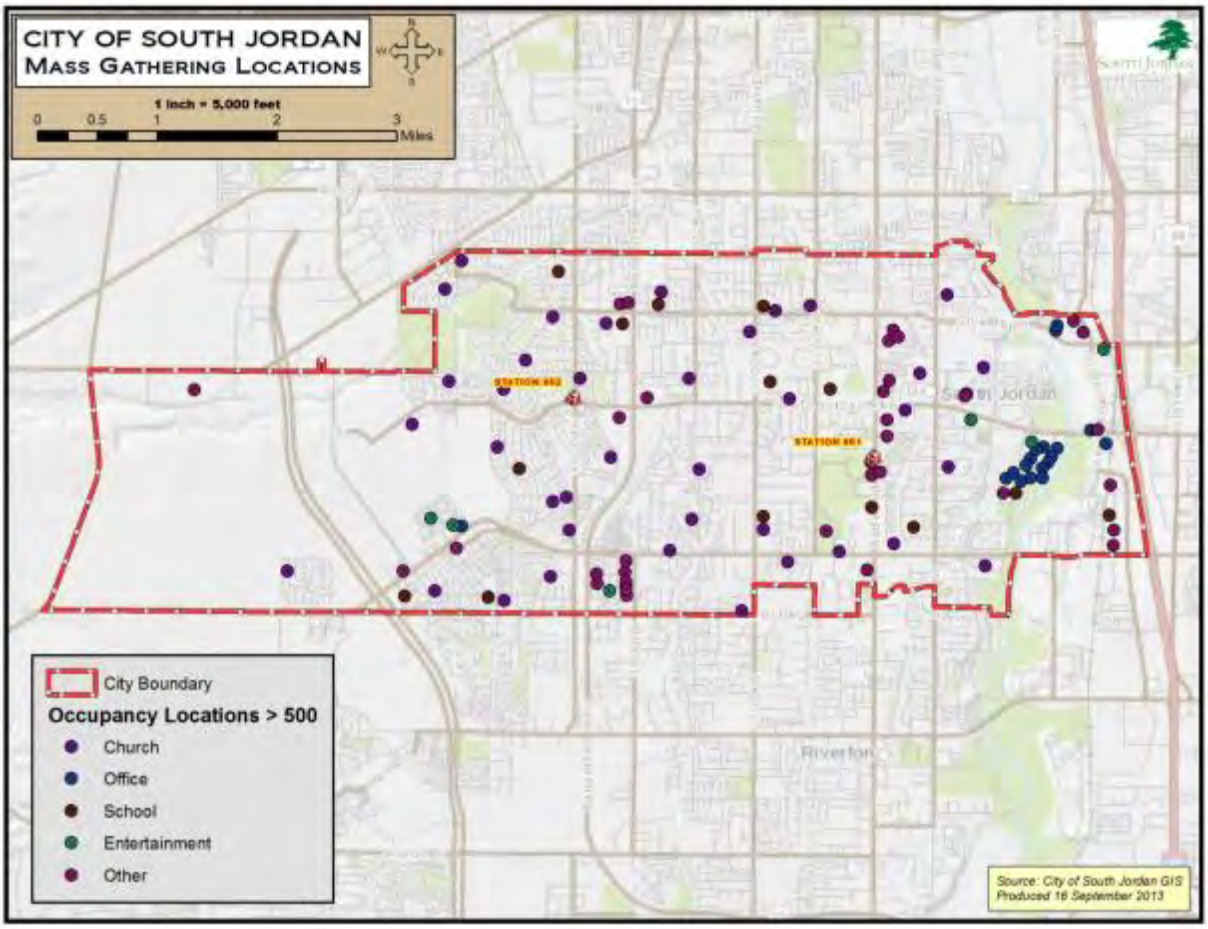
- Release of mink from various mink farms have resulted in acts of violence on several occasions.



Civil Disturbance: Similar to terrorism and acts of violence, public gathering places, community icons or monuments, government buildings, schools, churches, and commercial buildings may be potential targets.

Historic Events in South Jordan:

- December 25, 2010 Oquirrh Mountain temple incident

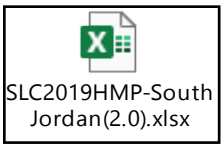


Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Severe Winter Weather	3	16	48
Severe Weather	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Flooding	2	17	34
Cyber Attack	2	17	34

Hazardous Materials Incident	2	14	28
Drought	2	14	28
Terrorism	1	25	25
Dam Failure	1	22	22
Radon	3	6	18
Tornado	1	12	12
Wildfire	1	10	10
Civil Disturbance	1	8	8
Landslide and Slope Failure	1	6	6
Avalanche	1	0	0

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.



Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1		Avalanche	No Impact	0	0
Dam Failure	Low	1		Dam Failure	Medium	2	6
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Low	1	3
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Low	1		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	Medium	2	6
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	Low	1		Wildfire	Low	1	3

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	No Impact	0	0		Avalanche	No Impact	0	0
Dam Failure	Medium	2	2		Dam Failure	High	3	6
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Low	1	2
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	Medium	2	4
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Low	1	2
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Low	1	2
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	Low	1	1		Wildfire	Low	1	2

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**		**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)		**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)		**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)		**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)		**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)
Avalanche	No Impact	0	0
Dam Failure	Medium	2	2
Drought	Medium	2	2
Civil Disturbance	Medium	2	2
Cyber Attack	Medium	2	2
Earthquake	High	3	3
Flooding	Medium	2	2
Hazardous Materials Incident	Medium	2	2
Landslide and Slope Failure	No Impact	0	0
Public Health Epidemic/ Pandemic	High	3	3
Radon	No Impact	0	0
Severe Weather	Low	1	1
Severe Winter Weather	Medium	2	2
Terrorism	High	3	3
Tornado	Medium	2	2
Wildfire	Low	1	1

Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Unlikely	0	0
Dam Failure	Medium	2	6
Drought	Low	1	3
Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	6
Earthquake	High	3	9
Flooding	Low	1	3
Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	9
Radon	Unlikely	0	0
Severe Weather	Unlikely	0	0
Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	9
Tornado	Unlikely	0	0
Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Low potential that this hazard could be catastrophic (Impact Factor = 1)
Unlikely—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

Action	Year Initiated	Goal/ Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Bury powerlines and upgrade key utilities in the older sections of the community to ensure greater resiliency to severe weather.	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Severe Weather	Public Works	Utilities	Medium	High	Local and Private Funds, HMA Grants	Medium	Long-term	

Mitigation Table - Ongoing Actions

Action	Year Initiated	Hazard(s)	Agency Lead	Benefit	Cost	Funding Source	Priority	Timeframe	Comment
Establish notification capabilities and procedures for emergency personnel	2009	All Hazards	South Jordan	High	Medium	Local, State and Federal Grants	High	Ongoing	South Jordan continues to work on notification tools and procedures to be in harmony with changing technology and equipment
Establish a coordinating group to address long-term communication needs and implementation strategies	2009	All Hazards	South Jordan	Medium	Low	Local	Low	Ongoing	No formal coordinating group exists yet, but South Jordan engages in discussions with other jurisdictions and the county regarding this issue

Implement improvements to address hazards identified in assessment	2009	All Hazards	South Jordan	High	High	HMA, federal, and state	High	Ongoing	South Jordan is identifying options and opportunities to address issues identified during the risk assessments in 2013 and 2019
Provide education regarding all natural hazards through live trainings, as well as web-based, print and broadcast media	2009	All Hazards	South Jordan	High	Low	Local Funds	High	Ongoing	South Jordan Emergency Management continues to provide several public education classes for groups to discuss the hazards in the community and what residents can do to be prepared
Develop education programs to target specific groups including homeowners, developers, schools and people with special needs	2009	All Hazards	South Jordan	High	Low	Local Funds	High	Ongoing	South Jordan's education programs are customizable for all kinds of groups and available to all members of the community
Coordinate with existing public education programs such as the American Red Cross, Utah Living with Fire, be Ready Utah, the National Weather Service, etc.	2009	All Hazards	South Jordan	High	Low	Local Funds	High	Ongoing	South Jordan has worked with Be Ready Utah and other programs to make presentations in South Jordan and will continue to invite them to events and other activities in the community
Coordinate with water districts to plan for, develop and/or expand secondary water	2009	Drought	South Jordan	Medium	High	County and State funds	Medium	Ongoing	South Jordan continues to encourage the development of secondary water, where feasible. Several areas have been added to the secondary water system in the last 5 years.
Encourage Communities to actively participate in NFIP	2009	Flood	South Jordan	High	Low	Local	High	Ongoing	South Jordan actively participates in the NFIP
Determine potential flood impacts and identify areas in need of additional flood control structures	2009	Flood	South Jordan	High	High	Federal, County, and State funds	High	Ongoing	The City Engineer and Public Works Director regularly review the impact of development and the need for flood control infrastructure and make recommendations as needed
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures	2009	Flood	South Jordan	High	High	Federal, County, and State funds	High	Ongoing	The City Engineer and Public Works Director oversee the construction of flood control structures Example: Significant construction efforts were completed on Midas Creek including upsizing culverts, channel stabilization, etc.

Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of storm water and flood control systems	2009	Flood	South Jordan	High	High	Federal, County, and State funds	High	Ongoing	The Stormwater Division of the Public Works Department continues to maintain and repair all drainage systems in the City
Modify structures as needed to address deficiencies	2009	Flood	South Jordan	High	High	Federal, County, and State funds	High	Ongoing	The City Engineering Division in cooperation with the Public Works Department make repairs as needed to deficient structures
Assist NWS in making other agencies and departments aware of available resources	2009	Severe Weather	South Jordan	Medium	Low	Local	Low	Ongoing	South Jordan supports the NWS efforts for education and outreach and makes internal departments aware of NWS resources
Assist Forest Service Utah Avalanche Forecast Center and other organizations in promoting avalanche hazard awareness for backcountry users	2009	Severe Weather	South Jordan	Medium	Low	Local	Medium	Ongoing	South Jordan supports the efforts for education and outreach
Maintain community participation in the National Flood Insurance Program. Flooding risks exist in the community from a variety of sources, including; riverine flooding, infrastructure failures (canal breech, dam failure, water main rupture), and groundwater sources. Areas near the Jordan River are in a mostly undeveloped state.	2014	Flood	Development Services	High	Low <$5,000	General Fund	High	Ongoing	Participation in the National Flood Insurance requires the City to maintain and enforce a flood damage prevention ordinance and other regulatory authorities to minimize the effects of flooding to structures in the community. Enforcement of the ordinance will reduce the number of structures at risk of damage from flooding
Distribution of flood hazard and flood preparedness / response information such as the “Flooding: What you should Know when Living in Utah” brochure which the City partnered in developing in 2014, or similar types of information. Post such information on the City’s website.	2014	Flood	Administrative Services – Emergency Management, Information Technology	Medium	Low <$5,000	General Fund	Medium	Ongoing	Dissemination of information raises public awareness, resulting in a more knowledgeable community that is prepared for potential threats. It also helps build community support for other hazard mitigation efforts such as strong building codes and enforcement of existing codes such as the flood damage prevention ordinance.

Update of the City's Stormwater Master Plan to include specific flood mitigation projects in flood prone areas of the City.	2014	Flood	Public Works, Development Services	Medium	High - $50,000- $100,000	General Fund, Enterprise Funds	Medium	Ongoing	Once updated, the Stormwater Master Plan will identify specific infrastructure needs that will help reduce the potential for flooding. The Plan will be used in determining priority based needs throughout the City. Funding for specific projects may come from a variety of sources and will appear as part of the capital improvements plan.
Install automatic gas shut off fixtures on any City-owned buildings or structures with gas service/meter that do not have one currently. Train staff to check the meter immediately following an earthquake event and shut off service if necessary	2014	Earthquake	Administrative Services – Facilities Division	Medium	Medium - $50,000- $100,000	General Fund, Grants	Medium	Ongoing	Automatic shut off valves will stop the flow of gas after a significant event if there is damage to the system. This could potentially save the structure from potential fire or a hazardous materials incident.
Distribution of earthquake hazard preparedness / response information. Post such information on City's website	2014	Earthquake	Administrative Services – Emergency Management, Information Technology	Medium	Low <$5,000	General Fund	Medium	Ongoing	Dissemination of information raises public awareness, resulting in a more knowledgeable community that is prepared for potential threats. It also helps build community support for other hazard mitigation efforts such as strong building codes and enforcement of existing codes such as the flood damage prevention ordinance.
Support of community education programs that raise awareness and provide information to property owners on how to protect their structures from wildfire damage. Post such information on the City's website.	2014	Wildland Fire	Administrative Services – Emergency Management, Fire Department, Information Technology	Medium	Low < $5,000	General Fund, Grants	Medium	Ongoing	Raised awareness of people who may determine to live in areas that are at risk for wildland fire.
Maintain a wildland fire response unit.	2014	Wildland Fire	Fire Department	High	High - $100,000	General Fund, Grants	High	Ongoing	Provides the City with an initial response unit as well as the ability to support neighboring jurisdictions with their response efforts.

Prohibit the use of fireworks in high risk areas.	2014	Wildland Fire	Fire Department	Low	Minimal	General Fund, Grants	Low	Ongoing	Fireworks restrictions in high risk areas help reduce the potential for ignition sources and the need for additional response units.
Training for firefighters in wildland firefighting.	2014	Wildland Fire	Fire Department	High	Medium - $50,000	General Fund, Grants	High	Ongoing	Continue providing training to firefighters in wildland fire so there are better able to assist if needed.
Maintain automatic/mutual aid agreements and assist neighboring jurisdictions as requested.	2014	Wildland Fire	Fire Department	Medium	Low - Minimal	General Fund, Grants	Medium	Ongoing	Having automatic and mutual aid agreements will help the community be more prepared with access to resources when needed. It will also make it easier to assist neighboring jurisdictions if requested
Rebate program to promote water conservation	2014	Drought	Public Works	Low	Low	Local	Low	Ongoing	The City offers rebates to persons who upgrade their existing infrastructure with new devices that use less water. This includes fixing leaking toilets and upgrading to low flow, installing smart irrigation systems, planting drought tolerant plants, etc. The results of these efforts should reduce the consumption of water by users in the community.
Development of a 5-year Water Conservation Plan	2014	Drought	Public Works	Medium	Low	Local	Low	Ongoing	
Offer Annual Sprinkler Maintenance Workshops to promote efficient and effective watering of landscapes.	2014	Drought	Public Works	Low	Low	Local	Low	Ongoing	Public education on how to maintain and operate a sprinkler system will help conserve water by avoiding waste from leaks and/or ineffective systems and practices.
Promotion of “Water Week” with elementary students to promote best management practices for water conservation.	2014	Drought	Public Works	Medium	Low	Local	Medium	Ongoing	Teaching elementary students about water conservation will help promote best management practices in the homes of residents and helps share information about how individuals can make a difference in conserving water.
Provide real-time water use data to customers	2014	Drought	Public Works	Medium	Medium	Local	Medium	Ongoing	Water users can monitor their own use of water resources in real time to help them

									make determinations about their water use practices.
Development of a Pandemic Response & Recovery Plan	2014	Pandemic	Administrative Services – Emergency management, Fire Department - EMS	Low	Medium	General Fund, Grants	Low	Ongoing	Having a response and recovery plan will help the City to be more prepared, identify potential protocols for response and implement strategies that prioritize public safety and help reduce the economic impacts on the City from the potential effects of a pandemic crisis.
Engage in the process to become a "Storm Ready Community" with the National Weather Service.	2014	Severe Weather	Administrative Services – Emergency Management, Public Works	Medium	Medium $25,000-$50,000	General Fund, Grants	Medium	Ongoing	Participation in the "Storm Ready Community" will help raise awareness of the dangers of severe weather and provide tools to the community to aid in preparing for and responding to severe weather events.
Promote public education in the community regarding severe weather. Post such information on the City's website.	2014	Severe Weather	Administrative Services – Emergency Management, Information Technology	Medium	Low < $5,000	General Fund, Grants	Medium	Ongoing	Dissemination of information raises public awareness, resulting in a more knowledgeable community that is prepared for potential threats. It also helps build community support for other hazard mitigation efforts such as strong building codes and enforcement of existing codes.
Support of community education programs that raise awareness and provide information to property owners on the dangers and risks of avalanches. Post such information on the City's website, including links to the Utah Avalanche Center.	2014	Avalanche	Administrative Services – Emergency Management, Information Technology	Medium	Low < $5,000	General Fund, Grants	Medium	Ongoing	Raised awareness of people who may desire to participate in activities that are at risk for avalanche.
Creation of a radon hazard map showing potential areas of the community that may be affected by radon.	2014	Radon	Administrative Services – Emergency Management, Information Technology, Development Services	High	Low < $5,000	General Fund	High	Ongoing	A map showing the extent of the hazard will be useful in helping residents determine if they should consider testing for radon and/or engaging in their own efforts to mitigate radon in their structures. The map will also help to raise awareness of the issue in the community.

Distribution of information on Radon. Post such information on the City's website.	2014	Radon	Administrative Services – Emergency Management, Information Technology	High	Low < $5,000	General Fund	Medium	Ongoing	Dissemination of information raises public awareness, resulting in a more knowledgeable community that is prepared for potential threats. It also helps build community support for other hazard mitigation efforts such as strong building codes and enforcement of existing codes such as the flood damage prevention ordinance.
Development of a Communications Response Team and Emergency Communications Plan	2014	All Hazards	Administrative Services, Police Department, Fire Department, Public Works	Medium	Medium >$50,000	General Funds, Grants	Medium	Ongoing	A communication response team will help to ensure that the City can develop and maintain a viable communication system that will enable the City to have communications capabilities after a significant event occurs.
Adoption and Enforcement of Building Codes	2014	All Hazards	Development Services	Medium	Medium	General Funds, Grants	Medium	Ongoing	Adopting and enforcing appropriate building codes will ensure that new construction projects will benefit from new technologies, construction design, and lessons learned from previous disasters.

Mitigation Table - Completed and Removed Actions

Category	Year Initiated	Action	Status	Comments
All Hazards	2009	1 – Evaluate vulnerability of critical communications systems	Completed	South Jordan evaluates areas of vulnerability and develops solutions to ensure communication systems or alternate solutions are viable Example: The development of a second / redundant radio system for the Police, Fire, and Public Works Departments
All Hazards	2009	1 – Utilize GIS to identify facilities and infrastructure at risk	Completed	In 2013 South Jordan GIS, Fire and Emergency and Risk Management personnel did an extensive hazard and risk assessment on all structures in the city to evaluate their level of risk
All Hazards	2009	2 – Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment	Completed	In 2013 South Jordan GIS, Fire and Emergency and Risk Management personnel did an extensive hazard and risk assessment on all structures in the city to evaluate their level of risk

		resources and redundancy, and adequate emergency procedures		
All Hazards	2009	2 – Incorporate information about cascading effects of hazards in education programs	Completed	Information is included in all presentations on the effects of cascading hazards
All Hazards	2009	4 – Utilize maps and similar products on County EM website and other media to educate public on areas at risk to hazards	Completed	South Jordan GIS personnel have compiled and made available hazard maps to help educate the public on potential hazards in the city
All Hazards	2009	2 – Ensure current hazard ordinances are available for viewing online	Completed	All current South Jordan ordinances are available online at: http://www.sterlingcodifiers.com/codebook/index.php?book_id=488
Dam Failure	2009	1 – Include dam inundation maps in current County, City and Special Service District Emergency Operations Plans	Completed	The inundation map for the dam at Oquirrh Lake is included in the City's Emergency Management Plans
Dam Failure	2009	2 – Utilize inundation maps to identify potential evacuation areas and routes	Completed	The inundation map for Oquirrh Lake has been considered in identifying potential evacuation routes, if needed
Drought	2009	1 – Set up livestock water rotation in areas of agricultural use	Not Completed	This is not applicable to South Jordan
Earthquake	2009	1 – Identify structures at risk to earthquake damage	Completed	In 2013 South Jordan GIS, Fire and Emergency and Risk Management personnel did an extensive hazard and risk assessment on all structures in the city to evaluate their level of risk
Earthquake	2009	2 – Research feasibility of an incentive program for retrofitting privately-owned buildings, particularly unreinforced masonry	Not Completed	South Jordan does not have funding to support this type of program. South Jordan does not intend to move this activity forward due to the very limited number of URM structures in the community and the lack of potential funding sources to support it
Earthquake	2009	3 – Complete seismic rehabilitation/retrofitting projects of public buildings at risk	Not Completed	Due to the age of the City's public buildings (most having been built in the last 15 years) there are no major retrofit or rehabilitation projects needed at this time in South Jordan
Earthquake	2009	1 – Provide educational materials to unreinforced masonry home and business owners	Not Completed	There are very few URM homes and businesses located in South Jordan that would make this activity cost effective for the City to engage in. South Jordan supports county level efforts to share this type of information

Earthquake	2009	1 – Procure Engineering Consultant to perform the nonstructural design and geotechnical assessment and review.	Not Completed / Not Applicable	Not applicable to South Jordan as the referenced dam is located in another jurisdiction.
Flooding	2009	1 – Assist Cities with NFIP application	Not Completed / Not Applicable	South Jordan has been a participating community in the NFIP since 1974
Severe Weather	2009	1 – Maintain Hazardous Weather Operations Plan according to StormReady requirements	Not Completed / Not Applicable	South Jordan does not have a Weather Operations Plan and does not participate in the StormReady program. This is a Salt Lake County level program
Severe Weather	2009	2 – Maintain Contact with NWS prior to re-application in 2010	Not Completed / Not Applicable	South Jordan does not have a Weather Operations Plan and does not participate in the StormReady program. This is a Salt Lake County level program
Severe Weather	2009	1 – Work with NWS to develop large event venue weather safety and evacuation procedures	Not Completed	South Jordan has not developed a large event venue weather safety plan and/or evacuation procedures with the NWS
Slope Failure	2009	1 – Develop protocol for working with State and Federal agencies in reducing the impact of post-fire debris flow hazard	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Slope Failure	2009	1 – Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	1 – Increase public awareness through “Firewise” program	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Educate homeowners on the need to create defensible space near structures in WUI	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	1 – Designate and promote county-wide annual initiative for clearing fuels	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Provide waste removal, such as chipping of green waste by public	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable

		works, following designated fuel clearing day/week		
Wildland Fire	2009	1 – Work with experts and communities to develop or update evacuation plans	Not Completed	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Evaluate transportation network and address needed improvements to facilitate evacuation and emergency response	Completed	South Jordan has an adequate transportation network to support evacuation and emergency response
Wildland Fire	2009	1 – Identify all facilities, businesses, and residences, particularly in the canyons, and assign addresses according to current county addressing standards	Completed	Addressing of structures in South Jordan is complete
Wildland Fire	2009	2 – Incorporate improved addresses in fire-dispatch and other databases	Completed	Addressing of structures in South Jordan is complete
Wildland Fire	2009	1 – Reduce fuels around publically owned structures	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Implement fire breaks and other protective measures	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	3 – Assess existing water flow capabilities, both public and private, and address deficiencies	Completed	The South Jordan water system meets and/or exceeds requirements for providing water flow for firefighting purposes in the City
Wildland Fire	2009	4 – Assist communities in developing Community Wildfire Protection Plans or similar plans	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	1 – Adopt the Utah Wildland-Urban Interface Code	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
All Hazards	2009	1 – Conduct an inventory and assessment of communications equipment and systems and identify needs	Completed	South Jordan has and will continue to improve and maintain its communication capabilities, but capabilities adequately meet the need of the department.

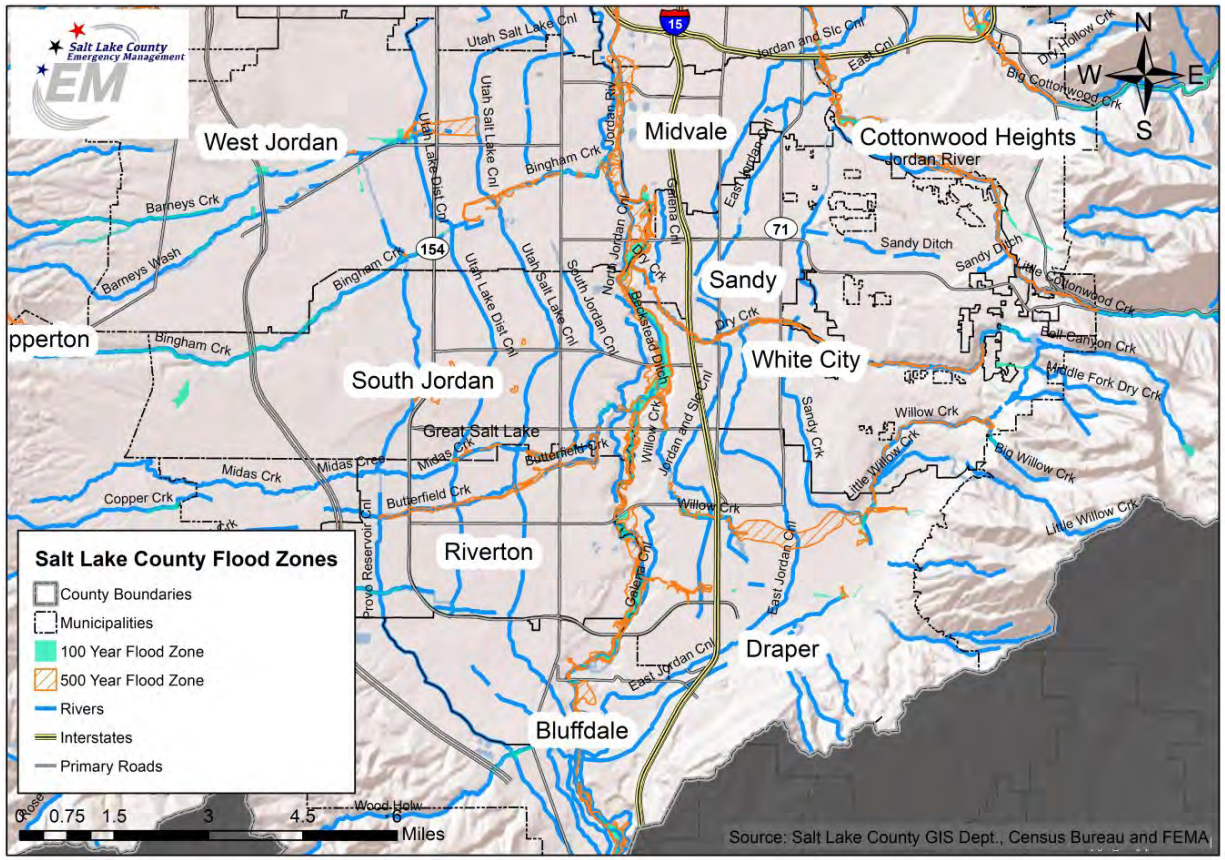
All Hazards	2009	2 – Conduct Training and awareness activities on communication equipment, tools, and systems	Completed	South Jordan has built the use of communication equipment into training and exercises.
All Hazards	2009	3 – Establish agreements to share communications equipment between agencies involved in emergency operations	Completed	While no formal agreements exist to share communications equipment, but communications equipment can be shared as part of other mutual aid agreements that are in place
All Hazards	2009	Establish redundancy for dispatch centers and other critical communications	Completed	South Jordan relies on the Valley Emergency Communications Center (VECC) for dispatch services. They coordinate with other PSAPS to provide redundancy.
All Hazards	2009	Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group	Completed	South Jordan has upgraded existing equipment and purchased new equipment to maintain operability
All Hazards	2009	1 – Establish a coordinating group to address geographic data issues	Completed/Ongoing	South Jordan GIS personnel actively participate in several coordinating groups that address issues associated with geographic data
All Hazards	2009	2 – Examine current data availability and sharing capabilities, evaluate needs, and identify shortcomings	Completed/Ongoing	South Jordan GIS personnel actively participate in several coordinating groups that address issues associated with geographic data
All Hazards	2009	3 – Update and expand data on hazards, critical facilities, and critical infrastructure according to assessed needs	Completed/Ongoing	South Jordan GIS personnel continue to develop and add to the geographic data as part of the City's overall geographic information systems
All Hazards	2009	4 – Provide centralized access to geographic data to emergency planners and responders	Completed	South Jordan GIS personnel make data available to first responders and others involved in emergency management efforts
All Hazards	2009	1 – Integrate existing hazard monitoring networks in emergency operations centers. Utilize sensors such as weather stations, stream gages, seismograph stations, road conditions, etc.	Completed	South Jordan has implemented the use of monitoring equipment such as stream gages, seismographs, SNOTEL sites to provide situational awareness and forecasting capabilities

All Hazards	2009	2 – Identify and implement additional hazard monitoring capabilities.	Completed	Example: The South Jordan emergency manager receives alerts from the USGS and NWS via text message and email
All Hazards	2009	1 – Compile inventory of mutual-aid agreements and memoranda of understanding (MOU) and identify deficiencies	Completed	South Jordan has formal agreements for Police, Fire, and Water
All Hazards	2009	2 – Pursue and implement needed mutual-aid agreements	Completed	South Jordan is currently working on participation in a new public works MAA
All Hazards	2009	1 – Establish and enforce appropriate planning, zoning, and building code ordinances	Completed	South Jordan enforces all current ordinances and building codes including ordinances like our Flood Damage Prevention and Land Disturbance ordinances.
Drought	2009	2 – Emergency Managers will coordinate with local water districts/public utilities to support ongoing conservation efforts	Completed	South Jordan has hired a Water Conservation Manager who coordinates with the Jordan Valley Water Conservancy District and leads the City's programs for water conservation
Drought	2009	3 – Investigate feasibility of implementing an incentive program to encourage the use of low-flow appliances and fixtures in homes and businesses	Completed	South Jordan has a variety of incentive programs that it offers to its residents related to water conservation.
Drought	2009	4 – Implement water-saving devices and practices in public facilities	Completed	South Jordan has implemented several projects including using secondary water to irrigate public parks instead of culinary water
Drought	2009	5 – Repair, maintain and improve water distribution infrastructure to prevent loss from leakage, breaks, etc.	Completed	The South Jordan Water Division responds immediately to all reports of leaks and performs regular system maintenance, including actively monitoring for leaks, theft of services, etc.
Drought	2009	6 – Coordinate public safety water use, such as hydrant testing	Completed	The South Jordan Water Division coordinates all water use, including the testing of hydrants in partnership with the fire department

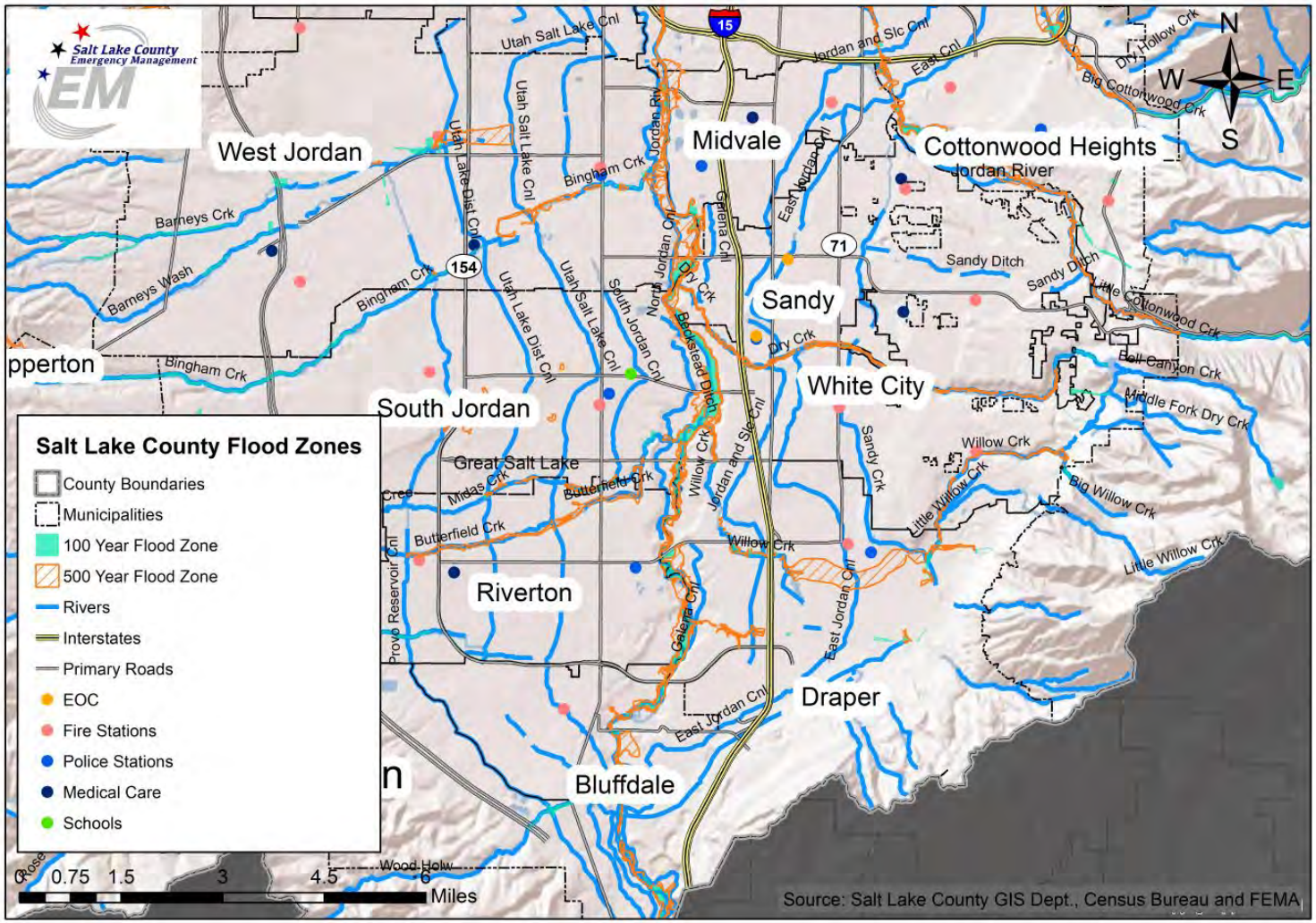
Drought	2009	7 – Provide information on landscaping alternatives for persons subject to green area requirements	Completed	South Jordan offers a variety of information and training classes on topics ranging from proper sprinkler use and maintenance to alternative plants and other vegetation that can be used.
Drought	2009	1 – Identify and assess structures for deficiencies	Completed	The City Engineering Division in cooperation with the Public Works Department regularly review and inspect City-owned infrastructure and make recommendations as needed
Severe Weather	2009	Meet with NWS representative on an annual basis to receive information on new services and alerts available	Completed	South Jordan participates in briefings provided by NWS representatives on an annual basis
Slope Failure	2009	1 – Utilize recommendations provided by the State Geological Hazards Working Group to address land-use and planning for new developments	Completed	South Jordan Engineering and Planning reviews recommendations as provided pertaining to development within the City
Wildland Fire	2009	2 – Define wildland-urban interface and develop digital maps of the WUI	Completed	South Jordan GIS and Fire Department have created maps indicating areas that may have an increased risk for wildfire.

Jurisdiction Maps

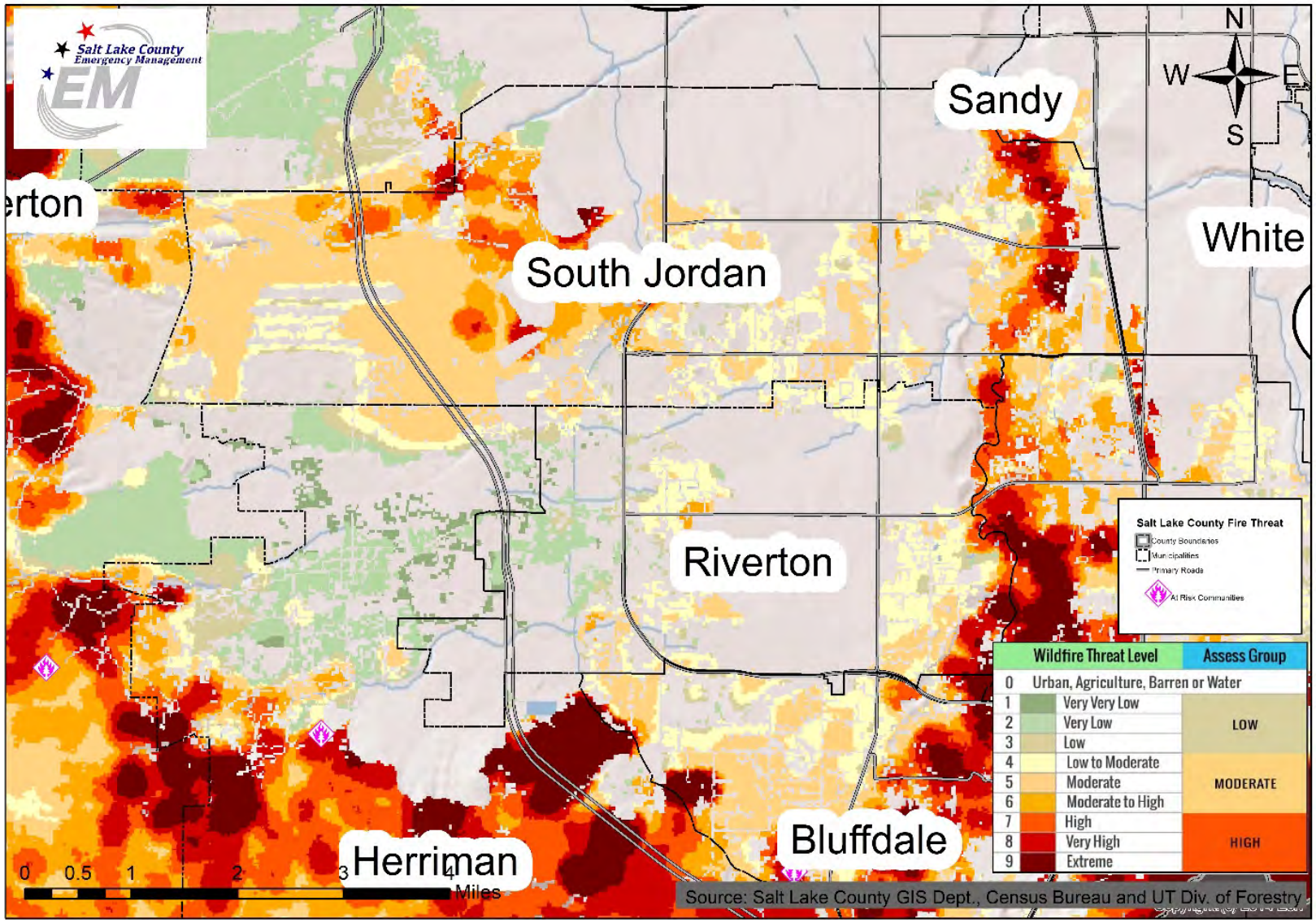
Map: 100 Year and 500 Year Flood Zone



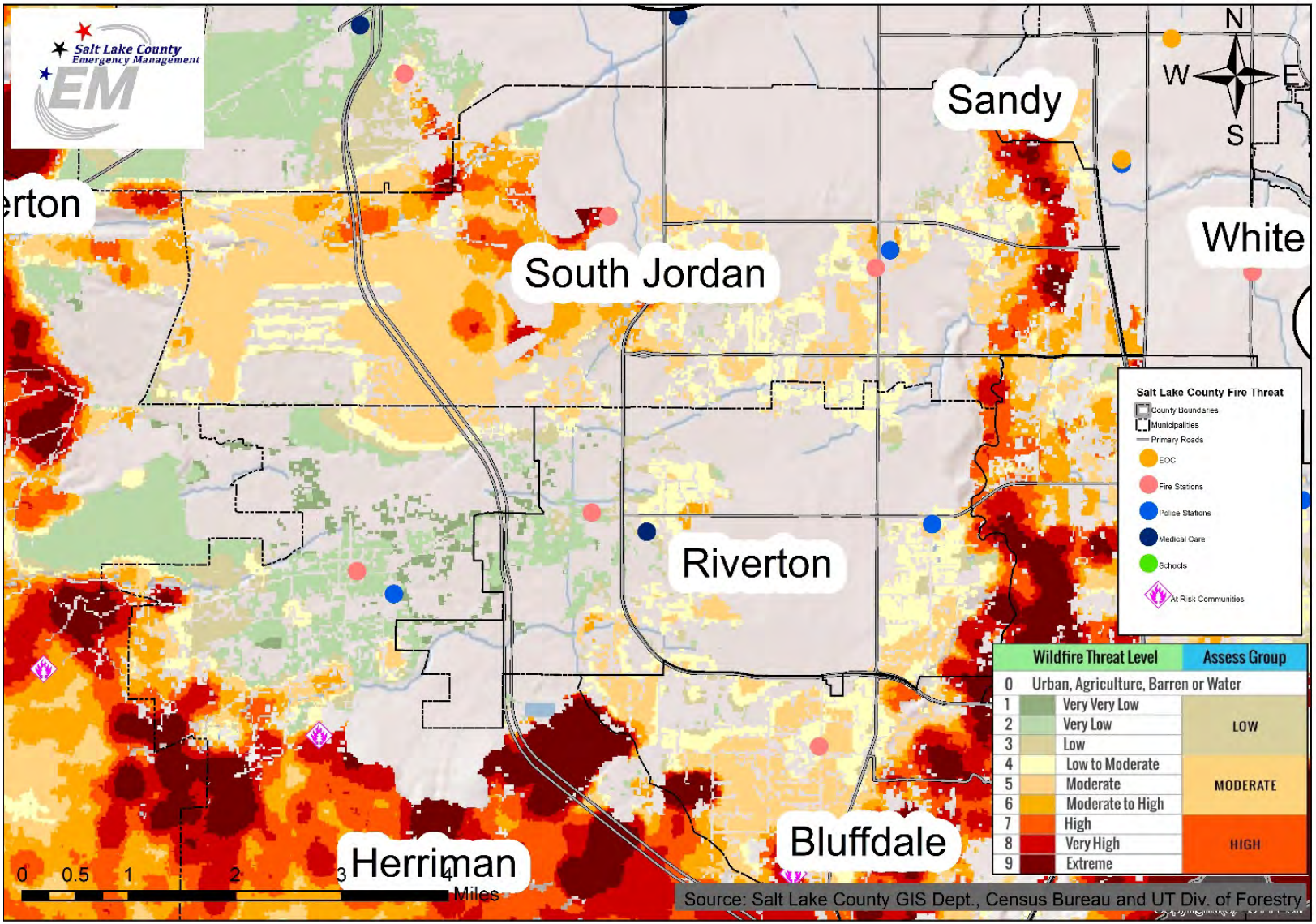
Map: 100 Year and 500 Year Flood Zone with Critical Facilities



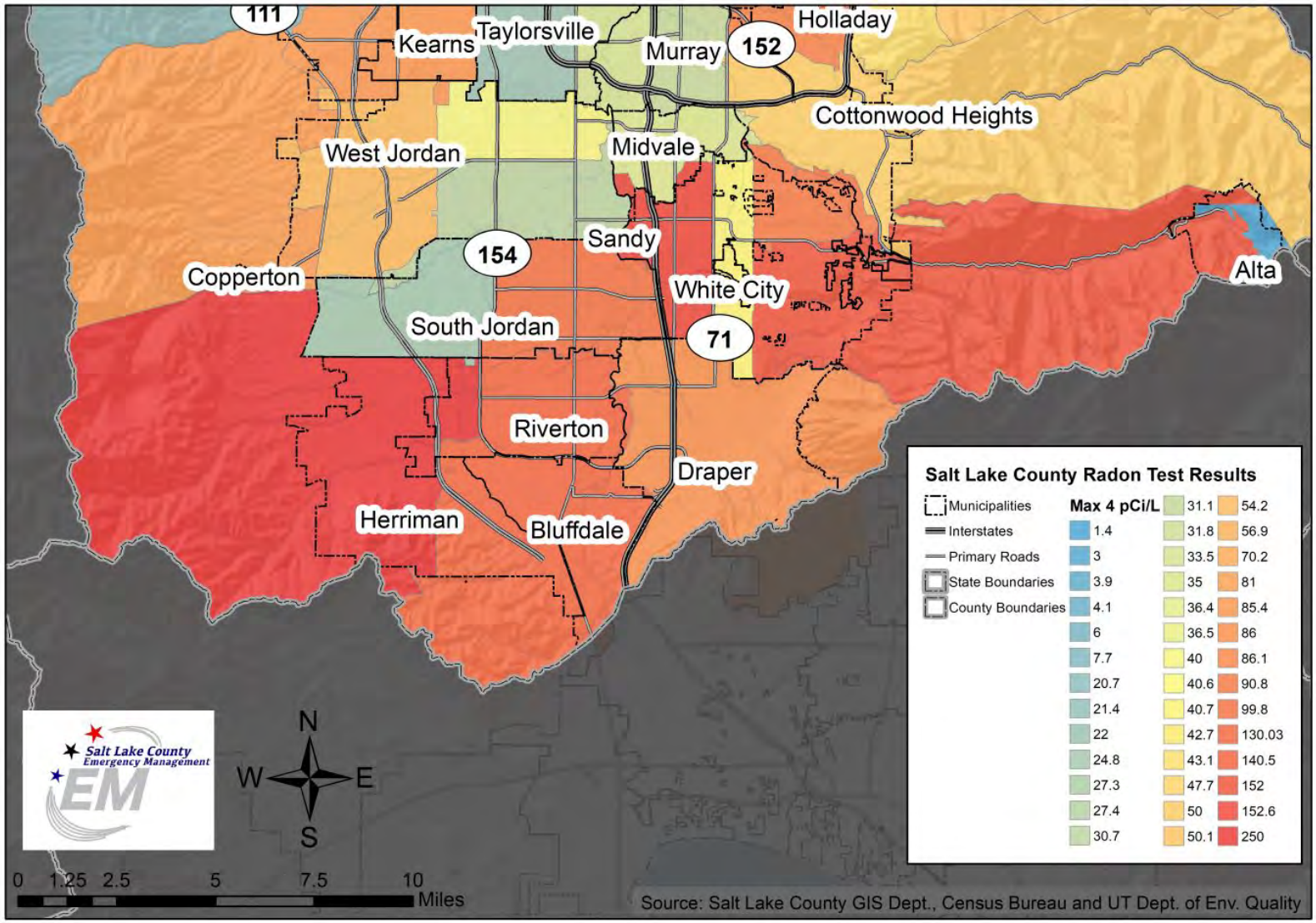
Map: Wildfire Threat Level



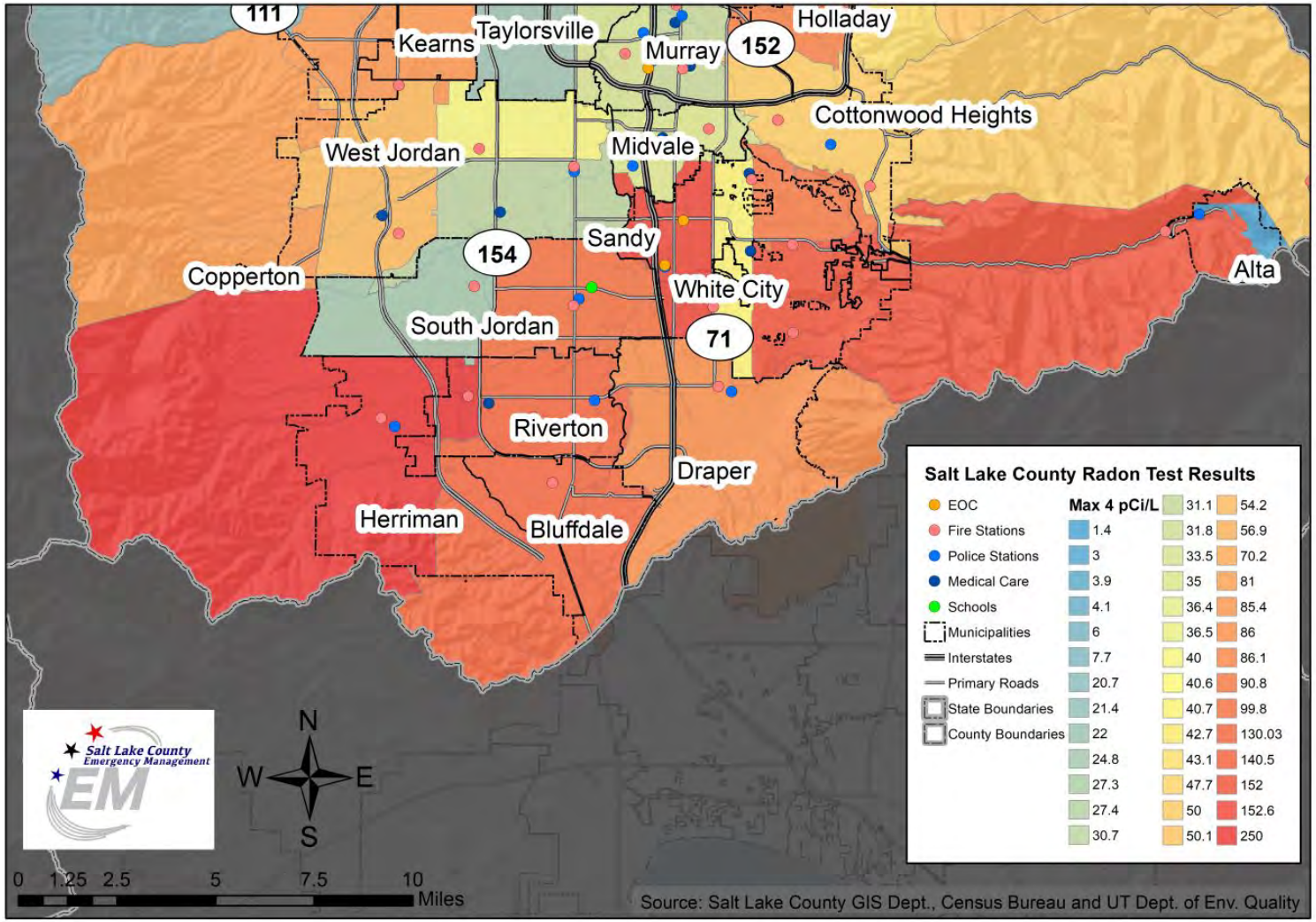
Map: Wildfire Threat Level with Critical Facilities



Map: Radon


111
Kearns
Taylorsville
Murray
152
Holladay
Cottonwood Heights
West Jordan
Midvale
Sandy
154
Copperton
White City
Alta
South Jordan
71
Riverton
Draper
Herriman
Bluffdale
Salt Lake County Radon Test Results
Municipalities
Interstates
Primary Roads
State Boundaries
County Boundaries
Max 4 pCi/L
1.4
3
3.9
4.1
6
7.7
20.7
21.4
22
24.8
27.3
27.4
30.7
31.1
31.8
33.5
35
36.4
36.5
40
40.6
40.7
42.7
43.1
47.7
50
50.1
54.2
56.9
70.2
81
85.4
86
86.1
90.8
99.8
130.03
140.5
152
152.6
250
Salt Lake County Emergency Management
EM
N
W
E
S
0 1.25 2.5 5 7.5 10
Miles
Source: Salt Lake County GIS Dept., Census Bureau and UT Dept. of Env. Quality

Map: Radon with Critical Facilities



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: City of South Salt Lake

Hazard Mitigation Plan Point of Contact

Primary Point of Contact
Name: Blaine Daimaru Title: Emergency Manager Department: Fire Address: 220 East Morris Ave. South Salt Lake, UT 84115 Office Phone: (801) 464-6726 Cell Phone: (801) 673-2390 Email Address: bdaimaru@southsaltlakecity.com Website: http://www.southsaltlakecity.com/department-listings/fire/communityeducation

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** 1938
- **Current Population:** 25,365 (Census v2018)
- **Population Growth:** The population has grown 7.6% from April 1, 2010 (23,574) to July 1, 2018 (Census).
- **Location and Description:** The City of South Salt Lake is located at the heart of Salt Lake County and is central to the region's employment, transportation, and government partners. The City occupies 7 square miles and shares borders with Salt Lake City, West Valley, and Unincorporated Salt Lake County.
- **Brief History:** Originally, South Salt Lake was made up of three distinct unincorporated areas: Millcreek to the north, Central Park and Southgate to the south. Jesse Fox Jr. developed the area South Salt Lake refers to as Central Park around 1890. It runs approximately from State Street to 300 East and 2500 South to 3000 South. On Thursday, September 29, 1938, a meeting was called to order at 8:30 p.m. by Robert R. Fitts. Also, in attendance at this meeting were Alma Kasteler, A.S. Dykman, Clyde H. Peck, and Ariel A. Jensen. The official resolution as passed by Salt Lake County creating the Town of South Salt Lake and appointing the first town board was read. Board members took their oath before Justice Herman Gygi. And so, it began, the Town of South Salt Lake with Mr. Fitts as the first town president. The town was created because of a need for a sewer system. Salt Lake City was going to annex the area in 1936 but couldn't get a sewer system to the area for several years. According to Mr. Fitts, the community needed other things as well, like a bank, post office, and fire department. After a close vote, residents approved incorporation. The sewer system was a Works Project Administration project. The deadline to file the sewer system plans was two days after the city was incorporated. The project began in 1939 at a cost of $462,000. The original boundary of South Salt Lake was from 5th East to 3rd West and 2100 South to the center of Millcreek stream. Over the years the population grew, businesses came, and schools were built. On August 1, 1950, the population was such that the Town of South Salt Lake became the City of South Salt Lake and declared a third-class city by the county. This changed the form of government to a mayor and city council. During his administration, Marlow Callahan went from Town President to the first mayor of The City of South Salt Lake. In the 1990s, South Salt Lake

annexed portions of unincorporated Salt Lake County to the south, and nearly doubled the boundaries of the City and population.

- **Climate:** The City of South Salt Lake has an average annual temperature of 52 degrees F and receives an average of 16.1 inches of rain. While the average temperature is relatively temperate, each season can bring unique and sometimes unpredictable weather patterns. During the summer months, the average temperature can exceed 90 degrees F. In the winter months the average temperature is 27 degrees F with temperatures dipping below well below during the night time hours.
- **Public Services:** The city has numerous departments, including the newly established Urban Livability Department. In addition to this department, others related to mitigation include work closely with other city departments; Community Development Department, Public Works, Police Department, Fire Department, City Attorney's Office, and the Salt Lake County Health Department (South Salt Lake).
- **Governing Body Format:** South Salt Lake City is divided into five geographic districts, with a council member representing each district. Additionally, there are two council members who represent the entire city as At Large representatives. The city also has a mayor. Additionally, South Salt Lake City is divided into five geographic districts, with planning commissioners representing each district. The city has a Redevelopment Agency (RDA), which is a tool used by local governments to clean up blight and to implement the development goals of communities. Each RDA consists of the elected council or commission which is the RDA Board by state statute. The RDA Board adopts the plans, policies, and budgets which are implemented by the agency. The city also has an award-winning youth city council is a city-sponsored organization made up of local high school students (South Salt Lake).
- **Development Trends:** The City is a major business provider of the County with over 2,000 businesses and brings approximately 40,000 workers to the City each day. Business areas account for approximately two-thirds of the land-use area of jurisdiction. The municipality is the crossroads for the region's transportation network. The major interstates of I-15 and I-80 intersect within the municipal boundaries. The City's residents are among the highest users of public transportation thanks to major bus routes, three light rail stations and three new stops as part of the South Salt Lake/Salt Lake City streetcar. The City is also the center for government, utility, and education. The State of Utah, Salt Lake County, Utah Transit Authority, and Granite School District have offices and key facilities in South Salt Lake which encompasses approximately 21% of the land in South Salt Lake. Due to the City's proximity to Salt Lake City and vast transit networks, the City has seen a substantial increase in homebuilding. Because the City is essential "built out" land is in short supply and the cost of land can be expensive. For this reason, most development in the City is more of urban nature with small-lot single-family detached homes, townhomes and multi-family development.

Capability Assessment

The city maintains a full-time staff of 0 and part-time staff of 2 individuals. The Emergency Manager is the city's designated Emergency Manager. Hazard Mitigation Planning efforts are led by the City's Elected and Current Administration.

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY				
	Local Authority Exists to Develop and Implement/ Enforce?	**A Jurisdiction-Specific Code, Ordinance and/or Requirement Currently Exists?**	**Rely on the County's Codes, Ordinances & Requirements**	**Comments**
Codes, Ordinances, & Requirements				
Building Code Development and Enforcement	Yes	Yes	No	
Zonings Ordinance(s)	Yes	Yes	No	
Subdivision Ordinance(s)	Yes	Yes	No	
Stormwater Management Program	Yes	Yes	Yes	
Floodplain Ordinance(s)	Yes	Yes	Yes	
Post Disaster Recovery Program and Ordinance(s)	Yes	No	Yes	
Real Estate Disclosure Ordinance(s)	Yes	No	-	
Growth Management	Yes	Yes	-	
Site Plan Review Requirements	Yes	Yes	-	

Planning Documents				
General or Comprehensive Plan	Yes	Yes	-	
Capital Improvement Plan	Yes	No	-	
Economic Development Plan	Yes	Yes	-	
Disaster Planning Documents				
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	Yes	-	
Post-Disaster Recovery Plan	Yes	No	-	
Continuity of Operations Plan	Yes	No	-	
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	Yes	Yes	-	

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State/Federal Sponsored Grant Programs	Yes

Development Impact Fees for Homebuyers or Developers	Yes
Other	-

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	Full Time	
Engineers or professionals trained in building or infrastructure construction practices	Yes	Full Time	
Planners or engineers with an understanding of natural hazards	Yes	Full Time	
Personnel skilled or trained in GIS applications	Yes	Full Time	
Emergency manager	Yes	Part Time	
Grant writers	No	NA	

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	Community Development
Who is your jurisdiction's floodplain administrator? (department/position)	None
Are any certified floodplain managers on staff in your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Yes/General Training
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**

Community Rating System (CRS)	No	-	-
Public Protection/ISO	No	-	-
NWS StormReady	No	-	-

Jurisdiction-Specific Hazards and Risks

The *Natural Hazard Events Table* lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 23 policies were in force with total coverage of $6,845,200 and total written premium and FPF of $26,854 (FEMA, 2019).
- The City of South Salt Lake does participate in the National Flood Insurance Program (CID # 490219) and the last FIRM map for the area was issued on 08/02/12 (FEMA, 2019).
- The city will continue to participate in the NFIP through various efforts including but not limited to floodplain management, ordinance development and review, technical assistance, compliance inspections, and community education on flood hazards.

TABLE: RECENT NATURAL HAZARD EVENTS
(NOAA Data with additions from the jurisdiction representatives)

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Heavy Snow	7 inches of snow		3/28/2019	
High Wind	widespread power outages		6/12/2017	$40,000 in property damage
Winter Storm	8 inches of snow		1/20/2017	
Hail	penny-sized hail		8/10/2016	
Winter Storm	6 inches of snow and hundreds of car accidents		3/2/2015	
Winter Storm	6 inches of snow		12/7/2013	
High Wind	Power lines were knocked down in multiple locations, most notably in South Salt Lake		4/8/2013	$35,000 in property damage
Winter Storm	8 inches of snow		1/27/2013	

Winter Storm	14 inches of snow		1/10/2017	$1,000 in property damage
Thunderstorm Wind	Thunderstorm winds caused a 20' tree to fall on a 2 story home in South Salt Lake.		7/30/2018	$10,000 in property damage

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	**Number in Community**
Members of the community over 65 years old	1,657
Members of the community under 18 years old	6,082
Members of the community that identify as having disability status	2,394
Members of the community that speak English less than "very well"	3,503
Members of the community living below the poverty line	5,240
The number of mobile homes in the community	98
Members of the community without health insurance	5,125
Occupied housing units with tenants without a vehicle	1,005
Housing units without heating fuel	67

*County jail is located in South Salt Lake. The Homeless Resource Center will be in the city.

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

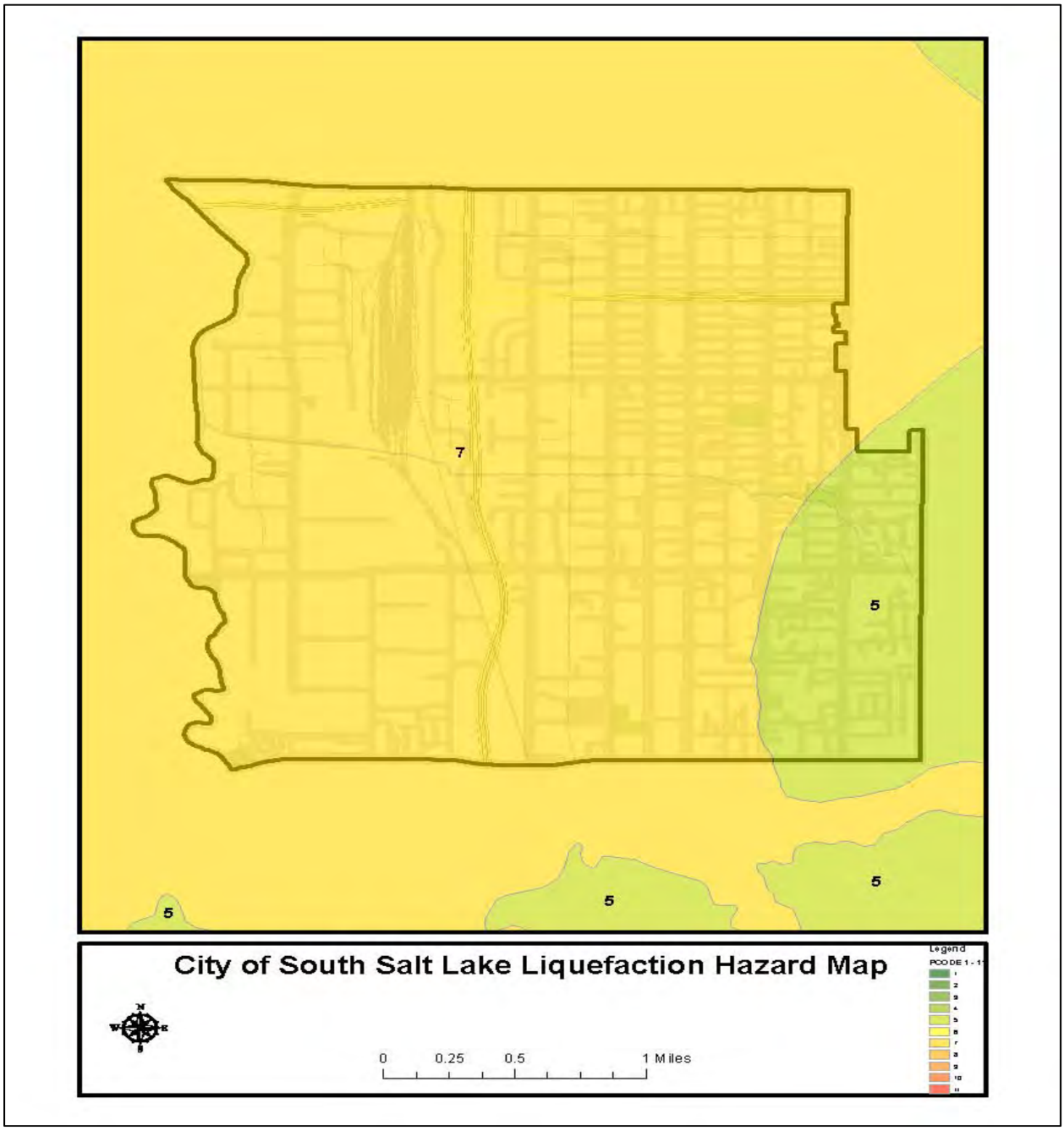
Extreme Temperatures: Temperatures above 95 and below 32 are not uncommon in the area. These temperatures can yield negative health consequences. The area has a high number of individuals without health insurance and accessing adequate treatment could be a problem.

Winter Storms: These events are not uncommon and can highly impact traffic and business continuity. South Salt Lake has a very high vulnerable population.

High Wind: These events can knock out power, which for sustained periods can yield negative health effects, especially for elderly members of the community.

Hazardous Materials: New apartment complexes are being built in the city, and some are in close proximity to the rail line.

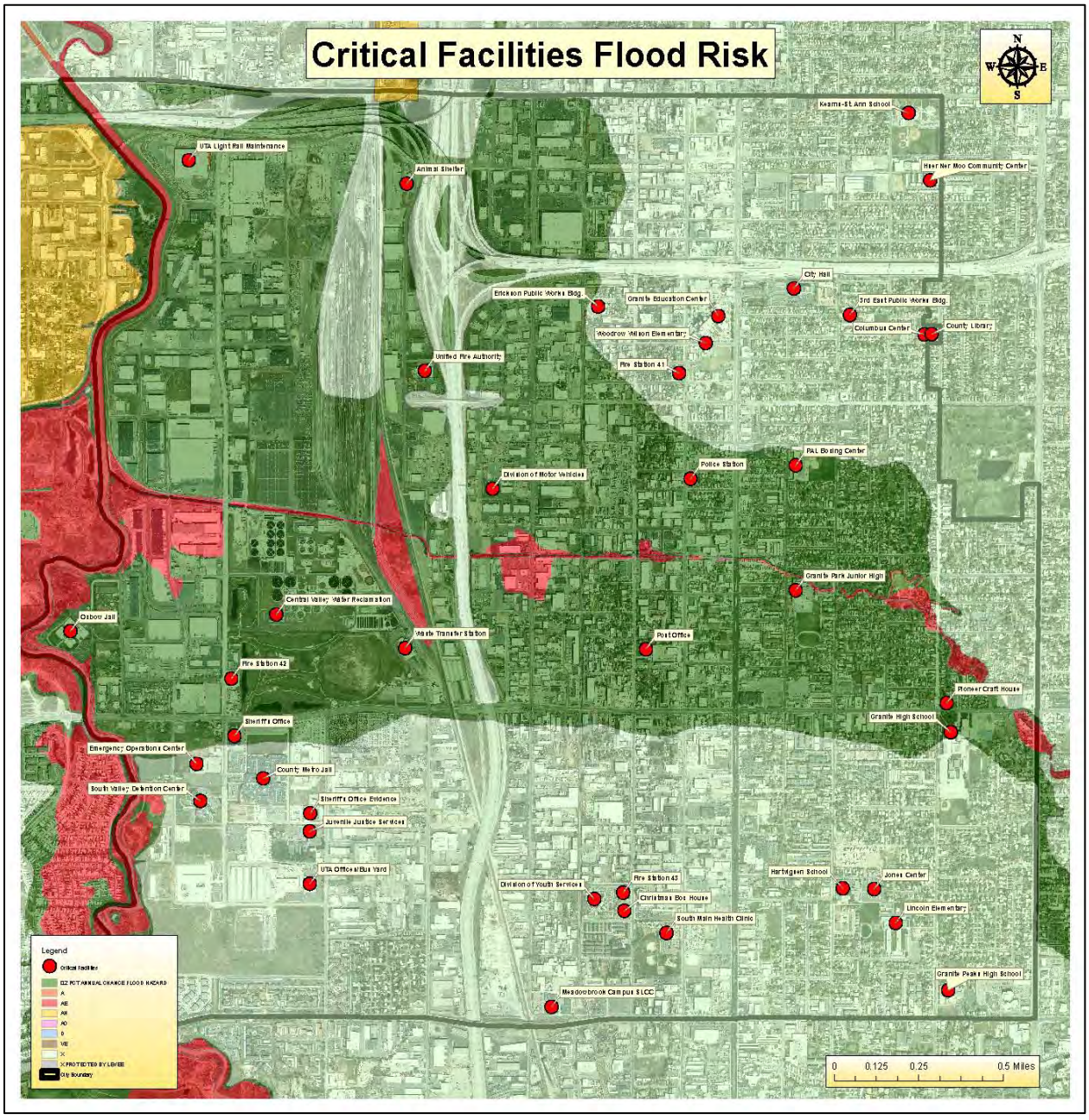
Earthquake (Seismic Hazard):



Liquefaction Hazard and Damage Estimates:

- PCODE 5: $450,839,620
- PCODE 7: $3,091,978,400

Flooding:

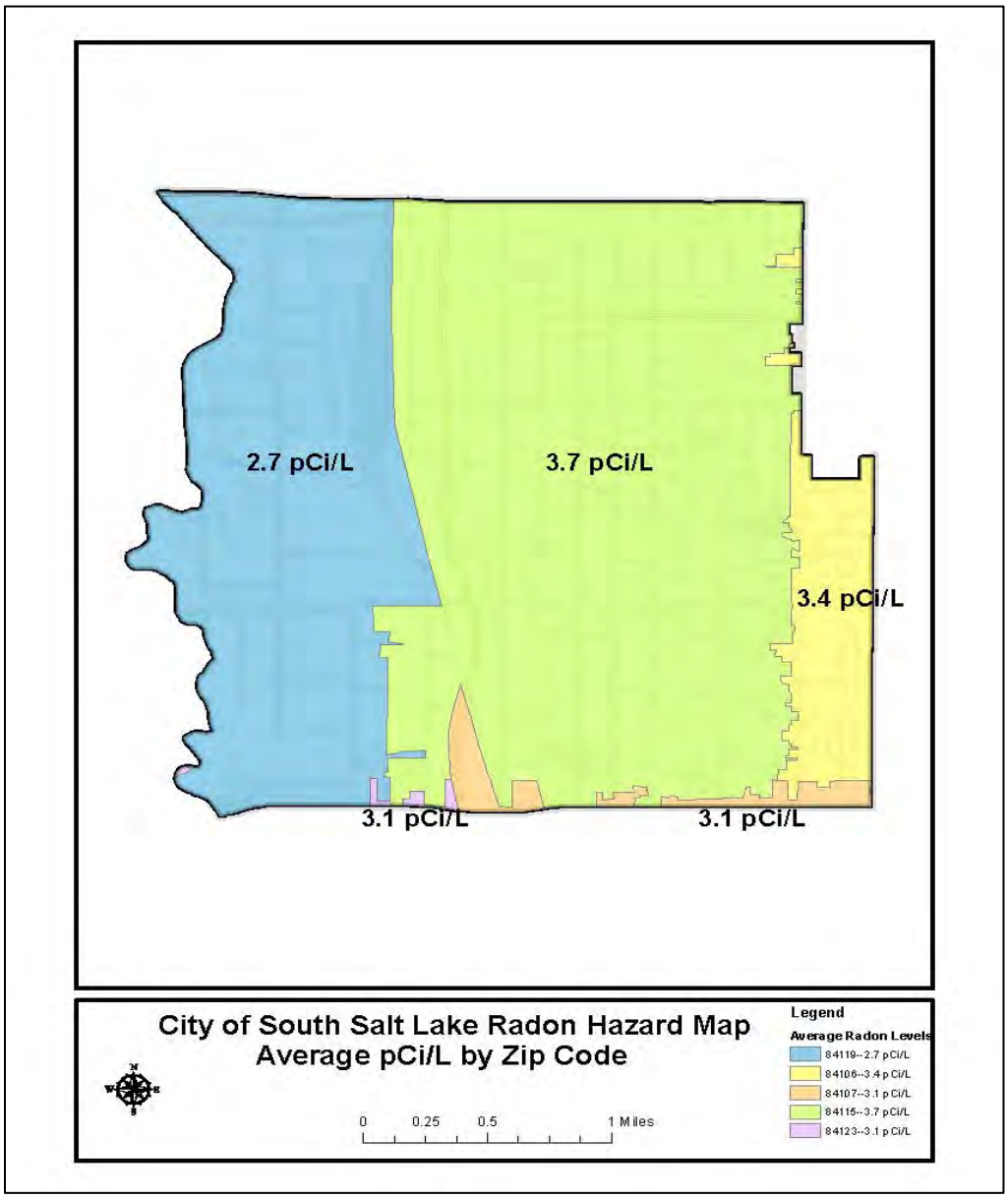


Flood Hazard:

- AE flood zone: $111,586,350
- .2 flood zone: $1,465,354,400
- X flood zone: $2,129,059,520

Radon: Radon is a radioactive gas that has no smell, taste, or color. It comes from the natural decay of uranium that is found in nearly all rock and soil. When geologic conditions are favorable, the potential increases for high indoor levels of radon.

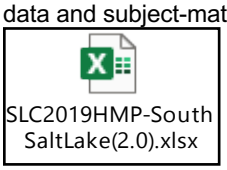
Outdoor radon levels never reach dangerous concentrations because air movement scatters radon into the atmosphere. Radon is a hazard in buildings because the gas collects in enclosed spaces. Radon decays into radioactive particles that can be trapped in the lungs when inhaled. These particles release small bursts of energy that damage lung tissue and may lead to lung cancer. Radon is the second leading cause of lung cancer in the United States.



Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Severe Winter Weather	3	16	48
Severe Weather	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Flooding	2	19	38
Cyber Attack	2	17	34
Hazardous Materials Incident	2	14	28
Drought	2	14	28
Terrorism	1	25	25
Radon	3	6	18
Dam Failure	1	17	17
Tornado	1	12	12
Civil Disturbance	1	8	8
Wildfire	1	3	3
Landslide and Slope Failure	1	0	0
Avalanche	1	0	0

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.



Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)	Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1	Avalanche	No Impact	0	0
Dam Failure	Low	1	Dam Failure	Medium	2	6
Drought	Medium	2	Drought	High	3	9
Civil Disturbance	Low	1	Civil Disturbance	Low	1	3
Cyber Attack	Medium	2	Cyber Attack	High	3	9
Earthquake	Medium	2	Earthquake	High	3	9
Flooding	Medium	2	Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2	Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Low	1	Landslide and Slope Failure	No Impact	0	0
Public Health Epidemic/ Pandemic	Medium	2	Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3	Radon	Medium	2	6
Severe Weather	High	3	Severe Weather	High	3	9
Severe Winter Weather	High	3	Severe Winter Weather	High	3	9
Terrorism	Low	1	Terrorism	Medium	2	6
Tornado	Low	1	Tornado	Low	1	3
Wildfire	Low	1	Wildfire	No Impact	0	0

Probability [No Weighted Factor]	**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)	**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)	**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)	**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)	**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	No Impact	0	0		Avalanche	No Impact	0	0
Dam Failure	Medium	2	2		Dam Failure	High	3	6
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Low	1	2
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	High	3	6
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	No Impact	0	0		Landslide and Slope Failure	No Impact	0	0
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Low	1	2
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	No Impact	0	0		Wildfire	No Impact	0	0

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**	**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)	**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)	**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)	**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)	**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)
Avalanche	No Impact	0	0
Dam Failure	Medium	2	2
Drought	Medium	2	2
Civil Disturbance	Medium	2	2
Cyber Attack	Medium	2	2
Earthquake	High	3	3
Flooding	Medium	2	2
Hazardous Materials Incident	Medium	2	2
Landslide and Slope Failure	No Impact	0	0
Public Health Epidemic/ Pandemic	High	3	3
Radon	No Impact	0	0
Severe Weather	Low	1	1
Severe Winter Weather	Medium	2	2
Terrorism	High	3	3
Tornado	Medium	2	2
Wildfire	No Impact	0	0

Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Unlikely	0	0
Dam Failure	Medium	2	6
Drought	Low	1	3
Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	6
Earthquake	High	3	9
Flooding	Low	1	3
Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	9
Radon	Unlikely	0	0
Severe Weather	Unlikely	0	0
Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	9
Tornado	Unlikely	0	0
Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Low potential that this hazard could be catastrophic (Impact Factor = 1)
Unlikely—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - Ongoing Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Conduct an inventory and assessment of communications equipment and systems and identify needs	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	All Hazards	So. S.L. Emergency Management		Medium	Low	Local	Medium	Ongoing	So. S.L. continues to improve and maintain its communication capabilities.
Conduct Training and awareness activities on communication equipment, tools, and systems	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	All Hazards	So. S.L. Emergency Management		High	Low	Local	High	Completed /Ongoing	So. S.L. participates in training and exercises designed to practice using communication tools and equipment. Example: using amateur radio volunteers to support special events like the 4TH of July Celebration to exercise its communication equipment as well as to train and practice.

Establish agreements to share communications equipment between agencies involved in emergency operations	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	All Hazards	So. S.L. Emergency Management	Communications	Medium	Low	Local	Medium	Ongoing	No formal agreements exist to share communications equipment, but communications equipment can be shared as part of other mutual aid agreements that are in place
Establish notification capabilities and procedures for emergency personnel	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	All Hazards	So. S.L. Emergency Management	Communications	High	Low	Local	High	Ongoing	So. S.L. continues to work on notification tools and procedures to be in harmony with changing technology and equipment
Evaluate vulnerability of critical communications systems	2009	1 – Improve and maintain communications capabilities for emergency operations 1.2 – Maintain communications capabilities for critical facilities	All Hazards	Public Works and Communications	So. S.L. Emergency Management	High	Low	Local	High	Ongoing	So. S.L. evaluates areas of vulnerability and develops solutions to ensure communication systems or alternate solutions are viable
Establish a coordinating group to address long-term communication needs and	2009	1 – Improve and maintain communications capabilities for emergency operations	All Hazards	So. S.L. Emergency Management	Communications	Medium	Low	Local	Low	Ongoing	No formal coordinating group exists yet, but So S.L. engages in discussions with other jurisdictions

implementation strategies		1.3 – Conduct communications Strategic Planning									and the county regarding this issue
Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group	2009	1 – Improve and maintain communications capabilities for emergency operations 1.3 – Conduct communications Strategic Planning	All Hazards	Communications	So. S.L. Emergency Management	High	Low	Local	High	Ongoing	So. S.L. has upgraded existing equipment and purchased new equipment to maintain operability
Utilize GIS to identify facilities and infrastructure at risk	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	All Hazards	GIS	So. S.L. Emergency Management	High	Medium	Local	High	Ongoing	So. S.L. GIS, Fire and Emergency and Risk Management personnel are working on a risk assessment on all structures in the city to evaluate their level of risk
Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment resources and redundancy, and adequate	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	All Hazards	Public Works	So. S.L. Emergency Management, GIS, and Fire	High	Medium	Local	High	In Process	So. S.L. GIS, Fire and Emergency and Risk Management personnel are working on a risk assessment on all structures in the city to evaluate their level of risk

emergency procedures											
Pursue and implement needed mutual-aid agreements	2009	4 – Improve response capabilities through mutual-aid agreements 4.1 – Utilize mutual-aid agreements in accordance with National Incident Management System (NIMS) requirements	All Hazards	So. S.L. Emergency Management		Medium	Low	Local	Medium	Completed / Ongoing	So. S.L. is currently working on participation in a new public works MAA
Provide education regarding all natural hazards through live trainings, as well as web-based, print and broadcast media	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – establish a comprehensive public education program	All Hazards	So. S.L. Emergency Management		Medium	Low	Local	Medium	In Process	So. S.L. Emergency Management is meeting with groups to discuss the hazards in the community and what residents can do to be prepared
Develop education programs to target specific groups including homeowners, developers, schools and people with special needs	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – Establish a comprehensive public education program	All Hazards	So. S.L. Emergency Management		Medium	Low	Local	Medium	Ongoing	So. S.L. Emergency Management is meeting with groups to discuss the hazards in the community and what residents can do to be prepared

Provide information on landscaping alternatives for persons subject to green area requirements	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	Drought	So. S.L. Emergency Management		Medium	Low	Local	Low	Ongoing	So. S.L. encourages water conservation
Identify structures at risk to earthquake damage	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	Earthquake	Public Works	So. S.L. Emergency Management, GIS, and Fire	High	Medium	Local	High	In Process	So. S.L. GIS, Fire and Emergency and Risk Management personnel are working on a risk assessment on all structures in the city to evaluate their level of risk
Determine potential flood impacts and identify areas in need of additional flood control structures	2009	1 – Protection of life and property before, during and after a flooding event 1.2 – Encourage appropriate flood control measures, particularly in new developments	Flood	City Engineer and Public Works		High	Medium	Local	High	Completed / Ongoing	The City Engineer and Public Works Director regularly review the impact of development and the need for flood control infrastructure and make recommendations as needed
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or	2009	1 – Protection of life and property before, during and after a flooding event 1.2 – Encourage appropriate flood	Flood	City Engineer and Public Works		High	High	State and Federal Grants such as HMA	High	Completed / Ongoing	The City Engineer and Public Works Director oversee the construction of flood control structures

other flood control structures		control measures, particularly in new developments									
Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of storm water and flood control systems	2009	1 – Protection of life and property before, during and after a flooding event 1.3 – Provide maintenance, repairs and improvements to drainage structures, storm water systems and flood control structures	Flood	Public Works		High	Medium to High	Local and as needed, apply for state and federal grants	High	Completed / Ongoing	The Public Works Department continues to maintain and repair all drainage systems in the City
Identify and assess structures for deficiencies	2009	2 – Reduce threat of unstable or inadequate flood control structures 2.1 – Reduce potential for failure of flood control structures	Flood	City Engineer and Public Works		High	Medium	Local	High	Completed / Ongoing	The City Engineering Office in cooperation with the Public Works Department regularly review and inspect City-owned infrastructure and make recommendations as needed
Modify structures as needed to address deficiencies	2009	2 – Reduce threat of unstable or inadequate flood control structures 2.1 – Reduce potential for	Flood	City Engineer and Public Works		High	Medium to High	Local and as needed, apply for state and federal grants	High	Completed / Ongoing	The City Engineering Office in cooperation with the Public Works Department make repairs as needed to deficient structures

		failure of flood control structures									
Train and Certify City Inspectors to Conduct Pre/Post-Disaster Damage Assessment	2014	Goal 1 Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Earthquake	South Salt Lake Community Development Department		High	Low - $2,500	General Fund	High	As trainings become available in the local area	This will improve response and the recovery during an event through pre-training and certifications. Currently our staff is certified in the model codes (International Building, Plumbing, Mechanical, International Residential and NFPA Electrical code). Specific training will enhance the individuals responsible for preforming the assessment of structures and facilities impacted by disasters. City inspectors will play a vital role in pre-disaster building assessment for city owned public buildings by training on potential seismic issues. Pre-training is vital for both response and recovery to reduce in loss of life, relocate populations, and

											ensure in the rebuilding of the local economies.
Conduct a Seismic Vulnerability Assessment of City owned critical facilities	2014	Goal 2 Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Earthquake	South Salt Lake Community Development Department		High	Medium - Inspector Salary	General Fund	High	Ongoing	The city is interested in preforming a building-specific, seismic vulnerability assessment of city-owned critical facilities, and to include the infrastructure. Included in this assessment will be recommended mitigation alternatives that meet the goals and objectives of this plan. This will prevent the loss of human life, economic and property loss to City owned facilities
Conduct a Geotechnical Study	2014	Goal 1 Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Problem Soils	South Salt Lake Community Development and Public Works departments		High	High	Paid for by developer.	High	Ongoing	The city requires a soils investigation report referred to as “Geotechnical Study” on most large building or structures. Geotechnical studies play a major role for site development projects. This study

		Goal 2 Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.									has been required for the better part of five years. Two conditions play a substantial part in South Salt Lake City soil make up, ground water and lake bottom type soils. Much of our city is located on or close to an aquifer. The City and developer know what types of soils that are being built upon. An engineer is makes recommendations for structural and soil improvements.

Mitigation Table - Completed and Removed Actions

Category	Year Initiated	Action	Status	Comments
All Hazards	2009	1 – Integrate existing hazard monitoring networks in emergency operations centers. Utilize sensors such as weather stations, stream gages, seismograph stations, road conditions, etc.	Not Addressed	Funding constraints
All Hazards	2009	2 – Identify and implement additional hazard monitoring capabilities.	Not Addressed	Funding constraints
Dam Failure	2009	1 – Include dam inundation maps in current County, City and Special Service District Emergency Operations Plans	Not Applicable	This is not applicable to So. S.L.

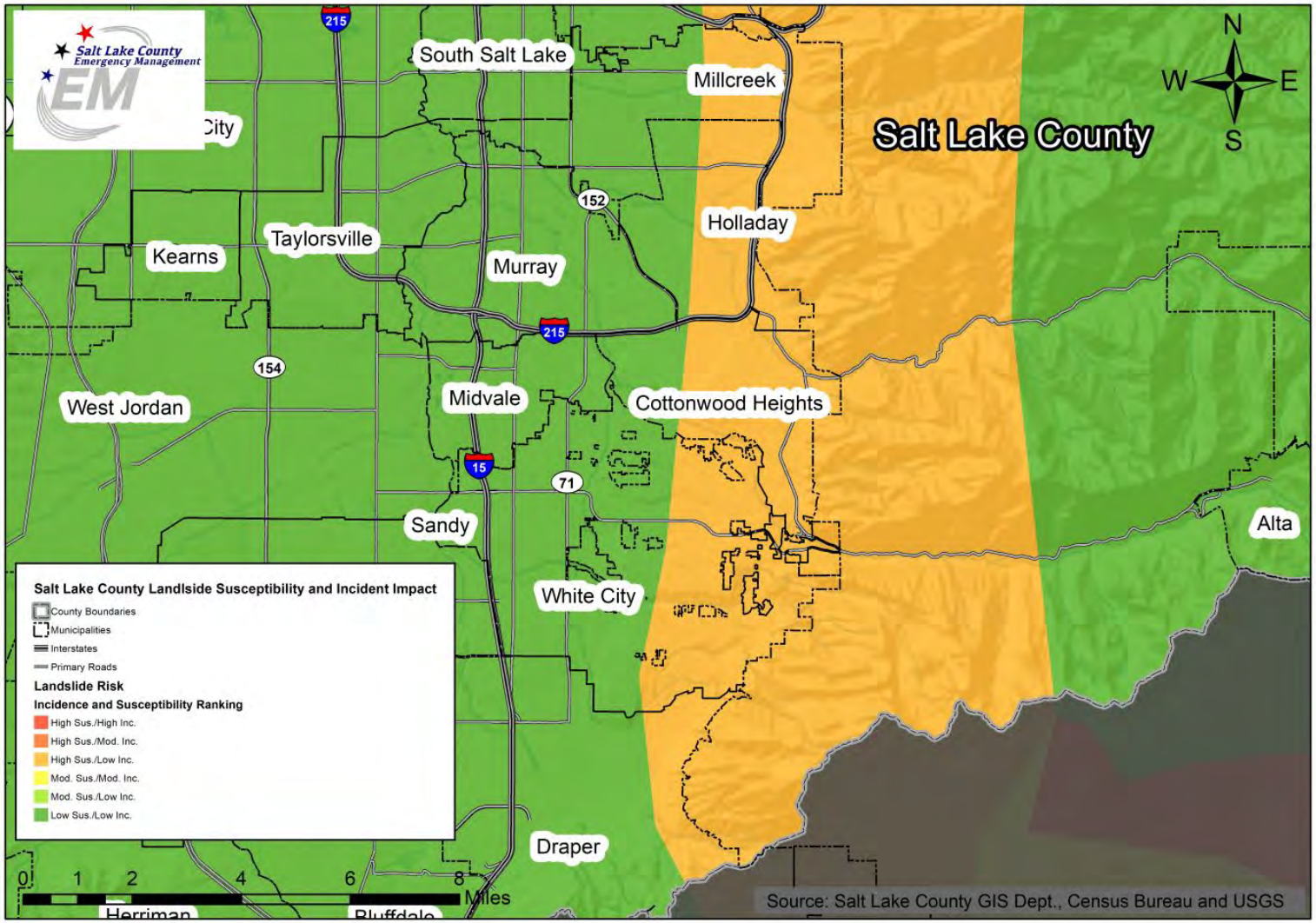
Dam Failure	2009	2 – Utilize inundation maps to identify potential evacuation areas and routes	Not Applicable	Coordinate through other GIS initiatives
Drought	2009	3 – Investigate feasibility of implementing an incentive program to encourage the use of low-flow appliances and fixtures in homes and businesses	Not Applicable	Funding constraints
Drought	2009	1 – Set up livestock water rotation in areas of agricultural use	Not Applicable	This is not applicable to So. S.L.
Drought	2009	1 – Coordinate with water districts to plan for, develop and/or expand secondary water	Not Applicable	This is not applicable to So. S.L.
Earthquake	2009	2 – Research feasibility of an incentive program for retrofitting privately-owned buildings, particularly unreinforced masonry	Not Applicable	No Research
Earthquake	2009	3 – Complete seismic rehabilitation/retrofitting projects of public buildings at risk	Not Addressed	Funding constraints
Earthquake	2009	1 – Provide educational materials to unreinforced masonry home and business owners	Not Addressed	Focus on other educational outreach
Earthquake	2009	1 – Procure Engineering Consultant to perform the nonstructural design and geotechnical assessment and review.	Not Applicable	Funding constraints
Flooding	2009	1 – Assist Cities with NFIP application	Not Addressed	City participates in NFIP
Flooding	2009	2 – Encourage Communities to actively participate in NFIP	Not Addressed	City participates in NFIP
Severe Weather	2009	1 – Maintain Hazardous Weather Operations Plan according to StormReady requirements	Not Applicable	So. S.L. does not have a Weather Operations Plan and does not participate in the StormReady program. This is a Salt Lake County level program
Severe Weather	2009	2 – Maintain Contact with NWS prior to re-application in 2010	Not Applicable	So. S.L does not have a Weather Operations Plan and does not participate in the StormReady

				program. This is a Salt Lake County level program
Severe Weather	2009	1 – Meet with NWS representative on an annual basis to receive information on new services and alerts available	Not Applicable	Coordinate with County
Severe Weather	2009	2 – Assist NWS in making other agencies and departments aware of available resources	Not Applicable	Coordinate with County
Severe Weather	2009	1 – Assist Forest Service Utah Avalanche Forecast Center and other organizations in promoting avalanche hazard awareness for backcountry users	Not Applicable	Coordinate with County
Severe Weather	2009	1 – Work with NWS to develop large event venue weather safety and evacuation procedures	Not Applicable	Coordinate with County
Slope Failure	2009	1 – Develop protocol for working with State and Federal agencies in reducing the impact of post-fire debris flow hazard	Not Applicable	This is a very low probability event for the City and not applicable
Slope Failure	2009	1 – Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential	Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	1 – Increase public awareness through “Firewise” program	Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Educate homeowners on the need to create defensible space near structures in WUI	Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	1 – Designate and promote county-wide annual initiative for clearing fuels	Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	1 – Work with experts and communities to develop or update evacuation plans	Not Completed	This is a very low probability event for the City and not applicable
Wildland Fire	2009	1 – Identify all facilities, businesses, and residences, particularly in the canyons, and	Completed	Addressing of structures in So. S.L. is complete

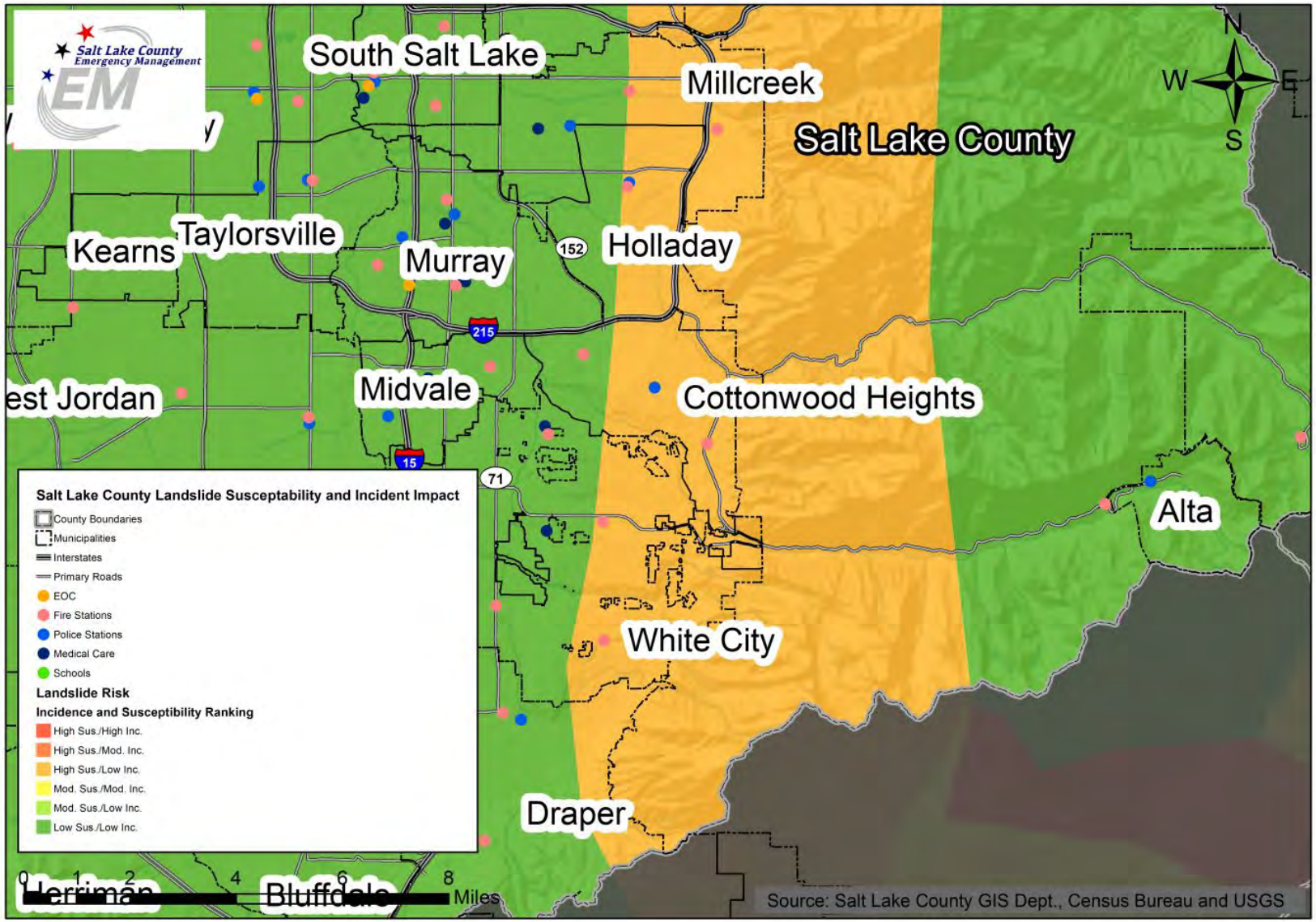
		assign addresses according to current county addressing standards		
Wildland Fire	2009	2 – Incorporate improved addresses in fire-dispatch and other databases	Completed	Addressing of structures in So. S.L. is complete
Wildland Fire	2009	1 – Reduce fuels around publically owned structures	Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Implement fire breaks and other protective measures	Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	3 – Assess existing water flow capabilities, both public and private, and address deficiencies	Completed	The So. S.L. water system meets exceeds requirements for providing water flow for firefighting purposes in the City
Wildland Fire	2009	4 – Assist communities in developing Community Wildfire Protection Plans or similar plans	Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	1 – Adopt the Utah Wildland-Urban Interface Code	Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Define wildland-urban interface and develop digital maps of the WUI	Not Applicable	This is a very low probability event for the City and not applicable

Jurisdiction Maps

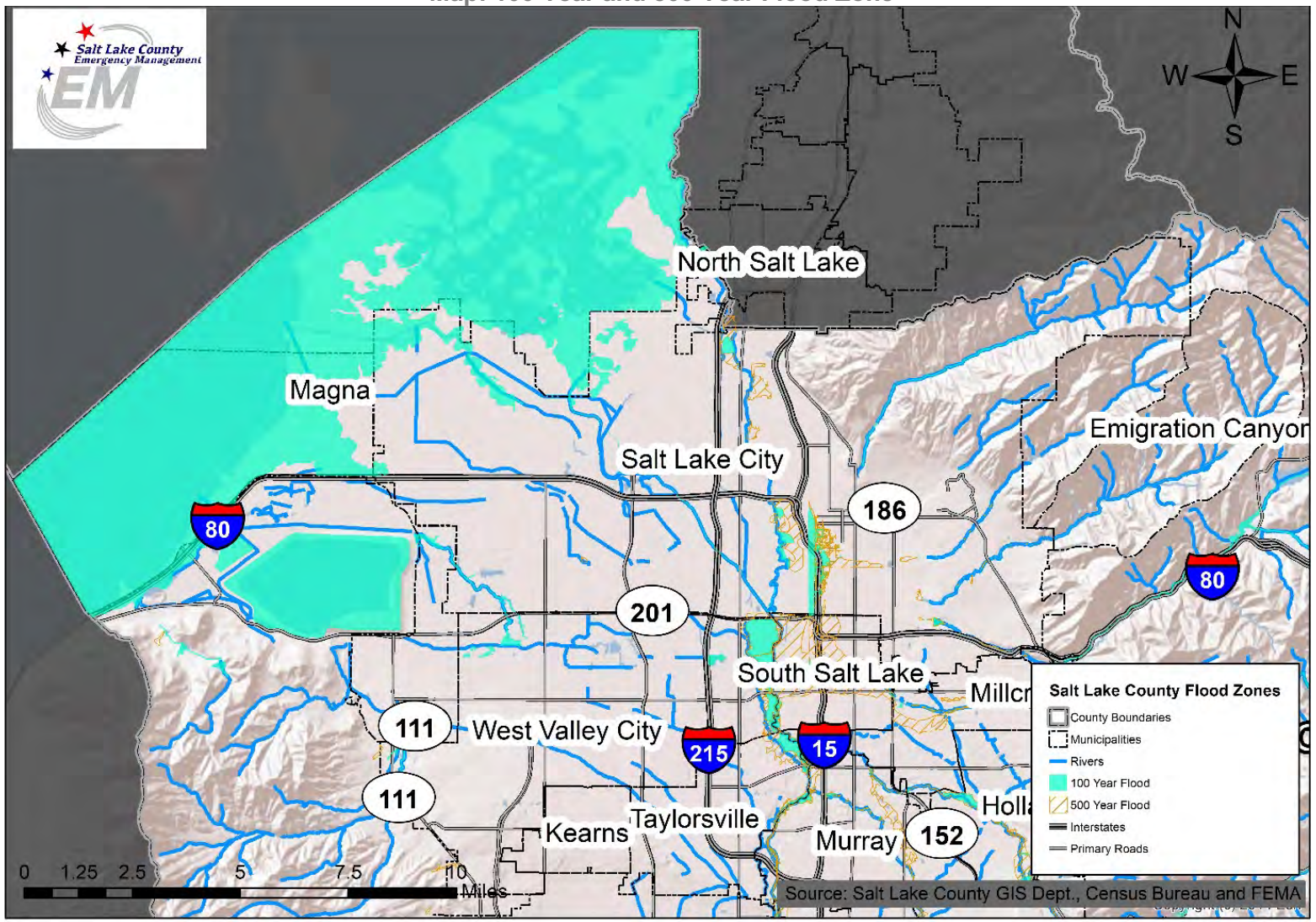
Map: Landslide Susceptibility and Incident Impact Potential



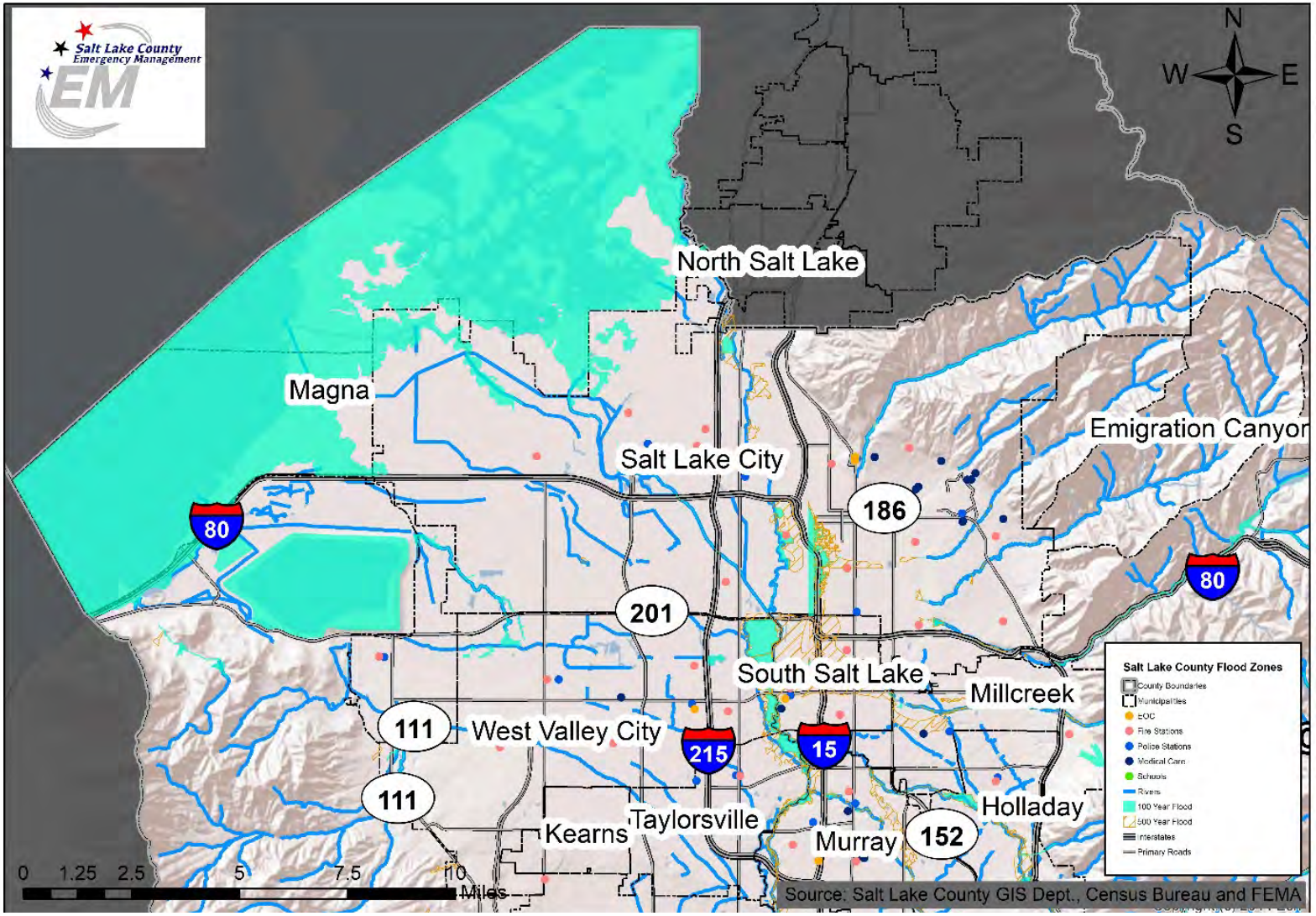
Map: Landslide Susceptibility and Incident Impact Potential with Critical Facilities



Map: 100 Year and 500 Year Flood Zone



Map: 100 Year and 500 Year Flood Zone with Critical Facilities

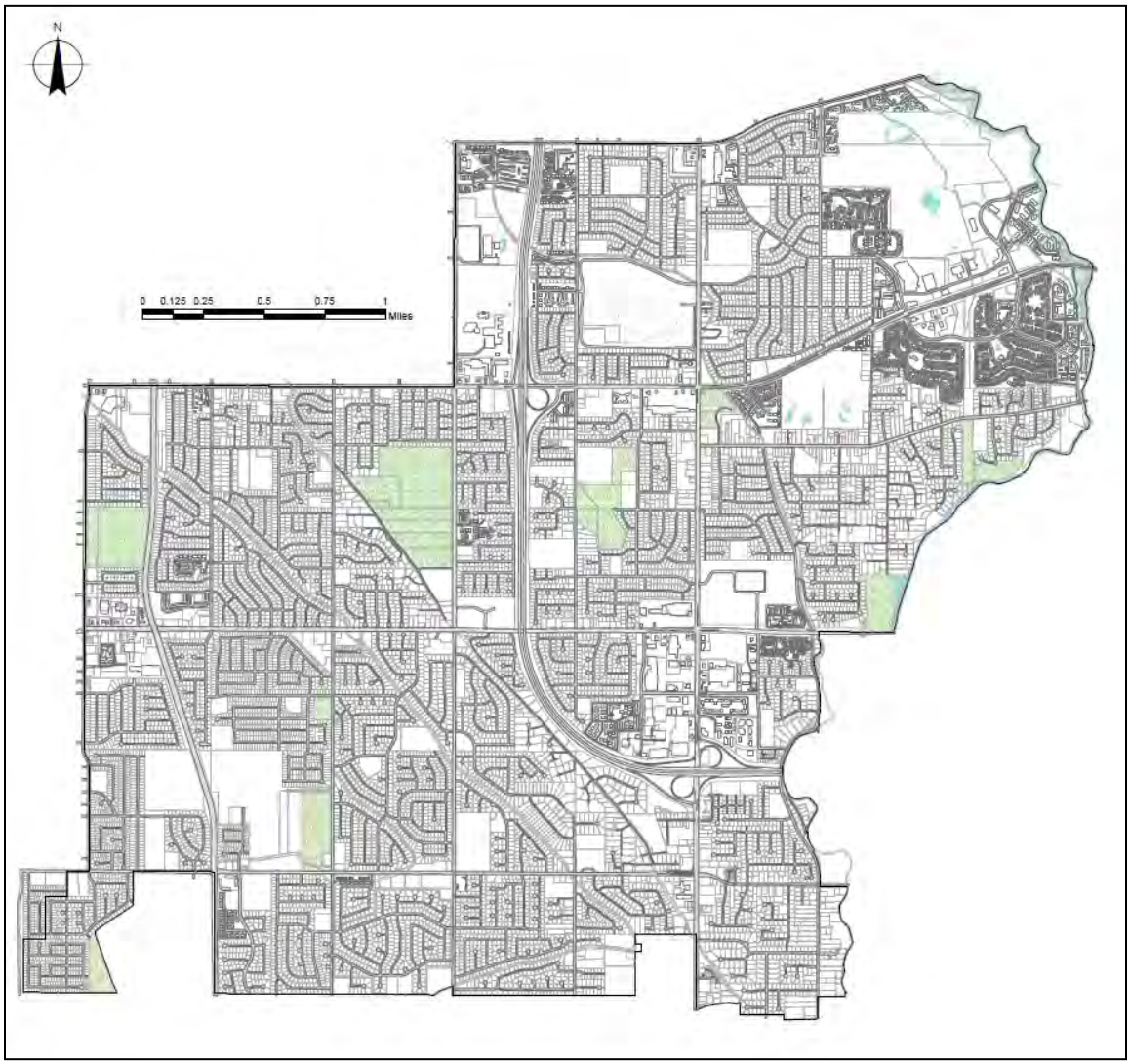


2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: City of Taylorsville

Hazard Mitigation Plan Point of Contact

Primary Point of Contact
Name: Donny Gasu Title: Emergency Response Coordinator Department: Emergency Preparedness Address: 2600 West Taylorsville Blvd. Office Phone: (801) 955-2092 Cell Phone: (801) 707-1724 Email Address: dgasu@taylorsvilleut.gov Website: https://www.taylorsvilleut.gov/government/emergency-preparedness



Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** July 1, 1996
- **Current Population:** 60,192 (Census v2018)
- **Population Growth:** The population grew 2.6% from April 1, 2010 (58,691) to July 1, 2018 (Census).
- **Location and Description:** The City of Taylorsville is located in the center of the Salt Lake Valley lying just west of the Jordan River covering 10.8 square miles. The City is encircled by neighboring jurisdictions including West Jordan, West Valley, and Murray Cities as well as an unincorporated area, Kearns. In the near distance, the city is propped central to the Wasatch and Oquirrh Mountain ranges. Much of the land is dedicated to developed residential and commercial use while large areas still remain open.
- **Brief History:** Named after the prominent Utah figure, John Taylor who resided in what would become Taylorsville during the 1880s, the first settlers arrived in Taylorsville in 1848 utilizing the close access to the Jordan River to water their crops. The town slowly grew through the 19th century in areas known as Taylorsville, Bennion, and Kearns. Much of the area was purchased by the federal government for a military training facility during WWII which brought with it much of the infrastructure including water and sewage. In the 1980s many businesses began to develop in the area of Taylorsville bringing with them larger amounts of residents. Because of the increase in population, residents became concerned for the high growth rates affecting other aspects including public safety. Later in 1995, residents in Taylorsville, Bennion, and Kearns voted with a 70% majority to incorporate which was later completed in 1996 during the State of Utah's centennial celebrations making Taylorsville "Utah's Centennial City."
- **Climate:** The City of Taylorsville has an average annual temperature of 53.1°F and receives 14.7 inches of precipitation.
- **Public Services:** The City offers many emergency preparedness programs, including a CERT, amateur radio emergency communications, and CPR classes
- **Governing Body Format:** Taylorsville has an elected mayor and 5 elected council members. Additionally, the city has a Youth City Council (Taylorsville).
- **Development Trends:** Recently, an LDS temple was built in the city. While most of the City's land has already been developed and/or dedicated to a specific purpose, the community has continued to grow. Over the past quarter-century, the population has continued to grow at a steady rate, albeit much slower than many western cities in the County. Taylorsville is proud to have the head offices of Salt Lake Community College at its Taylorsville Redwood Campus where thousands of students are able to receive their secondary education in many trade and traditional fields. Businesses like American Express, Sorenson Research Park, Utah Department of Transportation, Nelson Laboratories as well as others are all found within the City and provide wonderful employment opportunities to many Taylorsville residents and others in the neighboring communities. To that end, the city has rolled out a "20/20 Vision" for the Year 2020 and beyond. That vision focuses on new business and economic growth taking place across the city, as well as development opportunities and projects on the horizon. It includes efforts to bring new business and housing to the city, plans for prime development locations, transportation and land use (Taylorsville).

Capability Assessment

Regulatory Tool	Yes/No
General plan	Yes
Zoning ordinance	Yes
Subdivision ordinance	Yes
Site plan review requirements	Yes
Floodplain ordinance	Yes
Other special purpose ordinance (stormwater, water conservation, wildfire)	Yes
Building code	Yes
Fire department ISO rating	Yes
Erosion or sediment control program	Yes
Stormwater management program	Yes
Capital improvements plan	Yes
Economic development plan	Yes
Local emergency operations plan	Yes
Flood Insurance Study or other engineering study for streams	Yes

Jurisdiction-Specific Hazards and Risks

The *Natural Hazard Events Table* lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 15 policies were in force with total coverage of $3,558,000 and total written premium and FPF of $5,267 (FEMA, 2019).
- The City of Taylorsville does participate in the National Flood Insurance Program (CID # 490248) and the last FIRM map for the area was issued on 09/25/09 (FEMA, 2019).
- To date, the City of Taylorsville does not have repetitive loss properties.
- The City's Community Development Director oversees enforcement of floodplain management requirements adopted by the City, including regulating new construction in Special Flood Hazard Areas (SFHAs); Floodplain identification and mapping, including any local requests for map updates; description of community assistance and monitoring activities.

TABLE: RECENT NATURAL HAZARD EVENTS
(NOAA Data with additions from the jurisdiction representatives)

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Flash Flood		-	9/11/2019	-
Heavy Snow	5 inches	-	3/28/2019	-
Heavy Snow	9 inches	-	3/13/2019	-
Heavy Snow	7 inches	-	3/1/2019	-
Heavy Snow	18 inches	-	2/3/2019	-
Hail	0.75 diameter	-	8/22/2018	-
Heavy Snow	14 inches	-	2/18/2018	-
Lightning Strike & Flash Flood	2 injured	-	7/26/2017	8,750,000 in property damage
Heavy Snow	7 inches	-	2/21/2017	-
Heavy Snow	8.5 inches	-	12/24/2015	-
Flash Flood	Heavy rain caused flash flooding in Taylorsville during the early morning hours of July 4. The flooding occurred at the Atherton Park Apartments, where water flowed into 24 basement-level apartments. Only four of these apartments experienced significant damage, but approximately 75 people were temporarily displaced by the flooding.	-	7/4/2013	$40,000 in property damage
Thunderstorm Winds	Multiple large trees were knocked down in West Jordan, South Jordan, and Taylorsville,	-	6/12/2013	$50,000 in property damage

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
	including a few that fell on houses and caused damage to roofs.			
Flash Flood	In Taylorsville, at least a half dozen homes had flooded basements near the intersection of 5400 South and 3200 West. Water caused a sinkhole to form in the roadway around 6200 South and 2700 West, buckling and collapsing the street.	-	7/26/2011	$350,000 in property damage

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community
Members of the community over 65 years old	6,889
Members of the community under 18 years old	16,056
Members of the community that identify as having disability status	6,114
Members of the community that speak English less than "very well"	4,609
Members of the community living below the poverty line	6,753
The number of mobile homes in the community	901 (additionally 5 reside in a boat, RV, van, or equivalent)
Members of the community without health insurance	8,272

Occupied housing units with tenants without a vehicle	1,007
Housing units without heating fuel	45

Jurisdiction-Specific Hazards and Impacts Summary

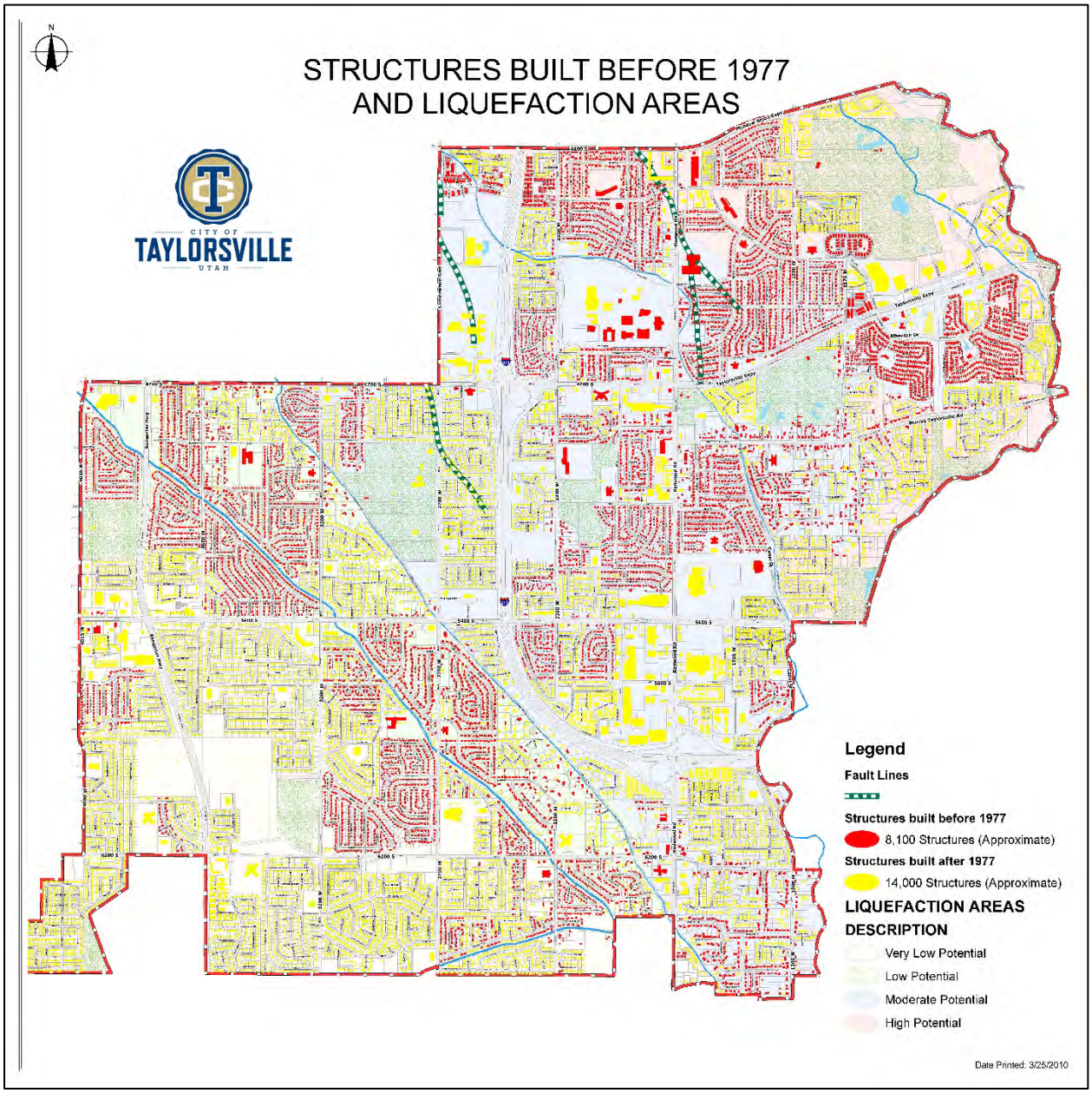
Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Drought: The City of Taylorsville can have large variance in the temperature and precipitation from season to season. High heat and low precipitation as seen in the past can cause a shortage of water to the residents and businesses in the area. Businesses and residents are encouraged to be conservative in their landscaping and maintenance of their green spaces particularly in periods of lower water availability.

Extreme Temperatures: The City of Taylorsville can have large variance in the temperature and precipitation from season to season. High heat and low precipitation as seen in the past can cause a shortage of water to the residents and businesses in the area. Businesses and residents are encouraged to be conservative in their landscaping and maintenance of their green spaces particularly in periods of lower water availability.

Earthquake: Of significant concern, many high priority public and private buildings and many critical infrastructure facilities are located within or across the major fault zones in the region. Buildings built prior to 1972 are constructed in a fashion more susceptible to seismic activity. These facilities include very large waterlines, large irrigation canals, utilities, railroads and major transportation routes. However, potential damage is not limited to fault zone areas. Fine-grained, lake-bottom sediments are common in Taylorsville and are susceptible to liquefaction-induced ground failure during a large earthquake. Each incident may require a unique response from the City and in the instance of a major earthquake outside assistance will be required.

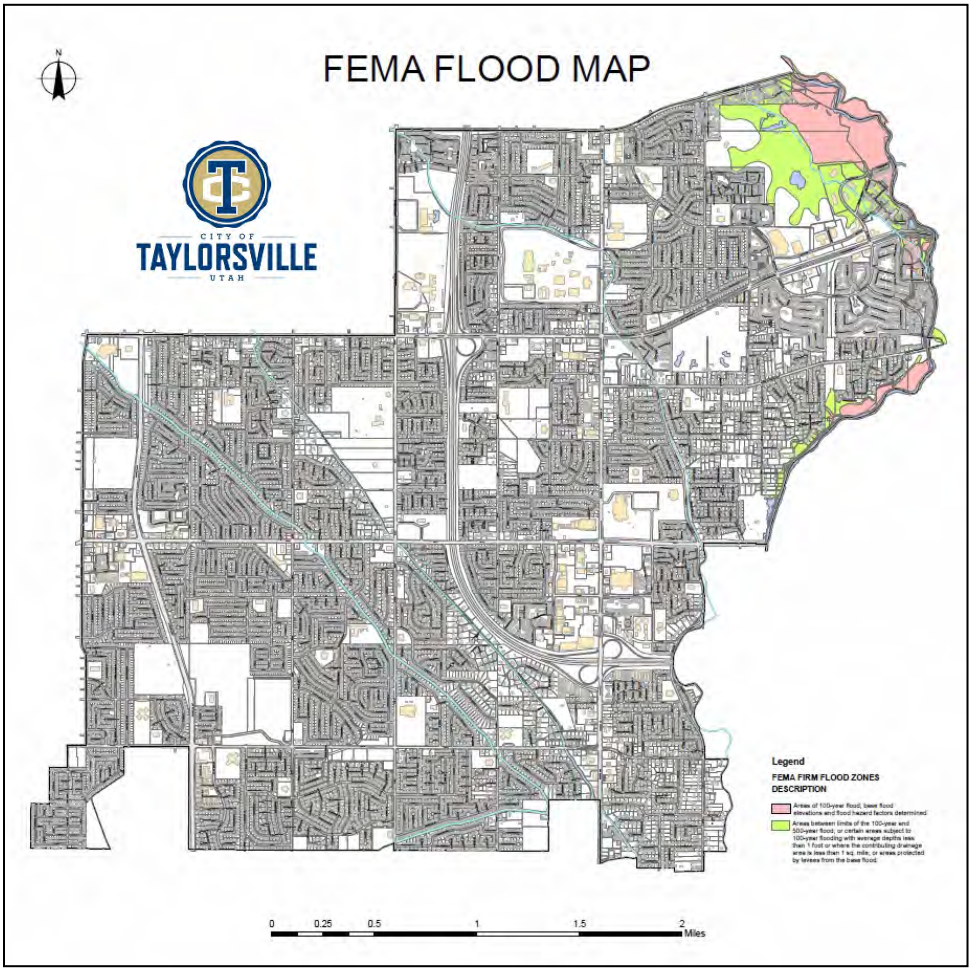
Figure. The City of Taylorsville – Earthquake Vulnerability



Flooding: Although located in a semi-arid region, the City of Taylorsville is subject to thunderstorms and snowmelt flooding. Significant flooding occurred in the Salt Lake Valley in 1983 and to a lesser extent in 1984, and again in 2011 resulted in the construction of some sediment basins, installation of stream-bank protection, and the cleaning of stream channels to reduce flood hazards. Flood plains along the Jordan River and its tributaries have been rated for expected flood heights by the Federal Emergency Management Agency (FEMA) and areas susceptible to flooding have been delineated on the Federal Insurance Rate Maps (FIRM). These maps are updated as development occurs and channel obstructions, culvert modifications, and other changes alter potential flood heights and velocities. The development ordinances of the city require geotechnical studies to identify areas of shallow groundwater, artesian wells, and other

water hazards. During high snow and rainfall years, the groundwater table can move closer to the surface. Flooding can also result from leakage of unlined irrigation canals, flood irrigation practices, and septic tank drain fields. The Jordan River runs along much of the northeastern border of the City. This poses a threat to many homes and areas built along that stretch. Parts of the area also are impacted by stormwater drainage issues.

Figure. The City of Taylorsville - Flood Zones



Jordan Watershed: The Jordan River runs along the eastern border of the City of Taylorsville. A flood risk is defined as an accumulation of water over normally dry areas. Floods become hazards to people and property by inundating developed areas. Flood losses range from damage to landscaping and debris generation to building damage and injury or death.

Structure Occupancy Type	1% Annual Chance Structure Exposure	1% Annual Chance Building and Contents Loss	0.2% Chance Structure Exposure	0.2% Chance Building and Contents Loss
Total	**1**	**$ 11,139**	**58**	**$ 4,075,208**

Table. City of Taylorsville – Estimated Flood Loss Information

Winter Storms: The potential for severe weather is a reality in the City of Taylorsville and the surrounding region. These weather events are not isolated to any climatic season, but rather can occur at any time during the year. During the spring and summer months, heavy rains can fall upon soils in a desert climate that may not readily percolate creating surface runoff, mudslides, debris flow, flooding, and other water-related damage. During the winter months, heavy snowfall is possible. Winter weather systems and snowstorms over northern Utah can have a dramatic effect on regional commerce, transportation, and daily activity and are a major forecast challenge for local meteorologists. Snowfall is particularly influenced by the Great Salt Lake, which can produce localized snow bands or lake effect accumulations several times each winter.

HAZMAT: The City is a central part of the County and receives a high traffic flow, including hazardous materials traveling through the area.

Public Health Emergencies/Pandemic: In partnership with local and state public health officials, other federal agencies, medical and public health professional associations, infectious disease experts from academia and clinical practice, and international and public service organizations, the City of Taylorsville will incorporate all reasonable strategies to educate its residents and prepare for a measured response in the instance of a public health emergency.

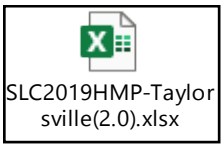
Radon: The 2017 Radon Study showed that radon is not a major concern for the area.

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Severe Winter Weather	3	16	48
Severe Weather	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Flooding	2	19	38
Cyber Attack	2	17	34
Hazardous Materials Incident	2	14	28
Drought	2	14	28
Terrorism	1	25	25
Dam Failure	1	19	19
Radon	3	6	18
Tornado	1	12	12

Civil Disturbance	1	8	8
Landslide and Slope Failure	1	6	6
Wildfire	1	3	3
Avalanche	1	0	0

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.


SLC2019HMP-Taylorsville(2.0).xlsx

Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1		Avalanche	No Impact	0	0
Dam Failure	Low	1		Dam Failure	Medium	2	6
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Low	1	3
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Low	1		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	Medium	2	6
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	Low	1		Wildfire	No Impact	0	0

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	No Impact	0	0		Avalanche	No Impact	0	0
Dam Failure	Low	1	1		Dam Failure	Medium	2	4
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Low	1	2
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	High	3	6
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Low	1	2
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Low	1	2
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	No Impact	0	0		Wildfire	No Impact	0	0

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**	**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)	**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)	**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)	**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)	**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	No Impact	0	0		Avalanche	Unlikely	0	0
Dam Failure	Medium	2	2		Dam Failure	Medium	2	6
Drought	Medium	2	2		Drought	Low	1	3
Civil Disturbance	Medium	2	2		Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	2		Cyber Attack	Medium	2	6
Earthquake	High	3	3		Earthquake	High	3	9
Flooding	Medium	2	2		Flooding	Low	1	3
Hazardous Materials Incident	Medium	2	2		Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	No Impact	0	0		Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	3		Public Health Epidemic/ Pandemic	High	3	9
Radon	No Impact	0	0		Radon	Unlikely	0	0
Severe Weather	Low	1	1		Severe Weather	Unlikely	0	0
Severe Winter Weather	Medium	2	2		Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	3		Terrorism	High	3	9
Tornado	Medium	2	2		Tornado	Unlikely	0	0
Wildfire	No Impact	0	0		Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Low potential that this hazard could be catastrophic (Impact Factor = 1)
Unlikely—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Fix and repair drainage by increasing drainage area and expanding inlets and outlets	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Flood (Riverine and Urban/Flash Flooding)	Taylorsville EM	Public Works	High	Medium	Local Funds	High	2020	
Conduct a Hazardous Material Flow Study	2019	• Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. • Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Hazardous Materials Release	Taylorsville EM	Public Works	Medium	Medium	HMA/PDM Grant or other federal funds	Medium	Short-term	

Mitigation Table - Ongoing Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Establish agreements to share communications equipment between agencies involved in emergency operations	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	All Hazards	Taylorsville Emergency Management	Medium	Low	Local	Medium	Ongoing	Taylorsville is in the process of entering an MOU with the Taylorsville HAMnet to utilize their services during an emergency.
Establish notification capabilities and procedures for emergency personnel	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	All Hazards	Taylorsville Emergency Management	Medium	Low	Local	Medium	Ongoing	Taylorsville continues to work on notification tools and procedures to be in harmony with changing technology and equipment.
Establish a coordinating group to address long-term communication needs and implementation strategies	2009	1 – Improve and maintain communications capabilities for emergency operations 1.3 – Conduct communications Strategic Planning	All Hazards	Taylorsville Emergency Management	Medium	Low	Local	Low	Ongoing	No formal coordinating group exists yet, but Taylorsville engages in discussions with other jurisdictions and the county regarding this issue

Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group	2009	1 – Improve and maintain communications capabilities for emergency operations 1.3 – Conduct communications Strategic Planning	All Hazards	Taylorsville Emergency Management	High	Low	Local	High	Ongoing	Taylorsville has upgraded existing equipment and purchased new equipment to maintain operability
Implement improvements to address identified in assessment	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	All Hazards	Taylorsville Emergency Management	High	Medium to High	State and Federal Grants, project dependent	High	In Process	Taylorsville is identifying options and opportunities to address issues.
Identify structures at risk to earthquake damage	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	Earthquake	City Engineering Division	High	High	State and Federal Grants such as HMA	High	Ongoing	Taylorsville is in the process of identifying which structures are at a particular risk.
Determine potential flood impacts and identify areas in need of additional flood control structures	2009	1 – Protection of life and property before, during and after a flooding event 1.2 – Encourage appropriate flood control measures, particularly in new developments	Flood	City Engineering Division	High	Low	Local	High	Ongoing	The City Engineer regularly review the impact of development and the need for flood control infrastructure and make recommendations as needed

Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures	2009	1 – Protection of life and property before, during and after a flooding event 1.2 – Encourage appropriate flood control measures, particularly in new developments	Flood	City Engineering Division	High	High	State and Federal Grants such as HMA	High	Ongoing	The City Engineer oversees the construction of flood control structures
Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of storm water and flood control systems	2009	1 – Protection of life and property before, during and after a flooding event 1.3 – Provide maintenance, repairs and improvements to drainage structures, storm water systems and flood control structures	Flood	Taylorsville-Bennion Improvement District	High	Medium	Local	High	Ongoing	Taylorsville-Bennion Improvement District continues to maintain and repair all drainage systems in the City
Identify and assess structures for deficiencies	2009	2 – Reduce threat of unstable or inadequate flood control structures 2.1 – Reduce potential for failure of flood control structures	Flood	City Engineering Division	High	Medium	Local	High	Ongoing	The City Engineering Division in cooperation with Salt Lake County Public Works regularly review and inspect City-owned infrastructure and make recommendations as needed
Modify structures as needed to address deficiencies	2009	2 – Reduce threat of unstable or inadequate flood control structures 2.1 – Reduce potential for failure of	Flood	City Engineering Division	High	High	State and Federal Grants such as HMA	High	Ongoing	The City Engineering Division in cooperation with Salt Lake County Public Works make repairs as needed to deficient structures

		flood control structures								
Continue to Enforce Building Codes, Development Codes and Zoning Ordinance	2009	Goal 7 Advocate, support, and promote the use of laws and local regulations and ordinances aimed to mitigate hazards and to enhance resiliency.	Earthquake, Flood and Severe Weather	City of Taylorsville Building Division, City of Taylorsville Community Development Department	High	Low	Developer-based funding under specific plan requirements	High	Now and Long term	The City requires that construction complies with the adopted building codes and the zoning and development ordinances adopted by the City. This will prevent the loss of human life and economic and property losses.
Continue to Execute Training and Exercise Program	2009	Goal 4 Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters.	Earthquake, Pandemic, Flood and Severe Weather	Emergency Management	High	Low - Less than $1,000 annually	City budget	High	Now and Long term	The City of Taylorsville regularly administers training and participates in exercises. These events provide participants with opportunities to learn of duties and practices that would be used during a real-world emergency or disaster situation. Coordination of operations would be exercised and allow Taylorsville Emergency Management to identify the areas of higher and lower performance and how to best improve their efforts. This will help to prevent the loss of human life and property losses when a major emergency or disaster event occurs.
Educate Residents and Businesses through the Public	2009	Goal 4 Promote education and awareness programs,	All Hazards	Public Information Officer,	High	Low - Less than $1,000 annually	City budget	High	Now and Long term	The City of Taylorsville takes great care to get the appropriate information out to the residents and businesses in the

Information and Events		campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters.		Emergency Manager						community. To this measure, the City has started an annual Emergency Preparedness Fair where participants are able to obtain the information that would benefit them in their situation. Further, the City invests a great amount of time and resources to putting out information to the public through traditional and modern methods including social media. These efforts provide the community with the information that is necessary to get assist their preparedness and mitigation efforts. This will prevent the loss of human life and economic and property losses.

Mitigation Table - Completed and Removed Actions

Category	Year Initiated	Goal / Objective	Action	Status	Comments
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.2 – Maintain communications capabilities for critical facilities	1 – Evaluate vulnerability of critical communications systems	Completed	Taylorsville evaluates areas of vulnerability and develops solutions to ensure communication systems or alternate solutions are viable
All Hazards	2009	5 – Increase citizen safety through improved hazard awareness	2 – Incorporate information about cascading effects of	Completed	Information is included in all presentations on the effects of cascading hazards

		5.1 – Establish a comprehensive public education program	hazards in education programs		
All Hazards	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – Establish a comprehensive public education program	4 – Utilize maps and similar products on County EM website and other media to educate public on areas at risk to hazards	Completed	Taylorsville GIS personnel have compiled and made available hazard maps to help educate the public on potential hazards in the city
All Hazards	2009	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	2 – Ensure current hazard ordinances are available for viewing online	Completed	All current Taylorsville ordinances are available online at: http://www.sterlingcodifiers.com/codebook/index.php?book_id=540
Dam Failure	2009	1 – Include dam failure inundation in future County and City planning efforts 1.1 – Review current State dam safety information on all identified high hazard dams in the County	1 – Include dam inundation maps in current County, City and Special Service District Emergency Operations Plans	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Dam Failure	2009	1 – Include dam failure inundation in future County and City planning efforts 1.1 – Review current State dam safety information on all identified high hazard dams in the County	2 – Utilize inundation maps to identify potential evacuation areas and routes	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.2 – Address agricultural water shortages in the County	1 – Set up livestock water rotation in areas of agricultural use	Not Completed	This is not applicable to Taylorsville
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure	2 – Research feasibility of an incentive program for retrofitting privately-owned buildings,	Not Completed	Taylorsville does not have funding to support this type of program.

		1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	particularly unreinforced masonry		
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	3 – Complete seismic rehabilitation/retrofitting projects of public buildings at risk	Not Completed	Due to the age of the City's public buildings (most having been built in the last 15 years) there are no major retrofit or rehabilitation projects needed at this time in Taylorsville
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.2 – Improve public education regarding earthquake risks to unreinforced masonry buildings	1 – Provide educational materials to unreinforced masonry home and business owners	Not Completed	Taylorsville supports county level efforts to share this type of information
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.3 – Improve Seismic Hazard understanding and seismic resistance of CUWCD Red Butte Dam in Salt Lake County.	1 – Procure Engineering Consultant to perform the nonstructural design and geotechnical assessment and review.	Not Completed / Not Applicable	Not applicable to Taylorsville as the referenced dam is located in another jurisdiction.
Flooding	2009	1 – Protection of life and property before, during and after a flooding event 1.1 – Provide 100% availability of the National Flood Insurance Program	1 – Assist Cities with NFIP application	Not Completed / Not Applicable	Taylorsville actively participates in the NFIP
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.1 – Maintain status as a StormReady Community	1 – Maintain Hazardous Weather Operations Plan according to StormReady requirements	Not Completed / Not Applicable	Taylorsville does not have a Weather Operations Plan and does not participate in the StormReady program. This is a Salt Lake County level program
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events	2 – Maintain Contact with NWS prior to re-application in 2010	Not Completed /	Taylorsville does not have a Weather Operations Plan and does not participate in the StormReady program. This is a Salt Lake County level program

		1.1 – Maintain status as a StormReady Community		Not Applicable	
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.4 – Examine the vulnerability of patrons at large event venues to extreme weather events	1 – Work with NWS to develop large event venue weather safety and evacuation procedures	Not Completed	Taylorsville has not developed a large event venue weather safety plan and/or evacuation procedures with the NWS
Slope Failure	2009	1 – Reduce or eliminate the threat of slope failure damage 1.1 – Reduce the threat of slope failures following wildfires	1 – Develop protocol for working with State and Federal agencies in reducing the impact of post-fire debris flow hazard	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Slope Failure	2009	1 – Reduce or eliminate the threat of slope failure damage 1.2 – Monitor historic landslide areas	1 – Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Slope Failure	2009	1 – Reduce or eliminate the threat of slope failure damage 1.3 – Address landslide hazards in new sub-divisions	1 – Utilize recommendations provided by the State Geological Hazards Working Group to address land-use and planning for new developments	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	1 – Community education on wildfire hazard 1.1 – Reduce risk from wildfire through education programs	1 – Increase public awareness through “Firewise” program	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	1 – Community education on wildfire hazard	2 – Educate homeowners on the need to create defensible space near structures in WUI	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable

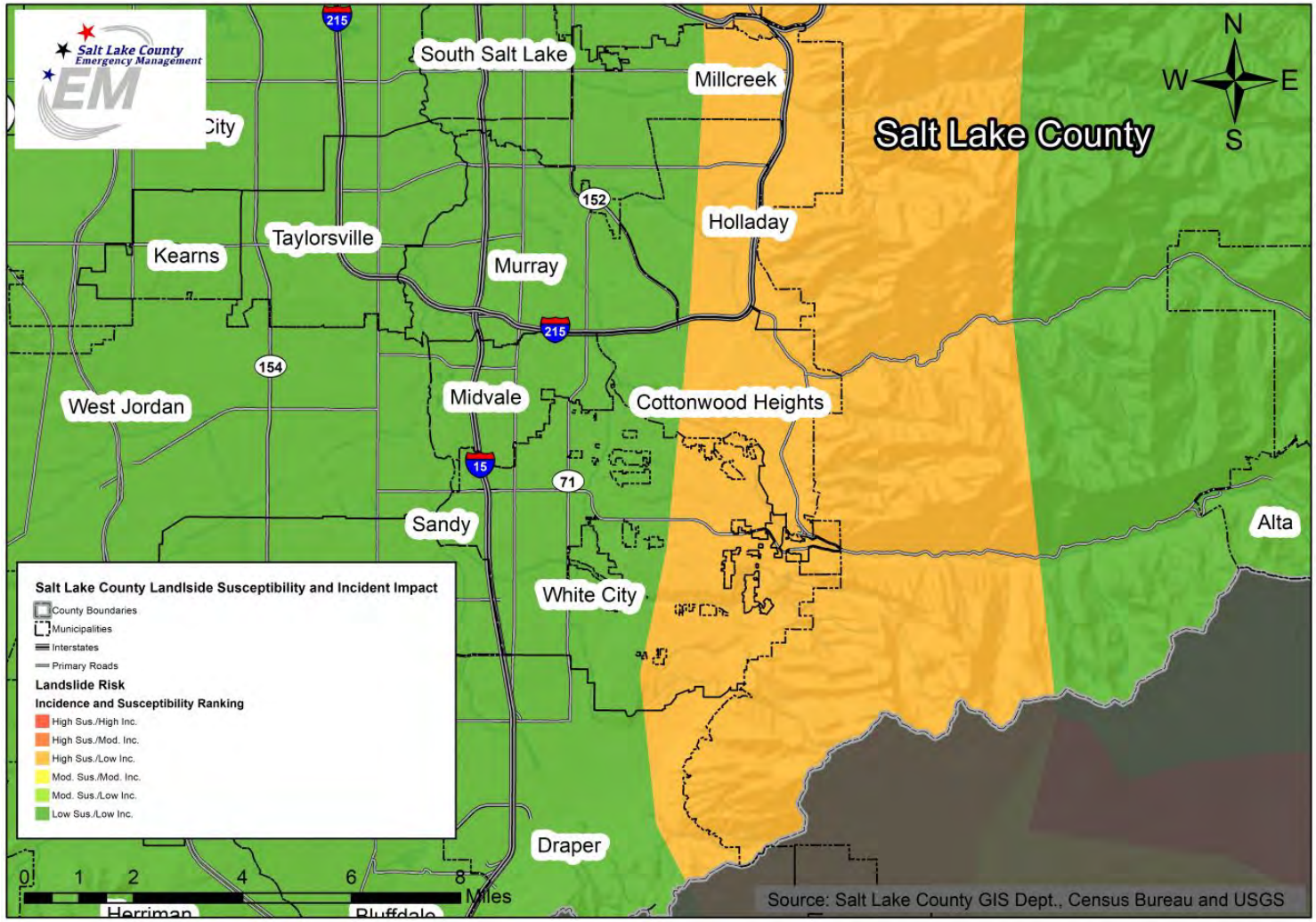
		1.1 – Reduce risk from wildfire through education programs			
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.1 – Assist homeowners with creating defensible space near structures in WUI areas	1 – Designate and promote county-wide annual initiative for clearing fuels	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.1 – Assist homeowners with creating defensible space near structures in WUI areas	2 – Provide waste removal, such as chipping of green waste by public works, following designated fuel clearing day/week	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.2 – Improve evacuation capabilities for WUI areas	1 – Work with experts and communities to develop or update evacuation plans	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.2 – Improve evacuation capabilities for WUI areas	2 – Evaluate transportation network and address needed improvements to facilitate evacuation and emergency response	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities	1 – Identify all facilities, businesses, and residences, particularly in the canyons, and assign addresses according to	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable

		2.3 – Improve addressing system in WUI areas to facilitate emergency response	current county addressing standards		
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.3 – Improve addressing system in WUI areas to facilitate emergency response	2 – Incorporate improved addresses in fire-dispatch and other databases	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	1 – Reduce fuels around publically owned structures	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	2 – Implement fire breaks and other protective measures	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	3 – Assess existing water flow capabilities, both public and private, and address deficiencies	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities	4 – Assist communities in developing Community Wildfire Protection Plans or similarA plans	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable

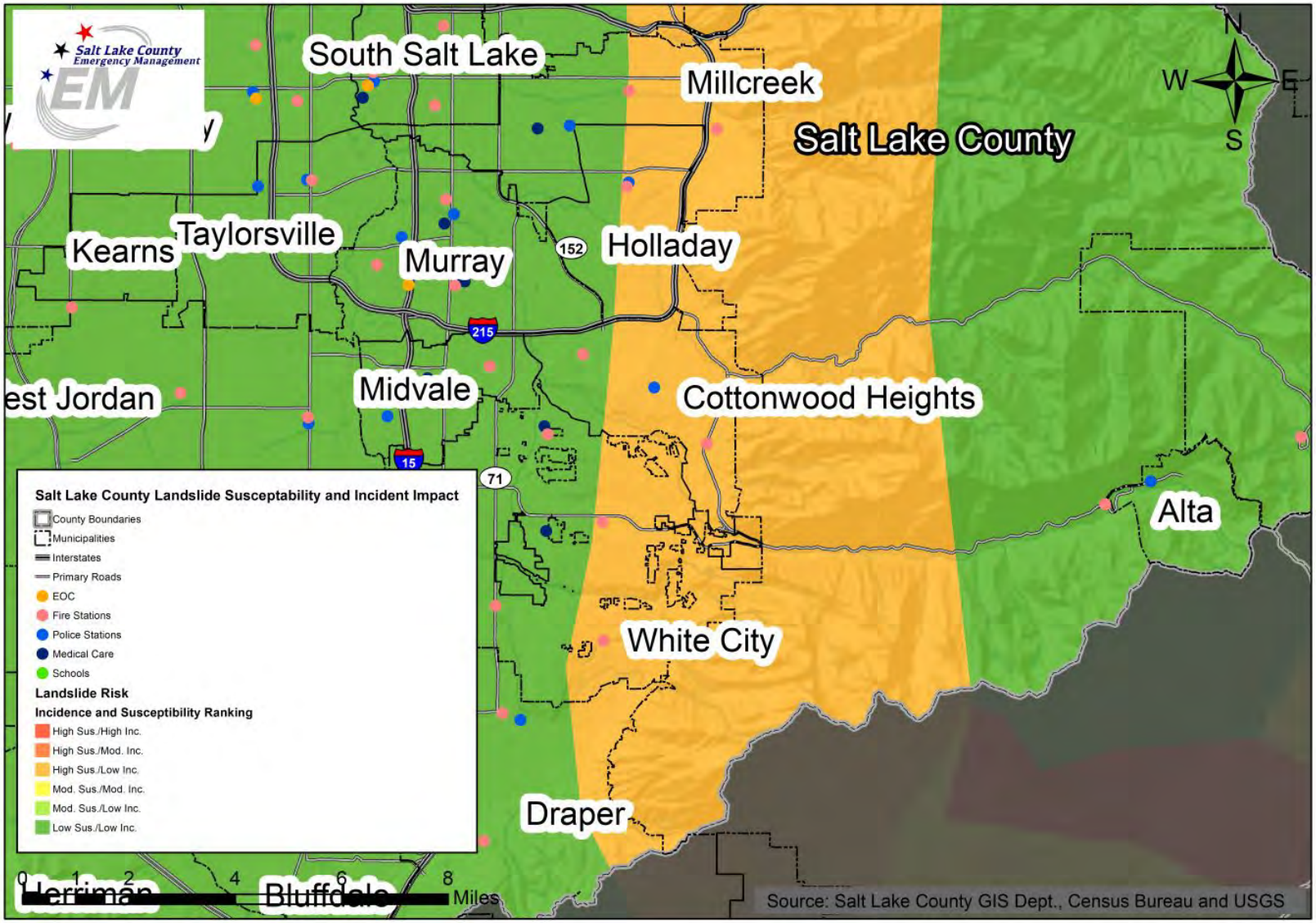
		2.4 – Complete wildfire protection projects			
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.5 – Encourage proper development practices in the WUI	1 – Adopt the Utah Wildland-Urban Interface Code	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.5 – Encourage proper development practices in the WUI	2 – Define wildland-urban interface and develop digital maps of the WUI	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable

Jurisdiction Maps

Map: Landslide Susceptibility and Incident Impact Potential



Map: Landslide Susceptibility and Incident Impact Potential with Critical Facilities



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: West Jordan City

Hazard Mitigation Plan Point of Contact

Primary Point of Contact
Name: Jared Smith Title: Emergency Manager Department: Emergency Management (under the Human Resources Department) Address: 8000 S Redwood Road Office Phone: 801-569-5147 Cell Phone: (801) 440-6995 Email Address: jared.smith@westjordan.utah.gov Website: https://www.westjordan.utah.gov/emergencymanagement

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** 1967 (city) and 1941 (town)
- **Current Population:** 116,046 (Census v2018)
- **Population Growth:** From April 1, 2010 (103,601) to July 1, 2018, grew 12% (Census).
- **Location and Description:** The city land area is 32 sq. miles. The city occupies the west-central portion of the Salt Lake Valley, which is surrounded by the Oquirrh and Wasatch mountains. It shares borders with Taylorsville, Kearns, South Jordan, Sandy, Murray, Midvale, Copperton, West Valley City and unincorporated Salt Lake County. West Jordan is fortunate to have a large share of vacant land left for future growth within Salt Lake County.
- **Brief History:** Settlement of the land along the Jordan River in the area that is now West Jordan began in the fall of 1849. Due to the imminent onset of winter and the lack of readily available timber, the first homes were “dugouts” excavated into the hillsides above the river. Most of these dugouts were replaced the following spring as soon as weather permitted the hauling of timber from Bingham Canyon. By 1853, the population of the West Jordan area was 361. In more recent history, the residents of West Jordan petitioned the County Commission for incorporation as a town in 1941. West Jordan became a third-class city in 1967, and after reaching a population of 104,128 residents, West Jordan officially became a first-class city on December 3, 2007 (West Jordan General Plan 2012).
- **Climate:** The average high temperature is 92 degrees and the low temperature is 23 degrees. Additionally, the rain average is 20 inches of rain per year and 53 inches of snow a year (Best Places).
- **Public Services:** The city offers a multitude of services to the residents. The city also has an emergency communications center and an active LEPC. The West Jordan LEPC fulfills the federal requirements for chemical reporting and emergency planning as specified in federal law 42 USC Chapter 116, the Community Right-to-Know Act (West Jordan).
- **Governing Body Format:** The City of West Jordan operates under the Strong Mayor form of government. Under this form, the Mayor acts as the chief executive officer for the City. The City Council is the legislative body for the City and is responsible for all legislative policies for the City.(West Jordan).
- **Development Trends:** West Jordan is Utah’s fourth-largest city, with an estimated population in March of 2014 over 108,000 residents.

Capability Assessment

The city maintains a full-time staff of 500 and part-time staff of 100 individuals. The Risk/Emergency Manager is the city's designated Emergency Manager. Hazard Mitigation Planning efforts are led by the Emergency Manager position and supported by the Human Resources Director positions.

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY			
	Local Authority Exists to Develop and Implement/ Enforce?	**A Jurisdiction-Specific Code, Ordinance and/or Requirement Currently Exists?**	**Comments**
Codes, Ordinances, & Requirements			
Building Code Development and Enforcement	Yes	Yes	
Zonings Ordinance(s)	Yes	Yes	
Subdivision Ordinance(s)	Yes	Yes	
Stormwater Management Program	Yes	Yes	
Floodplain Ordinance(s)	Yes	Yes	
Post Disaster Recovery Program and Ordinance(s)	Yes	Yes	
Real Estate Disclosure Ordinance(s)	N/A	N/A	
Growth Management	No	No	

Site Plan Review Requirements	Yes	Yes	
Public Health and Safety Program and Requirements	No	Yes	County Function
Environmental Protection Program and Requirements	No	Yes	County Function
Planning Documents			
General or Comprehensive Plan	Yes	Yes	
Capital Improvement Plan	Yes	Yes	
Habitat Conservation Plan	No	No	
Economic Development Plan	Yes	Yes	
Disaster Planning Documents			
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	Yes	
Post-Disaster Recovery Plan	Yes	Yes	
Continuity of Operations Plan	Yes	No	In-Progress
Public Health Plans	No	No	County Function
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	Yes	Yes	

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes

Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	N/A

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	Full	Development Services - City Engineer
Engineers or professionals trained in building or infrastructure construction practices	Yes	Full	Development Services - City Engineer
Planners or engineers with an understanding of natural hazards	Yes	Full	Development Services - City Engineer
Surveyors	Yes	Full	Development Services - Surveyor
Personnel skilled or trained in GIS applications	Yes	Full	Public Works - GIS Staff
Emergency manager	Yes	Full	Human Resources - Emergency Manager
Grant writers	Yes	Full	Public Works - Capital Projects

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	Engineering
Who is your jurisdiction's floodplain administrator? (department/position)	City Engineer

Are any certified floodplain managers on staff in your jurisdiction?	Yes
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	No
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System (CRS)	No	-	-
Public Protection/ISO	Yes	3	2010
NWS StormReady	No	-	-

Jurisdiction-Specific Hazards and Risks

The *Natural Hazard Events Table* lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 26 policies were in force with total coverage of $7,395,000 and total written premium and FPF of $16,096 (FEMA, 2019).
- West Jordan City does participate in the National Flood Insurance Program (CID # 490108) and the last FIRM map for the area was issued on 09/25/09 (FEMA, 2019).
- The city will continue to participate in the NFIP through various efforts including but not limited to floodplain management, ordinance development and review, technical assistance, compliance inspections, and community education on flood hazards.

TABLE: RECENT NATURAL HAZARD EVENTS
(NOAA Data with additions from the jurisdiction representatives)

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Heavy Snow	5 inches of snow	-	4/6/2019	-
Heavy Snow	7 inches of snow		3/13/2019	
Heavy Snow	22 inches of snow		2/3/2019	
Hail	Quarter sized hail		6/13/2016	
Flooding	This flooding was most common in driveways, garages, and basements, with some homes receiving significant damage.		8/20/2014	
Flooding	In West Jordan, about 10 apartment units were flooded with water and mud, and portions of the Mountain View Corridor were closed so that the Utah Department of Transportation could drain retention ponds that had filled with the heavy rainfall.		9/14/2013	
Thunderstorm Wind	A microburst occurred near the intersection of Utah State Route 111 and New Bingham Highway in West Jordan, knocking over or snapping a series of power poles. Rocky Mountain Power reported that 37 large transmission poles and 4 smaller distribution poles were damaged and had to be replaced. This temporarily knocked out power to about 3,000 customers, as well as closing State Route 111 for several hours. The downed power lines also dragged a couple of metal poles supporting traffic signals to the ground. Despite the destruction, two sensors very close to the intersection (the SR-85 at Dannon Way sensor and the Trans-Jordan Landfill sensor) only		8/5/2013	

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
	recorded peak wind gusts of 45 mph and 42 mph respectively.			
Thunderstorm Wind	multiple large trees were knocked down in West Jordan, South Jordan, and Taylorsville, including a few that fell on houses and caused damage to roofs.		6/12/2013	
Lake-Effect Snow	8 inches of snow		3/22/2013	
Winter Storm	6 inches of snow		3/6/2012	
Winter Storm	12 inches of snow		12/29/2010	
Winter Storm	14 inches of snow		11/28/2010	
Winter Storm	8 inches of snow		11/23/2010	
Winter Storm	15 inches of snow		11/20/2010	
Thunderstorm Wind	58 mph wind		8/20/2010	

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community
Members of the community over 65 years old	7,887
Members of the community under 18 years old	35,713
Members of the community that identify as having disability status	7,700
Members of the community that speak English less than "very well"	6,105
Members of the community living below the poverty line	8,331
The number of mobile homes in the community	924
Members of the community without health insurance	11,399

Occupied housing units with tenants without a vehicle	543
Housing units without heating fuel	11

Jurisdiction-Specific Hazards and Impacts

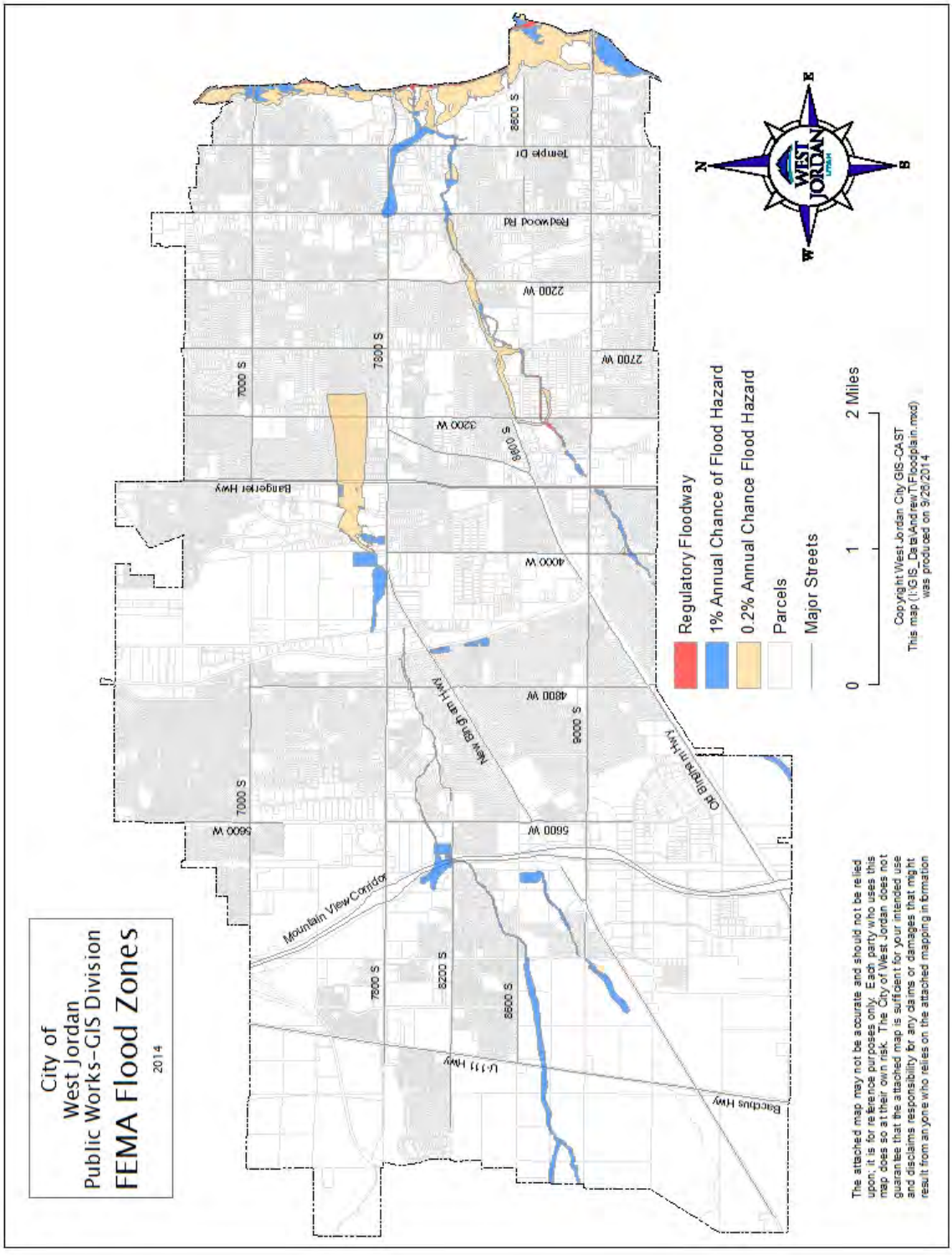
Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Flooding: Riverine flooding can be expected along the Jordan River, Midas Creek, and Little Willow Creek. The potential for flooding also exists along the old channel of Bingham Creek (during heavy rains), the Beckstead Ditch and any of the four canals which transverse the city. (Welby Jacob Canal, Utah Distributing Canal, Utah Salt Lake Canal, & South Jordan Canal.) Localized floods and flash flooding are possible in all areas of the City. Subsurface flooding problems exist near the Jordan River and eastern portions of the city. Historic effects in West Jordan.

- August 2014 –17 homes were flooded when rainfall runoff overwhelmed storm water capability.
- August 2013 - An apartment complex in the southwest portion of the city sustain a river of mud from accumulate flow across the dry farm areas to the west.

West Jordan City doesn't have any repetitive flood loss claims identified under the National Flood Insurance Program (NFIP).

The City Engineer oversees enforcement of floodplain management requirements adopted by the City, including regulating new construction in Special Flood Hazard Areas (SFHAs); Floodplain identification and mapping, including any local requests for map updates and community assistance and monitoring activities. This is part of an integrated development review process that involves the Office of Development Assistance and all supporting departments within the city to include, Engineering, Economic Development, Planning, Building and Safety, and the Fire Marshal.


City of
West Jordan
Public Works-GIS Division
FEMA Flood Zones
2014
Regulatory Floodway
1% Annual Chance of Flood Hazard
0.2% Annual Chance Flood Hazard
Parcels
Major Streets
0
1
2 Miles
Copyright West Jordan City GIS-CAST
This map (I:\GIS_Data\Andrew T\Floodplain.mxd)
was produced on 9/26/2014
The attached map may not be accurate and should not be relied upon; it is for reference purposes only. Each party who uses this map does so at their own risk. The City of West Jordan does not guarantee that the attached map is sufficient for your intended use and disclaims responsibility for any claims or damages that might result from an yone who relies on the attached mapping information
Temple Dr
Redwood Rd
2200 W
2700 W
3200 W
4000 W
4800 W
5600 W
6400 W
7000 S
7800 S
8600 S
8200 S
9000 S
Bangerter Hwy
Mountain View Corridor
New Bingham Hwy
Old Bingham Hwy
U-111 Hwy
Bacchus Hwy

Dam Failure: The largest dam located in West Jordan is the Bateman Pond dam located at 6800 South 1100 West. Other dams that are listed with the State of Utah are all dams created by the construction of water detention basins that meet individual planning requirements.

Earthquake: The entire city is at risk for ground shaking. Certain areas are at risk for liquefaction; however, there is a minimal chance for surface rupture. East of Redwood Road is especially vulnerable. No large-scale events have been recorded in West Jordan.

Wildfire: West Jordan does have some urban-wildland interface along the Jordan River and the western portions of the city. Specifically, at risk is the undeveloped areas along the Jordan River where natural vegetation is abundant and other undeveloped areas, open areas, some agricultural areas. Historically, most events have been small grass and brush fires. No significant events have occurred. Wildfire is a growing concern for the city as development expands.

Severe Weather and Winter Storms: The entire city is subject to these events. The substantial population over 65 is particularly vulnerable to sustained power outages and extreme temperatures. West Jordan is well known for its rapid and often severe changes in weather. Severe weather common in the city includes winter storms, large scale wind events, thunderstorms, lightning, hail, tornadoes, and flooding. While some types of these events can be predicted, others will occur with little or no warning.

Tornado and High Wind: The entire city is susceptible to high wind events, especially the more than 900 mobile homes in the city. Historic High Wind Events in West Jordan:

- High Wind Event - August 2013: 60 large electrical transmission poles were toppled along SR-111

One weather related phenomenon that occurs most often from December to February are inversions. These inversions tend occur when pockets of cold air become trapped in the valley between the Oquirrh Mountain range and the Wasatch Mountain range. These temporary inversions can last several days and lead to poor air quality for residents in the valley and restrictions placed on burning some types of fuels.

Drought: West Jordan has a semi-arid desert climate and a few weeks without rain are not uncommon. However, when the weeks turn to months, serious problems can arise. Because much of our drinking water comes from snowmelt, a dry winter can have serious implications in terms of how much water is available for the following summer season. Most locations in the city have enough water reservoirs to make it through one dry winter; however multiple years of dry winter seasons is a concern, particularly for agriculture in the area.

Historic Events in West Jordan:

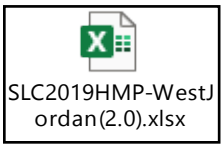
- 1896 – 1907 Statewide drought conditions
- 1930 – 1936 Statewide drought conditions
- 1953 – 1965 Statewide drought conditions
- 1974 – 1978 Statewide drought conditions
- 1988 – 1993 Statewide drought conditions
- 1999 – 2003 Statewide drought conditions

Public Health Emergencies/Pandemic: The potential for a pandemic to have a noticeable impact on the city has increased as worldwide travel and commerce in the area has increased.

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Severe Winter Weather	3	16	48
Severe Weather	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Flooding	2	17	34
Cyber Attack	2	17	34
Hazardous Materials Incident	2	14	28
Drought	2	14	28
Terrorism	1	25	25
Dam Failure	1	21	21
Radon	3	6	18
Tornado	1	12	12
Wildfire	1	10	10
Civil Disturbance	1	8	8
Landslide and Slope Failure	1	6	6
Avalanche	1	0	0

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.



Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1		Avalanche	No Impact	0	0
Dam Failure	Low	1		Dam Failure	Medium	2	6
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Low	1	3
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Low	1		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	Medium	2	6
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	Low	1		Wildfire	Low	1	3

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	No Impact	0	0		Avalanche	No Impact	0	0
Dam Failure	Low	1	1		Dam Failure	High	3	6
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Low	1	2
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	Medium	2	4
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Low	1	2
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Low	1	2
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	Low	1	1		Wildfire	Low	1	2

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**		**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)		**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)		**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)		**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)		**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)
Avalanche	No Impact	0	0
Dam Failure	Medium	2	2
Drought	Medium	2	2
Civil Disturbance	Medium	2	2
Cyber Attack	Medium	2	2
Earthquake	High	3	3
Flooding	Medium	2	2
Hazardous Materials Incident	Medium	2	2
Landslide and Slope Failure	No Impact	0	0
Public Health Epidemic/ Pandemic	High	3	3
Radon	No Impact	0	0
Severe Weather	Low	1	1
Severe Winter Weather	Medium	2	2
Terrorism	High	3	3
Tornado	Medium	2	2
Wildfire	Low	1	1

Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Unlikely	0	0
Dam Failure	Medium	2	6
Drought	Low	1	3
Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	6
Earthquake	High	3	9
Flooding	Low	1	3
Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	9
Radon	Unlikely	0	0
Severe Weather	Unlikely	0	0
Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	9
Tornado	Unlikely	0	0
Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Low potential that this hazard could be catastrophic (Impact Factor = 1)
Unlikely—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

Action	Year Initiated	Goal/ Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Increase the size and capacity of drainage facilities	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Flooding	City of West Jordan	Public Works	High	High ($10,000,000)	Local and Federal Grants, such as HMA	Medium	2025	Increase the capacity of stormwater in the City and reduce the flood areas throughout the City. Continue to identify areas of the City that store and drain stormwater throughout the City. There are several areas of drainage that require larger culverts and or pipes to handle the inconsistent rainfall and stormwater throughout the City.
Seismic Retrofitting of the water tanks	2019	Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Earthquake	City of West Jordan		Medium	High	Local and Federal Grants, such as HMA	Medium	Long-term	

Mitigation Table - Ongoing Actions

Action	Year Initiated	Hazard(s)	Agency Lead	Benefit	Cost	Funding Source	Priority	Timeframe	Comment
Establish notification capabilities and procedures for emergency personnel	2009	All Hazards	West Jordan	High	Medium	Local, State, and Federal Grants	High	Ongoing	West Jordan continues to work on notification tools and procedures to be in harmony with changing technology and equipment. We are in the process of purchasing a complete phone system for the city that has notification features as well as disaster level system redundancy.
Establish a coordinating group to address long-term communication needs and implementation strategies	2009	All Hazards	West Jordan	Medium	Low	Local	Low	Ongoing	The Utah Communications Authority provides the coordination of radio channels throughout the state of Utah.
Utilize GIS to identify facilities and infrastructure at risk	2009	All Hazards	West Jordan GIS	High	Medium	Local	High	Ongoing	West Jordan has an ongoing project to GPS locate critical infrastructure and key resources. This includes a dedicated frequency for reporting data to the City.
Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment resources and redundancy, and adequate emergency procedures	2009	All Hazards	West Jordan	High	Medium	Local and County	High	Ongoing	West Jordan Fire Prevention and Emergency Management has an ongoing program to review city facilities for safety and code compliance. We also work with the city's risk manager and insurance company to review city properties for hazards.
Implement improvements to address hazards identified in assessment	2009	All Hazards	West Jordan	High	High	HMA, federal, and state	High	Ongoing	West Jordan is identifying options and opportunities to address issues identified during the risk assessments.
Provide education regarding all natural hazards through live trainings, as well as web-based, print and broadcast media	2009	All Hazards	West Jordan	High	Low	Local Funds	High	Ongoing	West Jordan Emergency Management provides several public education classes. Our Ready West Jordan program and variations of that 2 ½ hour class.

Develop education programs to target specific groups including homeowners, developers, schools and people with special needs	2009	All Hazards	West Jordan	High	Low	Local Funds	High	Ongoing	West Jordan's education programs are customizable for all kinds of groups and available to all members of the community
Coordinate with existing public education programs such as the American Red Cross, Utah Living with Fire, be Ready Utah, the National Weather Service, etc.	2009	All Hazards	West Jordan	High	Low	Local Funds	High	Ongoing	West Jordan has worked with Be Ready Utah and other programs to make presentations in West Jordan and will continue to invite them to events and other activities in the community
Coordinate with water districts to plan for, develop and/or expand secondary water	2009	Drought	West Jordan	Medium	High	County and State funds	Medium	Ongoing	West Jordan has been supportive of Jordan Valley Water Conservancy Districts program to recover and treat ground water at the facility here in West Jordan.
Encourage Communities to actively participate in NFIP	2009	Flood	West Jordan	High	Low	Local	High	Ongoing	West Jordan actively participates in the NFIP
Determine potential flood impacts and identify areas in need of additional flood control structures	2009	Flood	West Jordan	High	High	Federal, County, and State funds	High	Ongoing	The City Engineer and Public Works Director regularly review the impact of development and the need for flood control infrastructure and make recommendations as needed
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures	2009	Flood	West Jordan	High	High	Federal, County, and State funds	High	Ongoing	The City Engineer and Public Works Director oversee the construction of flood control structures Example: Significant construction efforts were completed on Midas Creek including upsizing culverts, channel stabilization, etc.
Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of storm water and flood control systems	2009	Flood	West Jordan	High	High	Federal, County, and State funds	High	Ongoing	The Stormwater Division of the Public Works Department continues to maintain and repair all drainage systems in the City
Identify and assess structures for deficiencies	2009	Flood	West Jordan	High	Low	Local	High	Ongoing	The City Engineering Division in cooperation with the Public Works Department regularly review and inspect City-owned infrastructure and make recommendations as needed

Modify structures as needed to address deficiencies	2009	Flood	West Jordan	High	High	Federal, County, and State funds	High	Ongoing	The City Engineering Division in cooperation with the Public Works Department make repairs as needed to deficient structures
Assist NWS in making other agencies and departments aware of available resources	2009	Severe Weather	West Jordan	Medium	Low	Local	Low	Ongoing	West Jordan supports the NWS efforts for education and outreach and makes internal departments aware of NWS resources
Assist Forest Service Utah Avalanche Forecast Center and other organizations in promoting avalanche hazard awareness for backcountry users	2009	Severe Weather	West Jordan	Medium	Low	Local	Medium	Ongoing	West Jordan supports the efforts for education and outreach
Increase public awareness and compliance with keeping storm drains and ditches free from debris, particularly green waste.	2014	Flood	Public Works Department, Storm Water Manager	High	Medium - $57,000	General Fund	High	Ongoing	Storm water systems are designed to function unimpeded by green waste and other forms of debris. Residents who live near ditches and canals have been found to have dumped grass clippings and tree trimmings into these storm water assets. West Jordan has developed a stormwater master plan
Increase emphasis in our code enforcement efforts to create defensible space between undeveloped fields and residential and commercial property.	2014	Wildland Fire	City Attorney, Code Enforcement	High	Medium - $57,000	General Fund	High	Ongoing	A significant amount of acreage in the city is still used as wheat dry farm. There are also developable plots of land that exceed 5 acres in size. A vegetation fire can spread rapidly with prevailing winds and spread to fencing, out buildings and finally to primary structures that may be located along the rural-urban interface.
Educate residents on the IPAWS system to provide greater warning for individuals living in areas being impacted by severe weather.	2014 [update and modified in 2019]	Severe Weather	West Jordan Emergency Management	High	Low - $5,000	General Fund	High	Ongoing	West Jordan is large enough that different parts of the city can be impacted by weather events. People become less motivated to respond when they receive general warnings and then do not experience an event. Thus targeting the impacted areas with information is more beneficial

Emphasis needs to be placed on the development of a citywide continuity of operations plan.	2014	Pandemic	West Jordan Emergency Program Manager West Jordan Facilities Manager West Jordan IT Manager	High	Medium - $57,000	General Fund	High	Ongoing	West Jordan is becoming more densely populated and the potential for rapid transmission of a disease is increased. West Jordan also has a young population of small children who are propone to habits of touching and tasting that can spread disease rapidly through schools and daycares. We have plans for continuity of command but need to work on the ability to work remotely and to relocate major operations if necessary.
Participate in a public awareness campaign to alert homeowners to the presence of radon gas production from the soil.	2014	Radon	West Jordan Emergency Program Manager	Low	Low	County	Low	Ongoing	

Mitigation Table - Completed and Removed Actions

Category	Year Initiated	Action	Status	Comments
All Hazards	2009	1 – Evaluate vulnerability of critical communications systems	Completed	West Jordan evaluates areas of vulnerability and develops solutions to ensure communication systems or alternate solutions are viable Example: The development of a Public Works 800 MHz channel to be a backup to the statewide 800 MHz system for Police and Fire.
All Hazards	2009	2 – Incorporate information about cascading effects of hazards in education programs	Completed	Information is included in all presentations on the effects of cascading hazards
All Hazards	2009	4 – Utilize maps and similar products on County EM website and other media to educate public on areas at risk to hazards	Completed	West Jordan GIS personnel have compiled and made available hazard maps to help educate the public on potential hazards in the city
All Hazards	2009	2 – Ensure current hazard ordinances are available for viewing online	Completed	All current West Jordan ordinances are available online at: http://www.wjordan.com
Dam Failure	2009	1 – Include dam inundation maps in current County, City and Special Service District Emergency Operations Plans	Completed	Individual dam plans are created for the detention basins meeting the dam requirements.

Dam Failure	2009	2 – Utilize inundation maps to identify potential evacuation areas and routes	Completed	A copy of the FEMA Flood Plain map is included in the mitigation plan.
Drought	2009	1 – Set up livestock water rotation in areas of agricultural use	Not Completed	This is not applicable to West Jordan
Earthquake	2009	1 – Identify structures at risk to earthquake damage	Completed	West Jordan identified the Sugar Factory Tower and buildings as a hazard and had them razed. Fire Station 54 had seismic concerns and has been torn down and is currently being rebuilt.
Earthquake	2009	2 – Research feasibility of an incentive program for retrofitting privately-owned buildings, particularly unreinforced masonry	Not Completed	West Jordan does not have funding to support this type of program. West Jordan does not intend to move this activity forward due to the very limited number of URM structures in the community and the lack of potential funding sources to support it
Earthquake	2009	3 – Complete seismic rehabilitation/retrofitting projects of public buildings at risk	Not Completed	Fire Station 54 is currently being rebuilt from the ground up due in part to seismic concerns.
Earthquake	2009	1 – Provide educational materials to unreinforced masonry home and business owners	Not Completed	There are very few URM homes and businesses located in West Jordan that would make this activity cost effective for the City to engage in. West Jordan supports county level efforts to share this type of information
Earthquake	2009	1 – Procure Engineering Consultant to perform the nonstructural design and geotechnical assessment and review.	Not Completed / Not Applicable	Not applicable to West Jordan as the referenced dam is located in another jurisdiction.
Flooding	2009	1 – Assist Cities with NFIP application	Not Completed / Not Applicable	West Jordan is a participating community in the NFIP.
Severe Weather	2009	1 – Maintain Hazardous Weather Operations Plan according to StormReady requirements	Not Completed / Not Applicable	West Jordan has a Weather Operations Plan for city events and shares this as a best practice with community groups.
Severe Weather	2009	2 – Maintain Contact with NWS prior to re-application in 2010	Not Completed / Not Applicable	West Jordan does not have a Weather Operations Plan and does not participate in the StormReady program. This is a Salt Lake County level program
Severe Weather	2009	1 – Work with NWS to develop large event venue weather safety and evacuation procedures	Not Completed	West Jordan has developed a large event venue weather safety plan and/or evacuation procedures with the NWS
Slope Failure	2009	1 – Develop protocol for working with State and Federal agencies in reducing the impact of post-fire debris flow hazard	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable

Slope Failure	2009	1 – Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	1 – Increase public awareness through “Firewise” program	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Educate homeowners on the need to create defensible space near structures in WUI	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	1 – Designate and promote county-wide annual initiative for clearing fuels	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Provide waste removal, such as chipping of green waste by public works, following designated fuel clearing day/week	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	1 – Work with experts and communities to develop or update evacuation plans	Not Completed	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Evaluate transportation network and address needed improvements to facilitate evacuation and emergency response	Completed	West Jordan has an adequate transportation network to support evacuation and emergency response
Wildland Fire	2009	1 – Identify all facilities, businesses, and residences, particularly in the canyons, and assign addresses according to current county addressing standards	Completed	Addressing of structures in West Jordan is complete
Wildland Fire	2009	2 – Incorporate improved addresses in fire-dispatch and other databases	Completed	Addressing of structures in West Jordan is complete
Wildland Fire	2009	1 – Reduce fuels around publically owned structures	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Implement fire breaks and other protective measures	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	3 – Assess existing water flow capabilities, both public and private, and address deficiencies	Completed	The West Jordan water system meets and/or exceeds requirements for providing water flow for firefighting purposes in the City
Wildland Fire	2009	4 – Assist communities in developing Community Wildfire Protection Plans or similar plans	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable

Wildland Fire	2009	1 – Adopt the Utah Wildland-Urban Interface Code	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
Wildland Fire	2009	2 – Define wildland-urban interface and develop digital maps of the WUI	Not Completed / Not Applicable	This is a very low probability event for the City and not applicable
All Hazards	2009	1 – Conduct an inventory and assessment of communications equipment and systems and identify needs	Completed	West Jordan has and will continue to improve and maintain its communication capabilities, but capabilities adequately meet the need of the department.
All Hazards	2009	2 – Conduct Training and awareness activities on communication equipment, tools, and systems	Completed	West Jordan has built the use of communication equipment into training and exercises.
All Hazards	2009	3 – Establish agreements to share communications equipment between agencies involved in emergency operations	Completed	While no formal agreements exist to share communications equipment, but communications equipment can be shared as part of other mutual aid agreements that are in place
All Hazards	2009	Establish redundancy for dispatch centers and other critical communications	Completed	West Jordan relies on the Valley Emergency Communications Center (VECC) for dispatch services. They coordinate with other PSAPS to provide redundancy.
All Hazards	2009	Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group	Completed	West Jordan has upgraded existing equipment and purchased new equipment to maintain operability
All Hazards	2009	1 – Establish a coordinating group to address geographic data issues	Completed/Ongoing	West Jordan GIS personnel actively participate in several coordinating groups that address issues associated with geographic data
All Hazards	2009	2 – Examine current data availability and sharing capabilities, evaluate needs, and identify shortcomings	Completed/Ongoing	West Jordan GIS personnel actively participate in several coordinating groups that address issues associated with geographic data
All Hazards	2009	3 – Update and expand data on hazards, critical facilities, and critical infrastructure according to assessed needs	Completed/Ongoing	West Jordan GIS personnel continue to develop and add to the geographic data as part of the City's overall geographic information systems
All Hazards	2009	4 – Provide centralized access to geographic data to emergency planners and responders	Completed	West Jordan GIS personnel make data available to first responders and others involved in emergency management efforts

All Hazards	2009	1 – Integrate existing hazard monitoring networks in emergency operations centers. Utilize sensors such as weather stations, stream gages, seismograph stations, road conditions, etc.	Completed	West Jordan has implemented the use of monitoring equipment such as stream gages, seismographs, SNOTEL sites to provide situational awareness and forecasting capabilities
All Hazards	2009	2 – Identify and implement additional hazard monitoring capabilities.	Completed	Example: The West Jordan emergency manager receives alerts from the USGS and NWS via text message and email
All Hazards	2009	1 – Compile inventory of mutual-aid agreements and memoranda of understanding (MOU) and identify deficiencies	Completed	West Jordan has formal agreements for Police, Fire, and Water
All Hazards	2009	2 – Pursue and implement needed mutual-aid agreements	Completed	West Jordan is currently working on participation in a new public works MAA
All Hazards	2009	1 – Establish and enforce appropriate planning, zoning, and building code ordinances	Completed	West Jordan enforces all current ordinances and building codes including ordinances like our Flood Damage Prevention and Land Disturbance ordinances.
Drought	2009	2 – Emergency Managers will coordinate with local water districts/public utilities to support ongoing conservation efforts	Completed	West Jordan has hired a Water Conservation Manager who coordinates with the Jordan Valley Water Conservancy District and leads the City's programs for water conservation
Drought	2009	3 – Investigate feasibility of implementing an incentive program to encourage the use of low-flow appliances and fixtures in homes and businesses	Completed	West Jordan has a variety of incentive programs that it offers to its residents related to water conservation.
Drought	2009	4 – Implement water-saving devices and practices in public facilities	Completed	West Jordan has implemented several projects including using secondary water to irrigate public parks instead of culinary water
Drought	2009	5 – Repair, maintain and improve water distribution infrastructure to prevent loss from leakage, breaks, etc.	Completed	The West Jordan Water Division responds immediately to all reports of leaks and performs regular system maintenance, including actively monitoring for leaks, theft of services, etc.
Drought	2009	6 – Coordinate public safety water use, such as hydrant testing	Completed	The West Jordan Water Division coordinates all water use, including the testing of hydrants in partnership with the fire department

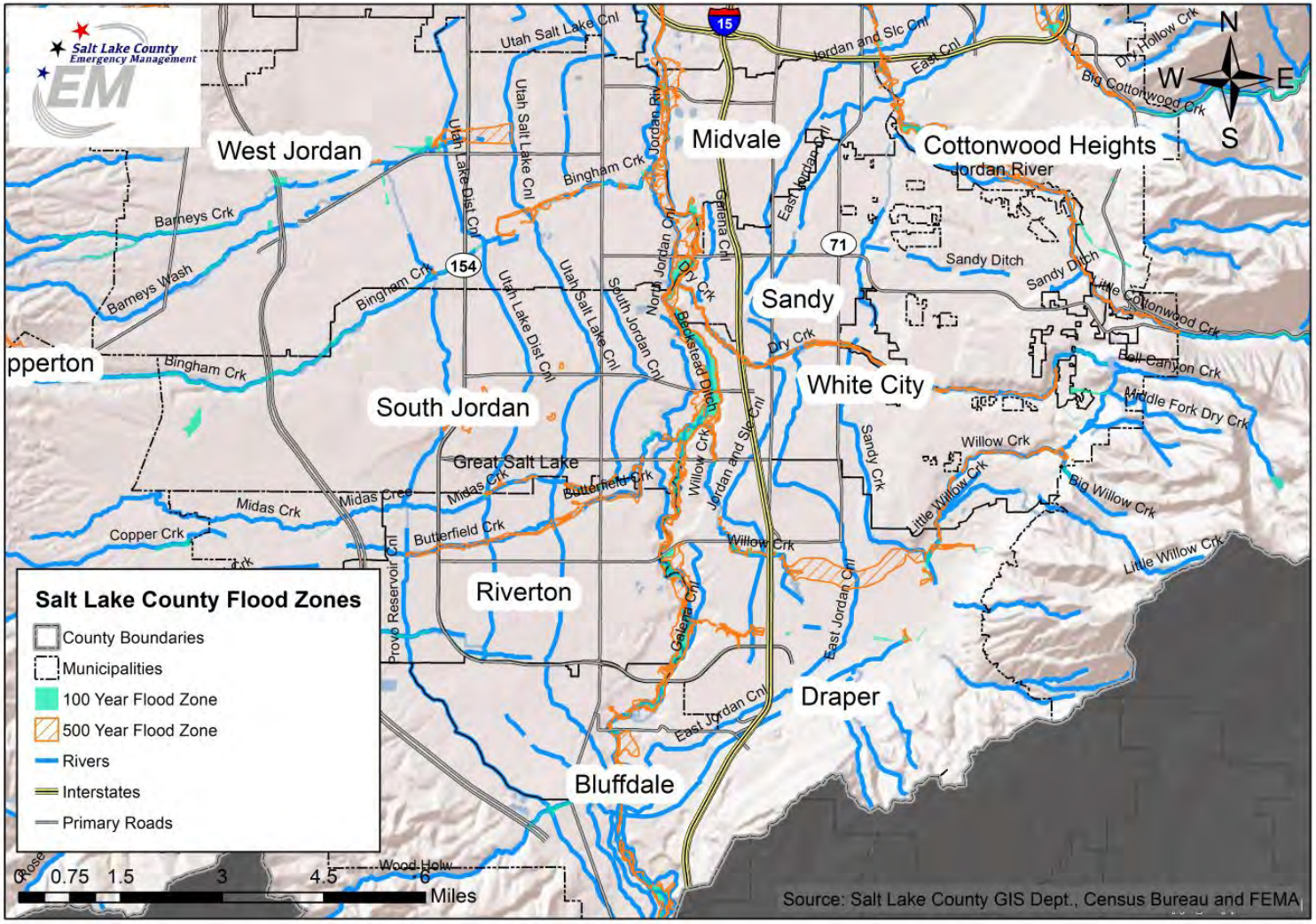
Drought	2009	7 – Provide information on landscaping alternatives for persons subject to green area requirements	Completed	West Jordan offers a variety of information and training classes on topics ranging from proper sprinkler use and maintenance to alternative plants and other vegetation that can be used.
Severe Weather	2009	Meet with NWS representative on an annual basis to receive information on new services and alerts available	Completed	West Jordan participates in briefings provided by NWS representatives on an annual basis
Slope Failure	2009	1 – Utilize recommendations provided by the State Geological Hazards Working Group to address land-use and planning for new developments	Completed	West Jordan Engineering and Planning reviews recommendations as provided pertaining to development within the City
Drought	2009	Continue to encourage water conservation utilizing and promoting outreach material from all water districts in the County	Completed	Public information was developed and continues to be utilized to increase public awareness
Problem Soils	2009	Continue the current application of West Jordan development standards which require soil sampling as part of the geo-technical reports submitted for property development.	Completed/Not applicable	Action taken by private home or business owners. Geo-technical reports are paid for by the person making application for development in the city.
Infestation	2009	Continue the annual West Jordan weed abatement program through the Code Enforcement unit of the West Jordan City Attorney's Office.	Completed/Not applicable	Weed abatement on private property is the responsibility of the owner

Action	Year Initiated	Hazard	Agency Lead	Benefit	Cost	Funding Source	Priority	Status	Comment
Increase the number of residents who are trained to set up and operate an emergency shelter.	2014	Earthquake	Emergency Manager and Fire Department	High	Medium	General Fund	High	Removed	Complete
Enforce the West Jordan Hillside Ordinance to ensure that new development occurs within the requirement.	2014	Slope Failure	West Jordan City Engineer	Low	High - $100,000	General Fund	Low	Complete	We avoid developing in a manner that would risk home and business development to long term problems and costs. It is possible to construct buildings on slopes that have high potential for slipping. Slopes that are too steep impede

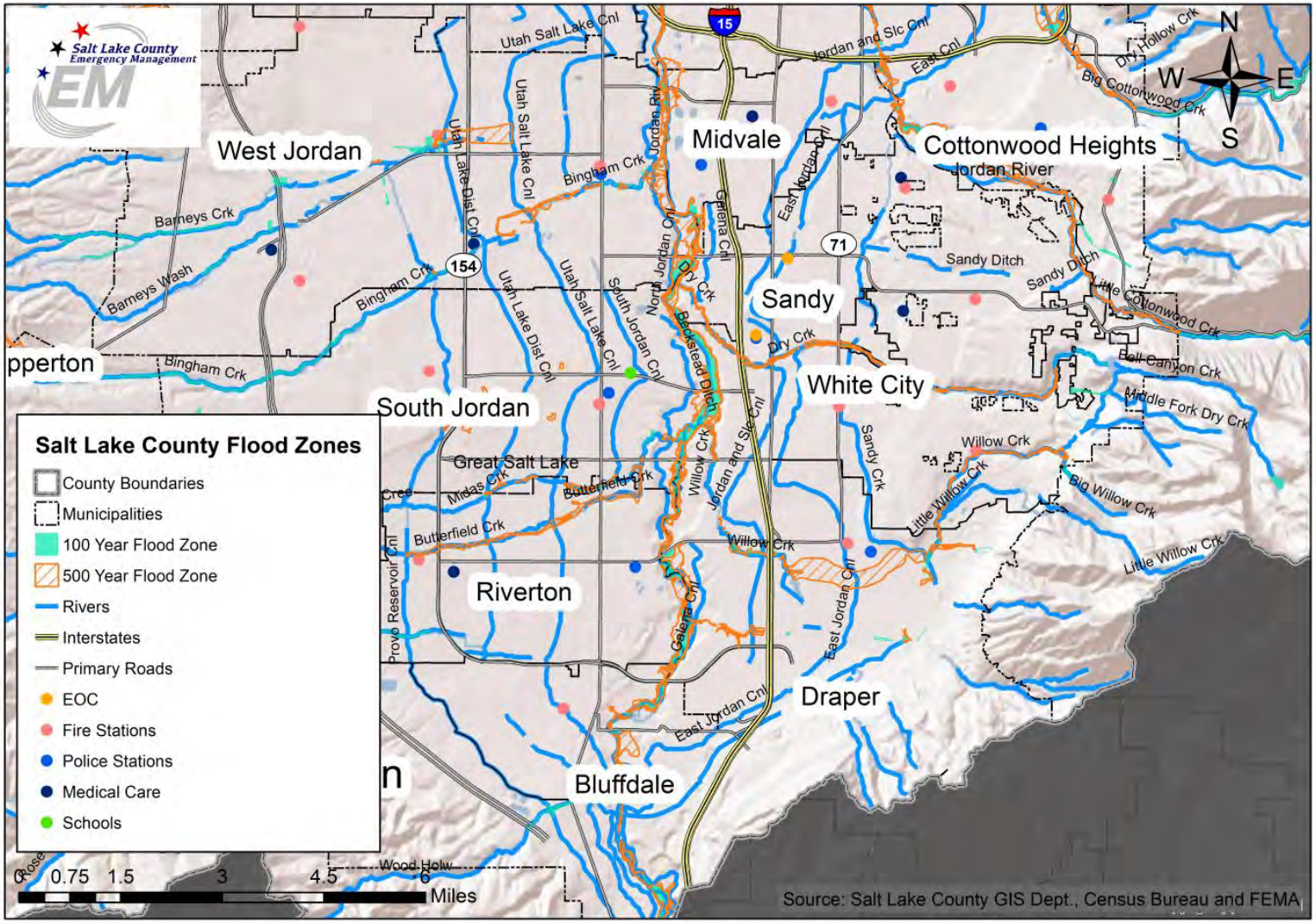
									the ability of the fire department to respond to an emergency.
Create a patterned inspection program to look for signs of weakness in the dam structure.	2014	Dam Failure	West Jordan Public Works Director	Low	Low - $25,000	General Fund	Low	Complete	Bateman Pond has a dam that stores water year-round. Most of our dams are detention basins that serve as park space and are filled falling a significant weather event. This program has been created.
West Jordan is researching the possibility of obtaining water from treated wastewater and post-industrial use water sources.	2014	Drought	West Jordan Public Works Director	Medium	High - $5,000,000	General Fund, HMA, and private funding	Medium	Complete	West Jordan is a water supplier to the community from well sources as well as purchasing water from Jordan Valley Water Conservancy District. Increasing population and industry are putting a significant demand on conventional water supplies.

Jurisdiction Maps

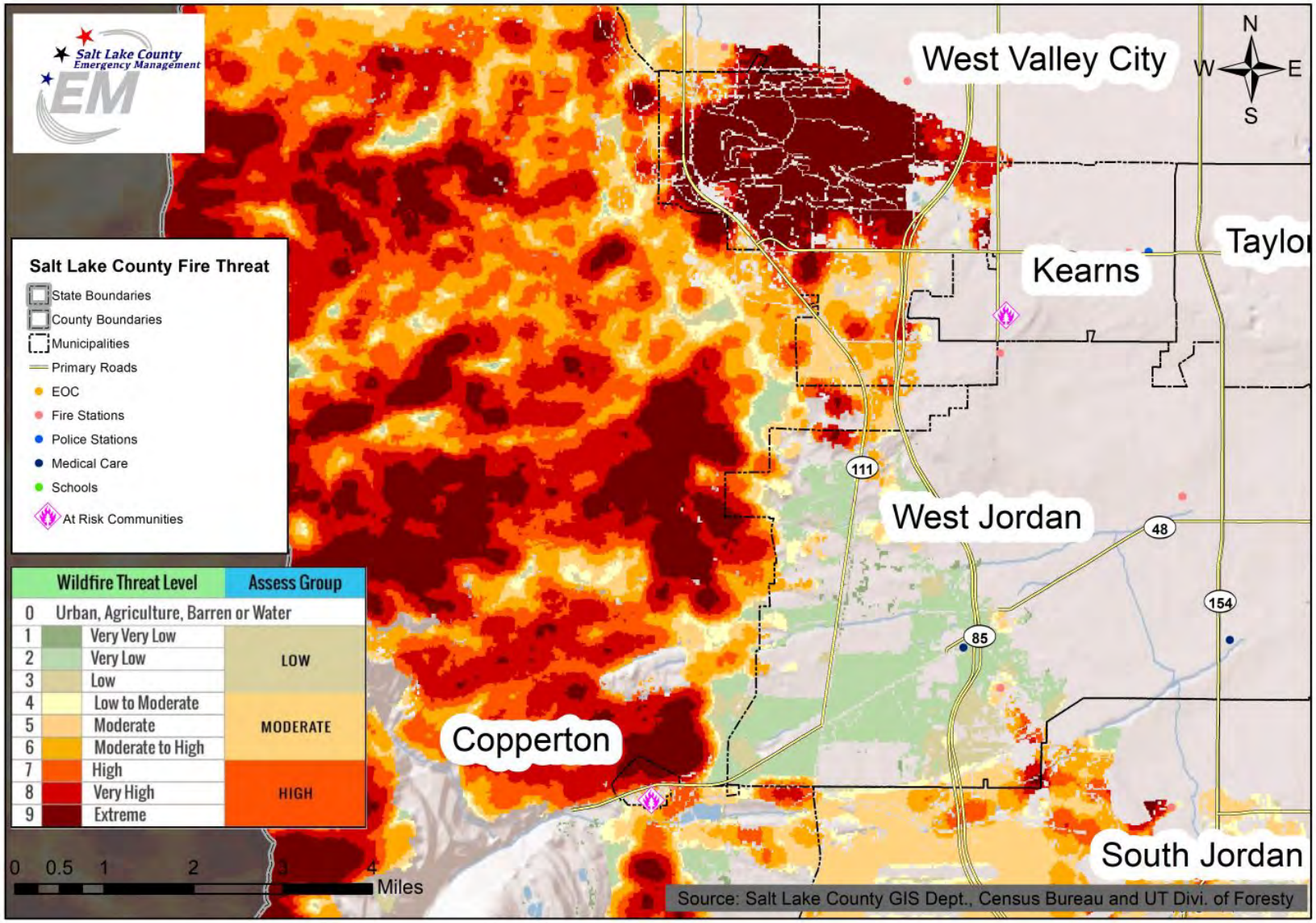
Map: 100 Year and 500 Year Flood Zone



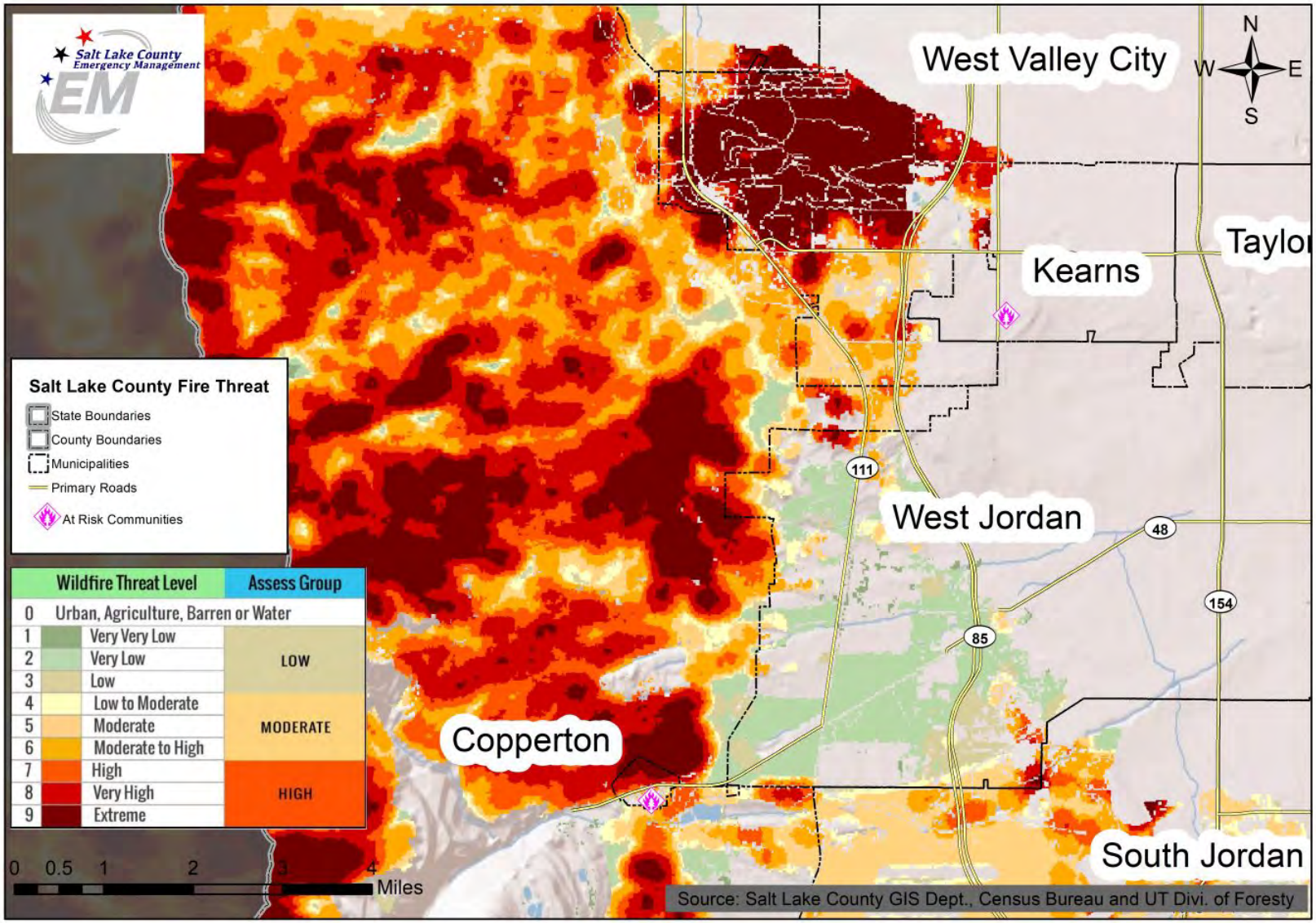
Map: 100 Year and 500 Year Flood Zone with Critical Facilities



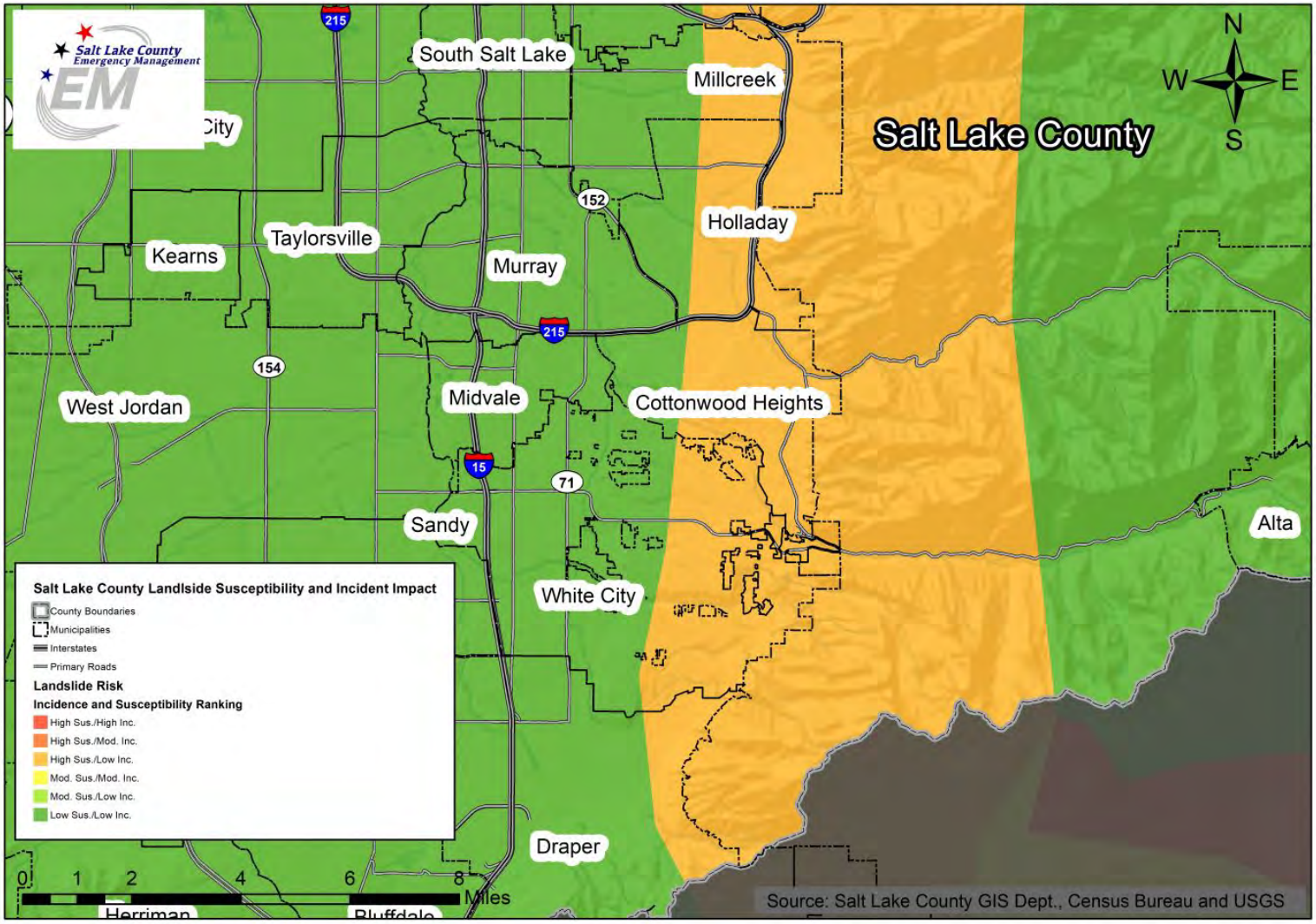
Map: Wildfire Threat Level



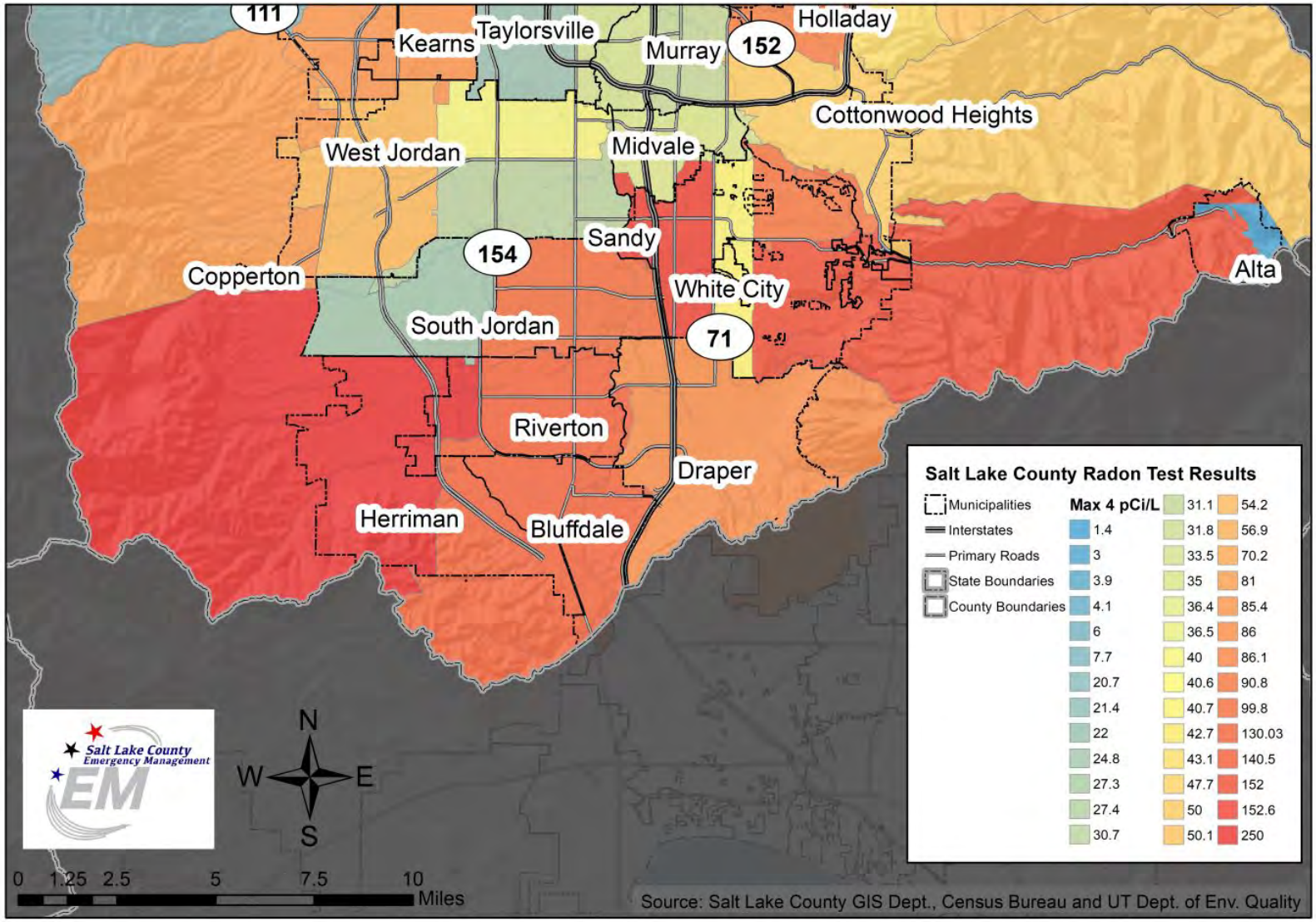
Map: Wildfire Threat Level with Critical Facilities



Map: Landslide Susceptibility and Incident Impact Potential



Map: Radon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Kearns
Taylorsville
Murray
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Holladay
Cottonwood Heights
West Jordan
Midvale
Sandy
154
Copperton
White City
Alta
South Jordan
71
Riverton
Draper
Herriman
Bluffdale
Salt Lake County Radon Test Results
Municipalities
Interstates
Primary Roads
State Boundaries
County Boundaries
Max 4 pCi/L
1.4
3
3.9
4.1
6
7.7
20.7
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24.8
27.3
27.4
30.7
31.1
31.8
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40.6
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43.1
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50.1
54.2
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81
85.4
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99.8
130.03
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152
152.6
250
Salt Lake County Emergency Management
EM
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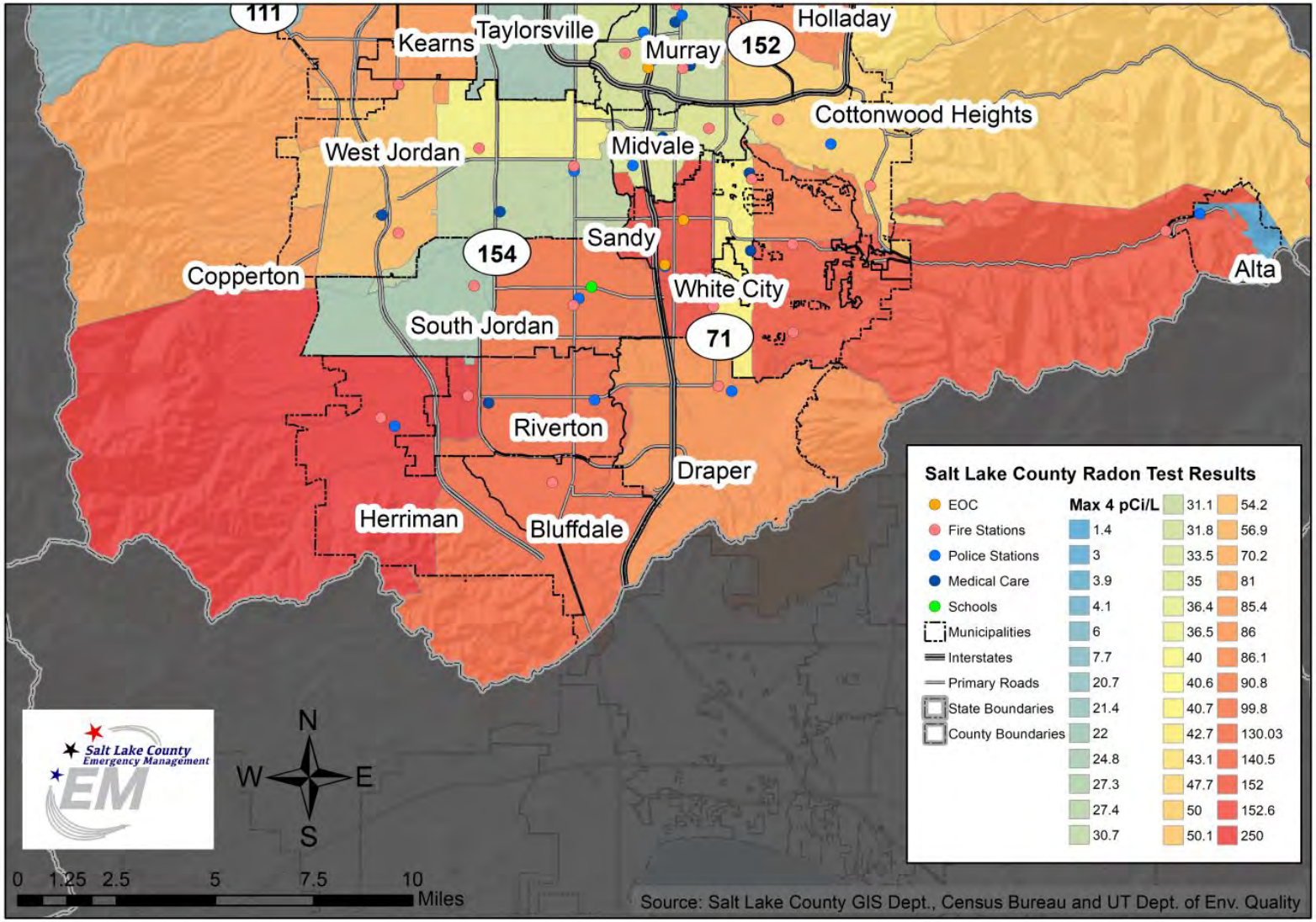
0 1.25 2.5 5 7.5 10
Miles
Source: Salt Lake County GIS Dept., Census Bureau and UT Dept. of Env. Quality

Map: Radon with Critical Facilities



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: West Valley City

Hazard Mitigation Plan Point of Contact

Primary Point of Contact	Alternate Point of Contact
Name: John Evans Title: Fire Chief and Emergency Services Director Department: Fire Address: 3600 S Constitution Boulevard West Valley City, UT 84119 Office Phone: (801) 963-3337 Cell Phone: (801) 232-0337 Email Address: john.evans@wvc-ut.gov Website: https://www.wvc-ut.gov/1562/Be-Ready-WVC	Name: Chris Beichner Title: Deputy Fire Chief Department: Fire Address: 3600 S Constitution Boulevard West Valley City, UT 84119 Office Phone: 801-963-3336 Website: https://www.wvc-ut.gov/1562/Be-Ready-WVC

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** 1980
- **Current Population:** 136,401 (Census v2018).
- **Population Growth:** The population grew 5.3% from April 1, 2010 (129,491) to July 1, 2018 (Census).
- **Location and Description:** The city is located in the suburbs of Salt Lake City and the majority of the space is land (25.4 sq mi) and a very small portion is water (01. sq mi).
- **Brief History:** West Valley City, despite being Utah's second-largest city, is a relatively young city. Incorporated in 1980, the city does not have the deep civic traditions of older Utah communities like Ogden, Salt Lake City or Provo. By the 1870s and 1880s canals were dug across the west side of the valley, bringing water from the Jordan River that became invaluable for irrigation. After World War II, the residents united in a Granger-Hunter Improvement District to provide culinary water and modern sewer services. Established in 1950, this organization gave the area the ability to provide a neighborhood with water allowing new subdivisions to become a reality, and the residential boom was on. Farms disappeared or shrunk as suburbia encroached. Businesses appeared along major corridors like 3500 South and Redwood Road to fill the needs of the growing community. Area residents began to organize, first in groups like the Lions Club, Rotary Club, Valley West Chamber of Commerce, and Daughters of the Utah Pioneers. From these civic-minded organizations came the Granger-Hunter Community Council in 1964. After a failed incorporation effort in 1978, a successful one occurred in 1980, and West Valley City was officially born July 1, 1980. The early years for West Valley City were rough. In fact, new city leaders were faced with a disincorporation vote on the ballot just a week after their July 1 swearing ins. Disincorporation failed and the city was here to stay, but the recession of the early 1980s was not kind to the infant municipality and finances were rough. But through prudent management, the city got on its feet, even paying cash for a new City Hall that was completed in 1990. Because of its relatively affordable housing, West Valley City was a popular place to settle for new immigrants coming to the Salt Lake Valley(West Valley City).

- **Climate:** The average high temperature is 92 degrees and the average low temperature is 24 degrees. On average, West Valley City receives 18 inches of rain and 42 inches of snow a year (Best Places).
- **Public Services:** The city offers community members the opportunity to participate on city boards and committees, including Board of Adjustments, Clean and Beautiful Committee, Historical Preservation Commission, License Hearing Board, Planning Commission, Professional Standards Review Board, and Sister City Committee
- **Governing Body Format:** West Valley City has a nonpartisan, city manager form of government. The mayor fills a role similar to the chairman of the board, with the City Council acting as the board. The mayor is a voting member of the City Council, and City Council has six councilors.
- **Development Trends:** The population of West Valley City, as with the rest of the Wasatch Front, is expected to grow through 2030 and beyond. Currently, high-rise buildings are being built and there are still large areas of older homes. As development continues, more education opportunities on remodeling and retrofitting should be presented for residents. Internal growth, potential annexation and increases in density in some areas will all impact the overall population of the City. The current and expected future population also indicates a transition toward an older population. significant growth in population is expected not only in West Valley City but among all Wasatch Front communities. Rapidly changing demographics and population growth will place different demands on aging housing stock. As West Valley City is approaching build-out in terms of raw land, these changes will raise important questions as to how the city grows, what is built, and where to invest resources and prepare for the future. Economic development has continued to be a priority for West Valley City's leaders. Business parks like Lake Park Corporate Center, West Ridge Commerce Park, Decker Lake Business District and Metro Business Park include corporate headquarters, regional offices and world-wide distribution centers for companies like Verizon Wireless, Frito Lay, Backcountry.com, United Parcel Service (UPS) and Discover Card. Economic development activities in the heart of the city include a complete redevelopment of Valley Fair Mall, and an all-new transit oriented development, Fairbourne Station (West Valley City).

Capability Assessment

The Fire Chief is the Town's designated Emergency Manager. Hazard Mitigation Planning efforts are led by the Emergency Manager/Fire Chief position(s).

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY

	Local Authority Exists to Develop and Implement/ Enforce?	A Jurisdiction-Specific Code, Ordinance and/or Requirement Currently Exists?	Rely on the County's Codes, Ordinances & Requirements	Comments
Codes, Ordinances, & Requirements				
Building Code Development and Enforcement	Yes	Yes	No	
Zonings Ordinance(s)	Yes	Yes	No	
Subdivision Ordinance(s)	Yes	Yes	No	
Stormwater Management Program	Yes	Yes	No	
Floodplain Ordinance(s)	Yes		Yes	
Post Disaster Recovery Program and Ordinance(s)	No	No	Yes	
Real Estate Disclosure Ordinance(s)	Yes	Yes	No	
Growth Management	Yes	Yes	No	
Site Plan Review Requirements	Yes	Yes	No	
Planning Documents				
General or Comprehensive Plan	Yes	Yes	No	
Capital Improvement Plan	Yes	Yes	No	
Economic Development Plan	Yes	Yes	No	
Disaster Planning Documents				
Comprehensive Emergency Management	Yes	Yes	Yes	

Plan/ Local Emergency Operations Plan				
Post-Disaster Recovery Plan	Yes	No	-	
Continuity of Operations Plan	Yes	Yes	-	
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	Yes	Yes	Yes	Some are in the process.

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	No
State/Federal Sponsored Grant Programs	Yes

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	Full Time	Community Development
Engineers or professionals trained in building or	Yes	Full Time	Community Development

infrastructure construction practices			
Planners or engineers with an understanding of natural hazards	Yes	Full Time	Public Works Limited
Personnel skilled or trained in GIS applications	Yes	Full Time	IT Department
Emergency manager	Yes	Part Time	Fire Chief
Grant writers	Yes	Part Time	Finance

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	Public Works
Who is your jurisdiction's floodplain administrator? (department/position)	Public Works
Are any certified floodplain managers on staff in your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes, Limited.
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Yes
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	Yes, Limited.

Jurisdiction-Specific Hazards and Risks

The *Natural Hazard Events Table* lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0

- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 103 policies were in force with total coverage of $27,519,900 and total written premium and FPF of $119,447 (FEMA, 2019).
- West Valley City does participate in the National Flood Insurance Program (CID # 490245) and the last FIRM map for the area was issued on 09/25/09 (FEMA, 2019).
- The city will continue to participate in the NFIP through various efforts including but not limited to floodplain management, ordinance development and review, technical assistance, compliance inspections, and community education on flood hazards.

TABLE: RECENT NATURAL HAZARD EVENTS
(NOAA Data with additions from the jurisdiction representatives)

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Heavy Snow	4 inches of snow		2/13/2019	
Heavy Snow	9 inches of snow		2/22/2018	
Hail	quarter-sized, ping-pong-sized, to golf-ball-sized		6/13/2016	
Hail	1-inch diameter		8/6/2014	
Winter Storm	7 inches of snow, power outages including downed power lines and hundreds of car accidents		12/19/2013	
Winter Storm	6 inches		12/7/2013	
Winter Storm	11 inches		12/29/2010	

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community
Members of the community over 65 years old	10,759
Members of the community under 18 years old	43,437

Members of the community that identify as having disability status	11,275
Members of the community that speak English less than "very well"	19,165
Members of the community living below the poverty line	18,631
The number of mobile homes in the community	2,416
Members of the community without health insurance	28,061
Occupied housing units with tenants without a vehicle	1,454
Housing units without heating fuel	22

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Earthquake: The Wasatch Fault poses the greatest threat to the area. Other faults within West Valley City include the West Valley Fault Zone and the East Great Salt Lake Fault Zone. Each of these fault zones has a much longer return interval (2,500 years or more) and is not expected to produce a major quake in the near future. Other faults of concern are the Taylorsville and Granger Fault. With any earthquake, liquefaction is a concern, as well as the potential high impact on the unreinforced masonry structures and structures built before 1974.

Name	Fault Type	Length (km)	Time of Most Recent Deformation	Recurrence Interval
West Valley fault zone, Granger segment	Normal	16	1,500±200 cal yr B.P.	2,600-6,500 years
West Valley fault zone, Taylorsville segment	Normal	15	2,200±200 cal yr B.P.	6,000-12,000 years

Table. Quaternary Faults, Salt Lake County (UGS 2002, UGS 2006) cal yr B.P.=calendar years before present

Vulnerability Assessment

The following values are from the HAZUS analysis performed in the previous Mitigation Plan. Because no significant changes in the level of risk or the condition of infrastructure, these values are still considered valid estimates of potential impacts to earthquake in Salt Lake County and West Valley areas. They are based on a probabilistic 2500-year event with a Richter magnitude of 7.1 as well as an arbitrary 5.9 event located in close proximity to West Valley's most populated areas. These locations and magnitudes were chosen for their likelihood and proximity respectively. Default HAZUS-MH inventory for all infrastructure was used.

Vulnerability of people and infrastructure to earthquake hazards in West Valley City was obtained from the modeling program HAZUS-MH, completed by FEMA Region VIII.

Jurisdiction	*Total Building Economic Loss*	*Loss Ratio*	*Total Debris (tons)*
West Valley City	$ 1,890,864,776	15%	1,280,884

Jurisdiction	*Displaced Households*	*Individuals Seeking Public Shelter*	*Total Casualties*	*Life-Threatening Injuries and Fatalities*	*URM Count*
West Valley City	5,830	4,944	1,686	169	7,143

Jurisdiction	*Life-Threatening Ratio to Total Pop*	*URM Ratio to Total Structures*
West Valley City	0.130%	23%

Building Damage

HAZUS-MH classifies building damage into five states: none, slight, moderate, extensive and complete. The Table below lists the number of buildings by occupancy estimated to sustain moderate to complete levels of damage during an arbitrarily-determined Richter magnitude 5.9 (M5.9) earthquake scenarios or a probabilistic Richter magnitude 7.1 (M7.1) earthquake scenario. Also listed are the estimated monetary losses to structures, contents/inventory, and income.

Category	**Number of Structures with > 50% Damage**		**Category**	**Estimated Losses**	
	Salt Lake M5.9	**2500-yr M7.1**		**Salt Lake M5.9**	**2500-yr M7.1**
Residential	30,342	157,705	Structural Losses	$519,320,000	$3,419,030,470
Commercial	1,896	5,199	Non-Structural Losses	$1,818,647,000	$12,331,504,070
Industrial	495	1,367	Content Losses	$719,709,000	$4,114,455,740
Government	167	475	Inventory Losses	$29,216,000	$175,756,410
Education	51	159	Income and Relocation Losses	$623,140,000	$3,263,449,580
Totals	32,951	164,905	Totals	**$3,710,032,000**	**$23,304,196,270**

Table. Building Damage Counts and Estimated Losses using HAZUS MH

Debris Removal

The Table below shows how much debris would be generated by the earthquake and how many loads it would take to remove the debris, based on 25 tons per load. One truck can likely haul one load per hour. A second debris removal issue is landfill space. Fifty thousand tons at a weight-to-volume ratio of one ton per cubic yard would cover more than ten acres to a depth of three feet.

Category	Salt Lake M5.9	2500-yr M7.1
Brick, Wood & Others	581,000 tons / 23,240 loads	3,356,000 tons / 134,240 loads
Concrete & Steel	1,195,000 tons / 47,800 loads	7,678,000 tons / 307,120 loads

Table. Debris Generated/Number of Loads

Fires Following an Earthquake

Multiple ignitions and broken water mains following an earthquake can make firefighting nearly impossible. HAZUS-MH uses estimated building damages, loss of transportation infrastructure and estimated winds to calculate the estimated area that would be burned following an earthquake.

Casualties

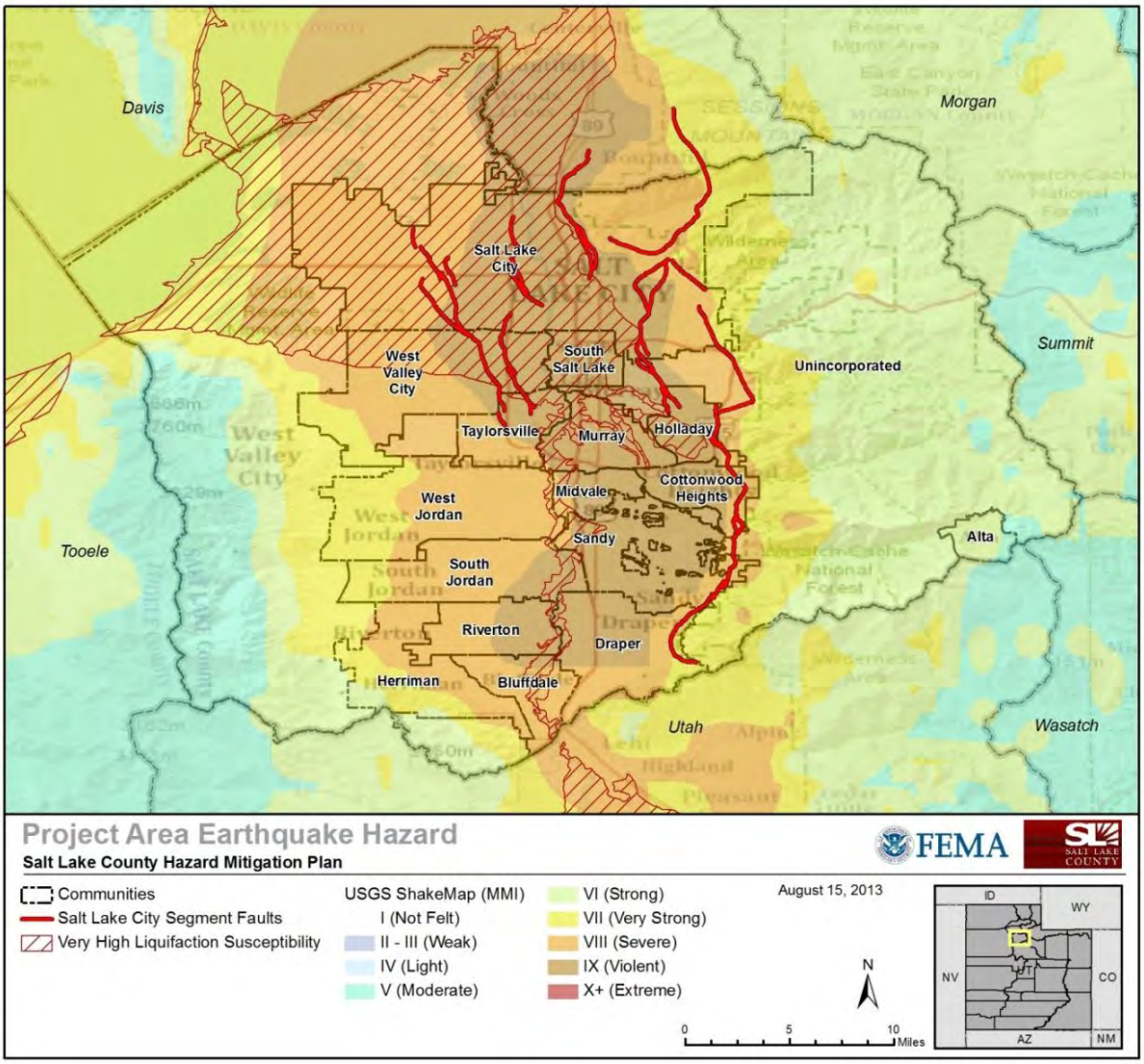
The Table below estimates casualties likely to occur during each earthquake scenario. The nighttime scenario (2 a.m. local time) assumes a primarily residential concentration of persons, the daytime scenario (2 p.m. local time) a commercial concentration, and the commute scenario (5 pm. local time) a concentration of persons on commuting routes. Categories of casualties include those not requiring hospitalization (minor), those requiring treatment at a medical facility (major), and fatalities.

Night Event	Salt Lake M5.9	2500-yr M7.1	Day Event	Salt Lake M5.9	2500-yr M7.1	Commute Event	Salt Lake M5.9	2500-yr M7.1
Minor	1,024	10,475	**Minor**	1,883	17,110	**Minor**	1,432	13,442
Major	219	3,224	**Major**	502	6,192	**Major**	369	4,688
Fatalities	44	758	**Fatalities**	122	1,742	**Fatalities**	87	1,258

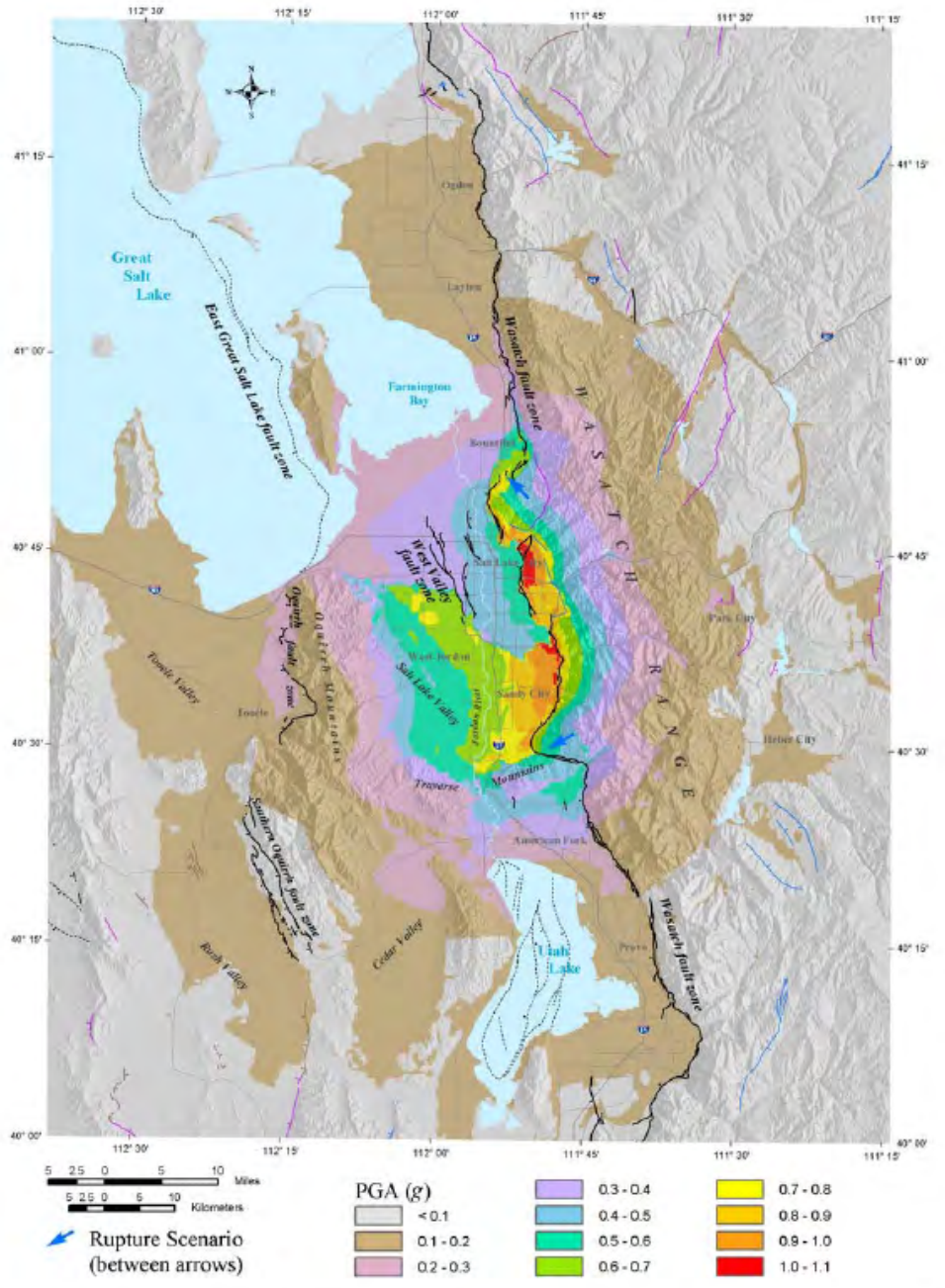
Table. Casualties

Community Assets

Additional significant community assets with potential impacts by earthquake hazards were identified by the Planning Team. These include areas of concern, critical facilities and infrastructure, areas of future development, major employers or economic sectors, cultural or historic facilities, significant populations, or significant natural resources.



Map from Earthquake-Hazards Scenario for a M 7 Earthquake on the Salt Lake City Segment of the Wasatch Fault Zone, Utah, Utah Geological Survey Special Study 111, 2004.



Flooding: Flooding in West Valley City is typically the result of excessive snowmelt runoff and/or heavy rainfall. Snowmelt flooding is usually the result of the rapid melting of snowpack and occurs between April through June and occurs along the major existing streams and waterways. Thunderstorms can produce high intensity, short-duration heavy rainfall that occurs over a relatively small area in the summer months. However, flooding can also occur from non-thunderstorm rainfall events. The flows of the Jordan River from Utah Lake into West Valley City are controlled and the flood potential from is somewhat reduced upstream of the major Jordan River tributaries. A concern in the area is the uncertified levees at 3800 S. The bridge over the river at 3900 is too low and easily impacted by flooding. Also, the lack of drainage in the eastern part of the city adds to flooding concerns, particularly the area east of Lester St in Chesterfield

and east of 1300 W South of 3500 S. Urban flooding is a concern for South Bourne Circle, Atlas Way-north end, 4000 W. and 4100-4700 S., and Stanton Dr./ 3285 S. Intersection.

West Valley City has no recurring loss properties identified under the National Flood Insurance Program (NFIP).

Location

Flooding in West Valley City is typically the result of excessive snowmelt runoff and/or heavy rainfall. Snowmelt flooding is usually the result of rapid melting of snowpack and occurs between April through June and occurs along the major existing streams and waterways. Thunderstorms can produce high intensity, short duration heavy rainfall that occurs over a relatively small area in the summer months. However, flooding can also occur from non-thunderstorm rainfall events.

The flows of the Jordan River from Utah Lake into West Valley City are controlled and the flood potential from is somewhat reduced upstream of the major Jordan River tributaries. Parley's Creek has flood storage capacity at Mountain Dell and Little Dell Reservoirs and is routed through a retention basin in Sugarhouse Park. Big and Little Cottonwood Creeks and have several smaller flood storage lakes and ponds providing some flood protection, such as Wheeler Historic Farm. In Salt Lake City, Emigration Creek and Red Butte Creek come together at 700 East and 1300 South and can be discharged in or bypass Liberty Park pond. Parley's Creek discharges to the 1300 South drain at State Street.

A concern in the area is the uncertified levees at 3800 S. The bridge over the river at 3900 is too low and easily impacted by flooding. Also, the lack of drainage in the eastern part of the city adds to flooding concerns, particularly the area east of Lester St in Chesterfield and east of 1300 W South of 3500 S. Urban flooding is a concern for South Bourne Circle, Atlas Way-north end, 4000 W. and 4100-4700 S., and Stanton Dr./ 3285 S. Intersection.

History:

The following flood events are of notable significance:

2011 - Large snowpack meant larger resulting spring runoff flows
2010 - Spring snowmelt combined with heavy rains caused several streams to overtop their banks
1987 – Great Salt Lake reached its all-time maximum water level (4211.6 feet)
1983 - Large snowpack was coupled with a rain-on-snow event, (City Creek diverted down State Street)
1983/1984 - Large snowpack overwhelmed Utah Lake and affected Jordan River downstream
1952 - Rapid melt of a large snowpack

During the past 149 years, the Great Salt Lake has peaked three times above 4,211 feet above sea level: 4,211.60 feet in June 1873, 4,211.50 feet in June 1986 and 4,211.60 feet in June 1987.

Vulnerability Assessment

The following loss estimates were provided by FEMA Region VIII, as part of the Mitigation Planning/Risk MAP partnership.

Structure Exposure and HAZUS-Generated Losses

	1% Annual Chance			0.2% Annual Chance		
Jurisdiction	Structure Exposure	Building and Contents Loss*	Loss Ratio**	Structure Exposure	Building and Contents Loss	Loss Ratio
West Valley City	399	$90,923,943	0.704%	173	$4,741,553	0.04%
County Total	**1,533**	**$118,217,947**		**6,763**	**$320,309,430**	**0.23%**
Population Exposure						
1% Annual Chance					7,421	
0.2% Annual Chance					23,126	

Agricultural Losses

Losses are computed according to the number of days in which the crops are inundated with water. All numbers are estimated for a flood occurring near April 15th.

	100-year Losses Day 3	**100-year Losses Day 7**	**500-year Losses Day 3**	**500-year Losses Day 7**
Barley	$45,134	$60,179	$49,078	$65,438
Corn Silage	$565,932	$754,577	$566,310	$820,518

Debris Removal

The Table below shows how much debris would be generated by flooding and how many loads it would take to remove the debris, based on a capacity of 25 tons per load. One truck can likely haul one load per hour. A second debris removal issue is landfill space. Fifty thousand tons at a weight-to-volume ratio of one ton per cubic yard would cover more than ten acres to a depth of three feet.

Category	**100-year**	**500-year**
Finishes	37,402 tons/1,497 loads	44,481 tons/1,780 loads
Structures	64,725 tons/2,589 loads	69,936 tons/ 2,798 loads
Foundations	61,660 tons/2,467 loads	66,747 tons/2,670 loads
Totals	163,786 tons/6,553 loads	181,164 tons/7,248 loads

Severe Weather: Severe weather common in the city includes winter storms, large scale wind events, thunderstorms, lightning, hail, tornadoes, flooding, and avalanches. While some types of these events can be predicted, others will occur with little or no warning.

High Winds: High winds can occur with or without the presence of a storm and are unpredictable in regard to time and place. West Valley City has experienced high winds in the past and can expect future events.

Thunderstorms: Damage can be extensive especially for agriculture, farming, and transportation systems.

Winter Storm: Winter storms can pose a significant threat due to vehicle traffic accidents on icy roads, prolonged exposure to cold, damage to electrical, telephone or communication systems from ice or heavy snow accumulation, and indirectly related health threats such as individuals suffering heart attacks while shoveling snow. Prolonged exposure to cold can cause frostbite or hypothermia and can become life-threatening. Winter weather can also have significant economic costs associated with snow removal, revenue and wage losses from road and airport delays or closures, flooding damage from rapid snowmelt, and agricultural and timber losses from frost and ice. Of primary concern for the area is roof damage on old low slope roofs, the homeless population being impacted, and the lack of snowplowing resources.

Extreme Temperature: The area experiences both cold and very high-temperature conditions. Extreme heat not only causes discomfort, but personal health can be affected through heat cramps, heat exhaustion or heat stroke, particularly affecting vulnerable populations such as the very young, elderly, poor, and homeless. Extreme heat places a substantial burden on power grids through the widespread use of evaporative coolers and air conditioning. This strain can lead to brownouts or blackouts leaving many without power. Historically, extreme cold in the region has disrupted agriculture, farming, and crops. Especially vulnerable to extreme cold are the young, elderly, homeless and animals. Wind chill can further the effects of extreme cold. Extreme Cold impacts the old water and gas infrastructure.

Drought: Although the agricultural community is usually the most heavily impacted by drought, direct and indirect impacts extend into economic, social, or environmental sectors as well.

Dam Failure: The Dam on Riter Canal (5300 W) would impact the area, including a few homes, if it failed.

Wildfire: Areas near SR-III (need gate access) are at risk for wildfire. The town also has a significant homeless population and wildfires can cause adverse impacts to these community members.

Public Health: Like the winter storm and wildfire concerns, the homeless population could be adversely impacted by a pandemic.

Civil Disorder/Riot: USANA and Maverik Center are areas of concern for these events due to being gathering sites.

Hazardous Materials Release: ATK (Northrup Gruman) Explosion is the biggest HAZMAT event to have occurred. The railroad carries loads of hazardous materials through the town and Hexcel Carbon Fiber Management plant houses hazardous materials.

Radon: Radon is a radioactive gas released from the nuclear decay process of uranium and radium, which are trace elements of many soils. The entire city is subject to this type of event.

Terrorism: The ICE facility could be a target.

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Severe Winter Weather	3	16	48
Severe Weather	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Public Health Epidemic/ Pandemic	2	21	42
Flooding	2	19	38
Cyber Attack	2	17	34
Hazardous Materials Incident	2	15	30
Drought	2	14	28
Radon	3	9	27
Terrorism	1	25	25
Dam Failure	1	21	21
Tornado	1	11	11
Civil Disturbance	1	10	10
Wildfire	1	10	10
Landslide and Slope Failure	1	6	6
Avalanche	1	0	0

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.

SLC2019HMP-West Valley(2.0).xlsx

Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1		Avalanche	No Impact	0	0
Dam Failure	Low	1		Dam Failure	Medium	2	6
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Low	1	3
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Low	1		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	High	3	9
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	Low	1		Wildfire	Low	1	3

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	No Impact	0	0		Avalanche	No Impact	0	0
Dam Failure	Medium	2	2		Dam Failure	High	3	6
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Medium	2	4
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	High	3	6
Hazardous Materials Incident	Medium	2	2		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Low	1	2
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Low	1	2
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	Low	1	1		Wildfire	Low	1	2

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**		**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)		**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)		**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)		**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)		**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	No Impact	0	0		Avalanche	Unlikely	0	0
Dam Failure	Low	1	1		Dam Failure	Medium	2	6
Drought	Medium	2	2		Drought	Low	1	3
Civil Disturbance	Medium	2	2		Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	2		Cyber Attack	Medium	2	6
Earthquake	High	3	3		Earthquake	High	3	9
Flooding	Medium	2	2		Flooding	Low	1	3
Hazardous Materials Incident	Medium	2	2		Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	No Impact	0	0		Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	3		Public Health Epidemic/ Pandemic	High	3	9
Radon	No Impact	0	0		Radon	Unlikely	0	0
Severe Weather	Low	1	1		Severe Weather	Unlikely	0	0
Severe Winter Weather	Medium	2	2		Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	3		Terrorism	High	3	9
Tornado	Low	1	1		Tornado	Unlikely	0	0
Wildfire	Low	1	1		Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**		**Catastrophic Factor**—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)		**High**—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)		**Medium**—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)		**Low**—Low potential that this hazard could be catastrophic (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)		**Unlikely**—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Procure generators and hookups for publicly-owned buildings and facilities assisting functional access needs populations.	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Hazardous Materials Release	West Valley City EM	Public Works and ALF	High	High	HMA/PDM Grant or other federal funds	High	Short-term	
Conduct a Hazardous Flow Study	2019	Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.	All-Hazards	West Valley City EM	Public Works	Medium	Medium	HMA/PDM Grant or other federal funds	Medium	Short-term	

Mitigation Table - Ongoing Actions

Action	Year Initiated	Hazard(s)	Agency Lead	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Conduct an inventory and assessment of communications equipment and systems and identify needs	2009	All Hazards	Emergency Management	High	Low	Local	Medium	Ongoing	Currently we have upgraded radio and comms systems. Inventory of all local assets complete
Establish agreements to share communications equipment between agencies involved in emergency operations	2009	All Hazards	Emergency Management and Communications	Medium	Low	Local	Medium	Ongoing	Working with Salt Lake County
Evaluate vulnerability of critical communications systems	2009	All Hazards	Emergency Management and Communications	High	Low	Local	Medium	Ongoing	Looking at each emergency to see weakness
Establish a coordinating group to address long-term communication needs and implementation strategies	2009	All Hazards	Emergency Management and Communications	Medium	Low	Local	Medium	Ongoing	Working with City comms group for this
Compile inventory of mutual-aid agreements and memoranda of understanding (MOU) and identify deficiencies	2009	All Hazards	Emergency Management	Medium	Low	Local	Medium	Ongoing	Completed all fire and ems. Working with Public works and police now
Incorporate information about cascading effects of hazards in education programs	2009	All Hazards	Emergency Management	Medium	Low	Local	Medium	Ongoing	Working with city to have continual education
Develop education programs to target specific groups including homeowners,	2009	All Hazards	Emergency Management	Medium	Low	Local	Medium	Ongoing	We have completed adult programs and are now working on an

developers, schools and people with special needs									elementary school program
Implement water-saving devices and practices in public facilities	2009	Drought	Emergency Management and Public Works	Medium	Medium	Local and grants	Medium	Ongoing	City facilities are changing over fixtures for conservation in city owned buildings
Assist Cities with NFIP application	2009	Flood	Emergency Management	Medium	Low	Local	Low	Ongoing	Advise citizens and businesses of program
Encourage Communities to actively participate in NFIP	2009	Flood	Emergency Management	Medium	Low	Local	Medium	Ongoing	Provide education to citizens in EM programs
Identify and assess structures for deficiencies	2009	Flood	Emergency Management and Public Works	Medium	Medium	Local and grants	Medium	Ongoing	Provide education to citizens in EM programs
Modify structures as needed to address deficiencies	2009	Flood	Emergency Management and Public Works	Medium	High	Local and grants	Medium	Ongoing	Provide education to citizens in EM programs
Maintain Contact with NWS prior to re-application in 2010	2009	Severe Weather	Emergency Management	Medium	Low	Local	Medium	Ongoing	Work always on plans with NWS
Conduct training and awareness activities on communications equipment, tools, and systems.	2014	All Hazards	Fire and Emergency Management	High	Minimal	Local	High	Ongoing	West Valley completes monthly tests
Establish notification capabilities and procedures for emergency personnel.	2014	All Hazards	Fire and Emergency Management - Dispatch	High	Minimal	Local	High	Ongoing	West Valley uses the VECC callback system for personnel
Establish redundancy for dispatch centers and other critical communications systems.	2014	All Hazards	MIS	Medium	Medium - $60,000	Local	High	Ongoing	West Valley has this with VECC and also our own 800mhz radio repeater system; We have trained all personnel working in emergency operations

Acquire, upgrade, and/or integrate communications equipment and systems as determined by coordinating group.	2014	All Hazards	Fire/EMS	Medium	High - $500,000	Federal and state grants	High	Ongoing	New Radio Systems; Budget issue upgrading as we can with current budgets
Establish a coordinating group to address geographic data issues.	2014	All Hazards	CED/MIS	Medium	Minimal	Local	Medium	Ongoing	West Valley GIS is always updating the maps
Examine current data availability and sharing capabilities, evaluate needs, and identify shortcomings.	2014	All Hazards	Municipal	High	Low - $10,000	Local	Medium	Ongoing	Working on Gap Analysis
Update and expand data on hazards, critical facilities, and critical infrastructure according to assessed needs.	2014	All Hazards	Fire and Emergency Management	High	Low - $10,000	Local	Medium	Ongoing	West Valley not currently done but has some items within the Digital Sandbox
Provide centralized access to geographic data to emergency planners and responders.	2014	All Hazards	GIS	Medium	Low - Minimal	Local	Medium	Ongoing	Working with GIS Department).
Integrate existing hazard monitoring networks in emergency operations centers. Utilize sensors such as weather stations, stream gauges, seismograph stations, road conditions, etc.	2014	All Hazards	Municipal	Medium	Low -$4,000	Local	Medium	Ongoing	West Valley City looking at weather strand
Identify and implement additional hazard monitoring capabilities.	2014	All Hazards	Municipal	High	High	Municipal	Medium	Ongoing	Further research needed
Utilize GIS to identify facilities and infrastructure at risk.	2014	All Hazards	MIS	High	Low-$5,000	Local	High	Ongoing	Continually accessing
Assess critical facilities for hazard exposure, structural	2014	All Hazards	Municipal	High	Medium - $25,000	Municipal	High	Ongoing	Education strategy.

weaknesses, power, communications and equipment resources and redundancy, and adequate emergency procedures.									
Pursue and implement needed mutual-aid agreements.	2014	All Hazards	All	Medium	Low - $5,000	Municipal	Medium	Ongoing	West Valley Fire and Police are done working on other departments
Provide education regarding all natural hazards through live trainings, as well as web-based, print and broadcast media.	2014	All Hazards	Emergency Management	High	Low	Local	High	Ongoing	West Valley CERT
Utilize maps and similar products on City EM website and other media to educate public on areas at risk to hazards.	2014	All Hazards	MIS	High	Low - $5,000	Local	High	Ongoing	Continually update
Continue to encourage water conservation utilizing and promoting outreach material from all water districts in the County.	2014	Drought	Water Districts	High	Low	Municipal	High	Ongoing	Ongoing outreach
Emergency Managers will coordinate with local water districts/public utilities to support ongoing conservation efforts.	2014	Drought	Public Works and West Valley Education	High	Low	Local	High	Ongoing	Ongoing outreach
Identify structures at risk to earthquake damage.	2014	Earthquake	Emergency Management	High	Low - $5,000	Local	High	Ongoing	West Valley HAZUS
Research feasibility of an incentive program for retrofitting privately-owned	2014	Earthquake	Emergency Management	High	High	State and Federal grants,	High	Ongoing	West Valley Planning Process

buildings, particularly unreinforced masonry.						such as HMA			
Complete seismic rehabilitation/retrofitting projects of public buildings at risk.	2014	Earthquake	Municipal	High	High - $17,000,000	Municipal and additional grants	High	Ongoing	West Valley City working plan
Provide educational materials to unreinforced masonry home and business owners.	2014	Earthquake	Emergency Management	Medium	Low - $10,000	Municipal	Medium	Ongoing	Ongoing outreach to citizens
Determine potential flood impacts and identify areas in need of additional flood control structures.	2014	Flood	Public Works and West Valley Planning	Medium	Low	Municipal	Medium	Ongoing	Continual process
Address identified problems through construction of debris basins, flood retention ponds, energy dissipaters or other flood control structures.	2014	Flood	Public Works	Medium	High - $1,000,000	Municipal	Medium	Ongoing	West Valley – Continual with all developments and up-grades to storm water drains near Jordan River.
Establish maintenance and repair programs to remove debris, improve resistance and otherwise maintain effectiveness of storm water and flood control systems.	2014	Flood	Public Works	High	Medium - $75,000 annually	Local	High	Ongoing	West Valley City on-going maintenance
Maintain Hazardous Weather Operations Plan according to StormReady requirements.	2014	Severe Weather	Emergency Management	Low	Low	Local	Low	Ongoing	Work on Storm Wise Program
Assist NWS in making other agencies and departments aware of available resources.	2014	Severe Weather	Staff	Medium	Low	Local	Medium	Ongoing	Advise citizens on website
Work with the NWS to develop large event venue weather safety and evacuation procedures.	2014	Severe Weather	Emergency Management	High	Low - $10,000	Local	High	Ongoing	West Valley to develop a plan with event areas

Mitigation Table - Completed and Removed Actions

Category	Year Initiated	Goal / Objective	Action	Status	Comments
All Hazards	2009	1 – Improve and maintain communications capabilities for emergency operations 1.1 – Improve communication capabilities	4 – Establish notification capabilities and procedures for emergency personnel	Done	Worked with Dispatch and reverse 911 for our system
All Hazards	2009	2 – Improve awareness and analysis of hazards 2.2 – Improve and expand hazard monitoring capabilities	1 – Integrate existing hazard monitoring networks in emergency operations centers. Utilize sensors such as weather stations, stream gages, seismograph stations, road conditions, etc.	No Progress	Funding and personnel
All Hazards	2009	2 – Improve awareness and analysis of hazards 2.2 – Improve and expand hazard monitoring capabilities	2 – Identify and implement additional hazard monitoring capabilities.	No Progress	Funding and personnel
All Hazards	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	2 – Assess critical facilities for hazard exposure, structural weaknesses, power, communications and equipment resources and redundancy, and adequate emergency procedures	Done	Have completed this for city owned facilities
All Hazards	2009	3 – Ensure critical facilities can sustain operations for emergency response and recovery 3.1 – Prevent damage to critical facilities and infrastructure	3 – Implement improvements to address identified in assessment	Done	completed this for city owned facilities
All Hazards	2009	5 – Increase citizen safety through improved hazard awareness 5.1 – Establish a comprehensive public education program	5 – Coordinate with existing public education programs such as the American Red Cross, Utah Living with Fire, be Ready Utah, the National Weather Service, etc.	Done	All of our programs work with the groups listed

All Hazards	2009	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	1 – Establish and enforce appropriate planning, zoning, and building code ordinances	Done	City building uses latest codes
All Hazards	2009	6 – Improve public safety through preventative regulations 6.1 – Minimize hazard impacts through the adoption of appropriate prevention measures	2 – Ensure current hazard ordinances are available for viewing online	Done	Codes available at city hall
Dam Failure	2009	1 – Include dam failure inundation in future County and City planning efforts 1.1 – Review current State dam safety information on all identified high hazard dams in the County	1 – Include dam inundation maps in current County, City and Special Service District Emergency Operations Plans	NA	Dam's not hazard in this city
Dam Failure	2009	1 – Include dam failure inundation in future County and City planning efforts 1.1 – Review current State dam safety information on all identified high hazard dams in the County	2 – Utilize inundation maps to identify potential evacuation areas and routes	NA	Dam's not hazard in this city
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	3 – Investigate feasibility of implementing an incentive program to encourage the use of low-flow appliances and fixtures in homes and businesses	NA	City does not own water system
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	2 – Research feasibility of an incentive program for retrofitting privately-owned buildings, particularly unreinforced masonry	No Progress	Funding issues

Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.1 – Encourage retrofit and rehabilitation of highly susceptible infrastructure	3 – Complete seismic rehabilitation/retrofitting projects of public buildings at risk	No Progress	Funding issues
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.2 – Improve public education regarding earthquake risks to unreinforced masonry buildings	1 – Provide educational materials to unreinforced masonry home and business owners	Done	Provide information at all events. This will always be on going
Earthquake	2009	1 – Reduce earthquakes losses to infrastructure 1.3 – Improve Seismic Hazard understanding and seismic resistance of CUWCD Red Butte Dam in Salt Lake County.	1 – Procure Engineering Consultant to perform the nonstructural design and geotechnical assessment and review.	None	Funding issues
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.1 – Maintain status as a StormReady Community	1 – Maintain Hazardous Weather Operations Plan according to StormReady requirements	Done	Emergency plan information
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.2 – Increase awareness of information services provided by NWS	1 – Meet with NWS representative on an annual basis to receive information on new services and alerts available	Done	Meeting on plans but will always be ongoing
Severe Weather	2009	1 – Reduce threat of loss of life or property due to extreme weather events 1.3 – Encourage safe practices in avalanche prone areas	1 – Assist Forest Service Utah Avalanche Forecast Center and other organizations in promoting avalanche hazard awareness for backcountry users	N/A	No Avalanches

Slope Failure	2009	1 – Reduce or eliminate the threat of slope failure damage 1.1 – Reduce the threat of slope failures following wildfires	1 – Develop protocol for working with State and Federal agencies in reducing the impact of post-fire debris flow hazard	N/A	
Slope Failure	2009	1 – Reduce or eliminate the threat of slope failure damage 1.2 – Monitor historic landslide areas	1 – Coordinate with the Utah Geological Survey and other agencies to understand current slope failure threats/potential	N/A	
Slope Failure	2009	1 – Reduce or eliminate the threat of slope failure damage 1.3 – Address landslide hazards in new sub-divisions	1 – Utilize recommendations provided by the State Geological Hazards Working Group to address land-use and planning for new developments	N/A	
Wildland Fire	2009	1 – Community education on wildfire hazard 1.1 – Reduce risk from wildfire through education programs	1 – Increase public awareness through “Firewise” program	N/A	No wildland in City
Wildland Fire	2009	1 – Community education on wildfire hazard 1.1 – Reduce risk from wildfire through education programs	2 – Educate homeowners on the need to create defensible space near structures in WUI	N/A	No wildland in City
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.1 – Assist homeowners with creating defensible space near structures in WUI areas	1 – Designate and promote county-wide annual initiative for clearing fuels	N/A	No wildland in City
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities	2 – Provide waste removal, such as chipping of green waste by public works, following designated fuel clearing day/week	N/A	No wildland in City

		2.1 – Assist homeowners with creating defensible space near structures in WUI areas			
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.2 – Improve evacuation capabilities for WUI areas	1 – Work with experts and communities to develop or update evacuation plans	N/A	No wildland in City
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.2 – Improve evacuation capabilities for WUI areas	2 – Evaluate transportation network and address needed improvements to facilitate evacuation and emergency response	N/A	No wildland in City
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.3 – Improve addressing system in WUI areas to facilitate emergency response	1 – Identify all facilities, businesses, and residences, particularly in the canyons, and assign addresses according to current county addressing standards	N/A	No wildland in City
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.3 – Improve addressing system in WUI areas to facilitate emergency response	2 – Incorporate improved addresses in fire-dispatch and other databases	N/A	No wildland in City
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities	1 – Reduce fuels around publicly owned structures	N/A	No wildland in City

		2.4 – Complete wildfire protection projects			
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	2 – Implement fire breaks and other protective measures	N/A	No wildland in City
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	3 – Assess existing water flow capabilities, both public and private, and address deficiencies	N/A	No wildland in City
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.4 – Complete wildfire protection projects	4 – Assist communities in developing Community Wildfire Protection Plans or similar plans	N/A	No wildland in City
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.5 – Encourage proper development practices in the WUI	1 – Adopt the Utah Wildland-Urban Interface Code	N/A	No wildland in City
Wildland Fire	2009	2 – Improve safety from wildfire hazards through planning, protective actions and improved fire response capabilities 2.5 – Encourage proper development practices in the WUI	2 – Define wildland-urban interface and develop digital maps of the WUI	N/A	No wildland in City

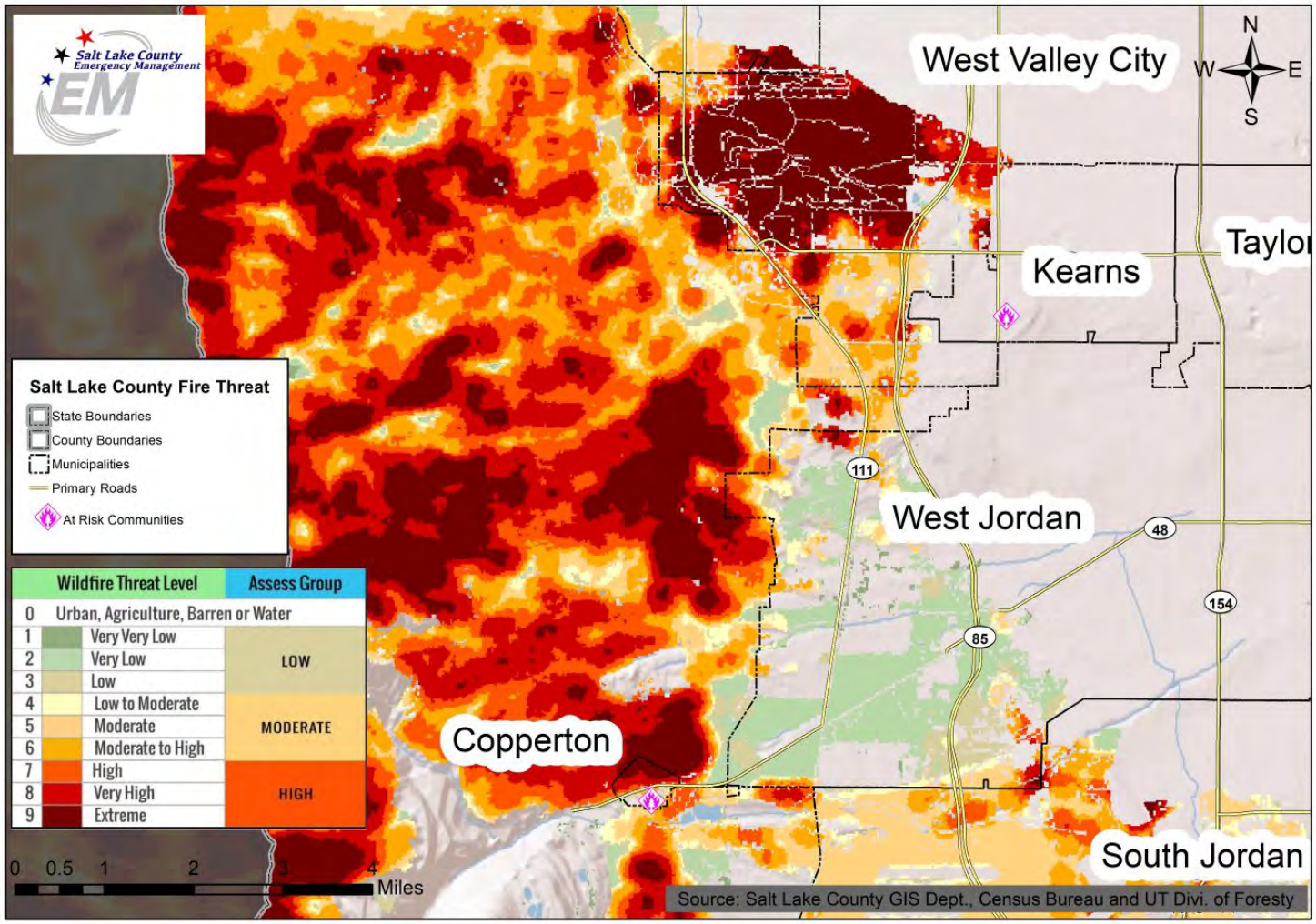
All Hazards	2014	Improve and maintain communications capabilities for emergency operations. This mitigation strategy applies to all listed hazards. Conduct Communications Strategic Planning	Establish a coordinating group to address long-term communication needs and implementation strategies.	Complete	
All Hazards	2014	Improve response capabilities through mutual-aid agreements. This mitigation strategy applies to all listed hazards. Utilize mutual-aid agreements in accordance with National Incident Management System (NIMS) requirements.	Compile inventory of current mutual-aid agreements and memoranda of understanding (MOU) and identify deficiencies.	Complete	
All Hazards	2014	Increase citizen safety through improved hazard awareness. This mitigation strategy applies to all listed hazards. Establish a comprehensive public education program.	Develop education programs to target specific groups including homeowners, developers, schools and people with special needs.	Complete	
All Hazards	2014	Increase citizen safety through improved hazard awareness. This mitigation strategy applies to all listed hazards. Establish a comprehensive public education program.	Coordinate with existing public education programs such as the American Red Cross, Utah Living with Fire, Be Ready Utah, the National Weather Service, etc.	Complete	
All Hazards	2014	Improve public safety through preventative regulations. This mitigation strategy applies to all listed hazards. Minimize hazard impacts through the adoption of appropriate prevention measures.	Establish and enforce appropriate planning, zoning, and building code ordinances.	Complete	

All Hazards	2014	Improve public safety through preventative regulations. This mitigation strategy applies to all listed hazards. Minimize hazard impacts through the adoption of appropriate prevention measures.	Ensure current hazard ordinances are available for viewing online.	Complete	
Severe Weather	2014	Maintain status as a StormReady Community Increase awareness of information services provided by NWS.	Meet with NWS representative on an annual basis to receive information on new services and alerts available.	Complete	
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	5 – Repair, maintain and improve water distribution infrastructure to prevent loss from leakage, breaks, etc.	Removed	City does not own water system
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	6 – Coordinate public safety water use, such as hydrant testing	Removed	City does not own water system
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.1 – Limit unnecessary consumption of water throughout the County	7 – Provide information on landscaping alternatives for persons subject to green area requirements	Removed	City does not own water system
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.2 – Address agricultural water shortages in the County	1 – Set up livestock water rotation in areas of agricultural use	Removed	City does not own water system

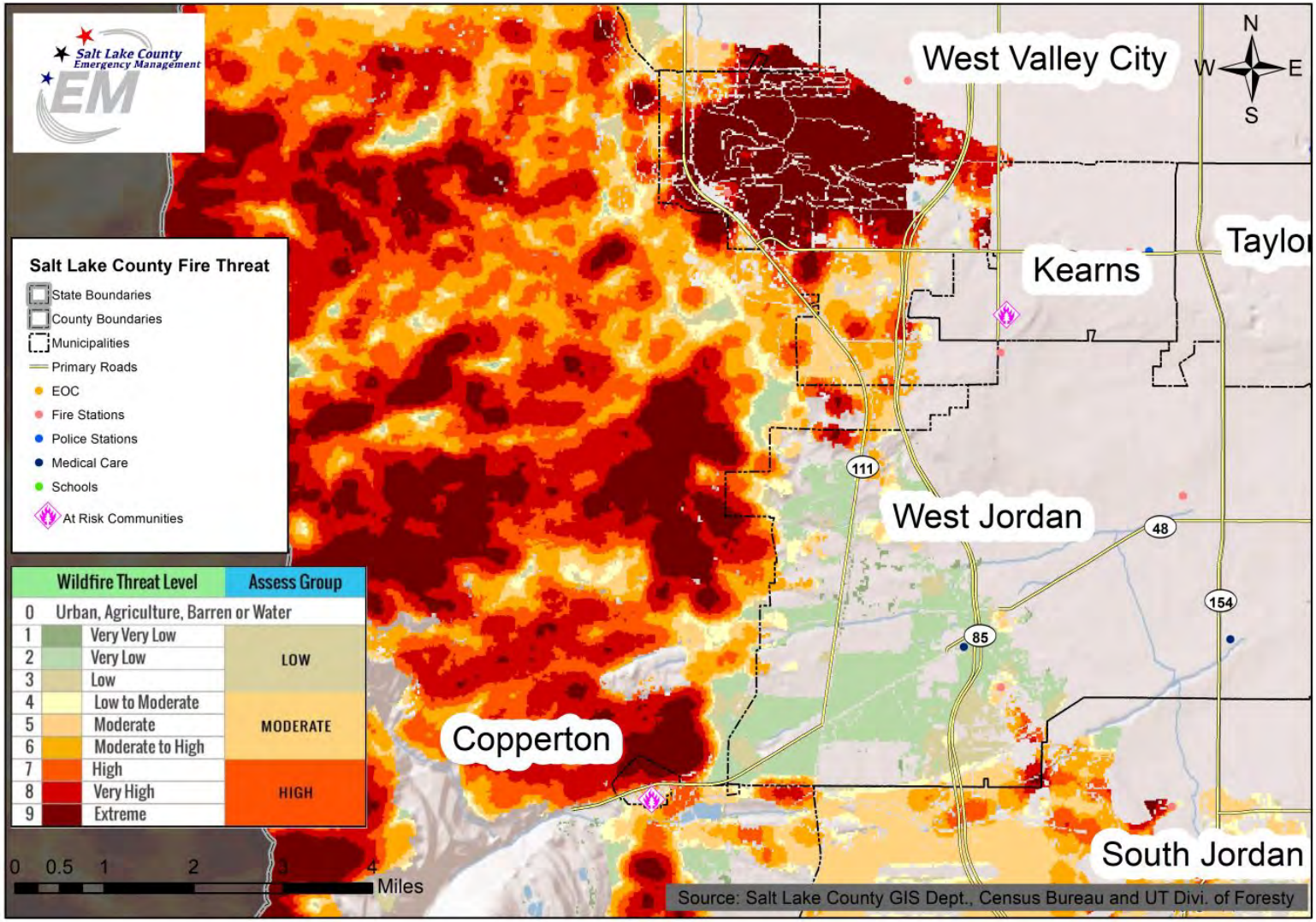
Drought	2009	1 – Reduce and prevent hardships associated with water shortages 1.3 – Encourage development of secondary water systems	1 – Coordinate with water districts to plan for, develop and/or expand secondary water	Removed	City does not own water system

Jurisdiction Maps

Map: Wildfire Threat Level



Map: Wildfire Threat Level with Critical Facilities



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: Copperton Metro Township

Hazard Mitigation Plan Point of Contact

Primary Point of Contact	Alternate Point of Contact
Name: Sean Clayton **Title:** Chair **Department:** Council Members **Office Phone:** (801) 615-3900 **Email** **Address:** seanclayton@coppertonutah.org **Website:** https://coppertonutah.org/	**Name:** Apollo Pazell **Title:** Vice Chair **Department:** Council Members **Office Phone:** (801) 386-0476 **Email** **Address:** apollopazell@coppertonutah.org **Website:** https://coppertonutah.org/

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** 2015
- **Current Population:** As of the 2017 estimates, the population was determined to be 579* (Census 2017).
- **Population Growth:** In 2010, the Census determined the population to be 826. This shows a decline in population by just under 250 people. * The population may have been higher in both 2010 and 2017. The township boundaries (designated by the county) includes a greater area to the west than that of the CDP (designated by the U.S. Census).
- **Location and Description:** Located at the mouth of the Bingham Canyon and about 25 miles from Salt Lake City.
- **Brief History:** The town's history is directly linked to the mining industry. Copperton was established by the Utah Copper Company as a residential area and "model city" for its employees and later a "showplace for company-subsidized family life." Construction of housing ended in the 1930s and company furnished housing ended in 1955. After that, a private real estate developer managed the homes for employees. Copperton is the only mining town remaining for the Bingham Canyon Mine after Lark was torn down in 1980 (Online Utah).
- **Climate:** Each year, Copperton gets about 88 inches of snow and 23 inches of rain. The summer high temperature is 90 and the low winter temperature is 20 (Best Places).
- **Governing Body Format:** The town is served by a City Council of 5 members with one serving as Chair, one as Vice-Chair, and one as Treasurer (Coppertown).
- **Development Trends:** The township has an active Community Council and Lion's Club. Recently, the township has been working to improve parks in the community. While the community was originally developed due to the mining industry, today, only a handful of residents work for the mine.

Capability Assessment

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY			
	Local Authority Exists to Develop and Implement/ Enforce?	**A Jurisdiction-Specific Code, Ordinance and/or Requirement Currently Exists?**	**Comments**
Codes, Ordinances, & Requirements			
Building Code Development and Enforcement	Yes	Yes	Per Utah Code 10-9a
Zonings Ordinance(s)	Yes	Yes	Per Utah Code 10-9a
Subdivision Ordinance(s)	Yes	Yes	Per Utah Code 10-9a
Stormwater Management Program	Yes	Yes	Per Utah Code 10-9a
Floodplain Ordinance(s)	Yes	No	County Maintained
Post Disaster Recovery Program and Ordinance(s)	Yes	Yes	Currently under review for updates
Real Estate Disclosure Ordinance(s)	Yes	Yes	Overpressure Ordinance
Growth Management	Yes	Yes	General Plan update
Site Plan Review Requirements	Yes	Yes	Performed by MSD
Public Health and Safety Program and Requirements	No	Yes	County Requirement
Planning Documents			
General or Comprehensive Plan	Yes	Yes	
Capital Improvement Plan	Yes	-	
Economic Development Plan	Yes	-	
Disaster Planning Documents			
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	No	
Post-Disaster Recovery Plan	Yes	No	
Continuity of Operations Plan	Yes	No	
Public Health Plans	No	No	County Plan
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	Yes	No	

TABLE: FISCAL CAPABILITY

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	-
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	No

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	Other	Greater Salt Lake Municipal Services District
Engineers or professionals trained in building or infrastructure construction practices	Yes	Other	Greater Salt Lake Municipal Services District
Planners or engineers with an understanding of natural hazards	Yes	Other	Greater Salt Lake Municipal Services District
Surveyors	Yes	Other	SLCO
Personnel skilled or trained in GIS applications	Yes	Other	GSLMSD
Emergency manager	Yes	-	County Supported
Grant writers	No	-	

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	GSLMSD
Who is your jurisdiction's floodplain administrator? (department/position)	Planning Director
Are any certified floodplain managers on staff in your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	N/A

Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System (CRS)	No	-	-
Public Protection/ISO	No	-	-
NWS StormReady	No	-	-

Jurisdiction-Specific Hazards and Risks

The *Natural Hazard Events Table* lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 0 policies were enforced (FEMA, 2019).
- Copperton Metro Township does not participate in the National Flood Insurance Program (FEMA, 2019).

TABLE: RECENT NATURAL HAZARD EVENTS (NOAA Data with additions from the jurisdiction representatives)
*The NOAA data did not capture any events for Copperton; however, given the locations presented for the events listed below, these events were interpreted as having an impact on Copperton Metro Township.

Type of Event	**Description**	**FEMA Disaster Number (if applicable)**	**Date**	**Preliminary Damage Assessment**
Heavy Snow	13-19 inches in Copperton		11/21/1999	
Flood	Debris Flow		8/19/2010	
Flood	Spring Flooding along the Creek		2011	
Winter Storm*			2/5/2019	

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	**Number in Community**
Members of the community over 65 years old	121
Members of the community under 18 years old	68
Members of the community that identify as having disability status	66
Members of the community that speak English less than "very well"	0

Members of the community living below the poverty line	0
The number of mobile homes in the community	0
Members of the community without health insurance	0
Occupied housing units with tenants without a vehicle	19
Housing units without heating fuel	0

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Winter Storms: Given the location of the community to the Bingham Canyon, the area receives a considerable amount of snow each year in comparison to the rest of the County.

Wildfire: Given the dry climate and location of the town to wilderness areas, wildfires can potentially impact the area.

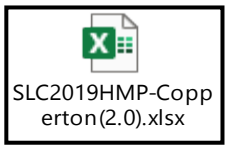
Hazardous Material: The Trans-Jordan Landfill is located in the town.

Earthquake: Soil liquefaction occurs in many areas.

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Wildfire	3	19	57
Severe Winter Weather	3	18	54
Severe Weather	3	17	51
Public Health Epidemic/ Pandemic	2	21	42
Flooding	2	17	34
Cyber Attack	2	17	34
Radon	3	9	27
Hazardous Materials Incident	2	13	26
Drought	2	13	26
Terrorism	1	25	25
Tornado	2	12	24
Civil Disturbance	1	10	10
Dam Failure	1	10	10
Landslide and Slope Failure	1	10	10
Avalanche	1	7	7

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.



Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1		Avalanche	Low	1	3
Dam Failure	Low	1		Dam Failure	Low	1	3
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Low	1	3
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Low	1		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	High	3	9
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Medium	2		Tornado	Low	1	3
Wildfire	High	3		Wildfire	Medium	2	6

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	Low	1	1		Avalanche	Low	1	2
Dam Failure	Low	1	1		Dam Failure	Low	1	2
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Medium	2	4
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	Medium	2	4
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Medium	2	4
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Medium	2	4
Severe Winter Weather	High	3	3		Severe Winter Weather	Medium	2	4
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	Medium	2	2		Wildfire	High	3	6

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**	**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)	**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)	**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)	**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)	**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)
Avalanche	Low	1	1
Dam Failure	Low	1	1
Drought	Low	1	1
Civil Disturbance	Medium	2	2
Cyber Attack	Medium	2	2
Earthquake	High	3	3
Flooding	Medium	2	2
Hazardous Materials Incident	Low	1	1
Landslide and Slope Failure	Medium	2	2
Public Health Epidemic/ Pandemic	High	3	3
Radon	No Impact	0	0
Severe Weather	Low	1	1
Severe Winter Weather	Medium	2	2
Terrorism	High	3	3
Tornado	Medium	2	2
Wildfire	Medium	2	2

Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Unlikely	0	0
Dam Failure	Low	1	3
Drought	Low	1	3
Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	6
Earthquake	High	3	9
Flooding	Low	1	3
Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	9
Radon	Unlikely	0	0
Severe Weather	Unlikely	0	0
Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	9
Tornado	Unlikely	0	0
Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Low potential that this hazard could be catastrophic (Impact Factor = 1)
Unlikely—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

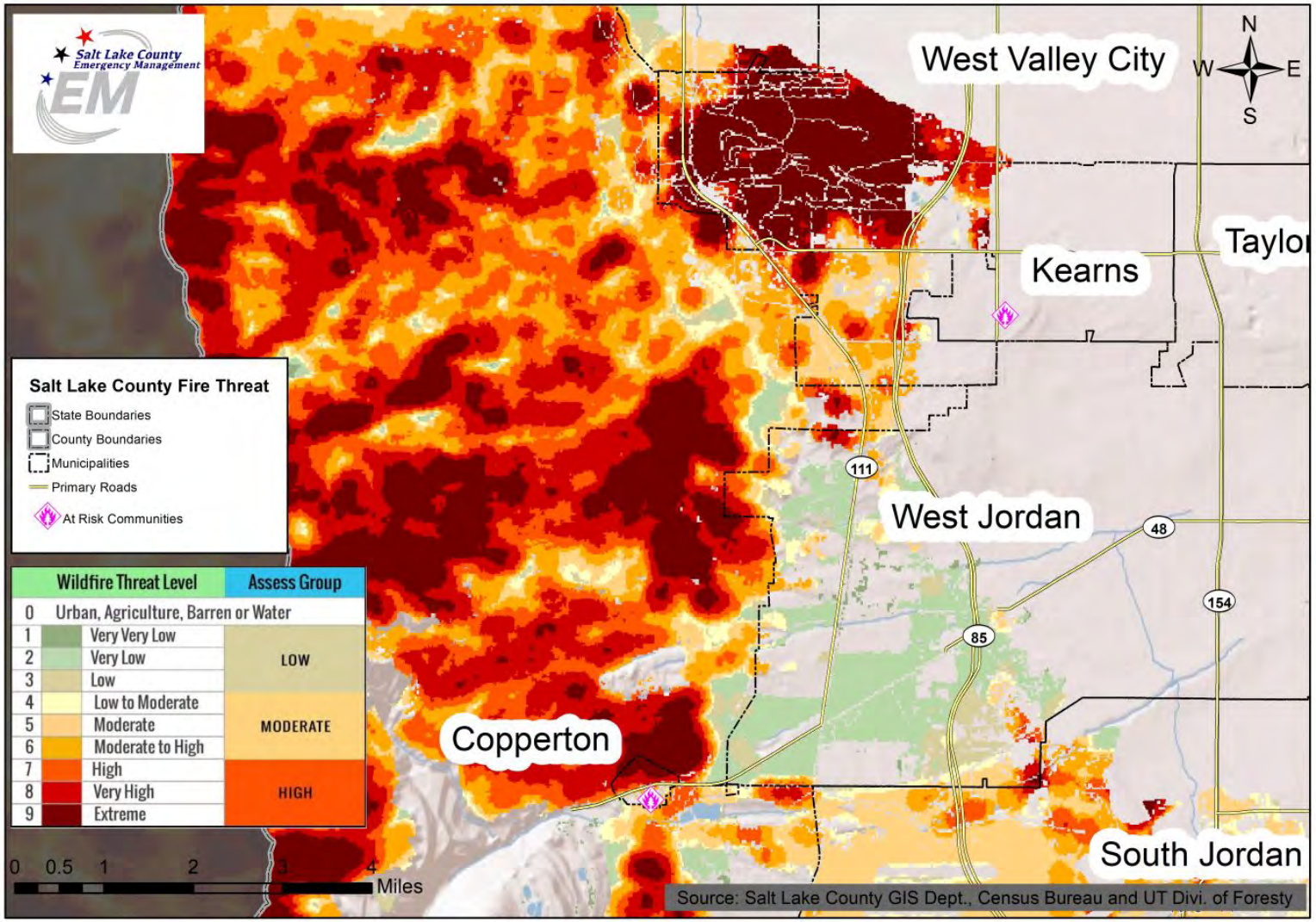
Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Conduct seismic retrofitting and implement a program for residents similar to the “Fix the Bricks” initiative. Provide additional education and materials to the public regarding the earthquake risk and potential mitigation actions that can be taken.	2019	Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. Goal 4: Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters.	Earthquake	Copperton	GSL MSD	High	High	PDM Grant or other federal funds	High	Long-term	

Mitigation Table - Ongoing Actions

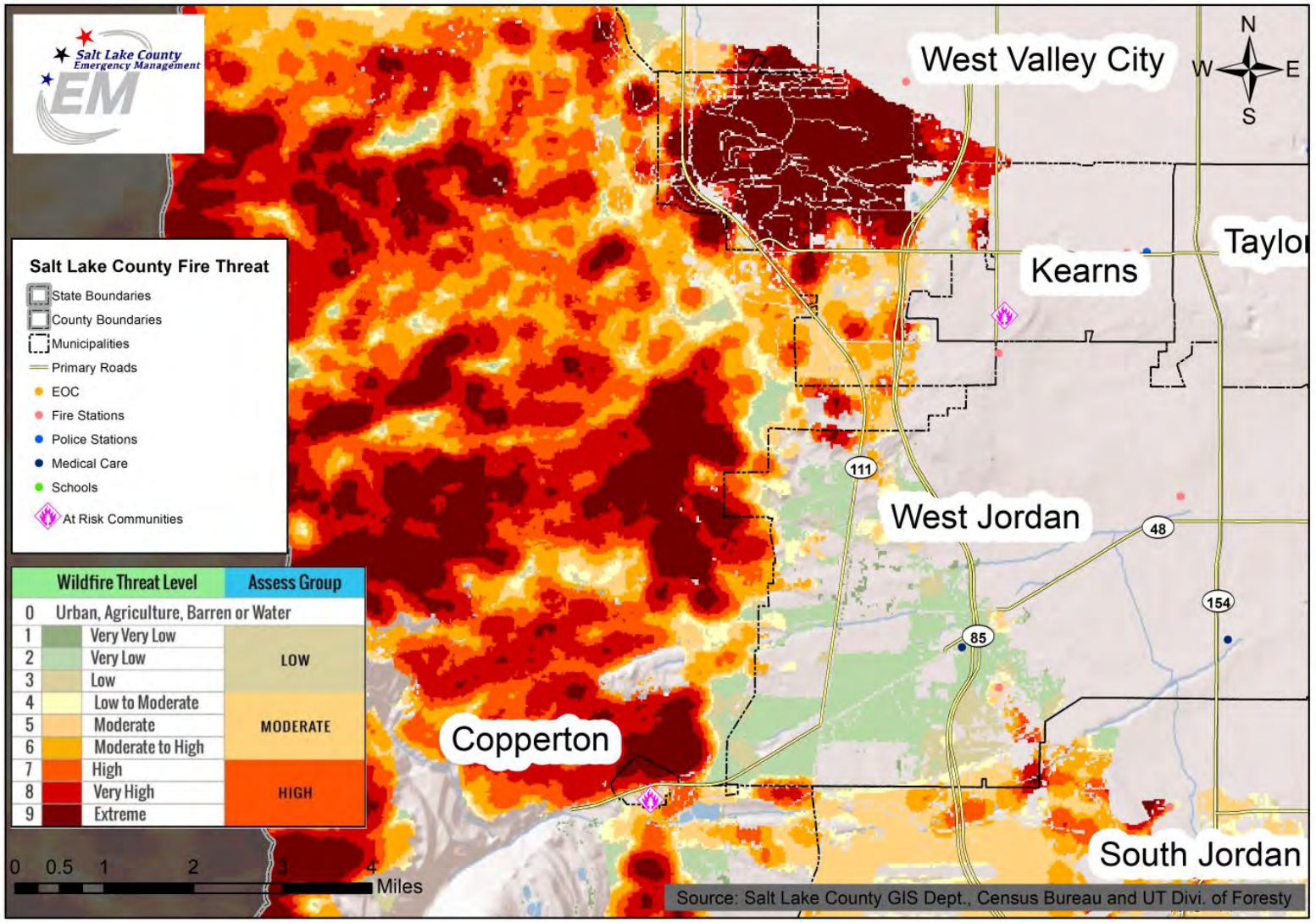
Not applicable since Copperton did not participate as an incorporated jurisdiction in 2014.

Jurisdiction Maps

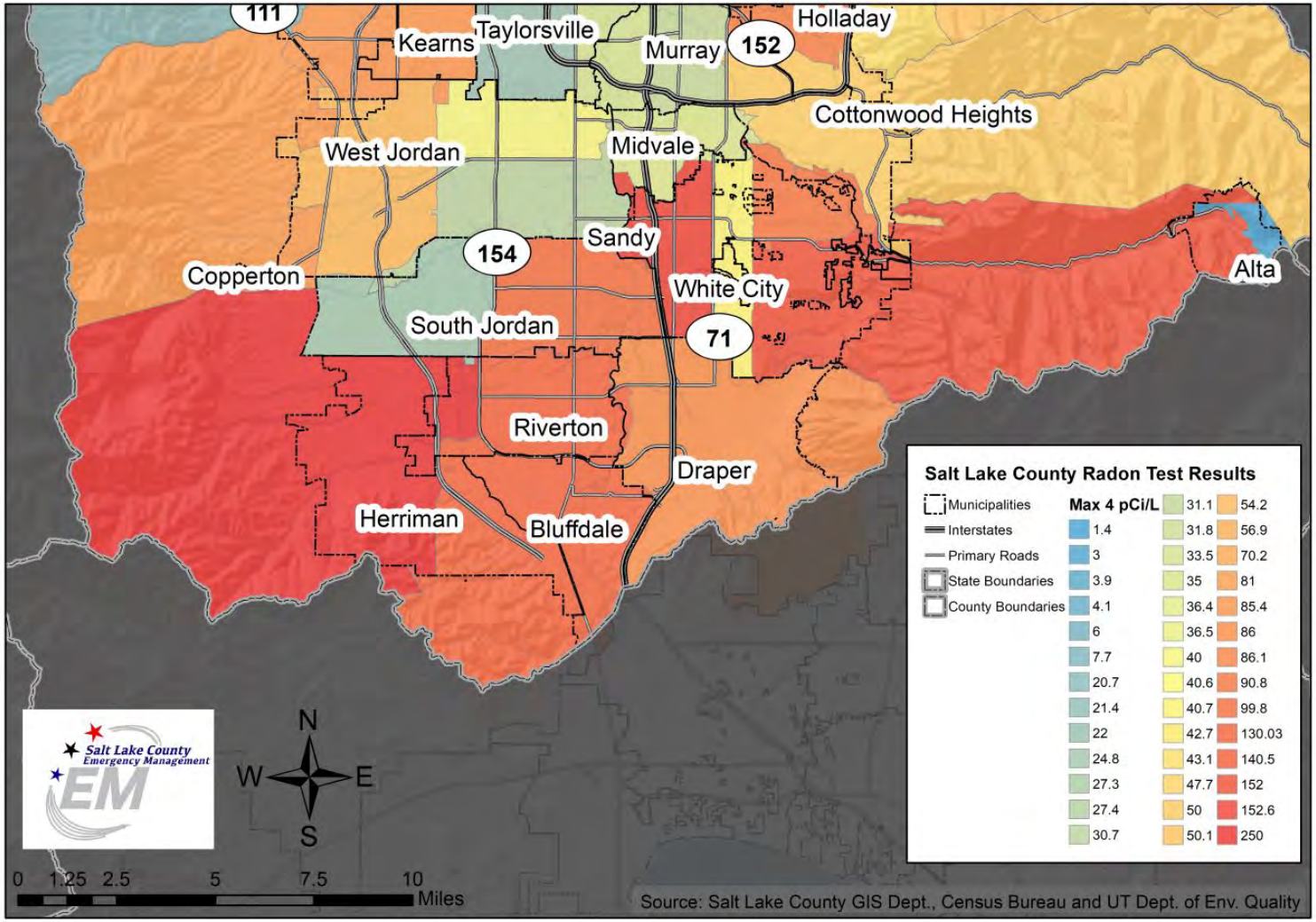
Map: Wildfire Threat Level



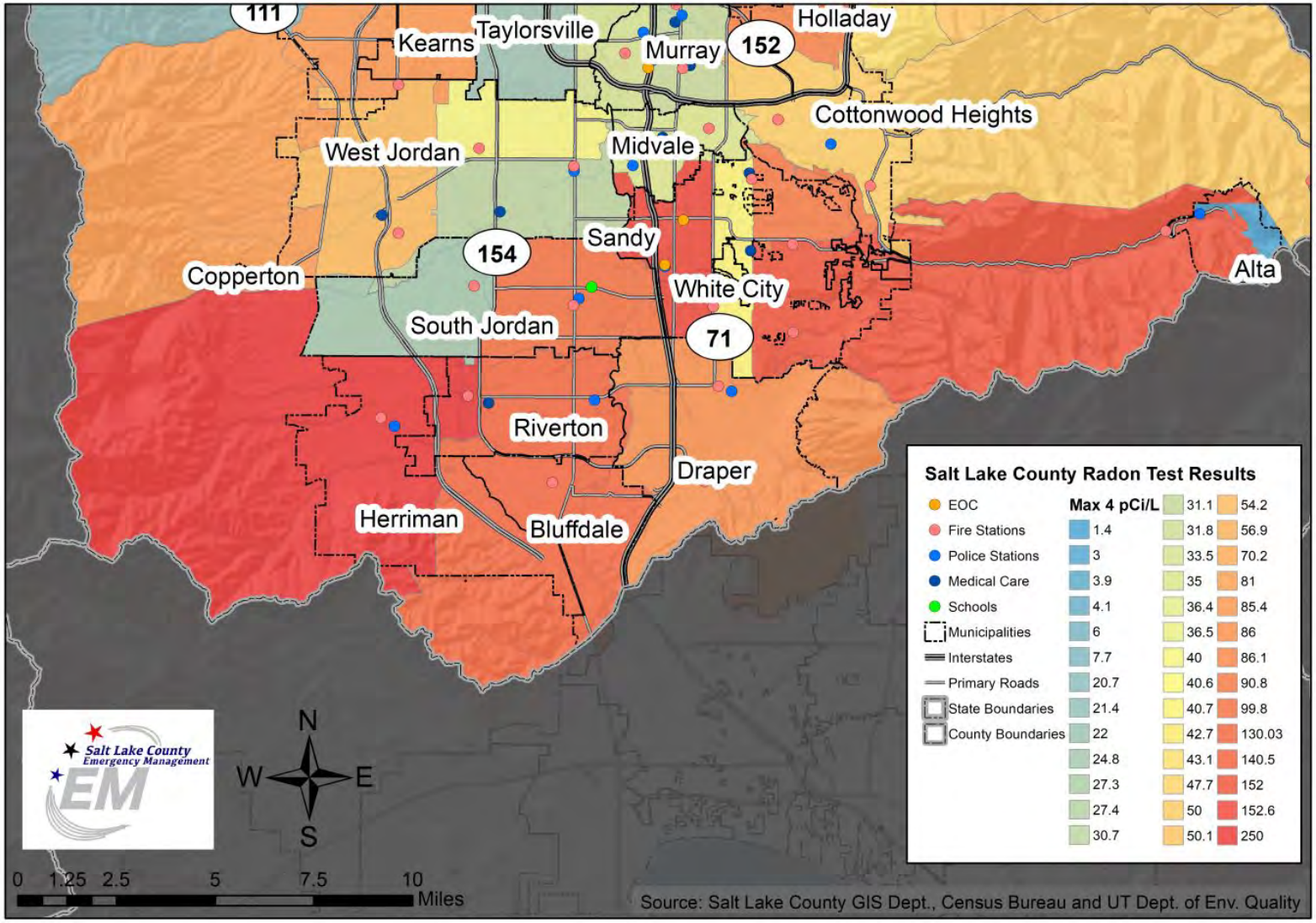
Map: Wildfire Threat Level with Critical Facilities



Map: Radon


111
Kearns
Taylorsville
Murray
152
Holladay
Cottonwood Heights
West Jordan
Midvale
Sandy
154
Copperton
White City
Alta
South Jordan
71
Riverton
Draper
Herriman
Bluffdale
Salt Lake County Radon Test Results
Municipalities
Interstates
Primary Roads
State Boundaries
County Boundaries
Max 4 pCi/L
1.4
3
3.9
4.1
6
7.7
20.7
21.4
22
24.8
27.3
27.4
30.7
31.1
31.8
33.5
35
36.4
36.5
40
40.6
40.7
42.7
43.1
47.7
50
50.1
54.2
56.9
70.2
81
85.4
86
86.1
90.8
99.8
130.03
140.5
152
152.6
250
Salt Lake County Emergency Management
EM
N
W
E
S
0 1.25 2.5 5 7.5 10
Miles
Source: Salt Lake County GIS Dept., Census Bureau and UT Dept. of Env. Quality

Map: Radon with Critical Facilities



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: Emigration Canyon Metro Township

Hazard Mitigation Plan Point of Contact

Primary Point of Contact	Alternate Point of Contact
Name: Joe Smolka Title: Mayor Department: N/A Address: 5025 E. Emigration Canyon Road Salt Lake City, UT 84108 Office Phone: (801) 560-3543 Cell Phone: (801) 560-3543 Email Address: joesmolka@ecmetro.org Website: https://www.ecmetro.org/	Name: Jennifer Hawkes Title: Deputy Mayor Department: N/A Address: 5025 E. Emigration Canyon Road Salt Lake City, UT 84108 Office Phone: 385-240-1400 Email Address: jenniferhawkes@ecmetro.org Website: https://www.ecmetro.org/

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** Emigration Canyon Metro Township is a Utah municipality created by a vote of the residents of Emigration Canyon in 2015. Incorporation took place in 2017.
- **Current Population:** 1,931 (Census 2017)
- **Population Growth:** The 2017 population grew by a little less than 400 from the 2010 population of 1,567 (Census).
- **Location and Description:** Emigration Canyon Township encompasses a large portion of northeastern Salt Lake County within the Wasatch Mountain Range of northern Utah. Elevations in Emigration Township range from about 5,100 feet near the mouth of the canyon to just over 8,900 feet at the summit of Lookout Peak along the northern township boundary
- **Brief History:** Emigration Canyon was the original route used by pioneers entering the area. Throughout Emigration Canyon, there are several historic markers designating camps, trail markers, and milestones where the Mormon Pioneers passed on their way to the Salt Lake Valley. In 1961, a portion of Emigration Canyon, located in This Is the Place Heritage Park, was declared a National Historic Landmark because of the canyon's significance in the Mormon migration of the 19th century. Emigration Canyon was also important in the early days for the natural resources that it supplied to the growing population in the Salt Lake Valley. Timber was cut and brought to a sawmill at Little Mountain where it was processed for use in the city. In addition to timber, there was also an abundance of lime in the canyon, which was quarried and burned in lime kilns. Evidence of early quarrying may still be found today in some exposed rock areas (Emigration Canyon Township General Plan).
- **Climate:** Emigration Canyon Township is characterized as Intermountain Semi Desert by the US Department of Agriculture. Emigration Canyon's climate, like Salt Lake County and the rest of the southwestern states, is very dry. Emigration Canyon has all four seasons with moderately hot summers and cold winters. July is typically the hottest time of the year, with an average high of 89 degrees; the average low in January is at 20 degrees. The average annual precipitation is 19.4 inches. Emigration Canyon's average low precipitation is in July at .74 inches, and its average high is in May at 2.09 inches (Emigration Canyon Township General Plan).
- **Public Services:** The Township has all of the municipal powers available to Utah municipalities under the Utah Municipal Code with the exception of certain taxing

powers. It does not have the power to enact a property tax or a municipal energy taxes (sometimes called franchise taxes). The Township council has the authority to enact laws and ordinances to carry out its responsibilities such as land use and development regulations (zoning). As long as these laws are not inconsistent with the Utah Municipal Code and other state statutes. The Township is a member of the Greater Salt Lake County Municipal Services District. This District provides six municipal type services to the residents of the Township. The Township is also a participating member of the Unified Police Department and the Unified Fire Authority located in Salt Lake County (Emigration website).

- **Governing Body Format:** The Township is governed by an elected council consisting of five members, one of whom is selected by the others to be the chair/mayor. The Council is the legislative body of the Township. The chair/mayor is the chief executive officer of the Township. The Emigration Canyon Planning Commission is a board created and appointed by the Emigration Canyon Metro Township Council (Emigration website).
- **Development Trends:** A variety of commercial developments and ventures were tried in Emigration Canyon over the first century of settlement. Emigration Canyon became more accommodating to year-round living as automobiles became commonplace. The Emigration Canyon Township study area includes approximately 12,000 acres. The majority of this acreage is currently undeveloped. Approximately 4,800 acres or 40% of the total land is privately owned. The rest of the land in Emigration Canyon is publicly owned or managed—either by the U.S. Forest Service, which manages around 4,100 acres (34%), or Salt Lake City, which owns approximately 3,100 acres (26%). Emigration Canyon has a limited commercial development. Currently, existing commercial establishments include Ruth's Diner and the Sun and Moon Cafe. It is unlikely that commercial development will expand greatly beyond these sites, due to conditions placed on the existing commercial zones, the lack of commercial zoning available elsewhere in the canyon, the land constraints of the environment, and the limited desire for additional commercial zoning in the township. Traffic safety conflicts on Emigration Canyon Road, waste disposal issues, and the quality of water (Emigration Creek) have become notable issues for canyon residents (Emigration Canyon Township General Plan). Since the devastating fire in 1988, many new high-end homes have been built where the fire occurred.

Capability Assessment

The town maintains a full-time staff of 0 and part-time staff of 0 individuals. The Emergency Response Coordinator is the Town's designated Emergency Manager. Hazard Mitigation Planning efforts are led by the Emergency Response Coordinator position and supported by Greater Salt Lake Municipal Services District (Land Use Planning, Building Inspection, Code Enforcement, Stormwater Program, and Public Works Operations), Unified Fire Authority (Fire Protection Services), Unified Police Department (Police Services), and Wasatch Front Waste and Recycling District (Trash/Refuse Collection).

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications

under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY			
	Local Authority Exists to Develop and Implement/ Enforce?	**A Jurisdiction-Specific Code, Ordinance and/or Requirement Currently Exists?**	**Comments**
Codes, Ordinances, & Requirements			
Building Code Development and Enforcement	Yes	Yes	Per Utah Code 10-9a
Zonings Ordinance(s)	Yes	Yes	Per Utah Code 10-9a
Subdivision Ordinance(s)	Yes	Yes	Per Utah Code 10-9a
Stormwater Management Program	Yes	Yes	Per Utah Code 10-9a
Floodplain Ordinance(s)	Yes	No	County Maintained
Post Disaster Recovery Program and Ordinance(s)	Yes	Yes	Currently under review for updates
Real Estate Disclosure Ordinance(s)	Yes	Yes	Overpressure Ordinance
Growth Management	Yes	Yes	General Plan update
Site Plan Review Requirements	Yes	Yes	Performed by MSD
Public Health and Safety Program and Requirements	No	Yes	County Requirement
Planning Documents			
General or Comprehensive Plan	Yes	Yes	
Capital Improvement Plan	Yes	-	
Economic Development Plan	Yes	-	
Disaster Planning Documents			
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	No	
Post-Disaster Recovery Plan	Yes	No	
Continuity of Operations Plan	Yes	No	
Public Health Plans	No	No	County Plan
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	Yes	No	

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes and No
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	No

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	Other	Greater Salt Lake Municipal Services District
Engineers or professionals trained in building or infrastructure construction practices	Yes	Other	Greater Salt Lake Municipal Services District
Planners or engineers with an understanding of natural hazards	Yes	Other	Greater Salt Lake Municipal Services District
Surveyors	Yes	Other	SLCO
Personnel skilled or trained in GIS applications	Yes	Other	GSLMSD
Emergency manager	No	-	
Grant writers	No	-	

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	GSLMSD
Who is your jurisdiction's floodplain administrator? (department/position)	Planning Director
Are any certified floodplain managers on staff in your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	N/A

Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	N/A
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System (CRS)	No	-	-
Public Protection/ISO	No	-	-
NWS StormReady	No	-	-

Jurisdiction-Specific Hazards and Risks

The *Natural Hazard Events Table* lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 0 policies were enforced (FEMA, 2019).
- Emigration does not participate in the National Flood Insurance Program (FEMA, 2019).

TABLE: RECENT NATURAL HAZARD EVENTS (NOAA Data with additions from the jurisdiction representatives)

Type of Event	**Description**	**FEMA Disaster Number (if applicable)**	**Date**	**Preliminary Damage Assessment**
Winter Storm	24 inches in Emigration Canyon		1/5/2019	
Winter Storm	Storm totals in the Wasatch Mountains north of Interstate 80 included 32 inches of new snow in Emigration Canyon. In addition, winds were strong ahead of and with the initial cold front, with peak recorded wind gusts of 80 mph at the Snowbasin Straw Top sensor.		1/10/2013	
Flood	Emigration Creek, which had been flowing as low as 18 cfs the previous day, rose as high as 136 cfs, above the flood stage of 130 cfs.		4/18/2011	Did receive some FEMA dollars for stream bank stabilization

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Winter Storm	Emigration Canyon received 15 inches of snow.		3/25/2009	
Flood	Heavy rains combined with snowmelt to bring the Emigration Creek above its banks and flood 5 homes along the bank. Damage amounts estimates from newspaper clippings.		4/15/2006	$50,000
Heavy Wind	Another strong south wind event as a Pacific storm approached the state. Some winds reached hurricane force, with numerous power outages along the Wasatch Front and in the Cache Valley. Several reports of damage were also received, mainly from downed trees. The road up Emigration Canyon was blocked for a while as an 18-inch diameter tree was blown across it.		11/23/1998	
Tornado	A cold core funnel cloud touched down for 5 seconds in a gentleman's backyard in Emigration Canyon.		9/12/1998	$2,000
Flood	Highest stream flow in recorded history. So much debris that it clogged the gages.		6/9/1989	
Wildfire	Significant wildfire in 1988. Since 1988, there have been over 12 fires.		Labor Day 1988	
Flood	Road washed out in multiple places, specifically in the Pinecrest area. A lot of mitigation happened after this flood.		1983	

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community
Members of the community over 65 years old	222
Members of the community under 18 years old	425
Members of the community that identify as having disability status	66
Members of the community that speak English less than "very well"	6
Members of the community living below the poverty line	157
The number of mobile homes in the community	0

Members of the community without health insurance	0
Occupied housing units with tenants without a vehicle	11
Housing units without heating fuel	0

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

A general concern for the community is the limited ingress and egress to and from Emigration Canyon Metro Township. This poses a major concern as it relates to the multiple natural and manmade hazards that could affect the community.

Winter Storms: Winter Storms are common in Emigration. Poor drainage in some areas of the canyon creates road icing in the winter and creates a traffic safety issue.

Earthquake: No known active faults have been mapped within Emigration Canyon Township. The nearest active fault is the Salt Lake segment of the Wasatch Fault, located about two-and-a-half miles west of the mouth of Emigration Canyon. Seismic hazards in Emigration Township will come primarily from the seismic waves that are generated during large earthquakes, should such an event occur. However, given the nature of sediments found in the Emigration Canyon, the soil liquefaction potential is typically considered below average.

Flood: Stream flooding is highly likely and has the potential to cause roadway washouts. Emigration Creek and its tributaries are the principal drainages carrying runoff through Emigration Canyon. Most creeks have well-defined channels that have experienced historic flooding. Some small drainages flow continuously and some intermittently throughout the year. All drainage tributaries have the potential for high flows during the spring runoff period. After a winter of heavy precipitation, many parts of Emigration Canyon dealt with high water and flooding issues during the Spring of 2011. Jurisdictional wetlands have been delineated by the U.S. Army Corps of Engineers along Emigration Creek. Chances of riverine flooding greatly increase post-wildfire.

Wildfire: Very high risk of wildfires in Emigration. While the community is a Firewise community, fires are hard to fight given the area's terrain. Residential development in Emigration Canyon often interfaces with areas of undeveloped canyon lands that exist in a natural state. This bordering of residential development on open lands or what is termed the Wildland-Urban Interface (WUI) is part of the charm of the canyon for many residents. The WUI area has inherent risks associated with it, mainly dangers from a wildfire that can and do occur in the foothills and canyons from time to time. Whether these fires are started due to natural causes such as lightning, or by human activities, they can quickly spread across the thicker natural vegetation of undeveloped areas and threaten adjacent residential development.

Wind: Given the differing elevation and a large number of trees in the town, heavy winds can occur and impact some areas much worse than others, typically involving knocking large trees over, which is especially problematic when a fallen tree blocks a road.

Landslide/Slope Failure: Several places in Emigration Canyon would experience road closure if a landslide were to occur.

Avalanche: Rare occurrences every 1-5 years with minimal impact on the community.

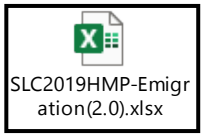
Dam Failure: If a dam failure occurred in Parley Canyon, Emigration Canyon Road would become the primary route to Interstate 80.

Hazardous Materials: Crude oil pipelines with no catch basins have the potential to infiltrate waterways and the environment should there be a leak or failure.

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Wildfire	3	26	78
Flooding	3	22	66
Earthquake	2	27	54
Severe Winter Weather	3	18	54
Landslide and Slope Failure	2	19	38
Severe Weather	3	12	36
Public Health Epidemic/ Pandemic	2	17	34
Cyber Attack	2	17	34
Avalanche	2	14	28
Hazardous Materials Incident	2	13	26
Drought	2	13	26
Terrorism	1	25	25
Radon	2	6	12
Tornado	1	10	10
Civil Disturbance	1	10	10
Dam Failure	1	7	7

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.



Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Medium	2		Avalanche	Medium	2	6
Dam Failure	Low	1		Dam Failure	Low	1	3
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Low	1	3
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	High	3		Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Medium	2		Landslide and Slope Failure	Medium	2	6
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	Medium	2		Radon	Medium	2	6
Severe Weather	High	3		Severe Weather	Medium	2	6
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	High	3		Wildfire	High	3	9

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	Medium	2	2		Avalanche	Medium	2	4
Dam Failure	Low	1	1		Dam Failure	Low	1	2
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Medium	2	4
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	Medium	2	4
Flooding	Medium	2	2		Flooding	High	3	6
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Medium	2	2		Landslide and Slope Failure	High	3	6
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Medium	2	4
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	Medium	2	4
Wildfire	Medium	2	2		Wildfire	High	3	6

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**	**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)	**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)	**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)	**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)	**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)
Avalanche	Medium	2	2
Dam Failure	Low	1	1
Drought	Low	1	1
Civil Disturbance	Medium	2	2
Cyber Attack	Medium	2	2
Earthquake	Medium	2	2
Flooding	Medium	2	2
Hazardous Materials Incident	Low	1	1
Landslide and Slope Failure	Medium	2	2
Public Health Epidemic/ Pandemic	Medium	2	2
Radon	No Impact	0	0
Severe Weather	Low	1	1
Severe Winter Weather	Medium	2	2
Terrorism	High	3	3
Tornado	Medium	2	2
Wildfire	High	3	3

Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Unlikely	0	0
Dam Failure	Unlikely	0	0
Drought	Low	1	3
Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	6
Earthquake	High	3	9
Flooding	Medium	2	6
Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2	6
Radon	Unlikely	0	0
Severe Weather	Unlikely	0	0
Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	9
Tornado	Unlikely	0	0
Wildfire	Medium	2	6

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Low potential that this hazard could be catastrophic (Impact Factor = 1)
Unlikely—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

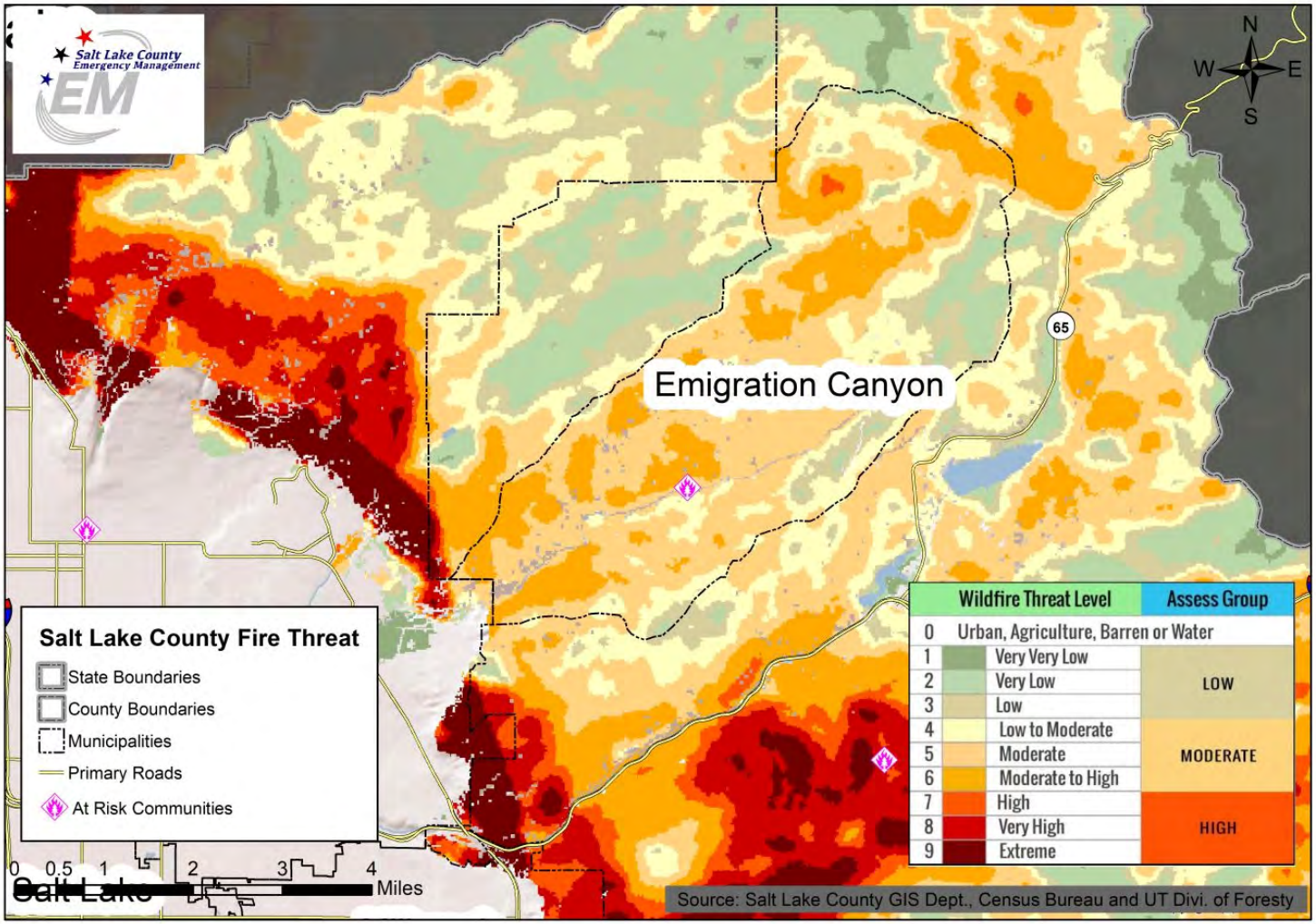
Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Conduct a Slope Stabilization Study	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Landslides, Avalanche, Earthquake	Emigration Canyon	MSD	High	Medium	HMA/PDM Grant or other federal funds	High	Short-term	Utilize study to prioritize slope stabilization projects.
Bury Powerlines to mitigate power outages and mitigate wildfires.	2019	Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	All-Hazards	Emigration Canyon	Utilities	High	High	HMA/PDM Grant or other federal funds	Medium	Long-term	

Mitigation Table - Ongoing Actions

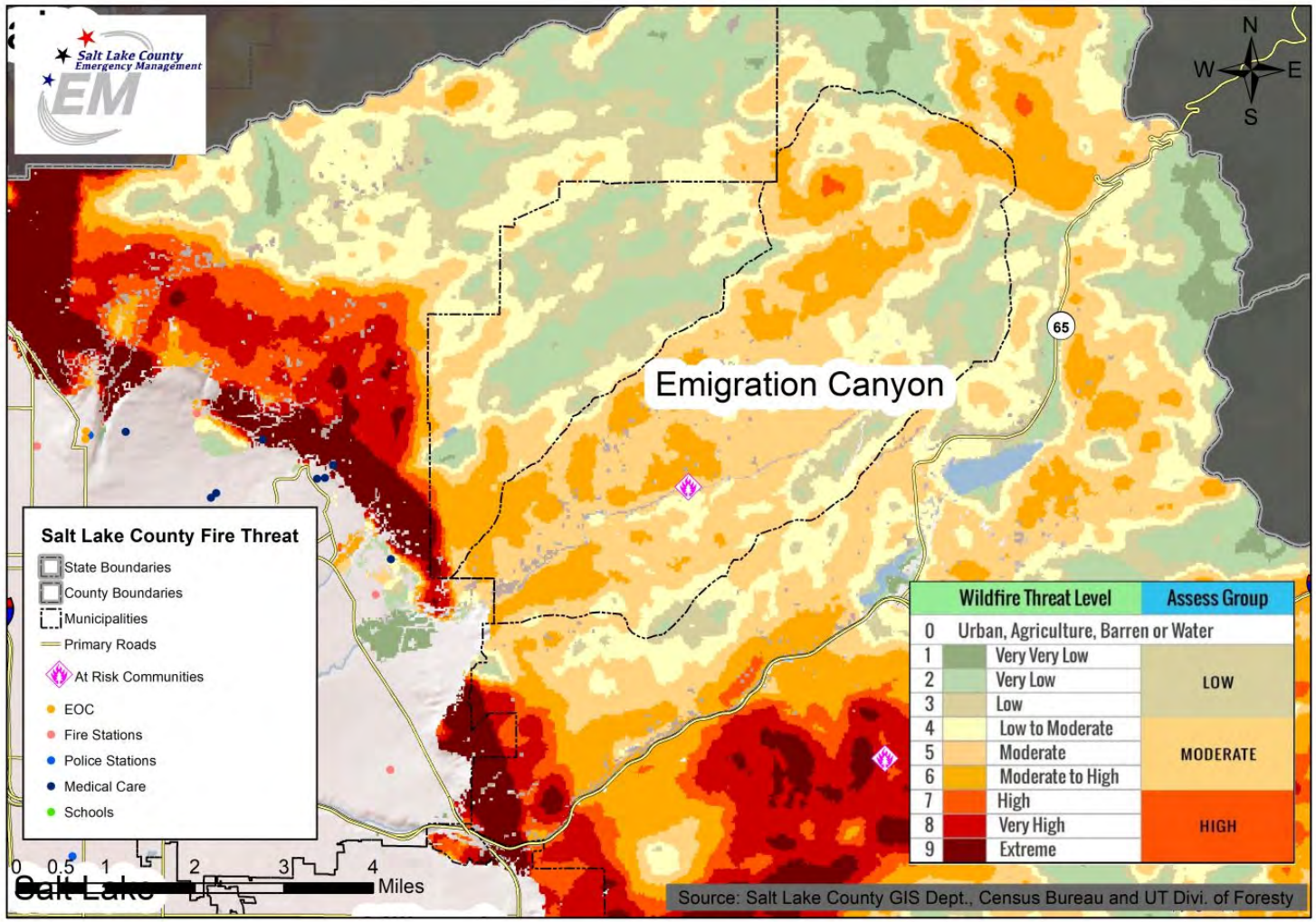
Not applicable since Emigration Canyon did not participate as an incorporated jurisdiction in 2014.

Jurisdiction Maps

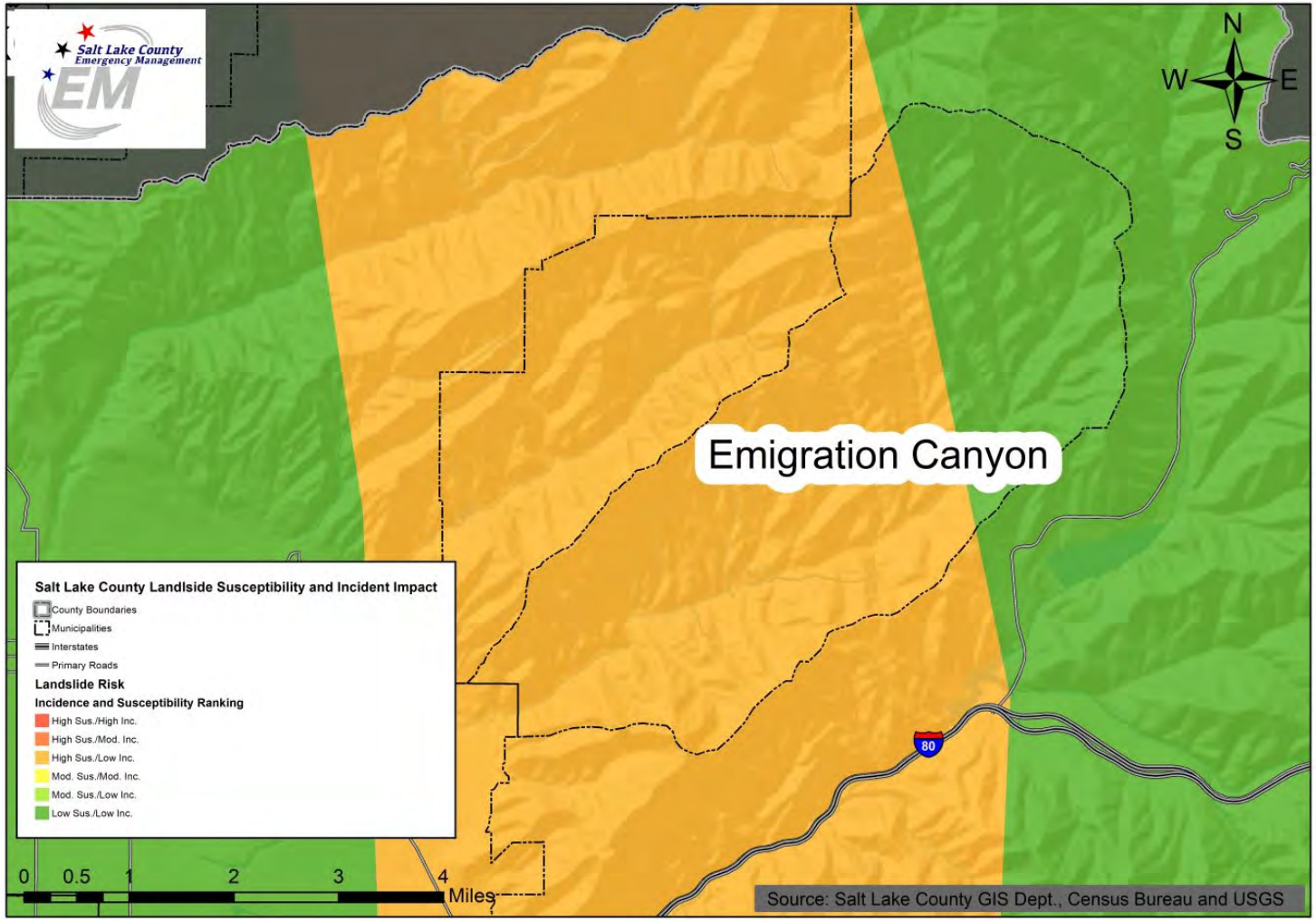
Map: Wildfire Threat Level



Map: Wildfire Threat Level with Critical Facilities



Map: Landslide Susceptibility and Incident Impact Potential



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: Kearns Metro Township

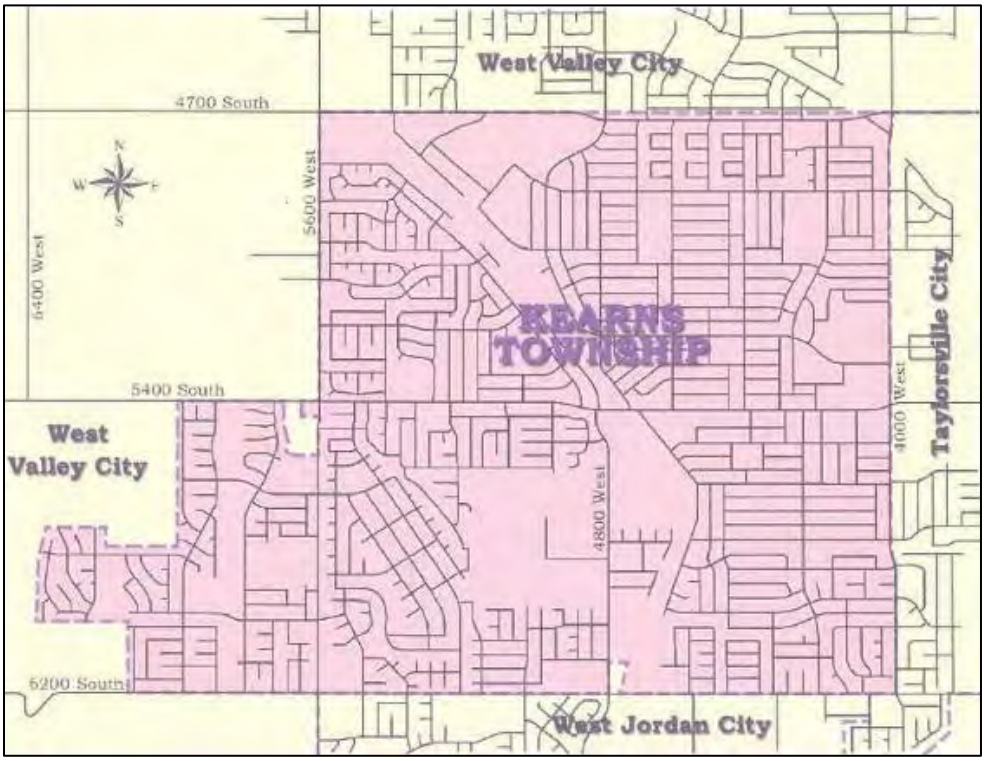
Hazard Mitigation Plan Point of Contact

Primary Point of Contact	Alternate Point of Contact
Name: Kelly Bush **Title:** Mayor **Department:** N/A **Address:** 4956 West 6200 South Suite #527 Kearns, Utah 84118 **Office Phone:** (801) 654-2123 **Email Address:** lobkb973@hotmail.com **Website:** https://www.kmtutah.org/	**Name:** Tina Snow **Title:** Deputy Mayor **Department:** N/A **Address:** 3600 Constitution Blvd West Valley City, UT 84119 **Office Phone: (801) 979-9457** **Email Address:** grlsnow40@comcast.net **Website:** https://www.kmtutah.org/

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** Founded in 1942, and the first Metro Township election was held in 2016.
- **Current Population:** According to the 2017 American Community Survey, the population of the Kearns census designated place (CDP) was 37,194.
- **Population Growth:** The 2010 U.S. Census recorded approximately 35,731 people with the Kearns CDP. The 2017 figure of 37,194 indicates a growth rate of about 4% over this period.
- **Location and Description:** Kearns Metro Township is located in Salt Lake County, Utah, between West Valley City, the City of Taylorsville, and West Jordan City. It has a total land area of approximately 4.8 square miles.



- **Brief History:** Kearns was originally Kearns Army Air Base and functioned as a United States training facility during World War 2. After the war, the Air Force turned the inactive base over to the State of Utah. Local development soon followed and many houses and businesses began to be built. In the years of 2010-2015 a movement began and Kearns officially became a Metro Township. In 2016 the first election was held for the Metro Township to elect the first council members. There were 5 elections for each of the 5 districts in the Kearns Metro Township. In 2017 the first council members of the Metro Township were sworn into office.
- **Climate:**

	Kearns, Utah	United States
Rainfall	19.5 in.	38.1 in.
Snowfall	54.0 in.	27.8 in.
Precipitation	92.0 days	106.2 days
Sunny	225 days	205 days
Avg. July High	91.9°	85.8°
Avg. Jan. Low	24.5°	21.7°
Comfort Index (higher=better)	7.2	7
UV Index	4.7	4.3
Elevation	4531 ft.	2443 ft.

Source: https://www.bestplaces.net/climate/city/utah/kearns

- **Governing Body Format:** The governing body is the Kearns Metro Township Council comprised of a mayor and four council members. Also active within the Township are the Kearns Planning Commission and Kearns Community Council.
- **Development Trends:** According to the U.S. Census Bureau 2012 survey of business owners, there were approximately 1,442 businesses in the Kearns CDP. American Community Survey data from 2015 to 2017 indicate that the total civilian employed population 16 years and older rose 6% from 17,582 to 18,663. During this same time span, the industries that grew the most in terms of absolute number of jobs were Health Care and Social Assistance, Information, and Retail Trade. The industries that lost the most

jobs were Transportation and Warehousing, Construction, and Professional, Scientific, and Technical Services. Many of the homes were built prior to 1954.

Capability Assessment

Hazard Mitigation Planning efforts are supported by Greater Salt Lake Municipal Services District.

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY

	Local Authority Exists to Develop and Implement/ Enforce?	A Jurisdiction-Specific Code, Ordinance and/or Requirement Currently Exists?	Comments
Codes, Ordinances, & Requirements			
Building Code Development and Enforcement	Yes	Yes	Per Utah Code 10-9a
Zonings Ordinance(s)	Yes	Yes	Per Utah Code 10-9a
Subdivision Ordinance(s)	Yes	Yes	Per Utah Code 10-9a
Stormwater Management Program	Yes	Yes	Per Utah Code 10-9a
Floodplain Ordinance(s)	Yes	No	County Maintained
Post Disaster Recovery Program and Ordinance(s)	Yes	-	
Real Estate Disclosure Ordinance(s)	Yes	-	
Growth Management	Yes	Yes	General Plan update
Site Plan Review Requirements	Yes	Yes	Performed by MSD
Public Health and Safety Program and Requirements	No	Yes	County Requirement
Planning Documents			
General or Comprehensive Plan	Yes	Yes	
Capital Improvement Plan	Yes	-	
Economic Development Plan	Yes	-	
Disaster Planning Documents			

Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	No	
Post-Disaster Recovery Plan	Yes	No	
Continuity of Operations Plan	Yes	No	
Public Health Plans	No	No	County Plan
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	Yes	No	

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	-
Incur Debt through General Obligation Bonds	Yes and No
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	No

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	Other	Greater Salt Lake Municipal Services District
Engineers or professionals trained in building or infrastructure construction practices	Yes	Other	Greater Salt Lake Municipal Services District
Planners or engineers with an understanding of natural hazards	Yes	Other	Greater Salt Lake Municipal Services District
Surveyors	Yes	Other	SLCO
Personnel skilled or trained in GIS applications	Yes	Other	GSLMSD
Emergency manager	Yes	-	County supported
Grant writers	No	-	

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	GSLMSD
Who is your jurisdiction's floodplain administrator? (department/position)	Planning Director
Are any certified floodplain managers on staff in your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	N/A
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System (CRS)	No	-	-
Public Protection/ISO	No	-	-
NWS StormReady	No	-	-

Jurisdiction-Specific Hazards and Risks

The Natural Hazard Events Table lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 0 policies were enforced (FEMA, 2019).
- Kearns Metro Township does not participate in the National Insurance Flood Program (FEMA, 2019).

TABLE: RECENT NATURAL HAZARD EVENTS
(NOAA Data with additions from the jurisdiction representatives)

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Winter Storm	12.5 inches of snow		1/19/2018	
High Winds	High Winds occur often; in 2018 a wind incident affected		2018	

	trees, homes and shingles.			
Fires	Near the railroad tracks		ongoing	Neighborhoods periodically need to be evacuated.
Winter Storm	8 inches of snow		12/24/2015	
Hail	1.5 inches in diameter		8/4/2011	
Flood	In Kearns, water was 9 to 12 inches deep across several roads, making them impassable.		7/26/2011	$350,000
Flood	standing water accumulated 1 to 3 feet in low lying areas.		7/22/2008	
Heavy Snow	10 inches		11/26/2005	

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community
Members of the community over 65 years old	2,409
Members of the community under 18 years old	12,211
Members of the community that identify as having disability status	2,959
Members of the community that speak English less than "very well"	4,095
Members of the community living below the poverty line	4,242
The number of mobile homes in the community	198
Members of the community without health insurance	6,594
Occupied housing units with tenants without a vehicle	255
Housing units without heating fuel	11

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only

addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Earthquake: Portions of Kearns are on the major fault zones in the region. However, the potential damage is not limited only to the fault zone areas. Fine-grained, lake-bottom sediments are common in the area and are susceptible to liquefaction-induced ground failure during a large earthquake. Each incident may require a unique response from Kearns and in the instance of a major earthquake outside assistance will be required.

Homes east of the railroad tracks (4420 West) were built between 1954-1960. These older homes may be constructed of unreinforced masonry. Several schools in the area are being rebuilt and reinforced. The Olympic Oval serves as a designated shelter for Kearns, and additional retrofitting/reinforcing may be necessary.

Flooding: Although located in a semi-arid region, Kearns is subject to thunderstorms and snowmelt flooding. Significant flooding occurred in the Salt Lake Valley in 1983 and to a lesser extent in 1984, and again in 2011.

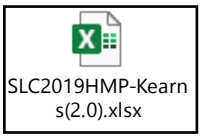
Winter Storms and Thunderstorms: The potential for severe weather is a reality in Kearns and the surrounding region. These weather events are not isolated to any climatic season, but rather can occur at any time during the year. During the spring and summer months, heavy rains can fall upon soils in a desert climate that may not readily percolate creating surface runoff, mudslides, debris flow, flooding, and other water-related damage. During the winter months, heavy snowfall is possible. Winter weather systems and snowstorms over northern Utah can have a dramatic effect on regional commerce, transportation, and daily activity and are a major forecast challenge for local meteorologists. Snowfall is particularly influenced by the Great Salt Lake, which can produce localized snow bands or lake effect accumulations several times each winter.

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Severe Winter Weather	3	18	54
Severe Weather	3	17	51
Public Health Epidemic/ Pandemic	2	21	42
Hazardous Materials Incident	3	13	39
Flooding	2	17	34
Radon/Asbestos	3	9	27
Drought	2	13	26

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Tornado	2	12	24
Cyber Attack	2	11	22
Terrorism	1	22	22
Dam Failure	1	15	15
Wildfire	1	10	10
Civil Disturbance	1	10	10
Landslide and Slope Failure	1	6	6
Avalanche	0	0	0

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.


SLC2019HMP-Kearns(2.0).xlsx

Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	None	0		Avalanche	No impact	0	0
Dam Failure	Low	1		Dam Failure	Low	1	3
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Low	1	3
Cyber Attack	Medium	2		Cyber Attack	Medium	2	6
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Medium	2	6
Hazardous Materials Incident	High	3		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Low	1		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	High	3	9
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Low	1	3
Tornado	Medium	2		Tornado	Low	1	3
Wildfire	Low	1		Wildfire	Low	1	3

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	No Impact	0	0		Avalanche	No Impact	0	0
Dam Failure	Low	1	1		Dam Failure	Medium	2	4
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Medium	2	4
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	Medium	2	4
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Low	1	2
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Medium	2	4
Severe Winter Weather	High	3	3		Severe Winter Weather	Medium	2	4
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	Low	1	1		Wildfire	Low	1	2

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**	**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)	**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)	**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)	**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)	**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)
Avalanche	No Impact	0	0
Dam Failure	Low	1	1
Drought	Low	1	1
Civil Disturbance	Medium	2	2
Cyber Attack	Medium	2	2
Earthquake	High	3	3
Flooding	Medium	2	2
Hazardous Materials Incident	Low	1	1
Landslide and Slope Failure	No Impact	0	0
Public Health Epidemic/ Pandemic	High	3	3
Radon	No Impact	0	0
Severe Weather	Low	1	1
Severe Winter Weather	Medium	2	2
Terrorism	High	3	3
Tornado	Medium	2	2
Wildfire	Low	1	1

Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Unlikely	0	0
Dam Failure	Medium	2	6
Drought	Low	1	3
Civil Disturbance	Unlikely	0	0
Cyber Attack	Low	1	3
Earthquake	High	3	9
Flooding	Low	1	3
Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	9
Radon	Unlikely	0	0
Severe Weather	Unlikely	0	0
Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	9
Tornado	Unlikely	0	0
Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Low potential that this hazard could be catastrophic (Impact Factor = 1)
Unlikely—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

Action	Year Initiated	Goal/ Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Asbestos Removal	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Public Health (Asbestos), Hazardous Materials Release	Utah DEQ	Kearns	High	High	HMA/PDM Grant or other federal funds	Medium	Long-term	
Seismic Retrofitting	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Earthquake	Kearns	MSD	High	High	HMA/PDM Grant or other federal funds	Medium	Long-term	
Fireline along the railroad tracks to mitigate wildfires from occurring and affecting	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Wildfire	Union Pacific Railroad	Kearns	Medium	High	Railroad or other state and federal funds	Medium	Long-term	

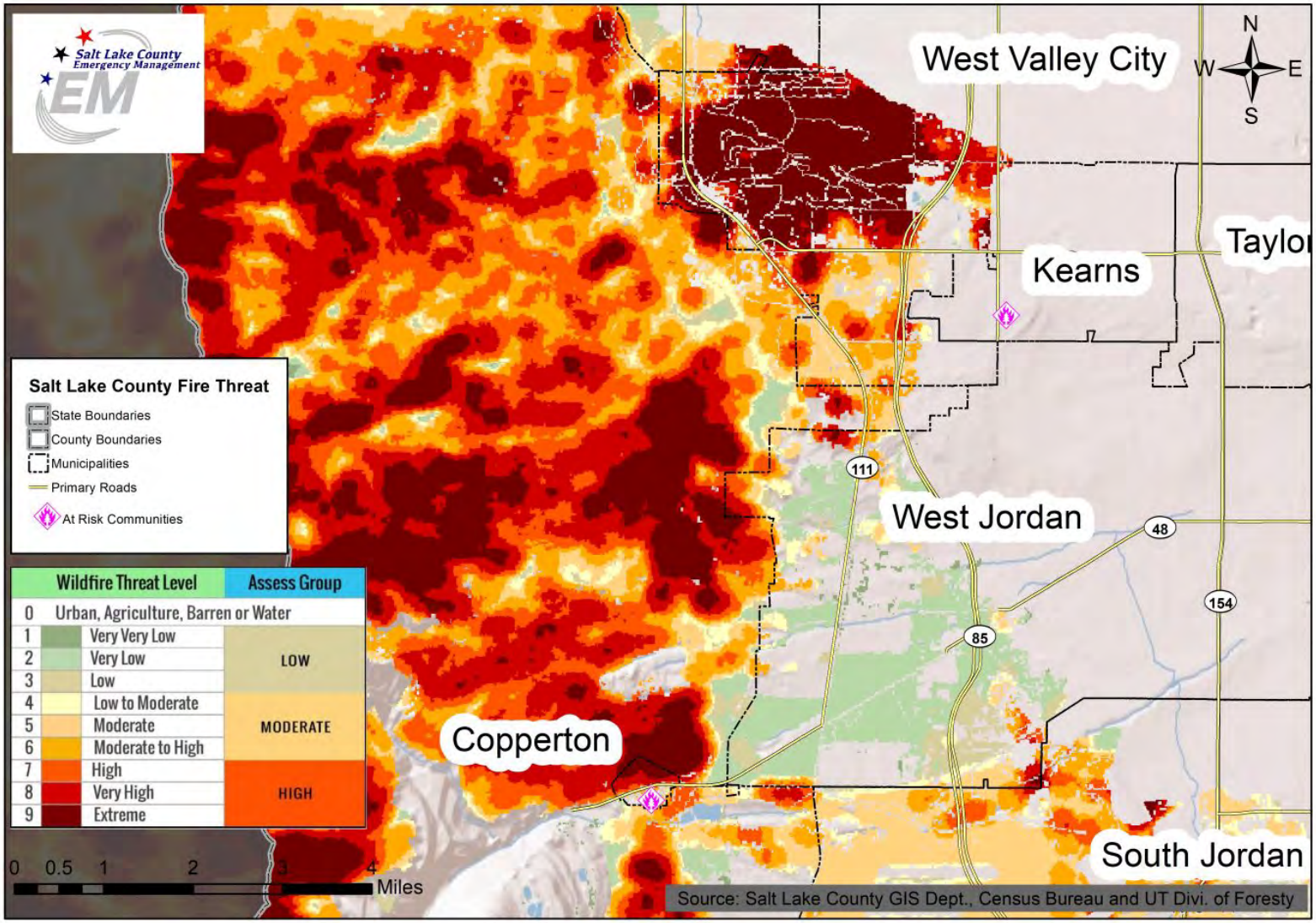
nearby neighborhoods		Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.									
Procure and install an emergency notification system	2019	Goal 3: Enhance and protect the communication and warning/notification systems in the County.	All-Hazards	Kearns	Salt Lake County Emergency Management	High	Medium	HMA/PDM Grant, local funds, or state funds	Medium	Short-term	Interested in a system similar to Magna
Create an Emergency Operations Plan	2019	Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.	All-Hazards	Kearns	MSD	High	Medium	Local budget or state funds	High	Short-term	
The bridge at 4015 W lacks load capacity for emergency services vehicles, and needs to be replaced or retrofitted. This is an important roadway that connects many communities in the County.	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	All-Hazards; Flooding, Winter Storms, Severe Thunderstorms	Kearns	Taylorsville	High	High	HMA/PDM Grant or other federal funds	High	Long-term	Connects Taylorsville, West Valley, and Kearns

Mitigation Table - Ongoing Actions

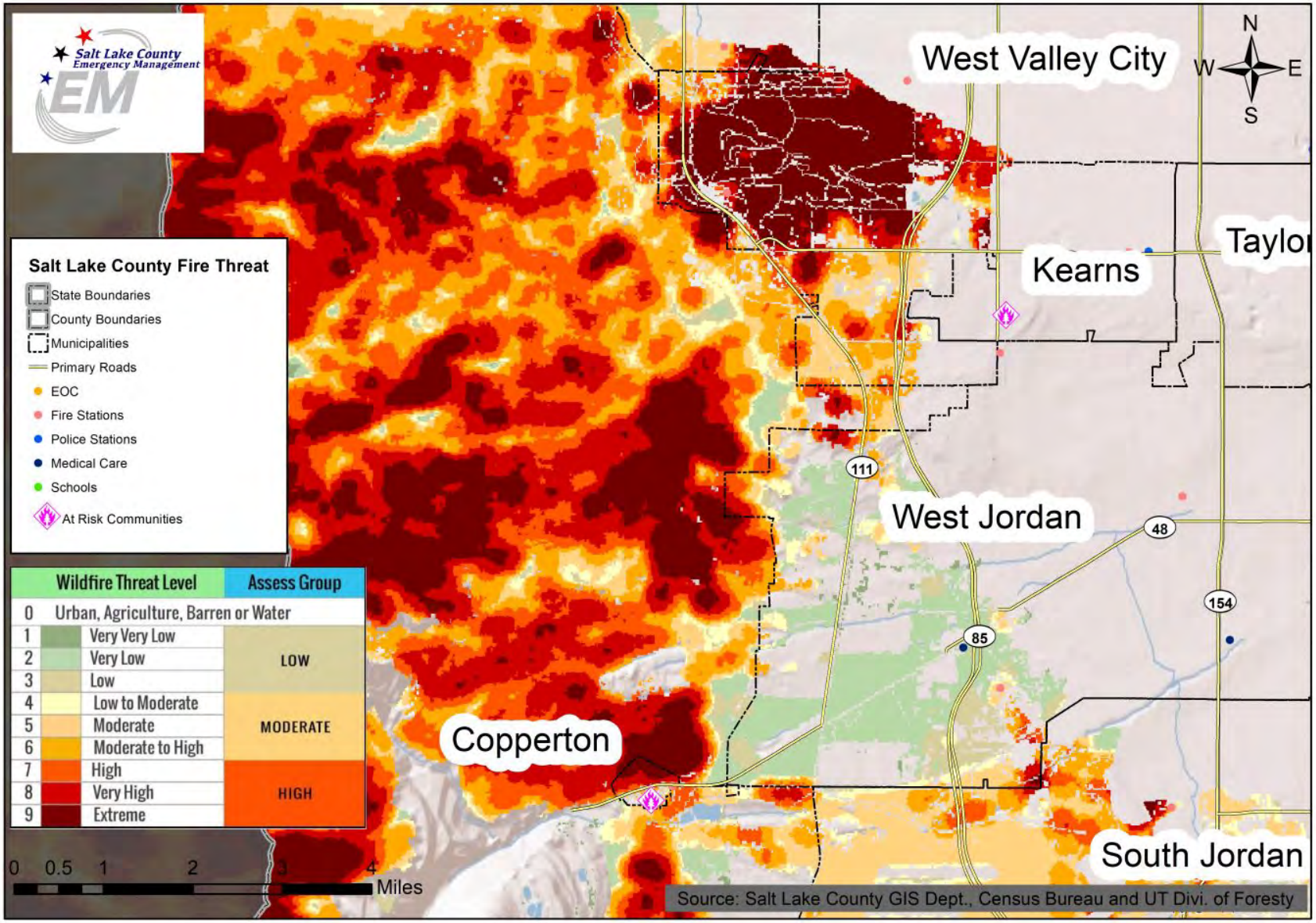
Not applicable since Kearns did not participate as an incorporated jurisdiction in 2014.

Jurisdiction Maps

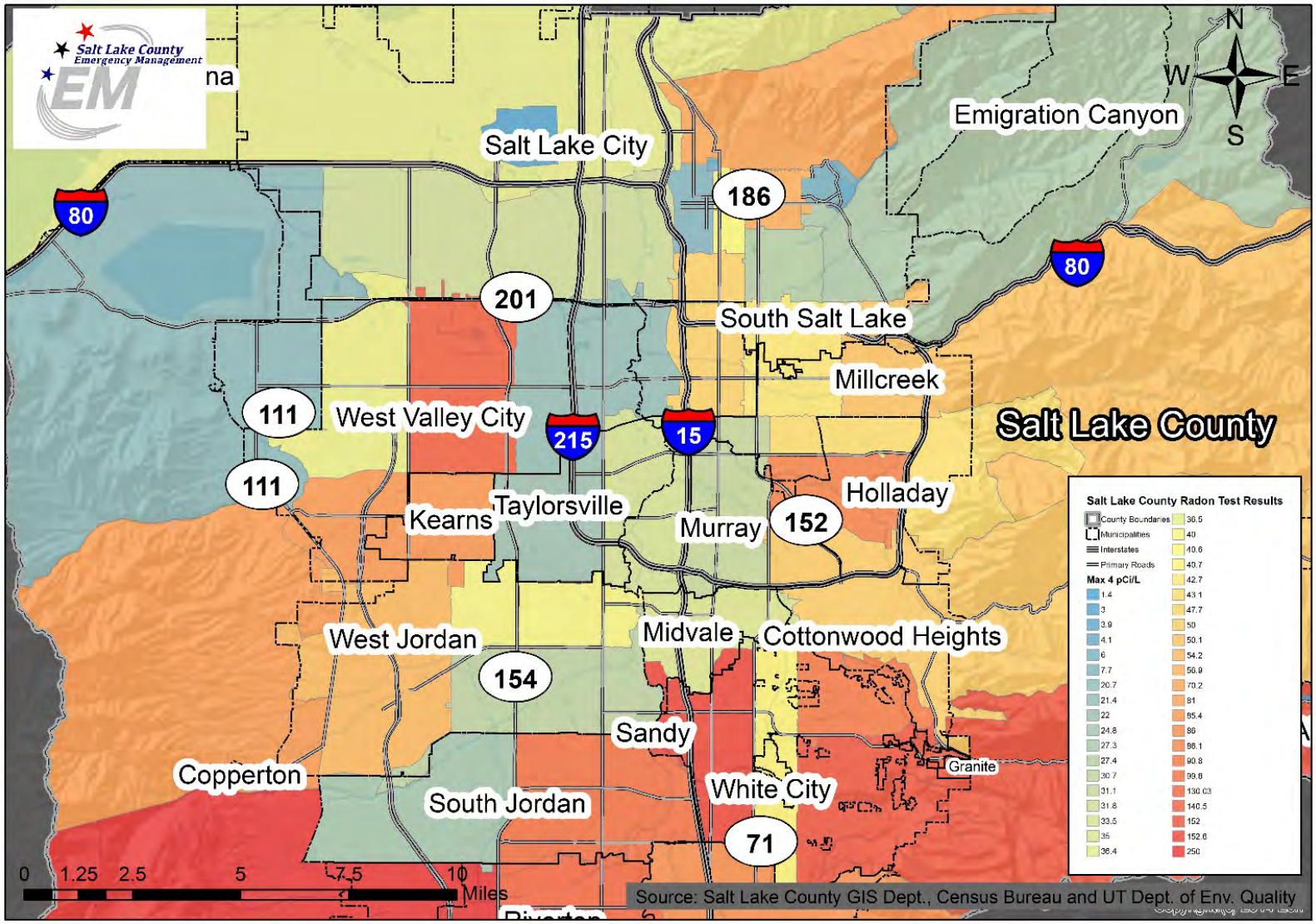
Map: Wildfire Threat Level



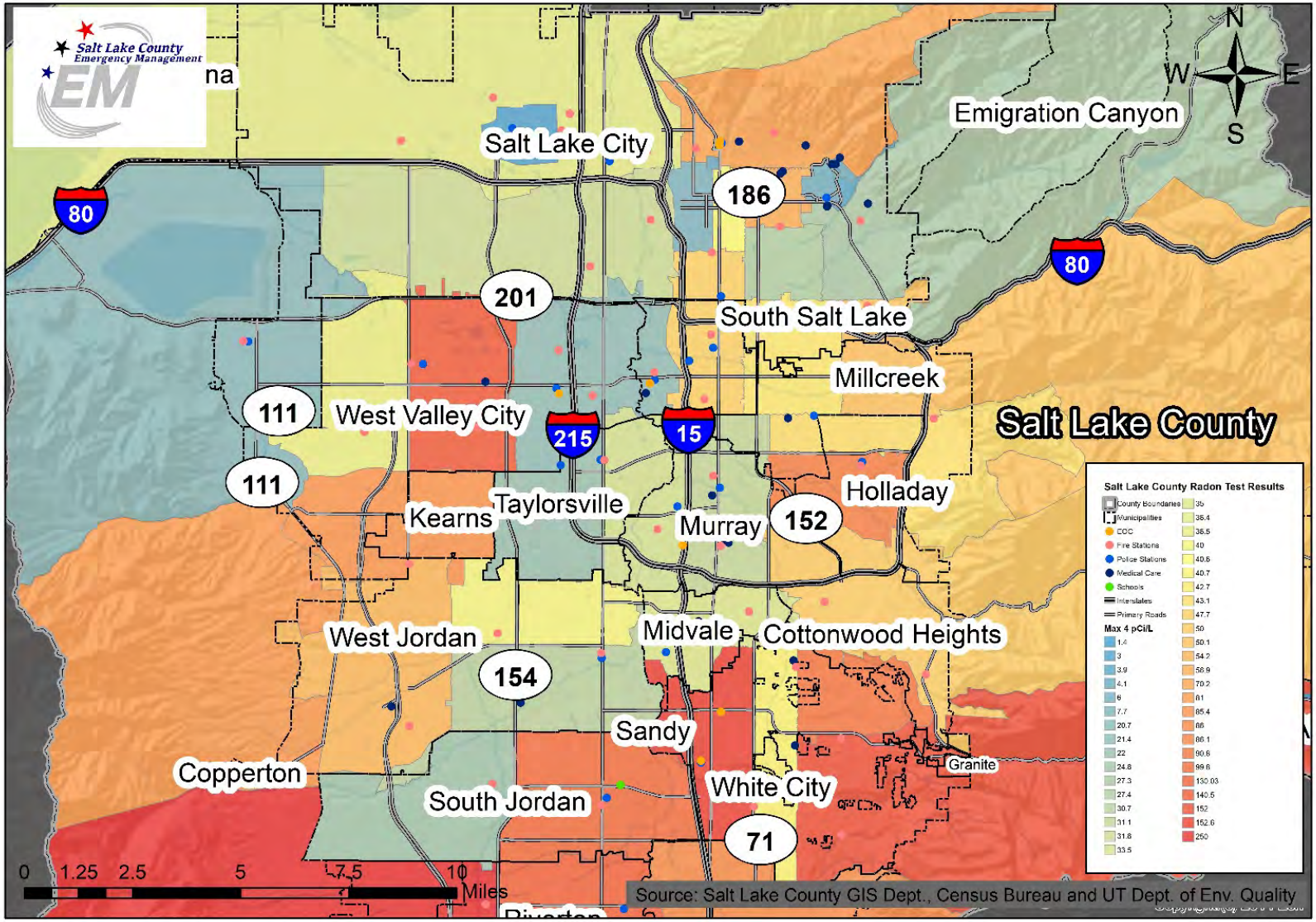
Map: Wildfire Threat Level with Critical Facilities



Map: Radon


Salt Lake County Emergency Management
EM
N
W
E
S
Salt Lake City
Emigration Canyon
186
80
201
South Salt Lake
Millcreek
111
West Valley City
215
15
Salt Lake County
111
Holladay
Kearns
Taylorsville
Murray
152
West Jordan
Midvale
Cottonwood Heights
154
Sandy
Granite
Copperton
White City
South Jordan
71
0 1.25 2.5 5 7.5 10 Miles
Source: Salt Lake County GIS Dept., Census Bureau and UT Dept. of Env. Quality
Salt Lake County Radon Test Results
County Boundaries
Municipalities
Interstates
Primary Roads
Max 4 pCi/L
1.4
3
3.9
4.1
6
7.7
20.7
21.4
22
24.8
27.3
27.4
30.7
31.1
31.8
33.5
35
36.4
36.5
40
40.6
40.7
42.7
43.1
47.7
50
50.1
54.2
56.9
70.2
81
85.4
86
98.1
90.8
99.8
130.03
140.5
152
152.6
250

Map: Radon with Critical Facilities



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: Magna Metro Township

Hazard Mitigation Plan Point of Contact

Primary Point of Contact	Alternate Point of Contact
Name: Greg Schulz **Title:** Administrator **Department:** **Address:** 8952 West Magna Main Street (2700 South) **Office Phone:** 385-258-3690 **Cell Phone:** 801-419-3071 **Email Address:** Greg.schulz@magnacity.org **Website:** https://www.magnametrotownship.org/	**Name:** Dan Peay **Title:** Mayor **Department:** N/A **Address:** 8952 West Magna Main Street Magna, Utah 84044 **Office Phone:** 801-209-9407 **Email Address:** Dan.peay@magnacity.org **Website:** https://www.magnametrotownship.org/

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** Settled in 1853; Incorporated in 2017
- **Current Population:** 28,257 (ACS 2017)
- **Population Growth:** In 2000, the population was 22,770, and in 2010, the population was 26,505. Following this pattern, the Magna Metro Township continues to grow in population size.
- **Location and Description:** 3,066.2/sq mi
- **Brief History:** Magna Utah is an incorporated municipality of Salt Lake County that began as a small settlement in the mid-1800s and was called Pleasant Green. Mining activity came to the scene at the turn of the century, and once the foundations of a modern town were laid, the name was changed to Magna in 1906. Historic Magna Main Street has served as the heart of the community and a commercial center for decades, and the local economy fluctuated along with the fortunes of the copper mine. Within the boundaries lies a portion of the Great Salt Lake and the historic Saltaire concert hall (Chamber of Commerce). The Legislature authorized most unincorporated-area voters to choose their futures in 2015. All unincorporated townships would become municipalities, but voters in each could choose whether to make their community a Metro Township or a City. Magna voters elected to become a Metro Township. Metro Townships are a new type of municipality with most of a city's revenue collection powers. These voters also chose to receive their services from the Greater Salt Lake Municipal Services District (MSD).
- **Climate:** On average, the hottest temperature is 91.7 degrees in the summer and December is the snowiest month of the year (9.7 inches on average) (Best Places).
- **Public Services:** The Magna Metro Township does not provide most of its municipal-type services. Like most Metro Townships, services are performed by contract, or through participation in a local district. By participating in local districts, Metro Townships benefit from leveraging economies of scale that individually, no Metro Township could achieve on its own through self-provision of services. The overwhelming majority of the municipal-type services being provided to the metro townships through a Local District or Interlocal Contract Agency has a member of their respective Metro Township Council serving and voting on the Board of Trustees of each of those entities. Examples of this active participation and management of services include the Greater Salt Lake Municipal Services District, the Unified Police Department/Salt Lake Valley Law Enforcement

Service Area, Unified Fire Department/Unified Fire Service Area, and Wasatch Front Waste and Recycling District (Magna).

- **Governing Body Format:** A Magna Metro Township is a municipality with a governing board. The Metro Township Council is comprised of five members who are elected to serve, just like cities and towns elect their councils. The Mayor of the Metro Township is currently chosen by a vote of the Metro Township Council – the same way some towns choose their Mayor. The Metro Township has a budget it must manage; municipal laws, rules, and regulations it must create, change, and enforce; and state laws it must follow and enforce. In fact, the state laws the Metro Township must work within are generally the same laws cities and towns must conduct their business by – including the state laws for land use (Magna).
- **Development Trends:** Magna is home to major employers Rio Tinto and ATK. Between the copper and rockets that workers at these companies produce, Magna's efforts can be seen all over the world and even in space. Alorica is also a large employer. In the next 5-7 years, the community will add many new single and multi-family units.

Capability Assessment

The town maintains a full-time staff of 0 and part-time staff of 0 individuals. The Emergency Response Coordinator is the Town's designated Emergency Manager. Hazard Mitigation Planning efforts are led by the Emergency Response Coordinator position and supported by Greater Salt Lake Municipal Services District (Land Use Planning, Building Inspection, Code Enforcement, Stormwater Program, and Public Works Operations), Magna Water District (Potable Water, Secondary Water, and Sewer), Unified Fire Authority (Fire Protection Services), Unified Police Department (Police Services), and Wasatch Front Waste and Recycling District (Trash/Refuse Collection).

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY			
	Local Authority Exists to Develop and Implement/ Enforce?	**A Jurisdiction-Specific Code, Ordinance and/or Requirement Currently Exists?**	**Comments**

Codes, Ordinances, & Requirements			
Building Code Development and Enforcement	Yes	Yes	Per Utah Code 10-9a
Zonings Ordinance(s)	Yes	Yes	Per Utah Code 10-9a
Subdivision Ordinance(s)	Yes	Yes	Per Utah Code 10-9a
Stormwater Management Program	Yes	Yes	Per Utah Code 10-9a
Floodplain Ordinance(s)	Yes	No	County Maintained
Post Disaster Recovery Program and Ordinance(s)	Yes	Yes	Currently under review for updates
Real Estate Disclosure Ordinance(s)	Yes	Yes	Overpressure Ordinance
Growth Management	Yes	Yes	General Plan update
Site Plan Review Requirements	Yes	Yes	Performed by MSD
Public Health and Safety Program and Requirements	No	Yes	County Requirement
Planning Documents			
General or Comprehensive Plan	Yes	Yes	
Capital Improvement Plan	Yes	No	In progress
Economic Development Plan	Yes	No	In progress
Disaster Planning Documents			
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	No	
Post-Disaster Recovery Plan	Yes	No	
Continuity of Operations Plan	Yes	No	
Public Health Plans	No	No	County Plan
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	Yes	No	

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes and No
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	No

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	Other	Greater Salt Lake Municipal Services District
Engineers or professionals trained in building or infrastructure construction practices	Yes	Other	Greater Salt Lake Municipal Services District
Planners or engineers with an understanding of natural hazards	Yes	Other	Greater Salt Lake Municipal Services District
Surveyors	Yes	Other	SLCO
Personnel skilled or trained in GIS applications	Yes	Other	GSLMSD
Emergency manager	No	-	

Grant writers	No	-	

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	GSLMSD
Who is your jurisdiction's floodplain administrator? (department/position)	Planning Director
Are any certified floodplain managers on staff in your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	N/A
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System (CRS)	No	-	-
Public Protection/ISO	No	-	-
NWS StormReady	No	-	-

Jurisdiction-Specific Hazards and Risks

The Natural Hazard Events Table lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 0 policies were enforced (FEMA, 2019).

- Magna Metro Township does not participate in the National Flood Insurance Program (FEMA, 2019).

TABLE: RECENT NATURAL HAZARD EVENTS
(NOAA Data with additions from the jurisdiction representatives)

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Hail	0.88 in diameter		5/15/2018	
High Wind	Large trees were knocked over and fell onto houses in Murray and Magna, and fence damage was also reported across the area		4/13/2017	$50,000 in property damage
High Wind	Shingles were blown off of homes and other roof damage was reported in several locations, especially in the Magna and Grantsville areas. In addition, multiple large trees and traffic light poles were knocked down across the area.		3/17/2014	$80,000 in property damage
Winter Storm	12 inches of snow		12/7/2013	
Winter Storm	12 inches of snow		12/31/2013	
Winter Storm	7 inches of snow		3/6/2012	
Winter Storm	9 inches of snow		3/1/2012	
Winter Storm	11 inches of snow		11/28/2010	

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community

Members of the community over 65 years old	1,854
Members of the community under 18 years old	9,037
Members of the community that identify as having disability status	2,475
Members of the community that speak English less than "very well"	2,269
Members of the community living below the poverty line	3,218
The number of mobile homes in the community	204
Members of the community without health insurance	4,222
Occupied housing units with tenants without a vehicle	328
Housing units without heating fuel	6

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Winter Storms: These storms bring extremely low temperatures to the area, which can be particularly dangerous for elderly members of the community and members of the community without health insurance due to the health-issues correlated with these types of weather events.

High Wind: These events are especially dangerous for the community members that reside in mobile homes.

Avalanche: In the last 20 years, development has increased in Little Valley, which is an area susceptible to avalanches. As development expands to the west/southwest, avalanche risk will likely increase in this area.

Landslide/Slope Failure: Pleasant Green Cemetery is located on Copper Bend Drive which can be impacted by these events. This is a steep area and a rail line is located at the foot of the hill.

Earthquake: Many edifices on main street, downtown Magna, and elementary schools are not seismically retrofitted. Soil liquefaction occurs in many areas. An earthquake could cause Tailings Pond to fail, which would affect the highway and other roadways.

Flooding: Storm drains cannot currently handle the increased flooding in the area. Of particular concern is that if Tailings Pond failed, downtown Magna and beyond would likely flood.

Wildfire: Magna is located at the base of the Oquirrh's and Rio Tinto Land which is in the wildland-urban interface (WUI). The buildings in Old Magna are older and flammable. An area of particular concern is 8800-26th South.

Radon: Old Magna is considered a red spot (very high) for radon since most homes were built before 1975. Many homes have not gone through radon remediation.

Hazardous Materials: Multiple areas of concern exist in Magna including the potential for a critical explosion of solid rocket fuel at Northrup Grumman that could impact South Magna, the transportation of hazardous materials along major roadways, and rail transportation of materials through the area.

Terrorism: Northrup Grumman and Rio Tinto could be targeted.

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Severe Winter Weather	3	16	48
Severe Weather	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Wildfire	2	17	34
Flooding	2	17	34
Cyber Attack	2	17	34
Hazardous Materials Incident	2	15	30
Drought	2	14	28
Radon	3	9	27
Terrorism	1	25	25
Tornado	1	11	11
Dam Failure	1	10	10
Civil Disturbance	1	8	8
Landslide and Slope Failure	1	7	7
Avalanche	1	7	7

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.

SLC2019HMP-Magna(2.0).xlsx

Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1		Avalanche	Low	1	3
Dam Failure	Low	1		Dam Failure	Low	1	3
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Low	1	3
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Low	1		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	High	3	9
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	Medium	2		Wildfire	Medium	2	6

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	Low	1	1		Avalanche	Low	1	2
Dam Failure	Low	1	1		Dam Failure	Low	1	2
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Low	1	2
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	Medium	2	4
Hazardous Materials Incident	Medium	2	2		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Low	1	2
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Low	1	2
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	Medium	2	2		Wildfire	Medium	2	4

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**		**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)		**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)		**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)		**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)		**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)
Avalanche	Low	1	1
Dam Failure	Low	1	1
Drought	Medium	2	2
Civil Disturbance	Medium	2	2
Cyber Attack	Medium	2	2
Earthquake	High	3	3
Flooding	Medium	2	2
Hazardous Materials Incident	Medium	2	2
Landslide and Slope Failure	Low	1	1
Public Health Epidemic/ Pandemic	High	3	3
Radon	No Impact	0	0
Severe Weather	Low	1	1
Severe Winter Weather	Medium	2	2
Terrorism	High	3	3
Tornado	Low	1	1
Wildfire	Medium	2	2

Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Unlikely	0	0
Dam Failure	Low	1	3
Drought	Low	1	3
Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	6
Earthquake	High	3	9
Flooding	Low	1	3
Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	9
Radon	Unlikely	0	0
Severe Weather	Unlikely	0	0
Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	9
Tornado	Unlikely	0	0
Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Low potential that this hazard could be catastrophic (Impact Factor = 1)
Unlikely—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Conduct Urban Interface Wildfire Mitigation	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. Goal 4: Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters.	Wildfire	Magna	UFA	Medium	Medium	HMA/PDM Grant or other federal funds	Medium	Long-term	
Conduct Seismic Upgrades	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities,	Earthquake	Magna	GSL MSD School District	High	High	HMA/PDM Grant or other federal funds	High	Long-term	Provide seismic upgrades to downtown Magna Metro Township, elementary schools, and

		structures, and infrastructure during disasters. Goal 3: Enhance and protect the communication and warning/notification systems in the County. Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.									Brockbank Campus.
Storm Drain System Overhaul	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. Goal 5: Ensure and promote ways to increase government and private sector continuity of services during and after a disaster. Goal 6: Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.	Flood (Urban/Flash Flooding) and Public Health (Pandemic/ Epidemic)	Magna	GSL MSD	High	High $10-15 million	HMA/PDM Grant or other federal funds	Medium	Long-term	Completely overhaul the storm drain system from 8400 to the west.

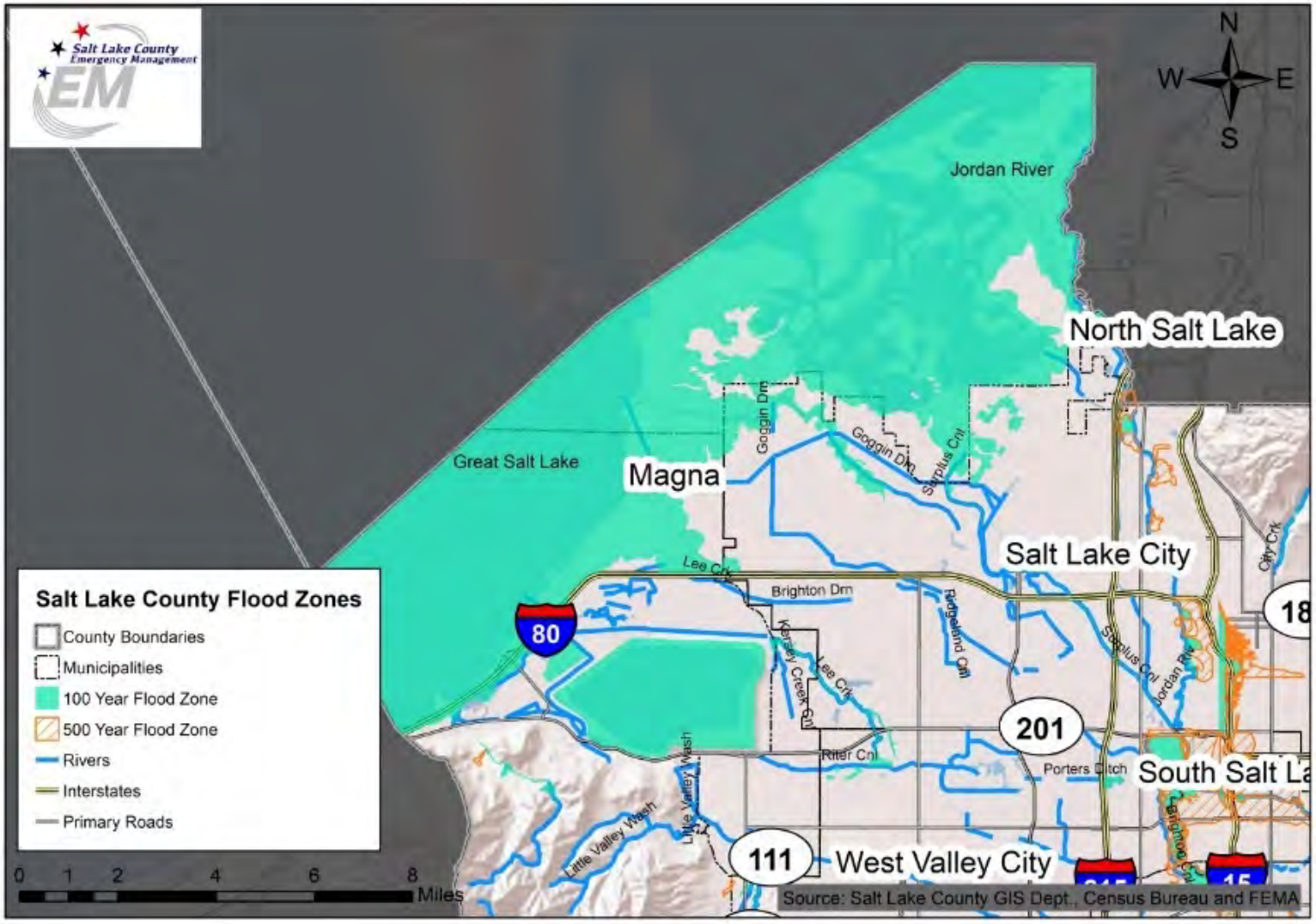
Slope Stabilization at locations like, but not limited to: Copper Bend Drive	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Landslide	Magna	GSL MSD	Medium	Medium	HMA/PDM Grant or other federal funds	Medium	Long-term	
Radon testing and remediation	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Radon	Magna		High	Low	Local and/or State funds	Medium	Ongoing	Encourage residents to test for radon and conduct appropriate remediation. Find radon hot spots in Magna.
Conduct Hazardous Materials Flow Study	2019	Goal 1: Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	HAZMAT	Magna	GSL MSD	High	Medium	US DOT or related Federal Grants	High	Short-term	

Mitigation Table - Ongoing Actions

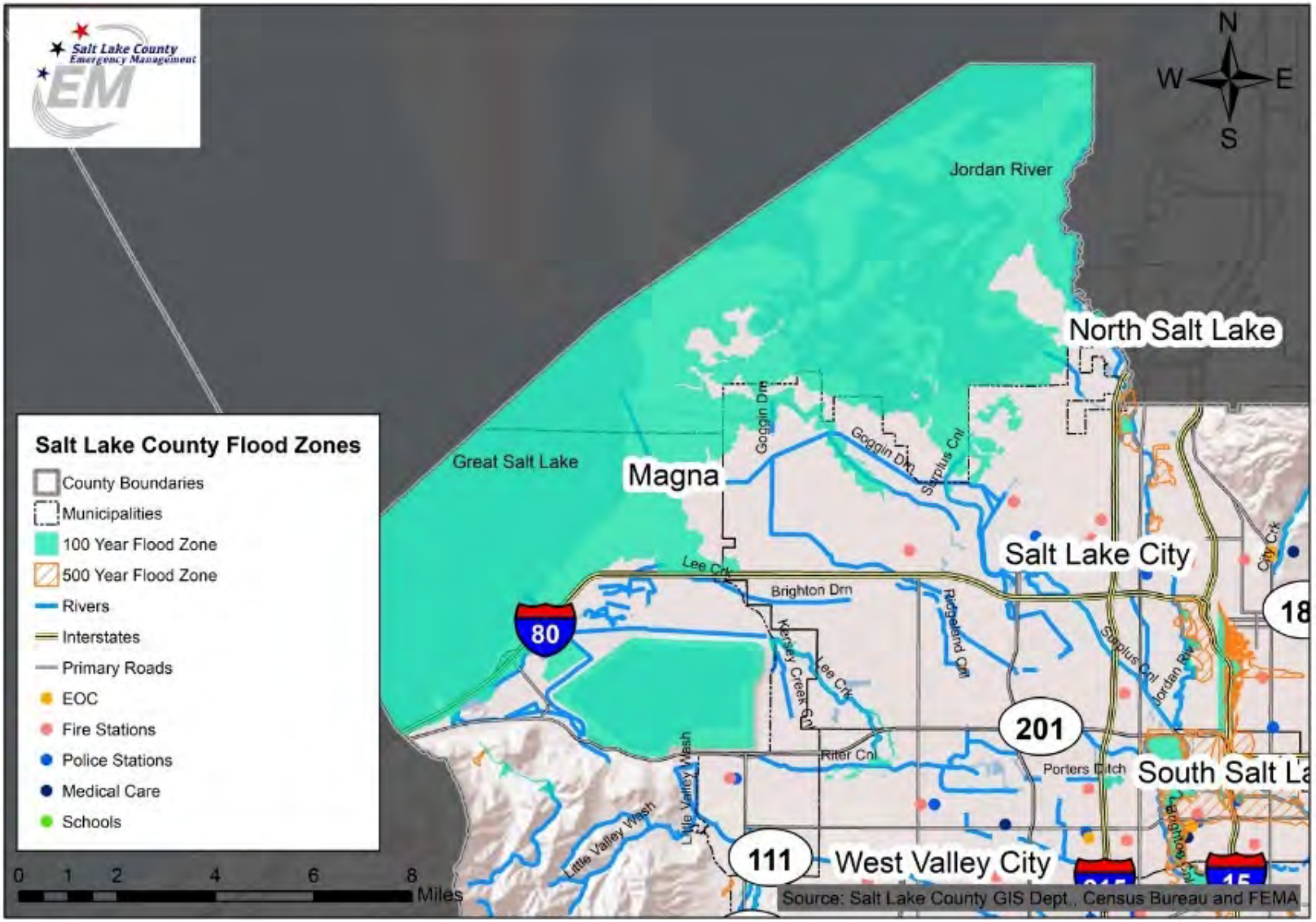
Not applicable since Magna did not participate as an incorporated jurisdiction in 2014.

Jurisdiction Maps

Map: 100 Year and 500 Year Flood Zone with



Map: 100 Year and 500 Year Flood Zone with Critical Facilities



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Annex: White City Metro Township

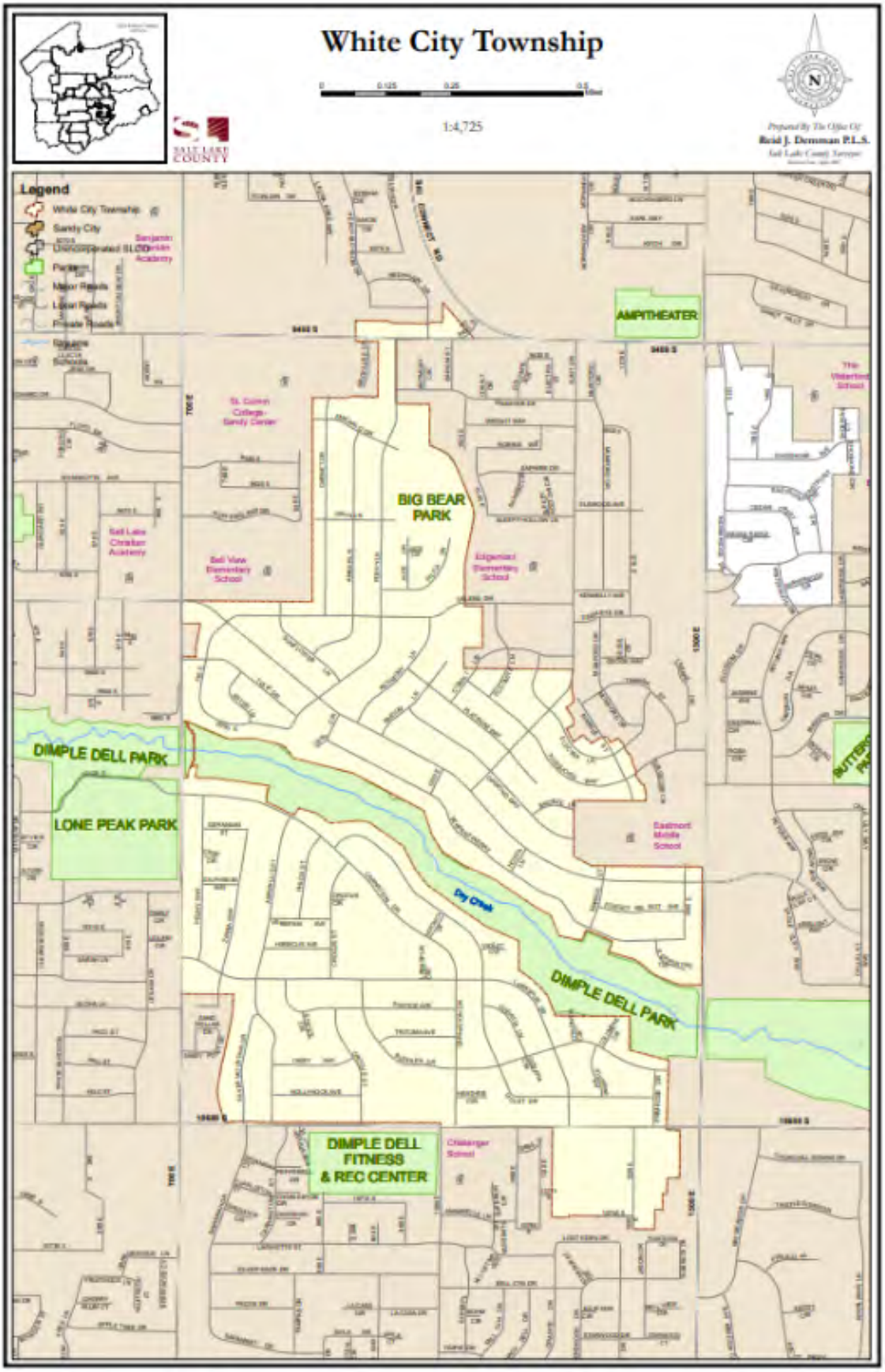
Hazard Mitigation Plan Point of Contact

Primary Point of Contact
Name: Paulina Flint **Title:** Mayor **Department:** City Council **Address:** 10467 S Carnation Dr White City, UT 84094 **Office Phone:** 801-571-5257 **Email Address:** pbflint@yahoo.com; paulina.flint@whitecity-ut.org **Website:** https://www.whitecity-ut.org

Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** Granted the status of township by The Salt Lake County Council on September 26, 2006 and transitioned to a metro township in January 2017.
- **Current Population:** According to U.S. Census 2017 population estimates, there are approximately 5,270 within White City census-designated place (CDP).
- **Location and Description:** White City Township is an enclave of the City of Sandy in Northern Utah in the Southeast portion of Salt Lake County. It currently has a total land area of approximately .9 square miles.


White City Township
1:4,725
Legend
White City Township
Sandy City
Unincorporated SLCO
Parkway
Major Roads
Local Roads
Private Roads
AMPITHEATER
BIG BEAR PARK
DIMPLE DELL PARK
LONE PEAK PARK
DIMPLE DELL FITNESS & REC CENTER
Dry Creek
St. Comm College- Sandy Center
Bell View Elementary School
Edgemont Elementary School
Eastmont Middle School
Salt Lake Christian Academy

- **Brief History:** White City was started by developers Ken White and Cannon Papanicholas in 1955. Ken White named "White City" and it became listed as a "census designated place" by the US Census Bureau. The first homes were built along Galena Drive in 1957. White City Water Company was developed to service the area owned by these developers. Later, in 1961, Sandy Suburban Service District was started to service this same area. Edgemont Elementary was the first school built, one of three elementary schools and one middle school within walking distance. The majority of White city was built in the fifties and sixties. White City was granted the status of township by the Salt Lake County Council on September 26, 2006. White City then transitioned to a metro township in January 2017.
- **Climate:**

	White City, Utah	United States
Rainfall	21.0 in.	38.1 in.
Snowfall	61.2 in.	27.8 in.
Precipitation	86.7 days	106.2 days
Sunny	227 days	205 days
Avg. July High	92.2°	85.8°
Avg. Jan. Low	21.5°	21.7°
Comfort Index (higher=better)	7.1	7
UV Index	4.7	4.3
Elevation	4583 ft.	2443 ft.

Source: https://www.bestplaces.net/climate/city/utah/white_city

- **Governing Body Format:** The White City Metro Township Council is the municipal government for White City. The five-member council is elected at-large from the community. Per State Law the Mayor is chosen by the Council to serve as White City's executive, and the Mayor chairs all council meetings. Services within the city include the following: various boards and commissions, the Greater Salt Lake Municipal Services District, a Mosquito Abatement District, Parks and Recreation, the Unified Fire Service Area, Salt Lake Unified Police Department, Wasatch Front Waste and Recycling District, and the White City Water Improvement District.
- **Development Trends:** Single-family homes are the dominant land use type and total over 98 percent of the dwellings in the White City Community, with the most common zone designation being R-1-8 which is a single-family residential zone that requires a minimum 8000 square foot lot per dwelling. There are no medium or high-density residential housing units in the community. 95% of the homes were built between 1940 and 1979 in White City. Preservation of the existing single-family neighborhoods is a high priority in the community. Except for the one existing commercial property within the Township all commercial activity for the community is found outside of its boundaries. The area is

considered a bedroom community with low rental rates and has already built out. A young population has started to move to the area. A new elementary school was built in 2017.

Capability Assessment

The town maintains a full-time staff of 0 and part-time staff of 0 individuals. Hazard Mitigation Planning efforts are supported by Greater Salt Lake Municipal Services District (Land Use Planning, Building Inspection, Code Enforcement, Stormwater Program, and Public Works Operations), Unified Fire Authority (Fire Protection Services), Unified Police Department (Police Services), and Wasatch Front Waste and Recycling District (Trash/Refuse Collection).

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY

	Local Authority Exists to Develop and Implement/ Enforce?	A Jurisdiction-Specific Code, Ordinance and/or Requirement Currently Exists?	Comments
Codes, Ordinances, & Requirements			
Building Code Development and Enforcement	Yes	Yes	Per Utah Code 10-9a
Zonings Ordinance(s)	Yes	Yes	Per Utah Code 10-9a
Subdivision Ordinance(s)	Yes	Yes	Per Utah Code 10-9a
Stormwater Management Program	Yes	Yes	Per Utah Code 10-9a
Floodplain Ordinance(s)	Yes	No	County Maintained
Post Disaster Recovery Program and Ordinance(s)	Yes	Yes	Currently under review for updates
Real Estate Disclosure Ordinance(s)	Yes	Yes	Overpressure Ordinance
Growth Management	Yes	Yes	General Plan update
Site Plan Review Requirements	Yes	Yes	Performed by MSD
Public Health and Safety Program and Requirements	No	Yes	County Requirement

Planning Documents			
General or Comprehensive Plan	Yes	Yes	
Capital Improvement Plan	Yes	-	
Economic Development Plan	Yes	-	
Disaster Planning Documents			
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	No	
Post-Disaster Recovery Plan	Yes	No	
Continuity of Operations Plan	Yes	No	
Public Health Plans	No	No	County Plan
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	Yes	No	

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes and No
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	No

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	Other	Greater Salt Lake Municipal Services District
Engineers or professionals trained in building or infrastructure construction practices	Yes	Other	Greater Salt Lake Municipal Services District
Planners or engineers with an understanding of natural hazards	Yes	Other	Greater Salt Lake Municipal Services District

Surveyors	Yes	Other	SLCO
Personnel skilled or trained in GIS applications	Yes	Other	GSLMSD
Emergency manager	Yes	-	County supported
Grant writers	No	-	

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	GSLMSD
Who is your jurisdiction's floodplain administrator? (department/position)	Planning Director
Are any certified floodplain managers on staff in your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	N/A
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System (CRS)	No	-	-
Public Protection/ISO	No	-	-
NWS StormReady	No	-	-

Jurisdiction-Specific Hazards and Risks

The *Natural Hazard Events Table* lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0
- As of 6/30/2019, 0 policies were enforced (FEMA, 2019).
- White City Metro Township does not participate in the National Flood Insurance Program (FEMA, 2019).

TABLE: RECENT NATURAL HAZARD EVENTS (NOAA Data with additions from the jurisdiction representatives)

*The NOAA data did not capture any events for White City; however, given the locations presented for the events listed below, these events were interpreted as having an impact on White City Metro Township.

Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Heavy Snow	2 inches	-	4/6/2019	-
Heavy Snow	17 inches	-	3/1/2019	-
Heavy Snow	6 inches	-	2/13/2019	-
Winter Storm	18 inches	-	1/21/2019	-
Winter Storm	6.5 inches	-	12/1/2018	-
Winter Storm	25 inches	-	2/18/2018	-
Winter Storm	16 inches	-	1/19/2018	-
High Wind & Winter Storm	66 mph & 10 inches	-	2/21/2017	-
Winter Storm	15 inches	-	1/20/2017	-
High Wind	66 mph	-	1/18/2017	10,000 property damage.
Winter Storm	12 inches		12/23/2016	
High Wind	72 mph; Power outages were common across the area due to downed trees and power lines.	-	2/17/2016	200,000 property damage.
Winter Storm	7 inches	-	12/24/2015	-
Winter Storm	12 inches	-	4/14/2015	-
Winter Storm	14 inches	-	12/25/2014	-
High Wind	60 mph	-	3/1/2014	-
Winter Storm		-	12/19/2013	-
Flooding		-	2011	-
Flooding		-	8/19/2010	-

Community Data to Utilize to Enhance Whole Community Resilience

In order to prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below: (ACS 2017)

Factors	Number in Community

Members of the community over 65 years old	815*
Members of the community under 18 years old	1,448
Members of the community that identify as having disability status	654
Members of the community that speak English less than "very well"	156
Members of the community living below the poverty line	419
The number of mobile homes in the community	0
Members of the community without health insurance	567
Occupied housing units with tenants without a vehicle	79
Housing units without heating fuel	0

**Local officials believe the number of Elderly in White City may be underreported.*

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Earthquake: White City has the potential for a large earthquake. Reports indicate that thousands of deaths, billions of dollars of damage to private property, extended loss of utility services, overwhelmed medical facilities, and other catastrophic incidents will occur if a major earthquake occurs in the Salt Lake and/or Utah Valley. Eighty percent of the buildings/homes in White City are made of unreinforced masonry.

Wildfire: The potential for damage and loss of life and property through fire events, especially in Dimple Dell Park is a possibility.

Flooding: The majority of flooding concerns have been mitigated and riverine flooding is not a concern. Although located in a semi-arid region, White City is subject to thunderstorms and snowmelt flooding.

Winter Storms and Severe Weather: Winter weather systems and snowstorms over northern Utah can have a dramatic effect on regional commerce, transportation, and daily activity and are a major forecast challenge for local meteorologists. Severe winter weather and severe weather are probable in White City.

Avalanche: The likelihood of avalanches impacting White City is unlikely.

High Wind: Although infrequent, White City is subject to severe damage resulting from extremely high winds often called microburst winds. While no impact has previously occurred, the trees in the area could be impacted.

Extreme temperature: Given the location, temperatures can get lower than other parts of the County and both extreme cold and heat adversely impacts the elderly in the community.

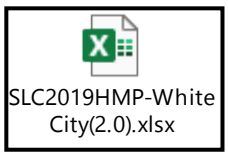
Landslide/Slope Failure: Homes along Dimple Dell Park are at a slight risk during an earthquake.

Radon: The community is at low risk for radon.

Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Earthquake	2	30	60
Severe Winter Weather	3	16	48
Severe Weather	3	15	45
Public Health Epidemic/ Pandemic	2	21	42
Flooding	2	17	34
Cyber Attack	2	17	34
Hazardous Materials Incident	2	14	28
Drought	2	14	28
Radon	3	9	27
Terrorism	1	25	25
Wildfire	2	10	20
Dam Failure	1	15	15
Tornado	1	11	11
Civil Disturbance	1	11	11
Landslide and Slope Failure	1	7	7
Avalanche	1	0	0

*To access the full probability and impact scores, please click the link below to download the Excel file. The excel file consists of two tabs. The first tab includes the variables and scores specific to the community based on best available data and subject-matter input; and the second tab provides the overall summary output based on the assessment.


SLC2019HMP-White City(2.0).xlsx

Hazard Event	Probability (High, Medium, Low)	Probability Factor (Adjust Probability Factor to Change Scores)		Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Low	1		Avalanche	No Impact	0	0
Dam Failure	Low	1		Dam Failure	Low	1	3
Drought	Medium	2		Drought	High	3	9
Civil Disturbance	Low	1		Civil Disturbance	Medium	2	6
Cyber Attack	Medium	2		Cyber Attack	High	3	9
Earthquake	Medium	2		Earthquake	High	3	9
Flooding	Medium	2		Flooding	Medium	2	6
Hazardous Materials Incident	Medium	2		Hazardous Materials Incident	Medium	2	6
Landslide and Slope Failure	Low	1		Landslide and Slope Failure	Low	1	3
Public Health Epidemic/ Pandemic	Medium	2		Public Health Epidemic/ Pandemic	High	3	9
Radon	High	3		Radon	High	3	9
Severe Weather	High	3		Severe Weather	High	3	9
Severe Winter Weather	High	3		Severe Winter Weather	High	3	9
Terrorism	Low	1		Terrorism	Medium	2	6
Tornado	Low	1		Tornado	Low	1	3
Wildfire	Medium	2		Wildfire	Low	1	3

Probability [No Weighted Factor]		**People**—Values were assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows: **[Weighted Factor: 3]**
High—Significant hazard event is likely to occur annually (Probability Factor = 3)		**High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
Medium—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)		**Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
Low—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)		**Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)		**No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)		Hazard Event	Property Damages from Major Event (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (2)
Avalanche	No Impact	0	0		Avalanche	No Impact	0	0
Dam Failure	Low	1	1		Dam Failure	Medium	2	4
Drought	No Impact	0	0		Drought	No Impact	0	0
Civil Disturbance	Low	1	1		Civil Disturbance	Low	1	2
Cyber Attack	No Impact	0	0		Cyber Attack	No Impact	0	0
Earthquake	High	3	3		Earthquake	High	3	6
Flooding	Medium	2	2		Flooding	Medium	2	4
Hazardous Materials Incident	Low	1	1		Hazardous Materials Incident	Low	1	2
Landslide and Slope Failure	Low	1	1		Landslide and Slope Failure	Low	1	2
Public Health Epidemic/ Pandemic	No Impact	0	0		Public Health Epidemic/ Pandemic	No Impact	0	0
Radon	No Impact	0	0		Radon	No Impact	0	0
Severe Weather	High	3	3		Severe Weather	Low	1	2
Severe Winter Weather	High	3	3		Severe Winter Weather	Low	1	2
Terrorism	Low	1	1		Terrorism	High	3	6
Tornado	Low	1	1		Tornado	High	3	6
Wildfire	Low	1	1		Wildfire	Low	1	2

Property Exposed—Values were assigned based on the percentage of the total ***property value exposed*** to the hazard event. **[Weighted Factor: 1]**		**Property Damages**—Values were assigned based on the expected total ***property damages incurred*** from the hazard event. It is important to note that values represent estimates of the loss from a **major event** of each hazard based on historical data for each event or probabilistic models/studies. **[Weighted Factor: 2]**
High—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)		**High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
Medium—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)		**Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
Low—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)		**Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)		**No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Hazard Event	Impact on Economy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (1)
Avalanche	No Impact	0	0
Dam Failure	Low	1	1
Drought	Medium	2	2
Civil Disturbance	Medium	2	2
Cyber Attack	Medium	2	2
Earthquake	High	3	3
Flooding	Medium	2	2
Hazardous Materials Incident	Medium	2	2
Landslide and Slope Failure	Low	1	1
Public Health Epidemic/ Pandemic	High	3	3
Radon	No Impact	0	0
Severe Weather	Low	1	1
Severe Winter Weather	Medium	2	2
Terrorism	High	3	3
Tornado	Low	1	1
Wildfire	Low	1	1

Hazard Event	Potential for Catastrophy (High, Medium, Low)	Impact Factor (Adjust Impact Factor to Change Scores)	Multiplied by Weighting Factor (3)
Avalanche	Unlikely	0	0
Dam Failure	Medium	2	6
Drought	Low	1	3
Civil Disturbance	Unlikely	0	0
Cyber Attack	Medium	2	6
Earthquake	High	3	9
Flooding	Low	1	3
Hazardous Materials Incident	Low	1	3
Landslide and Slope Failure	Unlikely	0	0
Public Health Epidemic/ Pandemic	High	3	9
Radon	Unlikely	0	0
Severe Weather	Unlikely	0	0
Severe Winter Weather	Unlikely	0	0
Terrorism	High	3	9
Tornado	Unlikely	0	0
Wildfire	Low	1	3

Economic Factor—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP). **[Weighted Factor: 1]**
High—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)
Medium—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)
Low—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)
No Impact—Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor—The potential that an occurrence of this hazard could be catastrophic. **[Weighted Factor: 3]**
High—High potential that this hazard could be catastrophic (Impact Factor = 3)
Medium—Medium potential that this hazard could be catastrophic (Impact Factor = 2)
Low—Low potential that this hazard could be catastrophic (Impact Factor = 1)
Unlikely—Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Mitigation Strategies and Actions

2019 Mitigation Strategies Progress & Summary

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Mitigation Table - New Actions

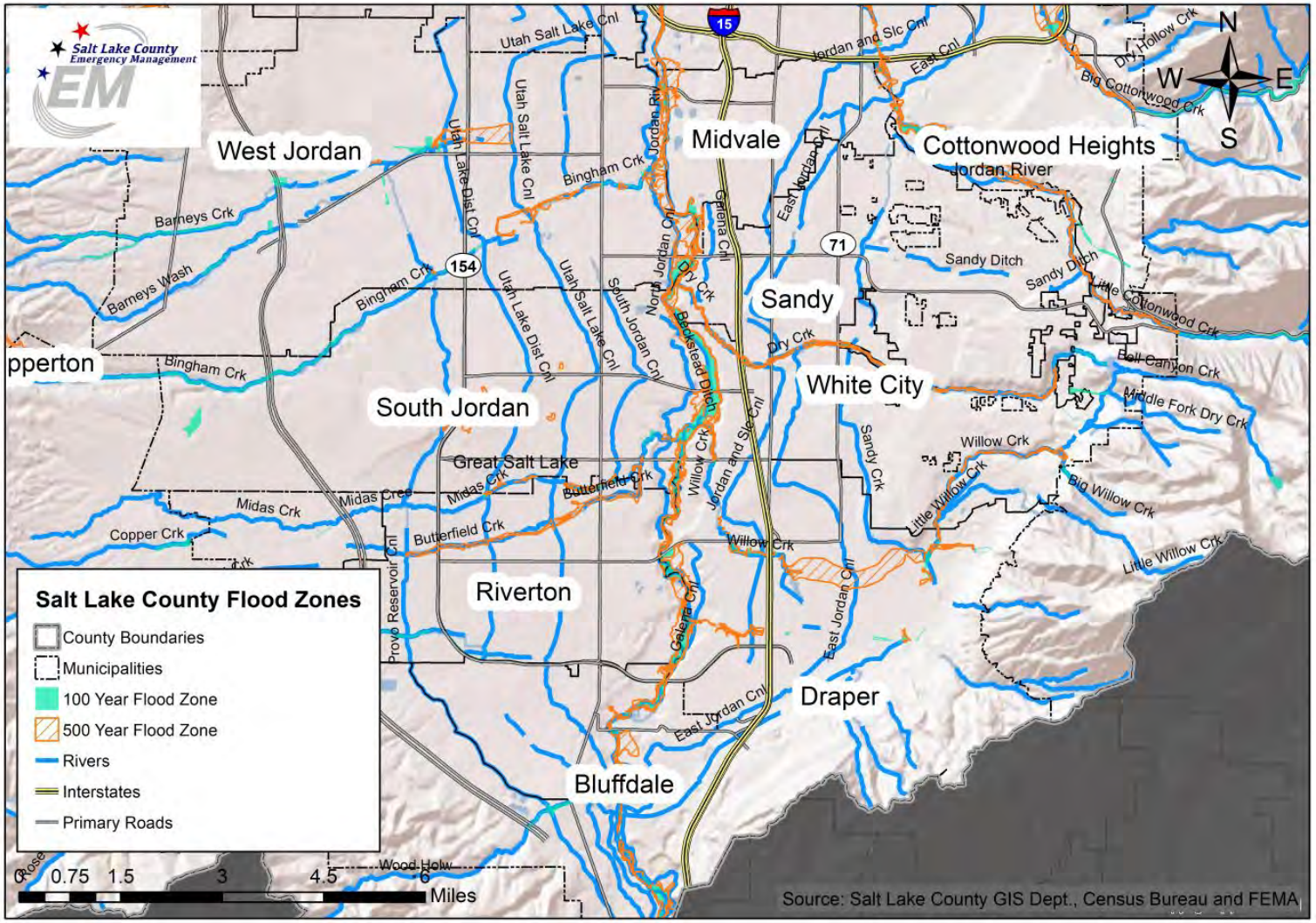
Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Supporting Agency(ies)	Benefit	Cost	Funding Source	Priority	Timeframe	Comments
Establish an emergency fund to support response and recovery operations.	2019	Goal 5: Ensure and promote ways to increase government and private sector continuity of services during and after a disaster.	All-Hazards	White City	GSL MSD	High	Medium	Local Funds	Medium	Ongoing	The emergency fund will support grant matches and future investments in mitigation.
Conduct seismic retrofitting and implement a program for residents similar to the “Fix the Bricks” initiative. Provide additional education and materials to the public regarding the earthquake risk and potential mitigation actions that can be taken. Develop a training program for contractors so they become qualified to conduct seismic retrofitting.	2019	Goal 2: Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters. Goal 4: Promote education and awareness programs, campaigns, and efforts designed to encourage citizens, private and public entities to mitigate and become more resilient to disasters.	Earthquake	White City	GSL MSD	High	High	PDM Grant or other federal funds	High	Long-term	The community will start with generating a list of qualified contractors that can conduct seismic retrofitting. Currently there is a shortage of qualified contractors.

Mitigation Table - Ongoing Actions

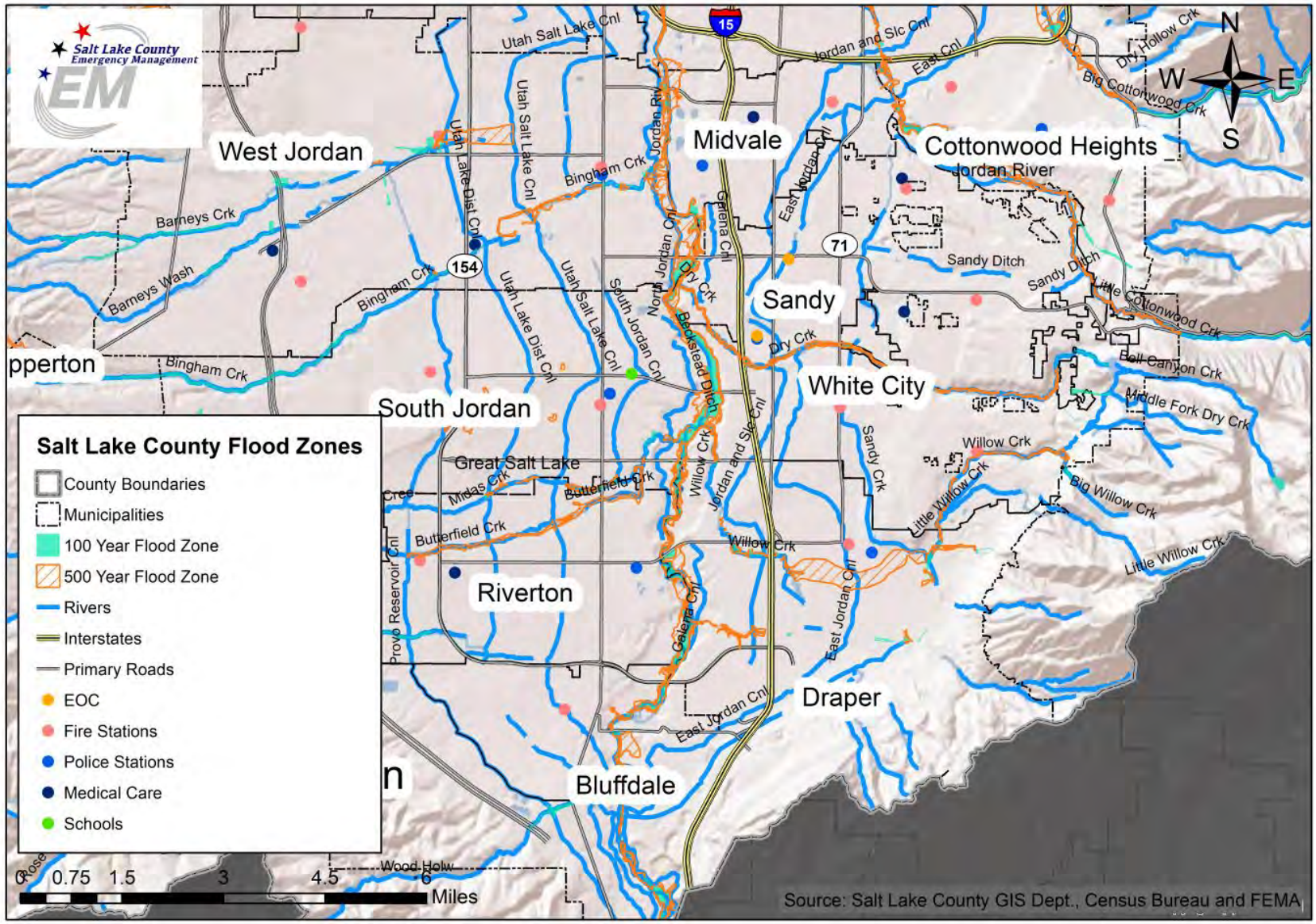
Not applicable since White City did not participate as an incorporated jurisdiction in 2014.

Jurisdiction Maps

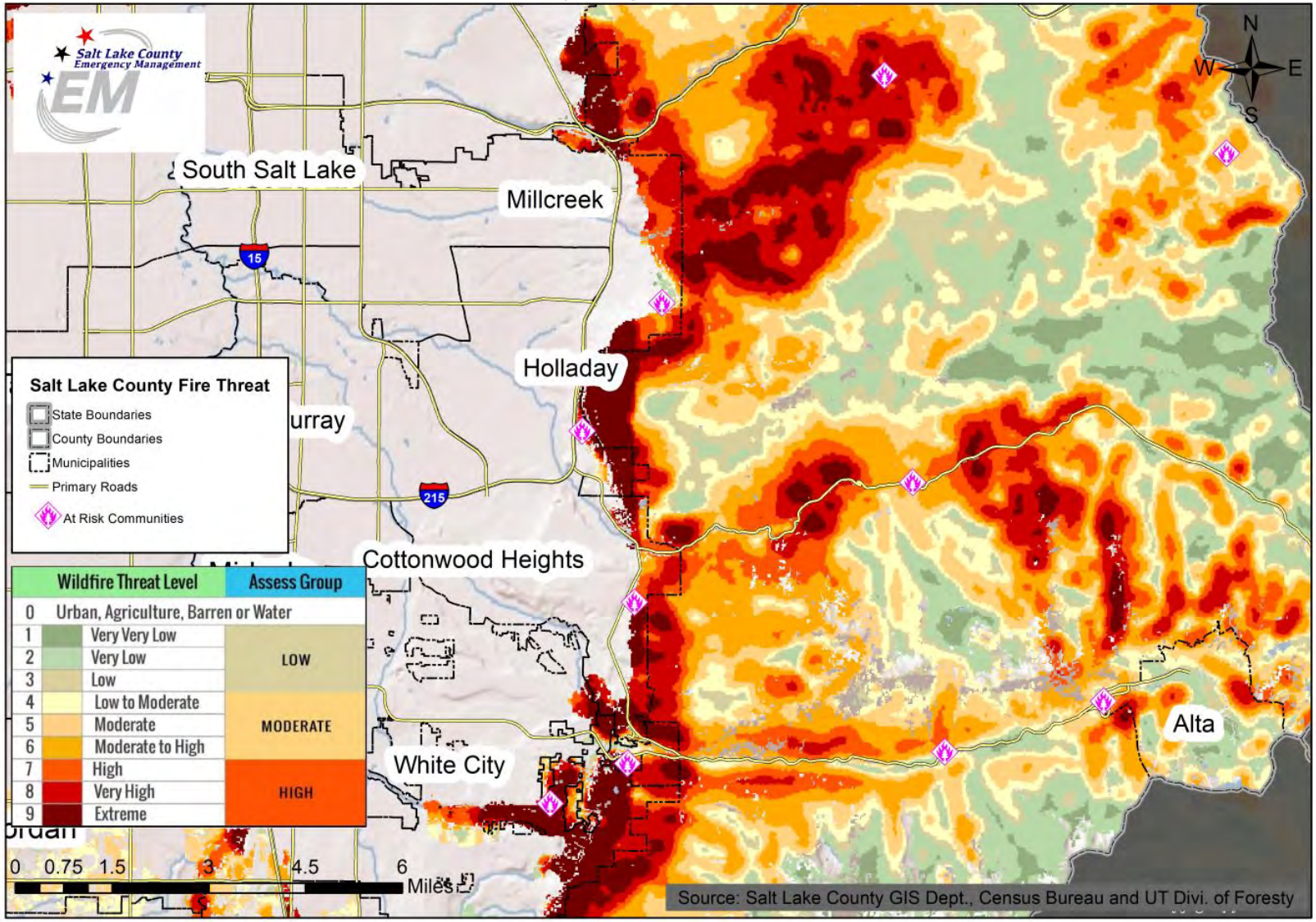
Map: 100 Year and 500 Year Flood Zone



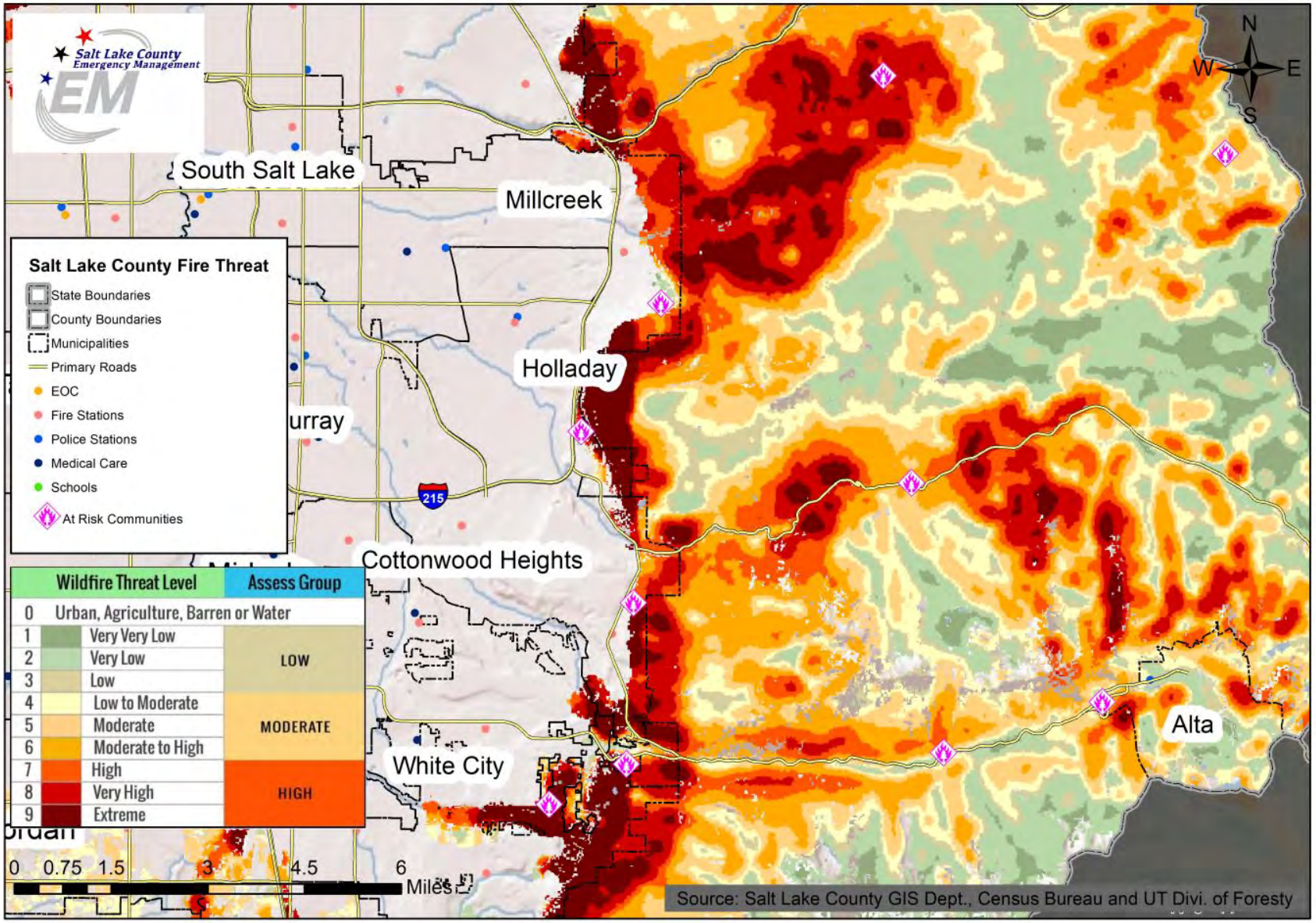
Map: 100 Year and 500 Year Flood Zone with Critical Facilities



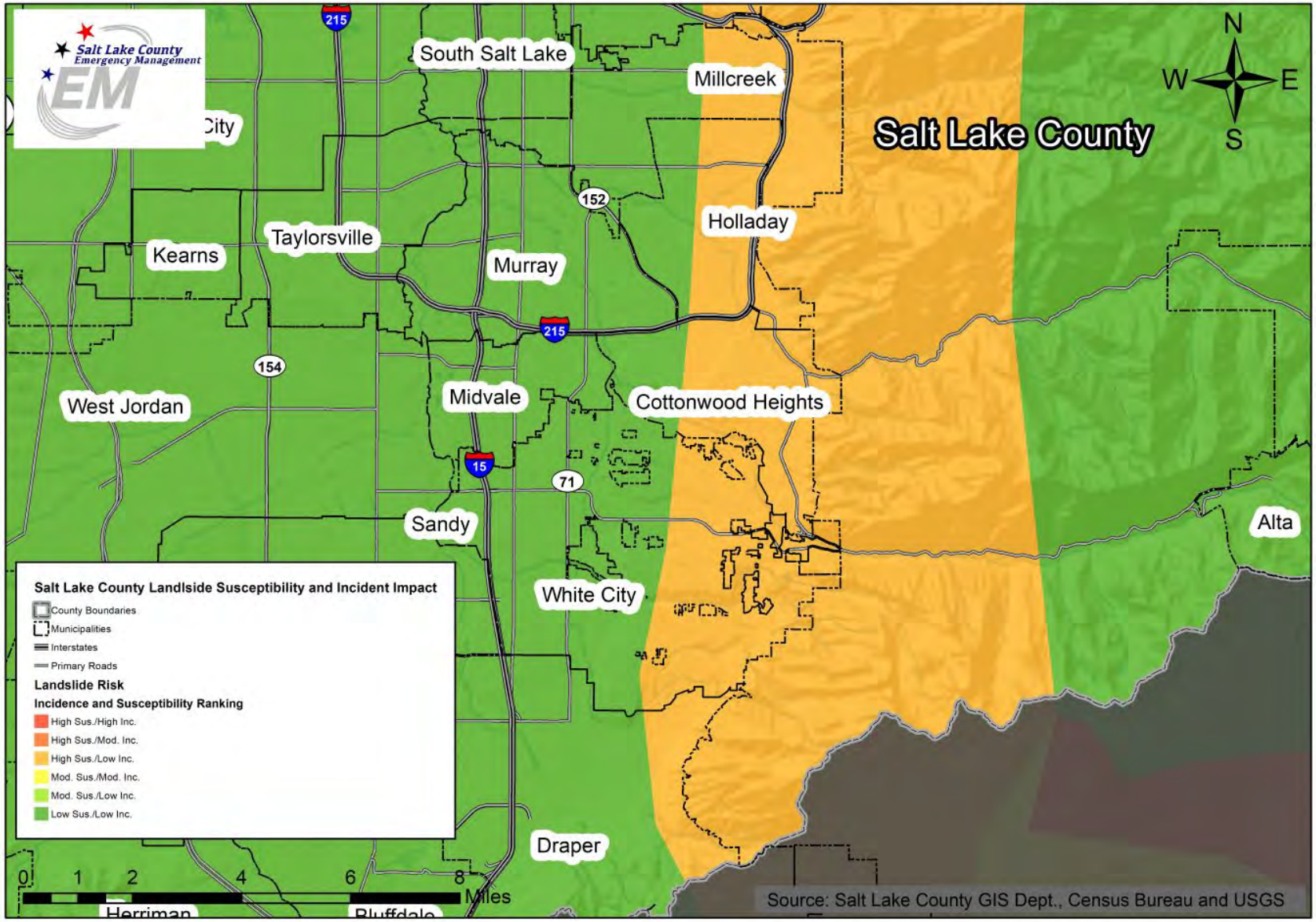
Map: Wildfire Threat Level



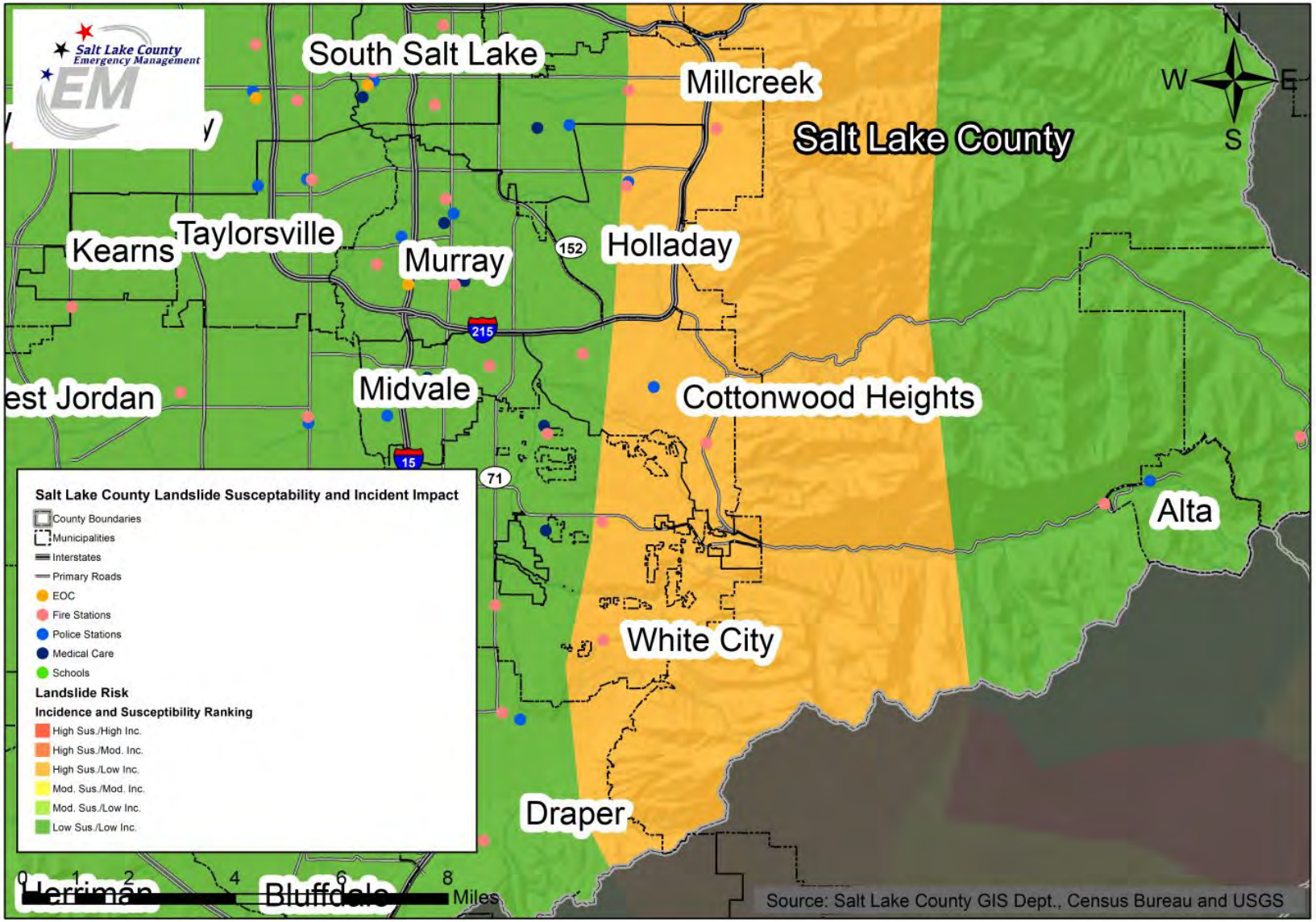
Map: Wildfire Threat Level with Critical Facilities



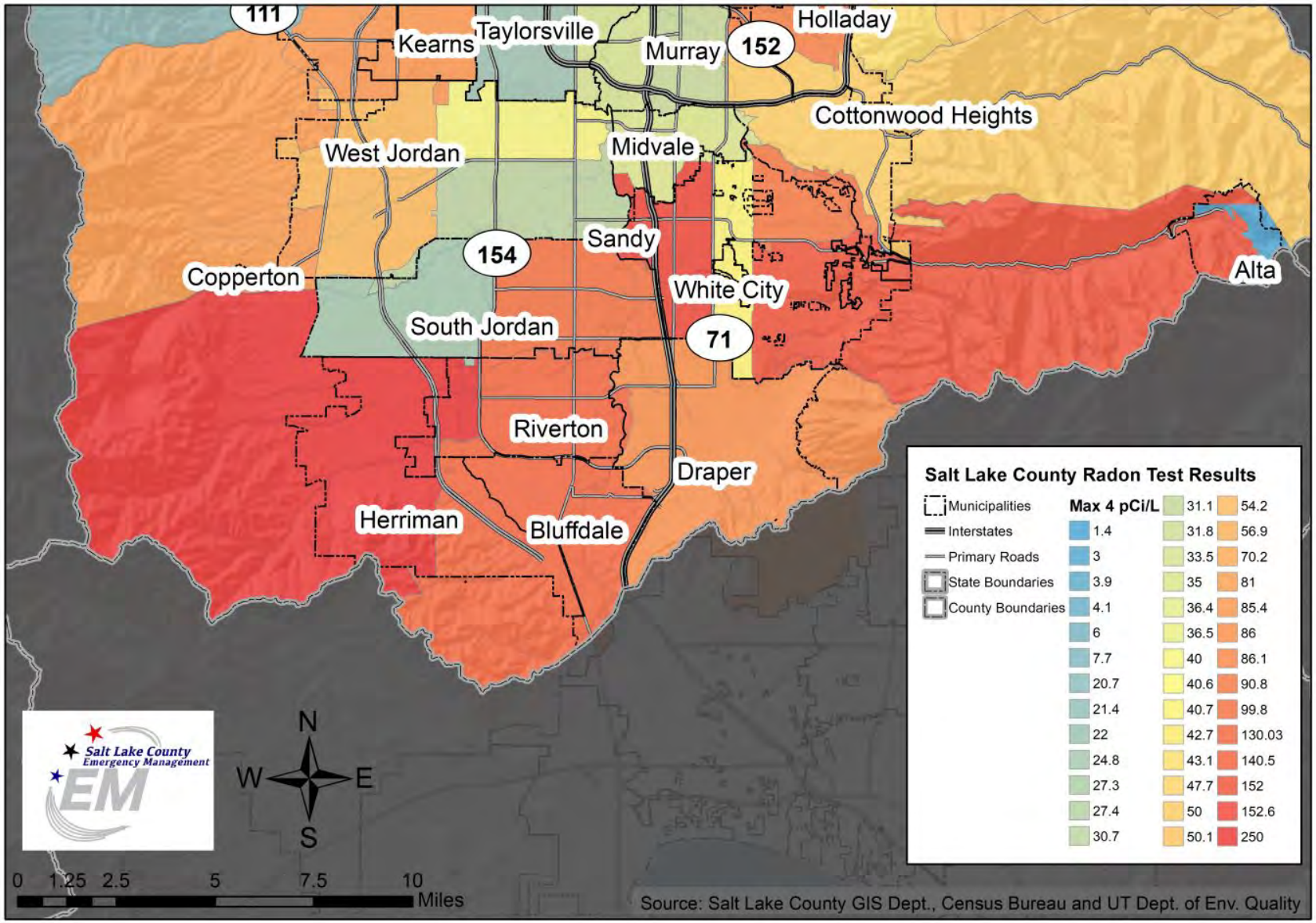
Map: Landslide Susceptibility and Incident Impact Potential



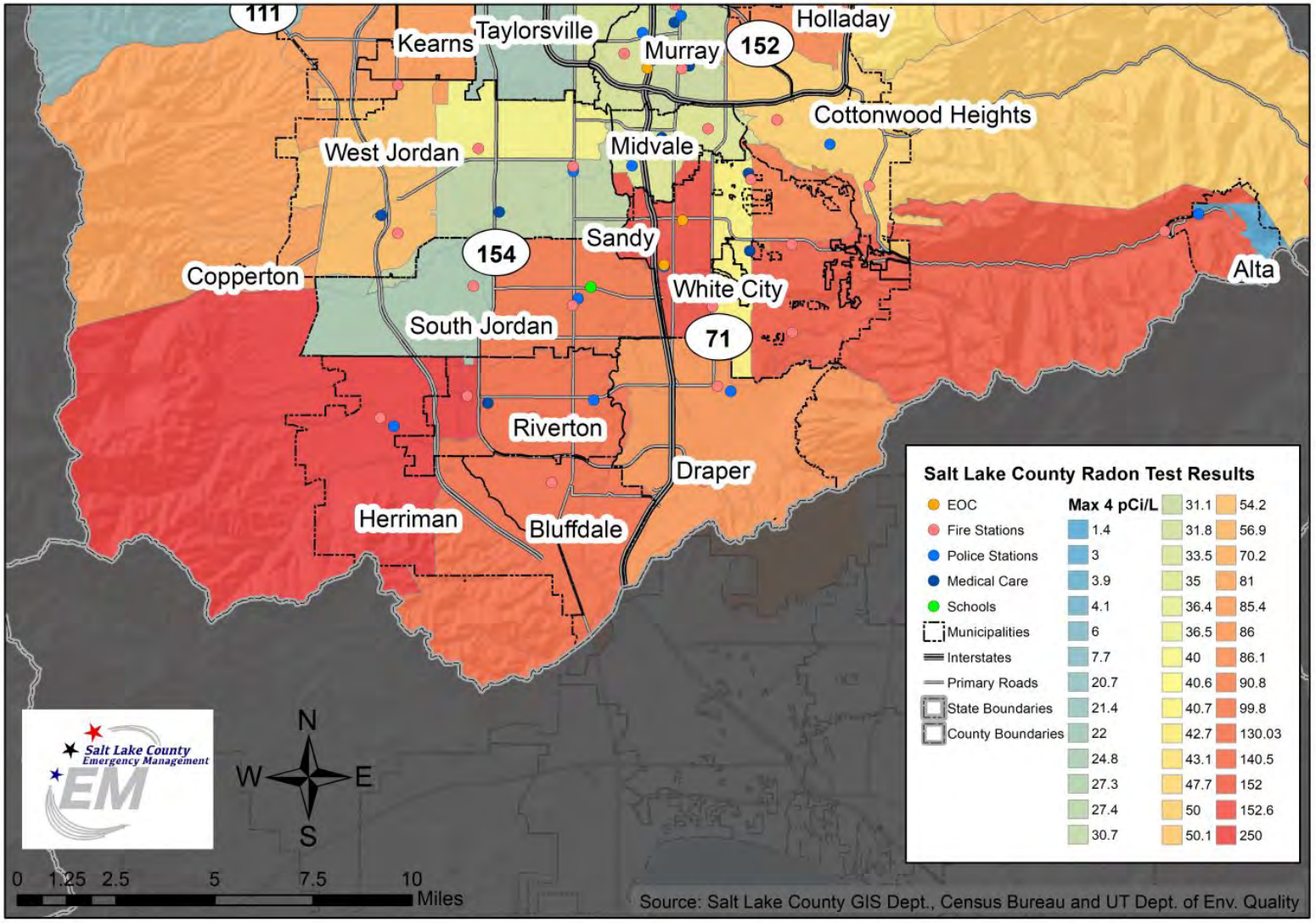
Map: Landslide Susceptibility and Incident Impact Potential with Critical Facilities



Map: Radon


111
Kearns
Taylorsville
Murray
152
Holladay
Cottonwood Heights
West Jordan
Midvale
Sandy
154
Copperton
White City
Alta
South Jordan
71
Riverton
Draper
Herriman
Bluffdale
Salt Lake County Radon Test Results
Municipalities
Interstates
Primary Roads
State Boundaries
County Boundaries
Max 4 pCi/L
1.4
3
3.9
4.1
6
7.7
20.7
21.4
22
24.8
27.3
27.4
30.7
31.1
31.8
33.5
35
36.4
36.5
40
40.6
40.7
42.7
43.1
47.7
50
50.1
54.2
56.9
70.2
81
85.4
86
86.1
90.8
99.8
130.03
140.5
152
152.6
250
Salt Lake County
Emergency Management
EM
N
W
E
S
0 1.25 2.5 5 7.5 10
Miles
Source: Salt Lake County GIS Dept., Census Bureau and UT Dept. of Env. Quality

Map: Radon with Critical Facilities



2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdictional Appendix: Salt Lake Community College

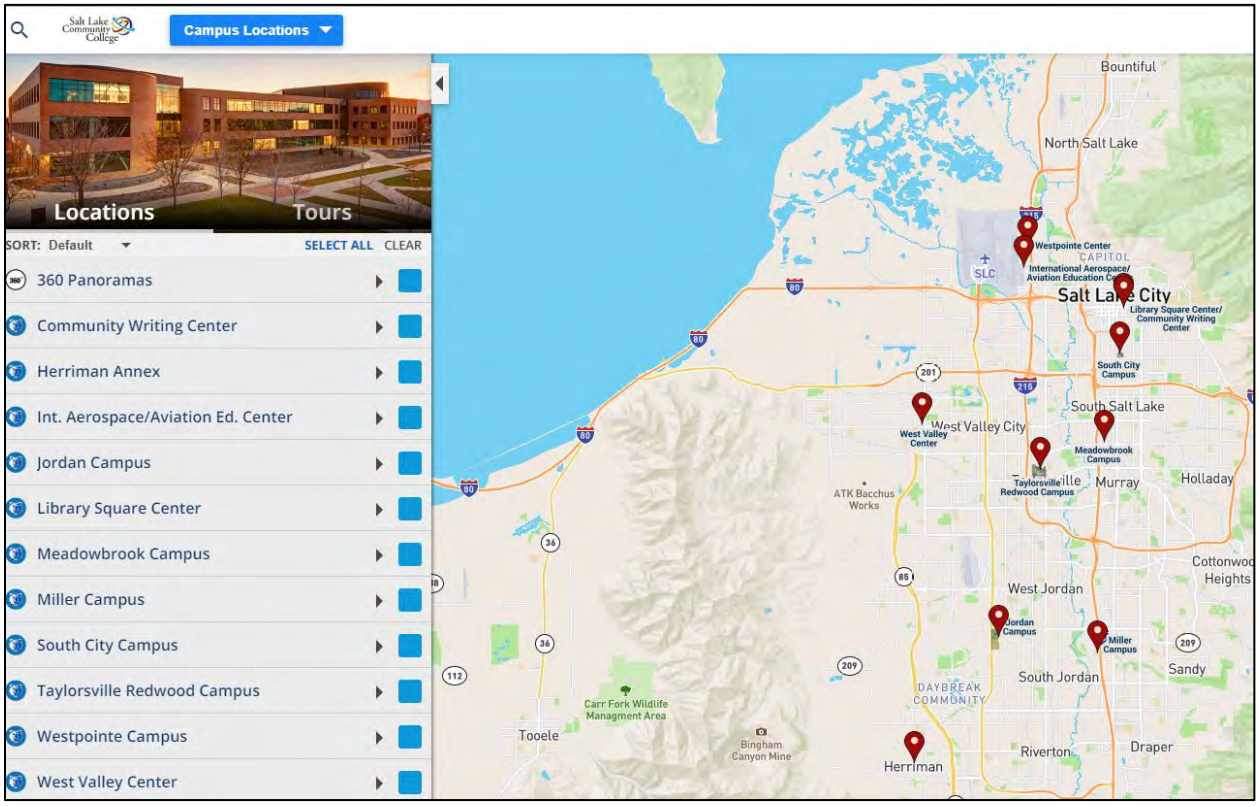
Hazard Mitigation Plan Point of Contact

Primary Point of Contact
Name: Lisa L. Schwartz Title: Emergency Manager Department: Salt Lake Community College Campuses Address: 4365 South 2200 West | GFSB 124 Salt Lake City, Utah 84123 Office Phone: 801-957-4963 Cell Phone: 801-870-5153 Email Address: lisa.schwartz@slcc.edu Website: http://www.slcc.edu/police/emergency-management.aspx

Jurisdiction Profile

The following is a summary of key information about the Sale Lake Community College

- **Locations:** Salt Lake Community College is Utah's largest college with the most diverse student body. It serves more than 60,000 students on 10 campuses and with online classes. The locations are highlighted on the map below with a red tab (SLCC).



Salt Lake Community College's Emergency Management Program: The program is committed to the preparation for, response to, recovery from, and reduction or elimination of losses from natural and technological hazards that may negatively affect its students, faculty, staff, visitors, property and College facilities.

- To accomplish this, Emergency Management:
  - Establishes and promotes a foundation for emergency management and the framework for effective plans and procedures
  - Develops and aligns achievable emergency management goals and objectives with the vision, mission, and purpose of SLCC
  - Defines procedures pertinent to the execution of the Emergency Management Program
  - Identifies, establishes and maintains good working relationships with internal and external emergency management partners
  - Strengthens program continuity and viability by identifying source funding, recommending normal budget levels and establishing expected benchmarks or milestones

Capability Assessment

In 2019, the college conducted an internal review of their own response capacity regarding several hazards. The issues considered to evaluate response included:

1. Time to marshal an on-scene response
2. Scope of response capacity
3. Historical evaluation of response success

The results below demonstrate the response capacity available internally and externally for the various campuses and facilities.

Meadowbrook Campus

EVENT	INTERNAL PREPAREDNESS Plans, Training, Education, Equipment…	EXTERNAL RESPONSE Community Readiness
SCORE	0 = N/A 1 = High 2 = Moderate 3 = Low	0 = N/A 1 = High 2 = Moderate 3 = Low
Winter Storm (blizzard, big hail, ice rain, low temp)	2.0	2.0
Tornado >F3 (Fujita scale 158-206mph)	2.0	1.0
High Winds < F3 (Fujita scale 40-157mph)	2.0	2.0
Severe Heat / Extended Drought	2.0	2.0
Earthquake > 5.0	2.0	2.0
Liquefaction	2.0	2.0
Flood (heavy rain, snowmelt, dam inundation)	2.0	2.0
Wildfire	0.0	0.0
Landslide	0.0	0.0
Avalanche	0.0	0.0
Lightning Thunderstorm > T3 (10-20 within 5 minutes)	2.0	2.0
AVERAGE SCORE	**1.45**	**1.36**

Taylorsville Redwood Campus

EVENT	INTERNAL PREPAREDNESS Plans, Training, Education, Equipment…	EXTERNAL RESPONSE Community Readiness
SCORE	0 = N/A 1 = High 2 = Moderate 3 = Low	0 = N/A 1 = High 2 = Moderate 3 = Low
Winter Storm (blizzard, big hail, ice rain, low temp)	2.0	2.0
Tornado >F3 (Fujita scale 158-206mph)	2.0	2.0
High Winds < F3 (Fujita scale 40-157mph)	2.0	2.0
Severe Heat / Extended Drought	2.0	2.0
Earthquake > 5.0	2.0	2.0
Liquefaction	2.0	2.0
Flood (heavy rain, snowmelt, dam inundation)	2.0	2.0

Wildfire	0.0	0.0
Landslide	0.0	0.0
Avalanche	0.0	0.0
Lightning Thunderstorm > T3 (10-20 within 5 minutes)	2.0	2.0
AVERAGE SCORE	**1.45**	**1.45**

West Valley Learning Center

EVENT	INTERNAL PREPAREDNESS Plans, Training, Education, Equipment…	EXTERNAL RESPONSE Community Readiness
SCORE	0 = N/A 1 = High 2 = Moderate 3 = Low	0 = N/A 1 = High 2 = Moderate 3 = Low
Winter Storm (blizzard, big hail, ice rain, low temp)	2.0	1.0
Tornado >F3 (Fujita scale 158-206mph)	3.0	2.0
High Winds < F3 (Fujita scale 40-157mph)	2.0	2.0
Severe Heat / Extended Drought	2.0	2.0
Earthquake > 5.0	2.0	2.0
Liquefaction	2.0	2.0
Flood (heavy rain, snowmelt, dam inundation)	2.0	2.0
Wildfire	2.0	2.0
Lightning Thunderstorm > T3 (10-20 within 5 minutes)	2.0	2.0
AVERAGE SCORE	**2.11**	**1.89**

Library Square Center

EVENT	INTERNAL PREPAREDNESS Plans, Training, Education, Equipment…	EXTERNAL RESPONSE Community Readiness
SCORE	0 = N/A 1 = High 2 = Moderate 3 = Low	0 = N/A 1 = High 2 = Moderate 3 = Low
Winter Storm (blizzard, big hail, ice rain, low temp)	2.0	2.0
Tornado >F3 (Fujita scale 158-206mph)	2.0	2.0
High Winds < F3 (Fujita scale 40-157mph)	2.0	2.0
Severe Heat / Extended Drought	2.0	2.0
Earthquake > 5.0	2.0	2.0
Liquefaction	2.0	2.0
Flood (heavy rain, snowmelt, dam inundation)	2.0	2.0
Wildfire	0.0	0.0
Landslide	0.0	0.0
Avalanche	0.0	0.0
Lightning Thunderstorm > T3 (10-20 within 5 minutes)	2.0	2.0
AVERAGE SCORE	**1.45**	**1.45**

South City Campus

EVENT	INTERNAL PREPAREDNESS Plans, Training, Education, Equipment…	EXTERNAL RESPONSE Community Readiness
SCORE	0 = N/A 1 = High 2 = Moderate 3 = Low	0 = N/A 1 = High 2 = Moderate 3 = Low
Winter Storm (blizzard, big hail, ice rain, low temp)	2.0	2.0
Tornado >F3 (Fujita scale 158-206mph)	2.0	2.0
High Winds < F3 (Fujita scale 40-157mph)	2.0	2.0
Severe Heat / Extended Drought	2.0	2.0
Earthquake > 5.0	2.0	2.0
Liquefaction	2.0	2.0
Flood (heavy rain, snowmelt, dam inundation)	2.0	2.0
Wildfire	0.0	0.0
Landslide	0.0	0.0
Avalanche	0.0	0.0
Lightning Thunderstorm > T3 (10-20 within 5 minutes)	2.0	2.0
AVERAGE SCORE	**1.45**	**1.45**

Writing Center Campus

EVENT	INTERNAL PREPAREDNESS Plans, Training, Education, Equipment…	EXTERNAL RESPONSE Community Readiness
SCORE	0 = N/A 1 = High 2 = Moderate 3 = Low	0 = N/A 1 = High 2 = Moderate 3 = Low
Winter Storm (blizzard, big hail, ice rain, low temp)	2.0	2.0
Tornado >F3 (Fujita scale 158-206mph)	2.0	2.0
High Winds < F3 (Fujita scale 40-157mph)	2.0	2.0
Severe Heat / Extended Drought	2.0	2.0
Earthquake > 5.0	2.0	2.0
Liquefaction	2.0	2.0
Flood (heavy rain, snowmelt, dam inundation)	2.0	2.0
Wildfire	0.0	0.0
Landslide	0.0	0.0
Avalanche	0.0	0.0
Lightning Thunderstorm > T3 (10-20 within 5 minutes)	2.0	2.0
AVERAGE SCORE	**1.45**	**1.45**

Airport Campus

EVENT	INTERNAL PREPAREDNESS Plans, Training, Education, Equipment…	EXTERNAL RESPONSE Community Readiness
SCORE	0 = N/A 1 = High 2 = Moderate 3 = Low	0 = N/A 1 = High 2 = Moderate 3 = Low
Winter Storm (blizzard, big hail, ice rain, low temp)	2.0	2.0
Tornado >F3 (Fujita scale 158-206mph)	2.0	2.0
High Winds < F3 (Fujita scale 40-157mph)	2.0	2.0
Severe Heat / Extended Drought	2.0	2.0
Earthquake > 5.0	2.0	2.0
Liquefaction	2.0	2.0
Flood (heavy rain, snowmelt, dam inundation)	2.0	2.0
Wildfire	0.0	0.0
Landslide	0.0	0.0
Avalanche	0.0	0.0
Lightning Thunderstorm > T3 (10-20 within 5 minutes)	2.0	2.0
AVERAGE SCORE	**1.45**	**1.45**

Westpointe Campus

EVENT	INTERNAL PREPAREDNESS Plans, Training, Education, Equipment…	EXTERNAL RESPONSE Community Readiness
SCORE	0 = N/A 1 = High 2 = Moderate 3 = Low	0 = N/A 1 = High 2 = Moderate 3 = Low
Winter Storm (blizzard, big hail, ice rain, low temp)	2.0	2.0
Tornado >F3 (Fujita scale 158-206mph)	2.0	2.0
High Winds < F3 (Fujita scale 40-157mph)	2.0	2.0
Severe Heat / Extended Drought	2.0	2.0
Earthquake > 5.0	2.0	2.0
Liquefaction	2.0	2.0
Flood (heavy rain, snowmelt, dam inundation)	2.0	2.0
Wildfire	0.0	0.0
Landslide	0.0	0.0
Avalanche	0.0	0.0
Lightning Thunderstorm > T3 (10-20 within 5 minutes)	2.0	2.0
AVERAGE SCORE	**1.45**	**1.45**

Jordan Campus

EVENT	INTERNAL PREPAREDNESS Plans, Training, Education, Equipment…	EXTERNAL RESPONSE Community Readiness
SCORE	0 = N/A	0 = N/A

	1 = High 2 = Moderate 3 = Low	1 = High 2 = Moderate 3 = Low
Winter Storm (blizzard, big hail, ice rain, low temp)	2.0	2.0
Tornado >F3 (Fujita scale 158-206mph)	2.0	2.0
High Winds < F3 (Fujita scale 40-157mph)	2.0	2.0
Severe Heat / Extended Drought	2.0	2.0
Earthquake > 5.0	2.0	2.0
Liquefaction	2.0	2.0
Flood (heavy rain, snowmelt, dam inundation), External Pipe Break (large JVWD waterline)	2.0	2.0
Wildfire	2.0	2.0
Landslide	0.0	0.0
Avalanche	0.0	0.0
Lightning Thunderstorm > T3 (10-20 within 5 minutes)	2.0	2.0
AVERAGE SCORE	**1.64**	**1.64**

Miller Campus

EVENT	INTERNAL PREPAREDNESS	EXTERNAL RESPONSE
	Plans, Training, Education, Equipment…	Community Readiness
SCORE	0 = N/A 1 = High 2 = Moderate 3 = Low	0 = N/A 1 = High 2 = Moderate 3 = Low
Winter Storm (blizzard, big hail, ice rain, low temp)	2.0	2.0
Tornado >F3 (Fujita scale 158-206mph)	2.0	2.0
High Winds < F3 (Fujita scale 40-157mph)	2.0	2.0
Severe Heat / Extended Drought	2.0	2.0
Earthquake > 5.0	2.0	2.0
Liquefaction	2.0	2.0
Flood (heavy rain, snowmelt, dam inundation)	2.0	2.0
Wildfire	0.0	0.0
Landslide	0.0	0.0
Avalanche	0.0	0.0
Lightning Thunderstorm > T3 (10-20 within 5 minutes)	2.0	2.0
AVERAGE SCORE	**1.45**	**1.45**

The assessment of the college's legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the college's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the college's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below.

Hazard Mitigation Planning efforts are led by Emergency Management and supported by Facilities, Public Safety and other departments.

TABLE: LEGAL AND REGULATORY CAPABILITY			
	Local Authority Exists to Develop and Implement/ Enforce?	**The Codes, Ordinances & Requirements Currently Exists?**	**Comments**
Codes, Ordinances, & Requirements			
Building Code Development and Enforcement	No	No	

Zonings Ordinance(s)	No	No	
Subdivision Ordinance(s)	No	No	
Stormwater Management Program	No	No	
Floodplain Ordinance(s)	No	No	
Post Disaster Recovery Program and Ordinance(s)	No	No	
Real Estate Disclosure Ordinance(s)	No	No	
Growth Management	No	No	
Site Plan Review Requirements	No	No	
Public Health and Safety Program Requirements	No	No	
Environmental Protection Program and Requirements	No	No	
Planning Documents			
General or Comprehensive Plan	No	No	
Capital Improvement Plan	No	No	
Habitat Conservation Plan	No	No	
Economic Development Plan	No	No	
Disaster Planning Documents			
Comprehensive Emergency Management Plan/ Local Emergency Operations Plan	Yes	No	
Post-Disaster Recovery Plan	No	No	
Continuity of Operations Plan	Yes	No	
Specialized Hazard Plan(s) (e.g., Heavy Snow/Winter Storm Plan, Fire Management Plan, Extreme Temperature Plan): Insert the name of Plan(s) in the comments section	Yes	No	

TABLE: FISCAL CAPABILITY	
Financial Resources	**Accessible or Eligible to Use?**
Community Development Block Grants	No
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service	No

Incur Debt through General Obligation Bonds	No
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State/Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Other	No

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY			
Staff/Personnel Resources	**Available?**	**Full Time/Part Time/Other**	**Department/Agency/Position**
Planners or engineers with knowledge of land development and land management practices	Yes	Full	Planning and Design
Engineers or professionals trained in building or infrastructure construction practices	Yes	Full	Facilities Services
Planners or engineers with an understanding of natural hazards	Yes		
Surveyors	Yes		
Personnel skilled or trained in GIS applications	Yes	Full	Natural Sciences
Emergency manager	Yes		
Grant writers	Yes		Office of Sponsored Projects

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	N/A
Who is your jurisdiction's floodplain administrator? (department/position)	N/A
Are any certified floodplain managers on staff in your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	N/A

Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	N/A
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	N/A

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	**Classification**	**Date Classified**
Community Rating System (CRS)	No		
Public Protection/ISO	No		
NWS StormReady	No		

Hazards and Risks

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 Salt Lake County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are relevant and unique to the college.

It should be noted that this annex only includes the natural hazards. Other hazards related to infrastructure, human incidents, hazardous materials and infectious outbreak were assessed, but were **not** included for security purposes.

Dam Failure

A number of campus facilities, specifically in the northern part of Salt Lake County, reside in multiple inundation areas. Due to security purposes, those dams and facilities are not noted in this plan.

Earthquake

Multiple facilities are located between major faults. The Westpointe Campus is adjacent to a fault in a high liquefaction area. Multiple campuses are older buildings, and due to their age and susceptibility of Salt Lake County to earthquakes, they are inherently at risk.

Public Health

Due to the diverse nature of the college and various programs/trainings to support refugees and other vulnerable populations, certain facilities, such as the Meadowbrook Campus, may have a higher risk of public health concerns.

Civil Disorder/Riot

Like all universities, a major concern for the college is the potential for riots and protests. SLCC supports diversity, accommodates large gatherings, and as a result, can attract various protests and events. Although not provided in this annex, the full comprehensive risk assessment acknowledges the ***human incident*** related hazards and risks and assesses that these risks are increasing.

Meadowbrook Campus

	EVENT	RISK	RANK
NATURAL	Winter Storm (blizzard, big hail, ice rain, low temp)	33%	15
	Tornado >F3 (Fujita scale 158-206mph)	22%	24
	High Winds < F3 (Fujita scale 40-157mph)	17%	35
	Severe Heat / Extended Drought	15%	38.5
	Earthquake > 5.0	78%	3
	Liquefaction	78%	3
	Flood (heavy rain, snowmelt, dam inundation)	19%	32
	Wildfire	0%	45
	Landslide	0%	45
	Avalanche	0%	45
	Lightning Thunderstorm > T3 (10-20 within 5 minutes)	20%	28

Vulnerability/Impact Analysis:
Est. Max Headcount During Any Part of the Term (Peak Time): 11
Est. Building(s)/Facility(ies) Value on Campus: $12,088,000

Taylorsville Redwood Campus

	EVENT	RISK	RANK
NATURAL	Winter Storm (blizzard, big hail, ice rain, low temp)	33%	13.5
	Tornado >F3 (Fujita scale 158-206mph)	22%	26.5
	High Winds < F3 (Fujita scale 40-157mph)	30%	16.5
	Severe Heat / Extended Drought	17%	41.5
	Earthquake > 5.0	89%	1
	Liquefaction	78%	4
	Flood (heavy rain, snowmelt, dam inundation)	17%	41.5
	Wildfire	0%	52
	Landslide	0%	52
	Avalanche	0%	52
	Lightning Thunderstorm > T3 (10-20 within 5 minutes)	33%	13.5

Vulnerability/Impact Analysis:
Est. Max Headcount During Any Part of the Term (Peak Time): 2,449
Est. Building(s)/Facility(ies) Value on Campus: $240,897,000

West Valley Center Campus

	EVENT	RISK	RANK
NATURAL	Winter Storm (blizzard, big hail, ice rain, low temp)	15%	41
	Tornado >F3 (Fujita scale 158-206mph)	22%	26
	High Winds < F3 (Fujita scale 40-157mph)	33%	14.5
	Severe Heat / Extended Drought	17%	38
	Earthquake > 5.0	89%	1
	Liquefaction	83%	3
	Flood (heavy rain, snowmelt, dam inundation)	17%	38
	Wildfire	19%	33.5
	Lightning Thunderstorm > T3 (10-20 within 5 minutes)	33%	14.5

Vulnerability/Impact Analysis:
Est. Max Headcount During Any Part of the Term (Peak Time): 83
Est. Building(s)/Facility(ies) Value on Campus: N/A

Library Square

	EVENT	RISK	RANK
NATURAL	Winter Storm (blizzard, big hail, ice rain, low temp)	37%	16
	Tornado >F3 (Fujita scale 158-206mph)	24%	24.5
	High Winds < F3 (Fujita scale 40-157mph)	33%	19
	Severe Heat / Extended Drought	33%	19
	Earthquake > 5.0	89%	1
	Liquefaction	72%	5.5
	Flood (heavy rain, snowmelt, dam inundation)	17%	40.5
	Wildfire	0%	47
	Landslide	0%	47
	Avalanche	0%	47
	Lightning Thunderstorm > T3 (10-20 within 5 minutes)	37%	16

Vulnerability/Impact Analysis:

Est. Max Headcount During Any Part of the Term (Peak Time): 61

Est. Building(s)/Facility(ies) Value on Campus: N/A

South City Campus

	EVENT	RISK	RANK
NATURAL	Winter Storm (blizzard, big hail, ice rain, low temp)	37%	16.5
	Tornado >F3 (Fujita scale 158-206mph)	24%	24.5
	High Winds < F3 (Fujita scale 40-157mph)	33%	19
	Severe Heat / Extended Drought	33%	19
	Earthquake > 5.0	89%	1
	Liquefaction	67%	5.5
	Flood (heavy rain, snowmelt, dam inundation)	17%	42.5
	Wildfire	0%	49
	Landslide	0%	49
	Avalanche	0%	49
	Lightning Thunderstorm > T3 (10-20 within 5 minutes)	37%	16.5

Vulnerability/Impact Analysis:

Est. Max Headcount During Any Part of the Term (Peak Time): 811

Est. Building(s)/Facility(ies) Value on Campus: $117,247,000

Writing Center Campus

	EVENT	RISK	RANK
NATURAL	Winter Storm (blizzard, big hail, ice rain, low temp)	37%	14
	Tornado >F3 (Fujita scale 158-206mph)	24%	24.5
	High Winds < F3 (Fujita scale 40-157mph)	33%	17
	Severe Heat / Extended Drought	33%	17
	Earthquake > 5.0	83%	2
	Liquefaction	72%	6
	Flood (heavy rain, snowmelt, dam inundation)	17%	42
	Wildfire	0%	47
	Landslide	0%	47
	Avalanche	0%	47
	Lightning Thunderstorm > T3 (10-20 within 5 minutes)	37%	14

Vulnerability/Impact Analysis:

Est. Max Headcount During Any Part of the Term (Peak Time): N/A

Est. Building(s)/Facility(ies) Value on Campus: N/A

Airport Campus

	EVENT	RISK	RANK
NATURAL	Winter Storm (blizzard, big hail, ice rain, low temp)	37%	14
	Tornado >F3 (Fujita scale 158-206mph)	24%	28
	High Winds < F3 (Fujita scale 40-157mph)	33%	17.5
	Severe Heat / Extended Drought	33%	17.5
	Earthquake > 5.0	89%	1
	Liquefaction	67%	6
	Flood (heavy rain, snowmelt, dam inundation)	17%	38.5
	Wildfire	0%	43
	Landslide	0%	43
	Avalanche	0%	43
	Lightning Thunderstorm > T3 (10-20 within 5 minutes)	37%	14

Vulnerability/Impact Analysis:

Est. Max Headcount During Any Part of the Term (Peak Time): 81

Est. Building(s)/Facility(ies) Value on Campus: N/A

Westpointe Campus

	EVENT	RISK	RANK
NATURAL	Winter Storm (blizzard, big hail, ice rain, low temp)	33%	15
	Tornado >F3 (Fujita scale 158-206mph)	22%	27.5
	High Winds < F3 (Fujita scale 40-157mph)	30%	17.5
	Severe Heat / Extended Drought	15%	42.5
	Earthquake > 5.0	89%	1
	Liquefaction	78%	4
	Flood (heavy rain, snowmelt, dam inundation)	17%	38
	Wildfire	0%	52
	Landslide	0%	52
	Avalanche	0%	52
	Lightning Thunderstorm > T3 (10-20 within 5 minutes)	33%	15

Vulnerability/Impact Analysis:

Est. Max Headcount During Any Part of the Term (Peak Time): 130

Est. Building(s)/Facility(ies) Value on Campus: $50,000,000

Jordan Campus

	EVENT	RISK	RANK
NATURAL	Winter Storm (blizzard, big hail, ice rain, low temp)	33%	15
	Tornado >F3 (Fujita scale 158-206mph)	22%	24.5
	High Winds < F3 (Fujita scale 40-157mph)	44%	8
	Severe Heat / Extended Drought	13%	43
	Earthquake > 5.0	89%	1
	Liquefaction	41%	11.5
	Flood (heavy rain, snowmelt, dam inundation), External Pipe Break (large JVWD waterline)	19%	32.5
	Wildfire	20%	28
	Landslide	0%	50.5
	Avalanche	0%	50.5
	Lightning Thunderstorm > T3 (10-20 within 5 minutes)	33%	15

Vulnerability/Impact Analysis:

Est. Max Headcount During Any Part of the Term (Peak Time): 777

Est. Building(s)/Facility(ies) Value on Campus: $50,511,00

Miller Campus

	EVENT	RISK	RANK
NATURAL	Winter Storm (blizzard, big hail, ice rain, low temp)	44%	8
	Tornado >F3 (Fujita scale 158-206mph)	22%	30
	High Winds < F3 (Fujita scale 40-157mph)	33%	16.5
	Severe Heat / Extended Drought	26%	22.5
	Earthquake > 5.0	83%	2
	Liquefaction	78%	3.5
	Flood (heavy rain, snowmelt, dam inundation)	19%	43
	Wildfire	0%	52.5
	Landslide	0%	52.5
	Avalanche	0%	52.5
	Lightning Thunderstorm > T3 (10-20 within 5 minutes)	33%	16.5

Vulnerability/Impact Analysis:
Est. Max Headcount During Any Part of the Term (Peak Time): 166
Est. Building(s)/Facility(ies) Value on Campus: $58,298,000

Mitigation Strategies and Actions

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014

Mitigation Table - New Actions

Note: The identification and inclusion of mitigation actions in this annex do not obligate Salt Lake Community College to implement these actions. Many factors, such as funding and the need for extensive analyses, will ultimately determine whether these projects are implemented.

Action	Year Initiated	Goal/Objective	Hazard(s)	Agency Lead	Benefit	Cost	Funding Source	Priority	Timeframe
Seismic Retrofitting and Upgrades of Vulnerable Buildings and Facilities	2019	Goal 1. Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2. Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Earthquake	Facilities Services	High	High	PDM, HMGP, Internal Funds	High	Ongoing
Hand Sanitizing Stations	2019	Goal 1. Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Public Health	Emergency Management and Health Safety	Medium	Low	Internal Funds	Medium	Ongoing
Stop the Bleed Kits	2019	Goal 1. Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster.	Civil Disturbance, Terrorism/Active Threat	Emergency Management	High	Low	Internal Funds, Grants	High	Ongoing

Security Hardening Assessment and Hardening of Campus Assets	2019	Goal 1. Protect the lives, health, and safety of the citizens of Salt Lake County before, during, and after a disaster. Goal 2. Protect and eliminate and/or reduce damages and disruptions to critical facilities, structures, and infrastructure during disasters.	Civil Disturbance, Terrorism/Active Threat	Public Safety, Emergency Management, Facilities Services	High	High	Internal Funds, Grants	High	Ongoing
Enhance interoperable communications between campuses. Make investments in key communications infrastructure and equipment to ensure redundant and effective communications.	2019	Goal 3. Enhance and protect the communication and warning/notification systems in the County. Goal 6. Advocate, support, and promote the continued coordination and integration of disaster planning efforts throughout the County.	All Hazards	Public Safety	High	Medium	Internal Funds, Grants	High	Ongoing

Mitigation Table - Ongoing Actions

Not applicable since Salt Lake Community College was not part of the 2014 plan.