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EXECUTIVE SUMMARY

Davis County Overview

With a total area of 630 square miles and only 223 square miles of usable land, Davis County is the second smallest county in Utah. Antelope Island in the Great Salt Lake adds another 42 square miles to the land area with the remaining portion part of the Great Salt Lake. Davis County is the third most populous county in the state with a population density of roughly 933 people per square mile. Morgan County bounds the county to the east, Salt Lake County to the south, Tooele County to the west, and to the north, Weber County. The western half of Davis County consists of the Great Salt Lake, while the eastern edge of the County is the front of the Wasatch Mountains, much of that in the Wasatch National Forest.
Davis County includes 15 municipalities: Bountiful, Centerville, Clearfield, Clinton, Farmington, Fruit Heights, Kaysville, Layton, North Salt Lake, South Weber, Sunset, Syracuse, West Bountiful, West Point, and Woods Cross. Unincorporated areas with significant populations are limited to Hill Air Force Base, the Val Verda area between the communities of North Salt Lake and Bountiful and the Mutton Hollow area between Kaysville and Layton. The percent of land ownership within the county is 10.9% Federal, 12.0% State, 24.9% Private and Local Government, and 52.2% under the Great Salt Lake (also owned by the State).

Most of the early settlers in Davis County were ranchers and farmers. The fertile ground produced sugar beets, tomatoes, alfalfa, grain, corn, potatoes, onions and extensive fruit orchards were developed on the bench areas. Cattle ranching and dairy farming were also leading agricultural activities.

As the county population continued to grow, Davis County developed a commercial and industrial base. The military became an important part of the County economy with the development of the Naval Supply Depot and Hill Air Force Base. The Naval Supply Depot was sold to private developers in the 1960’s and it became Freeport Center, which is the largest distribution center in the United States. Hill Air Force Base has been the economic backbone of Davis County for many years and is a fundamental economic component of the community. The current economy has many components including manufacturing, trade, services and government. Some of the largest employers include Hill Air Force Base, Davis County School District, Lifetime Products Inc., Smith’s Marketplace, Utility Trailer Manufacturing and Wal-Mart (UDWS 2007b). Davis County’s population is large and growing and the housing and community demands are high. Mean household income in 2014 was $70,388 and the 2014 per capita income was $26,309.

### Hazard History

Within the mitigation planning process, it is important to remember that the past is the key to the future. Identifying past hazard events provides a starting point for predicting where future events could occur. The following historical hazard event statistics were consolidated from the Spatial Hazard Events and Losses Database for the United States (SHELDUS) of the Hazards and Vulnerability Research Institute. This database records reported natural hazard events which cause greater than $50,000 in damages.

### Risk Assessment

The risk assessment process revealed the following for Drought, Earthquake, Flood, Infestation, Landslide/Slope Failure, Severe Weather, and Wildland Fire. Drought, Infestation and Severe Weather are regional hazards and can be found in Part VII. Refer to Part VI for an explanation of the risk assessment methodology. According to this data, there are a total of 130 identified critical facilities within Davis County. For the complete list, refer to Appendix D.

| Table Exec.1 - Davis County, Structures with Moderate or Greater Vulnerability, 2020 |
|---------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                                | TOTAL          | Ground Shaking | Liquefaction   | Flood          | Problem Soils  | Wildfire       | Soil Failure   | Dam Failure    |
| Amateur Radio Repeaters        | 12             | 12 (100%)      | 5 (42%)        | 2 (17%)        | 0 (0%)         | 12 (100%)      | 1 (8%)         | 1 (8%)         |
| Public Safety Repeaters        | 9              | 9 (100%)       | 1 (11%)        | 0 (0%)         | 0 (0%)         | 6 (67%)        | 1 (11%)        | 0 (0%)         |
| Electric Generation Facilities | 1              | 1 (100%)       | 1 (100%)       | 0 (0%)         | 0 (0%)         | 0 (0%)         | 0 (0%)         | 1 (100%)       |
Executive Summary - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

| Emergency Operations Centers | 1 | 1 (100%) | 1 (100%) | 1 (100%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (100%) |
| Fire Stations                | 16| 15 (100%)| 9 (60%)  | 1 (7%)   | 0 (0%) | 1 (6%) | 0 (0%) | 2 (13%)  |
| Hospitals                    | 3 | 2 (100%) | 1 (50%)  | 0 (0%)   | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%)   |
| Oil Facilities               | 7 | 7 (100%) | 7 (100%) | 0 (0%)   | 0 (0%) | 0 (0%) | 0 (0%) | 1 (14%)  |
| Police Stations              | 14| 14 (100%)| 12 (86%) | 2 (14%)  | 0 (0%) | 0 (0%) | 0 (0%) | 3 (21%)  |
| Schools                      | 88| 88 (100%)| 69 (78%) | 3 (3%)   | 0 (0%) | 0 (0%) | 1 (1%) | 14 (17%) |
| Water Treatment Facilities   | 3 | 3 (100%) | 3 (100%) | 1 (33%)  | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%)   |

Risk Potential

The FEMA National Risk Index identifies Davis County Utah as an area with an overall risk index of 6.92. This is lower than the average for counties in Utah (7.25), and the national average (10.70). However, emergency management is a priority to Davis County because the same matrix identifies Davis County as having a much higher score for “Expected Annual Loss” (23.83) - almost double the average in Utah (12.95) and counties throughout the nation (13.47). One of the main reasons for this is because of the population density and building values in Davis County.

Development Trends

Davis County’s residential growth will continue to infill previous agricultural and industrial fringe. Some of the residential growth is occurring on more sensitive lands such as hillsides and low lying areas towards the Great Salt Lake, and in northern Davis County. The opening of the Legacy Parkway in 2008 provided a much needed alternate north/south transportation expressway through the county. The planned North Davis Highway will further facilitate transportation from Weber, through Davis, to Salt Lake County.

Davis County's population is projected to continue to increase significantly. This will result in housing cost increases greater than the rate of inflation. Higher population densities are projected to be concentrated in currently developed areas with recent development occurring at lower densities in the outlying areas.
Illustration of areas that are likely to see growth in the next 5 years. (Source: local county and municipal planners).
Plan Mission

Davis County developed this PDM Plan in partnership with the jurisdictions it serves to substantially and permanently reduce the County's vulnerability to natural hazards. The Plan is intended to promote sound public policy and protect or reduce the vulnerability of the citizens, critical facilities, infrastructure, private property and the natural environment within the County. This can be achieved by increasing public awareness, documenting resources for risk reduction and loss-prevention and identifying activities to guide the development of a less vulnerable and more sustainable community.

Plan Update

This Plan represents an update of the PDM Plan that was approved by the cities, county, the State and by FEMA in 2016. All of the demographic data, maps, vulnerability assessments and mitigation strategies have been revised to reflect the constant growth throughout Davis County. Development pressures in hazard areas will continue to increase the risk to residents. The entire plan was reviewed and analyzed by the planning team throughout the planning process and again at the final draft stage before submission to the state and FEMA.

Plan Organization

The Plan was developed and organized within the rules and regulations established under 44 Code of Federal Regulations (CFR), Section 201.6. The Plan contains a discussion on the purpose and methodology used to develop the Plan, a profile on communities within Davis County, as well as a hazard identification study and a vulnerability analysis of eight hazards. To assist in the explanation of the above-identified contents there are several appendices included which provide more detail on specific subjects. This is intended to improve the ability of communities within Davis County to respond to emergencies and disasters. It will also document valuable local knowledge on the most efficient and effective ways to reduce loss.

Plan Funding

The Plan has been funded and developed under the PDM Program provided by the Federal Emergency Management Agency (FEMA) and the Utah Department of Public Safety, Division of Emergency Management (DEM).

Plan Participation

Plan participation was completed as a result of a collaborative effort between Davis County, DEM, city and county emergency managers, fire departments, sheriff’s office, public works departments, planning commissions, assessor’s office, city and county geographic information systems (GIS) departments, special service districts, school district, elected officials, public employees and citizens of the cities in Davis County.

Interviews were conducted with stakeholders from the communities and workshops were conducted during the Plan development phase. Additionally, through public hearings, workshops and draft Plan displays, ample opportunity was provided for public participation. Any comments, questions and discussions resulting from these activities were given strong consideration in the development of this Plan.

Hazards Identification

The PDM Plan addresses earthquake, flood, landslide, problem soils, wildfire, dam failure, and severe weather. The hazard identification study recognized the following natural hazards as being the most prevalent and posing the most potential risk to Davis County. It is recognized that dam failure is not a natural hazard. However, the impact from a catastrophic dam failure would likely be so severe that it warrants inclusion into the Plan.
Acknowledgements

Davis County would like to extend their appreciation to the following agencies, which assisted in the development of this Plan.

- Utah Division of Emergency Management
- Federal Emergency Management Agency
- National Weather Service
- National Climate Data Center
- Utah Army Corps of Engineers
- Utah Geologic Survey
- Utah Division of Forestry, Fire and State Lands
- Utah Department of Agriculture
- Utah Avalanche Center
- Utah Automated Geographic Resource Center
- University of Utah
- University of Utah Seismic Station
- Utah State University
- Wasatch Front Regional Council (WFRC)
- Associations of Governments
- Davis County
- Bountiful City
- Centerville City
- Clearfield City
- Clinton City
Executive Summary - Davis Co PDMP
Please add comments by typing directly into the document. Your changes will be saved automatically.

- Farmington City
- Fruit Heights City
- Kaysville City
- Layton City
- North Salt Lake City
- South Weber City
- Sunset City
- Syracuse City
- West Bountiful City
- West Point City
- Woods Cross City
- Davis County elected officials
- Davis County Emergency Manager Sgt. Ellis Bruch, Davis County Sheriff's Office
- Rural Community Consultants and Jones & DeMille Engineering, Consultant
- Davis County agencies including:
  - Public Works
  - Local Emergency Planning Committee (LEPC)
  - Fire Departments
  - Davis School District
  - Special Service Districts
  - Weber Basin Water Conservancy District
Part I - INTRODUCTION

Utah is vulnerable to natural and technological (human-caused) hazards that threaten the health, welfare and security of our citizens. The cost of response to and recovery from potential disasters can be substantially reduced when attention is turned to mitigating their impacts and effects before they occur.

Hazard mitigation is defined as any cost-effective action that has the effect of reducing, limiting, or preventing vulnerability of people, property, and/or the environment to potentially damaging, harmful, or costly hazards. Hazard mitigation actions, which can be used to eliminate or minimize the risk to life and property, fall into three categories: first, those that keep the hazard away from people, property and structures; second, those that keep people, property and structures away from the hazard; and third, those that do not address the hazard at all but rather reduce the impact of the hazard on the victims such as insurance. This mitigation Plan has strategies that fall into all three categories.

Hazard mitigation actions must be practical, cost effective, environmentally and politically acceptable. Actions taken to limit the vulnerability of society to hazards must not in themselves be more costly than the anticipated damages.

Capital investment decisions must be considered in conjunction with natural hazard vulnerability. Capital investments can include homes, roads, public utilities, pipelines, power plants, chemical plants, warehouses and public works facilities. These decisions can influence the degree of hazard vulnerability of a community. Once a capital facility is in place, few opportunities will present themselves over the useful life of the facility to correct any errors in location or construction with respect to hazard vulnerability. It is for these reasons that zoning ordinances, which could restrict development in high vulnerability areas, and building codes, which could ensure that new buildings are built to withstand the damaging forces of hazards, are the most useful mitigation approaches that a county or city can implement.

Often, hazard mitigation may be a neglected aspect within emergency management. When local governments place a low priority on mitigation implementation activities relative to the perceived threat, some important mitigation measures may be neglected in favor of higher priority activities. Mitigation success can be achieved, however, if accurate information is portrayed through complete hazard identification and impact studies, followed by effective mitigation management. Hazard mitigation is the key to greatly reducing long-term risk to people and property from natural hazards and their effects. Preparedness for all hazards includes response and recovery plans, training, development, management of resources and the need to mitigate each jurisdictional hazard.

A. Purpose

The purposes of this Plan are (1) identify threats to the community, (2) create mitigation strategies to address those threats, (3) develop long-term mitigation planning goals and objectives, and (4) to fulfill federal, state and local hazard mitigation planning obligations.

Mitigation actions would serve to minimize threats that have an undesirable impact on the citizens, economy, and the environment of Davis County. This Plan is intended to enhance the awareness and to provide mitigation strategies for elected officials, agencies and the public of these hazards and their associated threat to life and property. The Plan also details what actions can be taken to help prevent or reduce hazard vulnerability to each jurisdiction.
B. Scope

The Davis County Natural Hazards Pre-Disaster Mitigation (PDM) Plan was developed in accordance with the requirements of the FEMA Section 322 regulations, the Utah Division of Emergency Management (DEM) and local planning agencies. The goal of this Plan is to assist Davis County in reducing the costs of natural disasters by providing comprehensive hazards identification, risk assessment, vulnerability analysis, mitigation strategy and implementation schedule. Regulations set forth by FEMA were followed during the development of this Plan. All participating jurisdictions are listed. Future monitoring, evaluating, updating and implementation will occur annually or following any natural disaster. A major revision will occur every five years. Annual or any interim Plan review, updates and revisions will be the responsibility of each adopting jurisdiction.

C. Authority

1. Federal

Public Law (PL) 93-288 as amended, established the basis for federal hazard mitigation activity in 1974. A section of this Act requires the identification, evaluation and mitigation of hazards as a prerequisite for state receipt of future disaster assistance outlays. Since 1974, many additional programs, regulations and laws have expanded on the original legislation to establish hazard mitigation as a priority at all levels of government. When PL 93-288 was amended by the Stafford Act, several additional provisions were added that provide for the availability of significant mitigation measures in the aftermath of Presidential declared disasters. Civil Preparedness Guide 1 - 3, Chapter 6 - Hazard Mitigation Assistance Programs, places emphasis on hazard mitigation planning directed toward hazards with high impact and threat potential.

President Clinton signed the Disaster Mitigation Act of 2000 (DMA 2000) into law on October 30, 2000. Section 322 defines mitigation planning requirements for state, local and tribal governments. Under Section 322, states are eligible for an increase in the federal share of hazard mitigation, if they submit a mitigation plan (which is a summary of local and/or regional mitigation plans) that identifies natural hazards, risks, vulnerabilities and actions to mitigate risks.

2. State


3. Local

Local governments play an essential role in implementing effective mitigation. For the purposes of this Plan, local governments include not only cities and counties, but also special service districts with elected boards. Each local government will review all present or potential damages, losses and related impacts associated with natural hazards to determine the need or requirement for mitigation action and planning. In the cities making up Davis County, the local executives responsible for carrying out plans and policies are the county commissioners and city or mayors and administrators. Local governments must be prepared to participate in the post-disaster hazard mitigation team process and pre-mitigation planning as outlined in this document in order to effectively protect their citizens. All jurisdictions in Davis County participated in the development of this plan.
D. Goals and Objectives

The goals and objectives of the PDM Plan include coordinating with local governments to develop a County planning process that meets each planning component identified in the FEMA Region VIII Crosswalk document, Utah Division of Emergency Management (DEM) planning expectation and local input. Another goal is to meet the need of reducing risk from natural and technological hazards in Utah through the implementation of and updating of County plans.

1. Short Term Local Goals

The following general goals were used in the development of the PDM Plan. They are shown from highest to lowest priority.

1. Life safety protection.
2. Eliminate and/or reduce property damage.
3. Protect emergency response capabilities (critical infrastructure).
4. Protect/create communication and warning systems.
5. Protect emergency medical services and medical facilities.
7. Protect critical facilities.
8. Ensure government continuity.
9. Protect developed property, homes, businesses, industry, education opportunities and the cultural fabric of a community. Combine hazard loss reduction efforts with the environmental, social and economic needs of the community.
10. Protect natural resources and the environment.
11. Promote public awareness through education of community hazards and mitigation measures.
12. Preserve and/or restore natural features.

2. Long Term Local Goals

1. Eliminate or reduce long-term risk to human life and property.
2. Aid private and public sectors in understanding the risks they may be exposed to and identify mitigation strategies to reduce those risks.
3. Avoid risk of exposure to natural and technological hazards.
4. Minimize the impacts of risks that cannot be avoided.
5. Mitigate the impacts of damage as a result of identified hazards.
6. Accomplish mitigation strategies in such a way that negative environmental impacts are minimized.
7. Provide a basis for prioritizing and funding mitigation projects.
8. Establish a County platform to enable the community to take advantage of shared goals and resources.
3. **Objectives**

The following objectives are meant to serve as a measure upon which individual hazard mitigation strategies can be evaluated. These objectives become especially important when two or more projects are competing for limited resources.

1. Identify persons, agencies or organizations responsible for implementation.

2. Project a time frame for implementation.

3. Explain how the project will be financed including the conditions for financing and implementation (as information is available).

4. Identify alternative measures, should financing not be available.

5. Be consistent with, support, and help implement the goals and objectives or hazard mitigation plans already in place.

6. Projects should significantly reduce potential damages to public and/or private property and/or reduce the cost of state and federal recovery for future disasters.

7. Projects should be practical, cost-effective and environmentally sound after consideration of the options.

8. Projects should address a repetitive problem, or one that has the potential to have a major impact on an area or population.

9. Projects should meet applicable permit requirements.

10. Discourage development in hazardous areas.

11. Projects should contribute to short and long term solutions.

12. Project benefits should outweigh the costs.

13. Projects should have manageable maintenance and modification costs.

14. Projects should accomplish multiple objectives when possible.

15. Projects should be implemented using existing resources, agencies and programs when possible.
Part II - ADOPTION PROCESS + DOCUMENTATION

Participating Jurisdictions

The Davis County Plan was developed as a multi-jurisdictional Plan. Therefore, to meet the requirements of Section 322 of the local hazard planning regulations, the final Plan must be adopted by each of the municipalities as well as the County. This section documents the adoption process of each local government in order to demonstrate compliance with this requirement.

The Plan will be adopted by the County following FEMA Region VIII approval. Table 2-1 identifies the communities and authorities that participated in the planning process and will adopt the Plan. All of these jurisdictions are seeking plan approval. Each of these jurisdictions also participated in and adopted the previous PDM Plan in 2009 and 2016.

A sample of the adoption resolution is given at the end of this section, and links to the individual support and adoption resolutions are available in Appendix H - Stakeholder Support. Also in Appendix H - Stakeholder Support, is a matrix of who attended meetings, completed assignments, etc. A list of invited special service districts, local agencies, non-governmental organizations, etc. and a sample of the invite is available in Appendix G.

Table 2.1: Community Representatives

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Contact Name and Information</th>
<th>2021 Participation (Yes/No)</th>
<th>Resolution Adoption Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davis County</td>
<td>Chad Monroe Emergency Manager <a href="mailto:cmunroe@co.davis.ut.us">cmunroe@co.davis.ut.us</a></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Bountiful</td>
<td>Dave Edwards Assistant Chief of Police <a href="mailto:edwards@bountifulutah.gov">edwards@bountifulutah.gov</a></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Centerville</td>
<td>Paul Child Chief of Police <a href="mailto:pechild@centervilleut.com">pechild@centervilleut.com</a> Louisa McDonald Assistant Emergency Manager <a href="mailto:lmcdonald@centervilleut.com">lmcdonald@centervilleut.com</a></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Clearfield</td>
<td>John Meek Emergency Manager <a href="mailto:john.meek@clearfieldcity.org">john.meek@clearfieldcity.org</a></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Clinton</td>
<td>Dave Olsen Fire Chief <a href="mailto:dolsen@clintoncity.com">dolsen@clintoncity.com</a></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Farmington</td>
<td>Brigham Mellor Assistant City Manager <a href="mailto:bmellor@farmington.utah.gov">bmellor@farmington.utah.gov</a></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Contact Name</td>
<td>Position</td>
<td>Email</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------------------</td>
<td>---------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Fruit Heights</td>
<td>Brandon Green</td>
<td>City Manager</td>
<td><a href="mailto:bgreen@fruitheightscity.com">bgreen@fruitheightscity.com</a></td>
</tr>
<tr>
<td>Kaysville</td>
<td>Paul Erickson</td>
<td>Fire Chief</td>
<td><a href="mailto:perickson@kaysvillecity.com">perickson@kaysvillecity.com</a></td>
</tr>
<tr>
<td>Layton</td>
<td>Doug Bitton</td>
<td>Fire Marshal</td>
<td><a href="mailto:dbitton@laytoncity.org">dbitton@laytoncity.org</a></td>
</tr>
<tr>
<td>North Salt Lake</td>
<td>Ken Leatham</td>
<td>City Manager, <a href="mailto:kenl@nslcity.org">kenl@nslcity.org</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ali Avery</td>
<td>City Planner, <a href="mailto:alia@nslcity.org">alia@nslcity.org</a></td>
<td></td>
</tr>
<tr>
<td>South Weber</td>
<td>Derek Tolman</td>
<td>Fire Chief</td>
<td><a href="mailto:dtolman@southwebercity.com">dtolman@southwebercity.com</a></td>
</tr>
<tr>
<td>Sunset</td>
<td>Jason Monroe</td>
<td>Director of Public Works</td>
<td><a href="mailto:Worksjmonroe@sunset-ut.com">Worksjmonroe@sunset-ut.com</a></td>
</tr>
<tr>
<td>Syracuse</td>
<td>Erin Behm</td>
<td>Emergency Management Coordinator</td>
<td><a href="mailto:ebehm@syracuseut.com">ebehm@syracuseut.com</a></td>
</tr>
<tr>
<td>West Bountiful</td>
<td>Jason Meservy</td>
<td>Volunteer (Emergency Services)</td>
<td><a href="mailto:jason.meservy@imail.org">jason.meservy@imail.org</a></td>
</tr>
<tr>
<td>West Point</td>
<td>Ryan Harvey</td>
<td>Administrative Services Director</td>
<td><a href="mailto:rharvey@westpointcity.org">rharvey@westpointcity.org</a></td>
</tr>
<tr>
<td>Woods Cross</td>
<td>Sam Christiansen</td>
<td>Director of Public Works</td>
<td><a href="mailto:schristiansen@woodscross.com">schristiansen@woodscross.com</a></td>
</tr>
</tbody>
</table>
Sample Resolution of Support

The following language was provided to local emergency managers. They were asked to convert it into the format of their municipal resolutions. Copies of enacted resolutions were sent back to the PDM planning team.

//date//

WHEREAS the health, safety and welfare of the citizens of ___jurisdiction____ are matters of paramount importance to the City Council; and

WHEREAS the ___jurisdiction____ City Council recognizes the threat that natural hazards pose to people and property within their jurisdiction; and

WHEREAS, the Federal Emergency Management Agency (“FEMA”) has required that municipalities review and revise their local multi-hazard mitigation plan every five years to reflect changes in development, progress in local hazard mitigation efforts, and changes in mitigation priorities and submit their revised multi-hazard mitigation plan for review and approval by FEMA to remain eligible for pre-disaster mitigation grant funding; and

WHEREAS the Emergency Services Division of Davis County has received a grant from FEMA to prepare a multi-jurisdictional hazard mitigation plan in accordance with the requirements of 44.C.F.R. 201.6 and the FEMA “Local Mitigation Planning Handbook”; and

WHEREAS these requirements include obtaining formal resolutions of participation and support from stakeholder jurisdictions.

NOW THEREFORE, BE IT RESOLVED that the City Council of ___jurisdiction____ hereby intends to support the Plan update initiative by participating with the committee intended to develop revisions and updates to the Davis County Pre-Disaster Mitigation Plan.

This Resolution shall take effect upon passage.

//s//_______________
Part III - PLANNING PROCESS

This updated Plan was prepared by the Davis County Emergency Services staff and consultant Rural Community Consultants, with support from the planning committee, and other local and state personnel. Additional county and municipal agencies that have aided in the planning process include; city and county geographic information systems (GIS) departments, elected officials, local officials, emergency managers, fire, planning departments, public works departments, and local governmental agencies. The planning process was based on Section 322 requirements of the Disaster Mitigation Act of 2000 (DMA 2000) and supporting guidance documents developed by FEMA and the Utah DEM.

The planning process included the following steps:

**Step 1: Organize Resources**

Davis County received a FEMA Pre-Disaster Mitigation grant to update the Davis County 2016 Mitigation Plan and to develop a 2020 Davis County Pre-Disaster Mitigation Plan under the planning guidelines included in the FEMA guidance materials (published in 2011). The 2009 Wasatch Front Region’s Pre-Disaster Mitigation Plan was the result of a 2006 Pre-Disaster Mitigation grant that the Wasatch Front Region received from FEMA.

Davis County designated a core planning team made up of members outlined in Table 3-1. These members were the main constituents of the planning process from the initiation of the Plan, to the development and coordination, and resolution of the Plan’s adoption. In addition to the core planning team, a planning committee was created to review the 2016 PDM Plan and recommend revisions. The planning team was also instrumental in guiding the Plan’s overall revision process and content. Every jurisdiction in Davis County, plus representatives from special service districts were invited to provide a representative to serve on the planning team. Some jurisdictions were not able to provide a representative; however, relevant input was solicited and obtained from every jurisdiction in the county.

<table>
<thead>
<tr>
<th>Contact</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chad Monroe</td>
<td>Davis County Emergency Manager</td>
</tr>
<tr>
<td>Alexandra Lindgren</td>
<td>Davis County Emergency Preparedness Planner</td>
</tr>
<tr>
<td>Mike Hansen, AICP</td>
<td>Rural Community Consultants</td>
</tr>
</tbody>
</table>

Table 3-2: Planning Committee

<table>
<thead>
<tr>
<th>Contact Name and Information</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eric Martineau</td>
<td>Utah Division of Emergency Management</td>
</tr>
<tr>
<td>Chad Monroe</td>
<td>Davis County Emergency Manager</td>
</tr>
<tr>
<td>Alexandra Lindgren</td>
<td>Davis County Emergency Preparedness Planner</td>
</tr>
</tbody>
</table>
### Step 2: Planning Process Timeline

To ensure the public and County officials were supportive of the planning process, a series of public meetings were conducted throughout the planning period. Additionally, the Davis County Emergency Manager and/or the project consultant attended and briefed the County Commission on the progress at several Commission meetings. The Davis County Emergency Manager and/or the project consultant also briefed the jurisdiction Mayors and Councils on this process.

The schedule below represents the roadmap that Davis County utilized to develop the 2020 update.

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mike Hansen, AICP</td>
<td>Rural Community Consultants</td>
</tr>
<tr>
<td>Kent Anderson</td>
<td>Davis County Community &amp; Economic Devt</td>
</tr>
<tr>
<td>Loretta Cole</td>
<td>Davis County Citizens Corps</td>
</tr>
<tr>
<td>Cheryl Larsen</td>
<td>Davis County GIS</td>
</tr>
<tr>
<td>Paul Child</td>
<td>Centerville City</td>
</tr>
<tr>
<td>John Meek</td>
<td>Clearfield City</td>
</tr>
<tr>
<td>Derek Tolman</td>
<td>South Weber City</td>
</tr>
<tr>
<td>Dave Olsen</td>
<td>Clinton City</td>
</tr>
<tr>
<td>Sam Christiansen</td>
<td>Woods Cross City</td>
</tr>
<tr>
<td>Jason Meservy</td>
<td>West Bountiful City</td>
</tr>
<tr>
<td>Brigham Mellor</td>
<td>Farmington City</td>
</tr>
<tr>
<td>Doug Bitton</td>
<td>Layton City</td>
</tr>
<tr>
<td>Scott Paxman</td>
<td>Weber Basin Water Conservancy District</td>
</tr>
<tr>
<td>Brian Law</td>
<td>Davis Hospital</td>
</tr>
<tr>
<td>Tami Timothy</td>
<td>Lakeview Hospital</td>
</tr>
<tr>
<td>Kimberly Giles</td>
<td>Utah DEM</td>
</tr>
<tr>
<td>Michelle Villegas</td>
<td>Davis Hospital Medical Center</td>
</tr>
<tr>
<td>Ryan Perkins</td>
<td>Layton Hospital</td>
</tr>
</tbody>
</table>
The chart below provides PDM meetings associated with the planning process. Please see Appendix G: Stakeholder Participation for more detailed information on attendance.

### Table 3-3: Planning Process Timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Participants</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020.10.20</td>
<td>Presentation to Davis County Council of Governments</td>
<td>Elected officials</td>
<td>Brief introduction to the initiative. Provide handout and explain that formal support is needed.</td>
</tr>
<tr>
<td>2020.10.21</td>
<td>Presentation to Davis County Emergency Managers</td>
<td>Planning Committee</td>
<td>Team introduction. Explanation of process and expectations.</td>
</tr>
<tr>
<td>2020.11.11</td>
<td>Team meeting</td>
<td>Core Planning Team Members</td>
<td>Walkthrough of initiative website.</td>
</tr>
<tr>
<td>2020.11.19</td>
<td>Working meeting with Davis County Emergency Managers</td>
<td>Planning Committee</td>
<td>Provide project update. Explain initial assignments.</td>
</tr>
<tr>
<td>2021.01.06</td>
<td>Team meeting</td>
<td>Core Planning Team Members</td>
<td>Provide project update. Discuss information roadblocks.</td>
</tr>
<tr>
<td>2021.02.23</td>
<td>Team meeting</td>
<td>Core Planning Team</td>
<td>Provide project update. Explain new</td>
</tr>
<tr>
<td>Date</td>
<td>Meeting Type</td>
<td>Group</td>
<td>Task Description</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------------------------</td>
<td>--------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2021.02.25</td>
<td>Team meeting</td>
<td>Core Planning Team Members</td>
<td>Provide project update. Discuss next steps.</td>
</tr>
<tr>
<td>2021.03.05</td>
<td>Team meeting</td>
<td>Core Planning Team Members</td>
<td>Provide project update. Discuss next steps.</td>
</tr>
<tr>
<td>2021.03.07</td>
<td>Team meeting</td>
<td>Core Planning Team Members</td>
<td>Discussion of ‘assignment 4’.</td>
</tr>
<tr>
<td>2021.04.01</td>
<td>Team meeting</td>
<td>Core Planning Team Members</td>
<td>Provide project update. Discuss next steps.</td>
</tr>
<tr>
<td>2021.04.27</td>
<td>Team meeting</td>
<td>Core Planning Team Members</td>
<td>Status report.</td>
</tr>
<tr>
<td>2021.05.13</td>
<td>Emergency Managers update meeting</td>
<td>Planning Committee</td>
<td>Follow-up on information gathering assignments.</td>
</tr>
<tr>
<td>2021.06.17</td>
<td>Working meeting with Davis County</td>
<td>Planning Committee</td>
<td>Project update and discussion.</td>
</tr>
<tr>
<td></td>
<td>Emergency Managers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2021.07.07</td>
<td>Team meeting</td>
<td>Core Planning Team Members</td>
<td>Provide project update. Discuss next steps.</td>
</tr>
<tr>
<td>2021.08.04</td>
<td>Team meeting</td>
<td>Core Planning Team Members + Clinton City</td>
<td>Discussion of responsibilities and potential to leverage the new Clinton EOP to help Davis PDM.</td>
</tr>
<tr>
<td>2021.08.26</td>
<td>Team meeting</td>
<td>Core Planning Team Members</td>
<td>Review draft document. Provide project update. Discuss next steps.</td>
</tr>
<tr>
<td>2021.09.03</td>
<td>Public marketing campaign and comment</td>
<td>Core Planning Team Members</td>
<td>Announce public comment opportunities, connect with Special Districts and other stakeholders.</td>
</tr>
<tr>
<td></td>
<td>period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2021.10.04</td>
<td>Report to Emergency Managers on public</td>
<td>Planning Committee</td>
<td>Results are available at: <a href="https://tinyurl.com/DavisPDMSurveyResponses">https://tinyurl.com/DavisPDMSurveyResponses</a></td>
</tr>
<tr>
<td></td>
<td>survey responses.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2021.10.05</td>
<td>Information request(s) for details on</td>
<td>Planning Committee</td>
<td>Respond to State comments on early draft.</td>
</tr>
</tbody>
</table>
Step 3: Public Officials Outreach

To ensure the public and their officials were supportive of the Plan, the Davis County Emergency Manager and/or the project consultant attended County Councils of Government meetings. These public meetings have representation from each chief elected official in the County. Additionally, some communities recommended meeting with their city council to better inform the community.

Step 4: Establish Continuity in the Planning Process

To meet the requirements set forth by DMA 2000, Davis County was contracted by DEM to update this multi-jurisdictional PDM Plan.

Step 5: Data Review and Acquisition

The 2016 WFRC PDM Plan was reviewed by the Davis County Working Group and it was determined that all Plan sections would need to be updated and revised. Contact was made with the County GIS technician and/or planning commission staff in cities to assess available data at the local level.

Agreements were made to allow for the exchange of data between the local jurisdictions and Davis County. Mapping data layers obtained included some or all of the following: local roads, plot maps, county tax assessor’s data, hazard data, flood maps, topographic data, aerial photographs and land development data.

Step 6: County Hazard Identification and Profile

These steps were conducted by gathering data on the hazards that threaten the planning region. This information was gathered from local, state and federal agencies, organizations, newspapers and other local media accounts, state and local weather records, conversations with the public and local officials, surveys, interviews and meetings with key personnel within the planning area. County-level mitigation planning meetings were held during this process. During these meetings, attendees had the opportunity to review hazard information and provide comments. These meetings also provided a forum for discussion on the background information that was needed to gain a general understanding of the geography, geology, recreation and natural resources of the planning region.

Step 7: County Vulnerability Assessment

This step was conducted through a review of local base maps, topographical maps, floodplain maps, United States Geological Survey (USGS) and Utah Geological Survey (UGS) maps, Automated Geographic Reference Center (AGRC) maps, FEMA hazard maps and climate maps from the National Climatic Data Center (NCDC). A detailed vulnerability assessment was completed with the use of GIS software for each county within Davis County. The FEMA modeling program Hazards United States – Multi-Hazards (HAZUS-MH) was used to determine vulnerability to earthquakes and floods. Loss estimation methodology was developed by the core planning team, with assistance from the technical team, to determine vulnerability from each identified hazard. Transportation Analysis Zone (TAZ) and Census 2010 data (including the American Community Survey estimates) were used to estimate the number of residents and households that could be affected by the hazard. Utah State sales tax and Equifax Business data were used to find the total number of businesses and annual sales vulnerable to hazards. HAZUS-MH infrastructure data was used to analyze the amount of infrastructure vulnerable to hazards.
Step 8: Review Existing Local Mitigation Actions

This step was conducted through a review of the governing documents of the county, as well as, conversations, interviews and meetings with interested community leaders and members. This step identified what goals are already established and adopted for the county.

Step 9: Form Local Working Groups

Davis County organized a working group. The working group was composed of individuals with an interest in hazards mitigation, as well as technical experts from the public sector having mitigation expertise. The committee included city planners, city engineers, county and city GIS staff, floodplain managers, sheriff and fire staff, and city and county emergency managers. Each completed section of the updated Plan was reviewed and analyzed for accuracy by the working groups, individual county emergency managers and Davis County staff. Every section of the Plan was updated and revised as part of the planning process.

Step 10: Risk Assessment Review

The working groups were tasked with reviewing county risk assessments for accuracy and completeness and with developing mitigation strategies for all natural hazards threatening the county. Changes or additions were conveyed to the Core Planning Team for revision.

Step 11: Mitigation Strategy Development

Developing the mitigation strategies was a process in which all of the previous steps were taken into account. The County evaluated, identified and profiled the hazards, and vulnerability assessment. Each Mitigation Strategy developed underwent a cost/benefit analysis to determine the best action to take given limited budgets allocated to hazard mitigation efforts at the local level.

Step 12: Prioritization of Identified Mitigation Strategies

DMA 2000 requires state, tribal, and local governments to show how mitigation actions were evaluated and prioritized. The prioritization process was completed by the core planning team, the technical team and the local planning teams over a series of planning meetings. Prioritization was accomplished using the STAPLEE method as explained in the FEMA How to Guide, Document 386-3. This process resulted in each Mitigation Strategy given a High, Medium, or Low priority by the planning teams.

Step 13: State Review

DEM created a formal PDM Plan review committee to ensure local plans met the requirements of DMA 2000. This committee reviewed the Plans during September, 2021 subsequent to submission to FEMA for final review and acceptance.

Step 14: Adoption

The Plan went through a public adoption process from September to December 31, 2021, and was adopted by the cities and counties listed in Table 2-1 of Part II, Adoption Process and Documentation.
### Table 3-4: Adoption Timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>Adoption Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021.09.27</td>
<td>Submitted Plan to State DEM for initial review and comment</td>
<td>FEMA requirement</td>
</tr>
<tr>
<td>2021.10.07</td>
<td>Submitted refined Plan to State DEM with comments addressed.</td>
<td></td>
</tr>
</tbody>
</table>

### Public Involvement

Public involvement opportunities were available and incorporated throughout the development of this Plan. Such opportunities included a public website (DavisHazardPlan.org), social media campaigns, and public meetings for comment review. The development of this plan was conducted during the 2020-2021 Covid-19 pandemic, so online interaction was the preferred method.

Emergency managers, fire and sheriff departments, state and local agencies, business leaders, educators, non-profit organizations, private organizations, and other interested members that could be affected by a hazard within the region or other interested members, were all a part of the planning process.
The draft of this PreDisaster Mitigation Plan was developed publicly on the initiative website and Davis County websites. Once the draft was compiled, a focused advertisement for a public comment and review period was conducted (in September, 2021). The initiative website was visited 1,360 times by residents, and there were 12 public surveys received on that draft of the Plan. Members of the public and elected officials from each jurisdiction were notified of the public comments at county Council of Government meetings.

Information Sources

Background information and data for this Plan was obtained from the sources listed below. From these sources, the Planning Consultant extracted relevant information and data. That information and data was subsequently submitted to the County Work Groups for their consideration and approval for inclusion into the Plan.

- Federal Emergency Management Agency (How-to Guides)
- National Weather Service (hazard profile)
- National Climate Data Center (drought, severe weather)
- Utah Division of Emergency Management (Salt Lake City Mitigation Plan, GIS data, flood data, HAZUS data for flood and earthquake)
- Utah Geologic Survey (GIS data, geologic information)
- Utah Division of Forestry Fire and State Lands (fire data)
- Utah Avalanche Center, Snow and Avalanches,
- Utah Department of Transportation (traffic data)
- Utah Automated Geographic Resource Center (GIS data)
- University of Utah Seismic Station (earthquake data)
- Utah State University (climate data)
- Councils or Government
- Association of Governments
- Utah Association of Special Districts
- State Office of Education
- Davis County and municipalities (Emergency Operations Plan, histories, mitigation actions, public input, data: GIS, assessor, transportation, property, and infrastructure)
- Earthquake Safety in Utah
- Utah Natural Hazard Handbook
- Utah Statewide Fire Risk Assessment Project
- A Strategic Plan for Earthquake Safety in Utah
- State of Utah Wildfire Plan 2008
- State of Utah Drought Plan 2007
Part IV - 2016 COUNTY GOAL REVIEW

The Davis County Mitigation Strategies Working Group developed the following Mitigation Strategies. The Working Group revised and expanded on strategies implemented in the 2016 PDM Plan.

Earthquake

Earthquake Problem Identification (1): Davis County is located in the heart of the Wasatch Fault between the shores of the Great Salt Lake and the foothills of the Wasatch Mountain Range. The majority of the population lives within 5 miles of the fault. The only major traffic artery runs north and south, and numerous water and petroleum pipelines either cross over or run within ½ mile of the fault. Five moderately sized petroleum refineries located in the southern end of the county are subject to severe damage from ground movement and liquefaction. A major earthquake in the area would result in hundreds of millions of dollars in damage to residential structures, industry, and of critical infrastructure, and likely some loss of life. Several public safety facilities and schools are seismically unsafe throughout the county. The Davis County Historical Courthouse in Farmington continues to house county offices and host other public events. These facilities pose a significant threat to those who regularly work and attend school in them, and are in need of seismic retrofitting.

Goal 1: Provide public education on seismic hazards and mitigation.

Objective 1.1: Conduct community preparedness fairs, community outreach events, and promote resident participation in the annual “ShakeOut” earthquake exercise.

Action A: Provide earthquake public education outreach.

Status (as of 2021): Participated in the South Davis Preparedness Fair in 2018. The bi-annual fair was set to take place again in 2020, but was cancelled due to the COVID-19 Pandemic. The annual “ShakeOut” earthquake exercise has continued to be promoted each year.

Objective 1.2: Improve seismic resilience for public facilities including the Davis County Historical Courthouse.

Action A: Conduct seismic reviews of the Davis County Historical Courthouse and actively seek mitigation project funding to retrofit and/or rebuild this structure.

Status (as of 2021): Completed

Action B: Implement structural engineering recommendations to meet seismic standards.

Status (as of 2021): Currently in process with a projected completion date of March 2022.

Objective 1.3: Increase quality and quantity of available natural hazards data to facilitate better decision-making.
2016 Goals - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

**Action A:** Revise and update the county emergency operations plan with the updated seismic information and maps.

**Status (as of 2021):** This action has not begun.

**Earthquake Problem Identification (2):** Communities need to revise and update their Emergency Operations Plans (EOP) and Standard Operating Guidelines (SOG) to reflect these changes.

Goal 2: Update and revise local jurisdictions EOPs and SOGs to enhance emergency response capabilities and critical facilities.

**Objective 2.1:** Explore ways Davis County can help its jurisdictions comply with the requirements of

**Action A:** Develop and administer an RFP for help to create a Davis County EOP that may or may not include each municipality as an appendix.

**Status (as of 2021):** Scoping requirements are being discussed with private sector consultants.

**Flooding**

**Flooding Problem Identification (1):** FEMA has, over the past several years, updated and revised flood hazard maps throughout Davis County. As a result, an increased number of residences are currently located in flood plains. Most of these residents are not fully aware of the change in flood hazard. The County needs to reach out to citizens to provide them with this information.

**Goal 1: Educate citizens of Davis County about flood hazards.**

**Objective 1.1:** Increase the level of understanding in homeowners, city officials, permit authorities and title companies/realtors.

**Action A:** Develop and publicize about flood hazards and the National Flood Insurance Program (NFIP) and disseminate information on the County Emergency Management webpage.

**Status (as of 2021):** This action has not begun.

**Flooding Problem Identification (2):** Debris basins and other flood control infrastructure require regular inspection and maintenance. Stream channels may also change with heavy flow events. Proper flood control measures should be an ongoing priority.

**Goal 2: Reduce flood hazard.**

**Objective 2.1:** Increase the capacity of streams to better handle runoff.

**Action A:** Clean / maintain stream channels.
Slope Failure

Slope Failure Problem Identification (1): Numerous canyons, large and small, exist along the east bench of Davis County. They were formed over thousands of years by debris flows and mudslides. Now, many hundreds of homes and other structures, pipelines, power lines and roadways have been constructed on top of or through the alluvial fans produced by these events. Nature continues to construct these canyons. Landslides and debris flows will continue to occur over time, thus threatening residents and critical infrastructure.

Goal 1: Improve regulation for new development in areas with potential slope issues.

Objective 1.1: Provide regional leadership by example and precept.

Action A: Continue to encourage cities to adopt a standard of requiring geotechnical studies in identified landslide and debris flow areas.

Status (as of 2021): This action has not begun.

Slope Failure Problem Identification (2): There are a number of canyons that do not currently have debris basins constructed to contain debris flows, and others are insufficient in size. These debris basins need to be built or reconstructed in order to provide protection to residents.

Goal 2: Reduce or eliminate landslide damage due to debris flows.

Objective 2.1: Reduce loss of life and damage to property by providing a means to control debris and water from debris flows.

Action A: Continue to identify and re-evaluate flood hazard areas. Develop additional debris basins and retrofit others that require it.

Status (as of 2021): Identification and re-evaluation of flood hazard areas is ongoing. At this time there are no plans for additional debris basins, but there is intention to create additional sediment basins.

Wildland Fire

Wildland Fire Problem Identification (1): Wildland fire has been a continuing challenge throughout Davis County's history. There are several areas in Davis County where there is an extreme danger of wildland-urban fire. Due to increased development into wildland areas, it is likely that any fire over 100 acres in size would threaten structures. North Salt Lake, Bountiful, Centerville, Farmington, Fruit Heights, Kaysville, Layton, and
South Weber, are cities within Davis County that have been classified as “at risk” for wildland fire. These communities are actively participating in the development of Community Wildland Protection Plans (CWPP) in cooperation with the County Fire Warden and the Utah Division of Forestry Fire & State Lands. The safety of the citizens of any community is a shared responsibility between property owners, developers or homeowners associations (HOA), and local, county, state and federal governments. The primary responsibility, however, remains with the property owner and HOA level.

**Goal 1: Reduce or eliminate the threat of wildland fire, and the resulting loss of property and/or life.**

**Objective 1.1:** Increase the level of wildfire knowledge for home and business owners by encouraging participation in the Firewise Communities Program, which provides homeowners and businesses with simple steps to reduce wildfire risk by preparing for wildland fire.

**Action A:** Participate in the “Utah, Let’s Do Our Part” campaign which is the result of an interagency effort to reach the public with fire prevention messages relevant to Davis County. The program goals are wildland fires; campfires, debris burning, and vehicle-caused fires. The goal of the program is to reach specific audiences with fire prevention messages to reduce the number of human-caused fires in the County. For example, many fires are started by unattended campfires left by those out for an evening of fun in the mountains. Even on cold nights, a small breeze can cause a campfire to smolder all night, possibly resulting in a wildfire. The same problem exists with debris burning in the spring and fall.

Vehicles are often the cause of wildland fires. Drivers will pull off the side of the road into the brush to get out of traffic and the heat of the engine is enough to start a fire without the driver ever knowing it. ATVs, trucks, and other vehicles that travel cross country are another major issue as exhaust sparks, dragging metal, hot engines, brake malfunctions, and more cause wildfires. The public will see billboards, flyers, posters, PSAs, news releases, and other products with this campaign logo on them.

**Status (as of 2021):** The County has supported, and will continue to participate in the program.

**Action B:** Host an annual community Firewise day.

**Status (as of 2021):** Events have been held as resources have been available.

**Objective 1.2:** Maintain fire breaks and provide for better access into wildland fire interface areas.

**Action A:** Routinely maintain fire breaks and improve wildland access roads.

**Status (as of 2021):** Ongoing improvement needed. Priority work is to develop proper easements and ongoing funding for maintenance.

**Action B:** Purchase new wildland fire apparatus.

**Status (as of 2021):** Ongoing partnerships are working to enhance equipment availability and response capabilities within the county. As funding opportunities and necessities are identified the county and partnering agencies will continue to work together on purchasing and staffing new fire apparatus and required equipment.

**Wildland Fire Problem Identification (2):** Given that wildland fire is a hazard that can be managed through effective fuel control and the lack of defensible space in one home could threaten other homes nearby in
subdivisions, ordinances requiring residents to maintain defensible space around their respective homes would greatly reduce the fire hazard in these areas. Programs could be established to assist residents in performing this requirement or to encourage rebates for property insurance.

**Goal 2:** Assist homeowners to maintain defensible space around homes and businesses to more effectively mitigate the wildland fire hazard by conducting fuels reduction and chipper days.

**Objective 2.1:** Provide coordination and support to residents and homeowners associations (HOAs) for fuels reduction and defensible space.

**Action A:** Regularly conduct fuels reduction and chipper workshops.

**Status (as of 2021):** This action has not begun.

**Action B:** Educate citizens about defensible space requirements.

**Status (as of 2021):** Educational content continues to be disseminated via social media.

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**Problem Soils**

*The 2016 Plan did not contain goals specific to problem soil issues.*

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**Dam Failure (Secondary Water System)**

**Secondary Water Problem Identification:** Davis County has several secondary water system delivery systems. The Weber Basin Aqueduct transverses the County north to south, carrying several million gallons of water each day to virtually every community. Additionally, several water impoundment ponds provide for pressurized delivery of this water. The failure of either/or the aqueduct or the impoundments could result in a catastrophic flood event.

**Goal 1:** Reduce the potential impact of a failure of the Weber Basin aqueduct.

**Objective 1.1:** Assess the entire length of the aqueduct for potential points of failure.

**Action 1:** The Weber Basin aqueduct is more than 50 years old, and requires regular assessment and maintenance. Weber Basin water is also planning to install emergency shutoff valves throughout the system.

**Status (as of 2021):** Maintenance has been conducted to the level of resources available.

**Action B:** Retrofit high risk Weber Basin Water delivery system aqueduct along the east bench of the county. The Weber Basin Water Conservancy District (WBWCD) has been
seismically retrofitting a large portion of their water delivery system, including; a Seismic Retrofit of Filter and Flocculation Basins and Seismic Retrofit of Pump Stations along the aqueduct along the east bench of the county. The WBWCD has received FEMA Mitigation Grant Funding for this project. Exact funding amounts are estimated to be $4 million.

**Status (as of 2021):** Ongoing maintenance and upgrades continue as personnel and resources are available including seismic retrofitting. Additional funding sources are being explored and obtained for additional upgrades such as auto shut-off system

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**Drought**

*The 2016 Plan did not contain goals specific to drought issues.*

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**Severe Weather**

**Severe Weather Problem Identification (1):** Most presidential disaster declarations are the result of severe weather. Davis County is prone to the effects of severe weather, as are many other counties in the state. These are usually thunderstorms and snowstorms. However, we are also prone to extremely severe wind events referred to as “East Winds.” Historically, Davis County has experienced gusts of over 110 mph and sustained winds of 80+ mph. These severe wind events can result in millions of dollars in damage. On average, we experience at least one every 5-10 years. Severe storms result in secondary and tertiary problems mostly dealing with power, heating and travel. Severe weather has resulted and will continue to result in serious travel problems, as well as power and heating difficulties.

**Goal 1:** Assist residents in protecting themselves from the effects of severe weather and changing global climate.

**Objective 1.1:** Support programs to prepare residents and elected officials for adverse weather conditions.

**Action A:** Encourage all cities to participate in the Storm Ready program.

**Status (as of 2021):** Ongoing effort. Davis County recently became Storm Ready certified. Will encourage cities to participate as well.
Severe Weather Problem Identification (2): Davis County cities near the mountain front are subject to strong easterly canyon winds. These high winds can result in serious disruption of essential public services and communications for emergency responders have been severely hampered in the past by high wind damage to communication infrastructure.

Goal 2: Improve public understanding of the potential impact of severe weather in the County.

Objective 2.1: To educate officials and the public on the impact that climate change has had on water supplies.

Action A: Develop and promote an educational outreach for elected officials and the public on the impact that global climate change has had on water supplies in Davis County. Regional weather summit meeting was held in April 2016.

Status (as of 2021): Action has not begun.

Goal 3: Improve emergency notification capabilities in the School District.

Objective 3.1: Provide consistent and timely emergency notification to the schools in the Davis School District.

Action A: In order to better ensure consistent emergency communications during any kind of emergency event, including severe weather, the School District has purchased an emergency alert and notification system that will be used to transmit emergency information via the internet, tablets, cell phones and radios to any of the schools in the District. The County Emergency Manager is also included in the system.

Status (as of 2021): Completed.
Part V - COUNTY MITIGATION STRATEGIES, OBJECTIVES, ACTIONS

Using the findings from the risk assessment and the capabilities assessment as a guide, several mitigation strategies and implementing actions were identified for Davis County. These priorities were reviewed and refined by local emergency managers and were made publicly available for comment as well. The following presents information regarding general priority goals for the county as a whole, including the County’s unincorporated areas.

1. Earthquake

**Earthquake Problem Identification:** Davis County is located along the Wasatch Fault between the shores of the Great Salt Lake and the foothills of the Wasatch Mountain Range, with a majority of its population residing within 5 miles of the fault line. The major traffic infrastructures run north and south, and numerous water and petroleum pipelines either cross over or run within miles of the fault. Five moderately sized petroleum refineries located in the southern end of the county are subject to severe damage from ground movement and liquefaction. A major earthquake in the area would result in severe damage to residential structures, industry, critical infrastructure, and bodily injury and loss of life. With the advent of social media, misinformation on preparation and response to earthquakes has become more prevalent as was seen in the March 2020 earthquake.

**Goal 1.1: Improve earthquake public education via credible science and government resources.**

**Action A:** Promote the Utah Seismic Safety Commission via social media outlets.

**Action B:** Organize a field visit from the Utah Geologic Survey to identify and discuss earthquake hazards.

**Action C:** Provide education on preparation activities throughout the year but emphasizing them close to the annual “Great Shakeout” drill.

**Goal 1.2: Educate property owners of seismic threats.**

**Action A:** Provide online maps of earthquake faults and damage zones to residents.

**Action B:** Educate homeowners on structural safety techniques to follow during and after an earthquake.

**Action C:** Educate homeowners about structural and non-structural retrofitting of vulnerable homes and encouraging retrofit.
2. Flooding

Flooding Problem Identification (1): Property owners in Davis County are often unaware that their home or future home may be in a potentially hazardous area. Although federally regulated lending institutions are required to disclose to mortgage and other loan applicants whether a property is on a floodplain, they are only required to do so 10 days prior to closing at which point the applicant may be unable to back out of the purchase due to a myriad of circumstances.

Goal 2.1: Minimize injury, and loss of life and property from flooding through public education and government involvement in the NFIP.

**Action A:** Create floodplain awareness campaign in collaboration with the state, Davis County cities, NWS, and various Davis County departments. Campaign will include floodplain information dissemination via presentations, seminars, social media, and Davis County presence at public events.

**Action B:** Create a floodplain committee that includes Davis County Public Works, Davis County Emergency Management, Davis County Economic and Community Development, cities within Davis County, and private sector partners affiliated with property selling/buying that meets annually to discuss best collaborative efforts to bring awareness to floodplain properties.

**Action C:** Work with Davis County executive staff to continually enforce floodplain management ordinances that meet the minimum NFIP requirements.

Flooding Problem Identification (2): Debris basins and other flood control infrastructure require regular inspection and maintenance. Stream channels may also change with heavy flow events. Proper flood control measures should be an ongoing priority.

Goal 2.2: Implement and/or continue proper flood control measures to minimize injury and loss of life and property from flooding.

**Action A:** Develop and/or update community-wide stormwater management plan.

**Action B:** Complete a stormwater drainage study for known problem areas.

**Action C:** Install/upgrade stormwater pumping stations.

**Action D:** Perform regular drainage system maintenance including sediment and debris clearance; and detection and prevention of discharges into stormwater and sewer systems from home footing drains, downspouts, or sewer pumps.
3. Wildland Fire

Wildland Fire Problem Identification (1): Wildland fires continue to be a challenge for Davis County and its residents. There are several areas in Davis County where there is an extreme danger of wildland-urban fire. Due to increased development into wildland areas, it is likely that any fire over 100 acres in size would threaten structures. North Salt Lake, Bountiful, Centerville, Farmington, Fruit Heights, Kaysville, Layton, and South Weber, are cities within Davis County that have been classified as “at risk” for wildland fire. The safety of the residents in any community is a shared responsibility between property owners, developers or homeowners’ associations (HOA), and local, county, state and federal governments. The primary responsibility, however, remains with the property owner and HOA level.

Goal 3.1: Further Davis County residents’ knowledge of wildland fire mitigation and preparedness.

Action A: Sponsor Firewise workshops for local officials, developers, civic groups, and neighborhood/homeowners’ associations.

Action B: Work with Davis County fire agencies/departments to organize local fire department tours.

Action C: Work with Davis County cities to inform residents about proper evacuation procedures.

Action D: Link wildfire safety with environmental protection strategies.

Action E: Sponsor local “slash and clean-up days” to reduce fuel loads along the wildland-urban interface.

Goal 3.2: Mitigate injury and the loss of life and property by performing wildland fire mitigation activities.

Action A: Create defensible zones around power lines, oil and gas lines, and other infrastructure systems.

Action B: Enhance and develop new water sources in wildfire-prone areas.

Action C: Work with Davis County fire departments/agencies to routinely inspect the functionality of fire hydrants.

Action D: Develop a vegetation management plan.

Action E: Continue the development and maintenance of firebreak road on the east bench in coordination with cities.

Wildland Fire Problem Identification (2): Davis County does not have a county fire department, but there are 9 fire agencies and departments within the county that serve Davis County residents. The responsibility of County Fire Warden lies on the shoulders of the County Emergency Manager. The Davis County Emergency Manager may not have prior fire experience; therefore, they might not be the best qualified to serve as the County Fire Warden.

Goal 3.3: Increase consistent information amongst all fire agencies/departments and the county.
**County Goals - Davis Co PDMP**

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

**Action A:** Continue the development of the Community Wildland Protection Plan (CWPP) in coordination with the Utah Division of Forestry Fire & State Lands.

**Action B:** Meet with all fire agencies/departments bi-monthly during wildland fire season to share information on hazards, fireworks restrictions, and county and state ordinances and restrictions

**Action C:** Work with all fire agencies/departments and the Utah Division of Forestry Fire & State Lands to create an up-to-date centralized MOU/MOA file.

**Goal 3.4: Ensure that County Fire Warden is experienced in wildland fire mitigation and response.**

**Action A:** Create position (volunteer or paid) within the Davis County Emergency Management program to serve as County Fire Warden and require experience relating to wildland fires

**Action B:** If Action A cannot be completed, send the current County Fire Warden to extensive training to further their knowledge of wildland fires.

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4. **Severe Weather**

**Severe Weather Problem Identification (1):** Most presidential disaster declarations are the result of severe weather. Davis County is prone to the effects of severe weather, as are many other counties in the state. These are usually thunderstorms and snowstorms. However, we are also prone to extremely severe wind events referred to as “East Winds.” Historically, Davis County has experienced gusts of over 110 mph and sustained winds of 80+ mph. These severe wind events can result in millions of dollars in damage. On average, Davis County experiences at least one of these severe wind events every 5-10 years. Severe storms result in secondary and tertiary problems mostly dealing with power, heating, and travel. Severe weather has resulted and will continue to result in serious travel problems, power and heating difficulties, and property damage.

**Goal 4.1: Increase public awareness of severe weather information and best mitigation and preparedness strategies.**

**Action A:** Work with the Davis County School District to include safety strategies for severe weather in driver education classes and materials.

**Action B:** Utilize awareness weeks for lightning, severe weather, winter weather, etc.

**Action C:** Promote community outreach to vulnerable populations that may need assistance if heating and power are impacted by severe weather.

**Action D:** Educate homeowners on the benefits of retrofitting homes.

**Goal 4.2: Retrofit public buildings and critical infrastructures to better withstand severe weather events.**

**Action A:** Anchor roof-mounted heating, ventilation, and air conditioning units.

**Action B:** Ensure critical facilities, public buildings, and high occupancy buildings have back-up generators.

**Action C:** Work with utility companies to inspect utility poles to ensure they meet specifications and are wind resistant.
Action D: Direct promotion towards utility companies to upgrade overhead utility lines and/or bury power lines to provide uninterrupted power after severe winds, considering both maintenance and repair issues.
Part VI - CITY MITIGATION STRATEGIES, OBJECTIVES, ACTIONS

Bountiful City

Background

Bountiful City is a picturesque community nestled on the foothills of the Wasatch Range in Davis County. With a population of about 44,000, and approximately 14,000 households, Bountiful offers a variety of housing options from view on the Bountiful Bench, townhomes, to homes with access to I-15 for commuters close to Salt Lake City. The city grew rapidly during the suburb growth of the late 1940s, 1950s, and 1960s and was Davis County's largest city until 1985 when it was surpassed by Layton. Bountiful is currently Utah's 15th largest city.

Although a part of the Ogden-Clearfield Metropolitan Statistical Area, it serves as a bedroom community to Salt Lake City and the surrounding area. However, due to the very narrow entrance into Salt Lake County, roads between the counties often reach near-gridlock traffic during rush hour. The FrontRunner commuter rail has been running since April 2008, and the Legacy Parkway was opened in 2008. These were built to help alleviate the traffic load on Interstate 15 through the Bountiful area.

Bountiful occupies an area of approximately 13.5 square miles. It is a gateway community to Salt Lake County for travelers going south on I-15.

Bountiful operates under a weak mayor form of government, with an elected Mayor and five Council Members. The day-to-day operations and the majority of executive authorities are delegated to a City Manager, who works hand-in-hand with the Mayor to ensure all city operations are well-run. City operations include a 24/7 police department, part-time animal services, a municipal court, water, garbage/recycling, streets, stormwater, snow removal, community development, and parks and recreation programming. Bountiful City is part of the South Davis Fire District which provides fire protection. Emergency management and pre-disaster mitigation responsibilities are coordinated by the Bountiful City Police Department.

Community Buildings and Infrastructure Status

Bountiful City is dedicated to the safety and quality of life for both its citizens and visitors. As part of this mission they actively work to upgrade critical and essential infrastructure. As funding, personnel, and resources become available, Bountiful City strives to maintain 2021 health and safety standards.

City Buildings:

- City Hall - Seismic retrofit 2019-2021 Completed
- Public Safety - Seismic compliant – completed in 1997
- Water Dept - Seismic compliant – completed in 2018
- Streets Dept. - Constructed in 1973
- Power Department - Seismic compliant - Retrofit and remodel completed 2019
Infrastructure:

- Power Dept is municipal and we house materials (poles and wire) to accomplish major emergency repairs
- A fiber optic cable ring has been put in place to provide data redundancy across all city buildings
- We comply with current building codes re seismic standards

Specific Community Hazards

- **Earthquake.** Bountiful’s proximity to the mountains and the Wasatch Fault puts it at high risk of earthquake damage.
- **Flooding.** Bountiful is located along the Wasatch Mountain Front. During the 1983 declared flooding disaster, City facilities, trails, and homes sustained significant damage.
- **Wildland Fire.** Much of Bountiful City is located in the foothills, increasing the risk for wildland fires.
- **Dam failure.** The secondary water system throughout the community has small storage reservoirs.

<table>
<thead>
<tr>
<th>CRITICAL AREA FACILITIES + INFRASTRUCTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility</td>
</tr>
<tr>
<td>Water Treatment Plant</td>
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<tr>
<td>Upper Reservoir</td>
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<tr>
<td>Well</td>
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<tr>
<td>Bountiful power generation plant</td>
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<tr>
<td>Water Tanks</td>
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<tr>
<td>Underground petroleum pipelines</td>
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<tr>
<td>Irrigation Reservoirs</td>
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<tr>
<th>MUNICIPAL BUILDINGS + INFRASTRUCTURE</th>
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<tbody>
<tr>
<td>Facility</td>
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<tr>
<td>Bountiful power generation plant</td>
</tr>
</tbody>
</table>

6. City Goals - 38
<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Offices</td>
<td>Loss of vital city records; communication vehicles; day to day functions</td>
<td>TBD</td>
</tr>
<tr>
<td>City Public Works building</td>
<td>Damage and destruction to facilities and vehicles from earthquake</td>
<td>Enhance structural integrity of infrastructure</td>
</tr>
<tr>
<td>Police Department</td>
<td>Loss of vital police records; impact to day to day functions</td>
<td>TBD</td>
</tr>
<tr>
<td>Public Works Building</td>
<td>Loss/damage to response equipment</td>
<td>N/A</td>
</tr>
<tr>
<td>IT Network and Server</td>
<td>Loss of communications</td>
<td>Enhance security</td>
</tr>
<tr>
<td>EOC</td>
<td>Loss of operability for EOC</td>
<td>Equip EOC; Complete connection to fiber/analog lines</td>
</tr>
<tr>
<td>Main Generator for City Office</td>
<td>Loss of power for critical operations</td>
<td>Enhance security</td>
</tr>
<tr>
<td>South Metro Davis Fire - Station #81</td>
<td>Loss/damage to response apparatus/personnel</td>
<td>Enhance structural earthquake resiliency</td>
</tr>
<tr>
<td>South Metro Davis Fire - Station #82</td>
<td>Loss/damage to response apparatus/personnel</td>
<td>Enhance structural earthquake resiliency</td>
</tr>
<tr>
<td>South Metro Davis Fire - Station #83</td>
<td>Loss/damage to response apparatus/personnel</td>
<td>Enhance structural earthquake resiliency</td>
</tr>
<tr>
<td>South Metro Davis Fire - Station #84</td>
<td>Loss/damage to response apparatus/personnel</td>
<td>Enhance structural earthquake resiliency</td>
</tr>
<tr>
<td>South Metro Davis Fire - Station #85</td>
<td>Loss/damage to response apparatus/personnel</td>
<td>Enhance structural earthquake resiliency</td>
</tr>
</tbody>
</table>

**STORMWATER INFRASTRUCTURE**

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple storm water retention</td>
<td>Flooding</td>
<td>Dredge and de-silt</td>
</tr>
</tbody>
</table>
Mitigation Efforts Since the 2016 Plan

- Bountiful City is updating the City Emergency Operations Plan (EOP) - estimated completion 2022-23.
- Bountiful City has completed Action 2, having built the culinary reservoir.
- Bountiful City has completed Action 5.
- Investments were made to upgrade the high-pressure gas pipeline at a cost of $2m (Action 3).
- Bountiful City retrofitted its city hall for seismic and communications security at a cost of $8m.

Mitigation Strategies (2021-2026)

**Earthquake - Problem Identification:** Critical facilities do not meet seismic standards.

**Goal:** Improve building resilience through construction standards and retrofitting.

**Objective (Priority MEDIUM):** Retrofit facilities to seismic standards.

**Action 1:** Replace the Mueller Park Culinary Water Treatment Plant equipment with a new treatment system and retrofit the building to bring it into compliance with current seismic code.

- **Time Frame:** 2023
- **Funding:** City funds + grants
- **Estimated Cost:** $2 million
- **Staff:** City Administration, Public Works, Engineer, etc.
City Goals - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

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**Jurisdictions:** Bountiful City

**Action 2:** Construct a new 1,000,000 gallon culinary water reservoir at 1300 East 400 North, to work in tandem with two existing reservoirs increasing city water storage and earthquake survivability.

- **Time Frame:** 2023-2024
- **Funding:** City funds + grants
- **Estimated Cost:** $650,000
- **Staff:** City Administration, Public Works, Engineer, etc.

**Jurisdictions:** Bountiful City

**Action 3:** Replace ten aging high pressure gas lines which serve a large portion of Bountiful City (by Questar Gas). These gas lines cross several fault traces, and are subject to failure in the event of fault movement or a reasonably expected seismic event.

- **Time Frame:** 2021-2023
- **Funding:** City funds
- **Estimated Cost:** unknown
- **Staff:** City / Questar Gas

**Jurisdictions:** Bountiful City

**Action 4:** Bountiful City has an ongoing, annual program of replacing aging cast iron culinary water pipe, which is very susceptible to earth movement, with flexible PVC pipe, which is better able to withstand earth movement caused by a seismic event.

- **Time Frame:** Ongoing through 2026
- **Funding:** City funds
- **Estimated Cost:** $900,000/year
- **Staff:** City Administration, Public Works, Engineer, etc.

**Jurisdictions:** Bountiful City

**Action 5:** Stoker School Demolition and Replacement. Eliminate and replace a 110 year building which is currently being used as the Bountiful campus for the University of Utah and would be subject to damage/failure/collapse in the event of a reasonably expected seismic event. The building will be replaced with a new city hall in the same location.

- **Time Frame:** (completion expected in 2021-22)
- **Funding:** Mitigation grants, City funds
- **Estimated Cost:** $10 million
- **Staff:** City / County

**Jurisdictions:** Bountiful City

**Action 6:** Install critical facilities generators at different locations (i.e. water pumps).

- **Time Frame:** (completion expected in 2021-23)
City Goals - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

**Funding**: Mitigation grants, City funds

**Estimated Cost**: $600,000

**Staff**: City Public Works

**Jurisdictions**: Bountiful City

**Action 7**: Seismic retrofit of critical roadway 600s and Davis Blvd.

**Time Frame**: (completion expected in 2021-23)

**Funding**: City transportation funds

**Estimated Cost**: $1,000,000

**Staff**: City Public Works

**Jurisdictions**: Bountiful City

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**Landslide - Problem Identification**: Landslides are the movements of a mass of rock, debris, or earth down a slope by force of gravity. Landslides occur when the slope or soil stability changes from stable to unstable, which may be caused by earthquakes, storms, volcanic eruptions, erosion, fire, or additional human-induced activities. With Bountiful City being located at the foothills of the Wasatch Range in Davis County, landslides are possible.

**Goal**: Mitigate the effects of landslides.

**Objective (Priority LOW)**: Creating a plan to study areas where landslides may occur.

**Action**: Discuss using GIS Mapping to determine where landslides may occur.

**Time Frame**: Unknown, depending on funding

**Funding**: City funds

**Estimated Cost**: Minimal

**Staff**: City Administration, GIS, etc.

**Jurisdictions**: Bountiful City

---

**Severe Weather - Problem Identification**: Severe downslope winds from Wasatch Mountain Range.

**Goal**: Reduce the threat of severe weather damage to infrastructure.

**Objective (Priority LOW)**: Encouraging wind-proofing measures and construction techniques.

**Action**: Encourage new construction to implement wind-proofing into building plans.

**Time Frame**: Ongoing

**Funding**: None

**Estimated Cost**: None

**Staff**: Community Development, Building Department, etc.

**Jurisdictions**: Bountiful City
**Flooding - Problem Identification:** Bountiful City is traversed by several creeks which may be subject to flooding in severe storm events. These creeks overtopped their banks in the 1983 flood disaster, resulting in thousands of dollars in damages. Significant funding following the 1983 flooding greatly reduced flood vulnerability in those areas. Ongoing maintenance of these floodways by the city will continue to mitigate this threat.

**Goal:** Mitigate the impact of flooding in high-threat areas.

**Objective (Priority HIGH):** Maintain identified flood threat areas.

**Action:** Annually inspect and remove debris in stream channels and debris basins.

**Time Frame:** Annually, ongoing

**Funding:** City funds

**Estimated Cost:** Minimal

**Staff:** City Administration, Public Works, Engineer, etc.

**Jurisdictions:** Bountiful City

**Objective (Priority MEDIUM):** Providing the public with knowledge about the possibility of flooding.

**Action:** Provide information to citizens about local flood hazard, flood insurance, and flood protection measures.

**Time Frame:** Ongoing

**Funding:** City Funds

**Estimated Cost:** Minimal

**Staff:** City Administration

**Jurisdictions:** Bountiful City

**Wildland Fire - Problem Identification:** A significant portion of Bountiful City is along the foothills creating an urban/wildland interface.

**Goal:** Mitigate the impact of wildfire in high-threat areas.

**Objective #1 (Priority MEDIUM):** Fuels mitigation

**Action 1:** Work in tandem with homeowners to remove fuels and create fire breaks.

**Time Frame:** Unknown, depending on funding

**Funding:** Federal, State and Local

**Estimated Cost:** Unknown

**Staff:** City Administration, Public Works, Engineer, etc.

**Jurisdictions:** Bountiful City
Action 2: Create a public service campaign to inform residents about fuels reduction, fire breaks, and other mitigation tactics.

**Time Frame:** Unknown, depending on funding  
**Funding:** Federal, State and Local  
**Estimated Cost:** Unknown  
**Staff:** City Administration, Public Works, Engineer, etc.  
**Jurisdictions:** Bountiful City

### Dam Failure - Problem Identification
The Millcreek City culinary water system reservoir is aging and vulnerable, and is subject to damage/failure/collapse, resulting in flooding downstream neighborhoods.

**Goal:** Continue to conduct ongoing replacement programs of critical infrastructure.

**Objective (Priority HIGH):** Enhance the resiliency of Millcreek Reservoir, part of the city culinary water system.

**Action:** Replace the 60+ year old 3,000,000 gallon culinary water Millcreek Reservoir.

**Time Frame:** 2024  
**Funding:** City funds/State/Federal grant  
**Estimated Cost:** $1.9 million  
**Staff:** City Administration, Public Works, Engineer, etc.  
**Jurisdictions:** Bountiful City

### Multi-Hazards - Problem Identification
The City does not have an emergency management plan in place and communication networks are vulnerable.

**Goal:** Maintain an effective operational strategy for hazards.

**Objective #1 (Priority HIGH):** Improve communications, mitigate the impacts of and be prepared for emergency situations and hazards.

**Action 1:** Create an Emergency Management Plan

**Time Frame:** 2022  
**Funding:** Federal and Local  
**Estimated Cost:** Unknown  
**Staff:** City Administration, Public Works, Engineer, etc.  
**Jurisdictions:** Bountiful City

**Action 2:** Enhance IT Network and Server Security

**Time Frame:** Unknown, depending on funding  
**Funding:** Local and State
Centerville City

Background
Centerville City is located between Farmington and Bountiful, east of Interstate 15. The city has an estimated population of 17,404 (2024). It is located adjacent to the easternmost part of the Great Salt Lake.

Centerville operates under a weak mayor form of government, with an elected Mayor and five Council Members. The day-to-day operations and most executive authorities are delegated to a City Manager, who works closely with the Mayor to ensure all city operations are well-run. City operations include a full time Police, Fire, and Public Works Departments. Emergency management and pre-disaster mitigation responsibilities are coordinated by the Centerville City Manager.

Community Buildings and Infrastructure Status
Centerville City has spent extensive time and efforts on infrastructure improvements to help protect against earthquakes, wildfires, high wind events, flooding, and other disasters. Centerville City is dedicated to the safety and quality of life of their citizens. Centerville City is continuously exploring new infrastructure projects and maintaining 2021 building standards and safety measures.

Buildings:
- City Hall - Built 1991 - Backup generator
- Public Works - Built 1990 - Backup generator
- Public Works Storage bldg. - Built 2005
- Parks & Rec - Built about 2000
- Museum (original part) - Built about 1912.

Infrastructure:
- Backup generators have been installed at all city well/pump houses of the water system.
- Water system isolation valves and hoses to jump across broken lines.
- Have access to a solar powered church water well.
- Emergency fuel storage for generators and vehicles.
- Debris dam and fence in Parish Canyon to catch/slow debris flow/landslide
- Redundant storm drain system and Bernard Street Canal at Bernard Creek for heavy run-off/flood
- Flood water/landslide detentions at Freedom Hills Park. Flood detention at Community Park, Jennie P Stewart Elementary, Frontage Road Swales, Market Place drive and west of Costa Vida & Centerville Commons Park.
Specific Community Hazards

- **Flooding.** Centerville is traversed by several creeks which may be subject to flooding in severe storm events and spring runoff.
- **Earthquakes.** Centerville’s proximity to a known trace of fault puts it at high risk of earthquake damage.
- **Wildland Fire.** A significant portion of Centerville City is along the foothills creating an urban / wildland interface.
- **Dam Failure.** Centerville houses several dams that could fail causing various levels of damage to the city.

### CRITICAL AREA FACILITIES + INFRASTRUCTURE

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culinary water storage tanks and secondary</td>
<td>The city has culinary water storage tanks and secondary water storage</td>
<td>Enhance security, upgrade water distribution system.</td>
</tr>
<tr>
<td>water reservoirs</td>
<td>reservoirs that may experience water contamination, flooding and failure due</td>
<td></td>
</tr>
<tr>
<td></td>
<td>to earthquakes</td>
<td></td>
</tr>
<tr>
<td>Water main on Main St.</td>
<td>Improper installation/ground settling</td>
<td>As road construction occurs, or a pipe breaks, they are replaced with</td>
</tr>
<tr>
<td></td>
<td></td>
<td>better materials, and better bedding (sand).</td>
</tr>
</tbody>
</table>

### MUNICIPAL BUILDINGS + INFRASTRUCTURE

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Offices/Eoc</td>
<td>Loss of vital city records; communication, vehicles; day to day functions.</td>
<td>Provide for city office/EOC survivability following an earthquake.</td>
</tr>
<tr>
<td></td>
<td>Loss of operability for EOC</td>
<td></td>
</tr>
<tr>
<td>Public Works Building</td>
<td>Loss/damage to response equipment</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### STORMWATER INFRASTRUCTURE

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
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</thead>
</table>
City Goals - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

<table>
<thead>
<tr>
<th>Stormwater detention basins</th>
<th>Flooding: excessive rainfall over filling banks</th>
<th>Downstream protection of property. See Goal 1</th>
</tr>
</thead>
</table>

### ARTERIAL ROADS

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Street</td>
<td>Destruction, evacuation and response concerns.</td>
<td>State Road</td>
</tr>
<tr>
<td>Frontage Road</td>
<td>Destruction, evacuation and response concerns.</td>
<td>Maintain</td>
</tr>
<tr>
<td>400 East</td>
<td>Destruction, evacuation and response concerns.</td>
<td>Maintain</td>
</tr>
<tr>
<td>Parrish Lane</td>
<td>Destruction, evacuation and response concerns.</td>
<td>Maintain (Partially State Road)</td>
</tr>
<tr>
<td>Pages Lane</td>
<td>Destruction, evacuation and response concerns.</td>
<td>Maintain</td>
</tr>
<tr>
<td>Interstate 15</td>
<td>Destruction, evacuation and response concerns.</td>
<td>State Road</td>
</tr>
<tr>
<td>Legacy Highway</td>
<td>Destruction, evacuation and response concerns.</td>
<td>State Road</td>
</tr>
</tbody>
</table>

**Mitigation Efforts Since the 2016 Plan**

- Centerville City has just recently doubled the drainage fees in order to pay for repairs and upgrades to our drainage systems.
- South Davis Metro Fire will tear down and build a new fire station in Centerville.(Completed in 2024).
- Additional repairs and improvements on the firebreak road.
- Centerville has developed a 45 year master plan to upgrade the water system. Work is currently in progress to make improvements in the system to keep up with this plan.
- Davis County has plans to put an open creek into a culvert along Porter Lane.(in the works)
Mitigation Strategies (2021-2026)

**Earthquake - Problem Identification**: Centerville is located on known traces of faults.

- **Goal**: Educating citizens about safety during earthquakes.
- **Objective (Priority LOW)**: Making information available to citizens on safety techniques to follow during and after earthquakes.
  
  **Action 1**: Providing information to citizens when requested.
  
  - **Time Frame**: Ongoing
  - **Funding**: City
  - **Estimated Cost**: Minimal
  - **Staff**: City Administration
  - **Jurisdictions**: Centerville City

**Flooding - Problem Identification**: Centerville is traversed by several creeks which may be subject to flooding in severe storm events and spring runoff. Significant funding towards a debris flow basin in the Deuel Creek area has greatly reduced flood vulnerability in this area. Ongoing work on upsizing water coverts are taking place under Frontage Road extending under the Freeway and in the area of Bernard Creek.

- **Goal**: Minimize the impact of flood damage in high potential areas.
- **Objective (Priority HIGH)**: Maintain identified flood threat areas.
  
  **Action 1**: Continue upsizing coverts in flood threat areas.
  
  - **Time Frame**: Annually
  - **Funding**: City
  - **Estimated Cost**: $600,000
  - **Staff**: City Administration, Public Works, Engineer, etc.
  - **Jurisdictions**: Centerville City

**Wildland Fire - Problem Identification**: A significant portion of Centerville City is along the foothills creating an urban / wildland interface. Prevent Wildfires from coming into the City.

- **Goal**: Minimize the impact of wildfire damage in high potential areas.
- **Objective (Priority MEDIUM)**: Fuels Mitigation.
  
  **Action 1**: Work with homeowners to remove fuels and create defensible spaces and maintain fire break roads.
  
  - **Time Frame**: Ongoing
  - **Funding**: City funds/State/Federal grant
  - **Estimated Cost**: unknown
**City Goals - Davis Co PDMP**

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

**Staff:** City Administration, Public Works, Engineer, etc.

**Jurisdictions:** Centerville City

**Action 2:** Create a public service campaign to inform residents about fuels reduction, fire breaks, defensible spaces and other mitigation tactics.

- **Time Frame:** Estimated completion will be the fall of 2022.
- **Funding:** City funds/State/Federal
- **Estimated Cost:** unknown
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** Centerville City

**Action 3:** Participate in the CWPP (Community Wildfire Protection Plan)

- **Time Frame:** Documentation of man hours and community service will be done annually.
- **Funding:** Federal, State, Local, citizen in-kind participation.
- **Estimated Cost:** Unknown
- **Staff:** City Administration, Public Works, Centerville community involvement, State workers
- **Jurisdiction:** Centerville City

**Dam Failure - Problem Identification:** Multiple water containment systems located throughout Centerville are aging.

**Goal:** Prevent dam failures.

- **Objective (Priority LOW):** Provide citizens within the flood area of dams with information on flash flooding and hazards associated with dam failure.

  - **Action:** Make information available to citizens about flash flooding and other hazards.
  - **Time Frame:** Ongoing
  - **Funding:** City funds
  - **Estimated Cost:** Minimal
  - **Staff:** City Administration
  - **Jurisdictions:** Centerville City

**Severe Weather - Problem Identification:** Severe downslope winds from Wasatch Mountain Range.

**Goal:** Reduce the threat of severe weather damage to infrastructure.

- **Objective (Priority MEDIUM):** Encouraging wind-proofing measures in new construction.

  - **Action:** Encourage new construction to implement wind-proofing into building plans.
City Goals - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

Time Frame: Ongoing
Funding: City Funds
Estimated Cost: Minimal
Staff: Community Development, Building Department, etc.
Jurisdictions: Centerville City

Landslide - Problem Identification: With Centerville being located at the foothills of the Wasatch Range in Davis County, landslides are possible.

Goal: Mitigate the effects of landslides.

Objective (Priority LOW): Creating a plan to study areas where landslides may occur.

Action: Discuss using GIS Mapping or other means to determine where landslides may occur and taking mitigative actions where necessary.

Time Frame: Unknown, depending on funding
Funding: City Funds
Estimated Cost: Minimal
Staff: City Administration, GIS, etc.
Jurisdictions: Centerville City

Clearfield City

Background
Clearfield was one of the last communities to be settled in the northern part of Davis County (1877). Hunters and Native American Warriors knew this land before the first white man settled here. They referred to it as the land of wind and sand. But it was the roar of the train’s engine that first awakened the area in 1869 and stirred the sleeping Sand Ridge, which it was once known as until the name was later changed to Clearfield in order to attract agricultural settlers.

Clearfield City has a total land area of 7.8 square miles, and a population of 30,112 as of the 2010 Census, making it the third largest city in Davis County, behind Layton and Bountiful. Clearfield City has an average elevation of 4,327 feet above sea level. The lowest point within the boundaries of the city is 4,314 feet at the intersection of 1000 West and Antelope Drive on the city’s western edge and the highest is 4,711 feet at a point that is within the city’s northeast corner, but physically located on Hill Air Force Base property along Constitution Way in their housing area.

The City is in the north central portion of Davis County. The county is surrounded by the Great Salt Lake to the west and the steep Wasatch mountain range on the east, although neither of these notable natural landmarks is physically within the city boundaries. Directly encircling Clearfield are the cities/areas of
Sunset City to the north, Clinton City to the northwest, Syracuse City and West Point City to the west, Layton City to the south and east, and Hill Air Force Base military installation to the northeast.

There are no major lakes or rivers within the city. There are a few small ponds, mostly at public parks or on privately owned property. The only significant waterway in the city is the Weber and Davis Canal along the east and northeast edge of the city that extends both north and south of the city boundaries. The Clearfield Canal Trail parallels the canal for a portion of its trip through Clearfield.

Community Buildings and Infrastructure Status

Clearfield City’s geographical area holds a dense population. Dedicated to the quality of life for its residents, Clearfield City works in partnership with neighboring communities to better its infrastructure by developing partnerships when needed, exploring funding opportunities, and improving its critical and essential infrastructure, maintaining today’s building and safety standards as personnel, funding, and resources allow.

Specific Community Hazards

- **Earthquake.** Clearfield is in the portion of Davis County where it is near the low lying areas of the Great Salt Lake where the water table is near the surface and would be susceptible to liquefaction in addition to shaking.

- **Flooding.** Clearfield is located in relative proximity to the Great Salt Lake and has several smaller lakes, ponds, and streams that have the potential to flood during flash flooding or severe amounts of rain.

- **Critical Roads.** Critical Roadways for lifeline infrastructure. A seismic event could separate access routes between east Clearfield and west Clearfield due to failure of overpasses

- **Windstorm.** Severe downslope winds form Wasatch Mountain Range

- **Land Subsidence.** Several structures in the city have experienced various degrees of settlement and require further understanding / mitigation solutions.

- **Multi-Hazards.** The City does not have a detailed emergency management plan in place but it does have a All Hazard EOP and communication networks are vulnerable.

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power &amp; Gas Utilities</td>
<td>Complete loss of utilities</td>
<td>Enhance security</td>
</tr>
<tr>
<td>10.5 Million Gallon water tank</td>
<td>Damage and destruction, loss of water supply to city</td>
<td>Inspect and maintain</td>
</tr>
<tr>
<td>Facility</td>
<td>Hazard / Risk</td>
<td>Mitigation</td>
</tr>
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<td>--------------------------------</td>
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<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>MOC Maintenance Operation Center</td>
<td>Earthquake collapse</td>
<td>New state of the art building Completed 2020</td>
</tr>
<tr>
<td>City Library</td>
<td>Earthquake Collapse</td>
<td>New state of the art Building Compete date Fall 2021</td>
</tr>
<tr>
<td>City Office</td>
<td>Loss of vital city records; communication vehicles; day to day functions</td>
<td>Provide for city office/EOC survivability following an earthquake</td>
</tr>
<tr>
<td>Public Works Building</td>
<td>Loss/damage to response equipment</td>
<td>N/A</td>
</tr>
<tr>
<td>EOC</td>
<td>Loss of operability for EOC</td>
<td>Secondary or replace EOC in MOC</td>
</tr>
<tr>
<td>Dispatch center</td>
<td>Loss of power for critical operations and communications</td>
<td>Installed IPU</td>
</tr>
<tr>
<td>City Public Works building</td>
<td>Damage and destruction to facilities and vehicles from earthquake</td>
<td>Enhance structural integrity of infrastructure</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Police Department</td>
<td>Loss of vital police records; impact to day to day functions</td>
<td>TBD</td>
</tr>
<tr>
<td>Public Works Building</td>
<td>Loss/damage to response equipment</td>
<td>3 phase New building MOC</td>
</tr>
</tbody>
</table>

**STORMWATER INFRASTRUCTURE**

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stormwater pipes and drains</td>
<td>Flooding</td>
<td>Inspect and maintain</td>
</tr>
</tbody>
</table>

**ARTERIAL ROADS**

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interstate 15</td>
<td>Destruction, evacuation and response concerns</td>
<td>Maintenance and inspection</td>
</tr>
<tr>
<td>Utah state route 193</td>
<td>Destruction, evacuation and response concerns</td>
<td>Maintenance and inspection</td>
</tr>
<tr>
<td>State Street</td>
<td>Destruction, evacuation and response concerns</td>
<td>Maintenance and inspection</td>
</tr>
<tr>
<td>300 North</td>
<td>Destruction, evacuation and response concerns</td>
<td>Maintenance and inspection</td>
</tr>
<tr>
<td>1700 south/Antelope Dr</td>
<td>Destruction, evacuation and response concerns</td>
<td>Maintenance and inspection</td>
</tr>
</tbody>
</table>

**Mitigation Efforts Since the 2016 Plan**

- Clearfield city added a UPS uninterruptible Power System for our dispatch center and city building $80K
- We built a new state of the art Maintenance Operations Center(MOC) which is up to code. Phase 1 and 2 Completed 2020 cost $$
Clearfield City has updated the City Emergency Operations Plan (EOP)

**Mitigation Strategies (2021-2026)**

**Earthquake - Problem Identification:** Clearfield is in the portion of Davis County where it is near the low-lying areas of the Great Salt Lake where the water table is near the surface and would be susceptible to liquefaction in addition to shaking. Liquefaction is a loss of strength in some saturated granular soil, which can result in slope failure or substantial settlement of structures. Most habitable land in the City is either moderately or highly susceptible to liquefaction. Most of this land is either covered with single or two story residential structures, manufacturing and business buildings that would likely suffer minor to moderate damage due to liquefaction. However, many underground utilities could be severely damaged. Summer flash flooding can cause flooding problems in Clearfield City. The loss of City Building and infrastructure would be likely.

**Goal:** Third phase to MOC with possible EOC

**Objective #1 (Priority HIGH): Earthquake - Problem Identification:** Critical facilities do not meet seismic standards.

**Goal:** Reduce the threat of earthquake damage in the city.

**Objective (Priority HIGH):** Retrofit facilities to seismic standards.

**Action 1:** Retrofit, modify and/or Replace the Maintenance Operation Center (MOC) building to bring into compliance with current seismic code. Three phases

- **Time Frame:** 2025
- **Funding:** City funds/State/Federal grant
- **Estimated Cost:** unknown
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** Clearfield city

- **Time Frame:** 2025
- **Funding:** City funds/State/Federal grant
- **Estimated Cost:** Sunknown
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** Clearfield City

**Objective #2 (Priority MEDIUM):** Educate the general public about earthquakes and the need to secure the contents of their homes and offices.

**Action:** Hold an Emergency Preparedness Fair to educate the public on the need to secure the contents of their homes and offices.

- **Time Frame:** 2024
- **Funding:** City funds
- **Estimated Cost:** $1,500
- **Staff:** Emergency Management
Jurisdictions: Clearfield City

Objective #3 (Priority MEDIUM): Retrofit water lines and storm drain infrastructure to meet seismic standards.

**Action 1:** Upgrade existing roads and utilities infrastructure where growth has exceeded capacity.

- **Time Frame:** 2021-2025
- **Funding:** City funds
- **Estimated Cost:** unknown
- **Staff:** City Administration, Public Works, Engineer, etc.

**Jurisdictions:** Clearfield City

**Action 2:** Design and upgrade culinary water storage tanks for some time over the next 5 to 10 years.

- **Time Frame:** 2021-2025
- **Funding:** City funds/State/Federal grant
- **Estimated Cost:** unknown
- **Staff:** City Administration, Public Works, Engineer, etc.

**Jurisdictions:** Clearfield City

**Action 3:** The City performs continuous maintenance and repair to keep the system in good working order for both fire flow and earthquake resistance.

- **Time Frame:** 2021-2025
- **Funding:** City funds/State/Federal grant
- **Estimated Cost:** $ Unknown
- **Staff:** City Administration, Public Works, Engineer, etc.

**Jurisdictions:** Clearfield City

**Action 4:** Clearfield City has an ongoing, annual program of replacing an aging 4” cast iron culinary water pipe, which is very susceptible to earth movement, with 8-24” flexible PVC pipe, which is better able to withstand earth movement caused by a seismic event.

- **Time Frame:** Ongoing
- **Funding:** City funds
- **Estimated Cost:** UNKNOWN
- **Staff:** City Administration, Public Works, Engineer, etc.

**Jurisdictions:** Clearfield City
Flooding - Problem Identification: Clearfield is located in relative proximity to the Great Lakes and has several smaller lakes, ponds, and streams that have the potential to flood during flash flooding or severe amounts of rain.

Goal: Mitigate the impact of flooding in high-threat areas.

Objective (Priority MEDIUM): Providing the public with knowledge about the hazards of flooding.

Action: When requested, providing information to citizens about local flood hazard, flood insurance, and flood protection measures.

Time Frame: Ongoing

Funding: City funds

Estimated Cost: Minimal

Staff: City Administration

Jurisdictions: Clearfield City

Clinton City

Background

Clinton City is located in the Northwest portion of Davis County, Utah. Clinton City is bordered by Sunset City to the east, Clearfield City to the southeast, and West Point City to the southwest. The northern border of Clinton is the Weber County line, with the city of Hooper to the northwest and Roy City to the north and northeast. Clinton City is part of the Ogden–Clearfield, Utah Metropolitan Statistical Area. Clinton City, then part of Layton City, was settled in the 1870’s by James Hill and his family. Early settlers used it to graze their animals but, even though the land was fertile, culinary water had to be hauled in from the Weber River. The area was commonly called The Range, Sand Ridge, The Basin and The Summit. The first school was built in 1885 just south of the cemetery.Clinton would not become an official town until 1936, and its growth was relatively small until the 1960’s. Clinton grew rapidly during the 1990s and continues to see rapid growth, with an estimated population of 22,499 in 2024.

Community Buildings and Infrastructure Status

As Clinton City continues to see substantial growth, they have focused much attention on the improvements of critical infrastructure. Clinton City maintains the utmost standards of public safety along with current construction methods and seismically sound structures. The goals of Clinton City moving forward demonstrate their commitment to maintaining essential infrastructure and the safety of its residents well into the future.

Specific Community Hazards

- Earthquake: Clinton proximity to the mountains and the Wasatch Fault puts it at high risk of earthquake damage.
● **Flooding:** Clinton is susceptible to flooding from storm events and runoff or failure of a critical area infrastructure.

● **Severe Weather:** Clinton City is susceptible to severe weather (rain, snow, wind, lightning, etc.)

● **Wildland Fire:** Clinton City has a walking/running/biking trail on the old Denver Rio Grande western Railroad track system. There is approximately 6,000’ to 8,000’ of trail that is covered with an abundance of natural fuels.

<table>
<thead>
<tr>
<th>CRITICAL AREA FACILITIES + INFRASTRUCTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility</td>
</tr>
<tr>
<td>Well Water (1800 N)</td>
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<tr>
<td>Culinary Water Tanks (HAFB)</td>
</tr>
<tr>
<td>Underground Petroleum Pipelines</td>
</tr>
<tr>
<td>Rocky Mountain Power Plant Substation</td>
</tr>
<tr>
<td>Dominion Natural Gas Substation (High pressure)</td>
</tr>
<tr>
<td>Water lines</td>
</tr>
<tr>
<td>Sewer lines</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MUNICIPAL BUILDINGS + INFRASTRUCTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility</td>
</tr>
<tr>
<td>City Offices</td>
</tr>
<tr>
<td>Public Works building</td>
</tr>
</tbody>
</table>
### City Goals - Davis Co PDMP

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Department/EOC</td>
<td>Loss of vital fire records; loss/damage to response equipment; Loss of operability for EOC</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Police Department</td>
<td>Loss of vital police records; impact to day to day functions</td>
<td>Add backup power generator</td>
</tr>
<tr>
<td>IT Network and Server</td>
<td>Loss of communications</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Fire Department generator</td>
<td>Loss of power</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Sewer lift station</td>
<td>Sewer backup</td>
<td>Maintenance and inspections; Enhance security</td>
</tr>
<tr>
<td>Sewer lift station generator</td>
<td>Loss of power; sewer backup</td>
<td>Maintenance and inspections</td>
</tr>
</tbody>
</table>

### STORMWATER INFRASTRUCTURE

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple stormwater retention</td>
<td>Flooding</td>
<td>Maintenance and inspections</td>
</tr>
<tr>
<td>Stormwater lines</td>
<td>Damage and destruction; flooding</td>
<td>Maintenance and inspections</td>
</tr>
</tbody>
</table>

### ARTERIAL ROADS

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1800 North</td>
<td>Destruction, evacuation and response concerns</td>
<td>State Road</td>
</tr>
<tr>
<td>2000 West</td>
<td>Destruction, evacuation and response concerns</td>
<td>State Road</td>
</tr>
<tr>
<td>800 North</td>
<td>Destruction, evacuation and response concerns</td>
<td>Maintenance and inspections</td>
</tr>
<tr>
<td>1300 North</td>
<td>Destruction, evacuation and</td>
<td>Maintenance and inspections</td>
</tr>
<tr>
<td>Location</td>
<td>Destruction, evacuation and response concerns</td>
<td>Maintenance and inspections</td>
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<tr>
<td>2300 North</td>
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<tr>
<td>3000 West</td>
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<tr>
<td>1500 West</td>
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</tr>
<tr>
<td>1000 West</td>
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</tbody>
</table>

**Mitigation Efforts Since the 2016 Plan**

- The City has maintained a capital improvements program to guide its infrastructure investments every year since 2016. One of core principles that help the city prioritize their projects is the impact to public safety and emergency preparedness.
- Clinton has recently started an initiative to update its EOP.

**Mitigation Strategies (2021-2026)**

**Earthquake - Problem Identification:** Davis County contains the highest density of faults in the state, yet no major earthquake has been recorded. According to geologists from the Utah Geological Society, Davis County could experience magnitude 7.0 to 7.5 earthquakes. Ground displacement and liquefaction-induced ground failure that could affect critical infrastructure and structures within our community.

**Goal:** Work toward becoming more earthquake resilient.

**Objective (Priority Medium):** Mitigate the effects of earthquakes.

**Action 1:** Clinton City has an ongoing program of replacing aging cast iron culinary water pipe, which is very susceptible to earth movement, with flexible PVC pipe, which is better able to withstand earth movement caused by a seismic event.

- **Time Frame:** ongoing
- **Funding:** City funds
- **Estimated Cost:** $5 to 7 million
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** Clinton City

**Action 2:** Clinton City is adding a new culinary water reservoir and deep well at 2200 North 730 West. This reservoir and deep well will be within city limits. The city’s main culinary water system is currently stored on Hill Air Force Base. This will also give us a
City Goals - Davis Co PDMP

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secondary culinary water supply if the main culinary water reservoirs or piping fail. This will increase city water storage and help Clinton City become more earthquake resilient. The land for this project has been purchased already by the City.

**Time Frame**: 2024
**Funding**: TBD
**Estimated Cost**: TBD
**Staff**: City Administration, Emergency Management, Public Works, Engineer, etc.

**Jurisdictions**: Clinton City

**Action 3**: Unreinforced Masonry Risk Reduction Program. Evaluate to determine if there are and how many structures in Clinton City were built with unreinforced masonry construction. Such structures can more easily succumb to the movement and shaking during an earthquake.

**Time Frame**: 2021-2025
**Funding**: TBD
**Estimated Cost**: TBD
**Staff**: City Administration, Emergency Management, Public Works, Engineer

**Jurisdictions**: Clinton City

**Flooding - Problem Identification**: Adding an additional storm drain in Cranefield subdivision to help with potential flooding problems in the area. The storm water dumps into the golf course pond and from there into a slough. Bad water flow issues and vegetation going to the slough have caused water backup problems.

**Goal**: Fix water flow issues and will help with flooding issues in the event of severe weather in that portion of the city.

**Objective (Priority Medium)**: Reduce risk of flooding in major subdivisions.

**Action**: Conduct infrastructure improvements.

**Time Frame**: Completed by June 2022
**Funding**: City funds
**Estimated Cost**: $730,000.00
**Staff**: City Administration, Public Works, Engineer, etc.

**Jurisdictions**: Clinton City

**Severe Weather - Problem Identification**: Severe Weather: Clinton City is susceptible to severe weather (rain, snow, wind, lightning, etc.)

**Goal**: Reduce the threat of severe weather damage to infrastructure.
**City Goals - Davis Co PDMP**

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**Objective (Priority MEDIUM):** Encouraging weather-proofing measures in new construction.

**Action:** Encourage new construction to implement weather-proofing into building plans.

- **Time Frame:** Ongoing
- **Funding:** City Funds
- **Estimated Cost:** Minimal
- **Staff:** Community Development, Building Department, etc.

**Jurisdictions:** Clinton City

---

**Wildfire - Problem Identification:** Clinton City has a walking/running/biking trail on the old Denver Rio Grande western Railroad track system. There is approximately 6,000’ to 8,000’ of trail that is covered with an abundance of natural vegetation and fuels.

**Goal:** To reduce and maintain the amount of fire load and growth in the area.

**Objective (Priority Medium):**

**Action:** Cut, trim, remove, and maintain trees and other natural vegetation in the area.

- **Time Frame:** ongoing
- **Funding:** City funds
- **Estimated Cost:** $10,000 every year
- **Staff:** City Administration, Public Works, Engineer, etc.

**Jurisdictions:** Clinton City

---

**Multi-Hazards - Problem Identification:** Update Emergency Operations Plan (EOP) in place and improve communication networks that are vulnerable. Improve communications, mitigate the impacts of and be prepared for emergency situations and hazards.

**Goal:** Have an updated and comprehensive Emergency Operations Plan (EOP)

**Objective (Priority HIGH):**

**Action 1:** Update an Emergency Management Plan.

- **Time Frame:** 2021
- **Funding:** City funds
- **Estimated Cost:** $10,000
- **Staff:** All Departments etc.

**Jurisdictions:** Clinton City

**Action 2:** Enhance IT Network and Server Security.

- **Time Frame:** TBD
**City Goals - Davis Co PDMP**

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**Funding:** City funds  
**Estimated Cost:** TBD  
**Staff:** City Administration  
**Jurisdictions:** Clinton City

**Action 3:** Enhance Multi-hazard outreach program through city website, social media, and community training.  
**Time Frame:** On-going  
**Funding:** City funds  
**Estimated Cost:** TBD  
**Staff:** All Departments  
**Jurisdictions:** Clinton City

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**Farmington City**

**Background**

Farmington City is a picturesque community nestled on the foothills of the Wasatch Range in Davis County. With a population of about 22,500, and approximately 7,000 households, Farmington serves as the county seat and offers a variety of entertainment to include Utah’s largest amusement park (Lagoon), Legacy Fairgrounds, Station Park Shopping Center, and various outdoor recreation opportunities to include nearly two hundred miles of walking and hiking trails. Housing options include farming estates, dense residential communities, care of the aged centers, townhomes and homes with access to Interstate 15, Legacy Highway, and Highway 89 for commuters close to Ogden (to the north) and Salt Lake City (to the south). Farmington was settled in 1847 and remained a bedroom community regardless of being the county seat and location of Utah’s largest amusement park. This changed in 2011 when commercial and residential development exploded and continues to expand at the time of this report. Farmington was recently ranked #14 of “Best Places to Live” in a nationwide probe performed by Money Magazine.

Although a part of the Ogden-Clearfield Metropolitan Statistical Area, Farmington serves as a bedroom community to both Ogden City and Salt Lake City. However, due to the very narrow entrance into Salt Lake County, roads between the counties often reach near-gridlock traffic during rush hour. The FrontRunner commuter rail has been running since April 2008, and the Legacy Parkway was opened in 2008. These were built to help alleviate the traffic load on Interstate 15 through the Farmington area. Farmington City occupies an area of approximately 10 square miles; however, provides critical services for surrounding areas of unincorporated Davis County. Farmington is a gateway community to both North and South Davis County and acts as a main arterial pathway for ground and rail transportation.

Farmington operates under a weak mayor form of government, with an elected Mayor and five Council Members. The day-to-day operations and the majority of executive authorities are delegated to a City Manager, who works hand-in-hand with the Mayor to ensure all city operations are well-run. City operations include a 24-7 police department, 24-7 fire and ambulance department, water, garbage/recycling, streets, stormwater, snow removal, community development, parks and recreation
programming. Emergency management and pre-disaster mitigation responsibilities are coordinated by the City Manager.

**Community Buildings and Infrastructure Status**

Over the last decade, Farmington City has exploded with both residential and commercial buildings. As this trend is projected to continue into the future, Farmington City has been focused on improving its infrastructure to protect its essential functions and maintaining critical services for its citizens and visitors. As the community grows, so do the standards of Farmington City in their recognized responsibility to their community. Farmington City is dedicated to upgrading infrastructure when needed and ensuring all new infrastructure meets currency safety, health, and building standards.

**Specific Community Hazards**

- **Earthquake.** Farmington's proximity to the mountains and the Wasatch Fault puts it at high risk of earthquake damage.
- **Flooding.** Farmington is located along the Wasatch Mountain Front. During 1983, city infrastructure, homes, and trails sustained significant damage from mudslides and flooding.
- **Land Subsidence.** Several structures in the city have experienced various degrees of settlement and require further understanding / mitigation solutions.
- **Wildland Fire.** Much of Farmington City is located against the foothills, increasing the risk (HIGH) for wildland fires. Farmington also provides initial fire and ambulance response to emergencies within and above Farmington Canyon areas that encompass over 30 structures.
- **Dam Failure.** Primary and secondary water systems throughout the community utilize multiple storage reservoirs. Certain components of this delivery and storage systems pose a high failure risk in the event of a seismic incident.
- **Severe Weather.** Severe downslope winds form Wasatch Mountain Range.
- **Chemical Release.** Potential crude oil release, ultra-high volume (52 gallons per second at 200 psi) within the center of Farmington City – Station Park and Legacy Center area. Interstate and heavy rail also passes through Farmington with countless quantities of hazardous materials.
- **Critical Roads.** Critical Roadways for lifeline infrastructure. A seismic event could separate access routes between east Farmington and west Farmington due to failure of overpasses.
- **Multi-Hazards.** The City does not have a detailed emergency management plan in place and communication networks are vulnerable.

<table>
<thead>
<tr>
<th>CRITICAL AREA FACILITIES + INFRASTRUCTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility</td>
</tr>
<tr>
<td>Well / Water Treatment Plants</td>
</tr>
<tr>
<td>Upper Reservoirs</td>
</tr>
</tbody>
</table>
### City Goals - Davis Co PDMP

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well</td>
<td>Water contamination</td>
<td>Enhance security</td>
</tr>
</tbody>
</table>
| Underground petroleum pipelines        | Major Hazardous Materials release to include crude oil within critical city infrastructure and commerce area of town. | Enhance security
|                                        |                                                                             | Increased protection from new and ongoing construction                    |
| Irrigation Reservoirs                  | Water contamination, dam breach w/ flooding                                 | Enhance security                                                          |
| Power & Gas Utilities                  | Complete loss of utilities                                                 | Enhance security                                                          |
| Critical Roadway & Bridges             | Loss of emergency access / city split into two by I-15, Legacy Hwy and Hwy 89. | Enhance security                                                          |

<table>
<thead>
<tr>
<th><strong>MUNICIPAL BUILDINGS + INFRASTRUCTURE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility</td>
</tr>
<tr>
<td>City Offices</td>
</tr>
<tr>
<td>City Public Works building</td>
</tr>
<tr>
<td>Police Department</td>
</tr>
<tr>
<td>Public Works Building</td>
</tr>
<tr>
<td>IT Network and Server</td>
</tr>
<tr>
<td>EOC</td>
</tr>
<tr>
<td>Main Generator for City Office</td>
</tr>
<tr>
<td>Farmington Fire Station #71</td>
</tr>
<tr>
<td>Farmington Fire Apparatus Storage BLD (West Side) #72</td>
</tr>
<tr>
<td>Well Houses</td>
</tr>
</tbody>
</table>
### STORMWATER INFRASTRUCTURE

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple storm water retention basins throughout the city</td>
<td>Flooding</td>
<td>Dredge and de-silt</td>
</tr>
</tbody>
</table>

### ARTERIAL ROADS

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Street (North to South)</td>
<td>Destruction, evacuation and response concerns</td>
<td>N/A</td>
</tr>
<tr>
<td>Sheppard Lane (West to East)</td>
<td>Destruction, evacuation and response concerns</td>
<td>N/A</td>
</tr>
<tr>
<td>200 East (North to South)</td>
<td>Destruction, evacuation and response concerns</td>
<td>N/A</td>
</tr>
<tr>
<td>Park Lane (West to East)</td>
<td>Destruction, evacuation and response concerns</td>
<td>N/A</td>
</tr>
<tr>
<td>Clark Lane / State Street (East to West)</td>
<td>Destruction, evacuation and response concerns</td>
<td>N/A</td>
</tr>
<tr>
<td>Grovers Lane &amp; 1525 West</td>
<td>Destruction, evacuation and response concerns</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Mitigation Efforts Since the 2016 Plan**

- Farmington City is updating the City Emergency Operations Plan (EOP).

**Mitigation Strategies (2021-2026)**

**Earthquake - Problem Identification:** Critical facilities do not meet seismic standards.

**Goal:** Perform seismic engineering evaluation FY2022

**Objective (Priority HIGH):** Retrofit facilities to seismic standards.

**Action 1:** Retrofit Farmington City Fire Station #71 building to bring into compliance with current seismic code.

**Time Frame:** 2023

**Funding:** City funds/State/Federal grant

**Estimated Cost:** $350,000

**Staff:** City Administration, Public Works, Engineer, etc.

**Jurisdictions:** Farmington City
**City Goals** - Davis Co PDMP

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

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**Action 2**: Identify / pre-plan the entire culinary water delivery network and reservoirs city-wide to determine earthquake survivability and modify accordingly.

- **Time Frame**: 2022-2023
- **Funding**: City funds/State/Federal grant
- **Estimated Cost**: $500,000
- **Staff**: City Administration, Public Works, Engineer, etc.
- **Jurisdictions**: Farmington City

**Action 3**: Replace multiple aging high pressure gas lines which serve a large portion of Farmington City (by Dominion Gas). These gas lines cross several fault traces, and are subject to failure in the event of fault movement or a reasonably expected seismic event.

- **Time Frame**: 2022-2026
- **Funding**: utility company, ARPA
- **Estimated Cost**: minimal
- **Staff**: City / Questar Gas.
- **Jurisdictions**: Farmington City

**Action 4**: Farmington City has an ongoing, annual program of replacing aging cast iron culinary water pipe, which is very susceptible to earth movement, with flexible PVC pipe, which is better able to withstand earth movement caused by a seismic event.

- **Time Frame**: ongoing
- **Funding**: City funds
- **Estimated Cost**: $900,000/yr
- **Staff**: City Administration, Public Works, Engineer, etc.
- **Jurisdictions**: Farmington City

---

**Flooding - Problem Identification**: Farmington City is located just off of the Farmington Bay and has smaller lakes, ponds, and streams that have the potential to flood during flash flooding or heavy rainfall.

**Goal**: Mitigate the impact of flooding in high-threat areas.

**Objective (Priority MEDIUM)**: Providing the public with knowledge about the possibility of flooding.

- **Action**: When requested, provide information to citizens about local flood hazard, flood insurance, and flood protection measures.
  - **Time Frame**: Ongoing
  - **Funding**: City funds
  - **Estimated Cost**: Minimal
  - **Staff**: City Administration

---

6. City Goals - 66
Jurisdictions: Farmington City

Landslide - Problem Identification: Several homes in the city have experienced substantial settlement.

Goal: Reduce the threat of earthquake damage in the city.

Objective (Priority MEDIUM): Conduct an analysis of why this is occurring and seek to discover mitigation solutions.

Action: Continue with residential inquiries, monitoring and evaluations of existing established benchmarks and boring when indicated.

Time Frame: 2023-2025
Funding: City funds
Estimated Cost: unknown
Staff: Engineer, consultants.

Jurisdictions: Farmington City

Wildland Fire - Problem Identification: A large portion of Farmington City is along the foothills with a significant history of urban/wildland interface fires.

Goal: Reduce the threat of wildfire damage in the city.

Objective (Priority HIGH): Fuels mitigation.

Action 1: Work in tandem with homeowners and government programs, via public education campaigns; such as, FireWise to educate and remove fuels to better facilitate defensible spaces.

Time Frame: unknown
Funding: City funds/State/Federal grant
Estimated Cost: unknown
Staff: City Administration, Public Works, Engineer, etc.

Jurisdictions: Farmington City

Action 2: Continue to utilize state and federal resources such as: Federal Excess Personal Property (FEPP) programs to help provide adequate equipment and assets to mitigate wildland / interface fires.

Time Frame: unknown
Funding: City funds/State/Federal grant
Estimated Cost: unknown
Staff: City Administration, Public Works, Engineer, etc.

Jurisdictions: Farmington City
**City Goals - Davis Co PDMP**

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

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**Dam Failure - Problem Identification**: Multiple water containment systems located throughout Farmington are aging and subject to various stages of decay. Based on assessment findings, these containment vessels will require different levels of repair and possible replacement.

**Goal**: Continue to conduct ongoing replacement programs of critical infrastructure.

**Objective (Priority HIGH)**: Enhance the resiliency of Farmington city culinary water system.

**Action**: Repair and/or Replace various culinary water containment reservoirs.

- **Time Frame**: 2024
- **Funding**: City funds/State/Federal grant
- **Estimated Cost**: unknown
- **Staff**: City Administration, Public Works, Engineer, etc.
- **Jurisdictions**: Farmington City

---

**Severe Weather - Problem Identification**: Severe downslope winds form Wasatch Mountain Range.

**Goal**: Reduce the threat of severe weather damage in the city.

**Objective (Priority MEDIUM)**: Structural building integrity improvements.

**Action**: Review proper building and development codes.

- **Time Frame**: 2024
- **Funding**: City funds/State/Federal grant
- **Estimated Cost**: $2,500
- **Staff**: Community Development, Building Department
- **Jurisdictions**: Farmington City

---

**Chemical Release - Problem Identification**: Potential ultra-high volume crude oil release (52 gallons per second at 200 PSI) within the center of Farmington City – Station Park and Legacy Center area.

**Goal**: Reduce the threat of chemical release event damage in the city.

**Objective (Priority MEDIUM)**: Continue working with pipeline vendors, ensuring that adequate training for all personnel and specialized equipment remains available.

**Action**: Ongoing / proper maintenance and training.

- **Time Frame**: annually
- **Funding**: City funds
- **Estimated Cost**: $5,000
- **Staff**: City Administration, Public Works, Engineer, etc.
- **Jurisdictions**: Farmington City

Goal: Improve the resiliency of the local road systems.

Objective (Priority MEDIUM): Provide unrestricted access or critical roadways for all lifeline infrastructure.

Action: Identify & map lifeline infrastructure.

Time Frame: 2024

Funding: City funds/State/Federal grant

Estimated Cost: $10,000

Staff: Public Works, Engineer, etc.

Jurisdictions: Farmington City

Multi-Hazards - Problem Identification: The City does not have a detailed emergency management plan in place and communication networks are vulnerable.

Goal: Develop a functional EOP and communication infrastructure.

Objective (Priority HIGH): Improve communications, mitigate the impacts of and be prepared for emergency situations and hazards.

Action 1: Create a detailed Emergency Management Plan.

Time Frame: 2023

Funding: Federal and Local

Estimated Cost: unknown

Staff: City Administration, Public Works, Engineer, etc.

Jurisdictions: Farmington City


Time Frame: 2023

Funding: Federal and Local

Estimated Cost: unknown

Staff: City Administration, Public Works, Engineer, etc.

Jurisdictions: Farmington City

Fruit Heights City

Background

Fruit Heights City is located between Kaysville on the west and Farmington on the south. The community is located on the foothills of the Wasatch Range in Davis County. With an estimated population of 6221 (2024 Census) comprising approximately 1800 households, Fruit Heights is one of the more affluent
communities in the state. The city grew rapidly during the 1970-1980's, but is nearing its "build out" stage with few open areas available for development.

Fruit Heights was originally known as Mountain Road. It was the first road between Salt Lake City and Ogden City. For nearly 50 years, Kaysville folks came to the Mountain Road, first to get their mail from Pony Express riders and later from stagecoach drivers. Early pioneer families settled along the Old Mountain Road around 1850.

John Bair had his own saw mill, located about where the Rock Loft is now. The mill furnished most of the wood for the early homes. Over the years settlers changed the area to beautiful farms and orchards. Water was very scarce. Ditches had to be dug. Some families were able to get water from springs in the mountains, but many had to use water from Haight's Creek, Baer Creek and irrigation ditches. It was used for culinary purposes, farm animals and irrigation. This situation continued until 1939.

It was then the people voted to incorporate and become a town, and what was known as the area along the "Old Mountain Road" was named Fruit Heights, because of the fruit industry.

Fruit Heights operates under a weak mayor form of government, with an elected Mayor and five Council Members. The day-to-day operations and the majority of executive authorities are delegated to a City Manager, who works closely with the Mayor to ensure all city operations are well-run. City operations include a full time Public Works Department. Fruit Heights City contracts with Kaysville for Fire and Emergency Medical Services (EMS) and with the Davis County Sheriff's Office for law enforcement and paramedic response. Emergency management and pre-disaster mitigation responsibilities are coordinated by the Fruit Heights City Manager.

Community Buildings and Infrastructure Status

Given the fact that Fruit Heights is close to the “build out” stage, as heretofore mentioned, much of the improvement strategies have been dedicated to existing infrastructure. Fruit Heights is dedicated to maintaining the quality of life for its citizens, therefore focusing time, funding, resources, and the highest level of standards on infrastructure improvements. These improvements are subject to the availability of funds, personnel and resources.

Specific Community Hazards

- **Earthquake.** Fruit Heights proximity to the mountains and the Wasatch Fault puts it at high risk of earthquake damage.
- **Flooding.** Fruit Heights is located along the Wasatch Mountain Front. During the 1983 declared flooding disaster, City facilities, trails, and homes sustained significant damage.
- **Wildland Fire.** Much of Fruit Heights City is located in the foothills, increasing the risk for wildland fires.
- **Dam failure.** The secondary water system throughout the community has small storage reservoirs.

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRITICAL AREA FACILITIES + INFRASTRUCTURE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**City Goals - Davis Co PDMP**

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

<table>
<thead>
<tr>
<th>Culinary water storage tanks</th>
<th>The city has 2 water storage tanks that may experience water contamination, flooding, and failure due to earthquake</th>
<th>Enhance security, and upgrade water distribution system</th>
</tr>
</thead>
<tbody>
<tr>
<td>City's Culinary Water Main</td>
<td>Aging infrastructure, poor or improper installations, and ground settling</td>
<td>As road projects occur or as the water main breaks, they are repaired or replaced with better materials, and better installation methods to protect the piping and extend the life of the pipe.</td>
</tr>
</tbody>
</table>

### MUNICIPAL BUILDINGS + INFRASTRUCTURE

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<tr>
<td>City Offices/EOC</td>
<td>Loss of vital city records; communication vehicles; day to day functions.</td>
<td>Provide for city office/EOC survivability following an earthquake</td>
</tr>
<tr>
<td>Public Works Building</td>
<td>Loss/damage to response equipment</td>
<td>N/A</td>
</tr>
<tr>
<td>Main Generator for City Office</td>
<td>Loss of power for critical operations</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Culinary Water Pump House</td>
<td>Loss of power for critical operations</td>
<td>Enhance security</td>
</tr>
</tbody>
</table>

### STORMWATER INFRASTRUCTURE

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stormwater detention basins</td>
<td>Flooding: excessive rainfall overfilling banks</td>
<td>Downstream protection of property</td>
</tr>
</tbody>
</table>

### ARTERIAL ROADS

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mountain Road</td>
<td>Destruction, evacuation and response concerns</td>
<td>City and State Maintained</td>
</tr>
<tr>
<td>Nicholls Road</td>
<td>Destruction, evacuation and response concerns</td>
<td>City Maintained</td>
</tr>
<tr>
<td>Green Road</td>
<td>Destruction, evacuation and response concerns</td>
<td>City Maintained</td>
</tr>
</tbody>
</table>
Mitigation Efforts Since the 2016 Plan

- Fruit Heights City evaluates and updates each year its Storm Water Capital Facilities plan and identifies storm water projects that have been completed or where improvements have been made.
- The Stormwater Facility Fee has had incremental increases over the year to help pay for repairs and upgrades to the system.
- Fruit Heights City’s capital facility plan has identified aging culinary water lines that need to be repaired. Fruit Heights City continues to replace these aging water lines with major road reconstruction projects.
- Fruit Heights City has adopted a Wildland/Urban Fire Protection Plan.

Mitigation Strategies (2021-2026)

**Earthquake - Problem Identification:** Critical facilities do not meet seismic standards.

**Goal:** Reduce the threat of earthquake damage in the city.

**Objective (Priority MEDIUM):** Retrofit water lines and storm drain infrastructure to meet seismic standards.

**Action 1:** Replace culinary water line (Asbestos Cement) and upsize Mountain Road and Nicholls Road to 1000 South Mountain Road to bring into compliance with current seismic code.

- **Time Frame:** 2023
- **Funding:** City funds/State/Federal grant
- **Estimated Cost:** $420,000
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** Fruit Heights City

**Action 2:** Loop the 1800 East to Eastoaks Drive water line increasing city water earthquake survivability.

- **Time Frame:** 2023-2024
- **Funding:** City funds/State/Federal grant

<table>
<thead>
<tr>
<th>400 North</th>
<th>Destruction, evacuation and response concerns</th>
<th>City &amp; State maintained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway 89</td>
<td>Destruction, evacuation and response concerns</td>
<td>State Maintained</td>
</tr>
<tr>
<td>Country Lane</td>
<td>Destruction, evacuation and response concerns</td>
<td>City Maintained</td>
</tr>
<tr>
<td>Lloyd Road</td>
<td>Destruction, evacuation and response concerns</td>
<td>City Maintained</td>
</tr>
</tbody>
</table>
Estimated Cost: $59,000
Staff: City Administration, Public Works, Engineer, etc.
Jurisdictions: Fruit Heights City

**Action 3**: Install storm drain and detention basin below Eastoaks Drive to bring into compliance with current seismic code.

Time Frame: 2023-2024
Funding: City funds/State/Federal grant
Estimated Cost: $189,000
Staff: City Administration, Public Works, Engineer, etc.
Jurisdictions: Fruit Heights City

**Action 4**: Install and line the storm drain pipe underneath Green Road to bring into compliance with current seismic code.

Time Frame: 2021-2022
Funding: City funds/State/Federal grant
Estimated Cost: $120,000
Staff: City Administration, Public Works, Engineer, etc.
Jurisdictions: Fruit Heights City

**Action 5**: Install a drainpipe in an open ditch along Mahogany Drive to bring into compliance with current seismic code.

Time Frame: 2023-2025
Funding: City funds/State/Federal grant
Estimated Cost: $35,000
Staff: City Administration, Public Works, Engineer, etc.
Jurisdictions: Fruit Heights City

**Action 6**: Upgrade and install a storm drain along South Mountain Road to bring into compliance with current seismic code.

Time Frame: 2023-2025
Funding: City funds/State/Federal grant
Estimated Cost: $180,000
Staff: City Administration, Public Works, Engineer, etc.
Jurisdictions: Fruit Heights City

Earthquake - Problem Identification: Fruit Heights City is located on known traces of faults.

Goal: Educating citizens about safety during earthquakes.
Objective (Priority LOW): Making information available to citizens on safety techniques to follow during and after earthquakes.

**Action 1:** Provide information to citizens about response to earthquakes and protective measures for themselves, families, and property.

**Time Frame:** Annual

**Funding:** City Funds

**Estimated Cost:** Minimal

**Staff:** City Administration

**Jurisdictions:** Fruit Heights City

**Flooding - Problem Identification:** Fruit Heights is situated between the Great Lakes and the Wasatch Range in Davis County. Fruit Heights City also has several smaller lakes, ponds, and streams that have the potential to flood and runoff from the Wasatch Mountain Range during flash flooding or severe amounts of rainfall.

**Goal:** Mitigate the impact of flooding in high-threat areas.

**Objective (Priority MEDIUM):** Providing the public with knowledge about the possibility of flooding.

**Action:** Provide information to citizens about local flood hazard, flood insurance, and flood protection measures.

**Time Frame:** Ongoing

**Funding:** City funds

**Estimated Cost:** Minimal

**Staff:** City Administration

**Jurisdictions:** Fruit Heights City

**Wildland Fire - Problem Identification:** A significant portion of Fruit Heights City is along the foothills creating an urban/wildland interface.

**Goal:** Mitigate the impact of wildfires in high-threat areas.

**Objective (Priority MEDIUM):** Including considerations of wildfire hazards in land use, public safety, and other elements of the comprehensive plan.

**Action 1:** In future city plans, encourage the mitigation of wildfires.

**Time Frame:** Ongoing

**Funding:** City Funds
City Goals - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

Estimated Cost: Minimal

Staff: City Administration, Community Development, Building Department, etc

Jurisdictions: Fruit Heights City

Dam Failure - Problem Identification: There are a few water containment systems like Baer Canyon and Little Canyon located in Fruit Heights, these bring the potential for failure, leading to flooding.

Goal: Mitigate the effects of dam failures.

Objective (Priority LOW): Provide citizens within the flood area of dams with information on flash flooding.

Action: Provide the local population with information on possible flooding.

Time Frame: Ongoing

Funding: City funds

Estimated Cost: Minimal

Staff: City Administration

Jurisdictions: Fruit Heights City

Severe Weather - Problem Identification: Severe Weather: Fruit Heights City is susceptible to severe weather (rain, snow, wind, lightning, ect.)

Goal: Reduce the threat of severe weather damage to infrastructure.

Objective (Priority MEDIUM): Encouraging weather-proofing measures in new construction.

Action: Encourage new construction to implement weather-proofing into building plans.

Time Frame: Ongoing

Funding: City Funds

Estimated Cost: Minimal

Staff: Community Development, Building Department, etc.

Jurisdictions: Fruit Heights City

Multi-Hazards - Problem Identification: The city Emergency Operations Plan (EOP) is overdue for an update and revision.

Goal: Maintain an effective EOP.

Objective (Priority MEDIUM):

Kaysville City

Background
Kaysville is located approximately 20 miles north of Salt Lake City between the Wasatch Mountain Range and the Great Salt Lake. Stream channels with dense vegetation run through the City from the mountains to the lake. The community enjoys panoramic views and the appropriate use of these many features.

Kaysville was originally settled as a farming community and grew to a place of residence between the employment centers of Salt Lake City and Ogden. Steady growth continues today, making Kaysville a destination of choice for a safe residential community with supporting businesses and public facilities.

Kaysville operates under a weak mayor form of government, with an elected Mayor and five Council Members. The day-to-day operations and most executive authorities are delegated to a City Manager, who works closely with the Mayor to ensure all city operations are well-run. City operations include a full time Police, Fire, and Public Works Departments. Emergency management and pre-disaster mitigation responsibilities are coordinated by the Kaysville City Manager.

Community Buildings and Infrastructure Status
Kaysville City maintains the highest level of building standards in their community and focuses much attention on infrastructure development. The goal of providing a safe community for their residents drives them to continually be engaged in and planning for additional critical and essential infrastructure projects.

Specific Community Hazards
- **Earthquake.** Kaysville proximity to the mountains and the Wasatch Fault puts it at high risk of earthquake damage and liquefaction activity.
- **Flooding.** Kaysville is located along the Wasatch Mountain Front. During the 1983 declared flooding disaster, City facilities, trails, and homes sustained significant damage.
City Goals - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

- **Wildland Fire.** Much of Kaysville City is located in the foothills, increasing the risk for wildland fires.
- **Landslide.** Kaysville City has a significant landslide potential, and danger of slides exists from the extreme northern border near the Weber River Basin to the southern end of the county.
- **Dam failure.** The secondary water system throughout the community has small storage reservoirs.

### CRITICAL AREA FACILITIES + INFRASTRUCTURE

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
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</thead>
<tbody>
<tr>
<td>Culinary water storage tanks and secondary</td>
<td>The city has culinary water storage tanks and secondary water storage</td>
<td>Enhance security, and upgrade water distribution system</td>
</tr>
<tr>
<td>water reservoirs</td>
<td>reservoirs that may experience water contamination, flooding, and failure</td>
<td>due to earthquake</td>
</tr>
<tr>
<td></td>
<td>due to earthquake</td>
<td></td>
</tr>
<tr>
<td>Main Substation</td>
<td>Loss of power following earthquake</td>
<td>Upgrade infrastructure to current seismic standards</td>
</tr>
<tr>
<td>West Substation</td>
<td>Loss of power following earthquake</td>
<td>Upgrade infrastructure to current seismic standards</td>
</tr>
<tr>
<td>Burton Substation</td>
<td>Loss of power following earthquake</td>
<td>Upgrade infrastructure to current seismic standards</td>
</tr>
<tr>
<td>Schick Substation</td>
<td>Loss of power following earthquake</td>
<td>Upgrade infrastructure to current seismic standards</td>
</tr>
</tbody>
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### MUNICIPAL BUILDINGS + INFRASTRUCTURE

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<td>City Offices/EOC</td>
<td>Loss of vital city records; communication; vehicles; day to day functions.</td>
<td>Provide for city office/EOC survivability following an earthquake</td>
</tr>
<tr>
<td></td>
<td>Loss of operability for EOC</td>
<td></td>
</tr>
<tr>
<td>Public Works Building</td>
<td>Loss/damage to response equipment</td>
<td>N/A</td>
</tr>
<tr>
<td>Kaysville City Power</td>
<td>Disruption in electrical service to residents following earthquakes</td>
<td>Upgrade infrastructure to current seismic standards</td>
</tr>
<tr>
<td>Department</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main Generator for City</td>
<td>Loss of power for critical operations</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Office</td>
<td></td>
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</tr>
</tbody>
</table>
Mitigation Efforts Since the 2016 Plan
- Mutton Hollow water line was upgraded in 2016 to add redundancy to the system and better fire flow.
- Updated City Hall facility.

Mitigation Strategies (2021-2026)

Earthquake - Problem Identification: Critical facilities do not meet seismic standards.

Goal: Reduce the threat of earthquake damage in the city.

Objective (Priority MEDIUM): Retrofit water lines and storm drain infrastructure to meet seismic standards.

**Action 1:** Design and upgrade culinary water storage tanks for some time over the next 5 to 10 years, and add a second pump house in the next 1-3 years that will equalize the water in the tanks.

**Time Frame:** 2022-2027

**Funding:** City funds/State/Federal grant
**City Goals - Davis Co PDMP**

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

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**Estimated Cost:** unknown

**Staff:** City Administration, Public Works, Engineer, etc.

**Jurisdictions:** Kaysville City

**Action 2:** The City performs continuous maintenance and repair to keep the system in good working order for both fire flow and earthquake resistance.

**Time Frame:** 2021-2021

**Funding:** City funds/State/Federal grant

**Estimated Cost:** $10,000/yr

**Staff:** City Administration, Public Works, Engineer, etc.

**Jurisdictions:** Kaysville City

**Action 3:** The City is collaborating with the Utah State University experimental facility to upgrade their ponds to better facilitate storm drain function.

**Time Frame:** 2021-2022

**Funding:** City funds/State/Federal grant

**Estimated Cost:** $120,000

**Staff:** City Administration, Public Works, Engineer, etc.

**Jurisdictions:** Kaysville City

**Action 4:** Fill an open ditch with a storm drain pipe along Angel Street.

**Time Frame:** 2022-2023

**Funding:** City funds

**Estimated Cost:** unknown

**Staff:** City Administration, Public Works, Engineer, USU, etc.

**Jurisdictions:** Kaysville City

**Action 5:** Reconstruct water and flood control channel through Barnes Park.

**Time Frame:** 2014-2015

**Funding:** City funds

**Estimated Cost:** unknown

**Staff:** City Administration, Public Works, Engineer, etc.

**Jurisdictions:** Kaysville City

**Action 6:** Stormwater retention pond construction on Nature Conservancy land.

**Time Frame:** 2023-2024

**Funding:** City funds

**Estimated Cost:** unknown
City Goals - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

Staff: City Administration, Public Works, Engineer, etc.

Jurisdictions: Kaysville City

**Action 7**: Stormwater retention pond construction on 200 North and Wellington.

**Time Frame**: 2023-2024

**Funding**: City funds

**Estimated Cost**: unknown

Staff: City Administration, Public Works, Engineer, etc.

Jurisdictions: Kaysville City

**Action 8**: Storm drain upsize and replacement on 100 North.

**Time Frame**: 2015-2021

**Funding**: City funds

**Estimated Cost**: unknown

Staff: City Administration, Public Works, Engineer, etc.

Jurisdictions: Kaysville City

**Action 9**: Storm drain upsize and replacement on 600 East to include new boxes and pipe replacement.

**Time Frame**: 2015-2021

**Funding**: City funds

**Estimated Cost**: unknown

Staff: City Administration, Public Works, Engineer, etc.

Jurisdictions: Kaysville City

**Flooding - Problem Identification**: Kaysville is located between Great Salt Lake and the Wasatch Mountain Range, it houses several lakes, ponds, streams and rivers that have the potential to flood during flash flooding and heavy rainfall.

**Goal**: Mitigate the impact of flooding in high-threat areas.

**Objective (Priority MEDIUM)**: Providing the public with knowledge about the possibility of flooding.

**Action**: When requested, provide information to citizens about local flood hazard, flood insurance, and flood protection measures.

**Time Frame**: Ongoing

**Funding**: City funds

**Estimated Cost**: Minimal
**City Goals** - Davis Co PDMP

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

**Staff:** City Administration

**Jurisdictions:** Kaysville City

**Dam Failure - Problem Identification:** Multiple dams and water containment systems located throughout Kaysville City. These are prone to aging, which can lead to structural failure.

**Goal:** Prevent dam failure.

**Objective (Priority LOW):** Mitigate the effects of dam failure, by educating the public.

**Action:** Provide the local population with information on flooding.

**Time Frame:** Ongoing

**Funding:** City Funds

**Estimated Cost:** Minimal

**Staff:** City Administration

**Jurisdictions:** Kaysville City

**Severe Weather - Problem Identification:** Severe Weather: Kaysville is susceptible to severe weather (rain, snow, wind, lightning, etc.)

**Goal:** Reduce the threat of severe weather damage to infrastructure.

**Objective (Priority MEDIUM):** Encouraging weather-proofing measures in new construction.

**Action:** Encourage new construction to implement weather-proofing into building plans.

**Time Frame:** Ongoing

**Funding:** City Funds

**Estimated Cost:** Minimal

**Staff:** Community Development, Building Department, etc.

**Jurisdictions:** Kaysville

**Wildland Fire - Problem Identification:** A significant portion of Kaysville City is considered to be in the Urban–Wildland Fire Interface.

**Goal:** Reduce the threat of wildfire damage in the city.

**Objective (Priority HIGH):** Decrease wildfire hazard in the Urban–Wildland Fire Interface area of the city due to fireworks use.
Action 1: Develop and support a permanent firework ordinance to restrict use and the Urban-Wildland Fire Interface through City Council adoption.

**Time Frame:** 2021

**Funding:** City funds

**Estimated Cost:** minimal

**Staff:** Fire Department, Parks Department

**Jurisdictions:** Kaysville City

Action 2: Complete and adopt Community Wildfire Protection Plan

**Time Frame:** 2022-2023

**Funding:** City funds/State

**Estimated Cost:** unknown

**Staff:** Fire Department.

**Jurisdictions:** Kaysville City / County Fire Marshall

**Landslide - Problem Identification:** With Kaysville being located at the foothills of the Wasatch Range in Davis County, landslides are possible.

**Goal:** Mitigate the effects of landslides.

**Objective (Priority LOW):** Creating a plan to study areas where landslides may occur.

**Action:** Discuss using GIS Mapping or other means to determine where landslides may occur.

**Time Frame:** Unknown, depending on funding

**Funding:** City Funds

**Estimated Cost:** Minimal

**Staff:** City Administration, GIS, etc.

**Jurisdictions:** Kaysville

**Multi-Hazards - Problem Identification:** The city Emergency Operations Plan (EOP) is overdue for an update and revision.

**Goal:** Develop and maintain an EOP.

**Objective (Priority HIGH):** Improve communications, mitigate the impacts of and be prepared for emergency situations and hazards.

**Action 1:** Update the Emergency Operations Plan (EOP).

**Time Frame:** 2022
City Goals - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

Funding: City funds/State/Federal grant
Estimated Cost: unknown
Staff: City Administration, Public Works, Engineer, etc.
Jurisdictions: Kaysville City

Time Frame: 2023-2024
Funding: City funds/State/Federal grant
Estimated Cost: unknown
Staff: City Administration
Jurisdictions: Kaysville City

Action 3: Kaysville City owns and maintains its own power supply system for city residents. The city performs an annual ongoing system-wide inspection, which includes: Pole inspection, line clearance, tree trimming, voltage upgrades as required, and replacement of poles/equipment on voltage upgrade as needed. All of the above will help prevent loss of power/system damage, enhance reliability from all types of natural hazards.

Time Frame: 2021-2021
Funding: City funds
Estimated Cost: $15,000/year
Staff: City Administration
Jurisdictions: Kaysville City

Layton City

Background
Layton City is located in Davis County, 25 miles north of Salt Lake City. Layton City has a current estimated population of 78,000 (2024) making it the largest city in Davis County and 9th most populous in the State of Utah. It is located adjacent to Hill Air Force Base to the north, Syracuse to the west, Kaysville to the south, Clearfield to the west/northwest, South Weber to the northeast and the Uintah/Wasatch/Cache National Forest to the east. The City covers approximately 24 square miles.

Layton City continues to experience substantial residential growth in both the single family and multi-family housing market and even more significantly in the retail market. Layton City is home to Weber State University Davis.

Layton City is the economic hub of the county with a large regional mall, numerous hotels, restaurants, large conference center, and several large business parks. The City is bisected by I-15 and very active rail lines, including the UTA FrontRunner Commuter line. The Union Pacific line handles a large amount of hazardous materials transportation on a daily basis.

Layton City operates with a Council-Manager form of government. Major city departments include Police, Fire, Public Works, Parks, Legal, Finance/Management services, and Community Development.
Emergency management functions are coordinated through the Assistant City Manager, Risks Management and Fire Department with various assigned roles relating to NIMS training, emergency operations plan maintenance, citizen outreach, continuity of operations, and LEPC/State DEM involvement.

Community Buildings and Infrastructure Status

As the largest community in Davis County Layton strives to lead from the front with a standard of excellence. Layton City maintains the highest level of building and infrastructure standards. Layton City is committed to improving its infrastructure and is constantly exploring new sources of funding and resources to better their community. Critical and essential infrastructure is always being improved as funds, personnel, resources, and needs are identified.

Specific Community Hazards

- **Earthquake.** Layton City’s proximity to the mountains and the Wasatch Fault puts it at high risk of earthquake damage.

- **Flooding.** The potential for flooding is mostly related to dam breach, however the west areas of the city could have flooding due to proximity to the Great Salt Lake. Additionally, there is the potential for flooding related to debris flows post any significant wildfire.

- **Landslide.** There are portions of Layton City deemed ‘sensitive lands’ and the City has experienced destructive landslides in the past decades.

- **Wildland Fire.** Layton City is in the Wasatch Front, increasing the risk for large wildland urban interface fires. Within the City are several trail systems, such as the Kays Creek Trail and Bonneville Shoreline Trail, increasing the wildfire potential.

- **Dam failure.** Layton City has three reservoirs with various dam failure potential.

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weber Basin Water Treatment Plant SR193 &amp; HWY89</td>
<td>Water contamination,</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Hobbs Reservoir 2360 E. Canyon View</td>
<td>Water contamination, dam breach w/ flooding</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Sandridge boosters 3050 N. Dump Rd</td>
<td>Water contamination</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Power plant substation 3050 N. Dump Rd</td>
<td>Power interruption</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Location</td>
<td>Threat</td>
<td>Other Considerations</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Fairfield Well Dump Rd below golf course</td>
<td>Water contamination</td>
<td>Enhance security</td>
</tr>
<tr>
<td>HAFB runway SR193/Fort Ln.</td>
<td>Flight interruption</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Power plant substation Fort Ln. &amp; 1000 N.</td>
<td>Power interruption</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Fort Lane Well 1550 N. Fort Ln.</td>
<td>Water contamination</td>
<td>Enhance security</td>
</tr>
<tr>
<td>City Shop Well 1925 N. Fort Ln.</td>
<td>Water contamination</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Water Tank Oak Hills &amp; HWY89</td>
<td>Water contamination, flooding from breach</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Underground petroleum pipeline valve Tanglewood &amp; HWY89</td>
<td>Major Hazardous Materials release to include crude oil</td>
<td>Enhance security, Increased protection from vehicles recently added</td>
</tr>
<tr>
<td>Holmes Reservoir 2800 E. Gentile Rd</td>
<td>Water contamination, dam breach w/ flooding</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Adams Reservoir 1500 E. 900 N.</td>
<td>Water contamination, dam breach w/ flooding</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Questar Natural Gas substation 900 S. Main St.</td>
<td>Hazardous materials release</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Power plant substation 600 N. Sugar St.</td>
<td>Power interruption</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Power plant substation 3100 W. 1000 N.</td>
<td>Power interruption</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Water pump station 2100 W. Weaver Ln.</td>
<td>Water contamination</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Davis Hospital 1600 W. Antelope</td>
<td>Loss of critical medical facilities</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Layton IHC Hospital 201 W Layton Parkway</td>
<td>Loss of critical medical facilities</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Laytona Well 2050 N. 400 W.</td>
<td>Water contamination</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Green Leaf water pump &amp; well 1000 N. at RR tracks (2200 W.)</td>
<td>Water contamination</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Facility</td>
<td>Hazard / Risk</td>
<td>Mitigation</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>----------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>City Offices</td>
<td>Loss of vital city records; day to day functions</td>
<td>Enhance seismic resiliency as needed</td>
</tr>
<tr>
<td>Police Department</td>
<td>Loss of vital police records; impact to day to day functions</td>
<td>Enhance seismic resiliency as needed</td>
</tr>
<tr>
<td>Public Works Building</td>
<td>Loss/damage to response equipment</td>
<td>Enhance seismic resiliency as needed</td>
</tr>
<tr>
<td>IT Network and Server</td>
<td>Loss of communications</td>
<td>Enhance security</td>
</tr>
<tr>
<td>EOC (Located in Police Department)</td>
<td>Loss of operability for EOC</td>
<td>Ensure communication improvements are made as required</td>
</tr>
</tbody>
</table>

**Church Street Well**
- Church Street and Fairfield Rd

**Church Street Boosters**
- Church Street and Fairfield

**Valley View Boosters**
- 1400 N Valley View
- North East Tank Boosters
- Layton Ridge Drive
- Twin Peaks Boosters
- 3125 E Tanglewood Drive
- Fairfield Boosters
- Fairfield & Gordon Ave
- Oakridge Boosters
- 1940 E Oak Ridge Drive
- Oakridge Tank
- 2177 E Oakridge Drive
- Valley View Tank
- 1350 N Valley View Drive

**MUNICIPAL BUILDINGS + INFRASTRUCTURE**

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Offices</td>
<td>Loss of vital city records; day to day functions</td>
<td>Enhance seismic resiliency as needed</td>
</tr>
<tr>
<td>Police Department</td>
<td>Loss of vital police records; impact to day to day functions</td>
<td>Enhance seismic resiliency as needed</td>
</tr>
<tr>
<td>Public Works Building</td>
<td>Loss/damage to response equipment</td>
<td>Enhance seismic resiliency as needed</td>
</tr>
<tr>
<td>IT Network and Server</td>
<td>Loss of communications</td>
<td>Enhance security</td>
</tr>
<tr>
<td>EOC (Located in Police Department)</td>
<td>Loss of operability for EOC</td>
<td>Ensure communication improvements are made as required</td>
</tr>
<tr>
<td>Main Generator for City Office</td>
<td>Loss of power for critical operations</td>
<td>Enhance security</td>
</tr>
<tr>
<td>Fire Station 51 (Alternate EOC)</td>
<td>Loss/damage to response apparatus/personnel</td>
<td>Enhance structural earthquake resiliency as needed</td>
</tr>
<tr>
<td>Fire Station 52</td>
<td>Loss/damage to response apparatus/personnel</td>
<td>Enhance structural earthquake resiliency as needed</td>
</tr>
<tr>
<td>Fire Station 53</td>
<td>Loss/damage to response apparatus/personnel</td>
<td>Enhance structural earthquake resilience as needed (seismic retrofit was done in 2006 with PDMG)</td>
</tr>
<tr>
<td>Fire Station 54 (Under Construction)</td>
<td>Loss/damage to response apparatus/personnel</td>
<td></td>
</tr>
<tr>
<td>Parks Building</td>
<td>Loss/damage to potential response equipment</td>
<td></td>
</tr>
<tr>
<td>Alternative Communications Center</td>
<td>Loss/damage to potential response equipment</td>
<td>Enhanced with backup power and redundant radio capabilities.</td>
</tr>
<tr>
<td>Layton Emergency Dispatch Center</td>
<td>Loss/damage to potential response equipment</td>
<td>Enhanced with backup power and redundant radio capabilities.</td>
</tr>
</tbody>
</table>

### STORMWATER INFRASTRUCTURE

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple storm water retention basins throughout the city</td>
<td>Flooding</td>
<td>Dredge and de-silt</td>
</tr>
</tbody>
</table>

### ARTERIAL ROADS

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway 193</td>
<td>Destruction, evacuation and response concerns</td>
<td>n/a</td>
</tr>
<tr>
<td>Antelope Drive</td>
<td>Destruction, evacuation and response concerns</td>
<td>n/a</td>
</tr>
<tr>
<td>Main Street</td>
<td>Destruction, evacuation and response concerns</td>
<td>n/a</td>
</tr>
<tr>
<td>Hill Field Road</td>
<td>Destruction, evacuation and response concerns</td>
<td>n/a</td>
</tr>
<tr>
<td>Highway 89</td>
<td>Destruction, evacuation and response concerns</td>
<td>n/a</td>
</tr>
</tbody>
</table>
### City Goals - Davis Co PDMP

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

<table>
<thead>
<tr>
<th>Location</th>
<th>Destruction, evacuation and response concerns</th>
<th>n/a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oak Hills/Gentile</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interstate 15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fairfield Rd</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2200 W.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fort Lane Rd</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Church St.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Layton Parkway</td>
<td></td>
<td></td>
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<tr>
<td>Gordon Avenue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cherry Lane</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Mitigation Efforts Since the 2016 Plan**

- Layton City has updated the Emergency Operations Plan (EOP) and City Continuity of Operations Plan (COOP) but both are in need of revision.
- Layton City has worked with the US Forest Service and completed a fuel mitigation project at the fire break road and also encompasses the Shoreline trail.
- Fuel reduction projects also completed at the trail system around Hobbs reservoir with mowing operations with our Parks department.
- Summerwood residential area had volunteer and EM District fuel reductions projects with support of our Public Works hauling off debris to the local green waste facility.
- Numerous Wildland Severity Surveys were conducted with potential residential developments within our mapped Wildland Urban Interface areas.
- Continued Wildfire prevention and mitigation education was presented for three faith based groups in the city and all Emergency Management Districts.

**Mitigation Strategies (2021-2026)**

**Earthquake - Problem Identification:** Layton City is located on known traces of faults.
**Goal:** Educating citizens about safety during earthquakes.

**Objective (Priority LOW):** Making information available to citizens on safety techniques to follow during and after earthquakes.

- **Action:** When requested, providing information to citizens.
- **Time Frame:** Ongoing
- **Funding:** City Funds
- **Estimated Cost:** Minimal
- **Staff:** City Administration
- **Jurisdictions:** Layton City

**Flooding - Problem Identification:** Layton City is located in relative proximity to the Great Salt Lake and has several lakes and rivers that have the potential to flood during flash flooding or severe amounts of rainfall.

**Goal:** Mitigate the impact of flooding in high-threat areas.

**Objective (Priority MEDIUM):** Providing the public with knowledge about the possibility of flooding.

- **Action:** When requested, provide information to citizens about local flood hazard, flood insurance, and flood protection measures.
- **Time Frame:** Ongoing
- **Funding:** City Funds
- **Estimated Cost:** Minimal
- **Staff:** City Administration
- **Jurisdictions:** Layton City

**Wildland Fire - Problem Identification:** A significant portion of Layton City is considered to be in the wildland urban interface.

**Goal:** Provide severity study for all potential land use development within the defined Wildland Urban Interface Map. This is subject to all developers being engaged in requesting and receiving this severity study based on the adopted Wildland Urban Interface Code by a member of the Fire Marshal Office prior to the structural permitting process.

**Objective 1 (Priority HIGH):** Severity Study on private/public land in the Wildland Urban Interface (City).

- **Action 1:** Work with the Developers and landowners to accomplish a severity study in developable areas within the city boundaries or annexed areas.
City Goals - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

**Objective 2 (Priority HIGH):** Fuels mitigation on public land (City & Federal).

**Action 1:** Work with the Parks Department to accomplish fuel reduction in city trails, most significantly on the Kay Creek Trail.

- **Time Frame:** 2021
- **Funding:** City funds
- **Estimated Cost:** varies
- **Staff:** Fire Department, Parks Department
- **Jurisdictions:** Layton City

**Action 2:** Work with the United States Forest Service and other service groups to improve fuel reduction along the Bonneville Shoreline Trail.

- **Time Frame:** 2021
- **Funding:** USFS
- **Estimated Cost:** Minimal. Work will be performed by the Weber Basin Hand Crew as part of their annual assignments and training.
- **Staff:** Fire Department
- **Jurisdictions:** USFS / Layton City

**Objective 3 (Priority MEDIUM):** Fuels mitigation on private land.

**Action 1:** Work with private landowners on fuel reduction programs and education.

- **Time Frame:** 2021
- **Funding:** Local (with possible State grant funds). Otherwise costs will be for the Wildland Fire Mitigation & Suppression city assessment per SB122 according to the UWRAP (Utah Wildfire Risk Assessment Portal).
- **Estimated Cost:** varies
- **Staff:** Fire Department, Parks Department
- **Jurisdictions:** Layton City

**Action 2:** Implement the “Ready, Set, Go!” and “Evacuation Levels plan” for the wildland urban interface education program for citizens in accordance with the adopted “Community Wildfire Protection Plan”.

- **Time Frame:** 2021-2022
- **Funding:** City / State / Federal
Estimated Cost: unknown
Staff: Fire Department
Jurisdictions: USFS / Layton City

**Dam Failure - Problem Identification**: Multiple water containment systems located throughout Layton are aging and bring the possibility of failure.

**Goal**: Prevent dam failures.

**Objective (Priority Medium)**: Provide citizens within the flood area of dams with information on flash flooding.

**Action**: When requested, provide citizens with information on flash flooding.

  - **Time Frame**: Ongoing
  - **Funding**: City Funds
  - **Estimated Cost**: Minimal
  - **Staff**: City Administration
  - **Jurisdictions**: Layton City

**Multi-Hazards - Problem Identification**: The Layton City Continuity of Operations Plan (COOP) and Emergency Operations Plan are in need of review and revision.

**Goal**: Establish review and revisions to 90 percent of all organizational COOP plans.

**Objective (Priority High)**: Review and update the Layton City Continuity of Operations Plan (COOP).

**Action 1**: Have each City department review their individual COOP and make revisions as needed.

  - **Time Frame**: 2021
  - **Funding**: City funds/State/Federal grant
  - **Estimated Cost**: unknown
  - **Staff**: City Administration, Public Works, Engineer, etc.
  - **Jurisdictions**: Layton City

**Action 2**: Have each City Department review and revise their individual department plan and their respective roles and assignments within each assigned ESF.

  - **Time Frame**: 2021
  - **Funding**: City funds/State/Federal grant
  - **Estimated Cost**: unknown
  - **Staff**: City Administration
Jurisdictions: Layton City

Action 3: Fire Department will coordinate the development of a Layton City employee Emergency Response Handbook with action guides for various types of emergencies for use by office staff as a quick reference.

Time Frame: 2021
Funding: City funds
Estimated Cost: $15,000/year
Staff: City Administration

Jurisdictions: Layton City

Multi-Hazards - Problem Identification: The Layton City has evaluated and has planned with grant assistance to establish fixed site generators at culinary water pump stations to feed elevated tank systems. This need was identified at the September 8, 2020 windstorm event where the electrical grid in the area was impaired and water could not be transferred to the tanks.

Goal: Through grant and other funds means providing fixed site generators and means to transfer culinary water.

Objective (Priority HIGH): BRIC grant and State funding sources proceed with plans to construct fixed site generators and all necessary components.

Action 1: City Engineering establishes grant proposals. First attempt with BRIC funding was denied. Continued to submit or seek other means.

Time Frame: 2021
Funding: City funds/State/Federal grant
Estimated Cost: unknown
Staff: City Administration, Public Works, Engineer, etc.
Jurisdictions: Layton City

Action 2: Continued assessment of the project costs and needs and update overall costs.

Time Frame: 2021
Funding: City funds/State/Federal grant
Estimated Cost: unknown
Staff: City Administration
Jurisdictions: Layton City

Action 3: Review and establish all needed requirements directed by grant guidelines for this project.

Time Frame: 2021
Funding: City funds
Estimated Cost: unknown
Staff: City Administration
Jurisdictions: Layton City

Severe Weather - Problem Identification: Layton City is susceptible to severe weather (rain, snow, wind, lightning, etc.)

Goal: Reduce the threat of severe weather damage to infrastructure.

Objective (Priority MEDIUM): Encouraging weather-proofing measures in new construction.

Action: Encourage new construction to implement weather-proofing into building plans.

Time Frame: Ongoing

Funding: City Funds

Estimated Cost: Minimal

Staff: Community Development, Building Department, etc.

Jurisdictions: Layton City

Landslide - Problem Identification: With a significant part of Layton City being located at the foothills of the Wasatch Range in Davis County, landslides are possible.

Goal: Mitigate the effects of landslides.

Objective (Priority LOW): Creating a plan to study areas where landslides may occur.

Action: Discuss using GIS Mapping or other means to determine where landslides may occur.

Time Frame: Unknown, depending on funding

Funding: City Funds

Estimated Cost: Minimal

Staff: City Administration, GIS, etc.

Jurisdictions: Layton City

North Salt Lake City

Background

The City of North Salt Lake is in southern Davis County; it is bordered to the north by Woods Cross, to the northeast by Bountiful and unincorporated Davis County, and to the south by Salt Lake City. North Salt Lake has a total area of 8.6 square miles. The city has approximately 23,000 residents.

North Salt Lake operates under a Council-Manager form of government, with an elected Mayor and five Council Members. The day-to-day operations and most executive authorities are delegated to a City
Manager, who works closely with the Mayor and City Council to ensure all city operations are well-run. City operations include full time Police and Public Works Departments. Emergency management and pre-disaster mitigation responsibilities are coordinated by the North Salt Lake City Manager.

**Community Buildings and Infrastructure Status**

The City of North Salt Lake engages in many sources of funding including grants to better their overall infrastructure. Maintaining and providing a safe and healthy place to live is the City of North Salt Lake’s top priority. North Salt Lake is always looking for ways to better their infrastructure and is actively engaged in projects year round to achieve these goals.

**Specific Community Hazards**

- **Earthquake.** North Salt Lake's proximity to the mountains and the Wasatch Fault puts it at high risk of earthquake damage.
- **Flooding.** North Salt Lake is located along the Wasatch Mountain Front. During the 1983 declared flooding disaster, City facilities, trails, and homes sustained significant damage.
- **Landslides.** The hillside, in North Salt Lake, is prone to landslides. Both the Springhill and Eaglpointe Landslides caused significant property damage.
- **Severe Weather.** The City is experiencing an increase in severe storms, particularly wind storms, that are causing power outages, property damage, flooding, etc. The state of Utah has also been experiencing years of extreme drought.
- **Wildland Fire.** Much of North Salt Lake City is located in the foothills abutting U.S. Forest Service property, increasing the risk for wildland fires.

### CRITICAL AREA FACILITIES + INFRASTRUCTURE

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culinary water storage tanks, pump houses, and secondary water reservoirs</td>
<td>The city has culinary water storage tanks and secondary water storage reservoirs that may experience water contamination, flooding, and failure due to earthquake</td>
<td>Enhance security, and upgrade water distribution system</td>
</tr>
<tr>
<td>Water Distribution System</td>
<td>Age of system, risk of failure during earthquake event.</td>
<td>Upgrade infrastructure to current seismic standards</td>
</tr>
<tr>
<td>Storm Water Distribution System</td>
<td>Age of system, flooding, risk of failure during earthquake event.</td>
<td>Upgrade infrastructure to current seismic standards</td>
</tr>
</tbody>
</table>

### MUNICIPAL BUILDINGS + INFRASTRUCTURE

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
</tr>
</thead>
</table>
**City Goals - Davis Co PDMP**

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

<table>
<thead>
<tr>
<th>City Offices/EOC</th>
<th>Loss of vital city records; communication vehicles; day to day functions. Loss of operability for EOC</th>
<th>Provide for city office/EOC survivability following an earthquake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Works Building</td>
<td>Loss/damage to response equipment</td>
<td>N/A</td>
</tr>
<tr>
<td>South Davis Metro Fire - Station #82</td>
<td>Loss/damage to response apparatus/personnel</td>
<td>Enhance structural earthquake resiliency</td>
</tr>
<tr>
<td>South Davis Metro Fire - Station #85</td>
<td>Loss/damage to response apparatus/personnel</td>
<td>Enhance structural earthquake resiliency</td>
</tr>
</tbody>
</table>

**STORMWATER INFRASTRUCTURE**

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stormwater detention basins</td>
<td>Flooding: excessive rainfall overfilling banks</td>
<td>Downstream protection of property</td>
</tr>
</tbody>
</table>

**ARTERIAL ROADS**

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Street</td>
<td>Destruction, evacuation and response concerns</td>
<td>n/a</td>
</tr>
<tr>
<td>Highway 89</td>
<td>Destruction, evacuation and response concerns</td>
<td>n/a</td>
</tr>
<tr>
<td>Orchard Drive</td>
<td>Destruction, evacuation and response concerns</td>
<td>n/a</td>
</tr>
<tr>
<td>Redwood Road</td>
<td>Destruction, evacuation and response concerns</td>
<td>n/a</td>
</tr>
<tr>
<td>Eaglewood Drive</td>
<td>Destruction, evacuation and response concerns</td>
<td>n/a</td>
</tr>
<tr>
<td>Interstate 15</td>
<td>Destruction, evacuation and response concerns</td>
<td>n/a</td>
</tr>
<tr>
<td>Eagleridge Drive</td>
<td>Destruction, evacuation and response concerns</td>
<td>n/a</td>
</tr>
</tbody>
</table>

6. City Goals - 95
Mitigation Efforts Since the 2016 Plan

- Continued to provide Emergency Preparedness education and support to our Community.
- Continued monitoring of existing landslide areas and control of nearby development.
- Adopted a Geologic Hazards Ordinance to require extensive geologic studies prior to development on lands designated as sensitive areas.
- Stabilization of the Eaglepointe Landslide.
- Upgraded culinary water and storm drain lines to meet seismic standards.

Mitigation Strategies (2021-2026)

**Earthquake - Problem Identification:** Critical facilities do not meet seismic standards.

**Goal:** Reduce the threat of earthquake damage in the city.

**Objective (Priority HIGH):** Upgrade culinary water and storm drain infrastructure to meet seismic standards.

**Action 1:** Upgrade culinary water line on 300 North.
- **Time Frame:** 2021-2022
- **Funding:** City funds
- **Estimated Cost:** $225,000
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** City of North Salt Lake

**Action 2:** Upgrade culinary water lines on 75 East, 125 East, and 175 East
- **Time Frame:** 2022-2023
- **Funding:** City funds
- **Estimated Cost:** $440,000
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** City of North Salt Lake

**Action 3:** Upgrade culinary water line on Lacey Way (Valley View Dr to Gary Way)
- **Time Frame:** 2022-2023
- **Funding:** City funds, state, federal
- **Estimated Cost:** $880,000
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** City of North Salt Lake
**Action 4:** Upgrade culinary water line on 150 North

*Time Frame:* 2022-2023  
*Funding:* City funds  
*Estimated Cost:* $165,000  
*Staff:* City Administration, Public Works, Engineer, etc.  
*Jurisdictions:* City of North Salt Lake

**Action 5:** Upgrade culinary water line on north Frontage Road (Wilson Road to Cobble Creek Road)

*Time Frame:* 2022-2023  
*Funding:* City funds  
*Estimated Cost:* $325,000  
*Staff:* City Administration, Public Works, Engineer, etc.  
*Jurisdictions:* City of North Salt Lake

**Action 6:** Upgrade culinary water line on 475 North & Cloverdale Road

*Time Frame:* 2023-2024  
*Funding:* City funds  
*Estimated Cost:* $360,000  
*Staff:* City Administration, Public Works, Engineer, etc.  
*Jurisdictions:* City of North Salt Lake

**Action 7:** Upgrade culinary water line adjacent to The Pointe at Northridge Apartments

*Time Frame:* 2023-2024  
*Funding:* City funds, state, federal  
*Estimated Cost:* $475,000  
*Staff:* City Administration, Public Works, Engineer, etc.  
*Jurisdictions:* City of North Salt Lake

**Action 8:** Upgrade culinary water line on 400 West (500 North to 1100 North)

*Time Frame:* 2023-2024  
*Funding:* City funds  
*Estimated Cost:* unknown  
*Staff:* City Administration, Public Works, Engineer, etc.  
*Jurisdiction:* City of North Salt Lake

**Action 9:** Upgrade culinary water line on Freedom Drive

*Time Frame:* 2024-2025
**City Goals - Davis Co PDMP**

Please add comments by typing directly into the document. Your changes will be saved automatically.

- **Funding:** City funds
- **Estimated Cost:** unknown
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdiction:** City of North Salt Lake

**Action 10:** Upgrade culinary water lines on 850 North, 900 North, 950 North, Madsen Lane, and 400 East

- **Time Frame:** 2025-2026
- **Funding:** City funds
- **Estimated Cost:** $365,000
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** City of North Salt Lake

**Action 11:** Upgrade culinary water line on 900 North

- **Time Frame:** 2025-2026
- **Funding:** City funds
- **Estimated Cost:** $615,000
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** City of North Salt Lake

**Action 12:** Upgrade culinary water line on 400 West

- **Time Frame:** 2026-2027
- **Funding:** City funds
- **Estimated Cost:** unknown
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** City of North Salt Lake

**Action 13:** Upgrade culinary water lines on Raygene Way and Marialana

- **Time Frame:** 2026-2027
- **Funding:** City funds
- **Estimated Cost:** unknown
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** City of North Salt Lake

**Action 14:** Upgrade culinary water lines on Liberty Road and Bunker Hill

- **Time Frame:** 2026-2027
- **Funding:** City funds
- **Estimated Cost:** unknown
- **Staff:** City Administration, Public Works, Engineer, etc.
Jurisdictions: City of North Salt Lake

Action 15: Design and upgrade culinary water storage tanks for some time over the next 5 to 10 years, and add a second pump house in the next 1-3 years that will equalize the water in the tanks.

Time Frame: 2022-2027
Funding: City funds/State/Federal grant
Estimated Cost: unknown
Staff: City Administration, Public Works, Engineer, etc.

Jurisdictions: North Salt Lake City

Action 16: Perform any necessary seismic upgrades to the pump houses and well buildings that support the delivery of culinary water.

Time Frame: 2021-2026
Funding: City funds/State/Federal grant
Estimated Cost: unknown
Staff: City Administration, Public Works, Engineer, etc.

Jurisdictions: City of North Salt Lake

Action 17: Perform an analysis of the structural stability of the stormwater detention/retention ponds to prevent downhill flooding in the event of a failure.

Time Frame: 2021-2026
Funding: City funds
Estimated Cost: unknown
Staff: City Administration, Public Works, Engineer, etc.

Jurisdictions: City of North Salt Lake

Flooding - Problem Identification: Storm water facilities do not meet flood control standards.

Goal: Reduce the threat of flood damage in the City.

Objective (Priority HIGH): Upgrade stormwater infrastructure to prevent downhill flooding.

Action 1: Construct stormwater detention/retention ponds where needed.

Time Frame: 2021-2026
Funding: City funds
Estimated Cost: unknown
Staff: City Administration, Public Works, Engineer, etc.

Jurisdictions: City of North Salt Lake

Action 2: Perform an analysis of the structural stability of the stormwater detention/retention ponds to prevent downhill flooding in the event of a failure.
City Goals - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

- **Time Frame:** 2021-2026
- **Funding:** City funds
- **Estimated Cost:** unknown
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** City of North Salt Lake

**Action 3:** Upgrade storm drain lines at Hole #14 of Eaglewood Golf Course
- **Time Frame:** 2021-2022
- **Funding:** City funds
- **Estimated Cost:** $90,000
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** City of North Salt Lake

**Action 4:** Upgrade storm drain lines in the canyon near David and Raygene Way
- **Time Frame:** 2021-2022
- **Funding:** City funds
- **Estimated Cost:** $350,000
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** City of North Salt Lake

**Action 5:** Upgrade storm drain lines in the canyon on Constitution Way
- **Time Frame:** 2023-2025
- **Funding:** City funds
- **Estimated Cost:** $1,000,000
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** City of North Salt Lake

**Action 6:** Upgrade storm drain line on Freedom Lane
- **Time Frame:** 2024-2025
- **Funding:** City funds
- **Estimated Cost:** $100,000
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** City of North Salt Lake

**Action 7:** Upgrade storm drain line at 480 North Cutler Drive and install a silt trap
- **Time Frame:** 2024-2025
- **Funding:** City funds
- **Estimated Cost:** $230,000
- **Staff:** City Administration, Public Works, Engineer, etc.
Jurisdictions: City of North Salt Lake

Action 8: Upgrade storm drain line along I-215 ramp south of Center Street

Time Frame: 2025-2026
Funding: City funds
Estimated Cost: $360,000
Staff: City Administration, Public Works, Engineer, etc.

Jurisdictions: City of North Salt Lake

Action 9: Perform preventative maintenance on storm water facilities regularly

Time Frame: 2021-2026
Funding: City funds
Estimated Cost: $150,000 annually
Staff: City Administration, Public Works, Engineer, etc.

Jurisdictions: City of North Salt Lake

Landslides - Problem Identification: Roughly half of the City's geographical area is located on hillside areas.

Goal: Reduce the threat of landslide damage in the City.

Objective (Priority MEDIUM): Decrease landslide occurrences on the hillside of the City.

Action 1: Continue to monitor the Springhill and Eaglepointe Landslides for movement.

Time Frame: 2021-2026
Funding: City funds
Estimated Cost: unknown
Staff: Engineering

Jurisdictions: City of North Salt Lake, UGS

Action 2: Continue to require that all developments, particularly in sensitive areas, meet the requirements of the Geologic Hazards Ordinance

Time Frame: 2021-2026
Funding: City funds
Estimated Cost: unknown
Staff: Community Development, Engineering

Jurisdictions: City of North Salt Lake

Dam Failure - Problem Identification: Multiple water containment systems located throughout North Salt Lake are aging and have the potential to fail in the future.
**Goal**: Mitigate against dam failures.

**Objective (Priority MEDIUM)**: Reduce the effects of dam failures, by educating the public

**Action**: Provide citizens with information on flash flooding.

**Time Frame**: Ongoing  
**Funding**: City Funds  
**Estimated Cost**: Minimal  
**Staff**: City Administration  
**Jurisdictions**: North Salt Lake

**Severe Weather - Problem Identification**: North Salt Lake has experienced increasingly more frequent instances of severe weather causing power outages, drought, property damage from wind, etc.

**Goal**: Reduce the threat of severe weather in the City.

**Objective (Priority HIGH)**: Protect critical facilities from failure or property damage due to severe weather such as windstorms and drought.

**Action 1**: Install permanent generators at all wells and pump houses.

**Time Frame**: 2021-2026  
**Funding**: City funds/State/Federal  
**Estimated Cost**: $1,630,000  
**Staff**: City Administration, Public Works, Engineer, etc.  
**Jurisdictions**: City of North Salt Lake

**Action 2**: Acquire additional water rights for secondary water and make secondary water lines accessible to the entire City.

**Time Frame**: 2021-2026  
**Funding**: City funds  
**Estimated Cost**: unknown  
**Staff**: City Administration, Public Works, Engineer, etc.  
**Jurisdictions**: City of North Salt Lake

**Action 3**: Promote water conservation efforts to residents and businesses in the City.

**Time Frame**: 2021-2026  
**Funding**: City funds  
**Estimated Cost**: unknown  
**Staff**: City Administration  
**Jurisdictions**: City of North Salt Lake
Wildland Fire - Problem Identification: A significant portion of the City of North Salt Lake is considered to be in the Urban-Wildland Fire Interface.

**Goal**: Reduce the threat of wildfire damage in the city.

**Objective (Priority HIGH)**: Decrease wildfire hazard in the Urban-Wildland Fire Interface area of the city.

**Action 1**: Establish defensible space around critical facilities.
- **Time Frame**: 2021-2026
- **Funding**: City funds/State/Federal
- **Estimated Cost**: unknown
- **Staff**: Fire, Public Works
- **Jurisdictions**: City of North Salt Lake, South Davis Metro Fire

**Action 2**: Complete and adopt a Community Wildfire Protection Plan
- **Time Frame**: 2021-2026
- **Funding**: City funds/State
- **Estimated Cost**: unknown
- **Staff**: Fire, Community Development
- **Jurisdictions**: City of North Salt Lake, South Davis Metro Fire

Multi-Hazards - Problem Identification: The city’s Emergency Operations Plan (EOP) is overdue for an update and revision.

**Goal**: Develop and maintain an effective EOP.

**Objective (Priority HIGH)**: Improve communications, mitigate the impacts of and be prepared for emergency situations and hazards.

**Action 1**: Update the Emergency Operations Plan (EOP).
- **Time Frame**: 2021-2026
- **Funding**: City funds/State/Federal grant
- **Estimated Cost**: unknown
- **Staff**: City Administration, Public Works, Engineer, etc.
- **Jurisdictions**: City of North Salt Lake

**Action 2**: Enhance IT Network and Server Security.
- **Time Frame**: 2021-2026
- **Funding**: City funds/State/Federal grant
- **Estimated Cost**: unknown
- **Staff**: City Administration
**Jurisdictions:** City of North Salt Lake

**Action 3:** Install Wi-Fi hotspots and security cameras at all City parks and facilities

**Time Frame:** 2021-2026

**Funding:** City funds

**Estimated Cost:** unknown

**Staff:** City Administration, Police, Public Works

**Jurisdictions:** City of North Salt Lake

---

**South Weber City**

**Background**

The town of South Weber was originally incorporated in 1938 and on March 16, 1971 it became a Third Class City. South Weber City is located in northeast Davis County at the mouth of Weber Canyon, bounded by the Weber River on the north and Layton City on the south. US Highway 89 and Interstate 84 are the two major transportation corridors that pass through the City. The 2010 census determined a population of 6,051 persons.

South Weber operates under a council–manager form of government, with an elected Mayor and five Council Members. The day-to-day operations and the majority of executive authorities are delegated to a City Manager, who works hand-in-hand with the Mayor to ensure all city operations are well-run. City operations include a municipal court, water, streets, storm water, sanitary sewer, snow removal, community development, parks and recreation programming, and a volunteer Fire Department. South Weber contracts for garbage services, animal control services, and law enforcement services.

**Community Buildings and Infrastructure Status**

South Weber loves its small community and is adamant about keeping the highest standards for the residents. South Weber has a decent amount of building and population growth happening, and is continuously working on improving their critical and essential infrastructure. Maintaining the highest level of safety for its employees and residents is of top priority, and South Weber is continually striving to improve as funding, personnel, and resources are made available.

**Specific Community Hazards**

- **Earthquake.** South Weber’s proximity to the mountains and the Wasatch Fault puts it at high risk of earthquake damage.
- **Flooding.** South Weber’s northern boundary is located along the Weber River.
- **Wildland Fire.** The southern and eastern city boundaries are located on the foothills and are subject to increased risk of wildland fires.
- **Dam failure.** The City is at the mouth of Weber Canyon which contains several dams including Echo, Rockport and East Canyon.
- **Severe Weather.** South Weber is at the mouth of Weber Canyon, which produces consistent high winds.
<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Tanks</td>
<td>No culinary water</td>
<td>Shut off valve(s)</td>
</tr>
<tr>
<td>Pump Stations</td>
<td>No culinary water</td>
<td>Back-up generator</td>
</tr>
<tr>
<td>Major sewer trunk lines</td>
<td>Backup/flooding/health</td>
<td>Regular maintenance</td>
</tr>
<tr>
<td>Culinary water well</td>
<td>No culinary water</td>
<td>Back-up generator</td>
</tr>
<tr>
<td>Sewer lift station (serves 4 homes)</td>
<td>Backup/flooding/health</td>
<td>Regular maintenance and replacement</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Offices</td>
<td>Loss of vital city records; communication; vehicles; day to day functions</td>
<td>TBD</td>
</tr>
<tr>
<td>Public Works Building</td>
<td>Loss/damage to response equipment/supplies/materials</td>
<td>TBD</td>
</tr>
<tr>
<td>Fire Station</td>
<td>Loss/damage to response equipment</td>
<td>TBD</td>
</tr>
<tr>
<td>IT Network and Server</td>
<td>Loss of communications</td>
<td>Enhance security</td>
</tr>
<tr>
<td>EOC</td>
<td>Loss of operability for EOC</td>
<td>TBD</td>
</tr>
<tr>
<td>Main Generator for City Office</td>
<td>Loss of power for critical operations</td>
<td>TBD</td>
</tr>
<tr>
<td>Family Activity Center</td>
<td>Loss of day to day functions</td>
<td>TBD</td>
</tr>
</tbody>
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<td>Detention basins</td>
<td>Flooding</td>
<td>Dredge &amp; de-silt / clean outlet control structures</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
</table>
Mitigation Efforts Since the 2016 Plan

- South Weber City is updating the City Emergency Operations Plan (EOP).
- Replaced old cast iron and led-joint pipe in the water system.

Mitigation Strategies (2021-2026)

**Earthquake - Problem Identification:** South Weber’s proximity to the mountains and the Wasatch Fault puts it at high risk of earthquake damage. The amount of damage, and what infrastructure or facilities would be damaged would depend on the magnitude of the earthquake. As mentioned, there is some potential for flooding from the Weber River due to an earthquake. A second likely risk is damage to the City’s culinary water system. Damage to other utility lines (petroleum, gas, communication, power, irrigation), roads and homes is also likely to occur in varying degrees due to the magnitude of the earthquake.

**Goal:** Reduce the threat of earthquake damage in the city.

**Objective (Priority MEDIUM):** Protect the City water system where feasible.

**Action:** Replace the waterline at the East Bench Reservoir to Cornia Dr. This line is cast iron and more susceptible to rupture than other lines in the system.

**Time Frame:** 2023-2024

**Funding:** City funds

**Estimated Cost:** $220,000

**Staff:** City Administration, Public Works, Private Contractor

**Jurisdictions:** South Weber City
**Flooding - Problem Identification:** If the south bank of the Weber River were to rupture at a location adjacent to the Staker & Parson Companies Gravel Pit, it would fill the pit with water. Once the pit was full, the river would flow out of the pit area and run along the south side of I-84 rather than back into the existing river channel. This is due to the elevation of the river channel being higher than the lowest elevations around the pit at that location. The flood waters would run in the lowest lying areas along I-84 (which is higher in elevation than the adjacent property on the south) until it got to Riverdale City and/or a location where it would run back into the existing river channel. This scenario could happen due to an earthquake or high flood waters in the river itself which exceeded the river bank at that location.

**Goal:** Reduce the threat of flooding damage in the city.

**Objective (Priority HIGH):** Prevent flooding along the south side of I-84 (in the lower lying areas) from the Stake & Parson Companies Gravel Pit west until the Riverdale City boundary.

**Action:** Build a berm around the Staker & Parsons Co. gravel pit at an elevation higher than the banks of the river adjacent to the Weber River in that area.

**Time Frame:** unknown

**Funding:** City funds/State/Federal grant

**Estimated Cost:** $300,000 to $600,000

**Staff:** City Administration, Public Works, Engineer, etc.

**Jurisdictions:** South Weber City

**Wildland Fire - Problem Identification:** A significant portion of South Weber City is considered to be in the wildland urban interface.

**Goal:** Reduce the threat of wildfire damage in the city.

**Objective (Priority MEDIUM):** Fuels mitigation.

**Action 1:** Work in tandem with homeowners to remove fuels and create fire breaks.

**Time Frame:** unknown

**Funding:** City funds, private property owners

**Estimated Cost:** varies

**Staff:** Fire Department, Parks Department

**Jurisdictions:** South Weber City

**Dam Failure - Problem Identification:** If the East Canyon Dam were to break, it may cause flooding in South Weber. The dam is located approximately 28 miles upstream as a feeder into the Weber River. The likelihood that flood waters would overtop the existing banks of the river by the time it reached South Weber is very low. However, the mitigation is the same as for Flooding below because the source of the flooding in both scenarios is the Weber River.

**Goal:** Reduce the threat of dam failure damage in the city.

**Objective (Priority MEDIUM):** Prevent flooding along the south side of I-84 (in the lower lying areas) from the Stake & Parson Companies Gravel Pit west until the Riverdale City boundary.
**City Goals - Davis Co PDMP**

Please add comments by typing directly into the document. Your changes will be saved automatically.

**City Goals**

**Action:** Build a berm around the Staker & Parsons Co. gravel pit at an elevation higher than the banks of the river adjacent to the Weber River in that area.

- **Time Frame:** unknown
- **Funding:** City funds/State/Federal grant
- **Estimated Cost:** $300,000 to $600,000
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** South Weber City

**Severe Weather - Problem Identification:** The City is at the mouth of Weber Canyon which produces continual moderate winds, but has the potential at times of very high winds. High winds from the east are also possible in general along the whole mountainside area.

**Goal:** Reduce the threat of severe weather damage in the city.

- **Objective 1 (Priority MEDIUM):** To secure critical infrastructure.
  - **Action:** Put an emergency backup generator at Church St. pump station.
  - **Time Frame:** 2022-2023
  - **Funding:** City funds
  - **Estimated Cost:** $98,000
  - **Staff:** Public Works, Engineer, etc.
  - **Jurisdictions:** South Weber City

- **Objective 2 (Priority MEDIUM):** To minimize debris and potential compromised access for emergency vehicles due to fallen trees across streets.
  - **Action:** Work in tandem with homeowners to trim or remove tall trees that are susceptible to falling over and causing damage to homes, other facilities or across streets.
  - **Time Frame:** unknown
  - **Funding:** City funds, private property owners
  - **Estimated Cost:** minimal
  - **Staff:** Public Works
  - **Jurisdictions:** South Weber City

**Landslide - Problem Identification:** With South Weber being located at the foothills of the Wasatch Range in Davis County, landslides are possible.

**Goal:** Mitigate the effects of landslides.

- **Objective (Priority LOW):** Creating a plan to study areas where landslides may occur.
**City Goals - Davis Co PDMP**

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

**Action:** Discuss using GIS Mapping or other means to determine where landslides may occur.

**Time Frame:** Unknown, depending on funding

**Funding:** City Funds

**Estimated Cost:** Minimal

**Staff:** City Administration, GIS, etc.

**Jurisdictions:** South Weber City

---

**Sunset City**

**Background**

Sunset is a city in Davis County, Utah, United States. It is part of the Ogden–Clearfield, Utah Metropolitan Statistical Area. The population was 5,122 at the 2010 census. Sunset emerged as a distinct place in 1916. Sunset is located in northern Davis County. It is bordered by Hill Air Force Base to the east, Clearfield to the south, Clinton to the west, and Roy in Weber County to the north.

**Community Buildings and Infrastructure Status**

According to the United States Census Bureau, the city of Sunset has a total area of 1.3 square miles, all of it land. Sunset is the smallest community in Davis County and as such does not often have the financial capabilities of larger communities. Nonetheless, Sunset makes critical and essential infrastructure projects a top priority. These projects are handled as funding, personnel, and resources are available.

**Specific Community Hazards**

- **Earthquake.** Sunset’s proximity to the Wasatch Fault puts it at high risk of earthquake damage.
- **Flooding.** Sunset is susceptible to flooding from runoff and storm events.

---

**CRITICAL AREA FACILITIES + INFRASTRUCTURE**

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump Stations</td>
<td>No culinary water</td>
<td>Back-up generator</td>
</tr>
<tr>
<td>Major sewer trunk lines</td>
<td>Backup/flooding/health</td>
<td>Regular maintenance</td>
</tr>
<tr>
<td>Culinary water well</td>
<td>No culinary water</td>
<td>Back-up generator</td>
</tr>
</tbody>
</table>

**MUNICIPAL BUILDINGS + INFRASTRUCTURE**

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
</table>

## City Goals - Davis Co PDMP

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

<table>
<thead>
<tr>
<th>City Offices</th>
<th>Loss of vital city records; communication; vehicles; day to day functions</th>
<th>TBD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Works Building</td>
<td>Loss/damage to response equipment/supplies/materials</td>
<td>TBD</td>
</tr>
<tr>
<td>Fire Station</td>
<td>Loss/damage to response equipment</td>
<td>TBD</td>
</tr>
<tr>
<td>IT Network and Server</td>
<td>Loss of communications</td>
<td>Enhance security</td>
</tr>
<tr>
<td>EOC</td>
<td>Loss of operability for EOC</td>
<td>TBD</td>
</tr>
</tbody>
</table>

### STORMWATER INFRASTRUCTURE

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>City-wide detention basin (16.5 acres)</td>
<td>Flooding</td>
<td>Dredge &amp; de-silt / clean outlet control structures</td>
</tr>
</tbody>
</table>

### ARTERIAL ROADS

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway 126 (Main St)</td>
<td>Destruction, evacuation, and response concerns</td>
<td>Maintain</td>
</tr>
<tr>
<td>2300 North</td>
<td>Destruction, evacuation, and response concerns</td>
<td>Maintain</td>
</tr>
<tr>
<td>1800 North</td>
<td>Destruction, evacuation, and response concerns</td>
<td>Maintain</td>
</tr>
<tr>
<td>800 North</td>
<td>Destruction, evacuation, and response concerns</td>
<td>Maintain</td>
</tr>
</tbody>
</table>

**Mitigation Efforts Since the 2016 Plan**

- The City has maintained a capital improvements program to guide its infrastructure investments every year since 2016. One of core principles that help the city prioritize their projects is the impact to public safety and emergency preparedness.
Mitigation Strategies (2021-2026)

Earthquake - Problem Identification: Public facilities may not meet seismic standards due to age of structure.

Goal: Reduce the threat of earthquake damage in the city.

Objective (Priority MEDIUM): Develop critical facilities.

Action 1: Build a new Public Works shop.
- **Time Frame:** 2023-2029
- **Funding:** City funds/State/Federal grant
- **Estimated Cost:** $1.5 million
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** Sunset City

Action 2: Build a new Fire Station.
- **Time Frame:** 2023-2029
- **Funding:** City funds/State/Federal grant
- **Estimated Cost:** $1.5 million
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** Sunset City

Flooding - Problem Identification: 450 W from 2137 N to 2300 N these properties are lower than the roadway. During periods of heavy rains the water will go over the curb and sidewalk towards the homes.

Goal: Reduce the threat of flooding damage in the city.

Objective (Priority HIGH): Install stormwater catch basins to catch the water flow before it has a chance to accumulate to the point of overflow.

Action 1: Engineer the new catch basins to ensure water is taken care of.
- **Time Frame:** 2022
- **Funding:** City funds
- **Estimated Cost:** $100,000
- **Staff:** Public Works, Engineer
- **Jurisdictions:** Sunset City

Dam Failure - Problem Identification: Multiple water containment systems located throughout Sunset City are aging and present the potential for failure in the future.

Goal: Reduce the threats associated with dam failures.
City Goals - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

Objective (Priority MEDIUM): Educate citizens within the possible flood areas of dams with information about flooding and other dam failure hazards.

Action: Provide citizens with information as necessary.

Time Frame: Ongoing
Funding: City Funds
Estimated Cost: Minimal
Staff: City Administration
Jurisdictions: Sunset City

Severe Weather - Problem Identification: Severe weather (rain, snow, wind, lightning, ect.) is a possibility in Sunset City.

Goal: Reduce the threat of severe weather damage to infrastructure.

Objective (Priority MEDIUM): Encouraging weather-proofing measures in new construction.

Action: Encourage new construction to implement weather-proofing into building plans.

Time Frame: Ongoing
Funding: City Funds
Estimated Cost: Minimal
Staff: Community Development, Building Department, etc.
Jurisdictions: Sunset City

Syracuse City

Background

Syracuse City is located 30 miles north of Salt Lake City, UT. The city footprint covers 9.5 sq. miles. Since 2000 the city's population has more than tripled with a current population of 31,458. Syracuse has many young working families as well as older native residents. The commercial base continues to develop, with the addition of a new sixty-acre industrial park, and the planned construction of the West Davis Highway..

Due to the growth in Davis County, one new highway project (State Highway 193), has recently been completed, and another (the West Davis Corridor) is in the construction phase with an expected completion in 2023..

Syracuse City proper has all of the amenities of a suburban community, including: City Hall, Syracuse Justice Court, Syracuse Public Safety Department, six elementary grade schools, two Jr. High (secondary) Schools, and Syracuse High School. Syracuse City also offers gas stations, grocery stores, restaurants,
office buildings, medical and dental practices, childcare facilities, one of the largest indoor fun centers in the state, and various other types of businesses.

Syracuse City is also home to the North Davis Sewer District which processes sewer for over 200,000 people in Davis County. The sewer district and public utilities like culinary water, natural gas, and electricity distribution, are considered as critical infrastructure within the community.

If impacted by disaster, the loss of this infrastructure would result in significant economic impact, and potentially the loss of life.

Syracuse operates under a six-member council form of government, with an elected Mayor and five Council Members. The day-to-day operations and the majority of executive authorities are delegated to a City Manager, who works closely with the Mayor to ensure a continuous performance of all city operations.

City operations include 24-7 police, fire, and public works departments, a municipal court, water, streets, stormwater evacuation, snow removal, community development, and parks and recreation programming. Emergency management and pre-disaster mitigation responsibilities are coordinated by the Syracuse City Manager.

**Specific Community Hazards**

- **Earthquake.** Syracuse proximity to the Wasatch Fault puts it at high risk of earthquake damage.
- **Flooding.** Syracuse is located west of the Wasatch Mountain Front, and just East of the Eastern shore of the Great Salt Lake. Flooding from heavy rain that overwhelsms storm drainage systems and impacts sewer and water infrastructure is a potential hazard, as well as flooding from rising lake levels or seismic events caused by earthquakes.
- **Severe Weather.** Syracuse City is west of the Wasatch Mountain Range where several downslope and canyon wind events have potential for property damage.
- **Chemical Spill.** Syracuse City is adjacent to the North Davis Wastewater Treatment Facility, which uses extremely hazardous chemicals. These chemicals are routinely delivered by truck to the facility via Syracuse City streets.
- **Water System Contamination.** Syracuse City operates its own culinary water well, and has heavy construction activity as it grows. This growth requires frequent connections into the City’s water system and presents opportunities for error and cross-contamination.

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Streets / Transportation</td>
<td>Earthquake; Destruction/disruption of system</td>
<td>Regular Maintenance</td>
</tr>
<tr>
<td>Culinary Water System</td>
<td>Earthquake; Contamination</td>
<td>Planned Upgrades</td>
</tr>
<tr>
<td>Sanitary Sewer</td>
<td>Earthquake;</td>
<td>Regular Maintenance</td>
</tr>
</tbody>
</table>

6. City Goals - 113
<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Offices</td>
<td>Loss of vital city records; communication vehicles; day to day functions</td>
<td>Explore Back-up of records Off-site</td>
</tr>
<tr>
<td>Police Department</td>
<td>Loss of vital police records; impact to day to day functions</td>
<td>Explore Satellite Station Feasibility/Need</td>
</tr>
<tr>
<td>Fire Department</td>
<td>Reduced Ability to Respond</td>
<td>Explore Satellite Station Feasibility/Need</td>
</tr>
<tr>
<td>Public Works Building</td>
<td>Loss/damage to response equipment</td>
<td>N/A</td>
</tr>
<tr>
<td>Community Center</td>
<td>Loss of Sheltering Ability and Volunteer Response</td>
<td>Explore Alternate Sheltering options</td>
</tr>
<tr>
<td>IT Network and Server</td>
<td>Loss of communications</td>
<td>Enhance security</td>
</tr>
<tr>
<td>EOC (Fire Station)</td>
<td>Loss of operability for EOC</td>
<td>Equip secondary location for use as EOC</td>
</tr>
<tr>
<td>Museum</td>
<td>Loss of artifacts</td>
<td>Improve storage</td>
</tr>
</tbody>
</table>

**STORMWATER INFRASTRUCTURE**

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>StormWater Retention Basins</td>
<td>Flooding</td>
<td>Routine maintenance.</td>
</tr>
</tbody>
</table>

**ARTERIAL ROADS**

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antelope Drive</td>
<td>Destruction, evacuation and</td>
<td>State Highway</td>
</tr>
</tbody>
</table>
Mitigation Efforts Since the 2016 Plan

- Syracuse has updated the City Emergency Operations Plan (EOP), and created an Disaster Preparedness Committee that meets monthly.
- Syracuse has installed back-up generators for all public buildings, including Police, Fire, Public Works, Community Center (shelter), and Administration. This will enable efforts to maintain services during long-term power outages or other infrastructure emergencies.
- Syracuse City has constructed a 3 million gallon water tank to accommodate new growth and better provide culinary water availability.
- Syracuse City has created a part-time Emergency Management Coordinator position to help facilitate EOC training and improvements to City readiness.
- Syracuse City has replaced several miles of older water, sewer, storm drain, and street infrastructure with newer materials with better seismic standards.

Mitigation Strategies (2021-2026)

**Earthquake - Problem Identification:** Critical facilities may not meet seismic standards. Due to geography, liquefaction may occur.

**Goal:** Maximize resiliency of functions provided by critical facilities
**Objective (Priority MEDIUM):** Retrofit facilities to seismic standards and provide alternate means to provide functionality where possible.

**Action 1:** Syracuse City has an ongoing, annual program of replacing aging sewer, water, pipe, which is very susceptible to earth movement, with PVC pipe, which is better able to withstand earth movement caused by a seismic event.

- **Time Frame:** ongoing
- **Funding:** City funds
- **Estimated Cost:** $250,000/mile
- **Staff:** Public Works, Engineer, etc.
- **Jurisdictions:** Syracuse City

**Action 2:** Provide remote working and communication ability for staff, which will be necessary if City buildings are rendered unusable.

- **Time Frame:** ongoing
- **Funding:** City funds/State/Federal grant
- **Estimated Cost:** Unknown, but feasible
- **Staff:** Administration
- **Jurisdictions:** Syracuse City

**Goal:** Mitigation against effects of earthquakes like loss of life and homes.

**Objective (Priority LOW):** Making information available to citizens on safety techniques to follow before, during, and after an earthquake.

**Action:** Provide information to the public about ways to protect themselves and their belongings during an earthquake.

- **Time Frame:** Ongoing
- **Funding:** City Funds
- **Estimated Cost:** Minimal
- **Staff:** City Administration

**Flooding - Problem Identification:** Syracuse City is established in western Davis County near the Bluff of the Great Salt Lake which may be subject to flooding in severe storm events or earthquake-caused wave events. Upstream drainage has potential to exceed capacity, resulting in thousands of dollars in damages. Ongoing maintenance of these drainage canals and pipelines by the City will continue to mitigate this threat.

**Goal:** Maximize capacity to manage flood events

**Objective (Priority MEDIUM):** Upgrade and maintain drainage systems.
**City Goals - Davis Co PDMP**

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---

**Action 1:** Annually inspect and remove debris in stream channels and detention basins and storm drains.

- **Time Frame:** Annually
- **Funding:** City funds
- **Estimated Cost:** minimal
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** Syracuse City

**Action 2:** Stormwater Master Plan includes design to connect and activate the 4000 West Outfall Project (60-inch diameter storm-water pipeline on the city's South side) that terminates along the Bluff into the Great Salt Lake.

- **Time Frame:** 2025
- **Funding:** City funds
- **Estimated Cost:** $300,000
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** Syracuse City

**Action 3:** Coordinate with the State of Utah on the ongoing Great Salt Lake floodplain delineation study.

- **Time Frame:** ongoing
- **Funding:** State and Federal Funds
- **Estimated Cost:** Unknown
- **Staff:** Public Works, Engineer, etc.
- **Jurisdictions:** Syracuse City and State of Utah

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**Wildland Fire - Problem Identification:** A significant portion of Syracuse City meets a natural environment to the west where an urban/wildland interface is created.

- **Goal:** Mitigate the impact of wildfires in high-threat areas.

- **Objective (Priority MEDIUM):** Including considerations of wildfire hazards in land use, public safety, and other elements of the comprehensive plan.

- **Action:** In future city plans, encourage the mitigation of wildfires.

- **Time Frame:** Ongoing
- **Funding:** City Funds
- **Estimated Cost:** Minimal
- **Staff:** City Administration, Community Development, Building Department, etc
- **Jurisdictions:** Syracuse City
**Severe Weather - Problem Identification**: Syracuse City is down-slope of the Wasatch Mountain Range where seasonally strong winds have caused damage to structures and the urban forest.

**Goal**: Maximize community resiliency to high-wind events

**Objective (Priority MEDIUM)**: Building Code Enforcement

**Action 1**: Work in tandem with project developers and homeowners to follow standardized codes and maintain structural integrity of commercial and residential buildings.

- **Time Frame**: Ongoing
- **Funding**: City funds
- **Estimated Cost**: minimal
- **Staff**: City Administration, Public Works, Engineer, etc.
- **Jurisdictions**: Syracuse City

**Action 2**: Create a public service campaign to inform residents about tree species and varieties that are more likely to endure high wind events without failure, causing damage to utilities, landscape and buildings.

- **Time Frame**: Ongoing
- **Funding**: City funds, local volunteers
- **Estimated Cost**: minimal
- **Staff**: City Administration, Public Works, Engineer, etc.
- **Jurisdictions**: Syracuse City

**Multi-Hazards - Problem Identification**: City-wide communications infrastructure is vulnerable, creating a need to mitigate failure of communications abilities during various types of disasters.

**Goal**: Maximize ability to communicate during various types of disasters

**Objective (Priority MEDIUM)**: Update and maintain existing communications infrastructure, and mitigate the impacts of damaged communications facilities during various types of disasters.

**Action 1**: Ensure cellular-based devices are updated

- **Time Frame**: Ongoing
- **Funding**: City funds
- **Estimated Cost**: minimal
- **Staff**: City Administration
- **Jurisdictions**: Syracuse City

**Action 2**: Update satellite-based communications equipment

- **Time Frame**: 2025
City Goals - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

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**Funding:** City funds

**Estimated Cost:** $3,000 per year

**Staff:** Administration

**Jurisdictions:** Syracuse City

**Action 3:** Update radio equipment

**Time Frame:** 2025

**Funding:** City funds, state/federal grants

**Estimated Cost:** $15,000

**Staff:** Administration, Public Safety

**Jurisdictions:** Syracuse City

**Action 4:** Maintain relationships and conduct training with community-based emergency organizations.

**Time Frame:** Ongoing

**Funding:** City, state/federal assistance

**Estimated Cost:** minimal

**Staff:** Administration

**Jurisdictions:** Syracuse City

---

**West Bountiful City**

**Background**

West Bountiful was first located in 1848 when pioneers made their way into the territory. It was incorporated as a town on January 28, 1949. The City is located about eight miles north of Salt Lake City and twenty-nine miles south of Ogden.

West Bountiful is a City of the fifth class and operates under a six-council member form of government, with an elected Mayor and five Council Members. The day-to-day operations are delegated to a City Administrator, who works hand-in-hand with the Mayor to ensure all city operations are well-run. City operations include a 24/7 police department, water, garbage/recycling, streets, storm water, snow removal, community development, and an Arts Council. West Bountiful City is part of the South Davis Fire District which provides fire protection. Emergency management and pre-disaster mitigation responsibilities are coordinated by the West Bountiful City Police Department in partnership with local citizens that are appointed to the Emergency Preparedness Advisory Committee (EmPAC). Sanitary Sewer services are provided by the South Davis Sewer District. Animal Care and Control services are provided by Davis County.

**Community Buildings and Infrastructure Status**

The 5300 residents enjoy a quiet, rural, equestrian lifestyle. Many opportunities for cultural events are provided through a monthly concert series and arts displays. Major events include 4th of July celebration,
Founders’ Day celebration, and special activities for Halloween, Easter and Christmas. The City benefits from a vibrant commercial district along 500 West between 400 North and 500 South, with a variety of goods and services from restaurants and deli's to home improvement and savings club businesses. The FrontRunner commuter rail has been running since April 2008, and the Legacy Parkway was opened in 2008. These were built to help alleviate the traffic load on Interstate 15 through the West Bountiful area. West Bountiful is a gateway community to Salt Lake County for travelers going south on I-15 and Legacy Parkway.

Specific Community Hazards

- **Earthquake.** West Bountiful’s proximity to the mountains and the Wasatch Fault puts it at high risk of earthquake damage.

- **Flooding.** West Bountiful is located along the Wasatch Mountain Front. City facilities, trails, and homes sustained significant damage during the 1983 flooding disaster.

- **Severe Weather.** West Bountiful is subject to high winds. December, 2011 West Bountiful was subjected to extreme winds that caused significant damage to houses, trees, and other infrastructure.

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 South Water Tank</td>
<td>Water contamination, flooding, tank failure</td>
<td>New main line connection into tank. New main line from tank into West Bountiful</td>
</tr>
<tr>
<td>400 North Water Tank</td>
<td>Water contamination, flooding, tank failure</td>
<td>New main line from tank into West Bountiful</td>
</tr>
<tr>
<td>Bountiful Water Connection</td>
<td>Line Failure</td>
<td></td>
</tr>
</tbody>
</table>

**MUNICIPAL BUILDINGS + INFRASTRUCTURE**

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Offices</td>
<td>Loss of vital city records; communication vehicles; day to day functions</td>
<td>Transfer paper records to digital and secondary backup off site. Update heavy equipment.</td>
</tr>
<tr>
<td>Police Department</td>
<td>Loss of vital police records; impact to day to day functions</td>
<td>Update servers and security.</td>
</tr>
<tr>
<td>Public Works Building</td>
<td>Loss/damage to response equipment</td>
<td>Developing plans to construct a new maintenance yard.</td>
</tr>
<tr>
<td>Facility</td>
<td>Hazard / Risk</td>
<td>Mitigation</td>
</tr>
<tr>
<td>----------</td>
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<td>------------</td>
</tr>
<tr>
<td>Storm Water Ditches</td>
<td>Flooding</td>
<td>Dredge and de-silt</td>
</tr>
<tr>
<td>Storm Water Lines</td>
<td>Flooding</td>
<td>New lines in many areas of city</td>
</tr>
</tbody>
</table>

### ARTERIAL ROADS

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 South</td>
<td>Destruction, evacuation and response concerns</td>
<td>N/A</td>
</tr>
<tr>
<td>400 North</td>
<td>Destruction, evacuation and response concerns</td>
<td>New road from 800 West to 1100 West</td>
</tr>
<tr>
<td>1100 West</td>
<td>Destruction, evacuation and response concerns</td>
<td>Proper maintenance, chip seal etc</td>
</tr>
<tr>
<td>800 West</td>
<td>Destruction, evacuation and response concerns</td>
<td>New areas a road and proper</td>
</tr>
</tbody>
</table>
Mitigation Efforts Since the 2016 Plan

- West Bountiful City is updating the City Emergency Operations Plan (EOP).
- West Bountiful City created the Emergency Preparedness Advisory Committee (EmPAC). West Bountiful City assigned the city’s emergency planning to the police department.
- West Bountiful City purchased a mobile trailer that was converted into a mobile command trailer. West Bountiful City purchased new vehicle and handheld police radios to replace outdated equipment and bring the radios into compliance with projected UCA changes.
- West Bountiful City has purchased secondary radios for police, public works, and CERT. West Bountiful City has started to store water and food supplies for city incident command. West Bountiful City increased emergency preparedness training, eg. Spontaneous Volunteer Management.
- West Bountiful City takes part in emergency drills, eg. The Utah Great Shake-Out.
- West Bountiful’s CERT works in conjunction with the city government and has a representative on the EmPAC board.
- West Bountiful City purchased a new backhoe and loader that will be used in the event of a disaster.

Mitigation Strategies (2021-2026)

**Earthquake - Problem Identification:** Critical facilities do not meet seismic standards. Water tanks supplying water to the city.

**Goal:** Reduce the threat of earthquake damage in the city.

**Objective (Priority HIGH):** Replace main water line from 500 South water tank to city. Replace aging water lines supplying water to the city. Replace Questar gas lines that supply gas to the city.

**Action 1:** Replace main water line from 500 South water tank to the City.

- **Time Frame:** 2021
- **Funding:** City / Holly Refining
- **Estimated Cost:** $1.0 million
- **Staff:** City Administration, Public Works, Engineer, etc.
- **Jurisdictions:** West Bountiful City

**Action 2:** Replace aging high pressure gas lines which serve a large portion of West Bountiful City (by Questar Gas). These gas lines cross several fault traces, and are subject to failure in the event of fault movement or a reasonably expected seismic event.

- **Time Frame:** ongoing
City Goals - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

**Funding**: City funds

**Estimated Cost**: unknown

**Staff**: City / Questar

**Jurisdictions**: West Bountiful City

**Action 3**: West Bountiful City has an ongoing, annual program of replacing aging cast iron culinary water pipe, which is very susceptible to earth movement, with flexible PVC pipe, which is better able to withstand earth movement caused by a seismic event.

- **Time Frame**: ongoing
- **Funding**: City funds
- **Estimated Cost**: $500,000/yr
- **Staff**: City Administration, Public Works, Engineer, etc.
- **Jurisdictions**: West Bountiful City

**Flooding - Problem Identification**: West Bountiful City is traversed by several canals which may be subject to flooding in severe storm events. These canals overtopped their banks in the 1983 flood disaster, resulting in thousands of dollars in damages. Significant funding following the 1983 flooding greatly reduced flood vulnerability in those areas. Ongoing maintenance of these floodways by the county will continue to mitigate this threat.

**Goal**: Reduce the threat of flooding damage in the city.

- **Objective (Priority HIGH)**: Maintain identified flood threat areas.
  - **Action**: Annually inspect and remove debris in stream channels and debris basins.
  - **Time Frame**: annual
  - **Funding**: City funds
  - **Estimated Cost**: minimal
  - **Staff**: City Administration, Public Works, Engineer, etc.
  - **Jurisdictions**: West Bountiful City

**Multi-Hazards - Problem Identification**: West Bountiful City’s emergency operations plan is in the process of being updated.

**Goal**: Reduce the threat of wildfire damage in the city.

- **Objective (Priority HIGH)**: Improve communications, mitigate the impacts of and be prepared for emergency situations and hazards.
  - **Time Frame**: 2022
  - **Funding**: City funds / federal
**City Goals - Davis Co PDMP**

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

**Estimated Cost:** unknown  
**Staff:** City Administration, Police, Public Works, Engineer, EmPAC, etc.  
**Jurisdictions:** West Bountiful City

**Wildland Fire - Problem Identification:** A significant portion of West Bountiful City meets only a natural environment to the northwest where an urban/wildland interface is created.

**Goal:** Mitigate the impact of wildfires in high-threat areas.

**Objective (Priority LOW):** Including considerations of wildfire hazards in land use, public safety, and other elements of the comprehensive plan.

**Action:** In future city plans, encourage the mitigation of wildfires.

**Time Frame:** Ongoing  
**Funding:** City Funds  
**Estimated Cost:** Minimal  
**Staff:** City Administration, Community Development, Building Department, etc  
**Jurisdictions:** West Bountiful City

**Dam Failure - Problem Identification:** Water containment systems located throughout West Bountiful are aging and bring the possibility to fail in the future.

**Goal:** Mitigate effects of dam failures by the education of the public.

**Objective (Priority MEDIUM):** Reduce damage to life and property by educating the population on the possible effects of dam failures.

**Action:** Provide the public with information about flash flooding and dam failures.

**Time Frame:** Ongoing  
**Funding:** City Funds  
**Estimated Cost:** Minimal  
**Staff:** City Administration  
**Jurisdictions:** West Bountiful City

**Severe Weather - Problem Identification:** West Bountiful City is susceptible to severe weather (rain, snow, wind, lightning, etc.)

**Goal:** Reduce the threat of severe weather damage to infrastructure.

**Objective (Priority MEDIUM):** Encouraging weather-proofing measures in new construction.
**City Goals - Davis Co PDMP**

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

---

**Action:** Encourage new construction to implement weather-proofing into building plans.

**Time Frame:** Ongoing

**Funding:** City Funds

**Estimated Cost:** Minimal

**Staff:** Community Development, Building Department, etc.

**Jurisdictions:** West Bountiful City

---

**Holly Frontier Refinery - Problem Identification:** Potential Fire, Explosion, Chemical Leak.

**Goal:** Continue a good working relationship with Holly to include quality communication and collaboration on projects that affect the city.

**Objective (Priority HIGH):** Mitigate potential fire and explosion damage.

**Action:** Replace main waterline on 500 South to improve water flow to the refinery in the event of fire or explosion.

**Time Frame:** 2021

**Funding:** Holly Refining

**Estimated Cost:** $500,000

**Staff:** City Administration, Public Works, Engineer, etc.

**Jurisdictions:** West Bountiful City

---

**Landslide - Problem Identification:** West Bountiful City is located in the foothills, therefore landslides are possible.

**Goal:** Mitigate the effects of landslides.

**Objective (Priority LOW):** Creating a plan to study areas where landslides may occur.

**Action:** Discuss using GIS Mapping or other means to determine where landslides may occur.

**Time Frame:** Unknown, depending on funding

**Funding:** City Funds

**Estimated Cost:** Minimal

**Staff:** City Administration, GIS, etc.

**Jurisdictions:** West Bountiful City
West Point City

Background

West Point is a city in Davis County, Utah, United States. It is part of the Ogden–Clearfield, Utah Metropolitan Statistical Area. The population was 9,511 at the 2010 census, up from 6,033 at the 2000 census. The estimated population in 2014 was 10,204. The city has experienced quick growth centered primarily around single-family residential construction.

West Point is located along the eastern shoreline of the Great Salt Lake, and an extensive network of wetlands is strung along the western boundaries. These areas are essential to migrating birds. The cities of Clinton and Hooper are located to the north, Clearfield is to the east, and the city of Syracuse is to the south.

Community Buildings and Infrastructure Status

West Point is a fast growing community with many newer facilities and homes. The city of West Point has taken great care in ensuring the infracture of the city is being constructed safely and using sound practices. Older infrastructure is cared for as needed and newer projects and held to the highest of development standards. West Point is dedicated to the safety and security of its employees, visitors, and residents and will continue to explore resources, partnerships, funding, and personnel to make such projects successful.

Specific Community Hazards

- **Earthquake.** West Point’s proximity to the Wasatch Fault puts it at high risk of earthquake damage.
- **Flooding.** West Point is susceptible to flooding from runoff and storm events.

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Tanks</td>
<td>No culinary water</td>
<td>Shut off valve(s)</td>
</tr>
<tr>
<td>Pump Stations</td>
<td>No culinary water</td>
<td>Back-up generator</td>
</tr>
<tr>
<td>Major sewer trunk lines</td>
<td>Backup/flooding/health</td>
<td>Regular maintenance</td>
</tr>
<tr>
<td>Culinary water well</td>
<td>No culinary water</td>
<td>Back-up generator</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Facility</th>
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<th>Mitigation</th>
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<tbody>
<tr>
<td><strong>CRITICAL AREA FACILITIES + INFRASTRUCTURE</strong></td>
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<tbody>
<tr>
<td><strong>MUNICIPAL BUILDINGS + INFRASTRUCTURE</strong></td>
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</tbody>
</table>
## City Goals - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

<table>
<thead>
<tr>
<th>City Offices</th>
<th>Loss of vital city records; communication; vehicles; day to day functions</th>
<th>TBD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Works Building</td>
<td>Loss/damage to response equipment/supplies/materials</td>
<td>TBD</td>
</tr>
<tr>
<td>Fire Station</td>
<td>Loss/damage to response equipment</td>
<td>TBD</td>
</tr>
<tr>
<td>IT Network and Server</td>
<td>Loss of communications</td>
<td>Enhance security</td>
</tr>
</tbody>
</table>

### STORMWATER INFRASTRUCTURE

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stormwater Ditches</td>
<td>Flooding</td>
<td>Dredge and de-silt</td>
</tr>
<tr>
<td>Detention basins</td>
<td>Flooding</td>
<td>Dredge &amp; de-silt / clean outlet control structures</td>
</tr>
</tbody>
</table>

### ARTERIAL ROADS

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Davis Corridor (proposed)</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>2000 West (SR-108)</td>
<td>Destruction, evacuation and response concerns</td>
<td>Maintain</td>
</tr>
<tr>
<td>300 North</td>
<td>Destruction, evacuation and response concerns</td>
<td>Maintain</td>
</tr>
<tr>
<td>800 North</td>
<td>Destruction, evacuation and response concerns</td>
<td>Maintain</td>
</tr>
<tr>
<td>4500 West</td>
<td>Destruction, evacuation and response concerns</td>
<td>Maintain</td>
</tr>
</tbody>
</table>
Mitigation Efforts Since the 2016 Plan

- The City has maintained a capital improvements program to guide its infrastructure investments every year since 2016. One of core principles that help the city prioritize their projects is the impact to public safety and emergency preparedness.

Mitigation Strategies (2021-2026)

Earthquake - Problem Identification: Critical facilities may not meet seismic standards. Due to geography, liquefaction may occur.

Goal: Reduce the threat of earthquake damage in the city.

Objective 1 (Priority HIGH): Make sure the City is up-to-date with building codes.

Action: Adopt and enforce updated building code provisions to reduce earthquake damage risk.

Time Frame: 2022
Funding: City funds
Estimated Cost: unknown
Staff: City Inspector
Jurisdictions: West Point City

Objective 2 (Priority HIGH): Know what locations within the City are most vulnerable to seismic events.

Action: Use GIS to map hazard areas, at-risk structures, and associated hazards to assess high-risk areas, and then offer the mapping online for residents and design professionals.

Time Frame: unknown
Funding: unknown
Estimated Cost: unknown
Staff: Public Works, City Engineer
Jurisdictions: West Point City

Objective 3 (Priority HIGH): Have an educated citizenry when it comes to earthquake protocol.

Action: Develop an outreach program about earthquake risk and mitigation activities in homes, schools, and businesses, and educate homeowners on safety techniques to follow during and after an earthquake.

Time Frame: ongoing
Funding: City
Estimated Cost: unknown
Staff: Administration
Jurisdictions: West Point City
Flooding - Problem Identification: The City has many Sewer and Storm Drain Manholes that often get filled with debris which could potentially cause flooding.

**Goal:** Reduce the threat of flooding damage in the city.

**Objective (Priority MEDIUM):** Maintain Sewer and Storm Drain Manholes.

**Action:** Annually inspect and remove debris in city sewer and storm drain manholes.

- **Time Frame:** annual
- **Funding:** City funds
- **Estimated Cost:** minimal
- **Staff:** Public Works
- **Jurisdictions:** West Point City

Severe Weather - Problem Identification: West Point is susceptible to severe weather (rain, snow, wind, lightning, etc.)

**Goal:** Reduce the threat of severe weather damage to infrastructure.

**Objective (Priority MEDIUM):** Encouraging weather-proofing measures in new construction.

**Action:** Encourage new construction to implement weather-proofing into building plans.

- **Time Frame:** Ongoing
- **Funding:** City Funds
- **Estimated Cost:** Minimal
- **Staff:** Community Development, Building Department, etc.
- **Jurisdictions:** West Point City

Multi-Hazards - Problem Identification: West Point City has had traces of Chloroform in the water in recent months and the Chlorine residuals are perpetually low.

**Goal:** Position the city to provide better support in multi-hazard situations.

**Objective 1 (Priority HIGH):** Maintain the City water to State Standards.

**Action:** Add Chlorine Booster to the Water System.

- **Time Frame:** 2022
- **Funding:** City funds
- **Estimated Cost:** $30,000
- **Staff:** Public Works, City Engineer
- **Jurisdictions:** West Point City

**Objective 2 (Priority HIGH):** Have AEDs available in case of emergency in public places.
**City Goals - Davis Co PDMP**

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**Action:** Acquire seven AEDs, one for each park, the Municipal Building, the Public Works Building, and two portables for the Public Works Director and the Recreation Director.

- **Time Frame:** 2022
- **Funding:** unknown
- **Estimated Cost:** $14,000
- **Staff:** Public Works Department
- **Jurisdictions:** West Point City

**Objective 3 (Priority HIGH):** The City has not adopted an emergency management plan. Improve communications, mitigate the impacts of and be prepared for emergency situations and hazards.

- **Action:** Finalize and adopt an Emergency Management Plan.
  - **Time Frame:** 2022
  - **Funding:** unknown
  - **Estimated Cost:** unknown
  - **Staff:** City Administration
  - **Jurisdictions:** West Point City

**Objective 4 (Priority MEDIUM):** Maintain City fire hydrants.

- **Action:** Annually inspect all City fire hydrants to ensure proper water pressure.
  - **Time Frame:** Annually
  - **Funding:** City
  - **Estimated Cost:** unknown
  - **Staff:** Public Works Department
  - **Jurisdictions:** West Point City

**Objective 4 (Priority MEDIUM):** Reduce hazards by completing risk assessments.

- **Action:** When new construction is being proposed, consider the use of a risk assessment to identify possible hazards, risks, and disasters.
  - **Time Frame:** Ongoing
  - **Funding:** City Funds
  - **Estimated Cost:** Minimal
  - **Staff:** Public Works, City Engineer
  - **Jurisdictions:** West Point City
Woods Cross City

Background

Woods Cross City is a community located in Davis County along the valley of the Wasatch Range. With a population of about 11,500 and approximately 2,800 households, Woods Cross offers a variety of housing options for commercial and industrial businesses with access to I-15 and Legacy Parkway for commuters close to Salt Lake City.

Although a part of the Ogden-Clearfield Metropolitan Statistical Area, it serves as a bedroom community to Salt Lake City and the surrounding area. However, due to the very narrow entrance into Salt Lake County, roads between the foothills and wetlands often reach near-gridlock traffic during rush hour.

The FrontRunner commuter rail has been running since April 2008, and the Legacy Parkway was opened in 2008. These facilities have helped alleviate the traffic load on Interstate 15 through the South Davis County Area. Woods Cross occupies an area of approximately six square miles.

Woods Cross City operates with an elected Mayor and five Council Members. The day-to-day operations and the majority of executive authorities are delegated to a City Administrator, who works hand-in-hand with the Mayor and Council to ensure all city operations are well-run. City operations include a 24/7 police department, a municipal court, water, garbage/recycling, street, stormwater, snow removal, community development, and parks facilities. Woods Cross City is part of the South Davis Fire District which provides fire protection. Emergency management and pre-disaster mitigation responsibilities are coordinated by the City Administrator. Woods Cross has many 24/7 services including a municipal police department. Fire services are handled by South Davis Metro Fire District.

Community Buildings and Infrastructure Status

Woods Cross takes great pride in its city and residents. Woods Cross focuses a good deal of attention each year to maintaining and upgrading essential services and critical infrastructure. Woods Cross ensures they are utilizing the highest standards of health and safety in these projects bringing their city to the highest of 2021 standards. Woods Cross plans to continue this trend as funding, resources, and personnel allow.

Specific Community Hazards

- **Earthquake**: Woods Cross City’s proximity to the Wasatch Fault puts it at a high risk of earthquake damage.
- **Flooding**: Woods Cross City is located along the eastern edge of the Great Salt Lake wetlands thus making the ground water suitable to many locations.
- **Landslides**: Homes in a specific geographical area experience substantial settlement issues after many years of being constructed.
- **Wildland Fire**: Western portion of Woods Cross City borders a nature preserve scenic by way and trail which has a potential for wildfires.
- **Severe Weather**: Woods Cross City lies on the western edge of the Wasatch from which have severe down slope wind events.
- **Railways**: Two major railroad tracks and an industrial rail track cross through the community.
- **Chemical Release**: Three petroleum facilities reside within Woods Cross City and others in very close proximity make probability of explosions or air contamination.
- **Pipeline**: Woods Cross City has 12 pressure petroleum pipelines that run through the city in roughly one mile wide corridor which encompass the majority of the City.

<table>
<thead>
<tr>
<th>CRITICAL AREA FACILITIES + INFRASTRUCTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Facility</strong></td>
</tr>
<tr>
<td>Wells #3, #4 &amp; #5</td>
</tr>
<tr>
<td>Storage reservoirs</td>
</tr>
<tr>
<td>Treatment Plant</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MUNICIPAL BUILDINGS + INFRASTRUCTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Facility</strong></td>
</tr>
<tr>
<td>City Offices</td>
</tr>
<tr>
<td>Police Department</td>
</tr>
<tr>
<td>Public Works Building</td>
</tr>
<tr>
<td>IT Network and Server</td>
</tr>
<tr>
<td>EOC</td>
</tr>
<tr>
<td>Standby Generator for City Office and Water system facilities</td>
</tr>
<tr>
<td>South Metro Davis Fire Station #81</td>
</tr>
</tbody>
</table>
### City Goals - Davis Co PDMP

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Metro Davis Fire - Station #82</td>
<td>Loss/damage to response apparatus/personnel</td>
<td>Enhance structural earthquake resiliency</td>
</tr>
<tr>
<td>South Metro Davis Fire - Station #83</td>
<td>Loss/damage to response apparatus/personnel</td>
<td>Enhance structural earthquake resiliency</td>
</tr>
<tr>
<td>South Metro Davis Fire - Station #84</td>
<td>Loss/damage to response apparatus/personnel</td>
<td>Enhance structural earthquake resiliency</td>
</tr>
<tr>
<td>South Metro Davis Fire - Station #85</td>
<td>Loss/damage to response apparatus/personnel</td>
<td>Enhance structural earthquake resiliency</td>
</tr>
</tbody>
</table>

**STORMWATER INFRASTRUCTURE**

<table>
<thead>
<tr>
<th>Facility</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500 South &amp; 1950 South Detention basins</td>
<td>Flooding: excessive rainfall overfilling banks</td>
<td>Downstream protection of property</td>
</tr>
</tbody>
</table>

**ARTERIAL ROADS**

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Hazard / Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500 South</td>
<td>Destruction, evacuation and response concerns, bridge collapse, train derailment</td>
<td>UDOT rebuilt I-15 bridge in 2014</td>
</tr>
<tr>
<td>800 West</td>
<td>Destruction, evacuation and response concerns</td>
<td></td>
</tr>
<tr>
<td>1100 West</td>
<td>Destruction, evacuation and response concerns, train derailment</td>
<td></td>
</tr>
<tr>
<td>Redwood Road</td>
<td>Destruction, evacuation and response concerns</td>
<td></td>
</tr>
<tr>
<td>2600 South</td>
<td>Destruction, evacuation and response concerns, train derailment, bridge collapse</td>
<td>UDOT rebuilt I-15 bridge in 2014</td>
</tr>
</tbody>
</table>

**Mitigation Efforts Since the 2016 Plan**

- Woods Cross City has updated the City Emergency Operations Plan (EOP)
- Drinking Water Well drilled and equipped with standby power - $1.5 million
- 3.1 million gallon reservoir designed and constructed for earthquake resilience - $3 million
- 2,000 gpm Water Treatment Facility - $5 million
- Upgrade to radio system with additional frequencies for city to district’s communication - $5,000
  Air monitoring equipment set up within the City - Business paid approximately $100,000 to
  Health Department for implementation
- Woods Cross Public Works Mutual Aid Agreements – UTWARN and UPWEMA

Mitigation Strategies (2021-2026)

Earthquake - Problem Identification: Public Works facility does not meet seismic standards.

Goal: New Public Works Building Built and completed in 2023

Objective (Priority HIGH): Retrofit facilities to seismic standards.

Action 1: Construct a new Public Works Facility.
  
  Time Frame: 2022-2023
  
  Funding: City funds, utility fees
  
  Estimated Cost: $6.5 million
  
  Staff: City Administration, Public Works
  
  Jurisdictions: Woods Cross City

Action 2: Replace Aging Waterlines.

  Time Frame: annually
  
  Funding: City funds, utility fees
  
  Estimated Cost: $300,000/yr
  
  Staff: Public Works, Engineering
  
  Jurisdictions: Woods Cross City

Flooding - Problem Identification: Basement flooding.

Goal: City Development ordinance adopted pertaining to water elevations

Objective (Priority HIGH): Determine elevations of high water elevations. Establish benchmarks
  for surveyor to utility.

   Action: Set lowest dwellable elevation and benchmarks.
  
   Time Frame: 2021
  
   Funding: City funds
  
   Estimated Cost: $10,000
  
   Staff: City Administration, Public Works, Engineer, etc.
  
   Jurisdictions: Woods Cross City

Wildland Fire - Problem Identification: Fire potential areas are located in the city limits.
**Goal**: Reduce the threat of wildfire damage in the city.

**Objective (Priority LOW)**: Fuel mitigation.

**Action 1**: Maintain a reduction of fuel along the trail system.
- **Time Frame**: annually
- **Funding**: City funds
- **Estimated Cost**: $5,000
- **Staff**: Public Works
- **Jurisdictions**: Woods Cross City

**Action 2**: Participate with South Davis Metro Fire District on a Community Wildfire Protection Plan.
- **Time Frame**: 2022
- **Funding**: Woods Cross City, South Davis Metro Fire District
- **Estimated Cost**: $10,000
- **Staff**: City Administration, City Citizen Corp Council, Fire District
- **Jurisdictions**: Woods Cross City, South Davis Metro Fire District

**Objective (Priority MEDIUM)**: Including considerations of wildfire hazards in land use, public safety, and other elements of the comprehensive plan.

**Action**: In future city plans, encourage the mitigation of wildfires.
- **Time Frame**: Ongoing
- **Funding**: City Funds
- **Estimated Cost**: Minimal
- **Staff**: City Administration, Community Development, Building Department, etc
- **Jurisdictions**: Woods Cross City

**Dam Failure - Problem Identification**: Many water containment systems are located in the area and they each have the potential to fail, which would affect Woods Cross.

**Goal**: Prevent dam failures.

**Objective (Priority MEDIUM)**: Provide citizens within the flood area of dams with information on flash flooding.

**Action**: When requested, provide citizens with information on flash flooding.
- **Time Frame**: Ongoing
- **Funding**: City Funds
City Goals - Davis Co PDMP

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**Estimated Cost**: Minimal

**Staff**: City Administration

**Jurisdictions**: Woods Cross City

**Landslide - Problem Identification**: Several homes in the city have experienced substantial settlement.

**Goal**: Established CDBG grants to help residents with subsidence. (Ongoing).

**Objective (Priority MEDIUM)**: Conduct an analysis of why this is occurring and seek to discover mitigation solutions.

**Action**: Continue with residential inquiries, monitoring and evaluations of existing established benchmarks and boring.

**Time Frame**: 2021-2023

**Funding**: City funds

**Estimated Cost**: $50,000

**Staff**: City Staff, consultants

**Jurisdictions**: Woods Cross City

**Goal**: Mitigate the effects of landslides by conducting studies.

**Objective (Priority LOW)**: Creating a plan to study areas where landslides may occur.

**Action**: Discuss using GIS Mapping or other means to determine where landslides may occur.

**Time Frame**: Unknown, depending on funding

**Funding**: City Funds

**Estimated Cost**: Minimal

**Staff**: City Administration, GIS, etc.

**Jurisdictions**: Woods Cross City

**Multi-Hazards - Problem Identification**: Lack of electronic storage and communication equipment that is vulnerable.

**Goal**: Performed an RFP for IT services and hire ETS to upgrade and secure Servers, computers and phones

**Objective (Priority MEDIUM)**: Improve storage capacity and duplicate critical communication as needed for operations.

**Action 1**: Develop a team to access the need and determine critical components.

**Time Frame**: 2023
City Goals - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

Funding: City funds
Estimated Cost: $1,000
Staff: City Staff
Jurisdictions: Woods Cross City

Action 2: Enhance the storage and communication equipment.
Time Frame: 2024
Funding: City funds
Estimated Cost: $10,000
Staff: City Staff
Jurisdictions: Woods Cross City

Railways - Problem Identification: Potential for HAZMAT spill.
Goal: Continual
Objective (Priority MEDIUM): Train on hazardous material response.
Action: First responder training.
Time Frame: annually
Funding: state/federal grants
Estimated Cost: unknown
Staff: South Davis Metro Fire
Jurisdictions: Woods Cross City, South Davis Metro Fire

Chemical Release - Problem Identification: Air quality impacts form chemical/petroleum releases.
Goal: Reduce the threat of chemical release damage in the city.
Objective (Priority MEDIUM): Educate the public and maintain existing monitoring equipment installed.
Action 1: Proper maintenance and training.
Time Frame: annually
Funding: Private business, County Health Dept
Estimated Cost: $5,000
Staff: County Health Department
Jurisdictions: County Health Department
Action 2: Public notification.
Time Frame: annually
City Goals - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

Funding: Private business
Estimated Cost: $500
Staff: Air quality committee
Jurisdictions: Woods Cross City

Pipeline - Problem Identification: Petroleum pipelines that impact the community.
Goal: Continual

Objective (Priority LOW): Support improvements to infrastructure.
Action: Educate community of pipeline awareness.
Time Frame: annually
Funding: Pipeline owners, City
Estimated Cost: $250
Staff: Pipeline owners, City Staff
Jurisdictions: Pipeline owners, Woods Cross City

Goal: Maintain critical transportation corridor capabilities.

Objective (Priority LOW): Provide unrestricted access or critical roadways for all lifeline infrastructure.
Action: Educate community of pipeline awareness.
Time Frame: 2022-2024
Funding: City
Estimated Cost: $10,000
Staff: Public Works, Engineering, Community Development
Jurisdictions: Woods Cross City

Davis County (Unincorporated)

Background

Davis County is Utah's smallest county in land area. It is a narrow strip of land only 223 square miles but is the third largest county in population. The territorial legislature created Davis County in 1852. During its first half-century, Davis County grew slowly. In 1940 the population was barely 16,000. The small family farms and local businesses could support no greater increase. However, the County doubled in population between 1940 and 1950, and doubled again in the next decade. Between 1960 and 1980, the population more than doubled again, from 65,000 to 147,000. By 1990 the population had reached
188,000 and the 2000 census recorded 238,994. Being the fastest growing of the four major urban communities along the Wasatch Front, Davis County is projected to build out with a population near 390,000 by the year 2030.

Accompanying this growth has been a diversification of population and a new prosperity. Davis County now enjoys a wide mix of people representing many ethnic, cultural, and religious backgrounds. The County has moved from its traditional agricultural dependency to an interlocking network of suburban communities around a core of original towns with closeness in proximity to downtown Salt Lake City. The communications age has tied Davis County to the world. Its citizens today are part of an economic and social pattern that reaches far beyond the County's tiny geographical limits.

Today, many nationally known commercial, industrial, recreational, and service companies provide diversified employment opportunities for residents of Northern Utah. The Freeport Center is located in Clearfield and is the largest distribution center in the State of Utah with more than seven million square feet of covered storage and five million square feet of open storage occupied by more than 70 renowned companies employing some 7,000 employees.

The County’s current general plan (adopted 2006) explains that “Davis County acknowledges that the main purpose of municipalities is to provide urban services and a public voice in local affairs. The role of the County should be to coordinate and assist the municipalities in addressing issues of regional significance” (p.1-2). While the unincorporated areas are small and have a limited population, for the purposes of this plan, the goals and strategies that affect the unincorporated areas of the County are incorporated into the neighboring municipal elements (i.e. Val Verda is a small area surrounded by Bountiful City). These unincorporated municipalities appear in the maps below in grey.
Specific Community Hazards

- **Earthquake**: Davis County’s proximity to the Wasatch Fault puts it at a high risk of earthquake damage.
- **Flooding**: Davis County is located along the eastern edge of the Great Salt Lake wetlands thus making the ground water suitable to many locations.
- **Dam Failure**: There are several water containment systems within the cities of Davis County, each of these are at various levels of decay. Each of them has the potential to fail.
- **Landslides**: Homes in a specific geographical area experience substantial settlement issues after many years of being constructed.
- **Wildland Fire**: Parts of Davis County borders a nature preserve scenic by way and trail which has a potential for wildfires.
- **Severe Weather**: Davis County lies on the western edge of the Wasatch from which have severe down slope wind events.
- **Chemical Release**: There are several locations and transport systems throughout the county. While these are directed to and around cities, the possibility of a chemical release is possible around Farmington and Syracuse Cities, as well as interstate and heavy rail transits.
- **Railways**: There are three railroad tracks that cross through the community. One of these transports materials, and others are used for commuter transit.
- **Pipeline**: The County has 8 pressure pipelines that run through the areas in the county.

Mitigation Efforts Since the 2016 Plan

- Began conducting community preparedness fairs, community outreach events, and promoting resident participation in the annual “ShakeOut” earthquake exercise. The yearly drill has consistently been promoted through county social media posts and education to county employees.
- Conducted seismic reviews of the Davis County Historical Courthouse and actively sought mitigation project funding to retrofit and/or rebuild this structure. The project is currently underway with restoration and seismic retrofitting already completed. - $12 Million.
- Implemented structural engineering recommendations to meet seismic standards. Any new construction of county facilities has met or exceeds current seismic standards.
- Retrofit the Weber Basin Water delivery system aqueduct along the east bench of the county for seismic occurrences. This is a continual project due to the magnitude. Currently retrofitting is taking place along with additional work in seeking funding for auto shutoff valve systems. - $5 Million.
- Increasing the capacity of streams to better handle runoff. Both natural and man made streams have been enlarged to handle downflow more efficiently.
City Goals - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

- Routinely maintain fire breaks and improve wildland access roads. Maintenance continues on this project. Given the length of the fire break roads in the county as well as sharing the space with private property owners this is a complicated ongoing project. Additionally, a new firebreak road/hiking trail (Bonneville Shoreline Trail) is currently under construction on the east bench of the county.

- Performed regular drainage system maintenance including sediment and debris clearance; and detection and prevention of discharges into stormwater and sewer systems from home footing drains, downspouts, or sewer pumps. Davis County has increased the size of their culvers therefore increasing their capacity. They also clear vegetation and manage the debris and sediment by conducting routine maintenance.

- Working with Davis County cities to inform residents about proper evacuation procedures. A county wide fire evaluation plan has been developed with color codes. This has been adopted by the county and all fire agencies within the county. A public campaign is moving forward to include the residents including evacuation routes from certain neighborhoods.

- Meeting with all fire agencies/departments bi-monthly during wildland fire season to share information on hazards, fireworks restrictions, and county and state ordinances and restrictions. All fire agencies and the county fire marshal meet on a regular basis, more than bimonthly. New ordinances have been implemented and discussed along with unified decisions made on fireworks, unincorporated area fire services, and equipment availability.

- Work with all fire agencies/departments and the Utah Division of Forestry Fire & State Lands to create an up-to-date centralized MOU/MOA file. Updated contracts for fire related services are currently being explored by county, city, and state officials.

- Hired a County Fire Warden and required experience relating to wildland fires. Sent the County Fire Warden to extensive training to further their knowledge of wildland fires. The county has contracted with Utah State Department of Forestry and Fire for a wildland fire warden position. The county fire marshal as well as all fire chiefs in the county are working together with the warden on project and wildland related matters.

- Continued to promote community outreach to vulnerable populations that may need assistance if heating and power are impacted by severe weather. Mass notification systems have been used in emergency situations to notify the population of possible hazardous situations. Also, county and city partnerships have been used to access as many social media users as possible to educate them on severe weather warnings and help with heat or cold related matters. Davis County is also working to improve their involvement in the 211 (United Way) system and the Special Needs Registry to ensure better education and safety measures.

- Back up generators have been installed in the county health department and main senior center. Backups have also been installed or upgraded in the county administration building, conference center, jail, sheriff's station, and memorial court house. Any new facilities or those under renovation are evaluated for essential functionality and if they require backup power capabilities.
Mitigation Strategies (2021-2026)

Earthquake - Problem Identification: Davis County is located in the heart of the Wasatch Fault between the shores of the Great Salt Lake and the foothills of the Wasatch Mountain Range. The majority of the population lives within 5 miles of the fault. A major traffic artery runs north and south, and numerous water and petroleum pipelines either cross over or run within 1/2 mile of the fault. Several petroleum refineries are located in the southern end of the county and are subject to severe damage from ground movement and liquefaction. A major earthquake in the area would result in hundreds of millions of dollars in damage to residential structures, industry, and of critical infrastructure, and likely some loss of life. Several public safety facilities and schools are seismically unsafe throughout the county. These facilities pose a significant threat to those who regularly work and attend school in them, and are in need of seismic retrofitting.

Goal: Provide public education on seismic hazards and mitigation.

Objective (Priority HIGH): Conduct community preparedness fairs, community outreach events, and promote resident participation in the annual “ShakeOut” earthquake exercise.

Action 1: Provide earthquake public education outreach.

  Time Frame: Ongoing
  Funding: County and City Emergency Management
  Estimated Cost: Minimal
  Staff: County and City Emergency Management
  Jurisdictions: Countywide

Action 2: Recommend implementation of structural engineering to meet seismic standards.

  Time Frame: Ongoing
  Funding: Local, FEMA PDM, State Earthquake Program Grant
  Estimated Cost: TBD when solutions are determined
  Staff: County operations, County engineer, consulting engineer
  Jurisdictions: Davis County/Cities

Flooding - Problem Identification: Problem Identification: FEMA has, over the past several years, updated and revised flood hazard maps throughout Davis County. As a result, an increased number of residences are currently located in flood plains. Most of these residents are not fully aware of the change in flood hazard.

Goal: Educate citizens of Davis County about flood hazard.

Objective (Priority HIGH): Increase the level of understanding in homeowners, city officials, permit authorities and title companies/realtors.
**City Goals - Davis Co PDMP**

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

**Action:** Develop and publicize about flood hazards and the National Flood Insurance Program (NFIP) and disseminate information on the County Emergency Management webpage.

- **Time Frame:** Ongoing
- **Funding:** County
- **Estimated Cost:** Minimal
- **Staff:** County Emergency Management
- **Jurisdictions:** County and Cities

**Dam Failure - Problem Identification:** Multiple water containment systems located throughout the County are aging and have the potential to fail in the future.

**Goal:** Prevent dam failures.

- **Objective (Priority MEDIUM):** Provide citizens within the flood area of dams with information on flash flooding.

  - **Action:** Provide the population with information and training opportunities about the possibility of and how to respond to flash flooding.
  - **Time Frame:** Ongoing
  - **Funding:** City Funds
  - **Estimated Cost:** Minimal
  - **Staff:** County Administration
  - **Jurisdictions:** Davis County

**Landslide - Problem Identification:** Numerous canyons and mountains, large and small exist around and in Davis County. Currently, hundreds of buildings, pipelines, power lines and roadways have been constructed on top of or through these natural formations. Nature continues to construct these canyons and mountains. Landslides and debris flows will continue to occur over time, thus threatening residents and critical infrastructure.

- **Objective (Priority LOW):** Reduce the effects of landslides by way of studying these areas and education.

  - **Action:** Continue to encourage cities to adopt a standard of requiring geo-technical studies in identified landslide and debris flow areas.
  - **Time Frame:** 1-6 years
  - **Funding:** County and city funds
  - **Estimated Cost:** Minimal
City Goals - Davis Co PDMP

Staff: County/City Emergency Management
Jurisdictions: Countywide

Wildland Fire - Problem Identification: Wildland Fire has been a continuing challenge throughout Davis County’s history. There are several areas in Davis County where there is an extreme danger of wildland-urban fire. Davis County has been classified as “at risk” for wildland fire. Various cities are actively participating in the development of Community Wildland Protection Plans (CWPP) in cooperation with the County Fire Warden and the Utah Division of Forestry Fire & State Lands.

Goal #1: Reduce or eliminate the threat of wildland fire, and the resulting loss of property and/or life.

Objective (Priority HIGH): Increase the level of wildfire knowledge for home and business owners by encouraging participation in The “Utah, Let’s Do Our Part” campaign, which provides homeowners and businesses with simple steps to reduce wildfire risk by preparing for wildland fire.

Action: Participate in the “Utah, Let’s Do Our Part” campaign which is the result of an interagency effort to reach the public with fire prevention messages relevant to Davis County. The goal of the program is to reach specific audiences with fire prevention messages to reduce the number of human-caused wildfires in the County.

Time Frame: Ongoing
Funding: County Funds
Estimated Cost: TBD
Staff: County and City Fire Departments, Emergency Management
Jurisdictions: Davis County

Problem Identification: Given that wildland fire is a hazard that can be managed through effective fuel control, ordinances requiring residents to maintain defensible space around their respective homes would greatly reduce the fire hazard in these areas. Programs could be established to assist residents in performing this requirement or to encourage rebates for property insurance.

Goal #2: Assist homeowners to maintain defensible space around homes and businesses to more effectively mitigate the wildland fire hazard by conducting fuels reduction and chipper days.

Objective (Priority HIGH): Provide information to residents and homeowners associations (HOAs) about the importance of fuels reduction and defensible spaces.

Action 1: Regularly conduct fuels reduction and chipper workshops.

Time Frame: Ongoing
Funding: Community Fire Departments
Estimated Cost: Minimal
Severe Weather - Problem Identification: Most presidential disaster declarations are the result of severe weather. These are usually thunderstorms and snowstorms. However, we are also prone to extremely severe wind events referred to as “East Winds.” Historically, Davis County has experienced gusts of over 110 mph and sustained winds of 80+ mph. These can result in millions of dollars in damage. On average we experience at least one every year. Severe storms result in secondary and tertiary problems mostly dealing with power, heating and travel. Severe weather has resulted and will continue to result in serious travel problems, as well as power and heating difficulties.

Goal: Assist residents protect themselves from the effects of severe weather and changing global climate.

Objective (Priority HIGH): Support programs to prepare residents and elected officials for adverse weather conditions.

Action 1: Encourage all cities to participate in the Storm Ready program.

- **Time Frame:** annually
- **Funding:** County and City Funds
- **Estimated Cost:** Minimal
- **Staff:** County/City Emergency Management
- **Jurisdictions:** Countywide

Action 2: Encourage avalanche preparedness for county backcountry users.

- **Time Frame:** Immediate
- **Funding:** County
- **Estimated Cost:** Minimal
- **Staff:** County Emergency Management
- **Jurisdictions:** Countywide

Problem Identification: Davis County cities near the mountain front are subject to strong easterly canyon winds. These high winds can result in serious disruption of essential public services and
communications for emergency responders have been severely hampered in the past by high wind damage to communication infrastructure.

**Objective 1.2 (Priority HIGH):** To educate officials and the public on the impact that climate change has had on water supplies.

**Action:** Promote education about the impact of global climate change.

- **Timeframe:** Immediate
- **Funding:** Federal, State and Local grants
- **Estimated Cost:** Minimal
- **Staff:** Emergency Manager and local jurisdiction Emergency Management Directors
- **Jurisdictions:** Countywide

**Chemical Release - Problem Identification:** Air quality impacts form chemical/petroleum releases.

**Goal:** Reduce the threat of chemical release damage in the city.

**Objective (Priority MEDIUM):** Educate the public and maintain existing monitoring equipment.

**Action 1:** Proper maintenance and training.

- **Time Frame:** annually
- **Funding:** Private businesses, County Health Dept.
- **Estimated Cost:** Minimal
- **Staff:** County Health Department
- **Jurisdictions:** County Health Department

**Action 2:** Public notification of air quality.

- **Time Frame:** annually
- **Funding:** Private businesses
- **Estimated Cost:** $1000
- **Staff:** County Emergency Management
- **Jurisdictions:** Countywide

**Railways - Problem Identification:** Potential for HAZMAT spill.

**Goal:** Have trained personnel available to respond to a possible HAZMAT spill.

**Objective (Priority MEDIUM):** Continual training on hazardous material response.

**Action:** First responder training.
**City Goals - Davis Co PDMP**

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

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**Time Frame:** annually  
**Funding:** state/federal grants  
**Estimated Cost:** TBD  
**Staff:** City Fire Departments, Emergency Management  
**Jurisdictions:** Countywide

**Pipeline - Problem Identification:** Petroleum pipelines that could impact the community if ruptured.  
**Goal:** Support cities in their mitigation and response efforts.  
**Objective (Priority LOW):** Support cities efforts with improvements to infrastructure.  
**Action:** Educate city leadership of pipeline hazards and how to respond if a release occurs.  
**Time Frame:** annually  
**Funding:** Pipeline owners, County  
**Estimated Cost:** Minimal  
**Staff:** Pipeline owners, City Staff  
**Jurisdictions:** Pipeline owners, County Emergency Management
A. Geographic and Physiographic Background

Davis County is located in northern Utah with an area of approximately 633 square miles. Two thirds of the county is covered by the Great Salt Lake, allowing for only 233 square miles of developable land, much of which is National Forest. The Great Salt Lake is the largest water body within the state and was named due to its high salt content. The elevation ranges from 4,200 feet at the Great Salt Lake to 9,547 feet at Francis Peak. Davis County is bordered by Morgan County to the east, Weber County and the Weber River to the northeast, Tooele County to the west, and Salt Lake County to the south (Davis County 2003).
B. Geology

Davis County is located along the Wasatch Mountain Range. The Wasatch Mountain Range runs north-south and is the eastern border of the valley region of the Great Basin, which is part of the much larger Basin and Range Province.

The geology of this area is a product of Miocene Epoch faulting and folding followed by a period of upheaval. The upheaval raised the valley 3,000 to 5,000 feet in a dome-like manner during the Tertiary Period. This disturbance of the valley floor created tension and a build-up of stress. To accommodate for the change, “block-faulting” occurred that allowed for the uplift of the mountain ranges and depression of the valley floor. This depression extends to the lowest portion of the Wasatch Front Region: the Great Salt Lake. Erosion is now the main geologic process of this area.

The Wasatch Range consists mainly of tertiary lake deposits and tertiary and quaternary volcanic rocks as well as younger Precambrian sedimentary rocks. To the north of Salt Lake City on the Wasatch Front, the hardest, highly altered metamorphosed rocks of schist and gneiss are found and date back about 2.6 billion years. Paleozoic marine sedimentary rocks surround the Precambrian areas of the Range. The Paleozoic sedimentary rocks have a very weak make-up and, in conjunction with Utah’s heavy precipitation during the winter and summer months, many landslides, avalanches, debris flows, and rockfalls occur.

C. Climate

Northern Utah has a cold desert climate. Utah has hot dry summers and cold winters. However, Utah’s climate is variable, wet in some areas of the state and dry in others. This variability is a function of latitude, elevation, topography, and distance from moisture sources. The Davis County region’s climate borders a semi-arid, mid-latitude steppe climate that occurs along the perimeter of the Great Basin Desert, and a humid continental climate found at slightly higher elevations in the Rocky Mountain foothills (Critchfield, 1974).

Northern Utah has four seasons, low annual precipitation, convective and frontal storms, dry summers, low humidity, and large annual and diurnal temperature extremes. The Wasatch Mountain Range brings most of the precipitation to the valley floor. The winter months bring heavy snow accumulation over the mountains that are favorable for winter sport activities.

Spring runoff is at its peak from April through June and can cause flooding along the lower streams. Flash flooding from summer thunderstorms affects smaller more localized areas in the county from summer thunderstorms.

The average annual precipitation in the Wasatch Mountain Range can be more than 40 inches. The average annual precipitation at the Salt Lake International Airport is 15.3 inches, with an average of 58.9 inches of snowfall. Utah is the second driest state in the nation.

The surrounding mountain ranges act as a barrier to the cold continental arctic masses. This also insulates the area during the day and cools the area rapidly at night. On clear nights, the colder air accumulates on the valley floor, while the foothills and benches remain relatively warm.

During the fall and winter months, smoke, haze, and fog can accumulate in the lower levels of stagnant air over the valley floor and can last for several weeks at a time. This is caused by areas of sinking air or high-pressure anticyclones settling over the Great Basin.

Average wind speeds are usually light to moderate, usually below 20 miles per hour. Strong winds can occur in Davis County, mainly in canyon mouths along the western slopes of the Wasatch Mountains. Tornadoes have occurred in this region but are uncommon. Severe hailstorms have also occurred in the region during the spring and summer months.
D. Major Rivers

Most of Davis County's water is from Wasatch Range snowmelt that occurs during the spring and summer. Larger drainages or river basins are formed from the mountain ravines or depressions that merge into perennial rivers and then meet forming the larger drainages. Davis County has a short stretch of the Weber River Basin.

Agricultural irrigation is the primary use of developed water in Utah, but municipal, industrial, environmental and recreational uses are increasing and this competition will reform the way water is utilized. With the growing population, agricultural land has decreased, with residential and commercial development on the rise. According to the Utah Water Plan, the Weber River Basins is projected to lose a significant amount of agricultural lands over the next few decades.
Map illustrating drainage basins in the Davis County area. (click for original).
E. Water and Drought

Utah is the second driest state in the nation and ranks second in per capita water use of public supplies. According to the Utah Division of Water Resources, Utah experienced drought conditions from 1999 to 2004, and from 2014 to 2015 on a statewide level. Decreased flow from major rivers has led to a decline in most of the reservoir levels and in the Great Salt Lake. The 2015 water year was one of the driest ever recorded (Utah Division of Water Resources 2015).

F. Development Trends

Davis County will continue to grow. Despite nationwide trends, Utah continues to develop. In general, the “developable” areas are in the western portion of the county bounded by the Great Salt Lake.

Davis County is part of the area known as the Urban Core of the Wasatch Front, in conjunction with Salt Lake, and Weber Counties. Over the past several decades, a great deal of growth has occurred in these three counties. Davis County’s residential growth will continue to infill previous agricultural and industrial fringe. Some of the residential growth is occurring on more sensitive lands such as hillsides and low lying areas towards the Great Salt Lake, and in northern Davis County. The opening of the Legacy Parkway in 2008 provided a much needed alternate north/south transportation expressway through the county. The planned North Davis Highway will further facilitate transportation from Weber, through Davis, to Salt Lake County.

Most population growth in the county is attributed primarily to residents having children. Some residential growth is attributed to in-migration due to the area’s strong job market. Nationally, growth is occurring in the west and in the south.

Davis County's population is projected to continue to increase significantly. This will result in housing cost increases greater than the rate of inflation. Higher population densities are projected to be concentrated in currently developed areas with recent development occurring at lower densities in the outlying areas.
Geography - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

(south)
Davis County, 2016

(south)
Davis County, 2021
A large commercial development has occurred at the Station Park project in Farmington. In Clinton, a large commercial development area has experienced major growth at 2000 W. and 1800 N.

**G. Development Constraints/Opportunities**

Influences on development are many and interrelated. A few are geographic, historic layout, transportation, household size, technology, employment trends and public policy. Development influences can encourage and/or discourage growth. For example, floodplains, wetlands, slopes and faults, sensitive species and transportation influences both attract and detract development.

**H. Geographic Constraints**

Geographic constraints on the urban area have created a linear region in Davis County that stretches more than 15 miles north to south, from Sunset on the north and south to North Salt Lake. At its widest point, Davis County is only 15 miles from east to west. This unique geographic layout has resulted in the development of a transportation system that is focused on the north-south movement of goods and people.

**I. Floodplains**

There are a number of identified floodplains in Davis County that pose challenges, command respect and generate appeal for development. Davis County is bisected by the Weber River and numerous streams, which emanate from the mountains and flow westward into the Great Salt Lake. In Davis County, several small creeks, such as Kays, Farmington, Davis, Deuel, North Canyon and others flow from the mountains into the lake. There are other streams too numerous to mention here, but some flow through open channels while sections of others are piped underground. While development is challenged by the floodplain, it is also attracted to it.

**J. National Flood Insurance Program Participation**

The National Flood Insurance Program was created in 1968 by the Federal Emergency Management Agency (FEMA) to provide homeowners living in the 100-year floodplain an opportunity to purchase flood insurance for their home. In order for individuals to be eligible to purchase flood insurance, their community needs to participate in the National Flood Insurance Program (NFIP). Assistance for community participation in the NFIP is provided by the State Floodplain Manager at DEM. There is also limited funding for flood mitigation projects for communities participating in the NFIP.

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### Geography - Davis Co PDMP

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

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| Sum            | 361      |        | $111,196,4 | $284,535  | 171     | $941,853 |

Davis County and all jurisdictions participate in the National Flood Insurance Program (NFIP). Davis County joined in March 1982 and the cities joined on the dates as indicated on the chart above. All jurisdictions are in the Regular Program with their current effective maps dated from 2007. FEMA has recently completed a remapping of Davis County and its cities. FEMA’s mapping data was accessed from the FEMA Flood Map Service Center website. The effective dates for various maps ranged from 2014 to 2021. Davis County will update their flood mapping data as new data becomes effective. Currently, Davis County has a total of 385 flood insurance policies, and has had a total of 138 claims since entering the NFIP. Each jurisdiction strives to follow the requirements of the NFIP, and utilize permitting for development in the floodplains. Centerville, Bountiful, and West Bountiful all participate in the Community Rating System (CRS). Their status is 7, 9, and 9 respectively. Additionally, Davis County does not have any repetitive loss structures within its boundaries. The County is supporting the mitigation efforts of entities like the Weber Basin Water Conservancy District and surrounding jurisdictions to help reduce the impact from hazards including flooding.

### K. Wetlands

Wetlands are those areas that are inundated or saturated with surface or groundwater at a frequency and duration sufficient to normally support a prevalence of vegetation typically adapted for life in saturated soil conditions. The greatest and most significant complex of wetlands in the intermountain area can be found adjacent to and
surrounding the Great Salt Lake. These wetlands provide important habitat to resident wildlife and are also an internationally significant habitat. As many as one million migratory shorebirds and waterfowl utilize the Great Salt Lake wetlands during annual migrations across North America. A majority of these wetlands are found on the east side of the lake. The east side of the lake is where the lake receives most of the freshwater and also where development pressures are occurring. Numerous rivers and streams flow into the lake, supplying this area with the fresh water needed to support wetlands, plant, and animal life. Wetlands can also be found adjacent to the streams, particularly in areas where the streams flow through relatively flat topography or low-lying areas.

Wetlands can be categorized according to their quality and type. Jurisdictional wetlands are those wetlands that are within the extent of the U.S. Army Corps of Engineers (USACE) regulatory overview. For an area to be identified as a jurisdictional wetland, the area must exhibit positive indicators of wetland hydrology, hydrophytic vegetation and hydric soils. If wetlands provide a particularly rich habitat for a variety of wildlife species, it is usually considered to be of high quality, or have a high functional value. Also, wetlands can be classified according to their type, including marsh, wet meadow, riparian scrub, playa/mudflat and open water.

L. Farmlands

Over the past several years, many acres of farmland in the area have been developed. There is a limited amount of prime/unique farmland and farmland of statewide importance in western Davis County. Historically, development followed farmland in an agrarian economy.

Farmlands of statewide importance are not as good as prime farmlands, but are nevertheless important to the agricultural base of the area. These farmlands have more limitations than prime farmlands, such as steeper slopes, high water table, and alkali problems. However, these lands can be made just as productive as the prime farmlands with proper management of the land. If farmlands of the type described above are located within incorporated city limits, it is presumed they will be eventually developed into urban type land uses. Currently, a majority of the acreage of these farmlands is being used to grow winter (dry farm) wheat and alfalfa.

M. Slopes and Faults

The steep slopes of the Wasatch Mountain Range were created by the Wasatch Fault, which runs the entire length of the urbanized areas. The Wasatch Fault and other faults in the area highlight the potential for earthquakes in the area and the need to consider their possible impact on infrastructure. As development continues to creep higher on the foothills of the Wasatch Mountains, slope stability, erosion and drainage problems will present engineering challenges in development design.

Development is usually attracted more to the views of slopes and faults than repelled by the higher risk of soil instability.

N. Open Space

Open Space is a large influence to residential and commercial development. Generally, people are attracted to open space. The Wasatch-Cache National Forest comprises the eastern portion of Davis County and includes a relatively large amount of open space. The urbanized area is fortunate to have exceptional public access to this open space to the east of the valley. Francis Peak is a notable Wasatch Range peak just east of Davis County. Numerous nationally recognized winter and summer recreation areas for skiers, hikers and rock climbers are in close proximity. As a consequence, hundreds of thousands of people visit the public lands in the foothills and mountains of the Wasatch annually.

Other open space features in Davis County include Antelope Island in the Great Salt Lake and the Farmington Bay Bird Refuge, which is a freshwater bay created by a dike of the Great Salt Lake. Over the past several years, population growth in the urbanized areas has impacted the open space resources of the Wasatch Range in a variety
of ways. Two of these ways are mentioned here. First, there are many more people visiting the popular places in the adjacent mountains. This has jeopardized the environmental quality of the mountains by degrading surface and ground water quality. The Wasatch Range is the major source of water for the adjacent urbanized areas, and water quality degradation can have far-reaching effects.

Secondly, many access points or trail heads to the canyon and other mountain destinations located on public lands that were commonly used in the past have been closed off to the public by private developments. The effect of this is that much of the public open space becomes inaccessible and the opportunity to visit these popular places becomes lost. Remaining access to non-private lands is channeled through an ever-decreasing number of public access points.

Not only can open space resources be found in the mountains of the Wasatch, but private and public open space is also found in the valleys in the form of farms, developed and natural parks, golf courses, water features and vacant land. In many instances, these resources may receive more intensive use than those found in the adjacent mountains. Recently, because of the rapid growth in the area, citizens as well as state and local political leaders have become concerned about the relatively rapid loss of private open space resources, such as farmland and vacant land. Urban growth has put considerable pressure on the farmlands that can still be found in, or adjacent to, the urbanized areas. Some individuals and lawmakers value farmlands and would like to see some of them preserved for future generations.

Management and development of open space has many questions – how, where, and to what degree will these lands be preserved?

Some agricultural lands are receiving state designation as farmland preserves through the use of conservation easements and favorable tax treatments. These designations assist farmers in preserving their lands for future agricultural use and provide aesthetically pleasing open space today. However, as development pressure and property values increase, it may become increasingly difficult to keep many agricultural lands in agriculture preserves. Policy decisions relative to open space will affect land use and development patterns, and, as a consequence, will also affect long range plans for the region’s transportation systems.

O. Hazardous Waste Sites

Davis County has a few hazardous waste sites, or contaminant sources. Most of these sources are near Hill Air Force Base or in close proximity to industrial areas. Construction through potential contaminant sources may add health and safety concerns and affect construction budget expenditures. The impact of these sites on transportation facilities will need to be addressed during the design and construction phase of each highway or transit project.

There are potentially five types of contaminant sources: underground storage tanks, Title 3 sites, Toxic Release Inventory (TRI) 1990 sites, Resource Conservation and Recovery Act (RCRA) sites and Comprehensive Environmental Response Compensation and Liability Act (CERCLA) sites.

The Comprehensive Environmental Response, Compensation and Liability Inventory System (CERCLIS) database documents hazardous waste sites where a release or potential threatened release has been investigated. These sites are further defined as a location that has been reported to the Environmental Protection Agency and where it is probable that some environmentally hazardous materials are present.

Also, the State of Utah Division of Solid and Hazardous Waste maintains databases for underground storage tank facilities, Leaking Underground Storage Tank (LUST) sites, and RCRA facilities.

P. Sensitive Species

Sensitive species are plants and animals, which are considered threatened or endangered relative to extinction. There are currently 21 species in the Wasatch Front Urban Area that fall into the sensitive species category. The
most notable of these are the peregrine falcon, bald eagle, and Ute ladies tresses which are all on the federal list of endangered and threatened species. Both peregrine falcon and bald eagle sightings have been reported over the past few years on a fairly regular basis. Some examples of other less notable sensitive species, which are known to inhabit certain areas of Davis County, include the spotted frog, least chub, western burrowing owl, ferruginous hawk, white faced ibis, Bonneville cutthroat trout, pocket gopher, and others. The likelihood of these and other sensitive species being present in the region will depend on whether or not suitable habitats exist.

Q. Ground Water

Much of the water flowing in streams and interfluvial areas seeps into the ground. The foothills and the base of the mountains are the locations where much of this water seeps into the ground. These locations are referred to as aquifer recharge areas. Water is stored in aquifers of various types. A considerable amount of the Wasatch Front Region's water resources comes from these aquifers, which can be tapped through wells or natural artesian springs. Davis County receives only about 15 inches of precipitation a year, yet the benches and mountaintops can annually receive 60 to 100 inches of precipitation. This contrast in precipitation can be a challenge in determining best development. Past and present human activities have affected these ground water resources in certain locations. If precautions are not taken, harmful substances found in landfills and mine tailings can be leached by rain and snow and find their way into the ground water resources. One example of this situation includes the plume of contaminated groundwater slowly moving westward near Sunset, caused by the inappropriate disposal of solvents and other chemicals for decades at Hill Air Force Base.

R. Historical Development Layout

Historically, development has occurred according to the "Plat of Zion." Davis County has street layouts based on the "Plat of Zion", implemented by Brigham Young when the Mormon Pioneers permanently settled the area beginning in 1847. This concept is based on a grid of 10-acre blocks with wide streets. While the concept is apparent in central city areas, the suburbs deviate. Historically, the street network and connecting highways served the local areas. Intercity travel was via the Bamberger Railroad, which ran passenger service from Salt Lake City to Ogden from 1891 to 1952. In the 1950’s, the federal government instituted the Interstate Highway System. Interstate 15 linked Salt Lake City, Ogden and Provo together with points north and south while Interstate 80 linked the area with points east and west.

Development has also followed along Interstate 15, Highway 89, and major collectors. Interstate 15 continues north through Davis County joining Interstate 84 in Weber County. Other major north–south arteries in Davis County include U.S. Highway 89 and the Legacy Parkway. The North Davis Highway in western Davis County will serve as a major traffic collector for that area. The historic development has followed the geographic constraints particularly in transportation.

S. Transportation

Large employment centers, such as Hill Air Force Base will need to be served with an improved transportation system. In 2014, the Utah Transit Authority (UTA) implemented a shuttle bus program between the Clearfield FrontRunner Station and Hill Air Force Base. This shuttle service has not had a high level of ridership.

The Wasatch Front Regional Council completed a Comprehensive Transportation Plan (RTP) in 2015. The transportation projects included in the 2015–2040 RTP are planned to meet the travel needs and improve quality of life within the Wasatch Front for the next 30 years. WFRC developed project lists with residents, local government stakeholders, and partner agencies by collecting project ideas and testing them against the RTP Goals. To be implemented, the region will need both existing and additional transportation revenues, which are outlined in the phasing and financial assumptions.
In addition to regional road, transit, and bicycle improvements, the 2015-2040 RTP also recommends general policy for transportation systems, enhancements, regional freight movement, safety, preservation and maintenance, and homeland security. The Plan conforms to federal air quality standards, meaning that the vehicle emissions estimated for the year 2040 are within the limits identified in the State Implementation Plan (SIP). Click here for the Plan's air quality conformity analysis. The plan includes interactive maps containing all of the highway, transit, and bike projects proposed for the 2015-2040 RTP. (Source: Regional Transportation Plan 2015-2040 Wasatch Front Regional Council 2015)

The growth and distribution of population and employment in Davis County will have a significant impact on the transportation demands in the next 25 years. Transportation accessibility is one of the major, if not the most important determining factor, where people live and work. To a large extent, people will live and work where transportation exists. Future development patterns will influence and be influenced by transportation. It is better planning to first conceptually plan for major transportation requirements.

A significant portion of the population growth is expected to occur in western and southwestern sections of Davis County. Anticipated growth will increase the need for north-south travel in the Region, which is being addressed in part by the ongoing reconstruction of I-15, the Legacy Parkway, and the North Davis Highway. Finally, travel in Davis County will increasingly be affected by the population and employment growth in the Farmington/Layton urban area.

Air quality is an influence on transportation. Greater awareness and concern for the air quality has resulted in tighter air quality standards and decreased transportation emissions. As Davis County continues to grow, the interrelationships among development and transportation will continue to increase.

These interrelationships have significant impact on the transportation facilities now and in the future. Davis County’s transportation system will need to improve east/west capacity to serve employment centers in suburban locations, such as Clearfield City’s Freeport Center. Travel demand will continue to grow in direct proportion to projected population increases. The population and employment growth in Davis County will increasingly affect travel demand in the urbanized area.

The growth and distribution of the Wasatch Front population and employment will continue to have a significant impact on the transportation needs of the future. Increases in regional population and employment translate into a growing demand for travel. In addition, the number of miles driven continues to increase. The amount and distribution of growth provide insights into the type, size and location of new transportation facilities required to meet present and future travel demand, including new highway projects, transit improvements, and transportation facilities for bicycles and pedestrians.

T. Household Size

Even with relatively large families, Utah is following the national downward trend in household size. As the population ages, birth rates fall and the household size decreases. There are areas in the region that will experience a slowing of population growth due to falling household sizes, while others will increase due to neighborhood recycling, where young families with children move into a neighborhood as the aging population dies. Overall, Davis County's population continues to grow and there doesn't appear that this growth will slow down in the foreseeable future.
Infographic of socioeconomic indicators for the Davis County area. (click for original)
U. Technology

As technology develops, its influence on community development touches every aspect dramatically. Technological influences are significant. This report will only very briefly mention a few. Technology advances in communications have made it possible for telecommuting, reduced the requirement of a daily commute to a workplace; increased availability of reliable public transportation has changed where people live and work; advances in agriculture have allowed more food to be produced on less land; and technological advances allow developments on marginal sites.

V. Reclamation of Industrial Land

Much public and private land will remain undeveloped because of specific environmental constraints, such as steep slopes, prime wetlands, or hazardous substances. However, other environmentally challenging properties are now developable due to advances in technology. Some areas historically used for industrial or mining activity are planned to be reclaimed for other uses.

W. Employment Trends

In the past 30 years, Davis County’s economy has diversified, resulting in more widespread development. The county’s economy was once heavily dependent on a limited number of industrial sectors, primarily Hill Air Force Base, and Freeport Center. No longer dependent on a limited number of sectors, the County's economy is now based on the service sector and other industries, such as health care, education, and local government. Agriculture continues to decline in importance in Davis County as agricultural lands are developed for urban expansion. The distribution of commercial and industrial development will remain much as it is today. Davis County experienced minimal employment changes, up or down, during the past decade. Overall, large employment gains are occurring in suburban areas.

X. Public Policy

Under Utah State law, local cities and counties are responsible for setting land use policy in their areas. Utah State Statute provides for the development of county-level plans under Title 17-27a-401. Components which are required to be addressed within these plans include: land use, transportation, environmental issues, public services and facilities, rehabilitation and redevelopment, economic concerns, recommendations for plan implementation, and "any other elements that the county considers appropriate". In 2015, the Utah Legislature amended Title 17-27a-401 to also require that county general plans include a “resource management plan” to provide a basis for communicating and coordinating with the federal government on land and resource management issues.

Projections for the Wasatch Urban Area Long Range Transportation Plan: 2007-2030 is based on individual city and county land use assumptions. A majority of the region is expected to be developed for residential uses. These local master plans call for relatively low-density residential and non-residential development patterns, with some pockets of denser activity. Large areas of industrial/warehouse development are planned around Hill Air Force Base. High-density office and commercial developments are focused mainly in the Station Park Development, near the Clearfield and Layton Frontrunner Stations with smaller commercial areas located in the Redwood Road area in North Salt Lake. Additional smaller nodes of commercial and retail development are dispersed throughout urban and rural portions of the County.

The Utah Quality Growth Act of 1999 created the Utah Quality Growth Commission to address the challenges and opportunities that growth brings to Utah. In addition, several public and private partnership planning efforts involved in smart growth initiatives have developed land use alternatives and growth scenarios. Envision Utah’s
outreach presentations provided local public officials and the general public the opportunity to examine the future consequences of various land use decisions. The growth scenarios ranged from the status quo land use planning to a demonstration of much greater density. These planning exercises and demonstrations proved beneficial in educating participants about development options and their anticipated consequences.

A significant portion of Davis County is currently zoned for low-density residential development. Additional commercial land use nodes are dispersed throughout southern Davis County to serve adjoining residential communities. An extension of the existing transportation network will provide needed highway and transit service to newly developed land. As land use changes, so will the type and size of facilities needed to meet increased travel demand.

Future land use characteristics of the Davis County urban area will play a key role in determining future development trends. Large portions of north Davis County are currently zoned for low-density residential development. Industrial land uses are located at the Falcon Hill development on Hill Air Force Base, and Clearfield’s Freeport Center.

Areas for commercial land uses include linear concentrations along major arterial roads including Hill Field Road near the Layton Hills Mall, State Street (Layton and Clearfield) and Main Street (Kaysville, Clearfield and Sunset). Additional commercial nodes are dispersed throughout the Urbanized Area to serve adjoining residential communities.

Public policy is the greatest contributing factor in development. This report has briefly mentioned the general development trends in the region and county as well as the contributing and limiting influences on development. Ultimately, the many development constraints and influences are measured, weighed, compared, and balanced in public policy.

Development public policy is articulated in Master Plans (sometimes referred to as General Plans, Land Use Management Codes, and other planning documents). Master Plans and Land Use Management Codes are formally adopted by city or county councils whereas other planning documents may not receive formal adoption. All Region counties continue to update their Master Plans and Land Use Management Codes. The counties have cooperated in producing the Wasatch Front Regional Open Space Plan. This Plan gives each county guidelines for preserving and developing open space. Davis County has been supportive of Envision Utah. Envision Utah is partially State supported to advocate smart growth. Envision Utah defines “smart growth” as growth that requires minimal infrastructure and maximizes environmental and human benefits.
This assessment analyzes current capacity to mitigate the effects of natural hazards and emphasizes the positive capabilities that should be continued. Davis County has elected to conduct a hazard and capabilities analysis.

The following areas were assessed to determine mitigation capabilities:

A. Staff and Organization
B. Technical
C. Fiscal
D. Policies and Programs
E. Land Use Management
F. Legal Authority
G. Political Willpower

A. Staff and Organization

The assessment found that Davis County has the capability to undertake and complete a limited level of natural hazards mitigation projects. Davis County and its cities are already protecting citizens from natural hazards under one if not several departments within their governmental structure.

City and County Elected Officials

The Davis County Commission consists of three members. Each of the fifteen cities has a mayor and a city council, consisting of five members, which governs the municipality. The elected officials have the responsibility of adopting mitigation policies. Cities and counties receive their legal authority to govern from the State of Utah.

Davis County General Capabilities

Listed below is a general organizational list of county/city governmental administrative areas involved in pre-disaster mitigation:

- Elected officials
- City Managers
- County and City Attorneys
- County Assessors
- County Clerks
- Human Services/Personnel Directors
- County and City Treasurers/ Finance
- Public Works Departments
- County and City Planning/GIS Departments
- County Health Department
Emergency Management

Davis County has an emergency management director, organized under the sheriff's office. The emergency management director is responsible for natural and man-made hazard mitigation, preparedness, response, and recovery operations.

Local Emergency Planning Committee (LEPC)

The mission of LEPC is to coordinate emergency preparedness for hazardous materials between all public and private emergency task disciplines. Many LEPCs have expanded their mandated hazardous materials function to include all hazards. The Davis County LEPC is composed of elected officials; law enforcement, emergency management, firefighting, emergency medical services, health, local environmental, hospital and transportation personnel; broadcast and print media; community groups; and owners and operators of hazardous chemical facilities that are required by federal law to have hazardous chemical emergency planning. Davis County has an active LEPC.

Fire/Emergency Medical Services

Most of the cities in Davis County have fire departments. Following a national trend, there are two multi-jurisdiction fire districts in Davis County that were formed with the goal to better provide fire and emergency medical services.

Public Works

Divisions within public works often include streets, engineering, water, power, wastewater and sanitation. The Davis County public works department has undertaken a number of mitigation projects in the county. Several municipal public works departments have also participated in hazard mitigation, primarily in the form of stormwater and watershed management projects.

Health Care

Davis County's four hospitals and the county health department provide medical emergency preparedness and response. Davis County Health organizes, coordinates and directs emergency medical and health services. The health department assesses health hazards caused by damage to sewer, water, food supplies or other environmental systems. It also provides safety information, assesses disaster related mental health needs and services, and provides crisis counseling for emergency workers. Short of a pandemic disease outbreak, the health department will likely continue to adequately staff, train and fund its mission.

School District

The Davis School District has more than 70,500 students in 92 schools. District administrators work closely with local public safety officials including law enforcement, fire emergency medical services, and public health to help ensure that schools are well prepared for any kind of emergency.

Special Service Districts

For the purposes of this Plan, Special Service Districts (SSD) are defined as quasi-governmental agencies having taxing authority, providing a specific public service that may include: public transportation, fire,
water, wastewater and sewer. These SSD’s work closely with local public safety officials to ensure that these Districts are well prepared for any kind of emergency. In many cases, the districts participate in the county or city emergency preparedness committee for emergency coordination, planning and response.

B. Technical Capability

Throughout the plan update process, Davis County staff consulted with and utilized the technical expertise from a wide variety of resources listed below:

**Jurisdiction Technical Expertise**

Davis County and all of the cities either employ or contract with planners, emergency managers, building inspectors, housing specialists and engineers on staff.

**Geographic Information Systems (GIS)**

Davis County has experienced GIS staff capable of providing important data to this planning process. GIS is a geo-referenced set of hardware and software tools that are used to collect, manage and analyze spatial data. (GIS capabilities are often found in other departments such as public works or information technology). GIS is most beneficial when data from all departments and planning jurisdictions is inputted for analysis.

**Public Safety Communications (PSC)**

Public safety communications networks assure emergency communications through radio, microwave, telephone, satellite, internet, e-mail, fax and amateur radio. One of the most beneficial capabilities of PSC is providing cross communication between equipment and frequencies. PSC coordinates dissemination of emergency information to the media, the public and emergency personnel; activates internal information systems; acts as a liaison to elected officials; assists in the provision of emergency information and documents the impact.

**Public Works**

Public works departments generally provide engineering, transportation, GIS, water, wastewater, sanitation (in some cases electric power) expertise and capability. As a team, public works personnel identify critical infrastructure and plan and prepare for emergency mitigation.

**Utah Division of Emergency Management (Utah DEM)**

Utah DEM assists Davis County in providing information on preparing for, responding to, and recovering from emergencies. DEM serves as the liaison between local, state and federal emergency assistance. DEM also educates the public about earthquakes, hazardous materials, floods, communications, leadership, information technology, funding, coordination and supplies.

**Utah State University(USU) Cooperative Extension**

The USU Extension Service assisted with family and community data in putting research-based knowledge to work. Many of the programs and informational courses improve pre-disaster mitigation.

**University of Utah**

The University of Utah was utilized as a technical resource for academic mitigation research and demographic data (particularly through the Kem C. Gardner Institute).
C. Fiscal Capability

Davis County has limited fiscal capabilities to implement mitigation strategies. Davis County is one of the top five counties in the state in budgeted expenditures and population. Davis County and most of its jurisdictions have provided some level of matching funds for federal grants in the past.

Utah State Code; Section 17-50-501 classifies counties into six categories based on population. The State of Utah grants graduated autonomy to counties according to class size. Davis County is a Class 2 county with an estimated 2019 population of over 355,000 residents (USCB 2019 Quick Facts).

D. Policies and Programs

Connecting local land use management with natural hazard planning is an effective way to mitigate a community’s risk. Many communities have plans, ordinances, agreements, maps, training, warning systems, etc. in place that help them to become more disaster resistant. One of the goals of this Plan is for communities to coordinate existing activities so that individual objectives become part of an overall plan of action.

E. Land Use Management Tools

Ordinances

- Zoning ordinances designate the use of land and structures for the purpose of protecting the health, safety and welfare of residents and businesses. A zoning ordinance divides all land within a jurisdiction into zones or related uses. The zoning ordinance consists of two parts; the text and maps. Specific zones are usually created for residential, commercial, industrial and government uses. The map defines the boundaries of these zones and the text provides the regulations for uses that are permitted to exist in each of the zones.

- Subdivision ordinances regulate all divisions and improvements of property including the division of land involving the dedications of new or changes of existing streets/roads.

- Design controls regulate building and landscaping. Such controls can be tailored to require that new developments meet the specific needs of the area. For example, requiring flame resistant roofs in urban-rural wildland fire interface zones or requiring that trees and vegetation are planted on steep slopes to help mitigate landslide hazards.

- Floodplain ordinances prevent building in special flood hazard areas and provide flood loss reduction measures to new and existing development. Floodplain management ordinances help to provide insurance to homes and businesses through the National Flood Insurance Program (NFIP). The NFIP’s Community Rating System was implemented to encourage cities to manage floodplain activities that exceed the minimum NFIP standards. A community participating in the system will receive reductions in insurance premiums.

- National Flood Insurance Program Participation The National Flood Insurance Program was created in 1968 by the Federal Emergency Management Agency (FEMA) to provide homeowners living in the 100-year floodplain an opportunity to purchase flood insurance for their home. In order for individuals to be eligible to purchase flood insurance, their community needs to participate in the National Flood Insurance Program (NFIP). Assistance for community participation in the NFIP is provided by the State Floodplain Manager at DEM. There is also limited funding for flood mitigation projects for communities participating in the NFIP. Davis County and all the cities participate in the NFIP and comply with the minimum standards required by FEMA to be considered participating jurisdictions.
• Building codes require certain standards of practice.

Easements
Easements can be a cost effective way to control development in hazard prone areas. Various land trusts can help secure easements that can then be conserved or preserved.

Planning
• **General plans** serve as a guide for decision-making on rezoning and other planning proposals and as the goals and policies of municipalities attempting to guide land use in local jurisdictions. Each plan is recommended to include land use, transportation, environment, public service and facilities, rehabilitation, redevelopment, conservation, and economics. Also recommended are implementing recommendations including the use of zoning ordinances, subdivision ordinances, capital improvement plans, and other suitable actions that the municipality deems appropriate. General plans articulate the jurisdiction’s vision while land use management codes implement that vision. General plans and land use management codes are being consulted, reviewed, and changed as necessary.

• **Emergency Operations Plans (EOPs)** identify specific emergency actions undertaken by a jurisdiction to mitigate the loss of lives and property immediately before, during, and following an emergency. The Davis County Emergency Operations Plan EOP was reviewed as part of this planning process.

• **Floodplain Management Plans** identify steps and implementation strategies to effectively deal with floodplains. FEMA uses a scoring system that is used to rate communities. Those with higher scores will receive higher discounts (in 5% increments) on flood insurance.

• **Stormwater Management Plans** identify water policies for an entire watershed. Such policies can include: preservation of habitats, water quality and supply, open space development, land preservation, pollution prevention and construction regulations.

• **Environmental Reviews** explain how development affects the land and its resources.

• **Capital Improvement Plans.** Cities plan for costs related to infrastructure, public facilities, and public safety. These plans identify projects, prioritize them and identify ways of funding them. Such plans can include disaster reduction costs or mitigation measures in flood-prone areas or retrofitting buildings for seismic strengthening.

The jurisdictions that make-up this region have incorporated various mitigation measures. The following tables identify, by county, existing land use ordinances, management practices and plans currently in place.

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8. Capability Assessment - 169
### Capability Assessment - Davis Co PDMP

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#### Table 8.2 - Natural Hazard & Environmental Quality Ordinances, Davis County

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<td>n/a</td>
<td>N</td>
<td>N</td>
<td>n/a</td>
</tr>
<tr>
<td>Groundwater</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Habitat</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Lakes, Streams, Riparian</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Landslides</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>n/a</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>n/a</td>
<td>N</td>
<td>N</td>
<td>n/a</td>
</tr>
<tr>
<td>Mountains &amp; Forest Zones</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>n/a</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>n/a</td>
<td>N</td>
<td>N</td>
<td>n/a</td>
</tr>
<tr>
<td>Pollution &amp; Air Quality (General Plan)</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Prime Agricultural</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>

8. Capability Assessment - 170
Building Codes

International and national building codes have been adopted by all jurisdictions in the county. These codes are constantly in review for reasonable mitigation for disasters. Locally, building officials lobby for additions or exceptions to international and/or national building codes according to local conditions. Most insurance policies rely on the international and national building code standards for assurance.

The Insurance Services Office, Inc. manages the Building Code Effectiveness Grading Schedule (BCEGS). This program was implemented in 1995 and assesses the building codes in effect in a particular community as well as how well the community enforces its building codes. The BCEGS program assigns each municipality a BCEGS grade of 1 to 10 with 1 showing exemplary commitment to building code enforcement. Insurance Services Inc (ISO) developed advisory rating credits that apply to ranges of BCEGS classifications 1–3, 4–7, 8–9, 10. ISO gives insurers BCEGS classifications, BCEGS advisory credits, and related underwriting information.

Communities with effective, well-enforced building codes should sustain less damage in the event of a natural disaster, and insurance rates can reflect that. The prospect of lessening natural hazard related damage and ultimately lowering insurance costs provides an incentive for communities to enforce their building codes rigorously. FEMA also uses these scores in their competitive grant programs, giving a higher ranking to those projects with lower scores. The following table highlights the BCEGS scores for Davis County jurisdictions.

<table>
<thead>
<tr>
<th>BCEGS Classification</th>
<th>Residential</th>
<th>Commercial</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bountiful</td>
<td>3</td>
<td>3</td>
<td>2006</td>
</tr>
<tr>
<td>Centerville</td>
<td>3</td>
<td>3</td>
<td>2004</td>
</tr>
<tr>
<td>Clearfield</td>
<td>3</td>
<td>3</td>
<td>2004</td>
</tr>
<tr>
<td>Clinton</td>
<td>4</td>
<td>2</td>
<td>2005</td>
</tr>
<tr>
<td>Davis County</td>
<td>4</td>
<td>4</td>
<td>2006</td>
</tr>
<tr>
<td>Farmington</td>
<td>3</td>
<td>3</td>
<td>2005</td>
</tr>
</tbody>
</table>
### Legal Authority

Local governments play an essential role in implementing effective mitigation. Each local government will review all present or potential damages, losses, and related impacts associated with natural hazards to determine the need or requirement for mitigation action and planning. In Davis County the local executive responsible for carrying out plans and policies are the county commissioners and for local jurisdictions it is the city mayors/city managers. Local governments must be prepared to participate in the post-disaster Hazard Mitigation Team process and the pre-mitigation planning as outlined in this document. The cities and counties of Utah have the authority, through policing, to protect the health, welfare, and safety of their residents.

### Political Willpower

Davis County region public officials have shown support for pre-disaster planning in the following ways:

#### Community Development Documents

Elected officials have adopted updated community development documents to reduce the risk of emergencies and disasters. Each county and most cities have updated Emergency Operation Plans, Land Use Management Codes, International Building Codes, and General Plans that include pre-disaster planning. In addition, there is support from residents. Davis County recently adopted an Open Space Plan. In the Davis County Open Space Plan, property with higher probability for natural hazards is recommended for open space or lower intensity uses.

#### Emergency Planning Training Courses

Davis County's residents have supported emergency planning training sponsored by Utah DEM and local governments such as: CERT (Community Emergency Response Team), Local Emergency Planning Committees (LEPC), Hazardous Materials (HAZMAT), Site Plans and Ordinances, Real Estate Requirements, and Hazard Mitigation.
Part IX - RISK ASSESSMENT

The FEMA National Risk Index identifies Davis County Utah as an area with an overall risk index of 6.92. This is lower than the average for counties in Utah (7.25), and the national average (10.70). However, emergency management is a priority to Davis County because the same matrix identifies Davis County as having a much higher score for “Expected Annual Loss” (23.83) - almost double the average in Utah (12.95) and counties throughout the nation (13.47). One of the main reasons for this is because of the population density and building values in Davis County. Fortunately, through careful management efforts, Davis County is a community with a relatively high potential for resilience.

A. Hazard Identification

The first step in risk assessment is identifying the hazards that could affect Davis County. Hazard identification addresses the geographic extent, the intensity/magnitude of a hazard and the probability of its occurrence. Hazard identification was initiated through an extensive process that utilized the following:

---

9. Risk Assessment - 173
The natural hazards in Table 9.1 below have the potential of impacting Davis County. The identification process for Davis County utilized those natural hazards that consistently impacted the county prior to and during the planning process based on history of occurrences, future probability, and risk. Table 9.2 identifies those natural hazards for easy reference.

Davis County created maps that identified the location of critical facilities and the municipalities affected by each identified hazard. Initial data from this study was also used to determine hazards that presented the greatest risk to the county. The geographic extent of each hazard is identified through maps. County hazard intensity/magnitude and probability profiles are also outlined.

Davis County conducted and updated risk assessment analyses for each identified hazard.

Table 9.1 - Local Hazards Identification

<table>
<thead>
<tr>
<th>EARTHQUAKE</th>
<th>Why Identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of County Emergency Operations Plan</td>
<td>Utah has a 1:5 chance of experiencing a large earthquake within the next fifty years.</td>
</tr>
<tr>
<td>Review of past disaster declarations</td>
<td>Numerous faults throughout Utah including the Intermountain Seismic Zone.</td>
</tr>
<tr>
<td>Input from City and County Emergency Operations Managers, USGS, UGS, Utah DEM, and community members</td>
<td>Yearly, Utah averages approximately 13 earthquakes having a magnitude 3.0 or greater.</td>
</tr>
<tr>
<td></td>
<td>Earthquakes can create fire, flooding, hazardous materials incidents, transportation, and communication limitations.</td>
</tr>
<tr>
<td></td>
<td>The Wasatch Front has recorded large earthquakes in the past and can be expected to experience large earthquakes in the future.</td>
</tr>
</tbody>
</table>

| LANDSLIDE | |
|-----------|
## Risk Assessment - Davis Co PDMP

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

### How Identified | Why Identified
--- | ---
Input from City and County Emergency Operations Managers, USGS, UGS, NCDC, Utah DEM, and community members | Have caused damage in the past to residential and commercial infrastructure. Can be life threatening. Generally occur in known historic locations therefore risks exist throughout much of Davis County. To increase community awareness.

### WILDLAND FIRE

<table>
<thead>
<tr>
<th>How Identified</th>
<th>Why Identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of County Emergency Operations Plan</td>
<td>Serious threat to life and property. Increasing threat due to urban growth in WUI areas. Secondary threat associated with flooding, drought, and earthquake. Much of the mountain front portion of Davis County is at risk. Additional funding and resources offered by local and state agencies to reduce risk. To increase community awareness.</td>
</tr>
<tr>
<td>Review of Community Wildland Protection Plans (CWPP)</td>
<td></td>
</tr>
<tr>
<td>Input from County Emergency Managers, Utah DEM, Utah FFSL, Utah FS, NWS, FEMA, and local community members</td>
<td></td>
</tr>
</tbody>
</table>

### PROBLEM SOILS

<table>
<thead>
<tr>
<th>How Identified</th>
<th>Why Identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of County Emergency Operations Plan</td>
<td>Related to subsequent effects from earthquakes. Have affected infrastructure and the local economy in the past.</td>
</tr>
<tr>
<td>Input from community members, Utah, DEM, and UGS</td>
<td></td>
</tr>
<tr>
<td>Researched historical data</td>
<td></td>
</tr>
</tbody>
</table>

### DAM FAILURE

<table>
<thead>
<tr>
<th>How Identified</th>
<th>Why Identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of County Emergency Operations Plan</td>
<td>Can cause serious damage to life and property and have subsequent effects such as flooding, fire, debris flow, etc. Davis County has several irrigation reservoirs. Threat to downhill communities. Subsequent effects include flooding, and debris flows. To increase community awareness.</td>
</tr>
<tr>
<td>Input from community members, Utah DWS, Dam Safety Section, Utah DEM</td>
<td></td>
</tr>
<tr>
<td>Review of inundation maps</td>
<td></td>
</tr>
</tbody>
</table>
### FLOOD

<table>
<thead>
<tr>
<th>How Identified</th>
<th>Why Identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of past disaster declarations</td>
<td>Several incidents have caused severe damage and loss of life. Many of the rivers and streams are located near neighborhoods. Many neighborhoods are located on floodplains, alluvial fans.</td>
</tr>
<tr>
<td>Input from City and County Emergency Operations Managers, Utah DWS, UGS, Utah Army Corps of Engineers, Utah DEM, and community members</td>
<td>Topography and climate lead to cloudburst storms and heavy precipitation can result in flash flooding throughout Davis County.</td>
</tr>
<tr>
<td>Review of Flood Insurance Studies, Floodplain maps, and Flood Insurance Rate Maps</td>
<td></td>
</tr>
</tbody>
</table>

### SEVERE WEATHER

<table>
<thead>
<tr>
<th>How Identified</th>
<th>Why Identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of County Emergency Operations Plan</td>
<td>Damage to communities, homes, infrastructure, roads, and residents.</td>
</tr>
<tr>
<td>Review of past disaster declarations</td>
<td>Can cause property damage and loss of life. Results in economic loss.</td>
</tr>
<tr>
<td>Input from City and County Emergency Managers, Utah Avalanche, Forecast Center, Utah Department of Transportation, and community members</td>
<td>Lightning is the number one cause of natural hazard death in Utah. Can be costly to recover from.</td>
</tr>
</tbody>
</table>

### CLIMATE CHANGE

<table>
<thead>
<tr>
<th>How Identified</th>
<th>Why Identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of Utah State Hazard Mitigation Plan</td>
<td>Long-term climate change has the potential to result in a wide range of impacts across the region and in many sectors of the economy.</td>
</tr>
</tbody>
</table>

The hazard identification process was aided through the use of FEMA How to Guidance documents, FEMA 386-1,2,3,7 FEMA Post Disaster Hazard Mitigation Planning Guidance DAP-12, Disaster Mitigation Act of 2000, 44 CFR Parts 201 and 206, Interim Final Rule, and FEMA Region VIII Crosswalk. The risk assessment process also utilized assistance from local Davis County GIS using the best available data.

<table>
<thead>
<tr>
<th>Table 9.2 - County Natural Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earthquake</td>
</tr>
</tbody>
</table>
B. Hazard Profile

This section describes the causes and characteristics of each identified hazard, including its severity or magnitude (as it relates to the percentage of the jurisdiction that can be affected), probability, conditions that make the area prone to the hazard, hazard history, and maps of the hazard’s geographic location or extent. The hazards were profiled based on history of occurrence, local input, county emergency operations plans, and county master or general plans, scientific reports, historical evidence, and hazard analysis plans. A risk assessment “Hazard Profile” table was created that highlights the above mentioned materials in each of the county portions of the plan introducing each identified hazard. The probability of a hazard event was determined through the amount of risk to the county. The probability or likelihood of an occurrence is categorized into four categories: Highly Likely, Likely, Possible, and Unlikely.

In determining hazard magnitude a scale was used to identify the level of damage on a countywide basis from Catastrophic to Negligible. (See table below)

<table>
<thead>
<tr>
<th>Damage Level</th>
<th>Jurisdiction Affected</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catastrophic</td>
<td>More than 50%</td>
<td>Extreme or High</td>
</tr>
<tr>
<td>Critical</td>
<td>25–50 %</td>
<td>Moderate</td>
</tr>
<tr>
<td>Limited</td>
<td>10–25%</td>
<td>Moderate</td>
</tr>
<tr>
<td>Negligible</td>
<td>Less than 10%</td>
<td>Low</td>
</tr>
</tbody>
</table>

The probability of a hazard event was determined through the amount of risk to the county. The probability or likelihood of an occurrence is categorized into four categories: Highly Likely, Likely, Possible, and Unlikely.

The geographical extent or location of the community that would be affected has been identified in the mapping portion of each county where geographic data was available. Hazard histories are provided for each county. These histories were taken from the Spatial Hazard Events and Losses Database for the United States (SHELDUS). Histories for each county were condensed into charts, tables and graphs in each county hazard profile section.
Maps were created using GIS software to identify the location and extent of each identified hazard area. Hazard maps were created for every identified natural hazard within the county. The following risk assessment maps were created for Davis County:

- Historic earthquakes
- Geologic hazards
- Liquefaction potential
- Flood history
- Drainage basins
- Landslide susceptibility
- Fire hazard potential
- Dam failure potential

C. Vulnerability Analysis

The vulnerability analysis is based on asset identification and potential loss estimates for those jurisdictions located within identified hazard areas.

Asset Identification

The vulnerability analysis combines the data from each of the hazard profiles and merges it with community asset information to analyze and quantify potential damages from future hazard events. The asset inventory identifies buildings, roads, and critical facilities that can be damaged or affected by the hazard events. Critical facilities are of particular concern because of the essential products and services to the general public they provide. These critical facilities can also fulfill important public safety, emergency response, and/or disaster recovery functions. The critical facilities identified in this plan include hospitals, police and fire stations, schools, communication facilities, utility companies, water and wastewater treatment plants. In order to assess where and to what extent the identified hazards will affect the assets of each county, the locations of assets were identified and overlaid with the mapped hazards using GIS software.

Potential Loss Estimates

Potential dollar loss estimates were identified using this same method; therefore estimates were completed for existing infrastructure only. When data permitted, structure, content, and function of the identified vulnerable infrastructure was incorporated into the vulnerability assessments. Describing the vulnerability in terms of dollar losses provides the community and the state with a common framework in which to measure the effects of hazards on assets. Future planned development was not analyzed due to the lack of data available in GIS format.

The core planning team and local planning team members estimated potential losses for the identified hazards by using the methodology explained in the FEMA document titled, Understanding Your Risks: Identifying Hazards and Estimating Losses, Utah DEM historical data and GIS data.

The information sources used to complete the vulnerability assessment portion of this Plan include; Utah DEM, County GIS department, county Assessor’s Office, HAZUS·MH data, and the Utah Automated Geographic Reference Center (AGRC). This data was compiled into GIS layers that were used as
overlays to identify critical facilities, municipalities, roads, and residents. The assets that have been
identified are based on the best available data during the development of this Plan in GIS form.

D. Methodology

Geographic Information System (GIS) software was used as the basic analysis tool to complete the hazard
analysis for the Davis County Natural Hazards Pre-Disaster Mitigation Plan. For most hazards a comparison was
made between digital hazard data and Transportation Analysis Zone (TAZ) demographic information.

Statewide digital data was obtained from Utah Automated Geographic Reference Center (AGRC) for problem
soils only. The vulnerability assessment for the county estimates the number of homes, business, infrastructure
and population vulnerable to each hazard and assigns a replacement dollar value to residential structures and
infrastructure in each hazard area. All the analysis takes place within the spatial context of a GIS. With the
information available in spatial form, it is a simple task to overlay the natural hazards with census data to extract
the desired information.

The methodology used to determine vulnerability for all hazards was identical. The number of households and
population vulnerable to each hazard was determined using WFRC Transportation Analysis Zone (TAZ) data and
Block Data from the 2010 Census data. The Block Data from the 2010 Census database, or TAZ data, was
intersected with each of the mapped hazard layers in order to determine the number and location of residential
housing units and population at risk from hazards. The methodology used assumes an even distribution of
residential housing units and population across each census block. Point data from HAZUS-MH was used to
determine the number of businesses, and the annual sales of each business in each hazard area.

The number of acres for all hazards was determined for each city and the unincorporated county. Once an acre
total was identified it was overlaid on the Census Block data or TAZ data to determine the total number of homes
impacted. The number of homes impacted was then multiplied by the average housing value to determine the total
value of potential loss. 2010 average house values from the U.S. Census Bureau were used for Davis County.
Content values are not included, which would raise the potential loss numbers for housing by approximately 50%.

In addition to the above methodology, earthquake risk was profiled using HAZUS-MH, which is shorthand for
Hazardous United States - Multihazards. The data used in this report is from a model that was run in 2009. A new
model has been requested from the State of Utah, and its findings will be incorporated into this PDM when they
are available.

The HAZUS-MH Earthquake Model is designed to produce loss estimates for use by federal, state, regional and
local governments in planning for earthquake risk mitigation, emergency preparedness, response and recovery.
The methodology deals with nearly all aspects of the built environment and a wide range of different types of
losses.

Extensive national databases are embedded within HAZUS-MH, containing information such as demographic
aspects of the population in a study region, square footage for different occupancies of buildings, and numbers
and locations of bridges. Embedded parameters have been included as needed. Using this information, users can
carry out general loss estimates for a region. The HAZUS-MH methodology and software are flexible enough
that locally developed inventories and other data that more accurately reflect the local environment can be
substituted, resulting in increased accuracy. TAZ data from 2010 was aggregated to census blocks to update
population data within HAZUS-MH.

Uncertainties are inherent in any loss estimation methodology. They arise in part from incomplete scientific
knowledge concerning earthquakes and their effects upon buildings and facilities. They also result from the
approximations and simplifications that are necessary for comprehensive analyses.
Incomplete or inaccurate inventories of the built environment, demographics and economic parameters add to the uncertainty. These factors can result in a range of uncertainty in loss estimates produced by the HAZUS-MH Earthquake Model, possibly at best a factor of two or more.

The methodology has been tested against the judgment of experts and, to the extent possible, against records from several past earthquakes. However, limited and incomplete data about actual earthquake damage precludes complete calibration of the methodology. Nevertheless, when used with embedded inventories and parameters, the HAZUS-MH Earthquake Model has provided a credible estimate of such aggregated losses as the total cost of damage and numbers of casualties. The Earthquake Model has done less well in estimating more detailed results—such as the number of buildings or bridges experiencing different degrees of damage.

Such results depend heavily upon accurate inventories. The Earthquake Model assumes the same soil condition for all locations, and this has proved satisfactory for estimating regional losses. Of course, the geographic distribution of damage may be influenced markedly by local soil conditions. In the few instances where the Earthquake Model has been partially tested using actual inventories of structures plus correct soils maps, it has performed reasonably well.

The HAZUS Model estimates building losses, numbers of shelters required for displaced households, amounts of debris generated, and numbers of casualties. A HAZUS report was completed for each of the counties covered in this Plan.

The potential impact of natural hazards on transportation and utilities was determined in a similar method as described above. Roads and utilities were overlaid on the hazard areas and the impacted utility and road segments were inventoried. Once the length of vulnerable infrastructure was determined it was multiplied by cost estimate information from HAZUS-MH.

In addition to the linear features, point data for critical facilities, dams, care facilities, schools, power generation facilities and substations were analyzed to determine if the feature was within a hazard area.

Limited availability of digital data presented a problem in completing the vulnerability assessment. Potential loss numbers were only determined for earthquakes, flood, landslides, dam failure, problem soils and wildfires in this Plan. Additional limitations to the above described analysis method include:

- Assuming random distribution
- Limited data sets for water, gas, electrical, resulting in incomplete numbers for these features
- Lack of digital parcels data for Morgan and Tooele Counties
- Relied on state wide data not intended for manipulation at the scale it was used
- Data was not field checked, resulting in an analysis wholly dependent on accuracy of data
- Metadata was lacking on some of the used data sets

In this document, simple maps were created to provide a graphical illustration of location. These maps are done at a scale, which allows them to fit on a standard letter sized page. Data manipulation and maps were created as a planning tool, to be used by interested persons within Davis County. This information should not take the place of accurate field verified mapping from which ordinances need to be based.

Effort to analyze hazards related to potential future development areas was also addressed where applicable. This proved to be a very difficult exercise and at best can only identify areas which need additional research before development should be allowed. No viable source of data exists for this study area to facilitate analysis of future development. Limited zoning data was available, but this data does not necessarily indicate which areas will be developed and which will not.
E. Mitigation Strategies, Objectives, Actions

Using the findings from the risk assessment and the capabilities assessment as a guide, several mitigation strategies and implementing actions were identified that would benefit each jurisdiction. Each action has been formalized and placed into this Plan in each of the county mitigation sections. These actions were identified in the planning group meetings which included input from the core planning team, local planning team, state and local agencies, county government, and city and county residents. Goals and objectives were developed in a working session between the above-mentioned groups with a period provided for comment and revision.

Each of the jurisdictions identified mitigation actions based on the identified goals and objectives. These actions are included in each county section of this Plan. The mitigation actions identify the responsible agency, the funding source, timeline, background, and their priority. Actions were selected using the information obtained from the capabilities assessment, which identified existing programs and shortfalls related to mitigation activities.

The actions were prioritized based on the Social, Technical, Administrative, Political, Legal, Economic, Environmental (STAPLEE) method identified in the FEMA How To Guides. The STAPLEE method of prioritization emphasizes the effectiveness of the actions with respect to their cost, as well as their social, technical, administrative, political, legal, environmental, and economic effects. Each action is judged and ranked against these criteria and assigned the priority of High, Medium, or Low.

F. Hazard Description + Profile

Each of the natural hazards that could affect the County has been described. These are general descriptions about each hazard to give an idea of what, why, when, and how the hazards occur.

1. Earthquake

Earthquake Overview + Profile

The Utah Geologic Survey defines an earthquake as the result of “...sudden breakage of rocks that can no longer withstand the stresses that build up deep beneath the earth’s surface” (DEM 2008). The energy that is released is abrupt shaking, trembling or sudden motion in the earth and rocks that break along faults or zones of weakness along which the rocks slip. Seismic waves are then transmitted outward and also produce ground shaking or vibrations in the earth. The Richter scale measures the magnitude of earthquakes on a seismograph. A Richter magnitude 6 earthquake is 30 times more powerful than a Richter magnitude 5. A Richter magnitude 7 is 1000 times more powerful than a Richter magnitude 5.

Utah experiences approximately 700 earthquakes each year, and approximately six of those have a magnitude 3.0 or greater (Table, this page). On average, a magnitude 5.5 or greater earthquake occurs in Utah every 10 years.

Generally, in order for humans to feel an earthquake it needs to be at least a magnitude 2.0. In order for significant damage to occur, an earthquake needs to be at least a magnitude of 5.5 or greater. The amount of damage that occurs from an earthquake depends on soil type, rock type, ground-water depth and topography. Other factors include the type of construction in an area and the population density.
Table 9.4 - Earthquake Hazard Summary Profile

<table>
<thead>
<tr>
<th>Changes since 2016</th>
<th>Potential Magnitude</th>
<th>Probability</th>
<th>Location</th>
<th>Extent</th>
<th>Prior Occurrences</th>
<th>Seasonal Pattern</th>
<th>Conditions</th>
<th>Duration</th>
<th>Secondary Hazards</th>
<th>Climate Change</th>
<th>Analysis Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over the last ten years, the population of Davis County has grown by approximately 30%. The number of buildings in the area have grown as well. In 2010, the estimated total building value in Davis County was over $14billion (HAZUS-MH). In recent years, the market value of buildings in the area have increased significantly. It is expected that any major earthquake event would affect most buildings in the area.</td>
<td>X</td>
<td>Catastrophic (&gt;50%)</td>
<td>Highly Likely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Critical (25-50%)</td>
<td>X</td>
<td>Likely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Limited (10-25%)</td>
<td>Possible</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Negligible (&lt;10%)</td>
<td>Unlikely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern areas of Bountiful, Centerville, Farmington, Kaysville, Kaysville, and Layton along the western portion of the Intermountain Seismic Belt. Ground shaking will be felt throughout the entire County. Surface fault ruptures will be found along and near the current fault trace. Liquefaction can be expected in areas of deep sediment and shallow groundwater, from the foothills to the western portion of the county near the Great Salt Lake.</td>
<td>Events are expected to be up to 7.0 (Richter).</td>
<td>Refer to table 9.5 and 9.6.</td>
<td>There is no seasonal pattern for earthquakes, they can occur at any time of the year or day during any or all weather conditions.</td>
<td>Liquefaction Potential is greatest near the Great Salt Lake along the low lying areas of the county, in soils that are composed of old lakebed sediments. Historic movement along faults: Intermountain Seismic Zone, and the Wasatch Fault Zone.</td>
<td>Actual ground shaking will be under one minute, aftershocks can occur for weeks or even months.</td>
<td>Fire, landslide, rock falls, avalanche, flooding.</td>
<td>Climate change is not expected to impact earthquake risk directly, but it could exacerbate hazards Utah already experiences.</td>
<td>Review of hazard analysis plans and other information provided by the University of Utah Seismograph Station, UGS, USGS, DEM, AGRC.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Locations and Activity:

Faulting can be evident on the earth’s surface or not evident at all, therefore earthquakes are believed to be able to occur anywhere in Utah.

The earthquake history of the Wasatch Fault is complicated by the fact that there has not been a large earthquake since the first pioneers first arrived in the valley in 1847. The Utah Geological Survey estimates that the last major earthquake in the Wasatch Front was approximately 1,350 years before present. Yet, when looking at the Wasatch Fault Zone, the potential for a large earthquake exists considering that "since 1850 at least 16 earthquakes (excluding aftershocks) of magnitude 6.0 or greater have occurred within the Intermountain Seismic Belt (ISB)" (DEM 2008). The greatest earthquake hazard is considered to be in the areas surrounding the Wasatch, East Cache, East Bear Lake, Bear River, Hansel Valley, Northern Oquirrh, West Valley, and East Great Salt Lake fault zones. On the Wasatch fault, the segments between Brigham City and Nephi, the "composite recurrence interval for large surface-faulting earthquakes (magnitude 7.0 to 7.5) is 395±60 years. The most recent surface-faulting earthquake on the Wasatch fault occurred 400 years ago on the Nephi segment" (DEM 2008).

According to Earthquake.usgs.gov, more recently there was a magnitude 2.8 on November 5th, 2010, 4 kilometers WSW of Morgan City, Utah. There was also a seismic event that occurred in Magna on March 18th, 2020 that was a 5.7 (U of U Seismograph Station Annual Report 2020). These are the more violent examples, as presented in the data below, Davis County is much more likely to experience smaller, more localized earthquakes that come with minimal damage.

<table>
<thead>
<tr>
<th>Magnitude</th>
<th>Wasatch Front Frequency</th>
<th>Utah Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥3.0</td>
<td>3 per year</td>
<td>6 per year</td>
</tr>
<tr>
<td>≥4.0</td>
<td>1 every 2 years</td>
<td>1 per year</td>
</tr>
<tr>
<td>≥5.0</td>
<td>1 every 10 years</td>
<td>1 every 4 years</td>
</tr>
<tr>
<td>≥5.5</td>
<td>1 every 20 years</td>
<td>1 every 10 years</td>
</tr>
<tr>
<td>≥6.0</td>
<td>1 every 50 years</td>
<td>1 every 20 years</td>
</tr>
<tr>
<td>≥6.5</td>
<td>1 every 120 years</td>
<td>1 every 50 years</td>
</tr>
<tr>
<td>≥7.0</td>
<td>1 every 330 years</td>
<td>1 every 150 years</td>
</tr>
</tbody>
</table>

Source: UUSS unpublished data in UGS PI-38 1996.
Excludes foreshocks, aftershocks and human-triggered seismic events.
Table 9.6 - Davis County Quaternary Faults

<table>
<thead>
<tr>
<th>Name + Type</th>
<th>Length</th>
<th>Time of Most Recent Deformation</th>
<th>Recurrence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fremont Island section, EGSLFZ (Normal type)</td>
<td>30km</td>
<td>3150 +235/-211 cal yr B.P.</td>
<td>4200 years</td>
</tr>
<tr>
<td>Antelope Island section, EGSLFZ (Normal type)</td>
<td>35km</td>
<td>586 +201/-241 cal yr B.P.</td>
<td>4200 years</td>
</tr>
<tr>
<td>Salt Lake segment, WFZ (Normal type)</td>
<td>43km</td>
<td>1300 ±650 cal yr B.P.</td>
<td>1300 years</td>
</tr>
<tr>
<td>Weber segment, WFZ (Normal type)</td>
<td>56km</td>
<td>950 ±450 cal yr B.P.</td>
<td>1400 years</td>
</tr>
</tbody>
</table>

Source: UGS 2002, Lund 2005) (EGSLFZ=East Great Salt Lake Fault Zone, WFZ=Wasatch Fault Zone, cal yr B.P.=calendar years before present)

The two largest measured earthquakes to occur in Utah were the Richfield earthquake of 1901, with a magnitude of 6.5 and the Hansel Valley earthquake of 1934 with a magnitude of 6.6.

“The Hansel Valley earthquake produced MM intensities of VIII in Salt Lake City; with numerous reports of broken windows, toppled chimneys, and structures twisted on their foundations. A clock mechanism weighing more than 2 tons fell from the main tower of the Salt Lake City County Building and crashed through the building. The only death that occurred during the event was caused when the walls of an excavation collapsed on a public-works employee south of downtown Salt Lake City.” (Lund 2005)

Utah’s most damaging earthquake was of a smaller magnitude (5.7), which occurred near Richmond in Cache Valley in 1962. This earthquake damaged over 75 percent of the houses in Richmond, as well as roads and various other structures. The total damage in 1962 dollars was about one million dollars.

“Earthquakes in 1909, 1914, and 1943 produced MM intensities in Salt Lake City of up to VI, and earthquakes in 1910, 1949, and 1962 had MM intensities of VII in Salt Lake City. Damage produced by these events included broken windows, cracked walls, fallen plaster, toppled chimneys, and buildings shifted on their foundations. The 1949 earthquake also ruptured a water main causing loss of water to a portion of the city.” (Lund 2005)

On average, Utah experiences a moderate, potentially damaging earthquake (magnitude 5.5 to 6.5) every 7 years. 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 most recent took place on the morning of March 18, 2020, northern Utah experienced a magnitude 5.7 earthquake with an epicenter just north of Magna, Utah. The shock was felt across the Wasatch Front and aftershocks were felt for weeks following.

“No major injuries were reported from the mainshock or aftershocks. Damages occurred throughout the valley with the most severe damage in Magna. HAZUS, software used by the state to estimate potential losses, shows that there could be upwards of $62 million in building-related damages, contributing to $629 million in total economic losses related to buildings. This does not include damages to public infrastructure.” (2020 Magna Quake, 2020)
Secondary Hazards:
Associated earthquake hazards include ground shaking, surface fault rupture and tectonic subsidence, soil liquefaction, flooding, avalanches, dam failure, fire, and slope failure.

<table>
<thead>
<tr>
<th>Table 9.7 - Fire Following Event, Population Exposed, and Building Stock Exposed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category</strong></td>
</tr>
<tr>
<td>Ignitions</td>
</tr>
<tr>
<td>Persons Exposed</td>
</tr>
<tr>
<td>Value Exposed</td>
</tr>
</tbody>
</table>

Source: HAZUS-MH
Ground Shaking:

Ground shaking is caused by the passage of seismic waves generated by an earthquake. Shaking can vary in intensity but is the greatest secondary hazard because it affects large areas and stimulates many of the other hazards associated with earthquakes. The waves move the earth’s surface laterally and horizontally and vary in frequency and amplitude. High frequency, small amplitude waves cause more damage to short, stiff buildings. Low frequency, large amplitude waves have a greater effect on high-rise buildings. The intensity depends on geologic features such as bedrock and rock type, topography, and the location and magnitude of the earthquake. Other significant factors include groundwater depth, basin shape, thickness of sediment, and the degree of sediment consolidation. Moderate to large earthquake events generally produce trembling for about 10 to 30 seconds. Aftershocks can occur erratically for weeks or even months after the main earthquake event. (DEM 2008)
Surface Fault Rupture and Tectonic Subsidence:

Surface fault rupture or down dropping and tilting associated with tectonic subsidence can rupture the ground surface and in Utah the result is the formation of scarps or steep breaks in the slope. The 1934 Hansel Valley earthquake resulted in a surface displacement of approximately 1.6 feet. The highest potential for surface faulting exists in the central segments of the Wasatch fault.

Also, earthquakes having a magnitude of 6.5 or greater could result in surface faulting of 16 to 20 feet high and 12 to 44 mile long break segments. Surface displacement generally occurs over a zone of hundreds of feet wide called the zone of deformation. Tectonic subsidence generally depends on the amount of surface fault displacement. The greatest amount of subsidence will be in the fault zone and will gradually diminish out into the valley (DEM 2008).

Soil Liquefaction:

Liquefaction occurs when there is a sudden large decrease in shear strength of sandy soils. It is caused by the collapse of the soil structure in which the soil loses its bearing capacity, and also by a temporary increase in pore-water pressure, or water saturation during earthquake ground shaking. Liquefaction is common in areas of shallow ground water and sandy or silty sediments. Two conditions must be met in order for soils to liquefy; first, the soils must be susceptible to liquefaction (sandy, loose, water-saturated, soils typically between 0 and 30 feet below the ground surface) and second, ground shaking must be strong enough to cause susceptible soils to liquefy (UGS 2015). The result is soils that will flow even on the gentlest of slopes.
**Risk Assessment** - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

Lateral Spreading:

Lateral spreading is a type of failure that results in surficial soil layers breaking up and moving, up to 3 feet or more, independently over the liquefied layer. On slopes more than 5 percent, flow failures can move several miles at speeds up to 10s of miles per hour. On slopes less than 0.5 percent the bearing capacity will lessen and can cause buildings to settle or tip. No matter the slope percent, ground cracking and differential settlement will occur. Liquefaction can also cause foundation materials to liquefy and fail and/or cause 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. (DEM 2008)

Slope Failure:

Ground shaking can cause rock falls and landslides in mountainous or canyon areas. Rock falls are the most common slope failure and can occur up to 50 miles away from a 6.0 magnitude earthquake. Landslides occur along benches in wet unconsolidated materials. During a 6.0 magnitude earthquake, landslides may happen within 25 miles of the source. (DEM 2008)
**Flooding:**

“Flooding can happen due to tectonic subsidence and tilting, dam failure, seiches (waves generated in standing bodies of water) in lakes and reservoirs, surface water diversion or disruption, and increased ground water discharge.” (DEM 2008)

**Avalanches:**

Avalanches could be triggered because of the associated ground movement. The most vulnerable areas include those that have steep terrain, high precipitation, high earthquake potential, and high population density. In winter or spring months with a snowpack, avalanches may be expected anywhere along the Wasatch Front following an earthquake. (DEM 2008).

**Sensitive Clays:**

Sensitive clays are a soil type that lose strength when disturbed and result in liquefaction or collapse. The resulting type of ground failure is similar to liquefaction (DEM 2008).

**Subsidence:**

A settling or sinking of the earth’s crust in loose granular materials such as gravel that do not contain clay. Western Utah is subject to this type of ground settlement (DEM 2008).

**Vulnerability Analysis:**

Vulnerability to earthquake in Davis County was obtained from the modeling program Hazards United States – Multihazards (HAZUS-MH). The following numbers were 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 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.

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of Structures with &gt;50% Damage</th>
<th>Estimated Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Davis M5.9</td>
<td>2500-yr M7.1</td>
</tr>
<tr>
<td>Residential</td>
<td>7,618</td>
<td>41,310</td>
</tr>
<tr>
<td>Commercial</td>
<td>282</td>
<td>954</td>
</tr>
<tr>
<td>Industrial</td>
<td>91</td>
<td>294</td>
</tr>
<tr>
<td>Government</td>
<td>15</td>
<td>49</td>
</tr>
<tr>
<td>Education</td>
<td>11</td>
<td>38</td>
</tr>
</tbody>
</table>

**Table 9.9 - Damage to Transportation and Utilities**

<table>
<thead>
<tr>
<th>Country</th>
<th>Estimated Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Davis M5.9</td>
</tr>
<tr>
<td>Residential</td>
<td>$96,362,000</td>
</tr>
<tr>
<td>Commercial</td>
<td>$345,379,000</td>
</tr>
<tr>
<td>Industrial</td>
<td>$131,812,000</td>
</tr>
<tr>
<td>Government</td>
<td>$4,504,000</td>
</tr>
<tr>
<td>Education</td>
<td>$90,090,000</td>
</tr>
<tr>
<td>Totals</td>
<td>$668,147,000</td>
</tr>
</tbody>
</table>

Source: HAZUS-MH
## Risk Assessment - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Structures</th>
<th>At Least Moderate Damage (&gt;50%)</th>
<th>Estimated Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>Davis M5.9</td>
</tr>
<tr>
<td>Wastewater Facilities</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Wastewater Pipelines</td>
<td>1,242 km</td>
<td>203 leaks/breaks</td>
<td>4,455 leaks/breaks</td>
</tr>
<tr>
<td>Potable Water Pipelines</td>
<td>2,069 miles</td>
<td>256 leaks/breaks</td>
<td>5,633 leaks/breaks</td>
</tr>
<tr>
<td>Natural Gas Pipelines</td>
<td>828 km</td>
<td>216 leaks/breaks</td>
<td>4,775 leaks/breaks</td>
</tr>
<tr>
<td>Electrical Power Facilities</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Communication Facilities</td>
<td>5</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Highway Bridges</td>
<td>130</td>
<td>0</td>
<td>81</td>
</tr>
<tr>
<td>Railway Facilities</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Airport Facilities</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: HAZUS-MH

### Table 9.10 - Debris Generated/Number of Loads

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Structures</th>
<th>Davis M5.9</th>
<th>2,500-yr M7.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brick, Wood &amp; Others</td>
<td>111,000 tons / 4,440 loads</td>
<td>758,000 tons / 30,320 loads</td>
<td></td>
</tr>
<tr>
<td>Concrete &amp; Steel</td>
<td>197,000 tons / 7,880 loads</td>
<td>1,603,000 tons / 64,120 loads</td>
<td></td>
</tr>
</tbody>
</table>

Source: HAZUS-MH

### Table 9.11 - Potential Casualties

<table>
<thead>
<tr>
<th>Category</th>
<th>Night Event</th>
<th>Day Event</th>
<th>Commute Event</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Davis M5.9</td>
<td>2,500-yr M7.1</td>
<td>Davis M5.9</td>
</tr>
<tr>
<td>Minor</td>
<td>223</td>
<td>2,589</td>
<td>250</td>
</tr>
<tr>
<td>Major</td>
<td>46</td>
<td>792</td>
<td>62</td>
</tr>
<tr>
<td>Fatalities</td>
<td>9</td>
<td>186</td>
<td>14</td>
</tr>
</tbody>
</table>

Source: HAZUS-MH
2. Flood

Flooding Overview + Profile

Flooding is a natural event for rivers and streams. Flood is determined to be the overflow of water onto land that is normally dry. Floods are related to an excess of snowmelt, rainfall, or failure of natural or engineered impoundments onto the banks 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, is larger than the channel of the river or the storm sewer capacity in a city. The peak discharge for a stream is associated with a probability of occurrence. The probability of occurrence can be stated in terms of recurrence intervals or return periods. For example, a probability of occurrence of 10 percent would be a flood expected to occur once in 10 years or 10 times in a 100 years. Flooding damage includes saturation of land and property, erosion from water, deposition of mud and debris, and the fast flowing waters from the flood itself. Most injuries and deaths occur from the fast moving floodwaters and most of the property damage results from the inundation by sediment-filled water. Flash flood conditions result from intense rainfall over a short period of time (DEM 2008).

Table 9.12 - Flooding Hazard Profile

<table>
<thead>
<tr>
<th>Changes since 2016</th>
<th>Local jurisdictions have been updating their floodplain development ordinances in areas with flooding potential.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential Magnitude</td>
<td>Probability</td>
</tr>
<tr>
<td>Catastrophic (&gt;50%)</td>
<td>Highly Likely</td>
</tr>
<tr>
<td>Critical (25-50%)</td>
<td>Likely</td>
</tr>
<tr>
<td>Limited (10-25%)</td>
<td>Possible</td>
</tr>
<tr>
<td>Negligible (&lt;10%)</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Location</td>
<td>Weber River; many creeks along Wasatch Front.</td>
</tr>
<tr>
<td>Extent</td>
<td>See map (below).</td>
</tr>
<tr>
<td>Prior Occurrences</td>
<td>The NOAA’s flood event database doesn’t record prior events since 2016, but minor flooding has occurred in different locations throughout the County.</td>
</tr>
<tr>
<td>Seasonal Pattern</td>
<td>Spring, late summer.</td>
</tr>
<tr>
<td>Conditions</td>
<td>Cloudburst storms and heavy snowfall runoff.</td>
</tr>
<tr>
<td>Duration</td>
<td>Flooding can last anywhere from hours to days and even months.</td>
</tr>
</tbody>
</table>
### Secondary Hazards

Raw sewage/health risk, electrical fires, gas spills.

### Climate Change

The increase in flood risk will occur in two ways. One, warmer temperatures will increase the risk of rain-on-snow events. Two, climate change will increase the incidence of extreme precipitation events and likely lead to an increase in flash flooding.

### Analysis Used

Review of FIS, FIRM, HAZUS-MH.

### Location and Extent:

The greatest flood risk within Davis County has been associated with cloudburst storms that generally result in flash flooding in localized areas. Heavy rain and rapid snowpack melt can also result in unusually heavy water, and/or mud and debris flows. Davis County’s precipitation is associated with the Wasatch Mountain Range, which is where most of the County’s surface water originates. All of the streams originate in canyons and pass along alluvial fans, across the eastern portion of the County into the Great Salt Lake.

The major river that poses a flood threat is the Weber River. The Weber River flowing through South Weber, acts as a partial northern county boundary. Many small creeks flow out of the Wasatch Mountain Front in Layton, Kaysville, Kaysville, Centerville, Bountiful, and North Salt Lake. These streams have flooded in the past and also pose a future flood threat, many of which are mapped through the NFIP. Many channels within the county can pose a threat due to channel constrictions from debris and could result in residential flooding. All of the alluvial fans in the county have been developed or are being developed, and therefore, residential and commercial flooding is probable. Floods can also pose a threat to the agricultural lands that are in the lower portions of the alluvial fans.

A little more than 50% of Davis County is under the Great Salt Lake. This results in a very high ground water table in those areas near the lake, threatening shorelines and, in some cases, agricultural lands and roads. Flooding in wetlands areas, along the shores of the Great Salt Lake, also threatens urban development.

High stream flows and velocity can affect the residential, commercial and recreational development on Farmington Creek, Kays Creek, Ricks Creek and Steeds Creek. Roads can be affected from high stream flows on Barton Creek and Holmes Creek. Primary threatened utilities are power substations and water treatment plants located on Stone Creek, Farmington Creek, Holmes Creek and Millcreek.

One of the more recent examples happened in 2004. Due to intense thunderstorms and heavy rainfall, flooding began in areas around Farmington and Shepard Canyons. Several factors contributed to this occurrence including: heavy rainfall, burned hillsides, steep slopes, ample sediment, and runoff previously caused by wet soil from snowmelt.

*Most damage occurred in subdivisions. Floodwaters and sediment deposition were mostly restricted to streets and yards, but damage also occurred to some vehicles, garages, and homes. Erosion by floodwaters threatened a section of a Weber Basin Water Conservancy District aqueduct running along the mountain front. Although emergency watershed protection measures were completed the fall following the fire, they are designed to reduce flooding and associated hazards, they do not eliminate them and are not permanent.* (Giraud & McDonald, 2021)
Snowmelt:
Snowmelt floods occur from the rapid snowmelt in the mountains. These floods generally happen in April, May and June. Warm air masses with mostly sunny skies melt the mountain watershed snowpack. The large accumulations of water generally last several days and the magnitude depends on the amount of snowpack and the warm weather. Snowmelt flood risk is reduced when the snowpack is below normal and/or the weather changes from winter to spring and summer gradually without an abrupt warming trend (DEM 2008).

Rainfall:
Rainfall floods result from large amounts of precipitation. Short duration local storms such as cloudburst or thunderstorms with a high intensity rainfall as well as the general storms that last several days with a less intense rainfall can produce a flooding event (DEM 2008).

Areas prone to flooding, according to the Utah Natural Hazards Handbook, include lake and reservoir shorelines which may flood when the flow of water into the lakes or reservoirs is greater than the outflow...
capacity. The Great Basin has several terminal lakes, such as the Great Salt Lake and Sevier Lake, which mean there is no outlet to the sea. These types of lakes are subject to considerable variations in water levels because the only outflow is by evaporation. Successive wet or dry periods lasting several years can result in a large change in size of terminal lakes. Development near this type of lake during a dry period is risky and certain to get flooded during wet periods (DEM 2008).

In 2016, the Great Salt Lake was reduced to only 4,206' due to a nine year period of excessive drought in the Salt Lake Valley. The historic low elevation for the lake was 4,191’ in 1963.

River and creek floodplain areas range from narrow zones to extensive lowlands extending great distances from a natural drainage area. Construction in floodplains is also dangerous because of the high flood risk. Urban areas are also prone to flooding because of the decrease in vegetation of the natural watershed. Houses, driveways, parking lots, buildings, and streets are all replacing the vegetative cover that is so important in lessening the potential for flood. This type of development prevents water infiltration into the soil and greatly increases the runoff. In some areas undersized piping and channels are used which may cause flooding. Man-made drainage channels can also play a role in flooding. Trash and debris can obstruct passageways (DEM 2008).
Vulnerability Analysis:
Assessing flood in Davis County was obtained from the modeling program Hazards United States – Multihazards (HAZUS-MH), for both 100-year (NFIP Zone A) and 500-year (NFIP Zone B or Zone X (shaded)) flood events. Analysis was completed using Flood Insurance Rate Maps (FIRM) or Digital Flood Insurance Rate Maps (DFIRM). Only streams which contained detailed flood cross-section data could be evaluated. Flooding from the Great Salt Lake was not included. Consequently, the results should be considered conservative. Total monetary losses include structures, contents and business interruption.

<table>
<thead>
<tr>
<th>Table 9.13 - Number of Structures in Floodplains</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acres Flooded</strong></td>
</tr>
<tr>
<td>100-year Flood</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>500-year Flood</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Source: HAZUS-MH

<table>
<thead>
<tr>
<th>Table 9.14 - Agricultural Losses, June 15 Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>100-year Losses Day 3</strong></td>
</tr>
<tr>
<td>Barley</td>
</tr>
<tr>
<td>Corn Silage</td>
</tr>
</tbody>
</table>

Source: HAZUS-MH

<table>
<thead>
<tr>
<th>Table 9.15 - Vehicle Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>100-year</strong></td>
</tr>
<tr>
<td>Daytime Scenario</td>
</tr>
<tr>
<td>Nighttime Scenario</td>
</tr>
</tbody>
</table>

Source: HAZUS-MH

<table>
<thead>
<tr>
<th>Table 9.16 - Debris Generation and Removal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>100-year</strong></td>
</tr>
<tr>
<td>Finishes</td>
</tr>
<tr>
<td>Structures</td>
</tr>
<tr>
<td>Foundations</td>
</tr>
<tr>
<td>Totals</td>
</tr>
</tbody>
</table>

9. Risk Assessment - 196
3. Landslide

Landslide Overview + Profile

Utah ranked third in the nation in terms of largest total landslide damage cost and cost per person between 1973 and 1983. Utah’s landslide hazard rating is “severe”, the highest level of five hazard classes given by the U. S. Geological Survey. The three main contributing factors to slope failure include areas with moderate to steep slopes, conductive geology, and high precipitation. The main elements that cause slope failure include precipitation events, topography and vegetation (DEM 2008). Landslide distribution in Utah is associated with topography and physiographic provinces. The two physiographic regions that are conducive to landslides in Utah are the Middle Rocky Mountains province and the High Plateaus subdivision of the Colorado Plateau physiographic province. Landslides are also known as slope failure and are classified according to the type of movement and the material involved. The five types of movement include falls, topples, slides, lateral spreads, and flows. The types of materials include rocks, debris (course grained soil), and earth (fine grained soil). Slope failure types are identified as rock falls, rock topples, rock slides, debris flows, debris topples, debris slides, slumps, and earth flows (DEM 2008). North Salt Lake experienced the Spring Hill landslide in 2014 which destroyed 1 home, damaged another home, and also damaged a tennis club. An agreement was reached in 2015 by the developer, the city, and the property owners to begin remediation of this slide.

Table 9.17 - Landslide Hazard Profile

<table>
<thead>
<tr>
<th>Changes since 2016</th>
<th>County and municipal planners have continued to see demand for hillside residential development. However, the lessons learned from the 2013 Parkway Drive landslide in North Salt Lake have improved political support for resilience efforts.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential Magnitude</td>
<td>Probability</td>
</tr>
<tr>
<td>Critical (25-50%)</td>
<td>X Highly Likely</td>
</tr>
<tr>
<td>Limited (10-25%)</td>
<td>Possible</td>
</tr>
<tr>
<td>Negligible (&lt;10%)</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Location</td>
<td>Generally occur in canyon mouths and foothill areas.</td>
</tr>
<tr>
<td>Extent</td>
<td>The HAZUS models identify the potential impact of landslides to be most significant in the Farmington area and on the southern end of the County.</td>
</tr>
<tr>
<td>Prior Occurrences</td>
<td>2013 Parkway Drive landslide in North Salt Lake</td>
</tr>
<tr>
<td>Seasonal Pattern</td>
<td>Spring and Summer; after heavy or long-duration precipitation</td>
</tr>
</tbody>
</table>
### Conditions

Usually caused by the stress release of over-weighted soils, shallow groundwater in certain soils, or loosening of rock and debris.

### Duration

Hours to years.

### Secondary Hazards

Flooding (natural dams), traffic accidents.

### Climate Change

Warmer, future winter temperatures will create a scenario where landslides may be more likely. Warmer winter temperatures mean it is less likely that soils are frozen, even if snowpack exists.

### Analysis Used

Information and maps provided by UGS, DEM.

Future landslide areas are usually located in the areas of historical landslides, which are well defined and localized. Landslides have been one of the most reoccurring hazards within Davis County along the canyon benches. The homes in these areas have the greatest vulnerability to rockfalls, debris flows, landslides and other types of slope failure.

#### Locations and Activity:

Based on the Threat Analysis below, landslides are likely in about half of Davis County’s land area. The August 2001 Heather Drive landslide in Layton damaged six houses, forcing homeowners to evacuate them.

> Three houses were saved and moved off the landslide, but the other three were so severely damaged they had to be demolished. Landslide movement also severed underground utility service to the houses. Estimates of homeowner equity loss, mortgage company loss, utility company costs, and Layton City costs exceed $1 million. The Heather Drive landslide is on a north facing slope above South Fork Kays Creek. The landslide is a partial reactivation of a prehistoric landslide in silt and clay sediments of ancient Lake Bonneville. Lake Bonneville sediments in the Layton area are prone to landsliding. In fact, several other landslides within one mile of Heather Drive reactivated recently, including the South Fork Kays Creek (1998), Hillsboro Drive (1998), Sunset Drive (1998 and 2006), and Beechwood Drive (2006) landslides. (Elliott, 2001)

On April 15, 2006, another instance occurred, homeowners recognized that the Sunset Drive landslide in Layton had reactivated. No injuries and only minor damage occurred in this example, however there is potential for worse in the future.

> The landslide is in a northwest-facing slope above the broad valley of the North Fork of Kays Creek. Landslide movement directly impacts two houses and the backyard landscaping at four other lots along the slope crest. The upper part of the landslide has been modified by the placement of fill for farming and subdivision development. The area of landsliding is about 650 to 700 feet wide and 550 feet long. The landslide has a vertical drop of about 160 feet and an average slope of 30%. Instruments indicate the sliding surface of the 2006 landslide movement is 30 to 38 feet below the ground surface near mid-slope and likely deeper near the slope crest. The Utah Geological Survey assisted Layton City in monitoring landslide movement and measuring ground-water levels, and Layton City building inspectors predicted potential damage to the two
houses directly threatened by the landslide. Much of northern Utah was experiencing a wet year, following the year 2005 when the UGS recorded over 100 landslides across the state. (Giraud et al., 2021)

Map illustrating landslide susceptibility in the Davis County area. (click for original).

Rock Falls and Rock Topples:
These occur when loosened blocks or boulders from an area of bedrock move down slope. Rock falls and topples generally occur along steep canyons, cliffs, and steep road cuts. Rock fall damage usually affects roads, railroad tracks, and utilities. In Davis County, Farmington Canyon road has been frequently damaged or blocked by rock falls from the steep terrain above the road. In the spring of 2015, boulders the size of automobiles blocked the road for several days until the debris could be cleared by the Forest Service.
Debris Slides and Debris Flows:

Slides and flows generally occur in mountainous areas and involve the relatively rapid, viscous flow of course-grained soil, rock, and other surficial materials. Debris flows generally occur in mountainous areas and are considered a flow rather than a slide because of the high water content coupled with the debris. Debris flows are typically more dangerous because of the high speeds under which they form and travel. Debris flows generally remain in stream channels but can flow out from canyon mouths for a considerable distance. Debris flows and slides can damage anything in their path including buildings, roads, railroad tracks, life lines/utilities, and reservoirs. Davis County has experienced numerous debris flows over the years. Significant debris flows occurred in 1983 as floods occurred in Farmington and Centerville. In order to mitigate this hazard, several debris basins have been constructed in the mouths of the canyons along the Front.

Slumps:

Slumps are common along road embankments and river terraces. They slip or slide along a curved failure plane away from the upper part of a slope leaving a scarp (a relatively steeper slope separating two more gentle slopes). Slumps generally do not move very far from the source area.

Earth Flows:

Earth flows are slumps with the addition of water that slump away from the top or upper part of a slope, leaving a scarp. These can range in size from very small to flows involving hundreds of tons of material and result in a bulging toe that can block streams and cause flooding, and damage buildings or other structures.

Causes of landslides are the result of hillside instability. Slope makeup, slope gradient, and slope weight all play a role. Other important factors of slope instability include rock type and structure, topography, water content, vegetative cover, and slope aspect. Debris flows, for example, occur when these elements are modified by natural processes or by human created processes.

Natural Processes:

Natural processes that can induce slope failure include ground shaking, wind and water weathering and erosion.

Human Causes:

Human created processes such as lawn watering and irrigation may place excess water on already unstable ground by adding water weight to the material and raise the pore pressure, leading to a loss of shear strength. Water can also change the consistency of the slope material reducing cohesion leading to an unstable mixture.

Rock types containing clay, mudstone, shale, or weakly cemented units, which are strongly affected by weathering and erosion, are particularly prone to landsliding because of expansive and lubricating properties. Other processes include the removal or addition of slope materials during construction.

Vegetation is very important in the stabilization of slopes because it prevents rainfall from impacting the soil directly and helps protect from erosion by retaining water and decreasing surface runoff. The roots systems serve as slope-stabilizing elements by binding the soil together or binding the soil to the bedrock. Increases in slope gradient such as placing heavy loads at the top of a slope and/or the removal of material at the toe of a slope all affect the equilibrium and result in slope failure because of slope instability.
Vulnerability Analysis:

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.

Table 9.18 - Infrastructure Vulnerable to Landslides, Davis County

<table>
<thead>
<tr>
<th>Length (Miles) or Number of Unit</th>
<th>Replacement Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highways/Interstates: 1.39 miles</td>
<td>$9,581,012</td>
</tr>
<tr>
<td>Highway Bridges: 11 bridges 11 bridges</td>
<td>$17,140,206</td>
</tr>
<tr>
<td>Railway Segments: .26 miles</td>
<td>$295,634</td>
</tr>
<tr>
<td>Railway Bridges: 0 bridges</td>
<td>$0</td>
</tr>
<tr>
<td>Water Distribution Lines: 235.50 miles</td>
<td>$7,579,602</td>
</tr>
<tr>
<td>Gas Lines: 94.14 miles</td>
<td>$3,031,846</td>
</tr>
<tr>
<td>Sewer Lines: 141.42 miles</td>
<td>$4,547,764</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$42,176,064</strong></td>
</tr>
</tbody>
</table>

*Source: HAZUS-MH*

Table 9.19 - Vulnerability Assessment for Landslides, Davis County

<table>
<thead>
<tr>
<th>Acres Affected</th>
<th>Population Affected</th>
<th>Residential Structures</th>
<th>Commercial Structures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bountiful</td>
<td>2,477</td>
<td>15,575</td>
<td>4,678</td>
</tr>
<tr>
<td>Centerville</td>
<td>327</td>
<td>3,600</td>
<td>738</td>
</tr>
<tr>
<td>Clearfield</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Clinton</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Farmington</td>
<td>723</td>
<td>4,752</td>
<td>1,011</td>
</tr>
<tr>
<td>Kaysville</td>
<td>247</td>
<td>1,669</td>
<td>422</td>
</tr>
<tr>
<td>Kaysville</td>
<td>131</td>
<td>1,282</td>
<td>340</td>
</tr>
<tr>
<td>Layton</td>
<td>1,518</td>
<td>7,792</td>
<td>2,199</td>
</tr>
<tr>
<td>North Salt Lake</td>
<td>1,018</td>
<td>4,287</td>
<td>1,362</td>
</tr>
<tr>
<td>South Weber</td>
<td>808</td>
<td>2,418</td>
<td>674</td>
</tr>
<tr>
<td>Sunset</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Syracuse</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>West Bountiful</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>West Point</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Woods Cross</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td><strong>Unincorporated Areas</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hill AFB</td>
<td>115</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mutton Hollow</td>
<td>23</td>
<td>135</td>
<td>40</td>
</tr>
<tr>
<td>Val Verda</td>
<td>2</td>
<td>34</td>
<td>12</td>
</tr>
</tbody>
</table>

9. Risk Assessment - 201
4. Wildfire

Wildfire Overview + Profile

The Wildland–Urban Interface (WUI) area is where residential areas meet wildland areas. It is known as the interface zone and presents a serious fire threat to people and property.

<table>
<thead>
<tr>
<th>Potential Magnitude</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catastrophic (&gt;50%)</td>
<td>X Highly Likely</td>
</tr>
<tr>
<td>Critical (25-50%)</td>
<td>Likely</td>
</tr>
<tr>
<td>Limited (10-25%)</td>
<td>Possible</td>
</tr>
<tr>
<td>Negligible (&lt;10%)</td>
<td>Unlikely</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>Wildland–Urban Interface (WUI) areas near the foothills and in forested areas in South Weber, Layton, Kaysville, Kaysville, Farmington, Centerville, Bountiful, and North Salt Lake.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extent</td>
<td>The potential magnitude of wildfire in Davis County is relative to the amount of fuels on the eastern foothills and canyons. There is also a wildfire potential in Antelope Island. See the tables that follow.</td>
</tr>
<tr>
<td>Prior Occurrences</td>
<td>There have been three major wildfire events in Davis County in recent years (July 16’, August 16’, and September 17’). Fortunately, there have been no deaths or injuries associated with them.</td>
</tr>
<tr>
<td>Seasonal Pattern</td>
<td>Summer</td>
</tr>
<tr>
<td>Conditions</td>
<td>Areas affected by drought and/or heavily overgrown dry brush and debris. Common triggers: lightning and humans.</td>
</tr>
<tr>
<td>Duration</td>
<td>Days to months; depends on climate and fuel load as well as resources (financial, manpower) to extinguish the fire.</td>
</tr>
<tr>
<td>Secondary Hazards</td>
<td>Landslides, debris flows, erosion, traffic accidents, air pollution.</td>
</tr>
</tbody>
</table>
Climate Change
Prolonged increases in temperature will increase the risk of wildfire occurrence in Utah because of the potential for extensive changes to both the length and severity of the fire season.

Analysis Used
Review of plans and data provided by US Forest Service, National Climatic Data Center, FEMA, AGRC, County Hazard Analysis Plans, and DEM.

The urban aspect includes homes, schools, storage areas, recreational facilities, transmission lines and commercial buildings. Wildland refers to unincorporated areas including hills, benches, plateaus, and forests. Homes are built on the benches adjacent to wildland areas. Wildfires remove vegetation which results in slope failure, erosion, water runoff and depletion of wildlife resources. The three conditions that affect fire behavior are topography, vegetation and weather (DEM 2008).

Topography includes such factors as slope, aspect, and elevation. Fires spread faster upslope because the fuels are closer to the flames on the upslope. The heat from a fire moves uphill and dries fuels in front of the fire allowing for easier ignition. The aspect of slope dictates moisture content. In short, the sun dries out fuels on south and west facing slopes more than on north and east facing slopes. Elevation and weather are interrelated because, generally, higher elevations result in cooler temperatures and a higher relative humidity. Elevation also determines the types of vegetation present (DEM 2008).

Vegetation plays a major role in the speed of a fire. Light grasses burn rapidly and heavy dense fuels burn slowly but with a greater intensity. The five major fuel types in Utah’s vegetation include grass/sagebrush, pinion-juniper, mountain bush, hardwoods, and softwoods. The grass/sagebrush area poses a serious threat because people underestimate the danger of wildfires in this area. These fires burn across thousands of acres rapidly and pose a serious threat to not only property but also life. Pinion-juniper fuel will contribute to the fire hazard when conditions are hot, dry, and windy. When a fire does occur here, it will burn intensely and spread rapidly. Mountain brush is commonly found in Utah’s foothills and if moderate to extreme fire conditions are present, this type of fuel will burn hot and fast. Hardwood forest and softwood (deciduous) fuel types are generally less risky (DEM 2008).

Size, continuity and compactness all affect the fuel’s rate of spread. Large fuels do not burn as readily as smaller fuels and need more heat to ignite. Small fuels on the other hand ignite easier, and a fire will spread more rapidly through them. Continuity is described by how fuel is arranged horizontally. Fuels that are broken up burn unevenly and slower than uniform fuels. Compactness is how fuel is arranged vertically. Tall, deep fuels have more oxygen available so they burn more rapidly. Less oxygen is available to compact fuels such as leaf litter and stacked logs, therefore they burn slower (DEM 2008).

Weather factors include temperature, humidity, precipitation, and wind. Weather affects the ease with which a fuel ignites, the intensity at which it burns, and how easy or difficult fire control may be. High temperatures increase fire danger because it heats fuels and reduces water content, which increases flammability. Humidity influences fuel ignition and how intensely fuel burns. A decrease in relative humidity causes fuels to dry, promoting easier ignition and more intense burning. Wind speed can increase burning intensity and the direction that the fire moves. Wind carries 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 well ahead of the main fires starting spot fires (DEM 2008).

Fire protection in these areas is difficult because the tactics used for wildland fire suppression cannot be used for structure protection and suppression. The energy that is emitted from a wildland fire is very
dangerous to firefighters and homeowners and makes protection of homes almost impossible. One third of all firefighter deaths occur fighting wildfires. Many believe that WUI areas increase the risks to firefighters significantly. Legally, federal wildland protection agencies seldom have the responsibility to protect structures. The legal responsibility for protecting structures on non-federal wildlands varies widely among state forestry agencies (DEM 2008).

**Locations and Activity:**

Potential wildfire hazard within Davis County is growing as population growth is spreading into wildland areas where the threat is most severe. Over the past 30 years, urban sprawl has encroached upon forested foothill areas and wildland areas.

The wildfire threat in Davis County has had a significant effect on watersheds, including landslide, debris flow, and other forms of erosion. Federal, state and local agencies have worked together to enforce ordinances and other programs such as re-vegetation zones to protect watersheds.

The Snow Canyon Fire of September 2006 is, unfortunately, not an uncommon occurrence. People are often the cause of wildfires, whether accidentally like in this case or purposefully. On September 14, 2006 a woman was attempting to burn a brush pile and started a fire that quickly became uncontrolled and forced the evacuation of more than 20 homes just outside Layton City. The Snow Canyon Fire grew quickly because of a high winds storm that ended up providing enough rain to keep the fire away from the threatened homes, greatly diminishing its impact.

A reverse-911 system was initiated and residents along Valley View Drive were informed and told to leave their homes. They were temporarily housed at a church nearby, where the Red Cross was available to assist with food, water and other necessities. U.S. 89 was closed between Kaysville and South Weber, creating mild congestion on I-15. Several schools in the area were unable to bus students home because of the road closure. The evacuation order was lifted after a 4 p.m. rainstorm aided firefighters. Residents were allowed back at 6 p.m. Departments from several jurisdictions assisted in the firefighting efforts, as well as air support. The fire burned over 400 acres. No structures were touched by the flames, including a building housing several restored vehicles. There were also no reported injuries. (Leonard, 2006)

However, not all wildfires are human-caused, like the following example are started naturally by varying conditions. Lightning is believed to be the cause of the West Antelope fire of July 2016, which began in the Utah State Park northwest of Salt Lake City.

The fire grew from a few hundred acres to around 8,000 acres in less than 48 hours. Meanwhile, several Bureau of Land Management Engines, a dozer, a helicopter and two Single Engine Air Tankers helped crews contain the blaze. Officials eventually requested a larger airtanker to help contain the flames. Officials from the Utah Department of Natural Resources published an alert to warn area residents to watch for updates. In this case, no one was injured and the damage was only to the natural environment, no infrastructure was damaged. (Handy, 2016)
Map illustrating wildfire risk in the Davis County area. (click for original)
Vulnerability Assessment

Provided are the number of units or total length of infrastructure vulnerable to wildfire events and the estimated replacement costs as provided by HAZUS-MH lost estimation software.

Table 9.21 - Infrastructure Vulnerable to Wildland Fire

<table>
<thead>
<tr>
<th></th>
<th>Length (Miles) or Number of Unit</th>
<th>Replacement Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highways/Interstates</td>
<td>4.9 miles</td>
<td>$24,200,027</td>
</tr>
<tr>
<td>Highway Bridges</td>
<td>10 bridges</td>
<td>$15,469,072</td>
</tr>
<tr>
<td>Railway Segments</td>
<td>3.4 miles</td>
<td>$1,682,730</td>
</tr>
<tr>
<td>Railway Bridges</td>
<td>0 bridges</td>
<td>$0</td>
</tr>
<tr>
<td>Water Distribution Lines</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Gas Lines</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Sewer Lines</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Total Estimated Infrastructure Replacement Costs</strong></td>
<td></td>
<td><strong>$41,351,829</strong></td>
</tr>
</tbody>
</table>

Source: HAZUS-MH

Table 9.22 - Vulnerability Assessment for Wildland Fire, Davis County

<table>
<thead>
<tr>
<th></th>
<th>Acres Affected</th>
<th>Population Affected</th>
<th>Residential Structures (Replacement Value)</th>
<th>Commercial Structures (Annual Sales)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bountiful</strong></td>
<td>8,450</td>
<td>3,146</td>
<td>1,538 $341,889,000</td>
<td>163 $136,290,000</td>
</tr>
<tr>
<td><strong>Centerville</strong></td>
<td>3,808</td>
<td>277</td>
<td>87 $18,206,298</td>
<td>8 $4,400,000</td>
</tr>
<tr>
<td><strong>Clearfield</strong></td>
<td>4,897</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Clinton</strong></td>
<td>3,809</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Farmington</strong></td>
<td>6,356</td>
<td>680</td>
<td>297 $45,245,145</td>
<td>3 $250,000</td>
</tr>
<tr>
<td><strong>Kaysville</strong></td>
<td>1,465</td>
<td>126</td>
<td>34 $9,055,820</td>
<td>4 $18,000,000</td>
</tr>
<tr>
<td><strong>Layton</strong></td>
<td>14,036</td>
<td>1,726</td>
<td>366 $64,019,439</td>
<td>60 $86,680,000</td>
</tr>
<tr>
<td><strong>North Salt Lake</strong></td>
<td>5,474</td>
<td>3,750</td>
<td>1,364 $273,551,328</td>
<td>44 $23,160,000</td>
</tr>
<tr>
<td><strong>South Weber</strong></td>
<td>3,091</td>
<td>80</td>
<td>25 $2,343,726</td>
<td>7 $60,000,000</td>
</tr>
<tr>
<td><strong>Sunset</strong></td>
<td>930</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Syracuse</strong></td>
<td>5,833</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>West Bountiful</strong></td>
<td>1,908</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>West Point</strong></td>
<td>4,455</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
5. Problem Soils

Problem Soils Overview + Profile

Soil-related risks and hazards that may not be readily apparent. Locating facilities in areas with excessive risks contributes to loss of life, health, and property.

<table>
<thead>
<tr>
<th>Location</th>
<th>Changes since 2016</th>
<th>Potential Magnitude</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woods Cross</td>
<td>New developments in areas near the Great Salt Lake have increased the awareness of problem soils mitigation.</td>
<td>Catastrophic (&gt;50%)</td>
<td>Highly Likely</td>
</tr>
<tr>
<td>Hill AFB</td>
<td></td>
<td>Critical (25-50%)</td>
<td>Likely</td>
</tr>
<tr>
<td>Mutton Hollow</td>
<td></td>
<td>Limited (10-25%)</td>
<td>X Possible</td>
</tr>
<tr>
<td>Val Verda</td>
<td></td>
<td>Negligible (&lt;10%)</td>
<td>Unlikely</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>Region-wide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extent</td>
<td>Low hazard potential (see commentary below).</td>
</tr>
<tr>
<td>Prior Occurrences</td>
<td>n/a</td>
</tr>
<tr>
<td>Seasonal Pattern</td>
<td>Anytime</td>
</tr>
<tr>
<td>Conditions</td>
<td>Conditions vary by geologic formation</td>
</tr>
<tr>
<td>Duration</td>
<td>Minutes to years</td>
</tr>
<tr>
<td>Secondary Hazards</td>
<td>Flooding (broken water pipes), fire (broken gas pipes).</td>
</tr>
</tbody>
</table>

Source: HAZUS-MH
**Risk Assessment** - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

<table>
<thead>
<tr>
<th>Climate Change</th>
<th>n/a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis Used</td>
<td>Utah Geological Survey.</td>
</tr>
</tbody>
</table>

**Locations and Activity:**

Problem soils are soils that present problems for buildings and other engineered structures. Three types of problems soils are present in Davis County – oolitic sands, limestone and peat bogs. Oolitic sands are found on the northwest shore of Antelope Island. Limestone karst structures are found in the Mueller Park area in the far southeastern portion of the county. Finally, peat bogs are found along the shores of the Great Salt Lake in Farmington Bay. All of these areas are thinly populated and pose little danger.

The oolitic sands on Antelope Island are on a public beach. Periods of flooding on the Great Salt Lake have eroded away much of the sands. The sands pose little threat to buildings, but can cover nearby roads at times.

Limestone karst structures are easily eroded by water and therefore often form caverns and crevices. If these caverns become large enough, the overlying ground can give way casing sinkholes and other forms of subsidence. Structures directly over the karst structure have a high potential for collapse.

Groundwater contamination is also possible (Mulvey 1992). Fortunately, the karst structures in Davis County are located in remote areas.

Peat bogs are collections of dead and dying plants. Areas of this problem soil can experience subsidence and can be compressed easily (Mulvey 1992). Furthermore, these bogs can produce methane which is highly flammable.

Except for radon gas, no deaths have been reported in Utah from other problem soil and rock hazards; however, they have caused an undetermined, but significant amount of infrastructure damage and economic impact.

**Vulnerability Assessment**

Widespread problem soils were found not to affect any population or infrastructure in Davis County. Therefore, no *significant* vulnerability exists.

6. **Dam Failure**

**Dam Failure Overview + Profile**

Dams and associated water delivery systems serve various functions and are built by different agencies and entities including; the Bureau of Reclamation, Army Corps of Engineers, Soil Conservation Service, cities, counties, and private irrigation companies. Dams are built for hydroelectric power generation, flood control, recreation, water storage for irrigation, as well as municipal and industrial uses. Utah’s dry climate makes it critical for the storage of the winter snowmelt runoff for uses all year round. Federal dams impound more than 84% of Utah’s stored water. The 650 non-federal dams store more than 1.2
million acre-feet of water. Dam placement is important and needs to be in an area where it can collect and distribute the greatest amount of water.

Dam sites with strong impermeable bedrock are the best in terms of strength. Davis County does not have any federal dams; however, a significant portion of the water utilized in Davis County is received from federal dams located in Morgan and Summit Counties. Upstream from Davis County are several large impoundments, including Echo, Wanship, East Canyon, and Lost Creek reservoirs. A failure of any of these dams would likely impact residents in the South Weber community of Davis County.

### Table 9.24 - Dam Failure Hazard Profile

<table>
<thead>
<tr>
<th>Changes since 2016</th>
<th>Potential Magnitude</th>
<th>Probability</th>
<th>Location</th>
<th>Extent</th>
<th>Prior Occurrences</th>
<th>Seasonal Pattern</th>
<th>Conditions</th>
<th>Duration</th>
<th>Secondary Hazards</th>
<th>Climate Change</th>
<th>Analysis Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>No new dams were created in recent years, and inspections of existing dams continue. Local jurisdictions have been updating their floodplain development ordinances in areas with flooding potential.</td>
<td>X Catastrophic (&gt;50%)</td>
<td>Highly Likely</td>
<td>Region-wide</td>
<td>See map (below)</td>
<td>None in the last five years</td>
<td>Rainy Day failure: Spring, late summer Sunny Day failure: Anytime</td>
<td>Rainy day failure happens mainly during heavy precipitation events, can have some warning time. Sunny day failure happens with no warning at all usually from sudden structural failure.</td>
<td>Hours to days.</td>
<td>Flooding, raw sewage/health risk, electrical fires, gas spills.</td>
<td>Changes in weather patterns and incidence of extreme precipitation will increase the risk of dam failure in Utah.</td>
<td>Review of BOR inundation maps and plans, FIS, Utah Division of Water Rights.</td>
</tr>
</tbody>
</table>

### Locations and Activity:

Ninety dams and irrigation impoundments are located in Davis County. Twenty-six of these are listed as high hazard; meaning if they fail, they have a high probability of causing loss of life and extensive economic loss. Twenty-three dams have a moderate hazard threat; if they fail, they have a low probability.
of causing loss of life. Both threats would cause appreciable property damage. Mitigation efforts should be developed and pursued. Thirty-two dams have a low hazard threat, if they were to fail there would be a minimal threat to life and economic losses would be minor. Damage would be limited to the owner of the dam. However, they should still be monitored. No hazard rating is provided for nine dams. These dams have yet to be inspected.

While no dams have failed within Davis County, dam failures occur all over the country some examples include: Laub Detention Dam Failure, Quail Creek, and Little Deer Creek

Little Deer Creek dam failed on its first filling on June 16, 1963, due to extensive foundation seepage. The catastrophic failure resulted in Utah’s first dam failure, killing Bradley Galen Brown, a four-year-old boy. Quail Creek dam failed on New Year’s Day (January 1) 1988, due to extensive foundation seepage. Failure caused approximately $12 million in damage and cost approximately $8 million to rebuild. No lives were lost. Laub Detention Dam failed on September 11, 2012. A severe storm with heavy rainfall occurred prior to the failure. Numerous homes, businesses and roads were damaged. No lives were lost. A Presidential Disaster Declaration was declared for Washington County on November 3, 2012. The Dam was rebuilt in 2013 and was renamed “Tuacahn Wash Lower Detention Basin.”
Rainy Day Failures:

“Rainy day failures occur when floodwaters overstress the dam, spillway, and outlet capacities. The flood water flows over the top of the dam and eventually erodes the structure from the top down. At this point the floodwater meets with the floodwaters from the rainstorm and a very destructive, powerful flood is created” (DEM 2008).

Sunny Day Dam Failures:

Sunny day dam failures are the most dangerous because they happen without warning. Downstream residents or inhabitants have little or no time to prepare or even evacuate the area; the results may be catastrophic. Sunny day failures occur from seepage or erosion inside the dam. This erosion removes fine materials creating a large void that can cause the dam to collapse, or overtop and wash away.

Earthquake ground shaking or liquefaction can also create structure problems. Ground shaking will cause the dam to start piping, slumping, settling, or experience a slope failure similar to a landslide. The dam then fails internally or overtops and washes away.
Other sunny day failures occur when vegetation or rodents get into a dam and leave holes or tunnels that can lead to failure. Not all dam failures are catastrophic; sometimes a dam can fail and be drained and repaired without a damaging flow of floodwaters (DEM 2008).

“Hazard ratings are determined by downstream uses, size, height, volume and incremental risk/damage assessments. The hazard ratings are: Low – insignificant property loss; Moderate – significant property loss; and High – possible loss of life” (DEM 2008). While Davis County does not have any identified high-hazard dams, the federal dams upstream are listed as high-hazard. Over two hundred Utah dams are rated as high-hazard.

**Vulnerability Assessment:**

Provided are the number of units or total length of infrastructure vulnerable and the estimated replacement costs as provided by HAZUS-MH loss estimation software.

<table>
<thead>
<tr>
<th>Table 9.25 - High and Moderate Hazard Dams, Davis County</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High-Hazard Dams</strong></td>
</tr>
<tr>
<td>---------------------------------------------------------</td>
</tr>
<tr>
<td>Adams</td>
</tr>
<tr>
<td>BOR Farmington Equalizing Reservoir</td>
</tr>
<tr>
<td>Bountiful – North Canyon (SDID#2)</td>
</tr>
<tr>
<td>Bountiful – Oakridge (SDID #1)</td>
</tr>
<tr>
<td>Centerville – Barnard Creek (Lower ) DB</td>
</tr>
<tr>
<td>Davis County – Barton Creek DB</td>
</tr>
<tr>
<td>Davis County – Farmington Pond</td>
</tr>
<tr>
<td>Davis County – Holmes Creek DB</td>
</tr>
<tr>
<td>Davis County – Hooper Draw DB</td>
</tr>
<tr>
<td>Davis County – Mutton Hollow DB</td>
</tr>
<tr>
<td>Davis County – Parrish Creek DB</td>
</tr>
<tr>
<td>Davis County – Ricks Creek DB</td>
</tr>
<tr>
<td>Davis County – Shepherd Creek DB</td>
</tr>
<tr>
<td>Davis County – Stone Creek DB</td>
</tr>
<tr>
<td>Davis/Weber County Canal Co. –</td>
</tr>
<tr>
<td>Davis/Weber County Canal Co. – Layton</td>
</tr>
</tbody>
</table>
## Risk Assessment - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

### Table 9.26 - Infrastructure Vulnerable to Dam Failure, Davis County

<table>
<thead>
<tr>
<th>Length (Miles) or Number of Unit</th>
<th>Replacement Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highways/Interstates 12.85 miles</td>
<td>$105,801,968</td>
</tr>
<tr>
<td>Highway Bridges 38 bridges</td>
<td>$71,093,046</td>
</tr>
<tr>
<td>Railway Segments 14.57 miles</td>
<td>$16,733,995</td>
</tr>
<tr>
<td>Railway Bridges 0 bridges</td>
<td>$0</td>
</tr>
<tr>
<td>Water Distribution Lines N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Gas Lines N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Sewer Lines N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$193,629,009</strong></td>
</tr>
</tbody>
</table>

*Source: HAZUS-MH*
7. **Drought**

**Drought Overview + Profile**

According to the National Drought Mitigation Center, drought originates from a shortage of precipitation over an extended period of time, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector. “Drought could be considered relative to some long-term average condition of balance between precipitation and evapotranspiration in a particular area” (NDMC 2006). Drought is also related to the timing and effectiveness of precipitation. Drought is a normal, recurrent feature of weather and climate but is a particular concern to all affected because of its devastating outcome. It occurs in almost all climatic zones with varying characteristics. “Drought is a temporary aberration and differs from aridity since aridity is restricted to low rainfall regions and is a permanent feature of climate”. Drought is a dry progression through the winter, spring, and summer months that could end in a year or last for many years. The number of dry years correlates with that impact. Usually, a one to two year drought affects only agriculture, while a three year drought may significantly impact culinary water in the local areas and communities.

<table>
<thead>
<tr>
<th>Changes since 2016</th>
<th>The recent drought conditions have increased awareness of the potential impact of drought in the County.</th>
<th>Highly Likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Much of the new subdivision development in the County has led to the conversion of agricultural land to suburban. The majority of irrigated acres in those converted areas were done via flood irrigation.</td>
<td>X</td>
<td>Likely</td>
</tr>
<tr>
<td>Davis County planners have utilized the new compilation of water-related land use data (<a href="https://dwre-utahdnr.opendata.arcgis.com/pages/wrlu">https://dwre-utahdnr.opendata.arcgis.com/pages/wrlu</a>).</td>
<td>Possible</td>
<td>Unlikely</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Potential Magnitude</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catastrophic (&gt;50%)</td>
<td>X</td>
</tr>
<tr>
<td>Critical (25-50%)</td>
<td></td>
</tr>
<tr>
<td>Limited (10-25%)</td>
<td></td>
</tr>
<tr>
<td>Negligible (&lt;10%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>Region-wide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extent</td>
<td>Davis County’s potential for drought impact is high. It is currently experiencing a “D4” event.</td>
</tr>
<tr>
<td>Prior Occurrences</td>
<td>The USDA and NOAA report that Davis County has experienced drought conditions at different levels almost continually since 2016.</td>
</tr>
</tbody>
</table>
| Seasonal Pattern | Winter: reduction of snowpack and water supplies
Spring: reduction of crop production and/or increased crop water demand |
**Risk Assessment - Davis Co PDMP**

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

| Conditions | Summer: increased water demand, impeded crop production  
Fall: reduction in soil moisture could reduce snowmelt runoff |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>Months, Years</td>
</tr>
<tr>
<td>Secondary Hazards</td>
<td>Wildfire, dust storms, air quality.</td>
</tr>
<tr>
<td>Climate Change</td>
<td>Climate change will increase the incidence of extreme precipitation events and change weather patterns. Extreme, or heavy snowfall events will increase the risk of avalanches. Also, changes in climate will likely cause an increase in drought hazard in Utah (which is one of the driest states in the US).</td>
</tr>
<tr>
<td>Analysis Used</td>
<td>National Weather Service, Utah Climate Center, Utah Division of Water Resources, Newspapers, Local input.</td>
</tr>
</tbody>
</table>

The most severe drought period in recorded history for the Northern Mountains region 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 (Utah Division of Water Resources 2007a).

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.

Conceptual definitions of drought help people understand the idea of a drought. Operational definitions define the process of drought. This is usually done by comparing the current situation to the historical average, often based on a 30-year period of record. It is hard to develop a singular operational definition of drought because of the striking differences throughout the world (NDMC 2006).

Meteorological drought is defined by the degree of dryness in comparison to an average amount and the duration of the dry period. Meteorological drought must be considered as region specific since the atmospheric conditions that result in deficiencies of precipitation are highly variable from region to region (NDMC 2006).

Hydrological drought refers to the precipitation decline in the surface and subsurface water supply. The frequency and severity of hydrological drought is often defined on a watershed or river basin scale (NDMC 2006).

Agricultural drought occurs when there is not enough water available for a crop to grow. This drought links various characteristics of meteorological or hydrological drought to agricultural impacts, focusing on precipitation shortages, differences between actual and potential evapotranspiration, soil water deficits, and reduced groundwater or reservoir levels (NDMC 2006).
Socioeconomic drought occurs when the physical water shortage begins to affect people (NDMC 2006). When drought begins, the agricultural sector is usually the first to be affected because of its heavy dependence on stored soil water. If precipitation deficiencies continue, then people dependent on other sources of water will begin to feel the effects of the shortage. Those who rely on surface and subsurface water are usually the last to be affected. Groundwater users are often the last to be affected by drought during its onset but may be the last to experience a return to normal water levels. The length of the recovery period is a function of the intensity of the drought, its duration, and the quantity of precipitation received as the episode terminates (NDMC 2006).

Locations and Activity:

**Palmer Drought Severity Index (PDSI):**

Developed in 1965, the PDSI is a soil moisture algorithm calibrated for relatively homogeneous regions used by government agencies and states to trigger drought relief programs. The PDSI provides a measurement of moisture conditions that were “standardized” so that comparisons using the index could be made between locations and between months. This is the oldest index for measuring drought and is less well suited for mountainous land or areas of frequent climatic extremes and does not include man-made changes. The PDSI is calculated based on precipitation and temperature data as well as local available water content of the soil. This scale is given as monthly values and is the most effective in determining long-term drought. The index ranges from –4 to 4 with negative values denoting dry spells and positive values indicating wet spells. The values 0 to –.5 equal normal, –0.5 to –1.0 equal incipient drought, –1.0 to –2.0 equal mild drought, –2.0 to –3.0 equal moderate drought, –3.0 to –4.0 equal severe drought, greater than –4.0 equals extreme drought. The wet spells use the same adjectives in the positive values (NDMC 2006).

Beginning in 1987 a drought produced some of the hottest years and driest years on record. Statewide reservoir capacity plunged below 50% at times and farmers and ranchers struggled to continue operations. However, there were a couple wet years mixed in between for some of the climate divisions, but overall drought conditions prevailed and in 2018 were severe. For the first time in about ten years Utah’s drought conditions reached a threshold that triggered the State’s statutory responsibility to convene Utah’s Drought Review and Reporting Committee. The committee gathered on Sept. 10, 2018 under the direction of the state’s Drought Coordinator, Mike Styler, executive director of the Utah Department of Natural Resources (DNR). On October 15, 2018 Governor Herbert issued an executive order declaring a State of Emergency due to statewide drought conditions. The Drought Review and Reporting Committee is required to hold this meeting by state code, UCA 53-2a, and Utah’s Drought Response, which requires the state to prepare for, respond to and recover from emergencies or disasters with the primary objectives to
save lives and protect public health and property. Drought conditions have developed to the degree that several areas within the state are likely to receive severe impacts to various sectors of their economies.

### Table 9.28 - Palmer Drought Severity Index

<table>
<thead>
<tr>
<th>High-Hazard Dams</th>
<th>Moderate-Hazard Dams</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0 or more</td>
<td>Extremely wet</td>
</tr>
<tr>
<td>3.0 to 3.99</td>
<td>Very wet</td>
</tr>
<tr>
<td>2.0 to 2.99</td>
<td>Moderately wet</td>
</tr>
<tr>
<td>1.0 to 1.99</td>
<td>Slightly wet</td>
</tr>
<tr>
<td>0.5 to 0.99</td>
<td>Incipient wet spell</td>
</tr>
<tr>
<td>0.49 to -0.49</td>
<td>Near normal</td>
</tr>
<tr>
<td>-0.5 to -0.99</td>
<td>Incipient dry spell</td>
</tr>
<tr>
<td>-1.0 to -1.99</td>
<td>Mild drought</td>
</tr>
<tr>
<td>-2.0 to -2.99</td>
<td>Moderate drought</td>
</tr>
<tr>
<td>-3.0 to -3.99</td>
<td>Severe drought</td>
</tr>
<tr>
<td>-4.0 or less</td>
<td>Extreme drought</td>
</tr>
</tbody>
</table>

*Source: NDMC 2006*

**Surface Water Supply Index (SWSI):**

Developed in 1982, the SWSI index uses the same basic classifications as the Palmer Drought Index and is designed to complement the Palmer Index in the western states. The SWSI is more of an indicator of surface water conditions and is described as “mountain water dependent”, in which mountain snowpack is a major component; calculated by river basin, based on snowpack, stream flow, precipitation, and reservoir storage. The objective of the SWSI was to incorporate both hydrological and climatological features into a single standardized index value. The pros and cons of the SWSI is that the index is unique to each basin. The SWSI is centered on 0 and has a range between −4.2 (extremely dry) and 4.2 (abundant supply). The index is calculated by combining pre-runoff reservoir storage with forecasts of spring and summer stream flow that is based on hydrologic variables (NDMC 2006).

**Standardized Precipitation Index (SPI):**

T.B. McKee, N.J. Doesken, and J. Kleist of the Colorado State University, Colorado Climate Center, formulated the SPI in 1993. The Standardized Precipitation Index was designed to quantify the precipitation deficit for multiple time scales; basically, the SPI is an index based on the probability of precipitation for any time scale. It assigns a single numeric value to the precipitation that can be compared...
across regions with different climates. The SPI is calculated by taking the difference of the precipitation from the mean for a particular time scale and dividing by the standard deviation.

The SPI is normalized and so the wetter and drier climates can be represented in the same way. The SPI can provide early warning of drought and help assess drought severity, yet the values based on preliminary data may change. The SPI values indicate an extremely wet period value at 2.0+, very wet equals 1.5 to 1.99, moderately wet is 1.0 to 1.49, .99 to .99 is near normal, -1.0 to -1.49 moderately dry, -1.5 to -1.99 is severely dry, -2 and less is extremely dry. The time scales were originally calculated for 3-, 6-, 12-, 24-, and 48- months (NDMC 2006).

A drought analysis review of 33 gauging stations data in Utah indicated that a localized drought has occurred on at least one stream every year since 1924. The duration of drought lasts longer in basins where runoff is mainly from snowmelt. The frequency of occurrence is greater for areas in the Wasatch Range than in the Wasatch Plateau, the mountains of southwestern Utah, or the Uinta Mountain range. It is widely held that because Utah relies on surface water supplies, about 81% of the population relies on off-stream water use and 35% of the population relies on surface water supplies, drought severely affects the people and industry of the whole state.

8. Severe Weather

Severe Weather Overview + Profile

Severe storms can include thunderstorms, lightning, hailstorms, heavy snow or rain, extreme cold and avalanche. 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.

<table>
<thead>
<tr>
<th>Changes since 2016</th>
<th>In recent years, winds in excess of 100 mph toppled thousands of trees and tore roofs and siding off of hundreds of buildings. Significant winter storms have also continued to draw attention to the need to prepare for potential hazard events.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential Magnitude</td>
<td>X Highly Likely</td>
</tr>
<tr>
<td>Probability</td>
<td>Catastrophic (&gt;50%)</td>
</tr>
<tr>
<td>Critical (25-50%)</td>
<td>Likely</td>
</tr>
<tr>
<td>X Limited (10-25%)</td>
<td>Possible</td>
</tr>
<tr>
<td>Negligible (&lt;10%)</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Location</td>
<td>Occur in localized areas throughout the region. 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.</td>
</tr>
</tbody>
</table>
**Extent**

Davis County has the potential to experience a number of severe weather events. The most likely are heavy winter storms and canyon winds.

**Prior Occurrences**

NOAA has recorded 25 different major storms in Davis County since 2016. None of them resulted in reported deaths or injuries.

**Seasonal Pattern**

Year-round

**Conditions**

Varies based on latitude, elevation, aspect and landforms

**Duration**

Severe weather hazards generally last hours and can persist for days

**Secondary Hazards**

Wildfire, flooding

**Climate Change**

Winter drought increases avalanche risk.

**Analysis Used**

National Climate Data Center, National Weather Service, Utah Avalanche Center, Utah DEM, local input, and review of historic events and scientific records.

**Locations and Activity:**

**Extreme Temperatures:**

Temperatures in Utah can reach the extreme ends of the thermometer. Winter months often experience temperatures below zero degrees. Summer temperatures regularly reach into the nineties with many days above 100 degrees. Drastic temperature changes also occur, even in a matter of hours. Temperature swings in such a short period of time can cause severe emotional stress in people, sometimes resulting in suicide. Sub-zero temperatures occur during most winters; however, prolonged periods of extremely cold weather are infrequent. 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 not only causes discomfort, but can lead to heat exhaustion or heat stroke. Extreme heat also places severe strain on electrical systems due to the widespread use of evaporative coolers and air conditioners. This strain can lead to brownouts or blackouts leaving many without electrical power.

**Heavy Precipitation:**

Heavy amounts of precipitation from rain or snow can result in flash flood events. The Wasatch Front has been susceptible to these types of storms because of close proximity to the mountain ranges. 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. 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.

**Winter Storms:**

Winter storms gain energy from the collisions of two air masses. In North America, a winter storm is usually generated when a cold air mass from dry Canadian air moves south and interacts with a northward moving warm moist air mass from the Gulf of Mexico. The position where a warm and a cold air mass
meet is called a front. If cold air is advancing and pushing away the warm air, the front is known as a cold front. If warm air is advancing, it will ride up over the cold air mass and the front is known as a warm front. A winter storm will typically begin under what is known as a stationary front. A stationary front is when neither air mass is advancing.

The atmosphere will try to even out the pressure difference by generating an area of lower pressure; this creates wind that blows from high pressure towards a low-pressure area. As the air travels toward the center of the low-pressure area, it is pushed up into the colder regions of the upper atmosphere because it has nowhere else to go. This causes the water vapor to condense as snow in the northern areas because of the colder temperatures. In the south, if the temperatures are warm enough the water vapor will fall as heavy rain in thunderstorms. Because of the easterlies in Northern America, the winter storm moves quickly over the area and generally does not last longer than a day in one area. However, in Utah, because of the Great Salt Lake “lake-effect”, snowstorms can last for many days. This is because of the amount of moisture from an unfrozen body of water. When a strong cold wind blows over a larger area of water, the air can attain a substantial amount of moisture; this moisture turns into heavy snow when it reaches land causing a lake effect snowstorm (Scholastic 2008).

While the majority of Utah residents are no longer isolated, they are still vulnerable to the extreme conditions caused by the winter storms. Heavy snow can paralyze a city, stranding motorists, stopping the flow of supplies, disrupting emergency services, and halting classes at area schools. Heavy accumulations of snow can cause buildings to collapse and knock down trees and utility lines. The resulting danger of prolonged utility outages can become critical, during cold temperatures, which often coincide with these storms, especially to the elderly and very young. Cost of snow removal, repairing damage, and loss of business can place a large economic burden on cities. Many of the deaths due to this kind of disaster are often indirectly related, such as heart attacks from shoveling snow, and traffic accidents caused by icy roads.

**Ice Storms:**

Ice storms are rare in Utah, but may occur when rain falls through a temperature inversion and the air near the ground is below freezing. The rain freezes on contact with everything it touches and can bring down electrical wires, telephone poles and lines, trees, and communication towers. Ice also freezes on contact with roads and highways resulting in extreme hazards to motorists and pedestrians. Bridges and overpasses are likely to freeze first. (NWS 2001)

**Heavy Snow:**

Heavy snow has occasionally immobilized Davis County stranding commuters, stopping the flow of commerce, disrupting emergency services, closing infrastructure and services. When heavy snow occurs with high winds, blowing snow or blizzard conditions may exist. (NWS 2001)

**Avalanche:**

Utah DEM defines an avalanche as a mass of snow sliding down a mountainside. Avalanches occur when stresses (driving forces), such as the pulling of snow downhill by gravity, exceeds the strength (resisting forces) such as the bonds between snow grains. Four ingredients are needed to produce an avalanche:

1. Snow
2. Weak layer in the snow cover
3. Steep slope
4. A trigger
About 90% of all avalanches start on slopes of 30 - 45 degrees; about 98% of all avalanches occur on slopes of 25 - 50 degrees. Avalanches release most often on slopes above timberline that face away from prevailing winds (leeward slopes collect snow blowing from the windward sides of ridges.) Avalanches can run, however, on small slopes well below timberline, such as gullies, road cuts, and small openings in the trees. Very dense trees can anchor the snow to steep slopes and prevent avalanches from starting; however, avalanches can release and travel through a moderately dense forest.

Avalanche victims are primarily backcountry recreationists: snowmobilers, climbers, snowboarders, skiers, and hikers. In 90% of avalanche incidents, the victim or someone in the victim's party triggers the avalanche. (UDEM 2015)

An avalanche consists of a starting zone, a track, and a runout zone. The starting zone is where the ice or snow breaks loose and starts to slide; this zone can be triggered by human and/ or natural activities.

Human induced avalanches can result from snowmobilers, backcountry skiers, or other outdoor recreationalists causing ground shaking. The two main natural factors that affect avalanche activity include weather and terrain and large, frequent storms combined with steep slopes. Other factors that contribute to the stability of the snowpack include the amount of snow, rate of accumulation, moisture content, snow crystal types and the wind speed and direction. The track is the grade or channel down which an avalanche travels. The runout zone is where an avalanche stops and deposits the snow. For large avalanches, the runout zone can include a powder, or windblast zone that extends far beyond the area of snow deposition. In Utah, avalanches annually kill more people than any other natural hazard, and ironically, are often triggered by the victim. Each winter an average of four people die in Utah due to avalanche activity (UDEM 2015).

Weather and terrain conditions affect avalanche conditions. The weather controls the durations and the extent of an avalanche while terrain is the element that determines where, why, and how an avalanche occurred. In Utah, the months of January through April pose the greatest avalanche potential.

Weather related aspects that affect the snowpack stability include rate of accumulation, amount of snowfall, moisture content, wind speed and direction, and snow crystal type. Wind can deposit snow 10 times faster than snow falling from a storm without accompanying wind.

This affects avalanche potential because the underlying weak layer of snow cannot adjust to the new load. Rain and the melting of snow can almost instantly cause an avalanche because of the added weight (UDEM 2015).

Terrain includes such variables as slope, aspect, elevation, roughness and angle. The slope is important in understanding where an avalanche will occur. Slopes greater than 45 degrees are too steep because the snow continually sluffs off; however slopes greater than 20 degrees can produce avalanches.

Optimum slope degree is between 30 to 45 degrees, which is also the optimum angle for backcountry skiers. This slope angle is where approximately 99.9 percent of avalanches occur. The slope aspect and elevation affect the snow depth, temperature, and moisture characteristics of the snowpack. Slope aspect, such as north facing or shady slopes usually produce more avalanches and more persistent avalanche hazards occur during mid-winter months. In the spring, the strong sun on south facing slopes produce more wet avalanches (UAC 2015).

Slope shape and roughness correlate with snowpack stability. Roughness identifies boulders, shrubs, and trees that can help slow, or reduce avalanche speed and impact. A bowl shaped slope is more prone to an avalanche than a ridge or cliff.
Dry-slab avalanche is when a cohesive slab of snow that fractures as a unit slides on top of weaker snow and breaks apart as it slides. Dry-slab avalanches occur usually because too much additional weight has been added too quickly, which overloads the buried weak layer. Even the weight of a person can add a tremendous stress to a buried weak layer. Dry-slab avalanches usually travel between 60-80 miles per hour within 5 seconds of the fracture and are the deadliest form of avalanche (UAC 2015).

Wet-slab avalanches occur for the opposite reason of dry avalanches; percolating water dissolves the bonds between the snow grains on the pre-existing snow, which decrease the strength of the buried weak layer. Strong sun or warm temperatures can melt the snow and create wet avalanches. Wet avalanches usually travel about 20 miles per hour (UAC 2015).

Avalanches can result in loss of life as well as economic losses. At risk are some communities, individual structures, roads, ski areas, snowmobilers, backcountry skiers, snowshoers, snowboarders, and climbers. One of the major consequences of avalanches is the burial of structures, roads, vehicles, and people in the runout zone where tens of feet of debris and snow can be deposited (UAC 2015).

Between 1958 and 2015, there was one avalanche fatality listed on the Utah Avalanche Center website. In 1996, a snowmobiler was killed in the Bountiful Peak area. (UAC 2015)

Lightning:

Lightning is the electric discharge between clouds or from a cloud to the earth. In Utah, lightning causes the highest number of weather-related fatalities (NWS 2008). Lightning casualties occur most frequently during the summer monsoonal flow in July and August. See Table 8-1 for the number of casualties caused by lightning. Lightning is also the primary cause of wildland fires in Utah (NWS 2008), which could cause casualties or be disruptive to the economy. Between 2006 and 2015, Utah had 6 lightning caused deaths, none of these occurred in Davis County.

Deaths directly related to severe weather occur, such as the case with lightning. Over 40 million lightning strikes occur each year in the United States. Since 1950 there have been 51 deaths and 131 injuries, in Utah, due to lightning. Lightning is Utah's second deadliest natural hazard, trailing only avalanches, when comparing the figures from 1951 to the present. Most lightning strikes, in Utah, occur during the summer months of May, June, July, and August, when large consecutive storms come.

Severe Thunderstorms usually last around 30 minutes and are typically only 15 miles in diameter (NWS 1999), but all produce lightning, the “number one weather-related killer” in Utah (NWS 2008). Thunderstorms can also lead to flash flooding from heavy rainfall, strong winds, hail and tornadoes or waterspouts (NWS 1999).

There are approximately 25 million recorded lightning strikes in the US and 200,000 cloud-to-ground lightning flashes in Utah annually. Although most lightning occurs in the summer, lightning can strike at any time of year. Lightning kills an average of 47 people in the US each year and hundreds more are severely injured. Additionally, lightning causes billions of dollars in associated losses by igniting fires and disrupting utility, aviation and transportation services.

Tornado:

Tornadoes are defined as “a violently rotating column of air extending from a thunderstorm to the ground” (NWS 2015), and is often on the edge of the updraft or next to the air coming down from the thunderstorm. A tornado’s vortex is a low-pressure area and as air rushes into the vortex, its pressure lowers and cools the air. This cooler air condenses into water vapor in the funnel cloud, known as the vortex, and doesn’t touch the ground. The swirling winds of the tornado pick up dust, dirt, and debris from the ground, which turns the funnel cloud darker. Some tornadoes can have wind speeds greater than
250 miles per hour with a damage zone of 50 miles long and greater than 1 mile wide (NWS 2015). Most tornadoes in Utah typically have winds less than 110 miles per hour, are no wider than 60 feet and are on the ground longer than “a few minutes” (Brough, et al. 2007).

A change in wind direction and an increase in wind speed along with increasing height create a horizontal spinning effect in the lower atmosphere forming a tornado while the rising air within the thunderstorm updraft tilts the rotating air vertically resulting in what we call a tornado. The area of rotation is generally 2 – 6 miles wide and extends through much of the storm (NWS 2015).

**Scale:** Tornadoes are classified by the National Weather Service using the Fujita Scale, which relates wind speed to damage to determine tornado intensity. The scale uses numbers from 0 through 5 with the ratings based on the amount and type of wind damage (SPC 2007). This scale has recently been modified and is now referred to as the Enhanced Fujita Scale. The Enhanced Fujita Scale classifications are listed below:

<table>
<thead>
<tr>
<th>Enhanced Fujita Scale</th>
<th>Wind Speed (mph)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF-0</td>
<td>65 – 85</td>
<td>Light damage, downed tree branches, chimney damage</td>
</tr>
<tr>
<td>EF-1</td>
<td>86 – 110</td>
<td>Moderate damage, mobile home damage</td>
</tr>
<tr>
<td>EF-2</td>
<td>111 – 135</td>
<td>Considerable damage, mobile home demolished, trees uprooted</td>
</tr>
<tr>
<td>EF-3</td>
<td>136 – 165</td>
<td>Severe damage, roofs and walls torn down, trains overturned, cars thrown</td>
</tr>
<tr>
<td>EF-4</td>
<td>166 – 200</td>
<td>Devastating damage, well-constructed walls leveled</td>
</tr>
<tr>
<td>EF-5</td>
<td>Over 200</td>
<td>Incredible damage, homes lifted off foundation and carried, autos thrown as far as 100 feet. (SPC 2014)</td>
</tr>
</tbody>
</table>

Tornadoes are rare in Davis County but have been reported, occurring mostly in the west part of the county and around the Great Salt Lake. In August of 2005 a tornado was photographed over Antelope Island.

Waterspouts are weak tornadoes that form over warm water, and in Utah generally occur with cold, late fall or late winter storms (Brough, et al. 2007).

Historically, atmospheric conditions have not been favorable for tornado development in Utah 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. Utah averages about two tornadoes per year which typically occur between May and August.

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 (Dunn and Vasiloff 2001) which was the costliest disaster in Salt Lake County history causing over $170 million in damages.

The list below shows Utah’s Strongest Tornadoes several of which occurred in Davis County and the surrounding areas. (Category based on old Fujita Scale, see below)

- F2 January 22, 1943 Young Ward
- F2 June 16, 1955 Sanpete County
- **F2 June 3, 1963 Bountiful**
- **F2 February 9, 1965 Salt Lake County**
- F2 November 2, 1967 Emery
- **F2 August 14, 1968 West Weber**
High Winds:

High winds can occur with or without the presence of a storm and are unpredictable in regards to time and place. Each of the five counties that make-up the Wasatch Front has experienced high winds in the past (see Map 8-2 page 96), and can expect regional high wind future events.

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. Davis County has experienced numerous high wind episodes resulting in several million dollars of property damage. In December 2011 winds in excess of 100 mph toppled thousands of trees and tore roofs and siding off of hundreds of buildings. Davis County received a Presidential Disaster Declaration for Public Assistance to help reimburse the cost of the cleanup.

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 Wasatch Front 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 (Hill 1987).

Thunderstorms:

Strong, rising air currents bring warm, moist air from the surface into the upper atmosphere where it condenses, forming heavy rains, hail, strong winds and lightning. Based on historical evidence thunderstorms can strike anywhere in the region, mainly during the spring and summer months.

Hailstorms:

Hailstorms occur when freezing water (in thunderstorm clouds) accumulates in layers around an icy core generally during the warmer months of May through September. Hail causes damage by battering crops, structures and automobiles. When hailstorms are large, damage can be extensive (especially when combined with high winds).

In January 2005 a Southwest flow ahead of a Pacific storm system brought mid-level moisture from the subtropics into northern Utah. Clouds cleared out long enough on the evening of the 26th to allow for sufficient radiational cooling to take place. Several areas along the northern and central Wasatch front observed freezing rain. The ice accumulated to about one-half of an inch along the Ogden and Salt Lake Valley areas. The Ogden Bench, Sandy, and West Haven all reported ice.

On January 24, 2013 a rare freezing rain event occurred in Utah. Very cold air was trapped in valley locations due to a persistent inversion when a weather disturbance brought precipitation to the area causing freezing rain and widespread travel difficulties.
Part X - SPECIALIZED LOCAL DISTRICTS

Utah State Code, Annotated, Section 17B-1-102, defines Specialized Local Districts (SLD) as a local district that is a cemetery maintenance district, a drainage district, a fire protection district, an improvement district, an irrigation district, a metropolitan water district, a mosquito abatement district, a public transit district, a service area or a water conservancy district. An SLD is a body corporate with perpetual succession, a quasi-municipal corporation, and is a political subdivision of the state.

SLD’s may be created to provide services consisting of: airport operations; cemetery operations; fire, paramedic, and emergency services; garbage collection and disposal; health care including health department or hospital service; library operations; abatement or control of mosquitoes and other insects; park or recreation facilities or services; sewage system operations; street lighting; construction and maintenance of curb, gutter and sidewalk; transportation, including public transit and providing streets and roads; water system operations, including the collection, storage, retention, control, conservation, treatment, supplying, distribution, or reclamation of water, including storm, flood, sewage, irrigation, and culinary water, whether the system is operated on a wholesale or retail level or both.

Because SLD’s are defined as quasi-municipal, they may be eligible for FEMA disaster funding reimbursement under the Stafford Act. Most of the SLD’s have jurisdictional boundaries within a specific county. Others, such as the Utah Transit Authority (UTA), have jurisdictional boundaries that include multiple counties.

Specialized local districts identified in Davis County are listed below. There may be others not identified here which will be included as they adopt this plan.

<table>
<thead>
<tr>
<th>Benchland Water District</th>
<th>Davis and Weber Counties Canal Company</th>
</tr>
</thead>
</table>
| 485 E Shepherd Lane Kaysville, UT 84037 | 138 W 1300 N  
Sunset, UT 84015  
(801) 774-6373 |
| (801) 451-2105 | |
| Bountiful Water Sub-Conservancy District | Davis School District |
| 385 W 500 S  
Bountiful, UT 84010  
(801) 295-5573 | P.O. Box 588 Farmington, UT 84025  
(801) 397-8400 |
| Central Davis Sewer District | Echo Creek Ranches Special Service District |
| 2200 S Sunset Dr  
Kaysville, UT 84037  
(801) 451-2190 | 670 N 900 E  
Bountiful, UT 84010  
(801) 298-7422 |
| Clinton City Sanitary Sewer Special Service District | Haights Creek Irrigation District |
| 2267 N 1500 W  
Clinton, UT 84015  
(801) 614-0700 | 820 E 200 N  
Kaysville, UT 84037  
(801) 546-4242 |
| Davis County Mosquito Abatement District | Mutton Hollow Improvement District |
| 85 North 600 West  
Kaysville, UT 84037  
(801) 544-3736 | 1272 W 2700 S  
Syracuse, UT 84075  
(801) 614-0405 |
Specialized Local Districts

North Davis Fire District
381 N 3150 W
Clearfield, UT 84015
(801) 525-2850

North Davis Sewer District
4252 W 2200 S
Syracuse, UT 84075
(801) 825-0712

Rocky Mountain Power
1407 W North Temple
Salt Lake City, UT 84116
(877) 508-5088

South Davis Metro Fire Agency
255 S 100 W
Bountiful, UT 84010
(801) 677-2400

South Davis Recreation District
550 N 200 W
Bountiful, UT 84010
(801) 298-6220

South Davis Sewer Improvement District
1800 W 1200 N
West Bountiful, UT 84087
(801) 295-3469

South Davis Water Improvement District
407 W 3100 S
Bountiful, UT 84010
(801) 295-4468

Utah Transit Authority
3600 S 700 W
Salt Lake City, UT 84119
(801) 262-5626

Wasatch Front Regional Council (WFRC)
41 N Rio Grande St
Salt Lake City, UT 84101
(801) 363-4250

Weber Basin Water Conservancy District
2837 E Highway 193
Layton, UT 84040
(801) 771-1677

Specialized Local Districts (SLD) are subject to the same hazards as the local jurisdictions in which they are located. The following general mitigation objectives have been developed for SLD’s.

**Problem Identification 1: Infrastructure vulnerability (Special Local Districts)**

Objective A: Assess the vulnerability of critical facilities owned outside Davis County that can impact service delivery inside the county.

Objective B: Retrofit or replace critical lifeline facilities and or their backup facilities that are shown to be vulnerable to damage in natural disasters.

Objective C: Conduct comprehensive programs to identify and mitigate problems with facility contents, architectural components, and equipment that will prevent critical buildings from being functional after major natural disasters.

Objective D: Develop and maintain a system of interoperable communications for first responders from cities, counties, special service districts, local school districts, state and federal agencies.

Objective E: Identify and undertake cost effective retrofit measures on critical facilities when these buildings undergo major renovations.

Objective F: Engage in, support and or encourage research by others on measures to further strengthen transportation, water, sewer, and power systems so that they are less vulnerable to damage in natural disasters.
Objective G: Encourage a higher priority for funding seismic retrofit of existing transportation and infrastructure systems, such as UTA.

**Problem Identification 2: Vulnerability of critical educational facilities**

Objective A: Retrofit or replace critical education facilities that are shown to be vulnerable to damage in natural disasters.

Objective B: Conduct comprehensive programs to identify and mitigate problems with facility contents, architectural components, and equipment that will prevent critical buildings from being functional after major natural disasters.

Objective C: Identify and undertake cost effective retrofit measures on critical facilities when these buildings undergo major renovations.

Objective D: Develop and maintain a system of interoperable communications for first responders from cities, counties, special service districts, local school districts, state and federal agencies.

Objective E: As a secondary focus, assess the vulnerability of non-critical educational facilities to damage in natural disasters based on occupancy and structural type, make recommendations on priorities for structural improvements or occupancy reductions, and identify potential funding mechanisms.
Part XI - PLAN MAINTENANCE + IMPLEMENTATION

Monitoring, Evaluating and Updating the Plan
Periodic monitoring and updates of this Plan are required to ensure that the goals and objectives for the region are kept current and that local mitigation strategies are being carried out. This Plan has been designed to be user-friendly in terms of maintenance and implementation.

Annual Review Procedures
Local jurisdictions shall annually review this Plan, or as situations dictate such as following a disaster declaration. If the participating jurisdictions or DEM determines that a modification of the Plan is warranted, an amendment to the Plan may be initiated.

Revisions and Updates
Each county emergency manager will regularly monitor and annually review the Plan and is responsible to make revisions and updates. The annual review is required to ensure that the goals and objectives for the Region are kept current. More importantly, revisions may be necessary to ensure the Plan is in full compliance with Federal regulations and State statutes. This portion of the Plan outlines the procedures for completing such revisions and updates. The Plan will also be revised to reflect lessons learned or to address specific hazard incidents arising out of a disaster.

Five Year Plan Review
The entire Plan including any background studies and analysis shall be revised and updated every five years to determine if there have been any significant changes in the region that would affect the Plan. Increased development, increased exposure to certain hazards, the development of new mitigation capabilities or techniques and changes to Federal or State legislation are examples of changes that may affect the condition of the Plan.

The Natural Hazard Pre-Disaster Mitigation Planning Committee and Local Working Group, with a potential membership representing every jurisdiction in Davis County, will be reconstituted for the five year review/update process. Typically, the same process that was used to create the original Plan will be used to prepare the update.

If the participating jurisdictions or DEM determine that the recommendations warrant modification to the Plan, an amendment may be initiated as described below.

Plan Amendments
The Utah DEM State Hazard Mitigation Officer, Local Mitigation Committee, or Mayor/City Manager of an affected community, will initiate amendments and updates to the Plan.

Upon initiation of an amendment to the Plan, DEM will forward information on the proposed amendment to all interested parties including, but not limited to, all affected city or county departments, residents and businesses. Depending on the magnitude of the amendment, the full planning committee may be reconstituted.

At a minimum, the information will be made available through public notice in a newspaper of general circulation or on the DEM website at dem.utah.gov. The review and comment period for the proposed Plan amendment will last for not less than 45 days.
At the end of the comment period, the proposed amendment and all review comments will be forwarded to participating jurisdictions for consideration. If no comments are received from the reviewing parties within the specified review period, such will be noted accordingly. DEM will review the proposed amendment along with comments received from other parties and submit a recommendation to FEMA within 60 days.

In determining whether to recommend approval or denial of a Plan amendment request, the following factors will be considered:

1. There are errors or omissions made in the identification of issues or needs during the preparation of the Plan; and/or
2. New issues or needs have been identified which were not adequately addressed in the Plan; and/or
3. There has been a change in information, data or assumptions from those on which the Plan was based.
4. The nature or magnitude of risks has changed.
5. There are implementation problems, such as technical, political, legal or coordination issues with other agencies.

Upon receiving the recommendation of DEM, a public hearing will be held. DEM will review the recommendation (including the factors listed above) and any oral or written comments received at the public hearing. Following that review, DEM will take one of the following actions:

1. Adopt the proposed amendment as presented.
2. Adopt the proposed amendment with modifications.
3. Defer the amendment request for further consideration and/or hearing.
4. Reject the amendment request.

Implementation Through Existing Programs

Once the Plan is promulgated, participating cities and counties will be able to include this Plan’s information in existing programs and plans. These could include the General or Master Plan, Capital Improvements Plan, Emergency Operations Plan, State Mitigation Plan, City Mitigation Plans. Many of the mitigation actions developed by the cities and counties have elements of mitigation implementation including the National Flood Insurance Program (NFIP), the Utah Wildland-Urban Interface Code, the Building Code Effectiveness Grading System (BCEGS), and Community Rating System (CRS), all of which have been implemented.

Process

It will be the responsibility of the Mayor/Council/Commissioner(s) of each jurisdiction, as they see fit, to ensure these actions are carried out no later than the target dates unless reasonable circumstances prevent their implementation (i.e. lack of funding availability).

Funding Sources

Although all mitigation techniques will likely save money by avoiding losses, many projects are costly to implement. Davis County jurisdictions shall continue to seek outside funding assistance for mitigation projects in both the pre- and post-disaster environment. This portion of the Plan identifies the primary Federal and State grant programs for Davis County jurisdictions to consider, and also briefly discusses local and non-governmental funding sources.
Federal Programs

The following federal grant programs have been identified as funding sources which specifically target hazard mitigation projects:

**Title: Pre-Disaster Mitigation Program**
Agency: Federal Emergency Management Agency

Through the Disaster Mitigation Act of 2000, Congress approved the creation of a national program to provide a funding mechanism that is not dependent on a Presidential Disaster Declaration. The Pre-Disaster Mitigation (PDM) program provides funding to states and communities for cost-effective hazard mitigation activities that complement a comprehensive mitigation program and reduce injuries, loss of life, and damage and destruction of property.

The funding is based upon a 75% Federal share and 25% non-Federal share. The non-Federal match can be fully in-kind or cash, or a combination. Special accommodations will be made for “small and impoverished communities”, who will be eligible for 90% Federal share/10% non-Federal.

FEMA provides PDM grants to states that, in turn, can provide sub-grants to local governments for accomplishing the following eligible mitigation activities:

- State and local Natural Hazard Pre-Disaster Mitigation Planning
- Technical assistance (e.g. risk assessments, project development)
- Mitigation Projects
- Acquisition or relocation of vulnerable properties
- Hazard retrofits
- Minor structural hazard control or protection projects
- Community outreach and education (up to 10% of State allocation)

**Title: Flood Mitigation Assistance Program**
Agency: Federal Emergency Management Agency

FEMA’s Flood Mitigation Assistance program (FMA) provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes and other structures insurable under the National Flood Insurance Program (NFIP). FMA was created as part of the National Flood Insurance Reform Act of 1994 (42 USC 4101) with the goal of reducing or eliminating claims under the NFIP.

FMA is a pre-disaster grant program, and is available to states on an annual basis. This funding is available for mitigation planning and implementation of mitigation measures only, and is based upon a 75% Federal share/25% non-Federal share. States administer the FMA program and are responsible for selecting projects for funding from the applications submitted by all communities within the state. The state then forwards selected applications to FEMA for an eligibility determination. Although individuals cannot apply directly for FMA funds, their local government may submit an application on their behalf.

**Title: Hazard Mitigation Grant Program**
Agency: Federal Emergency Management Agency

The Hazard Mitigation Grant Program (HMGP) was created in November 1988 through Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. The HMGP assists states and local
communities in implementing long-term mitigation measures following a Presidential disaster declaration.

To meet these objectives, FEMA can fund up to 75% of the eligible costs of each project. The state or local cost-share match does not need to be cash; in-kind services or materials may also be used. With the passage of the Hazard Mitigation and Relocation Assistance Act of 1993, federal funding under the HMGP is now based on 15% of the federal funds spent on the Public and Individual Assistance programs (minus administrative expenses) for each disaster.

The HMGP can be used to fund projects to protect either public or private property, so long as the projects in question fit within the state and local governments overall mitigation strategy for the disaster area, and comply with program guidelines. Examples of projects that may be funded include the acquisition or relocation of structures from hazard-prone areas, the retrofitting of existing structures to protect them from future damages; and the development of state or local standards designed to protect buildings from future damages.

Eligibility for funding under the HMGP is limited to state and local governments, certain private nonprofit organizations or institutions that serve a public function, Indian tribes and authorized tribal organizations. These organizations must apply for HMGP project funding on behalf of their citizens. In turn, applicants must work through their state, since the state is responsible for setting priorities for funding and administering the program.

**Title: Public Assistance (Infrastructure) Program, Section 406**

Agency: Federal Emergency Management Agency

FEMA’s Public Assistance Program, through Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, provides funding to local governments following a Presidential Disaster Declaration for mitigation measures in conjunction with the repair of damaged public facilities and infrastructure.

The mitigation measures must be related to eligible disaster related damages and must directly reduce the potential for future, similar disaster damages to the eligible facility. These opportunities usually present themselves during the repair/replacement efforts.

Proposed projects must be approved by FEMA prior to funding. They will be evaluated for cost effectiveness, technical feasibility and compliance with statutory, regulatory and executive order requirements. In addition, the evaluation must ensure that the mitigation measures do not negatively impact a facility’s operation or risk from another hazard.

Public facilities are operated by state and local governments, Indian tribes or authorized tribal organizations and include:

- Roads, bridges & culverts
- Draining & irrigation channels
- Schools, city halls & other buildings
- Water, power & sanitary systems
- Airports & parks

Private nonprofit organizations are groups that own or operate facilities that provide services otherwise performed by a government agency and include, but are not limited to the following:

- Universities and other schools
Title: Small Business Administration (SBA) Disaster Assistance Program  
Agency: U.S. SBA  
The SBA Disaster Assistance Program provides low-interest loans to businesses following a Presidential disaster declaration. The loans target businesses to repair or replace uninsured disaster damages to property owned by the business, including real estate, machinery and equipment, inventory and supplies. Businesses of any size are eligible, along with non-profit organizations.  
SBA loans can be utilized by their recipients to incorporate mitigation techniques into the repair and restoration of their business.

Title: Community Development Block Grants  
Agency: US Department of Housing and Urban Development  
The Community Development Block Grant (CDBG) program provides grants to local governments for community and economic development projects that primarily benefit low- and moderate-income people. The CDBG program also provides grants for post-disaster hazard mitigation and recovery following a Presidential disaster declaration.  
Funds can be used for activities such as acquisition, rehabilitation or reconstruction of damaged properties and facilities and for the redevelopment of disaster areas.

State Programs

Local  
Local governments depend upon local property taxes as their primary source of revenue. These taxes are typically used to finance services that must be available and delivered on a routine and regular basis to the general public. If local budgets allow, these funds are used to match Federal or State grant programs when required for large-scale projects.

Non-Governmental  
Another potential source of revenue for implementing local mitigation projects are monetary contributions from non-governmental organizations, such as private sector companies, churches, charities, community relief funds, the American Red Cross, hospitals, land trusts and other non-profit organizations.  
Paramount to having a Plan deemed to be valid is its implementation. There is currently no new fiscal note attached to the implementation of this Plan.
Continued Public Involvement

Throughout the planning process, public involvement has been and will be critical to the development of the Plan and its updates. The Plan will be available on the Davis County and Utah DEM website’s to provide opportunities for public participation and comment.

The Davis County Sheriff’s Office has been designated as the lead agency in preparing and submitting the Davis County Natural Hazards Pre-Disaster Mitigation Plan, which includes coverage for all incorporated cities and unincorporated county. The strategy of the county in preparing the Plan is to use available resources and manpower in the most efficient and cost effective manner to allow cities continued access to data, technical planning assistance and FEMA eligibility. In addition, the county will reach out to non-profits, public agencies, special needs organizations, groups and individuals in allowing them input and access to the Plan. With limited resources, however, it becomes difficult to both identify and to individually contact the broad range of potential clients that may stand to benefit from the Plan. This being the case, we have established the following course of action:

STEP 1. The county will publicly advertise all hearings, requests for input and meetings directly related to the Natural Hazard Pre-Disaster Mitigation Planning process. Davis County meetings where Plan items are discussed and where actions are taken will not receive special notifications as they are already advertised according to set standards. All interested parties are welcome and invited to attend such meetings and hearings, as they are public and open to all.

Advertisement will be done according to the pattern set in previous years, i.e. the county will advertise each hearing and request for input at least 7 days in advance of the activity and will publish notices of the event in local newspapers. The notices will advertise both the hearing and the means of providing input outside the hearing if an interested person is unable to attend.

STEP 2. Davis County has established a mailing list of many local agencies and individuals that may have an interest in the Natural Hazard Pre-Disaster Mitigation Plan. Each identified agency or person will be mailed a notice of the hearings and open houses.

STEP 3. Comments, both oral and written, will be solicited and accepted from any interested party. Comments, as far as possible, will be included in the final draft of the Plan; however, the county reserves the right to limit comments that are excessively long due to the size of the Plan.

STEP 4. Specific to risk assessment and hazard mitigation, needs analysis, and capital investment strategies, the county will make initial contact and solicitation for input from each incorporated jurisdiction within the region. All input is voluntary. Staff time and resources do not allow personal contact with other agencies or groups, however, comments and strategies are welcomed as input to the planning process from any party via regular mail, fax, e-mail, phone call, etc. In addition, every public jurisdiction advertises and conducts public hearings on their planning, budget, etc. where most of these mitigation projects are initiated. Input can be received from these prime sources by the region as well.

STEP 5. The following policies will guide county staff in making access and input to the Natural Hazard Pre-Disaster Mitigation Plan as open and convenient as possible:

A. Participation

All citizens of the region are encouraged to participate in the planning process, especially those who may reside within identified hazard areas. The county will take whatever actions possible to accommodate special needs of individuals including the impaired, non-English speaking, persons of limited mobility, etc.

B. Access to Meetings
Adequate and timely notification to all area residents will be given as outlined above to all hearings, forums, and meetings.

**C. Access to Information**

Citizens, public jurisdictions, agencies and other interested parties will have the opportunity to receive information and submit comments on any aspect of the Natural Hazards Pre-Disaster Mitigation Plan, and/or any other documents prepared for distribution by the county that may be adopted as part of the Plan by reference. The county may charge a nominal fee for printing of documents that are longer than three pages. The intent of the County is to maintain the DavisHazardPlan.org website as a public-facing information resource.

**D. Technical Assistance**

Residents as well as local jurisdictions may request assistance in accessing the program and interpretation of mitigation projects. County staff will assist to the extent practical, however, limited staff time and resources may prohibit staff from giving all the assistance requested. The County will be the sole determiner of the amount of assistance given all requests.

**E. Public Hearings**

The county will plan and conduct public hearings according to the following priorities:

1. Hearings will be conveniently timed for people who might benefit most from mitigation programs.
2. Hearings will be accessible to people with disabilities (accommodations must be requested in advance according to previously established policy).
3. Hearings will be adequately publicized. Hearings may be held for a number of purposes or functions including: identify and profile hazards, develop mitigation strategies, review plan goals, performance and future plans.

**F. Future Revisions**

Future revisions of the Plan shall include:

1. Expanded vulnerability assessments to include flood and dam failure inundation.
2. Continue the search for more specific mitigation actions.
3. An analysis of progress of the Plan as it is revised.
4. Expanded look into how the identified natural hazards will affect certain populations including the young and elderly.
Appendix A - POLICY CONSIDERATIONS

Natural disasters are naturally occurring phenomena. They play an integral part in maintaining balance in our world. Meteorological, geological, or hydrological processes have shaped Utah for millions of years and will continue to shape the valley for millions more. These unique phenomena only cause disasters when they affect humans and their structure. Modern engineering has made it possible to mitigate damage from natural hazards. However, the economic and environmental costs can be rather high. Tampering with natural systems can also create an imbalance in the natural environment. Nature provides its own mitigation and measures that need to be identified, protected and/or strengthened. To ensure that our environment is not harmed through mitigation measures, all applicable city/county ordinances and state/federal laws pertaining to the environment must be followed. The majority of the proposed mitigation programs in this Plan will be funded through federal programs, and thus tied to federal funding.

“44 CFR 10.8(d)(2)(iii) excludes this rule from the preparation of an environmental assessment or environmental impact statement, where the rule relates to actions that qualify for categorical exclusions under 44 CFR 10.8(d)(2)(iii), such as the development of plans under this section” (United States 2002).

The following acts will be taken into consideration and will be incorporated when needed while organizing and implementing the PDM Plan: Clean Air Act, Clean Water Act, Endangered Species Act, Floodplain Management, National Historic Preservation Act.

**Clean Air Act (CAA) 1970**

The Clean Air Act is the comprehensive Federal Law that covers the entire country under the Environmental Policy Act regulating air emissions from area, stationary, and mobile sources. This law sets limits or National Ambient Air Quality Standards (NAAQS), on how much of a pollutant can be in the air anywhere in the United States and the emissions of air pollutants. These limits ensure that all Americans have the same basic health and environmental protections. Maximum pollutant standards were set, though states may have stronger pollution controls than the national standards. Each state explains how it will do its job under the Clean Air Act by developing a mandated “state implementation plan” (SIP) that must be approved by the Environmental Protection Agency (EPA). The 1977 amendment set new dates for areas of the country that failed to meet the initial deadlines for achieving NAAQS. The 1990 amendments addressed problems such as acid rain, ground-level ozone, stratospheric ozone depletion, and air toxins. This act required facilities with large amounts of certain hazardous chemicals to have a special emergency planning requirement. Based on a facilities potential threat or risk from chemical spills, fires, explosions, etc., facilities prepare a Risk Management Plan (RMP) that includes hazard identification, assessments, design and maintenance of a safe facility, necessary steps to prevent releases and ways to minimize the consequences from an accidental release (United States 1970).

**Clean Water Act (CWA)**

The Federal Water Pollution Control Act Amendments of 1972 came about because of the growing awareness for the need to control water pollution. As amended in 1977, this law became known as the Clean Water Act, whose mission is to establish the basic structure for regulating discharges of pollutants into the waters of the United States, and to reduce and maintain the chemical, biological, and physical veracity. The act gave the EPA the authority to set wastewater standards for industry. The act also requires that each state adopt water quality standards, act to protect wetlands, and limit industrial and municipal discharges into navigable waters unless permitted. It funded the construction of wastewater treatment plants for nearly every city in the United States.
Clean Water Act, Section 404 – Wetland Preservation

This section regulates activities in wetland areas and authorizes the EPA to restrict or prohibit the use of an area as a disposal site for dredged or fill material if the discharge will have adverse effects on municipal water supplies, shellfish beds and fishery areas, wildlife or recreational areas. A permit must be issued that is based on regulatory guidelines developed in conjunction with the U.S. Army Corps of Engineers and the EPA. (United States 1977a)

Endangered Species Act of 1973

This act provides a plan for the protection of threatened or endangered plants and animals and the habitats in which they are found. Congress declared that various species of fish, wildlife, and plants in the United States have been caused to become extinct, or are so depleted in numbers they are in danger of becoming extinct as a result of economic development and expansion without adequate concern for conservation. Aesthetic, ecological, educational, historical, recreational, and scientific importance come from these species and are a value to our nation and its people. The U.S. will conserve, to a practicable extent, the species that face extinction and will encourage the States through federal assistance to develop and maintain conservation programs. The reason for the Act is to provide a means by which ecosystems with endangered and threatened species will be conserved. It is also declared that all state and local agencies resolve water resource issues in connection with conservation of endangered species (United States 1973).

Floodplain Management Policy

The main points of this policy are to reduce the loss of life and property and the disruption of societal and economic pursuits caused by flooding or facility operations as well as to restore, sustain and enhance the natural resources, ecosystems and other functions of the floodplains. Activities will search for a balance between the sometimes competing uses of floodplains in a way that provides the most benefit to society. Activities will pursue and encourage the appropriate use of floodplains, avoid long and short term negative impacts associated with the development and modification of floodplains, and avoid direct and indirect support of floodplain development whenever there is a practicable alternative. “Functions of floodplains include natural moderation of floods; fish, wildlife, and plant resources and habitat; groundwater recharge; and water quality maintenance. Uses of floodplains include stormwater management, erosion control, open space, natural beauty, opportunity for scientific study, outdoor education, recreation, and cultural preservation, and compatible economic utilization of floodplain resources by human society.” (United States 1977b).

National Historic Preservation Act of 1966 (NHPA)

This act was enacted by Congress because “the spirit and direction of the Nation are founded upon and reflected in its historic heritage…the historical and cultural foundations of the Nation should be preserved as a living part of our community life and development in order to give a sense of orientation to the American people.” Another main point of the act mandates the awareness of historic properties that are being lost or substantially altered. The preservation will continue a legacy of cultural, educational, aesthetic, inspirational, economic and energy benefits for future generations. The knowledge of historic resources and the encouragement of their preservations will improve the planning and execution of Federal and federally-assisted projects and will assist economic growth and development. The act uses measures that will foster conditions in which historic resources can exist in productive harmony with present and future generations (United States 2000).
Section 106 of NHPA “requires all Federal agencies to take into account the effects of their actions on historic properties, and provide ACHP with a reasonable opportunity to comment on those actions and the manner in which Federal agencies are taking historic properties into account in their decisions” beginning at the early stages of planning to mitigate any adverse effects on historic properties (United States 2000).
Appendix B - GENERAL MITIGATION STRATEGIES

For the purpose of this mitigation Plan, mitigation strategies will be divided into one of five categories according to how they accomplish mitigation. The six categories include:

- Emergency Services
- Natural Resource Protection
- Mitigation
- Property Protection
- Public Information and Involvement
- Structural Protection

**Emergency Service**

Emergency Services mitigate bodily injury and the loss of life of humans during and after a disaster. Examples include:

- Mutual aid agreements
- Protection of critical facilities
- Health and safety maintenances
- Inventory of assets
- EMS/Police/Fire response and skill

**Natural Resource Protection**

Natural Resource Protection includes strategies that preserve or restore natural areas or the natural function that an area provides. Examples include:

- Wetlands protection
- Pollution reduction
- Erosion and sediment control
- Fuels reduction
- Watershed maintenance

**Prevention**

Prevention measures are intended to prevent the problem from occurring and/or keep it from getting worse. Examples include:

- Planning, zoning, and ordinance regulations
- Open space preservation
- Floodplain and wetland development regulations
● Stormwater management
● Minimum set back requirements
● Evacuation plans

Property Protection

Property protection measures are used to modify residential and commercial property within high-risk areas in an attempt to reduce damage. For the most part, property protection measures do not affect a building’s appearance or use, making them less expensive and particularly suitable for historical sites and landmarks. Examples include:

● Utility relocation
● Burying or flood proofing
● Structural and non-structural earthquake mitigation
● Backup protections
● Insurance and other financial loss minimization actions
● Technical evaluations and mapping

Public Information and Involvement

Public information and involvement activities are intended to advise property owners, potential property owners, and visitors about the particular hazards associated with a property and ways to protect people and property from these hazards. Examples include:

● Public Education
● NFIP
● URWIN areas
● Hazard Identification and mapping
● Informational mailings
● Workshops
● Real estate disclosures for natural hazards
● Real estate insurance

Structural Protection/Projects

These are man-made structures, which prevent damage from impacting property. Examples include:

● Detention/retention basins
● Larger culverts
● Elevated seismic design
● Floodwalls
● Debris basins
● Landslide stabilization and levees
Earthquake Mitigation

Below is a list of common earthquake mitigation strategies pertaining to secondary threats often associated with earthquakes.

**Generic Ground Shaking Mitigation:**
- Understand peak horizontal acceleration and recurrence interval
- Design appropriately
- Zoning ordinances and building codes

**Generic Liquefaction Mitigation:**
- Move soil out
- Densify soils in place
- Remove ground water
- Structural design

**Generic Surface Fault Rupture Mitigation:**
- Avoidance
- Zoning ordinances
- Earthquake resistant building design codes
- Retrofitting of critical facilities and supporting equipment
- Retrofitting under-designed buildings
- Annual warning of risk/info on how to protect property and lives
- Projects to seismically upgrade critical public facilities/utilities and shelters
- Gather hazard and risk data/information
- Protection of roads and bridges
- General infrastructure protection
- Development of improved mitigation techniques
- Education of local officials, developers, and citizens

**A. Emergency Services**

**Emergency Operations Planning:**
Maintain an earthquake response plan to account for secondary problems, such as fire and hazardous material spills.

**Critical Facilities Protection:**

Protecting critical facilities are vital as the facilities play an important role in coordinating response and recovery following an earthquake. For this reason, listed below are vital facilities and facilities with the potential of causing a secondary disaster if destroyed.

- Facilities or locations vital to earthquake response efforts
- Emergency operations centers
- Police and fire stations
- Hospitals
- Highway garages
- Selected roads and bridges
- Evacuation routes

Facilities and locations, which if destroyed would create a secondary disaster:

- Facilities housing hazardous materials
- Wastewater treatment plants
- Schools
- Nursing homes

**B. Natural Resource Protection**

- Design of pipelines
- Land-use planning
- Community master plans and zoning ordinances

**C. Prevention**

While earthquakes are not preventable, proper planning, zoning, and building codes can prevent much of the damage common with earthquakes. Planning, zoning, and building codes should address minimum setbacks, critical faculty locations, steep slopes, areas with liquefiable soils, and ensure a high factor of safety ratings for critical facilities. Community master plans and zoning ordinances define hazard areas and require developers to show that any existing hazards have been investigated and new construction will not be exposed to unacceptable risk.

**D. Property Protection**

**Nonstructural Mitigation:**

Nonstructural mitigation consists of mitigation measures that don’t affect the overall look or purpose of the building yet prevent damage to no structural aspects and reduce the loss of life. In addition buildings with non-structural mitigation are frequently usable after an event.

- Tie downs
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- Flexible utility connections
- Mylar film on windows to prevent the glass from shattering
- Added bracing

Retrofitting:
Retrofitting upgrades the seismic safety of a building through structural and nonstructural mitigation techniques.

Insurance:
Above and beyond standard homeowners insurance, there is other coverage a homeowner can purchase to protect against earthquake hazard, something not covered under most homeowner’s insurance plans. Although this doesn’t mitigate the problem it does allow the homeowner to shift the financial loss/risk onto another party.

E. Public Information and Involvement
Public information and involvement for earthquakes is similar to the mitigation strategies outlined in the flood and riverine section mentioned above.

Real Estate Disclosure:
Disclosure of information regarding earthquakes and hazard prone properties are important if potential buyers are in a position to mitigate damage. Unlike floodplains there are no federal laws, which require disclosure of earthquakes.

F. Structural Protection/Projects
Mitigation measures can be any type of activity that reduces the likelihood or modifies what is at risk from the hazard. Earthquake mitigation can be accomplished through building codes that ensure safe and adequate construction including earthquake resistant designs and construction. Older buildings should be retrofitted to comply with the codes.

Flood/ Riverine Mitigation
The following are generic mitigation strategies appropriate for addressing the hazard of flooding. Many of these strategies are expanded upon in the text that follows.

- Avoidance, land-use planning and zoning ordinances
- Better flood routing through communities
- Annual warning of risk information on how to protect property and lives
- Flood insurance awareness, emphasis, and marketing
• Projects such as levees/dams
• Funding by a storm water tax in cooperation with Federal and State programs
• Additional SNOTEL sites and enhanced instrumentation
• Protection of roads and bridges
• Greater reservoir capacities
• Curtail development in flood-prone areas
• General infrastructure protection
• Develop river corridor parkways
• Protection of wastewater treatment facilities from excessive inflows
• Protection of drinking water supply systems
• Gather hazard and risk data/information
• Development of improved mitigation techniques
• Education of local officials, developers, and citizens
• Protecting natural floodplain resources
• Good watershed management

A. Emergency Services

Flood Warning:
Warning systems designed to alert residents of rising floodwaters. Warning systems can disseminate the information through a number of means such as sirens, radio, television, mobile public address system, emergency notification system, or door-to-door contact. Multiple or redundant warning systems are most effective, giving people more than one opportunity to be warned.

Flood Response:
Flood response refers to the actions that are taken to prevent or reduce damage once a flood starts. An example of flood response is the turning Salt Lake City’s State Street into a river during the 1983 flood event. Many of the below actions should be part of an Emergency Operations Plan (EOP) developed in coordination with the agencies that share responsibilities. The EOP once developed should be exercised and continually evaluated so when the Plan is needed key players know what to do.

Flood response actions might include:
• Activation of the emergency operations center
• Sandbagging designated areas
• Closing streets and bridges
• Shutting off power to threatened areas
• Protective actions for children in schools
• Ordering an evacuation
• Opening evacuation shelters
Critical Facilities Protection:
Protecting critical facilities is vital, yet this protection draws workers and resources away from protecting other parts of a town or county. For this reason listed below are vital facilities and facilities with the potential of causing a secondary disaster if destroyed. It is important to keep these locations in mind when considering potential mitigation projects.

Facilities or locations vital to flood response efforts:
- Emergency operations centers
- Police and fire stations
- Hospitals
- Highway garages
- Selected roads and bridges
- Evacuation routes

Facilities and locations which, if flooded would create a secondary disaster:
- Facilities housing hazardous materials
- Wastewater treatment plants
- Schools
- Nursing homes

Health and Safety Maintenance:
Response to floods or other natural disasters should include measures to prevent damage to health and safety such as:
- Patrolling evacuated areas to prevent looting
- Providing safe drinking water
- Vaccinating residents for tetanus
- Clearing streets
- Cleaning up debris

Many of these recommendations should be integrated into a public information program to educate citizens on the benefits of health and safety precautions.

B. Natural Resource Protection

Wetlands Protection:
Wetlands are capable of storing large amounts of floodwater, slowing and reducing downstream flows, and filtering the water. Any development that is proposed in a wetland is regulated by either federal and/or state agencies. Mitigation techniques are often employed, which might consist of creating a wetland on another site to replace what would be lost through the development. This is not an ideal practice, however, since it takes many years for a new wetland to achieve the same level of quality as an existing one.

Erosion and Sedimentation Control:
Controlling erosion and sediment runoff during construction and on farmland is important, since eroding soil will typically end up in downstream waterways. Sediment tends to settle where the water flow is slower. It will gradually fill in channels and lakes, reducing their ability to carry or store floodwaters. Sediment and erosion control have two principal components: minimize erosion with vegetation and capture sediment before it leaves the site. Slowing runoff increases infiltration into the soil, thereby controlling the loss of topsoil from erosion and the resulting sedimentation. Runoff and erosion control can be done through vegetation, terraces, contour strip farming, no-till farm practices, and impoundments.

C. Prevention Measures

Planning and Zoning:

Land use plans are put in place to guide future development, recommending where development should or should not take place. Sensitive and vulnerable lands can be designated for uses that would be compatible with occasional flood events. Zoning ordinances can regulate development in these sensitive areas by limiting or preventing some or all development.

Open Space Preservation:

Preserving open space is the best way to prevent flooding and flood damage. Open space preservation should not be limited to the flood plain. Other areas within the watershed may contribute to controlling the runoff that exacerbates flooding.

Floodplain Development Regulations:

Floodplain development regulations typically do not prohibit development in the special flood hazard areas, but they do impose construction standards on what is built there. The intent is to protect roads and structures from flood damage and to prevent the development from aggravating the flood potential. Floodplain development regulations are generally incorporated into subdivision regulations, building codes, and/or floodplain ordinances.

Subdivision Regulations:

These regulations govern how land will be divided into separate lots or sites. In some Utah cities these are known as Site Based Ordinances.

Building Codes:

Standards can be incorporated into building codes that address flood proofing all new improved or repaired buildings.

Floodplain Ordinances:

Communities that participate in the National Flood Insurance Program (NFIP) are required to adopt the minimum floodplain management regulations, as developed by FEMA. The regulations set minimum standards for subdivision regulations and building codes. Communities may adopt more stringent standards than those set forth by FEMA.

Stormwater Management:

Development outside of a floodplain can contribute significantly to flooding by covering impervious surfaces, which increase storm water runoff. Stormwater management is usually addressed in subdivision regulations. Developers are typically required to build retention or detention basins to minimize any increase in runoff caused by new or expanded impervious surfaces, or new drainage systems. Most large
cities and counties within Utah enforce an ordinance prohibiting storm water from leaving a site at a rate higher than it did before the development.

**Drainage System Maintenance:**

Ongoing maintenance of channel and detention basins is necessary if these facilities are to function effectively and efficiently over time. A maintenance program should include regulations that prevent dumping in or altering watercourses or storage basins; grading and filling should also be regulated.

**D. Property Protection**

**Relocation:**

Moving structures out of the floodplain is the surest and safest way to protect against damage. Relocation is expensive, so this approach will probably not be used except in extreme circumstances.

**Acquisition:**

Acquisition by governmental entities of land in a floodplain serves two main purposes: it ensures that the problem structure is addressed; and it has the potential to convert problem areas into community assets.

**Building Elevation:**

Elevation of a building above the base flood elevation is the best on-site protection strategy. The building could be raised to allow water to run underneath it, or fill could be brought in to elevate the site on which the building sits.

**Insurance:**

Above and beyond standard homeowners insurance, there is other coverage a homeowner can purchase to protect against flood hazard. Although this doesn’t mitigate the problem it does allow the homeowner to shift the financial loss/risk to another party. Two of the most common insurances offered against flood loss are:

- **National Flood Insurance:** When a community participates in the NFIP, any local insurance agent is able to sell separate flood insurance policies under rules and rates set by FEMA. Rates do not change after claims are paid because they are set on a national basis.

- **Basement Backup Insurance:** National Flood Insurance offers an additional deductible for seepage and sewer backup, provided there is a general condition of flooding in the area that was the proximate cause of the basement getting wet.

**E. Public Information and Involvement**

**Outreach Programs:** Outreach projects are proactive; giving the public information even if they have not asked for it. Outreach projects should be designed to encourage people to seek out more information and take steps to protect themselves and their properties.

Examples include:

- Mass mailing or newsletters to all residents
- Notices directed to high risk area residents
- Displays in public buildings
- Newspaper articles and special sections
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- Radio and TV news releases and interviews
- A detailed property owners handbook tailored for local conditions
- Presentations at public meetings and neighborhood groups

**Real Estate Disclosure:**

Disclosure of information regarding flood or hazard prone properties is important if potential buyers are to be in a position to mitigate damage. Federally regulated lending institutions are required to advise applicants that a property is in the floodplain. However, this requirement needs to be met only five days prior to closing, and by that time the applicant is typically committed to the purchase. This only includes flood prone areas, at the exclusion of other hazards.

**Map Information:**

Flood plain maps developed by FEMA outline the boundaries of the flood hazard areas. These maps can be used by anyone interested in a particular property to determine if it is in the floodplain. These maps are available from FEMA, the Utah Division of Emergency Management (DEM), and at many city and county planning offices. In addition the Utah Geologic Survey creates and maintains maps illustrating geologic hazards. These maps are available for sale at the Division of Natural Resources books store.

**F. Structural Projects**

The intent behind structural projects for flood mitigation is to prevent floodwaters from reaching properties. The shortcomings of almost all structural mitigation projects are that:

- They can be very expensive.
- They disturb the land, disrupt natural water flows, and destroy natural habitats.
- They are built to an anticipated flood event, and may be exceeded by a greater than expected flood.
- They can create a false sense of security.

**Reservoirs:**

Reservoirs control flooding by holding water behind dams or in storage basins. After a flood peaks, water is released or pumped out slowly at a rate the river downstream can handle. Reservoirs are expensive to build, occupy large tracts of land, require maintenance, and, if they fail, often result in greater downstream flooding than would occur during a natural flooding event.

**Levees/Floodwalls:**

One of the best-known structural flood control measures, levees and floodwalls are earthen, steel or concrete structures placed between the watercourse and the land.

**Diversions:**

A diversion is simply a new channel that sends floodwaters to a different location, thereby reducing flooding along an existing watercourse. Diversion structures can consist of surface channels, overflow weirs, or tunnels. During normal flows, the water stays in the old channel but during flooding events floodwaters spill over into the diversion channel.

**Channel Modifications:**
Channel modifications include making a channel wider, deeper, smoother, or straighter. Common channel modifications include:

- **Dredging**: Dredging is often cost-prohibitive because the dredged material must be disposed of somewhere else, and dredged streams usually fill back in with sediment.

- **Drainage Modifications**: These include man-made ditches and storm sewers that help drain areas where the surface drainage system is inadequate or where underground drainage ways may be safer or more attractive.

**Stormwater Management**: Mitigation techniques for managing stormwater include installing storm water systems, enlarging pipes, and street improvements in existing storm water systems.

**Landslide Mitigation**

### A. Generic Mitigation

- Avoidance
- Recognize landslide area
- Zoning ordinances
- Remove landslide materials
- Drain subsurface materials
- Install surface drains
- Remove materials for the head of the landslide
- Re-grade
- Build buttress or retaining wall at the toe of the slope
- Install soil nails and rock anchors
- Maintain natural vegetation
- Improved geologic mapping to identify potential landslide problems
- Zoning ordinances prohibiting construction in or adjacent to areas with high landslide potential
- Soil moisture sensors at SNOTEL sites
- Gather hazard and risk data/information
- Protection of roads and bridges
- Development of improved mitigation techniques
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- Education of local officials, developers, and citizens
- Protection of drinking water supply systems
- Generic Rock Fall Mitigation
- Avoidance
- Stabilize rocks
- Prerelease
- Build berms or benches
- Build structures to stop rocks

B. Emergency Services
- Warning systems
- Hazard identification and areas at risk

C. Prevention
- Land use planning ordinances
- Identify old landslides
  - Old landslides: irregular or subdued hill-like topography
  - Younger or more recently occurring landslides: hummocky terrain, scarps, inclined trees, ground cracks, sharp vegetation differences, and numerous depressions or ponds
- Identify unstable slopes
- Identify areas that could be affected by slope failures
  - Potential rock falls: steep cliff areas or where bedrock crops out onto mountain slopes

D. Property Protection
- Good land-use practices
- Avoid slope irrigation, undercutting, and over-steepening

E. Public Information and Involvement
- Communications systems
- Proper property assessments of slope conditions

F. Structural Protection/Projects
- Proper assessments of slope conditions
- Grading or removing the material from the top and placing it at the toe of a slope can lessen the slope gradient
- Subsurface drainage control used to dewater and stabilize slopes
- Retaining structures (concrete block walls or large masses of compacted earth)
General Mitigation Strategies

● Constructing debris basins
● Building deflection walls upslope of structures
● Avoiding ground level windows that face upslope
● Catchment fences
● Tieback walls
● Rock bolts
● Cut benches and berms

Wildfire Mitigation

A. General Wildfire Mitigation Strategies

● Avoidance
● Define, create, and maintain a defensible space
● Plant drought and fire resistant vegetation
● Ordinances
● Modification of fuel loading in high hazard interface areas
● Wildland fire training and experience for fire department personnel
● Public education effort for people living in the interface
● Additional suppression equipment needs of fire departments and the Utah Division of Forestry, Fire, and State Lands
● Fuel modification in moderate hazard interface areas
● Protection of roads and bridges
● Annual warning of risk/info on how to protect life and property
● Gather hazard and risk data/information
● General infrastructure protection
● Development of improved mitigation techniques
● Education of local officials, developers, and citizens
● Protection of drinking water supply systems
B. Emergency Service
   ● Fire fighting

C. Natural Resource Protection
   ● Prohibit development in high-risk areas
   ● Vegetation control

D. Prevention
   ● Zoning ordinances to reflect fire risk zones
   ● Planning and zoning to restrict development in areas near fire protection and water resources
   ● Requiring new subdivisions to space buildings, provide firebreaks, on-site water storage, wide roads and multiple accesses
   ● Building code standards for roof materials, spark arrestors
   ● Maintenance programs to clear dead and dry bush trees
   ● Regulations on open fires

E. Property Protection
   ● Retrofitting of roofs and adding spark arrestors
   ● Landscaping to keep bushes and trees away from structures
   ● Insurance rates based on distance from fire protection
   ● Planning how to deal with WUI fires before they occur
   ● Good visibility

F. Public Information and Involvement
   ● Educating homeowners and future homeowners about risk
   ● Planning how to deal with WUI fires before they occur
   ● Emergency warning system, action plan
   ● Communication tree between fire departments and homeowners
   ● Community actions
   ● Adequate water supply and systems

G. Structural Protection/Projects
   ● Building and property assessments
   ● Use appropriate construction materials
   ● Adequate access to buildings
Problem Soils Mitigation

A. General Problem Soil Mitigation
   - Avoidance
   - Presoak and compact
   - Remove problem soil
   - Landscape so that runoff moves away from foundations

B. Natural Resource Protection
   - Soil type awareness

C. Prevention
   - Landscaping with vegetation that does not concentrate or draw large amounts of water from the soil near foundations
   - Insulating floors or walls near heating or cooling units to prevent evaporation that could cause local changes in soil moisture
   - Avoid areas underlain by limestone and dolomite to prevent groundwater contamination and foundation problems in karst terrain
   - Use soil tests to find gypsum; do not plant high level of water plants near the house
   - Reduce piping damage by limiting construction that disturbs natural drainage
   - Peat deposits should be removed or avoided at construction sites
   - Avoid abandoned mine areas
   - Sands, and calcareous loamy soils are highly erodible

D. Property Protection
   - Special foundation designs
   - Installing gutters and downspouts that direct water at least 10 feet away from foundation slabs
   - Landscape with vegetation that does not concentrate or draw large amounts of water from the soil near foundations

E. Public Information and Involvement
   - Establish a public information portal that allows the public to easily search information about soil risk in the area.
G. Structural Protection
- Special foundation designs
- Installing gutters and downspouts
- Proper drainage along roads and around structures

Dam Failure Mitigation

A. General Dam Failure Mitigation
- Proper floodplain maps, including dam breach flood potential
- Public knowledge of floodplains for the general public and emergency managers
- Updated Emergency Operation Plans (EOP) integration with GIS Systems
- Maintain proper floodplain/wetland geometry and vegetation for flood routing
- Floodplain usage compatible with floodplain needs
- More debris dams; they help to maintain flooding, debris, and mud
- Flood control pool in existing dams
- Protection of roads and bridges
- General infrastructure protection
- More authority to help with snowmelt floods/runoff releases, better forecasting
- Gather hazard and risk data/information
- Development of improved mitigation techniques
- Education of local officials, developers, and citizens

B. Emergency Service
- Good emergency management and emergency action plans
- Dam conditioning monitoring
- Warning system and monitoring
- Understand standard operating procedures

C. Natural Resource Protection
- Zoning of downstream usage
General Mitigation Strategies - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

- Risk assessment
- Good watershed management

D. Prevention
- Dam failure inundation maps
- Planning/zoning/open space preservation to keep downs stream areas clear
- Building codes with flood elevations based on dam failure
- Dam safety inspections
- Draining the reservoir when conditions appear unsafe

E. Property Protection
- Acquisition of building in the path of a dam breach flood
- Flood insurance

F. Public Information and Involvement
- Communication and education of dam owners
- Communication and education with the public
- Evacuation procedures

G. Structural Protection/Projects
- Dam improvements
- Spillway enlargements
- Remove unsafe dams
- Design and construction review
- Direction for consulting engineers
- Instrumentations and monitoring of dams
- Remedial repair procedures
- Incremental damage assessment
Drought Mitigation

A. Emergency Service
   ● Provide low interest loans or private assistance for farmers and ranchers

B. Natural Resource Protection
   ● Manage wildlife during drought periods
   ● Incorporate wildfire hazard mitigation planning
   ● Integrate financial assistance for transportation or water hauling for livestock

C. Prevention
   ● Implement cloud seeding during drought years to enhance precipitation
   ● Protect culinary water systems and/or provide culinary water to people or systems
   ● Incorporate a drought management plan
   ● Introduce more water resources such as wells, ponds, reservoirs, and reservoir capacity

D. Public Information and Involvement
   ● Create or join water conservation programs that are designed to reduce water consumption
   ● Incorporate a drought management plan
   ● Drought resource coordination

Severe Weather Mitigation

A. Emergency Services
   ● Early warning systems
   ● Communication systems

B. Prevention
   ● Building code standards for light frame construction
   ● Ordinances that include weather resistant designs
C. Public Information and Involvement

- Listen to a weather radio
- Watch and listen to weather forecasts and warnings
- Develop a plan so you know where to take your family for shelter
- Understand risk and identify ways of reducing the impacts

D. Structural Protection/Projects

- Strengthen unreinforced masonry
Appendix C - HAZARD HISTORIES

Note that much of the hazard historical data is incorporated into the Part 9 - Risk Assessment.

### Table C.1 - Major Disaster Statistics by Type 1962-2005
(2005 dollars, HVRI) Davis County

<table>
<thead>
<tr>
<th></th>
<th>Injuries</th>
<th>Pct of Total Injuries</th>
<th>Pct of Total Fatalities</th>
<th>Property Damage</th>
<th>Pct Total Property Damage</th>
<th>Crop Damage</th>
<th>Pct Total Crop Damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avalanche</td>
<td>1.63</td>
<td>2.3%</td>
<td>1.25</td>
<td>22.8%</td>
<td>$0</td>
<td>0.0%</td>
<td>$0</td>
</tr>
<tr>
<td>Extreme Cold</td>
<td>0.17</td>
<td>0.2%</td>
<td>0.03</td>
<td>0.5%</td>
<td>$537,791</td>
<td>2.0%</td>
<td>$1,457,399</td>
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<tr>
<td>Flooding</td>
<td>0.24</td>
<td>0.3%</td>
<td>0.68</td>
<td>12.4%</td>
<td>$4,901,262</td>
<td>17.9%</td>
<td>$4,901,262</td>
</tr>
<tr>
<td>Fog</td>
<td>13.8</td>
<td>19.2%</td>
<td>0.4</td>
<td>7.3%</td>
<td>$159,947</td>
<td>0.6%</td>
<td>$0</td>
</tr>
<tr>
<td>Hail</td>
<td>6.07</td>
<td>8.4%</td>
<td>0.02</td>
<td>0.4%</td>
<td>$444,374</td>
<td>1.6%</td>
<td>$189,368</td>
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<tr>
<td>Heavy Snow</td>
<td>38.69</td>
<td>53.8%</td>
<td>2.32</td>
<td>42.3%</td>
<td>$5,169,331</td>
<td>18.9%</td>
<td>$64,299</td>
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<tr>
<td>Ice</td>
<td>5</td>
<td>7.0%</td>
<td>0</td>
<td>0.0%</td>
<td>$101,575</td>
<td>0.4%</td>
<td>$0</td>
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<tr>
<td>Landslide</td>
<td>0</td>
<td>0.0%</td>
<td>0.17</td>
<td>3.0%</td>
<td>$82,029</td>
<td>0.3%</td>
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</tr>
<tr>
<td>Lightning</td>
<td>0.24</td>
<td>0.3%</td>
<td>0.02</td>
<td>0.4%</td>
<td>$446,492</td>
<td>1.6%</td>
<td>$690</td>
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<tr>
<td>Tornado</td>
<td>0</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
<td>$199,629</td>
<td>0.7%</td>
<td>$2,994</td>
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<tr>
<td>Wind</td>
<td>6.04</td>
<td>8.4%</td>
<td>0.6</td>
<td>2.5%</td>
<td>$15,269,889</td>
<td>55.9%</td>
<td>$398,328</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>71.87</strong></td>
<td><strong>100.00%</strong></td>
<td><strong>5.49</strong></td>
<td><strong>91.50%</strong></td>
<td><strong>$27,312,318</strong></td>
<td><strong>100.00%</strong></td>
<td><strong>$7,014,340</strong></td>
</tr>
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</table>

### Table C.2 - Major Disaster Statistics by Decade 1960-2010
(2007 dollars, HVRI) Davis County

<table>
<thead>
<tr>
<th>Decade</th>
<th>Injuries</th>
<th>Pct of Total Injuries</th>
<th>Pct of Total Fatalities</th>
<th>Property Damage</th>
<th>Pct Total Property Damage</th>
<th>Crop Damage</th>
<th>Pct Total Crop Damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960s</td>
<td>1.9</td>
<td>3.0%</td>
<td>0.07</td>
<td>1.0%</td>
<td>$2,111,058</td>
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<td>1970s</td>
<td>15.7</td>
<td>21.0%</td>
<td>1.12</td>
<td>20.0%</td>
<td>$3,415,339</td>
<td>12.0%</td>
<td>$1,920,583</td>
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<td>1980s</td>
<td>0</td>
<td>0.0%</td>
<td>0.57</td>
<td>10.0%</td>
<td>$8,080,463</td>
<td>29.0%</td>
<td>$4,668,534</td>
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<tr>
<td>1990s</td>
<td>38.2</td>
<td>51.0%</td>
<td>3.09</td>
<td>56.0%</td>
<td>$13,170,387</td>
<td>47.0%</td>
<td>$224,746</td>
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<tr>
<td>2000s</td>
<td>19</td>
<td>25.0%</td>
<td>0.64</td>
<td>12.0%</td>
<td>$1,497,915</td>
<td>5.0%</td>
<td>$85,734</td>
</tr>
<tr>
<td><strong>2010s</strong></td>
<td><strong>19</strong></td>
<td><strong>25.0%</strong></td>
<td><strong>0.64</strong></td>
<td><strong>12.0%</strong></td>
<td><strong>$1,497,915</strong></td>
<td><strong>5.0%</strong></td>
<td><strong>$85,734</strong></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>74.8</strong></td>
<td><strong>100.00%</strong></td>
<td><strong>5.49</strong></td>
<td><strong>99.00%</strong></td>
<td><strong>$28,275,162</strong></td>
<td><strong>%</strong></td>
<td><strong>$7,014,340</strong></td>
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</table>
Table C.2 - Major Disaster Statistics by Event 1962-2005  
(2005 dollars, HVRI) Davis County

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Number of Events</th>
<th>Events Per Year</th>
<th>Injuries Per Event</th>
<th>Fatalities Per Event</th>
<th>Property Damage Per Event</th>
<th>Crop Damage Per Event</th>
<th>Total Damages Per Event</th>
<th>Total Annualized Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avalanche</td>
<td>6</td>
<td>0.10</td>
<td>0.27</td>
<td>0.21</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
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<tr>
<td>Extreme Cold</td>
<td>9</td>
<td>0.20</td>
<td>0.02</td>
<td>0.00</td>
<td>$59,755</td>
<td>$161,933</td>
<td>$221,688</td>
<td>$44,338</td>
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<tr>
<td>Flooding</td>
<td>21</td>
<td>0.50</td>
<td>0.01</td>
<td>0.03</td>
<td>$233,393</td>
<td>$233,393</td>
<td>$466,787</td>
<td>$217,834</td>
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<tr>
<td>Fog</td>
<td>3</td>
<td>0.10</td>
<td>4.6</td>
<td>0.13</td>
<td>$53,316</td>
<td>$0</td>
<td>$53,316</td>
<td>$3,554</td>
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<tr>
<td>Hail</td>
<td>4</td>
<td>0.10</td>
<td>1.52</td>
<td>0.01</td>
<td>$111,094</td>
<td>$47,342</td>
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<td>Heavy Snow</td>
<td>94</td>
<td>2.10</td>
<td>0.41</td>
<td>0.02</td>
<td>$54,993</td>
<td>$684</td>
<td>$55,677</td>
<td>$116,303</td>
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<td>Ice</td>
<td>2</td>
<td>0.00</td>
<td>2.5</td>
<td>0.00</td>
<td>$50,787</td>
<td>$0</td>
<td>$50,787</td>
<td>$2,257</td>
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<tr>
<td>Landslide</td>
<td>3</td>
<td>0.10</td>
<td>0</td>
<td>0.06</td>
<td>$27,343</td>
<td>$0</td>
<td>$27,343</td>
<td>$1,823</td>
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<tr>
<td>Lightning</td>
<td>7</td>
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<td>0.03</td>
<td>0.00</td>
<td>$63,785</td>
<td>$99</td>
<td>$63,883</td>
<td>$9,937</td>
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<tr>
<td>Tornado</td>
<td>4</td>
<td>0.10</td>
<td>0</td>
<td>0.00</td>
<td>$49,907</td>
<td>$749</td>
<td>$50,656</td>
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<tr>
<td>Wind</td>
<td>64</td>
<td>1.40</td>
<td>0.09</td>
<td>0.01</td>
<td>$238,592</td>
<td>$6,224</td>
<td>$244,816</td>
<td>$348,183</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>217</strong></td>
<td><strong>4.90</strong></td>
<td><strong>9.45</strong></td>
<td><strong>0.47</strong></td>
<td><strong>$27,312,318</strong></td>
<td><strong>$450,424</strong></td>
<td><strong>$7,014,340</strong></td>
<td><strong>$762,815</strong></td>
</tr>
</tbody>
</table>
Appendix D - CRITICAL FACILITIES

The following identifies an inventory of all the critical facilities within Davis County. Critical facilities are of particular concern because of the essential products and services to the general public they provide. These critical facilities can also fulfill important public safety, emergency response, and/or disaster recovery functions. The critical facilities identified in this Plan include amateur radio repeaters, emergency operations centers, electric and oil facilities, hospitals, fire and police stations, schools, water and wastewater treatment plants. (”Mod” = Moderate).

Table D.1 - Davis County, Amateur Radio Resources, 2021

<table>
<thead>
<tr>
<th>Call Sign</th>
<th>City</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>AI7J</td>
<td>Layton</td>
<td>440</td>
</tr>
<tr>
<td>K0NOD</td>
<td>Clearfield</td>
<td>440</td>
</tr>
<tr>
<td>K7CEM</td>
<td>Salt Lake</td>
<td>2000</td>
</tr>
<tr>
<td>K7DAV</td>
<td>Antelope Island</td>
<td>144</td>
</tr>
<tr>
<td>K7DAV</td>
<td>Antelope Island</td>
<td>440</td>
</tr>
<tr>
<td>K7DAV</td>
<td>Bountiful</td>
<td>440</td>
</tr>
<tr>
<td>N7CRG</td>
<td>Clearfield</td>
<td>440</td>
</tr>
<tr>
<td>N7TDT</td>
<td>Bountiful</td>
<td>440</td>
</tr>
<tr>
<td>NJ7J</td>
<td>Clearfield</td>
<td>440</td>
</tr>
<tr>
<td>NJ7J</td>
<td>Syracuse</td>
<td>220</td>
</tr>
<tr>
<td>W7CWK</td>
<td>Bountiful</td>
<td>144</td>
</tr>
<tr>
<td>W7CWK</td>
<td>Bountiful</td>
<td>440</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Damage Type</th>
<th>Flood</th>
<th>Ground Shaking</th>
<th>Severe Weather</th>
<th>Liquefaction</th>
<th>Problem Soils</th>
<th>Soil Failure</th>
<th>Wildfire</th>
<th>East Canyon Wind</th>
</tr>
</thead>
<tbody>
<tr>
<td>AI7J</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>K0NOD</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>K7CEM</td>
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<td>Low</td>
<td>High</td>
<td>Mod</td>
<td>Low</td>
<td>Low</td>
<td>Mod</td>
<td>High</td>
</tr>
<tr>
<td>K7DAV</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
<td>Mod</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>K7DAV</td>
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<td>Low</td>
<td>High</td>
<td>Mod</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>K7DAV</td>
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<td>High</td>
<td>Mod</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>N7CRG</td>
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<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>N7TDT</td>
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<tr>
<td>NJ7J</td>
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<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>W7CWK</td>
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<td>Mod</td>
<td>High</td>
<td>Mod</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
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</table>
Table D.2 - Davis County, Electric Generation Facility Vulnerability, 2021

<table>
<thead>
<tr>
<th></th>
<th>Dam Failure</th>
<th>Flood</th>
<th>Ground Shaking</th>
<th>Severe Weather</th>
<th>Liquefaction</th>
<th>Problem Soils</th>
<th>Soil Failure</th>
<th>Wildfire</th>
<th>East Canyon Winds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bountiful City Light &amp; Power</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
<td>Mod</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

Table D.3 - Davis County, Emergency Operations Centers Vulnerability, 2021

<table>
<thead>
<tr>
<th></th>
<th>Dam Failure</th>
<th>Flood</th>
<th>Ground Shaking</th>
<th>Severe Weather</th>
<th>Liquefaction</th>
<th>Problem Soils</th>
<th>Soil Failure</th>
<th>Wildfire</th>
<th>East Canyon Winds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davis County EOC (DCSO)</td>
<td>Low</td>
<td>Low</td>
<td>Mod</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
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Table D.4 - Davis County, Oil Refining Facility Vulnerability, 2021

<table>
<thead>
<tr>
<th></th>
<th>Dam Failure</th>
<th>Flood</th>
<th>Ground Shaking</th>
<th>Severe Weather</th>
<th>Liquefaction</th>
<th>Problem Soils</th>
<th>Soil Failure</th>
<th>Wildfire</th>
<th>East Canyon Winds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big West Oil</td>
<td>Low</td>
<td>Low</td>
<td>Mod</td>
<td>High</td>
<td>High</td>
<td>Low</td>
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<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Chevron USA Products - SLC Refinery</td>
<td>Low</td>
<td>Low</td>
<td>Mod</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Crown Asphalt (Cowboy Terminal)</td>
<td>Low</td>
<td>Low</td>
<td>Mod</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Holly Refining &amp; Marketing (WC)</td>
<td>Low</td>
<td>Low</td>
<td>Mod</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
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<tr>
<td>Silver Eagle Refining (WC)</td>
<td>Low</td>
<td>Low</td>
<td>Mod</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
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</tbody>
</table>
Table D.5 - Davis County, Fire Station Vulnerability, 2021

<table>
<thead>
<tr>
<th>Facility</th>
<th>Dam Failure</th>
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## Critical Facilities - Davis Co PDMP

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### Table D.8 - Davis County, School Facility Vulnerability, 2021

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### Critical Facilities - Davis Co PDMP

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**Charter School Facilities**

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### Critical Facilities - Davis Co PDMP

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### Table D.9 - Davis County, Water + Wastewater Facility Vulnerability, 2021

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Glossary of Terms - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

Appendix E - GLOSSARY OF TERMS

Glossary

**Abutment (dam)** – the valley side against which a dam is constructed.

**Acre-foot of Water** – approximately 326,000 gallons of water, or approximately a football field covered by one foot of water.

**Active Faults** – An active fault is defined as a fault displaying evidence of displacement along one or more of its traces during Holocene time (about the last 11,000 years).

**Aftershocks** – earthquakes during the seconds, hours, days to months following a larger earthquake (main shock) in the same general region.

**Alluvial Fan** – a cone-shaped deposit of stream sediments, generally deposited at the base of a mountain where a stream encounters flatter terrain.

**Amplitude (seismic waves)** – the maximum height of a wave crest or depth of a trough. The amount of ground moves as a seismic wave passes, as measured from a seismogram.

**Avalanche Path** – the area in which a snow avalanche runs; generally divided into starting zone, track, and runout zone.

**Basin and Range Physiographic Province** – consists of north-south-trending mountain ranges separated by valleys, bounded by the Rocky Mountains and the Colorado Plateau to the east and the Sierra-Cascade Mountains to the west (includes western Utah).

**Bearing Capacity** – the load per unit area, which the ground can safely support without excessive yield.

**Bedrock** – solid in-place rock, sometimes exposed and sometimes concealed beneath the soil.

**Block Faulting** – see normal fault

**Collapsible Soil (hydrocompaction)** – loose, dry, low-density soil that decreases in volume or collapses when saturated for the first time following deposition.

**Critical Areas** – Environmentally sensitive areas which include wetlands, fish and wildlife habitat conservation areas; geologically hazardous areas; areas with a critical recharging effect on aquifers used for potable water; and frequently flooded areas. Critical areas have measurable characteristics which, when combined, create a value for or potential risk to public health, safety and welfare.

**Critical/Essential Facilities** – Structures meeting one or more of the following criteria:

- Fire stations, police stations, storage facilities for vehicles/equipment needed after a hazard event, and emergency operation centers.
- Hospitals, nursing homes, and housing which are likely to contain occupants who may not be sufficiently mobile to avoid injury or death as a result of a hazardous event.
- Public and private utility facilities, which are vital to maintaining or restoring normal services to damaged areas after a hazardous event.
- Structures or facilities that produce, store, or use highly flammable, explosive, volatile, toxic and/or water reactive materials.

Debris Flow – involves the relatively rapid, viscous flow of surficial material that is predominantly coarse grained.

Debris Slide – involves predominantly coarse-grained material moving mainly along a planar surface.

Drought (Agricultural) – lack of water for crop production in a given area.

Drought (Hydrologic) – lack of water in the entire water supply for a given area.

Drought (Meteorological) – lack of precipitation compared to an area’s normal.

Drought (Socioeconomic) – lack of water sufficient to support an area’s population.

Earth Flow – Involves fine-grained material that slumps away from the top or upper part of a slope, leaving a scarp, and flows down to form a bulging toe.

Earthquake – a sudden motion or trembling in the earth as fracture and movement of rocks along a fault release stored elastic energy.

Earthquake Fault Zone – earthquake fault zones are regulatory zones around active faults. The zones are used to prohibit the location of critical facilities and structures designed for human occupancy from being built astride an active fault. Earthquake Fault Zones are plotted on topographic maps at a scale of 1-inch equals 2,000 feet. The zones vary in width, but average about one-quarter mile wide.

Earthquake-induced Seiche – Earthquake generated water waves causing inundation around shores or lakes and reservoirs.

Epicenter – the point on the earth's surface directly above the focus of an earthquake.

Epoch – geologic time unit lasting more than an age but shorter than a period (Epoch 2008).

Erosion – the removal of earth or rock material by many types of processes, for example, water, wind, or ice action.

Expansive Soil and Rock – soil and rock which contain clay minerals that expand and contract with changes in moisture content.

Fault – a break in the earth along which movement occurs.

Fault Segment – section of a fault that behaves independently from adjacent sections.

Fault Zone – an area containing numerous faults.

Federal Emergency Management Agency (FEMA) – authorized under Section 404 of the Stanford Act. Provides funding for hazard mitigation projects that are cost-effective and comply with existing post-disaster mitigation programs and activities. These projects cannot be funded through other programs to be eligible.

Fill – material used to raise the surface of the land generally in a low area.

Fire-resistant Vegetation – plants that do not readily ignite and burn when subjected to fire because of inherent physiological characteristics of the species such as moisture content, fuel loading, and fuel arrangement.

Floodplain – an area adjoining a body of water or natural stream that has been or may be covered by floodwater.

Floodplain (100-year/500-year) – Floodplains that have the potential to flood once every 100 or 500 years or that has a 1% (100-year) or 0.2% (500-year) chance of flooding equal to or in excess of that in any given year.
Floodway – An area of land immediately adjacent to a stream or river channel that, in times of flooding, becomes an enlarged stream or river channel and carries the floodwater with the highest velocity.

Fluvial – concerning or pertaining to rivers or streams.

Focus – the point of origin of an earthquake within the earth, and the origin of the earthquake's seismic waves.

Formation (geologic) – a mappable rock unit consisting of distinctive features/rock types separate from units above and below.

Frequency (seismic waves) – the number of complete cycles of a seismic wave passing a point during one second.

Fuel (fire) – vegetation, building material, debris, and other substances that will support combustion.

Fuel Break – a change in fuel continuity, type of fuel, or degree of flammability of fuel in a strategically-located strip of land to reduce or hinder the rate of fire spread.

Fuel Type – a category of vegetation used to indicate the predominant cover of an area.

Glacial Moraine – debris (sand to boulders) transported and deposited by glacial ice along a glacier's sides or terminus.

Graben – a block of earth dropped between two faults.

Gradient (slope) – a measure of the slope of the land surface.

Ground Failure – a general term referring to any type of ground cracking or subsidence, including landslides and liquefaction-induced cracks.

Ground Shaking – the shaking or vibration of the ground during an earthquake.

Ground Water – that portion of subsurface water which is in the zone of saturation.

Gypsiferous Deposits – soil or rock containing gypsum, which can be subject to dissolution.

Gypsum – a mineral composed of hydrated calcium sulfate. A common mineral of evaporites.

Hazard Mitigation Plan – The Plan resulting from a systematic evaluation of the nature and extent of vulnerabilities posed by a hazard present in society that includes the strategies needed to minimize future vulnerability to hazards.

Hazard Mitigation – Any action taken to reduce or permanently eliminate the long-term risk to human life and property and the environment posed by a hazard.

HAZUS-MH – Hazards United States – Multihazards; Earthquake loss estimation software using GIS databases developed by FEMA.

Head (landslide) – the upper parts of the slide material along the contact between the disturbed material and the main scarp.

Holocene – geologic epoch covering the last 10,000 years (after the last Ice Age).

Igneous Rocks – rocks formed by cooling and hardening of hot liquid material (magma), including rocks cooled within the earth (for example, granite) and those that cooled at the ground surface as lavas (such as basalt).

Impermeable – materials having a texture that does not permit water to move through.

Interfluve – land between two streams in the same drainage basin (Interfluve 2004).
**Intermountain Seismic Belt (ISB)** – zone of pronounced seismicity, up to 120 miles wide and 800 miles long, extending from Arizona through central Utah to northwestern Montana.

**Lacustrine** – concerning or pertaining to lakes.

**Lake Bonneville** – a large, ancient lake that existed 30,000 to 12,000 years ago and covered nearly 20,000 square miles in Utah, Idaho, and Nevada. The lake covered many of Utah's valleys, and was almost 1,000 feet deep in the area of the present Great Salt Lake.

**Lake Bonneville Sediments** – sediments deposited by Lake Bonneville, found in the valleys, which range from gravels and sands to clays.

**Landslide** – a general term for a mass of earth or rock, which moves down slope by flowing, spreading, sliding, toppling, or falling (see slope failure).

**Lateral Spread** – lateral down slope displacement of soil layers, generally several feet or more, above a liquefied layer.

**Levee (flood)** – a berm or dike used to contain or direct water, usually without an outlet or spillway.

**Liquefaction** – sudden large decrease in shear strength of a cohesionless soil (generally sand or silt) caused by collapse of soil structure and temporary increase in pore-water pressure during earthquake ground shaking.

**Magnitude (earthquake)** – a quantity characteristic of the amplitude of the ground motion of an earthquake. The most commonly used measurement is the Richter magnitude scale; a logarithmic scale based on the motion that would be measured by a standard type of seismograph 60 miles from the earthquake's epicenter.

**Metamorphic Rocks** – rocks formed by high temperatures and/or pressures (for example, quartzite formed from sandstone).

**Mitigation** – the act of reducing or preventing hazards which affect society or those things deemed important to society

**Modified Mercalli Intensity (MMI)** – the most commonly used intensity scale in the U.S.; it is a measure of the severity of earthquake shaking at a particular site as determined from its effect on the earth's surface, man, and man's structures.

**Montmorillonite** – a clay mineral characterized by expansion upon wetting and shrinking upon drying.

**Natural Vegetation** – native plant life existing on a piece of land before any form of development.

**Normal Fault (block faulting)** – fault caused by crustal extension in which relative movement on opposite sides is primarily vertical; for example, the Wasatch Fault.

**Oolite** – spherical grains of carbonate sand with a brine shrimp fecal pellet nucleus.

**Outlet (dam)** – a conduit through which controlled releases can be made from the reservoir.

**Palmer Drought Severity Index (PDSI)** – developed by Wayne Palmer in 1965; measures drought severity using temperature, precipitation and soil moisture (Utah Division of Water Resources 2007).

**Peat** – unconsolidated surficial deposit of partially decomposed plant remains.

**Period (geologic)** – a standard (world-wide) geologic time unit.

**Permeability** – the capacity of a porous rock or soil for transmitting a fluid.

**Physiographic Province** – a region whose pattern of relief features or landforms differs significantly from that of adjacent regions.
Glossary of Terms - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

Piping (problem soil and rock) – a weak incoherent layer in unconsolidated deposits that acts as a channel directing the movement of water. As the layer becomes saturated it conducts water to a free face (cliff or stream bank for example) that intersects the layer, and material exits out a "pipe" formed in the free face. Piping can occur in a dam as the result of progressive development of internal erosion by seepage.

Pore Space – the open spaces in a rock or soil between solid grains. The spaces may be filled with gas (usually air) or liquid (usually water).

Porosity – the ratio of the volume of pore space in rock or soil to the volume of its mass, expressed as percentage.

Probable Maximum Flood (PMF) – a flood that would result from the most severe combination of critical meteorological and hydrologic conditions possible in a region.

Probable Maximum Precipitation (PMP) – the maximum amount and duration of precipitation that can be expected to occur on a drainage basin.

Problem Soil and Rock – geologic materials that are susceptible to volumetric changes, collapse, subsidence, or other engineering geologic problems.

Project Impact – An initiative of the Federal Emergency Management Agency intended to modify the way in which the United States handles natural disasters. The Goal of Project Impact from a Federal Government perspective is to reduce the personal and economic costs of hazard events by bringing together the private and public sector to better enable the citizens of a community to protect themselves from natural hazards.

Quaternary – a geologic time period covering the last 1.6 million years.

Recurrence Interval – the length of time between occurrences of a particular event (an earthquake, for example).

Rock Fall – abrupt free fall or down slope movement, such as rolling or sliding, of loosened blocks or boulders from an area of bedrock. The rock fall runout zone is the area below a rock fall source which is at risk from falling rocks.

Rock Topple – forward rotation movement of a rock unit(s) about some pivot point.

Runout Zone (avalanche) – where a snow avalanche slows down and comes to rest (deposition zone). For large avalanches, the runout zone can include a powder or wind blast zone that extends far beyond the area of snow deposition.

Sand Blow (earthquake) – deposit of sandy sediment ejected as water and sand to the surface, formed when ground shaking has caused liquefaction at depth.

Scarp – a relatively steeper slope separating two more gentle slopes. Scarps can form as a result of earthquake faulting.

Sediment – material that is in suspension, is being transported, or has been moved from its site of origin by water, ice, or wind, and has come to rest on the earth's surface either above or below the sea level.

Sedimentary Rocks – rocks formed from loose sediment such as sand, mud, or gravel deposited by water, ice, or wind, and then hardened into rock (for example, sandstone); or formed by dissolved minerals precipitating out of solution to form rock (for example, tufa).

Seiche – a standing wave generated in a closed body of water such as a lake or reservoir. Ground shaking, tectonic tilting, sub aqueous fault rupture, or landsliding into water can all generate a seiche.

Seismic Waves – vibrations in the earth produced during earthquakes.

Seismicity – seismic or earthquake activity.
Sensitive Clay — clay soil that experiences a particularly large loss of strength when disturbed. Deposits of sensitive clay are subject to failure during earthquake ground shaking.

Shear Strength — the internal resistance that tends to prevent adjacent parts of a solid from "shearing" or sliding past one another parallel to the plane of contact. It is measured by the maximum shear stress that can be sustained without failure.

Shear Stress — a stress causing adjacent parts of a solid to slide past one another parallel to the plane of contact.

Slope Failure — a general term referring to any type of natural ground movement on a sloping surface (see landslide).

Slump — a slope failure that slides along a concave rupture surface. Generally slumps do not move very far from the source area.

Snow Avalanche — a rapid downslope movement of a mass of snow, ice, and debris.

Spectral Acceleration — measurement for approximate horizontal force experienced in a model earthquake. Measurements are specific to the frequency of shaking found to affect buildings during and earthquake. A 0.2-second period affects primarily one- and two-story buildings while 1.0-second period of spectral acceleration affects buildings approximately 10 stories in height.


Starting Zone (avalanche) — where the unstable snow or ice breaks loose and starts to slide.

Subsidence — a settling or sinking of the earth's crust.

Sunny-Day Failure — the failure of a dam with the water level at the normal pool elevation and no rainfall.

Surface fault rupture (surface faulting) — propagation of an earthquake-generated fault rupture to the ground surface, displacing the surface and forming a scarp.

Tectonic Subsidence — subsidence (down dropping) and tilting of a basin on the down dropped side of a fault during an earthquake.

Toe (landslide) — the margin of disturbed material most distant from the main scarp.

Track (avalanche) — the slope or channel down which a snow avalanche moves at a fairly uniform speed.

Unconsolidated Basin Fill — un-cemented and non-indurated sediment, chiefly clay, silt, sand, and gravel, deposited in basins.

Urban Area — a geographical area, usually of incorporated land, covered predominately by engineered structures including homes, schools, commercial buildings, service facilities, and recreational facilities.

Velocity (ground motion) — the rate of displacement of an earth particle caused by passage of a seismic wave.

Wasatch Fault — a normal fault that extends over 200 miles from Malad City, Idaho to Fayette, Utah, and trends along the western front of the Wasatch Range.

Watershed — the area of land above a reference point on a stream or river, which contributes runoff to that stream.

Weathering — a group of processes (such as the chemical action of air, rain water, plants, and bacteria and the mechanical action of temperature changes) whereby rocks on exposure to the weather change in character, decay, and finally crumble into soil.

Wildfire — uncontrolled fire burning in vegetation.
Wildland Area – a geographical area of unincorporated land covered predominately by natural vegetation.

Wildland Urban Interface (WUI) – Wildland vegetation and forested areas adjacent to or intermingled with residential developments.

Zone of Deformation (earthquake) – the width of the area of surface faulting over which earth materials have been disturbed by fault rupture, tilting, or subsidence.

List of Acronyms and Recognized Abbreviations
AARC - Average Annual Rate of Change
AGRC - Automated Geographic Reference Center
APHIS - Animal and Plant Health Inspection Service
BCEGS - Building Code Effectiveness Grading System
BOR - Bureau of Reclamation
CDBG - Community Development Block Grant
CERCLA - Comprehensive Environmental Response Compensation and Liability Act
CERT - Community Emergency Response Team
CFR - Code of Federal Regulations
CFS - Cubic Feet per Second
CRS - Community Rating System
DB - Detention Basin
DFIRM - Digital Flood Insurance Rate Map
DEM - Division of Emergency Management
DMA 2000 - Disaster Mitigation Act of 2000
EAP - Emergency Action Plan
EM - Emergency Management
EOC - Emergency Operations Center
EOP - Emergency Operations Plan
FEMA - Federal Emergency Management Agency
FIRM - Flood Insurance Rate Map
FIS - Flood Insurance Study
FMA - Flood Mitigation Assistance
G - Gravity
GIS - Geographic Information Systems
GOMB - Governor’s Office of Management and Budget
Glossary of Terms - Davis Co PDMP

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GPS - Geographic Positioning System
GSL - Great Salt Lake
HAM - Handheld Amateur Radio
HAZMAT - Hazardous Materials
HAZUS - MH Hazards United States – Multi-Hazards
HMGP - Hazard Mitigation Grant Program
LEPC - Local Emergency Planning Committee
LUST - Leaking Underground Storage Tank
M - Magnitude
MSL - Mean Sea Level
MOU - Memorandum of Understanding
NCDC - National Climatic Data Center
NFIP - National Flood Insurance Program
NIMS - National Incident Management System
NWS - National Weather Service
PDM - Pre-Disaster Mitigation
PDSI - Palmer Drought Severity Index
piC/L - picoCuries per Liter
PL - Public Law
PSC - Public Safety Communications
RCRA - Resource Conservation and Recovery Act
SA - Spectral Acceleration
SBA - Small Business Administration
SHELDUS - Spatial Hazard Events and Losses Database for the United States
SLC - Salt Lake City
SPI - Standardized Precipitation Index
SR - State Route
STAPLEE - Social, Technical, Administrative, Political, Legal, Economic, Environmental
SWSI - Surface Water Supply Index
TAZ - Transportation Analysis Zone
TRAX - Transit Express
TRI - Toxic Release Inventory
UCAN - Utah Communication Agency Networks
UDAF - Utah Department of Agriculture and Food
UDOT - Utah Department of Transportation
UEDV - Utah Economic Data Viewer
UFFSL - Utah Division of Forestry, Fire, and State Lands
UGS - Utah Geological Survey
USGS - United States Geological Survey
USACE - United States Army Corps of Engineers
USC - United States Code
USDA - United States Department of Agriculture
USFS - United States Forestry Service
USU - Utah State University
UUSS - University of Utah Seismic Stations
WFZ - Wasatch Fault Zone
WUI - Wildland-Urban Interface
Appendix F - WORKS CITED


Davis County 2015. *Davis County Emergency Operations Plan*. Davis County, UT.


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http://www.access.gpo.gov/uscode/title42/chapter85_.html  
(Accessed 16 April 2008).


http://www.access.gpo.gov/uscode/title16/ chapter1a_subchapterii_.html
Works Cited - Davis Co PDMP

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(Accessed 16 April 2008).


APPENDIX G - STAKEHOLDER PARTICIPATION

Invited Partners / Entities

One of the critical elements of the Davis PDM update was to invite participation from a number of stakeholders including jurisdictions, businesses, agencies, nongovernmental organizations, etc. (A sample invitation letter is shown below). The tables that follow show each invited stakeholder with contact information and how/if they responded.
### Table G.1: Invited Jurisdictions and Local Operators

<table>
<thead>
<tr>
<th>Jurisdiction / Entity</th>
<th>Contact Name and Information (if available)</th>
<th>2021 Participation (Yes/Invited-No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bountiful</td>
<td>Dave Edwards, Assistant Chief of Police <a href="mailto:edwards@bountifulutah.gov">edwards@bountifulutah.gov</a></td>
<td>Yes</td>
</tr>
<tr>
<td>Centerville</td>
<td>Paul Child, Chief of Police <a href="mailto:pechild@centervilleut.com">pechild@centervilleut.com</a></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Louisa McDonald, Assistant Emergency Manager <a href="mailto:lmcdonald@centervilleut.com">lmcdonald@centervilleut.com</a></td>
<td></td>
</tr>
<tr>
<td>Clearfield</td>
<td>John Meek, Emergency Manager <a href="mailto:john.meek@clearfieldcity.org">john.meek@clearfieldcity.org</a></td>
<td>Yes</td>
</tr>
<tr>
<td>Clinton</td>
<td>Dave Olsen, Fire Chief <a href="mailto:dolsen@clintoncity.com">dolsen@clintoncity.com</a></td>
<td>Yes</td>
</tr>
<tr>
<td>Davis County</td>
<td>Chad Monroe, Emergency Manager <a href="mailto:cmonroe@co.davis.ut.us">cmonroe@co.davis.ut.us</a></td>
<td>Yes</td>
</tr>
<tr>
<td>Davis County Animal Care and Control</td>
<td>Tracy Roddom, Assistant Director <a href="mailto:troddom@daviscountyutah.gov">troddom@daviscountyutah.gov</a></td>
<td>Invited - No Response</td>
</tr>
<tr>
<td>Farmington</td>
<td>Brigham Mellor, Assistant City Manager <a href="mailto:bmellor@farmington.utah.gov">bmellor@farmington.utah.gov</a></td>
<td>Yes</td>
</tr>
<tr>
<td>Fruit Heights</td>
<td>Brandon Green, City Manager <a href="mailto:bgreen@fruitheightscity.com">bgreen@fruitheightscity.com</a></td>
<td>Yes</td>
</tr>
<tr>
<td>Kaysville</td>
<td>Paul Erickson, Fire Chief <a href="mailto:perickson@kaysvillecity.com">perickson@kaysvillecity.com</a></td>
<td>Yes</td>
</tr>
<tr>
<td>Layton</td>
<td>Doug Bitton, Fire Marshal <a href="mailto:dbitton@laytoncity.org">dbitton@laytoncity.org</a></td>
<td>Yes</td>
</tr>
<tr>
<td>Morgan County (EM)</td>
<td>Austin Turner</td>
<td>Invited - No Response</td>
</tr>
<tr>
<td>North Salt Lake</td>
<td>Ken Leetham, City Manager <a href="mailto:kenl@nslcity.org">kenl@nslcity.org</a></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Ali Avery, City Planner <a href="mailto:alia@nslcity.org">alia@nslcity.org</a></td>
<td></td>
</tr>
<tr>
<td>Salt Lake City</td>
<td><a href="mailto:bereadyslc@slcgov.com">bereadyslc@slcgov.com</a></td>
<td>Invited - No Response</td>
</tr>
</tbody>
</table>
Table G.2: Invited Specialized Local Districts

<table>
<thead>
<tr>
<th>Specialized Local District</th>
<th>Representative Name, Title, Contact Information</th>
<th>2020 Participation (Yes/No/Invited)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benchland Water Improvement District</td>
<td>Jennifer Holbrook, Clerk <a href="mailto:jenniferh@benchlandwater.com">jenniferh@benchlandwater.com</a></td>
<td>Invited - No Response</td>
</tr>
<tr>
<td>Central Davis Sewer District</td>
<td>Susan Holmes, Board Chair <a href="mailto:cdsewer@gmail.com">cdsewer@gmail.com</a></td>
<td>Invited - No Response</td>
</tr>
<tr>
<td>Davis School District</td>
<td>Craig Carter, Assistant Superintendent <a href="mailto:ccarter@dsdmail.net">ccarter@dsdmail.net</a></td>
<td>Invited - No Response</td>
</tr>
</tbody>
</table>
### Stakeholder Participation - Davis Co PDMP

Please add comments by typing directly into the document. Your changes will be saved automatically.

<table>
<thead>
<tr>
<th>Specialized Local District</th>
<th>Representative Name, Title, Contact Information</th>
<th>2020 Participation (Yes/No/Invited)</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Red Cross - Utah</td>
<td>Kristy Denlein <a href="mailto:kristy.denlein@redcross.org">kristy.denlein@redcross.org</a></td>
<td>Invited - No Response</td>
</tr>
<tr>
<td>Davis Chamber of Commerce</td>
<td><a href="mailto:info@davischamberofcommerce.com">info@davischamberofcommerce.com</a></td>
<td>Invited - No Response</td>
</tr>
<tr>
<td>Davis Hospital and Medical Center</td>
<td><a href="mailto:DHMC.Media@steward.org">DHMC.Media@steward.org</a></td>
<td>Invited - No Response</td>
</tr>
<tr>
<td>Dominion Energy</td>
<td><a href="mailto:Corporate.communications@dominionenergy.com">Corporate.communications@dominionenergy.com</a></td>
<td>Invited - No Response</td>
</tr>
<tr>
<td>Intermountain Layton Hospital</td>
<td><a href="mailto:contactus@imail.org">contactus@imail.org</a></td>
<td>Invited - No Response</td>
</tr>
<tr>
<td>Lakeview Hospital</td>
<td>William Jensen, Public Information Officer <a href="mailto:William.Jensen@Mountainstarhealth.com">William.Jensen@Mountainstarhealth.com</a></td>
<td>Invited - No Response</td>
</tr>
</tbody>
</table>

**Table G.3: Invited Nongovernmental Organizations**

<table>
<thead>
<tr>
<th>Specialized Local District</th>
<th>Representative Name, Title, Contact Information</th>
<th>2020 Participation (Yes/No/Invited)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davis and Weber Counties Canal Company</td>
<td>Scott Paxman, President <a href="mailto:office@davisweber.org">office@davisweber.org</a></td>
<td>Invited - No Response</td>
</tr>
<tr>
<td>Hill Air Force Base</td>
<td>Barbara Fisher, Public Information Officer <a href="mailto:barbara.fisher.1@us.af.mil">barbara.fisher.1@us.af.mil</a></td>
<td>Invited - No</td>
</tr>
<tr>
<td>North Davis Fire District</td>
<td>Misty Rogers, Clerk <a href="mailto:mrogers@nofires.org">mrogers@nofires.org</a></td>
<td>Invited - No Response</td>
</tr>
<tr>
<td>North Davis Sewer District</td>
<td>M. Andy Dawson, Board Chair <a href="mailto:IT@NDSD.org">IT@NDSD.org</a></td>
<td>Invited - No Response</td>
</tr>
<tr>
<td>South Davis Metro Fire</td>
<td>Dane Stone, Fire Chief <a href="mailto:dstone@sdmetrofire.org">dstone@sdmetrofire.org</a></td>
<td>Invited - No Response</td>
</tr>
<tr>
<td>South Davis Sewer District</td>
<td>Susanne Monsen <a href="mailto:sm@sdsd.us">sm@sdsd.us</a></td>
<td>Invited - No Response</td>
</tr>
<tr>
<td>Utah Transit Authority (UTA)</td>
<td>Kerry Koane, Planning Manager <a href="mailto:kdoane@rideuta.com">kdoane@rideuta.com</a></td>
<td>Invited - No Response</td>
</tr>
<tr>
<td>Weber Basin Water Conservancy District</td>
<td>Sherrie Mobley, Clerk <a href="mailto:smobley@weberbasin.com">smobley@weberbasin.com</a></td>
<td>Invited - No Response</td>
</tr>
</tbody>
</table>
Stakeholder Participation - Davis Co PDMP

*Please add comments by typing directly into the document. Your changes will be saved automatically.*

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Email Address</th>
<th>Invited - Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rocky Mountain Power</td>
<td><a href="mailto:CCCCom2@pacificorp.com">CCCCom2@pacificorp.com</a></td>
<td>Invited - No Response</td>
</tr>
<tr>
<td>South Davis Community Hospital</td>
<td><a href="mailto:info@sdch.com">info@sdch.com</a></td>
<td>Invited - No Response</td>
</tr>
</tbody>
</table>

**Stakeholder Engagement Tools**

As mentioned in Part III, the development of this plan was conducted during the 2020-2021 Covid-19 pandemic, so online interaction was the preferred method. In order to compensate for this, the initiative website was modified in a way that helped ensure that all jurisdictions had access to the information that was being requested and generated. Each jurisdiction was given a specified place to get and submit information. This ensured that each stakeholder had the same access to the information presented during meetings, even if they were unable to attend in-person meetings.

Screen Capture of the "assignment pages" on the secured section of the initiative website. Stakeholders were provided specific instructions and individual folders to upload their response materials.
Communication was also facilitated with the use of shared Google Docs (see example below). Each part of the plan was digitized into this format, and links were shared with stakeholders who were able to make tracked comments directly into the text. These comments were reviewed and incorporated by the core planning team throughout the initiative. The public was also given access to do the same during the public comment period.

Typical Meeting Agenda for Core Planning Team

The Core Planning Team consists of Davis County Emergency Management and Rural Community Consultants to discuss updates and plans for future assignments (e.g. goals, timelines/ deadlines, etc). Due to the fact that the plan was ongoing with many stakeholders working to move forward, the agenda
for these items remained relatively unchanged throughout the process. Listed are dates of the Core Planning Team meetings along with an example of the running agenda:

- Progress reports
  - Assignment from last meeting
  - Engagement from stakeholders
  - New mapping and current hazard identification
  - Research, how to complete assignments to FEMA standards
- Goals (county and city both current plan related and updates from 2016 plan and progress)
- Public involvement + website development
  - Upcoming timelines and deadlines
  - Upcoming action items for stakeholders

### Table G.4: Dates and Agenda of Core Planning Team Meetings

<table>
<thead>
<tr>
<th>Date</th>
<th>Unique Agenda Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020.11.11</td>
<td>Design stakeholder assignments #1 and #2.</td>
</tr>
<tr>
<td>2021.01.06</td>
<td>n/a</td>
</tr>
<tr>
<td>2021.02.23</td>
<td>Feedback on draft to-date (parts 1-4).</td>
</tr>
<tr>
<td>2021.03.05</td>
<td>Design stakeholder assignment #3.</td>
</tr>
<tr>
<td>2021.03.07</td>
<td>Review stakeholder assignment #4.</td>
</tr>
<tr>
<td>2021.04.01</td>
<td>Outline stakeholder assignment #5.</td>
</tr>
<tr>
<td>2021.04.27</td>
<td>Design stakeholder assignment #6.</td>
</tr>
<tr>
<td>2021.05.26</td>
<td>n/a</td>
</tr>
<tr>
<td>2021.07.07</td>
<td>Lessons learned from BRAG PDM.</td>
</tr>
<tr>
<td>2021.08.04</td>
<td>Requirements for updated storymap content.</td>
</tr>
<tr>
<td>2021.08.26</td>
<td>n/a</td>
</tr>
<tr>
<td>2021.09.30</td>
<td>Discuss State feedback.</td>
</tr>
<tr>
<td>2021.10.01</td>
<td>Progress of State Comment Revisions</td>
</tr>
<tr>
<td>2021.10.04</td>
<td>Progress of State Comment Revisions</td>
</tr>
</tbody>
</table>
**Stakeholder Meeting Attendance**

Due to the disruptive nature of the pandemic, in-person attendance was difficult. The following information illustrates the major contact points related to the meetings and assignments related to the PDM project.

**One-on-One Meetings**

In order to help maintain the project and to keep communities engaged, one on one meetings were held between Davis County Emergency Management and various cities. During these meetings, we discussed various aspects of the Planning Process, including progress on tasks, goals, deadlines, ideas to incorporate, etc.

<table>
<thead>
<tr>
<th>Date</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021.01.11</td>
<td>Clearfield / Davis County EM</td>
</tr>
<tr>
<td>2021.01.26</td>
<td>Fruit Heights / Davis County EM</td>
</tr>
<tr>
<td>2021.02.01</td>
<td>Farmington / Davis County EM</td>
</tr>
<tr>
<td>2021.04.20</td>
<td>Davis, Weber, and Morgan County</td>
</tr>
<tr>
<td>2021.06.23</td>
<td>Bountiful, Centerfield, Kaysville, West Bountiful, Woods Cross / Davis County EM</td>
</tr>
<tr>
<td>2021.06.24</td>
<td>Clear Field, Layton, NSL, South Weber, Sunset, Syracuse/ Davis County EM</td>
</tr>
<tr>
<td>2021.10.06</td>
<td>Bountiful, Centerfield, Clearfield, Clinton, Farmington, Fruit Heights, Kaysville, Layton, North Salt Lake, South Weber, Sunset Syracuse, West Bountiful, West Point, Woods Cross / Davis County EM</td>
</tr>
</tbody>
</table>
## Stakeholder Participation Log

### Appendix G - Stakeholder Participation

| Meetings - Assignments                  | Davis County | Bountiful | Centerville | Clearfield | Clinton | Farrington | Fruit Heights | Hayville | Layton | Lehi | Limon | Logan | North | Ogden | Riverton | Salt Lake | South | Spanish Fork | Spanish Fork East | South Salt Lake | South Jordan | Springville | Stansbury Park | Tooele City | Tooele County | Utah Lake | Utah Valley | Utah's West Valley | Utah's West Valley East | Utah's West Valley South |  
|----------------------------------------|--------------|-----------|------------|------------|---------|------------|--------------|----------|--------|------|-------|-------|-------|-------|-------|---------|-----------|-------|-------------|----------------|----------------|---------------|-------------|---------------|---------------|-------------|----------------|-----------|-------------|------------------|------------------|----------------|
APPENDIX H - STAKEHOLDER SUPPORT

Participating Jurisdictions

As mentioned previously in Part II, those municipalities with staff resources provided support for the Davis County Pre-Disaster Mitigation initiative in 2020-2021. The following links will provide the locally-adopted resolutions of support for the project as well as their concurrence of the final.

<table>
<thead>
<tr>
<th>Municipality</th>
<th>2021 Participation</th>
<th>Support Resolution Date (+ link)</th>
<th>Adoption Resolution Date (+ link)</th>
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<tbody>
<tr>
<td>Bountiful</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Centerville</td>
<td>Yes</td>
<td>February 17, 2021</td>
<td></td>
</tr>
<tr>
<td>Clearfield</td>
<td>Yes</td>
<td>March 23, 2021</td>
<td></td>
</tr>
<tr>
<td>Clinton</td>
<td>Yes</td>
<td>March 9, 2021</td>
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<tr>
<td>Farmington</td>
<td>Yes</td>
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<td>Fruit Heights</td>
<td>Yes</td>
<td>March 2, 2021</td>
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<td>Kaysville</td>
<td>Yes</td>
<td>February 18, 2021</td>
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<tr>
<td>Layton</td>
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</tr>
<tr>
<td>North Salt Lake</td>
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<td>March 21, 2021</td>
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<tr>
<td>South Weber</td>
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<td></td>
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<tr>
<td>Sunset</td>
<td>Yes</td>
<td></td>
<td></td>
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<tr>
<td>Syracuse</td>
<td>Yes</td>
<td>March 23, 2021</td>
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<tr>
<td>West Bountiful</td>
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<tr>
<td>West Point</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Woods Cross</td>
<td>Yes</td>
<td>February 16, 2021</td>
<td></td>
</tr>
</tbody>
</table>
Sample Resolution of Support for the Initiative

The following language was provided to local emergency managers. They were asked to convert it into the format of their municipal resolutions. Copies of enacted resolutions were sent back to the PDM planning team.

//date//

WHEREAS the health, safety and welfare of the citizens of ___jurisdiction___ are matters of paramount importance to the City Council; and

WHEREAS the ___jurisdiction___ City Council recognizes the threat that natural hazards pose to people and property within their jurisdiction; and

WHEREAS, the Federal Emergency Management Agency (“FEMA”) has required that municipalities review and revise their local multi-hazard mitigation plan every five years to reflect changes in development, progress in local hazard mitigation efforts, and changes in mitigation priorities and submit their revised multi-hazard mitigation plan for review and approval by FEMA to remain eligible for pre-disaster mitigation grant funding; and

WHEREAS the Emergency Services Division of Davis County has received a grant from FEMA to prepare a multi-jurisdictional hazard mitigation plan in accordance with the requirements of 44.C.F.R. 201.6 and the FEMA “Local Mitigation Planning Handbook”; and

WHEREAS these requirements include obtaining formal resolutions of participation and support from stakeholder jurisdictions.

NOW THEREFORE, BE IT RESOLVED that the City Council of ___jurisdiction___ hereby intends to support the Plan update initiative by participating with the committee intended to develop revisions and updates to the Davis County Pre-Disaster Mitigation Plan.

This Resolution shall take effect upon passage.

//s//
Sample Resolution of Support for Adoption of the 2021 PDM

The following language was provided to local emergency managers. They were asked to convert it into the format of their municipal resolutions. Copies of enacted resolutions were sent back to the PDM planning team.

RESOLUTION NO.________


(Name of Jurisdiction)
(Governing Body)
(Address)

WHEREAS, President William J. Clinton signed H.R. 707, the Disaster Mitigation and Cost Reduction Act of 2000, into law on October 30, 2000; and,

WHEREAS, the Disaster Mitigation Act of 2000 requires all jurisdictions to be covered by a Pre-Disaster Hazard Mitigation Plan to be eligible for Federal Emergency Management Agency post-disaster funds; and,

WHEREAS, the Natural Hazard Pre-Disaster Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the City is within Davis County and participated in the update of the multi-jurisdictional Plan, the Natural Hazard Pre-Disaster Mitigation Plan; and,

WHEREAS, the City is a local unit of government that has afforded its citizens an opportunity to comment and provide input in the Plan and the actions in the Plan; and,

WHEREAS, the City is concerned about mitigating potential losses and has determined that it would be in the best interest of the community to adopt the Natural Hazard Pre-Disaster Mitigation Plan;

NOW THEREFORE, BE IT RESOLVED by the City Council that the City adopts the 2021 Davis County Natural Hazard Pre-Disaster Mitigation Plan Update as this jurisdiction’s Multi-Hazard Mitigation Plan.

ADOPTED this XX day of XX, 2021 at the meeting of the City Council.

Signed: (Chief Elected Official)
(City Council)