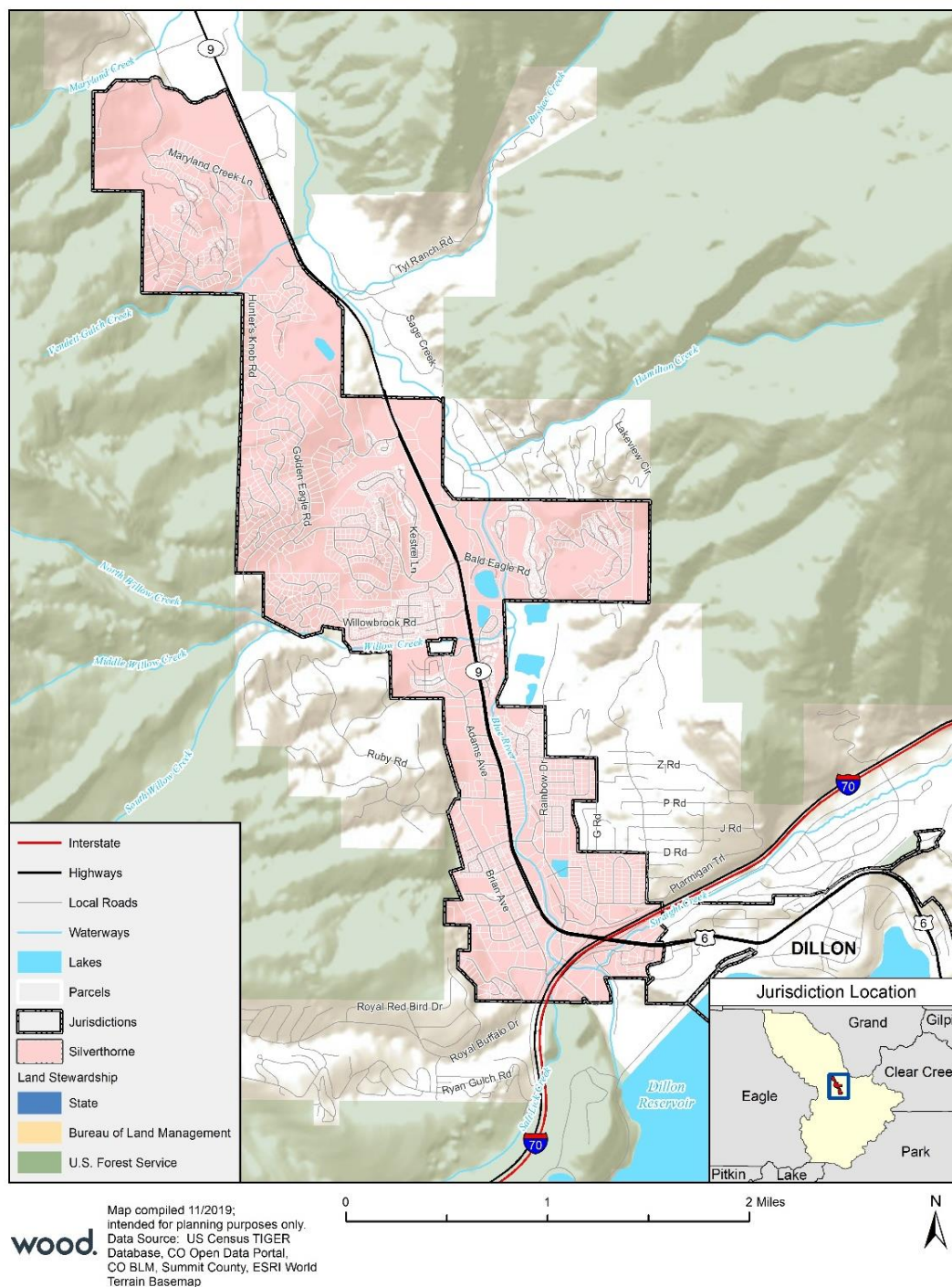


Annex F: Town of Silverthorne

F.1 Community Profile

Figure F-1 shows a base map of the Town of Silverthorne and its location in Summit County.

Figure F-1 Town of Silverthorne



Geography

Silverthorne is in the center of Summit County at an elevation of 8,790 feet, just downstream from Lake Dillon on the Blue River. The Blue River flows north through the Town. Its discharge through Silverthorne is regulated by the Dillon Dam. Straight Creek, Willow Creek, and the smaller Vendett Gulch Creek are tributaries of the Blue River that flow through Silverthorne (as displayed in the figure above). The Town is nestled below Buffalo Mountain and Red Peak, both part of the Gore Range to the west, and Ptarmigan Mountain and the Williams Fork Range to the east. Both sides of the valley are characterized by steep hillsides.

The climate of Silverthorne is that of a Colorado alpine valley. The mean annual temperature is approximately 35°F, with minimum daily temperatures averaging approximately 16°F and maximum daily temperatures averaging approximately 52°F. The lowest annual temperature averages approximately -45°F and the highest yearly temperature averages approximately 89°F. Total annual precipitation averages 18.4 inches, with approximately 140 inches of snow.

Population

The estimated 2018 population of the Town of Silverthorne was 4,821. Select U.S. Census data and American Community Survey (ACS) 2013-2017 estimates of demographic and social characteristics for Silverthorne are summarized in Table F-1.

Table F-1 Silverthorne Demographic and Social Characteristics

Characteristic	2013-2017 Estimate
Gender/Age	
Male	59.7%
Female	40.3%
Under 5 Years	5.8%
65 Years and Over	18.4%
Median Age	46.6
Race/Ethnicity (one race)	
White	64.6%
Black or African American	5%
Asian	0%
Native Hawaiian and Other Pacific Islander	0%
Other	0%
Hispanic or Latino (Of Any Race)	30.1%
Other	
Average Household Size	2.68
High School Graduate or Higher	85.4%

Source: ACS 2013-2017; US Census (factfinder.census.gov)

History

Incorporated in 1967, Silverthorne began as a residential area approximately two miles north of the old Town of Dillon. The Town is named for Judge Marshall Silverthorn who bought 160 acres at the Town's current location in 1881. Original subdivisions in the 1950s were home to the construction workers building the Dillon Dam.

Economy

According to the 2017 State Demography Office in Colorado, the industries that employed the highest percentages of Silverthorne's labor force were: accommodation and food services (26.9%); retail trade (12.2%); government (9.8%); and real estate, rental, and leasing (8.2%).

Other select economic characteristics for Silverthorne were obtained from the 2013-2017 ACS estimates and the U.S. Census (Table F-2).

Table F-2 Silverthorne Economic Characteristics

Characteristic	2013-2017 Estimates
Families below Poverty Level	8.4%
Individuals below Poverty Level	13.2%
Median Home Value	\$593,400
Median Household Income	\$50,727
Per Capita Income	\$33,959
Population Employed	76.8%

Source: ACS 2013-2017; US Census (factfinder.census.gov)

F.2 Hazard Identification and Profiles

Silverthorne's HMPC identified the hazards that affect the community and summarized their geographic location, probability of future occurrence, potential magnitude or severity, and overall significance specific to the Town (see Table F-3). In the context of the countywide planning area, there are no hazards that are unique to Silverthorne.

Table F-3 Silverthorne Hazard Summary

Hazard Type	Geographic Location	Probability of Future Occurrence	Magnitude/Severity	Overall Hazard Rating
Avalanche	Isolated	Occasional	Negligible	Low
Dam Failure	Large	Unlikely	Catastrophic	High
Drought	Large	Likely	Limited	Medium
Earthquake	Large	Unlikely	Limited	Low
Erosion/Deposition	Small	Likely	Limited	Low
Flood	Small	Likely	Critical	High
Hazardous Materials Release (Transportation)	Isolated	Occasional	Critical	High
Landslide, Mudflow/Debris Flow, Rockfall	Medium	Likely	Limited	Medium
Lightning	Large	Highly Likely	Critical	Medium
Pest Infestation (Forest and Aquatic)	Medium	Likely	Limited	Medium
Severe Winter Weather	Large	Highly Likely	Critical	High
Wildfire	Small	Likely	Critical	High
Wildlife-Vehicle Collisions	Small	Likely	Limited	Low
Windstorm	Large	Likely	Limited	Low

Note: See Section 3.2 of the HIRA document for definitions of these hazard categories.

Information on past events for each hazard can be found in Section 3.2 Hazard Profiles of the main plan.

F.3 Vulnerability Assessment

The intent of this section is to assess Silverthorne’s vulnerability separate from that of the planning area as a whole, which has already been assessed in Section 3.3 Vulnerability Assessment of the main plan. This vulnerability assessment analyzes the population, property, critical facilities, and other assets at risk to hazards for the more significant hazards or where available data permits a more in-depth analysis. For more information about how hazards affect the County as a whole, see Chapter 3 Risk Assessment of the Base Plan.

Community Asset Inventory

Table F-4 shows the total number of improved parcels, properties, and their improvement and content values for the Town of Silverthorne. Note that only those parcels with improvement values greater than \$0, or those which were classified as “exempt,” were accounted here and in vulnerability assessments to follow, so that those non-developed or non-improved parcels were left out for the purposes of conducting the vulnerability assessments in this annex. Counts and values are based on the latest county assessor’s data (as of November 2019), which was provided in GIS format. Contents exposure values were estimated as a percent of the improvement value here and under the hazard vulnerability assessment, specifically: 50% of the improvement value for Residential structures, 150% for Utility structures, 100% for Agricultural and Commercial structures, and 0% for Exempt and Vacant parcels. These percentage calculations are based on standard FEMA Hazus methodologies. Finally, Total Values were aggregated by adding the improvement and content values for each parcel type category.

Table F-4 Silverthorne Improved Parcel and Property Exposure

Parcel Type	Parcel Totals	Total Properties*	Improved Value	Content Value	Total Value
Agricultural	2	4	\$1,290,612	\$1,290,612	\$2,581,224
Commercial	103	205	\$179,272,811	\$179,272,811	\$358,545,622
Exempt	251	293	\$0	--	\$0
Residential	1,844	2,210	\$1,480,162,238	\$740,081,119	\$2,220,243,357
Utilities	1	1	\$884,138	\$1,326,207	\$2,210,345
Vacant	2	3	\$555,300	--	\$555,300
Total	2,203	2,716	\$1,662,165,099	\$921,970,749	\$2,584,135,848

Source: Summit County Assessors Data, November 2019.

*Property totals were obtained by counting the number of separate property records that were part of the same parcels. As such, the improved values and subsequent totals stem from the total individual property records, not stand-alone parcel totals.

Table F-5 lists summary information about the 20 critical facilities and other community assets identified by Silverthorne’s HMPC as important to protect or provide critical services in the event of a disaster. Table F-6 details more information on the critical facilities in question found in Silverthorne. Note that there were several critical facilities the HMPC indicated should not be disclosed in terms of location or name, so while they were considered in the GIS analysis within each hazard’s vulnerability assessment for planning purposes, they will not be described in detail nor will they be shown in any maps. As such, the detailed facility list only contains information for 19 of the 20 facilities. For additional information on the definitions behind each critical facility category, source, and other details refer to Section 3.3.2 of the main plan HIRA document.

Table F-5 Silverthorne Critical Facilities and Infrastructure Summary

FEMA Lifeline Category	Critical Facility Type	Total Critical Facilities
Communications	Information Centers	1
Food/Water/Shelter	Wastewater Facilities	2
Hazardous Materials	HazMat Tier II SARA Facilities	6
Other/Schools	Schools	1
Safety and Security	Fire Lookout Locations	1
	Government Buildings	7
	Incident Facilities*	1
	Police Stations	1
TOTAL		20

* This facility's location will not be disclosed, and no additional details will be provided.

Source: Summit County, HIFLD.

Table F-6 Detailed List of Critical Facilities and Infrastructure in Silverthorne

FEMA Lifeline Category	Critical Facility Type	Facility Name	Facility Location	Notes or Additional Details
Communications	Information Centers	Silverthorne Elementary Information Center	Hwy 9 and Hamilton Creek	
		Silverthorne Elementary Information Center	Hwy 9 and Hamilton Creek	
Food/Water/Shelter	Wastewater Facilities	Buffalo Mtn Waste Water Treatment		
		JSA Waste Water Treatment Plant		
Hazardous Materials	HazMat Tier II SARA Facilities	Vista Auto Group	171 W 9th St, Silverthorne 80498	Lake Dillon Fire Protection District (now Summit Fire & EMS)
		Lowes	201 Buffalo Mountain Dr, Silverthorne 80498	Lake Dillon Fire Protection District (now Summit Fire & EMS)
		Excel Energy	200 W 6th St, Silverthorne 80498	Lake Dillon Fire Protection District (now Summit Fire & EMS)
		UPS	337 W 4th St, Silverthorne 80498	Lake Dillon Fire Protection District (now Summit Fire & EMS)
		Comcast of Colorado V, LLC	249 Warren Ave, Silverthorne 80498	Lake Dillon Fire Protection District (now Summit Fire & EMS)
		Waste Management	314 W 3rd St, Silverthorne 80498	Lake Dillon Fire Protection District (now Summit Fire & EMS)

FEMA Lifeline Category	Critical Facility Type	Facility Name	Facility Location	Notes or Additional Details
Other/Schools	Schools	Silverthorne Elementary School		\$14 M replacement
Safety and Security	Fire Lookout Locations			
	Government Buildings	Silverthorne Public Works		
		USPS Silverthorne		
		Silverthorne Town Hall		
		County North Branch Library		
		CDOT Maintenance Buildings - Silverthorne		
		Silverthorne Recreation Center		
		USFS Dillon Ranger District Office		
	Police Stations	Silverthorne Police Department	601 Center Cir, Silverthorne 80498	\$8.5 M replacement

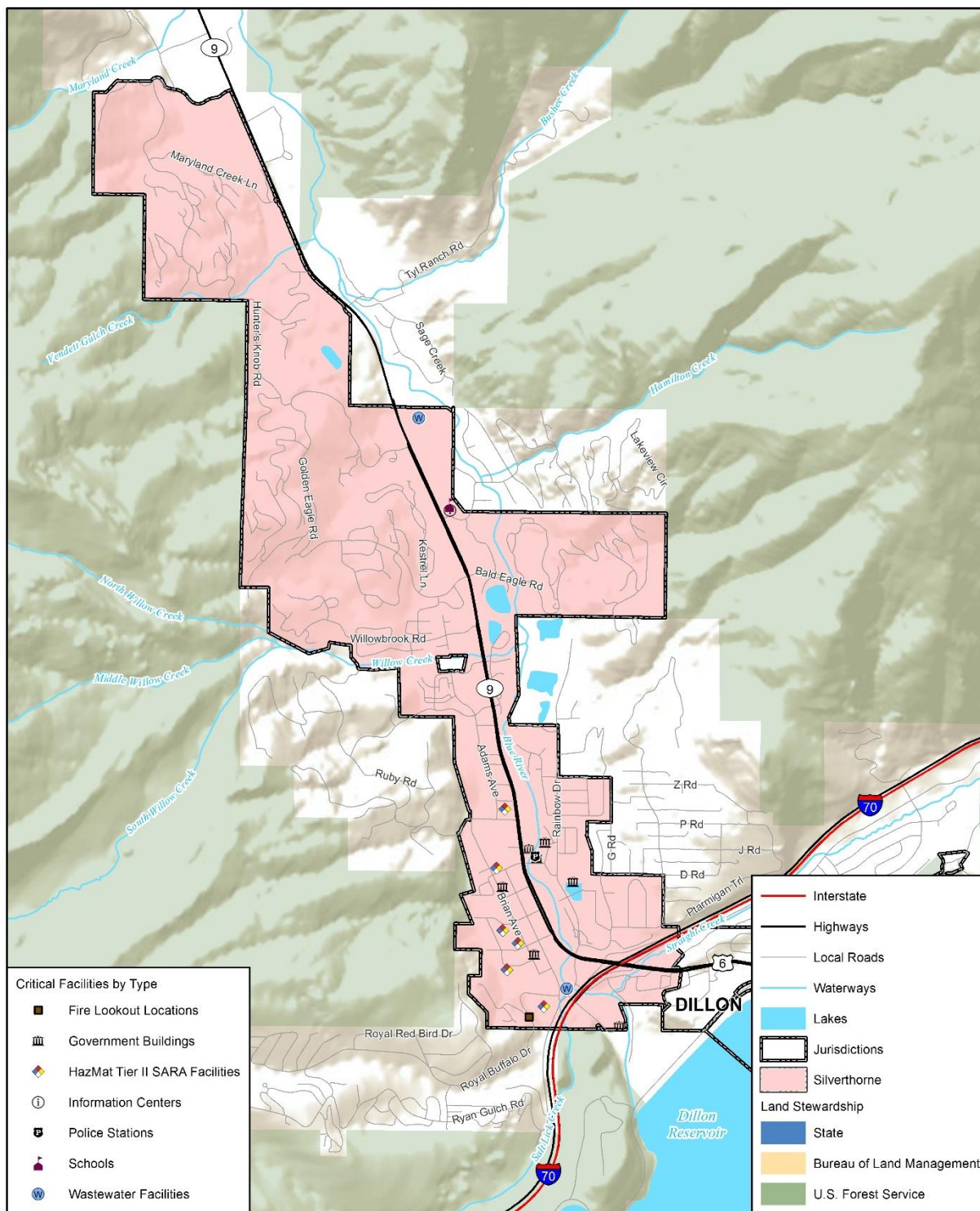
Source: Summit County GIS, Summit County HMPC.

Interstate-70 is also a critical facility and key asset to the community. The locations of critical facilities in Silverthorne identified by Summit County GIS are illustrated in Figure F-2.

In addition, the following assets were noted by the HMPC.

- Medical Offices: \$ 3 Million
- Fire Station: \$ 2.5 Million
- Summit Education Center: \$ 5 Million

Figure F-2 Critical Facilities and Infrastructure in Silverthorne



wood.

Map compiled 11/2019;
intended for planning purposes only.
Data Source: US Census TIGER
Database, CO Open Data Portal,
CO BLM, Summit County, ESRI World
Terrain Basemap, HIFLD

0 1 2 Miles



Vulnerability by Hazard

This vulnerability section analyzes existing and potential future risk in more detail where the risk varies from the rest of the planning area. Vulnerability details for the following bulleted hazards are often difficult to compile or estimate for specific jurisdictions and are already described in the Section 3.3.3 of the Base Plan.

- Drought
- Earthquake
- Erosion/Deposition
- Lightning
- Pest Infestation (Forest and Aquatic)
- Severe Winter Weather
- Wildlife-Vehicle Collisions
- Windstorm

Only Dam Inundation, Flood, Hazardous Materials Release, Landslide/Mudflow/Debris Flow/Rockfall, and Wildfire hazards will be profiled in the following vulnerability assessment sections, due to the ability to quantify vulnerability further with available data .

Dam Failure

General Property

The Dillon Dam and Reservoir are located approximately 0.5 miles upstream of the southern corporate limits of Silverthorne. As discussed in Chapter 3 Risk Assessment of the main plan, failure of the Dillon Dam would have catastrophic effects to the Town of Silverthorne, damaging and destroying the majority of structures. The dam failure inundation map contains sensitive information and is not available in this public planning document. Based on a GIS analysis performed with the county parcel layer and the available dam inundation mapping (for planning purposes only), the following potential damages would be expected in Silverthorne.

Table F-7 Estimated Dam Inundation Risk to Properties in Silverthorne

Parcel Type	Total Properties Exposed	Improved Value	Content Value	Total Value	Population Exposed
Agricultural	3	\$588,768	\$588,768	\$1,177,536	--
Commercial	202	\$179,190,729	\$179,190,729	\$358,381,458	--
Exempt	25	\$0	--	\$0	--
Residential	1,233	\$755,924,214	\$377,962,107	\$1,133,886,321	3,822
Utilities	1	\$884,138	\$1,326,207	\$2,210,345	--
Vacant	3	\$555,300	--	\$555,300	--
TOTAL	1,467	\$937,143,149	\$559,067,811	\$1,496,210,960	3,822

Source: Summit County GIS and Assessor's Office, U.S Census, Wood Analysis

People

Based on the GIS analysis summarized in the table above, it is expected that around 3,822 people in Silverthorne might be at risk of dam inundation hazards. These totals were estimated by multiplying the average number of persons per household in Summit County (which equals 3.10) times the number of residential properties where dam inundation extents were available.

Critical Facilities and Infrastructure

Based on the critical facility inventory considered in the updating of this plan and intersected with the dam inundation extents available for the Town of Silverthorne, 19 critical facilities were found to be at potential risk. These are summarized in the table below.

Table F-8 Critical Facilities in Silverthorne at Risk of Dam Inundation

FEMA Lifeline Category	Critical Facility Type	Total Critical Facilities
Communications	Information Centers	1
Food/Water/Shelter	Wastewater Facilities	2
Hazardous Materials	HazMat Tier II SARA Facilities	6
Other/Schools	Schools	1
Safety and Security	Government Buildings	7
	Incident Facilities	1
	Police Stations	1
TOTAL		19

Source: Summit County, HIFLD, Wood Analysis

Economy

A dam inundation event that affected the major roads which give access to the Town (e.g. Interstate 70) could significantly affect the local economy, by limiting or completely impeding access to shops, restaurants, hotels, and other major industries which keep the local economy thriving.

Historical, Cultural, and Natural Resources

Dam or reservoir failure effects on the environment would be similar to those caused by flooding from other causes. For the most part the environment is resilient and would be able to rebound, though this process could take years. However, historic and cultural resources could be affected just as housing or critical infrastructures would.

Future Development

Most future development occurring in Silverthorne will be at risk to a failure of the Dillon Dam due to the large extent of the inundation potential.

Flood

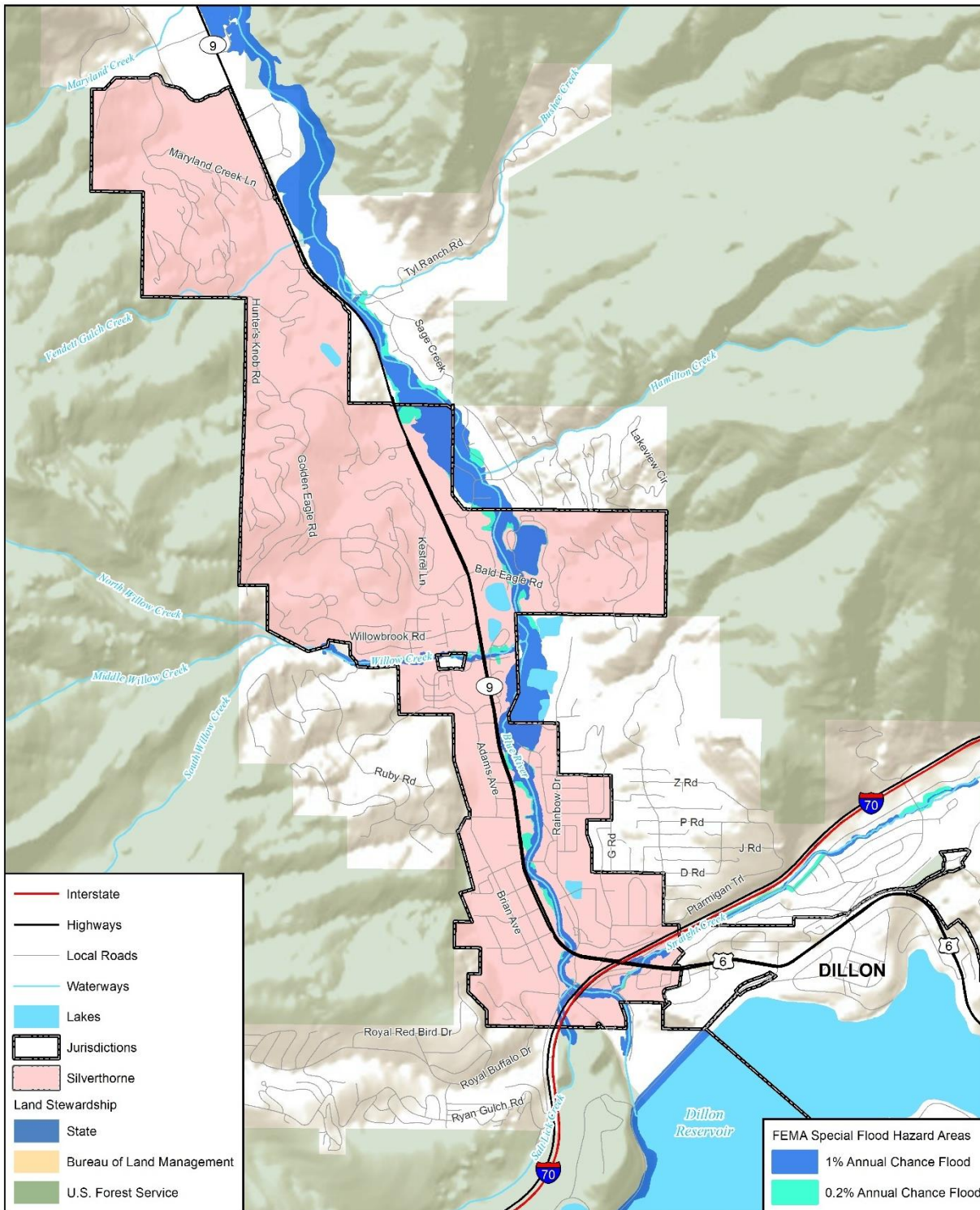
The principal causes of flooding in Silverthorne are along the Blue River, Straight Creek, and Willow Creek from April to July as a result of snowmelt runoff. The largest flood on record prior to the construction of the dam was in 1918 when the combined flow of the Blue River, Ten Mile Creek, and the Snake River was 3,500 cfs just upstream of the present location of Silverthorne. U.S. Geological Survey records show high flows on all three streams during May and June of several other years, but no significant damage was reported.

Dams built by beavers within Willow Creek occasionally result in nuisance flooding to nearby adjacent property owners. Although Willow Creek runs through private property in these locations, the Town has often assisted with dam removal during these emergencies.

General Property

Vulnerability to flooding was determined by summing potential losses to Summit County's properties in GIS, by using the latest FEMA NFHL data along with the Summit County parcel layer the provided by the Assessor's Office. FEMA's NFHL data depicts the 1% annual chance (100-year) and the 0.2% annual chance (500-year) flood events. This latest NFHL data is current as of September 17, 2019. Figure F-3 below displays the FEMA special flood hazard areas present in the town, color coded based on flood event (i.e. 100-year versus 500-year).

Figure F-3 FEMA Special Flood Hazard Areas in Silverthorne



wood.

Map compiled 12/2019;
intended for planning purposes only.
Data Source: US Census TIGER
Database, CO Open Data Portal,
CO BLM, Summit County, ESRI World
Terrain Basemap, FEMA NFHL

0 1 2 Miles



Based on the GIS analysis performed with the county parcel layer and the available FEMA flood mapping, the potential risk shown in Table F-9. Silverthorne's 1% annual chance flood zone has 68 properties with a total value of over \$16.4 million. For the 0.2% annual chance flood zone 8 additional properties are exposed. The highest number of exposed properties are Residential, followed by the Exempt, Commercial, and Vacant categories. The combined loss estimates for the properties in the floodplains (both 1% and 0.2% annual chance events) is around \$5.14 million.

Table F-9 Summary of Properties Vulnerable to Flood in Silverthorne, by Type

Flood Zone	Parcel Type	Total Properties	Improved Value	Content Value	Total Value	Loss Estimate (25% of Total Value)	Population
100-year	Residential	22	\$10,602,785	\$5,301,393	\$15,904,178	\$3,976,044	68
	Exempt	6	\$0	--	\$0	\$0	--
	Commercial	2	\$276,702	\$276,702	\$553,404	\$138,351	--
TOTAL		30	\$10,879,487	\$5,578,095	\$16,457,582	\$4,114,395	68
500-year	Vacant	2	\$554,800	--	\$554,800	\$138,700	--
	Residential	5	\$2,375,606	\$1,187,803	\$3,563,409	\$890,852	16
	Exempt	1	\$0	--	\$0	\$0	--
TOTAL		8	\$2,930,406	\$1,187,803	\$4,118,209	\$1,029,552	16
GRAND TOTAL		38	\$13,809,893	\$6,765,898	\$20,575,791	\$5,143,948	84

Source: Summit County, FEMA NFHL, U.S. Census Bureau, Wood analysis

Flood Insurance Policy Analysis

NFIP insurance data indicates that as of September 12, 2019, there were 45 flood insurance policies in force in the Town with \$14,395,900 of coverage. This is a decrease of 39 policies since 2013. Ten of the policies were in A zones, and 35 were located outside of the Special Flood Hazard Area (falling within B, C, and X zones). There has been one historical claim for flood losses that did not result in any payments. Thus, there were no repetitive or severe repetitive loss structures.

People

The population exposed to the flood hazards described in the flood vulnerability analysis above was estimated by applying an average household size factor (based on 2018 U.S. Census estimates for Summit County, which equal to 3.1 persons per household) to the number of improved properties identified in the flood hazard areas within Silverthorne. Note that only those parcels of type Residential were used to estimate populations exposed. These estimates yielded the population exposures shown in the table above (Table F-9). As such, the combined 1% and 0.2% annual chance floods would potentially displace 84 people, based on the residential structures which fall in those flood zones. For additional details on potential displacements by flood event, see the Summit County main plan HIRA document.

Critical Facilities and Infrastructure

There are two critical facilities located in flood zones in Silverthorne: the JSA Wastewater Treatment Plant and the USFS Dillon Ranger District Office government building, both of which fall in the 500-year flood zone. The USFS Dillon Ranger District Office was removed from the FEMA floodplain as part of a restudy and LOMR (Letter of Map Revision) process through FEMA, approved in 2013.

Economy

Flooding can have a major economic impact on the economy, including indirect losses such as business interruption, lost wages, and other downtime costs. Flooding often coincides with the busy summer

tourism months in Summit County, and may impact, directly or indirectly (such as from the negative perception of potential danger to his hazard), the revenues of shops, restaurants, hotels, and other major industries which keep the local economy thriving. In addition, major flooding which led to road or other infrastructure closures could additionally limit access to the Town by tourists, locals, and even basic goods and services.

Historical, Cultural, and Natural Resources

The environment is mostly resilient to general flooding. However, cultural or historic properties within floodplains would be affected in similar ways as property and critical facilities/infrastructure, especially those with underground or basement levels where water would easily seep and potential ruin archives, resources, or other important assets.

Future Development

Based upon the most recent 2019 FEMA NFHL data and Summit County's parcel layer, there is development within the 100- and 500-year floodplain in Silverthorne. Most development in the floodplain occurs along the stretch of the Blue River between 6th Street and Rainbow Court. The Town's flood damage prevention ordinance regulates development in special flood hazard areas.

Significant wetland areas exist east of State Highway 9 and north of 12th Street in Silverthorne as the Blue River meanders northwards. There are also many wetland areas adjacent to ponds, streams, and tributaries to the Blue River. Water bodies, wetlands and riparian areas are protected by the water body, wetland, and riparian protection regulations of the Town Code (Town of Silverthorne 2004).

Silverthorne is considering the development of a kayak park in the Blue River for recreational purposes. Because the park would be considered development within the floodway, the Town has requested and has received a conditional letter of map revision from FEMA. The FEMA-issued CLOMR is dated March 18, 2008. While the Town still desires to build the kayak park, other, higher priorities have postponed completing it. Timing for completion of this is uncertain.

Hazardous Materials Release (Transportation)

The six identified hazardous materials (HazMat) facilities in the Town of Silverthorne are summarized below for reference, by name and address.

Table F-10 Hazardous Materials Facilities in Silverthorne

Name	Address
Comcast of Colorado V, LLC	249 Warren Ave.
Excel Energy	200 W 6th St.
Lowes	201 Buffalo Mountain Dr.
UPS	337 W 4th St.
Vista Auto Group	171 W 9th St.
Waste Management	314 W 3rd St.

Source: Summit County GIS

General Property

The impact of most fixed facility incidents is typically localized to the property where the incident occurs. Based on Table F-10 above, those properties or parcels found immediately adjacent to these facilities could potentially be affected by a spill or incident if, for example, road closures were required which could

prevent those in the nearby areas from getting around. However, it is not expected that significant impacts or damages would be incurred to those properties in the vicinity of the HazMat facilities in Silverthorne.

People

As mentioned in the General Property subsection above, people could be temporarily affected by HazMat incidents if they were found in the near vicinity of a facility that suffered an accident, especially if road or other access was limited during cleanup. Depending on the degree of severity of a spill, however, HazMat incidents could lead to injuries, hospitalizations, and even fatalities to people nearby. People living near hazardous facilities and along transportation routes may be at a higher risk of exposure, particularly those living or working downstream and downwind from such facilities. For example, a toxic spill or a release of an airborne chemical near a populated area can lead to significant evacuations and have a high potential for loss of life if people were to inhale damaging fumes.

Critical Facilities and Infrastructure

Impacts of hazardous material incidents on critical facilities are most often limited to the area or facility where they occurred, such as at a transit station, airport, fire station, hospital, or railroad. However, they can cause long-term traffic delays and road closures resulting in major delays in the movement of goods and services.

Economy

Because of the presence of major roads in Silverthorne such as I-70, and Highway 9, and U.S. Highway 6, a potential HazMat incident which led to temporary closures of these roads might significantly impact the local economy, impeding access of important resources or even tourism into or out of the town.

Historical, Cultural, and Natural Resources

HazMat hazards could contaminate the local groundwater and eventually the municipal water supply, or even migrate to a major waterway or aquifer. If this was the case, Silverthorne's potable water, recreational water, other water uses, and overall natural resources would be severely compromised. Impacts on wildlife can also be significant.

Future Development

The amount of hazardous materials that are stored, used, and transported across the county are not anticipated to increase over the next five years based on regional growth trends. As such, future development should not be significantly affected by HazMat hazards.

Landslide, Mudflow/Debris Flow, Rockfall

General Property

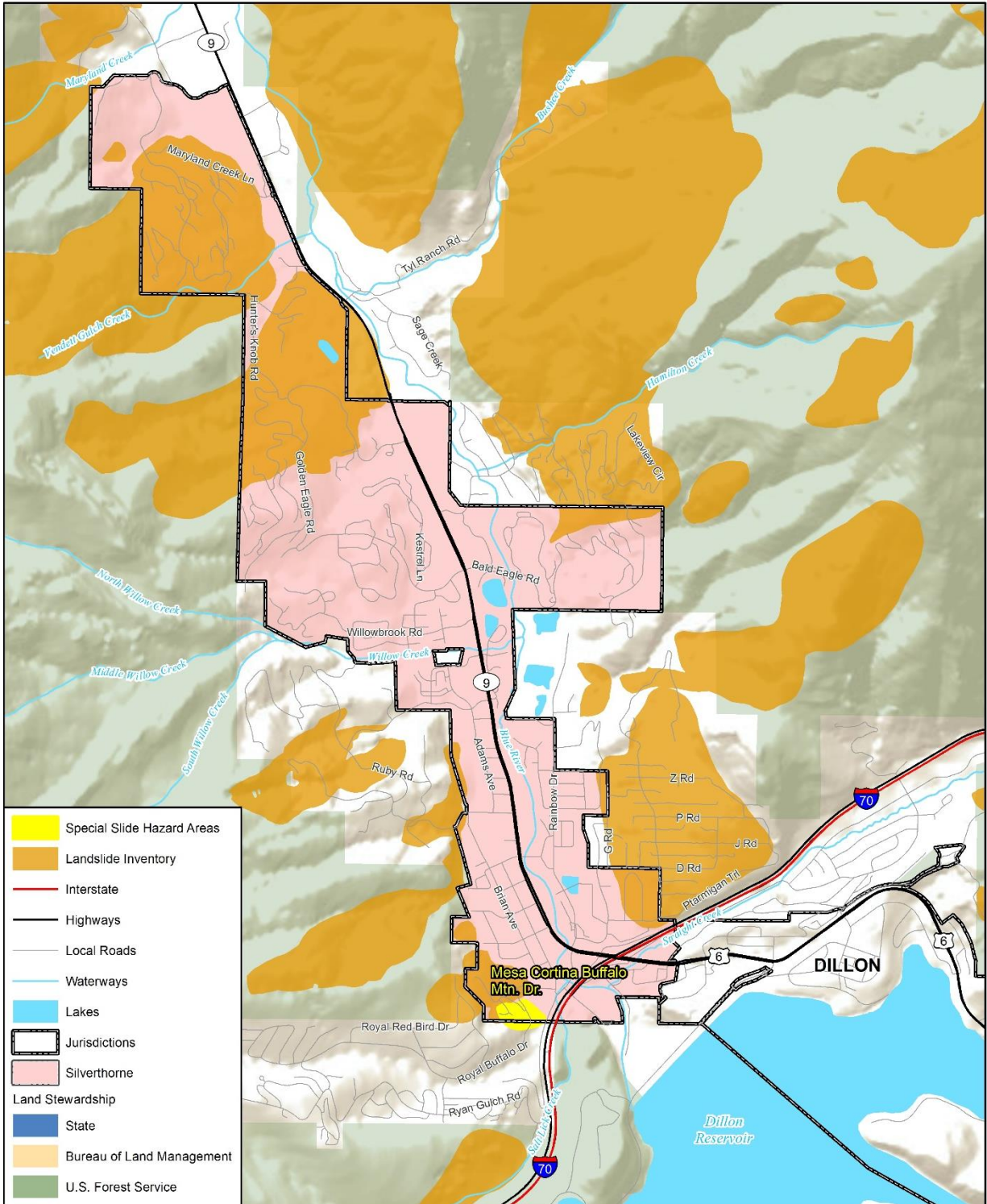
The majority of the Silverthorne community is located in areas that have limited potential for landslide, mudflow, debris flow, or rockfall hazards. While most of the town itself is relatively flat, the Eagles Nest, Willow Creek Highlands, and South Maryland Creek Ranch subdivisions in the northwestern portion of the town have been developed on forested hillsides. Angler Mountain Ranch subdivision, located in the northeastern portion of the Town, has been developed on a sage meadow hillside.

There are several areas in the Town that have slopes between 10 and 20 percent. These areas are located primarily west of Highway 9 in and around Golden Eagle Road in the Willowbrook Subdivision. South of Golden Eagle Road there are slopes between 10 and 20 percent along the westernmost edge of town, west of Brian Avenue and Adams Avenue, and west of Warren Avenue. Slopes of this same percent are also found in the portion of Town that extends east in and around Angler Mountain Ranch. There are also

many slopes within the Town and its immediate vicinity that are over 30 percent (Silverthorne Comprehensive Plan, 2008).

As shown in Figure F-4 below, a special slide hazard area is also present in the southernmost edge of the town, in the Mesa Cortina Buffalo Mountain Drive area. However, no improved properties were found exposed to that special landslide hazard area, shown in yellow.

Figure F-4 Landslide Hazard Areas in Silverthorne



wood.

Map compiled 11/2019;
intended for planning purposes only.
Data Source: US Census TIGER
Database, CO Open Data Portal,
CO BLM, Summit County, ESRI World
Terrain Basemap, CGS

0 1 2 Miles



Potential losses for general landslide areas were estimated using Summit County GIS and assessor's parcel data. Based on the GIS analysis performed, the potential risk to general landslide areas in Silverthorne is summarized in Table F-11. For the purposes of this analysis, if a parcel's centroid intersected the landslide hazard polygons, that parcel is assumed to be at risk.

Silverthorne's Residential properties have the highest exposure with a total value of over \$323 million, followed by Agricultural, Commercial, and Exempt properties. A total of 268 properties are exposed to landslide hazards, with over \$327.2 million in values.

Table F-11 Property Exposure to General Landslide Areas in Silverthorne

Parcel Type	Total Properties	Improved Value	Content Value	Total Value	Population at Risk
Agricultural	4	\$1,290,612	\$1,290,612	\$2,581,224	--
Commercial	3	\$790,100	\$790,100	\$1,580,200	--
Exempt	1	\$0	--	\$0	--
Residential	260	\$215,375,956	\$107,687,978	\$323,063,934	806
TOTAL	268	\$217,456,668	\$109,768,690	\$327,225,358	806

Source: Summit County GIS/Assessor Office, Colorado Geological Survey, U.S. Census, Wood analysis

People

People could be susceptible if they are caught in a landslide or debris flow, potentially leading to injury or death. There is also a danger to drivers operating vehicles, as rocks and debris can strike vehicles passing through the hazard area or cause dangerous shifts in roadways. Based on Table F-11 above, an estimated 806 people could be at risk of general landslide hazards in Silverthorne. At risk population was estimated by multiplying the average number of persons living in each household in Summit County (which is 3.1 per home) times the number of properties of type "residential" where landslide areas have been inventoried in Silverthorne.

Critical Facilities and Infrastructure

Only one critical facility is found at risk of landslide hazards in Silverthorne. It is a fire lookout spot located in the Mesa Cortina Buffalo Mountain Drive special slide hazard area, in the southernmost west corner of the town. This facility is categorized under the Safety and Security FEMA Lifeline. Major transportation routes present in the town and hence key infrastructure allowing access in and out of it include Interstate 70, Highway 9, and U.S. Highway 6. These routes could be affected by the geologic hazards in question if closures were required, impeding the normal flow of goods and services, for example.

Economy

Economic impacts related to landslide, rockfall, debris fall, and mudslide hazards typically center around transportation routes temporarily closed by debris flow or other activity. The major routes mentioned above (I-70, Hwy 9, and U.S. Hwy 6) would be at most risk due to their heavy flow of goods, services, and populations which keep the economy thriving.

Historical, Cultural, and Natural Resources

As primarily natural processes, landslides and debris flows can have varying impacts to the natural environment as well as cultural or historical resources found on their path. For buildings and other structures, impacts would be similar as those seen on general property or critical facilities/infrastructure.

Future Development

The Town's subdivision regulations address procedures and requirements for development in geologic hazard areas. The following information was extracted from the Silverthorne Comprehensive Plan (2008).

Slope is the most limiting factor to be considered in the design of access roads and residential subdivisions. Slope stabilization in the Silverthorne area is difficult even where homes are constructed on nearly level pads. Homes should be designed to use the existing slope as much as possible and keep foundation cuts to a minimum. Roads should be designed to keep cut and fill slopes to a minimum and to provide appropriate snow stacking areas and drainage. Current Town Code standards require paved roads.

The 2014 version of the Silverthorne Comprehensive Plan addresses the fact that the Buffalo Mountain Road area has existing structural problems related to slide hazards. For one, there is the issue that all roads in that development are gravel based and require upgrading (including paving and drainage improvements that will bring them up to Town standards), so that future development can benefit from the safest infrastructure. In addition, future development including mountain bike and pedestrian systems in the form of soft surfaces (to withstand landslide and related activity) would be most recommended.

Wildfire

General Property

Wildfire threat was estimated from the County's Wildfire Protection Assessment Rating layer, which breaks up areas into Low, Medium, High, and Extreme ratings. This wildfire layer was used in GIS to determine the number, type, and improvement values for properties found to overlap with them, and hence estimate potential property risk to wildfire threat in Silverthorne. For the purposes of this analysis, the wildfire zone that intersected a parcel centroid was assigned as the threat zone for the entire parcel. Improvement values were then summed by wildfire rating area and then sorted by parcel type. From the improvement values were the content values calculated next, as a percentage of property improvement values based on their occupancy type (using FEMA Hazus guidance as follows): a) Commercial parcels received content values worth 100% of their improvements; b) Residential parcels received content values worth 50% of their improvements; and, d) Exempt parcels received content values worth 0% of their improvements. Property improvements and content values were then totaled to arrive at the Total Value column, which is also the estimated value at risk based on FEMA loss curve standards for wildfire hazards.

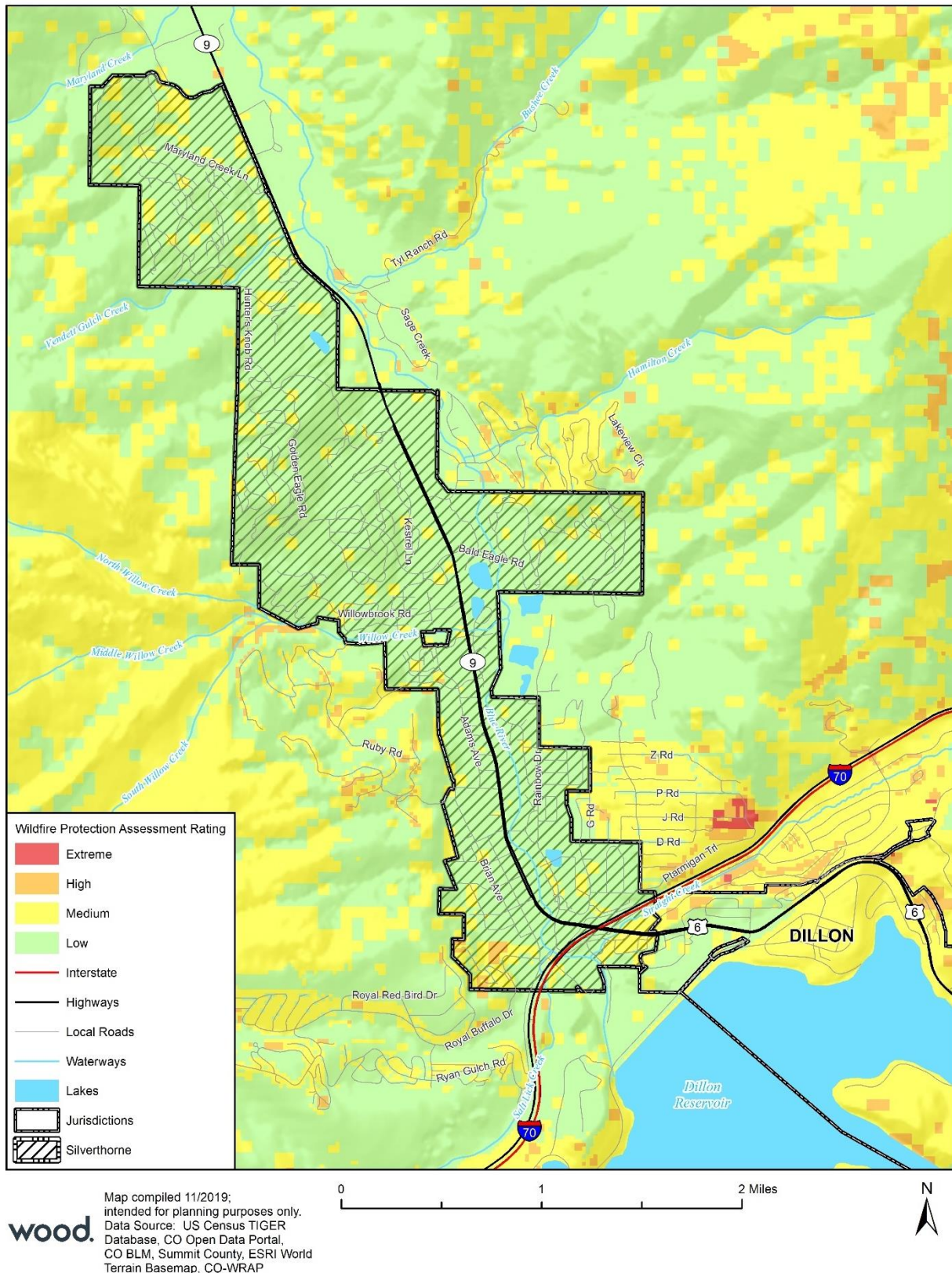
Wildfire protection assessment areas for Silverthorne are displayed in Figure F-5 for reference.

Table F-12 Property Values in Wildfire Zones by Parcel Type, Silverthorne

Parcel Type	Total Properties	Improved Value	Content Value	Total Value	Population at Risk
Residential	178	\$114,290,024	\$57,145,012	\$171,435,036	552
Exempt	1	\$0	--	\$0	--
Commercial	56	\$44,645,206	\$44,645,206	\$89,290,412	--
TOTAL	235	\$158,935,230	\$101,790,218	\$260,725,448	552

Source: Summit County GIS/Assessor Office, CO-WRAP, U.S. Census, Wood analysis

Figure F-5 Wildfire Protection Assessment Areas and Ratings in Silverthorne



Based on the methodology described for wildfire in Section 3.3.3 Vulnerability by Hazard of the main plan HIRA document, all properties at risk of fire hazards are found in Medium rated protection assessment zones due to lower threat. There are 235 properties falling in this category with over \$260 million at potential risk, most being Residential in nature. While Summit Fire & EMS, which provides fire protection services to the Town of Silverthorne and surrounding area, is considered an initial attack center for wildland fires on all private land and takes a joint responsibility with the U.S. Forest Service for fires on federal land, property risk is rather low in Silverthorne.

People

The last column of Table F-12 above summarizes the number of people at risk to wildfire in the analyzed fire zones. Based on the assessment conducted, Silverthorne has an estimated 552 people at risk of Medium rated wildfire zones. These totals were estimated by multiplying the average persons per household in Summit County, which is 3.1, times the number of residential properties falling within the fire threat zone/s.

However, smoke resulting from fire is an issue to local populations, as noted by the Summit County's HMPC. For example, the County Public Health Department has received calls in the past from tourists asking if they should cancel travel plans in the county due to smoke and potential health and safety related concerns.

Critical Facilities and Infrastructure

There are only two critical facilities found in wildfire assessment areas in Silverthorne, as listed below. They both fall in the Medium rated wildfire category, and belong to the Safety and Security FEMA Lifeline:

- Fire lookout spot (near Mesa Cortina area)
- USPS Silverthorne building

Economy

Tourism, the accommodation and food services industry (e.g. hotels and restaurants), and retail are major components of Summit County's economy, and Silverthorne's as well. Wildland fires can, for example, lead to significant tourism reductions due to health and safety concerns, causing lost revenues from lack of visitation, stays in hotels, spending on restaurants and other commerce sources, and more.

Historical, Cultural, and Natural Resources

Wildfires are a common and naturally occurring phenomenon in forested areas and can benefit forest health in many respects. But the climate change trend which is leading to hotter, more widespread, and destructive fires can make it more difficult for the environment to recover, and lead to increased flood runoff or other secondary/cascading hazards. This can severely impact water quality and watershed health for years after the fire.

With regards to historic or cultural structures and resources, wildfires would affect those in similar ways as general property and critical facilities/infrastructure, having the potential for burn downs and hence possible complete loss of important historical assets in Silverthorne.

Future Development

As Silverthorne grows and development on steep hillsides continues to be considered, the hazard potential will increase. Wildfire hazards, especially the wildland-urban interface, are becoming a larger issue in Silverthorne and the surrounding public lands. This is largely due to the fact that most of the valley floor in the Town has been developed, and residential subdivisions are now being built on the forested slopes that surround the Town. Areas of significant concern include the Wilderrest and Mesa

Cortina subdivisions located in Summit County (but within Silverthorne's three-mile area), and the Ptarmigan Mountain area (Government Small Tracks Subdivision) on the southeast side of the Town. Many of these subdivisions do not comply with current fire codes and present significant challenges to the fire district, especially with regard to access. The Eagles Nest and Willow Creek Highlands subdivisions, the Daley Ranch, and Angler Mountain Ranch on the northeast side of town are other areas where wildfire hazard is a concern. In the past several years, recent annual outbreaks of pine beetle infestation in the forested areas around the Town have resulted in large numbers of dead trees which also creates safety and fire hazards. The Town Code requires the removal of dead, diseased, and/or beetle infested trees from properties upon receipt of written notice from the Town to the property owner (Silverthorne Comprehensive Plan, 2008). Nevertheless, Silverthorne's Fire Hazard Mitigation ordinance establishes permitted fire mitigation standards for new and existing development.

For additional information on wildfire and hazard mitigation across Summit County, refer to the main plan or the Summit County Community Wildfire Protection Plan, re-adopted in 2018.

Growth and Development Trends

Table F-13 summarizes how Silverthorne has grown in terms of population and number of housing units between 2011 and 2017, based on the State of Colorado Demography Office figures.

Table F-13 Change in Population and Housing Units in Silverthorne, 2011-2017

2011 Population	2017 Population	Population Percent Change 2011-2017	2011 Total Housing Units	2017 Total Housing Units	Housing Units Percent Change 2011-2017
3,815	4,821	26%	2,051	2,366	15.4%

Source: HMPC and Colorado Demography Office, 2017

In 2019, the Town of Silverthorne building department issued permits for 140 residential/multi-family units. The majority of this growth occurred in the subdivisions of Angler Mountain and Summit Sky Ranch. Residential building permits in coming years are expected to remain steady. There is a total of 2,688 acres within the incorporated limits of the Town. At the end of 2019, there were a total of 4,205 zoned residential units, of which 2,756 have been platted, and 2,481 have been built.

F.4 Capability Assessment

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. The capabilities assessment is divided into five sections: regulatory mitigation capabilities, administrative and technical mitigation capabilities, fiscal mitigation capabilities, mitigation outreach and partnerships, and other mitigation efforts.

Regulatory Mitigation Capabilities

Table F-14 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place in Silverthorne.

Table F-14 Silverthorne's Regulatory Mitigation Capabilities

Regulatory Tool (Ordinances, Codes, Plans)	Yes/No	Comments
Comprehensive Plan	Yes	Update process to begin in 2020
Zoning Ordinance	Yes	
Subdivision Ordinance	Yes	
Growth Management Ordinance	No	
Floodplain Ordinance	Yes	
Other Special Purpose Ordinance (Stormwater, Steep Slope, Wildfire)	Yes	Removal of Dead Diseased and Beetle Infested Trees
Building Code	Yes	2018 International Building Code (effective January 1, 2020), 2012 International Fire Code and Amendment, 2012 International Energy Conservation Code
Fire Department ISO Rating	Yes	Rating: 4
Erosion or Sediment Control Program	Yes	
Stormwater Management Program	Yes	
Site Plan Review Requirements	Yes	
Capital Improvements Plan	Yes	
Economic Development Plan	Yes	
Local Emergency Operations Plan	No	Incorporated in Summit County Emergency Operations Plan
Other Special Plans	Yes	Dam Failure; Parks, Trails, and Open Space Master Plan
Flood Insurance Study or Other Engineering Study for Streams	Yes	FEMA Flood Insurance Study for Summit County and Incorporated Areas, November 16, 2018
Elevation Certificates	Yes	
Other	Yes	Community Rating System Rating: 8

Silverthorne Comprehensive Plan, 2014

The Silverthorne Comprehensive Plan, originally developed in 2001 and last updated in 2014, defines a long-term vision for the Town. The goals of the Comprehensive Plan are the following:

- Protect the health, safety, and general welfare of the citizens in the community,
- Improve the physical, social, and economic environment of the community, and
- Understand and make decisions on proposed short-term, individual actions that are based upon the long-range impacts of those actions.

In addition, the 2014 plan update more specifically seeks to:

- Provide a framework that supports informed and consistent decision making by Town elected officials, appointed officials, and staff,
- Outline a series of long range goals and policies concerning: land use, transportation, community design, and annexation of lands within three miles of Town limits,
- Guide public investment and the provision of services, and
- Establish policies to balance the rights of the individual with the interests of the community at large.

Chapter 3 Community Vision describes the town's community values as they relate to overall vision, land use, transportation, design, growth, and economic development.

Chapter 4 Goals and Policies contains detailed information on the Land Use Element, namely the following goals and policies related to environmental resource conservation and/or hazard mitigation:

- **Goal LU 1: Land Use Pattern** - Establish a pattern of future land uses that promotes health, safety, and well-being for all members of the community; makes the most efficient use of land, community facilities, and services; promotes economic vibrancy; and protects and integrates natural resources
 - **Policy LU 1.5** - Integrate and establish public lands including parks, open space and trails, throughout Silverthorne to provide access to the outdoors for all residents, as well as to provide buffers and greenspace for environmental protection and hazard mitigation.
 - **Policy LU 1.9** - Utilize sound land use planning principles when considering re-zonings and density increases in order to manage growth, ensure compatibility with surrounding developments, contain the urban form, protect environmental resources, and account for fiscal impacts.
- **Goal LU 2: Commercial Centers** - Establish a hierarchy of commercial activity in Silverthorne, focused on the Town Core and Gateway Districts to reinforce Silverthorne's economic sustainability and add to the year-round experience for residents and visitors.
 - **Town Core District Policy TC.5** - Shift emphasis from moving traffic on State Highway 9 to adopting the street as civic space. Create a strong hierarchy of linked streets through and around the Core that support various forms of transit and mitigate impacts to traffic.
 - **Business Park District Policy BP.2** - Ensure that new development is well-integrated with existing commercial, service, and business uses, and that adverse visual, noise, odor, and/or traffic impacts are mitigated.
- **Goal LU 5: Natural Resources** - Ensure that future development minimizes its impact on natural resources, integrates natural features and views where possible and appropriate, and reduces environmental hazards for the Silverthorne community.
 - **Sites and Vegetation Policy LU 5.1** - Discourage development within, or adjacent to, areas identified as potential hazardous areas. Developments proposed for any areas considered to pose a hazard shall submit engineering investigations of the site and mitigate potential negative impacts.
 - **Site and Vegetation Policy LU 5.2** - Discourage the disturbance of slopes greater than 30% during development and require engineering investigations of steep sites during project review. Development on slopes in excess of 15% shall maintain the maximum vegetative cover possible to protect soils, prevent land slippage, and retain wildlife habitat and open space resources.
 - **Site and Vegetation Policy LU 5.3** - Encourage the paving of existing gravel roadways, driveways and parking lots to decrease pollution from erosion and dust.
 - **Water Quality, Wildlife Habitat and the Blue River Policy LU 5.9** - Require new and existing developments to provide adequate measures to control, manage, and minimize adverse effects on the water resources and water quality of the region. These include items such as water related treatment and management basins and/or plans for stormwater and water quality management.
 - **Wildfire Prevention and Mitigation Policy LU 5.15** - Work cooperatively with appropriate agencies on wildfire prevention and mitigation policies and programs, and explore efforts aimed at reducing wildfire risk within the Town

Silverthorne Town Code

The Silverthorne Town Code serves as the legal framework for the Town, codifying allowable activities and creating an enforcement structure for its adopted policy. The Town Code is organized into five chapters and various subsections; those related to hazard mitigation are outlined below.

Chapter 3 Public Works Article VIII Flood Damage Prevention Ordinance, 2018

The flood damage prevention ordinance was recently re-adopted via ordinance 1) to reflect FEMA DFIRM mapping effective dates, reflecting November 2018 effective dates, and 2) to incorporate new State mandated requirements, which are more stringent than the prior requirements. It is the purpose of this Article to promote public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific areas by provisions designed to:

- (1) Protect human life and health;
- (2) Minimize expenditure of public money for costly flood control projects;
- (3) Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- (4) Minimize prolonged business interruptions;
- (5) Minimize damage to critical facilities, infrastructure and other public facilities such as water, sewer and gas mains; electric and communications stations; and streets and bridges located in floodplains;
- (6) Help maintain a stable tax base by providing for the sound use and development of floodprone areas in such a manner as to minimize future flood blight areas; and
- (7) Ensure that potential buyers are notified that property is in a flood hazard area.

In order to accomplish its purposes, this Article uses the following methods:

- (1) Restrict or prohibit uses which are dangerous to health, safety or property in times of flood or cause excessive increases in flood heights or velocities;
- (2) Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- (3) Control the alteration of natural floodplains, stream channels and natural protective barriers, which are involved in the accommodation of flood waters;
- (4) Control filling, grading, dredging and other development which may increase flood damage; and
- (5) Prevent or regulate the construction of flood barriers which will unnaturally divert flood waters, or which may increase flood hazards to other lands.

In all areas of special flood hazards where base flood elevation data has been provided, residential and nonresidential new construction and substantial improvement must have the lowest floor elevated to at least one foot above base flood elevation.

The ordinance designates the Public Works Director or his or her designee as the floodplain administrator and defines the administrator's duties.

Chapter 4 Community Development Article V Procedures and Requirements for Subdivisions

One of the purposes of this article is to promote the general health, safety, and welfare of the present and future inhabitants of the Town by requiring that land proposed for subdivision shall be used safely for the intended purpose without danger to health or peril from fire, flood, geologic hazards, or other natural hazards. It requires that no land shall be subdivided which is determined by the Town to be unsuitable for subdivision by reason of flooding, bad drainage, rock or soil creep, mudflow, rockslide, avalanche or snow slide, steep topography, or any other natural or environmental hazard, feature or condition of potential harm to the health, safety, or welfare of the future residents of the proposed subdivision or to the Town.

Chapter 4 Community Development Article VIII Environmental Guidelines

Division 5 Fire Hazard Mitigation establishes permitted fire mitigation standards for the protection of life and property from wildfires by reducing the hazards from threat of wildland fires on structures. Mitigation regulations include the following

- Roof material required.
 1. All new construction of residential and commercial structures shall be required to install a Class A roof covering.
 2. All existing residential and commercial structures when re-roofing will require a Class A roof cover to be installed.
- Vegetation/natural materials.
 1. A property owner may remove all trees and shrubs within 10 feet of structures on site.
 2. Tree branches of large trees should be trimmed to a minimum of six feet from the ground.
 3. Cut or piled combustible materials may be a minimum of 10 feet from the property line and/or 10 feet from any structure.
 4. Grass and/or other combustible materials on undeveloped parcels of any size which pose a fire hazard as determined by the Community Development Department or Lake Dillon Fire Department shall be removed.
 5. Dead, diseased and/or beetle infested trees must be removed from the property within 10 days of receipt of written notice to the property owner or responsible party.
- Chimney spark arrestors. Upon remodeling, renovation, or repairs requiring a building permit, the owners of the residential property will retrofit all existing wood stoves/wood burning fireplace chimneys with approved spark arrestors as approved by the building official.

Floodplain Regulations and NFIP Participation

Silverthorne joined the National Flood Insurance Program (NFIP) on May 1, 1980. There are Special Flood Hazard Areas identified in the most current (November 2018) Flood Insurance Study and associated National Flood Hazard Layer, for both the 1% and the 0.2% annual chance events. However, there are no repetitive loss or severe repetitive loss properties as defined by the NFIP. The Town Engineer in Public Works shares responsibilities related to flooding hazards such as acting as the floodplain administrator, and ensuring Town compliance with Federal, State, and local floodplain regulations. As previously stated, Chapter 3 of the Silverthorne Town Code also has flood damage prevention ordinance.

Silverthorne participates in the Community Rating System (CRS). The Town has, as of May 1, 2019, a CRS class ranking of 8, which provides a 10 percent reduction in flood insurance premiums for all policyholders in the community. Silverthorne achieves its CRS points through the following activities:

- Elevation certificates
- Map information service
- Hazard disclosure
- Higher regulatory standards
- Flood data maintenance
- Stormwater management
- Drainage system maintenance

Administrative/Technical Mitigation Capabilities

Table F-15 identifies the personnel responsible for activities related to mitigation in Silverthorne.

Table F-15 Administrative and Technical Mitigation Capabilities in Silverthorne

Personnel Resources	Yes/No	Department/Position
Planner/Engineer with Knowledge of Land Development/Land Management Practices	Yes	Community Development/Director; Planning Manager, Planner II
Engineer/Professional Trained in Construction Practices Related to Buildings and/or Infrastructure	Yes	Public Works/Director, Engineer; Utilities Manager
Planner/Engineer/Scientist with an Understanding of Natural Hazards	Yes	Community Development; Public Works/Director, Engineer
Personnel Skilled In GIS	Yes	Public Works and Utilities Personnel; Community Development/Information Systems Technician
Full Time Building Official	No	Contracted through Summit County
Floodplain Manager	Yes	Public Works/Engineer
Emergency Manager	No	Summit County Office of Emergency Management/Emergency Manager
Grant Writer	Yes	Parks and Recreation/Director
Warning Systems/Services	Yes	Summit County Office of Emergency Management/Emergency Manager

Fiscal Mitigation Capabilities

Table F-16 identifies financial tools or resources that Silverthorne could potentially use to help fund mitigation activities.

Table F-16 Fiscal Mitigation Capabilities in Silverthorne

Financial Resources	Accessible/Eligible to Use (Yes/No)
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
Fees for Water, Sewer, Gas, or Electric Services	Yes, water and sewer
Impact Fees for New Development	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activities	Yes
Withhold Spending in Hazard Prone Areas	Yes

Mitigation Outreach and Partnerships

Silverthorne is involved in ongoing outreach activities and partnerships related to hazard mitigation, which include the following:

- Each spring, the governments of Summit County, Breckenridge, Dillon, Frisco, and Silverthorne distribute a packet of information to inform the communities about how to prepare for possible high water in May or June resulting from snowmelt.
- After the December 2007 severe winter storm, the Town met with the Red Cross to improve guidelines and procedures for deploying an emergency shelter in the Silverthorne Recreation Center. Specific times of operation, capacity of the building, and capacity of each room within the building were determined. The Town will apply the new procedures during the next emergency event that requires sheltering.

Past Mitigation Efforts

Other mitigation related programs and projects that Silverthorne has implemented in the past include the following:

- In November 2007, a tree survey of public and private forested properties was conducted to help manage the mountain pine beetle infestation in Silverthorne. The survey identified 2,129 trees that needed to be cut and removed (or cut and chipped) before the summer of 2008. Property owners were responsible for taking action on trees on their property.
- In 2006, the Town hired a consultant to review all Town-owned property, including public rights of way, for beetle or other infestation killed trees. The Town then had the dead and downfall trees removed and preventive spraying applied to specified trees per the consultant's recommendations.
- The Town completed a stream restoration project on the Blue River to improve fish habitat and ecological function. This project also deepened the flow channel, which reduces flooding.
- Within the past 10 years, the Town has implemented an automatic backup power source for the Town's water supply system to insure an available water source during emergencies, such as a wildfire incident.
- Initiated in 2000 and continued annually, the Town provides a dropoff site for slash and processes the collected slash into chips that are transported to the Climax Mine as part of their reclamation efforts.

F.5 Opportunities for Enhancement

Based on the capability assessment, Silverthorne has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the Town to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform Town staff and board members on how best to integrate hazard information and mitigation projects into the Town policies and ongoing duties of the Town. Continuing to train Town staff on mitigation and the hazards that pose a risk to the Town will lead to more informed staff members who can better communicate this information to the public.

Another opportunity would be to improve the CRS rating; and an improved rating could make flood insurance more affordable. See related mitigation action #7 Floodplain mapping and management.

F.6 Mitigation Goals and Objectives

Silverthorne adopted the hazard mitigation goals and objectives developed by the Summit County Hazard Mitigation Planning Committee and described in Chapter 4 Mitigation Strategy.

F.7 Mitigation Actions

The planning team for Silverthorne identified and prioritized the following mitigation actions based on the risk assessment. Background information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included. The Town also chose to include emergency response actions related to water and wastewater facilities in their annex.

Continued Compliance with the National Flood Insurance Program.

As part of their mitigation strategy, Silverthorne will continue participation in and compliance with the NFIP. Specific activities that the Town will undertake to continue compliance include the following:

- Continuing participation in the Community Rating System and identifying opportunities to increase points and lower rating, such as through this planning process
- The Town will let the Insurance Services Office (ISO) know that this plan exists, is updated, and conforms with DMA, FMA and CRS planning requirements so that credit can be considered during the next CRS review.
- A mitigation action was introduced in 2013 related to Floodplain Mapping and Management (see Action #7).

Mitigation Action: Silverthorne—2 Mountain Pine Beetle Ordinance

Jurisdiction:	Town of Silverthorne
Action Title:	Continue to implement mountain pine beetle program and enforce ordinance
Hazard(s) Mitigated	Pest Infestation (forest)
Priority:	High
Issue/Background	<p>Silverthorne’s Code Section 4-8-44 (adopted in 2006) requires landowners to remove all dead, diseased, and/or beetle-infested trees located on their property within 10 days of notification. In November 2007, a tree survey of public and private forested properties was conducted to help manage the mountain pine beetle infestation in Silverthorne. The survey identified 2,129 trees that needed to be cut and removed (or cut and chipped) before the summer of 2008. Landowners were responsible for taking action on trees on their property. The tree removal deadline was June 20, 2008, and enforcement measures for remaining trees began in July 2008.</p> <p>The Town also has removed beetle infested trees from Town-owned property at a cost of approximately \$50,000 in 2007 and \$70,000 in 2008.</p>
Ideas for Implementation:	<p>Silverthorne will continue with program for the next three to five years. Between September 20 and October 1, 2008, the Town will survey trees on residential properties in Silverthorne to identify and mark trees that have been recently infected with pine beetle. These trees will be marked with a blue paint ring. Upon the completion of the survey, property owners with infected or dead trees on their property will receive a follow-up notification indicating removal requirements. The Town will also conduct media outreach to inform property owners of the program. Trees that have not been removed by the stated deadline will be removed by the Town and property owners charged at double the full cost of removal plus additional fines. The Town will offer a site for citizens to take slash for disposal and will pay for grinding at the end of the year.</p>
Responsible Agency:	Silverthorne Town Manager’s office and Community Development Department
Partners:	All Town departments
Potential Funding:	The Town of Silverthorne will provide funding for the tree survey, slash disposal site and grinding, and staff time to administer and enforce program. Property owners pay for tree removal.
Cost Estimate:	Annual cost estimate is \$7,000-10,000 for tree survey, \$10,000 for slash disposal site and grinding, \$50,000 for tree removal on Town-owned property, and significant staff time to administer and enforce
Benefits: (Losses Avoided)	<ul style="list-style-type: none"> • Reduces wildfire hazard • Reduces rate of spread of mountain pine beetle infestation
Timeline:	
Status:	Completed.

Mitigation Action: Silverthorne—3 Emergency Power for Wastewater Treatment Plant

Jurisdiction:	Town of Silverthorne
Action Title:	Insure emergency power for wastewater treatment plant during extended power outage
Hazard(s) Mitigated	Multi-Hazard
Priority:	Medium
Issue/Background	<p>A 450-kilowatt emergency generator was installed in 2000. The generator consumes approximately 33 gallons of diesel per hour. The fuel is supplied from a 1,000-gallon tank which would require refilling on a daily basis during an extended power outage. Possible solutions are to arrange for the delivery of a tanker during an emergency.</p>
Ideas for Implementation:	<p>Evaluate increasing emergency generator capacity to reflect plant expansions and increased plant loading since the generator was installed in 2000. The generator is capable of running the main plant and digester but would require that aeration be cycled to various basins on a rotating basis since the generator cannot operate all of the required blowers on a continuous basis.</p> <p>The dewatering facility is on a separate transformer and cannot be operated by the emergency generator. If it became necessary to operate the centrifuge during an extended power outage, a 150 kilowatt generator could be rented. Availability and guaranteed rental should be investigated.</p> <p>The flow equalization pond provides additional backup during an extended power failure. Approximately 24 hours of partially treated wastewater could be stored in the pond on an emergency basis.</p> <p>An engineering evaluation for installing increased generator capacity should be initiated.</p>
Responsible Agency:	Silverthorne/Dillon Joint Sewer Authority
Partners:	Town of Silverthorne and Town of Dillon
Potential Funding:	Capital funding
Cost Estimate:	Costs will be estimated based upon engineering evaluation
Benefits: (Losses Avoided)	<ul style="list-style-type: none">• Prevent loss of services during extended power outages• Avoid discharging raw wastewater and associated violations and possible penalties
Timeline:	Generator capacity engineering study and design in 2010 with capital appropriation and construction in 2012.
Status:	Completed.

Mitigation Action: Silverthorne—4 Emergency Power for Water Distribution

Jurisdiction:	Town of Silverthorne
Action Title:	Ensure continued water distribution during extended power outage
Hazard(s) Mitigated	Multi-Hazard
Priority:	Medium
Issue/Background	The Water and Sewer program maintains the Town’s water system and sewage transmission line. Water is provided by the Town of Silverthorne through a system of wells, storage tanks, and distribution lines. Some emergency power generators are in place, but additional generators and fuel sources are needed to maintain services during extended power outages.
Ideas for Implementation:	Secure fuel source for generators in place. Verify rental companies can accommodate our needs. Budget for a mobile generator to run all stations.
Responsible Agency:	Silverthorne Public Works Department – Water and Sewer program
Partners:	
Potential Funding:	Town of Silverthorne
Cost Estimate:	\$50,000
Benefits: (Losses Avoided)	<ul style="list-style-type: none"> • Prevent interruption of fire flows • Prevent loss of services to customers • Protection public health and safety
Timeline:	
Status:	Completed.

Mitigation Action: Silverthorne—5 Action Plan for Explosive Gas Event

Jurisdiction:	Town of Silverthorne
Action Title:	Develop action plan for responding to an explosive gas event at the headworks of the Silverthorne/Dillon Joint Sewer Authority
Hazard(s) Mitigated	HazMat
Priority:	Low
Issue/Background	Explosive gas detectors are located at the head works and the Buffalo Mountain and the Dillon/Dillon Valley flume vaults. An alarm is triggered at the head works when an explosive gas concentration reaches 10 percent lower explosive limit. The overhead door opens automatically, and an exhaust fan turns on.
Ideas for Implementation:	<p>If the alarm persists, plant personnel should be notified and assemble at the sludge building. The plant gate should be locked to prevent entry by non-essential personnel. The fire and police departments should be notified of the situation and placed on standby.</p> <p>If an explosion were to occur and damage or destroy the head works, it would be necessary to establish bypass pumping using the Silverthorne/Dillon Joint Sewer Authority's 4x4 and 6x6 trash pumps. The damage could extend up the sewer line for some distance and an additional discharge hose might be required. Extended time pumping would require additional pumps be rented.</p> <p>Refer to the JSA ERP located in the Lab at the JSA Treatment Plant</p>
Responsible Agency:	Silverthorne/Dillon Joint Sewer Authority
Partners:	Rain For Rent Pump Rental Activate CoWARN & Request Assistance
Potential Funding:	Purchase bypass pump with 2,000 GPM capacity
Cost Estimate:	\$75,000
Benefits: (Losses Avoided)	Prevent loss of services, continue plant operations and meet discharge permit
Timeline:	Purchased in 2015.
Status:	Completed.

Mitigation Action: Silverthorne—6 Cottonwood Shared Facilities

Jurisdiction:	Town of Silverthorne
Action Title:	Cottonwood shared Silverthorne Public Works and Summit Fire & EMS Facilities
Hazard(s) Mitigated	Wildfire
Priority:	Medium
Issue/Background	Silverthorne owns a parcel of land towards the north end of Town that was a required land dedication from the developers of the Eagles Nest subdivision region in the 1980's. A portion of this land was earmarked as the site of a potential future fire station. In more recent years, the Town and Summit Fire & EMS have been working together on developing and acquiring approvals for a site plan that would include sites for both a future public works building and a future fire station building. The facilities would be located adjacent to each other and would share some common items such as utility and access infrastructure; however, the buildings themselves would be built, owned and maintained separately by each respective entity.
Ideas for Implementation:	The site plan and infrastructure has already been designed and approved. Funding is what is needed for construction to occur.
Responsible Agency:	Town of Silverthorne /Summit Fire & EMS Protection District
Partners:	Town and Fire Protection District departments, employees and officials
Potential Funding:	DOLA Grants and through the normal Capital planning and budget processes,
Cost Estimate:	Approximately \$7 million for both projects and shared site work
Benefits: (Losses Avoided)	Summit Fire & EMS' closest staffed fire facility is located in Dillon. A new location in Silverthorne would result in closer proximity to most if not all of Silverthorne residents, development and infrastructure and would likely result in quicker response times. Silverthorne's Public Works staff would benefit from larger, more efficient offices and vehicle storage and maintenance facilities.
Timeline:	Silverthorne Public Works Building is anticipated for 2015 or 2016. The timeframe for Summit Fire & EMS is unknown/uncertain.
Status:	Completed. Action added in 2013

Mitigation Action: Silverthorne—7 Floodplain Mapping and Management

Jurisdiction:	Town of Silverthorne
Action Title:	Floodplain mapping and management
Hazard(s) Mitigated	Flood
Priority:	Medium
Issue/Background	<p>There are several components:</p> <ol style="list-style-type: none"> 1) Community Rating System (CRS) update. Silverthorne participates in the CRS, which is a point based incentive program, whereby properties within Silverthorne may receive a percentage based discount on flood insurance premiums. This discount rate is based on points earned within the CRS program. FEMA updated the CRS program guidance in 2013. The Town of Silverthorne may consider updating and expanding our local administration of the CRS program as well. The goal would be to earn more points so that flood insurance premium discounts can be increased. Points reflect effort done for both education and awareness as well as for proper planning for land uses in or near a floodplain. 2) Recreational In Channel Diversion (RICD) projects. The Town has considered building a kayak park at some point in time in the future. While the primary function is that of recreation, such a river project may improve the function of the river and mitigate potential flood hazards. The park will need increased flows, controlled by Denver Water, to function effectively. Silverthorne will request for a greater number of annual days with higher volumes of flows. As a beneficial byproduct, these higher flows will better transport and/or clear up areas of sedimentation and partial blockages or restrictions where they may exist along the length of the river. A better flowing, less congested river will reduce the level of future flood potential.
Ideas for Implementation:	<p>See above for descriptive detail.</p> <p>Bullet points include:</p> <ul style="list-style-type: none"> • Improved mapping for land use presentation and analysis • Improved floodplain management via CRS and other means • Planning and construction of river related projects.
Responsible Agency:	Town of Silverthorne Public Works; Public Works Director or designee
Partners:	Town of Silverthorne. Possibly also FEMA and Colorado Water Conservation Board (CWCB – the State)
Potential Funding:	FEMA, CWCB. Town budgeting. Possible future grants.
Cost Estimate:	\$5,000 to \$100,000
Benefits: (Losses Avoided)	Reduce risk and/or extent of damage to property. Reduce risk of threat to health and safety to people. Reduced cost of flood insurance to residents through CRS participation and enhancement.
Timeline:	Ongoing
Status:	Ongoing. Action added in 2013

Mitigation Action: Silverthorne—8 Community Evacuation

Jurisdiction:	Town of Silverthorne
Action Title:	Community evacuation
Hazard(s) Mitigated	Multi-Hazard
Priority:	High
Issue/Background	Develop procedures to quickly, efficiently and effectually evacuate critically identified areas of the community.
Ideas for Implementation:	Update the Town's current evacuation plan, look into advanced mapping programs to allow real-time updates, research other towns and their evacuation plans.
Responsible Agency:	Silverthorne Police Department
Partners:	Summit County and Municipalities
Potential Funding:	State OEM; general fund
Cost Estimate:	\$5,000 to \$25,000
Benefits: (Losses Avoided)	Have an orderly evacuation where all residents are able to leave their homes safely without loss of life.
Timeline:	Ongoing
Status:	Ongoing. Action added in 2013

Mitigation Action: Silverthorne—9 Firewise Education**Jurisdiction:** Town of Silverthorne**Action Title:** Firewise Education**Hazard(s) Mitigated** Wildfire**Priority:** Medium**Issue/Background** Summit County has experienced wildfires near the Silverthorne area in recent years and proper wildfire mitigation practices has proven successful in saving property and lives. This action would provide education on fire wise practices to any property that is applying for a building permit. Both new construction and remodel work will receive the educational materials.**Ideas for Implementation:** Educational pamphlets and information will be provided through the Community Development Department during the building permit process**Responsible Agency:** Silverthorne Community Development Department**Partners:** Summit County**Potential Funding:** General Fund**Cost Estimate:** \$2,000**Benefits:
(Losses Avoided)** Prevent property damage and save lives.**Timeline:** Start in 2020 and ongoing**Status:** New in 2020. Ongoing.

Mitigation Action: Silverthorne—10 Reinforce River Banks

Jurisdiction:	Town of Silverthorne
Action Title:	Reinforce River Banks to prevent flooding onto private property.
Hazard(s) Mitigated	Flood, Dam Incident, erosion
Priority:	High
Issue/Background	During high flows usually associated with floods or high releases from Dillion Reservoir the Blue River begins to erode the river banks at some isolated locations next to private property. The erosion will damage private property if left unchecked. The erosion does not cause debris flow but instead destroys the adjacent properties and makes them unusable.
Ideas for Implementation:	Design and construct armament along the banks of the Blue River in those isolated areas so that the banks remain in the current location.
Responsible Agency:	Town of Silverthorne Public Works
Partners:	Army Corps of Engineers
Potential Funding:	Grants from Federal Government and State of Colorado, Town of Silverthorne General Fund.
Cost Estimate:	\$150,000
Benefits: (Losses Avoided)	Avoid loss of property value.
Timeline:	Design in 2021 and construct in 2022.
Status:	New in 2020.

F.8 Implementation and Maintenance

Moving forward, the Town will use the mitigation action worksheets in the previous section to track progress on implementation of each project. Implementation of the plan overall is discussed in Chapter 5 in the Base Plan.

F.8.1 Incorporation into Existing Planning Mechanisms

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the Town to help inform updates and the development of local plans, programs and policies.

Integration of 2013 Plan into Other Planning Mechanisms

Risk and vulnerability information the 2013 Summit County Hazard Mitigation Plan and the Town of Silverthorne annex was used to inform the 2014 update to the Town of Silverthorne Comprehensive Plan and updates to the Town Code, as noted in section F.4 Capability Assessment. Refer to subsection Regulatory Mitigation Capabilities for more information related to the integration into the Town's Code.

Process Moving Forward

Moving forward, the Engineering Division may utilize the hazard information when implementing the Town's Capital Improvement Plan and the Planning and Zoning Divisions may utilize the hazard information when reviewing a site plan or other type of development applications. The Town will also incorporate this HMP into future updates to the Town of Silverthorne Comprehensive Plan.

As noted in Chapter 5 Plan Maintenance, the HMPC representatives from Silverthorne will report on efforts to integrate the hazard mitigation plan into local plans, programs and policies and will report on these efforts at the annual HMPC plan review meeting.

F.8.2 Monitoring, Evaluation and Updating the Plan

The Town will follow the procedures to monitor, review, and update this plan in accordance with Summit County as outlined in Chapter 5 of the Base Plan. The Town will continue to involve the public in mitigation, as described in Section 5.4 of the Base Plan. The Director of Public Works will be responsible for representing the Town in the County HMPC, and for coordination with Town staff and departments during plan updates. The Town realizes it is important to review the plan regularly and update it every five years in accordance with the Disaster Mitigation Act Requirements.