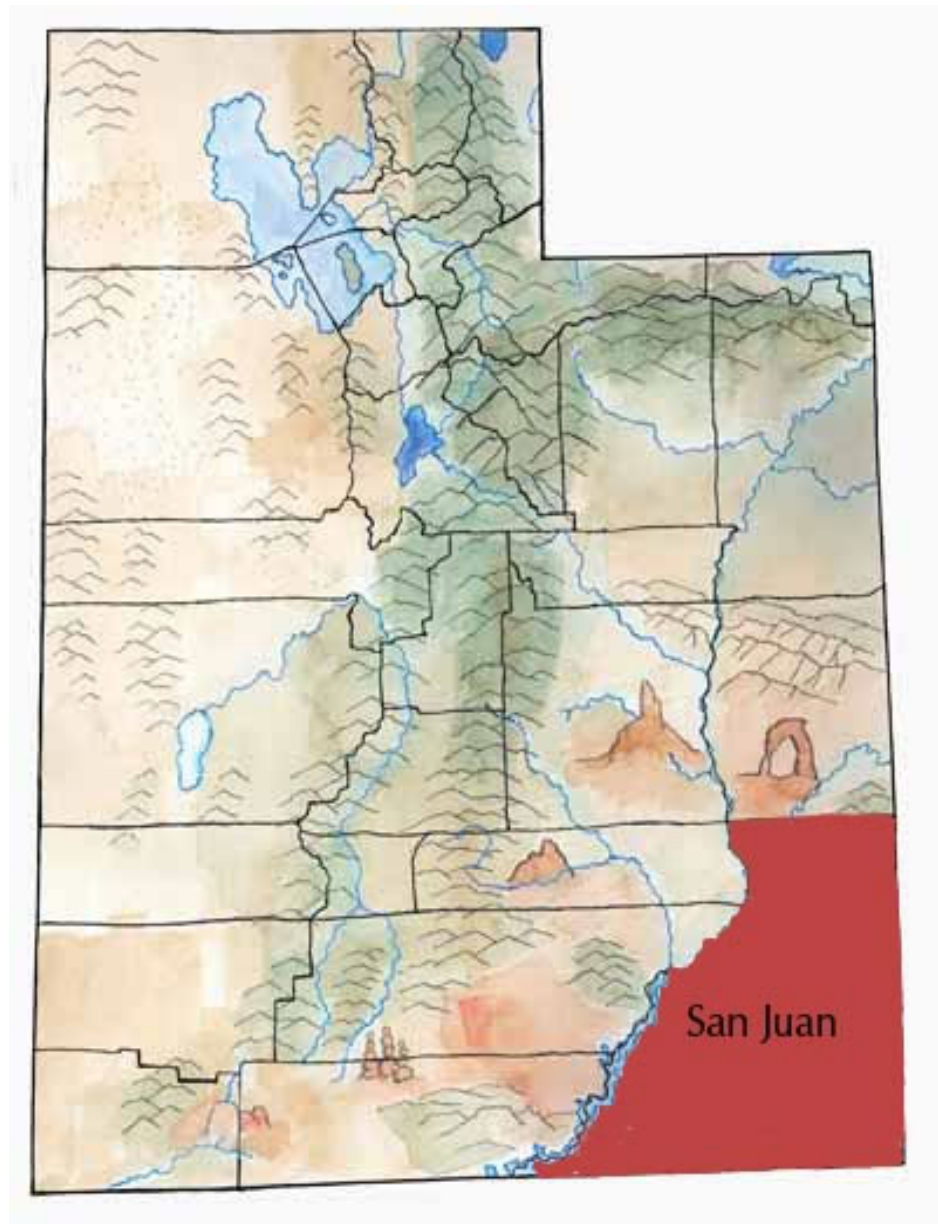


# San Juan County Pre-Disaster Hazard Mitigation Plan 2018



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

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# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

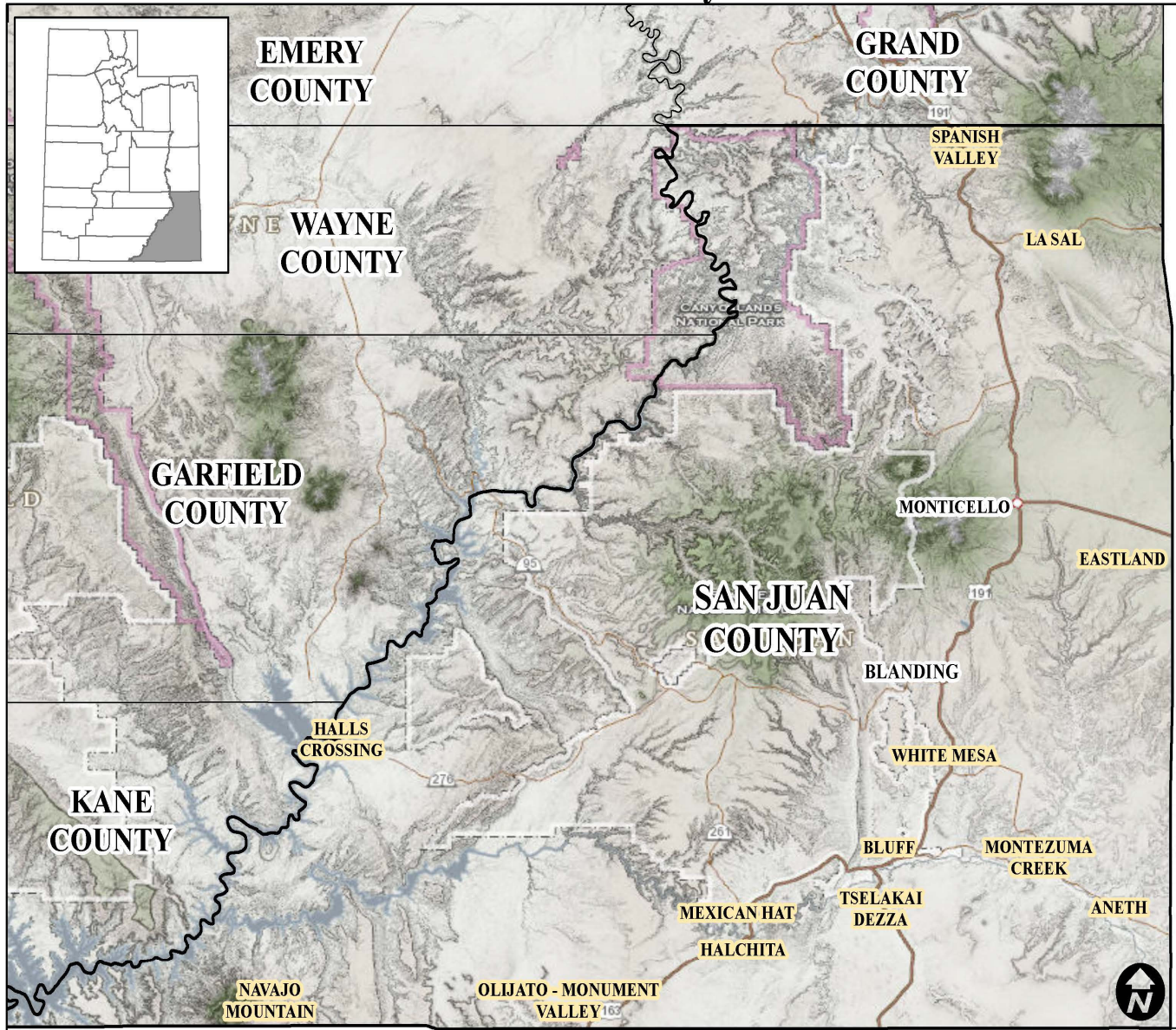
## **San Juan County**

Founded in 1880, San Juan County is famous for its beautiful scenery of plateaus and desert scenes. The county is located as part of the famous Four Corners area, in the southeastern region of The State of Utah. While tourism is growing, the county depends on the government for jobs. Compared with a state average of 17 percent government employment, more than four in 10 jobs in the county derive from government entities (including education). San Juan County is home to the Utah branch of the Navajo Nation and helps explain why Native Americans account for 47 percent of the population of the county, making it one of the most diverse counties in the state. (Utah Workforce Services 2017, Homefacts Dec. 2017)

San Juan County has three incorporated municipalities, Monticello, Blanding and Bluff. Non-incorporated communities are listed from north to south include Spanish Valley, La Sal, Eastland, Cedar Point, White Mesa, Aneth, Montezuma Creek, Mexican Hat-Halchita, Oljato-Monument Valley, Halls Crossing and Navajo Mountain. (Utah's Canyon Country Map, 2017)

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County



Data from AGRC. Map created by Utah Division of Emergency Management, Nov. 2017.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Below is a quick reference of San Juan County's past, present and future Mitigation projects

Date Started	Project Name and Brief Description	Project Status
2018-2019	Create Defensible Space. To Mitigate damage to the Communication Tower on Abajo Peak, Cedar Mesa and Colorado Communication Sites	Proposed
2019-2021	Groom watershed of dead and down vegetation. To mitigate damage to the Monticello Watershed on Abajo Mountain	Proposed
2018	Create Defensible Space. To Mitigate damage to homes within the county that are in the wildland interface	Ongoing
2018-2020	To Mitigate Damage to Home owners due to flooding. Create outreach documents for Flood Awareness and Insurance	Proposed
2018-2020	Prepare a brochure for earthquake awareness. To Mitigate loss due to earthquakes	Proposed
2018-2020	Promote drought awareness. Mitigate loss due to drought	Proposed
2015	Wildland Fires Provide fire breaks around residences and commercial business. Blade Fire breaks as needed.	Ongoing
2015	To provide expansion of suitable storage space for the accessibility during emergency situations	Completed
2014-2018	San Juan County MBA purchase Fire Equipment	On going

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

2014-2018	San Juan Conservancy will conduct improvements to Dry Wash Dam	Completed
2014-2018	Promote flood insurance throughout the County	Ongoing
2014-2018	Bluff Service Area will update the Storm and Flood Water infrastructure.	Ongoing
2014-2018	Blanding City will upgrade and make appropriate repairs to the sewer collection line.	Ongoing, should be completed Summer 2018
2014-2018	San Juan Conservancy will update the Dry Wash Reservoir.	Completed
2014-2018	Spanish Valley SSD will conduct a Water and Sewer Study	Completed
2014-2018	Blanding City will Repair and Upgrade the Sewer Collection Line	Ongoing, should be completed Summer 2018
2014-2018	Monticello City will replace water and sewer lines	Ongoing
2014-2018	Spanish Valley Water SSD will take on Water and Sewer Projects	Ongoing
2014-2018	San Juan Conservancy will make improvements to the Dry Wash Dam. To mitigate potential leakage that causes the limitation of possible flooding due to dam breakage.	Completed
2014	Dry Wash Improvements. Enlargement and safety improvements for the dam and reservoir	Completed
2014	Reduce potential of landslides on county and state highways. Removal of material, placement of	Ongoing

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

	larger culverts, re-routing of existing highways.	
2014	Establish agreements for emergency shelters. Develop public information on dam failure to include evacuation routes and sheltering plans	Ongoing
2014	Public Awareness Earthquake. Conduct public awareness campaign	Ongoing
2014	Use several ways in educating the public on efficient water usage. Drought	Ongoing
2014	Reduce damage to crops, grazing lands, etc. from wind erosion. Improve conditions to reduce soil erosion.	Ongoing
2014	Reduce power outages. Improve infrastructures to minimize power outages	Ongoing
2014	Provide education to residents including 72-hour kits, etc.	Ongoing
2013	Purchase of an Emergency Equipment for the San Juan County MBA	Ongoing
2013	Fire Station Expansion-Eastland for San Juan County	Completed
2013	Monticello City Fire Truck purchase	Ongoing
2013	Protect Lives and Property from Wildfire. Maintain adequate fuel breaks between wildfire zones and commercial/residence entities.	Ongoing
2012	Monticello City Large Fire Truck purchase	Ongoing

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

## **Introduction**

### **Mission**

The San Juan County Pre-Disaster Natural Hazard Mitigation Plan was created with the goal of substantially and permanently reducing the County's vulnerability to natural hazards through sound public policy. By increasing public awareness of potential harm, documenting resources for risk reduction and loss-prevention, and identifying activities to guide the development of less vulnerable and more sustainable communities, the Pre-Disaster Natural Hazard Mitigation Plan aims to protect citizens, critical facilities, infrastructure, private property, and the natural environment.

### **Plan Review and Update 2018**

After an extensive review to incorporate the most current demographic data, maps, vulnerability assessments, and mitigation projects, this 2018 San Juan County Pre-Disaster Natural Hazards Mitigation Plan (PDM) has been created to update the original PDM plan created in 2003, updated in 2013, which was approved by the counties, the state, and FEMA. The review incorporates the revision of names, critical facilities, hazard history, and economic development throughout the region over the previous five years. Other changes include a reorganization of the mitigation goals, objectives, and actions for ease in reading and for more clearly identifying projects. There have been some minor changes to appendices and general maintenance parts, however there were no changes to background history and data which continues to accurately reflect the region.

### **Organization**

As with the original Pre-Disaster Mitigation Plan (PDM), this updated version was developed and organized within the rules and regulations established under CFR Title 44, Part 201.6. Contained within the plan is a consideration of the purpose and methodology used in developing the plan, as well as a profile of communities within the county, and a vulnerability analysis of nine potential natural hazards. Several appendices are included to provide further detail on specific elements of the above content. This plan is intended to create a foundation that will enable San Juan County and the communities within San Juan County to develop projects that provide for both the safety of their populations and the protection of the environment.

### **Plan Financing**

The San Juan County PDM Plan was financed and developed under the Pre-Disaster Natural Hazard Mitigation Program guidelines established by the FEMA and the Utah Department of Public Safety DEM.

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

## **Plan Participation**

The 2018 San Juan County Pre-Disaster Natural Hazards Mitigation Plan was completed through the collaborative efforts of the Utah Department of Public Safety Division of Emergency Management, County Emergency Managers, Fire Departments, Sheriff's Office, Public Works Department, Planning Commission, Assessor's Offices, City, County, and State GIS Departments, Elected Officials, Public Employees, Utah Division of Forestry, Fire and State Lands, and Citizens of the cities and towns within San Juan County. Feedback was solicited through the San Juan County Pre-Disaster Natural Hazard Mitigation Plan Working Group. During the plan development the draft plan was posted on the San Juan County's Emergency Managements website for public comments. Public participation was also encouraged through a public hearing and review of the 2018 PDM Plan on the San Juan County website. All comments, questions, and discussions resulting from these activities were given thoughtful consideration as the plan was developed.

## **Purpose**

This plan exists to identify natural hazard threats to the community, prepare mitigation management strategies to address those threats, develop short-term and long-term goals and objectives for mitigation planning, and to fulfill federal, state, and local hazard mitigation planning obligations. The intention of this plan is to enhance awareness of, and provide mitigation strategies for, elected officials, agencies, and the public, develop actions which will minimize negative outcomes to San Juan County's citizens, the economy, and the environment due to potential natural hazard threats. The well-being of the county and local communities' rests on reducing risks to life and property in the event of a natural hazard event.

## **Community Capabilities**

San Juan County and the municipalities face many challenges to improve the natural hazard mitigation efforts and sustain the San Juan County Pre-Disaster Natural Hazards Mitigation 2018 Plan. The following capabilities have been identified for consideration for discussion and strengthening to implement and sustain the plan.

### **Financial:**

San Juan County nor the City of Monticello maintain a natural hazard mitigation specific fund or funding mechanism. The county does participate in the Utah Wildland Suppression Fund and has developed the Community Wildfire Preparedness Plan (Appendix 7). The CWPP does provide for some mitigation funding for Urban Wildland Interface fire reduction programs. The challenge as acknowledged in the San Juan County Master Plan is 92% of the county is owned by other Federal, State government agencies or is Tribal land and only 8% of the county is providing the tax base for county and municipal services.

### **Planning and Technical Services:**

The planning and technical capabilities of San Juan County and the municipalities are impacted by the limited



# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

tax base as the hiring of professional staff is often unobtainable. The elected officials and appointed staff perform many of the tasks normally completed by professional staff members. An example of a technical shortfall is that within San Juan County there is not currently a GIS trained staff member. The county and municipalities will contract out for specific planning documents such as Master Plans, General Plans, and Zoning Ordinances. The Southeast AOG is an organization the county can reach out to for assistance with planning and technical services.

## **Administration:**

San Juan County has an elected County Commission and a County Administrator, who is also the emergency manager. The assistant emergency manager is also the Director of Aging. The county hired a full time building inspector in 2018. The elected Sheriff provides law enforcement services throughout the county and unincorporated towns with a limited staff. The fire and EMS first responders are volunteers along with the Search & Rescue organization within the county. The county does maintain a Public Works/Road Department. Monticello has an elected mayor and city council with a city administrator. The city does support a small police department. The emergency manager for Monticello is a police officer, other duties as assigned. Monticello recently appointed a building inspector. Monticello City does maintain a small Public Works/Road Department.

The ability of San Juan County and the municipalities to expand the funding opportunities, roles and responsibilities beyond the current capability of implementing and sustaining the Pre-Disaster Natural Hazards 2018 Plan is constrained by the limited tax base.

## **Scope**

The plan provides comprehensive natural hazard identification, risk assessment, vulnerability analysis, mitigation actions, and an implementation schedule.

## **San Juan County Plan Goals and Objectives**

The goals of the Pre-Disaster Natural Hazard Mitigation Plan include coordinating with local governments to develop San Juan County plans and processes that meet the planning components identified in the FEMA Region VIII Crosswalk document, as well as Utah DEM planning expectation, and public input from the local community. The overall objective is risk reduction from natural hazards in the State of Utah through implementing and updating county, regional, and the State of Utah mitigation plans.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Short Term Goals:

These goals form the basis for the development of the Pre-Disaster Natural Hazard Mitigation Plan and are shown from highest to lowest priority.

1. Protection of life before, during, and after the occurrence of a natural disaster.
2. Preventing loss of life and reducing the impact of damage where problems cannot be eliminated.
3. Protection of emergency response capabilities (critical infrastructure).
4. Protect and/or create communication and warning systems.
5. Protect emergency medical services and medical facilities.
6. Ensure mobile resource availability and survivability.
7. Ensure the continuity of government.
8. Protect developed property, homes and businesses, industry, educational institutions and the cultural fabric of the community. While utilizing hazard loss reduction within the community's environmental, social and economic needs.
9. Protect natural resources and the environment, when considering mitigation measures.
10. Promote public awareness through education of community hazards and mitigation measures.
11. Preserve and/or restore natural features.

## Long Term Goals:

1. Eliminate or reduce the long-term risk to human life and property from identified natural hazards.
2. Aid both the private and public sectors in understanding the risks they may be exposed to and find mitigation strategies to reduce those risks.
3. Avoid risk of exposure to identified natural hazards.
4. Minimize the impacts of those risks when they cannot be avoided.
5. Mitigate the impacts of damage because of identified natural hazards.
6. Accomplish mitigation strategies in such a way that negative environmental impacts are minimized.
7. Provide a basis for funding; prioritizing of natural hazard mitigation projects.

# San Juan County Pre-Disaster Hazard Mitigation Plan

## 2018

8. Establish a county platform to enable all the communities to take advantage of shared goals and resources.

### **Objectives:**

The following objectives are meant to serve as a measure to evaluate natural hazard mitigation projects. The criterion becomes especially important when two or more projects are competing for limited resources.

1. Identification of persons, agency or organization responsible for implementation.
2. Project a time frame for implementation.
3. Explanation of how the project will be financed including the conditions for financing and implementing (as information is available).
4. Identifying alternative measures, should financing not be available.
5. Be consistent with, support, and help implement the goals and objectives of natural 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 have practical, cost-effective, and environmentally sound alternatives after options are considered.
8. Projects should address repetitive problem(s), or one that has the potential to have a major impact on a critical facility.
9. Projects should meet applicable permit requirements where development in hazardous areas is avoided.
10. Projects should contribute to both the short and long-term solutions to the hazard vulnerability risk problem assuring the benefits of a mitigation measure is equal to or exceeds the cost of implementation.
11. Projects should have manageable maintenance and modification costs when possible.
12. Projects should accomplish multiple objectives including improvement of life-safety risk, damage reduction, restoration of essential services, protection of critical facilities, and security of economic development, recovery, and environmental enhancement whenever possible.

# San Juan County Pre-Disaster Hazard Mitigation Plan

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### **Authorities**

#### **Federal:**

Public Law 93-288 as amended, established the basis for federal hazard mitigation activity in 1974. A section of this Act requires—as prerequisite for state receipt of future disaster assistance outlays—the identification, evaluation, and mitigation of hazards. 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. Several additional provisions were also included when PL 93-288 was amended by the Stafford Act that provide for the availability of significant mitigation measures in the aftermath of a Presidentially declared disaster. Civil Preparedness Guide 1-3, Chapter 6- Hazard Mitigation Assistance Programs places emphasis on hazard mitigation planning directed toward hazards with a high impact and threat potential.

The Disaster Mitigation Act of 2000 (DMA 2000) was signed into Law on October 30, 2000 by President Bill Clinton. Section 322, defines mitigation planning requirements for state, local, and tribal governments. Under Section 322, if states submit a mitigation plan (a summary of local/regional mitigation plans) identifying natural hazards, risks, vulnerabilities, and proposed actions to reduce those risks and vulnerabilities, the state is eligible for an increase in the Federal share of hazard mitigation.

#### **State:**

The Governor's Emergency Operation Directive, The Robert T. Stafford Disaster Relief and Emergency Assistance Act, amendments to Public Law 93-288, as amended, Title 44, CFR, Federal Emergency Management Agency Regulations, as amended, State Emergency Management Act of 1981, Utah Code 53-2, 63-5, Disaster Response Recovery Act, 63-5A, Executive Order of the Governor, Executive Order 11, Emergency Interim Succession Act, 63-5B.

#### **Local:**

Effective natural hazard mitigation is dependent upon local governments assuming a vital role. As such, each local government will review all present or potential damages, losses, and related impacts associated with natural hazards to determine what is required for mitigation action and planning. For San Juan County and the Cities and Towns of San Juan County, the local executives responsible for implementing plans and policies are the County Commissioners and City or Town Mayors. It is critical that local governments be prepared to participate in the post-disaster Hazard Mitigation Team process, as well as the pre-mitigation planning outlined in the Pre-Disaster Natural Hazard Mitigation Plan.

# San Juan County Pre-Disaster Hazard Mitigation Plan

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### Demographics and Population Growth

The demographics and population of an area are important to understand what the impacts of a natural hazard may be on communities now and in the future. The population is shown in Table 1. The increase in population between 2015 and 2016 of 1,188 or 7.6% earned San Juan County the distinction of the fastest growing county in the United States. A San Juan County Commissioner stated the growth was accommodated within existing residential infrastructure and new residential housing permit requests were minimal. The unofficial population estimate from the US Census Bureau indicates an out migration for 2017.

San Juan County Population: Past, Present, and Future while Table 1A provides the San Juan County population age breakdown and Table 1B provides the San Juan County population ethnic breakout. Monticello, Blanding and Bluff are the three primary cities in the county; however, significant communities include Aneth, Eastland, Cedar Point, White Mesa, Mexican Hat-Halchita, La Sal, Spanish Valley, Oljato-Monument Valley, Halls Crossing and Montezuma Creek.

**Table 1 San Juan County Population**

Geographic Area	2000	2010	2015	2016	2017	2020
City of Blanding	3,162	3,375	3,785	4,036	4,556	4,991
City of Bluff	351	258	*	265	*	272
City of Monticello	1,958	1,972	2,069	2,213	2,523	2,565
San Juan County	14,413	14,746	15,707	16,895	15,356	17,273

(Utah Governor's Office of Planning and Budget) Dec. 2017, US Census Bureau Quick Facts

\* There were no official numbers for the years 2015 and 2017

**Table 1A San Juan County, Utah Population Age Breakdown**

Age Group	Number	Percent	National Avg.
Under 5 Years	1,215	8%	6.2
5 to 9 Years	1,388	9.2%	6.4
10 to 14 Years	1,535	10.1%	6.4
15 to 19 Years	1,465	9.7%	6.7
20 to 24 Years	1,030	6.8%	7.0
25 to 34 Years	1,656	10.9%	13.7
35 to 44 Years	1,724	11.4%	12.7
45 to 54 Years	1,782	11.8%	13.4
55 to 59 Years	878	5.8%	6.7
60 to 64 Years	725	4.8%	6.0
65 to 74 Years	1,027	6.8%	8.6
75 to 84 Years	483	3.2%	4.4
85 Years and Over	244	1.6%	1.9

<https://www.homefacts.com/demographics/Utah/San-Juan-County.html> Dec. 2017

# San Juan County Pre-Disaster Hazard Mitigation Plan

## 2018

**Table 1B San Juan County Ethnic Breakout**

Race	Number	Percent	National Avg
One Race	14,893	98.3%	96.9
White	7,520	49.6%	73.1
African American	25	0.2%	12.7
American Indian	7,122	47.0%	0.8
Asian	112	.7%	5.4
Asian Indian	0	0.0%	1.2
Chinese	0	0.0%	1.3
Filipino	9	0.1%	0.9
Japanese	0	0.0%	0.2
Korean	11	0.1%	0.5
Vietnamese	40	0.3%	0.5
Other Asian	52	0.3%	0.8
Pacific Islander	27	0.2%	0.2
Native Hawaiian	11	0.1%	0.1
Guamanian	0	0.0%	0.0
Samoan	16	0.1%	0.0
Other Pac Islander	0	0.0%	0.1
Other Races	87	0.6%	4.8
Two or more Races	259	1.7%	3.1
Hispanic	Number	Percent	National Avg
Latino	771	5.1%	17.6
Mexican	616	4.1%	11.1
Puerto Rican	0	0.0%	1.7
Cuban	0	0.0%	0.7
Other Hispanic	155	1.0%	4.1
Non-Hispanic	14,381	94.9%	82.4

<https://www.homefacts.com/demographics/Utah/San-Juan-County.html> Dec.2017

### Economy

San Juan County has three main land-based economic opportunities that are expected to lead growth. These are mineral (hard rock mining and oil /gas exploration) agriculture, and tourism. Other factors that affect economic enrichment involve mineral production, governmental operations (State and Federal), tribal operation, oil and gas exploration, and wildlife recreation.

San Juan County's largest employment industry rests with Federal, State and Local Government, Retail Trade, and Health and Social Services. Tourism, professional & technical Services are also large employers that contribute to the county's economy. The adjusted unemployment rate is 6.8% for San Juan County October 2017 compared to the State of Utah unemployment rate of 3.3% and the United States unemployment rate of 4.2% for the same period. (Utah Department of Workforce Services 10/17)

# San Juan County Pre-Disaster Hazard Mitigation Plan

## 2018

The median household income for San Juan County was reported to be \$39,305 and the median home value was reported to be \$137,600 in July 2016. (US Census Quick Facts July 2016)

**Table 2 San Juan County Employment Rates as July 2017**

Employment	San Juan County %
Mining	-68
Construction	-29
Manufacturing	-4
Trade/Transport/Utilities	0
Leisure/Hospitality	66
Information	0
Financial Activities	-10
Prof/Business Services	6
Education/Health/Social Services	-17
Other Services	-9
Government	47

(Utah Department of Workforce Services 2017)

**Table 2A San Juan County Residential Building Permits as of Dec 2017**

Year	2012	2013	2014	2015	2016	2017
Number of Residential Building Permits Issued	33	24	24	13	1	3

(Utah Department of Workforce Services 2017)



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Transportation and Commuting Patterns

Transportation infrastructure is limited in San Juan County. There are no public railways, buses, or passenger air transportation. The major U. S. Highways include 191, 163 and 491. State highway 191 runs from the northern San Juan County line south through Monticello, Blanding, Bluff, and on into the State of Arizona connecting with highway 160. State highway 491 travels from the Colorado State line west through Monticello. Perpendicular to US 191 is state highway 163, extending from Montezuma Creek west through Bluff, and then southwesterly through Mexican Hat and on to the Arizona State line at Monument Valley.

## Land Use and Development Trends

San Juan County is in the far southeastern portion of Utah within the Colorado Plateau along the Colorado and Arizona borders. It is the largest county in Utah and the second largest in the United States with approximately 7884 square miles. Some of the more famous attractions within San Juan County are Monument Valley, Canyon Lands National Park, the controversial Bears Ears National Monument which is in the process of being re-designated as two National Monuments-The Indian Creek National Monument and the Shash Jaa National Monument, Lake Powell, Four Corners area and the Navajo Indian Reservation. The Federal Government administers most of land within San Juan County. The Bureau of Land Management (BLM) administers approximately 41% of the land, the National Park Service and the U.S. Forest Service administers 10% and 9%, respectively. State of Utah lands and private ownership make up 9% and 8% respectively with Private Indian Trust Funds Lands occupying less than 1%. The Indian Reservation occupies 23% of the County. Refer to Table 3 Land Ownership for a quick reference of land ownership and Table 4 for Land Use Acres. ([nrcs.usda.gov/wps/portal/nrcs/detail/ut/technical/dma/nri/pcid=nrcs141p2\\_034124](https://nrcs.usda.gov/wps/portal/nrcs/detail/ut/technical/dma/nri/pcid=nrcs141p2_034124))

**Table 3 Land Ownership**

San Juan County Land Ownership Acreage	
BLM	2,074,247
Forest Service	450,549
Indian Reservation	1,220,846
National Park Service	587,375
State Lands & Parks	406,415
Trust Lands	25,117
Private	406,367
Total San Juan County Lands	5,170,916
Percentage of Land Ownership	
BLM (Including BLM WSA)	41%
Forest Service	9%
Indian Reservation	23%
National Park Service	10%
State Lands & Parks	9%
Private	8%

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

(NRCS Report Jan. 2018)

**Table 4 Land Use Acres**

San Juan County Acreage per Land Type	
Developed	4,488
Row Crops	26,557
Grain Crops	55,117
Conservation Reserve Program	36,079
Grass/Pasture/Hay	26,733
Orchards/Vineyards	71
Shrub/Rangelands	2,937,699
Water	45,629
Forests	1,890,662
<b>San Juan County Total</b>	<b>5,023,035</b>

(NRCS Report Jan 2018)

## Risk Assessment

The Working Group concurred that the following natural hazards are specific natural hazards in the county. There are nine natural hazards profiles; Wildfire, Flood, Dam Failure, Infestation, Drought, Landslide, Problem Soils, Severe Weather, and Earthquakes. The Working Group also compiled a list of critical facilities in San Juan County to be considered during the risk assessment process. The risk assessment methodology for developing this updated 2018 plan risk assessment included several steps to gather information from the whole community, prepare the input, analyze and discuss the data to provide information of the potential impacts of the nine natural hazards identified for San Juan County. The San Juan County Working Group primarily used available GIS maps for the identified natural hazards, historical data, local knowledge, and the potential impact on the critical facilities and infrastructure. The gathered information was shared with the appropriate subject matter experts for their review and input. The final compilation of data was discussed by the Working Group and the Risk Assessment for each of the nine identified natural hazards was reached by consensus of the Working Group.

**Table 5 Risk Assessment**

Typed of Natural Hazard	Probability	Severity (Potential Magnitude)	County Ranking
Severe Weather	Highly Likely	Limited	1
Flooding	Likely	Critical	2

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

<b>Wildfire</b>	<b>Highly Likely</b>	<b>Limited</b>	<b>3</b>
<b>Drought</b>	<b>Highly Likely</b>	<b>Critical</b>	<b>4</b>
<b>Landslide</b>	<b>Possible</b>	<b>Limited</b>	<b>5</b>
<b>Dam Failure</b>	<b>Possible</b>	<b>Limited</b>	<b>6</b>
<b>Infestation</b>	<b>Likely</b>	<b>Limited</b>	<b>7</b>
<b>Problem Soils</b>	<b>Possible</b>	<b>Limited</b>	<b>8</b>
<b>Earthquake</b>	<b>Not Likely</b>	<b>Limited</b>	<b>9</b>

## San Juan County Critical Facilities

The San Juan County Critical Facilities List was updated by the San Juan County Pre-Disaster Mitigation Working Group and coordinated through the San Juan County Emergency Manager.

### Natural Hazard Impact Legend:

San Juan County's summary for the risk assessment for all the critical facilities by hazard (DF = Dam Failure, DR = Drought, EQ = Earthquake, FL = Flood, IN= Infestation, LS= Landslide, SW= Severe Weather, PS= Problem Soils, WF= Wildfire).

Each hazard has its own criteria for risk;

**Wildfire** categories of Very, Very Low (VVL), Very Low (VL), Low (L), Low-Moderate (L-M), Moderate (M), Moderate-High (M-H, High (H), Very High (VH), Extreme (E), and Urban, Agriculture, Water, or Barren (W).  
(DNR for the Utah Wildfire Risk Assessment Portal has identified)

**Dam Failure** has High (H) = facility is in inundation area, Moderate (M) = facility is within 0.10 mile of inundation area, and Low (L) = facility is >0.10 mile of inundation area.

**Earthquake** Peak Ground Acceleration has High (H), Moderate (M) and Low (L) based on data from USGS.

**Landslide** has High (H), Moderate (M), Low (L) and Very Low (VL) based from USGS.

**Drought** has Exceptional Drought (D4), Extreme Drought (D3), Severe Drought (D2), Moderate Drought (D1), Abnormally Drought (D0), None: No Drought.

National Integrated Drought Information System

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

**Flood** has High (H), Moderate (M), Low (L) and Very Low (VL).

Data from San Juan County Emergency Manager

**Infestation** has High (H), Moderate (M), Low (L) and Very Low (VL).

**Severe Weather** has High (H), Moderate (M), Low (L) and Very Low (VL).

**Problem Soils** High has (H), Moderate (M), Low (L) and Very Low (VL).

If a hazard does not affect any facility (such as infestation) you could just leave it off the table or just explain it. N/A may be utilized.

**Table 6 Critical Facilities**

Facility Name	DF	DR	EQ	FL	IN	LS	SW	PS	WF
Health Services Building 735 S 200 W Blanding, Utah	VVL	VH	VL	VL	VL	VL	H	L	W
Montezuma Creek Clinic State Highway 162 Montezuma Creek, UT 435-651-3291	VVL	VH	VL	VL	VL	VL	H	L	W
UNHS—Navajo Mountain Community Health Center P.O. Box 10100 Tonalea, AZ 86044 (928)-672-2498	VVL	VH	VL	VL	VL	VL	H	L	VL
Utah Navajo Health Systems East Highway 262 P.O. Box 130 Montezuma Creek, UT 84534 435-651-3291	VVL	VH	VL	VL	VL	VL	H	L	W
Monument Valley Health Center Four Rock Door Canyon Monument Valley, UT 84536 435-727-3241	VVL	VH	VL	VL	VL	VL	H	L	VL
San Juan Hospital 380 W 100 N, Monticello, UT 84535 435-587-2116	VVL	VH	VL	VL	VL	VL	H	L	W
San Juan Clinic 380 W 100 N Monticello, UT 84535 435-587-5054	VVL	VH	VL	VL	VL	VL	H	L	W
Blanding Clinic 804 N 400 W Blanding, UT 84511 435-678-2254	VVL	VH	VL	VL	VL	VL	H	L	W
UNHS—Blanding Family Practice	VVL	VH	VL	VL	VL	VL	H	L	L

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Community Health Center 802 S 200 W Blanding, UT 84511 435-678-3601									
Blue Mountain Hospital 802 S 200 W Blanding, Utah 84511 435-678-3993	VVL	VH	VL	VL	VL	VL	H	L	L
Lake Powell School 1000 Ferry Rd Lake Powell, UT 84533 phone: 435-684-2268	VVL	VH	VL	VL	VL	VL	H	L	L
Blanding Elementary School 302 S 100 W Blanding, UT 84511 435-678-1871	VVL	VH	VL	VL	VL	VL	H	L	W
La Sal Elementary School State Hwy 46 La Sal, UT 84530 (435) 678-1292	VVL	VH	VL	VL	VL	VL	H	L	L
Bluff Elementary School Old Main Hwy Bluff, UT 84512 435-678-1296	VVL	VH	VL	L	VL	VL	H	L	W
Montezuma Creek Elementary School State Highway 262 Montezuma Creek, UT 84534 435-678-1261	VVL	VH	VL	VL	VL	VL	H	L	W
Monticello Elementary School 197 N 200 W Monticello, UT 84535 435-587-2241	VVL	VH	VL	VL	VL	VL	H	L	W
Albert R. Lyman (ARL) Middle School 535 North 100 East Blanding, Utah 84511 PH: (435) 678-1398	VVL	VH	VL	VL	VL	VL	H	L	M
Tse'bi'ni'dzizgai Elementary School Highway 163, 10 West Medical Drive Monument Valley, UT 84536 435-678-1286	VVL	VH	VL	VL	VL	VL	H	L	VL
Monticello High School 164 S 200 W Monticello, UT 84535 435-678-1130	VVL	VH	VL	VL	VL	VL	H	L	W
San Juan High School	VVL	VH	VL	VL	VL	VL	H	L	W

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300 N 100 E Blanding, Utah 84511 (435) 678-1301									
Whitehorse High School P.O. Box #660 Montezuma Creek, UT 84534 (435) 651- 3427	VVL	VH	VL	VL	VL	VL	H	L	W
Monument Valley High School US State Hwy 163 Monument Valley, UT 84536 435-678-1208	VVL	VH	VL	VL	VL	VL	H	L	VL
Navajo Mountain High School Southwestern tip of San Juan County Utah. Turn north off Navajo Highway 98 about 50 miles southwest of Page Arizona and drive 40 miles north to where the pavement ends.	VVL	VH	VL	VL	VL	VL	H	L	W
San Juan County Jail House (Utah Department of Corrections) 297 South Main Monticello, UT 84535 (435) 587-2237	VVL	VH	VL	VL	VL	VL	H	L	W
Monticello City Sanitary Treatment Plant East End of Clay Hill Drive POC- 435-587-2271	VVL	VH	VL	VL	VL	VL	H	L	L
San Juan Water Conservancy Office 62 N Main Street Blanding, UT 435) 678-2596	VVL	VH	VL	VL	VL	VL	H	L	W
Blanding Water Treatment 1999 North Reservoir Road Blanding, UT 84511 (435) 678-2507	L	VH	VL	L	VL	VL	H	L	W
Monticello Water Treatment Plant 1580 W Abajo Dr Monticello, UT 84535 (435) 587-2618	L	VH	VL	L	VL	VL	H	L	M
Mexican Hat Special Service District P.O. Box 535 Mexican Hat, UT 84531	VVL	VH	VL	VL	VL	VL	H	L	L-M
Bluff Service Area P. O Box 310 Bluff, UT 84512-0310	VVL	VH	VL	L	VL	VL	H	L	M-H
San Juan County Road Department	VVL	VH	VL	VL	VL	VL	H	L	VVL

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

881 E Center St Monticello, Utah (435) 587-3230									
San Juan County Road Department 835 E Highway 491 Monticello (435) 587-3230	VVL	VH	VL	VL	VL	VL	H	L	VVL
San Juan County Road Department Montezuma Creek (435) 651-3269	VVL	VH	VL	VL	VL	VL	H	L	VL
Lisbon Valley Gas Plant 84530 (435)-686-7600	VVL	VH	VL	VL	VL	VL	H	L	VL
Blanding City Gas 84530 (435)-686-7600	VVL	VH	VL	VL	VL	VL	H	L	N/A
Rocky Mountain Power—substation (Pinto) Rocky Mountain Power (888)221-7070	VVL	VH	VL	VL	VL	VL	H	L	W
Empire Electric 16 E 200 S STE D Monticello, UT 84535 (435) 587-2421	VVL	VH	VL	VL	VL	VL	H	L	L-M
Gary-Williams Energy Facility ¾ miles south of Montezuma Creek	VVL	VH	VL	VL	VL	VL	H	L	W
Spower Wind farm Spower 2180 S 1300 E Salt Lake City, UT 84106 (801)679-350	VVL	VH	VL	VL	VL	VL	H	L	VVL
Blanding Ambulance Heliport (Private) San Juan Health Care Services 857 N 30 West Blanding, Utah 84511 (801) 678-2034	VVL	VH	VL	VL	VL	VL	H	L	M-H
Blanding Muni Airport—BDG (Public) Blanding City 50 W 100 S Blanding, Utah 84511	VVL	VH	VL	VL	VL	VL	H	L	L-M
Bluff Airport—66V (Public) San Juan Co. 435-587-3223	VVL	VH	VL	VL	VL	VL	H	L	VVL
Fry Canyon Field Airport—UT74 (Private) Bureau of Land Management	VVL	VH	VL	VL	VL	VL	H	L	M



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P.O. Box 7 Monticello, Utah 84535 (435) 587-1515									
Cal Black Memorial Airport—U96 (Public) San Juan County (435)-587-3223	VVL	VH	VL	VL	VL	VL	H	L	VVL
La Sal Junction Airport—01UT (Private) K Mc Dougald P. O Box 1330 Mc Dougald Oil Co Moab, UT 84532 (435) 259-6156	VVL	VH	VL	VL	VL	VL	H	L	M
A Z Minerals Corporation Airport— 03UT (Private) Navajo Tribe Windowrock, AZ 86515	VVL	VH	VL	VL	VL	VL	H	L	VVL
Sky Ranch Airport—UT53 (Private) Richard Tangren 8439 Placid St Las Vegas, NV 89123 (702) 361-8850	VVL	VH	VL	VL	VL	VL	H	L	L-M
Monticello Airport—U43 (Public) City of Monticello HWY 191 17 N 100 E Monticello, Utah 84535 (435) 587-2271	VVL	VH	VL	VL	VL	VL	H	L	VL
Needles outpost Airport—UT59 (Private) State of Utah	VVL	VH	VL	VL	VL	VL	H	L	VL
Monument Valley Airport—UT25 (Private) Rgj Corporation P.O. Box 360001 Monument Valley, Utah 84536 (435) 727-3225	VVL	VH	VL	VL	VL	VL	H	L	VVL
Navajo Mountain Airport—04UT (Private) Navajo Air Transportation P.O. box 706 Window Rock, AZ 86515	VVL	VH	VL	VL	VL	VL	H	L	W
Blanding City Fire Department 350 W 200 S Blanding UT, 84511 (435) 678-2837	VVL	VH	VL	VL	VL	VL	H	L	M
Bluff Volunteer Fire Department	VVL	VH	VL	L	VL	VL	H	L	M-H

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496 E Black Locust Ave, Bluff, UT 84512 (435)672-2281									
La Sal Fire Department 200 S Fire House Road, La Sal UT 84530 (435) 686-2315	VVL	VH	VL	VL	VL	VL	H	L	L
Mexican Hat-Fire Department (Not Manned) 100 US HWY 163 PO Box 310434 Mexican Hat, UT 84531 (435) 587-3225	VVL	VH	VL	VL	VL	VL	H	L	N/A
Eastland Volunteer Fire Department Monticello City HC 63 Box 75 Monticello, Utah (435)587-2732	VVL	VH	VL	VL	VL	VL	H	L	L-M
Monticello Fire Department Monticello City 17 N 100 E Monticello, UT 84535 (435)587-2271	VVL	VH	VL	VL	VL	VL	H	L	L-M
Pack Creek Fire Department San Juan County (435)587-3225	VVL	VH	VL	VL	VL	VL	H	L	N/A
San Juan County Fire/Emergency Services San Juan County 117 S Main Street Monticello, UT 84535 (435)587-3225	VVL	VH	VL	VL	VL	VL	H	L	W
Montezuma Creek Fire Department State RT. 262 PO Box 424 Montezuma Creek, UT 84534 (435)651-3351	VVL	VH	VL	VL	VL	VL	H	L	VL
Cedar Point Fire Department San Juan County (435)-587-3225	VVL	VH	VL	VL	VL	VL	H	L	N/A
San Juan County Communications Television 1159 s Highway 191 Blanding, Utah 84511	VVL	VH	VL	VL	VL	VL	H	L	N/A
Abajo Peak Communication Array (NOAA) 297 S. Main Street Monticello, UT 84535 435-587-2237 Bruce Bushore	VVL	VH	VL	VL	VL	VL	H	L	L-M

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

KAAJ 96 E 500 North Monticello, Utah (435)587-3456	VVL	VH	VL	VL	VL	VL	H	L	L-M
EAS Alerts from Utah Based Radio and Television Stations. (Especially KCYN 97.1 FM Moab, Utah) 1030 Bowling Alley Ln #3 Moab UT 84532 435-259-1035	VVL	VH	VL	VL	VL	VL	H	L	W
NWR Transmitter 162.475 38 Degrees/31'/44" N, -109 Degrees/19'/25" W	VVL	VH	VL	VL	VL	VL	H	L	VL
Monticello Police Department 435-587-2273	VVL	VH	VL	VL	VL	VL	H	L	L-M
Blanding Police Department 435-678-2334 or 435-678-2916	VVL	VH	VL	VL	VL	VL	H	L	M
San Juan County Sheriff Department 297 S. Main Street Monticello, UT 84535 435-587-2237	VVL	VH	VL	VL	VL	VL	H	L	W
Highway Patrol Office 232 S 100 E Monticello, UT84530 435-587-2000	VVL	VH	VL	VL	VL	VL	H	L	L-M
Navajo Nation Police Department (comes from Shiprock N.M.) 505-368-1350	VVL	VH	VL	VL	VL	VL	H	L	N/A
Ute Law Enforcement Officer (Comes from Towaoc CO) 971-565-3706	VVL	VH	VL	VL	VL	VL	H	L	N/A
KCYN 97.1 FM 1030 Bowling Alley Ln #3 Moab UT 84532 435-259-1035	VVL	VH	VL	VL	VL	VL	H	L	W
KTNN 600 AM PO Box 2569 Window Rock, Arizona 86515 Phone (928) 871-3553 Fax (928) 871-3479	VVL	VH	VL	VL	VL	VL	H	L	N/A
KRTZ 98.7 FM 2402 Hawkins St, Cortez, CO 81321- 9544 970-565-6565	VVL	VH	VL	VL	VL	VL	H	L	N/A
KTRA 102.1 FM 200 East Broadway Ave Farmington, NM 87401 505-325-1716	VVL	VH	VL	VL	VL	VL	H	L	N/A

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

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

## Natural Hazards Profiles



Image provided by San Juan County

### Wildland Fire

#### Hazard Profile

Potential Magnitude		Negligible	Less than 10%
	X	Limited	10-25%
		Critical	25-50%
		Catastrophic	More than 50%
Probability	X	Highly Likely	
		Likely	
		Possible	
		Unlikely	
Location	Countywide, URWIN areas around Monticello and Blanding.		
Seasonal Pattern or Conditions	Summer months. Areas affected by drought and/ or heavily overgrown and dry brush and debris. Lightning and human triggers.		
Duration	Wildfires typically last days but can last months, depending on climate and fuel load as well as resources (financial, manpower) to extinguish the fire.		
Analysis Used	Review of plans and data provided by US Forest Service, National Climate Center, FEMA, AGRC, County Hazard Analysis Plans, and D FF&SL.		

#### Description of Location and Extent

Wildfires—an uncontrolled fire spreading through both naturally occurring and non-native vegetative fuel sources—are a significant hazard, often beginning unnoticed and spreading quickly with threats to any structures in its path. Wildfires can cover a large geographic area, can be ignited by natural or human sources,

# San Juan County Pre-Disaster Hazard Mitigation Plan

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and are hard to predict. Table 14 Wild Land/Interface Fire Statistics summarizes the State of Utah Division of Forestry, Fire and State Lands Fire Statistics for San Juan County from 1986 to 2018. They were all isolated but did considerable damage to property and suppression was costly. The State of Utah Division of Forestry, Fire, and State Lands list below five categories to wildfire risk. A Wildfire map (Table 13) provided by Utah Division of Forestry, Fire, and State Lands show five categories of wildfire risk:

- Extreme
- High
- Medium
- Low
- Very Low

These ratings cover all of San Juan County and are based on the type and density of vegetation in each area. Additional factors influencing wildfires such as weather conditions, wind speed and direction are not considered in this risk assessment.

### Vulnerability Assessment

The following table includes the number of commercial, and residential structures (2016 median residential value \$137,600) inside extreme, high and moderate wildfire risk areas within San Juan County. The population within each of the areas is also included (Table 8).

**Table 8: Households and Population in Wildfire Area**

	Extreme Risk	High Risk	Moderate Risk
Residential Units/Replacement Cost	151/\$20,777,600	68/\$9,356,800	178/\$24,492,800
Population	604	272	712

Table 9 details the annual sales of the businesses inside each wildfire risk area, and the assessed value of residential property in each wildfire risk area. Residential loss estimates do not include contents. Including the value of contents would increase the values listed by 50%.

**Table 9: Businesses in Wildfire Area**

City Name	Businesses in Extreme/ Annual Sales	Businesses in High/ Annual Sales	Businesses in Moderate/ Annual Sales
Blanding	6/ \$3,900,000	4/ \$900,000	5/ \$6,900,000
Monticello	No known risk	No known risk	47/ \$54,900,000
Montezuma Creek	No known risk	No known risk	1/ \$600,000

Table 10 contains the number of acres in each wildfire risk area, within the municipal boundaries of the following cities in San Juan County.

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**Table 10: Wildfire Risk Area**

City Name	Acres of Extreme	Acres of High	Acres of Moderate
Monticello	90.93	92.16	90.93
Blanding	162.17	109.44	15.79

The following tables list the critical facilities and infrastructure within Extreme, High or Moderate wildfire risk areas (Tables 11,12).

**Table 11 Critical Facilities in Wildfire Zones**

Critical Facility	Name	Location
Oil Facility	Gary-Williams Energy Facility	¾ Mile South of Montezuma, Montezuma Creek
Oil Facility	Unocal Lisbon Plant	
Natural Gas Facility	Northwest Pipeline	22 Miles South of Hwy 191, Near Moab
School	Monticello High	Monticello
School	Monticello School	Monticello

**Table 12: Infrastructure in Wildfire Area**

Item	Length (Miles)	Replacement Cost
Local Roads	230.65	\$576,625,000
State Highways	144.95	\$724,750,000
US Highways	0.00	\$0
US Interstates	0.00	\$0
Power Lines	111.50	\$5,652,381
Gas Lines	45.24	\$11,466,508

### Catastrophic Wildfires Cascading Effects

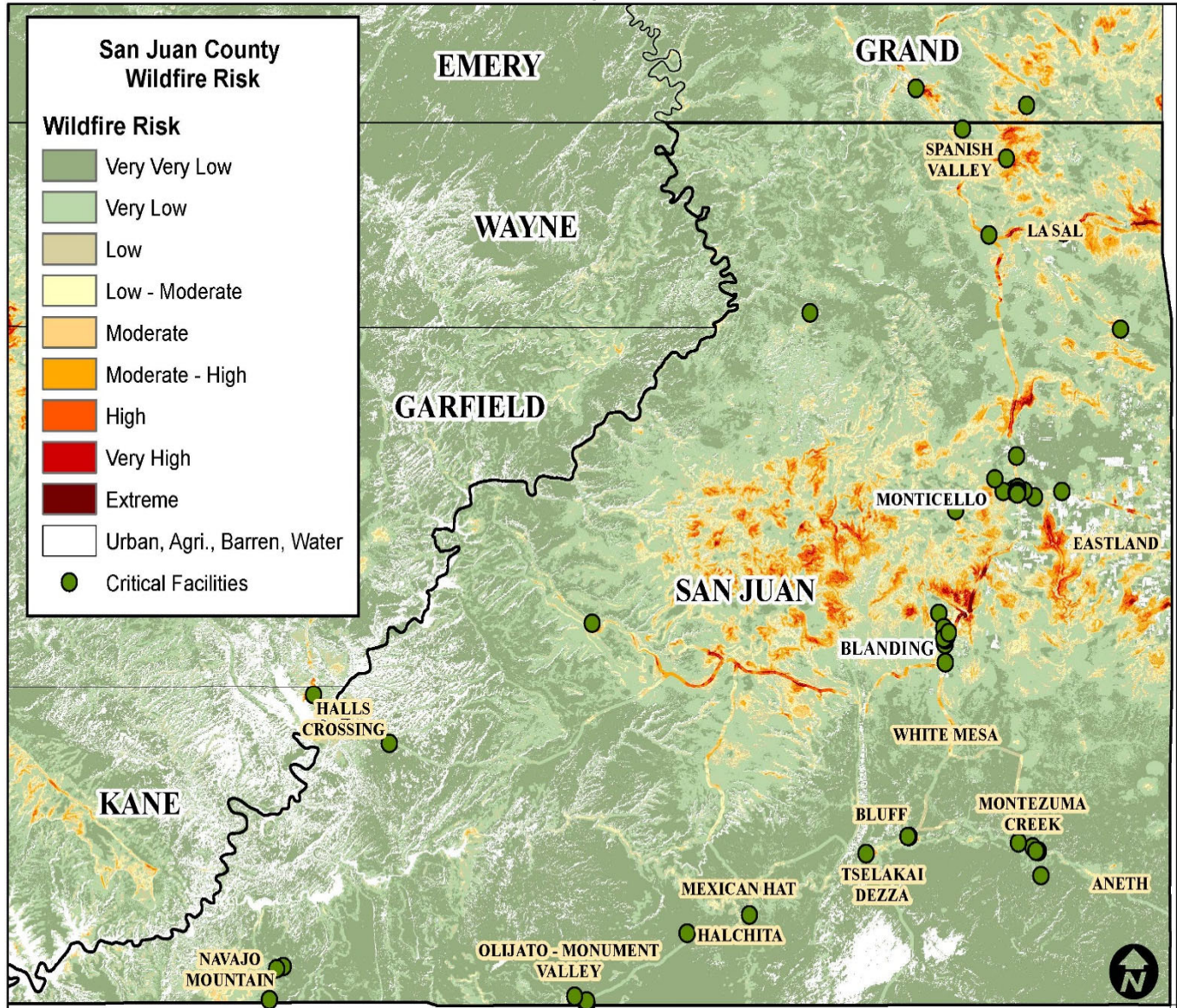
The occurrence of a Catastrophic Wildfire in San Juan County is fortunately a rare event. The post fire effect may produce a cascading series of events requiring immediate action and mitigation. The effect on the water shed may impinge upon the County or Communities' wells, springs, and the water delivery system. There may be landslides, mudflows, and debris flow in the burn scar that may impact streams and reservoirs or damage infrastructure such as roads and power transmission lines. Awareness of the potential and considering a plan of action to implement if a Catastrophic Wildfire should occur may mitigate the effects on the County and Communities of the cascading series of events.



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Table 13 Wildfire Risk Map

## San Juan County Wildfire Risk

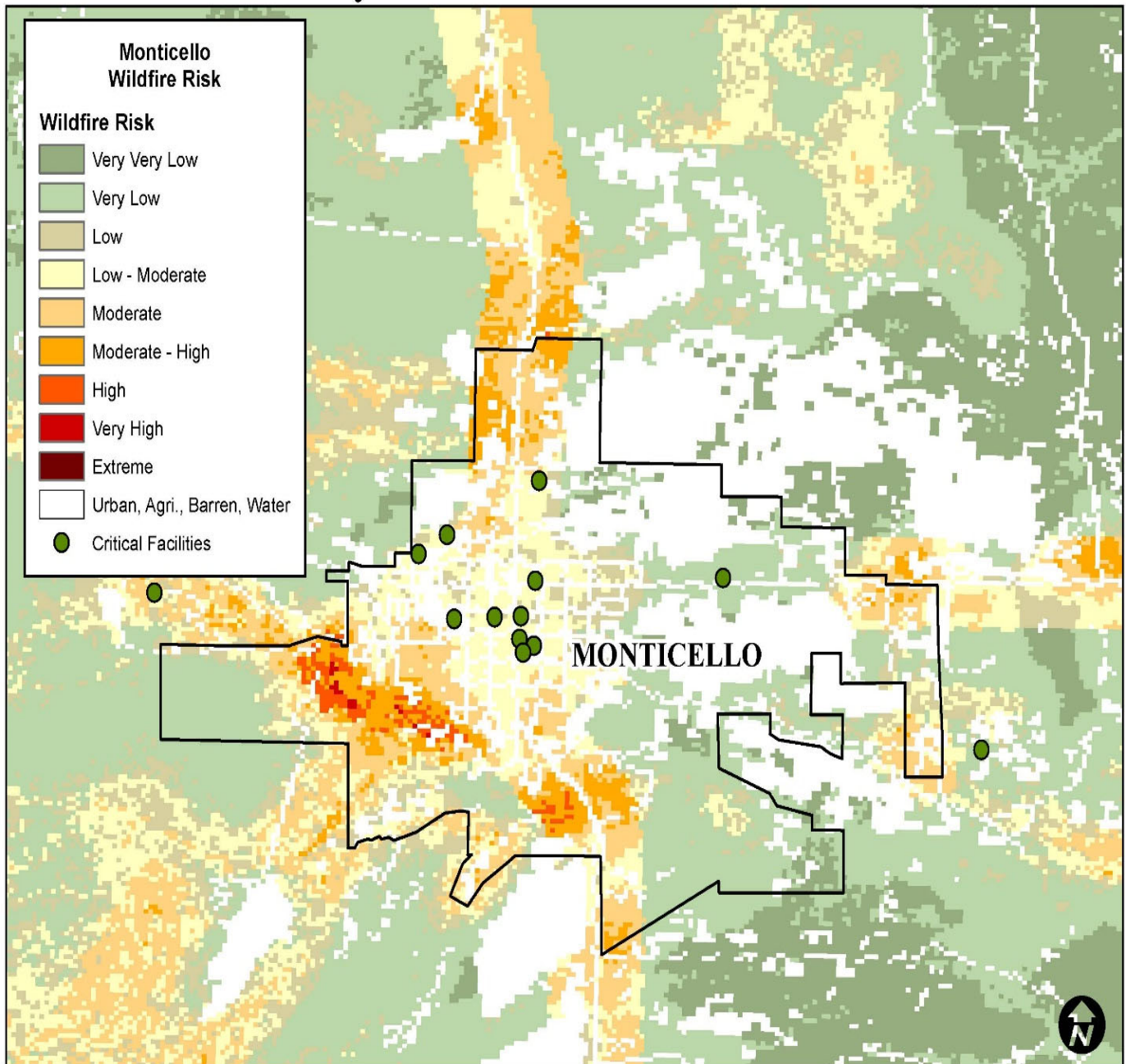


Data from Utah DNR and AGRC. Map created by Utah Division of Emergency Management, Nov. 2017.



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

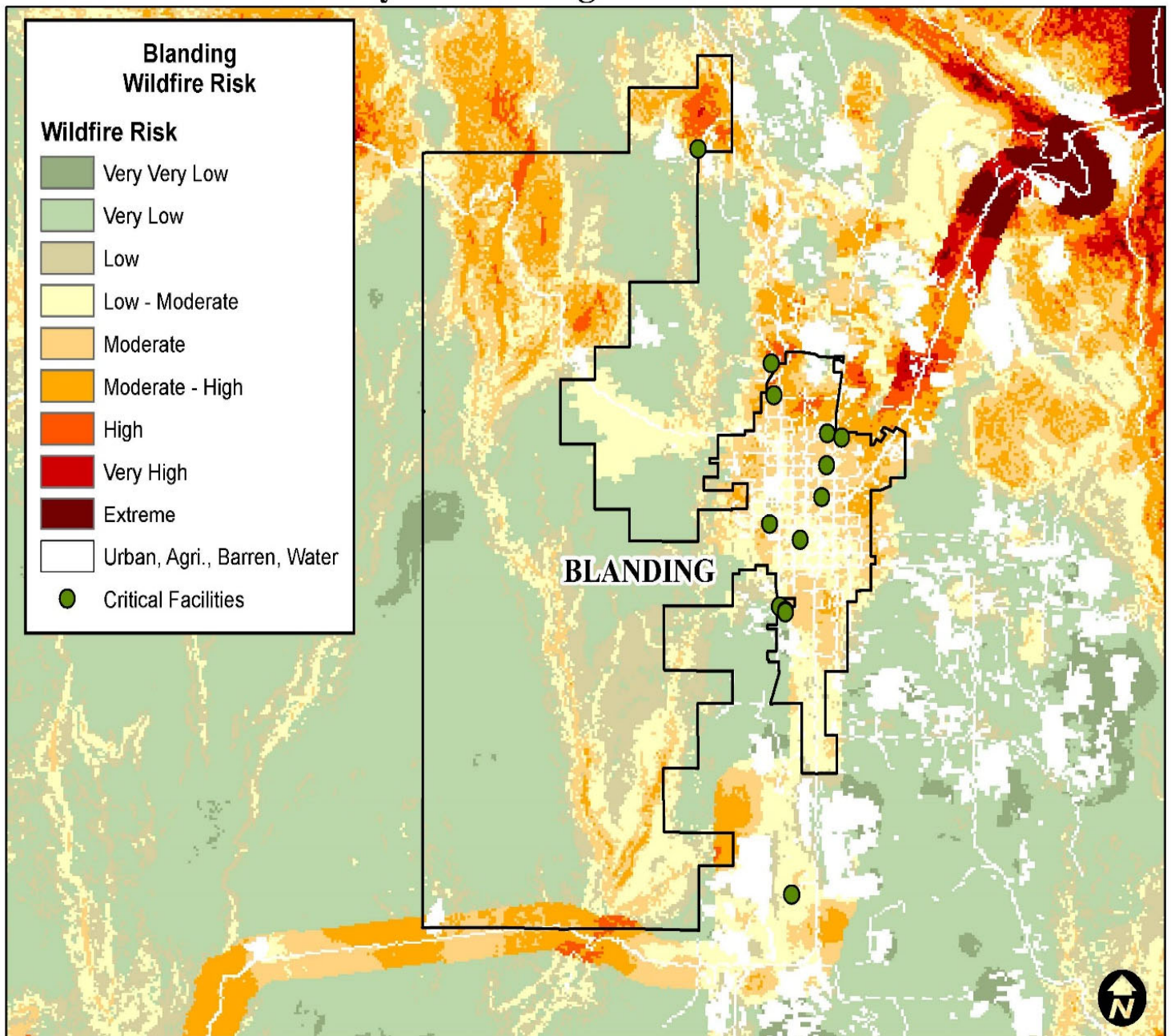
## City of Monticello Wildfire Risk



Data from Utah DNR and AGRC. Map created by Utah Division of Emergency Management, Nov. 2017.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## City of Blanding Wildfire Risk



Data from Utah DNR and AGRC. Map created by Utah Division of Emergency Management, Nov. 2017.



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**Table 14 Historical Wildfires 1986-2018**

**Fire Cause Legend: LT Lightning, FA False Alarm, MC Miscellaneous, DB Debris Burn, EQ Equipment, IN Incendiary, CF Camp Fire, CH Children, RR Rail Road**

The following list provides NWCG's standard data values for this data attribute:

Value	Description
A	Greater than 0 but less than or equal to 0.25 Acres
B	0.26 to 9.9 Acres
C	10.0 to 99.9 Acres
D	100 to 299 Acres
E	300 to 999 Acres
F	1000 to 4999 Acres
G	5000+ Acres

[https://www.nwcg.gov/sites/default/files/stds/fire\\_size\\_class/values.pdf](https://www.nwcg.gov/sites/default/files/stds/fire_size_class/values.pdf). Dtd Feb 19, 2009

Date	Fire Name	Cause	Size Approximate Acers	Cost
June 6, 1986	White Mesa	MC	E	NO DATA
June 1, 1987	White Mesa #2	IN	D	NO DATA
June 18, 1987	McCracken Mesa	MC	E	NO DATA
June 19, 1987	White Mesa #4	IN	E	NO DATA
June 23, 1987	White Mesa #6	DB	D	NO DATA
July 4, 1987	Tank Draw	EQ	F	NO DATA
August 15, 1987	Two Mile Creek	LT	D	NO DATA
June 15, 1989	Pehrson	LT	E	NO DATA
July 23, 1990	Horny Toad	LT	D	NO DATA
August 9, 1990	Alfred Frost	LT	D	NO DATA
June 14, 1994	Willow Basin	EQ	F	NO DATA
June 25, 1994	Haller (Wheatfield)	LT	D	NO DATA
June 29, 1994	Mustang	LT	D	NO DATA
July 14, 1994	Iron Canyon	LT	D	NO DATA
July 14, 1994	Peters Hill (Iron Canyon)	MC	D	NO DATA
March 21, 1996	Montezuma	DB	D	NO DATA
June 8, 1996	Dove Creek	LT	D	NO DATA
June 21, 1996	Eastland	LT	D	NO DATA
July 16, 1997	Wray	LT	D	NO DATA
July 17, 1997	Cajon Mesa	LT	E	NO DATA

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June 1, 1998	Aneth Point	CF	D	NO DATA
July 9, 1999	McCracken	LT	E	NO DATA
May 19, 2002	South Canopy	LT	.10	\$1219.00
June 4, 2002	South Point	LT	.25	\$2826.00
June 15, 2002	Old Airport	EQ	5	\$3008.00
July 7, 2002	Marco Polo	LT	.10	\$,350.00
July 12, 2002	Horse	LT	1250	\$188078.00
July 14, 2002	Canyons Complex	LT	10600	\$2799000.00
July 14, 2002	Pine	LT	12	\$15944.00
July 21, 2002	Ucola	LT	.20	\$8190.00
August 5, 2002	Brimley	LT	.10	\$2258.00
August 19, 2002	Peters Hill	LT	60	\$12762.00
September 4, 2002	Hop Creek	LT	.10	\$5,095.00
April 24, 2003	Flat Iron	DB	.50	\$1004.00
June 18, 2003	Chicken	LT	.10	\$2920.00
July 20, 2003	Big Ponderosa	LT	.10	\$1226.00
June 27, 2003	Woodeshoe Fire	HC	2710	No Data
July 7, 2003	Highway	EQ	3	\$2569.00
July 17, 2003	Lapper	LT	.10	\$1950.00
July 22, 2003	Devil	LT	.10	\$1146.00
August 12, 2003	Two Mile	LT	1	\$4210.00
August 13, 2003	Big Fat Tree	LT	.10	\$978.00
August 18, 2003	Quarters	LT	.25	\$1115.00
June 16, 2004	Hop Creek	LT	.25	\$2688.00
June 25, 2004	Brushy Basin	LT	.10	\$1190.00
July 16, 2004	Cottonwood Cliffs	LT	.10	\$1158.00
July 17, 2004	Dog Tank	LT	.10	\$1125.00
May 24, 2005	Smith	DB	21	\$13819.00
June 18, 2005	Blue	DB	.25	\$1389.00
June 23, 2005	Blanding South	EQ	2.5	\$1380.00
June 22, 2005	Adakai	DB	15	\$1150.00
June 28, 2005	Bug	LT	3.3	\$1391.00
June 30, 2005	Valentine	LT	206	\$47464.00
July 3, 2005	Gas Plant	LT	3	\$1890.00
July 13, 2005	Hovenweep	LT	28	\$9255.00
July 14, 2005	Eastland	DB	1	\$1260.00
July 14, 2005	Skid	LT	.10	\$1920.00
July 18, 2005	Summit Canyon	LT	195	\$1130.00
July 22, 2005	Christy	LT	.10	\$2240.00
July 24, 2005	Hop	LT	.10	\$1692.00
May 19, 2006	Ken's Lake 1	DB	13	\$1492.00
June 7, 2006	Dove Creek	LT	73	\$59574.00
June 7, 2006	Cedar Point	LT	220	\$64838.00

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July 2, 2006	McCracken Mesa	LT	4.5	\$2513.00
May 19, 2007	Hwy 211	LT	.10	\$1160.00
June 20, 2007	Ucolo	DB	3	\$1624.00
June 27, 2007	La Sal	DB	6.25	\$6297.00
July 6, 2007	Sombraro	LT	.10	\$1983.00
July 19, 2007	Gillman	LT	.25	\$1425.00
July 14, 2007	Ramsey	E	46	\$2005.00
July 21, 2007	Afton Hide	LT	.10	\$1244.00
July 21, 2007	West Devil	LT	.10	\$2239.00
July 28, 2007	Big Indian	LT	.10	\$1244.00
July 28, 2007	Big Canyon	LT	.26	\$6214.00
August 1, 2007	Dead Out Fire	LT	.10	\$1834.00
August 13, 2007	Pole Canyon	LT	.10	\$1800.00
August 22, 2007	Reservoir Road	DB	6	\$1680.00
August 25, 2007	Jimmy	LT	1	\$9451.00
September 3, 2007	Brumley	LT	.10	\$2000.00
September 5, 2007	East Coyote #2	LT	.10	\$1915.00
September 6, 2007	Ute	LT	.10	\$1346.00
September 16, 2007	Hang Two	LT	.10	\$2280.00
September 17, 2007	Pine Flats	LT	.10	\$2280.00
June 29, 2008	Parison Ridge	LT	.10	\$1107.00
July 3, 2008	Salvation Knoll	LT	.10	\$5097.00
July 24, 2008	Oak Creek Canyon	LT	.10	\$4004.00
July 27, 2008	9MM	LT	.10	\$1521.00
September 13, 2008	Black Steer	LT	.25	\$1035.00
July 7, 2009	Pine Ridge 2	LT	88	\$103366.00
July 13, 2009	Pinyon	LT	68	\$18510.00
July 20, 2009	Alkali	LT	.10	\$2312.00
August 1, 2009	Ucolo	LT	3.50	\$15433.00
August 2, 2009	Coal Bed North	LT	.10	\$1931.00
August 6, 2009	Castleton View	LT	.10	\$1130.00
August 15, 2009	Southern Horse	LT	.10	\$1302.00
April 21, 2010	Comb Wash	LT	3	\$1694.00
June 27, 2010	Alkali Point	LT	24.9	\$5286.00
July 7, 2010	Elk	LT	.10	\$1488.00
July 8, 2010	Brushy Ridge	LT	.10	\$1305.00
July 25, 2010	Snyder Farm	LT	.37	\$4542.00
August 16, 2010	Dry Wash Ridge	LT	.10	\$1145.00
January 12, 2011	Oil Rig	EQ	.20	\$1131.00
May 23, 2011	Browns Hole	LT	.10	\$1517.00
June 16, 2011	Long Point	LT	.10	\$1697.00
June 18, 2011	Plow	LT	.25	\$1453.00
June 30, 2011	Dry Draw	LT	.40	\$1375.00

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July 3, 2011	Raby	LT	56.5	\$134631.00
July 15, 2011	Small Fry	LT	.30	\$2568.00
July 16, 2011	East Canyon	LT	1.45	\$12245.00
July 16, 2011	Fish Creek	LT	.25	\$6560.00
July 17, 2011	Westwater Creek	LT	.10	\$1186.00
July 17, 2011	Knuckles	LT	.10	\$1663.00
July 20, 2011	Uranium	LT	.10	\$1210.00
July 22, 2011	Mustang	LT	6.50	\$3417.00
July 25, 2011	Intrepid	LT	.10	\$1091.00
August 7, 2011	Redd	LT	.10	\$1280.00
August 20, 2011	Three Step	LT	.68	\$2321.00
August 24, 2011	Pipeline	LT	3.6	\$3624.00
August 26, 2011	North Coal Bed	LT	.10	\$1198.00
August 27, 2011	Buzzy	LT	.10	\$1414.00
August 29, 2011	Harvey	LT	.10	\$1129.00
August 30, 2011	Lonesome	LT	.10	\$1008.00
September 1, 2011	Shirley	LT	.10	\$1800.00
September 5, 2011	Ramses	LT	.10	\$1065.00
March 24, 2012	Cottonwood	MC	.10	\$1095.30
April 11, 2012	Alkali Creek	MC	.38	\$1028.75
April 28, 2012	Spring Canyon	LT	.10	\$2302.40
June 2, 2012	Johnson Creek	LT	.10	\$1504.60
June 1, 2012	Verger	EQ	.25	\$1029.80
June 9, 2012	Junction	MC	1.00	\$3627.60
June 11, 2012	Patara	LT	.10	\$1207.40
July 9, 2012	N.O. Beaver Shaft	LT	.25	\$1033.90
July 10, 2012	Bear Trap	LT	.50	\$2795.70
July 11, 2012	Patterson	EQ	0.1	\$1023.00
January 22, 2013	FLATS VEHICLE	DB	0.1	\$1806.00
January 24, 2013	BUG POINT	DB	0.1	\$122.00
January 31, 2013	FA CROSS CANYON	DB	0.1	\$105.16
March 26, 2013	BAILEY	FA	0	\$68.80
April 12, 2013	FA RANDALL	DB	0.1	\$137.60
April 19, 2013	HWY 491 MM 7	MC	0.1	\$42.00
April 19, 2013	CARTWRIGHT	EQ	0.1	\$246.40
April 21, 2013	TODIE SPRINGS	CF	0.1	\$1090.80
April 30, 2013	PIPELINE	FA	0	\$269.40
May 5, 2013	FA ROSIE LANE	LT	0.1	\$159.60
May 6, 2013	BIG INDIAN	LT	0.1	\$586.60
May 7, 2013	GRAND FLAT	LT	0.1	\$428.00
May 8, 2013	HORSEHEAD	LT	0.1	\$269.40
May 18, 2013	INDIAN CANYON	LT	0.1	\$282.80

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

May 18,2013	MEADLEY	LT	0.1	\$995.00
May 18, 2013	CARVER	FA	0	\$226.00
May 27,2013	FA PINE RIDGE	LT	0.1	\$19.00
May 18, 2017	SENIDENI	MC	0.76	\$226.00
June 6, 2013	POWERLINE	LT	0.1	\$822.80
June 13,2013	HARMONY	LT	0.1	\$987.80
June 16, 2013	NORTH PINE	LT	.10	\$898.00
June 13,2013	LACKEY FAN	LT	904	\$25339.50
June 13,2013	DARK CANYON	LT	350	\$7,001.40
June 16,2013	SOUTH PINE	LT	0.5	\$199.60
June 24,2013	NORTHERN PIKE	MC	0.1	\$89.80
June 23,2014	HALIDAY	MC	0.1	\$49.80
June 26,2013	FOY	CF	0.1	\$179.60
June 27,2013	SHUMWAY POINT	EQ	0.2	\$767.40
June 28,2013	FA MOKI DUGWAY	FA	0	\$538.80
June 28,2013	PINE RIDGE	LT	1.8	\$2287.20
July 2,2013	MIDDLE MESA	LT	0.1	\$359.20
July 3,2013	FA BIG INDIAN ROCK	FA	0	\$269.40
July 5,2013	FA MM 93 HWY 191	FA	0	\$179.60
July 6,2013	FA HWY 191 MM 45	FA	0	\$179.60
July 7,2013	JOHNSON	LT	0.1	\$1,375.40
July 8,2013	MUSTANG	LT	0.1	\$454.00
July 10,2013	BRUSHY BASIN	LT	2.75	\$4138.50
July 14,2013	RECAPTURE CREEK	LT	0.1	\$1077.60
July 15,2013	FA LEMS DRAW	LT	0.1	\$523.80
July 14,2013	HALFWAY HOLLOW	LT	0.1	\$74.80
July 16,2013	HOMESTAKE	LT	0.1	\$956.20
July 15,2013	TURNER	LT	0.1	\$294.80
July 15,2013	BLACK	LT	0.1	\$407.80
July 15,2013	FOURTH RESERVOIR	LT	0.1	\$68.80
July 16,2013	NORTH COTTONWOOD	LT	0.3	\$718.40
July 19,2013	WILCOX	LT	0.1	\$552.00
July 20,2013	PINE FLAT	LT	0.1	\$766.40
July 18,2013	FA HWY 95 MM 100	FA	0	\$552.00
July 19,2013	FRED	LT	0.1	\$399.20
July 20,2013	MORMON PASTURE	LT	0.2	\$847.50
July 23,2013	NEEDLES	LT	0.1	\$299.40
July 20,2013	ANCIENTS	LT	0.1	\$1243.00
July 28,2013	HORSEHEAD POINT	LT	0.1	\$399.20
July 28,2013	STOWE	LT	0.1	\$450.40
August 1, 2013	REDD VEHICLE	EQ	0.1	\$614.20
August 1,2013	FA HOLE IN THE ROCK	LT	0.1	\$299.40

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

August 2,2013	COYOTE WASH	LT	0.1	\$399.20
August 4,2013	KOJAK	LT	0.1	\$1297.40
August 5,2013	NATURAL	LT	0.1	\$300.00
August 6,2013	GERMAN	LT	0.1	\$851.20
August 19,2013	HATCH WASH	LT	0.1	\$574.80
August 12,2013	BARRY	LT	0.1	\$375.60
August 12,2013	SHUPE	LT	0.1	\$601.60
August 12,2013	MCDONALD	LT	0.1	\$685.60
August 12,2013	DAIRY LANE	LT	0.1	\$953.60
August 14,2013	FA MARTIN	DB	0.1	\$74.80
August 17,2013	HANGDOG CREEK	LT	0.1	\$548.80
August 18,2013	POLE SPRINGS	MC	0.3	\$149.60
August 23,2013	TWO STEP	LT	0.1	\$1126.80
September 1,2013	PAPOOSE	LT	0.1	\$862.20
September 18,2013	BARTON	DB	0.2	\$399.20
September 24,2013	FA FOY	FA	0	\$199.60
October 21,2013	WAGON WHEEL	CF	0.1	\$299.40
October 28,2013	WEST MONTEZUMA	MC	0.5	\$2818.00
October 25,2015	FA BULL HOLLOW	FA	0	\$99.80
November 4,2013	FA FLAT IRON	FA	0	\$224.40
January 16,2014	HWY 191 MM 62	EQ	0.1	\$103.00
March 19,2014	FA FOURTH RESERVIOR	FA	0	\$269.40
March 12,2014	LITTLE BAULIES	LT	0.1	\$678.00
March 12,2014	WEST COMB RIDGE	LT	0.1	\$474.00
March 12,2014	PICKET	LT	0.1	\$399.20
March 12,2014	ANTHONY	LT	0.1	\$395.50
March 24,2014	FA HWY 46	FA	0	\$42.00
March 29,2014	FA HWY 191 MM 90	FA	0	\$213.60
May 10,2014	WOODENSHOE POINT	EQ	1	\$853.10
May 23,2014	LISBON	LT	0.1	\$1277.20
May 23,2014	WHEEL	LT	0.33	\$399.20
May 24,2014	FA DEVILS CANYON	FA	0	\$199.60
May 28,2014	FA MOUNTAIN SHADOWS	FA	0	\$1008.40
June 2,2014	PINE FLATS	LT	0.1	\$299.40
June 10,2014	TURTLE ROCK	LT	0.1	\$69.80
June 11,2014	STEEN	LT	0.1	\$349.00
June 12,2014	ALLEN	LT	0.1	\$433.80
June 3,2014	C.F. PUGHE	CF	0.1	\$47.40
June 17,2014	CLAY HILLS	MC	115	\$598.80
June 17,2014	WEST SUMMIT	DB	0.1	\$319.20
June 27,2014	FA ATWOOD	FA	0	\$199.60



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

July 7,2014	BORDER	LT	0.98	\$3310.80
July 8,2014	WILLOW	LT	0.1	\$299.40
July 5,2014	JOHNSON CREEK	LT	0.1	\$738.20
July 6,2014	HAMMOND CANYON	LT	0.1	\$598.80
July 6,2014	MURPHY POINT	LT	0.1	\$577.80
July 9,2014	FA UPPER 2 MILES	FA	0	\$399.20
July 11,2014	BABYLON PASTURE	LT	1.4	\$1434.50
July 13,2014	FA JUNCTION	FA	0	\$598.80
July 13,2014	BLUE	LT	0.1	\$199.60
July 14,2014	BLACK STEER	LT	0.1	\$1501.80
July 15,2014	CANYON	LT	0.1	\$846.40
July14,2014	Mustang Point	LT	0.1	\$181.00
July 31,2014	F.A Porter	FA	0	\$139.00
July 16,2014	BOULDER	LT	0.1	\$126.00
July 18,2014	BUG POINT	LT	1.09	\$4139.40
July 21,2014	GOLD QUEEN	CF	0.1	\$399.20
July 24,2014	GLADE	LT	0.1	\$199.60
July 24,2014	CHINSTRAP	LT	0.1	\$747.50
July 24,2014	WHITE FLATS	LT	0.1	\$452.00
July 24,2014	OLD DUMP	LT	0.1	\$1,239.00
July 24,2014	PEARSON	LT	0.1	\$413.80
July 24,2014	PIUTE KNOLL	LT	0.1	\$300.80
July 29,2014	FINGER	LT	0.1	\$1389.80
July 29,2014	SUMMIT CANYON	LT	0.1	\$798.40
July 29,2014	HALLOW	LT	0.1	\$452.00
August 5,2014	FA INDIAN CREEK	FA	0	\$299.20
August 4,2014	FA PETERS HILL	FA	0	\$113.30
August 1,2014	SOUTH COALBED	LT	0.1	\$223.60
August 5,2014	WILLOW BASIN	LT	0.1	\$187.00
August 5,2014	WRAY	LT	0.1	\$574.80
August 5,2014	DODGE	LT	0.1	\$1293.30
August 8,2014	HALFWAY HALLOW	LT	0.1	\$515.50
August 8,2014	HALFWAY HOLLOW	LT	0.1	\$193.50
August 16,2014	MUSTANG	LT	0.1	\$408.60
August 7,2014	SOP CANYON	LT	0.1	\$718.50
August 14,2014	FA DRY WASH	FA	0	\$239.50
August 12,2014	SPRING DRAW	MC	0.1	\$417.60
August 14,2014	NORTH BIG INDIAN	LT	0.1	\$383.20
August 19,2014	PIPELINE	LT	0.1	\$670.60
August 28,2014	FA SEEP CREEK	FA	0	\$99.80
August 27,2014	FA BARRY	FA	0	\$99.80
August 5,2014	FA SQUARE TOWER	FA	0	\$90.80

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

August 21,2014	FA BUG POINT	FA	0	\$99.80
September 8,2014	FA BOULDER CREEK	FA	0	\$99.80
September 6,2014	FA DARK CANYON LAKE	FA	0	\$499.00
September 7,2014	PETERS RIM	LT	0.1	\$499.00
September 17,2014	FA HWY 95 MM 87	FA	0	\$423.20
October 20,2014	FA EDGE OF THECEDARS	FA	0	\$139.00
December 3,2014	F.A. SWEAT LODGE	DB	0.1	\$50.00
February 15,2015	CHURCH ROCK	MC	0.1	\$139.60
April 30,2015	HATCH	MC	7.3	\$890.00
May 23,2015	8 MILE	LT	0.1	\$709.50
May 22,2015	LOCKERBY	LT	0.1	\$451.50
May 19,2015	MULE CANYON	LT	0.1	\$897.00
May 19,2015	DRY WASH	LT	0.1	\$345.00
May 14,2015	CEDAR MESA	LT	0.1	\$1104.00
May 8,2015	BULLDOG	LT	0.1	\$1191.00
May 9,2015	FALSE ALARM UCOLO	FA	0	\$276.00
May 26,2015	SHIRTTAIL	LT	1.5	\$1913.00
June 11,2015	F.A. MUSTANG MESA	FA	0	\$1135.50
June 29, 2015	PINE RIDGE	LT	0.45	\$565.00
July 14, 2015	BROWNS CANYON	DB	0.1	\$420.00
July 2, 2015	HATCH WASH	LT	0.1	\$87.50
July 4, 2015	ROCK CREEK	LT	0.1	\$169.50
July 9, 2015	BIG INDIAN	LT	0.1	\$339.00
September 9,2015	HIDEOUT CANYON	LT	2.6	\$1364.00
September 13,2015	BLACK RIDGE	MC	3.7	\$2252.00
September 14,2015	NORTH LA SAL	LT	0.1	\$100.00
June 22,2016	FLATTOP	LT	1.7	\$160.00
June 20,2016	COWBOY STREET	MC	0.3	\$50.00
July 19,2016	ABAJO LOOP	LT	0.1	\$87.50
August 15,2016	F.A. MUSTANG	FA	0	\$757.70
September 5,2016	LISBON VALLEY	LT	0.1	\$75.00
February 23,2017	ALIKALI RIDGE	MC	0	\$1,687.00
March 8, 2017	INDIAN CREEK	MC	0	\$1,482.00
April 12, 2017	EAST CANYON	MC	2.0	\$110.00
May 1, 2017	CHURCH ROCK	MC	0.25	\$375.00
May 6, 2017	ARCH CANYON	LT	0.1	\$531.00
May 6, 2017	NATURL BRIDGE	LT	0.1	\$79.00
May 7, 2017	LONG DRAW	LT	0.1	\$175.00
May 13, 2017	WRAY MESA	LT	1.0	\$3099.21
June 1, 2017	FALSE ALARM	FA	0	\$363.00
June 3, 2017	CAUSEWAY	LT	90.0	\$178,127.50
June 7, 2017	HWY 163 MM32	EQ	0.2	\$117.36

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

June 8, 2017	LYMAN PARK	CF	0.1	\$30.00
June 12, 2017	CORONADO	MS	0.5	\$69.00
June 12, 2017	PETER SPRINGS	MS	1.3	\$54.00
June 15, 2017	FALSE ALARM	FA	0	\$456.26
June 21, 2017	FALSE ALARM	FA	0	\$114.31
June 24, 2017	LA SAL	DB	0.25	\$801.00
July 1, 2017	COAL BED	DB	8.7	\$110.63
July 8, 2017	WEST SIDE	LT	0.1	\$284.14
July 8, 2017	MONTEZUMA	LT	0.1	\$62.62
July 9, 2017	HWY 261 MM 22	LT	0.1	\$63.00
July 9, 2017	FALSE ALARM	FA	0	\$411.85
July 10, 2017	SOUTH COTTONWOOD	LT	13.10	\$10,708.70
July 10, 2017	WHISKERS	LT	0.1	\$62.62
July 11, 2017	UCOLO	LT	0.1	\$37.17
July 13, 2017	MULE	LT	0.1	\$295.00
July 14, 2017	STRIKE	LT	0.1	\$26.00
July 17, 2017	PEARSON	LT	0.1	\$102.84
July 17, 2017	MAILBOX	LT	0.2	\$50.57
July 18, 2017	BUG POINT	LT	0.1	\$271.42
July 19, 2017	INDIAN PARK TWO	LT	0.1	\$91.98
July 19, 2017	BRIDGER JACK	LT	0.1	\$64.00
July 19, 2017	JOE WILSON CANYON	LT	0.1	\$777.00
July 19, 2017	HWY 191 MM 119	EQ	0.1	\$173.67
July 19, 2017	BAULLIES	LT	0.1	\$2043.87
July 20, 2017	FLAT IRON	LT	0.1	\$62.61
July 20, 2017	BOULDER CUTOFF	LT	0.1	\$5004.31
July 20, 2017	SEEP CREEK	LT	0.2	\$110.16
July 21, 2017	ROUGH CANYON	LT	0.1	\$62.61
July 22, 2017	ALKALI POINT	LT	0.1	\$541.60
July 22, 2017	WHISKER	LT	0.1	\$50.40
July 22, 2017	KANE GULCH	LT	0.1	\$364.56
July 23, 2017	PETERS SPRING POINT	LT	8.0	\$531.00
July 23, 2017	RECAPTURE CREEK	LT	0.1	\$406.86
July 25, 2017	LANDING	LT	0.1	\$463.95
July 27, 2017	HORSE HEAD CANYON	LT	0.1	\$278.44
July 30, 2017	WARREN ALLEN	LT	0.1	\$466.48
August 2, 2017	GRAND GULCH	LT	0.1	\$390.40
August 3, 2017	FALSE ALARM	FA	0	\$366.85
August 8, 2017	BIG CANYON	LT	0.1	\$1,129.63
August 10, 2017	WEST BOULDER POINT	DB	0.1	\$25.00
August 12, 2017	BULLDOG CANYON	LT	0.1	\$261.75
August 12, 2017	BULLDOG MESA	LT	0.1	\$468.13

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

August 12, 2017	BULLDOG RANCH	LT	0.1	\$92.94
August 12, 2017	BULLPUP CANYON	LT	0.1	\$424.63
August 17, 2017	WALKER ROAD	MC	70.0	\$8,478.58
August 21, 2017	SOUTH MESA	LT	0.1	\$835.84
August 26, 2017	LONG CANYON	LT	3.0	\$7,781.96
August 30, 2017	MANCOS JIM	LT	2.0	\$679.44
August 31, 2017	NOTCH	LT	0.1	\$62.93
August 31, 2017	CHURCH	LT	0.1	\$603.18
September 1, 2017	BULLET CANYON	LT	0.1	\$437.93
September 4, 2017	MULE CANYON	LT	0.2	\$63.00
September 4, 2017	LITTLE NOTCH	LT	0.14	\$85.14
September 13, 2017	HALFWAY	LT	0.1	\$134.21
September 13, 2017	NORTH FORK	LT	0.1	\$235.92
September 14, 2017	HAMMOND	DB	0.1	\$1,042.70
September 17, 2017	NOTCH CANYON	LT	1.3	\$883.40
September 17, 2017	BABYLON	LT	0.1	\$2,193.40
September 18, 2017	WOOD SHOE	LT	0.5	\$3,074.14
October 13, 2017	JOHNSON RIDGE	DB	90.0	\$657.40
2018				

Utah Division of Forestry, Fire and State Lands Annual Reports

**Fire Cause: LT Lightning, FA False Alarm, MC Miscellaneous, DB Debris Burn, EQ Equipment, IN Incendiary, CF Camp Fire, CH Children, RR Rail Road**

# San Juan County Pre-Disaster Hazard Mitigation Plan

## 2018



Image provided by San Juan County

### Flood

#### Hazard Profile

Potential Magnitude		Negligible	Less than 10%	
		Limited	10-25%	
	X	Critical	25-50%	
		Catastrophic	More than 50%	
Probability		Highly Likely		
	X	Likely		
		Possible		
		Unlikely		
Location	See map for the San Juan and Colorado Rivers and their respective larger tributaries. Located in the Hazus report Appendix 1 page 7			
Seasonal Pattern or Conditions	Spring and early summer, Heavy Snowfall Runoff. Monsoonal (late summer) Thunderstorms Heavy Rainfall			
Duration	Flooding can last anywhere from hours to days and even months.			
Analysis Used	Review of FIS, FIRM, Army Corp of Engineers Flood Study, GIS data, DEM Hazus 100 Year Flood report, and have worked with residents of the community.			

#### Description of Location and Extent

The WFRM, San Juan County GIS staff members, and Utah DEM have reviewed the county's most recent FIRM and FIS, EOP, 2017 Hazus 100 Year Flood Report, and have worked with residents of the community to compile all available data to profile the flooding hazard in San Juan County.

The following locations are situated in floodplains and have suffered property damage in the past. McElmo Creek, Comb Wash, Cottonwood Wash, and Montezuma Creek near Bluff, Cottonwood Wash near Blanding, Butler Wash near Bluff, Comb Wash near Bluff and Blanding, White Canyon near Hite, and Lime Creek near Mexican Hat.

# San Juan County Pre-Disaster Hazard Mitigation Plan

## 2018

Bluff is in an alluvial fan below Cottonwood Wash, and therefore is in a floodplain area as well as in a shallow ground water zone. Mexican Hat is located near the San Juan River and is also in the floodplain. The City of Blanding resides on or near expansive soils; when water is introduced into these types of soils they expand and damage or destroys foundations in homes and businesses.

Monticello, Bluff, Blanding, and Mexican Hat are likely to experience another flood event in the future. Flash flooding is also possible in San Juan County in gullies, washes and canyons.

### **Vulnerability Assessment**

#### **Economic Loss**

The total economic loss estimated for the 100-year flood analysis is 24.79 million dollars, which represents 10.75 % of the total replacement value of the scenario buildings. (September 2017 Hazus-MH Global Risk Report)

#### ***Building-Related Losses***

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 24.77 million dollars. 0% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 88.64% of the total loss. Table 15 below provides a summary of the losses associated with the building damage

The Hazus 100 -year flood model estimates 247 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 424 people (out of a total population of 14,746) will seek temporary shelter in public shelters.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

**Table 15 Building Related Loss**

Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	14.66	0.36	0.14	0.17	15.33
	Content	7.30	1.03	0.27	0.77	9.36
	Inventory	0.00	0.03	0.05	0.01	0.08
Sub Total		21.96	1.41	0.46	0.94	24.77
Business Interruption						
	Income	0.00	0.00	0.00	0.00	0.00
	Relocation	0.01	0.00	0.00	0.00	0.01
	Rental Income	0.00	0.00	0.00	0.00	0.00
	Wage	0.00	0.00	0.00	0.00	0.00
Sub Total		0.01	0.00	0.00	0.01	0.02
Total		21.97	1.41	0.46	0.95	24.79

UTDEM Hazus 100 Year Flood Analysis, Nov 2017

## San Juan County National Flood Insurance Policy Participation

San Juan County	Unincorporated	3 Polices	12/11/85 Entry into NFIP Program	No Flood Plain Map, No Special Flood Hazard Area, All Zone C
	Monticello City	0 Polices	12/6/99 Entry into the NFIP Program	12/24/76 Date of current Flood Plain Map
	Blanding City		Non-Participant	
	Town of Bluff		Non-Participant	

State of Utah NFIP Program dtd November 29, 2016

## San Juan County does not have any repetitive loss properties

### Flood Plain Administrators Actions

In 2018 San Juan County hired a Building Inspector and assigned the Building Inspector the role and responsibility as the San Juan County Flood Plain Administrator.

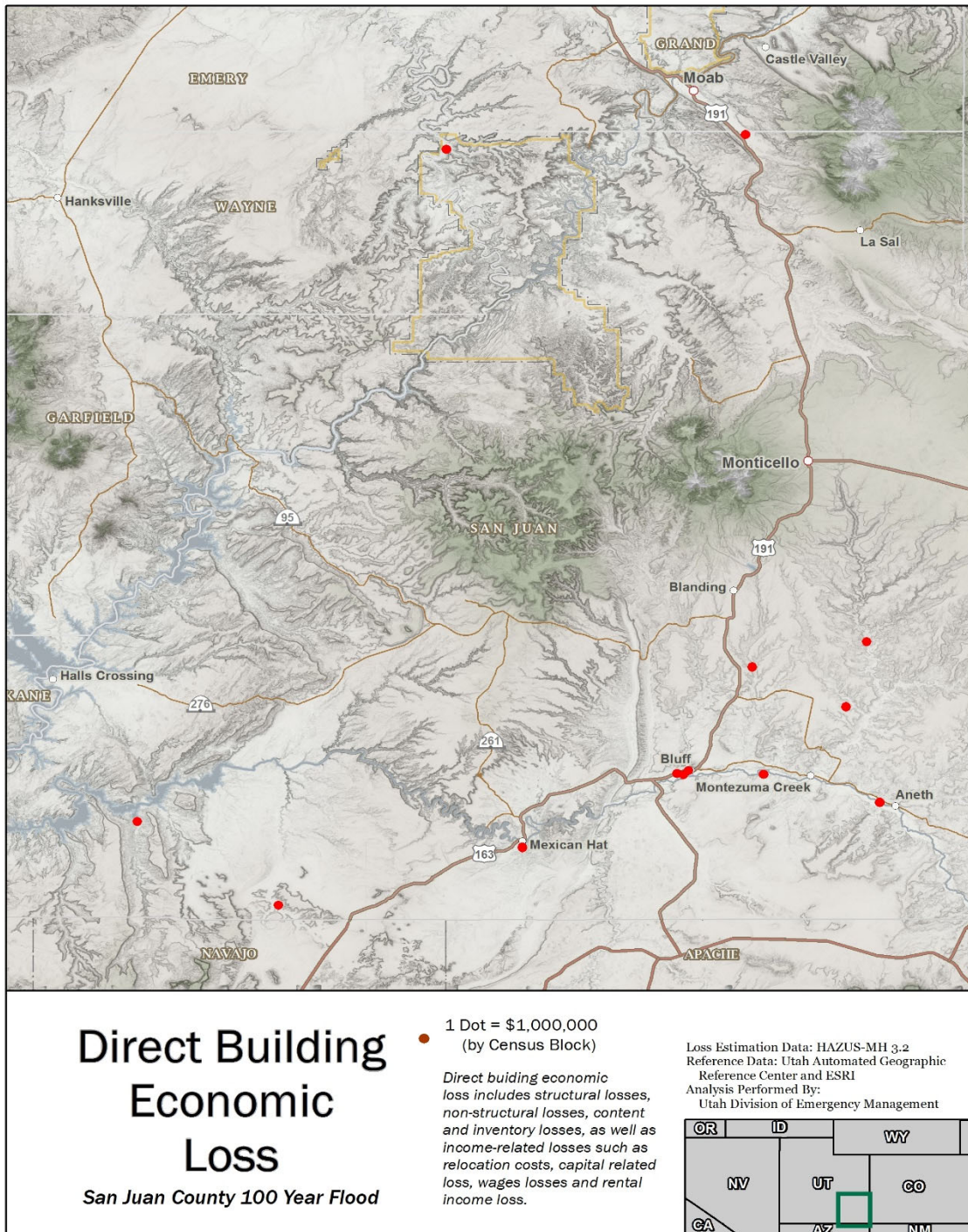
The County will review and update the Flood Plain Ordinances in 2018.

The City of Monticello has designated the Chair of the Monticello Planning and Zoning Committee as the Flood Plain Administrator.

The Monticello Flood Plain Administrator applies the applicable sections of the Monticello Flood Plain Ordinance 1999-4.

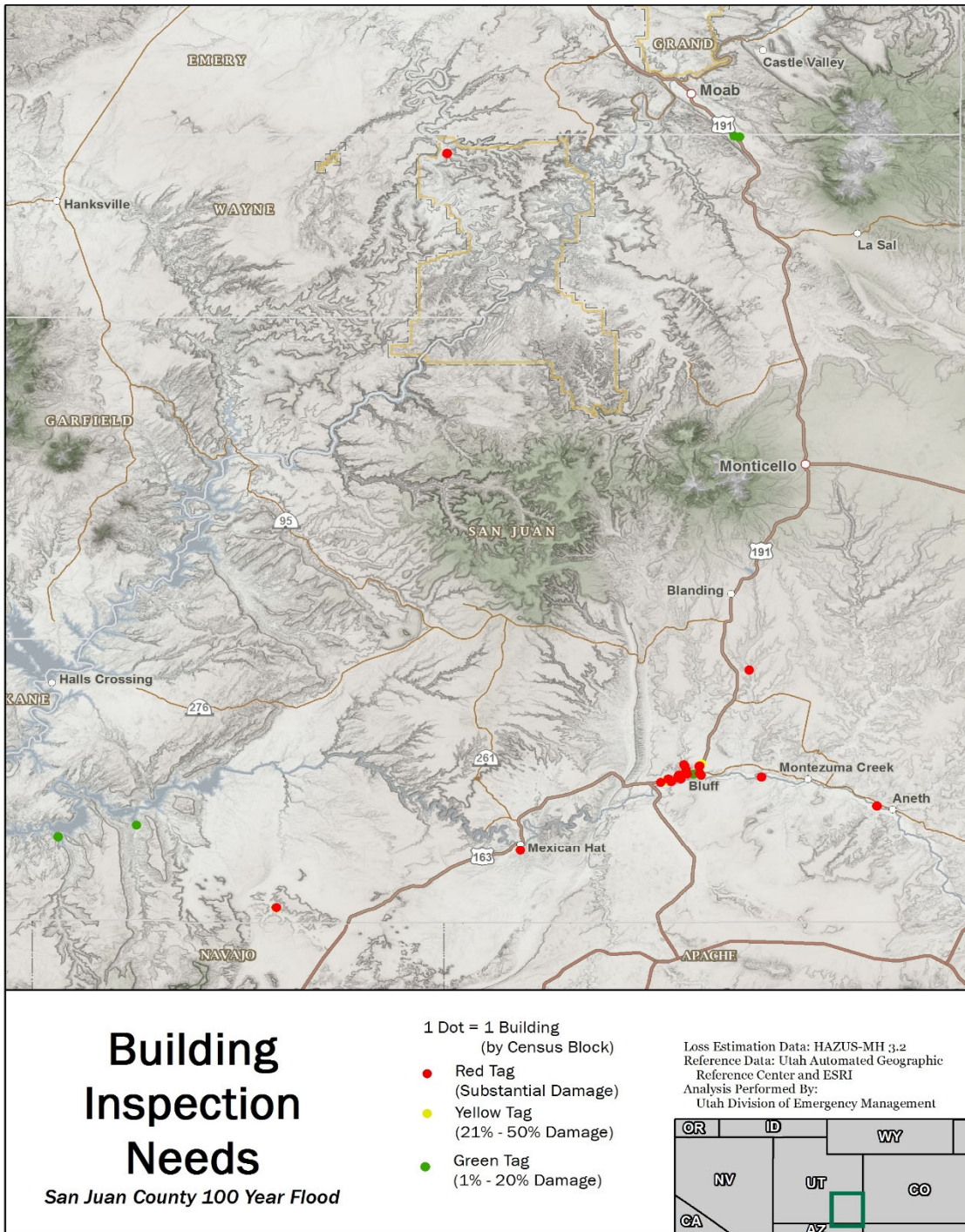


# San Juan County Pre-Disaster Hazard Mitigation Plan 2018





# San Juan County Pre-Disaster Hazard Mitigation Plan 2018



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Dam Failure

### Hazard Profile

Potential Magnitude		Negligible	Less than 10%
	X	Limited	10-25%
		Critical	25-50%
		Catastrophic	More than 50%
Probability		Highly Likely	
		Likely	
	X	Possible	
		Unlikely	
Location	Dam locations are mainly located in the mid-eastern portion of the county.		
Seasonal Pattern or Conditions	Rainy Day Failure happens mainly during heavy precipitation events, can have some warning time. Sunny Day Failure happens with no warning at all can happen at any time.		
Duration	Hours, Days. Depends on spillway type and area, maximum cfs discharge, overflow or breach type, dam type. Refer to Dam Inventory for more information.		
Analysis Used	Review of BOR inundation maps and plans, FIS, Water Rights, Utah Division of Water Rights and Dam Safety, local input.		

### Description of Location and Extent

Thirty-three dams are listed by the Utah Division of Water Rights Dam Safety in San Juan County with only six dams listed as having a high threat rating. A high threat rating means there is a possibility of life being lost due to dam failure. Seven dams are listed, as having a moderate hazard rating, meaning there would be significant downstream property loss if the dam were to fail. The remaining twenty dams have a low hazard rating; if a dam failure were to occur there would be insignificant property loss, however they should still be monitored. The classification of a high hazard dam does not mean that the dam has a high probability of failure. Dam safety hazard classifications simply delineate the downstream consequences if a dam were to fail (Table 16). Potential dam failure in San Juan County is rated as “possible.” If a dam were to breach in the county, the cities identified in Table 17 would be affected.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

**Table 16 San Juan County Dam Risk**

	<b>Dam Name</b>	<b>Hazard Rating</b>
1	BLANDING CITY NO. 3	HIGH
2	BLANDING CITY NO. 4	HIGH
3	KENS LAKE	HIGH
4	LOYD'S LAKE(MONTICELLO)	HIGH
5	RECAPTURE CREEK	HIGH
6	STARVATION CANYON	HIGH
7	CAMP JACKSON	MODERATE
8	DRY WASH NO. 2	MODERATE
9	GORDON	MODERATE
10	KELLER	MODERATE
11	MONTICELLO LAKE	MODERATE
12	RATTLESNAKE RANCH NO 1 (UPPER)	MODERATE
13	RATTLESNAKE RANCH NO.2 (LOWER)	MODERATE
14	ADAMS RANCH DAM	LOW
15	ADAMS, LYNN	LOW
16	BAILEY (UPPER)	LOW
17	BAILEY, LAWRENCE P. 72R3-20	LOW
18	BANKHEAD (LOWER)	LOW
19	BANKHEAD (UPPER)	LOW
20	BEARS EARS POND #2	LOW
21	BEAVER POND #1, SEC. 6	LOW
22	BEAVER POND #2, SEC. 6	LOW
23	BIG HOLE RESERVOIR	LOW
24	BLANDING WASTEWATER WINTER STORAGE	LOW
25	BLANKENAGLE RESERVOIR	LOW
26	BLUE SPRINGS RESERVOIR	LOW
27	BROWNELL, DURWIN H. 71R6-28	LOW
28	BRUSHY BASIN RESERVOIR #1	LOW
29	BRUSHY BASIN RESERVOIR #2	LOW
30	BRUSHY BASIN RESERVOIR #3	LOW
31	BRUSHY BASIN RESERVOIR #4	LOW
32	BUCK HOLLOW	LOW
33	BUCK HOLLOW RESERVOIR #2	LOW
34	BULL DOG POND	LOW
35	BUREAU OF LAND MANAGEMENT	LOW
36	COYOTE CREEK POND	LOW

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

37	DALTON, MAX	LOW
38	DAVIS POCKET POND	LOW
39	DE JONES, CARDON 72 72R5-1	LOW
40	DEER FLAT SPRING #2	LOW
41	DERVAGE, MICHAEL	LOW
42	DEVILS CANYON POND	LOW
43	DOUBLE CORRALS PASTURE POND	LOW
44	DUGOUT	LOW
45	DUKES POND	LOW
46	EAST POINT RESERVOIR	LOW
47	FOY	LOW
48	HALLS, F. DEVERE 70R6-2	LOW
49	HAMMOND CANYON TRAIL RESERVOIR	LOW
50	HARTS DRAW POND	LOW
51	HARTS DRAW POND #2	LOW
52	HARTS DRAW POND #3	LOW
53	HARTS DRAW POND #4	LOW
54	HYDE, LEE AFTON 70R12-23	LOW
55	IRON SPRINGS	LOW
56	IRVINE DAY RESERVOIR	LOW
57	J.N. PASTURE POND	LOW
58	JACKSON SPRING DUGOUT	LOW
59	JOHNSON CREEK RESERVOIR	LOW
60	JOHNSON RESERVOIR	LOW
61	JOHNSON RIDGE RESERVOIR #1	LOW
62	JOHNSON RIDGE RESERVOIR #2	LOW
63	JONES POND	LOW
64	KNOLLS RESERVOIR	LOW
65	LAWS, BOYD J. & SANDRA P. 94-09-64MD	LOW
66	LENS POINT RESERVOIR #1	LOW
67	LENS POINT RESERVOIR #2	LOW
68	LENS POINT RESERVOIR #3	LOW
69	LISBON VALLEY MINING CO. LLC	LOW
70	LISBON VALLEY MINING CO. LLC	LOW
71	LISBON VALLEY MINING CO. LLC	LOW
72	LISBON VALLEY MINING CO. LLC	LOW
73	LISBON VALLEY MINING COMPANY	LOW
74	LITTLE MOUNTAIN POND	LOW

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

75	LITTLE MOUNTAIN RIM POND	LOW
76	LOCKHART BASIN 72R3-21	LOW
77	LONG DRAW RESERVOIR	LOW
78	LOWER HOP CREEK	LOW
79	LOWER PINE RIDGE RESERVOIR	LOW
80	LOWER TRINITY RESERVOIR	LOW
81	LOWER WEST STATE LINE	LOW
82	LYMAN, RICHARD & MARY ANN	LOW
83	LYMAN, RICHARD & MARY ANN	LOW
84	LYMAN, RICHARD & MARY ANN	LOW
85	MARTINEZ, EARL	LOW
86	MARTINEZ, EARL	LOW
87	MARTINEZ, EARL	LOW
88	MAVERICK POINT POND	LOW
89	MEDICINE LAKE	LOW
90	MIKESELL FAMILY TRUST	LOW
91	MINERS POND	LOW
92	MOAB SALT POTASH POND DAM 2G	LOW
93	MOAB SALT POTASH POND DAM 2N	LOW
94	MOAB SALT POTASH POND DAM 3B	LOW
95	MONTICELLO CITY NO. 1	LOW
96	MONTICELLO CITY NO. 2	LOW
97	MONTICELLO CITY NO. 3	LOW
98	MOORE'S RANGE RESERVOIR #1	LOW
99	MOORE'S RANGE RESERVOIR #2	LOW
100	MORMON PASTURE POINT POND	LOW
101	MUD BALL RESERVOIR	LOW
102	NEEDLES OVERLOOK	LOW
103	NIELSON, G.J. 72R4-14	LOW
104	NIELSON, NORMAN F.	LOW
105	NORTH FORK OF VERDURE POND	LOW
106	PETERS POINT POND #1	LOW
107	PETERS POINT POND #2	LOW
108	PETERS POINT POND #3	LOW
109	PHOTO RESERVOIR	LOW
110	PINE RIDGE #1	LOW
111	PINE RIDGE #2	LOW
112	PINE RIDGE #3	LOW

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

113	PINE RIDGE #4	LOW
114	PINE RIDGE #5	LOW
115	PINE RIDGE #6	LOW
116	PINE RIDGE #7	LOW
117	PINE RIDGE RESERVOIR	LOW
118	POLE CANYON RESERVOIR	LOW
119	PORTER, EUGENE W. & ANNE B. 71R5-11-2	LOW
120	PORTER, EUGENE W. & ANNE B. 71R5-11-3	LOW
121	PROVANCHA	LOW
122	RACE TRACK POND	LOW
123	RAMSAY, CLARENCE R. 70R10-2	LOW
124	RECAPTUE BENCH RESERVOIR #1	LOW
125	RECAPTURE BENCH RESERVOIR #2	LOW
126	RECAPTURE ROAD POND	LOW
127	RESERVOIR CANYON FORK POND	LOW
128	RESERVOIR CANYON RESERVOIR	LOW
129	RIO ALGOM (LOWER)	LOW
130	RIO ALGOM (UPPER)	LOW
131	ROAD POND	LOW
132	ROCKY RESERVOIR	LOW
133	SALT CREEK POND	LOW
134	SCORUP POND	LOW
135	SEEP CREEK RESTORATION	LOW
136	SHAY RIDGE POND	LOW
137	SHAY RIDGE POND #1	LOW
138	SHAY RIDGE POND #2	LOW
139	SHUMWAY, EUGENE 77R2-25	LOW
140	SITLA	LOW
141	SITLA - BAULIES POND	LOW
142	SITLA - HART POINT POND	LOW
143	SITLA - JOHN'S CANYON POND	LOW
144	SITLA - POND #1	LOW
145	SITLA - POND #2	LOW
146	SNYDER NO. 2	LOW
147	SNYDER, WALTER B. 77R26	LOW
148	SNYDER, WALTER B. 77R25	LOW
149	SOUTH VERDURE RESERVOIR	LOW
150	STATE LINE RIDGE RESERVOIR	LOW

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

151	STOCK, A.M. 85R42	LOW
152	STOCKS, FRED & BRENDA	LOW
153	THORNELL POND	LOW
154	TRINITY CANYON RESERVOIR	LOW
155	TWO MILE ROAD RESERVOIR	LOW
156	U.S. FOREST SERVICE 84R35	LOW
157	VERDURE POND	LOW
158	WASHBURN POND	LOW
159	WEST HORSE PASTURE POND	LOW
160	WHITE MESA	LOW
161	WHITE MESA TAILINGS NO. 1	LOW
162	WHITE MESA TAILINGS NO. 2	LOW
163	WHITE MESA TAILINGS NO. 3	LOW
164	WHITE MESA TAILINGS NO. 4B	LOW
165	WILCOX	LOW
166	WOODENSHOE RESERVOIR	LOW
167	YOUNG MILL POND	LOW
168	BUREAU OF LAND MANAGEMENT 96-09-41MD	
169	BUREAU OF LAND MANAGEMENT 96-09-42MD	
170	CALLIHAM, GERALD 94-09-75MD	
171	CALLIHAM, GERALD 94-09-76MD	
172	DEER FLAT SPRING #3 POND 96-99-40MD	
173	FRANCOM, ROWLAND & CHRISTINE 97-09-03MD	
174	MARIAN, DUANE 97-09-08MD	
175	MONTICELLO MILLSITE POND #3	
176	MONTICELLO MILLSITE POND #4	
177	PORTER, EUGENE W. & ANNE B. 71R5-11	
178	SHUMWAY, DANNY 95-09-03MD	
179	SKY RANCH L.C. 98-05-35MD	
180	TRACY BALSLEY 96-05-21MD	
181	WILLIAM EWING LUCAS 96-05-34MD	

DWR, BOR, Utah Division of Water Rights Dam Safety



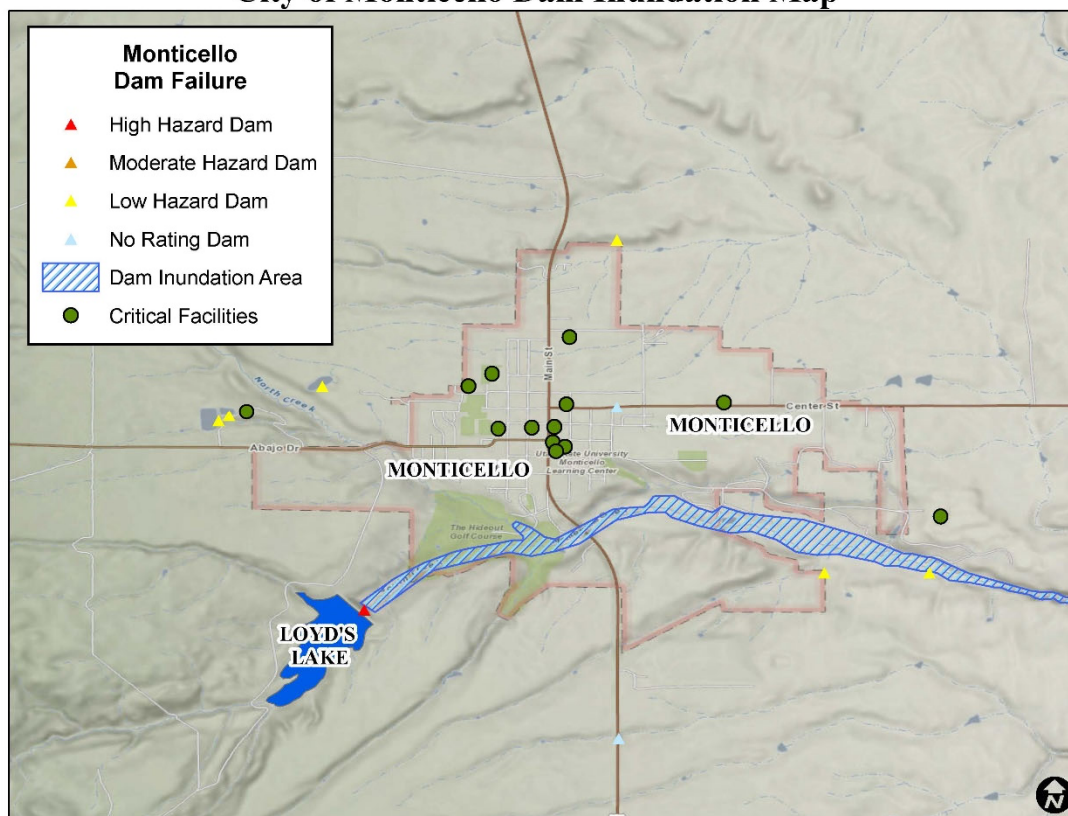
# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Vulnerability Assessment

### Monticello

Lloyds Lake is a High hazard dam owned by San Juan Water Conservancy District and was completed in 1984. The reservoir storage at spillway crest is 3,500 acre-feet and the reservoir storage at dam crest is 4,300 acre-feet. The spillway type is an open channel and the maximum dam breach flow would be 86,000 cfs with a 13-square mile drainage basin area. The first downstream town is Monticello 1 mile away.

### City of Monticello Dam Inundation Map



Data from AGRC, DWR, BOR. Map created by Utah Division of Emergency Management, Nov. 2017.

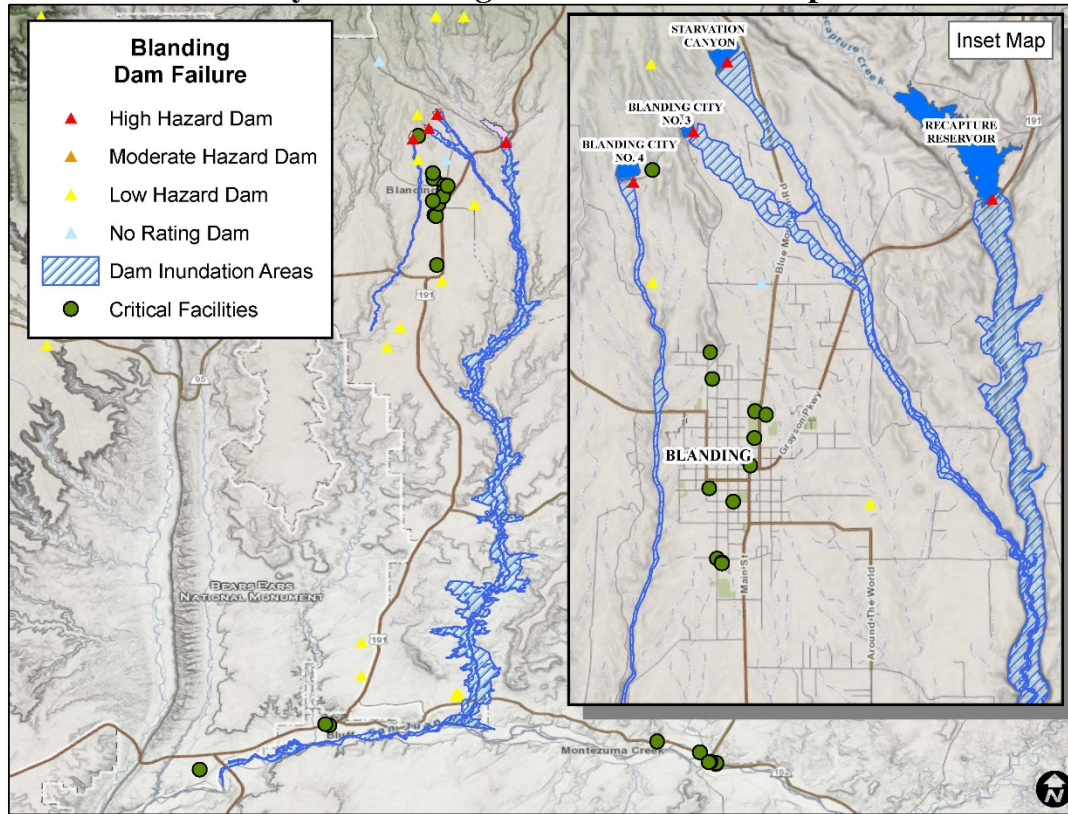
### Blanding

Starvation Canyon Reservoir is a High hazard dam owned by Blanding City and was completed in 1985. The reservoir storage at spillway crest is 600 acres and the reservoir storage at dam crest is 875 acres. The spillway type is an open channel and the maximum dam breach flow would be 28,000 cfs with a 1 square mile drainage basin area. The first downstream town is Blanding 3 miles away.



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

**City of Blanding Dam Inundation Map**



Data from AGRC, DWR, BOR. Map created by Utah Division of Emergency Management, Nov. 2017.

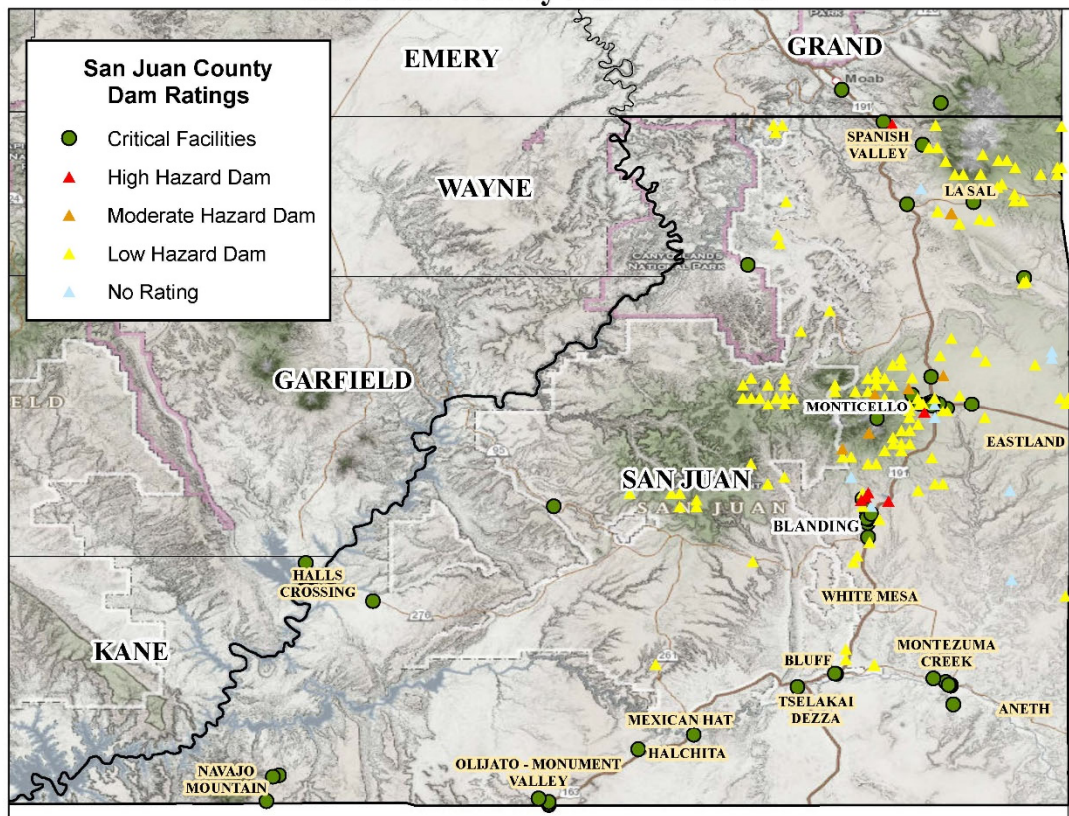
Recapture Creek has a High hazard dam rating. It is owned by San Juan Water Conservancy and was completed in 1984. The reservoir storage at spillway crest is 9,319 acre-feet and the reservoir storage at dam crest is 16,000 acre-feet. The spillway type is open channel and the maximum dam breach flow would be 220,000 cfs with a 61-square mile drainage basin area. Recapture Creek does not have a downstream town; the dam water would flow into the San Juan River.

**Table 17 Dam Breach Downstream Communities Affected**

Dam Name	First Downstream Town	Distance in miles
Bankhead, Lower	La Sal	5
Blanding City #3	Blanding	4
Camp Jackson	Blanding	17
Dry Wash #2	Blanding	14
Starvation Canyon	Blanding	3
Gordon	Monticello	5
Kens Lake	Moab	6
Lloyds Lake	Monticello	1
Monticello City #1	Monticello	1
Monticello City #2	Monticello	1

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Dam Hazards



Data from AGRC, DWR, BOR. Map created by Utah Division of Emergency Management, Nov. 2017.

## Infestation Hazard Profile

Potential Magnitude		Negligible	Less than 10%
	X	Limited	10-25%
		Critical	25-50%
		Catastrophic	More than 50%
Probability		Highly Likely	
	X	Likely	
		Possible	
		Unlikely	
Location	Countywide agricultural lands, forested areas, areas of extreme drought.		
Seasonal Pattern or Conditions	Summer, drought related		
Duration	Months to years		
Analysis Used	Reviewed information provided by UGS, DEM, AGRC, Utah Forestry Fire and State Lands, Utah Forest Service, Utah State University Extension Service, and local input.		

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

## **Description of Location and Extent**

San Juan County continues to experience an infestation problem of insects, disease, and noxious weeds. The unhealthy forests are conducive to insect and disease issues. Several factors contribute to the decline in forest health including: lack of active management, poor grazing patterns, fire exclusion, and invasive/noxious weeds. (See Appendix 4)

Cutworms have also been a problem within the cities and communities of San Juan County. This type of infestation has a direct correlation to drought and is one of the secondary threats of drought. San Juan County is located within Climate Division 7. This division experiences a drought almost every two years. Each drought can last five or more years.

## **Vulnerability Assessment**

Infestation will continue to be an issue in the future because of San Juan's climate. The drought conditions, invasive weeds, insects, and species diversity are all affected by climate and will continue to be a limited problem for San Juan's forestlands and communities.

Adequate precipitation and growing space is necessary to maintain tree vigor, thereby increasing tree resistance to insects and disease. The drought conditions persistent in San Juan County continues to place more stress on the forests already in poor health. The following insect and disease issues may not be the cause of poor forest health but a result of it.





# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

**Table 18.** Trees Killed and Acres Affected by Bark Beetles Reported in the 2015 Survey in San Juan County

Tree Type	Number of Trees	Number of Acres
Douglas Fir Beetle	609 Trees	304 Acres
Spruce Beetle	59 Trees	29 Acres
Pinon Engraver	8 Trees	5 Acres
Fir Engraver Beetle	834 Trees	388 Acres
Subalpine Fir	1,202 Trees,	898 Acres

**Table 19.** Number of Acres Impacted by Defoliators and other Agents in 2015

Cause	Number of Acres
Western Spruce Budworm	1,728 Acres
Unknown Aspen Defoliant	38 Acres
Aspen Decline	1,109 Acres

Utah Forest Insect and Disease Conditions Report 2015, State of Utah Department of Natural Resources, Division of Forestry, Fire, and State Lands

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Landslides

### Hazard Profile

Potential Magnitude		Negligible	Less than 10%
	X	Limited	10-15%
		Critical	25-50%
		Catastrophic	More than 50%
Probability		Highly Likely	
		Likely	
	X	Possible	
		Unlikely	
Location	State Route 163, SR 95, SR276 Monticello City and Blanding City		
Seasonal Pattern or Conditions	Runoff or heavy rain		
Duration	Hours to months		
Analysis Used	Emergency Manager, UDOT		

### Description of Location and Extent

During spring run-off or heavy rain periods may cause expansion of soils such as clay and large rock. This is mainly a problem on State Routes (SR) and is the responsibility of the Utah Department of Transportation (UDOT) to manage. However, routes that are affected can cause traffic and travel time delays. The landslide material affecting SR 276 is mainly clay and debris. This state road is located near Halls Crossing and mainly recreational use for those traveling to Lake Powell. SR 95 and SR 163 landslide hazard material is mainly large rock and debris. SR 95 is a scenic by-way used mainly for recreational access between Hanksville, Blanding and Halls Crossing, while SR 163 allows access from Bluff to Mexican Hat and supports residents in those communities. All three routes support traversing of emergency vehicles, tourism travel, and persons going to and from work.

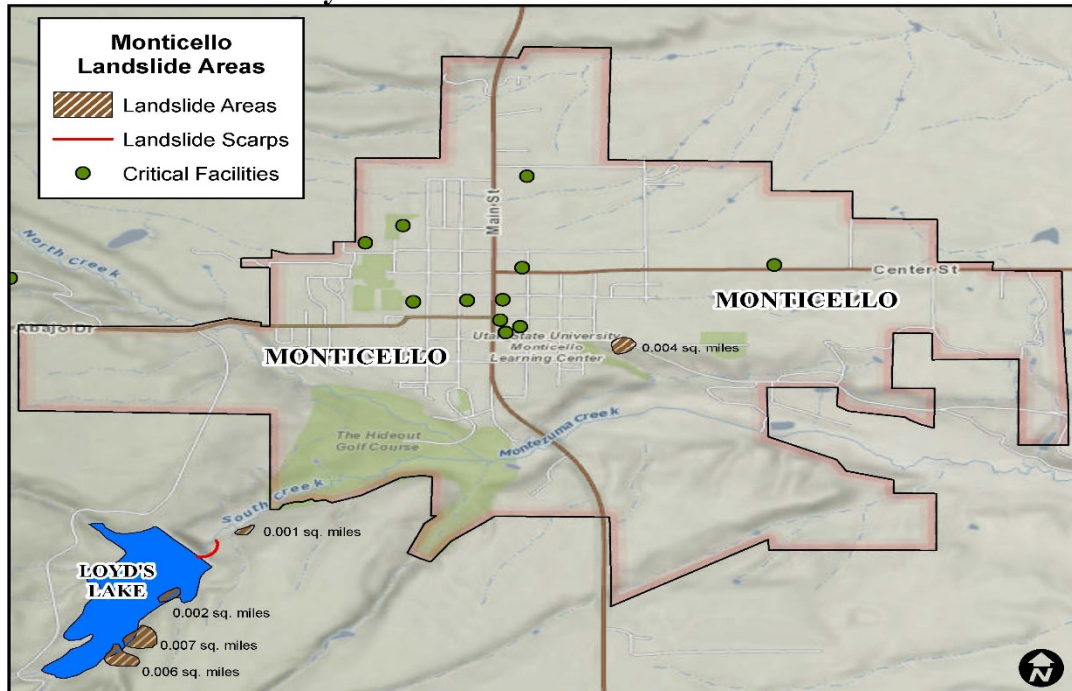
In 1986 a small landslide occurred in Monticello affecting the construction of a sewer line. An engineering study was conducted to determine how to mitigate the effects of the landslide.

### Vulnerability Analysis

Landslides are a naturally occurring event, from expansion of clay to large boulders. These roads are maintained by UDOT. Limited course of mitigation may occur. However, it is not economically feasible for UDOT to spend tax dollars to rebuild a new road route or remove the large facing walls of rock and soil.

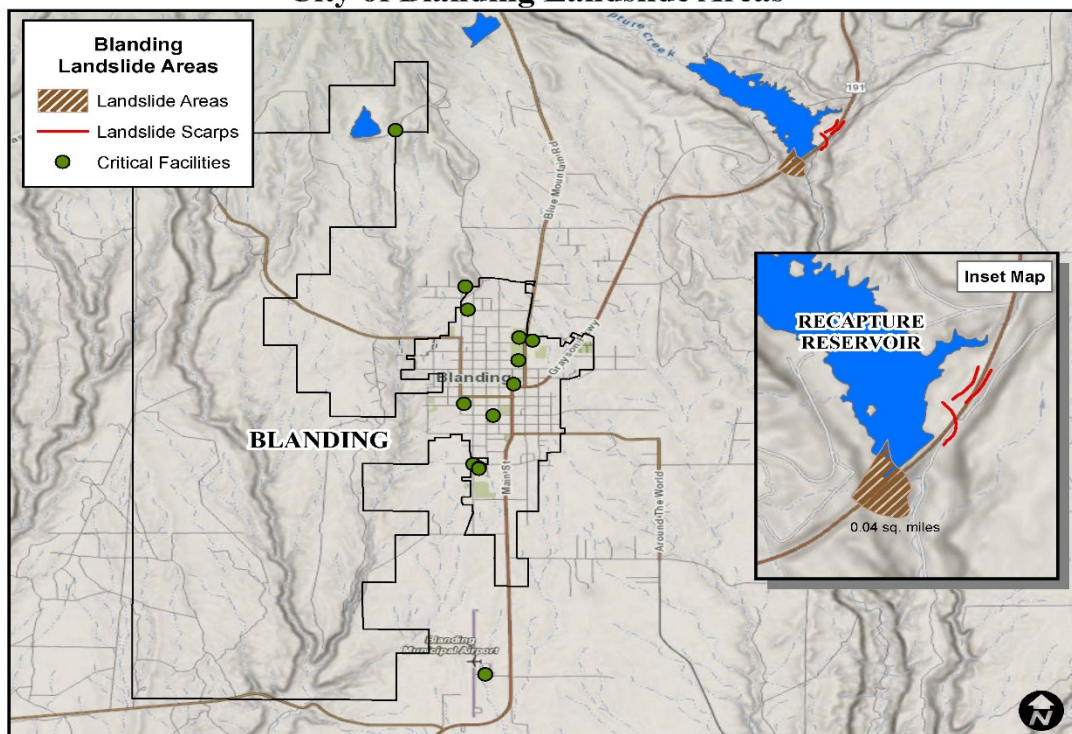
# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## City of Monticello Landslide Areas



Data from UGS and AGRC. Map created by Utah Division of Emergency Management, Nov. 2017.

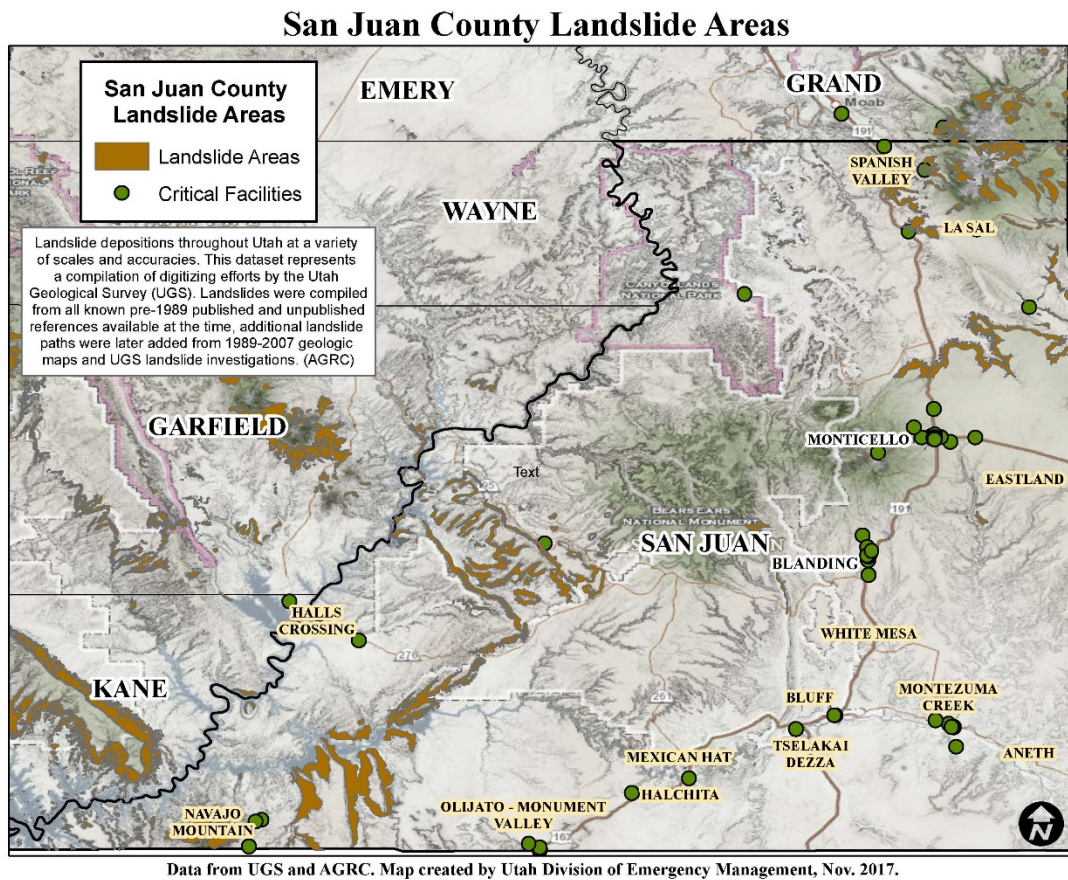
## City of Blanding Landslide Areas



Data from UGS and AGRC. Map created by Utah Division of Emergency Management, Nov. 2017.



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018





# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Problem Soils

### Hazard Profile

Potential Magnitude		Negligible	Less than 10%
	X	Limited	10-15%
		Critical	25-50%
		Catastrophic	More than 50%
Probability		Highly Likely	
		Likely	
	X	Possible	
		Unlikely	
Location	Countywide, specifically around transportation corridors.		
Seasonal Pattern or Conditions	Year-round event		
Duration	Ongoing variable		
Analysis Used	Emergency Management, past events.		

### Description of Location and Extent

There are soils that are made of heavy clay found from the White Mesa community south and east of this area to the Arizona border. Transportation corridors become affected by the buckling roads which correspond to the moisture content. Alkali soils are also an agent in these areas as well. Location is a majority of the roadways throughout the county. Therefore, responsibility to fix or mitigate the problem lies with the county for county roads and Utah Department of Transportation for State Routes.

Sinkholes have recently become a subject of concern. County road 146, Montezuma Canyon Road, had a very large sinkhole occurrence where it was too costly to provide fill dirt; therefore, the road was moved to accommodate vehicle travel. Some residential orchard property and buildings have also been affected by smaller sinkholes.

### Vulnerability Analysis

Due to the nature of problem soils, since it rests upon moisture content and geologic make up throughout the county, it is difficult to mitigate. Transportation corridors have existed for decades through the county and road structures were made during times soil analysis was not utilized as it is today. When it is economically and environmentally feasible, roads may be relocated to accommodate vehicle travel. However, where building construction is an issue, building codes are followed to ensure lives and lands are protected.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Further studies and data will need to be explored to evolve the mitigation efforts and responses to avoid building and continuous fixing of problems caused by problem soils, including the sinkhole phenomenon.

## Severe Weather

### Hazard Profile

Potential Magnitude		Negligible	Less than 10%
	X	Limited	10-25%
		Critical	25-50%
		Catastrophic	More than 50%
Probability	X	Highly Likely	
		Likely	
		Possible	
		Unlikely	
Location	Countywide		
Seasonal Pattern or Conditions	The occurrence of severe weather is generally snow, hail, and fog during the winter months, lightning and thunderstorms late spring, summer, and early fall		
Duration	The storms may be hours or days		
Analysis Used	NOAA Reports, Law Enforcement Reports, Road Department Reports		

### Description of Location and Extent

The severe weather is generally a countywide event also affecting the City of Monticello, the Town of Bluff and the City of Blanding, along with the unincorporated communities within the county. The National Parks within San Juan County are also impacted with Severe Weather events isolating tourists and causing park closures.

### Vulnerability Assessment

The historical record indicates San Juan County, the Cities of Monticello, Blanding and the Town of Bluff experience a wide variety of severe weather from thunderstorms with heavy rainfall and lightning, tornadoes, dense fog, hail, and heavy snowfall. The heavy rains impact the transportation system with road flooding causing road damage and road closures in San Juan County, the Cities of Monticello, Blanding, the Town of Bluff, the State of Utah Parks and the National Parks within the county. Unimproved roads become impassable.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Drought

### Hazard Profile

Potential Magnitude		Negligible	Less than 10%
		Limited	10-25%
	X	Critical	25-50%
		Catastrophic	More than 50%
Probability	X	Highly Likely	
		Likely	
		Possible	
		Unlikely	
Location	Countywide		
Seasonal Pattern or Conditions	Generally, summer and early fall		
Duration	Can be a month, several months to years. The current drought event is in its sixth year.		
Analysis Used	National Integrated Drought Information System, Utah State University Climate Information		

### Description of Location and Extent

The drought events affect the County, incorporated cities, and the unincorporated communities. The culinary water supply is stressed, irrigation water supply is decreased, and the stock ponds are depleted during a drought event. The result of these countywide impacts affects the economic, social and environmental fabric of San Juan County.

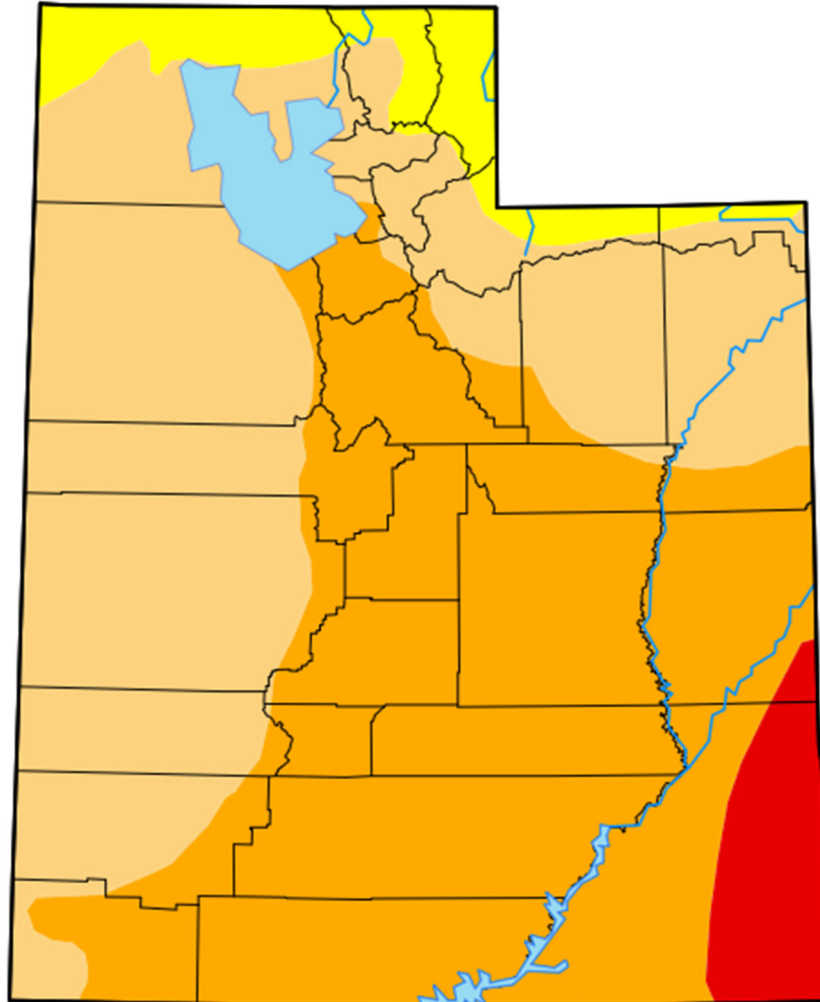
### Vulnerability Assessment

San Juan County is subject to drought events due to its location on the high desert in Eastern Utah. San Juan County has signed a Drought Disaster Declaration, January 2018, and historically has experienced prolonged drought events. The current drought event began in 2012 and is entering the sixth year. In May, 2018, the county was designated in the extreme drought category by the National Weather Service.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Drought

### U.S Drought Monitor- Utah 2018



National Integrated Drought Information System Feb 2018

### Drought Intensities

	None	No Drought
	D0	Abnormally Drought
	D1	Moderate Drought
	D2	Serve Drought
	D3	Extreme Drought

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

	D4	Exceptional Drought
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## Earthquake

### Hazard Profile

Potential Magnitude		Negligible	Less than 10%
	X	Limited	10-25%
		Critical	25-50%
		Catastrophic	More than 50%
Probability		Highly Likely	
		Likely	
		Possible	
	X	Unlikely	
Location	Countywide, refer to earthquake faults map		
Seasonal Pattern or Conditions	Can occur at any time		
Duration	Event duration is short, the recovery may be long term		
Analysis Used	USGS Report, DEM Hazus MH: Earthquake Global Report Sept. 2017 (Appendix 3)		

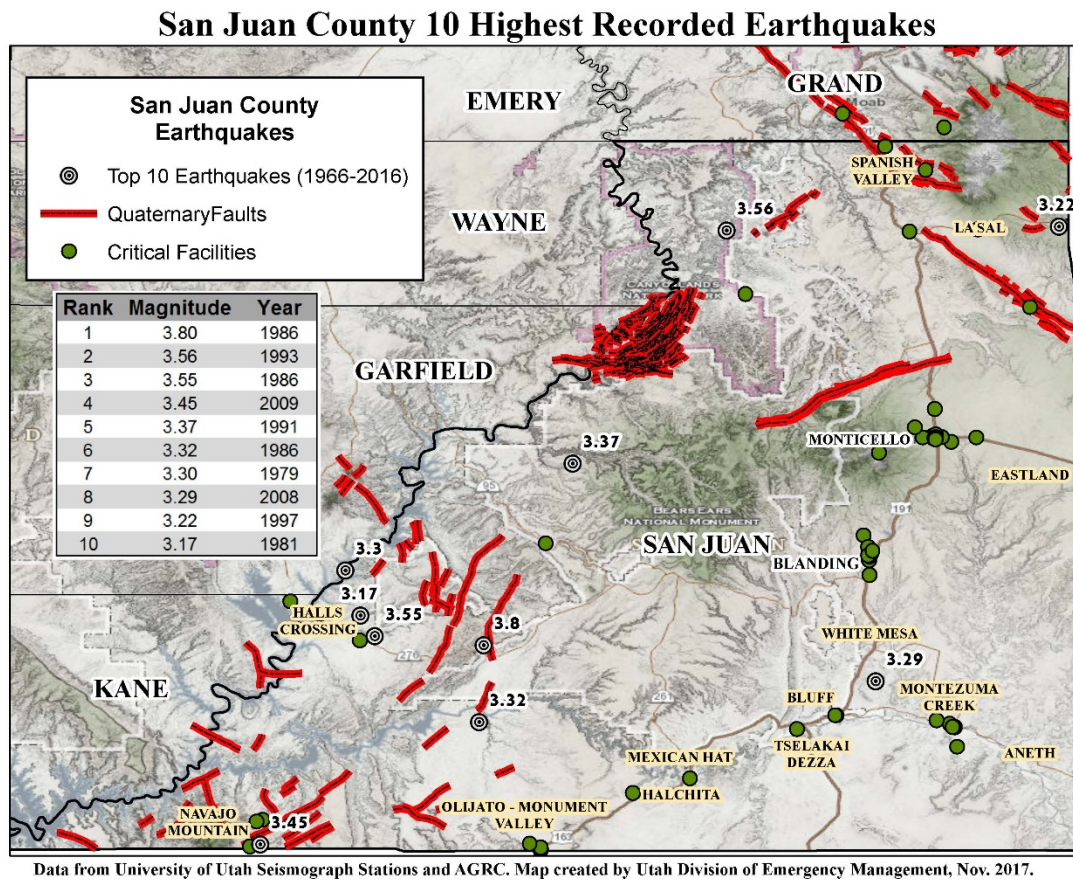
### Description of Location and Extent

San Juan County has recorded 17 earthquakes since 1931. (homefacts.com/earthquakes/utah/sanjuancounty, Dec2017) The earthquakes have generally been in unpopulated and remote areas of San Juan County. The San Juan County earthquake map created by the Utah Division of Emergency Management, Nov. 2017, illustrates the location of known earthquake fault lines in San Juan County.

### Vulnerability Assessment

The Hazus Earthquake Global Risk Report, Sept. 2017, based on a 6.5 MAG Earthquake indicates at least 571 buildings will be damaged and of these 5 buildings will be damaged beyond repair and 8 households will be displaced with 6 people seeking temporary public sheltering. The total economic loss is projected to be 32.28 million dollars. 28.04 million dollars of that will be building related costs of which 66% will be residential occupancy losses.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018



## Hazard History

Identifying past hazard events is key in predicting where future events are likely to occur. The following available relevant information such as date, location, area impacted, and damage costs are identified in the table below (Table 20). Due to the frequency and geographic extent of problem soil, and some severe weather events past events have not been recorded and are therefore not identified in the table below.

**Table 20 Hazard Histories**

Hazard	Date	Location	Critical Facility/ Area Impacted	Comments
Tornado	May 21, 1947	San Juan County		F0 on the Fujita Scale.
Tornado	May 23, 1947	San Juan County		F0 on the Fujita Scale.
Flash Flood	August 17, 1955	Monticello	Northeast Section of City	Damage to homes and businesses
Flash Flood	August 2, 1956	Monticello		City and some homes were flooded; one motel

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

				resulted in \$50,000 in damage.
Flash Flood	July 31, 1965	Monticello		Farmland and crop damage, Johnson Creek Road damaged.
Flood	August 1, 1968	Bluff		Residential and business property damaged. Damage estimated over \$16,000.
Winter Storm	1974	San Juan County		Runoff damage
Winter Storm	1986	Countywide		Road closures and property damage.
Landslide	October 17, 1986	Monticello		Impacted the construction of a sewer line. An engineering study was completed to mitigate the impact.
Earthquake	June 25, 1991	14 Miles from Oljato Monument		3.0 Mag No Damage Reported
Winter Storm	1992	Countywide		Road closures and property damage.
Blizzard	January 1, 1997	Countywide		3 deaths, 50 injuries and \$40 million in property damage.
Winter Storm	April 2, 1997	Countywide		No property damages or no loss of life



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Winter Storm	October 15, 1998	Countywide		Several thousand dollars of property damage.
Rainstorm	October 30, 1998	Bluff		No severe damage.
Winter Storm	December 19, 1998	Countywide		Several thousand dollars in property damage.
Wildfire	June 16, 1999	Monticello		No property damage or loss of life.
Wildfire	July 17, 2000	Blanding		No property damage or loss of life.
Wildfire	July -August, 2000	Monticello		
Funnel Cloud	August 20, 2000	Mexican Hat		No Damage Reported
Funnel Cloud	August 21, 2000	Monticello		No Damage Reported
Earthquake	September 26, 2002	8 Miles from Halls Crossing		3.0 Mag No Damage Reported
Earthquake	April 8, 2005	20 Miles from Lake Powell		2.8 Mag No Damage Reported
Earthquake	June 6, 2008	7 Miles from White Mesa		3.7 Mag No Damage Reported
Earthquake	September 7, 2008	9 Miles from Navajo Mountain		2.6 Mag No Damage Reported
Earthquake	March 31, 2009	17 Miles from Lake Powell		3.0 Mag No Damage Reported
Earthquake	April 14, 2009	19 Miles from Lake Powell		2.9 Mag No Damage Reported
Earthquake	June 9, 2009	17 Miles from Lake Powell		2.7 Mag No Damage Reported

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Earthquake	July 13, 2009	3 Miles from Navajo Mountain		3.3 Mag No Damage reported
Earthquake	January 18, 2011	9 Miles from Oljato Monument Valley		2.5 Mag No Damage Reported
Earthquake	July 16, 2012	15 Miles from Lake Powell		2.6 Mag No Damage Reported
Flash Flood	September 12, 2012	Upheaval Canyon	White Rim Road	Road Damage to White Rim Road
Flash Flood	September 12, 2012	Bluff	Hwy 91	Debris flow 8 miles north of Bluff closes Hwy. 91
Heavy Rainfall	January 26, 2013	Montezuma Creek	Hwy 262	Rock slide and debris damages Hwy 262
Earthquake	March 2, 2013	5 Miles from Montezuma Creek		2.0 Mag No Damage Reported
Flash Flood	May 9, 2013	Canyonlands National Park	Portions of Salt Creek Road Impassable due the creation of Quicksand	Road Damage
Flash Flood	July 15, 2013	White Rock Point	Hwy 191 MM 17	Mudflow 4' deep traps one vehicle, no injuries
Earthquake	July 23, 2013	7 Miles from Lake Powell		1.8 Mag No Damage Reported
Flooding	August 5, 2013	Monticello	Street Flooding and Basement Flooding	Property Damage
Flash Flood	August 25, 2013	Bluff	Flooding along Hwy. 191	Sandbagging took place
Flash Flood	August 26, 2013	Kane Springs, Fry Canyon, Mexican Hat	Roads Closed, Campgrounds Evacuated	Road Damage No Injuries

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Flash Flooding	September 9, 2013	Countywide	Elephant Hill Road washed out, Hwy. 191 near Church Rock closed due to a debris flow, Valley of the Gods Road Closed	No Injuries reported Road Damage
Hail Storm	September 17, 2013	Blanding	Up to 4" Hail Fell on the Roadways, the plows were called out	Damages to vehicles estimated to be \$20,000
Hail Storm	September 22, 2013	Montezuma Creek	Golf ball size hail fell breaking windows and windshields	Estimated Property Damage \$20,000
Earthquake	October 3, 2013	2 Miles from Navajo Mountain		2.2 Mag No Damage Reported
Earthquake	October 6, 2013	13 Miles from halls Crossing		1.7 Mag No Damage Reported
Winter Storm	October 10, 2013	Countywide		
Winter Storm	October 29, 2013	Countywide		
Winter Storm	November 20, 2013	Countywide		
Winter Storm	November 22, 2013	Canyonlands		
Earthquake	November 30, 2013	52 Miles from Blanding		1.7 Mag No Damage Reported
Winter Storm	December 4, 2013	Countywide		
Earthquake	December 6, 2013	51 Miles from Blanding		1.8 Mag No Damage Reported
Winter Storm	December 8, 2013	Countywide		
Winter Storm	January 30, 2014	Countywide		
Winter Storm	February 4, 2014	Countywide		
Earthquake	March 27, 2014	10 Miles from Monticello		2.0 Mag No Damage Reported
Winter Storm	April 2, 2014	Countywide		

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Earthquake	April 3, 2014	9 Miles from Halls Crossing		2.1 Mag No Damage Reported
Earthquake	April 5, 2014	15 Miles from Lake Powell		1.7 Mag No Damage Reported
Drought	April – Dec. 2014	4 Corners Area		
Flash Flood	May 11, 2014	Canyonlands National Park	Flooding caused secondary roads to be washed out in the Needles District	Search and Rescue Operations were required No Injuries Reported
Drought	June 1-30, 2014	Countywide		
Flash Flood	July 29, 2014	Monticello Airport to North of Peters Hill	3 to 4 feet of water were reported covering areas alongside HWY 191	Road damage
Flash Flood	August 4, 2014	Monticello	Mud and water 6" deep flowing over Hwy 191	Road Damage
Flash Flood	August 14, 2014	Canyonlands National Park	Needles District local drainages and several roads flooded	Road Damage
Flash Flood	September 9, 2014	Canyonlands National Park	A county road and White Rim Road were flooded and up to a foot of mud deposited on the roads	Road Damage and back country campers were stranded
Winter Storm	November 3, 2014	Countywide		
Winter Storm	November 16, 2014	Countywide		
Winter Storm	December 25, 2014	Countywide		
Winter Storm	December 31, 2014	Countywide		
Winter Storm	January 12, 2015	Countywide		
Winter Storm	January 31, 2015	Countywide		
Drought	Jan-Dec, 2015	4 Corners Area		

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Debris Flow	February 10, 2015	Shafer Trail Road	Rockslide with boulders as large as cars	Significant Road Damage
Winter Storm	February 28, 2015	Countywide		
High Wind Event	April 14, 2015	Natural Bridges		
Winter Storm	April 18, 2015	Countywide		
Funnel Cloud	May 14, 2015	Halls Crossing	Funnel Cloud Reported	No Damage Reported
Flooding	June 6, 2015	Elephant Canyon	Minor Flooding	No damage reported
Tornado	June 6, 2015	Comb Ridge	The tornado touched down east of Monument Valley	No Damage Reported
Hail Storm	June 6, 2015	Bluff	Quarter size hail reported 10 miles south of Bluff	No Damage Reported
Flash Flood	June 11, 2015	Canyonlands National Park	Several areas of debris filled water flowed up to a foot deep over Hwy 211	Road damage
Flash Flood	June 13, 2015	Arch Canyon	Heavy Rainfall resulted in fast moving water at least 4 feet deep moving down the canyon	An SUV parked on Arch Canyon Trail Road washed downstream about 2.2 miles. The owners were on higher ground and hiked out
Funnel Cloud	July 5, 2015	Halls Crossing	A funnel cloud was observed about four miles east of Hwy 276	No Damage Reported
Funnel Cloud	July 5, 2015	Monticello	A funnel cloud was observed and photographed on the east side of Monticello	No Damage Reported
Hail Storm	October 7, 2015	Blanding	Quarter size hail fell in the Blanding area	No damage Reported

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Winter Storm	November 5, 2015	Countywide		
Winter Storm	December 15, 2015	Countywide		
Winter Storm	December 25, 2015	Countywide		
Winter Storm	January 7, 2016	Countywide		
Winter Storm	January 21, 2016	Countywide		
Drought	Jan.-Dec. 2016	4 Corners Area		
Winter Storm	February 2, 2016	Countywide		
Earthquake	March 17, 2017	50 Miles from Blanding		3.0 Mag No Damage Reported
Earthquake	April 21, 2017	26 Miles from Blanding		3.8 Mag No Damage Reported
Thunderstorm	July 22, 2017	Mexican Hat	Heavy Rain Fall Minor Street Flooding	No Damage Reported NOAA
Flash Flood	July 25, 2017	Valley of the Gods	Valley of the Gods Road flooded	Several Visitors Stranded NOAA
Flash Flood	August 6, 2017	La Sal Junction	Culvert blocked by debris, water over a foot deep ran over the roadway	Temporary road closure, minor road damage
Earthquakes	September 7, 2017	35 Miles from Blanding	2 earthquakes were recorded from the same location, same day	4.3 Mag No Damage Reported
Drought	January- June 2018	Countywide		Drought Disaster Declaration signed

Homefacts.com/earthquakes/sanjuancounty/Utah (2017); NOAA information dtd 2018

## San Juan County Mitigation Goals, Objectives and Actions

Note: For purposes of this document, “countywide” refers to a mitigation strategy that benefits San Juan County and the cities of Monticello, Blanding and Bluff.

The following San Juan County, Monticello City, and Blanding City Codes and Ordinances were reviewed for updates and applicability to the mitigation strategies and action plans.

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

## **San Juan County:**

- San Juan County Master Plan: Adopted 2008
- San Juan County General Plan: Amended and Updated July 2017
- San Juan County Zoning Ordinance; Chapter 9, Construction subject to Geologic, Flood, or other Natural Hazards Updated 2011
- San Juan County Resource and Emergency Planning Guide Updated 2017
- San Juan County Wildland Fire Mobilization Plan 2017
- San Juan County Emergency Operations Plan 2017
- San Juan County Family Emergency Preparedness Manual 2017

## **Monticello City:**

- Storm Water Master Plan 2010
- Water Master Plan 2010
- Sewer Master Plan
- Street Master Plan Updated Yearly
- Flood Plain Map 1976
- Zoning Ordinance 1999-4

The Goal Priorities for mitigation actions are: High, Medium, or Low. It is possible that economic, environmental, and even political relations may cause conditions to this type of priority system to change. As such, goal priorities are only used to understand that ensuring the project is completed is of greater urgency than others. For these purposes, Objective is a general statement of the project(s) to be completed, and the Action is the specific mitigation project.

The prioritization high, medium, low for each goal and associated action project was established based on the perceived need, ability to support the action project, and cost of the action project. The San Juan County Working Group, Subject Matter Experts (SMEs), and the San Juan County Emergency Manager finalized the priority of each action project.

**High:** Priority goal and project to complete.

- The project can be supported.

- The funding is obtainable.

**Medium:** Would like to complete goal and project.

- The project can be supported.

- The funding is questionable.

**Low:** Nice to complete the goal and project.

- May be able to support the project.

- Funding may not be available.



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018



Image provided by San Juan County

## Wildland fire

Goal 1	Priority: High
--------	----------------

Objective 1: WF1	To Mitigate damage to the Communication Tower on Abajo Peak, Cedar Mesa and Colorado Communication Sites	
Action project: 1	Create Defensible Space	
	Location:	Abajo Peak, Cedar Mesa
	Time Frame:	2018-2019
	Funding:	State, Federal, Local
	Estimated Cost:	\$40,000
	Staff:	Division of Forestry Fire and State Lands, Forest Service, County
	Background	Overgrowth of vegetation at communication sites presents danger of wildfire risk and loss of communication capabilities.

Countywide Problem Identification 1: Communication towers in the following areas: Abajo Peak, Cedar Mesa and Colorado Border need to have defensible space implemented to keep the communications for Law Enforcement and Emergency Medical Services operating within the county.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Wildland fire

Goal 2	Priority: High
--------	----------------

Objective 1: WF2	To Mitigate damage to homes within the county that are in the wildland interface	
Action project: 2	Create Defensible Space	
	Location:	San Juan County
	Time Frame:	Ongoing
	Funding:	County, Federal
	Estimated Cost:	\$60,000
	Staff:	County Volunteer Fire Departments
	Background	Homes have been built in the wildland interface

Countywide Problem Identification 1: Throughout the years more and more homes have been built within the wildland interface.

## Wildland fire

Goal 3	Priority: High
--------	----------------

Objective 1: WF3	To Mitigate homes being built in the wildland interface without defensible space	
Action project: 3	Provide Firewise Workshop and Firewise Brochure in new building permit applications	
	Location:	San Juan County
	Time Frame:	2018-2020
	Funding:	County, Federal
	Estimated Cost:	\$5,000
	Staff:	County Fire
	Background	No Educational Materials have been provided for new building within the wildland fire interface.

Countywide Problem Identification 1: Homes have been built without providing educational materials on defensible space

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Wildland fire

Goal 4	Priority: High
--------	----------------

Objective 1: WF4	To mitigate damage to the Monticello Watershed on Abajo Mountain	
Action project: 4	Groom watershed of dead and down vegetation	
	Location:	Abajo Mountain
	Time Frame:	2019-2021
	Funding:	State and Federal
	Estimated Cost:	\$50,000
	Staff:	State, Forest Service
	Background	Vegetation overgrowth within the watershed

Countywide Problem Identification 1: There is a lot of dead and down vegetation and overgrowth within the Monticello watershed that is posing a wildland fire hazard.

## Wildland fire

Goal 5	Priority: Medium
--------	------------------

Objective 1: WF5	To Mitigate Tamarisk growth on San Juan River	
Action project: 5	Clear the overgrowth of tamarisk on San Juan River banks	
	Location:	San Juan river
	Time Frame:	2020-2021
	Funding:	Federal
	Estimated Cost:	\$40,000
	Staff:	BLM
	Background	Tamarisk growth on river are overgrown.

Countywide Problem Identification 1: Tamarisk growing along San Juan River is crowding access, water consumption and presenting a high fuel load. Concerns for the community and fire.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018



Image provided by San Juan County

## Problem Soils: Erosion

Goal 1	Priority: Medium
--------	------------------

Objective 1: E1	To Mitigate Erosion of Roads at 3 Step Area and Kane Creek	
Action project: 1	Develop Mapping and Education Materials Showing problem areas	
	Location:	San Juan County
	Time Frame:	2018-2020
	Funding:	County
	Estimated Cost:	\$3,000
	Staff:	County
	Background	Weather conditions have caused erosion on county roads and byways

Countywide Problem Identification 1: Roads in the Spanish Valley area and 3 Step have deteriorated with erosion due to weather conditions

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018



Image provided by San Juan County

## Flood

Goal 1	Priority: High
--------	----------------

Objective 1: F1	To Mitigate Saint Christopher Mission/ Bluff Area Flooding	
Action project: 1	Improve and sustain current levee	
	Location:	St. Christopher Mission and Bluff, UT
	Time Frame:	Ongoing
	Funding:	Federal, State, County
	Estimated Cost:	\$1,200,000
	Staff:	County
	Background	Community by St. Christopher Mission flooding issues

Countywide Problem Identification 1: During spring runoff there is the risk of flooding to the St. Christopher Mission area from the San Juan River.

## Flood

Goal 2	Priority: High
--------	----------------

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Objective 1: F2	To Mitigate washouts and improve the low water crossings at Mill Creek in Spanish Valley, Pack Creek Bridge Flooding, North Cottonwood, South Cottonwood, and Butler Wash areas	
Action project: 1	Mitigate road flooding in Spanish Valley Pack Creek, North Cottonwood, South Cottonwood and Butler Washes by adding rip rap covered by wire to the stream bed banks to stabilize the banks of the stream beds.	
	Location:	Spanish Valley Pack Creek
	Time Frame:	Ongoing
	Funding:	County
	Estimated Cost:	\$200,000
	Staff:	County
	Background	Heavy rainstorms create road flooding in the Spanish Valley Pack Creek Area, North Cottonwood, South Cottonwood and Butler Wash Areas. Influx of tourism due to Bears Ears National Monument Designation and Flashfloods create road washouts.

Countywide Problem Identification 1: When heavy rains are encountered there are roads in Spanish Valley and Pack Creek that are flooded.

## Flood

Goal 3	Priority: High
--------	----------------

Objective 1: F3	Define the Flood Plain for Spanish Valley	
Action project: 1	Contract with an engineering firm to study and establish the boundaries of the flood plain in Spanish Valley caused by Ken's Lake, Pack Creek, and storm water runoff.	
	Location:	Spanish Valley
	Time Frame:	2019-2020
	Funding:	Private Property Developers, Local, State
	Estimated Cost:	\$250,000
	Staff:	County, Private Contractor
	Background	The Spanish Valley Area is expected to experience significant growth. (Appendix 8) Identifying the flood plain does impact building codes and zoning regulations.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Flood

Goal 4	Priority: Medium	
Objective 1: F4	To Mitigate Damage to Home owners due to flooding	
Action project: 1	Create outreach documents for Flood Awareness and Insurance	
	Location:	San Juan County
	Time Frame:	2018-2020
	Funding:	County
	Estimated Cost:	\$2,000
	Staff:	County
	Background	Not a lot of outreach for flooding and flood insurance currently available.

Countywide Problem Identification 1: Flood information is not readily available in brochure format for residents.

## Earthquake

Goal 1	Priority: High	
Objective 1: EQ1	To Mitigate loss due to earthquakes	
Action project: 1	Prepare a brochure for earthquake awareness	
	Location:	San Juan County
	Time Frame:	2018-2020
	Funding:	County
	Estimated Cost:	\$2,000
	Staff:	County
	Background	Limited earthquake awareness information available.

Countywide Problem Identification 1: Earthquakes are thought to not be very common in San Juan County in the past year we have experienced 2 in the same location.



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Earthquake

Goal 1	Priority: High
--------	----------------

Objective 1: EQ2	Mitigate loss due to earthquakes	
Action project: 1	Encourage participation in the Great Shake Out	
	Location:	San Juan County
	Time Frame:	2018-2020
	Funding:	County
	Estimated Cost:	\$1,000
	Staff:	County
	Background	Low Participation in the Great Shake Out Drill

Countywide Problem Identification 1: Earthquakes are thought to not be very common in San Juan County in the past year we have experienced 2 in the same location.

## Severe Weather: High Winds

Goal 1	Priority: High
--------	----------------

Objective 1: HW1	To Mitigate Damage due to high winds	
Action project: 1	Promote Tree Trimming for power lines	
	Location:	San Juan County
	Time Frame:	2018-2020
	Funding:	County
	Estimated Cost:	\$1,000
	Staff:	County
	Background	Power Outages due to high winds and people burning on high wind days

Countywide Problem Identification 1: There have been instances of power outages due to high winds and tree limbs in the power lines. Locals burn without knowing the dangers of burning on Red Flag High wind days.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Severe Weather: Lightning

Goal 1	Priority: High
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Objective 1: L1	Mitigate loss due to lightning	
Action project: 1	Produce lightning brochures for lightning awareness	
	Location:	San Juan
	Time Frame:	2018-2020
	Funding:	County
	Estimated Cost:	\$1,000
	Staff:	County
	Background	Lightning storms are very frequent in San Juan County during the summer months.

Countywide Problem Identification 1: High probability of lightning storms in San Juan County due to monsoon season.



Image provided by San Juan County

## Severe Weather: Hail

Goal 1	Priority: Medium
--------	------------------

Objective 1: H1	Mitigate loss due to hail storms
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# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Action project: 1	Produce brochure for hail awareness	
	Location:	San Juan County
	Time Frame:	2018-2020
	Funding:	County
	Estimated Cost:	\$1,000
	Staff:	County
	Background	Hail storms are encountered several times a year and cause damage to property

Countywide Problem Identification 1: Hail storms have caused damage to vehicles, property and crops in San Juan County.



Image provided by San Juan County

## Severe Weather: Tornadoes

Goal 1	Priority: Low
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# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Objective 1: T1	Mitigate loss due to Tornadoes	
Action project: 1	Promote Severe Weather Safety and monitoring NOAA Weather Radio	
	Location:	San Juan County
	Time Frame:	2018-2020
	Funding:	County
	Estimated Cost:	\$1,000
	Staff:	County
	Background	Residents do not think that tornadoes are an issue during the past few years funnel clouds have been encountered more often.

Countywide Problem Identification 1: Thunderstorms with the potential to produce funnel clouds/tornadoes have been encountered more frequently in San Juan County.



Image provided by San Juan County

## Severe Weather: Winter Weather

Goal 1	Priority: High
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# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Objective 1: WW1	Mitigate effects of winter weather	
Action project: 1	Educate on Family and Traveler emergency preparedness during winter months by continuing to participate in the Weather Nation Ambassador Program.	
	Location:	San Juan County
	Time Frame:	2018-2020
	Funding:	County
	Estimated Cost:	\$2,000
	Staff:	County
	Background	San Juan County frequently encounters heavy winter storms. The Weather Nation Ambassadors partner with the National Weather Service to improve readiness, responsiveness, and overall resilience against extreme weather, water, and climate events in their communities. WRN Ambassadors agree to promote WRN messages, collaborate on outreach and education efforts, share success stories, and serve as an example.

Countywide Problem Identification 1: San Juan County encounters heavy winter storms every year sometimes stranding community members and travelers.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018



Image provided by San Juan County

## Severe Weather: Winter Weather

Goal 1	Priority: High
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Objective 1: WW2	Mitigate personal injury during winter months	
Action project: 1	Promote CO2 Detector Awareness	
	Location:	San Juan County
	Time Frame:	Ongoing
	Funding:	County
	Estimated Cost:	\$1,000
	Staff:	County
	Background	San Juan County encounters winter storms which requires heaters increasing the risk of Carbon Monoxide poisoning

Countywide Problem Identification 1: San Juan County has experienced Carbon Monoxide poisoning at one of the elementary schools due to a faulty water heater

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Severe Weather: Winter Weather

Goal 1	Priority: High	
Objective 1: WW3	Mitigate personal injury due to winter weather for Special Needs Populations	
Action project: 1	Promote Awareness for Special Needs Registry	
	Location:	San Juan County
	Time Frame:	2018-2020
	Funding:	County
	Estimated Cost:	\$1,000
	Staff:	County
	Background	With remote population bases we need the SNR to help identify those in need during winter storms

Countywide Problem Identification 1: San Juan County has encountered a loss of heat in one of the communities during a cold snap. It would have been good to have a list of the Special Needs Population within that community.

## Severe Weather: Winter Weather

Goal 1	Priority: Low	
Objective 1: WW4	Mitigate power outage due to winter weather and tree limbs	
Action project: 1	Promote awareness to get trees trimmed before winter months	
	Location:	San Juan County
	Time Frame:	2018-2020
	Funding:	County
	Estimated Cost:	\$1,000
	Staff:	County
	Background	Power outages due to heavy branches from ice

Countywide Problem Identification 1: San Juan County encounters power outages due to tree limbs causing issues in the winter months.



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018



Image provided by San Juan County

## Severe Weather: Thunderstorms

Goal 1	Priority: High
--------	----------------

Objective 1:1	Severe Weather	
Action project: 1	Mitigate the effects thunderstorms have historically had on the City of Monticello	
	Location:	Monticello City
	Time Frame:	2017-2019
	Funding:	Local, State
	Estimated Cost:	\$15,000.00
	Staff:	Monticello Emergency Manager, City employees
	Background	Many problems arise during severe weather maintaining critical infrastructure.

Monticello City Problem Identification 1: Monticello City has had issues with power blackouts, natural gas and phone service problems. The city has a need to acquire an additional generator, emergency response kits, and wintry weather rescue gear.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Drought

Goal 1	Priority: High
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Objective 1: D1	Reduce loss due to drought	
Action project: 1	Promote drought awareness by keeping the community informed of drought conditions throughout the county with social media, news articles, and personal appearances at community events.	
	Location:	San Juan County
	Time Frame:	2018-2021
	Funding:	County
	Estimated Cost:	\$2,000
	Staff:	County, Soil Conservation District
	Background	San Juan County is in the high desert and is prone to drought conditions.

Countywide Problem Identification 1: San Juan County has had to declare drought declarations several times in the past and has declared a Drought Disaster for 2018.

Goal 2	Priority: High
--------	----------------

Objective 2:1	Drought	
Action project: 1	Public awareness through the use of social media, news articles, brochures available at community events.	
	Location:	Monticello City
	Time Frame:	2017-2018
	Funding:	Local
	Estimated Cost:	Up to \$2,000.00
	Staff:	City employees
	Background	Monticello has been in drought conditions for years

Monticello City Problem Identification 1: Making the public aware of ways and reasons to conserve water now will help us all be prepared for future problems.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Goal 3	Priority: High
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Objective 3:1	Encourage the conservation of water resources	
Action project: 1	Community cooperation by providing information of the wise use of water.	
	Location:	Monticello City
	Time Frame:	2017-2020
	Funding:	Local
	Estimated Cost:	Up to \$2,000.00
	Staff:	City employees
	Background	While water levels are high, Monticello is still in drought

Monticello City Problem Identification 1: Making the public aware of watering times and restrictions. As well as enforcing these restrictions. Educating the public on ways and reasons to conserve water.

## Dam Failure

Goal 1	Priority: High
--------	----------------

Objective 1:1	Lloyds Lake Dam Failure	
Action project: 1	Inundation area map, update building permits in possible flood area	
	Location:	Monticello City; Lloyds Lake
	Time Frame:	2018-2019
	Funding:	Local
	Estimated Cost:	< 5,000.00
	Staff:	City manager, Public works, JD engineering
	Background	Possible Dam failure would cause flooding down stream

Monticello City Problem Identification 1: Water levels in Lloyds Lake are higher than they have been in years. While the level does not overflow the dam face, the dam could have issues leading to it releasing all the water.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Landslide

Goal 1	Priority: High	
Objective 1: L1	Mitigate Damage due to landslides	
Action project: 1	Create GIS data of landslide areas specifically Hwy 95 and the Comb Wash Cutoff	
	Location:	San Juan County
	Time Frame:	2018-2021
	Funding:	County, UDOT
	Estimated Cost:	\$10,000
	Staff:	County, UDOT
	Background	Several cuts in the Highway have potential for landslides

Countywide Problem Identification 1: In the past San Juan County highways have encountered landslides.

## All Hazards

Goal 1	Priority: High	
Objective 1: M1	Mitigate hazards from All hazards that our county is susceptible to	
Action project: 1	Develop and implement an All-Hazards public awareness program	
	Location:	San Juan
	Time Frame:	2018-2020
	Funding:	County
	Estimated Cost:	\$3,000
	Staff:	County
	Background	Multiple hazards will affect a community that is not prepared

Countywide Problem Identification 1: San Juan County is prone to All hazards

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## APPENDIX 1

Division of Emergency Management  
San Juan County HAZUS Report  
Earthquake and Flood



## Hazus-MH: Earthquake Global Risk Report

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Region Name: Earthquake

SanJuan\_L1\_EQ

Scenario: Print Date:

SanJuan\_L1\_2500\_Year\_Earthquake

September 26, 2017

**Disclaimer:**

*This version of Hazus utilizes 2010 Census Data.*

*Totals only reflect data for those census tracts/blocks included in the user's study region.*

*The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific*

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*and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.*

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## General Description of the Region

Hazus is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop earthquake losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from earthquakes and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

Utah

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 7,931.08 square miles and contains 4 census tracts. There are over 4 thousand households in the region which has a total population of 14,746 people (2010 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 5 thousand buildings in the region with a total building replacement value (excluding contents) of 986 (millions of dollars). Approximately 94.00 % of the buildings (and 82.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 2,941 and 67(millions of dollars), respectively.

## Building and Lifeline Inventory

### **Building Inventory**

Hazus estimates that there are 5 thousand buildings in the region which have an aggregate total replacement value of 986 (millions of dollars). Appendix B provides a general distribution of the building value by State and County.

In terms of building construction types found in the region, wood frame construction makes up 58% of the building inventory. The remaining percentage is distributed between the other general building types.

### **Critical Facility Inventory**

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 0 hospitals in the region with a total bed capacity of 0 beds. There are 18 schools, 10 fire stations, 6 police stations and 0 emergency operation facilities. With respect to high potential loss facilities (HPL), there are 0 dams identified within the inventory. Of these, 0 of the dams are classified as 'high hazard'. The inventory also includes 0 hazardous material sites, 0 military installations and 0 nuclear power plants.

### **Transportation and Utility Lifeline Inventory**

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 3,008.00 (millions of dollars). This inventory includes over 692 kilometers of highways, 27 bridges, 1,246 kilometers of pipes.

**Table 1: Transportation System Lifeline Inventory**

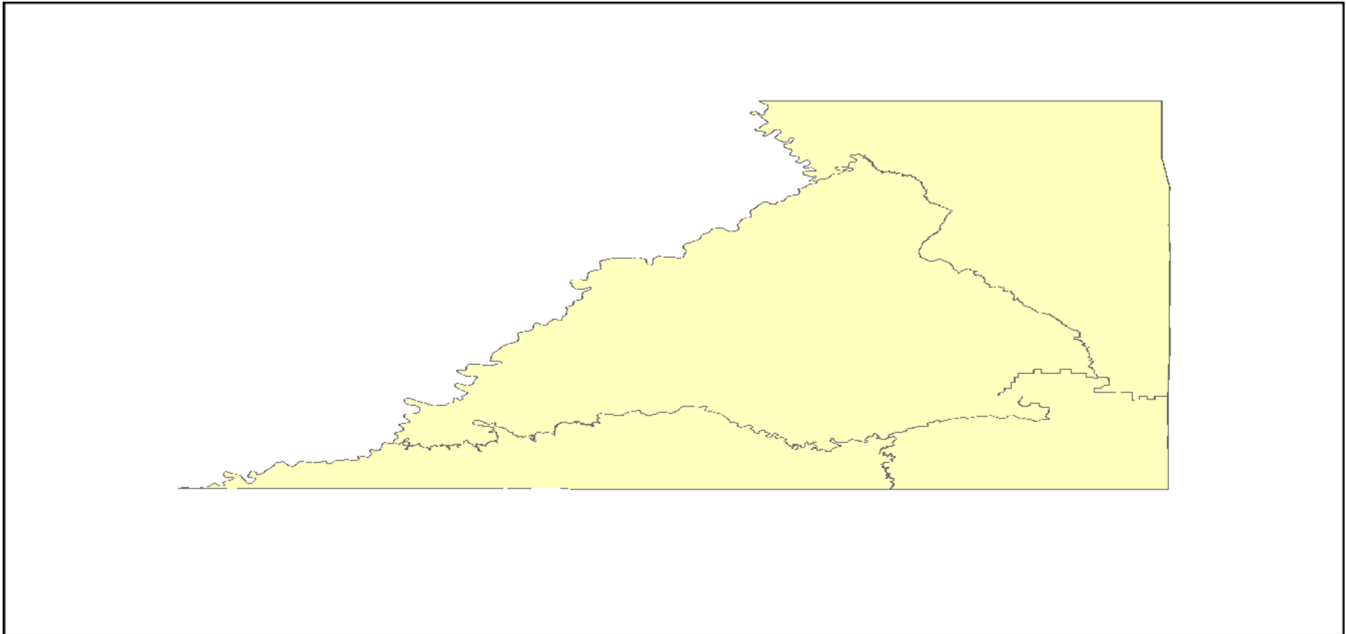
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	27	22.60
	Segments	28	2,867.90
	Tunnels	0	0.00
	Subtotal		<b>2,890.50</b>
Railways	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
	Subtotal		<b>0.00</b>
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
	Subtotal		<b>0.00</b>
Bus	Facilities	1	1.10
	Subtotal		<b>1.10</b>
Ferry	Facilities	1	1.30
	Subtotal		<b>1.30</b>
Port	Facilities	0	0.00
	Subtotal		<b>0.00</b>
Airport	Facilities	1	10.70
	Runways	1	38.00
	Subtotal		<b>48.60</b>
		Total	<b>2,941.60</b>

**Table 2: Utility System Lifeline Inventory**

System	Component	# Locations / Segments	Replacement value (millions of dollars)
<b>Potable Water</b>	Distribution Lines	NA	12.50
	Facilities	0	0.00
	Pipelines	0	0.00
	Subtotal		<b>12.50</b>
<b>Waste Water</b>	Distribution Lines	NA	7.50
	Facilities	1	65.30
	Pipelines	0	0.00
	Subtotal		<b>72.70</b>
<b>Natural Gas</b>	Distribution Lines	NA	5.00
	Facilities	2	2.10
	Pipelines	0	0.00
	Subtotal		<b>7.10</b>
<b>Oil Systems</b>	Facilities	2	0.20
	Pipelines	0	0.00
	Subtotal		<b>0.20</b>
<b>Electrical Power</b>	Facilities	0	0.00
	Subtotal		<b>0.00</b>
<b>Communication</b>	Facilities	0	0.00
	Subtotal		<b>0.00</b>
		Total	<b>92.50</b>

## Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	SanJuan_L1_2500_Year_Earthquake Probabilistic
Type of Earthquake	
Fault Name	NA
Historical Epicenter ID #	2,500.00
Probabilistic Return	
Period	NA
Longitude of Epicenter	
Latitude of	
Epicenter	
Earthquake Magnitude	6.50
Depth (km)	
	NA
Rupture Length (Km)	NA
Rupture Orientation (degrees)	NA
Attenuation Function	NA

## Building Damage

### Building Damage

Hazus estimates that about 571 buildings will be at least moderately damaged. This is over 10.00 % of the buildings in the region. There are an estimated 5 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

### Damage categories by General Occupancy Type

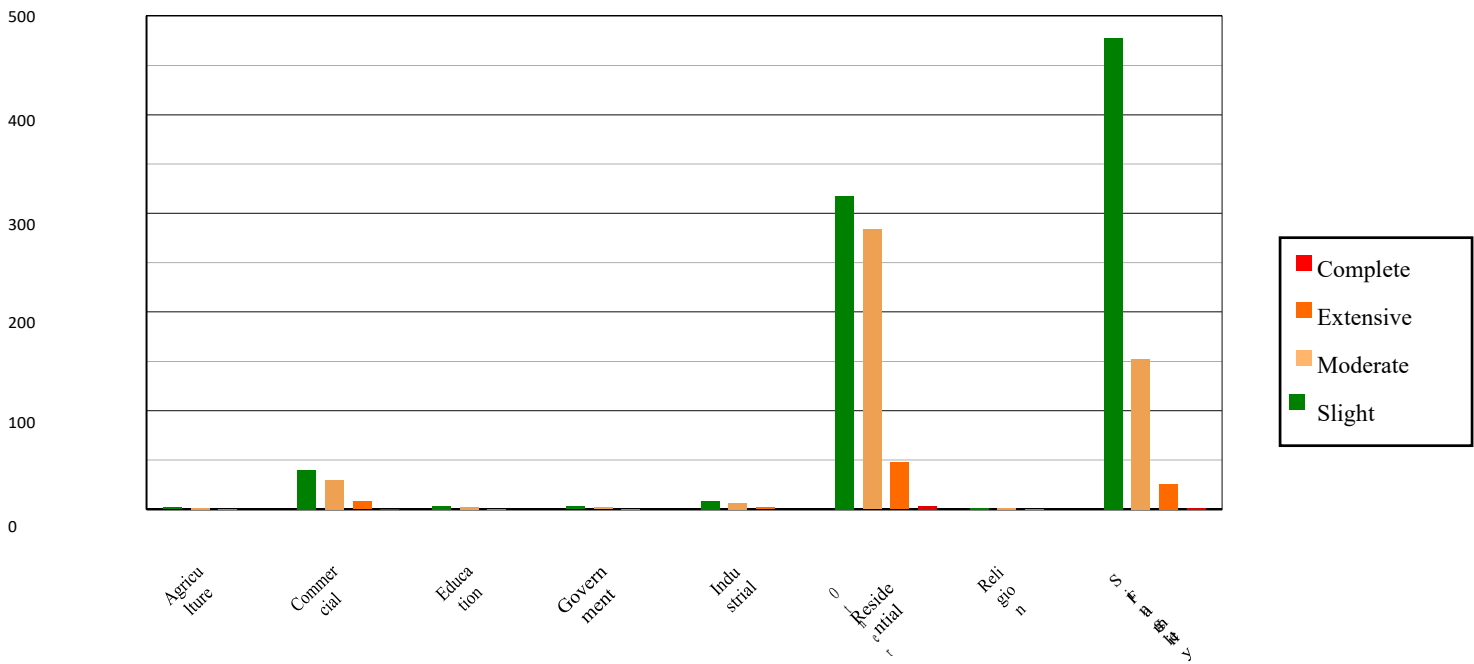


Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	11	0.25	2	0.24	1	0.30	0	0.45	0	0.52
Commercial	150	3.38	40	4.68	30	6.26	8	9.51	1	11.78
Education	14	0.31	3	0.37	3	0.52	1	0.78	0	0.92
Government	14	0.31	3	0.33	2	0.42	0	0.50	0	0.58
Industrial	34	0.76	8	0.99	7	1.42	2	2.16	0	2.46
Other Residential	890	20.00	317	37.20	284	59.07	48	55.89	3	58.81
Religion	9	0.19	2	0.21	1	0.27	0	0.36	0	0.43
Single Family	3,330	74.82	477	55.97	153	31.74	26	30.35	1	24.49
<b>Total</b>	<b>4,451</b>		<b>853</b>		<b>481</b>		<b>85</b>		<b>5</b>	

**Table 4: Expected Building Damage by Building Type (All Design Levels)**

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
<b>Wood</b>	2,903	65.23	426	49.99	90	18.65	7	7.76	0	4.18
<b>Steel</b>	45	1.02	12	1.38	12	2.40	3	3.24	0	5.60
<b>Concrete</b>	46	1.03	13	1.53	10	2.12	2	2.63	0	2.45
<b>Precast</b>	37	0.83	8	1.00	10	2.09	4	4.73	0	3.78
<b>RM</b>	550	12.37	72	8.40	67	14.03	19	21.88	0	6.42
<b>URM</b>	69	1.55	22	2.60	16	3.37	5	6.10	1	21.35
<b>MH</b>	800	17.98	299	35.10	276	57.34	46	53.66	3	56.22
<b>Total</b>	<b>4,451</b>		<b>853</b>		<b>481</b>		<b>85</b>		<b>5</b>	

\*Note:

RM                      Reinforced Masonry  
URM                    Unreinforced Masonry  
MH                    Manufactured Housing



### **Essential Facility Damage**

Before the earthquake, the region had 0 hospital beds available for use. On the day of the earthquake, the model estimates that only 0 hospital beds (0.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 0.00% of the beds will be back in service. By 30 days, 0.00% will be operational.

**Table 5: Expected Damage to Essential Facilities**

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	0	0	0	0
Schools	18	0	0	18
EOCs	0	0	0	0
Police Stations	6	0	0	6
Fire Stations	10	0	0	10

**Transportation Lifeline Damage**

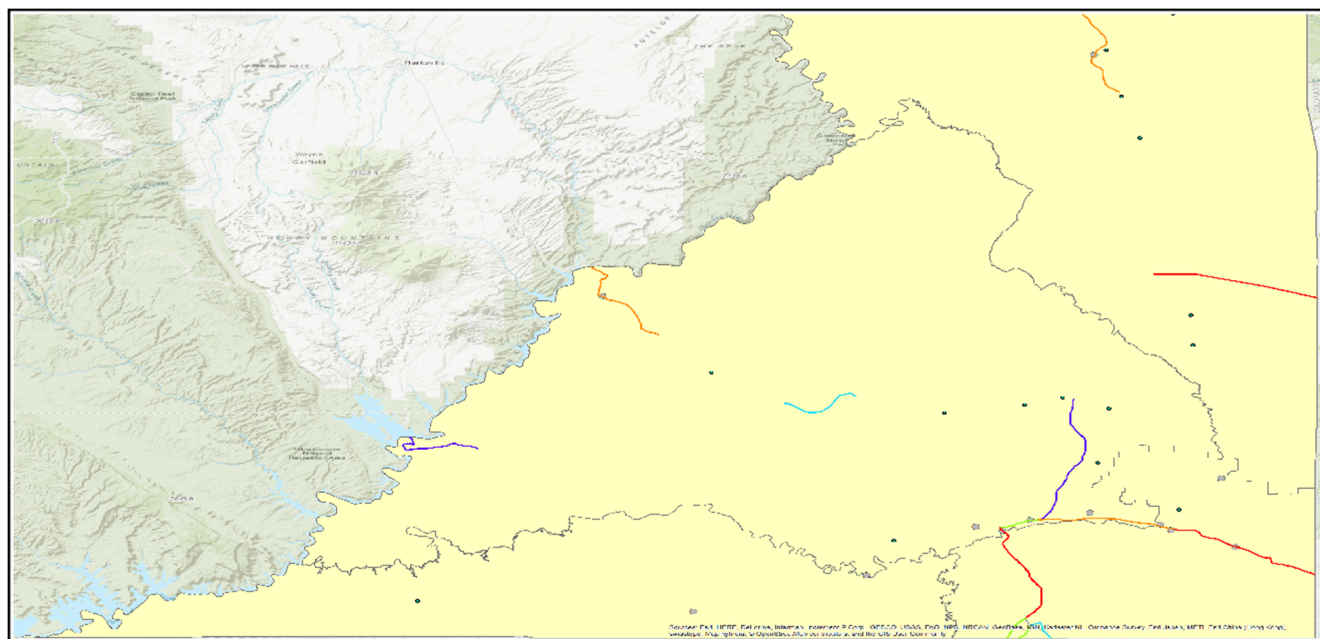


Table 6: Expected Damage to the Transportation Systems

System	Component	Number of Locations				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	28	0	0	28	28
	Bridges	27	0	0	27	27
	Tunnels	0	0	0	0	0
Railways	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	1	0	0	1	1
Ferry	Facilities	1	0	0	1	1
Port	Facilities	0	0	0	0	0
Airport	Facilities	1	0	0	1	1
	Runways	1	0	0	1	1

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7: Expected Utility System Facility Damage

System	Total #	# of Locations			
		With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	0	0	0	0	0
Waste Water	1	0	0	1	1
Natural Gas	2	0	0	2	2
Oil Systems	2	0	0	2	2
Electrical Power	0	0	0	0	0
Communication	0	0	0	0	0

Table 8: Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	623	10	2
Waste Water	374	7	2
Natural Gas	249	2	0
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

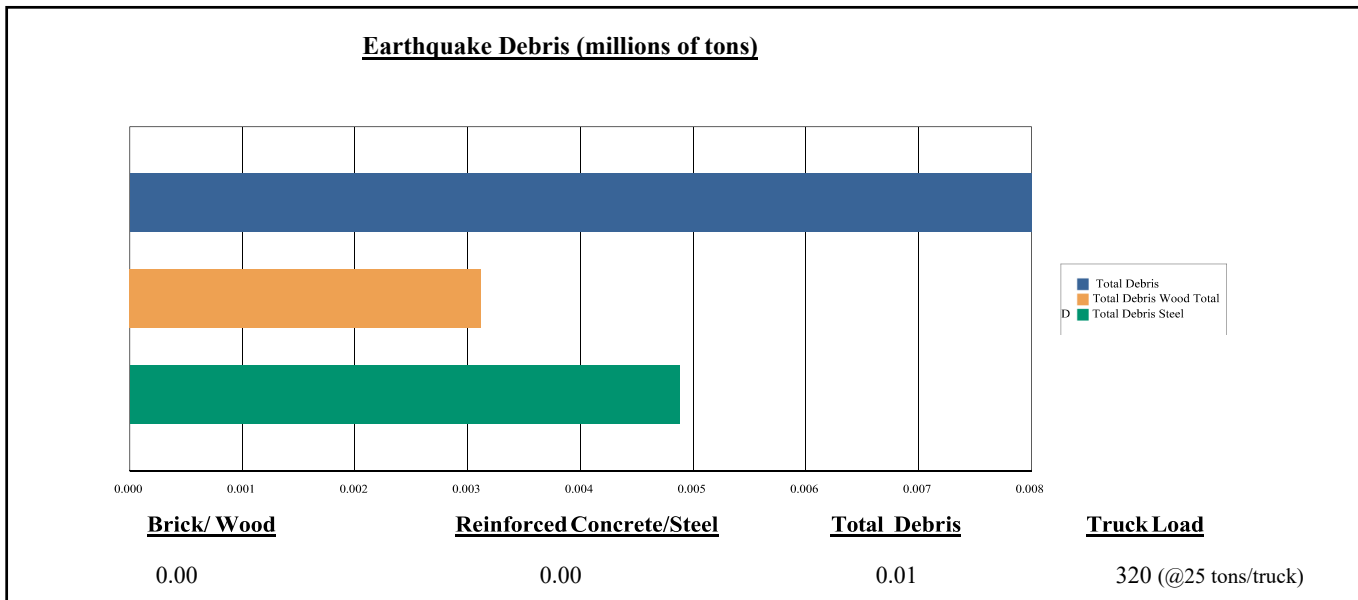
	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	4,505	0	0	0	0	0
Electric Power		0	0	0	0	0

## Induced Earthquake Damage

### Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

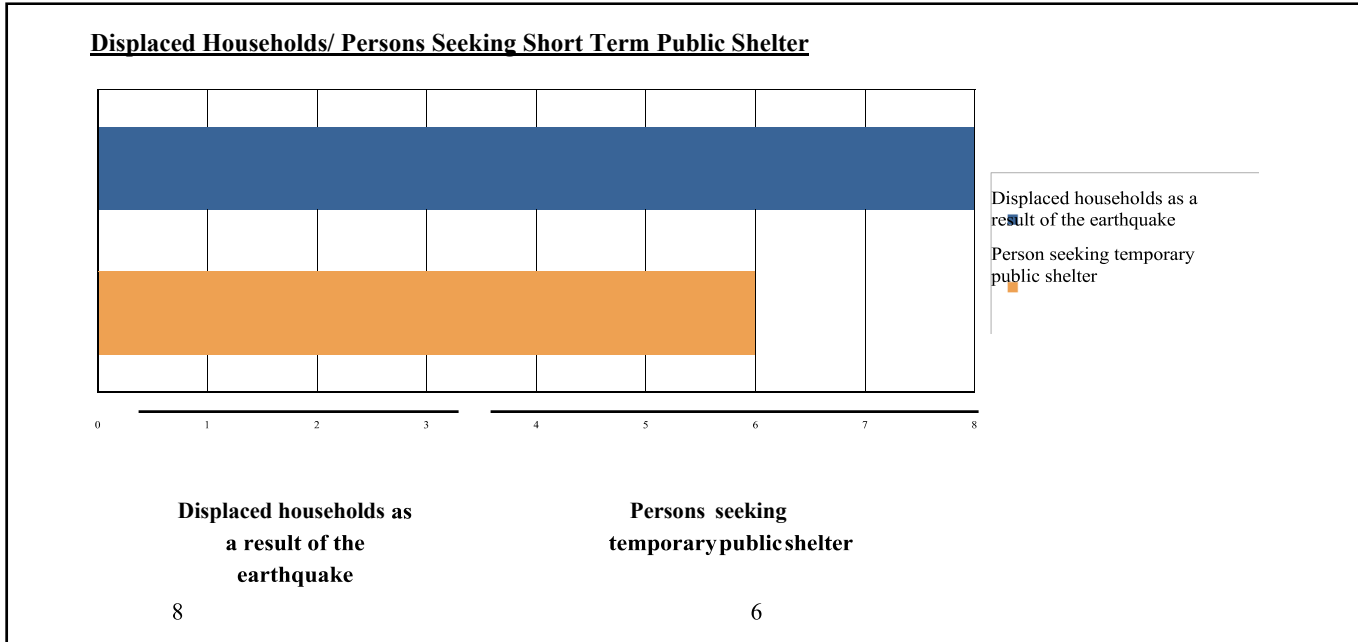
The model estimates that a total of 0.01 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 39.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 320 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.



## Social Impact

### Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 8 households to be displaced due to the earthquake. Of these, 6 people (out of a total population of 14,746) will seek temporary shelter in public shelters.



### Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention, but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

**Table 10: Casualty Estimates**

		Level 1	Level 2	Level 3	Level 4
<b>2 AM</b>	Commercial	0	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	0	0	0	0
	Other-Residential	4	0	0	0
	Single Family	3	0	0	0
	<b>Total</b>	<b>7</b>	<b>1</b>	<b>0</b>	<b>0</b>
	Commercial	4	1	0	0
<b>2 PM</b>	Commercial	4	1	0	0
	Commuting	0	0	0	0
	Educational	2	0	0	0
	Hotels	0	0	0	0
	Industrial	1	0	0	0
	Other-Residential	1	0	0	0
	Single Family	1	0	0	0
	<b>Total</b>	<b>8</b>	<b>1</b>	<b>0</b>	<b>0</b>
	Commercial	3	0	0	0
<b>5 PM</b>	Commercial	3	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	0	0	0	0
	Other-Residential	1	0	0	0
	Single Family	1	0	0	0
	<b>Total</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>0</b>
	Commercial	3	0	0	0



## Economic Loss

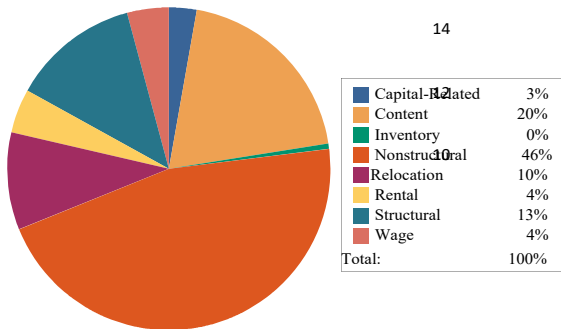
The total economic loss estimated for the earthquake is 32.28 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

## Building-Related Losses

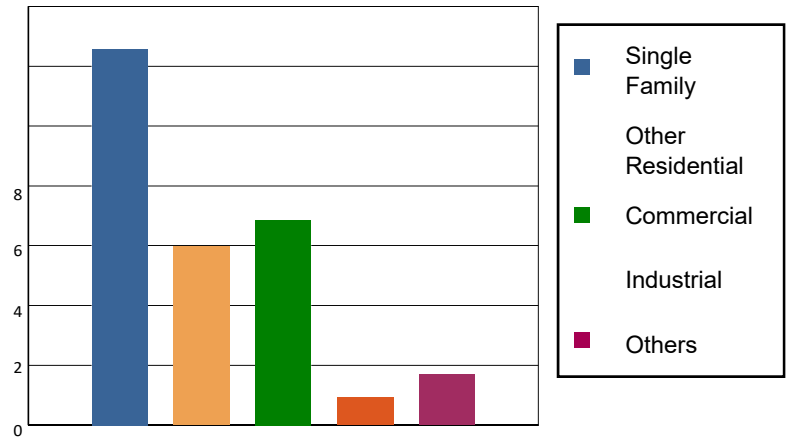
The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 28.04 (millions of dollars); 21 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 66 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Earthquake Losses by Loss Type (\$ millions)



Earthquake Losses by Occupancy Type (\$ millions)



**Table 11: Building-Related Economic Loss Estimates**  
(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses	Wage	0.00	0.30	0.76	0.02	0.08	1.15
	Capital-Related	0.00	0.13	0.63	0.01	0.01	0.78
	Rental	0.32	0.43	0.43	0.01	0.04	1.23
	Relocation	1.12	0.59	0.68	0.05	0.26	2.69
	<b>Subtotal</b>	<b>1.43</b>	<b>1.45</b>	<b>2.49</b>	<b>0.09</b>	<b>0.39</b>	<b>5.85</b>
Capital Stock Losses	Structural	1.50	0.90	0.88	0.12	0.24	3.64
	Nonstructural	6.76	2.93	2.16	0.40	0.65	12.89
	Content	2.89	0.70	1.30	0.27	0.41	5.56
	Inventory	0.00	0.00	0.05	0.05	0.01	0.10
	<b>Subtotal</b>	<b>11.15</b>	<b>4.53</b>	<b>4.38</b>	<b>0.84</b>	<b>1.30</b>	<b>22.19</b>
<b>Total</b>		<b>12.58</b>	<b>5.98</b>	<b>6.87</b>	<b>0.93</b>	<b>1.69</b>	<b>28.04</b>

## **Transportation and Utility Lifeline Losses**

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

**Table 12: Transportation System Economic Losses**  
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	2,867.90	\$0.00	0.00
	Bridges	22.64	\$0.03	0.13
	Tunnels	0.00	\$0.00	0.00
	Subtotal	<b>2,891</b>	<b>0.00</b>	
Railways	Segments	0.00	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	<b>0</b>	<b>0.00</b>	
Light Rail	Segments	0.00	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	<b>0</b>	<b>0.00</b>	
Bus	Facilities	1.07	\$0.11	10.58
	Subtotal	<b>1</b>	<b>0.10</b>	
Ferry	Facilities	1.33	\$0.07	5.40
	Subtotal	<b>1</b>	<b>0.10</b>	
Port	Facilities	0.00	\$0.00	0.00
	Subtotal	<b>0</b>	<b>0.00</b>	
Airport	Facilities	10.65	\$1.17	10.95
	Runways	37.96	\$0.00	0.00
	Subtotal	<b>49</b>	<b>1.20</b>	
	<b>Total</b>	<b>2,941.60</b>	<b>1.40</b>	

**Table 13: Utility System Economic Losses**

(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Distribution Lines	12.50	\$0.04	0.34
	Subtotal	12.47	\$0.04	
Waste Water	Pipelines	0.00	\$0.00	0.00
	Facilities	65.30	\$2.67	4.08
	Distribution Lines	7.50	\$0.03	0.41
	Subtotal	72.75	\$2.70	
Natural Gas	Pipelines	0.00	\$0.00	0.00
	Facilities	2.10	\$0.09	4.29
	Distribution Lines	5.00	\$0.01	0.18
	Subtotal	7.12	\$0.10	
Oil Systems	Pipelines	0.00	\$0.00	0.00
	Facilities	0.20	\$0.01	4.08
	Subtotal	0.20	\$0.01	
Electrical Power	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	\$0.00	
Communication	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	\$0.00	
	Total	92.53	\$2.85	

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**Appendix A: County Listing for the Region**

San Juan, UT



**Appendix B: Regional Population and Building Value Data**

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
Utah	San Juan	14,746	810	175	986
Total State		14,746	810	175	986
Total Region		14,746	810	175	986

## Hazus-MH: Flood Global Risk Report

**Region Name:** SanJuanCounty\_FL

**Flood Scenario:** Level1\_FL\_San\_Juan\_County

**Print Date:** Tuesday, September 26, 2017

**Disclaimer:**

*This version of Hazus utilizes 2010 Census Data.*

*Totals only reflect data for those census tracts/blocks included in the user's study region.*

*The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique.*

*Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Flood. These results can be improved by using enhanced inventory data and flood hazard information.*



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## General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The flood loss estimates provided in this report were based on a region that included 1 county(ies) from the following state(s):

- Utah

**Note:**

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 7,933 square miles and contains 4,544 census blocks. The region contains over 5 thousand households and has a total population of 14,746 people (2010 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B.

There are an estimated 5,875 buildings in the region with a total building replacement value (excluding contents) of 986 million dollars (2010 dollars). Approximately 94.11% of the buildings (and 82.17% of the building value) are associated with residential housing.



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## Building Inventory

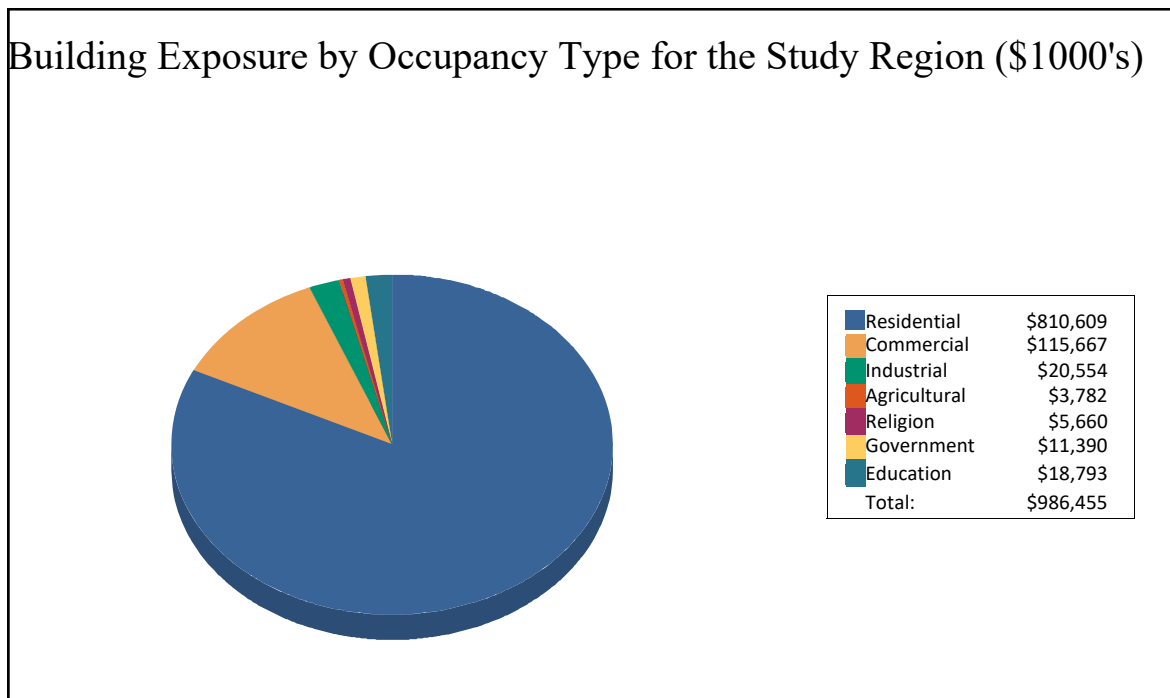
### General Building Stock

Hazus estimates that there are 5,878 buildings in the region which have an aggregate total replacement value of 986 million (2014 dollars). Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

**Table 1**  
**Building Exposure by Occupancy Type for the Study Region**

Occupancy	Exposure (\$1000)	Percent of Total
Residential	810,609	82.2%
Commercial	115,667	11.7%
Industrial	20,554	2.1%
Agricultural	3,782	0.4%
Religion	5,660	0.6%
Government	11,390	1.2%
Education	18,793	1.9%
<b>Total</b>	<b>986,455</b>	<b>100.0%</b>

### Building Exposure by Occupancy Type for the Study Region (\$1000's)



**Table 2**

**Building Exposure by Occupancy Type for the Scenario**

Occupancy	Exposure (\$1000)	Percent of Total
Residential	198,258	86.0%
Commercial	19,559	8.5%
Industrial	3,101	1.3%
Agricultural	1,447	0.6%
Religion	1,461	0.6%
Government	490	0.2%
Education	6,294	2.7%
<b>Total</b>	<b>230,610</b>	<b>100.0%</b>

**Essential Facility Inventory**

For essential facilities, there are 7 hospitals in the region with a total bed capacity of 25 beds. There are 15 schools, 13 fire stations, 7 police stations and 1 emergency operation center.



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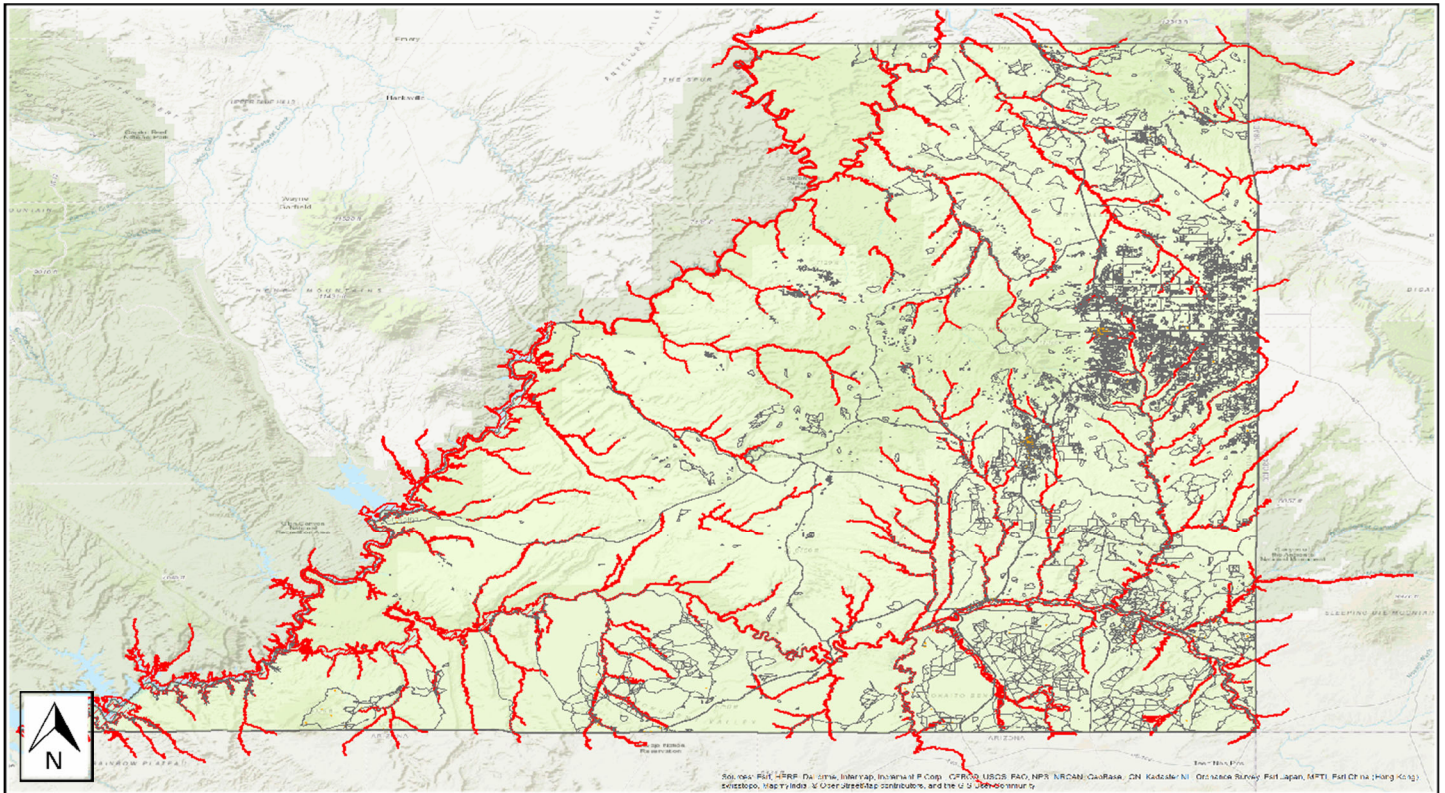
## Flood Scenario Parameters

Hazus used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

**Study Region Name:** SanJuanCounty\_FL  
**Scenario Name:** Level1\_FL\_San\_Juan\_County\_100  
**Return Period Analyzed:** AnalysisOptions No What-Ifs  
**Analyzed:**

### Study Region Overview Map

Illustrating scenario flood extent, as well as exposed essential facilities and total exposure



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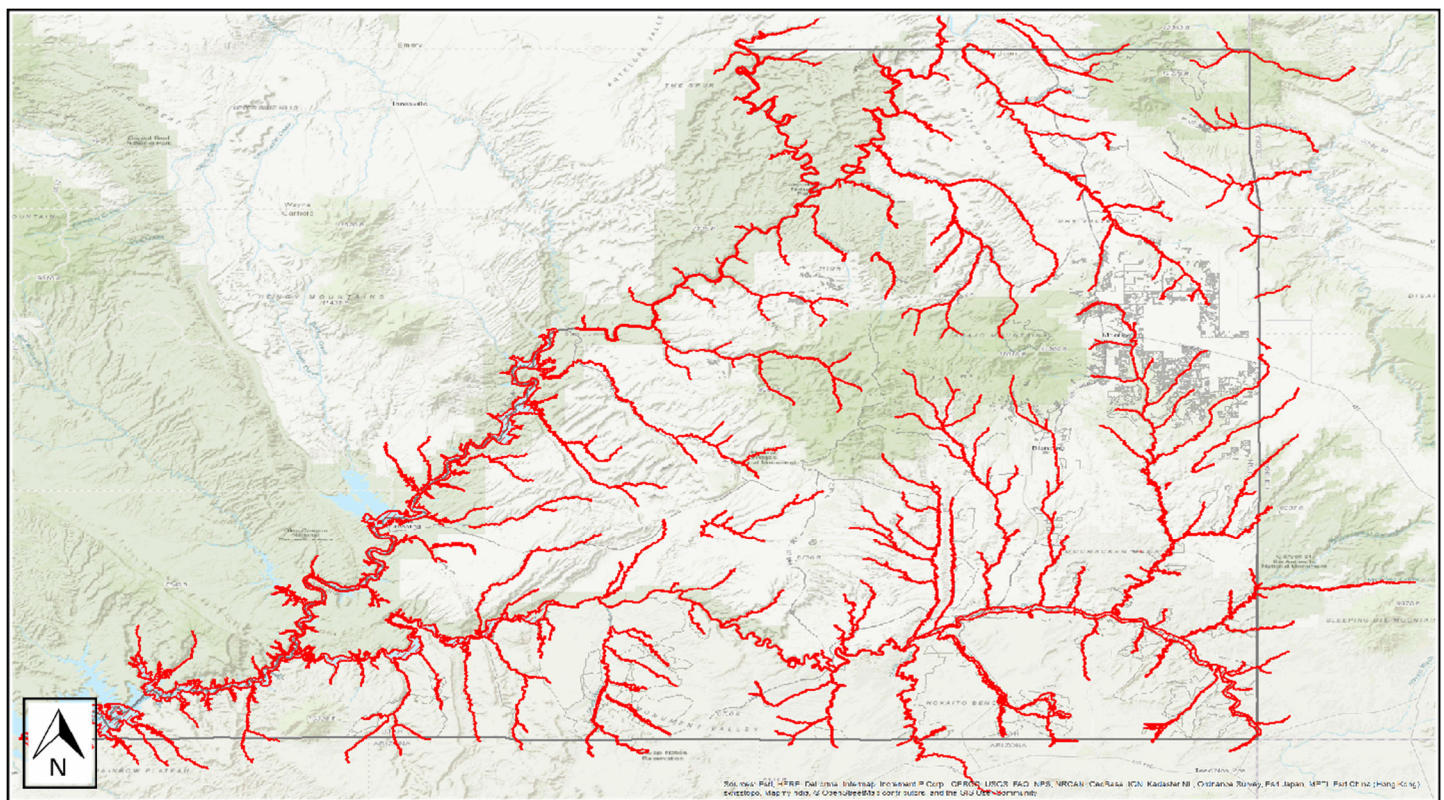


## Building Damage

### General Building Stock Damage

Hazus estimates that about 77 buildings will be at least moderately damaged. This is over 15% of the total number of buildings in the scenario. There are an estimated 58 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus Flood Technical Manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

### Total Economic Loss (1 dot = \$300K) Overview Map



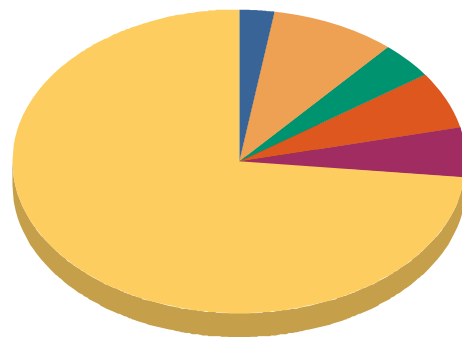
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**Table 3: Expected Building Damage by Occupancy**

	1-10		11-20		21-30		31-40		41-50 Substantially			
Occupancy	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	2	2.53	7	8.86	3	3.80	5	6.33	4	5.06	58	73.42
<b>Total</b>	<b>2</b>		<b>7</b>		<b>3</b>		<b>5</b>		<b>4</b>		<b>58</b>	

### Counts By Damage Level



Damage Level 1-10	2
Damage Level 11-20	7
Damage Level 21-30	3
Damage Level 31-40	5
Damage Level 41-50 Substantially	58
<b>Total:</b>	<b>79</b>



**Table 4: Expected Building Damage by Building Type**

Building	1-10		11-20		21-30		31-40		41-50		Substantially	
Type	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0	0	0	0	0	0	0	0	0	0	0
ManufHousing	0	0	0	0	0	0	0	0	0	0	30	100
Masonry	0	0	0	0	0	0	0	0	0	0	3	100
Steel	0	0	0	0	0	0	0	0	0	0	0	0
Wood	2	4	7	15	3	7	5	11	4	9	25	54

## Essential Facility Damage

Before the flood analyzed in this scenario, the region had 25 hospital beds available for use. On the day of the scenario flood event, the model estimates that 25 hospital beds are available in the region.

**Table 5: Expected Damage to Essential Facilities**

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	13	0	0	0
Hospitals	7	0	0	0
Police Stations	7	0	0	0
Schools	15	0	0	0

If this report displays all zeros or is blank, two possibilities can explain this.

- (1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.
- (2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.



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## Induced Flood Damage

### Debris Generation

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three broad categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the diverse types of material handling equipment required to handle the debris.

**Analysis has not been performed for this Scenario.**

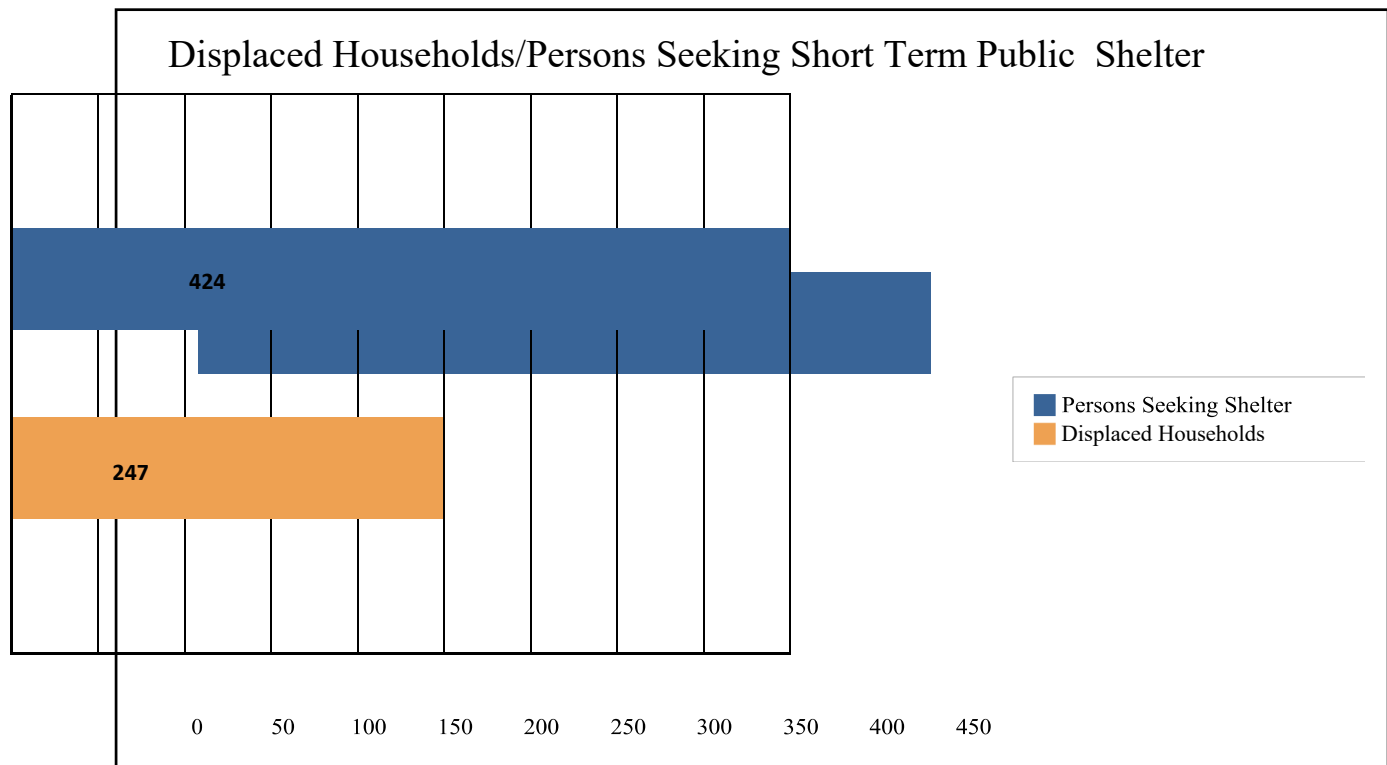


**FEMA**

## Social Impact

### Shelter Requirements

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 247 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 424 people (out of a total population of 14,746) will seek temporary shelter in public shelters.



## Economic Loss

The total economic loss estimated for the flood is 24.79 million dollars, which represents 10.75 % of the total replacement value of the scenario buildings.

### **Building-Related Losses**

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 24.77 million dollars. 0% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 88.64% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.



**Table 6: Building-Related Economic Loss Estimates**

(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Building Loss</u>						
	Building	14.66		0.36	0.14	15.33
	Content	7.30		1.03	0.27	9.36
	Inventory	0.00		0.03	0.05	0.08
	<b>Subtotal</b>	<b>21.96</b>		<b>1.41</b>	<b>0.46</b>	<b>24.77</b>
<u>Business Interruption</u>						
	Income	0.00		0.00	0.00	0.00
	Relocation	0.01		0.00	0.00	0.01
	Rental Income	0.00		0.00	0.00	0.00
	Wage	0.00		0.00	0.00	0.00
	<b>Subtotal</b>	<b>0.01</b>		<b>0.00</b>	<b>0.00</b>	<b>0.02</b>
<u>ALL</u>	<b>Total</b>	<b>21.97</b>		<b>1.41</b>	<b>0.46</b>	<b>24.79</b>



## **Appendix A: County Listing for the Region**

Utah

-

San Juan



**FEMA**

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Appendix B: Regional Population and Building Value Data

Building Value (thousands of dollars)

	Population	Residential	Non-Residential	Total
<b>Utah</b>				
San Juan	14,746	810,609	175,846	986,455
<b>Total</b>	<b>14,746</b>	<b>810,609</b>	<b>175,846</b>	<b>986,455</b>
<b>Total Study Region</b>	<b>14,746</b>	<b>810,609</b>	<b>175,846</b>	<b>986,455</b>



# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

## **Appendix 2**

### **Plan Maintenance, Evaluation, and Implementation**

#### **Monitoring, Evaluating, and Updating the Plan**

Periodic monitoring and updates to this Plan are required to ensure the goals and objectives for the San Juan County Pre-Disaster Mitigation Plan 2018 are kept current and the mitigation strategies are being carried out. This Plan has been designed to be user-friendly in terms of maintenance and implementation. 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.

The San Juan County LEPC meets quarterly to review emergency management efforts within the county. This meeting is open to the public and attended by County and City governmental officials, local businesses, EMS, hospitals, fire departments, and local citizens. To keep the San Juan County Pre-Disaster Mitigation Plan 2018 up-to date the LEPC will conduct an annual review to discuss the incorporation of new hazards, mitigations, or other data into the Plan.

#### **Annual Review Procedures**

San Juan County will annually review the mitigation strategies described in this plan, or as situations dictate, such as following a disaster declaration. The process will include San Juan County Emergency Management organizing a Mitigation Planning Committee comprised of individuals from organizations responsible for implementing the described mitigation strategies. Progress towards the completion of the strategies will be assessed and revised as warranted. The San Juan County Emergency Manager will regularly monitor the Plan and is responsible for making revisions and updates.

#### **Five Year Plan Review**

The entire Plan including, background studies and analysis shall be revised and updated every five years by the participating jurisdictions to determine if there have been any significant changes in the County that would affect the Plan.

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

Increased development, increased exposure to certain hazards, the development of new mitigation capabilities or techniques, and changes to State or Federal legislation are examples of changes that may affect the applicability of the Plan.

The San Juan County Pre-Disaster Hazard Mitigation Working Group 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 the Utah Division of Emergency Management determine the recommendations require modifications, an amendment may be initiated as described below.

## **Plan Amendments**

The State of Utah Division of Emergency Management Hazard Mitigation Officer, members of the Local Hazard Mitigation Committee, or County Commissioner/Mayor/City Manager of an affected jurisdiction may initiate amendments and updates to the Plan.

Upon initiation of an amendment to the Plan, the Utah Division of Emergency Management will forward information on the proposed amendment to all interested parties including, but not limited to, all affected county and city departments, residents and businesses. Depending on the magnitude of the amendment, the full Hazard Mitigation Planning Committee may be reconstituted.

At a minimum the information will be made available through a public notice in a newspaper of general distribution within the county providing a comment period of no less than forty-five 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. The Utah Division of Emergency Management will review the proposed amendment along with comments received from other parties and submit a recommendation to FEMA within sixty days.

In determining 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
2. Contemporary issues or needs have been identified which were not adequately addressed in the Plan.

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

3. There has been a change in information, data, or assumptions from those which the Plan was based
4. The nature or magnitude of the risks have changed
5. There are implementation problems such as technical, political, legal, or coordination with other agencies

Upon receiving the recommendation from the Utah Division of Emergency Management, a public hearing will be held by the San Juan County Emergency Manager. The Division of Emergency Management will review the recommendation (including the factors listed above) any oral or written comments received at the public hearing. Following the review, the Division of Emergency Management 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 hearings
4. Reject the Amendment request

## **Implementation Through Existing Programs**

Once the Plan has been promulgated, participating cities and the County 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, County, and/or City Mitigation Plans. Many of the mitigation actions developed by the cities and county have mitigation elements of other programs such as the National Flood Insurance Program, the Utah Wildland-Interface Code, the Building Code Effectiveness Grading System, and the Community Rating System.

## **Process**

It will be the responsibility of the participating jurisdiction's political body to ensure that these mitigation projects are carried out no later than the target dates unless reasonable circumstances prevent their implementation. (i.e. Lack of funding)

## **Funding Sources**

Although all mitigation techniques will likely save money by avoiding future losses, projects may be costly to implement. The County and participating jurisdiction will continue to seek funding sources to assist funding the completion of mitigation projects. This portion of the Plan identifies primary Federal and State Grant Programs, local and non-governmental funding sources.

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

## **Federal Programs**

The following Federal Grant Programs have been identified as funding sources which specifically target hazard mitigation projects:

The Pre-Disaster Hazard Mitigation Program administered by FEMA. The program provides funding to States, Counties, and Cities for cost effective hazard mitigation activities that complement a comprehensive mitigation program that reduces loss of life, reduces injuries, or damage to property.

The funding is based on a 75% Federal Share and a 25% Non-Federal Share. The Non-Federal Share may be in the form of cash or in-kind or a combination. The following maybe eligible mitigation activities:

1. Pre-Disaster Mitigation Planning
2. Technical Assistance (i.e. risk assessments, project development)
3. Mitigation Projects
4. Acquisition or relocation of vulnerable properties
5. Hazard Retrofits
6. Minor structural hazard control or protection projects
7. Community outreach and education

The Flood Mitigation Assistance Program is provided by FEMA and administered by the State. The program provides funds to reduce or eliminate the risks of long term flood damage to structures insurable under the National Flood Insurance Program. The funding is available for mitigation planning and the implementation of mitigation measures only. The funding levels are a 75% Federal Share and 25% Non-Federal Share.

## **State Grant Programs**

### **Local Funding**

Local government depends on property taxes as a primary source of revenue. These taxes are typically used to finance services that must be available and delivered on a routine, regular basis to the public. If local budgets permit these funds may be used as matching funds for State and Federal Grants.

### **Non-Governmental Funding**

Another potential source of funding for implementing mitigation projects are monetary contributions from private sector companies, faith-based organizations, charities, or other non-profit organizations.

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

## **APPENDIX 3 San Juan County PDM Process**

### **Integrating into other Plans**

The most direct application for local jurisdictions is to create or update a natural hazards zone or overlay in the local General Plans, zoning, and land use ordinances. Regulating land uses in natural hazard areas can effectively reduce losses of life and property. Communities should be updating their General Plan about every five years at a minimum anyway. This regular update process is a great opportunity for communities to review their sections of the San Juan County Pre-Disaster Mitigation Plan 2018, identify risks documented in the plan, and to update their local General Plan, zoning, and ordinances accordingly.

The responsibility and authority to regulate development in natural hazard areas lies with the County, City, or Town. The State of Utah does not regulate most development, and while the Utah Geological Survey and others help Counties/communities, they do not have authority to regulate. Public health, safety, and welfare can be protected most effectively as communities exercise the authority given them and use the resources available to them to plan development responsibly near hazard areas.

Local emergency management officials train for emergency response to all types of natural hazards. This plan can serve as a reference to them providing historical hazard events, points of contact, general geographic locations of hazards, and potential losses per jurisdiction per hazard. Also, continued involvement in several follow-up Pre-Disaster Mitigation planning meetings will provide useful forums for discussion and collaboration among various organizations and levels of government.

Public Works and Roads Departments can also implement the information from this plan. As communities view the natural hazards data and mapping in this plan, they can accordingly identify where infrastructure could be damaged in the event of a natural disaster or where weak sections are in the various systems. Data sets for the various hazards identified in this plan are continually being updated and refined. The Utah Geological Survey and others can provide zoning and ordinance assistance for geological hazard areas and can provide the most up-to-date data and mapping.

As far as Flood Mitigation Plans, those communities that do have a plan can update it referencing the data and statistics in this plan. Potential losses and the general number of structures in FEMA floodplains can be very beneficial in those plan updates. However, the best resource for updating floodplain planning efforts is the Utah Division of

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

Emergency Management. The State Floodplain Manager has the necessary training and resources to assist communities in this respect. Likewise, for wildfire protection, the Utah Division of Forestry, Fire, and State Lands can aid communities which can help them become eligible for funding. The cooperative and collaborative development of the Community Wildfire Preparedness Plans and the Pre-Disaster Natural Hazard Mitigation Plans enhances the community's preparedness for all-natural hazards. For general pre-disaster mitigation funding and project assistance, the Utah Division of Emergency Management hazard mitigation planning staff can provide the most up-to-date knowledge and experience.

Perhaps the most direct way communities in San Juan County can implement this plan into current planning mechanisms is by completing the mitigation strategies for their respective community found in this plan. These strategies were written by the San Juan County Working Group comprised of representatives from throughout the county to find ways to decrease potential losses to life and property. As communities strive to improve natural hazards planning within their jurisdictional boundaries, they will more effectively protect the public's health, safety, and welfare by implementing these mitigation strategies.

## **San Juan County Planning Process Overview**

The San Juan County 2018 Pre-Disaster Natural Hazard Mitigation Plan update began after a Request for Proposal and a bid award with the selection of Scott Mabe LLC, a Disabled Veteran Small Business, as the contractor to work with and assist San Juan County with updating the 2013 Pre-Disaster Natural Hazard Mitigation Plan. The contractor hired Ron Mosher of Ron Mosher Consulting, a sole proprietorship, to assist the contractor with the task.

The Kick-Off Meeting was held on 6/27/2016 chaired by the San Juan County Emergency Manager, Kelly Pehrson, attended by Tammy Gallegos, Deputy San Juan County Emergency Manager, Rick Bailey, Grand County Emergency Manager, Angelia Crowther, State of Utah Division of Emergency Management Southeastern Utah Liaison, Scott Mabe, Lead Contractor, and Ron Mosher, Contractor, to brainstorm the composite of the 2018 PDM Working Groups for San Juan County and Grand County. A tentative meeting schedule was discussed for each county. The roles and responsibilities of the contractor and the counties were discussed and agreed upon.

As a result of this Kick-Off Meeting the San Juan County 2018 Pre-Disaster Natural Hazard Mitigation Plan Working Group and the Core Planning Team were identified, and invitations were sent out for the first Working Group Meeting.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Planning Group	Email	Position	Invited, but did not attend any meetings as indicted by the X
Cari D. Spillman	<CSpillman@bmh.utah.gov>	Local Citizen	
Benny Musselman	<bmmusselman@sanjuancounty.org>	County Road and Bluff Water Works	
Nick Sandberg	nsandberg@sanjuancounty.org	County Planner	X
Kelly Pehrson	<kpehrson@sanjuancounty.org>	County EM and Administrator	
Tammy Gallegos	tgalegos@sanjuancounty.org	County Deputy EM	
Rick Bailey	<rbailey@grandcountysheriff.org>	Grand County EM	
Rebecca Benally	rmbenally@sanjuancounty.org	County Commissioner	X
Angelia Crowther	<acrowther@utah.gov>	State Liaison	
Avery Olsen	<avery@monticelloutah.org>	Monticello City EM	
Crystal Holt	<cholt@sanjuancounty.org>	EM Planning Team	
Jeremy Redd	jredd@blanding-ut.gov	Blanding City Administrator	
Don Angell	dangeell@montrosecounty.net	Montrose County EM	
David Gallegos	<dgallegos@sanjuancounty.org>	County Fire Chief	
Jennifer Dinsmore	jenniferd@sanmiguelsherrif.org	San Miguel County EM	X
Dough Wright	<doug@monticelloutah.org>	Monticello City Administrator	X
Eric Martineau	<emartineau@utah.gov>	State	
Greg Adams	<gregadams@sanjuancounty.org>	County Planning and Zoning Officer	X
Phil Lyman	plyman@sanjuancounty.org	County Commissioner	X
Heber Heyder	<heberheyder@utah.gov>	County Fire Warden	
Jason Johnson	<jasonajohnson@utah.gov>	County Forester	
Jim Pringle	Jim Pringle <james.pringle@noaa.gov>	NOAA Contact	
Linda Larson	<swens@sanjuancounty.org>	Em Planning Team	
Natalie Freestone	<nfreestone@sanjuancounty.org>	EM Planning Team	
Kyle Hosler	khosler@sjsd.org	San Juan School District	X
Rick Reeb	<rr21148@verizon.net>	Bluff Special Service District	X

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Nate Langston	nate@monticelloutah.org	Monticello City Water Works	
Ron Mosher	<brmosher@infowest.com>,	Contractor	
Scott Mabe	<smabecllc@gmail.com>,	Contractor	
Bruce Adams	bbadams@sanjuancounty.org	Commissioner	X
Walter Bird	<walterbird@sanjuancounty.org>,	Planning and Zoning Attorney	X
Harland Cleavland	hcleavland@navajo-nsn.gov	Navajo Nation EM	X
Charlie Delorme	No Longer here	County Economic Development	X
George Colson	No Longer here	Red Cross	
Navajo County Arizona	Catrina Jenkins		

<b>Core Planning Group</b>
Kelly Pehrson
Tammy Gallegos
David Gallegos
Natalie Freestone
Angelia Crowther
Linda Larson/Simmons
Ron Mosher
Scott Mabe
Avery Olsen

The first San Juan County 2018 PDM Working Group Meeting was held on 8/29/2016 facilitated by the contractor. The key stakeholders were present, and the current 2013 San Juan County Natural Hazard Pre-Disaster Plan was reviewed to establish what basic information required updating. The participants were asked, based on their knowledge and experience, for input to update some areas. Their spontaneous responses were recorded for inclusion in the Plan as they recalled various activities that had occurred



# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

over the past five years. It was suggested to include photographs to document some of these events and the San Juan County Deputy Emergency Manager accepted the responsibility to obtain applicable photos. Jim Pringle, the NOAA weather representative offered to research and provide severe weather updated information, the San Juan County Fire Chief offered to follow up with the State of Utah Division of Forestry, Fire, and State Lands to start the process of obtaining an updated fire history. The contractor was assigned the task of researching and updating county descriptive and demographic information. The contractor also began working with the Deputy County Emergency Manager to develop a current list of San Juan County critical facilities. A process of gathering and disseminating the information through the Deputy San Juan County Emergency Manager to the contractor was established. The County would be involved in every step of the process. The last item discussed was identifying individuals who could provide valuable information and were not present and reach out to them to attend the next meeting. The Working Group list reflects the diverse group within the county and surrounding jurisdictions the invitations were sent out for. A representative from Navajo County, AZ. Joined the meeting via a phone link.

The second San Juan Working Group Meeting was held on May 31, 2017 and was facilitated by the contractor. The effort to reach out again to identified Working Group Members and encouraging them to attend resulted in more participation. The basic Plan information that had been gathered by the contractors was reviewed and comments made by the participants incorporated into the document. The updated severe weather information gathered by Jim Pringle, NOAA, was shared with the Working Group and incorporated into the document. The Regional Forester, who was in attendance, stated the State Division of Forestry, Fire, and State Lands was compiling the fire history for San Juan County and would have the results to the county in a timely manner. The issue of how to cooperate and collaborate with the development of the Community Wildfire Preparedness Plan (CWPP) was discussed. The conclusion was the same individuals involved with the PDM will be involved with the CWPP and the consensus was to add the CWPP as an appendix to the 2018 PDM. The identification and prioritization of the natural hazards affecting San Juan County, municipal jurisdictions, and the critical facilities were discussed and agreed upon by the Working Group. The status of current mitigation projects, and potential future mitigation projects were discussed with input from the subject matter experts. Points of contact for future mitigation projects were provided and assignments to provide the applicable mitigation action project information to the Deputy County Emergency Manager were given. The Montrose County, CO. Emergency Manager joined the meeting in person to learn about the San Juan County PDM process and status.

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

In the interim between the second and third San Juan County Working Group Meetings information flowed between the contractors, the San Juan County Emergency Management Office, the subject matter experts in the San Juan County Road Department, and Monticello City Emergency Management as the impacts of natural hazards on the jurisdictions were identified and the hazard mitigation action projects were developed and prioritized for presentation to Working Group. During this time Blanding City chose not to participate any further in the planning process and did not submit any hazard mitigation projects to be included in the San Juan County 2018 Pre-Disaster Natural Hazard Mitigation Plan. Blanding City is not included in the San Juan County 2018 Pre-Disaster Natural Hazard Mitigation Plan.

The third San Juan County Working Group Meeting was held on March 5, 2018 and the contractors presented a Draft 2018 San Juan County Pre-Disaster Natural Hazard Mitigation Plan for review and comment by the Working Group. The contractor facilitated a point by point review of the document seeking additional input from the Working Group. The Working Group suggested some modifications which were incorporated, and they endorsed moving onto the next phase. The San Juan County 2018 Pre-Disaster Natural Hazard Mitigation Plan was posted on the San Juan County web site and the Public Hearing set for April 17, 2018. The next steps were discussed as the draft will become a “Final” document to send to the State of Utah Division of Emergency Management for their review.

The Letter of Invitation, meeting agendas, sign-in form, and notes for the San Juan County Working Group Meetings follow:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Pre-Disaster Mitigation Meeting 6/27/2016

10:00 a.m. 117 S Main Monticello Utah kick off meeting

[illegible]

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

6/27/2016

Notes of the first Pre-Disaster Mitigation Plan meeting

10:00

Present

Kelly Pehrson, Rick Bailey, Ron Mosher, Scott Mabe, Tammy Gallegos, Angelia Crowther

All documentation will come through San Juan County. San Juan County would like a plan that is useable and won't just sit on the shelf. Grand County has expressed that Thompson Springs has some water issues and Moab has a new sewer plant going in, and debris flow is always something that they would like to address their hope is the plan will support these projects. The other hope is that Castle Valley can be added to the plan as an addendum.

The Contractors expect support with note taking. That correspondence that is sent out for meetings to the work groups is done so in the Emergency Managers names. That there is cooperation with Mapping and GIS.

If the Navajo Nation and the Utah Navajo Chapters would like to participate they need to send a letter in requesting to be a part of the process.

PSA's and social media will be the outlets for the public during the planning process.

We will have two workgroups and there will be some overlap with the two groups, attached to these notes is the first initial list of invitees to the work groups.

San Juan's 1<sup>st</sup> meeting will be August 29<sup>th</sup>, 2016 from 12:00-2:00 with lunch being served. Grand County will have their 1<sup>st</sup> meeting August 30<sup>th</sup> Rick will get back to Scott and Ron with a time and place.

Tammy will pull the commission minutes approving the contractor and add it to the paperwork for record.

Invoicing will go through Scott's company and will be at the GSA rate.

Angelia offered the State's Go to Meeting for the group to use if it is needed.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Pre-Disaster Mitigation Sign in  
August 29, 2016

NAME	AGENCY	EMAIL
Ammy Gallegos	SJC EM	tgalligosa@sanjuancounty.org
Ann Spillman	Blue Mountain Hospital	cspillman@bmtutah.org
Linda Larsen	SJEMS	slarsen@sanjuancounty.org
Jeremy Redd	Blanding City	jredd@blanding-ut.gov
Jim Pringle	NATL WEATHER SVC	james.pringle@noaa.gov
George Colson	American Red Cross	george.colson@redcross.org
Natalie Freestone	SJC EM	nfreestone@sanjuancounty.org
Crystal Ho H	SJC HR	choh@sanjuancounty.org
David Gallegos	SJC (Fire)	dgallegos@sanjuancounty.org

Attended by Phone

Catrina Jenkins Navajo County Arizona

## Utah Region 7 Pre-Disaster Mitigation Plan

The Utah Region 7 Emergency Management Team has been awarded the FEMA grant for a Pre-Disaster Mitigation plan. We are committed to develop a local plan that will provide a basis for Hazard mitigation within our communities. We would now like to begin the process of developing a planning team. To support this activity we are organizing a meeting to discuss plan development in the area, to which you are cordially invited.

When: August 29, 2016 12:00-2:00 (Lunch will be served)

Where: 117 S Main Street Monticello Utah

In the course of the meeting we aim to bring together key strategic partners in order to establish the need for a local plan, and how we will identify the priorities and actions needed to complete the Pre-Disaster Mitigation plan.

Your input to this process is of key importance and we hope that you will be able to attend.

Yours sincerely

Kelly Pehrson

San Juan County Emergency Manager

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

## **Agenda**

### **San Juan County 2108 PDM**

### **Working Group Meeting**

**May 31, 2017**

**11:00 AM – 1:00 PM**

1. Review the San Juan County updated basic demographic information
2. Review the San Juan County Critical Infrastructure information
3. Review the San Juan County Natural Hazards prioritization
4. Examine the status of the current San Juan County Natural Hazard Mitigation Projects
5. Discuss the ideas, concepts, implementation, and cost estimates for the  
San Juan County 2018 Pre-Disaster Hazard Mitigation Plan Projects
6. Establish Points of Contact for follow up on each of the proposed projects in San Juan County  
Presentation by the representatives of the Department of Natural Resources, Division of Forestry, Fire, and State Lands on the concurrent development of the Community Wildfire Preparedness Plan within San Juan County

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Pre-Disaster Mitigation Sign In

May 31, 2017

NAME	AGENCY	EMAIL
Tammy Gallegos	SJC EM	tgallago@sanjuancounty.org
Cari Spillman	Blue Mountain Hospital	cspillman@bmh.utah.org
Linda Larsen	ST EMS	swens@sanjuancounty.org
Jeremy Ladd	Blanding City	jredde@blanding-ut.gov
TIM PRINGLE	NATL. WEATHER SVC	james.pringle@noaa.gov
GEORGE COLSON	AMERICAN RED CROSS	george.colson@redcross.org
Natalie Freestone	SJC EM	nfreestone@sanjuancounty.org
Crystal Hoff	SJC HR	choff@sanjuancounty.org
David Gallegos	SJC (Fire)	dgallegos@sanjuancounty.org
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Email List  
5/31/17  
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mms

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

## **Agenda**

**San Juan County 2108 PDM**

**Working Group Meeting**

**March 5, 2018**

**9:00 AM – 10:00 AM**

1. Welcome
2. Status of Plan
3. Proposed Changes
4. Review Process



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## PDM Sign In

March 5, 2018

NAME	AGENCY	EMAIL/Phone
Ron MASTER	Contractor	RMASTER@MFWEST.COM 435-668-0774
David O'Neil	USFS	doneil@FS.Fed.us
Mark Atwood	USFS	matwood02@FS.Fed.us
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Eric Martin	DEM	emartin@utah.gov
Cari Spillman	Blue Mountain Hospital	Cspillman@bmh.utah.org

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**



## **PUBLIC NOTICE: San Juan County**

Will host a public hearing on:

Tuesday, April 17, 2018 at 11:30 am

The meeting will be held at the:

Hide Out Community Center  
**648 S Hideout Way**  
**Monticello, Utah 84535**

The purpose of the public hearing is to receive public comment on a draft of the San Juan County Pre- Disaster Hazard Mitigation Plan.

All interested citizens may comment at the public hearing. The plan is available for review in the Administration Office of San Juan County 117 S Main Street, Room 202, Monticello, Utah 84535, or online at [www.sanjuancounty.org](http://www.sanjuancounty.org)

Published in the San Juan Record March 21, 28, 2018 and April 4, 11, 2018

Input from the following agencies was critical in completing this review: San Juan County Emergency Managers, PDM 2018 working group, Fire Departments, San Juan County Sheriff's Office, Public Works and Streets Departments, Geographic Information System Offices (GIS) from the State and Counties, Elected Officials, Public Employees, Special Districts, and Citizens of the Cities (Monticello, Blanding) and Federal Partners.

This planning review incorporated Federal Emergency Management Agency (FEMA) Local Multi-Hazard Mitigation Planning Guidance, 2008. FEMA Mitigation Ideas, A Resource for Reducing Risk to Natural Hazards, 2013. As required at 44CFR 201.6(d), Local Mitigation Plans and How-To Guides.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018



## SAN JUAN COUNTY COMMISSION MEETING HIDEOUT COMMUNITY CENTER - CONFERENCE ROOM AGENDA April 17, 2018

- 9:00 A.M.**      **Work Meeting** - All Discussion, Report, Department Head Concerns, & non-action items  
                    Garrett Silversmith – NDOT – Roads Discussion  
                    Jerry McNeely - Updates  
                    Nick Sandberg – Updates
- 11:00 A.M.**      **Commission Meeting**  
                    Approval of Minutes – April 3, 2018
- 11:05 A.M.**      **Agenda Items – Items for Discussion / Consideration for Approval**  
                    Walter Bird – SJC Human Resources Director  
                    New Hires  
                    Ben Musselman – SJC Public Works Director  
                    Procurement Requests  
                    Tammy Gallegos – SJC Aging Director  
                    CSBG Contract  
                    Aging 4-Year Plan
- 11:30 A.M.**      **Public Hearing** - to receive public comment on a draft of the San Juan County Pre-Disaster Hazard Mitigation Plan.  
                    Consider Approving the San Juan County Pre-Disaster Hazard Mitigation Plan
- 11:45 A.M.**      **Public Hearing** - to receive public comments regarding the Consideration of the Draft Spanish Valley Area Plan  
                    Consider approving the Spanish Valley Area Plan  
                    Kelly Pehrson – Chief Administrative Officer  
                    Floodplain Manager  
                    Other
- 12:00 P.M.**      **Commission Reports**
- 12:10 P.M.**      **CITIZENS' COMMENTS\*** (Please complete the request form - available at the door)
- 12:20 P.M.**      **Executive Session - Discuss Personnel Issues**
- 1:30 P.M.**      **Mark Jones – Federal Courts Outreach**

**\*San Juan County Commission can call a closed meeting at any time during the Regular Session\***

**\*CITIZENS' COMMENTS:** Anyone wishing to address the Commission on a non-agenda item is invited to do so during the citizens' comments period in the meeting. Comments or presentations are limited to three minutes, if requested, an extension of two minutes for a total of five minutes may be granted by the Commission Chairman.

**PROCEDURE:** Please complete the request form (available at the door) and hand it to the Commission Clerk, as you enter the meeting. Thank you for helping us provide an orderly productive meeting.

All agenda items shall be considered as having potential commission action components and may be completed by an electronic method \*\*In compliance with the Americans with Disabilities Act, persons needing auxiliary communicative aids and services for this meeting should contact the SJC Clerk's Office: 117 S Main, Monticello or telephone 435-587-3223, giving reasonable notice\*\*

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P.O. Box 338 • 117 South Main Street • Monticello, Utah 84535 • 435-587-3223 • Fax 435-587-2425

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# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

4/17/2017

Attending the Public Hearing for the Pre-Disaster Mitigation Plan

Kendall Laws

Jerry Mc Neely

Walter Bird

Bruce Adams

Rebecca Benally

Kelly Pehrson

Tammy Gallegos

John David Neilson

Bob Turri,

Benny Musselman

Kirk Bengé

Mark Vlassic

Greg Adams

No public comments were given.

The PDM Grant has been available on-line since March 5<sup>th</sup> 2018 and the document has been shared but no public comment has been provided.

<https://www.fema.gov/hazard-mitigation-planning>

The Working Group Meetings were published open meetings, the Draft Plan was posted to the County Website. A Public Hearing will be scheduled, the San Juan County Commission Meeting and City Council Meeting to accept the plan by resolution are open meetings

The following San County, Monticello City, and Blanding City Codes and Ordinances were reviewed for updates and applicability to the mitigation strategies and action plans.

San Juan County:

- San Juan County General Plan: Amended and Updated July 2017

- San Juan County Zoning Ordinance; Chapter 9, Construction subject to Geologic, Flood, or other Natural Hazards Updated 2011

- San Juan County Resource and Emergency Planning Guide Updated 2017

- San Juan County Wildland Fire Mobilization Plan 2008

- San Juan County Emergency Operations Plan 2017

- San Juan County Emergency Operations Plan 2015

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

## Monticello City:

- Storm Water Master Plan 2010
- Water Master Plan 2010
- Sewer Master Plan
- Street Master Plan Updated Yearly
- Flood Plain Map 1976
- Zoning Ordinance 1999-4

San Juan County Resolution of Adoption  
and  
City of Monticello Resolution of Adoption

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

San Juan County  
Utah

RESOLUTION NO. 752018

**A RESOLUTION OF San Juan County ADOPTING THE SAN JUAN COUNTY PRE-DISASTER HAZARD MITIGATION PLAN 2018**

WHEREAS San Juan County recognizes the threat that natural hazards pose to people and property within San Juan County; and

WHEREAS San Juan County has participated in the creation of a multi-hazard mitigation plan, hereby known as the San Juan County Pre-Disaster Hazard Mitigation Plan 2018 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS San Juan County Pre-Disaster Hazard Mitigation Plan 2018 Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in San Juan County from the impacts of future hazards and disasters; and

WHEREAS adoption by San Juan County demonstrates their commitment to hazard mitigation and achieving the goals outlined in the San Juan County Pre-Disaster Hazard Mitigation Plan 2018

NOW THEREFORE, BE IT RESOLVED BY San Juan County, Utah, THAT:

San Juan County adopts the San Juan County Pre-Disaster Hazard Mitigation Plan 2018

This resolution shall be effective on the date it is adopted.

DATED this 7 day of July, 2018.

Bruce Adams  
Signed

Bruce Adams Commission Chairman  
Printed Name and Title

San Juan County  
Jurisdiction Name

ATTEST

Tammy Gallegos  
Tammy Gallegos Administrative Assistant  
Name/Title

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Monticello,  
Utah

RESOLUTION NO. 2018-3

A RESOLUTION OF THE CITY OF MONTICELLO ADOPTING THE SAN JUAN COUNTY PRE-DISASTER HAZARD MITIGATION PLAN 2018

WHEREAS the City of Monticello recognizes the threat that natural hazards pose to people and property within Monticello; and

WHEREAS the City of Monticello has participated in the creation of a multi-hazard mitigation plan, hereby known as the San Juan County Pre-Disaster Hazard Mitigation Plan 2018 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS San Juan County Pre-Disaster Hazard Mitigation Plan 2018 Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Monticello from the impacts of future hazards and disasters; and

WHEREAS adoption by Monticello City Council demonstrates their commitment to hazard mitigation and achieving the goals outlined in the San Juan County Pre-Disaster Hazard Mitigation Plan 2018

NOW THEREFORE, BE IT RESOLVED BY THE CITY OF MONTICELLO, Utah, THAT:

In accordance with (local rule for adopting resolutions), Monticello City Council adopts the San Juan County Pre-Disaster Hazard Mitigation Plan 2018

This resolution shall be effective on the date it is adopted.

DATED this 12th day of July, 2018



7-2  
Signed  
Tim Young Mayor  
Printed Name and Title  
Monticello City  
Jurisdiction Name

ATTEST  
Cindi Holypark  
Cindi Holypark, Recorder  
Name/Title

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

## **Appendix 4 Environmental Considerations**

Natural disasters are any major, adverse event which occurs from the natural meteorological, hydrologic, or geologic processes of the Earth. These events can include floods, severe weather, volcanic eruptions, and earthquakes. Any natural disaster can result in loss of life or property damage, often with concomitant economic damage. The affected population's resilience or ability to recover will impact the severity of any economic damage.

Natural disasters are an integral part of the environment's capacity to maintain balance. Over millions of years, the processes of wind, water, and geology have shaped Utah as we know it, and they will continue to do so—affecting humans and their structures. This meeting of natural events and human communities is what constitutes a natural disaster, and while modern engineering has made it possible to mitigate some of the effects of natural disasters, the potential for economic and environmental costs can be high. Human tampering with natural systems can also create an imbalance in the environment which might create problems in the future which cannot yet be seen. As such, it seems living with a small amount of risk (respecting the natural processes as much as possible), rather than constructing mitigation for every eventuality, might be best in the long run.

In order to work harmoniously with the environment, nature's own mitigation measures need to be identified, protected and/or strengthened. In addition, all applicable city codes, county codes, and state and federal laws pertaining to the environment must be followed, doing the utmost to ensure that our environment is not harmed through mitigation measures. In the main, mitigation programs proposed in this plan will be funded through federal, state, or local programs/funding. During the planning process, the following acts were evaluated, and their consideration and incorporation was deemed necessary while organizing and implementing the PDM plan.

The Clean Air Act (CAA) 1970: The Clean Air Act is the comprehensive Federal Law that covers the entire country under the Environmental Policy Act (EPA) 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



# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

anywhere in the United States, this controls the emissions of air pollutants. These limits ensure that all Americans have the same basic health and environmental protections. Maximum pollutant standards were set, and states may have stronger pollution controls on an individual basis, but not weaker pollution controls than those set for the whole country.

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 EPA. The 1977 amendment was to 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 toxics. This act required that facilities with copious amounts of certain hazardous chemicals to have special emergency planning requirement; based on a facilities potential threat or risk from chemical spills, fires, explosions, etc. A Risk Management Plan (RMP) is prepared 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 (Clean Air).

The Clean Water Act (CWA): The Federal Water Pollution Control Act Amendments of 1972 came about because of the growing awareness for controlling 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 Environmental Protection Agency (EPA) the authority to set wastewater standards for industry.

The act also required 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, under construction grant programs from the EPA and recognized the need for planning for future problems that posed a threat from nonpoint source pollution (Clean Water).

Endangered Species Act of 1973: This act provides a plan for the protection of threatened and endangered plants and animals and the habitats in which they are found. Congress finds and declares 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, because 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.

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

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 in 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 connections with conservation of endangered species (Endangered).

Floodplain Management Policy: The main points of the 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 makes the most benefit to society. To pursue and encourage appropriate use of floodplains and to avoid long and short term negative impacts associated with the inhabitants and modification of floodplains and to avoid direct and indirect support of floodplain development, whenever there is a practicable alternative.

“Functions (Natural) of floodplains include natural moderation of floods; fish, wildlife, and plant resources and habitat; groundwater recharge; and water quality maintenance. Uses of floodplains include the following: storm water 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” (Floodplain, Reclamation).

National Historic Preservation Act of 1966: This act was found and declared 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 to give a sense of orientation to the American people.” Some of the other main points of the act include 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 would like to use measures that will foster conditions in which historic resources can exist in productive harmony with present and future generations (National). Section 106 of NHPA “requires all Federal agencies to take into account the effects of their actions on historic properties, and that provide the Advisory Council on Historic Preservation (ACHP) with a reasonable

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

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 (Section 106).

Utah’s Noxious Weed Control Act, July 2008: was established to provide a means to control destructive noxious weeds. The act goes hand in hand with helping to prevent wildfires as well as control insects that are both destructive to our economic and environmental landscapes. The invasive noxious weeds can spread rapidly causing enormous economic losses. It is reported that millions of acres in North America have been invaded or are at risk of being invaded by weeds which include destruction of cropland, pastures, rangelands, forests, wilderness areas, national parks, recreation sites, wildlife management areas, transportation corridors, waterways, wetlands, parks, golf courses, even yards and gardens. The Utah Weed Control Association reports that the spread of noxious weeds are spreading at a rate of more than 4,600 acres per day on federal lands in the United States.

Noxious weeds can cause damage to watersheds and increase soil erosion leaving the land permanently damaged. The economic losses from weeds exceed \$20 billion annually in the United States, and the cost continues to grow. The mitigation efforts in each county help protect and preserve our lands.

**Utah's Noxious Weed List:** Weeds are prioritized into four levels. effective December 2017 under the Rule R68-9. Authority R689-9-1, Designation and Publication of State Noxious Weeds

Source: Utah Office of Administrative Rules, <https://rules.utah.gov/publicat/code/r068/r068-009.htm>.

Class 1A: Early Detection Rapid Response (EDRR) Watch List Declared noxious and invasive weeds not native to the state of Utah and not known to exist in the State that pose a serious threat to the state and should be considered as a very high priority.

Common crupina	Crupina vulgaris
African rue	Peganum harmala
Small bugloss	Anchusa arvensis
Mediterranean sage	Salvia aethiopis
Spring millet	Milium vernale
Ventenata (North Africa grass)	Zygophyllum fabago
Plumeless thistle	Ventenata dubia
Malta starthistle	Carduus acanthoides
Syrian beancaper	Centaurea melitensis

Class 1B: (Control) Declared noxious weeds not native to the state of Utah, which pose a threat to the state and should be considered a high priority for control.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Camelthorn	Alhagi maurorum
Garlic	Alliaria petiolata
Purple starthistle	Centaurea calcitrapa
Goatsrue	Galega officinalis
African mustard	Brassica tournefortii
Giant reed	Arundo donax
Japanese knotweed	Polygonum cuspidatum
Blueweed (Vipers bugloss)	Echium vulgare
Elongated mustard	Brassica elongata
Common St. Johnswort	Hypericum perforatum
Oxeye daisy	Leucanthemum vulgare
Cutleaf vipergrass	Scorzonera laciniata

**Class 2: (Control)** Declared noxious and invasive weeds not native to the state of Utah, that pose a threat to the state and should be considered a high priority for control. Weeds listed in the control list are known to exist in varying populations throughout the state. The concentration of these weeds is at a level where control or eradication may be possible.

Leafy spurge	Euphorbia esula
Medusahead	Taeniatherum caput-medusae
Rush skeletonweed	Chondrilla juncea
Spotted knapweed	Centaurea stoebe
Purple loosestrife	Lythrum salicaria
Squarrose knapweed	Centaurea virgata
Dyers	Isatis tinctoria
Yellow starthistle	Centaurea solstitialis
Yellow toadflax	Linaria vulgaris
Diffuse knapweed	Centaurea diffusa
Black henbane	Hyoscyamus niger
Dalmation toadflax	Linaria dalmatica

**Class 3: (Containment)** Declared noxious and invasive weeds not native to the State of Utah that are widely spread. Weeds listed in the containment noxious weeds list are known to exist in various populations throughout the state. Weed control efforts may be directed at reducing or eliminating new or expanding weed populations. Known and established weed populations, as determined by the weed control authority, may be managed by any approved weed control methodology, as determined by the weed control authority. These weeds pose a threat to the agricultural industry and agricultural products.

Russian knapweed	Acroptilon repens
Houndstounge	Cynoglossum officinale
Perennial pepperweed	Lepidium latifolium
(Tall whitetop)	
Phragmites (Common reed)	Phragmites australis ssp.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Tamarisk(Saltcedar)	Tamarix ramosissima
Hoary cress	Cardaria spp.
Canada thistle	Cirsium arvense
Poison hemlock	Conium maculatum
Musk thistle	Carduus nutans
Quackgrass	Elymus repens
Jointed goatgrass	Aegilops cylindrica
Bermudagrass*	Cynodon dactylon
Perennial Sorghum spp	including but not limited to Johnson Grass (Sorghum halepense and alnum)
Scotch thistle (Cotton thistle)	Onopordum acanthium
Field bindweed	Convolvulus spp.
(Wild Morning-glory)	

\* Bermudagrass *Cynodon dactylon* : shall not be a noxious weed in Washington County and shall not be subject to provisions of the Utah Noxious Weed Law within the boundaries of that county. It shall be a noxious weed throughout all other areas of the State of Utah and shall be subject to the laws therein.

**Class 4:** (Prohibited) Declared noxious and invasive weeds, not native to the state of Utah, that pose a threat to the state through the retail sale or propagation in the nursery and greenhouse industry. Prohibited noxious weeds are annual, biennial, or perennial plants that the commissioner designates as having the potential or are known to be detrimental to human or animal health, the environment, public roads, crops, or other property.

Cogongrass (Japanese blood grass)	Imperata cylindrica
Myrtle spurge	Euphorbia myrsinites
Dames Rocket	Hesperis matronalis
Scotch broom	Cytisus scoparius

Each county in Utah may have different priorities regarding specific State Designated Noxious Weeds and is therefore able to reprioritize these weeds for their own needs.

## San Juan Sensitive Species List

Name	Scientific Name	State Status
Allen's Big-eared Bat	Idionycteris phyllotis	SPC
American Three-toed Woodpecker	Picoides dorsalis	SPC
American White Pelican	Pelecanus erythrorhynchos	SPC
Arizona Toad	Bufo microscaphus	SPC
Bald Eagle	Haliaeetus leucocephalus	SPC
Big Free-tailed Bat	Nyctinomops macrotis	SPC
Black-footed Ferret -	Unconfirmed Mustela nigripes	S-ESA

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Bluehead Sucker	<i>Catostomus discobolus</i>	CS
Bobolink	<i>Dolichonyx oryzivorus</i>	SPC
Bonytail Gila	<i>elegans</i>	S-ESA
Burrowing Owl	<i>Athene cunicularia</i>	SPC
Colorado Pikeminnow	<i>Ptychocheilus lucius</i>	S-ESA
Common Chuckwalla	<i>Sauromalus ater</i>	SPC
Desert Night Lizard	<i>Xantusia vigilis</i>	SPC
Flannelmouth Sucker	<i>Catostomus latipinnis</i>	CS
Fringed Myotis	<i>Myotis thysanodes</i>	SPC
Gray Wolf	Historically <i>Canis lupus</i>	S-ESA
Great Plains Toad	<i>Bufo cognatus</i>	SPC
Greater Sage-grouse	<i>Centrocercus urophasianus</i>	SPC
Gunnison Sage-grouse	<i>Centrocercus minimus</i>	S-ESA,
CS Gunnison's Prairie Dog	<i>Cynomys gunnisoni</i>	SPC
Humpback Chub Gila	<i>cypha</i>	ESA
Kit Fox Vulpes	<i>macrotis</i>	SPC
Lewis's Woodpecker	<i>Melanerpes lewis</i>	SPC
Mogollon Vole <i>Microtus</i>	<i>mogollonensis</i>	SPC
Northern Goshawk <i>Accipiter</i>	<i>gentilis</i>	CS
Razorback Sucker	<i>Xyrauchen texanus</i>	S-ESA
Roundtail Chub <i>Gila robusta</i>	<i>Gila robusta</i>	CS
Short-eared Owl	<i>Asio flammeus</i>	SPC
Silky Pocket Mouse	<i>Perognathus flavus</i>	SPC
Smooth Greensnake	<i>Opheodrys vernalis</i>	SPC
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	S-ESA
Spotted Bat	<i>Euderma maculatum</i>	SPC
Spotted Owl	<i>Strix occidentalis</i>	S-ESA
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	SPC
Yavapai	Mountainsnail <i>Oreohelix yavapai</i>	SPC

San Juan County Sensitive Species (dnrcdc.nr.utah.gov/ucdc Dec. 2017)

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## APPENDIX 5 General Mitigation Strategies

### Section 1. Mitigation Categories

For the purpose of this mitigation plan, the mitigation strategies were divided into one of six categories according to how they accomplish mitigation. Below are the categories with examples; following, in Section 2, the regional natural hazard mitigation strategies are addressed using this categorization.

- A. Emergency Services*
- B. Natural Resource Protection*
- C. Prevention*
- D. Property Protection*
- E. Public Information and Involvement*
- F. Structural Protection*

A. Emergency Service: Emergency Services protect people 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

B. 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

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

- Erosion and sediment control
- Fuels reduction
- Watershed maintenance

C. 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
- Storm water management
- Minimum set back requirements
- Evacuation plans

D. Property Protection: Property Protection measures are used to modify buildings within high-risk areas in an attempt to reduce damage. For the most part property protection measures do not affect a buildings appearance of use making them less expensive and particularly suitable for historical sites and landmarks.

Examples include:

- Utility relocation
- Burying or flood proofing
- Non-structural earthquake mitigation
- Backup protections
- Insurance and other monetary loss minimization actions
- Technical evaluations and mapping

E. *Public Information and Involvement: Public Information and Involvement activities are intended to advise property owners, potential property owners, and visitors*



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

*about the particular hazards associated with a property and ways to protect people and property from these hazards.*

Examples include:

- Education
- NFIP
- URWIN areas
- Hazard Identification
- Maps with high hazard locations identified
- Informational mailings
- Workshops
- Real Estate disclosures for natural hazards
- Real Estate insurance

*F. Structural Protection/Projects:* 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

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## **Section 2. General Mitigation Strategies**

### **Flood/ Riverine Mitigation**

**Generic 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 SNOwpack TELelemetry (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 residence of rising floodwaters. Warning systems can disseminate the information through many means such as sirens, radio, television, mobile public-address system, reverse 911, 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, and example of flood response is the turning of State Street into a river during the 1983 flood event. Many of the below actions should be part of an emergency response plan EOP developed in coordination with the agencies that share responsibilities. The EOP once developed should be exercised and

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

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
- Releasing children from school
- 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 with 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, applicable to all disasters:

- 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
- Vaccination of 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*

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Wetlands Protection: Wetlands are capable of storing copious 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*

Planning and Zoning: Land use plans are put in place to guide future development, they recommend where development should and should not take place. Sensitive and vulnerable lands can be designated for uses that would not be incompatible with occasional flood events. The 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.

# San Juan County Pre-Disaster Hazard Mitigation Plan

## 2018

Building Codes: Standards can be incorporated into building codes that address flood proofing from all new and 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.

Storm Water Management: Development outside of a floodplain can contribute significantly to flooding by covering impervious surfaces, which increase storm water runoff. Storm water 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. Larger 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; regarding and filling should also be regulated.

### *D. Property Protection*

Relocation: Moving structures out of the floodplain are 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 entity 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: Elevating 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 homeowner's 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 monetary loss/risk onto 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 can sell separate flood insurance policies under rules and rates

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

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
- Radio and TV news releases and interviews
- A detailed property owner's handbook tailored for local conditions
- Presentations at meetings and neighborhood groups

Real Estate Disclosure: Disclosure of information regarding flood or hazard prone properties is important if potential buyers are to be able to mitigate damage. Federally regulated lending institutions are required to advise applicant 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 or the flood hazard areas. These maps can be used by anyone interested in a property to determine if it is in the floodplain. These maps are available from FEMA, the Utah Division of Emergency Management, 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:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

- 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 maybe 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 measure levees and floodwalls are 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. Diversions 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.

Storm Water Management: Mitigation techniques for managing storm water include installing storm water systems, enlarging pipes, and street improvements in existing storm water systems.

## Earthquakes

Generic Mitigation is a list of generic earthquake mitigation strategies pertaining to secondary threats often associated with earthquakes.

### Generic Ground Shaking Mitigation

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

- Understand peak horizontal acceleration and recurrence interval
- Design appropriately
- Zoning ordinances and building codes

## Generic Liquefaction Mitigation

- Move soil out
- Density 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 a significant 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



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

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 facility locations, steep slopes, areas with liquefiable soils, and insure 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 consist of mitigation measures that do not affect the overall look or purpose of the building yet prevent damage to non-structural aspects and lessen the loss of life. In addition, buildings with non-structural mitigation are frequently usable after an event.

- Tie downs
- Flexible utility connections
- Mylar film on windows to prevent the glass from shattering
- Added bracing.

Retrofitting: consists of upgrading the seismic safety of a building through structural and nonstructural mitigation techniques.

Insurance: Above and beyond standard homeowner's 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 monetary loss/risk onto another party.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## *E. Public Information and Involvement*

Public information and involvement for earthquakes is like 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 can mitigate damage. Unlike floodplains there are no federal laws, which require disclosure of earthquakes.

## *F. Structural Protection*

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 building should be retrofitted to comply with the codes.

## **Dam Failure**

### **Generic Mitigation**

- Proper floodplain maps, including dam breach flood potential
- Public knowledge of floodplains for the 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 order releases and better forecasting would help in snowmelt floods and runoff
- Gather hazard and risk data/information
- Development of improved mitigation techniques
- Education of local officials, developers, and citizens

## *A. Emergency Service*

- Good emergency management and emergency action plans
- Dam conditioning monitoring
- Warning system and monitoring

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

- Understand standard operating procedures

## *C. Natural Resource Protection*

- Zoning of downstream usage
- Risk assessment
- Good watershed management

## *C. 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

## *D. Property Protection*

- Acquisition of building in the path of a dam breach flood
- Flood insurance

## *E. Public Information and Involvement*

- Communication and education of dam owners
- Communication and education with the public
- Evacuation procedures

## *F. Structural Protection*

- 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

## **Wildfire**

### **Generic Wildfire Mitigation**

- Avoidance

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

- 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

## *A. Emergency Service*

- Fire fighting

## *B. Natural Resource Protection*

- Prohibit development in high-risk areas.
- Vegetation control

## *C. 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.

## *D. Property Protection*

- Retrofitting of roofs and adding spark arrestors
- Landscaping to keep bushes and trees away from structures

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

- Insurance rates based on distance from fire protection
- Planning how to deal with URWIN fires before they occur
- Good visibility

## *E. Public Information and Involvement*

- Educating homeowners and future homeowners about risk
- Planning how to deal with URWIN fires before they occur
- Emergency warning system, action plan
- Communication tree between fire departments and homeowners
- Community actions
- Adequate water supply and systems

## *F. Structural Protection*

- Building and property assessments
- Use appropriate construction materials
- Adequate access to buildings

## **Landslides**

### **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
- Education of local officials, developers, and citizens

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

- Protection of drinking water supply systems
- Generic Rock Fall Mitigation
- Avoidance
- Stabilize rocks
- Prerelease
- Build berms or benches
- Build structures to stop rocks

## *A. Emergency Services*

- Warning systems
- Hazard identification and areas at risk

## *B. Natural Resource Protection*

## *C. Prevention*

- Land use planning ordinances
- Identify old landslides
  - Old landslides usually show irregular or subdued hill-like topography
  - Younger or more recently occurring landslides show signs of 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 can be found in 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*

- Proper assessments of slope conditions

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

- 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
- 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

## **Severe Weather**

### *A. Emergency Services*

- Early warning systems
- Communication systems

### *B. Natural Resource Protection*

### *C. Prevention*

- Building code standards for light frame construction
- Ordinances that include weather resistant designs

### *D. Property Protection*

### *E. Public Information and Involvement*

- Listen to a weather radio

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

- 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

## *F. Structural Protection*

- Strengthen un-reinforced masonry

## **Problem Soils**

### Generic Mitigation

- Avoidance
- Presoak and Compact
- Remove problem soil
- Landscape so that runoff moves away from foundations

## *A. Emergency Service*

## *B. Natural Resource Protection*

### *a. Soil awareness*

## *C. Prevention*

- Landscaping with vegetation that does not concentrate or draw substantial 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 ground water 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



# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

## *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 substantial amounts of water from the soil near foundations

## *E. Public Information and Involvement*

## *F. Structural Protection*

- Special foundation designs
- Installing gutters and downspouts
- Proper drainage along roads and around structures

## **Drought**

### *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

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

## *D. Property Protection*

## *E. 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

## *F. Structural Protection/Projects*

N/A

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

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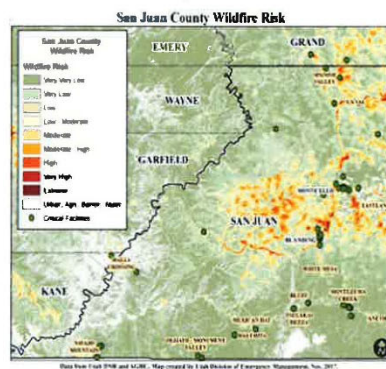
## Appendix 7

### State of Utah

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## County Wildfire Preparedness Plan For the Wildland – Urban Interface

### San Juan County



3/5/2018



Department of Natural Resources  
Division of Forestry, Fire and State Lands  
1594 W North Temple, PO Box 145703, Salt Lake City, UT 84114-5703

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

## **San Juan County Wildfire Preparedness Plan**

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# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### Declaration and Concurrence Page

This list needs to be customized to the individual plan. Provide the names and affiliations of all cooperators. This page will then be signed after all cooperators have reviewed the plan and concur with its contents.

<u>Kelly Rehman</u> NAME	<u>San Juan County</u> AFFILIATION
<u>Kelly Rehman</u> SIGNATURE	<u>04/13/18</u> DATE
<u>Tammy Gallegos</u> NAME	<u>San Juan County</u> AFFILIATION
<u>Tammy Gallegos</u> SIGNATURE	<u>4/13/18</u> DATE
<u>David Gallegos</u> NAME	<u>San Juan County (Fire)</u> AFFILIATION
<u>David Gallegos</u> SIGNATURE	<u>5/14/18</u> DATE
<u>Avery Olson</u> NAME	<u>Monticello City</u> AFFILIATION
<u>[Signature]</u> SIGNATURE	<u>04-16-2018</u> DATE
<u>Page Kannon</u> NAME	<u>FFSL</u> AFFILIATION
<u>[Signature]</u> SIGNATURE	<u>5/21/18</u> DATE

Declaration and Concurrence Page, continued

3 | Page

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Jason Johnson FFSL Area Manager  
NAME AFFILIATION  
[Signature] 5/21/2018  
SIGNATURE DATE

JENNIFER HANSEN FFSL Wildfire Risk Reduction Coord.  
NAME AFFILIATION  
[Signature] 5/25/2018  
SIGNATURE DATE

NAME	AFFILIATION
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NAME	AFFILIATION
SIGNATURE	DATE



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Declaration and Concurrence Page, continued

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# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### INTRODUCTION

Over 600 of Utah's communities have been classified as "at risk" of wildfire. The safety of the citizens of any community and the protection of private property and community infrastructure is a shared responsibility between the citizens; the owner, developer or association; and the local, county, state and federal governments. **The primary responsibility, however, remains with the local government and the citizen/owner.**

#### The purpose of wildfire preparedness planning is to...

- Motivate and empower local government, communities, and property owners to organize, plan, and take action on issues impacting the safety and resilience of values at risk
- Enhance levels of fire resilience and protection to the communities and infrastructure
- Identify the threat of wildland fires in the area
- Identify strategies to reduce the risks to structures, infrastructure and commerce in the community during a wildfire
- Identify wildfire hazards, education, and mitigation actions needed to reduce risk
- Transfer practical knowledge through collaboration between stakeholders toward common goals and objectives

#### Outcomes of wildfire preparedness planning...

- Facilitate organization of sustainable efforts to guide planning and implementation of actions:

##### 1. Fire adapted communities 2. Resilient landscapes 3. Safe and effective fire response

- Improve community safety through:

- |                                  |                                       |                                       |
|----------------------------------|---------------------------------------|---------------------------------------|
| ✓ Coordination and collaboration | ✓ Firefighter training                | ✓ Fire prevention                     |
| ✓ Public awareness and education | ✓ Fuel modification                   | ✓ Development of long-term strategies |
|                                  | ✓ Improved fire response capabilities |                                       |

### RESOURCES

For resources to complete a wildfire preparedness plan for your community, consider organizations such as the following:

- |  |  |
|--|--|
| ✓ Local / Primary fire protection provider               | ✓ Local emergency management services  |
| ✓ Local Resource, Conservation and Development Districts | ✓ USDA Forest Service                  |
| ✓ Utah Division of Forestry, Fire and State Lands        | ✓ U.S. Department of Interior Agencies |
| ✓ Utah State Fire Marshal (Dept. of Public Safety)       | ✓ Utah Resource Conservation Districts |
| ✓ Utah Division of Emergency Management                  | ✓ Utah Soil Conservation Districts     |
| ✓ Utah Living With Fire                                  |  |
| ✓ Local fire agencies                                    |  |

### STATEMENT OF LIABILITY

The activities suggested by this template, associated checklist and guidance document, the assessments and recommendations of fire officials, and the plans and projects outlined by the community wildfire council, are made in good faith according to information available at this time. The Utah Division of Forestry, Fire and State Lands assumes no liability and makes no guarantees regarding the level of success users of this plan will experience. Wildfire still occurs, despite efforts to prevent it or contain it; the intention of all decisions and actions made under this plan is to reduce the potential for, and the consequences of, wildfire.

*Last revised March 2016*

This document provides the outline for and specifies the information recommended for inclusion in a wildfire preparedness plan. **Completed Community Wildfire Preparedness Plans should be submitted to the local Area Manager or Fire Management Officer with the Utah Division of Forestry, Fire and State Lands for final concurrence.**

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

## **San Juan County Wildfire Preparedness Plan**

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# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### PLANNING OVERVIEW

*On January 11, 2018 a conference call was held to start the process of the CWPP for San Juan County. During the time frame from the conference call Part I of the plan was partially completed. There was a group meeting on January 28, 2018 the County, the Division of Forestry Fire and State Lands. The State provided a new work template and at that time Part I of the plan was completed and distributed to the work group. The Division of Forestry Fire and State Lands worked on Part II of the plan providing maps to the work group the county was divided into the North, South, East and West with the maps during the public meeting those in attendance will work within the group that pertains to the area that they have an interest in.*

*A public meeting was held on March 5, 2018 at the Hideout Community Center in Monticello Utah. 850 letters were sent out to private landowners that live outside of incorporated areas in the county, as well as the Bureau of Land Management and the Forest Service. 22 showed up to the public meeting to bring their ideas, concerns and solutions forward and to help develop the plan.*

*The outcome of this process is to have a workable Community Wide Wildland Protection Plan. San Juan County is the largest county in the State and the second largest county in the United States. However the majority of San Juan County land is State, Federal and Bureau of Indian Affairs land. 6% of San Juan County is private land and land that is encompassed by cities, and unincorporated areas of the county that are not within city boundaries. This plan will focus on the areas that San Juan County has Jurisdiction over.*

San Juan County



# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

## **PARTNERSHIPS AND COLLABORATION**

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### PART I COMMUNITY DESCRIPTION

<b>Community Legal Structure</b>			
List the government entities associated with the community – city, town, unincorporated community, special service district, homeowner association(s), other.			
<b>Organization</b>	<b>Contact Person</b>	<b>Phone Number</b>	<b>E-mail</b>
San Juan County EM	Kelly Pehrson	435-587-3225	<a href="mailto:kpehrson@sanjuancounty.org">kpehrson@sanjuancounty.org</a>
San Juan County Fire	David Gallegos	435-587-3225	<a href="mailto:dgallegos@sanjuancounty.org">dgallegos@sanjuancounty.org</a>
San Juan County EM	Tammy Gallegos	435-587-3225	<a href="mailto:tgalegos@sanjuancounty.org">tgalegos@sanjuancounty.org</a>
Monticello EM	Avery Olsen	435-587-2271	<a href="mailto:avery@monticelloutah.org">avery@monticelloutah.org</a>
Utah Division of Forestry Fire and State Lands	Jason Johnson	435-210-4578	<a href="mailto:jasonajohnson@utah.gov">jasonajohnson@utah.gov</a>

### Population – all focus areas

Approximate number of homes	1021
Approximate number of lots	1000
Approximate number of commercial entities	44
Approximate number of full-time residents	521
Approximated number of part-time residents	500

Notes/comments:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

<b>Restricting Covenants, Ordinances, etc. (Attach as appendix) – all focus areas</b> For example, home association bylaws may have requirements regarding building construction materials or vegetation removal, or regarding access in a gated community.		
Source	Details	Focus area



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Access – Spanish Valley/Pack Creek
<b>Directions to community</b> Head north on Us-191 N/S Main Street, for 46.2 miles turn right onto Old Airport Road, turn left onto La Sal Mountain Loop Road/Spanish Valley Drive. Turn Left onto Rio Grande Dr.
<b>All-weather access</b> Yes
<b>Seasonal access</b>

Roads – Spanish Valley/Pack Creek							
	None	Some	All	Adequate	Inadequate	% Pavement	% gravel dirt
Road signs present			X	X		80	20
Will support normal flow of traffic			X	X			
Are loop roads		X		X			
Are dead-end roads		X		X			
Turnaround space available at end of road for emergency equipment		X		X			

Notes/comments:

Driveways – Spanish Valley/Pack Creek							
	Adequate	Inadequate	None	Few	Most	All	
Most driveways width and height clearance, road grades and vegetation appearance are...	X				X		
Individual homeowners have posted their name and address	X				X		

Notes/comments:

Structures – Spanish Valley/Pack Creek
--

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### Driveways – Spanish Valley/Pack Creek

	None	Few	Some	Many	Most	All
Wood frame construction					X	
Have wood decks or porches				X		
Have wood, shake or shingle roofs			X			
Are visible from the main subdivision road				X		

Notes/comments:

### Bridges, Gate, Culverts, other – Spanish Valley/Pack Creek

	None	Some	All
Bridges support emergency equipment		X	
Gate provides easy access to emergency equipment	X		
Culverts are easily crossed by emergency equipment			X

Notes/comments:

### Utilities – Spanish Valley/Pack Creek

	Below ground	Above ground	Provided by	Phone number	% marked with a flag or other highly visible means	% utilized
Telephone service		X	Frontier/Cell		50	100
Electrical service		X	Rocky Mountain		50	100
Are there homes utilizing propane?		X	Propane		50	70
Are there homes utilizing natural gas?		X	Dominion Energy		50	.30

Notes/comments:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Access – La Sal/Old La Sal
<b>Directions to community</b> Head north on Us-191 31.8 miles, turn right onto Utah 46 E for 9 miles for La Sal and 16 miles for Old La Sal
<b>All-weather access</b> Yes
<b>Seasonal access</b>

Roads – La Sal/Old La Sal								
	None	Some	All	Adequate	Inadequate	% Pavement	% gravel	% dirt
Road signs present			X	X		50	50	
Will support normal flow of traffic			X	X				
Are loop roads		X		X				
Are dead-end roads		X		X				
Turnaround space available at end of road for emergency equipment		X		X				

Notes / comments:

Driveways – La Sal/Old La Sal							
	Adequate	Inadequate	None	Few	Most	All	
Most driveways width and height clearance, road grades and vegetation appearance are...	X				X		
Individual homeowners have posted their name and address	X			X			

Notes / comments:

Structures – La Sal/Old La Sal
--------------------------------

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### Structures – La Sal/Old La Sal

	None	Few	Some	Many	Most	All
Wood frame construction					X	
Have wood decks or porches				X		
Have wood, shake or shingle roofs		X				
Are visible from the main subdivision road			X			
<i>Notes/comments:</i>						

### Bridges, Gate, Culverts, other – La Sal/Old La Sal

	None	Some	All
Bridges support emergency equipment	X		
Gate provides easy access to emergency equipment	X		
Culverts are easily crossed by emergency equipment			X
<i>Notes/comments:</i>			

### Utilities – La Sal/Old La Sal

	Below ground	Above ground	Provided by	Phone number	% marked with a flag or other highly visible means	% utilized
Telephone service		X	Frontier/Cell		15	100
Electrical service		X	Rocky Mountain Power		15	100
Are there homes utilizing propane?		X	Private Propane		15	100
Are there homes utilizing natural gas?		X	NA		15	100
<i>Notes/comments:</i>						

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Access – Eastland/Cedar Point/Bug Point
<b>Directions to community</b>
Eastland-On US-491 11 miles, turn right onto Horse Head 3 miles, turn right onto Eastland 1 mile. Cedar Point- Follow US 491 19 miles to county road 2 1.7 miles into Dolores County. Continue on County road 2 for 8 miles Bug Point-Follow US 491 to road 5.7 in Dolores County 23 miles, take CO Road 6, County Road P and Road 1.5 to Bug Point 21.2 miles
<b>All-weather access</b>
Yes
<b>Seasonal access</b>

Roads – Eastland/Cedar Point/Bug Point								
	None	Some	All	Adequate	Inadequate	% Pavement	% gravel	% dirt
Road signs present			X	X		80	20	
Will support normal flow of traffic			X	X				
Are loop roads		X		X				
Are dead-end roads		X		X				
Turnaround space available at end of road for emergency equipment		X		X				

Notes/comments:

Driveways – Eastland/Cedar Point/Bug Point							
	Adequate	Inadequate	None	Few	Most	All	
Most driveways width and height clearance, road grades and vegetation appearance are...	X				X		
Individual homeowners have posted their name and address	X			X			

Notes/comments:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### Structures – Eastland/Cedar Point/Bug Point

	None	Few	Some	Many	Most	All
Wood frame construction					X	
Have wood decks or porches				X		
Have wood, shake or shingle roofs			X			
Are visible from the main subdivision road			X			

Notes/comments:

### Bridges, Gate, Culverts, other – Eastland/Summit Point/Cedar Point

	None	Some	All
Bridges support emergency equipment	X		
Gate provides easy access to emergency equipment	X		
Culverts are easily crossed by emergency equipment			X

Notes/comments:

### Utilities – Eastland/Cedar Point/Bug Point

	Below ground	Above ground	Provided by	Phone number	% marked with a flag or other highly visible means	% utilized
Telephone service		X	Frontier/Cell		5	100
Electrical service		X	Empire Electric		5	100
Are there homes utilizing propane?		X	Private Propane		5	100
Are there homes utilizing natural gas?		X	NA		5	100

Notes/comments:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Access – Peter's Hill/Elk Meadows
<b>Directions to community</b> Head north on US-191 7.4 miles Elk Meadows- Head north US-191 7.4 miles turn right on Peters Spring Road 3 miles
<b>All-weather access</b> Yes
<b>Seasonal access</b>

Roads – Peter's Hill/Elk Meadows								
	None	Some	All	Adequate	Inadequate	% Pavement	% gravel	% dirt
Road signs present			X	X			50	50
Will support normal flow of traffic			X	X				
Are loop roads		X		X				
Are dead-end roads		X		X				
Turnaround space available at end of road for emergency equipment		X		X				

Notes/comments:

Driveways – Peter's Hill Elk Meadows							
	Adequate	Inadequate	None	Few	Most	All	
Most driveways width and height clearance, road grades and vegetation appearance are...	X						
Individual homeowners have posted their name and address	X						

Notes/comments:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### Structures – Peter’s Hill/Elk Meadows

	None	Few	Some	Many	Most	All
Wood frame construction					X	
Have wood decks or porches				X		
Have wood, shake or shingle roofs			X			
Are visible from the main subdivision road			X			

Notes/comments:

### Bridges, Gate, Culverts, other – Peter’s Hill/Elk Meadows

	None	Some	All
Bridges support emergency equipment	X		
Gate provides easy access to emergency equipment	X		
Culverts are easily crossed by emergency equipment			X

Notes/comments:

### Utilities – Peter’s Hill/Elk Meadows

	Below ground	Above ground	Provided by	Phone number	% marked with a flag or other highly visible means	% utilized
Telephone service		X	Frontier/Cell		5	100
Electrical service		X	Empire Electric		5	100
Are there homes utilizing propane?		X	Private Propane		5	100
Are there homes utilizing natural gas?		X	N/A		5	100

Notes/comments:



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Access – Flat Iron Mesa/Browns Hole
<b>Directions to community</b> Flat Iron Mesa-Head north on US 191 35 miles, turn left on County Road 164 1.5 miles, turn left onto Flat Iron Mesa Route Browns Hole-Head north on US 191 33.3 miles turn right on Browns Hole Road 1.4 miles.
<b>All-weather access</b> Yes
<b>Seasonal access</b>

Roads- Flat Iron Mesa/Browns Hole								
	None	Some	All	Adequate	Inadequate	% Pavement	% gravel	% dirt
Road signs present			X	X		20	80	
Will support normal flow of traffic			X	X				
Are loop roads		X		X				
Are dead-end roads		X		X				
Turnaround space available at end of road for emergency equipment		X		X				

Notes / comments:

Driveways – Flat Iron Mesa/Browns Hole							
	Adequate	Inadequate	None	Few	Most	All	
Most driveways width and height clearance, road grades and vegetation appearance are...	X						
Individual homeowners have posted their name and address	X						

Notes / comments:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### Structures – Flat Iron Mesa/Browns Hole

	None	Few	Some	Many	Most	All
Wood frame construction					X	
Have wood decks or porches				X		
Have wood, shake or shingle roofs			X			
Are visible from the main subdivision road			X			

Notes/comments:

### Bridges, Gate, Culverts, other – Flat Iron Mesa/Browns Hole

	None	Some	All
Bridges support emergency equipment	X		
Gate provides easy access to emergency equipment	X		
Culverts are easily crossed by emergency equipment			X

Notes/comments:

### Utilities – Flat Iron Mesa/Browns Hole

	Below ground	Above ground	Provided by	Phone number	% marked with a flag or other highly visible means	% utilized
Telephone service		X	Frontier/Cell		5	100
Electrical service		X	Rocky Mountain Power		5	100
Are there homes utilizing propane?		X	Private Propane		5	100
Are there homes utilizing natural gas?		X	N/A		5	100

Notes/comments:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Access – Behind the Rocks
<b>Directions to community</b> Head north on US-191 41 miles, turn left at Pole Canyon Road/Strike Ravine
<b>All-weather access</b> Yes
<b>Seasonal access</b>

Roads – Behind the Rocks									
	None	Some	All	Adequate	Inadequate	% Pavement	% gravel	% dirt	
Road signs present			X	X		20	80		
Will support normal flow of traffic			X	X					
Are loop roads		X		X					
Are dead-end roads		X		X					
Turnaround space available at end of road for emergency equipment		X		X					

Notes/comments:

Driveways – Behind the Rocks							
	Adequate	Inadequate	None	Few	Most	All	
Most driveways width and height clearance, road grades and vegetation appearance are...	X						
Individual homeowners have posted their name and address	X						

Notes/comments:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### Structures – Behind the Rocks

	None	Few	Some	Many	Most	All
Wood frame construction					X	
Have wood decks or porches				X		
Have wood, shake or shingle roofs			X			
Are visible from the main subdivision road			X			

Notes/comments:

### Bridges, Gate, Culverts, other – Behind the Rocks

	None	Some	All
Bridges support emergency equipment	X		
Gate provides easy access to emergency equipment	X		
Culverts are easily crossed by emergency equipment			X

Notes/comments:

### Utilities – Behind the Rocks

	Below ground	Above ground	Provided by	Phone number	% marked with a flag or other highly visible means	% utilized
Telephone service		X	Frontier/Cell		5	100
Electrical service		X	Rocky Mountain Power		5	100
Are there homes utilizing propane?		X	Private Propane		5	100
Are there homes utilizing natural gas?		X	N/A		5	100

Notes/comments:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Access – Wilson Arch/Rockland Ranch
<b>Directions to community</b>
Wilson Arch-Head north on US 191 28.6 miles Rockland Ranch Head north on US 191 31.1 miles turn left onto Looking Glass road
<b>All-weather access</b>
Yes
<b>Seasonal access</b>

Roads – Wilson Arch/Rockland Ranch								
	None	Some	All	Adequate	Inadequate	% Pavement	% gravel	% dirt
Road signs present			X	X		60	40	
Will support normal flow of traffic			X	X				
Are loop roads		X		X				
Are dead-end roads		X		X				
Turnaround space available at end of road for emergency equipment		X		X				

Notes/comments:

Driveways – Wilson Arch/Rockland Ranch							
	Adequate	Inadequate	None	Few	Most	All	
Most driveways width and height clearance, road grades and vegetation appearance are...	X						
Individual homeowners have posted their name and address	X						

Notes/comments:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### Structures – Wilson Arch/Rockland Ranch

	None	Few	Some	Many	Most	All
Wood frame construction					X	
Have wood decks or porches				X		
Have wood, shake or shingle roofs			X			
Are visible from the main subdivision road			X			

Notes/comments:

### Bridges, Gate, Culverts, other – Wilson Arch/Rockland Ranch

	None	Some	All
Bridges support emergency equipment	X		
Gate provides easy access to emergency equipment	X		
Culverts are easily crossed by emergency equipment			X

Notes/comments:

### Utilities – Wilson Arch/Rockland Ranch

	Below ground	Above ground	Provided by	Phone number	% marked with a flag or other highly visible means	% utilized
Telephone service		X	Frontier/Cell		5	100
Electrical service		X	Rocky Mountain Power		5	100
Are there homes utilizing propane?		X	Private Propane		5	100
Are there homes utilizing natural gas?		X	N/A		5	100

Notes/comments:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Access –Summit Point/Ucolo
<b>Directions to community</b> Summit Point-12.6 miles east on US 491, turn left onto West Summit Road, Ucolo-15.8 miles on US 491 turn left onto Ucolo Road 3.5 miles, turn right to stay on Ucolo road 6 miles
<b>All-weather access</b> Yes
<b>Seasonal access</b>

Roads – Summit Point/Ucolo						
	None	Some	All	Adequate	Inadequate	
Road signs present			X	X		% Pavement 60
Will support normal flow of traffic			X	X		% gravel 40
Are loop roads		X		X		
Are dead-end roads		X		X		
Turnaround space available at end of road for emergency equipment		X		X		

Notes/comments:

Driveways – Summit Point/Ucolo							
	Adequate	Inadequate	None	Few	Most	All	
Most driveways width and height clearance, road grades and vegetation appearance are...	X						
Individual homeowners have posted their name and address	X						

Notes/comments:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### Structures – Summit Point/Ucolo

	None	Few	Some	Many	Most	All
Wood frame construction					X	
Have wood decks or porches				X		
Have wood, shake or shingle roofs			X			
Are visible from the main subdivision road			X			

Notes/comments:

### Bridges, Gate, Culverts, other – Summit Point/Ucolo

	None	Some	All
Bridges support emergency equipment	X		
Gate provides easy access to emergency equipment	X		
Culverts are easily crossed by emergency equipment			X

Notes/comments:

### Utilities – Summit Point/Ucolo

	Below ground	Above ground	Provided by	Phone number	% marked with a flag or other highly visible means	% utilized
Telephone service		X	Frontier/Cell		5	100
Electrical service		X	Empire Electric		5	100
Are there homes utilizing propane?		X	Private Propane		5	100
Are there homes utilizing natural gas?		X	N/A		5	100

Notes/comments:



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Access – Canyon Terrace/Long Canyon
<b>Directions to community</b> Canyon Terrace- South US 191 7 miles turn left onto County Road 146 Long Canyon-South US 191 6 miles turn left onto County Road 190,
<b>All-weather access</b> Main Roads
<b>Seasonal access</b>

Roads – Canyon Terrace/Long Canyon						
	None	Some	All	Adequate	Inadequate	
Road signs present			X	X		% Pavement 50 % gravel 50 % dirt
Will support normal flow of traffic			X	X		
Are loop roads		X		X		
Are dead-end roads		X		X		
Turnaround space available at end of road for emergency equipment		X		X		
Notes / comments:						

Driveways – Canyon Terrace/Long Canyon						
	Adequate	Inadequate	None	Few	Most	All
Most driveways width and height clearance, road grades and vegetation appearance are...	X					
Individual homeowners have posted their name and address	X					
Notes / comments:						

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### Structures – Canyon Terrace/Long Canyon

	None	Few	Some	Many	Most	All
Wood frame construction					X	
Have wood decks or porches				X		
Have wood, shake or shingle roofs			X			
Are visible from the main subdivision road			X			

Notes/comments:

### Bridges, Gate, Culverts, other – Canyon Terrace/Long Canyon

	None	Some	All
Bridges support emergency equipment	X		
Gate provides easy access to emergency equipment	X		
Culverts are easily crossed by emergency equipment			X

Notes/comments:

### Utilities – Canyon Terrace/Long Canyon

	Below ground	Above ground	Provided by	Phone number	% marked with a flag or other highly visible means	% utilized
Telephone service		X	Frontier/Cell		5	100
Electrical service		X	Empire Electric		5	100
Are there homes utilizing propane?		X	Private Propane		5	100
Are there homes utilizing natural gas?		X	N/A		5	100

Notes/comments:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Access – Blue Mountain Guest Ranch-Dude Ranch
<b>Directions to community</b> South US 191 9 miles turn right on county road 110
<b>All-weather access</b> Main roads
<b>Seasonal access</b>

Roads – [Focus Area Name]								
	None	Some	All	Adequate	Inadequate	% Pavement	% gravel	% dirt
Road signs present			X	X			80	20
Will support normal flow of traffic			X	X				
Are loop roads		X		X				
Are dead-end roads		X		X				
Turnaround space available at end of road for emergency equipment		X		X				

Notes/comments:

Driveways – [Focus Area Name]							
	Adequate	Inadequate	None	Few	Most	All	
Most driveways width and height clearance, road grades and vegetation appearance are...	X						
Individual homeowners have posted their name and address	X						

Notes/comments:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### Structures – Blue Mountain Guest Ranch-Dude Ranch

	None	Few	Some	Many	Most	All
Wood frame construction					X	
Have wood decks or porches				X		
Have wood, shake or shingle roofs			X			
Are visible from the main subdivision road			X			

Notes/comments:

### Bridges, Gate, Culverts, other – Blue Mountain Guest Ranch-Dude Ranch

	None	Some	All
Bridges support emergency equipment	X		
Gate provides easy access to emergency equipment	X		
Culverts are easily crossed by emergency equipment			X

Notes/comments:

### Utilities – Blue Mountain Guest Ranch-Dude Ranch

	Below ground	Above ground	Provided by	Phone number	% marked with a flag or other highly visible means	% utilized
Telephone service		X	Frontier/Cell		5	100
Electrical service		X	Empire Electric		5	100
Are there homes utilizing propane?		X	Private Propane		5	100
Are there homes utilizing natural gas?		X	N/A		5	100

Notes/comments:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Access – Montezuma Canyon
<b>Directions to community</b> South US 191 6 miles turn left onto County Road 190,
<b>All-weather access</b> Main roads only
<b>Seasonal access</b>

Roads – Montezuma Canyon								
	None	Some	All	Adequate	Inadequate	% Pavement	% gravel	% dirt
Road signs present			X	X			80	20
Will support normal flow of traffic			X	X				
Are loop roads		X		X				
Are dead-end roads		X		X				
Turnaround space available at end of road for emergency equipment		X		X				

Notes/comments:

Driveways – Montezuma Canyon							
	Adequate	Inadequate	None	Few	Most	All	
Most driveways width and height clearance, road grades and vegetation appearance are...	X						
Individual homeowners have posted their name and address	X						

Notes/comments:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Structures – Montezuma Canyon						
	None	Few	Some	Many	Most	All
Wood frame construction			X			
Have wood decks or porches			X			
Have wood, shake or shingle roofs			X			
Are visible from the main subdivision road			X			
Notes/comments:						

Bridges, Gate, Culverts, other – Montezuma Canyon			
	None	Some	All
Bridges support emergency equipment	X		
Gate provides easy access to emergency equipment	X		
Culverts are easily crossed by emergency equipment			X
Notes/comments:			

Utilities – Montezuma Canyon						
	Below ground	Above ground	Provided by	Phone number	% marked with a flag or other highly visible means	% utilized
Telephone service		X	Frontier/Cell		5	100
Electrical service		X	Empire Electric		5	100
Are there homes utilizing propane?		X	Private Propane		5	100
Are there homes utilizing natural gas?		X	N/A		5	100
Notes/comments:						

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Access – Mustang Mesa/Blanding East
<b>Directions to community</b> South US 191, 19 miles turn left on Carrol road to Mustang Mesa Road.
<b>All-weather access</b> Main Roads
<b>Seasonal access</b>

Roads – Mustang Mesa/Blanding East									
	None	Some	All	Adequate	Inadequate	% Pavement	% gravel	% dirt	
Road signs present			X	X			80	20	
Will support normal flow of traffic			X	X					
Are loop roads		X		X					
Are dead-end roads		X		X					
Turnaround space available at end of road for emergency equipment		X		X					

Notes/comments:

Driveways – Mustang Mesa/Blanding East								
	Adequate	Inadequate	None	Few	Most	All		
Most driveways width and height clearance, road grades and vegetation appearance are...	X							
Individual homeowners have posted their name and address	X							

Notes/comments:

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### Structures – Mustang Mesa/Blanding East

	None	Few	Some	Many	Most	All
Wood frame construction					X	
Have wood decks or porches				X		
Have wood, shake or shingle roofs			X			
Are visible from the main subdivision road			X			

Notes/comments:

### Bridges, Gate, Culverts, other – Mustang Mesa/Blanding East

	None	Some	All
Bridges support emergency equipment	X		
Gate provides easy access to emergency equipment	X		
Culverts are easily crossed by emergency equipment			X

Notes/comments:

### Utilities – Mustang Mesa/Blanding East

	Below ground	Above ground	Provided by	Phone number	% marked with a flag or other highly visible means	% utilized
Telephone service		X	Frontier/Cell		5	100
Electrical service		X	Rocky Mountain Power		5	100
Are there homes utilizing propane?		X	Private Propane		5	100
Are there homes utilizing natural gas?		X	N/A		5	100

Notes/comments:



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### List locations of propane tanks above ground – all focus areas

Owner	Address, lat/long, etc.	Size
Spanish Valley/Pack Creek Area	No Community utilities propane for homes	Community Wide
La Sal/Old La Sal	No Community utilities propane for homes	Community Wide
Flat Iron mesa/Browns Hole	No Community utilities propane for homes	Community Wide
Behind the Rocks	No Community utilities propane for homes	Community Wide
Wilson Arch/Rockland Ranch	No Community utilities propane for homes	Community Wide
Peters Hill/Elk Meadows	No Community utilities propane for homes	Community Wide
Eastland/Cedar/Bug Point	No Community utilities propane for homes	Community Wide
Summit Point/Ucolo	No Community utilities propane for homes	Community Wide
Canyon Terrace/Long Canyon Ranch	No Community utilities propane for homes	Community Wide
Blue Mountain Guest/Dude Ranch	No Community utilities propane for homes	Community Wide
Montezuma Canyon	No Community utilities propane for homes	Community Wide
Mustang Mesa/Blanding East	No Community utilities propane for homes	Community Wide

*Notes/comments:*  
Maps are attached

### Primary Water Sources – all focus areas

Approximate % homes using central water system	0
Approximate % homes using individual wells	80
Approximate % homes having additional private water source	0
Water provided by	Private
	Phone

*Notes/comments:*

### List locations of water sources – all focus areas

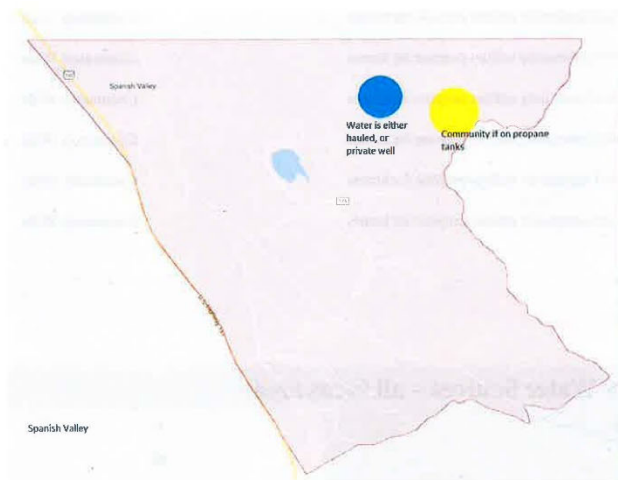
Owner	Address, lat/long, etc.	Accessible
Spanish Valley/Pack Creek Area	No Community utilities wells or water hauling for homes	Community Wide
La Sal/Old La Sal	No Community utilities wells or water hauling for homes	Community Wide
Flat Iron mesa/Browns Hole	No Community utilities wells or water hauling for homes	Community Wide
Behind the Rocks	No Community utilities wells or water hauling for homes	Community Wide
Wilson Arch/Rockland Ranch	No Community utilities wells or water hauling for homes	Community Wide
Peters Hill/Elk Meadows	No Community utilities wells or water hauling for homes	Community Wide

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

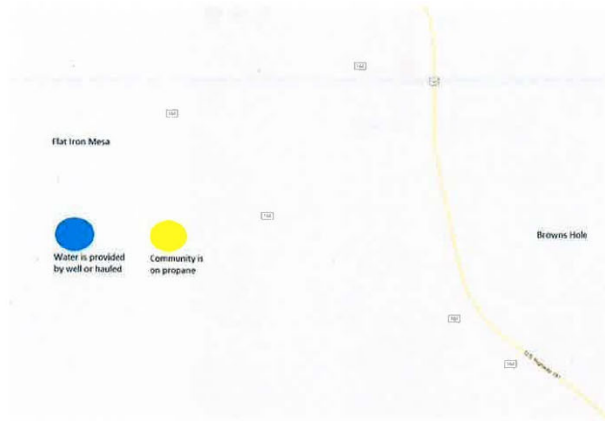
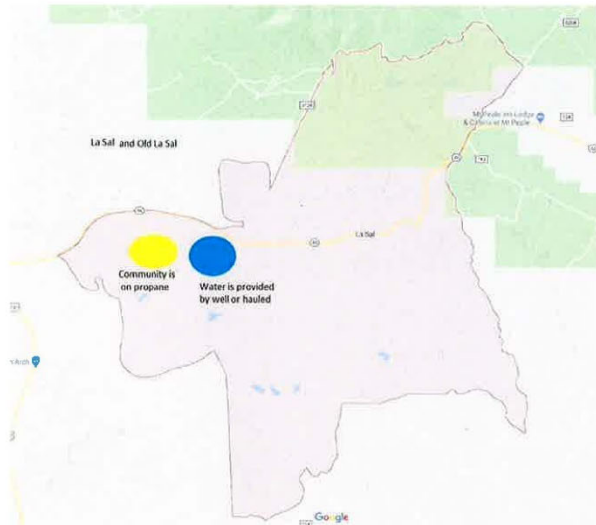
Eastland/Cedar/Bug Point	No Community utilities wells or water hauling for homes	Community Wide
Summit Point/Ucolo	No Community utilities wells or water hauling for homes	Community Wide
Canyon Terrace/Long Canyon Ranch	No Community utilities wells or water hauling for homes	Community Wide
Blue Mountain Guest/Dude Ranch	No Community utilities wells or water hauling for homes	Community Wide
Montezuma Canyon	No Community utilities wells or water hauling for homes	Community Wide
Mustang Mesa/Blanding East	No Community utilities wells or water hauling for homes	Community Wide

*Notes/comments:*  
Maps are attached



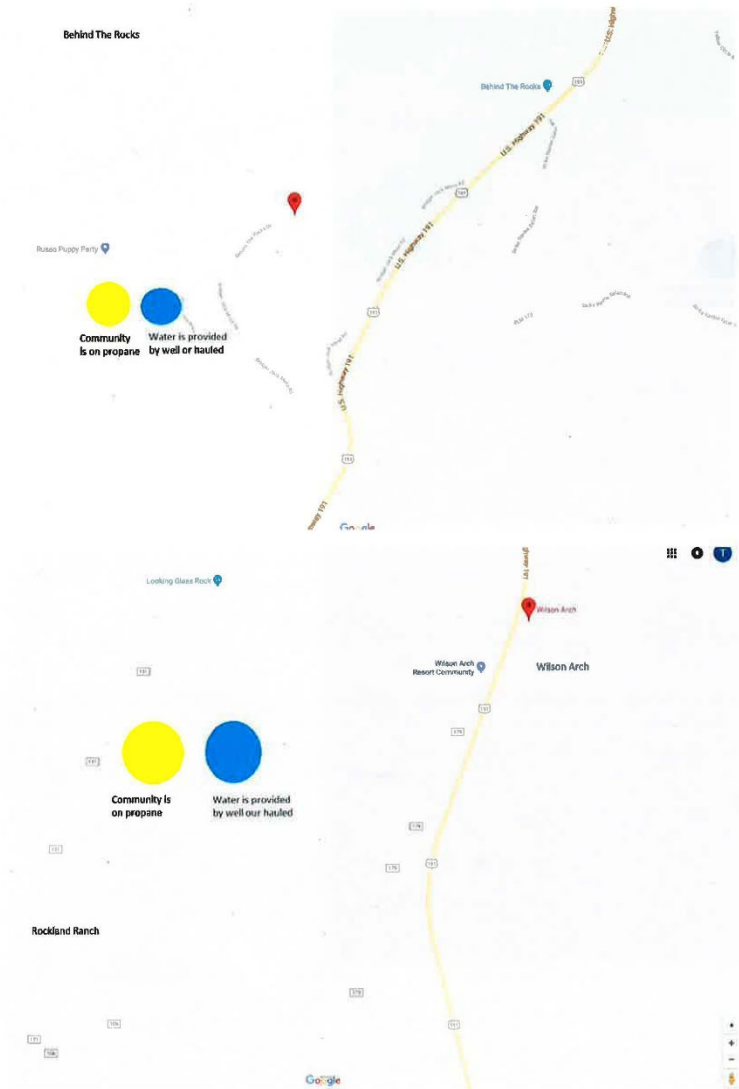
# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan



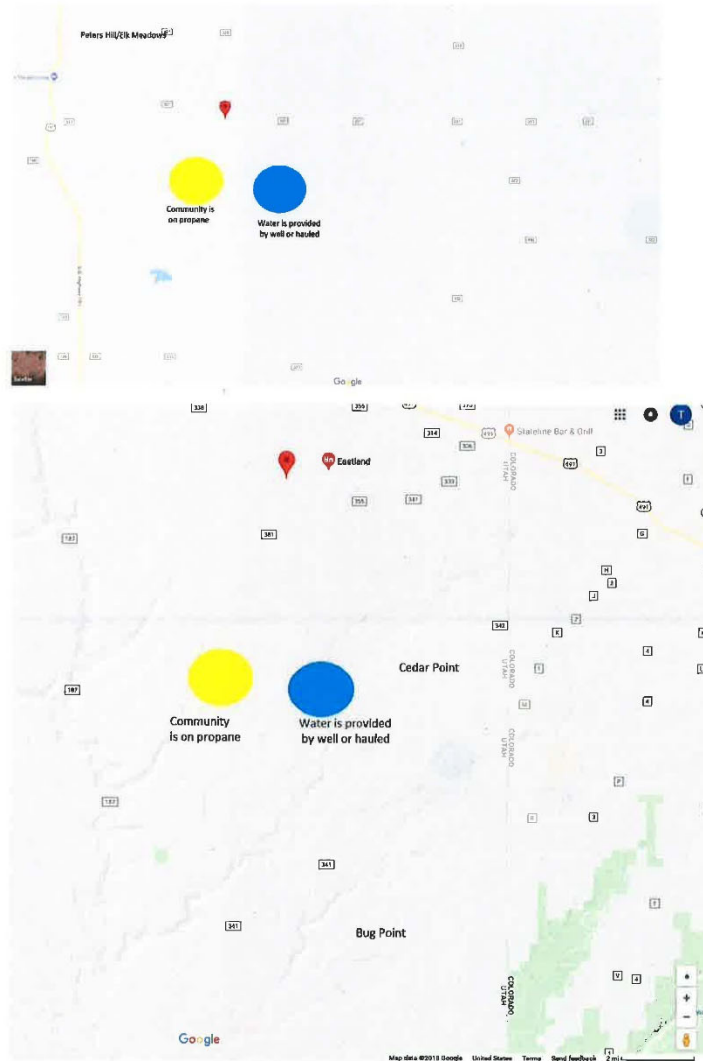
# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan



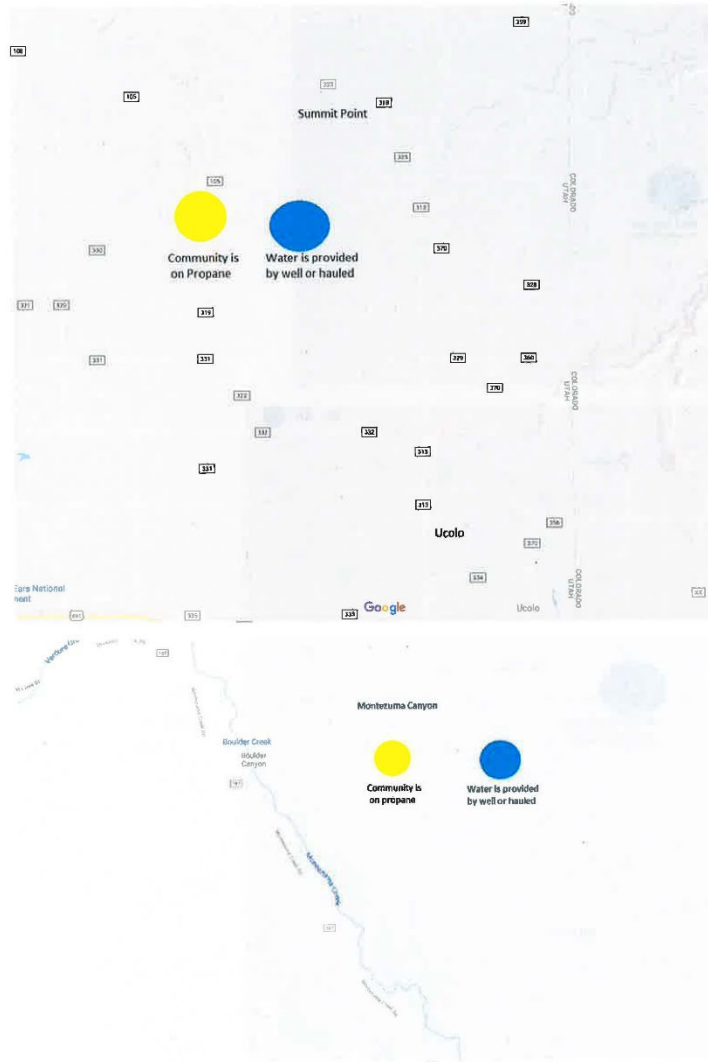
# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan



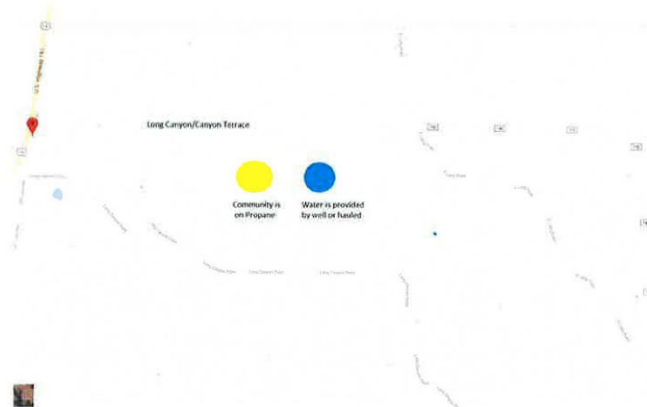
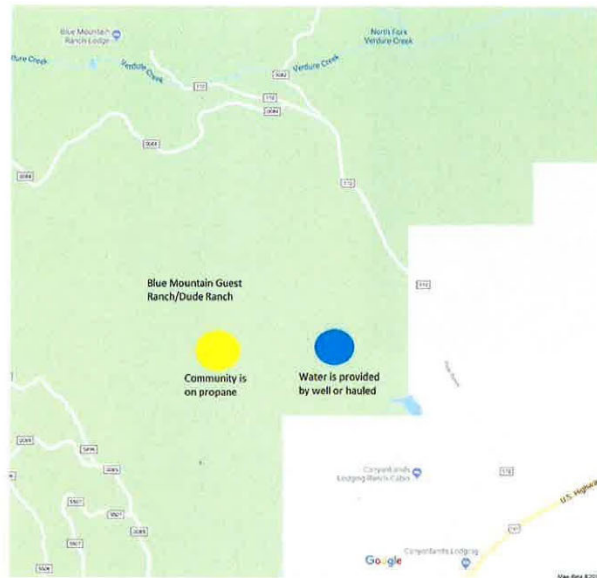
# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan



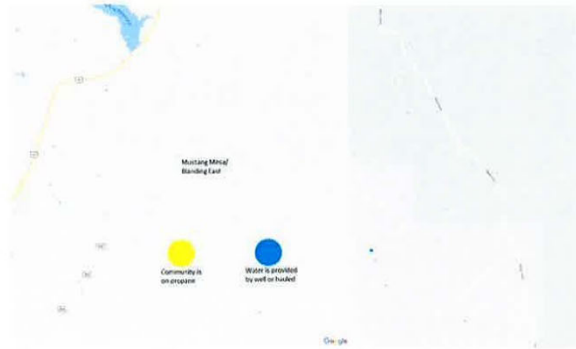
# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan





# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### PART II:

### RISK ASSESSMENT

#### Estimated Values at Risk

Provide an approximation of the estimated current values of residential and commercial property in the area. The County Assessor should be able to assist with this information.

<b>Estimated values at risk of commercial and residential property</b>	\$88.7 million
<b>Year</b>	2018

#### Natural Resources at Risk

Describe the natural resources at risk in the area, such as watershed, forest products, wildlife, recreation tourism, etc.

Natural resources at risk from wildfire in San Juan County include significant areas of potentially valuable timber. Impacts of wildfires on the timber resources will vary based on the forest type. Open ponderosa forests on gentle slopes can be expected to handle fire well, while unthinned forests of the same type could lose significant quantities of potentially valuable timber. Of particular concern are the high elevation mixed conifer and aspen forest on the La Sal and Abajo mountains. These forests are increasingly dominated by conifers at the expense of fire resistant aspen. Large wildfires in these areas would serve to restore aspen on the landscape, but because of steep slopes and heavy fuel loadings post-fire effects could be severe. The Blanding and Monticello municipal watersheds occur in this critical forest types and the watersheds at risk also feed into major canyons (including Cottonwood Wash and Montezuma Canyon) with important communities and development. In the La Sal mountains the upper part of the Pack Creek watershed presents a threat of post-fire flooding and debris flows into populated areas. In the pinyon-juniper type wildfires can increase flooding and erosion and destroy valuable cover for wildlife, but may have positive impacts on forage availability. Many pinyon-juniper areas in the county have scant understory vegetation and may require seeding after fires to encourage the growth of useful and soil-conserving grasses and forbs.

Grazing is an important part of San Juan County's economy and culture. Wildfires can have positive impacts on grazing long-term by reducing aggressive woody species and encouraging the growth of grasses and forbs, but large fires can cause significant disruptions through the immediate loss of forage and because of grazing closures to allow for recovery post-fire. Cheatgrass can be found in a number of areas around the County and can be expected to increase with repeated fire. The area east and northeast of Blanding, Spanish Valley, and Pack Creek are at particular risk for increases in cheatgrass.

As with grazing, wildlife can benefit from or be harmed by wildfire. Two species of concern in San Juan County are the Colorado cutthroat trout and the Gunnison sage grouse. A unique lineage of the Colorado cutthroat occurs in small streams on the east side of the La Sals, these trout, occurring in a limited habitat could be significantly impacted by uncontrolled fire. The sage grouse could potentially benefit from wildfire, because of the removal of junipers and other trees that provide roosting sites for predators, but many negative effects could also occur including direct mortality and the loss of sagebrush (which is slow to recover after fire). Fire in the Gunnison sage grouse areas of the county could also lead to increased regulatory burdens because this species is Federally listed. Big game species would largely benefit from increased fire clearing overly dense conifers and restoring grasses, forbs, and aspen, but there could be some increased predation in oak and other brush habitats when dense resprouts provide cover for lions. San Juan county has significant areas of mature oak that is important to wildlife including turkey, bear, and deer. Fire in mature oak stands would promote resprouting and produce lower, thicker stands for many years. This would have a negative effect on these important game species because it is the older, more mature oak stands that produce reliable crops of acorns they use to prepare for winter.

Soils are the foundational resource that, along with precipitation sets the potential productivity of the landscape. In our arid climate soil formation occurs slowly and soil losses, which increase after fire, are not reversed on human time scales. Of particular concern is the area north of Highway 491 where there are extensive areas of private land used for grazing and farming. These soils are vulnerable to both wind and water erosion post-fire.

Water resources are especially valuable in an arid climate. The forested high country of San Juan County is relied on by

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Monticello, Blanding, Moab, and La Sal for the direct provision of drinking water, as well as to feed the aquifers. Reservoirs in Spanish Valley and near Monticello and Blanding contribute to the drinking water supply, provide water for irrigation, and are used for fishing and other recreation. Wildfires in the watershed can damage the water collection and distribution infrastructure and deliver mud, ash and other debris into reservoirs.

San Juan county as a large county with a low population is very reliant on secondary roads for local transportation, emergency response, tourism, and agriculture. Large scale fires can compromise this vital network because of increased flood response, and the delivery of logs and other debris to culverts.

Air quality is also affected by fire. Large, long duration fires can negatively impact the health and quality of life for visitors and residents. Because of the closed valley setting Spanish Valley is particularly vulnerable, but La Sal, Monticello, and Blanding could also see significant air quality impacts.

One unique resource in San Juan county is the large concentration of archaeological sites. These sites are important to residents, and to many tribes in neighboring states. They are also of great interest to visitors and are an important driver of the tourist economy in the county. While most intact structures are in sites with little to no vegetation, fire can cause spalling of petroglyph/pictograph panels. Firefighting can also damage sites directly because of digging and equipment use. Wildfire can also char and damage potsherds on the soil surface and expose previously obscured surface sites making them vulnerable to incidental looting by visitors.

Tourism, based on the natural resources, is important to San Juan county. Wildfire can temporarily close areas to visitors, and can damage the road and communication networks that they rely on. The mountain areas are heavily used by tourists and also local residents and popular camping areas are vulnerable to wildfire. Wildfires, often many miles away in other states, are an important contributor to air quality and visibility problems in popular parks like Canyonlands and Dead Horse Point.

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*The following information is based on the Communities At Risk (CARs) list that was developed cooperatively at the local and state level to assist land management agencies and other stakeholders in determining the scope of the WUI challenge and to monitor progress in mitigating the hazards in these areas. This information is updated annually through the interagency fuel groups. Input the fields that are reflected on the state list found on our website at [forestry.utah.gov](http://forestry.utah.gov).*

**Fire Occurrence:** Number of fires in the area for the last 10 years \_\_\_\_\_ to \_\_\_\_\_

	0	No Risk	
	1	Moderate	0 to 1 fire/township
	2	High	2 to 14 fires/township
X	3	Extreme	Greater than 14 fires/township

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Area Fire History			
Month/Year of fire	Ignition point	Ignition source	Acres burned
7/14/07	RAMSEY - BLM	Equipment	46
8/13/07	POLE CANYON - Private	Lightning	28
7/24/08	OAK CREEK CANYON FIRE - BLM	Lightning	10
7/7/09	PINE RIDGE 2 - FS	Lightning	88
7/13/09	PINYON - Private	Lightning	68
7/31/09	DUCK LAKE - FS	Lightning	17
8/2/09	CALVERT - BLM	Lightning	12
8/6/09	LOCKERBY - Private	Lightning	660
8/31/09	SHIRT TAIL - Private	Unknown	15
6/27/10	ALKALI POINT - BLM	Lightning	25
6/29/11	MILL SITE - Private	Lightning	16
7/3/11	RABY - Private	Lightning	56
3/15/12	SHUMWAY AG BURN - Private	Agriculture	30
7/3/12	POSEY - BLM	Lightning	10
6/13/13	DARK CANYON - FS	Lightning	350
6/13/13	LACKEY FAN - FS	Lightning	904
6/17/14	CLAY HILLS - BIA	Unknown	115
7/26/14	WILDERNESS - FS	Lightning	12
6/10/16	PEEKABOO - NPS	Unknown	23
6/12/16	BAYLES RANCH - Private	Agriculture Burn	12
7/26/16	BLUE MOUNTAIN - Private	Catalytic Converter	46
8/2/16	CAJON MESA - BIA	Lightning	16
6/3/17	Causeway - FS	Lightning	90
7/10/17	South Cottonwood - BLM	Lightning	13.1
8/17/17	Walker Road - Private	Equipment	70
10/13/17	Johnson Ridge - FS	Prescribed Burn	90
7/14/07	RAMSEY - BLM	Equipment	46

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

**Fuel Hazard:** Assess the fuel conditions of the landscape and surrounding the community

	0	No Risk	
	1	Moderate	Moderate to low to control, fire intensities would generally cause moderate damage to resources based on slope, wind speed and fuel. Vegetation Types: Ponderosa pine/mountain shrub, grassland, alpine, dry meadow, desert grassland, Ponderosa pine, Aspen and mountain riparian.
X	2	High	High resistance to control, high to moderate intensity resulting in high to moderate damage to resources depending on slope, rate of spread, wind speed and fuel loading. Vegetation Type: Maple, mountain shrubs, sagebrush, sagebrush/perennial grass, salt desert scrub, Black Brush, Creosote and Greasewood.
	3	Extreme	High resistance to control, extreme intensity level resulting in almost complete combustion of vegetation and possible damage to soils and seed sources depending on slopes, wind speed, rate of spread and fuel loading.

**Values Protected:** Evaluate the human and economic values associated with the community or landscape, such as homes, businesses and community infrastructure.

	0	No Risk	
X	1	Moderate	Secondary Development: This would be seasonal or secondary housing and recreational facilities.
	2	High	Primary Development: This would include primary residential housing, commercial and business areas.
	3	Extreme	Community infrastructure and community support: This would be water systems, utilities, transportation systems, critical care facilities, schools manufacturing and industrial sites. It may also include valuable commercial timber stands, municipal watersheds and areas of high historical, cultural and/or spiritual significance which support and/or are critical to the well-being of the community.

### Insurance Rating

Provide the current insurance rating for the community  
ISO Fire Insurance Rating:

**Protection Capabilities:** Insurance Services Organization (ISO) rating for the community will serve as an overall indicator of the protection capabilities.

x	1	Moderate	ISO Rating of 6 or lower
	2	High	ISO Rating 7 to 9
	3	Extreme	ISO Rating 10

Fire Occurrence	Fuel Hazard	Values Protected	Fire Protection Capabilities	Overall Rating
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# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

3	2	1	1	7
Total: 4-7 Moderate, 8-11 High, 12 Extreme				Moderate

The following information is based on the Utah Wildfire Risk Assessment Portal (UWRAP) and Area of Interest (AOI) Summary Reporting Tool. Reports are generated using a set of predefined map products developed by the West Wide Wildfire Risk Assessment (2012) project. The UWRAP provides a consistent, comparable set of scientific results to be used as a foundation for wildfire mitigation and prevention planning in Utah.

**Wildland Development Area (WUI) Impacts:** Data set is derived using a Response Function modeling approach. To calculate the Wildland Development Area Impact Response Function Score, the Wildland Development Area housing density data was combined with flame length data and Response Functions assignments to represent potential impacts.

**Wildfire Threat:** A number that is closely related to the likelihood of an acre burning.

**Wildfire Risk:** Combines the likelihood of a fire occurring (Threat), with those of areas of most concern that are adversely impacted by fire (Fire Effects). Wildfire Threat Index is derived from historical fire occurrence, landscape characteristics including surface fuels and canopy fuels, percentile weather derived from historical weather observations and terrain conditions. Fire Effects are comprised of Value Impacts and Suppression Difficulty.

Total Acres AOI for each Category with the percentages added			
	Wildfire Risk	WUI Impacts	Wildfire Threat
Low (1-4)	752,910 (74%)	11,740 (83%)	726,582 (71%)
Moderate (5-7)	240,996 (24%)	2,070 (15%)	272,047 (27%)
High (8-10)	27,974 (2%)	355 (2%)	23,248 (2%)

Including maps from the UWRAP report may also be beneficial in this section. Consider using the following as an example.

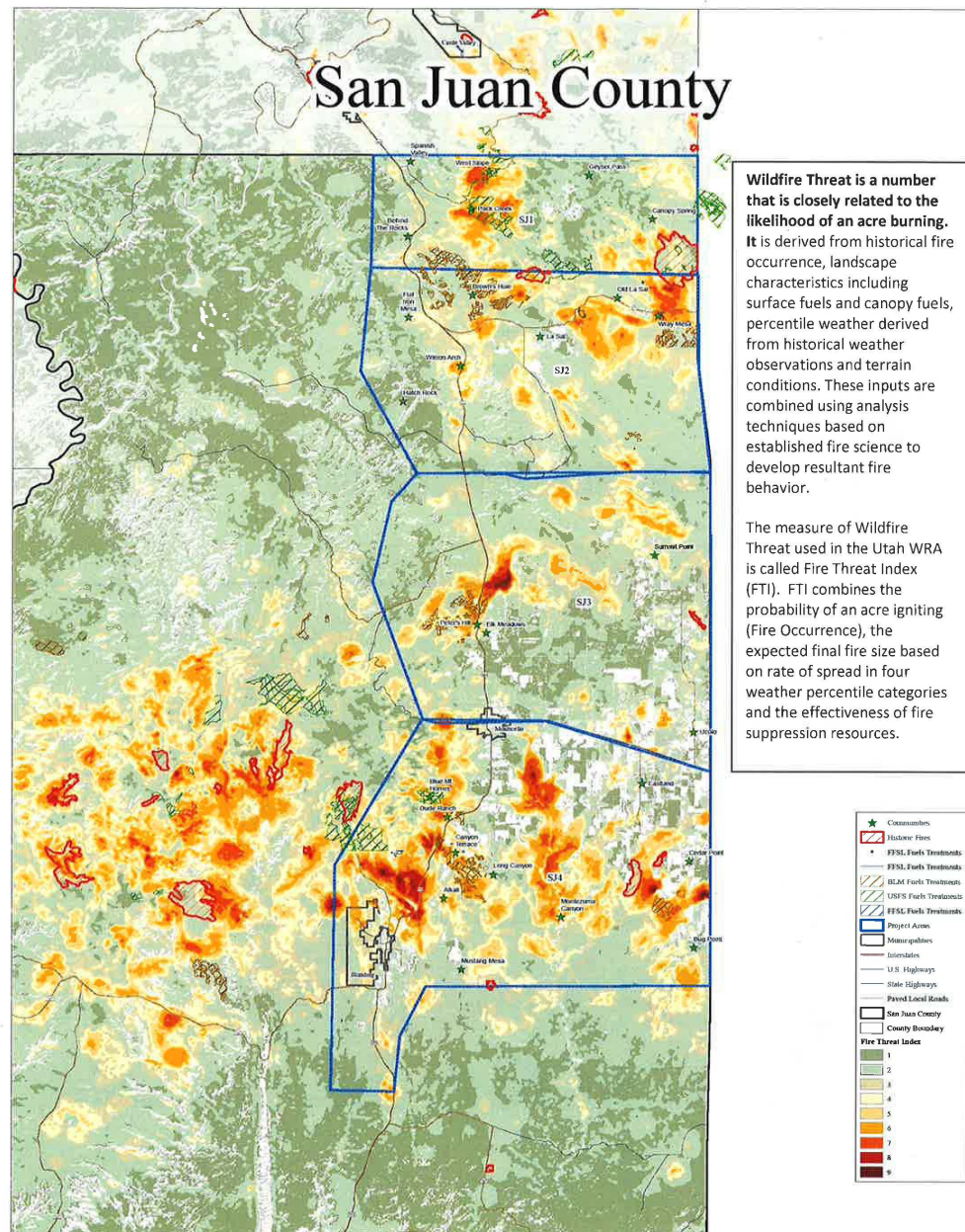
- Location Specific Ignitions
- Water Impacts
- Rate of Spread
- Suppression Difficulty
- Fire Effects
- Slope and aspect

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

## **San Juan County Wildfire Preparedness Plan**

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan





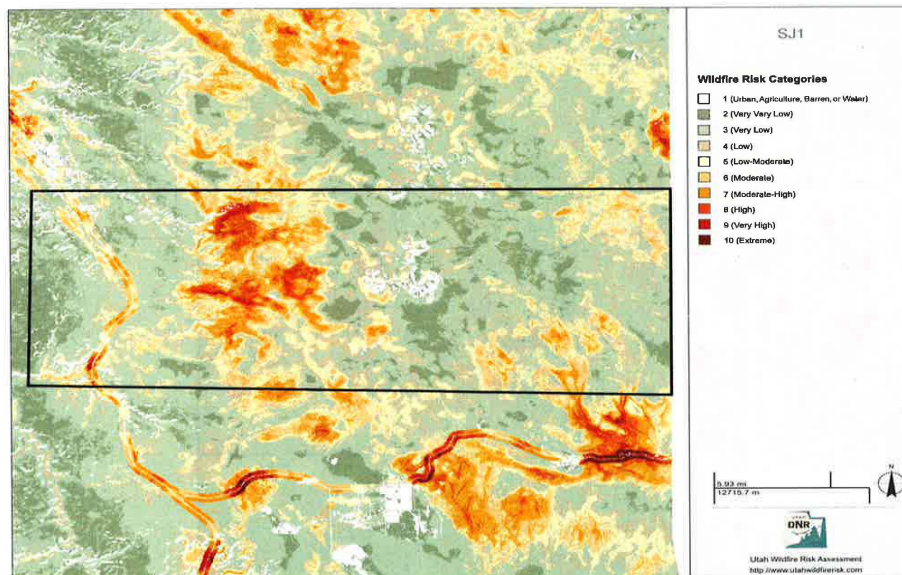
# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

SJ1

Wildfire Risk Category	Acres	Percent
1 (Urban, Agriculture, Barren, or Water)	3,378	2.5 %
2 (Very Very Low)	15,397	11.5 %
3 (Very Low)	59,555	44.3 %
4 (Low)	16,503	12.3 %
5 (Low-Moderate)	16,091	12.0 %
6 (Moderate)	12,843	9.6 %
7 (Moderate-High)	7,291	5.4 %
8 (High)	2,705	2.0 %
9 (Very High)	553	0.4 %
10 (Extreme)	5	0.0 %
<b>Total</b>	<b>134,322</b>	<b>100.0 %</b>

**Wildfire Risk represents the possibility of loss or harm occurring from a wildfire.** It combines the likelihood of a fire occurring (Threat), with those areas of most concern that are adversely impacted by fire (Fire Effects), to derive a single overall measure called the Wildfire Risk Index. It identifies areas with the greatest potential impacts from a wildfire considering the likelihood of an area burning and the Impacts to values and assets aggregated together.



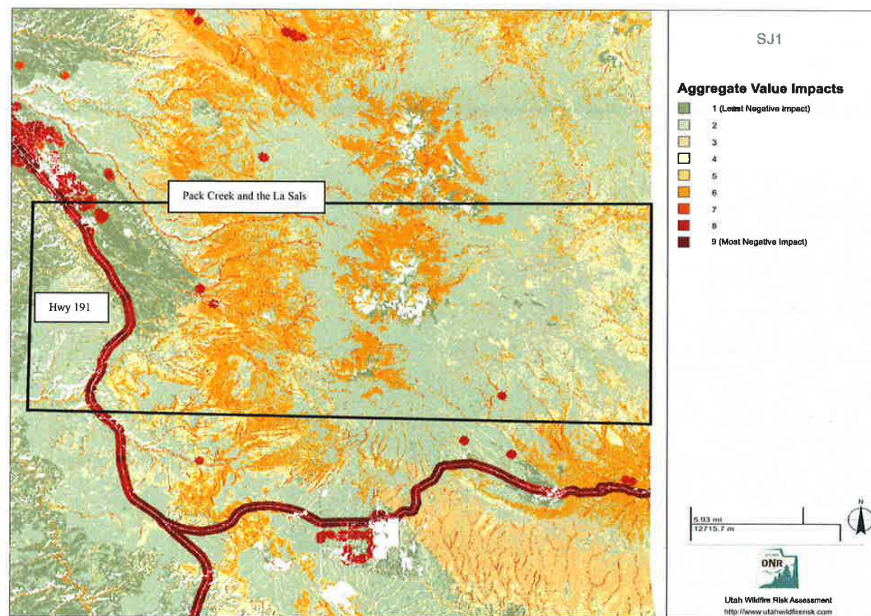


# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

	Aggregate Value Impacts Category	Acres	Percent
	1 (Least Negative Impact)	11,561	8.8 %
	2	70,520	53.9 %
	3	5,072	3.9 %
	4	12,814	9.8 %
	5	3,608	2.8 %
	6	21,499	16.4 %
	7	3,315	2.5 %
	8	1,722	1.3 %
	9 (Most Negative Impact)	832	0.6 %
	<b>Total</b>	<b>130,944</b>	<b>100.0 %</b>

The Aggregate Value Impacts is a collective value that represents adverse impacts by a wildfire based on the impacts to all of the five defined Values Impacted. These values include: the Wildland Development Areas (WUI), Forest Assets, Riparian Assets, Drinking Water Importance Areas and Infrastructure Response.



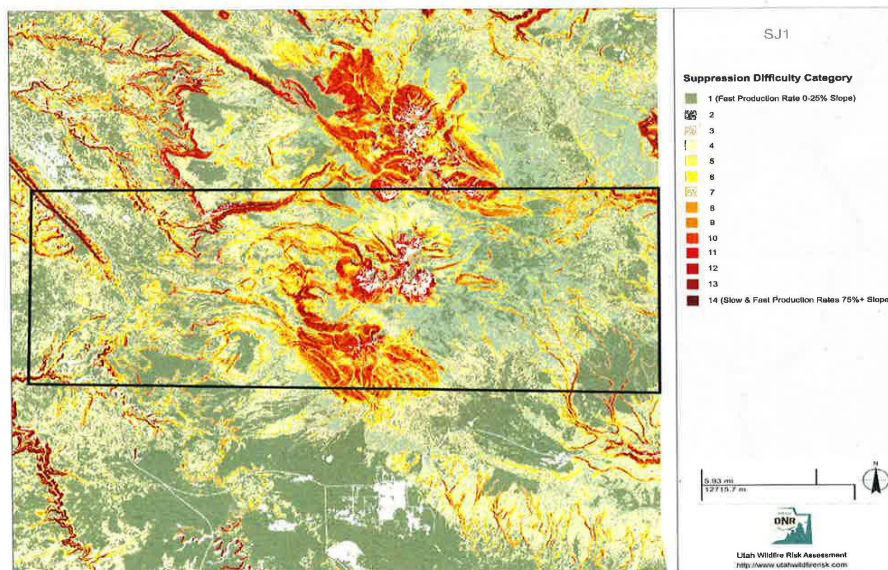
# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

	Suppression Difficulty Category	Acres	Percent
1	(Fast Production Rate 0-25% Slope)	38,481	29.4 %
2		23,321	17.8 %
3		5,611	4.3 %
4		26,617	20.3 %
5		8,079	6.2 %
6		7,428	5.7 %
7		3,245	2.5 %
8		5,185	4.0 %
9		3,999	3.1 %
10		2,632	2.0 %
11		2,130	1.6 %
12		676	0.5 %
13		1,907	1.5 %
14	(Slow & Fast Production Rates 75%+ Slope)	1,635	1.2 %
Total		130,944	100.0 %

The Suppression Difficulty data layer reflects the difficulty or relative cost to suppress a fire given the terrain and vegetation conditions. It is **NOT** based on response time. This layer combines the slope steepness and the fuel type characterization to identify areas where it would be difficult or costly to suppress a fire due to the underlying terrain and vegetation.

The rating was calculated based on the fireline production rates for hand crews and engines with modifications for slope, as documented in the NWCG Fireline Handbook 3, PMS 401-1 (NWCG 2004).

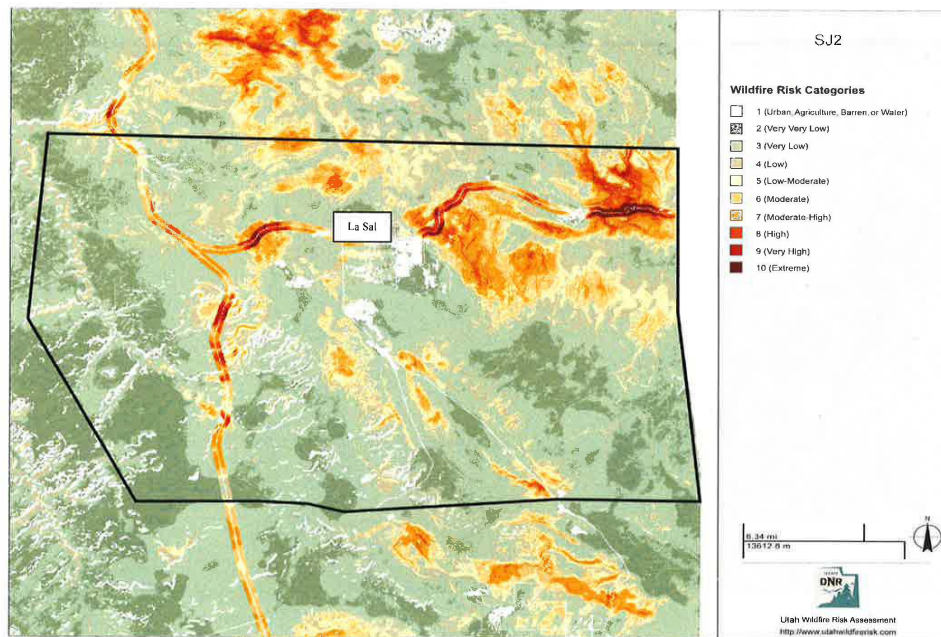


# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

SJ2

Wildfire Risk Category	Acres	Percent
1 (Urban, Agriculture, Barren, or Water)	10,012	4.3 %
2 (Very Very Low)	44,862	19.1 %
3 (Very Low)	109,346	46.4 %
4 (Low)	20,366	8.7 %
5 (Low-Moderate)	18,050	7.7 %
6 (Moderate)	15,489	6.6 %
7 (Moderate-High)	11,864	5.0 %
8 (High)	3,505	1.5 %
9 (Very High)	1,200	0.5 %
10 (Extreme)	727	0.3 %
<b>Total</b>	<b>235,419</b>	<b>100.0 %</b>

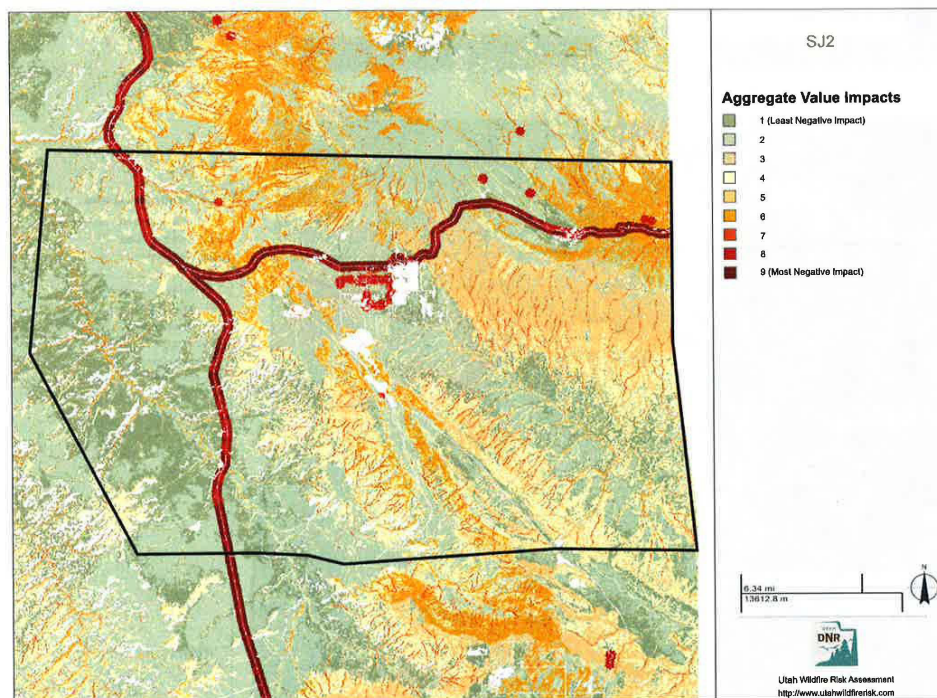




# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

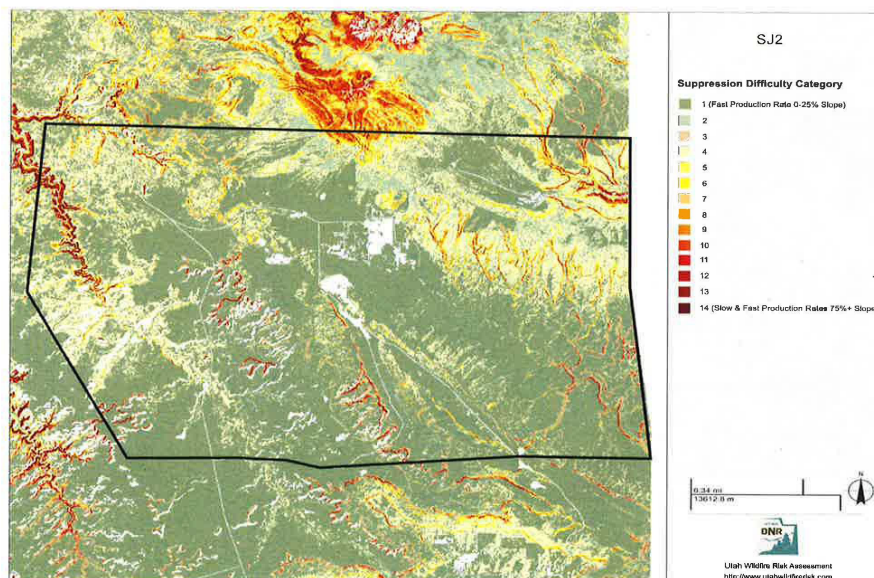
	Aggregate Value Impacts Category	Acres	Percent
	1 (Least Negative Impact)	41,171	18.3 %
	2	83,146	36.9 %
	3	6,557	2.9 %
	4	40,977	18.2 %
	5	23,343	10.4 %
	6	15,752	7.0 %
	7	5,307	2.4 %
	8	3,964	1.8 %
	9 (Most Negative Impact)	5,190	2.3 %
	<b>Total</b>	<b>225,406</b>	<b>100.0 %</b>



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

	Suppression Difficulty Category	Acres	Percent
	1 (Fast Production Rate 0-25% Slope)	149,538	66.3 %
	2	10,305	4.6 %
	3	7,205	3.2 %
	4	44,314	19.7 %
	5	816	0.4 %
	6	4,690	2.1 %
	7	2,610	1.2 %
	8	393	0.2 %
	9	1,911	0.8 %
	10	187	0.1 %
	11	1,358	0.6 %
	12	50	0.0 %
	13	836	0.4 %
	14 (Slow & Fast Production Rates 75%+ Slope)	1,195	0.5 %
	<b>Total</b>	<b>225,408</b>	<b>100.0 %</b>

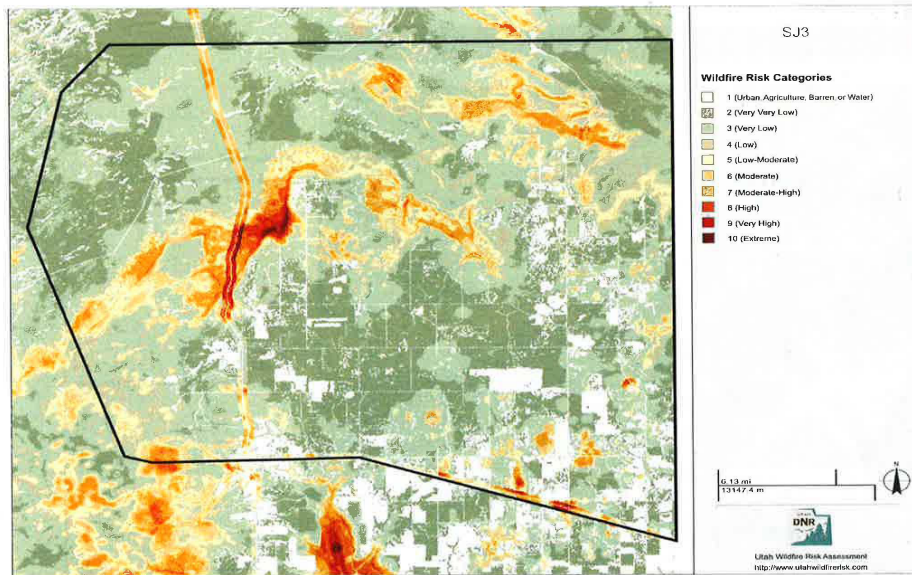


# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

SJ3

Wildfire Risk Category	Acres	Percent
1 (Urban, Agriculture, Barren, or Water)	31,656	10.6 %
2 (Very Very Low)	88,157	29.4 %
3 (Very Low)	114,636	38.3 %
4 (Low)	18,215	6.1 %
5 (Low-Moderate)	18,465	6.2 %
6 (Moderate)	15,646	5.2 %
7 (Moderate-High)	9,390	3.1 %
8 (High)	1,832	0.6 %
9 (Very High)	1,085	0.4 %
10 (Extreme)	360	0.1 %
<b>Total</b>	<b>299,442</b>	<b>100.0 %</b>

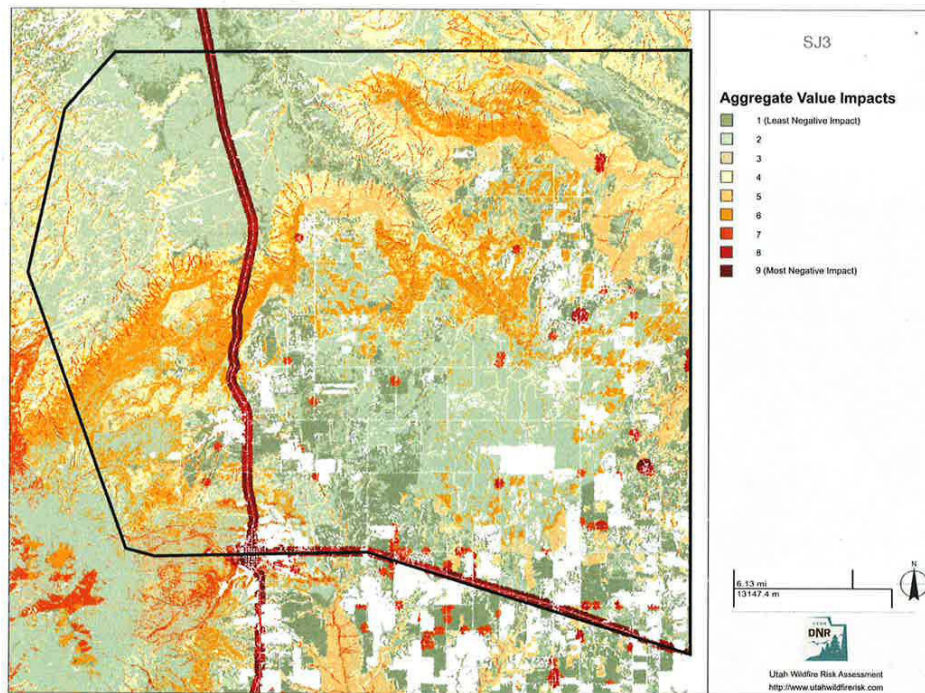




# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

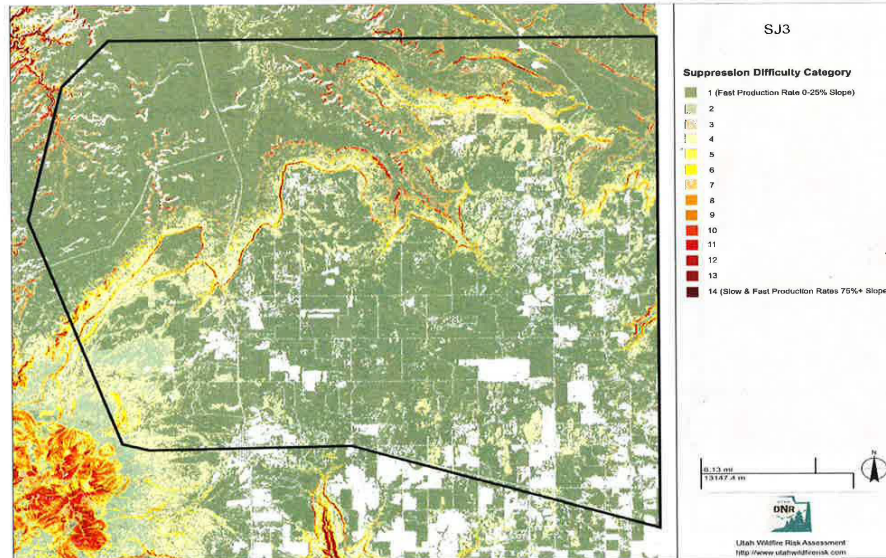
	Aggregate Value Impacts Category	Acres	Percent
	1 (Least Negative Impact)	46,182	17.2 %
	2	107,549	40.2 %
	3	5,887	2.2 %
	4	39,521	14.8 %
	5	23,799	8.9 %
	6	30,774	11.5 %
	7	6,586	2.5 %
	8	3,853	1.4 %
	9 (Most Negative Impact)	3,627	1.4 %
	<b>Total</b>	<b>267,779</b>	<b>100.0 %</b>



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

	Suppression Difficulty Category	Acres	Percent
1	(Fast Production Rate 0-25% Slope)	208,401	77.8 %
2		10,616	4.0 %
3		6,628	2.5 %
4		33,505	12.5 %
5		375	0.1 %
6		3,024	1.1 %
7		2,620	1.0 %
8		89	0.0 %
9		1,075	0.4 %
10		30	0.0 %
11		992	0.4 %
12		7	0.0 %
13		275	0.1 %
14	(Slow & Fast Production Rates 75%+ Slope)	149	0.1 %
<b>Total</b>		<b>267,785</b>	<b>100.0 %</b>



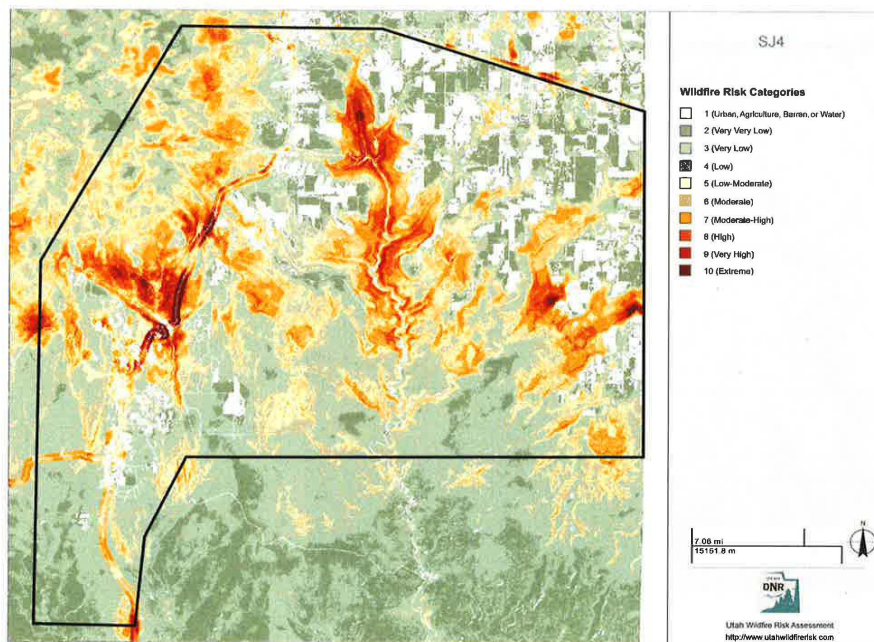


# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

SJ4

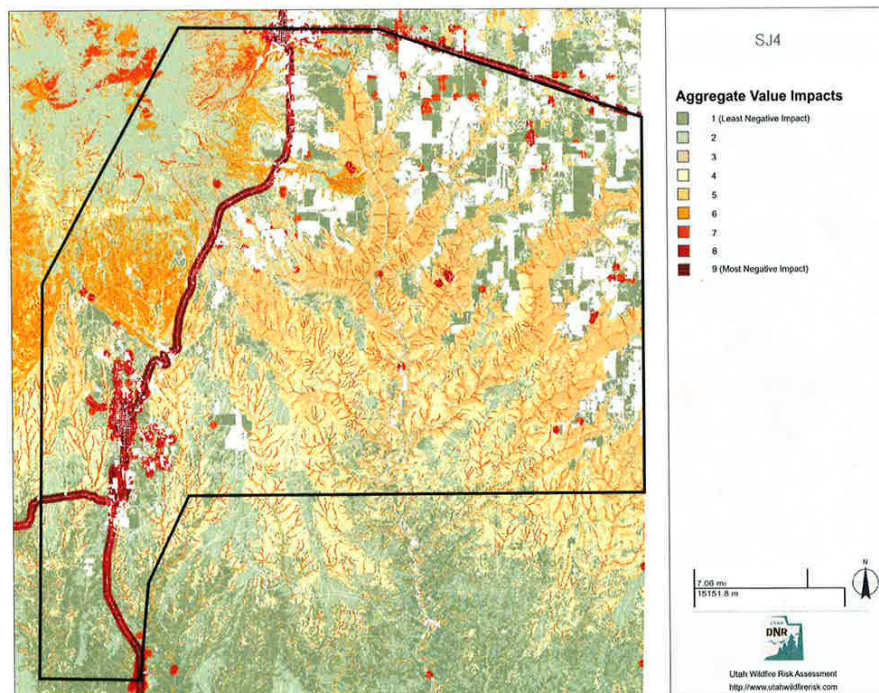
Wildfire Risk Category	Acres	Percent
1 (Urban, Agriculture, Barren, or Water)	45,480	12.9 %
2 (Very Very Low)	39,013	11.1 %
3 (Very Low)	104,907	29.7 %
4 (Low)	31,427	8.9 %
5 (Low-Moderate)	41,688	11.8 %
6 (Moderate)	43,224	12.3 %
7 (Moderate-High)	30,955	8.8 %
8 (High)	10,769	3.1 %
9 (Very High)	3,663	1.0 %
10 (Extreme)	1,570	0.4 %
<b>Total</b>	<b>352,696</b>	<b>100.0 %</b>



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

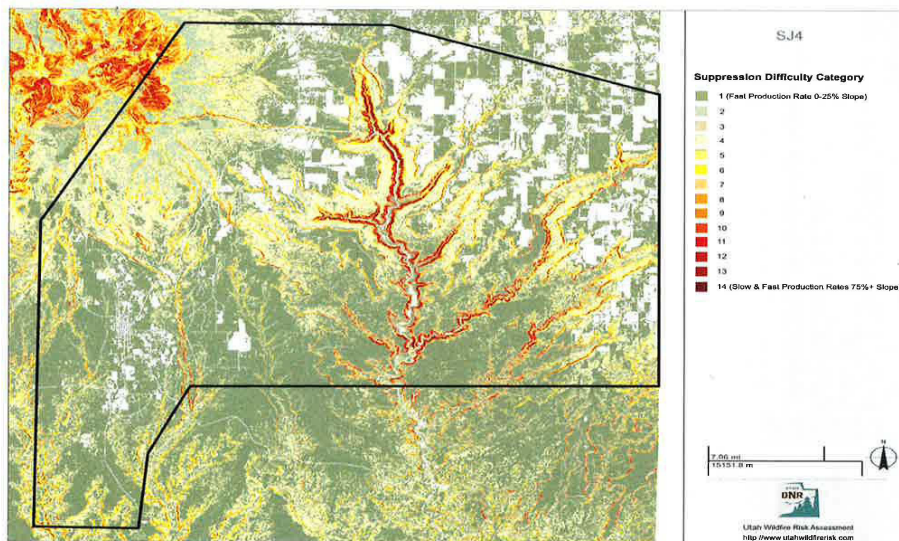
	Aggregate Value Impacts Category	Acres	Percent
	1 (Least Negative Impact)	67,321	21.9 %
	2	55,233	18.0 %
	3	11,764	3.8 %
	4	60,588	19.7 %
	5	68,892	22.4 %
	6	14,464	4.7 %
	7	17,221	5.6 %
	8	6,746	2.2 %
	9 (Most Negative Impact)	4,978	1.6 %
	<b>Total</b>	<b>307,206</b>	<b>100.0 %</b>



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

	Suppression Difficulty Category	Acres	Percent
1	(Fast Production Rate 0-25% Slope)	174,831	56.9 %
2		25,313	8.2 %
3		10,587	3.4 %
4		64,736	21.1 %
5		3,295	1.1 %
6		9,128	3.0 %
7		6,307	2.1 %
8		1,664	0.5 %
9		4,295	1.4 %
10		659	0.2 %
11		3,815	1.2 %
12		28	0.0 %
13		1,788	0.6 %
14	(Slow & Fast Production Rates 75%+ Slope)	769	0.3 %
<b>Total</b>		<b>307,215</b>	<b>100.0 %</b>



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Past Accomplishments	
Prevention	We have done Social Media Outreach, Flyers, and Community Events with Firewise information.
Preparedness	FEPP trucks
Mitigation	Project work on Private Property
Maintenance	We have not started maintenance of past projects yet.

# San Juan County Pre-Disaster Hazard Mitigation Plan

## 2018

### San Juan County Wildfire Preparedness Plan

#### PART III: RISK REDUCTION GOALS/ ACTIONS

**Goals of Plan:** Provide a brief statement under the Prevention, Preparedness, Mitigation and Maintenance goals. These should align with the pillars of the National Cohesive Strategy and the Utah Catastrophic Wildfire Reduction Strategy (1.Resilient Landscapes 2. Fire Adapted Communities 3. Wildfire Response).

**Identification of Actions:** Provide detailed project information. These projects/actions can be mapped/tracked in the Utah WRA portal and should be consistent with a Cooperative Agreement in compliance with the Wildfire Policy if applicable.

**GOAL A: PREVENTION** – Activities directed at reducing the occurrence of fires, including public education, law enforcement, and personal contact.

Goal A.1 –				
Action(s):	Timeline:	Community Lead:	Priority:	Focus Area
Fire Wise Brochures for new building permits	2018-2023	SJC Fire	1	All unincorporated areas
Fire Wise Brochures mailed out	2018-2023	SJC Fire	2	All unincorporated areas
Social Media Outreach with Fire Wise information	2018-2023	SJC EM	3	All San Juan County Followers
County Webpage dedicated to Fire Wise information	2018-2023	SJC Fire	4	All San Juan County Followers
Notes, updates and monitoring				



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

**GOAL B: PREPAREDNESS** – Activities that lead to a state of response readiness to contain the effects of wildfire to minimize loss of life, injury, and damage to property. Including access to home/community, combustibility of homes/structures and creating survivable space.

Goal B.1 – Evaluate, upgrade and maintain community wildfire preparation				
Action(s):	Timeline:	Community Lead:	Priority:	Focus Area
2 FEPP Trucks-Tender-To help assist putting fires out. Placed at West Summit and Ucolo	2018	SJC Fire	1	San Juan County Cache Main Response Area
Radios installed in 2 new FEPP Trucks. tender to communicate with other response vehicles. Placed at West Summit and Ucolo	2018-2019	SJC Fire	2	San Juan County Cache Main Response Area
Red Card Training/ Yearly	2018-2023	SJC Fire	1	San Juan County Response Area
Signage	2019	SJC Fire	2	San Juan County Response Area
Place one Brush Truck in the community of Pack Creek	2018-2020	SJC Fire	2	Provide Pack Creek with a fire truck
Place FEPP Truck-Tender in the community of West Summit	2018-2020	SJC Fire	2	Provide West Summit with a fire truck
Place FEPP Truck-tender in the community of Ucolo	2018-2020	SJC Fire	2	Provide Ucolo with a fire truck
Notes, updates, and monitoring				

Goal B.2 – Educate community members to prepare for and respond to wildfire.				
Action(s):	Timeline:	Community Lead:	Priority:	Focus Area
Fire Wise information/ Yearly	2018-2023	SJC EM	1	San Juan County Response Area
Community Event/ Yearly	2018-2023	SJC EM	2	San Juan County Response Area
Educate on Road and Access use to Private land owners	2018-2023	SJC EM	3	San Juan County Response Area

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Goal B.2 – Educate community members to prepare for and respond to wildfire.				
Action(s):	Timeline:	Community Lead:	Priority:	Focus Area
Facebook Social Media posts quarterly on Firewise and Defensible Space	2018-2023	SJC EM	4	San Juan County Response Area
<i>Notes, updates, and monitoring</i>				

Goal B.3 – Address identified regulative issues impacting community wildfire prevention and response needs.				
Action(s):	Timeline:	Community Lead:	Priority:	Focus Area
When a fire ban is in place make sure that all entities involved are aware. SJC Fire, SJC EM, SJE Commission, SJC SO	2018-2023	SJC EM	1	San Juan County Response Area
<i>Notes, updates, and monitoring</i>				

Goal B.4 – Evaluate response facilities and equipment.				
Action(s):	Timeline:	Community Lead:	Priority:	Focus Area
Equipment Check and Maintenance Yearly	2018-2023	SJC Fire	1	San Juan County Response Area
Purchase of a UTV for response to fires	2018-2023	SJC Fire	2	San Juan County Response Area
Purchase of a Trailer for a UTV to haul UTV to fires	2018-2023	SJC Fire	3	San Juan County Response Area
Purchase of water tank and equipment for the UTV to firefighting response	2018-2023	SJC Fire	4	San Juan County Response Area

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Goal B.4 – Evaluate response facilities and equipment.				
Action(s):	Timeline:	Community Lead:	Priority:	Focus Area
Upgrade tank and pumps at the industrial park by the fairgrounds. This is where we draw water from for the tenders <i>Notes, updates, and monitoring</i>	2018-2023	SIC EM	1	San Juan County Response Area



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

**GOAL C: MITIGATION** – Actions that are implemented to reduce or eliminate risks to persons, property or natural resources including fuel treatments and reduction.

Goal C.1 – Decrease fuels within the community to reduce wildfire impact in and around the community.				
Action(s):	Timeline:	Community Lead:	Priority:	Focus Area
Project Work Blue Mountain Guest Ranch	2018-2023	SJC Fire	1	San Juan Unincorporated Private Land Areas
Monticello Watershed	2018-2020	Forest	2	The Watershed issue for Monticello is a great concern the problem we are facing is it is not land that the county has jurisdiction on. Goal that work is being planned by the Mont-La Sal National Forest and FFSL, with implementation to begin fall of 2018.
Abajo Peak Tower Communication Site	2018-2020	Forest	3	The communication site on the Abajo mountains is a great concern the problem we are facing is it is not land that the county has jurisdiction on. This site is also being worked on mostly by USFS with some FFSL funding.
Project Work Summit Point	2018-2023	SJC Fire	1	San Juan Unincorporated Private Land Areas
Project Work Bug Point	2018-2023	SJC Fire	1	San Juan Unincorporated Private Land Areas
Mitigate fuels around the Communication site at Cedar Mesa	2018-2023	County Em	2	The communication site on the Cedar Mesa Communication site is a great concern the problem we are facing is it is not land that the county has jurisdiction on.
Mitigate homes being built in the wildland interface without defensible space	2018-2023	SJC Fire	3	Provide the Firewise Brochure and a Firewise Community Presentation

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Goal C.1 – Decrease fuels within the community to reduce wildfire impact in and around the community.				
Action(s):	Timeline:	Community Lead:	Priority:	Focus Area
<i>Notes, updates, and monitoring</i> We are currently going home to home and sending letters to the community to see if residents in the County Jurisdiction would like mitigation fuels work done.				

Goal C.2 – Work with local, state and federal fire officials to decrease fuels on private and adjacent public lands to reduce wildfire intensity and impact in and around the community.				
Action(s):	Timeline:	Community Lead:	Priority:	Focus Area
Project Work Blue Mountain Guest Ranch	2018-2023	SJC Fire	1	San Juan Unincorporated Private Land Areas
Project Work Summit Point Work Bug Point	2018-2023	SJC Fire	1	San Juan Unincorporated Private Land Areas
Place 2 large water tanks for Forest Service use at 1 at Shingle Mill and 1 at Spring Creek for use on their work of the county watershed	2018-2023	SJC Fire	1	San Juan Watersheds
Chipper Day for San Juan County Yearly	2019-2023	SJC Fire	2	San Juan Unincorporated Private Land
<i>Notes, updates, and monitoring</i>				

GOAL D: MAINTENANCE – the process of preserving actions that have occurred including fuel treatments and reduction.

Goal D.1 - Regularly evaluate, update and maintain project commitments.				
Action(s):	Timeline:	Community Lead:	Priority:	Focus Area
Follow up on past project work every 3 years	2018-2023	SJC Fire	1	San Juan Unincorporated Private Land Areas
Meet with past landowners on site for mitigation grooming	2018-2023	SJC Fire	2	San Juan Unincorporated Private Land Areas

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Goal D.1 - Regularly evaluate, update and maintain project commitments.				
Contract out a mower to mow breaks in cheatgrass on county land.	2018-2023	SJC Fire	3	San Juan Unincorporated Private Land Areas
Notes and updates				

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### PART IV: CONTACTS

The contacts in this part identify community resources that can be used to complete the goals of the plan.

Planning Committee Member List			
Name	Affiliation	Phone Number	E-mail
San Juan County EM	Kelly Pehrson	435-587-3225	<a href="mailto:kpehrson@sanjuancounty.org">kpehrson@sanjuancounty.org</a>
San Juan County Fire	David Gallegos	435-587-3225	<a href="mailto:dgallegos@sanjuancounty.org">dgallegos@sanjuancounty.org</a>
San Juan County EM	Tammy Gallegos	435-587-3225	<a href="mailto:tgalegos@sanjuancounty.org">tgalegos@sanjuancounty.org</a>

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Commercial Entities				
Organization	Mailing Address	City	State	Zip
1ST STREET CAR WASH LLC	PO BOX 903	MONTICELLO	UT	84535-0903
4 Corners Electric	95 N 400 W	Blanding	UT	84511
7-ELEVEN #53618	861 S MAIN ST	Blanding	UT	84511
A SPOT OF SHADE	44 N 300 W #8	Blanding	UT	84511
ABAJO CONSTRUCTION	PO BOX 627	MONTICELLO	UT	84535
ABAJO TRADING POST	HC 63 BOX 27	MONTICELLO	UT	84535
ABAJO VIEW APARTMENTS	370 E 500 S STE 101	SALT LAKE CITY	UT	84111
ABSOLUTE CARE	686 N GRAYSON PKWY	Blanding	UT	84511
ADVANCE MEDICAL SERVICES INC	154 S MAIN ST	Blanding	UT	84511
ADVANCED HYDROGEN RESEARCH	148 E 200 N	Blanding	UT	84511
ALANS BODY SHOP	P O BOX 126	MONTICELLO	UT	84535-0126
AMERICAN MEDICAL SUPPLY LLC	301 S MAIN STREET	Blanding	UT	84511
AMERICAN NATIONAL INSURANCE	PO BOX 965	MONTICELLO	UT	84535-0819
Amerigas Propane Parts & Service	1831 S Main	Blanding	UT	84511
ANASAZI REALTY	755 N MAIN ST	MOAB	UT	84532
ANDERSON & ANDERSON	P O BOX 275	MONTICELLO	UT	84535-0275
ANDERSON LEASING COMPANY	PO BOX 275	MONTICELLO	UT	84535
ANDREW BAYLESS	122 N 500 W	Blanding	UT	84511
ARCH CANYON LLC DBA BLUE MTN R	1930 S MAIN ST	Blanding	UT	84511
ARTISAN JEWELERS	PO BOX 844	MONTICELLO	UT	84535
AS YOU WISH NAIL SALON	290 S 50 E	Blanding	UT	84511
ASTER HOLDINGS, LLC DBA FOUR CO	818 N 400 W	Blanding	UT	84511
BAILEY'S LITTLE BAKERY	677 W 350 N	Blanding	UT	84511
Baus Butte	161 S 200 W	Blanding	UT	84511
Bayles Plumbing Inc.	267 S 100 E	Blanding	UT	84511
Bayles Trailer Park	288 W 100 N	Blanding	UT	84511
BE RESIDENTIAL REPAIRS	714 S NAVAJO DR	Blanding	UT	84511

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

BEARS EARS WIRELESS	1261 S MAIN	Blanding	UT	84511
BEAUTIFUL U AESTHETICS	5400 E HWY 491	Blanding	UT	84511
BE-YOU-TIFUL SALON	577 S 300 W	Blanding	UT	84511
BIG JOHN'S BBQ CORRAL	633 E PINION RIDGE RD	Blanding	UT	84511
BLACK CATTLE COMPANY, INC	413 E FLOUR MILL ROAD	Blanding	UT	84511
Black Hawk Transporation, Inc.	737 N Grayson	Blanding	UT	84511
BLACK OIL	PO BOX 159	MONTICELLO	UT	84535-0159
BLACK PROFESSIONAL CLEANING	3033 N BLUE MOUNTAIN ROAD	Blanding	UT	84511
Blue Moon Country Inn	118 E 300 S	Blanding	UT	84511
BLUE MOUNTAIN CHIROPRACTIC	P.O. BOX 783	MONTICELLO	UT	84535-0783
Blue Mountain Chiropractic	11 W Center	Blanding	UT	84511
BLUE MOUNTAIN FOODS	HC 63 BOX 160	MONTICELLO	UT	84535-0430
BLUE MOUNTAIN HOSPITAL	802 S 200 W	Blanding	UT	84511
BLUE MOUNTAIN MEATS	P O BOX 279	MONTICELLO	UT	84535-0279
BLUE MOUNTAIN OASIS RV PARK	PO BOX 732	MONTICELLO	UT	84535
BLUSH MINI SPA	212 E 500 S	Blanding	UT	84511
BOOKS ALIVE! PRESCHOOL	380 N 400 W	Blanding	UT	84511
BRADFORD LOCKS LLC	267 S 300 E	Blanding	UT	84511
Bradford Tire	39 E Center	Blanding	UT	84511
Brent Johansen, DDS	212 S 200 E	Blanding	UT	84511
BRIGHT BEGINNINGS PRESCHOOL	1088 S 100 E	Blanding	UT	84511
Brooke Pehrson Photography	378 W 500 S	Blanding	UT	84511
BULL HOLLOW RACEWAY	PO BOX 1041	MONTICELLO	UT	84535-0214
BURTENSHAW SHOP - METER	PO BOX 1024	MONTICELLO	UT	84535-1024
C & S Thinning & Wood	44 W 500 N	Blanding	UT	84511
Canyon Country	12 W Center Street	Blanding	UT	84511
CANYONLANDS CONOCO LLC	477 N 400 W	BLANDING	UT	84511
CANYONLANDS MOTOR INN	PO BOX 1142	MONTICELLO	UT	84535
Canyonlands Tire	111 South Main	Blanding	UT	84511

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

CARRSHOP	414 E 300 S	Blanding	UT	84511
CASTLES AND CAVERNS	138 S 200 E	Blanding	UT	84511
CEDAR CANYON ENT	1445 S MAIN	Blanding	UT	84511
Cedar Mesa Products	333 S Main	Blanding	UT	84511
Cherie's Kiddie Kare	311 N 100 W (19-6)	Blanding	UT	84511
CITY OF BLANDING	50 W 100 S	BLANDING	UT	84511
CITY OF MONTICELLO	PO BOX 457	MONTICELLO	UT	84535-0457
Clark's Market	820 S Main	Blanding	UT	84511
CM RACING	633 S 200 W	Blanding	UT	84511
CM SCHOOL OF DANCE	633 S 200 W	Blanding	UT	84511
CODALE ELECTRIC SUPPLY	61 W 300 N	Blanding	UT	84511
COHEN, DOUGLAS, & LYMAN, LP	842 N 300 W	Blanding	UT	84511
COMFORT AT HOME CARE LLC	210 N SHIRTTAIL WAY	Blanding	UT	84511
COMMUNITY CHURCH	PO BOX 193	MONTICELLO	UT	84535-0193
Computer Network Specialists	375 N 200 W	Blanding	UT	84511
COUNTRY COMFORT HOLDINGS LLC	2287 N BLUE MOUNTAIN RD	Blanding	UT	84511
COUNTRY COMFORT, LLC	1244 S 100 E	BLANDING	UT	84511
Country Comfort, LLC	1244 S 100 E	Blanding	UT	84511
COUNTRY VIEW MOBILE HOME PARK	PO BOX 913	MONTICELLO	UT	84535-0913
Courtesy Loans of Utah, Inc.	191 N Grayson Parkway	Blanding	UT	84511
COZY COTTAGE	29 N 300 W	Blanding	UT	84511
Craig C Halls, Attorney-at-Law	403 South Main	Blanding	UT	84511
CREATIVE FLOORS LLC	259 S MAIN	Blanding	UT	84511
CROSSROADS CDL SERVICES LLC.	PO BOX 343	MONTICELLO	UT	84535
CROWLEY CONSTRUCTION, INC.	HC 63 BOX 66	MONTICELLO	UT	84535
D & D Rentals	311 N 400 W	Blanding	UT	84511
D&K BLACK CLEANING SERVICES	208 S 200 W	Blanding	UT	84511
DANELL PERKINS	112 CONTINENTAL	Blanding	UT	84511
Dark Canyon Trading Company	212 W 200 N	Blanding	UT	84511

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

DAVIS CONSTRUCTION SOLUTIONS	296 N 600 W	Blanding	UT	84511
DAVIS FAMILY LODGING LLC	PO BOX 1201	MONTICELLO	UT	84535
DBA "MOVIENTE" (CAPSTONE MEDIA,	12 W CENTER ST	Blanding	UT	84511
DESERT ICE	301 S MAIN	Blanding	UT	84511
Diamond C Truck Stop	89 E Center	Blanding	UT	84511
Directional Design	706 West 4650 South	Blanding	UT	84511
DMK ENVIROMENTAL ENGINEERING	PO BOX 461	MONTICELLO	UT	84535
DOUGS STEAK HOUSE & BBQ	PO BOX 732	MONTICELLO	UT	84535
DRAPER TOWING & REPAIR LLC	PO BOX 1257	MONTICELLO	UT	84535-1257
DT'S YARD AND TREES	361 N 400 W	Blanding	UT	84511
EAGLE AIR MED	212 W FREEDOM WAY	Blanding	UT	84511
ECONOMY CONTRACTING INC	287 S 100 E	Blanding	UT	84511
EDDIE JIM PAINTING	713 N 300 W	Blanding	UT	84511
Einerson Construction Inc	311 N 400 W	Blanding	UT	84511
EMPIRE ELECTRIC	PO DRAWER K	CORTEZ	CO	81321
ENDLESS SUMMER	53 S 200 W	Blanding	UT	84511
ENSIGNAL INC	166 N HWY 191	Blanding	UT	84511
Family Dollar, Inc. #27063	742 S Main	Blanding	UT	84511
FAMILY MASSAGE THERAPY	335 S MAIN	Blanding	UT	84511
FARM BUREAU INSURANCE	PO BOX 1149	MONTICELLO	UT	84535-1149
Farmer's Insurance-Gary White	376 N 400 W	Blanding	UT	84511
FIRST BAPTIST CHURCH	PO BOX 1028	MONTICELLO	UT	84535-1028
FLOUR BEDS, LLC; dba GRIST MILL INN	PO BOX 597	MONTICELLO	UT	84535
FOUR CORNERS ADVENTURES/DBA F	1690 N PINION RIDGE DR	Blanding	UT	84511
Four Corners Healthcare	301 S MAIN	Blanding	UT	84511
Four Corners Inn	131 E Center	Blanding	UT	84511
FOUR CORNERS SCHOOL	PO BOX 1029	MONTICELLO	UT	84535-1029
FOUR POINT DEER PROCESSING	P O BOX 325	MONTICELLO	UT	84535-0325
FRONTIER A CITIZENS COMMUNICATI	51 W 100 S	Blanding	UT	84511



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

FURNITURE-2-U	215 E CENTER ST	Blanding	UT	84511
G & R	P. O. Box 325	Blanding	UT	84511
Gateway Inn	88 East Center	Blanding	UT	84511
Gentry Credit Corp	146 N Main, Suite A	Blanding	UT	84511
GETGO SIGNS GRAFIX & APPAREL	PO BOX 941	MONTICELLO	UT	84535-0941
GRANNY M'S ATTIC	163 N GRAYSON PKWY	Blanding	UT	84511
GRAYSON GETAWAY LLC	293 N 100 W	Blanding	UT	84511
GRAYSON GETAWAY LLC	259 N 100 W	Blanding	UT	84511
GRIFFINS	820 S MAIN ST	Blanding	UT	84511
GUARDIAN FLIGHT LLC DBA EAGLE A	212 W FREEDOM WAY	Blanding	UT	84511
GZ GRIKA	167 S 100 W #2	Blanding	UT	84511
H+ AESTHETICS SKIN AND BEAUTY	333 S MAIN SUITE #2	Blanding	UT	84511
HARRIS PLUMBING	PO BOX 910	MONTICELLO	UT	84535
HEIDI REDD-INDIAN CREEK RANCH	PO BOX 609	MONTICELLO	UT	84535-0609
HILLBILLY SNOW SHACK	19 E 100 S	Blanding	UT	84511
Holiday Construction, Inc.	700 East Brown Canyon Road	Blanding	UT	84511
HOME RENTAL	292 W CENTER	Blanding	UT	84511
Homestead Steak House	121 E Center	Blanding	UT	84511
HONDALAND	HC 63 BOX 3	MONTICELLO	UT	84535
HORSE HEAD GRILL	PO BOX 486	MONTICELLO	UT	84535
Hucks Museum And Trading Post	1243 South Main	Blanding	UT	84511
Hunt's Trading Post Inc.	146 East Center	Blanding	UT	84511
ILLUMINATED MOMENTS	60 N MAIN	Blanding	UT	84511
INN AT THE CANYONS	PO BOX 700	MONTICELLO	UT	84535-0700
JACKALOPE TRADING COMPANY	PO BOX 628	MONTICELLO	UT	84535
JAN REDD - PONDEROSA PLAZA	PO BOX 96	MONTICELLO	UT	84535-0096
Jan's Style Salon	161 W 300 N	Blanding	UT	84511
JB Restoration & Fabrication	17 N 100 E	Blanding	UT	84511
JC HUNT CO INC DBA BCL DIST	1261 S Main	Blanding	UT	84511

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

JCC ELECTRIC INC	323 E APPLE LANE	Blanding	UT	84511
JED LYMAN	144 W 500 N	Blanding	UT	84511
JEFF FROST dba FROST LANDSCAPE	PO BOX 968	MONTICELLO	UT	84535
JESSICA'S ALL OVER HAIR	287 W 400 S	Blanding	UT	84511
JM Custom & Ind. Welding, Inc.	2858 South Main	Blanding	UT	84511
Julie's Daycare	171 N 100 W	Blanding	UT	84511
Katherine Palmer Daycare	235 N 600 W	Blanding	UT	84511
KCA ENTERPRISE INC	219 W 100 S	Blanding	UT	84511
Keith Campbell Service, Inc.	429 N 300 W	Blanding	UT	84511
KENDALL G LAWS PC	30 W 100 S	Blanding	UT	84511
Kevin Black	250 W 400 S	Blanding	UT	84511
Kigalia	450 S Main	Blanding	UT	84511
KODE BEAR	867 N 240 W	Blanding	UT	84511
KRIS BLACK AGENCY	P.O. BOX 368	MONTICELLO	UT	84535-0368
L & K PROPERTIES	PO BOX 402	MONTICELLO	UT	84535
LA PETITE FLOWER SHOP	77 S MAIN	Blanding	UT	84511
Lake Powell Mail Inc	363 S 100 E	Blanding	UT	84511
Lawn Max	775 S 200 E	Blanding	UT	84511
LEE CONTRACTING LLC	270 N 600 W	Blanding	UT	84511
LEWIS FARMS	PO BOX 1111	MONTICELLO	UT	84535-1111
Lickity Split Chocolate Studio, LLC	28 S MAIN	Blanding	UT	84511
LITTLE BEAR CHILD CARE, INC	1944 N BLUE MOUNTAIN RD	Blanding	UT	84511
Lyle Northern Electric Inc.	61 W 300 N	Blanding	UT	84511
Lyman Counseling Center	33 S 500 W	Blanding	UT	84511
LYMAN PSYCHOLOGICAL SERVICES	178 W 300 N	Blanding	UT	84511
Lyman Trailer Court	90 W 100 S	Blanding	UT	84511
LYMAN'S ENCHANTED TREASURES	744 E FLOUR MILL ROAD	Blanding	UT	84511
M.G. Manufacturing, LLC	333 South Main Street #5	Blanding	UT	84511
MAA PROSPECTOR MOTOR LODGE LL	591 S MAIN ST	Blanding	UT	84511

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

MARC'S HOME HAIR	341 NORTH 600 WEST	Blanding	UT	84511
Mardawns Beauty Shop & Day Care	242 E 625 S	Blanding	UT	84511
MAX TECHNOLOGY LLC	1261 S MAIN	Blanding	UT	84511
Mesa Loans	#2 S Main Street	Blanding	UT	84511
MICKEY'S BEAUTY SALON	346 N 600 W	Blanding	UT	84511
MIKE'S PEST MANAGEMENT	283 E 100 S	Blanding	UT	84511
MILAN G MUNSON CONSTRUCTION	921 N 100 W	Blanding	UT	84511
MISSION DISCOVERY SCHOOL	HC 63 BOX 26B	MONTICELLO	UT	84535
MISTY PERKINS DAYCARE	53 S 200 W	Blanding	UT	84511
MOMMA T'S NAIL SALON	434 W 200 S	Blanding	UT	84511
Montella's Repair	1901 S. Main	Blanding	UT	84511
MONTEZUMA HEARING CLINIC	804 N 400 W	Blanding	UT	84511
MONTICELLO CEMETERY MAINTENANCE DISTRICT	PO Box 688	MONTICELLO	UT	84535
MONTICELLO LIQUOR OUTLET	PO BOX 1232	MONTICELLO	UT	84535-1232
MONTICELLO LODGING	PO BOX 1326	MONTICELLO	UT	84535
MONTICELLO MERC	PO BOX 307	MONTICELLO	UT	84535-0307
Motor Parts	54 E 100 S	Blanding	UT	84511
MOUNTAIN VIEW RV PARK	PO BOX 910	MONTICELLO	UT	84535-0910
MOUNTAIN WEST MEDICAL	301 S MAIN	Blanding	UT	84511
MOUNTAINLAND SUPPLY LLC	PO BOX 10	OREM	UT	84058
MR PYRO	170 MAIN ST	Blanding	UT	84511
MUHLESTEIN GREENHOUSES	PO BOX 471	MONTICELLO	UT	84535
Naida's Beauty Shop	381 N 400 W	Blanding	UT	84511
NATALIE'S HAIRCUTS	811 N 100 W	Blanding	UT	84511
NICOLETTE OLSEN	75 E 800 N	Blanding	UT	84511
North Wash Outfitters LLP	88 W 100 N SUITE #B	Blanding	UT	84511
O KNIGHT CONSTRUCTION	264 S 50 E	Blanding	UT	84511
OLD WEST RV	HC63 BOX 24 B	MONTICELLO	UT	84535
OLDE SCHOOL FARMS	PO BOX 694	MONTICELLO	UT	84535

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

PACA PANTRY	PO BOX 1288	MONTICELLO	UT	84535
Pacificorp	241 W 300 N	Blanding	UT	84511
PALMERCITA LLC	517 N 100 W	Blanding	UT	84511
Personal Prints	88 S 100 W	Blanding	UT	84511
PETALS & SWEETS	PO BOX 133	MONTICELLO	UT	84535
Phil Lyman, CPA PC	333 S Main Suite #2	Blanding	UT	84511
PICK A STITCH LLC	111 S 300 E	Blanding	UT	84511
PIECHOWSKI ARMS LLC	54 E 100 S	Blanding	UT	84511
PJ's OF MONTICELLO	PO BOX 811	MONTICELLO	UT	84535-0811
POP'S BURRITOS	148 S MAIN	Blanding	UT	84511
Precision Rehabilitation, Inc	412 S MAIN	Blanding	UT	84511
Primary Residential Mortgage, Inc.	409 S Main	Blanding	UT	84511
PROSCENDO INC	411 S MAIN	Blanding	UT	84511
PROSPECTOR MOTOR LODGE	591 S MAIN	Blanding	UT	84511
QUALITY INN & SUITES	711 S MAIN ST	Blanding	UT	84511
QUALITY MFG.	PO BOX 1244	MONTICELLO	UT	84535-1244
R & F RESTAURANT	PO BOX 62	MONTICELLO	UT	84535-0062
RANDYS AUTO	PO BOX 940	MONTICELLO	UT	84535-0940
Ray Palmer Apts.	436 S 300 W	Blanding	UT	84511
RED CYPRESS GROUP DBA EPIK SOL	215 E CENTER ST	Blanding	UT	84511
RED ROCK HEALTHCARE, INC DBA ZI	58 N MAIN ST	Blanding	UT	84511
RED ROCK WELL SERVICE	1358 E HARRIS LANE	Blanding	UT	84511
Redd Mechanical, Inc.	1012 S 300 W	Blanding	UT	84511
REDD, GRAYSON	PO BOX 96	MONTICELLO	UT	84535
REDD'S ACE HARDWARE	82 S MAIN	Blanding	UT	84511
RENTAL PROPERTY	254 N 100 W	Blanding	UT	84511
RICKS FIREWORKS	820 S MAIN	Blanding	UT	84511
ROAM INDUSTRY	PO BOX 773	MONTICELLO	UT	84535
Rocky Mountain Home Care	28 N Main	Blanding	UT	84511

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

S&S Enterprises	162 N Grayson Parkway	Blanding	UT	84511
SAGE INNOVATION	1690 N PINION RIDGE DR	Blanding	UT	84511
SAM'S STUDIO HAIR AND DESIGN	164 N HWY 191	Blanding	UT	84511
San Juan Building Supply	1050 S Main	Blanding	UT	84511
SAN JUAN CHIROPRACTIC & WELLNE	792 S MAIN ST	Blanding	UT	84511
SAN JUAN CLINIC BLANDING	735 S 200 W SUITE 3	Blanding	UT	84511
SAN JUAN COFFEE CO DBA HIGHER G	87 S MAIN ST	Blanding	UT	84511
SAN JUAN COUNTY	PO BOX 338	MONTICELLO	UT	84535-0338
SAN JUAN HOSPITAL	PO BOX 308	MONTICELLO	UT	84535-0308
San Juan Insurance	60 N Main St	Blanding	UT	84511
San Juan Mortuary	370 S Main	Blanding	UT	84511
SAN JUAN PHARMACY	P O BOX 519	MONTICELLO	UT	84535-0519
San Juan Pharmacy	65 S Main	Blanding	UT	84511
SAN JUAN RECORD	PO BOX 879	MONTICELLO	UT	84535-0879
SAN JUAN SPORTS	255 W 600 N	Blanding	UT	84511
San Juan Theater/Clark Hawkins	20 S Main	Blanding	UT	84511
San Juan Vision Clinic	46 N Main	Blanding	UT	84511
Sandra Dawn Photography, Inc.	187 W 700 N	Blanding	UT	84511
SCE ENGINEERING	190 S 200 E	Blanding	UT	84511
SCHAFFER AUTO CLINIC	P O BOX 543	MONTICELLO	UT	84535-0543
SECOND TO NONE THRIFT	HC 63 BOX 30	MONTICELLO	UT	84535
Sherrow Masonry	2142 N Reservoir Rd	Blanding	UT	84511
SHOPKO HOMETOWN #583	860 S MAIN ST	Blanding	UT	84511
SIMPLY LUMINOUS	333 S MAIN SUITE #2	Blanding	UT	84511
SLACK ENTERPRISES, INC	PO BOX 546	MONTICELLO	UT	84535
SMF Incorporated Dba Creative Floors	259 S Main	Blanding	UT	84511
Smith Plumbing & Heating	88 N 200 W	Blanding	UT	84511
SMOKE PIZZA COMPANY	583 S 300 W	Blanding	UT	84511
SONDEREGGER - BATCH PLANT	P O BOX 713	MONTICELLO	UT	84535-0713

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

SOUNDZGREAT,LLC	722 N 100 W	Blanding	UT	84511
SOUTH EASTERN UTAH TITLE CO.	PO BOX 579	MONTICELLO	UT	84535-0579
SOUTH PEAK RENTALS LLC	184 W 400 N	Blanding	UT	84511
Southway Trading	651 South Main	Blanding	UT	84511
SPRINKLER REPAIR	1845 E BROWNS CANYON RD	Blanding	UT	84511
ST. JOSEPH CATHOLIC CHURCH	P O BOX 518	MONTICELLO	UT	84535-0518
Star Loans	10 South Main	Blanding	UT	84511
Stellar National LLC	774 N 400 W	Blanding	UT	84511
STEVE FRANCOM COST	259 S MAIN	BLANDING	UT	84511
STEVE PERRY CONSTRUCTION	224 W 800 N	Blanding	UT	84511
Steven C. Black, CPA	411 S Main	Blanding	UT	84511
STONE LIZARD LLC DBA STONE LIZA	88 W CENTER STREET	Blanding	UT	84511
SUBWAY/REDD, DALLIN	82 S MAIN STREET	Blanding	UT	84511
SUNRISE AERIAL	913 N 240 W	Blanding	UT	84511
Sunrise Outfitting, Inc.	755 S MAIN ST	Blanding	UT	84511
Super Splash Inc	988 S MAIN ST	Blanding	UT	84511
TACHI'NII NURSING SERVICES INC	881 E BROWNS CANYON ROAD	Blanding	UT	84511
Taylor Made Wooden Heritage	705 N HWY 191	Blanding	UT	84511
TERYL'S TREE SERVICE	234 N 300 W	Blanding	UT	84511
THATZZA PIZZA CO.	PO BOX 494	MONTICELLO	UT	84535
THATZZA PIZZA INC	164 N GRAYSON PKWY	Blanding	UT	84511
THE BAKERY TANNING CO	164 N HWY 191	Blanding	UT	84511
THE DINOSAUR MUSEUM SHOP	754 S 200 W	Blanding	UT	84511
THE FLOWER SHOP	77 S MAIN	Blanding	UT	84511
THE HAIR HOUSE	354 W 600 S	Blanding	UT	84511
The Patio Drive-In	95 N GRAYSON PARKWAY	Blanding	UT	84511
THE PEACE TREE	PO BOX 732	MONTICELLO	UT	84535-0732
THE SAGEBRUSH ROSE	778 N 300 W	Blanding	UT	84511
The Style Station	191 N Main	Blanding	UT	84511

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Thin Bear Indian Arts Inc.	1944 S Main	Blanding	UT	84511
Tiny Tots Preschool	544 S 300 W	Blanding	UT	84511
TLC - TREEHOUSE LEARNING CENTE	60 S 500 W	Blanding	UT	84511
TM PREMIER SERVICES	PO BOX 791	MONTICELLO	UT	84535
TRACY SEITER WITH LULAROE	110 N MAIN ST	Blanding	UT	84511
Transitions	29 E Center Street	Blanding	UT	84511
TRAVIS A. BLACK DBA NAILED IT	871 N 100 W	Blanding	UT	84511
Tri-Hurst Construction	377 W 300 S	Blanding	UT	84511
TROI	732 N 300 W	Blanding	UT	84511
TSJ SAFETY & COMPLIANCE	551 S 200 E	Blanding	UT	84511
TWISTED TREE	PO BOX 1327	MONTICELLO	UT	84535
UNIQUE CREATIONS & GIFTS	PO BOX 627	MONTICELLO	UT	84535
USU EASTERN BLANDING CHILDCARE	650 W 250 S	Blanding	UT	84511
USU EXTENSION	PO BOX 549	MONTICELLO	UT	84535
Ute Mountain Construction	120 W Center	Blanding	UT	84511
WAGON WHEEL PIZZA	P O BOX 729	MONTICELLO	UT	84535-0729
WAYSIDE INN	P O BOX 247	MONTICELLO	UT	84535-0247
WAYSIDE INN-LAUNDRY	PO BOX 247	MONTICELLO	UT	84535-0247
Wesley L. Hunt Company	750 E 500 S	Blanding	UT	84511
WESTERNER TRAILER PARK	P O BOX 371	MONTICELLO	UT	84535-0371
Yak's Center Street Cafe	333 North Grayson Parkway	Blanding	UT	84511
YOUNGS MACHINE	PO BOX 489	MONTICELLO	UT	84535-0489

Formal Associations			
Organization	Contact Person	Phone Number	E-mail
Monticello LDS Church	N/A	435-587-2139	N/A
Blanding LDS Church	N/A	435-678-2518	N/A
1 <sup>st</sup> Baptist church	N/A	435-587-2534	N/A
St. Joseph's Catholic church	N/A	435-587-2322	N/A
Community Church	N/A	N/A	N/A

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Formal Associations			
Organization	Contact Person	Phone Number	E-mail

Media Support			
Organization	Contact Person	Phone Number	E-mail
San Juan County PIO	Kelly Pehrson	435-587-3225	kpehrson@sanjuancounty.org
KAAJ-LP	103.9 FM	Monticello	First Baptist Church
KBDX	92.7 FM	Blanding	Redrock Radio Group L.L.C.
KCUT-LP	102.9 FM	Moab	Tunnel Vision Music
KCYN	97.1 FM	Moab	Moab Communications, LLC
KUST	88.7 FM	Moab	Utah State University of Agriculture and Applied Science
KZMU	90.1 FM	Moab	Moab Public Radio, Inc. Variety

Schools				
School	Contact Person	Phone Number	E-mail	Address
La Sal Elementary	Ron Nielson	435-678-1211	<a href="mailto:rnielson@sjsd.org">rnielson@sjsd.org</a>	200 N Main
Monticello Elementary	Ron Nielson	435-678-1211	<a href="mailto:rnielson@sjsd.org">rnielson@sjsd.org</a>	200 N Main
Blanding Elementary	Ron Nielson	435-678-1211	<a href="mailto:rnielson@sjsd.org">rnielson@sjsd.org</a>	200 N Main
Bluff Elementary	Ron Nielson	435-678-1211	<a href="mailto:rnielson@sjsd.org">rnielson@sjsd.org</a>	200 N Main
Montezuma Creek Elementary	Ron Nielson	435-678-1211	<a href="mailto:rnielson@sjsd.org">rnielson@sjsd.org</a>	200 N Main
Monument Valley Elementary	Ron Nielson	435-678-1211	<a href="mailto:rnielson@sjsd.org">rnielson@sjsd.org</a>	200 N Main
Blanding Middle School	Ron Nielson	435-678-1211	<a href="mailto:rnielson@sjsd.org">rnielson@sjsd.org</a>	200 N Main
Monticello High School	Ron Nielson	435-678-1211	<a href="mailto:rnielson@sjsd.org">rnielson@sjsd.org</a>	200 N Main
San Juan High School	Ron Nielson	435-678-1211	<a href="mailto:rnielson@sjsd.org">rnielson@sjsd.org</a>	200 N Main
White Horse High School	Ron Nielson	435-678-1211	<a href="mailto:rnielson@sjsd.org">rnielson@sjsd.org</a>	200 N Main
Monument Valley High School	Ron Nielson	435-678-1211	<a href="mailto:rnielson@sjsd.org">rnielson@sjsd.org</a>	200 N Main
Navajo Mountain High School	Ron Nielson	435-678-1211	<a href="mailto:rnielson@sjsd.org">rnielson@sjsd.org</a>	200 N Main

Transportation
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# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

Organization	Contact Person	Phone Number	E-mail
Utah Department of Transportation	Chet Johnson		cejohnson@utah.gov

Private Equipment Capabilities				
Type of Equipment	Contact Person	Phone Number	E-mail	Address
All of these are listed in the MOB Plan				

Other			
Organization	Name	Phone Number	E-mail

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Wildfire Preparedness Plan

### APPENDIX

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# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Appendix 8 Spanish Valley Plan

### SAN JUAN COUNTY Spanish Valley Area Plan



February 12, 2018



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

ADVISORY COMMITTEE	Walter Bird, San Juan County Mike Bynum, SJSV-SSD Frank Darcey, SJSV-SSD Elise Erler, SITLA Jerry McNeely, San Juan County Kelly Pehrson, San Juan County Bryan Torgerson, SITLA
PLANNING COMMISSION	Marcia Hadenfeldt, Chairwoman Joe Hurst, Vice Chair Carmella Galley, Board Member Jeff Nielson, Board Member Trent Schafer, Board Member
COUNTY COMMISSION	Bruce Adams, Chairman Rebecca Benally, Vice Chair Phil Lyman
COUNTY STAFF	Kelly Pehrson, San Juan County Chief Administrative Officer Walter Bird, San Juan County Human Resources Director
LANDMARK DESIGN TEAM	Mark Vlasic, Principal-in-Charge Jennifer Hale, Senior Planner John Locke, Planner Siri Vlasic, Intern  Charles Allen, Parametrix (Transportation) Fred Phillipot, Lewis, Young, Robertson & Birmingham (Economic Planning) Greg Poole, Hensen, Allen & Luce Engineers (Stormwater Planning)
ACKNOWLEDGMENTS	
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San Juan County Spanish Valley Area Plan

# **San Juan County Pre-Disaster Hazard Mitigation Plan 2018**

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

1.0

INTRODUCTION &  
BACKGROUND

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San Juan County Spanish Valley Area Plan



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## PURPOSE AND FOCUS OF THE SAN JUAN COUNTY SPANISH VALLEY AREA PLAN

The *San Juan County Spanish Valley Area Plan* is an official document intended to guide future development in the San Juan County portion of the Spanish Valley. Once adopted, the plan will be incorporated as a chapter of the San Juan County General Plan.

A comprehensive planning process was used to establish a long-term planning vision for the area. The process identified specific guiding principles and planning goals to guide future growth, while addressing other aspects related to land use, transportation, quality of life, public services and infrastructure, land use and transportation. Although the exact time frame for implementation is unclear, it is anticipated that full realization of the plan will take several decades.

## HISTORY OF THE SPANISH VALLEY

The San Juan County portion of the Spanish Valley (The Study Area) is a picturesque valley surrounded by high red sandstone mesas and cliffs. The valley is located at an average elevation of 4,300 feet. Pack Creek flows through Spanish Valley from the southern perimeter of the Study Area, continuing north - northwestward through the Moab Valley toward its confluence with the Colorado River. Water flow is intermittent.



1.0

INTRODUCTION &  
BACKGROUND

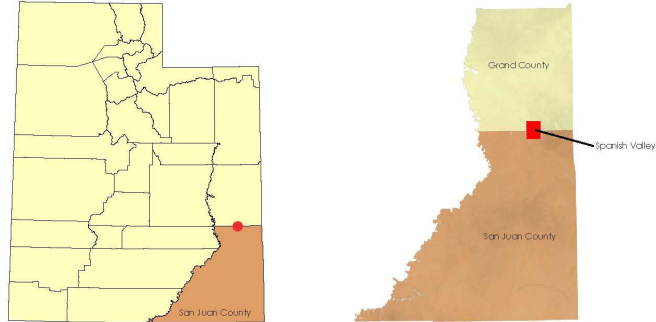
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San Juan County Spanish Valley Area Plan

# San Juan County Pre-Disaster Hazard Mitigation Plan

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The San Juan portion of the Spanish Valley is approximately six miles long and 2.5 miles wide, encompassing 15-square miles of land. In comparison, the entire Spanish Valley is approximately fifteen miles long and three miles wide. Only the southern third of the Spanish Valley lies within San Juan County, and it is the least populated segment. The Spanish Valley is more regularly identified as the valley that lies south of the city of Moab. The majority of the valley, and the majority of the population living in it, are within Grand County.



### 1.0

#### INTRODUCTION & BACKGROUND

Evidence suggests that the area and surrounding country was inhabited by ancient native groups as early as 10,000 years ago. Mormon missionaries attempted to settle the area in 1855, but the mission was abandoned after only a few months. For the next three decades the area was used intermittently by trappers, prospectors and cattlemen, with no permanent settlement until the 1870's with the arrival of Mormon settlers. Growth was slow and focused primarily in the Moab area. The economy was based on farming and ranching, with small mining operations established in the 1890's. The railroad soon followed.

The discovery of uranium in 1952 signaled an era of mineral extraction in the region, swelling the local population from 3,000 to nearly 10,000 residents in less than three years. Potash, salt mining and milling operations added to the local economy until 1983, when uranium mining was discontinued and nearly all mining and milling operations soon after ceased. The region soon emerged as a popular tourist destination due to its close proximity to Arches National Park, Canyonlands National Park, Dead Horse Point State Park, the Colorado River and other regional parks and lands. More recently the area has become a popular destination for recreational and competitive mountain bikers, river runners, hikers, off-roaders and outdoor adventure seekers. Ken's Lake and Faux Falls are recreation attractions located in the Study Area.

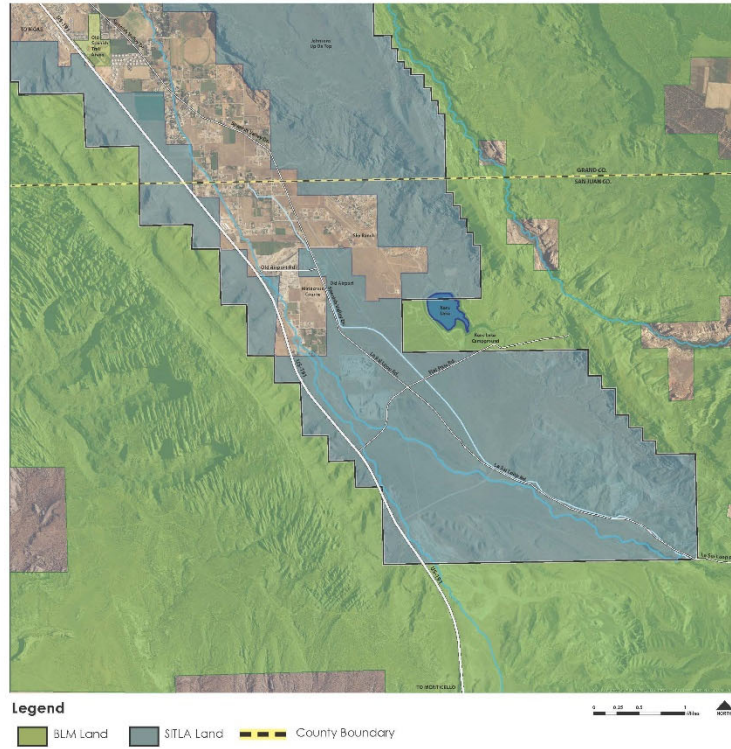
The northern quarter of the Study Area is privately owned, with the remainder owned and operated by state (SITLA) and the Bureau of Land Management. The privately owned lands are a census-designated place (CDP) with an estimated 2015 population of 500.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

SPANISH VALLEY  
STUDY AREA

1.0

INTRODUCTION &  
BACKGROUND



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San Juan County Spanish Valley Area Plan

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018



Faux Falls



Ken's Lake

Fifty-miles to the south of the Study Area is Monticello, which is the nearest San Juan County town as well as the county seat. It is the second most populous city in the county with approximately 2,000 residents. While it is relatively far-removed from the Study Area, Monticello has emerged as a bedroom community to Moab, due to the lack of affordable housing options in the region.

## CHANGES & OPPORTUNITIES IN THE SPANISH VALLEY

In contrast to the Grand County portion of the Spanish Valley, growth in the Study Area has been constrained and slow to take root. Many residents have moved here in search of a more rural lifestyle. The area is generally more affordable, but the lack of a culinary water and sewer system, minimalistic zoning and development control, and the lack of planning and development review has constrained growth.

*But things are changing*

The Spanish Valley area is receiving increasing growth pressure. Planning and the establishment of better infrastructure for the area is now a top priority for the county. A study was recently completed to analyze the needs and costs of providing water and sewer systems for current residents and the future population. A stand-alone water system was determined to be the best alternative to provide culinary water to residents in the area. A combined sewer system with Grand Water & Sewer Service Agency (GWSSA) and Moab City sewer was selected as the best alternative to treat waste water. Both systems are currently under design.

## ORGANIZATION OF THE AREA PLAN

The *San Juan County Spanish Valley Area Plan* establishes and analyzes existing conditions, assesses planning issues and ideas, identifies growth and development principles, and presents a future vision for growth and development in the valley, including Land Use and Phasing plans. The plan is divided into the four chapters as listed below:

1. Introduction & Background
2. Existing Conditions & Analysis
3. Spanish Valley Area Plan
4. Guidelines & Ordinance Concepts

## 1.0 INTRODUCTION & BACKGROUND

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Once the plan is adopted, development guidelines and ordinance concepts will be further refined, resulting in new rules and regulations that will direct future growth. It is critical that the new rules are responsive to the needs of the area and the resources available in San Juan County.

## PUBLIC ENGAGEMENT

Identifying planning issues and ideas was an essential initial step in the planning process, helping to ensure that the plan accurately addresses anticipated needs and encapsulates the future vision for the area by residents, landowners and stakeholders. As summarized below and detailed in Appendix A, a thorough public involvement process was utilized to capture the pulse of the community. The process incorporated multiple opportunities for the public to provide comments, identify issues and provide feedback throughout the planning process.

### Advisory Committee

An Advisory Committee was established during the early stages of the project to review progress and to provide guidance as the plan was formulated. Members of the committee included representatives of San Juan County, Grand Sewer and Water Service Agency, local land owners and developers, SITLA, business leaders and residents.

The Advisory Committee met on four occasions at the following stages:

1. During a Kickoff Meeting in the early stages of the project;
2. Prior to the Public Scoping Meetings;
3. Following the Public Workshop held as part of reviewing Alternative Planning Concepts. It should be noted that the Steering Committee expressed significant concern over the preservation of large tracts of open space as illustrated in both alternatives that were presented. The committee suggested that a more metered approach be considered as the draft plan was developed.
4. Prior to a Public Open House Meeting in February 2018 as part of a Draft Plan Workshop held in Monticello. The meeting was also attended by members of the San Juan County Commission, San Juan County Planning Commission and key county staff.

### San Juan County Commission Briefing

Landmark Design presented an overview of the planning approach to the San Juan County Commission on August 14, 2017 in Monticello during a regularly-scheduled meeting. The briefing provided an overview of the process and intents of the planning study. Commissioners provided general direction and visions for the study. It was noted that the commissioners envision that a new community will result through this effort, which will be established through county efforts and eventually become an independent municipality.

### Stakeholder Interviews

To get a pulse for the needs and issues of residents and experts, nine interviews were conducted with residents, neighborhood groups and agencies during a three-day period (September 18-20, 2017). Interviews were held with representatives of six families living in a local subdivision; individual interviews with five local families; a meeting with UDOT officials to better understand transportation and highway access needs, and courtesy meetings with SITLA and Grand County planning staff. The discussions identified general concerns and visions, most of which were aligned with input received during the scoping meetings. Discussions with UDOT officials resulted in a clarification of intersection and driveway access standards, and the results of recently completed studies affecting transportation planning in the area.

## 1.0

### INTRODUCTION & BACKGROUND



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## Public Scoping Meeting

Two public scoping meetings were held on September 20, 2017, providing an opportunity for Landmark Design staff to listen to concerns and aspirations for the area, identify issues related to growth and development, and understand the visions and desires for the area. The meetings were lightly attended, with only twenty people signing in (see summary of Input and Direction received at the conclusion of this chapter for details).

## Plan Alternatives Workshop

Two public workshops were held on November 7 and 8, 2017 to provide members of the public the opportunity to review and refine preliminary planning ideas and concepts, which were developed by Landmark Design staff. Each session began with a review of existing conditions and an analysis of opportunities, followed by a presentation of preliminary concepts. The workshops also included (1) a **visual preference survey** to help verify preferred uses, (2) a presentation of **preliminary planning principles** to verify the conceptual framework of the plan, and (3) small group break-out sessions to verify opportunities and constraints. 39 people signed into the workshop. The comments and input received was compiled, summarized and analyzed by the planning team, and reviewed as part of creating a preferred planning concept (see copies of the visual preference survey results in Appendix B and the Preliminary Alternative Concepts in Appendix C).

Top images by category - visual preference survey:



Community



Parks, Open Space & Trails



Residential



Roads



Highway/Commercial

1.0

INTRODUCTION &  
BACKGROUND

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## San Juan County Planning Commission Briefing on Preliminary Planning Alternatives

The San Juan County Planning Commission was briefed on the preliminary plan alternatives as well as general input provided by the public during the workshops. The planning commission expressed some concern that the concepts focus on preserving large swaths of open space, but otherwise expressed support for the general direction provided.

## Draft Plan Open House

Once a preferred planning direction emerged, a Draft Plan was developed by the planning team. A public open house meeting was held on February 13, 2017 to receive public input prior to plan finalization and adoption. The meeting began with a presentation of key plan ideas and concepts and was followed by group discussions and opportunity to explore the plan and comment. A copy of the draft plan was also posted on the project web page.

## Project Web Page & Media Coordination

In order to provide easy access to planning information and to increase public involvement opportunities, the Spanish Valley Area Plan web page was established and hosted on the Landmark Design website ([www.ldi-vt.com/spanishvalley.html](http://www.ldi-vt.com/spanishvalley.html)). The web page provided an electronic venue for noticing important meetings and events, reviewing draft plans as they were developed, and for receiving public feedback and input. As of early February 2018, the site had received 663 visits, 534 unique page views, and the average length of time visiting was nearly five minutes.

Public notices and invitations to the various meetings and workshops were prepared by the planning team, placed on the project website and linked to the San Juan County website. Meeting notices were also placed on the San Juan County website, and distributed as printed flyers and by email.

## SUMMARY OF INPUT AND DIRECTION RECEIVED

The comments, issues and ideas expressed through the public engagement process were broad and varied. All input was documented, summarized and analyzed, then compared with input from the steering committee. Existing studies and reports were also reviewed and assessed. An important outcome of this process was the emergence of a clear picture of what is desired for the future, which were eventually translated and verified as guiding principles for directing future growth and development.

The following are the ideas and issues that emerged during the scoping meetings.

### 1.0

#### INTRODUCTION & BACKGROUND

#### Community and Area Character

- Want a place that is quiet and dark at night – not a lot of traffic and street lights like Moab.
  - Incorporate these elements into new zoning ordinances
- Plan spaces for churches, schools, and other community spaces; places that are close to where people live (to be walkable)
- Equestrian and other livestock uses - need to accommodate (ranching is part of the heritage of the area – continue to allow people to have livestock)
- Not too city-like or suburban; like the rural-ness (having space/elbow room)
- Visual restrictions in zoning – e.g. no junk yards as entering the area/valley
- Likes 1 acre lots; space between neighbors
- Density will bring more “lights” – compromise night sky
- Would like to see kids be able to live here
- Community feel – need to develop not just along Hwy 191; look at Spanish Valley Road – make it have a community feel

# San Juan County Pre-Disaster Hazard Mitigation Plan

## 2018

### 1.0 INTRODUCTION & BACKGROUND

- The primary reason for living here is the relative isolation and distance from tourists and tourism impacts.
- The area is quiet and relatively affordable.
- Would like to see parks, schools, trails, fire and safety and similar public uses and services.
- Would like it to be a place with no hotels and over-night visitors (Airbnb) or similar tourist-based uses.
- The neighborhood has a wide range of lifestyles and living conditions (families with kids, retirees, etc.), although it is getting too expensive for many to live here.
- Want the area to be its own place, not an extension of Moab. Do not want the area to be a city, and it should not have a discernible downtown like Moab. However, the area should have a destination to meet and come together, possibly centered around a park.
- The area should be more aligned with creating a community for its residents and less about accommodating the needs of tourists.
- The area should have a separate vibe than Moab. It should be a nice place to live, but not a "well to do" community. The Spanish Valley/Moab relationship is comparable to Eagle to Vail Colorado, or Bellevue/Halley to Ketchum/Sun Valley Idaho. An affordable community where most residents will work and shop in Moab.
- The area should have discernible neighborhoods, but not like Moab.
- The eclectic design and land use structure is generally OK, although future buildings should be required to fit in better with the landscape. If a Walmart or other big box uses are located here, they should fit in like those found in St. George and Cedar City.
- Both moved to the area to get away from Moab. The ability to have a larger property and the affordable price of land was a major reason both moved here, although the quiet lifestyle and dark skies are what keeps them here.
- There is no doubt that more people are coming, and it is critical to figure out a model to accommodate them. Many existing residents don't want more growth and want to preserve the area as it is now, although they have no right to expect that. Need to figure out how to accommodate a lot more growth.
- Views, viewsheds and preservation of the landscape should be considered when developing the area.
- The area isn't sure who or what they are. Would like to see the area remain primarily a bedroom community to Moab, with some industry and jobs as well.
- It is difficult to get good and dependable residents for service jobs, and in some cases foreigners from China and similar locations are brought in for those purposes.
- Not afraid of growth like many neighbors

#### Land Use and Planning

- Currently they have incompatible land use and very little regulation; needs to be some regulation and buffering between uses
- Commercial – prefer mom and pop shops over big box
- Some smaller lots (1/2 acre) okay – if it's needed
- SITLA needs to agree to and comply with the master plan
- Look at Pack Creek and how it fits in with this plan
- Height limits because of fire resources/restrictions? *Not an issue (everything can be served)*
- Height uses would change based on land use
- Completion of La Sal loop could change the area dramatically
- Future, more detailed, studies need to occur and need to look at how much those studies will cost (how much will it cost to do this plan?)
- Small commercial away from Hwy 191 but still on well-traveled roads for visibility (maybe Spanish Valley Road?)
- RV/tiny houses are in issue in Grand County; put where it should go not where it is convenient
- Locating all "transient" (e.g. temporary housing and low-income renters) uses together might not be a good idea



# San Juan County Pre-Disaster Hazard Mitigation Plan

## 2018

### 1.0

#### INTRODUCTION & BACKGROUND

- Gravel pits are important to growth; keep development away from
- SITLA – like to see mixed income/type of housing; bike trails; find a future use for gravel pits – when mined out
- Find best place for next gravel pit (SITLA – 30-year pit lifespan)
- 1,000 ft. commercial highway – liked to see pushed forward; too large, would like to see more area for residential development
- Incompatible uses – the 1,000 ft. commercial rule really needs to change so commercial uses aren't next or in the middle of residential areas (We are about 10 years behind)
- Grow from a community commercial center around Spanish Valley Rd. out
- Put gas stations, Walmart on Hwy; locate smaller commercial internally
- Learn from mistakes that Moab has made
- Would like better buffers between residential and commercial/industrial uses. The lack of control in San Juan County has resulted in some incompatible land uses being located together. However, most moved here specifically because the area is in San Juan County, which has limited input and control.
- Don't see a need for stores or services that one can walk to; don't mind driving to Moab and beyond for basic needs.
- Most believe that Moab will still be the commercial and social core of the area. However, this will be less true as areas further to the south develop as they are so much further away.
- There is an opportunity to be smarter and better-planned than Moab, particularly through the design and location of utilities and infrastructure (water, sewer and roads are key).
- The area should be dominated by single-family residential, although there is room for a wider range of types and densities, including cluster. Some residents indicated they would like higher density residential located near commercial and industrial uses, while others believe it is important to integrate such uses within the overall layout.
- Building heights should be relatively low, no higher than 3-stories.
- Colorado Outward Bound is generating a lot of traffic and light pollution. This is an example of "dumb" planning within the 1,000-foot commercial strip along the highway.
- Existing zoning which requires one-acre minimum lot size and 1,000-foot commercial development strip along the highway both poor control models (unwise), particularly now that water and sewer are available.
- The area should have some smaller retail and grocery uses, and the Spanish Valley Road should become the Main Street of the area.
- Many people want to build small homes on their properties that they can rent out or subdivide and sell – they don't think this is a good idea for permanent residents, and don't like the idea of too many "overnighters" in the area.
- San Juan County has discussed converting the old airport into residences, although nothing has happened.
- They have been personally impacted by poor land use decisions. An unfavorable use was allowed to be constructed immediately adjacent, which has impacted their ability to sell the property.
- Would be comfortable with the area becoming a residential enclave. High prices have impacted many in the community, and many have become "priced out".
- Retail in Moab has always struggled, requiring residents to drive to Grand Junction for reasonably-priced items and better selection. The development of a Wal-Mart could improve access to goods, although it would likely result in the loss of 3-4 local stores and businesses.
- Envisions the area to be primarily a residential community, with limited commercial to serve local needs.
- Provided a copy of the Draft San Juan County Spanish Valley I-O Infill Overlay Zone – thinks it makes some sense, certainly a step toward providing better control of development. Keeps commercial separate from residential uses, which is a big problem, particularly within the 1,000-foot highway zone.
- Would like to see some smaller corner stores and similar uses, but no gas stations as they tend to be a major impact on residences.
- The area needs some commercial, particularly along the highway.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## 1.0 INTRODUCTION & BACKGROUND

### Transportation

- Currently no connectivity to Moab. Need better transportation plan; in particular, need bike routes
- Don't want service employees far from city, but probably will occur here – consider transportation system
- Need some good cross valley access – Spanish Valley is over used, and speed limit keeps getting lowered
- Need to require commercial development to improve roads (otherwise won't happen until county does it/too late)
- Transportation needs to look at and incorporate good signage
- Road standards – pavement requirements to get good quality
- New roads to limit traffic volumes to current residential neighborhoods to keep current developed areas quiet and provide opportunity for other uses on properties to be developed.
- Grocery store, Walmart – All of this will come eventually, want it in the right places
- Hwy 191 to Spanish Valley Rd. (2<sup>nd</sup> key road) doesn't have a good connection now
- We have space and flexibility now – so now is the time to plan (get the bike paths in now)
- Lack of acceleration/deceleration lanes at highway is a big problem. Left turns off the highway into the area can be a death trap, particularly with fast-moving trucks and semis trying to keep us speed as they climb up roadway.
- UDOT - It will be a long time before a 4-lane highway is installed south from the county line. Focus is completing 4-lanes from county line to Moab.
- UDOT - A copy of the existing corridor agreement was provided, which was approved by both counties and Moab in 2015. Any changes would require approval by all parties. Addresses segment from Millcreek Road to city. Addresses existing access to private properties by inclusion of frontage road system. Was completed prior to the existing water/sewer agreement and corresponding growth implications. San Juan County hasn't really followed the plan, with roads implemented contrary to the agreement.
- UDOT – key standards to consider include:
  - No driveways closer than 1,000 ft. apart
  - Minimum one-mile between controlled intersections (acceleration/deceleration lanes for now)
  - If traffic increases, the distance between intersections can increase as part of decreasing speed, like Moab situation. However, the fact that there will be limited development on the west side of the highway indicates that the highway will be different here than when it passes through the middle of the city in Moab.
  - Lighting – all intersections require lights, according to standards. Improvements to address preservation of night skies would be a betterment.

### Parks, Open Space, Trails & Recreation

- Work with BLM on anything regarding Kens Lake; had a recreation plan at one time.
- Kens Lake – likes to see the growth; need to improve access and traffic so the impact to neighborhood/area isn't as great
- Parks – Places of respite in the summer; can the county keep them up/afford it? (need to ask)
- Kens Lake – BLM is looking at planning for bigger recreation facilities
  - Some years Ken's Lake is dry; can it be a sustainable draw?
  - Most of the recreation happens outside of the valley; probably won't be a huge draw within
- Drainages and water ways should be maintained as trail systems and used to delineate neighborhoods and land use areas.
- Community gathering locations are important but should have a rural focus that builds upon the opportunities found here. Kens Lake, parks and greenways should be the place where people come together.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## 1.0 INTRODUCTION & BACKGROUND

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### Environmental

- Flood plains are a concern; County needs stricter regulations (people are building where they shouldn't)
- Retention ponds are really important particularly as you develop new roads/put new pavement in
- Kers Lake – development around should be carefully considered (has leaked in past)
- Floodwaters – a big concern
- Has FEMA been involved? People have lost properties in Grand County because in flood plain. We should plan around the flood plains
- Preservation of night skies is a critical concept. Moab has lost the ability to see stars and is unlikely to be able to regain it even if they can reverse existing light spillover.
- Flood waters flow down west cliffs during heavy rains, which impact the west side of the highway and Pack Creek. Need check dams, avoid development on the west side of the highway.
- Need to take a careful look at storm water, the role of drainages and ravines, etc. as development plans are made.
- Preservation of night sky is a critical issue and concern.

### Housing

- Affordable housing – where should it go?
- School districts will have to be thought about; currently the area is being served by Grand County
- Look at financing and having enough to provide services (schools)
- Affordable housing – keeping this area residential and then have a good transportation system to Moab (plenty of jobs there now – but are seasonal and part-time)
- Employee housing is a huge issue. Some accommodations are being made by employees now, but more is needed
- Affordable housing – should be looked at carefully; regulation is important for balancing
- Affordable housing should be part of each development; not pushed just into one area
- Low-income and affordable housing is a critical issue that will be a big part of the future. Many believe that residents are hung up on maintaining and increasing their property value rather than maintaining the area as a good place to live.

### Government Services and Regulatory

- Jones and DeMille plans are assumed – easements need to be acquired, etc.
- School districts will have to be thought about; currently the area is being served by Grand County
- Look at financing and having enough to provide services (schools)
- Could have a big problem with grandfathering – where smaller lots have already been approved
- Fire District – need to consider so insurance rates don't go up (insurance rates go up if population increases in a service area)
- Business sneaks in (e.g. RV/tiny houses) on a former residential lot; unsafe conditions and unregulated
- Schools – are we planning for them? (Reach out to school district to establish needs)
- Look at guidelines for development to preserve what we like – e.g. night sky
- The area has no continuity or real structure, no standards. Would like to have more, but not too much like in Moab. Striking a balance between free choice and too much control is a primary issue.
- Moab has a real problem with Airbnb uses proliferating, and this is emerging to be an issue in the Spanish Valley as well. Should look at what Moab is doing and apply similar solutions when codes are developed.
- Both appreciate the flexibility San Juan County provides for development, although they are worried about increasing traffic, the proliferation of overnight-rentals and similar uses and the impact of development on the quiet life/dark skies.
- They are concerned that services are nearly non-existent (they won't even grade the roads), even though they pay taxes

San Juan County Spanish Valley Area Plan

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## 1.0

### INTRODUCTION & BACKGROUND

- in San Juan County. Since the Spanish Valley is far from Monticello, they believe that the county doesn't care what goes on here; the Spanish Valley is low on the list of priority for the county.
- San Juan County and Grand County do not get along, and don't want anything to do with the other. They are surprised that San Juan County is backing this planning effort, particularly since they are so disengaged, don't maintain the roads and don't have any ordinances that work at present.
  - They believe that San Juan County doesn't care about the Spanish Valley, and that the area is on the bottom of the list when it comes to maintenance, etc. They are out of sight/out of mind. Can't believe things will change and get better in the future.
  - Despite access to water and sewer, don't see things improving in the future. They feel stuck with the poor conditions that exist.
  - Pessimistic that San Juan County has any interest doing something so far from Monticello.
  - Motel tax has been used to promote tourism up to this point. However, there are some who think that since tourism is thriving, the tax should be used for improving police and other services, which are stretched thin by the tourists. This is a contentious issue.
  - Despite all of the issues, bringing water and sewer to the area is a good idea.
  - San Juan County doesn't care about the Spanish Valley – out of sight, out of mind.
  - The use of CC&R's and other development control tools would help.
  - The Spanish Valley is the stepchild of San Juan County. Roads here are the last to get maintained and fixed.
  - Building inspection used to be easy but has gotten more difficult since the county hired the same inspector used by Grand County.
  - One-acre lots are too large for most people to handle. Some residents are worried that the water will be fluoridated and/or chlorinated.
  - Concerned about the water source and quality. Will it be adequately tested and controlled?

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

2.0

## EXISTING CONDITIONS & ANALYSIS

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San Juan County Spanish Valley Area Plan

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## INTRODUCTION

Needs and desires in the Spanish Valley are more complex today than they were in the past. This is reflected by demands for affordable housing options, improved planning, better use of water and land resources, more amenities and services, and a better quality of life. When the Spanish Valley Area Plan is eventually adopted and implemented, residents and stakeholders expect new development that is well coordinated, and growth that is responsive to the setting, environment and history of the valley and San Juan County.

As presented in the following pages, a clear understanding of existing conditions and opportunities is essential for determining the best way to accommodate future development and to direct growth in the valley.

## PHYSICAL ENVIRONMENT CONDITIONS

### Geology and Landform

The Spanish Valley is a northwest-southeast trending valley that merges with the Colorado River south of Moab. The main geologic features in the area are the Glen Canyon Group sandstones and the La Sal Mountains. The Glen Canyon Group form the steep walls on both sides of the Spanish Valley, as well as the domes and dendritic canyons for which the area is famous.

### Precipitation and Groundwater Recharge

Average annual precipitation in the Spanish Valley area averages 15 inches annually. Most of the precipitation is lost to evapotranspiration, with only 0.25 inches infiltrating down and recharging the groundwater. Summer precipitation is usually in the form of thunderstorms, which are localized, intense, and short-lived. Winter precipitation is less localized, less intense, and of longer duration. The gradual melting of winter snow allows more time for precipitation to infiltrate and recharge the groundwater, especially during spring melting of the winter snowpack at higher altitudes.

The main source of groundwater recharge in the Spanish Valley occurs in the La Sal Mountains to the east. The slopes of the mountains are covered in areas by talus, which readily absorbs snowmelt runoff and precipitation. Several springs discharge from the sides of Spanish Valley, especially from the eastern side.

### Surface Water, Drainage and Stormwater Management

The following is a summary assessment for the management of surface water, drainage and stormwater in the Study Area prepared by Hansen, Allen & Luce, Inc Engineers. See Appendix D for a copy of the full memo.

## 2.0

### EXISTING CONDITIONS & ANALYSIS



La Sal Mountains from Spanish Valley



Cliffs in Spanish Valley

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Storm water runoff is a difficult resource to manage. Streams can erode in one section while depositing in another. Stream courses can also change alignment and cross section dramatically with a single storm runoff event. Land development compounds the problem, creating a need for a drainage system capable of handling nuisance water, protecting development from damage, and protecting downstream waters from adverse quality and quantity impacts.

Pack Creek flows through the study area and conveys storm runoff to Mill Creek, which flows to the Colorado River. Pack Creek is a critical resource for the study area, providing a natural storm drainage outlet for Spanish Valley. Careful storm drainage planning is needed to assure that Pack Creek is not adversely impacted by development.

The major storm drainage system in newly developing residential areas or business districts should generally be designed for the 100-year event with the objective of preventing major damage and loss of life. This does not mean that storm drain pipe systems should be designed for the 100-year event. It means that the combination of storm sewers and channelized surface flow should be designed together to accommodate the flood event.

Construction activities that disturb more than an acre of land must be authorized under the Utah Pollutant Discharge Elimination System (UPDES). Owners and contractors are required to obtain a Storm Water Permit. Construction activities that disturb more than one acre are required to file a notice of intent and to prepare and follow a storm water pollution prevention plan for construction activities.

An approach that can be used for long term storm water management is **Low Impact Development (LID)**. LID techniques minimize the directly connected impervious area and infiltrate runoff from impervious areas near the source of the runoff, emphasizing conservation and use of on-site natural features and constructed swales to protect water quality. LID practices are especially helpful in areas of high soils permeability and low slopes.



Urban LID Example



LID Drainage Corridor



Standard Solution - Storm Drain

## 2.0

### EXISTING CONDITIONS & ANALYSIS

Inherent in development is the increase of impervious area as roads, driveways, sidewalks, parking lots, and homes are constructed. Storm runoff from impervious areas can exceed ten times the runoff from natural areas. LID practices can help mitigate the effects of increased impervious areas by providing opportunities for infiltration near the source of the runoff. For example, in areas of suitable soils the runoff from sidewalks and homes can be infiltrated prior to running off into the storm drain collection system. Stormwater detention basins are an effective means of reducing downstream runoff peak flow effects. Detention basins should be designed to reduce peak storm runoff flows to at or below historic runoff peaks.

#### Open and Sensitive Lands

The Spanish Valley is surrounded by large areas of open land that contribute to the broad views and unique vistas found here. As indicated through the public process, open space and natural areas are highly valued, and should be protected and preserved to the greatest degree possible. Such areas are also important as wildlife habitat and as places to engage in outdoor activities and recreation.



# San Juan County Pre-Disaster Hazard Mitigation Plan

## 2018

### 2.0 EXISTING CONDITIONS & ANALYSIS

Ken's Lake is managed by the Bureau of Land Management (BLM), a Federal land management agency. The area includes a campground with more than three miles of hiking trails. Fishing in the reservoir is popular, although boating is limited to non-motorized craft. Short family-friendly hikes provide views of the Moab Valley, Faux Falls and Ken's Lake. Beyond the Study Area much of land is managed by the BLM.

#### Land Use and Ownership

The Study Area encompasses more than 6,000-acres of land, of which nearly 750-acres are privately owned. Approximately 550-acres of land controlled by the BLM surrounds Ken's Lake, providing a direct link to extensive BLM holdings to the east. The remaining acreage is owned and managed by the State Institutional Trust Lands Administration (SITLA).

SITLA is a state agency that manages Utah's 3.4 million acres of trust lands. Unlike public lands held in public domain, trust lands are parcels of land held in trust to support twelve state institutions, primarily the K-12 public education system. SITLA is constitutionally mandated to generate revenue from trust lands to build and grow permanent endowments for these institutions. The trust lands were designated by Congress in 1894.

Approximately 40% of the privately-owned area in the northern reaches of the Study Area is currently developed with homes and businesses; the latter concentrated along the eastern edge of US-191. Existing residential development is dominated by large lot, single-family residences. **Sky Ranch** is a private airfield located in a large lot residential subdivision in the eastern extents of the privately-owned district. The facility has generated significant public concern in recent months, primarily over concerns related to safety and noise.

**Ken's Lake** is an artificial reservoir located primarily on BLM land on the east edge of the Study Area. The area includes campgrounds and a trail system that are managed for public use by the BLM. The remaining lands are owned and managed by SITLA and are primarily undeveloped and vacant. A gravel extraction operation west of Ken's Lake is the primary active use in this portion of the Study Area.

#### Zoning

The Study Area is currently controlled by two zones in the San Juan County Zoning Ordinance. The **Controlled District Highway (CD-h)** extends 1,000 feet along both sides of US-191 for the length of the roadway, permitting a range of commercial uses considered appropriate for a roadway setting. Examples include restaurants, motels, automobile sales and service and mobile home parks. The remainder of the Study Area is zoned **Agricultural (A-1)**, which is intended to promote and preserve conditions favorable to agriculture and maintenance of greenbelt open spaces. This zone also permits single-family residences, ranches and cabins. Two-family residences are permitted as a conditional use, and additional single-family units may be approved on a case-by-case basis for the use of employees and family members. The lack of a culinary water and sewer system and the reliance on private wells and septic systems has resulted in the application of a one-acre minimum lot size for primary residential uses.

Once this General Plan has been adopted, new development guidelines and ordinances will be developed to ensure the Area plan is implemented as envisioned.



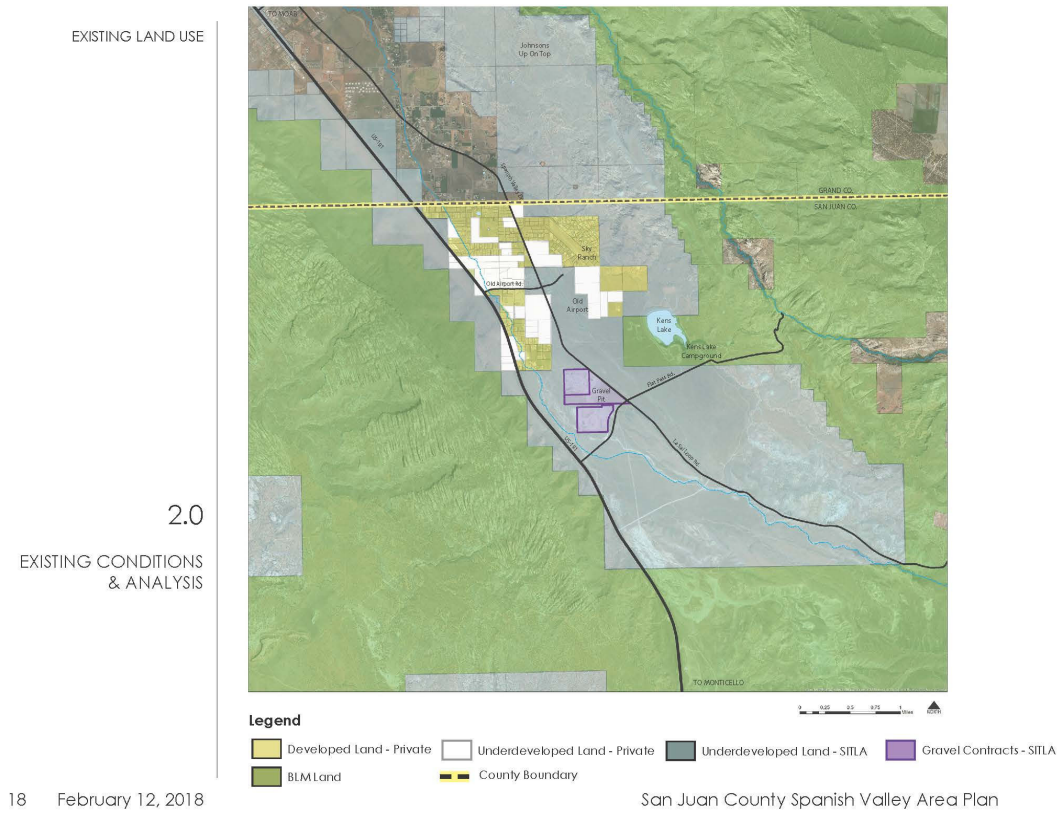
Hikers at Faux Falls



Gravel Pit



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

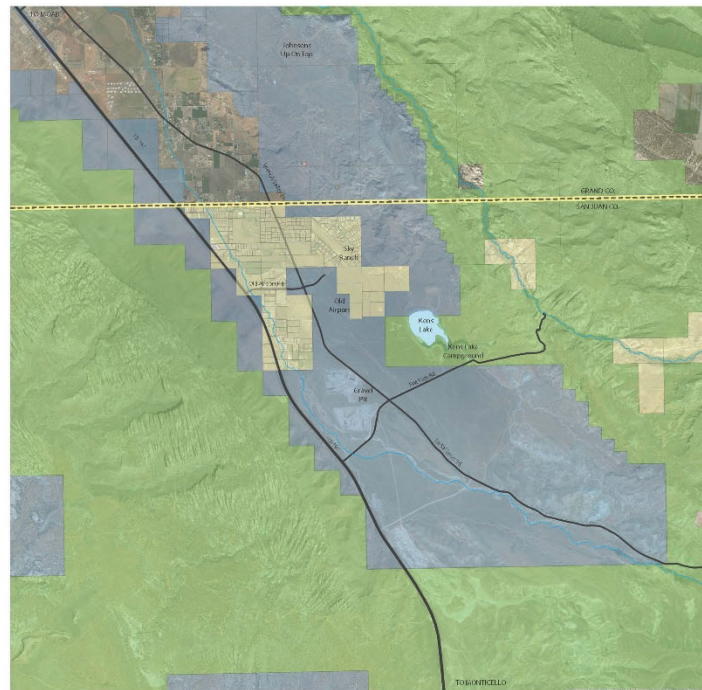


# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

EXISTING LAND OWNERSHIP

2.0

EXISTING CONDITIONS  
& ANALYSIS



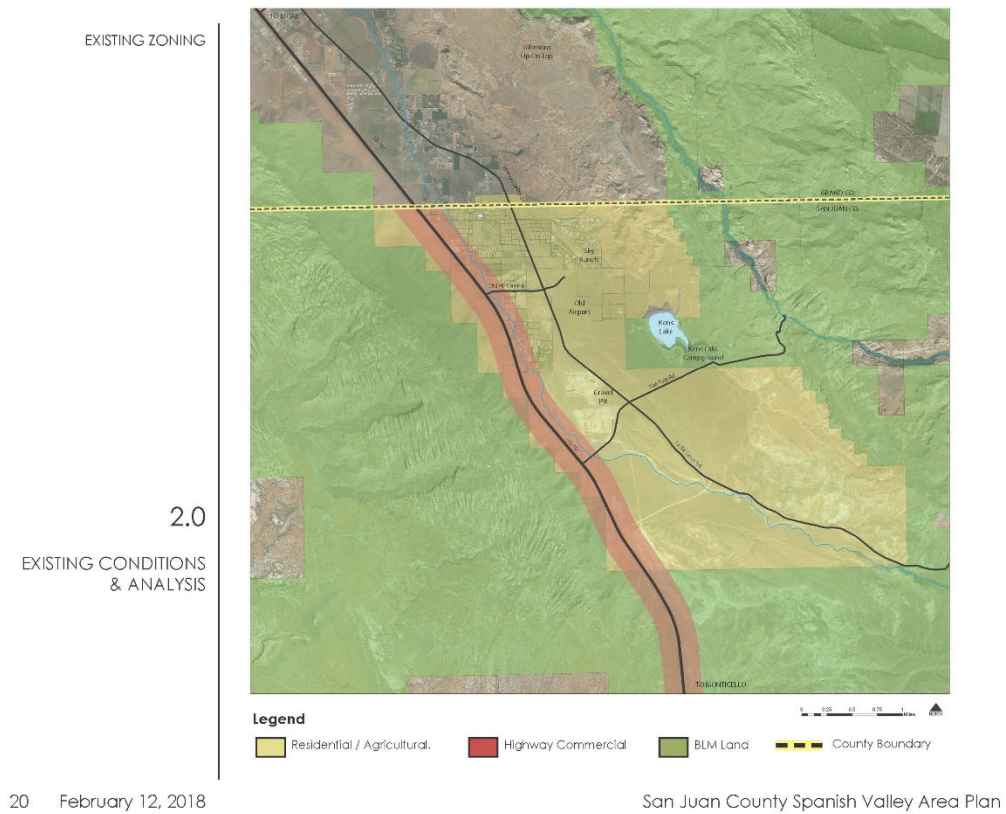
Legend

Private Land in San Juan Co. BLM Land SITLA Land County Boundary

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San Juan County Spanish Valley Area Plan

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## 2.0 EXISTING CONDITIONS & ANALYSIS

### Water and Sewer Infrastructure

Development in the Spanish Valley has been traditionally limited to the use of individual water wells and septic systems. The lack of culinary water and sewer systems has many practical and environmental shortcomings. They lack the ability to provide sufficient fire protection, they are expensive, and they limit growth, resulting in inefficient and sprawling development patterns.

To address increasing development pressure and demands, San Juan County contracted Jones & DeMille Engineering to prepare two key studies to address long-term water and sewer needs:

- Spanish Valley Water and Sewer Master Plan (2017)<sup>1</sup>
- San Juan Spanish Valley SSD 40-year Water Right Plan – Water Right: 09-2349 (2017)<sup>2</sup>

To summarize, the *Water and Sewer Master Plan* evaluated the condition of existing private wells and septic systems, future growth, and culinary water/sewer system alternatives. Growth projections were calculated for the private land areas, indicating that 229 **Equivalent Residential Connections** (ERCs) are required to meet the needs of existing households. The total number of ERCs required to meet needs in 2035 was estimated at approximately 1,400. The municipal water system will initially use one or two wells to supply water to the area. As Spanish Valley grows and expands, new wells or springs will need to be developed to supply water to new growth in the valley.

The *Water Rights Plan* projected beneficial water use of water right 09-2349 over a 40-year period (2017-2057), determining how much water the San Juan Spanish Valley SSD will have to manage and how much water will be required by developers before granting project approval. Currently, the SSD owns water right 09-2349, which allow the district to divert 5,000-acre feet per year or an average daily use of approximately 4.47 million gallons. It is projected that residential water use will take about half of the total amount of water used initially. By the end of the 40-year period, Spanish Valley will use the entirety of their current water right and have a deficit, which will require the SSD to procure additional water rights or shares to meet additional water needs.

### Roads and Transportation

Primary access to San Juan County portion of the Spanish valley is provided by **US-191**, a two-lane, north-south state highway that traces the western edges of the Study Area. According to discussions with UDOT, it will be a long time before the highway is converted into a four-lane route from the San Juan - Grand County line southward, particularly since the current focus is on completing four-lanes from the county line north into Moab. A corridor agreement was approved in 2015 by San Juan County, Grand County and Moab, which addresses how to improve existing access to private properties through the inclusion of frontage road system (see Appendix G). The agreement was completed prior to the current water/sewer agreement and corresponding growth implications.

Key UDOT standards to consider when planning the area follow:

- No driveways closer than 1,000 feet apart;



Highway Intersection

<sup>1</sup> See Appendix E for detailed report.  
<sup>2</sup> See Appendix F for detailed report.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## 2.0 EXISTING CONDITIONS & ANALYSIS

- One-mile minimum distance between controlled intersections?
- If traffic increases, the distance between intersections can increase as part of decreasing speed, similar to Moab.

Spanish Valley Road/LaSal Loop Road is a county highway that bifurcates the Study Area from north to south. The two-lane highway is part of the **La Sal Mountain Loop Road Scenic Backway**, which begins on US 191, six miles south of Moab, and winds north over the La Sal Mountains through Castle Valley, ending at Upper Colorado River Scenic Byway U-128 and Moab to the west. The roadway is a popular drive and bikeway, providing spectacular scenery ranging from the forested heights of the La Sal Mountains to expansive views of the red rock landscape below. It is also an important roadway for the Study Area, providing a direct link with Moab to the north.



La Sal Loop Road

Other existing roads include Flat Pass Road, a County roadway that provides a link from US-191 and LaSal Loop Road to Kers Lake and other attractions in the vicinity and Old Airport Road.

A series of paved, unpaved and graded roads serve as the local road system servicing the various residential and commercial properties in the northern extents of the study area.

### Commercial Market Potential

A primary objective of this plan is to determine the appropriate amount of commercial law in the Spanish Valley area necessary to support local and regional needs, as well as to generate jobs and provide a level of economic independence. According to an analysis by Lewis, Young, Robertson & Buntingham (LYRB) in October 2017<sup>3</sup>, Spanish Valley's remote location, limited interstate access and rural population will make it challenging to attract larger distribution and business centers. Lower population levels and continued sales leakage will result in less commercial acreage within the community. However, if the County allows for greater densities, resulting in an increase in buying power and capture rates, the area could see higher levels of commercial development.

Methods to promote commercial development in the area include:

- Allowing for more residential development and population growth;
- Providing development incentives;
- Promoting niche markets that will capture sales from surrounding communities; and
- Promoting other types of commercial development (industrial, tech, office, etc.).

<sup>3</sup> There are four existing or distant fee roadways that provide access between US-191 and the Spanish Valley at present, including Old Airport Road and Flat Pass Road. These roads are spaced approximately one mile apart, which is the minimum distances according to UDOT standards.  
<sup>4</sup> See Appendix B for a copy of the complete report.



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## LAND SUITABILITY ANALYSIS

The Study Area is large, encompassing a range of natural and man-made conditions that impact the utility for development and growth. As illustrated in the accompanying diagrams, an overlay process was used to highlight areas with the greatest suitability for development. The overlays addressed several conditions:

- **Developed Land** – removed due to limited development opportunities;
- **Transportation and Electrical Corridors** – eliminated because existing functions are assumed to be maintained;
- **Federal and State Lands** – removed due to protected land status;
- **Critical and Sensitive Lands** (water bodies, streams, shorelands, wetlands, floodplains, and steep slopes unsuitable for development were removed)

This process resulted in a composite map that highlights the land most suitable for development, which served as the basis for land use concepts that were eventually explored (see Chapter 3).

## 2.0

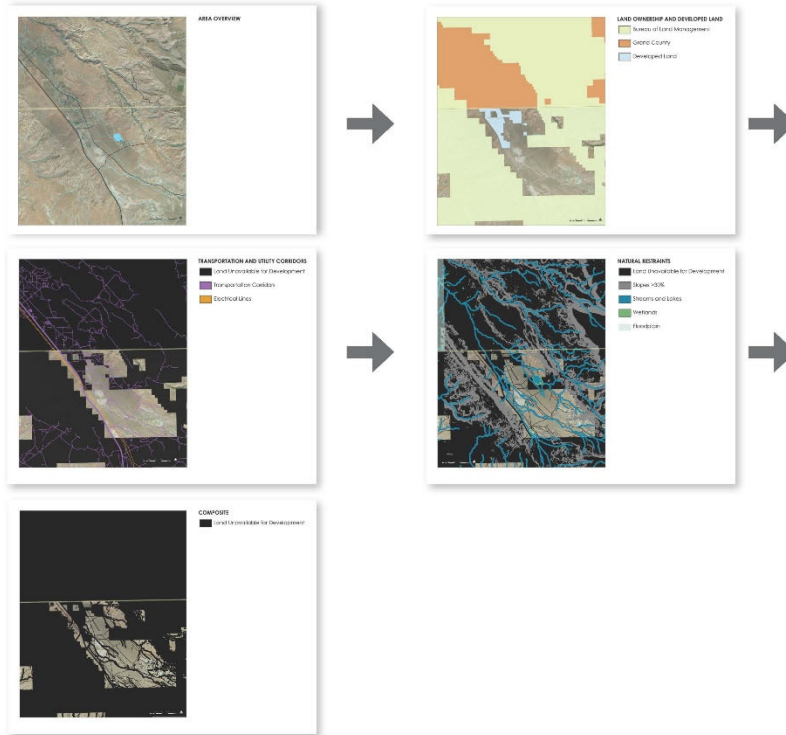
### EXISTING CONDITIONS & ANALYSIS

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

OVERLAY PROCESS

2.0

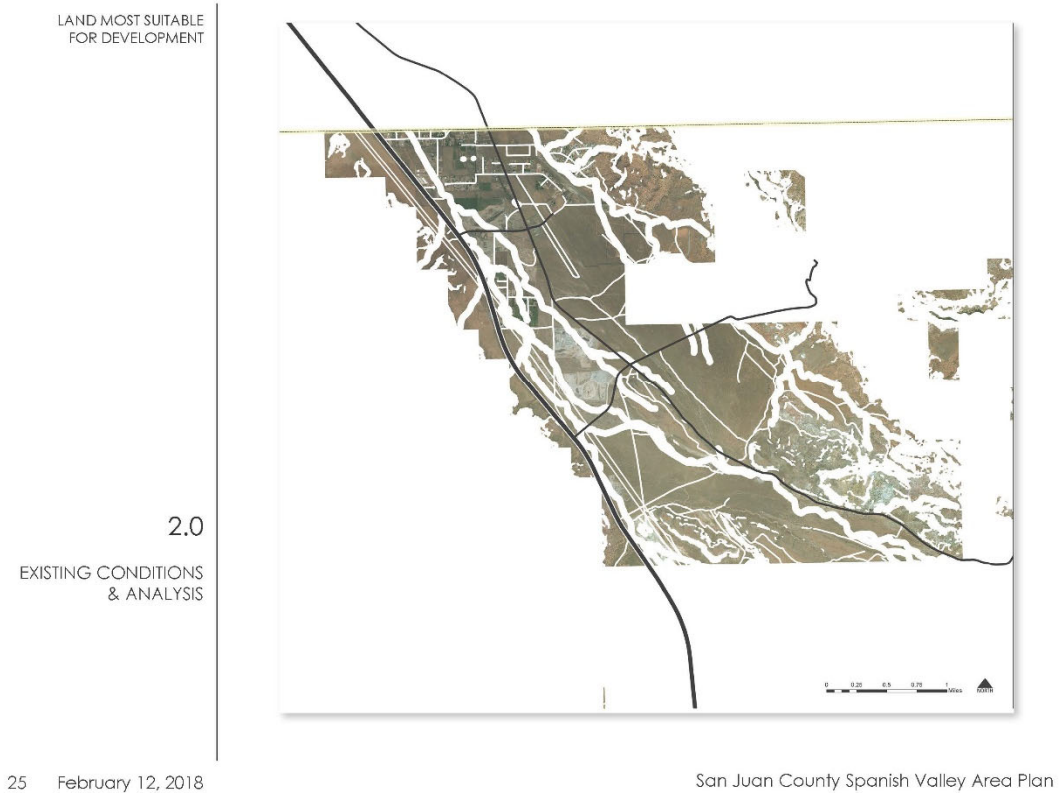
EXISTING CONDITIONS  
& ANALYSIS



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San Juan County Spanish Valley Area Plan

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018





# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

3.0

SPANISH VALLEY  
AREA PLAN

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# San Juan County Pre-Disaster Hazard Mitigation Plan

## 2018

### INTRODUCTION

The Spanish Valley has developed slowly. Key factors contributing to this place include the valley's distant location from Moab, and the lack of water, sewer and other services. The area is known as a place to get away from urban life, where control and interference is limited. It is a place where you can still watch the stars at night, with open valley views are delineated by steep cliffs and bluffs at the edges. The area has been developed with a hands-off approach and a focus on meeting individual needs. The result is a place with a general lack of planning foresight, and no clear community vision.

*But things are changing*

Development pressure is high and there are few locations in Moab or Grand County to accommodate growth. Instead of being an affordable place to get away from Moab, the study area is emerging as a community to itself, with a unique character, charm and allure. This is supported by desires for better housing, better planning, better use of water and land, more amenities and services, and a better quality of life. The public expects a more sustainable planning and development approach. They envision a community that is better served by San Juan County, yet which maintains strong ties to the commercial hubs of Moab and Grand County. They envision a place that is responsive to the setting, environment and history of the valley, where evenings under the stars are not lost in the haste to develop.

In order to adequately address these complex demands, growth and development needs to be better organized and implemented.

As presented in the following pages, a new land use vision has been identified for the Spanish Valley. It is based on a process of listening, consideration of past directions and future needs, the establishment of guiding planning principles, and careful consideration of core issues and ideas. The land use vision begins by improving the development pattern in the private property areas in the northern reaches of the Study Area, continuing south in a contiguous manner that promotes the formation of a unified community.

### LAND USE PLAN

As illustrated in the accompanying Land Use Plan and described below, the Study Area is organized into five types of Growth and Development Areas. The layout of the zones is rational and coordinated, reflecting the unique conditions and opportunities of the site and the needs of a well-planned community.

## 3.0

### SPANISH VALLEY AREA PLAN

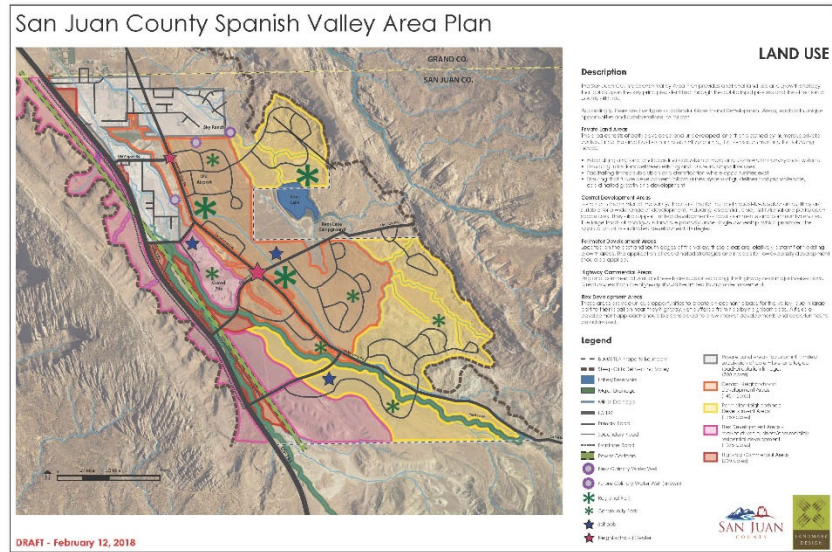
#### Spanish Valley Area Plan Guiding Principles

- 1 Preserve Spanish Valley's night sky and quiet rural-setting through the use of zoning ordinances.
- 2 Keep housing in Spanish Valley diverse (a mixture of types and densities) and affordable.
- 3 Create a non-tourism centered community that is distinctly different than Moab, yet still maintains its current close ties.
- 4 Encourage and support business development and job generation through the location of well-situated business development zones adjacent to the highway.
- 5 Create a strong community feel by carefully integrating community and civic places throughout the area.
- 6 Carefully consider the natural environment—particularly floodplains and waterways—when planning the Spanish Valley area.
- 7 Revise existing zoning ordinances to require well organized development and compatible land uses. Incorporate appropriate land use buffers where required.
- 8 Revise existing zoning ordinances to encourage compatible uses being located together and/or the incorporation of appropriate buffers.
- 9 Locate a small commercial center—comprised of small, local businesses—in a central location and bigger, more regional-type commercial uses near Highway 191.
- 10 Develop a well-connected transportation system with safe access from Highway 191 and which incorporates multiple modes of transit (shuttle/bus, bicycle, walking, etc.).

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

LAND USE PLAN

## 3.0 SPANISH VALLEY AREA PLAN



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San Juan County Spanish Valley Area Plan

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## 3.0 SPANISH VALLEY AREA PLAN

### **Private Land Areas (700 Acres)**

These areas encompass both developed and undeveloped land, nearly all of which is privately owned. There has been little planning direction in this area in the past, resulting in an inefficient and helter-skelter pattern of development.

Efforts should focus on improving the layout of the existing neighborhoods, linking them with a coordinated road and infrastructure system that facilitates infill development. Key steps for meeting this vision include:

- Connecting a municipal water and sewer system to all existing and future homes and uses in the area;
- Implementing a system of roads and storm water drainage system standards that is unified and efficient;
- Providing transitions and buffers between incompatible land uses;
- Facilitating limited subdivision and densification where opportunities exist and which are consistent with established patterns and directions of growth; and
- Ensuring that guidelines and ordinances are adjusted so the area is safe, coordinated and interconnected.



Examples of existing residences - private land areas

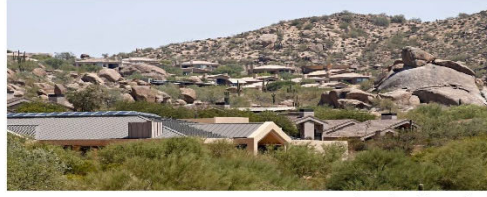
### **Central Development Areas (1,450 Acres)**

Located in the center of the valley, these are the flattest, least sensitive and easiest-to-develop sites in the Study Area. They are suitable for a wide range of residential development, in addition to civic, educational, institutional and park/open space uses. These are the preferred areas for locating mixed-use neighborhood centers, where local commercial and civic services will be provided. The large tracts of contiguous land are primarily under single ownership, which promotes the use of coordinated development strategies to encourage creative design and development.

### **Perimeter Development Areas (1,750 Acres)**

Located on the east and south edges of the valley, these areas are relatively isolated, located in the foothills and topographically challenged edge of the valley. They are proposed primarily for long-term development, assuming adequate water and sewer resources are found to serve them. These areas should be designed in an efficient, affordable and coordinated manner, focusing on lower-density residential uses, recreational resorts and similar uses.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018



Examples of lower density development suitable for topographically-challenged sites

## **Flex Development Areas (1,075 Acres)**

These areas provide opportunities to establish an economic base for the valley. Located in close proximity to US-191, they are well-located to capitalize on highway traffic and highway access opportunities. These areas should be buffered from nearby residential neighborhood, incorporating a flexible development approach that allows a range of business, distribution, highway commercial and specially residential uses in response to market opportunities and conditions.

## **Highway Commercial Areas (200 Acres)**

These areas take advantage of the location along US-191, providing sites for a range of highway-based commercial uses to meet community and regional needs. The earmarked acreage is considered sufficient for meeting long-term needs.

## **KEY USES**

The following is a list of key uses envisioned for the area.

### **Residential**

A full range of residential uses and types is envisioned for the area. The Central Development Area should be designed with the greatest diversity of residential uses, while the Perimeter Development Areas should focus on large lot and destination residential uses.

Densities may be higher in the Central Development Areas (4-5 units per acre on average), while the Perimeter Development Areas will focus more on single-family, large lot, specially residential and ranch-type uses that are more appropriate for the challenging terrain (1-2 units per acre on average). The projected number of residential equivalents (housing units), population, and development assumptions are summarized in the table at the end of this chapter.



The range of housing types should be broad to meet existing and future needs

## 3.0

### SPANISH VALLEY AREA PLAN

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

Examples of appropriate residential types include the following:

- Single Family and two-family homes;
- Mother-in-law units and accessory residential units on larger lots;
- Multi-family limited by height (3 – 4 stories max) and density (15 units/acre);
- Townhomes and row houses (3 stories maximum);
- Ranchettes and large lot estates (20-acre minimum), carefully sited on topographically-challenged and sensitive sites;
- Residential resorts, sited in topographically-challenged sites.

Additional residential uses and types should be considered, depending on specific needs and opportunities that arise.

## **Community/Neighborhood Centers**

Two neighborhood centers are proposed to meet the commercial, institutional, civic, and cultural/recreational needs of the community. The centers will also function as key community destinations, and will be places to meet and engage in local events and activities. Typical uses include:

- |  |                                     |
|--|-------------------------------------|
| • Local stores and corner shops                          | • Civic/government offices          |
| • Local mail box/post office                             | • Library/media center              |
| • Cafe, ice cream store, coffee shop, sports shops, etc. | • Day Care                          |
| • Restaurants  | • Farmer's markets and local events |
| • Social hall/ community meeting space                   | • Trail connections                 |

## 3.0

### SPANISH VALLEY AREA PLAN

Major goods and services will be provided at commercial areas slated for development along US-191, in or outside of the Moab region.



Centers should be places to gather, meet and conduct daily business



# San Juan County Pre-Disaster Hazard Mitigation Plan

## 2018

### 3.0 SPANISH VALLEY AREA PLAN

#### Parks, Recreation, Open Space and Trails

An interconnected open space system is supported, linking the various neighborhoods with trails, parks, schools and recreation sites. The community should cooperate with the school district and adjacent communities to ensure duplication of park services and amenities is avoided.

A full-range of parks should be provided to meet the long-term needs of the community. Minimum level of service and distribution standards for parks should be codified in the development guidelines and ordinances:

- **Regional Parks** (15+ acres) provides amenities that serve the region, including restrooms, fields, open play areas, play grounds and specialty draws such as sports park, rodeo grounds and similar facilities. They should be coordinated with nearby school fields and school recreation facilities to avoid duplication of services and amenities.
- **Community Parks** (10+ acres) Includes open play and sports fields as basic features to meet the needs of the community.
- **Neighborhood Parks** (2 to 5 acres) are focused on open play areas, playgrounds and similar amenities that meet the needs of the surrounding neighborhood. Typical amenities include a restroom, pavilions, playgrounds, sports fields and un-programmed space.
- **Local Parks** (1 to 2 acres) meet the need of adjacent and nearby residents. Typical amenities include a small shelter, a playground and a local play feature.



*A full range of developed parks, natural open spaces and trails should be provided*

- **Natural Open Spaces, Drainage Corridors and Off-street Trail Corridors**

#### Other Key Uses and Features of the Area Plan

- The major road system consists of **four east/west roads** linking development areas to US-191 and Spanish Valley Drive/La Sal Loop Road. A full range of collector and local roads should also be included, laid out in response to the natural topography and the valley landscape.
- Designation of a **smaller Neighborhood Center** at the Old Airport Road/Spanish Valley Drive intersection, and a **larger Neighborhood Center** near the intersection of Hal Pass road and LaSal Loop Road. Both centers should include a full-range of community commercial, civic, institutional and cultural uses and services.
- Establishment of an **interconnected system of trails**, including off-street facilities located in the open space corridors, and on-street bike lanes located along the edges of the road system. Together, these provide active transportation connections between the neighborhoods, local destinations and regional sites. Spanish Valley Drive/LaSal Loop Road should be developed as the north-south "spine" of the on-street system.

# San Juan County Pre-Disaster Hazard Mitigation Plan

## 2018

- **Conversion of existing gravel pits** along Flat Pass Road into a recreational neighborhood or business development zone. Regardless of the final use, the area should be well-buffered from surrounding residential uses. The site is near Ken's Lake and Pack Creek Corridor, promoting a design that is focused on the establishment of a unique recreational district.
- Regional **commercial, business development and specialty residential** density residential uses are distributed along Highway 191 as part of a flexible, mixed use development model. Access should be provided primarily from east/west road and highway frontage roads.
- The various Development Districts should encompass a **wide range of residential uses and types** to meet the full range of socio-economic and life-cycle needs of the study area. Densities should be higher in Central Development Areas, with lower-density/larger lot development focused in the outlying Perimeter Development Areas.
- Three **school sites** have been conceptually located to meet the anticipated needs for elementary, middle and high schools. Specific sites should be identified with the participation of school district officials prior to development to ensure needs are met.
- Major and minor **streams and washes** should be incorporated into the community structure as part of a Low-Impact Development (LID) approach where appropriate. These systems should be coordinated with the regional park, open space and trails system.
- Existing and proposed wells to service the new culinary water system are illustrated in the land use map. **Well-protection zones** should be demarcated and codified to ensure critical water sources are protected from development and other impacts. Appendix I contains a copy of the San Juan County Well Protection Ordinance that will apply in this area. Appendix J illustrates the location of known wells and the concentric protection zones for each. To summarize, no development is permitted in Zone 1; Zone 2 and 3 do not allow septic or underground fuel storage tanks, but otherwise permit development; Zone 4 permits most types of development.
- **Sky Ranch** is a private airfield located in the northern reaches of the Study Area. Since San Juan County does not have specific ordinances in place to ensure the operation of such facilities are safe and the impacts on surrounding uses is understood, Federal Aviation Administration (FAA) rules should apply (see Appendices K and L for additional information).

### PHASING

#### 3.0

#### SPANISH VALLEY AREA PLAN

Residential development should be implemented sequentially from north to south as part of a rational extension of municipal water and sewer services (Phases 1-6).

Extension of water and sewer services should be more flexible in Highway Commercial and Flex Development Areas (Phases A-C) in order to support business, commercial development, job generation and specialty residential development.

##### **Phase 1 - 700 Acres**

**Existing and undeveloped private land area.** Residential infill and densification is supported, assuming minimum lot sizes, setback and similar site development guidelines are established.

##### **Phase 2 - 950 Acres**

**Primarily residential neighborhood.** The bulk of land in single ownership (SITLA) supports a coordinated design and development approach, with higher density in the Central Neighborhood Development zone. Includes a small neighborhood center, two regional parks and a community park as primary amenities/destinations.



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## 3.0

### SPANISH VALLEY AREA PLAN

#### **Phase 3 - 525 Acres**

Central Neighborhood Development area under single ownership (SITLA) supports implementation of **coordinated design and development principles**. Includes part of a small Neighborhood Center, a regional park, a community park and schools as primary amenities/destinations.

#### **Phase 4 - 675 Acres**

Primarily a **residential neighborhood with some highway commercial** along highway. Single ownership (SITLA) supports coordinated design and development, with higher density in the Central Neighborhood Development zone. Includes part of a neighborhood center, a community park and Pack Creek as primary amenities/draws. Vehicular access to highway commercial be provided primarily by service roads running parallel to the highway and from adjacent east/west primary roads.

#### **Phase 5 - 775 Acres**

Primarily a **residential neighborhood**. Single ownership (SITLA) supports coordinated design and development as part of lower-density, Perimeter Neighborhood Development principles. Includes a community park as the primary amenity/draw.

#### **Phase 6 - 400 Acres**

Primarily **residential neighborhood**. Single ownership (SITLA) supports coordinated design and development, with lower-density in the Perimeter Neighborhood Development zone. Includes schools, a community park and Pack Creek as the primary amenities/draws.

#### **Flex Phase A - 600 Acres**

**Business, commercial and residential development** to be considered, depending on market interest and demand. Vehicular access to be provided by service roads running parallel to the highway. Detailed master plan to be submitted and approved before development and extension of water/sewer services.

#### **Flex Phase B - 150 Acres**

**Business, commercial, residential and recreation development** to be considered for existing gravel pit site, depending on market interest and demand. Detailed master plan to be submitted and approved before development and extension of water/sewer services.

#### **Flex Phase C - 400 Acres**

**Business, commercial and specialty residential development** to be considered, depending on market interest and demand. Vehicular access to be provided by service roads running parallel to the highway and along east/west Primary Road. Detailed master plan to be submitted and approved before development and extension of water/sewer services.



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

SUMMARY OF LAND USE PHASING ASSUMPTIONS

PHASE	ACRES	DEVELOPED ACRES	UNDEVELOPED ACRES	DEVELOPMENT ASSUMPTIONS	IMPLEMENTATION TIMING	RESIDENTIAL EQUIVALENTS	PROJECTED POPULATION (2.5 AVG HOUSEHOLD SIZE)	WATER SUPPLY
1	700	420	280	Approximately 60% of area is currently developed, of which it is assumed 50% will be subdivided and developed or an additional residential unit will be developed on larger sites. Assumes 30% of land area dedicated to roads, infrastructure, utilities, and civic/commercial uses. Net average density = 2 units/acre.	SHORT-TERM 0 TO 10 YEARS	280*0.7*2 + 200*.5 = 392+100 = 490	492 * 2.5 = 1,230	EXISTING 5,000 ACRE FEET
2	950	0	950	Assumes 30% of undeveloped sites dedicated to roads, infrastructure, utilities and civic uses. Net density = 3 units/acre.	SHORT-TERM 0 TO 10 YEARS	950*.7*3 = 1,995	1995 * 2.5 = 4,990	EXISTING 5,000 ACRE FEET AND ADDITIONAL RESOURCES YET TO BE CONFIRMED
3	525	0	525	Assumes 30% of undeveloped sites dedicated to roads, infrastructure, utilities and civic uses. Net density = 4 units/acre.	SHORT-TERM 0 TO 10 YEARS	525*.7*4 = 1,020	1,020 * 2.5 = 2,550	ADDITIONAL RESOURCES YET TO BE CONFIRMED
4	675	0	675	Assumes 20% of undeveloped sites dedicated to roads, infrastructure, utilities and civic uses. Net density = 3 units/acre.	MEDIUM-TERM 10 TO 20 YEARS	675*.7*3 = 1,420	1,420 * 2.5 = 3,550	ADDITIONAL RESOURCES YET TO BE CONFIRMED
5	775	0	775	Assumes 20% of undeveloped sites dedicated to roads, infrastructure, utilities and civic uses. Net density = 1 unit per 5 acres.	LONG-TERM 20+ YEARS	775*.7/5 = 110	464 * 2.5 = 275	ADDITIONAL RESOURCES YET TO BE CONFIRMED
6	400	0	400	Assumes 20% of undeveloped sites dedicated to roads, infrastructure, utilities and civic uses. Net density = 1 unit per 5 acres.	LONG-TERM 20+ YEARS	400*.7/5 = 60	60* 2.5 = 150	ADDITIONAL RESOURCES YET TO BE CONFIRMED
A	600	0	600	Assumes 50% of undeveloped sites dedicated to roads, infrastructure, sensitive lands, utilities, etc. Assumes 10% of total dedicated to residential uses at 10 units per acre	LONG-TERM 20+ YEARS	30*.5*10 = 150	150* 2.5 = 375	EXISTING 5,000 ACRE FEET AND ADDITIONAL RESOURCES YET TO BE CONFIRMED
B	150	0	150	Assumes 50% of undeveloped sites dedicated to roads, infrastructure, open space, utilities, etc. Assumes 10% of total dedicated to residential uses at 10 units per acre	SHORT-TO-LONG-TERM 0 TO 20+ YEARS	15*.5*10 = 75	75* 2.5 = 225	ADDITIONAL RESOURCES YET TO BE CONFIRMED
C	400	0	400	Assumes 30% of undeveloped sites dedicated to roads, infrastructure, utilities, etc. Assumes 25% of total dedicated to residential uses at 3 units per acre	LONG-TERM 20+ YEARS	100*.7*3 = 210	150* 2.5 = 525	ADDITIONAL RESOURCES YET TO BE CONFIRMED
	4,775	420	4,355	N/A	N/A	5,530	13,870	N/A

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

4.0

GUIDELINES AND  
ORDINANCES

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San Juan County Spanish Valley Area Plan

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## INTRODUCTION

As indicated in Chapter 2, development control in the Spanish Valley is very limited. The Study Area is controlled by two zones in the San Juan County Zoning Ordinance. The **Controlled District Highway (CD-h)** zone permits uses considered appropriate for a highway setting. Typical uses include restaurants, motels, automobile sales and service and mobile home parks. The ordinance indicates that no commercial or industrial building can be erected within 25-feet of a residential building or residential district boundary. There are no coverage limitations and few other controls.

The remainder of the Study Area is zoned **Agricultural (A-1)**, which permits agricultural uses, single-family residences, ranches and cabins. Two-family residences are permitted as a conditional use, and additional single-family units on a single lot may be approved on a case-by-case basis for the use of employees and family members. The minimum lot size is one-acre and minimum lot width is 330'. Front and rear yards must be at least 25' and side yards at least 15'. Building height is limited to 2.5 stories or 25'.

Roads and utilities are poorly planned and implemented, often in violation of established regulations. The size of subdivisions is determined in large part by access to water and sewer systems. This has resulted in a proliferation of small subdivisions utilizing shared water wells and individual septic systems. There has been limited development control and building inspection in the past, resulting in inconsistent and unsafe development norms. However, the situation recently improved with the hiring of a part-time building inspector.

To address such shortcomings, new development guidelines and ordinances are necessary to facilitate the type of development envisioned. The guidelines and ordinances should:

- Meet the needs of the Spanish Valley, providing clear direction and flexibility when required;
- Address the specific needs and requirements of the various development districts; and
- Meet the capacities of San Juan County, which has limited resources and manpower.

Many models are feasible for these purposes, some better suited to the Spanish Valley. Examples to be considered include:

- Modifying existing guidelines and ordinances;
- Creating new zones and guidelines specifically crafted to meet the needs of the Spanish Valley; and
- Utilizing Development Agreements and similar tools to negotiate specific projects.

## KEY PRINCIPLES TO BE CONSIDERED WHEN DEVELOPING GUIDELINES AND ORDINANCES FOR THE SPANISH VALLEY

1. The needs of the partially-developed Private Development Areas will be significantly different than the undeveloped areas to the south. The application of separate guidelines and ordinances for both areas should be considered.
2. The use of simple, easy-to-understand and workable standards that address the poorly connected structure and unsafe conditions in the Private Development Areas should be addressed.
3. Guidelines and ordinances for the rest of the Study Area should encourage coordinated development of large tracts of land under single ownership. They should be easy to understand and promote good planning and creative design.
4. Rules should be established that clarify the extension of services from north to south for residential districts, with exceptions for business and commercial districts near Highway-191.

## 4.0

### GUIDELINES AND ORDINANCES

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## 2018

### 4.0

#### GUIDELINES AND ORDINANCES

5. Guidelines should establish that the Highway Commercial Areas and Flex-Development Areas are the primary locations of large-scale commercial development, that access should be provided by frontage roads or from east-west entry roads, that the list of possible uses should be broad, and that industrial uses should be prohibited.
6. Guidelines should be developed to improve the appearance of uses along the highway, particularly at major intersections, which will become the main gateways into Spanish Valley.
7. Access from US-191 should meet UDOT standards.
8. Buffers and land use transitions should be applied between incompatible land uses.
9. A functional roadway classification system should be developed for the area, including standard road sections and details. An example of a typical hierarchy follows:
  - State highway
  - Primary roads
  - Secondary roads
  - Local roads
  - Frontage roads
  - Alleys/trails (both on and off-road)
  - Bicycle lanes
10. Identification of a functional trail system for the area, including on-road and fully-separated/ off-road systems. The on-road system should be composed of Primary Routes (Spanish Valley Drive/LaSal Loop Road) and Secondary Routes.
11. Establish stormwater drainage standards, including the use of Low-Impact Development (LID) systems is encouraged.
12. Discouragement of strip development and encouragement of the establishment of centers, nodes and of destinations.
13. Clarification of minimum park and open space standards and types. Open space corridors should be encouraged for the location of stormwater detention facilities, trails, parks and to link neighborhoods to public lands.
14. Specific guidelines should be developed that ensure dark skies are preserved.
15. Specific guidelines should be developed that preserve key viewsheds and sensitive lands.

#### OTHER CONSIDERATIONS WHEN DEVELOPING GUIDELINES AND ORDINANCES FOR THE SPANISH VALLEY

The following is a list of additional questions and ideas to be considered as new guidelines and ordinances are developed. These transcend preconceived notions of what new development should look like and how it can fit with the surroundings.

##### Region and Setting

- Where did the original settlers build?
- What architectural features were distinctive?
- What building materials were used?

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## 4.0 GUIDELINES AND ORDINANCES

- How wide do the streets need to be to accommodate traffic and movement?
- What role do public spaces, parks and open space play in the life of the community?
- What building types, setbacks and heights are appropriate?
- How do these elements work together to support the character of the community?
- How does the Spanish Valley of the future express the streams, washes, landforms and cliffs found in the area?

### Historic Traditions

- Are there historical development patterns that will help create a great place to live?
- Are there traditional land use patterns that should be expressed?
- Are there significant views or features such as cliffs, rock outcrops and ridgelines that help define the area?
- Are there sensitive natural areas or high hazard areas (steep slopes or flood zones, for example) where development should be discouraged?

### Centers, Destinations and Neighborhoods

- Are there gathering places such as public squares and parks in the region that should be emulated? Should public places within walking distance of home?
- What is the relationship between buildings and streets? How far are they set back? Do houses have large front yards? Do buildings face the street? Are the public spaces inviting? Are yards large or small? Where are things stored on the property?
- Does the area have a variety of housing types (single family, multifamily, apartments)? Are there residential neighborhoods or subdivisions that should serve as models? What makes these neighborhoods desirable?
- Should clustered development and conservation subdivision standards be used to encourage good utilization of land?

### Natural Setting

- Where does the Spanish Valley get its water? Is demand increasing? Is water reused? What kind of plants are native? Should trees be planted along streets? In parks?
- What is the native plant palette? Can native plants be salvaged and replanted? What kind of wildlife is in the area? Where is critical habitat located? Do road standards respect the landscape and minimize environmental impacts? Are wildfires a threat? Is development discouraged in those areas?
- Are there prominent ridgelines that help define the area's character?
- What was the development pattern of older ranches and homesteads?
- Where are buildings typically located? In valleys? Toes of slopes?

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## 4.0 GUIDELINES AND ORDINANCES

### Architecture/Design

- Is there a traditional or vernacular architectural style in the region? What defines that style (height, roof pitch, color, detailing, etc.)? What is the historic size of lots? How big are houses or buildings on those lots?
- What traditional building materials are used in the area?
- What is the maximum height of buildings in the area?
- Are there historic buildings worthy of protection? Can they be integrated into new development?

### Site Design

- How are buildings oriented to take advantage of the sun or shade?
- What is the relationship between main structures and accessory buildings on a site?
- Is there native vegetation on the site? Can it be preserved?
- What materials were used historically for fencing? Are residential lots in older neighborhoods fenced to provide privacy or security? Are front yards open or fenced?
- Is street lighting provided at present? Is it possible to provide lighting that doesn't affect the dark skies?
- Are there crime/security issues to justify bright night lighting?
- Has sufficient space been reserved for neighborhood centers?
- Should minimum and maximum building heights and sizes be required?

### Streets/Access

- How wide should streets be? What are the traditional street patterns in the region?
- Should streets be adjusted to terrain and topographical constraints?
- Should streets take advantage of distant views?
- Are dead end streets acceptable?
- Should streets be designed to accommodate multiple modes of transportation, such as buses and bikes?



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# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

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San Juan County Spanish Valley Area Plan



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## PUBLIC SCOPING MEETING NOTES

### San Juan County Spanish Valley Area Plan

PUBLIC SCOPING MEETINGS HELD AT GRAND WATER & SEWER SERVICE AGENCY,  
3025 EAST SPANISH TRAIL ROAD, MOAB  
SEPTEMBER 20, 2017

#### SCOPING MEETING 1 - 10:30 AM to Noon

11 people signed in as attendees. Landmark Design staff facilitated discussions. The following are verbatim comments as recorded.

- Quiet and dark – not a lot of traffic and street lights. Moab has lost this; Spanish Valley has and wants to keep
  - Incorporate these elements into zoning ordinances
- Currently they have incompatible land use and very little regulation; needs to be some regulation and buffering between uses
- Plan spaces for churches, schools, and other community spaces; places that are close to where people live (to be walkable)
- Jones and DeMille plans are current just assumed – easements need to be acquired, etc.
- Rentals are a concern; it would be nice to have ordinances and limit these uses to certain areas to minimize impacts (noise, traffic, etc.)
- Currently limited connectivity to Moab. Need better transportation plan; in particular, need bike routes
- Flood plans are a concern; County needs stricter regulations (people are building where they shouldn't)
- Recreation ponds are really important; particularly as you develop new roads/put new pavement in
- Equestrian and other livestock uses - need to accommodate (ranching is part of the heritage of the area – continue to allow people to have)
- School districts will have to be thought about; currently the area is being served by Grand County
- Look at financing and having enough to provide services (schools)
- Commercial – prefer mom and pop shops over big box
- Not too city-like or suburban; like the rural-ness (having space/"elbow room")
- Some smaller lots (1/2 acre) okay – it's needed
- Affordable housing - where should it go?
- Could have a big problem with grandfathering – where smaller lots have already been approved
- SJPLA needs to agree to and comply with the master plan
- Look at Pack Creek and how it fits in with this plan

- Fire District – need to consider so insurance rates don't go up (insurance rates go up if population increases in a service area)
- Height limits because of fire resources/restrictions? Not an issue (everything can be served)
- Don't want service employees far from city, but probably will occur here – consider transportation system
- Height uses would change based on land use
- Need some good cross valley access – Spanish Valley is over used and speed limit keeps getting lowered
- Ken's Lake – development around should be carefully considered (has leaked in past)
- Work with BLM on anything regarding Ken's Lake; had a recreation plan at one time
- Ken's Lake – likes to see the growth; need to improve access and traffic so the impact to neighborhood/area isn't as great
- Completion of La Sal loop could change the area dramatically
- Future, more detailed, studies need to occur and need to look at how much those studies will cost (how much will it cost to do this plan?)
- Need to require commercial development to improve roads (otherwise won't happen until county does it/too late)
- Small commercial away from Hwy 191 but still on well-traveled roads for visibility (maybe Spanish Valley Road?)
- Visual restrictions in zoning – e.g. no junk yards as entering the area/valley
- RV/tiny houses are in issue in Grand County; put where it should go not where it is convenient
- Locating all "transient" (e.g. temporary housing and low-income renters) uses together might not be a good idea
- Business sneaks in (e.g. RV/tiny houses) on a former residential lot; unsafe conditions and unregulated
- Transportation needs to look at and incorporate good signage
- Road standards – pavement requirements to get good quality
- Affordable housing – keeping this area residential and then have a good transportation system to Moab (plenty of jobs there now – but are seasonal and part-time)
- Employee housing is a huge issue. Some accommodations are being made by employees now, but more is needed
- New roads to limit traffic volumes to current residential neighborhoods to keep current developed areas quiet and provide opportunity for other uses on properties to be developed.

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# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## PUBLIC SCOPING MEETING NOTES

## APPENDIX A

### SCOPING MEETING 2 6:00PM to 7:30PM

9 people signed in as attendees. Landmark Design staff facilitated discussions. The following are verbatim comments as recorded.

- Likes Lacre lots: space between neighbors
- Density will bring more "lights" – compromise night sky
- Gravel pits are important: to growth; keep development away from
- S/T/LA – like to see mixed income/type of housing; bike trails; find a future use for gravel pits – when mined out
- Find best place for new gravel pit (S/T/LA – 30 year pit lifespan)
- Floodwaters – a big concern
- Has FEMA been involved? People have lost properties in Grand County because in flood plain. We should plan around the flood plains
- 1,000 ft. commercial highway – liked to see pushed forward; too large, would like to see more area for residential development
- Schools – are we planning for them? (Reach out to school district to establish needs)
- Grocery store, Walmart – all of this will come eventually, want it in the right places
- Affordable housing – should be looked at carefully; regulation is important for balancing
- Would like to see kids be able to live here
- Hwy 191 to Spanish Valley Road (2nd key road) doesn't have a good connection now
- Parks – places of respite in the summer; can the county keep them up/afford it? (need to ask)
- Ken's lake – S. M is looking at planning for bigger recreation facilities
  - Some years Ken's lake is dry; can it be a sustainable draw?
  - Most of the recreation happens outside of the valley; probably won't be a huge draw within
- Incompatible uses – the 1,000 ft. commercial rule really needs to change so commercial uses aren't next or in the middle of residential areas (we are about 10 years behind)
- Community feel – need to develop not just along Hwy 191, look at Spanish Valley Road – make it have a community feel
- We have space and flexibility now – so now is the time to plan (get the bike paths in now)
- Grow from a community commercial center around Spanish Valley Road out
- Put gas stations, Walmart, on highway, locate smaller commercial internally
- Affordable housing should be part of each development; not pushed just into one area
- Look at guidelines for development to preserve what we like – e.g. night sky
- Learn from mistakes that Moab has made

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## RESIDENT, LANDOWNER AND STAKEHOLDER INTERVIEWS

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#### San Juan County Spanish Valley Area Plan

RESIDENT, LANDOWNER AND STAKEHOLDER INTERVIEWS  
HELD IN MOAB, UTAH  
SEPTEMBER 18-20, 2017

##### INTERVIEW 1 – Representatives of Six Families from Sunny Acres Lane HOA September 18, 2017 – 7:00PM

**Background**  
Group interview of neighbors from Sunny Acres Lane (Lstrolia Lstace), a newer (~11 year old) subdivision. Approximately six homes/families represented. The subdivision is controlled by an HOA, which provides limited design and maintenance guidelines. The homes are located primarily just south of the county line and west of Spanish Valley Road, although some are within Grand County on Una Crde. Most move here from Moab, although some came directly from S.C. and Colorado. Most of the homes located on one-acre lots, the minimum size required by San Juan County when septic/wells are utilized.

##### Comments/Issues/Ideas

- The primary reason for living here is the relative isolation and distance from tourists and tourism impacts.
- The area is quiet and affordable.
- Preservation of night skies is a critical concept. Moab has lost the ability to see stars, and is unlikely to be able to regain it even if they can reverse existing light spillover.
- Would like better buffers between residential and commercial/industrial uses. The lack of control in San Juan County has resulted in some incompatible land uses being located together. However, most moved here specifically because the area is in San Juan County, which has limited impact and control.
- Would like to see parks, schools, trails, fire and safety and similar public uses and services.
- Would like it to be a place with no hotels and over-night visitors (Air &B) or similar tourist-based uses.
- Don't see a need for stores or services that one can walk to; don't mind driving to Moab and beyond for basic needs.
- The neighborhood has a wide range of lifestyles and living conditions (families with kids, retirees, etc.), although it is getting too expensive for many to live here.
- The area has no continuity or real structure, no standards. Would like to have more, but not too much like in Moab. Striking a balance between free choice and too much control is a primary issue.

- Want the area to be its own place, not an extension of Moab. Do not want the area to be a city, and it should not have a discernible downtown like Moab. However, the area should have a destination to meet and come together, possibly centered around a park.
- Most believe that Moab will still be the commercial and social core of the area. However, this will be less true as areas further to the south develop as they are so much further away.
- There is an opportunity to be smarter and better planned than Moab, particularly through the design and location of utilities and infrastructure (water, sewer and roads are key).
- The area should be more aligned with creating a community for its residents and less about accommodating the needs of tourists.
- The area should have a separate vibe than Moab. It should be a nice place to live, but not a "well-to-do" community. The Spanish Valley/Moab relationship is comparable to Eagle to Vail Colorado, or Bellevue/Valley to Ketchum/Sun Valley Idaho. An affordable community where most residents will work and shop in Moab.
- The city should have discernible neighborhoods, but not like Moab.
- The area should be dominated by single-family residential, although there is room for a wider range of types and densities, including cluster. Some residents indicated they would like higher density residential located near commercial and industrial uses, while others believe it is important to integrate such uses within the overall layout.
- The eclectic design and land use structure is generally OK, although future buildings should be required to fit in better with the landscape. If a Walmart or other big box uses are located here, they should fit in like those found in St. George and Cedar City.
- Low-income and affordable housing is a critical issue that will be a big part of the future. Many believe that residents are hung up on maintaining and increasing their property value rather than maintaining the area as a good place to live.
- Moab has a real problem with Air &B uses proliferating, and this is emerging to be an issue in the Spanish Valley as well. Should look at what Moab is doing and apply similar solutions when codes are developed.
- Building heights should be relatively low, no higher than 3 stories.
- One member indicated that the BLM is in the process of negotiating a site for a new Wal-Mart (others say this is not true/net part of BLM's role/mandate).

##### INTERVIEW 2 – Mike Bynum and Shik (son-in-law who lives immediately to the north of Bynum). Bynum is member of the advisory committee. [shik@bure.com](mailto:shik@bure.com) 303.547.6919, 50 South ranch Trail, Mab, 84532

September 19, 2017 – 1:20PM

##### Background

Mr. Bynum owns a ranch that is the furthest south in the valley (west of Ken's Lake, near the highway). The ranch is 1/2-11 acres in extent, and includes eight horses. Bynum has planted the

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## RESIDENT, LANDOWNER AND STAKEHOLDER INTERVIEWS

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property with lots of trees, which create a green oasis while also serving as a buffer against nearby incompatible uses.

Shik's 2.5-acre property (which includes about a one-acre meadow) lies directly north of the ranch. He has several children, who run across a meadow to grandpa's house/ranch. The ranch serves as a park for the kids, and as a place for employee parties, etc. (Bynum owns restaurants, motels and other uses in Moab).

Bynum grew up in Moab but moved to Boulder Colorado for several years before returning to Moab. His children are all grown. Shik moved to Grand County about 10 years ago before moving to his current place 4-5 years ago. Shik would like to have more flexibility to subdivide his property and/or develop additional residences and rental uses on his site.

### Comments/Issues/Ideas

- Both moved to the area to get away from Moab. The ability to have a larger property and the affordable price of land was a major reason both moved here, although the quiet lifestyle and dark skies are what keeps them here.
- Both appreciate the flexibility San Juan County provides for development, although they are worried about increasing traffic, the proliferation of overnight rentals and similar uses and the impact of development on the quiet life/dark skies.
- They are concerned that services are nearly non-existent (they won't even grade the roads), even though they pay taxes in San Juan County. Since the Spanish Valley is far from Monticello, they believe that the county doesn't care what goes on here; the Spanish Valley is low on the list of priority for the county.
- Colorado Outward Bound located adjacent to the properties, and is generating a lot of traffic and light pollution. This is an example of "dumb" planning within the 1,000-foot commercial strip along the highway.
- There is no doubt that more people are coming, and it is critical to figure out a model to accommodate them. Many existing residents don't want more growth and want to preserve the area as it is now, although they have no right to expect that. Need to figure out how to accommodate a lot more growth.
- Existing zoning which requires one-acre minimum lot size and 1,000-foot commercial development strip along the highway both poor control models (dumb), particularly now that water and sewer are available.
- The area should have some smaller retail and grocery uses, and the Spanish Valley Road should become the Main Street of the area.
- Views, viewsheds and preservation of the landscape should be considered when developing the area.
- Drainages and water ways should be maintained as trail systems and used to delineate neighborhoods and land use areas.
- Community gathering locations are important, but should have a rural focus that builds upon the opportunities found here. Ken's lake, parks and greenways should be the place where people come together.

### INTERVIEW 3 - Ken and Janice Knight, [jknight@proconet.net](mailto:jknight@proconet.net); 33 Merriam Court, Moab

September 19, 2017 – 3:40 PM

#### Background

Ken is originally from Ogden, Janice is from Little America, Wyoming. They have moved 52 times over their life together. Moved to Moab eleven years ago, renting a condominium. Moved to current property 10 years ago. Merriam Court is a out-of-the-way for five homes with a shared well that is located about a half-mile south of the county border. It is accessed directly from the highway. The roadway was originally designed to extend further to the west and provide access to homes on the other side of a drainage, but it was decided to close the roadway so they didn't need to put in a more extensive water system. It takes them 10 minutes to get into Moab, while those living just to the east need at least 20 minutes via Spanish Valley Road. They are retired, although a granddaughter who attends JSU in Logan lives with them during the summer.

#### Comments/Issues/Ideas

- The five homes are all manufactured homes, each located on lots around one-acre.
- Many people want to build small homes on their properties that they can rent out or subdivide and sell – they don't think this is a good idea for permanent residents, and don't like the idea of too many "overnighters" in the area.
- San Juan county has discussed converting the airport into residences, although nothing has happened.
- San Juan County and Grand County don't get along, and don't want anything to do with the other. They are surprised that San Juan county is backing this planning effort, particularly since they are so disengaged, don't maintain the roads and don't have any ordinances that work at present.
- They believe that San Juan county doesn't care about the Spanish Valley, and that the area is on the bottom of the list when it comes to maintenance, etc. They are out of sight/out of mind. Can't believe things will change and get better in the future.
- Despite access to water and sewer, don't see things improving in the future. They feel stuck with the poor conditions that exist.
- They have been personally impacted by poor land use decisions. A gravel pit was allowed to be constructed immediately adjacent, which has impacted their ability to sell the property.
- Pessimistic that San Juan county has any interest doing something so far from Monticello. San Juan County is driven by Mormon history from the south (Bluff) and focus on Monticello. Moab is more diverse.
- Would be comfortable with the area becoming a residential enclave. High prices have impacted many in the community, and many have become "priced out".
- Motel tax has been used to promote tourism up to this point. However, there are some who think that since tourism is declining, the tax should be used for improving police and other services, which are stretched thin by the tourists. This is a contentious issue.

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## RESIDENT, LANDOWNER AND STAKEHOLDER INTERVIEWS

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- The area isn't sure who or what they are. Would like to see the area remain primarily a bedroom community to Moab, with some industry and jobs as well.
- Retail in Moab has always struggled, requiring residents to drive to Grand Junction for reasonably priced items and better selection. The development of a Wal-Mart could improve access to goods, although it would likely result in the loss of 3-4 local stores and businesses.
- It is difficult to get good and dependable residents for service jobs, and in some cases foreigners from China and similar locations are brought in for those purposes.
- Despite all of the issues, bringing water and sewer to the area is a good idea.

#### INTERVIEW 4 – Carmella Galley, 16 Meridian Court, 435.260.9018 (cell); 435.259.5121 (work)

September 19, 2017 – 4:30 PM

##### Background

Works for Moab City in Administration office. Originally from New York City. Moved to Virgin Isles, back to New York, to Florida before moving to Beaver. Moved to Moab area in 2006, originally living in a trailer at the Grand Oasis for six months before moving here. Own a manufactured home located on a one-acre lot with husband Jeff Galley. Like other residents, have septic and shared well.

##### Comments/Issues/Ideas

- Envisions the area to be primarily a residential community, with limited commercial to serve local needs.
- San Juan County doesn't care about the Spanish Valley – out of sight, out of mind.
- Provided a copy of the Draft San Juan County Spanish Valley I/O Infill Overlay Zone – thinks it makes some sense, certainly a step toward providing better control of development. Keeps commercial separate from residential uses, which is a big problem, particularly within the 1,000-foot highway zone.
- Would like to see some smaller corner stores and similar uses, but no gas stations as they tend to be a major impact on residences.
- Flood waters flow down west cliffs during heavy rains, which impact the west side of the highway and Pack Creek. Need check dams, avoid development on the west side of the highway.
- Need to take a careful look at storm water, the role of drainages and ravines, etc. As development plans are made.
- Lack of acceleration/deceleration lanes at highway is a big problem. Left turn off the highway into the area can be a death trap, particularly with fast-moving trucks and semis trying to keep up speed as they climb up roadway.
- Preservation of high sky is a critical issue and concern.
- The use of CCR's and other development control would help.

#### INTERVIEW 5 – Jared Shumway, resident on Mt. Peale Street (about one mile south of county line along the east edge of the valley), 435.260.9018 (cell); 435.259.5121 (work)

September 20, 2017 – 12:15 PM

##### Background

Works in Moab, has lived here for several years.

##### Comments/Issues/Ideas

- Not afraid of growth like many neighbors.
- The area needs some commercial, particularly along the highway.
- The Spanish Valley is the stepchild of San Juan county. Roads here are the last to get maintained and fixed.
- Building inspection used to be easy but has gotten more difficult since the county hired the same inspector used by Grand County.
- One-acre lots are too large for most people to handle. Some residents are worried that the water will be fluoridized and/or chlorinated.
- Concerned about the water source and quality. Will it be adequately tested and controlled?

#### INTERVIEW 6 – Meeting with UDOT representatives Kurt McFarlane, Region 4 Permits Officer (Price), Jeff Bunker, Region 4 Permits Engineer (Richfield). Held at SITLA Conference Room in Moab City Center building.

September 19, 2017 – 2:30 PM

##### Note:

invite to next Advisory Committee Meeting and Open House Meetings

- It will be a long time before a 4 lane highway is installed south from the county line. Focus is completing 4-lanes from county line to Moab.
- A copy of the existing corridor agreement was provided, which was approved by both counties and Moab in 2015. Any changes would require approval by all parties. Addresses segment from Millcreek Road to city. Addresses existing access to private properties by inclusion of frontage road system. Was completed prior to the existing water/sewer agreement and corresponding growth implications. San Juan County hasn't really followed the plan, with roads implemented contrary to the agreement.
- Key UDOT standards to consider include:
  - No driveways closer than 1,000' apart
  - Minimum one-mile between controlled intersections (acceleration/deceleration lanes for now)



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## RESIDENT, LANDOWNER AND STAKEHOLDER INTERVIEWS

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- If traffic increases, the distance between intersections can increase as part of decreasing speed, like Moab situation. However, the fact that there will be limited development on the west side of the highway indicates that the highway will be different here than when it passes through the middle of the city in Moab.
- Lighting – all intersections require lights, according to standards. Improvements to address preservation of night skies would be a benefit.

### INTERVIEW 6 - Meeting with Zacharia Levine, Grand County Community Development Director

September 20, 2017 – 2:30 PM

Courtesy meeting with focus on applicability of housing plan for the planning area.

Mr. Levine stressed that the planning effort should take a regional approach and embrace the fact that Moab will continue to be the economic driver of the region. The Spanish Valley is part of a drainage system that flows into Moab and eventually to the Colorado River, which should be considered as part of development scenarios.

Current focus of low-income housing improvements is on Moab, as it doesn't make sense to spread housing far and wide. Access to urban services is part of good housing for the underserved.

Believes that the Spanish Valley Road provides a unique road biking experience due to the connection with Castle Valley loop, so inclusion of bike lanes is a no brainer. The distance to Spanish valley and topography will likely require the use of e-bikes to be realistic commuting route. Is excited that San Juan County is leading this effort, and would like to explore opportunities for improved joint planning activities. Would like to have opportunities to take part on a more formal basis, but also understands that this may impact the process. Wonders if County Commissioners could be invited to attend meetings, and whether advisory committee meetings are open to the public.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## ALTERNATIVE WORKSHOP NOTES

### Alternative Workshop Notes – November 7 & 8, 2017

#### Public Workshop – November 7, 2017 6 PM

- Water retention – pay close attention to – as development occurs
- Not enough contiguous open space in the plan, phase to keep maximum amount open space (especially south of Ken's Lake)

#### Public Workshop – November 8, 2017 10:30 AM

- Open space – should be more useable, not just a "weed patch"

#### Plan Committee – November 8, 2017 1 PM

- West Side of highway:
  - Limited pockets connected by frontage roads; roads can be well integrated especially for uses that don't need highway access/presence (storage units, hotels, truck stops, etc.) – possibly single loaded
- Frontage roads on both sides
- East side development: Expensive to develop, installation of dikes/drainage ways, as indicated in Option 1. Helps keep costs in check
- Draft plan: similar to structure and can with examples of road systems.
- Post-by-post development is the likely scenario.

#### Public Scoping – November 8, 2017 7 PM

- Frustrated that Co. zoning is too broad and not enforced. So much that needs to be fixed. Would like to "trial" from this project to use in other areas (Bluff, etc.).
- Track on overnight residents, 1,000 commercial zone, etc. Will use our ideas
- Local commercial – how limited is it?
- Reaction to concepts:
  - Too much open space
  - Too detailed?
  - Need to think outside of the box
  - Employment: yes, as long as it isn't in the middle of a residential area.
    - Envision light commercial/defer to Moab

### November 7, 2017 Preliminary Concept Notes

#### Group 1 – Concept A: 45/55

- Bike paths along major roads
- Neighborhood commercial
- Bike path along Pack Creek
- Trash collection mandatory and free (built into property tax at incorporation)
- Where does the trash go?
- Commercial should remain close to Grand County
- Leave toll in tact
- Private land on west side needs to be addressed
- Sports fields should be artificial turf
- Proposed lake should be used for some water retention (use stone water as an amenity)
- Highway was built as a "dam", water flows to low point and heads to river
- Contact Moab City Engineering Department to learn more about how soils act
- Ken's Lake – 30% loss of water

#### Group 1 – Concept B: 55/45

- No notes...

#### Group 2 – Concept A: 45/55

- Need to investigate and analyze on the size level
  - Engineer first
- Like higher density and more open space = affordability
- Accommodating ATVs and farm with own roads

#### Group 2 – Concept B: 55/45

- No notes...

#### Group 3 – Concept A: 45/55

- Add more density to existing built areas – in exchange for more open space
- Doesn't care if rest has commercial development if "prime" open space is kept open
- Introduce agriculture into the area – keep open space in case of catastrophe – this may be difficult because of existing development patterns
- Proposed Lake – no water to do it
- Affordability is very important, okay with mobile homes and tiny houses to accomplish this
- Vegetation is important; keeps few perches down as development uses run off/water to water plants (green infrastructure)
  - The vista is also important – no trees

## APPENDIX A

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## ALTERNATIVE WORKSHOP NOTES

- Kern Lake has leakage
- Horse trail along the east boundary of proposed plan area

### Group 3 – Concept B: 55/45

- Park near intersection of La Sal Loop Road and Flat Pass Road is too close to public land
- Maybe have a park closer to the highway?

### November 8, 2017 Preliminary Concept Notes

#### Group 1 – Concept A: 45/55

- Contractors need lumber stores to make development more affordable/feasible
- What kind of aircrafts will be flown in?
- Prefers to leave open, would probably leave if the area develops

#### Group 2 – Concept B: 55/45

-

#### Group 2 – Concept A: 45/55

- Commercial – keep small with rural feeling
- As traffic increases, the road needs to be improved
- Prefers the more organic and rural feel/look
- Don't want to lose the rural feel – looking out at horse pasture, the La Sal, etc.
- ATV recreation should be limited – less noise in area – off loading areas
- As growth happens, schools need to be carefully considered. Money needs to go to the right places to support.
- Don't want to see two story or higher – decreases views

#### Group 2 – Concept B: 55/45

- No notes...

## APPENDIX A

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## VISUAL PREFERENCE SURVEY DESCRIPTION OF PROCESS, SUMMARY ANALYSIS, & SAMPLE RESPONSE SHEET

### APPENDIX B

A Visual Preference Survey was held as part of the Alternatives Workshop to better understand the preferred looks of places and uses envisioned for the Spanish Valley community of the future. Forty-two people participated, scoring 83 random images in the following five categories:

- Community
- Parks, Open Space & Trails
- Residential
- Roads
- Highway/Commercial

Not surprising, images in the **Parks, Open Space & Trails** category were rated the highest and those in the **Highway/Commercial** category were rated the lowest. More than anything else, this illustrates that the two categories are on the opposite end of the visual spectrum, one of which inherently evokes a positive response. It can also be inferred that members of the public place high value on parks, recreation and open space, and do not find large, highway-oriented uses and settings attractive or desirable.

A better sense of what is visually preferred is achieved when images are scored within each category.

Images of nature, community markets and schools were liked the most in the **Community** category, while retail stores and small local businesses and buildings were rated the lowest.

In the **Parks, Open Space & Trails** category, trails for biking/hiking and natural water features received the highest scores, while golf courses, sports fields and formal parks received low scores. This can be attributed to a variety of factors, including the sense that green lawns and artificial fields do not belong in the area, or concern that maintaining such uses requires high amounts of maintenance and water.

High scores in the **Residential** category favored homes with traditional and rustic appearances and styles, indicating support for what is known and accepted. Images of higher density housing and different types of residential, unusual architecture and tiny houses received low scores, indicating a suspicion of multi-family and new types housing.

**Roads** that are simply graded or composed of dirt scored the highest, particularly those set in attractive open space settings. Worn residential roads received low scores, particularly those with no trees. Images of bike lanes and well-designed signage were generally highly rated, and images of highways were disliked in general.

The **Highway/Commercial** images that received the highest scores included gas stations, IFA/country store types, and similar uses. The lowest ranked images included large warehouses, chain motels and hotels and fast shops.

#### Summary Analysis

The results of the Visual Preference Survey indicate that the incorporation of parks, open space and trails is supported, and that well-designed homes and buildings that fit in with the setting and history of the area are endorsed. Uses which support tourism and non-local businesses and chains were highly disliked, as were over-sized roads and big infrastructure.

#### Spanish Valley Area Plan

Visual Preference Survey – November 7, 2017, 6:00 p.m.

Photo	Score	Comments	Photo	Score	Comments
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# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## VISUAL PREFERENCE SURVEY COMMENTS

### APPENDIX B

**NOTES**  
Spanish Valley Area Plan

**ALTERNATIVES WORKSHOP**  
November 7, 2017 at 6:00pm and November 8, 2017 at 10:55am  
Meeting Room at Civic Center & Senior Service Agency
















**39 members of the public signed in**

The meeting began with introductions and a summary of plan alternatives, which was followed by a Visual Preference Survey.

**Visual Preference Survey (47) proposals were received**  
Participants were shown a series of 40 slides each of which was changed for 30 seconds, followed by a blank slide, which gave people the time to write each design idea or comment if desired. The images included various types of commercial/retail centers, parks, recreation & trails, industrial areas, roads, and highway centers. Images were shown in a range from 1 (currently shown) to 4 (best idea), and participants could comment on each slide as well. Color pencils for each slide were provided.

**Landmark Design**  
LANDSCAPE ARCHITECTURE & PLANNING













Antelope Valley Gardens  
855 South 400 West | Suite 104  
Salt Lake City, Utah 84111  
801.474.3300  
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 <p><b>1</b></p> <ul style="list-style-type: none"> <li>Too expensive</li> <li>Another valley planning</li> <li>Already existing a center in Moab</li> </ul>	 <p><b>2</b></p> <ul style="list-style-type: none"> <li>Two commercial and residential</li> <li>Too bright - no necessary sun lighting</li> <li>Would be in this end of the valley to economic growth</li> </ul>	 <p><b>3</b></p> <ul style="list-style-type: none"> <li>Would be a good center, some better at it</li> <li>Wanted to look, not natural</li> </ul>
 <p><b>4</b></p> <ul style="list-style-type: none"> <li>Build and road looks great</li> <li>More modern would be nice</li> <li>Too expensive</li> <li>Keep the community played</li> </ul>	 <p><b>5</b></p> <ul style="list-style-type: none"> <li>Cheap, but old</li> <li>Depends on location</li> <li>No right to rentals - but "blacks"</li> </ul>	 <p><b>6</b></p> <ul style="list-style-type: none"> <li>Appropriate</li> <li>Must also reduce</li> <li>No need, it already exists</li> </ul>
 <p><b>7</b></p> <ul style="list-style-type: none"> <li>It's underdeveloped</li> <li>Modern and simple</li> <li>Reveal the density</li> <li>No fine Village or right to rent</li> <li>Most spread - NO</li> </ul>	 <p><b>8</b></p> <ul style="list-style-type: none"> <li>EYESORE</li> <li>Too generic</li> <li>Need the density</li> <li>Actually affordable</li> </ul>	 <p><b>9</b></p> <ul style="list-style-type: none"> <li>A little large for commercial unless on the highway</li> <li>Too bright</li> <li>Power 131 underdeveloped</li> <li>Not necessary</li> </ul>
 <p><b>10</b></p> <ul style="list-style-type: none"> <li>Doesn't fit Spanish Valley</li> <li>Super cute Main Street feel</li> <li>Need commercial out here</li> </ul>	 <p><b>11</b></p> <ul style="list-style-type: none"> <li>Where would the water come from?</li> <li>Playing soccer are important</li> <li>Maybe if there was a school in Spanish Valley</li> </ul>	 <p><b>12</b></p> <ul style="list-style-type: none"> <li>Good concept, careful not to be too small, apartments better</li> <li>Power 131 in</li> </ul>
 <p><b>13</b></p> <ul style="list-style-type: none"> <li>Needed</li> <li>Too suburban unless on highway</li> </ul>	 <p><b>14</b></p> <ul style="list-style-type: none"> <li>Yes! It captures the area</li> <li>Integrated into transportation system, bike lanes needed</li> <li>More shoulder needed</li> <li>Already everywhere!</li> </ul>	 <p><b>15</b></p> <ul style="list-style-type: none"> <li>Yes! Very modern and fits the environment</li> <li>What is it?</li> <li>Downcast lights needed</li> </ul>

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## VISUAL PREFERENCE SURVEY COMMENTS



















### APPENDIX B

 <p>16</p> <ul style="list-style-type: none"> <li>Rural is character, fits environment</li> <li>Affordable housing needed</li> <li>Too crowded</li> </ul>	 <p>17</p> <ul style="list-style-type: none"> <li>Too urban</li> <li>Pretty but not necessary</li> <li>Doesn't fit in</li> <li>Water features are too wonderful</li> </ul>	 <p>18</p> <ul style="list-style-type: none"> <li>Beautiful view</li> <li>Unlikely with current light pollution</li> <li>Dark sky - important</li> <li>We already have that</li> </ul>	 <p>25</p> <ul style="list-style-type: none"> <li>Great style, but NOT for overnight rentals</li> <li>Coskie rustic</li> <li>Open space would be needed</li> </ul>	 <p>26</p> <ul style="list-style-type: none"> <li>Open space is good</li> <li>We already have open space</li> <li>Nice creek trail</li> <li>Waste of water</li> </ul>	 <p>27</p> <ul style="list-style-type: none"> <li>Too tall and boxy</li> <li>Apartment needed for density</li> <li>Doesn't really fit environment</li> <li>Maybe in the right location</li> </ul>
 <p>19</p> <ul style="list-style-type: none"> <li>No water for it</li> <li>No golf course, too much water</li> <li>Maintain the integrity of the environment</li> <li>Add housing with it</li> </ul>	 <p>20</p> <ul style="list-style-type: none"> <li>Trails are good</li> <li>Already all over the valley</li> </ul>	 <p>21</p> <ul style="list-style-type: none"> <li>Good architecture</li> <li>Simple and subtle</li> </ul>	 <p>28</p> <ul style="list-style-type: none"> <li>Economic driver</li> <li>Bad roof color</li> </ul>	 <p>29</p> <ul style="list-style-type: none"> <li>Single story neighborhood commercial needed</li> <li>Walking district YES!</li> <li>More than needed</li> <li>Garish color scheme</li> </ul>	 <p>30</p> <ul style="list-style-type: none"> <li>Doesn't fit Spanish Valley character</li> <li>Single story neighborhood commercial is good</li> <li>Main street feel</li> </ul>
 <p>22</p> <ul style="list-style-type: none"> <li>Industrial look, not unique</li> <li>Awful!</li> <li>Good concept, bad look</li> </ul>	 <p>23</p> <ul style="list-style-type: none"> <li>Already have a field not being used</li> <li>No water for it!</li> <li>Bright light bad for light pollution</li> <li>No school in Spanish Valley</li> </ul>	 <p>24</p> <ul style="list-style-type: none"> <li>Affordable</li> <li>Lacks visual appeal and natural vegetation</li> <li>No! Can do affordable without ugly</li> </ul>	 <p>31</p> <ul style="list-style-type: none"> <li>Only on the Highway</li> <li>Too bright for night skies</li> <li>Needed</li> </ul>	 <p>32</p> <ul style="list-style-type: none"> <li>Gravel road, not paved</li> <li>Charming, but not for high traffic</li> <li>Transportation is important</li> <li>Open space is a plus</li> </ul>	 <p>33</p> <ul style="list-style-type: none"> <li>On highways only</li> <li>Need jobs</li> <li>Necessary but ugly</li> </ul>

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## VISUAL PREFERENCE SURVEY COMMENTS



















### APPENDIX B

 <p>34</p> <ul style="list-style-type: none"> <li>Where's the water?</li> <li>Outdoors!</li> <li>Needs more funding for management</li> </ul>	 <p>35</p> <ul style="list-style-type: none"> <li>NOT rural, too commercial</li> <li>Good concept, doesn't match outdoor feel</li> <li>Outdoor shopping for independent businesses needed</li> </ul>	 <p>36</p> <ul style="list-style-type: none"> <li>Horrible!</li> <li>Necessary but ugly</li> <li>Too commercial</li> <li>Only on the highway</li> </ul>	 <p>43</p> <ul style="list-style-type: none"> <li>Ugly, NO!</li> <li>Horrible colors</li> <li>Commercial needed</li> <li>Only along the highway</li> </ul>	 <p>44</p> <ul style="list-style-type: none"> <li>Ugly but needed</li> <li>Only near the highway</li> <li>I don't trust it</li> <li>Boring</li> </ul>	 <p>45</p> <ul style="list-style-type: none"> <li>Western architecture good</li> <li>Only along highway</li> <li>Needed</li> <li>Keep in mind</li> <li>Would be better if it wasn't a chain</li> </ul>
 <p>37</p> <ul style="list-style-type: none"> <li>Needed, get with the times</li> <li>Need jobs</li> <li>Not near any residency</li> <li>Not</li> <li>Practical</li> </ul>	 <p>38</p> <ul style="list-style-type: none"> <li>Doesn't fit Spanish Valley character</li> <li>Housing needed, but different style</li> <li>Less town</li> </ul>	 <p>39</p> <ul style="list-style-type: none"> <li>Through neighborhood??</li> <li>No open space, utilize the land</li> </ul>	 <p>46</p> <ul style="list-style-type: none"> <li>Appropriate if controlled</li> <li>On trails only</li> <li>NO - sound and noise pollution</li> <li>Need trail system</li> </ul>	 <p>47</p> <ul style="list-style-type: none"> <li>Great concept</li> <li>Houses NOT overnight rentals</li> <li>Bright and tacky, too modern</li> <li>Should do density with apartments</li> </ul>	 <p>48</p> <ul style="list-style-type: none"> <li>Great style</li> <li>Altogether housing!</li> <li>Need density and more vegetation</li> <li>Nice balance of color and form</li> </ul>
 <p>40</p> <ul style="list-style-type: none"> <li>Not enough water</li> <li>Useful if there was a school in Spanish Valley</li> </ul>	 <p>41</p> <ul style="list-style-type: none"> <li>Road too wide</li> <li>Suburban, not rural</li> <li>Would like to see more condensed housing</li> <li>More curves</li> </ul>	 <p>42</p> <ul style="list-style-type: none"> <li>Through neighborhood??</li> <li>No open space, utilize the land</li> </ul>	 <p>49</p> <ul style="list-style-type: none"> <li>Great for community</li> <li>Great if it is a walk/bike path, not a road too</li> <li>Footcathion/trails are good but there is no open space</li> </ul>	 <p>50</p> <ul style="list-style-type: none"> <li>No straight roads</li> <li>Need bike lanes</li> <li>Need density</li> <li>Open sky is good</li> </ul>	 <p>51</p> <ul style="list-style-type: none"> <li>Bike lanes are needed</li> <li>Green color not good, too bright</li> <li>Like trees need signs</li> </ul>

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## VISUAL PREFERENCE SURVEY COMMENTS

### APPENDIX B















 <p>52</p> <ul style="list-style-type: none"> <li>• Yes we need a school</li> <li>• Don't need another school</li> <li>• If needed</li> </ul>	 <p>53</p> <ul style="list-style-type: none"> <li>• Nice neighborhood feel</li> <li>• Needed</li> <li>• Sidewalk too small</li> </ul>	 <p>54</p> <ul style="list-style-type: none"> <li>• Festivals - good</li> <li>• Impossible due to rate/need</li> <li>• Community gathering place is great</li> </ul>	 <p>61</p> <ul style="list-style-type: none"> <li>• Love this!</li> <li>• Smaller attractive houses</li> <li>• Sensitive to local setting</li> <li>• Good size of lot</li> </ul>	 <p>62</p> <ul style="list-style-type: none"> <li>• Ugly, not cared for</li> <li>• Looks neglected</li> </ul>	 <p>63</p> <ul style="list-style-type: none"> <li>• We need business space</li> <li>• Needed</li> <li>• Too industrial</li> <li>• By the highway</li> </ul>
 <p>55</p> <ul style="list-style-type: none"> <li>• No golf course!</li> <li>• Golf yes, open space no</li> <li>• Too much water use</li> </ul>	 <p>56</p> <ul style="list-style-type: none"> <li>• Nice neighborhood</li> <li>• Absolutely!</li> <li>• Sprawl is bad</li> <li>• Good trees</li> </ul>	 <p>57</p> <ul style="list-style-type: none"> <li>• Nice style</li> <li>• No overnight rentals</li> <li>• Density with open space!</li> <li>• Maybe in the appropriate location</li> </ul>	 <p>64</p> <ul style="list-style-type: none"> <li>• How clean is the water?</li> <li>• Fun but uses too much water</li> <li>• If planned by developer</li> </ul>	 <p>65</p> <ul style="list-style-type: none"> <li>• No overnight rentals!</li> <li>• Ugly but density needed</li> </ul>	 <p>66</p> <ul style="list-style-type: none"> <li>• Not appropriate</li> <li>• Too hot</li> <li>• Farm/produce stands/farmers market would be great</li> </ul>
 <p>58</p> <ul style="list-style-type: none"> <li>• Campground NOT overnight rental</li> <li>• Don't want overnight tourists</li> <li>• Not out here!</li> </ul>	 <p>59</p> <ul style="list-style-type: none"> <li>• No more hotels</li> <li>• Too bright and commercial</li> <li>• Needed but ugly</li> <li>• Enough in Moab</li> </ul>	 <p>60</p> <ul style="list-style-type: none"> <li>• In neighborhoods - pocket parks</li> <li>• Green is too bright and a shade structure is needed</li> <li>• Great area for families</li> </ul>	 <p>67</p> <ul style="list-style-type: none"> <li>• Already plenty in town</li> <li>• Better in Moab</li> <li>• Nice commercial space</li> </ul>	 <p>68</p> <ul style="list-style-type: none"> <li>• Ugly but needed</li> <li>• Walmart with good design</li> <li>• Please!</li> <li>• NGI!</li> </ul>	 <p>69</p> <ul style="list-style-type: none"> <li>• Doesn't fit environment</li> <li>• Yuck, tired</li> <li>• Lowly, but can't take the historic feel</li> </ul>



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## VISUAL PREFERENCE SURVEY COMMENTS

## APPENDIX B

 <p>70</p> <ul style="list-style-type: none"> <li>• Ugly, boring</li> <li>• Need density to achieve affordability</li> <li>• Nice style</li> </ul>	 <p>71</p> <ul style="list-style-type: none"> <li>• Street is too wide</li> <li>• Too sprawled, waste of space</li> <li>• Infrastructure is good</li> </ul>	 <p>72</p> <ul style="list-style-type: none"> <li>• Ugly but jobs are needed</li> <li>• In industrial zone</li> <li>• NG</li> <li>• Needed</li> </ul>	 <p>79</p>	 <p>80</p> <ul style="list-style-type: none"> <li>• Tiny houses for resident not tourists</li> <li>• No - Cookie cutter and too much lean</li> <li>• Yes</li> </ul>	 <p>81</p> <ul style="list-style-type: none"> <li>• Along the highway</li> <li>• Ugly but needed</li> <li>• In industrial zone</li> <li>• Too risky with ground water</li> </ul>
 <p>73</p> <ul style="list-style-type: none"> <li>• Not in Spanish Valley</li> <li>• Keep tourism in Moab</li> </ul>	 <p>74</p> <ul style="list-style-type: none"> <li>• Waste of water</li> <li>• Good if a resort is wanted</li> <li>• Too high scale</li> </ul>	 <p>75</p> <ul style="list-style-type: none"> <li>• No strip malls</li> <li>• Too bright, poor color choice</li> <li>• Necessary</li> </ul>	 <p>82</p> <ul style="list-style-type: none"> <li>• Housing is needed</li> <li>• Cookie cutter development</li> <li>• If mixed with higher density</li> <li>• Looks like LA/Vegas neighborhood</li> </ul>	 <p>83</p>	
 <p>76</p> <ul style="list-style-type: none"> <li>• No open space, but pretty</li> </ul>	 <p>77</p> <ul style="list-style-type: none"> <li>• Ugly but needed</li> <li>• No</li> </ul>	 <p>78</p> <ul style="list-style-type: none"> <li>• RV park for residents NOT tourists</li> <li>• Too inefficient for real housing</li> </ul>			

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## VISUAL PREFERENCE SURVEY

### RESULTS TOP AND BOTTOM THREE OVERALL

#### Overall Visual Preference Results



Top 1 (#18)



Top 2 (#6)



Top 3 (#49)



Bottom 1 (#59)



Bottom 2 (#72)



Bottom 3 (#43)

## APPENDIX B

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## VISUAL PREFERENCE SURVEY

### RESULTS TOP AND BOTTOM THREE BY CATEGORY

#### COMMUNITY

##### Community Visual Preference Results



Top 1 (#18)



Top 2 (#54)



Top 3 (#52)



Bottom 1 (#2)



Bottom 2 (#73)



Bottom 3 (#63)

#### APPENDIX B

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## VISUAL PREFERENCE SURVEY

### RESULTS TOP AND BOTTOM THREE BY CATEGORY

#### PARKS, OPEN SPACE AND TRAILS

## APPENDIX B

Parks, Open Space and Trails Visual Preference Results



Top 1 (#49)



Top 2 (#34)



Top 3 (#20)



Bottom 1 (#19)



Bottom 2 (#40)



Bottom 3 (#23)

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## VISUAL PREFERENCE SURVEY

### RESULTS TOP AND BOTTOM THREE BY CATEGORY

#### RESIDENTIAL

##### Residential Visual Preference Results



Top 1 (#4)



Top 2 (#61)



Top 3 (#16)



Bottom 1 (#27)



Bottom 2 (#5)



Bottom 3 (#12)

#### APPENDIX B

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## VISUAL PREFERENCE SURVEY

### RESULTS TOP AND BOTTOM THREE BY CATEGORY

#### ROADS

Roads Visual Preference Results



Top 1 (#6)



Top 2 (#50)



Top 3 (#14)



Bottom 1 (#71)



Bottom 2 (#62)



Bottom 3 (#41)

## APPENDIX B



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

VISUAL PREFERENCE SURVEY

RESULTS  
TOP AND BOTTOM THREE  
BY CATEGORY

HIGHWAY COMMERCIAL

Highway Visual Preference Results



Top 1 (#75)



Top 2 (#31)



Top 3 (#81)



Bottom 1 (#59)



Bottom 2 (#72)



Bottom 3 (#43)

APPENDIX B

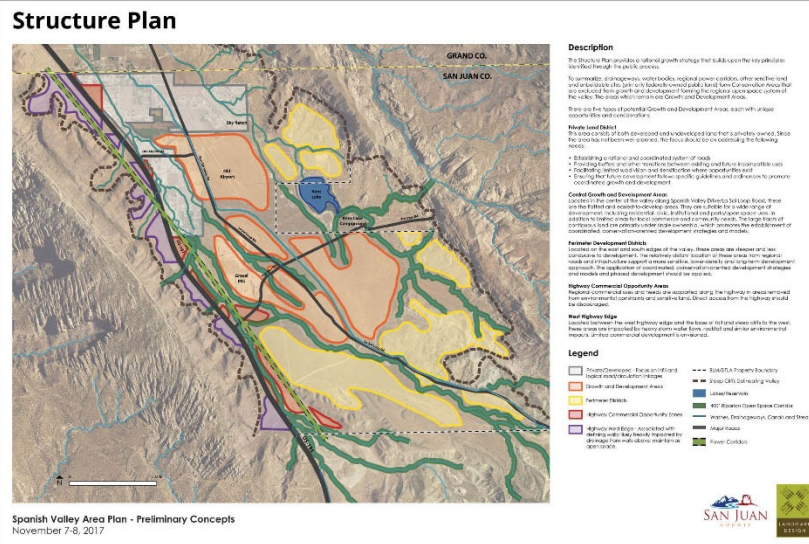
64 February 12, 2018

San Juan County Spanish Valley Area Plan

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

PRELIMINARY ALTERNATIVE  
CONCEPT DIAGRAMS

APPENDIX C



65 February 12, 2018

San Juan County Spanish Valley Area Plan







# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## SPANISH VALLEY STORM DRAINAGE MEMO

## APPENDIX D

**HANSEN  
ALLEN  
& LUCE**  
INC.

**MEMORANDUM**


DATE: January 11, 2018

TO: Mark Vasic, PLA, ASIA, AICP, President  
Landmark Design Inc.  
850 S. 400 W., Suite 104  
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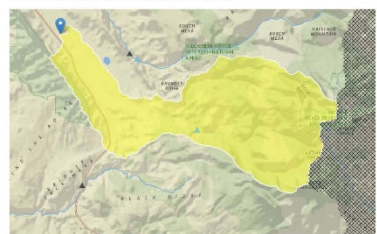
SUBJECT: San Juan County - Spanish Valley General Plan - Storm Drainage

PROJECT NO.: 344.02.500



**INTRODUCTION**  
Landmark Design Inc. is currently completing a general plan for Spanish Valley. HAL has been requested to assist by providing general drainage design criteria and recommendations to assist in the planning.  
Storm water runoff is a difficult resource to manage. Storm water flows are dependent on many complex time and spatially varied factors. Even a natural undeveloped drainage system is not static. Streams can erode in one section while depositing in another. Stream courses can also change alignment and cross section dramatically with just one storm runoff event. Land development compounds the problem and creates a need for a drainage system with the basic goals of managing nuisance water, protecting development from damage, and protecting downstream waters from adverse quality and quantity impacts.  
Recommendations and information to be considered in storm drainage planning for the Spanish Valley area are presented in four sections: Pack Creek, Drainage Criteria, Spanish Valley Runoff Characteristics, and Summary of Development Drainage Planning Recommendations.  
**PACK CREEK**  
Pack Creek flows through the study area and conveys storm runoff to Mill Creek which flows to the Colorado River. The tributary drainage area to Pack Creek at the Grand County - San Juan County line is shown on Figure 1. StreamStats predictions for peak flood flows for various return periods are provided on Table 1. Pack Creek is a critical resource for the study area and provides a natural storm drainage outlet for Spanish Valley. Careful storm drainage planning is needed to assure that Pack Creek is not adversely impacted by development.  
Kenney, T.A., Wilkowske, C. D., and Wright, G.J., 2007, Methods for Estimating Magnitude and Frequency of Peak Flows for natural streams in Utah: U.S. Geological Survey Scientific Investigations Report 2007-5159 <https://pubs.usgs.gov/of/2007/5159/>  
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We recommend that floodplain delineation for Pack Creek be completed through Spanish Valley. The Pack Creek floodplain should be managed consistent with practices promulgated by the Federal Emergency Management Agency (FEMA).



**FIGURE 1 - PACK CREEK TRIBUTARY AREA**

**TABLE 1**  
**Pack Creek Predicted Peak Flood Flowrates At The County Line**  
(43.8 square miles tributary area and 7520 feet mean basin elevation)

RETURN PERIOD <sup>2</sup>	*PREDICTED PEAK STORM RUNOFF FLOWRATE (CFS)
2-YEAR	250
10-YEAR	900
50-YEAR	2,020
100-YEAR	2,770
500-YEAR	4,510

\*These predictions are based on regional regression equations. Standard error of prediction for these estimates varies from 80% for the 100-year value to 106% for the 2-year value.

**DRAINAGE CRITERIA**  
Every urban area has two drainage systems, whether or not they are actually planned for and designed. One is the minor or primary system, which is designed to provide public convenience and to accommodate relatively moderate frequent flows. The other is the major system, which

<sup>2</sup>Return period is defined as the reciprocal of the probability of the event being equaled or exceeded. For example a 100-year flood event has a 1% probability of being equaled or exceeded in any given year.

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## SPANISH VALLEY STORM DRAINAGE MEMO

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carries more water and operates when the rate or volume of runoff exceeds the capacity of the minor system. Both systems should be carefully considered.<sup>1,2</sup> The minor storm drainage system is also referred to as the initial storm drainage system.

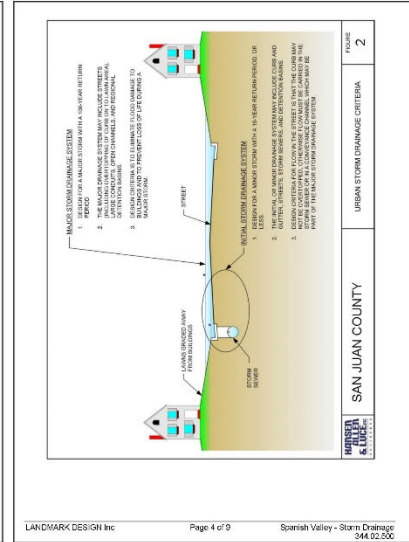
The initial storm drainage system is sometimes referred to as the convenience system in that the initial system is designed to "reduce street maintenance costs, to provide protection against regularly recurring damage from storm runoff (of a 10-year recurrence interval or less), to help create an orderly urban system, and to provide convenience to the urban residents."<sup>3</sup> Storm drain pipe systems are generally considered part of the initial storm drainage system. In conjunction with the initial storm drainage system, provisions should be made to avoid major property damage or loss of life from a major storm event. Such provisions are considered to comprise the major storm drainage system.

The major storm drainage system in newly developing residential areas or business districts should generally be designed for the 100-year event with the objective to eliminate major damage to edifices (homes, buildings, etc.) and to prevent loss of life. This does not mean that storm drain pipe systems, which are considered part of the initial storm drainage system, should be designed for the 100-year event. It means that the combination of storm sewers and channelized surface flow, which may include using part of the grassed frontage area of a home as part of a 100-year channel (see Figure 2), should be designed to accommodate the 100-year event thereby preventing damage to the edifice. There appears to be general agreement among most major flood control agencies that in the design of the major storm drainage system for residential areas the 1-percent storm (100-year return period) should be used, except in the design of water impoundment structures that exceed a specified capacity.

As water impoundment structures increase in volume and embankment height, the potential for property damage and loss of life increases if the impoundment fails. Selection of a design storm and other design criteria for large impoundment structures should include an evaluation of the risks associated with failure of the impoundment. If failure of the impoundment could result in loss of life or major property damage, the spillway and outlet works for the impoundment should be designed for the 500-year event or the Probable Maximum Flood. Design requirements and other regulations for water impoundments are presented in *State of Utah Statutes and Administrative Rules for Dam Safety*, (UAC, 2005).

We recommend that San Juan County consider selecting the 10-year storm event for the design of the initial storm drainage system and the 100-year storm event for design of the major storm drainage system.

<sup>1</sup> ASCE Manual of Practice No. 77 "Design and Construction of Urban Stormwater Management Systems" 1992 (see p. 47)  
<sup>2</sup> "Urban Storm Drainage Criteria Manual" Urban Drainage and Flood Control District, 2016  
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## 2018

### SPANISH VALLEY STORM DRAINAGE MEMO

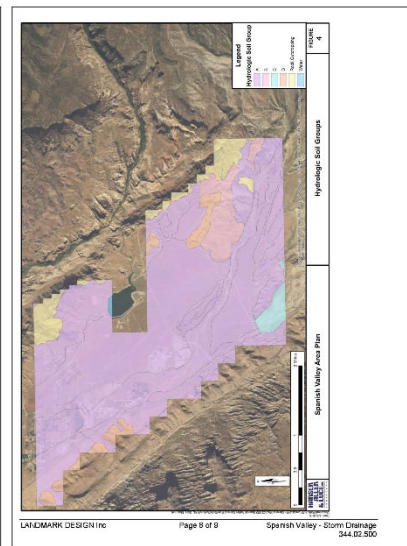
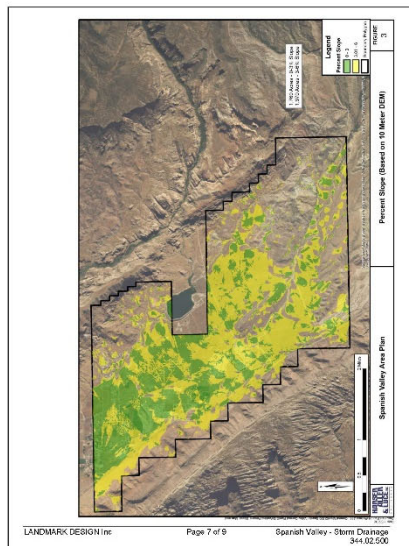
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<p><b>Design Rainstorm</b></p> <p>The National Oceanic and Atmospheric Administration (NOAA) have published web based point precipitation frequency estimates for Utah<sup>2</sup>. This is the recommended source for design rainfall depths. Precipitation depth duration frequency estimates for an example selected location in the Spanish Valley study area is provided in the appendix.</p> <p>In order to use the depth duration frequency information provided by NOAA, the design storm precipitation depth needs to be distributed through time. Use of modern storm water runoff modeling methods (such as the HEC/HMS Corps of Engineers model) to design storm water management facilities requires the use of a design storm distribution. The design storm distribution provides the pattern for the temporal distribution of the rainfall within the design storm.</p> <p>The National Resource Conservation Service (NRCS) recommends<sup>3</sup> use of the NOAA Atlas 14 precipitation frequency data to develop design storm distributions. "These rainfall distributions are based on the 5 minute through 24 hour rainfall depths for a specific return period". These distributions are regarding the highly "SCS" storm distributions. An example of a distribution developed for Spanish Valley is included in the appendix.</p> <p><b>Storm Water Quality Management</b></p> <p>Construction activities that disturb one or more acres of land must be authorized under the Utah Pollutant Discharge Elimination System (UPDES). Owners and general contractors are required to obtain a Storm Water Permit. Construction activities that disturb more than an acre (or are part of a common plan of development that disturbs more than an acre) are required to file a notice of intent and to prepare and follow a storm water pollution prevention plan for construction activities.</p> <p>As required by the Clean Water Act and ordered by EPA, Utah Division of Water Quality (UDWQ) has prepared a permit program to control pollutants in municipal storm water runoff. UDWQ currently has a list of about 90 Utah communities which are required to apply for a permit for storm water discharges under what is referred to as the UPDES Phase II general storm water permit. Currently the communities of San Juan County are not required to submit for permit for storm water discharges. It is not known when or if communities of San Juan County will be required to comply with the municipal storm water discharge permit requirements. Nevertheless, it is recommended that San Juan County adopt storm water quality best management practices to help protect downstream water resources.</p> <p>The UPDES Phase II general storm water permit<sup>4</sup> requires that the permitted community implement six minimum control measures. These measures focus on controlling pollutants at the source.</p> <p><small><sup>2</sup> NOAA Atlas 14 <a href="https://www.noaa.gov/hydro/precipitation.html?term=us">https://www.noaa.gov/hydro/precipitation.html?term=us</a></small> <small><sup>3</sup> National Resource Conservation Service, "Design Rainfall Distributions Based on NOAA Atlas 14 [Rainfall Depths and Durations]" by William Mosley, James Mosley, and Quan Quan, NRCS 2015, "SCS Soil Conservation Service, the agency name has been changed to Natural Resource Conservation Service. The agency distributions are included in NRCS Technical Release 85, "Urban Hydrology for Small Watersheds", revised 1988.</small> <small><sup>4</sup> Utah Division of Water Quality, Utah Pollutant Discharge Elimination System (UPDES) General Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4s). <a href="https://des.wq.utah.gov/permits/utah-updes-general-permit/">https://des.wq.utah.gov/permits/utah-updes-general-permit/</a></small></p> <p><small>LANDMARK DESIGN INC. Page 8 of 8 Spanish Valley - Storm Drainage 3/4/22 5:03</small></p>	<ol style="list-style-type: none"><li>1. Public Education and Outreach on Storm Water Impacts</li><li>2. Public Involvement/Participation</li><li>3. Best Discharge Detection and Elimination</li><li>4. Construction Site Storm Water Runoff Control</li><li>5. Long Term Storm Water Management in New Development and Redevelopment</li><li>6. Pollution Prevention and Good Housekeeping for Municipal Operations</li></ol> <p>A key concept in the control of storm water runoff pollutants is the control of the pollutants at the source. An approach which can be used for long term storm water management is to implement Low Impact Development (LID) practices.</p> <p>Key practices for LID include minimizing the directly connected impervious area and infiltrating runoff from impervious areas near the source of the runoff. LID emphasizes conservation and use of on site natural features and constructed swales to protect water quality. LID practices are especially helpful in areas of high soils permeability and low slopes.</p> <p><b>Storm Water Runoff Management</b></p> <p>Inherent in development is the increase of impervious area as roads, driveways, sidewalks, parking lots, and homes are constructed. Storm runoff from impervious areas can exceed ten times the runoff from natural areas. LID practices can help to mitigate the effects of increased impervious areas by providing opportunities for infiltration near the source of the runoff. For example, in areas of suitable soils the runoff from sidewalks and homes can be infiltrated prior to running off into the storm drain collection system. Stormwater detention basins are an effective means of reducing downstream runoff peak flow effects. Detention basins should be designed to reduce peak storm runoff flow to 40 or below historic runoff peaks. As a minimum, we recommend that detention be provided to control peak storm runoff releases to historic discharges in the 2-year, 10-year, and 100-year design storm events.</p> <p><b>SPANISH VALLEY STUDY AREA RUNOFF CHARACTERISTICS</b></p> <p>Much of the Spanish Valley study area includes soils and topography which are conducive to LID methods. Mapping of ground slopes between 0 to 3% and 3 to 9% slopes are shown on Figure 3. Mapping of soils by Hydrologic Soil Group are shown on Figure 4. Hydrologic soil groups A and D are soils with high to moderate infiltration rates and are conducive to LID methods. Hydrologic Soil Group C soils are the least conducive to LID methods due to very slow infiltration rates.</p> <p><small><sup>5</sup> National Resource Conservation Service, Web Soil Survey, 2017 <a href="https://websoilsurvey.sc.egov.usda.gov/App/WebSoilsurvey.asp">https://websoilsurvey.sc.egov.usda.gov/App/WebSoilsurvey.asp</a></small> <small>LANDMARK DESIGN INC. Page 8 of 8 Spanish Valley - Storm Drainage 3/4/22 5:03</small></p>
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# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

SPANISH VALLEY STORM  
DRAINAGE MEMO

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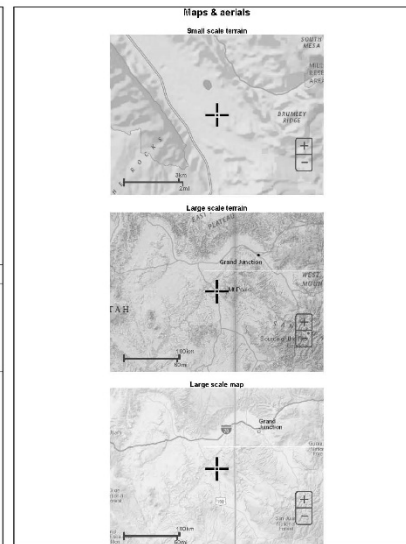
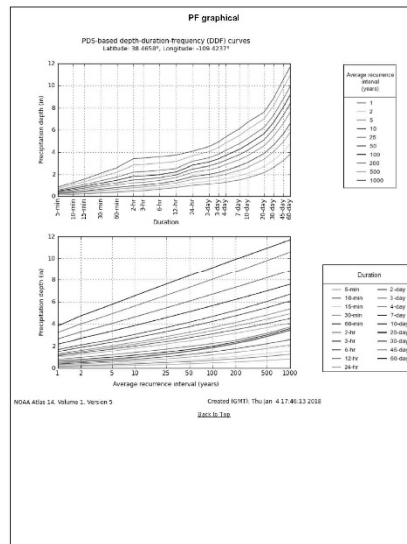




# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## SPANISH VALLEY STORM DRAINAGE MEMO

### APPENDIX D

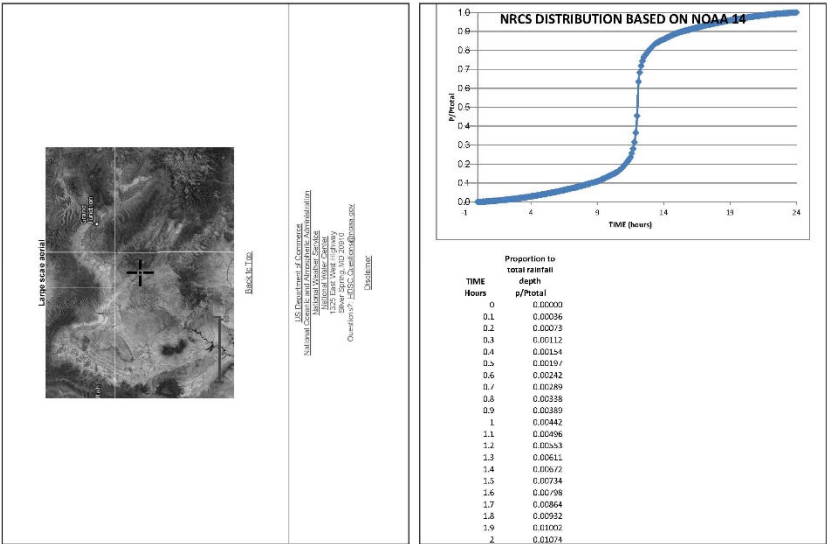




# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

SPANISH VALLEY STORM  
DRAINAGE MEMO

APPENDIX D



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

SPANISH VALLEY STORM  
DRAINAGE MEMO

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Proportion to total rainfall		Proportion to total rainfall	
TIME	depth	TIME	depth
2.1	0.01148	6.5	0.06786
2.2	0.01224	6.6	0.06846
2.3	0.01301	6.7	0.06906
2.4	0.01381	6.8	0.06971
2.5	0.01462	6.9	0.07037
2.6	0.01546	7	0.07104
2.7	0.01631	7.1	0.07174
2.8	0.01718	7.2	0.07246
2.9	0.01807	7.3	0.07318
3	0.01896	7.4	0.07393
3.1	0.01981	7.5	0.07470
3.2	0.02068	7.6	0.07549
3.3	0.02152	7.7	0.07630
3.4	0.02238	7.8	0.07712
3.5	0.02322	7.9	0.07797
3.6	0.02404	8	0.07884
3.7	0.02488	8.1	0.07972
3.8	0.02569	8.2	0.08062
3.9	0.02653	8.3	0.08155
4	0.02739	8.4	0.08249
4.1	0.02825	8.5	0.08345
4.2	0.02913	8.6	0.08443
4.3	0.03002	8.7	0.08543
4.4	0.03092	8.8	0.08645
4.5	0.03184	8.9	0.08748
4.6	0.03274	9	0.08854
4.7	0.03367	9.1	0.08961
4.8	0.03462	9.2	0.09069
4.9	0.03559	9.3	0.09178
5	0.03659	9.4	0.09289
5.1	0.03760	9.5	0.09401
5.2	0.03863	9.6	0.09514
5.3	0.03968	9.7	0.09628
5.4	0.04075	9.8	0.09743
5.5	0.04184	9.9	0.09859
5.6	0.04294	10	0.09976
5.7	0.04407	10.1	0.10094
5.8	0.04521	10.2	0.10213
5.9	0.04636	10.3	0.10333
6	0.04751	10.4	0.10454
6.1	0.04866	10.5	0.10576
6.2	0.04983	10.6	0.10699
6.3	0.05097	10.7	0.10823
6.4	0.05213	10.8	0.10947
		10.9	0.11072

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

SPANISH VALLEY STORM  
DRAINAGE MEMO

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Proportion to total rainfall		Proportion to total rainfall	
TIME	depth	TIME	depth
10.9	0.18285	15.3	0.89757
11	0.19039	15.4	0.89957
11.1	0.19851	15.5	0.90155
11.2	0.20719	15.6	0.90351
11.3	0.21644	15.7	0.90545
11.4	0.22626	15.8	0.90738
11.5	0.23665	15.9	0.90928
11.6	0.24863	16	0.91116
11.7	0.26117	16.1	0.91303
11.8	0.27431	16.2	0.91488
11.9	0.28802	16.3	0.91670
12	0.30233	16.4	0.91851
12.1	0.31721	16.5	0.92030
12.2	0.33263	16.6	0.92207
12.3	0.34863	16.7	0.92382
12.4	0.36527	16.8	0.92555
12.5	0.38251	16.9	0.92726
12.6	0.39934	17	0.92896
12.7	0.41671	17.1	0.93063
12.8	0.43468	17.2	0.93229
12.9	0.45321	17.3	0.93392
13	0.47235	17.4	0.93554
13.1	0.49206	17.5	0.93714
13.2	0.51239	17.6	0.93872
13.3	0.53331	17.7	0.94028
13.4	0.55478	17.8	0.94182
13.5	0.57677	17.9	0.94334
13.6	0.59925	18	0.94484
13.7	0.62229	18.1	0.94632
13.8	0.64586	18.2	0.94779
13.9	0.66993	18.3	0.94923
14	0.69456	18.4	0.95066
14.1	0.71972	18.5	0.95206
14.2	0.74539	18.6	0.95345
14.3	0.77154	18.7	0.95482
14.4	0.79814	18.8	0.95617
14.5	0.82516	18.9	0.95750
14.6	0.85257	19	0.95881
14.7	0.88035	19.1	0.96010
14.8	0.90847	19.2	0.96138
14.9	0.93691	19.3	0.96265
15	0.96565	19.4	0.96390
15.1	0.99467	19.5	0.96513
15.2	1.02395	19.6	0.96635

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

SPANISH VALLEY STORM  
DRAINAGE MEMO

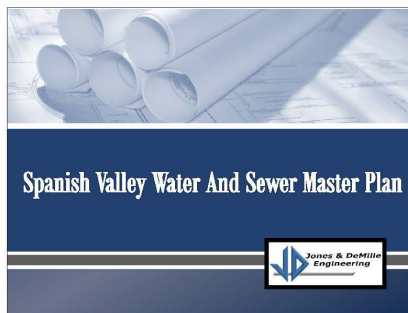
APPENDIX D

Proportion to total rainfall	
TIME	depth
19.7	0.96745
19.8	0.96861
19.9	0.96975
20	0.97087
20.1	0.97197
20.2	0.97305
20.3	0.97412
20.4	0.97516
20.5	0.97618
20.6	0.97719
20.7	0.97818
20.8	0.97914
20.9	0.98009
21	0.98102
21.1	0.98193
21.2	0.98282
21.3	0.98369
21.4	0.98454
21.5	0.98538
21.6	0.98619
21.7	0.98699
21.8	0.98776
21.9	0.98852
22	0.98926
22.1	0.98998
22.2	0.99068
22.3	0.99136
22.4	0.99202
22.5	0.99266
22.6	0.99328
22.7	0.99389
22.8	0.99447
22.9	0.99504
23	0.99555
23.1	0.99601
23.2	0.99642
23.3	0.99671
23.4	0.99698
23.5	0.99723
23.6	0.99746
23.7	0.99768
23.8	0.99787
23.9	0.99804
24	1.00000

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

SPANISH VALLEY WATER  
AND SEWER MASTER PLAN

APPENDIX E



## Purpose & Need

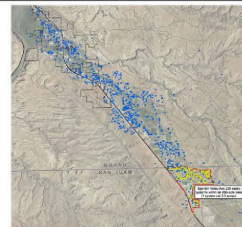
San Juan Spanish Valley Sewer Service District (SSD) hired Jones and DeMille Engineering to evaluate:

- o Existing Condition of Water and Wastewater Systems (Wells & Septic)
- o Future Growth (Proactive vs. Reactive)
- o Culinary Water System Alternatives
- o Sanitary Sewer System Alternatives

## Existing Conditions

- Individual Water Wells
  - o Do not provide sufficient fire protection
  - o Costly (high maintenance)
  - o Limits growth
  - o Limited water right availability
- Individual Septic Systems
  - o Limits residential development to 1-acre per resident
  - o High concentration for small area

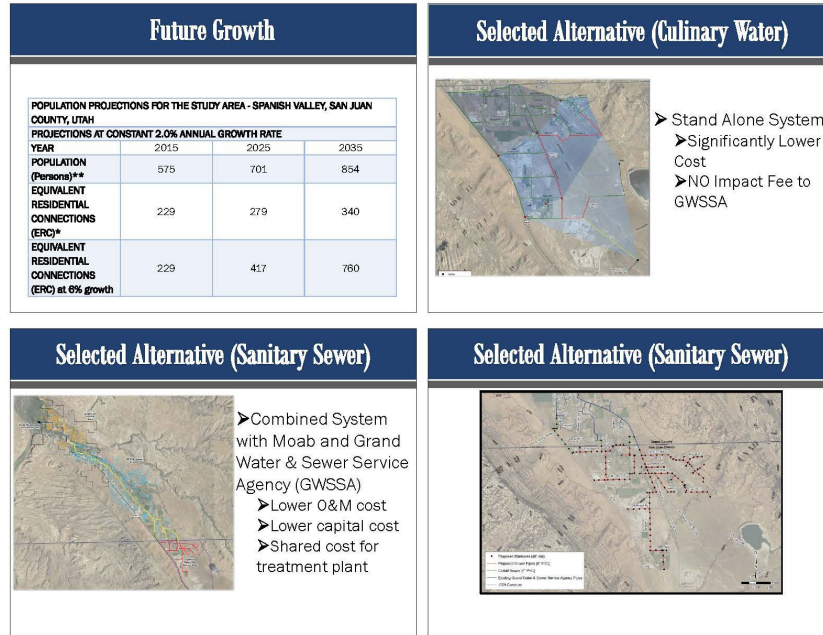
## Underground Wells / Septic Systems



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

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AND SEWER MASTER PLAN

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## Cost Estimates

System	Construction	Land & Capacity	Professional Services	TOTAL
Culinary Water	\$4,510,000	\$30,000	\$560,000	\$5,100,000
Sanitary Sewer	\$3,600,000	\$950,000	\$450,000	\$5,000,000

## Funding

- State, Federal and Private sources of money for public infrastructure projects:
  - Utah Permanent Community Impact Board (CIB)
  - Utah Division of Drinking Water (DDW)
  - Utah Department of Water Quality (DWQ)
  - USDA Rural Development
  - Private Loans and bonding
- Those that offer some form of grant money have a calculation to determine how much grant to give.
- DWQ, CIB, DDW use a percentage of the Median Adjusted Gross Income (MAGI) as an indication of what's affordable.

## % of MAGI (\$31,922)

- WATER** - The State of Utah recommends that an affordable water bill be no more than 1.75% of the community's median adjusted gross income (MAGI). The maximum affordable water bill for the SSD based on 1.75% of the SSD's MAGI is **\$45.63** per month.
- SEWER** - The State of Utah recommends that an affordable sewer bill be no more than 1.40% of the community's median adjusted gross income (MAGI). The maximum affordable sewer bill for the SSD based on 1.40% of the SSD's MAGI is **\$36.51** per month.
- Needed **80% Grant** 20% Loan to ensure SSD could charge no more than these rates.

## Funding Package (Culinary Water)

Table 1: Funding Authorized	Amount	Rate	Term	Annual Payment
Utah Permanent Community Impact Board	\$1,750,000	8%	10	\$210,000
Utah Division of Drinking Water	\$1,750,000	8%	10	\$210,000
Utah Department of Water Quality	\$1,750,000	8%	10	\$210,000
USDA Rural Development	\$1,750,000	8%	10	\$210,000
<b>Total</b>	<b>\$6,750,000</b>			<b>\$840,000</b>

Table 2: User Fee Summary	2017	2018	2019	2020
Water (incl. 10% of sewer)	\$680,000	\$700,000	\$720,000	\$740,000
Sanitary Sewer (incl. 10% of water)	\$230,000	\$240,000	\$250,000	\$260,000
<b>Grand Total User Fees</b>	<b>\$910,000</b>	<b>\$940,000</b>	<b>\$970,000</b>	<b>\$1,000,000</b>

53% Grant 47% loan

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

SPANISH VALLEY WATER  
AND SEWER MASTER PLAN

## Funding Package (Sanitary Sewer)

Table B: Spanish Valley Funding Authority	Amount	Rate	Term	Annual Payment
USDA Title II Loan Guaranty Program	\$1,500,000	2%	20 Yr	\$80,000
USDA Loan	\$400,000	0%	31	\$12,261.64 (loan)
CDL Loan	\$1,100,000	3%	10 Yr	\$90,000
CDL Loan	\$1,100,000	0%	30	\$26,300
<b>Total</b>	<b>\$4,100,000</b>			<b>\$204,561.64</b>

Table C: User Fee Summary	2017	2018	2019	2020
USDA Title II Loan	\$120,000	\$120,000	\$120,000	\$120,000
USDA Loan	\$0	\$0	\$0	\$0
CDL Loan	\$100,000	\$100,000	\$100,000	\$100,000
CDL Loan	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$220,000</b>	<b>\$220,000</b>	<b>\$220,000</b>	<b>\$220,000</b>

66% Grant 34% loan

## O&M Budget (Water)

Table D: Year Budget Projections	Current Year Budget	Year 1 Projected	Year 2 Projected	Year 3 Projected
<b>Operating Expenses</b>	<b>\$1,100,000</b>	<b>\$1,100,000</b>	<b>\$1,100,000</b>	<b>\$1,100,000</b>
A. Salaries and Benefits	\$700,000	\$700,000	\$700,000	\$700,000
B. Water Meter Maintenance	\$100,000	\$100,000	\$100,000	\$100,000
C. Water Meter	\$100,000	\$100,000	\$100,000	\$100,000
D. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
E. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
F. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
G. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
H. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
I. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
J. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
K. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
L. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
M. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
N. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
O. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
P. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
Q. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
R. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
S. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
T. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
U. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
V. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
W. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
X. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
Y. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
Z. Water Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
<b>Total</b>	<b>\$1,100,000</b>	<b>\$1,100,000</b>	<b>\$1,100,000</b>	<b>\$1,100,000</b>

## O&M Budget (Sewer)

Table E: Year Budget Projections	Current Year Budget	Year 1 Projected	Year 2 Projected	Year 3 Projected
<b>Operating Expenses</b>	<b>\$1,100,000</b>	<b>\$1,100,000</b>	<b>\$1,100,000</b>	<b>\$1,100,000</b>
A. Salaries and Benefits	\$700,000	\$700,000	\$700,000	\$700,000
B. Sewer Meter Maintenance	\$100,000	\$100,000	\$100,000	\$100,000
C. Sewer Meter	\$100,000	\$100,000	\$100,000	\$100,000
D. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
E. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
F. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
G. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
H. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
I. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
J. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
K. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
L. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
M. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
N. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
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P. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
Q. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
R. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
S. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
T. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
U. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
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Y. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
Z. Sewer Meter Repairs (20 - 25)	\$100,000	\$100,000	\$100,000	\$100,000
<b>Total</b>	<b>\$1,100,000</b>	<b>\$1,100,000</b>	<b>\$1,100,000</b>	<b>\$1,100,000</b>

## SITLA Partnership

- A Funding Package of 80% Grant and 20% Loan Needed
- San Juan County was able to obtain 60% Grant and 40% Loan.
- In order to make the 80% grant and 20% loan, \$2,000,000 worth of sewer and water connections were sold to the School Institutional Trust Lands Administration (SITLA).

APPENDIX E





# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

SAN JUAN SPANISH VALLEY  
SSD 40-YEAR WATER RIGHT  
PLAN-WATER RIGHT: 09-2349

APPENDIX F


<b>SAN JUAN SPANISH VALLEY SSD 40-YEAR WATER RIGHT PLAN WATER RIGHT: 09-2349</b>	
NOVEMBER 2017	
PREPARED FOR: San Juan Spanish Valley SSD	
PREPARED BY:  1-800-748-5275 Project #: 1503-060	
RIO-GRANDE • PUECO • NAJITO • RODRIGUEZ • UTECH VALLEY • ST. GEORGE • MONTEZIMOLA • VERNAL	
San Juan Spanish Valley SSD 40-Year Water Right Plan Water Right: 09-2349 (Cover)	
Jones & DeMille Engineering Project #: 1503-060	

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# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

SAN JUAN SPANISH VALLEY  
SSD 40-YEAR WATER RIGHT  
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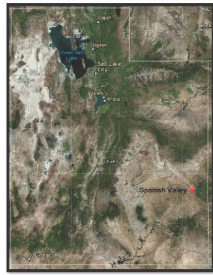
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[Owner]

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Jones & DeMille Engineering  
Project #: 1509-080

1. INTRODUCTION	
<p>The San Juan Spanish Valley SSD is a local district located in northern San Juan County. Figure 1. Spanish Valley has a population of about 500. Spanish Valley is near several major visitor attractions, Arches National Park, Canyonlands National Park, the Colorado and Green Rivers. The San Juan Spanish Valley SSD was created for the purpose of serving the residents, helping in conserving and developing water for multiple uses and developing a municipal water system for the area of Spanish Valley.</p> <p>San Juan Spanish Valley SSD has contracted with Jones &amp; DeMille Engineering to produce this 40 Year Water Right Plan. This plan will project the beneficial water use of water right 09-2349 through a 40-year period. The Plan period will only evaluate the next 40 years and will need updates as required to make water right decisions for all future development. This Plan will answer how much water right the San Juan Spanish Valley SSD will have to manage and how much water right is required from a developer before any individual new project approval.</p>	
	
<p>Figure 1. Spanish Valley</p>	
<p>San Juan Spanish Valley SSD 40-Year Water Right Plan Water Right: 09-2349</p>	
<p>Page 2</p>	
<p>Jones &amp; DeMille Engineering Project #: 1509-080</p>	

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

SAN JUAN SPANISH VALLEY  
SSD 40-YEAR WATER RIGHT  
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## APPENDIX F

### 1.1. PROJECTED GROWTH RATES

For the next 40 years, the Utah Governor's Office of Management and Budget (GOMB) projects that San Juan County will experience an annual growth rate of 0.38%. However, it's reasonable to expect that Spanish Valley will develop and grow faster than what the GOMB projects for the rest of the county.

There are several indicators that Spanish Valley will develop quite rapidly in the near future. One such indicator is that tourism in Moab, Arches National Park, and Canyonlands is increasing greatly. As tourism increases, the need for more restaurants, hotels, and other tourism related infrastructure increases, as well as the need for more housing to accommodate new employees and residents. Arches National Park and Canyonlands National Park have experienced a tremendous increase in the number of visitors over the last few years. The attractiveness for less expensive development places Spanish Valley in a favorable position for future development to accommodate increasing tourism.

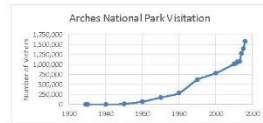


Figure 7: Arches National Park Visitation<sup>1</sup>

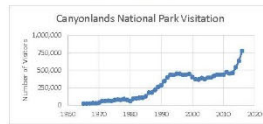


Figure 8: Canyonlands National Park Visitation<sup>2</sup>

<sup>1</sup> <https://www.nps.gov/arch/learn/management/statistics.htm>  
<sup>2</sup> <https://www.nps.gov/cany/learn/management/statistics.htm>  
San Juan Spanish Valley SSD 40-Year Water Right Plan-Water  
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Project #: 15034-000

Another indicator for higher growth for Spanish Valley is the planned construction of the culinary water and sanitary sewer system in 2018. Similar cities have experienced a large growth related to a low cost of development and after a sewer or water system was constructed one such city is Nibley City, Utah. Nibley City experienced a large increase in population shortly after the city had a sewer system constructed. Nibley was primarily rural and much of the land within the city was open prairie prior to 2000. When the sewer system was under construction many developers came to Nibley to build single family homes because of the relatively low cost to develop. Nibley City experienced an almost 13% annual growth rate per year between 2000 and 2005, almost doubling the population.<sup>3</sup>

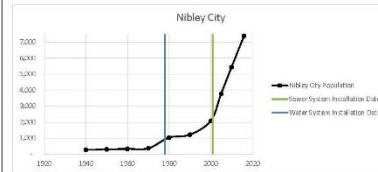


Figure 9: Nibley City Development

Based on increasing tourism, and large development occurring during and after the construction of the water and sewer systems, Spanish Valley may experience a similar, if not greater, boost in development.

#### 1.1.1. DEVELOPMENT CAPACITY

The development capacity of Spanish Valley is related to the amount of area that can be developed. The amount of developable area is based mainly on terrain conditions. Areas that are hilly, steep, or that contain wetlands are not considered part of this developable area. Other excluded areas are located primarily within the Kanab area, and the BLM campground south of Kanab's Lake. The developable area was chosen using Google Earth Imagery, Figure 5. In Spanish Valley there are about 4,000 acres that can be developed.

<sup>3</sup> <https://population.us/ut/nibley/>  
San Juan Spanish Valley SSD 40-Year Water Right Plan-Water  
Right: 09-2349

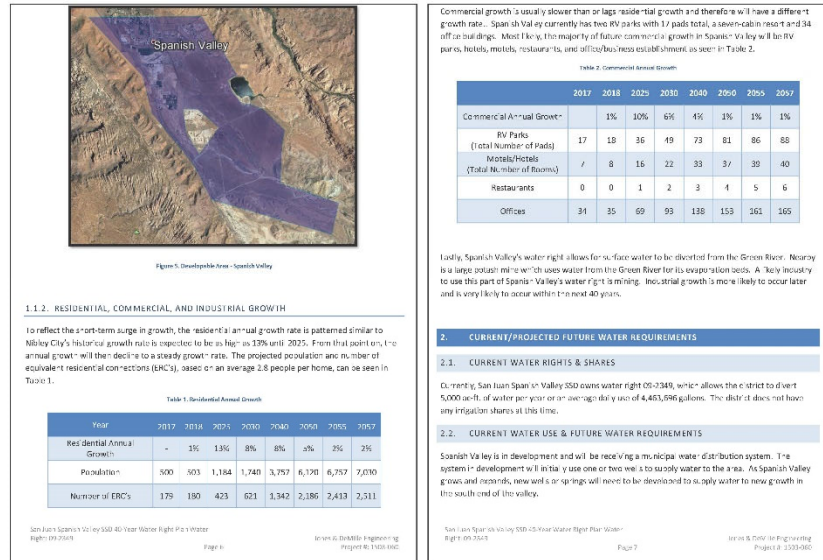
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# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

SAN JUAN SPANISH VALLEY  
SSD 40-YEAR WATER RIGHT  
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## APPENDIX F



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

SAN JUAN SPANISH VALLEY  
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## APPENDIX F

To best estimate water use for Spanish Valley the following assumptions have been made and are based on engineering judgement and Utah Code:

1. For conservative purposes, residential water use will be based on the Peak Day Demand of 800 gallons per day per connection, see Table 3.
2. Agricultural use is based on 0.3 irrigated acres per connection, see Figure 6 and Table 4.
  - a. Spanish Valley is in Vrg zone 5 and therefore irrigation use is 4.52 gallons per minute per irrigated acre (i.e. the peak day demand).
3. Any industry that uses Spanish Valley's water right is assumed to use three cubic feet per second or about 1,938,571 gallons per day.
4. All offices or building establishment, present and future, do not or will not have a cafeteria, see Table 5.
5. All new restaurants will be ordinary (not 74 hour and lower on average) of 77 seats, see Table 5.

Table 3. Source Demand for indoor use\*

TABLE 3.10-3 Source Demand for indoor Use		
Type of Connection	Peak Day Demand	Average Yearly Demand
Year round use:		
Residential	800 gpd/conn	145,000 gal./conn (400 gal./conn)
Typical/semi-Residential Connection (ERC)	800 gpd/ERC	145,000 gal./ERC (400 gal./ERC)
Hotel, Motel and Resort	150 gpd/unit	51,750 gal./unit
RV Park	100 gpd/site	15,500 gal./site

\* <https://pubs.usgs.gov/pam/pam000/009/109-510.html>  
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James E. DeVries, Jr. Consulting  
Project No. 1-2018-002

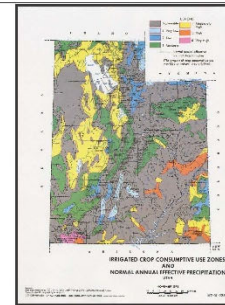


Figure 6. Irrigated Crop Consumptive Use Zones\*

TABLE 3.10-3 Source Demand for irrigation	
Map Zone	Peak Day Demand (gpm/irrigated acre)
1	7.36
2	2.60
3	3.35
4	3.90
5	4.52
6	4.90

\* [https://dew.usgs.gov/Topics/Water/for-irrigation/magnets/irrigation\\_zones\\_2322x3340.gif](https://dew.usgs.gov/Topics/Water/for-irrigation/magnets/irrigation_zones_2322x3340.gif)  
<https://pubs.usgs.gov/pam/pam000/009/109-510.html>  
San Juan Spanish Valley SSD 40-Year Water Right Plan-2018  
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James E. DeVries, Jr. Consulting  
Project No. 1-2018-002

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

SAN JUAN SPANISH VALLEY  
SSD 40-YEAR WATER RIGHT  
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TABLE 5.10-2	
Source Demand for Indoor Use	
Type of Establishment	Peak Day Demand (gpd)
Office Buildings and Business Establishments, per shift, per employee	
a. with cafeteria	25
b. with no cafeteria	15
Restaurants	
a. ordinary restaurants (not 24-hour service)	35 per seat
b. 24-hour service	50 per seat
c. single service customer utensils only	2 per customer
d. cr. per customer served (includes toilet and kitchen wastes)	10 per customer served

**3. SUMMARY**

Residential water use takes about half of the total amount of water used initially. As mentioned in the assumptions, 800-gal per connection was used as a conservative approach and not to under estimate and have Spanish Valley run out of water sooner than expected. Table 6 shows residential water use through the 40-year period.

Table 6. Residential Water Use							
	2017	2018	2025	2030	2040	2050	2057
population	500	508	1,194	1,740	3,757	6,120	7,630
Number of ERC's	179	180	423	621	1,342	2,186	2,413
Residential Water Use (gallons)	142,887	145,714	398,296	497,143	1,073,429	1,748,671	2,008,571

<sup>1</sup><https://planning.sanjuan.gov/index.cfm?2007-007-010.htm>  
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drawn & layout: engineering  
Project #: 1503-000

The total agricultural use was calculated with the following equation:

$$Ag. Water Use = 4.5 \frac{gpd}{in \cdot in \cdot irrigated acres} \times 30 \frac{in}{ft} \times 24 \frac{hr}{day} \times 0.1 \frac{hr}{day} \times irrigated acres \times \# of EDC's$$

Agricultural water use also makes up about half of the total water use initially. Table 7 shows agricultural water use through the 40-year period.

Table 7: Agricultural Water Use

	2017	2018	2025	2030	2040	2050	2057
Irrigated Acres	18	18	47	67	134	219	241
Agricultural Water Use (gallons)	116,229	116,926	279,229	404,475	873,341	1,422,638	1,970,719

Commercial water use was calculated by taking the type of business and multiplying the number of units by the respective source demand. Table 8 shows commercial water use through the 40-year period.

Table 8: Commercial Water Use

	2017	2018	2025	2030	2040	2050	2057
RV Park Water Use	1,700	1,800	3,690	4,300	7,300	8,100	8,800
Marine/Hotel's Water Use	1,250	1,260	2,400	3,300	4,950	5,550	6,050
Restaurants Water Use (72 seats per restaurant)	-	-	2,520	5,240	7,350	10,280	11,120
Office/Government Establishment Water Use (gallons)	1,020	1,030	2,070	2,790	4,140	4,990	4,950
Total Commercial Water Use (gallons)	3,770	4,090	10,590	16,030	23,990	28,320	31,880

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# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

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## APPENDIX F

Industrial water use for the 40-year period can be seen in Table 9. Again, as mentioned in the assumptions, industrial use has been converted from 3 cubic feet per second to gallons per day.

Table 9: Industrial Water Use

	2017	2018	2019	2020	2040	2050	2055	2057
Industrial Water Use (gallons)	0	0	0	0	1,938,571	1,938,571	1,938,571	1,938,571

The combined water use for the year period can be seen in Table 10.

Table 10: Total Water Use

	2017	2018	2019	2020	2040	2050	2055	2057
Residential Water Use (gallons)	142,067	143,714	188,202	497,344	1,079,429	1,788,571	1,898,571	2,039,571
Agricultural Water Use (gallons)	116,219	116,902	275,219	408,475	873,961	1,475,699	1,573,719	1,694,174
Total Commercial Water Use (gallons)	3,770	4,280	32,500	16,730	28,700	28,300	31,800	36,370
Industrial Water Use (gallons)	0	0	0	0	1,938,571	1,938,571	1,938,571	1,938,571
Total Water Use (gallons)	262,056	264,906	496,921	912,549	3,026,661	5,131,141	5,432,721	5,704,686
Current Average Daily Available Water (gallons)	4,403,712	4,403,712	4,403,712	4,403,712	4,403,712	4,403,712	4,403,712	4,403,712
Surplus/Deficit	4,141,656	4,138,806	3,906,791	3,491,163	1,377,051	1,272,571	1,270,991	1,270,991

By the end of the 40-year period, Spanish Valley will use the entirety of their current water right and have a deficit, as seen in the red highlighted cells of Table 10. To ensure that there is sufficient water for development past the 40-year period, the district should procure additional water rights or shares.

San Juan Spanish Valley SSD 40-Year Water Right Plan Water  
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Jones & Duda Engineering  
Project #: 1319-000

APPENDIX A: BOARD MEMBER INFORMATION

San Juan Spanish Valley SSD Board Members

Name	Position	Term Expires
Frank Darcey	Chairman	
William Johnston	Vice Chair	
Kerry Behanin	Board Member	
Jared Shumway	Board Member	
Mike Bynum	Board Member	12/1/2020

Contact Information:  
San Juan Spanish Valley SSD  
117 South Main  
Monticello, UT 84535

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Jones & Duda Engineering  
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# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

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**APPENDIX D: WATER RIGHT INFORMATION**

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David R. Carlson Engineering  
Project #: 2018-082

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San Juan County Spanish Valley Area Plan

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The image displays two side-by-side screenshots of documents, likely related to the 2013 NSA leaks. The left document is titled "NSA P R I V (092246)" and contains a header "NSA P R I V (092246)" and a footer "NSA P R I V (092246)". The right document is titled "U.S. DEPARTMENT OF JUSTICE" and contains a header "U.S. DEPARTMENT OF JUSTICE" and a footer "U.S. DEPARTMENT OF JUSTICE".

SAN JUAN SPANISH VALLEY  
SSD 40-YEAR WATER RIGHT  
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# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

US 191 CORRIDOR  
PRESERVATION STUDY

## Introduction

### Background

The Utah Department of Transportation (UDOT) is concerned about access management along State Route U.S. 191. To assist UDOT in its current and long range transportation planning, InterPlan was hired to conduct an access management study along the corridor, in coordination with Grand County, San Juan County, and Moab City (hereinafter referred to as "the participating entities") and to determine the location of future signals, street accesses, and driveway accesses. The study area includes U.S. 191 from milepost (MP) 112 to 123.4. The goal of this study is for the participating entities to enter into a corridor agreement for U.S. 191. This agreement will give the participating entities a better tool to manage this corridor in the future. The study utilizes principles found in the Transportation Research Board's (TRB) Access Management Manual, UDOT's R930-6 Access Management, and the American Association of State Highway and Transportation Officials (AASHTO) Policy on Geometric Design of Highways and Streets, latest editions.

### Description of U.S. 191

The U.S. 191 study area is 11.4 miles long, directly south of Moab City. This portion of U.S. 191 is a two lane rural highway with intermittent passing lanes. The speed limit in the northern portion of the corridor is 55 miles per hour (mph), rising to 65 mph at approximately MP 121.2. Along the study corridor land uses vary from commercial and light industrial to residential and vacant land. Development and development pressures are generally more intense on the north end of the corridor.

## Existing Conditions

### Land Use

Land use along the corridor varies greatly. Most of the developed portions are to the north in Grand County with some development occurring in the northernmost portion of San Juan County. Development is primarily low intensity commercial and industrial uses with some residential. Larger residential areas are accessed from the corridor via collector roads. Additionally, to the south various recreational resources are accessed from the corridor, including some popular recreational trails.

### Capacity and Traffic Volumes

Along the study corridor, U.S. 191 is a two-lane highway with intermittent passing lanes. The capacity along the facility varies, from 11,500 vehicles at level of service (LOS) C at the rural south end to 25,500 vehicles at LOS D at the urban northern end. LOS is defined as how well a road operates based on levels A through F. Level A represents the best operating conditions and level F the worst. Annual average daily traffic (AADT) currently peaks in the study area at a volume of 13,295 at the northern end of the corridor. This represents approximately 69 percent of capacity. Table 1 shows historical AADTs for the segments of the study area.

Table 1: Historical Annual Average Daily Traffic

Begin Milepost	End Milepost	Description	Annual Average Daily Traffic		
			2013	2012	2011
123.45	117.89	Spanish Valley to La Sal Loop Road	4,262	4,222	4,212
117.89	121.18	La Sal Loop Road to Mitten Creek Drive	8,495	8,370	8,360
123.18	124.48	Mitten Creek Drive to 600 East	13,295	13,125	13,065

### Existing Access Management Categories

UDOT Administrative Rule R930-6, *Accommodation of Utilities and the Control and Protection of State Highway Rights of Way*, establishes the access management policies for state roads. According to R930-6, access to U.S. 191 in the study area is defined as Category 2 – System Priority Rural from the southern extent of the study area to just south of Lemon Lane and Category 4 – Regional Rural from just south of Lemon Lane to the north end of the study limits. As shown in the following table, Category 2 minimum signal spacing is 5,280 feet, minimum street spacing is 1,000 feet, and minimum driveway spacing is 1,000 feet. Category 4 minimum signal spacing is 2,540 feet, minimum street spacing is 660 feet, and minimum driveway spacing is 500 feet.

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San Juan County Spanish Valley Area Plan

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

US 191 CORRIDOR  
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**Table 2: Rule R930-6 Access Management Standards**

Category	Minimum Signal Spacing (feet)	Minimum Street Spacing (feet)	Minimum Access Spacing (feet)	Minimum Interchange to Crossroad Access Spacing (feet)		
				To 1 <sup>st</sup> Right-in Right-out	To 1 <sup>st</sup> Intersection	From Last Right-in Right-out
1 L				Interchange to Next Crossroad Access		
2 S-R	6,250	1,000	1,000	1,320	1,320	1,320
3 S-U	2,640	No Unsignalized Access Permitted		1,320	1,320	1,320
4 R-R	2,640	660	500	660	1,320	500
5 R-RU	2,640	660	500	660	1,320	500
6 R-U	1,320	395	200	500	1,320	500
7 C-R	1,320	660	160			
8 C-U	1,320	660	160	Not Applicable		
9 O	1,320	395	160			

Source: UDOT Administrative Rule R930-6, August 2013 Edition

Currently, U.S. 191 does not meet the UDOT access management standards along both the Category 2 and Category 4 sections within the study area. Access management standards were adopted with pre-existing deficiencies. The Administrative Rule requires permission for access or a modification to access from UDOT if it is a new access, a change of land use type, or a change of intensity of land use. Pre-existing deficiencies are not affected by the rule unless or until development is proposed, thus triggering UDOT approval.

The table below shows the existing U.S. 191 access management compliance throughout the study area. Although the access management standards were adopted after deficiencies such as driveways existed, UDOT can still work with developers and property owners to limit future driveways to meet UDOT access management standards.

**Table 3: Existing Access Compliance**

	All Segments		Northbound		Southbound	
	Driveway	Street	Driveway	Street	Driveway	Street
Category 2	31%	56%	22%	50%	64%	100%
Category 4	4%	11%	8%	25%	2%	67%
All Categories	15%	55%	13%	58%	21%	77%

## Measurement of Spacing

In Section 3.0, Definitions of UDOT's Administrative Rule R930-6, specifications are given on how to measure the spacing of signals, streets, and private accesses/driveways and are set forth as follows:

1. Signal Spacing – "Signal spacing is measured from the centerline of the existing or future signalized intersection cross street to the centerline of the next existing or future signalized intersection cross street."
2. Street Spacing – "Street spacing is measured as the distance from leaving point of tangent to receiving point of tangent."
3. Access Spacing – "Access is measured as the distance from the inside point of curvature of the radius of an intersection or driveway to the inside point of curvature of the next intersection or driveway radius."
4. Driveway Spacing – "Means the distance between adjacent driveways on the side of the roadway as measured from the near edge."

In order to determine the number of signals, streets, and accesses/driveways along U.S. 191, an aerial map of the study area was used along with on-site inspection of the roadway. The project technical advisory committee also provided input. The table below shows the number of existing signals, streets, and accesses/driveways along U.S. 191.

**Table 4: Existing Access, U.S. 191, MP 117 to MP 123.4**

Number of Traffic Signals	Number of Streets	Number of Accesses/Driveways
0	34	110

Existing access points along the corridor are displayed in exhibits one through six in the appendix.

## Safety Analysis

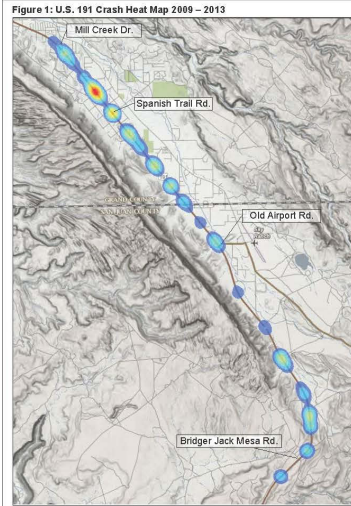
There were a total of 107 crashes on U.S. 191 within the study area from 2009 to 2013. Of these, 32 involved wild animal collision, comprising 30 percent of the total. Eleven crashes were severe, including three pedestrian, two DUI's, two no seatbelts, one drowsy driver, one weather related, and one speed related crash. Figure 1 below depicts a heat map, which displays crash activity concentrations. Crashes occur more frequently to the north of the study area, particularly at the intersections of San Jose Road and Spanish Trail Road.

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## Future Conditions

### Land Use

Existing land use patterns are expected to continue, spreading into existing vacant developable land. The most notable known change in the future is the Utah State University (USU) campus that is expected to be located just west of the corridor near milepost 123 at the north end of the study limits. In addition to the campus, supporting housing and retail development is anticipated in the surrounding areas. These developments will likely change the dynamic of traffic patterns along the U.S. 191 corridor.

### Traffic Volumes

Using the Utah Statewide Travel Model, future 2040 traffic conditions were forecasted. Although significant increases are projected with daily volumes peaking at 18,170, this growth is more than accommodated by the capacity of existing and planned infrastructure. It is important to note that these volumes do not reflect tourist peak season conditions and do not account for the new USU campus. The table below shows the existing and future traffic volumes.

**Table 5: Forecasted 2040 Traffic Volumes**

Begin Milepost	End Milepost	Description	Annual Average Daily Traffic	
			2013	2040
109.45	117.89	Spanish Valley to LaSal Loop Road	4,260	11,200
117.89	123.19	LaSal Loop Road to Milcreek Drive	8,455	11,200
123.19	124.48	Milcreek Drive to 400 East	13,285	18,170

### Future Street Network

The street network surrounding the study corridor should be expected to change in the future. The anticipated changes include the realignment of Milcreek Drive and new roadway connections to the west to provide access to the future USU campus. These anticipated changes are shown in exhibits one through six in the appendix.

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## Access Management

### What is Access Management?

Access management is a way of preserving the safe performance of the road for the flow of traffic at posted speeds by controlling driveway and cross street access to that roadway. Access management on Utah's state roads is administered by UDOT through the Utah Administrative Rule R930-6. Access management maintains the longer term functionality of a state road that is critical to the maintenance of a quality transportation system. Specifically, access management limits the number of traffic signals, intersections and access points so that traffic flows at the speed and capacity designed for the road classification.

### Importance of Access Management

Access management is necessary to achieve public safety on Utah's roadways. Through access management techniques, accident rate reduction is typically achieved, while modest improvements in capacity and travel speeds can also occur. Starting with the design of a roadway, engineers plan for limited access along the roadway in order to limit performance reduction. With many intersections, traffic signals and driveways, the potential for congestion is increased along with the potential for a decline in automobile speed that often causes delays. Goals of access management include:

1. Reduction in traffic conflicts and accidents
2. Reduced traffic congestion and increased mobility
3. Preservation of traffic capacity and level of service
4. Improved economic benefits to business
5. Potential reduction in air pollution from vehicle exhaust

According to the National Cooperative Highway Research Program's (NCHRP) Report 420 *Impacts of Access Management Techniques* there are numerous access management techniques than can be used to preserve the intended performance of a roadway. These techniques range from adopting policies to designing roadway features. One known policy technique will be the corridor agreement that is proposed to be signed between the participating entities. This agreement provides specific policy direction on the spacing of future traffic signals, location of streets, and driveway access spacing with an overall goal of limiting the number of access points along a particular roadway. According to UDOT's Administrative Rule R930.6, a corridor agreement supersedes other access category designations and becomes the governing rule on permitting future driveways. Similar corridor agreements have been created in all four UDOT Regions.

## Study Process

### Public Participations Efforts

InterPlan completed the following tasks in order to provide UDOT with an access management plan:

1. Organized a technical advisory committee (TAC) to work with the consultant team to provide local knowledge and subject matter expertise.
2. Collected existing conditions data and reviewed pertinent data regarding relevant future planning efforts.
3. Conducted two public open houses with the TAC on August 18, 2015 and September 30, 2015.

### Technical Advisory Committee

As mentioned earlier, a TAC was formed to provide local knowledge and subject matter expertise in the development of the access management plan and the corridor agreement between the participating entities. The TAC was charged with the responsibility for reviewing the technical analysis completed by the consultant team and considering public input before moving forward with a preferred access management alternative.





# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

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Table 6: Technical Advisory Committee Members

Name	Organization
Troy Ferguson	UDOT
Robert Dwyer	UDOT
Dave Skapley	UDOT
Phat Amel	UDOT
Arne Soder	UDOT
Bill Jackson	Grand County
Zacharia Levine	Grand County
Scott Christensen	San Juan County
Jeff Foster	Moab City
Philip Bowman	Moab City
Elise Eiler	STUA
Rick Smith	BLM
Vern Kestler	InterPlan
Kai Tanaka	InterPlan
Michael Baker	InterPlan

### Public Open Houses

Two public open houses were held with the general public along the corridor on August 18, 2015 and September 30, 2015. Both open houses were noticed through an advertisement in the Moab Times Independent. At the meetings, participants were informed of the status of the project through slideshow presentations and they were invited to an open discussion with the consultant team and staff over large study area maps. Participants were also invited to submit comments through a comment form (see Appendix for comment forms and comments from both public meetings).



## Corridor Access Management Plan

### Signal Control Plan

Planning the future signalization for the study corridor was an iterative process where multiple scenarios were considered and reviewed. The signalization recommendations were determined through a review of existing conditions, TAC recommendations, and public comment. The identified potential future signal locations are described below.

#### 1. Old Spanish Trail Arena (MP 120.8)

This road acts as primary access for the Old Spanish Trail Arena, as well as agricultural uses to the east. Increasing usage of the developing arena may warrant a signal in the future.

#### 2. Spanish Trail Road (MP 121.5)

Located at approximately 121.5, Spanish Trail Road extends northeast, acting as a major collector road to Spanish Valley Drive. The intersection extends to the southwest directly into a RV park.

#### 3. Millicreek Drive (MP 123.2)

Located at the very northern portion of the study corridor at approximately MP 123.2, the junction at U.S. 191 and Millicreek Drive currently operates as two separate one-way T intersections. There are currently plans to redesign this intersection as a single T intersection located slightly to the north of its current location. Millicreek Drive will access development to the north and east of U.S. 191 and acts as an alternative route to U.S. 191 to the north.

In the future, signals may be installed if signal warrants are met. The *Manual on Uniform Traffic Control Devices* (MUTCD) is the national standard for all traffic control devices on all public roads open to public travel in accordance with 23 U.S.C. 108(d) and 402(a). The MUTCD states that the need for a traffic control signal shall include an analysis of the applicability of any of nine standard warrants based on a study of the existing operation and safety. These warrants are:

Table 7: Traffic Control Signal Warrants

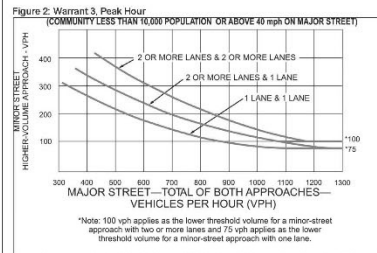
MUTCD Traffic Control Signal Warrants	
Warrant 1: Eight-Hour Vehicular Volume	Warrant 6: Coordinated Signal Systems
Warrant 2: Four-Hour Vehicular Volume	Warrant 7: Crash Experience
Warrant 3: Peak Hour	Warrant 8: Roadway Network
Warrant 4: Pedestrian Volume	Warrant 9: Intersection Near at-grade Railroad Crossing
Warrant 5: School Crossing	

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The peak hour warrant is often the most likely leading indicator of a need for a traffic signal, and is easiest to estimate. In addition, where cross traffic is concentrated at a few major points, the peak hour warrant is met sooner than where cross traffic might be dispersed over a larger number of smaller intersecting streets.



### Access Corridor Control Plan

Existing accesses along U.S. 191 were reviewed and analyzed with input from the TAC and the public to identify opportunities to increase compliance with the UDOT access management categories. Possible future changes to increase compliance include: street realignments, driveway consolidation, driveway closures, and construction of frontage roads. Exhibits one through six in the appendix display the identified possible future changes.

When compared to Table 3, Table 8 below shows the improvement in access spacing compliance if all identified changes are implemented. It is important to note that all existing accesses are established and legal and that UDOT can only implement these improvements if there is a change in the type of land use, a change in intensity of land use, or in cooperation with the land owner.

**Table 8: Potential Future Access Compliance**

	All Segments		East Side		West Side	
	Driveway	Street	Driveway	Street	Driveway	Street
Category 2	63%	79%	43%	71%	100%	100%
Category 4	38%	88%	37%	100%	100%	86%
All Categories	49%	83%	40%	83%	81%	86%

### Next Steps: Corridor Agreement

The next steps include all four jurisdictions signing the corridor agreement and having Grand County, San Juan County, and Moab City adopt the corridor agreement as part of their transportation master plans and proceed with implementation by coordinating with UDOT.

### About InterPlan:

InterPlan is a Utah owned and operated company located in Midvale, Utah and dedicated to transportation planning and traffic engineering services. The firm was founded on the concept of providing high quality technical work, attention to client needs, and open and honest communication.

**InterPlan**  
2719 South Main Street  
Midvale, Utah 84047  
801.327.3400

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## Appendix

1. Technical Advisory Committee Meeting Agendas for July 16, August 19, and September 30, 2015
2. Public Comments Forms for August 19, and September 30, 2015
3. Moab Times Public Meeting Advertisements of August 19, and September 30, 2015
4. Public Comments dated August 5, August 11, August 14, August 19, September 24, and October 1, 2015
5. Exhibits 1-6

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## U.S. 191 Corridor Preservation Study Technical Advisory Committee Meeting Agenda

Date: Thursday, July 16, 2015  
Time: 1:00 p.m. to 3:00 p.m.  
Place: Conference Room - Moab City Office, 217 East Center Street, Moab City

### Technical Advisory Committee (TAC)

Troy Torgerson, UDOT Region 4  
Bill Jackson, Grand County  
Scott Christensen, San Juan County  
Jill Foster, Moab City  
Ellen Enrie, BTLA  
Beth Ransel, BLM  
Vern Koester, InterPlan  
Kai Tschmalz, InterPlan  
Michael Baker, InterPlan

### Agenda

1. Introduction
  - a. TAC Introductions
  - b. Purpose of corridor study
  - c. Access management principles
2. Existing Conditions
  - a. UDOT access spacing standards
  - b. Existing access compliance
3. Public Engagement
  - a. Future TAC and Public Meetings
    - August 11 - Review existing conditions
    - September 9 - Review recommendations
  - b. Stakeholder list
  - c. Meeting notice

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## U.S. 191 Corridor Preservation Study Technical Advisory Committee Meeting Agenda

Date: Wednesday, August 19, 2015  
Time: 2:00 p.m. to 4:00 p.m.  
Place: The Grand Center, 182 North 500 West, Moab, Utah

### Technical Advisory Committee (TAC)

Troy Torgersen, UDOT  
Robert Lovell, UDOT  
Dale Stapley, UDOT  
Dwayne Piment, UDOT  
Rhett Ames, UDOT  
Anne Ogilvie, UDOT  
Bill Jackson, Grand County  
Zacharia Luning, Grand County  
Scott Christensen, San Juan County  
Jeff Fesler, Moab City  
Eric Johnson, Moab City  
Elise Eker, SITLA  
Brian Torgerson, SITLA  
Beth Ramey, BLM  
Rock Smith, BLM  
Vern Kessler, InterPlan  
Kai Torgerson, InterPlan  
Michael Baker, InterPlan

### Agenda

1. Introduction
  - a. TAC introductions
  - b. Study update
2. Existing Conditions
  - a. Identified private driveways, private roads, and public roads
3. Future Conditions
  - a. Identified private driveways that could be closed or consolidated
  - b. Identified private/public roads that could be consolidated, realigned, or constructed

4. Public Engagement
  - a. Future TAC and Public Meetings
    - September 30 – Review recommendations
  - b. Meeting notice – Advertised in the Moab Times-Independent on August 6 & 13, 2015. Requested to be on the websites of Grand County, San Juan County, and Moab City. Requested to be on Community Calendar website.

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#### U.S. 191 Corridor Preservation Study Technical Advisory Committee Meeting Agenda

Date: Wednesday, September 30, 2015  
Time: 2:00 p.m. to 4:00 p.m.  
Place: The Grand Center, 162 North 500 West, Moab, Utah

##### Technical Advisory Committee (TAC)

Troy Tongensen, UDOT  
Robert Dowell, UDOT  
Dale Stipley, UDOT  
Danyle Friant, UDOT  
Robert Ansell, UDOT  
Anne Ogden, UDOT  
Bill Jackson, Grand County  
Zacharia Levine, Grand County  
Scott Christensen, San Juan County  
Jeff Foster, Moab City  
Eric Johnson, Moab City  
Elise Erler, SITLA  
Brian Tongenson, SITLA  
Beth Rames, BLM  
Rock Smith, BLM  
Vern Kossler, InterPlan  
Ken Tomlinson, InterPlan  
Michael Baker, InterPlan

##### Agenda

1. Introduction
  - a. TAC Instructions
  - b. Study update
2. Future Conditions
  - a. Identified private driveways that could be closed or consolidated
  - b. Identified private/public roads that could be consolidated, realigned, or constructed
3. Story Board Review
  - a. Information for public to be placed on website of Grand County, Moab City, San Juan County, UDOT, and InterPlan.

4. Public Meeting for September 30, 2015
  - a. Show presentation
  - b. Allow for review of Corridor Preservation Plan
  - c. Allow for written public comments
5. Next Steps
  - a. Consider new comments from public meeting
  - b. Write a draft Corridor Agreement
  - c. Send to Grand County, Moab City, San Juan County, and UDOT for review

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U.S. 191 Corridor Preservation Study  
Public Meeting, August 13, 2015  
Public Comment Form

1. What are your comments about the public meeting held tonight?
2. Is there adequate private access to the properties fronting U.S. 191?  
Circle No or Yes. Please explain.
3. Is there adequate public street access for properties not fronting U.S. 191?  
Circle No or Yes. Please explain.
4. Are there traffic signals needed on U.S. 191 in the study area?  
Circle No or Yes. If yes, please indicate where and why.
5. Please provide any additional comments you have about the U.S. 191 Corridor Preservation Study.

Please submit all comment forms at the public meeting or by August 31, 2015 to Vonn Kessler, InterPlan Planning Services, 1000 West 1000 South, Suite 100, Midvale, Utah 84007.

**LIPDOT**  
Landscape Architecture

U.S. 191 Corridor Preservation Study  
Public Meeting, September 30, 2015  
Public Comment Form

1. How did you hear about tonight's public meeting?
2. What are your comments about the public meeting held tonight?
3. In the proposed plan, will there be adequate private access to the properties fronting U.S. 191? Circle No or Yes. Please explain.
4. In the proposed plan, will there be adequate public street access for properties not fronting U.S. 191? Circle No or Yes. Please explain.
5. In the proposed plan, are the future traffic signals located where they will be needed? Circle No or Yes. If yes, please indicate where and why.
6. Please provide any additional comments you have about the U.S. 191 Corridor Preservation Study.

Please submit all comment forms at the public meeting or by October 7, 2015 to Vonn Kessler, InterPlan Planning Services, 1000 West 1000 South, Suite 100, Midvale, Utah 84007.

**LIPDOT**  
Landscape Architecture



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 <p><b>PUBLIC MEETING</b> <b>Attention Property Owners along US-191</b></p> <p>The Utah Department of Transportation (UDOT) seeks public comment on the US-191 Corridor Preservation Study. This project spans 11.5 miles from approximately Sage Drive in Moab to Bridger Jack Mesa Road, 1.5 miles north of the Kane Springs Rest Area in San Juan County.</p> <p>To improve safety along the corridor, the study will guide the placement of future public streets and private driveways on US-191.</p> <p>Please join us for a public meeting to learn more about this study and to review the existing conditions!</p> <p><b>DATE: Wednesday, August 19, 2015</b> <b>WHEN: 6:00 - 8:00 PM</b> <b>WHERE: The Grand Center</b> <b>182 North 500 West in Moab</b></p> <p>If you have any comments, questions, or suggestions please contact: Vern Keeslar, InterPlan Planning Manager. 801-307-3400 or vern@interplanco.com</p>	 <p><b>PUBLIC MEETING</b> <b>Attention Property Owners along US-191</b></p> <p>The Utah Department of Transportation (UDOT) seeks public comment on the US-191 Corridor Preservation Study. This project spans 11.5 miles from approximately Sage Drive in Moab to Bridger Jack Mesa Road, 1.5 miles north of the Kane Springs Rest Area in San Juan County.</p> <p>To improve safety along the corridor, the study will guide the placement of future public streets and private driveways on US-191.</p> <p>Please join us for our second public meeting to learn more about this study and to review possible changes!</p> <p><b>DATE: Wednesday, September 30, 2015</b> <b>WHEN: 6:00 - 8:00 PM</b> <b>WHERE: The Grand Center</b> <b>182 North 500 West in Moab</b></p> <p>If you have any comments, questions, or suggestions please contact: Vern Keeslar, InterPlan Planning Manager. 801-307-3400 or vern@interplanco.com</p>
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Vern Kessler

From: Kara Dehnenwald <kara@waggoner.com>  
Sent: Wednesday, August 08, 2017 10:57 AM  
To: vern@sanjuancounty.net  
Subject: Pay TTX through Mubis

Hello Mr. Kessler,

I just saw a flyer advertising the US-191 corridor preservation study for a public meeting on August 22nd. I will be out of town most of the month so unfortunately will miss that meeting. I do not have property in that stretch of 191, however I would like to suggest a line point that I believe a public be considered for part of the ROW on the Spanish Valley Road side of the highway. This currently separates residential lots from the highway and bypasses from the turn off to River's Lake to at least Mill Creek Drive. My understanding is that the 1000' ROW is very wide through this section. Locating a line point set at least 50 to 100 feet off the highway could be a great way of keeping pedestrian and bicycles off the highway itself.

I know there have been several pedestrian/high speed vehicle accidents (one resulting in death of a child) in the past 10 years. I had the misfortune to be right behind a vehicle that hit a pedestrian a few years ago. There is more slow speed traffic on this corridor than any to compare.

I appreciate your consideration of this comment, and would be happy to provide more detail or answer any questions. I can be reached at this e-mail address, or by phone at 435-230-0003.

Thank you!

Kara Dehnenwald  
William Waggoner LLC  
P.O. Box 871  
Mesa, Utah 84052

Vern Kessler

From: Dan <dan@sanjuancountynet>  
Sent: Tuesday, August 11, 2015 11:33 AM  
To: vern@sanjuancounty.net  
Subject: Aug 25th Mubis Meeting

Vern,

I will not be able to make your upcoming Access Management meeting in Mesa. I own a warehouse at 1221 S. Hwy 191 within the project area. We rely on this to meet a demand for access. We do not anticipate any changes to and in the future. Also, there is another access to the North proceeding across to a dirt entrance of dirt lane. We have granted an easement for this use to cross the corner of our property but have no other easement. Please keep me on the property owner list and forward any information from this meeting and any future meetings.

Thank you,

Dan Orlak

Dan Orlak  
Carpenter Waggoner Admire Co.  
435-230-0007  
email: [dan@sanjuancountynet.com](mailto:dan@sanjuancountynet.com)  
website: <http://sanjuancountynet.com/>

Living well requires an adventurous spirit!

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Vern Kessler	Vern Kessler
<p><b>From:</b> Kris Huftbert &lt;kris.huftbert@sanjuancounty.gov&gt; <b>Sent:</b> Friday, August 24, 2018, 1:01 PM <b>To:</b> vern@sanjuancounty.gov <b>Subject:</b> Community meeting in Moab</p> <p>Hi Vern:</p> <p>I am the president of the Bridger Jack Property Owner's Association. We are very happy to have a chance to provide input regarding safety along highway 191. Though we are engaged with a number of projects to make it safer for commercial traffic.</p> <p>While a number of residents also are attending, we are pulling together a list of their observations and potential solutions to improve safety around WP 112 on Highway 191. Some will provide input directly to you but we thought it would be helpful and efficient to get some consensus amongst our membership to present at the meeting.</p> <p>The input so far is quite good. I think UDOT will be pleased with some of the observations and recommendations. The residents are the ones who travel the U.S. routes all year so they know that stretch of road better than most anyone.</p> <p>Thank you again for holding this meeting. We will see you and/or your colleagues on the 19th. Please contact me if you have any questions. I know it's hard to challenge to set up a community meeting without knowing who might attend, so far its our users from RMJ have said they will be there.</p> <p>Kris Huftbert 435.260.8824 Sent from my iPad</p>	<p><b>From:</b> Jeff Kessner &lt;jkessner@sanjuancounty.gov&gt; <b>Sent:</b> Friday, August 24, 2018, 1:37 PM <b>To:</b> vern@sanjuancounty.gov <b>Subject:</b> Public comment on the US 191 Corridor</p> <p>Hi Kris - I own property at the Bridger Jack Mesa subdivision that is accessed from US-191 in San Juan County.</p> <p>I respectfully offer the comment that safety for the ingress and egress to RTM Road would be considerably improved if UDOT would install turn lanes at the intersection. The current conditions present a driving hazard to those using the road and to those passively involved who are not aware the road is present until they are very close to the road.</p> <p>Thanks,</p> <p>Jeff Kessner 901 E. 100 S. Moab, UT 84532 cell: 435-497-7018</p>



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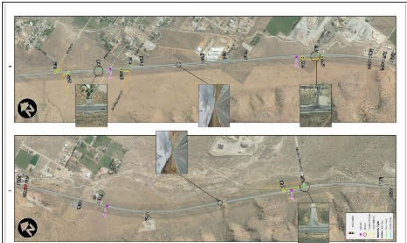
Vern Keeler	Vern Keeler
<p><b>Subject:</b> FW: FW: Contact Item Chamber Website</p> <p>----- Forwarded message ----- <b>From:</b> Dale Stapley &lt;dstapley@utah.gov&gt; <b>Date:</b> Thursday, September 26, 2013 <b>Subject:</b> FW: FW: Contact Item Chamber Website The "Shovel, Ruben" &lt;shovel@utah.gov&gt;, Anne Ogden &lt;annew@utah.gov&gt;, "Arnold, Rhett" &lt;arnold@utah.gov&gt;</p> <p>FW: FW</p> <p>----- Forwarded message ----- <b>From:</b> Julie Bingham-Gibbs &lt;julie@utahchamber.com&gt; <b>Date:</b> Thu, Sep 26, 2013 at 9:51 AM <b>Subject:</b> FW: Contact Item Chamber Website <b>To:</b> dstapley@utah.gov</p> <p>Date:</p> <p>FW attached is a comment from a recent Moab visitor.</p> <p>Julie Bingham-Gibbs Executive Director Moab Chamber of Commerce</p> <p>Name: Ben Riller Business Name: Phone: Email: ben.riller@gmail.com Question/Comment: Why do you permit snow trailer trucks to pass through the Main Street of your town? The noise is deafening and drives from the sidewalks of Moab. I cannot at least 20 to 30 snow trailer trucks passing through Moab during my lunch. At 8:10 am in a Campground RV park I heard the air breaks of a snow trailer. Last night we followed a trailer onto our road through the Main Street. We were less 8 years ago and we did not see any snow trailers. What has happened to Moab? This definitely will affect my decision to come back to Moab. Other travelers have said the same thing to us.</p>	<p><b>From:</b> Thomas Morasu &lt;tom@morasu.org&gt; <b>Sent:</b> Thursday, October 03, 2013 10:12 AM <b>To:</b> vern@utahchamber.com <b>Subject:</b> Hwy 191 Corridor Preservation Study - Public Comment Item Answer</p> <ol style="list-style-type: none"><li>1. I saw a little ad in the Times Independent.</li><li>2. My greatest concern is the potential multi-car pile up that will occur at the top of Blue Hill. Southbound traffic is making similar passes of the traffic they couldn't get around coming up the curve in the other direction. Then, when it all comes together at the top of Blue Hill, you have 1000's pulling fifth wheels, pulling trailers, turning onto Black Ridge at 2 mph. This needs to be fixed and I don't even know how you can do that. Until this is fixed maybe some signage? I don't know ... its something though. And is my plan.</li><li>3. Yes? Not aware of even how much private property there is foraging 191.</li><li>4. I never saw the plan, showed up late to the meeting.</li><li>5. Yes. Eventually a light will be needed at Spanish Trail Rd. It's years off.</li><li>6. There was a huge crash in front of the Arena a couple years ago, that was a result of an RV pulling out slowly into oncoming traffic on 191 (see number 2). You should look at that.</li></ol> <p>Blue Spring and left bring large numbers of touring cyclists to this stretch of highway. Any improvement should include an ample shoulder right of the rumble strip for cyclists. Highway 313 going up to The Knoll is an excellent example of what I would call an "ample shoulder" or what you may call distribution lanes.</p> <p>Regarding corridor preservation: On the west side of the highway, close to Blue Hill (the southern most two miles of this study area), there are old, historic road grades on the low hills. Please preserve the old grades and the hand stacked rocks that create them. It is my hope that in the future a recreation bike trail is constructed parallel to this entire study area (a continuation of the Pipe Dream Trail) and that trail will use these grades.</p> <p>On the east side on the highway, at the bottom of Blue Hill, camping on busy town weekends is beginning to get out of control. Every year more and more campers learn about the "free" for all camping at that turn. This should be considered by whomever owns this land, SITLA?</p> <p>Lastly, thanks for taking the time to accept public comment. I am glad I can voice my opinions on this road that I am so intimate with, or so this road five days a week, 48 weeks a year. I've been up and down this stretch of road over four thousand times in my lifetime as a Traffic Engineer closer to Moab, Utah. It's a bit of topic but I would also like to express my gratitude to the highway crews that plow the snow in the winter. From Blending to Moab, I am always impressed with the job the snowplow drivers do once they get out.</p> <p>Regards, Thomas Morasu 288 McGiff Ave. Moab, UT 84452 435-260-0841</p>

San Juan County Spanish Valley Area Plan

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

US 191 CORRIDOR  
PRESERVATION STUDY

APPENDIX G



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

US 191 CORRIDOR  
PRESERVATION STUDY



APPENDIX G

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## SAN JUAN COUNTY SPANISH VALLEY COMMERCIAL DEVELOPMENT ANALYSIS

## APPENDIX H

A primary objective of the County is to determine the appropriate amount of commercial zoning within the Spanish Valley area. Important demographics to help evaluate this objective include income, population growth, historic taxable sales, and estimated new growth.

**CURRENT POPULATION**

An analysis of decadal population growth shows that the State of Utah increased by 287,332 persons from 2010 through 2016. San Juan County increased by 2,140 persons. The U.S. Census Bureau released a report in March of 2017 indicating San Juan County was the fastest growing county in the nation. Another interesting observation was unclear why this area of the State is growing so rapidly. Possible explanations may be the migration of retirement age populations to the area or causes related to Valley American residents.<sup>1</sup>

**Historic Population**

Year	State of Utah	San Juan County	San Juan County % Increase
1910	697,341	3,494	
1920	696,710	4,411	26%
1930	698,490	5,110	16%
1940	696,427	5,646	10%
1950	6,985,773	9,004	38%
1960	14,411,031	11,253	25%
1970	17,523,998	12,631	12%
1980	22,255,889	14,482	14%
1990	27,522,488	14,136	2%
2000	29,176,161	14,351	1%
2010	3,386,792	14,504	1%
2016	2,936,660	16,644	15%
2018	2,941,039	16,720	1%
2019	2,965,321	16,891	1%
2020	3,017,123	16,966	4%

**INCOME**

The median household income in San Juan County grew at its decade annual growth rate (AAGR) of 1.1 percent from \$27,259 in 2009 to \$30,366 in 2015. San Juan County's median household income is the lowest of the reported counties shown below.

**Median Household Income**

County	2009	2011	2013	2015	2016	AAGR
Cotton County	47,544	47,547	47,514	44,534	47,534	1.1%
Duchesne	55,195	54,922	57,346	57,334	61,301	1.2%
Garfield	51,425	47,428	51,111	52,301	54,491	1.1%
Grand	55,725	61,439	62,732	62,523	65,334	1.2%
<b>San Juan</b>	<b>27,259</b>	<b>27,444</b>	<b>28,223</b>	<b>28,227</b>	<b>30,366</b>	<b>1.1%</b>
Sevier	30,919	45,031	49,321	48,333	44,644	0.3%
Utah	44,029	46,194	45,342	49,372	49,711	1.2%
Wasatch-Cache	55,149	55,529	57,467	59,716	60,932	1.2%

**HISTORIC TAXABLE SALES**

From 2011 through 2016, the total taxable sales declined by an average of two percent. Similar negative trends followed in Duchesne, and Garfield Counties, while San Juan and Sevier Counties have experienced moderate growth. In 2016, the taxable sales per capita in San Juan County rose \$0.96, compared to a high of \$0.34 in Duchesne County.

**Historic Taxable Sales**

County	2011	2012	2013	2014	2015	2016	AAGR
Cotton	\$14,539,641	\$14,214,167	\$14,178,161	\$14,165,455	\$14,148,524	\$14,137,999	-0.1%
Duchesne	\$27,961,235	\$28,055,132	\$28,539,271	\$28,713,548	\$28,766,294	\$29,295,622	1.9%
Garfield	\$18,444,577	\$18,410,739	\$17,838,115	\$17,644,712	\$17,629,835	\$18,045,452	-0.2%
<b>San Juan</b>	<b>\$29,827,081</b>	<b>\$29,108,188</b>	<b>\$29,142,803</b>	<b>\$28,415,273</b>	<b>\$28,451,589</b>	<b>\$28,514,449</b>	-0.5%
Sevier	\$18,918,757	\$20,448,513	\$21,194,954	\$22,152,671	\$22,728,955	\$24,639,716	2.7%
Utah	\$16,777,740	\$17,372,439	\$17,197,567	\$18,545,432	\$18,563,762	\$18,149,231	0.9%
Wasatch-Cache	\$29,589,274	\$30,281,081	\$30,363,462	\$30,370,751	\$30,774,486	\$30,975,731	0.7%

**Historic Taxable Sales Per Capita**

County	2011	2012	2013	2014	2015	2016	AAGR
Cotton	\$11,011	\$10,744	\$10,721	\$10,712	\$10,702	\$10,697	-0.1%
Duchesne	\$33,579	\$33,712	\$33,712	\$33,712	\$33,712	\$33,712	0.0%
Garfield	\$16,967	\$16,967	\$16,967	\$16,967	\$16,967	\$16,967	0.0%
Grand	\$36,967	\$36,967	\$36,967	\$36,967	\$36,967	\$36,967	0.0%
<b>San Juan</b>	<b>\$12,823</b>	<b>\$12,798</b>	<b>\$12,798</b>	<b>\$12,798</b>	<b>\$12,798</b>	<b>\$12,798</b>	-0.0%
Sevier	\$16,967	\$16,967	\$16,967	\$16,967	\$16,967	\$16,967	0.0%
Utah	\$16,967	\$16,967	\$16,967	\$16,967	\$16,967	\$16,967	0.0%
Wasatch-Cache	\$36,967	\$36,967	\$36,967	\$36,967	\$36,967	\$36,967	0.0%

**SALES GAP ANALYSIS**

A sales gap (also "leakage") analysis is conducted in order to identify economic development opportunities for a community by evaluating the total purchases made by residents inside and outside the community (leakage). The term "leakage" for sales lost outside the community. This type of analysis first identifies sales within the State of Utah, for each major North American Industry Classification System (NAICS) code category and then calculates the leakage sales per capita in each category. For capita sales in the community are compared to average per capita sales statewide in order to determine what portion of resident purchases are being made within the community, and what amount is leaving the community. Communities with a lower per capita sales figure compared to the State average representing "leakage", whereas communities with higher sales are "capturing" higher leakage sales.

**COMP. TAXABLE SALES BY CATEGORY**

A comparison of taxable sales by economic sector illustrates San Juan County has several areas of leakage.

- Building Material, Garden Supply & Support Services
- Electronics & Appliance Stores
- Food & Beverage Stores
- Furniture & Home Furnishings Stores
- General Merchandise Stores
- Health & Personal Care Stores
- Maintenance, Parts, Tires
- Motor Vehicle & Parts Dealers
- Quarry, Sand, Gravel, and Other Bulk Products
- Wholesale Trade, Durable Goods
- Wholesale Trade, Nondurable Goods
- Automotive, Rental, Leasing
- Automotive, Rental, Leasing
- Automotive, Rental, Leasing
- Food Service & Drinking
- Management of Companies & Enterprises
- Other Services (except Public Administration)
- Professional, Scientific, & Technical Services
- Retail Trade, Apparel & Accessories

1. San Juan County, Office of Economic Development  
2. Data is based on reported to the Utah Tax Commission as of May 1, 2017. Data is based on the reports of San Juan County, Office of Economic Development, Office of Tax Services.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## SAN JUAN COUNTY SPANISH VALLEY COMMERCIAL DEVELOPMENT ANALYSIS

## APPENDIX H

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The second linkage is likely due to proximity to other markets, specifically Albu. Many of the retail, industry and service categories are located in Mesa, north of San Juan County.

### Commercial Retail Center Retail

	Carbon	Samuel	Sevier	Duchesne	San Juan	Emery	Grand
Gift, Jewelry, Fashion, Food & Beverage Stores	19%	36%	15%	25%	30%	30%	55%
Dining & Drinking Establishments	24%	35%	25%	4%	5%	7%	145%
Electronics & Appliance Stores	27%	37%	15%	2%	5%	11%	49%
Fuel & Lubrication Stores	24%	27%	19%	10%	10%	27%	110%
Furniture & Home Furnishings Stores	14%	17%	5%	1%	1%	11%	12%
Luggage Stores	13%	13%	21%	11%	25%	52%	22,04%
General Merchandise Stores	13%	14%	18%	1%	1%	1%	11%
Health & Personal Care Stores	29%	30%	30%	5%	11%	15%	52%
Household Goods Stores	13%	17%	4%	14%	3%	5%	12%
Motor Vehicle & Parts Dealers	52%	52%	34%	10%	1%	3%	14%
Newspaper Publishers	11%	5%	10%	11%	1%	1%	14%
Shooting Clubs, Hobby, Music & Book Stores	4%	5%	3%	1%	1%	1%	14%
Wholesale Trade-Durable Goods	19%	11%	11%	10%	1%	1%	12%
Wholesale Trade-Non-durable Goods	17%	11%	11%	10%	1%	1%	12%

### Commercial Services Center Retail

	Carbon	Samuel	Sevier	Duchesne	San Juan	Emery	Grand
Agriculture, Forestry, Fishing & Hunting	1%	24%	16%	42%	1%	57%	6%
Construction	54%	52%	5%	10%	10%	14%	10%
Information	3%	7%	10%	10%	1%	14%	20%
Manufacturing	14%	52%	1%	22%	14%	25%	25%
Transportation, Information, & Communications	50%	1%	1%	22%	14%	25%	4%
Transportation & Warehousing	27%	1%	10%	3%	14%	34%	2,144%
Utilities	13%	14%	11%	1%	1%	1%	25%

### Commercial Services Center Retail

	Carbon	Samuel	Sevier	Duchesne	San Juan	Emery	Grand
Accommodation	42%	6%	13%	2%	10%	20%	11,10%
Arts, Entertainment & Recreation	7%	1%	5%	4%	1%	1%	14%
Auto, Equipment, and Reproduction	48%	23%	1%	1%	14%	24%	75%
Education Services	4%	11%	2%	2%	1%	1%	1%
Finance & Insurance	5%	44%	4%	20%	54%	1%	35%
Food Services & Drinking Places	11%	47%	11%	4%	14%	1%	54%
Health, Social & Cultural Services	21%	11%	22%	22%	12%	1%	22%
Management of Companies & Enterprises	5%	21%	11%	4%	1%	1%	1%
Other Services (except Public Administration)	13%	11%	11%	2%	1%	1%	11%
Professional, Scientific, & Technical Services	48%	1%	2%	2%	1%	1%	11%
Public Administration	44%	21%	3%	5%	14%	14%	1%
Real Estate, Rental, & Leasing	5%	11%	11%	1%	1%	1%	11%

The total capture rate for San Juan County is estimated at 79 percent of the total income adjusted average. This indicates that relative to the State per capita spending, the County is capturing \$1.79 on the dollar in taxable sales, with residents traveling outside the County for many goods and services.

continue to see development in Mining, Quarrying, and Oil and Gas Extraction.

While the County has discussed the potential separation of distribution and warehouse capabilities, the County's ability to stimulate this type of development may be limited by population and competing from adjacent markets such as Moab. While markets are showing a trend toward expansion of distribution centers in order to keep pace with the growth of online shopping, competition for these facilities is intense.

Critical retail sales numbers by the Census Bureau show a steady growth in sales from Nonstore Retailers. Many communities across Utah and the Nation are in a race to capture this growth, with sales to attract retail giants like Amazon and Walmart. As online shopping and delivery push the brick-and-mortar retail store, the brick-and-mortar store for a competitive distribution center is proximity to large population centers and access to major transportation infrastructure. A good example of this is the 1.3 million-square-foot Amazon facility recently constructed in Kent, Washington. The Puget Sound Economic Council reported that General Manager Dave Campbell indicated Amazon's motive for the move was to serve customers with lower cost and quick delivery. The new Kent facility will put more products closer to customers and speed the delivery network to a two-day delivery. Amazon also noted, "Additional measures include the expansion of Amazon's Fulfillment, and Amazon's Amazon.com, Amazon.com, and the recent success of both Lake City, Utah, in attracting an Amazon.com facility. While the town of Shreveport has an estimated population of only 2,511 according to the 2010 Census (2010), its proximity to Interstate 49 allows for quick delivery to a hub 50 miles away. Similarly, the site next to Lake Tahoe for many years has been a hub for the Lake Tahoe International Airport, making the majority of Utah's population easily accessible by air travel.

Spanish Valley's remote location, limited infrastructure, and small population will make it challenging to attract large distribution centers. Lower population levels in central and southern Utah will result in less commercial development. While the community, however, if the County allows for greater densities, resulting in an increase in housing and commercial centers, the area could see higher levels of commercial development. Methods to encourage increased commercial development include:

- Allow for more residential development and population growth.
- Promote development incentives.
- Promote infrastructure that will reduce costs for businesses and communities.
- Promote development of commercial development (industrial, retail, office, etc.).

<sup>1</sup> Source: 2013 Census Bureau Retail Sales by County, Utah Department of Commerce, Bureau of Economic Development.  
<sup>2</sup> Source: Puget Sound Economic Council, "Amazon's move to Kent, Washington will speed up the region's growth," by Michael R. Dwyer.

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## SAN JUAN COUNTY SPANISH VALLEY COMMERCIAL DEVELOPMENT ANALYSIS

### APPENDIX H

continue to see development in Mining, Quarrying, and Oil and Gas Extraction.

While the County has discussed the potential impacts of distribution and warehouse operations, the County's ability to distribute the type of development may be tested by population and commercial from adjacent markets such as Alamosa. While markets are showing a trend toward expansion of distribution centers in order to keep pace with the growth of online shopping, competition for these facilities is intense.

Official retail sales numbers by the Census Bureau show a steady growth in sales from Nonstore Retailers. "More commercial centers than ever before are in a race to capture this growth with big to attract retail giants like Amazon and Walmart. As online shoppers and retailers push for shorter and shorter delivery times, the existing infrastructure for a competitive distribution site is proving to be a major problem. Retailers are looking for ways to improve their distribution network. A good example of this is the 1.7 million square-foot Amazon facility recently constructed in Fort Washington. The *Fort Worth Business Journal* reported that General Manager Dave Cragg said: "Successful retail is based on demand and that customers want lower cost and quick delivery. . . . The new Amazon facility will get more products closer to customers and extend the delivery window by a true two-day delivery, seven days a week." Additional examples include the expansion of Amazon, Wal-Mart, and Home Depot in Boulder, Colorado, and the recent success of Safeway City, Utah, in obtaining a \$200,000,000 loan for Amazon facility. While the town of Boulder has an estimated population of just 7,000, according to the U.S. Census (2010), its proximity to Denver allows for quick delivery to its home market. Similarly, the town of Salt Lake City has a population of 1.6 million and the Salt Lake International Airport, making the majority of Utah's population quickly accessible within two days.

Spanish Valley's remote location, limited infrastructure, and anti-population will make it challenging to attract larger distribution centers. Lower population levels in western Utah may result in limited commercial storage within the community. However, if the County allows for greater densities, resulting in an increase in housing power and capture rates, the area could see higher levels of commercial development. Methods to promote increased commercial development include:

- Allow for more residential development and population growth.
- Promote development incentives.
- Promote in the markets that will capture some infrastructure investments, and
- Promote other types of commercial development (educational, health, etc.).

\*Source: 2010 Census Data. Source: U.S. Census Bureau. <http://www.census.gov/hhes/indicators.html>  
\*Source: *Fort Worth Business Journal*, "Amazon's new Fort Worth facility will bring online delivery closer to home," by Marcus R. Evans.

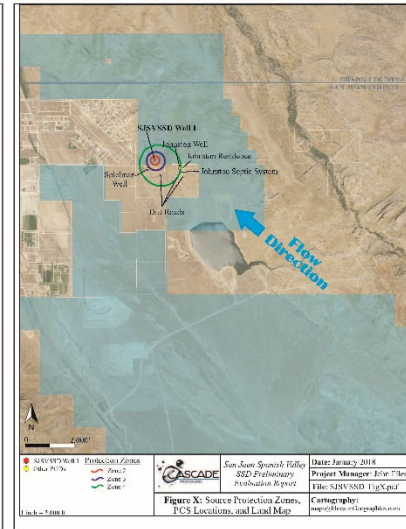
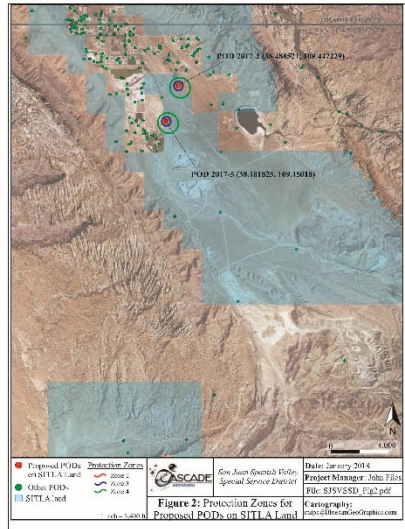




# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

KNOWN WELLS &  
CONCENTRIC  
PROTECTION ZONES

APPENDIX J



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San Juan County Spanish Valley Area Plan

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## AIRPORTS & LAND USE

### APPENDIX K



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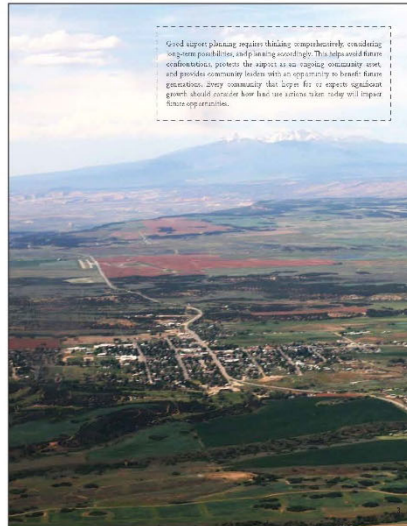
San Juan County Spanish Valley Area Plan

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## AIRPORTS & LAND USE

## APPENDIX K

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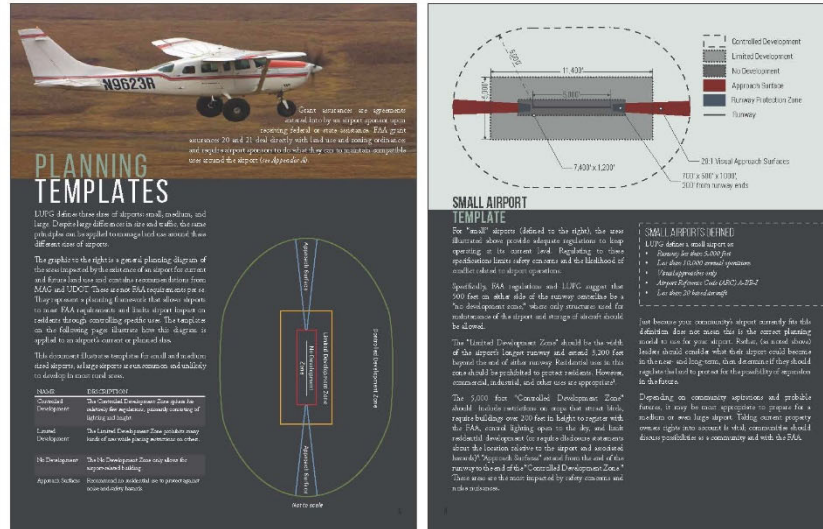


San Juan County Spanish Valley Area Plan

# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## AIRPORTS & LAND USE

### APPENDIX K



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San Juan County Spanish Valley Area Plan



# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## AIRPORTS & LAND USE

### WHO MANAGES PLANNING?

An airport sponsor is the city, county, township, or individual responsible for the airport. The airport master plan is completed by the airport sponsor and establishes the airport for future development. However, land use surrounding the airport is up to the municipality and outside the jurisdiction of the airport sponsor and potential area of influence (see page 6-7). As a result, land use planning around an airport regularly involves more than one community within this county.

For municipalities within the area of airport influence, a potential development area (see map on page 6-7) is usually within a community's boundaries. The community or county planning commission makes recommendations to the legislative body who adopts, amends, or rejects the recommendations.

For airports with influence over the area jurisdictional boundaries, such community includes existing authority for the area within their boundaries. If communities determine to exercise existing authority over their portion of the airport influence area, significant efforts to coordinate and coordinate existing regulations between entities is vital to avoid future conflict.

The Utah State Legislature has provided a model structure for new jurisdictional airports in the Airport Zoning Act.<sup>1</sup> This act provides leadership with the option to create a Joint Airport Zoning Board. The commission requires "any recommendation approved by such public institutions participating in its action," and provides for coordination with authority to "adopt, substitute, and amend" airport zoning regulations for the airport's needs area.

There are benefits and drawbacks to joint boards. Reduplicating local control can delay business zoning decisions for all residents by researching regulations,

redesigning political processes to include recommendations, and forcing communities to agree mutually agreeable terms. In addition, joint boards may delay rule making, or there are the current planning commissions and uniformity who is unfamiliar with the concept of an airport zoning board.

Ultimately it is up to the airport sponsor and various stakeholders to help plan for future development and how to build a regulatory structure. Communication should be in place for conflict to avoid future zoning problems. Joint use by the same. Rather, they should promote a more cooperative approach that takes more duty for residents and public officials.

### PLANNING QUESTIONS

The following questions should help entities plan for an airport future:

**Current Zoning.** Do current zoning (or zoning) allow for compatible land use planning surrounding airport?

**Are there more resources, state, regional, potentially and**

**potentially reducing land value?**

**Current Plans.** Create the airport master plan, do

**them necessary to ensure the current future and future**

**future?**

**How will these planned changes impact the day of future, that**

**will additional land use regulations?**

**How does the airport fit into current quality of life and**

**community development in the community?**

**Future Timelines.** Consider the next 50, 75, and

**100 years. What are the activities and priorities for the**

**community?**

**How does the airport fit into the community's vision and**

**community's future?**

**What current services does the airport provide? What**

**services are not currently being provided?**

**How will future airport development affect the community's**

**future?**

### LAND USE TOOLS

Land use planning information on a variety of tools that airport sponsors, local airport zoning boards, and affected communities can use to protect airports and residents from inappropriate development. These tools are able to coordinate planning with landowners to achieve mutually acceptable management of land use. Government taking action without consultation from property owners.

### COOPERATIVE

Cooperative. Cooperative. Airport sponsors should consider

land use for future, historical, long-term, and short-term

development. The airport sponsor should consider the

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## APPENDIX K





# San Juan County Pre-Disaster Hazard Mitigation Plan 2018

## AIRPORTS &amp; LAND USE

## APPENDIX K

Additional considerations for airports currently unmanned include: According to FAA rules, unmanned aircraft operators are required to register their UAS with the FAA, and must inform airport flight control if they intend to operate their drone within five miles of an airport. The issue of UAS will be introducing additional regulations to current or future regulatory regimes. Airport operators and surrounding cities should pay attention to these rules and ensure residents and visitors are informed to help keep pilots and residents safe.

Residents of small communities may question the importance of promoting small, rural and urban centers or be unable to envision their tiny airport having long-term, major impacts on the quality of life for residents. When communities zone explicitly to protect an airport and residents, they are protecting future potential and community ambition. The impact of the airport may not be felt for decades, however the potential benefits to local economies is enormous.

Leaders working to protect their assets and residents should give special consideration to maintaining property use options for affected landowners. Application of a wide range of tools will help ensure landowners have input in their land's future and can optimize their land's use. Assets provide opportunities and challenges to landowners; leadership should carefully help landowners recognize the opportunities while mitigating the impacts. Communities should come together to determine the possibilities for their community and support and take steps necessary to protect both into the future.

## LANDOWNER IMPACTS & PROTECTING AIRPORTS

Significant portions of this document came from the *Complete Land Use Planning Guide for Utah Airports*, prepared by the Western Front Regional Council and Utah Division of Transportation (part of the Utah Department of Transportation) in December 2006. UDOT and EAA both recommended the guide as a relevant, good thought process for airport land use. Many additional documents were reviewed for information on EAA requirements, best practices, and land-use challenges; other communities have faced addressing their airports. The remainder came from meetings and interviews with UDOT, EAA, and involved residents and leaders. The resources below can provide additional information for leaders.

1. Accounting of the Income Tax (Corporate Income Tax). <http://www.fairtax.com/Corporate%20Income%20Tax.htm>
2. What's New Regional Council: International Association of Corporate Tax Directors of Accountants (IACTD) Ltd. The Taxing Authority. <http://www.iactd.com/iactd/what%20s%20new%20regional%20council%20of%20tax%20directors%20of%20accountants.htm>
3. Rane, L. M. The new regional council is a must for corporate tax and not only. *Accounting*, 2014, 116 (July), 103-104. Available at: <http://www.iactd.com/iactd/what%20s%20new%20regional%20council%20of%20tax%20directors%20of%20accountants.htm>
4. Related Parties. *IACTD*. *What's New: Corporate Tax Ltd and Income Taxers*, 2014. <http://www.iactd.com/iactd/what%20s%20new%20regional%20council%20of%20tax%20directors%20of%20accountants.htm>
5. Mink, C. *Corporate Income Tax: The New Regional Council of Tax Directors of Accountants*. <http://www.iactd.com/iactd/what%20s%20new%20regional%20council%20of%20tax%20directors%20of%20accountants.htm>
6. *Corporate Income Tax: The New Regional Council of Tax Directors of Accountants*. <http://www.iactd.com/iactd/what%20s%20new%20regional%20council%20of%20tax%20directors%20of%20accountants.htm>
7. *Corporate Income Tax: The New Regional Council of Tax Directors of Accountants*. <http://www.iactd.com/iactd/what%20s%20new%20regional%20council%20of%20tax%20directors%20of%20accountants.htm>
8. *Corporate Income Tax: The New Regional Council of Tax Directors of Accountants*. <http://www.iactd.com/iactd/what%20s%20new%20regional%20council%20of%20tax%20directors%20of%20accountants.htm>
9. *Corporate Income Tax: The New Regional Council of Tax Directors of Accountants*. <http://www.iactd.com/iactd/what%20s%20new%20regional%20council%20of%20tax%20directors%20of%20accountants.htm>
10. *Corporate Income Tax: The New Regional Council of Tax Directors of Accountants*. <http://www.iactd.com/iactd/what%20s%20new%20regional%20council%20of%20tax%20directors%20of%20accountants.htm>
11. *Corporate Income Tax: The New Regional Council of Tax Directors of Accountants*. <http://www.iactd.com/iactd/what%20s%20new%20regional%20council%20of%20tax%20directors%20of%20accountants.htm>
12. *Corporate Income Tax: The New Regional Council of Tax Directors of Accountants*. <http://www.iactd.com/iactd/what%20s%20new%20regional%20council%20of%20tax%20directors%20of%20accountants.htm>
13. *Corporate Income Tax: The New Regional Council of Tax Directors of Accountants*. <http://www.iactd.com/iactd/what%20s%20new%20regional%20council%20of%20tax%20directors%20of%20accountants.htm>
14. *Corporate Income Tax: The New Regional Council of Tax Directors of Accountants*. <http://www.iactd.com/iactd/what%20s%20new%20regional%20council%20of%20tax%20directors%20of%20accountants.htm>
15. *Corporate Income Tax: The New Regional Council of Tax Directors of Accountants*. <http://www.iactd.com/iactd/what%20s%20new%20regional%20council%20of%20tax%20directors%20of%20accountants.htm>
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17. *Corporate Income Tax: The New Regional Council of Tax Directors of Accountants*. <http://www.iactd.com/iactd/what%20s%20new%20regional%20council%20of%20tax%20directors%20of%20accountants.htm>
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20. *Corporate Income Tax: The New Regional Council of Tax Directors of Accountants*. <http://www.iactd.com/iactd/what%20s%20new%20regional%20council%20of%20tax%20directors%20of%20accountants.htm>



