

## **SECTION 3: PLANNING PROCESS**

## TOOELE COUNTY PDMP PLANNING PROCESS

This mitigation plan is the result of a comprehensive and coordinated planning process. Beyond the involvement of the general public, a great deal of effort focused on coordinating and obtaining input from the 14 incorporated and non-incorporated communities in Tooele County. All 14 jurisdictions in the county were invited to participate in the planning process, as well as other interested parties including the general public. Representatives of local communities that were not able to attend working group meetings often participated in other ways including surveys or through personal communications via telephone or e-mail.

### How The Plan Was Produced and Project Staff

Tooele County staff was primarily responsible for the management and oversight of the plan update process and provided guidance throughout the planning process. Staff acted as major points of contact and a liaison for major stakeholders, scheduled meetings, invited stakeholders to all of the meetings, helped to gather local data and natural hazards information, assisted with local promulgation of the plan, and additional administrative duties.

**Table 5:** Stakeholder Meetings

Bucky Whitehouse, Tooele County Emergency Services Director, was the project manager and served as the primary contact for local governments and other stakeholders. Beckie Boekweg, Tooele County Emergency Services staff, served as an additional contact for stakeholders, project administration, and provided assistance preparing for and holding stakeholder meetings.

Planning staff at Bear River Association of Governments was hired by Tooele County to update the plan, including, but not limited to, updating all necessary data, GIS analysis and mapping, potential losses, document natural hazards and events for each community (if available), and record mitigation strategies for each community. BRAG staff also presented at local meetings, recorded all community and public input, submitted the plan to the State of Utah and FEMA for review, and, following any necessary edits, submitted the plan for final approval by FEMA.

Zac Covington, Sr. Regional Planner with BRAG, served as the primary contact with the County and managed the plan update under the county’s direction. He managed document updates, provided guidance on GIS and potential loss analyses, and all other elements of the update process under the direction of Tooele County Emergency Services personnel.

COUNTYWIDE MEETINGS - TOOELE COUNTY PDMP UPDATE			
Meeting	Date	Location	Invitees
Countywide Kick-off Mtg.	5/26/15	Tooele County Emergency Operations Center	Elected officials, staff, state and federal agencies, transit providers, emergency managers, planners, and other stakeholders
Countywide RiskAssessment Mtg.	8/18/16	Tooele County Emergency Operations Center	Elected officials, staff, state and federal agencies, transit providers, emergency managers, planners, and other stakeholders
Countywide Mitigation Strategies Mtg.	11/10/15	Tooele County Emergency Operations Center	Elected officials, staff, state and federal agencies, transit providers, emergency managers, planners, and other stakeholders
Countywide Pre-Adoption/DRAFT Plan Mtg.	3/15/16	Tooele County Emergency Operations Center	Elected officials, staff, state and federal agencies, transit providers, emergency managers, planners, and other stakeholders
OTHER MEETINGS WITH LOCAL COMMUNITIES (Attended by Tooele County EM Staff)			
Meeting		Date	
Stockton Town Council		4/9/15	
Vernon Town Council		8/11/15	
Stockton Town Council		8/13/15	
Wendover Town Council		8/20/15	
Rush Valley Town Council		8/26/15	
Ophir Town Council		9/1/15	
Stockton Town Council		3/25/16	

\* Please see Appendix H for detailed agenda's and attendance lists for the countywide Tooele County PDMP update meetings.

Landon Profaizer, Regional Planner at BRAG, was responsible for GIS analyses and mapping, provided critical input on potential loss methodology, wrote several sections of the plan, helped formulate the planning process, and created the template for this document.

Planning Intern, Zach Maughan, managed initial GIS databases, performed preliminary potential loss analysis and natural hazards mapping, served as project contact for the county early in the process, and gave presentations at several stakeholder meetings.

Planning Interns Bryan Wilson and Joseph Nielson provided critical assistance with potential losses, spreadsheet management, data entry, and calculations, writing community potential loss and other document sections, processing survey data, and other project elements as needed.

A county working group was created to provide guidance, input, and technical assistance throughout the planning process. This working group was primarily composed of emergency management personnel, elected officials, public works staff, planners, federal and state agencies, citizens, and others representing jurisdictions in Tooele County.

### Meetings Summary

Table 1 shows all of the countywide meetings for this plan update, including the kick-off, local risk assessment, mitigation, and pre-adoption meetings:

### Planning Meetings and Public Outreach

A regional kick-off meeting was held on June 8, 2015. This meeting was intended to introduce stakeholders to the planning process, provide a project timetable, explain requirements for the plan, and to outline responsibilities for attendees, elected officials, emergency management staff, state and federal agencies, and others.

Those attending were chosen because of their past and present involvement in emergency and city/county emergency and general planning and/or management.

A newspaper article was published by the local Tooele Transcript, announcing completion of the draft plan, and soliciting comments from local residents and interested parties. See **Appendix E** for a copy of the newspaper announcement.

Letters and e-mails were also sent to each jurisdiction in the region, notifying them of the plan update process and inviting them to participate.

The county working group helped determine where current hazards were located and risks identified (in addition to current GIS data). They also gave input on existing critical facilities and infrastructure, explored mitigation strategies, and determined issues and needs to be addressed by this plan update (see attendance lists in **Appendix H** for dates, locations, and attendance for countywide meetings). Mayors, emergency managers, public works staff, state and federal government agencies, local Chambers of Commerce, planners, and other interested citizens were invited to be a member of the working group. The public, through public service announcements, were also invited to participate.

The county risk assessment meeting was held on August 18, 2015, and was intended to give attendees the opportunity to discuss known hazards in the county or their municipality, severity of the hazards, history of past hazard events, hazard mapping details, and resources of local knowledge regarding the hazards. In-house Geographic Information Systems (GIS) mapping was utilized by BRAG staff for creating maps of known natural hazards, critical facilities, and local infrastructure. Surveys were also passed out to attendees to fill out during the meeting. For those not able to attend, surveys were mailed to each jurisdiction. Included were questions regarding current know natural hazards, previous disaster events, National Flood Insurance Program participation, and other questions related to risk assessment.

It was important that jurisdictions were encouraged to help lead the process for writing the plan as much as possible, which they would be adopting and implementing in the future. The public and other organizations had ample

opportunity to be involved as desired through newspaper announcements, and word of mouth. As always, while word of mouth, letters, e-mails, and newspapers reach the vast majority of organizations and the general public in Tooele County, it may be advantageous to reach out more directly to different groups during the next plan update. Other organizations which could be invited to be involved in the next plan update process are special service districts (including school districts and conservation districts), canal and utility companies, the Utah Department of Transportation (UDOT), Utah Transit Authority, and others.

After hazard types and locations were determined for each jurisdiction and presented to the group, a countywide mitigation strategies meeting was held on November 10, 2015. Several natural hazards specialists gave presentations on the most probable future hazard events in the county, including earthquake, landslide, flood, and wildfire. These specialists shared local and regional examples of destructive natural hazard events, and gave recommendations on what types of mitigation strategies would be appropriate for those particular hazards. Attendees were also provided with FEMA’s Mitigation Ideas booklet, lists of mitigation strategies from 2008 as a reference for strategy updates, and a mitigation strategies survey. This survey provided an opportunity for communities to document which strategies they wanted to include in the plan.

The final meeting was a countywide Draft Plan Presentation and Pre-Adoption Meeting held on March 15, 2016. At this meeting, the draft plan was presented, and adoption of the plan was

discussed. A public comment period began on April 1, 2016 ending on April 30, 2016, and was announced in local newspapers countywide.

Draft Review

After the draft plan was completed and presented at the countywide pre-adoption meeting, a link for the plan was placed on the Tooele County Emergency Services website at [www.tcem.org](http://www.tcem.org). A digital copy was also sent to the Utah Division of Emergency Management (Utah DEM) with a completed crosswalk for a pre-draft review. At the same time, public notices were published in local newspapers announcing a 30-day public comment period and the plan’s location on the Tooele County Emergency Services website. Communities and working group members were also notified of the comment period and location of the draft plan online.

After all the necessary changes were made to the draft plan, and after the public comment period, the plan was sent to FEMA for review. After FEMA revisions were made, those sections of the plan which were updated were sent back to FEMA for final approval. Copies of the plan were then sent to each community and County in the region, with an example promulgation form. Copies of signed promulgation forms from each participating jurisdiction in the region were then sent to Utah DEM, and, in turn, to FEMA.

**Table 6:** Natural Hazards in Tooele County

<b>NATURAL HAZARDS IN TOOELE COUNTY</b>	
<b>Natural Hazards Analyzed Utilizing GIS (GIS Data Available)</b>	<b>Other Natural Hazards Included in the Plan</b>
<b>Dam Failure</b>	<b>Avalanche</b>
<b>Faults</b>	<b>Tornado</b>
<b>Wildfire</b>	<b>Tsunami</b>
<b>Flood (FEMA 100-yr)</b>	<b>Volcanic</b>
<b>Flood (NRCS Soils)</b>	<b>Radon</b>
<b>Liquefaction</b>	<b>Severe Weather</b>
<b>Landslide</b>	<b>Drought</b>
<b>Slope</b>	<b>Agricultural</b>
<b>High Water Table (NRCS Soils)</b>	
<b>Unsuitable Soils for Buildings (NRCS Soils)</b>	

Hazard Identification

Hazards were identified and evaluated for inclusion in this plan based on historical review of past events, synthesis of existing reports, data and hazard mapping analysis, and input from local level emergency management personnel, planners, and other community officials. Consideration for inclusion was based on the likelihood of a hazard’s occurrence, location of the occurrence and the potential impact of the event in terms of its effect on human life and property (See Table 6 above).

This list on the left side of the table includes those natural hazards that were analyzed utilizing Geographic Information Systems (GIS).

However, there are several other hazards that were discussed during the planning process in less detail due to a lack of data or a lack of historical evidence showing substantial risk to the jurisdictions in the region. Some hazards were also not discussed in detail in this plan because they are not natural hazards, which are what this plan mainly focuses on, with the understanding that those non-natural hazards should still be planned for by jurisdictions. This table includes a comprehensive list of all the hazards discussed with local stakeholders throughout this process, including those that were analyzed using GIS.

HAZARD LAYERS INCLUDED IN ANALYSIS	
Dam Failure	Faults (Fault Rupture zones and buffered Quaternary faults)
FEMA Flood Zone	Flood (NRCS Soils)
Liquefaction	Landslides
Steep Slopes	Wildfire
High Water Table (Soils)	Unsuitable Soils (Bldgs)

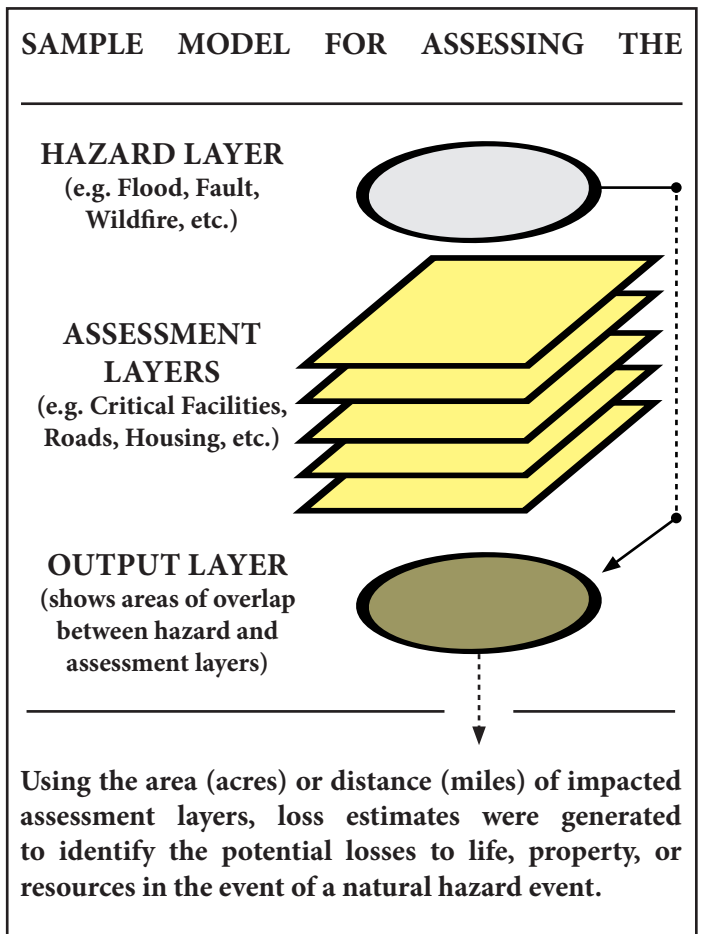
ASSESSMENT LAYER CATEGORIES	
Agriculture	Critical Facilities
Environment/Recreation	Infrastructure
Population	
See <b>Appendix F</b> for a complete list of risk assessment layers and data sources used in the analysis.	

Summary of Risk Assessment Methodology

(See **Appendix C** for more detailed information)

**Assessing Hazard Impacts**

The risk assessment analysis for this plan was completed using Geographic Information Systems (GIS) software developed by Environmental System Research Institute (ESRI). Spatial layers were obtained from a number of sources throughout the planning process that include the Utah Automated Geographic Reference Center (AGRC), subject matter experts at workshops or meetings, and various local municipal or county planners or technical specialists. Once all the necessary hazard and assessment layers were obtained, ArcGIS Modelbuilder was used to organize and process the necessary spatial tools to identify resources that may be impacted by future hazard events.



The first step in the modelling process includes the acquisition and preparation of all available hazard layers. Once hazard layers are identified and organized by county, assessment layers are organized by category and added to the model to identify areas of overlap with each of the hazard layers. When the model is complete and processed, the resulting layers reveal all potential spatial or geographic threats to persons, property, or resources in the entire region that were included in the analysis.

After all the output layers are generated, and all layers and features affected by hazards are identified, everything is then clipped to each jurisdiction in the region, and loss estimate tables are generated using the area or distance measurements of affected features for each community.

#### Estimating Losses From Natural Hazards

With the output layers organized by community, the planning team uses layer information, along with other data sources to develop risk and value/loss tables for each of the five assessment layer categories that include:

- Population
- Critical Facilities
- Infrastructure
- Environmental/Recreational
- Agriculture

#### ***Population***

The population table includes risk to people, as well as value and loss estimates for commercial and residential structures. In order to identify potentially impacted structures, Assessor/ GIS tables are filtered to extract Residential vs. Commercial parcels in the region. Structures are then assessed for their overlap or intersection with potential hazards through the modelling process previously described. Following this step, BRAG then used the land and structure Current Market Values associated with the Assessor file to assign loss estimates to structures threatened by hazards. BRAG also developed a Potential Revenue Loss

column to identify economic impacts to businesses in the event of a natural hazard. These figures are based on average sales, receipts, or value of shipments of firms with or without paid employees per firm (\$642,261 per firm). This information is derived from US Census Bureau and surveys of local/regional business owners.

With residential structures identified from the modelling process, BRAG then assigned population values to all threatened homes. These figures were derived from the 2013 American Community Survey using the average persons per household density estimate that varied slightly by county.

#### **Critical Facilities**

Critical facilities are identified from multiple data sources including: Utah AGRC, UDOT, Utah Division of Water Resources, and public and community leader input. Hazard layers are overlaid onto all critical facilities layers in the modelling process to show spatial intersection or overlap, and are then summarized in the associated community risk assessment table. Features assessed for hazard risk in this category include:

- Emergency Services/Law Enforcement
- Schools/Public Facilities
- Health Care Facilities
- Places of Worship
- Infrastructure (Bridges, Broadband Anchors, Dams, Springs, Fuel Storage, Solid Waste Facilities, and others based on location)

#### ***Infrastructure***

This category includes layers from a combination of local, state, and private entities. Infrastructure layers are first overlaid by hazard layers in the risk assessment model. The overlapping areas are then clipped out and a distance measurement is calculated for all the affected portions of linear infrastructure. Once the affected infrastructure sections are summarized, cost estimates for repair or replacement are then applied to assess the economic impact of each hazard type. Cost estimates are from a variety of

TOOELE COUNTY PDMP RISK ASSESSMENT LAYERS						
RESIDENTS AND PROPERTY	Residential Units at Risk			Commercial Units at Risk		
CRITICAL FACILITIES	Emergency Services/Law Enforcement	Schools/Public Facilities	Health Care Facilities	Places of Worship	Infrastructure (Oil/Gas Wells, Water System Facilites)	Hazardous Waste Facilities
INFRASTRUCTURE	Railroad Lines	Natural Gas Lines	Electrical Power lines	Roads	Canals	
AGRICULTURAL AMENITIES	Agriculturally Productive Lands		Grazing Allotments		Farm Land of Statewide Importance	
ENVIRONMENTAL AND RECREATIONAL AMENITIES	Wetland/ riparian	Lakes	Streams	Parks	Trails/Amenities	

**Table 7:** Tooele County PDMP Risk Assessment Layers

sources including prior planning documents or studies, utility providers, and county public works personnel.

Features assessed in the infrastructure category include:

- Railroad Lines
- Natural Gas Lines
- Electrical Power Lines
- Roads
- Canals

***Environmental/Recreational***

This category includes several environmental and recreational layers from multiple data sources including: Utah AGRC, US Fish and Wildlife Service, US Forest Service, US Geological Survey, Utah Division of Water Resources, and public and community leader input.

All layers were loaded in the risk assessment model and overlaid by hazards. With areas at risk identified, BRAG calculated the area or length of impacted features and summarized the results in the community risk assessment table. Features included in the Environmental/Recreational category are:

***Environmental***

- Wetlands

- Riparian Areas

- Lakes

- Streams

Recreational

- Parks

- Trails

- Outdoor Amenities

**Agriculture**

The final risk assessment category includes features associated with agricultural land and/or the historic and cultural resources associated with the history of farming in the region. Data sources for agricultural layers include: Utah Division of Water Resources, Utah AGRC, and BRAG.

All layers were loaded in the risk assessment model and overlaid by hazards. BRAG calculated the area and number of affected features and summarized the results in the community risk assessment table. Features included in the Agriculture category include:

- Agriculture Production (producing lands)
- Grazing Lands

### Incorporation of Existing Plans, Studies, Reports, and Technical Information

While there have been many documents produced locally and regional in regards to hazards and reducing loss of life and property, most are emergency response and/or management, and do not specifically apply to pre-disaster mitigation. Federal, State, and local government documents have been written for many of the jurisdictions in the region. FEMA and the Utah Division of Emergency Management have both produced some excellent documents which can be used as a resource for natural hazards planning and pre-disaster mitigation. Many local governments address natural hazards on some level in their General Plan or in local land use ordinances. Some of the more recent documents incorporated as part of the planning process and used for general background information are as follows:

- Christenson, G.E., and Harty, K.M. (1988). Flood Hazard from Lakes and Failure of Dams in Utah. Utah Geological Survey. Map 111. Utah Department of Natural Resources.
- FEMA. G 318 Local Mitigation Planning Workshop Student Manual. 2014.
- FEMA. Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards, 2013.
- Floodplain Management in Utah; Quick Guide, 2003
- Public Safety Canada. All Hazards Risk Assessment Methodology Guidelines, 2012 - 2013.
- Southeastern Utah Association of Local Governments. Natural Hazards: Pre-Disaster Mitigation Plan for the Southeastern Region of Utah, 2013
- State of Utah Division of Emergency Management. State of Utah Hazard Mitigation Plan, 2014
- State of Utah, Division of Forestry, Fire and State Lands. Catastrophic Wildfire Reduction Strategy. 2012/2013
- Utah Floodplain and Stormwater Management Association. Floods: What You Should Know When Living in Utah, 2013.
- Utah Geological Survey, Guidelines for Evaluating Surface-Fault Rupture Hazards in Utah, 2003
- Utah Geological Survey. (1999). Geology and Geologic Hazards of Tooele Valley and the West Desert Hazardous Industry Area, Tooele County, Utah. Special Study 96. Utah Department of Natural Resources.
- Utah Governor's Office of Management and Budget. Utah 2012 Baseline Report
- Utah Natural Hazards Handbook, 2008
- Wasatch Front Regional Council. (2008). Natural Hazard Pre-Disaster Mitigation Plan.