



Hazard Mitigation

EXISTING CONDITIONS

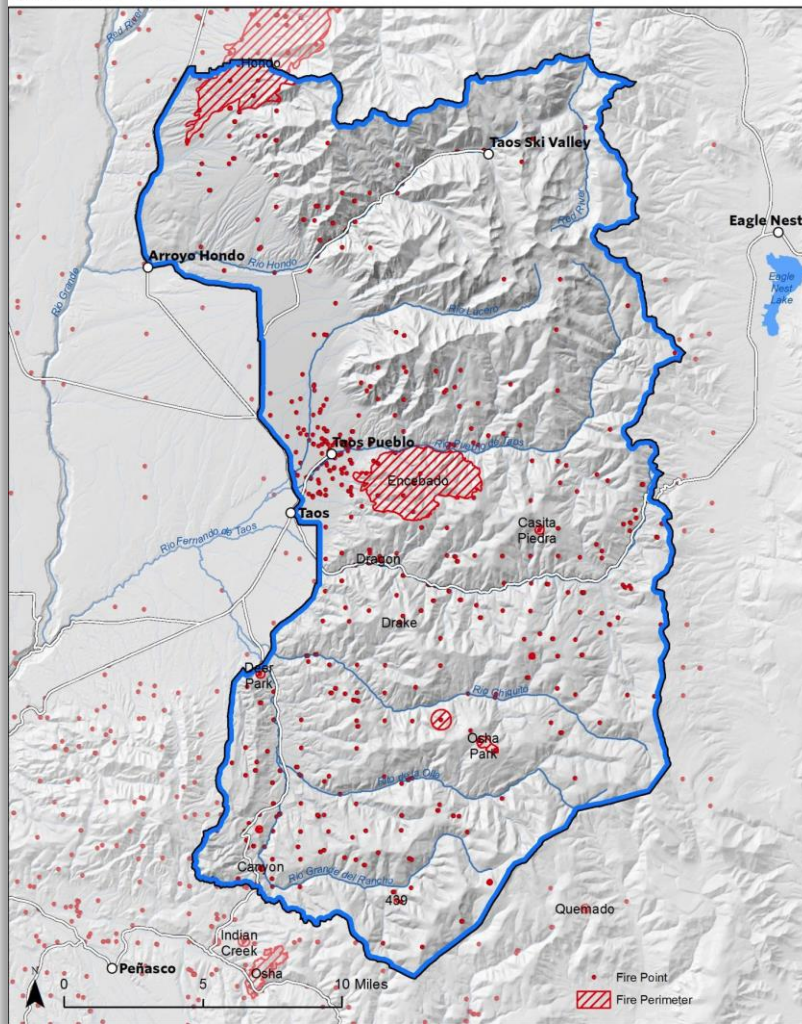
Natural hazards represent a serious threat to the natural beauty, property, safety, and economy of the Village. The threats arise from forest fire, flood, avalanches, and landslides. A summary of these threats are outlined below.

- Forest Fire

A forest fire represents a variety of risks and consequences to the Village, the tourism industry, and private property owners. These are summarized below:

1. The forest surrounding the Village is overgrown with small diameter, dead-and-down and dead-and-standing trees due to fire suppression policies that remained in place by the US Forest Service for many decades.
2. A forest fire would have disastrous consequences to wildlife and wildlife habitat, including the potential for massive fish kills in the Rio Hondo.
3. Soil erosion would damage waterways and increase flood potential.
4. Irrigated agriculture and grazing in downstream communities would be at risk of water pollution in the Rio Hondo due to ash and debris deposited in the river following a forest fire.
5. Persistent drought increases fire potential.
6. Invasive insect species kill trees, increasing the ignitability of the forest.
7. A fire could damage the Phoenix Spring which provides the Villages single source of drinking water.
8. A forest fire would be disastrous to the aesthetics of the ski runs and hiking and biking trails with a very negative effect on the visitor experience.
9. Hundreds of millions of dollars being invested by TSV Inc. in the redevelopment of the core area and infrastructure improvements are put at risk.
10. State highway 150 is the single access road to and from the Village making emergency evacuation problematic and dangerous.
11. Careless visitors may accidentally or intentionally start a fire in remote areas.
12. Above-ground electric utility poles along NM 150 and within the Village are at risk from falling on the lines, from high winds and many other factors beyond human control.
13. The Village has limited financial resources to provide the necessary training equipment to fight wildland fires.
14. Difficulty in getting fire hazard insurance for residences and commercial buildings.

Recent Fires



There have been several devastating forest fires in Taos County in recent history, including the Encebado fire and the Hondo/ Lama fire. The **Recent Fires Map** identifies the location of recent forest fires.

- 2015 Rio Grande Watershed Coalition – Landscape Restoration Strategy. 2015.

"Within hours after the Hondo Fire started on May 5, 1996, near San Cristobal and Taos, NM, the neighboring town of Lama was burned through. Some structures remained, but many were destroyed. Families in nearby Red River and portions of the town of Questa were evacuated. Before this incident was over, about 2,000 individuals were displaced or evacuated from their homes, and portions of some highways were closed to all but local residents and fire traffic." – Taos News. From an article in Fire Management Notes Volume 56, No.4, 1996 United States Department of Agriculture, Forest Service.

The ash cloud from the Hondo/Lama Wildfire reached across the Sangre de Cristo Mountains.

– 2009 Taos County CWPP. p. 7



"The Village is surrounded by the Taos County Wildland Urban Interface (WUI). "The WUI is the area or zone where structures and other human development meet to intermingle with undeveloped wild-lands or vegetative fuel. When homes blend together with the wild-land, a tremendous wildfire danger can exist. This creates the Wild-land/Urban Interface." - 2009 Taos County Community Wildfire Protection Plan.

The Village has been proactive in addressing the threat of catastrophic wildfire in recent years. The Village was designated as a Fire Wise Community / USA status in December, 2014. The Firewise Board of Directors is responsible for preparing an annual Work Plan to address the risks of a catastrophic forest fire.

In August, 2014, the Firewise Community Board of Directors assessed each property in the Village to determine whether or not they are high, medium, or low risk. Then in 2015 the Firewise Community Board of Directors was awarded a \$500 grant from State Farm Insurance for thinning the dead and dying trees and dead underbrush on the property around the Village Offices and Fire Department building.



BEFORE (LEFT) AND AFTER (RIGHT) PHOTOS FROM THINNING AT THE VILLAGE OFFICE ON "WILDFIRE PREPAREDNESS DAY" HELD IN MAY 2015.

Most recently in 2015, the Village purchased software that will send a text message to anyone within range of cell towers in the Village of an immediate emergency situation (i.e. - wildland fires, landslides, avalanches, mudslides, active shooter, etc.) and inform them of evacuation sites and protocols. Also in 2015, the Village signed on as a member of the Rio Grande Wildfire and Water Source Protection Collaborative Effort and donated the requested \$5,000 to the US Geological Survey for a Regional Fire History Study.

- Flood & Erosion

The Village receives 21 inches of rain per year. Rain storms come in short, intense episodes, increasing the threat of flood and erosion. Flood and erosion can contribute to non-point source pollution of surface waters. Several areas within the Village are susceptible to flood, including several Amizette properties along the Rio Hondo, properties along the Lake Fork Creek in the O.E. Pattison subdivision, properties on Upper Twinning Road, and the Rio Hondo condominiums and the “old bone yard” near the Rio Hondo.



The Federal Emergency Management Agency (FEMA) has not mapped the 100-year Flood Hazard Area (e.g. – “flood plain”) within the Village; however, the Village requires site specific flood studies prior to approving new construction when there is an apparent threat of flood conditions. The Village works with the US Army Corps of Engineers (USACE) to evaluate the potential for a development project to impact surface water and wetlands. The USACE permits development projects as a part of their regulatory responsibility under Section 10 of the Rivers and Harbors Act and/or Section 404 of the Clean Water Act.

- **Avalanche**



**AVALANCHE SHOOT ON THE
PATTISON PROPERTY.**

“The high elevations and steep topography (upper slopes range from 30° to 45° inclinations) provide an ideal topographic setting for snow avalanches.”

– Snow Avalanche Mapping and Zoning with Land Use Recommendations. Arthur I. Mears. June, 2000. p. 1.

The last major avalanche was above the Bavarian Restaurant in the Kachina area in 1995 and again in 1997. However, numerous avalanches routinely occur above and through Kachina Road and have resulted in significant property damage to homes on Cliffhanger Loop as recent as 2008.

The Village relies on a June 2000 study prepared by Arthur I. Mears, PE, as a reference for determining the limits of avalanche zones. The study identified a Blue Zone, a Red Zone, and the TSV, Inc. Control Area:

Red Zone (High Hazard) – have a return period of 30 years or less and/or produce impact pressures of 600 lbs/ft² or more on flat surfaces normal to the flow direction. The Red Zone is effectively a no build zone.

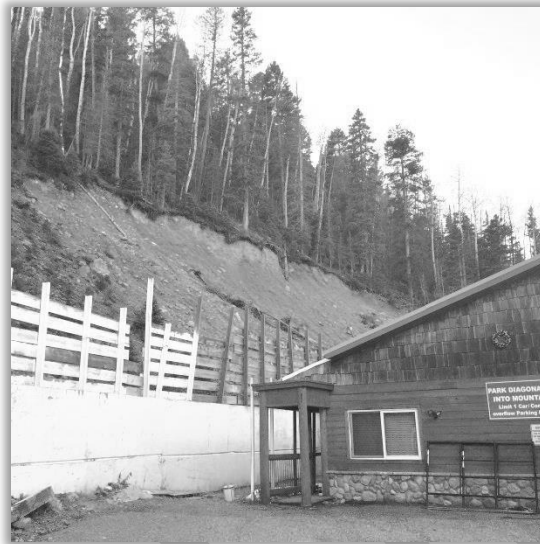
Blue Zone (Moderate Hazard) – have return periods of more than 30 years and produce impact pressures of less than 600 lbs/ft². Construction is permitted if (1) structural engineering defenses have been built to protect the building from an avalanche design, (2) buildings have been reinforced for design avalanche impact and deposition loads, and (3) avalanches have been prevented by structures in the starting zone.

TSV, Inc. Control Area – have regular avalanche control, including forecasting, skier and / or machine compactions, and explosive or skier release. Explosives may cause a “100-year” avalanche and are not always entirely effective at preventing an avalanche. Major avalanches may occur in these areas in the Spring due to high intensity prolonged storms.

The **Avalanche Zone Map** identifies the locations of Blue and Red zones and the TSV, Inc. Control Areas.

- Landslides

Landslides occur when rock, soil, or debris slide down a slope under the force of gravity. Landslides are not uncommon in the Village. Problems often occur on slopes steeper than 10-15 degrees. Roadways and buildings constructed on steep slopes can cause erosion and landslides. Underground water can seep and heave the soil causing it to move and slide.



Large cut and fill increases the risks of landslides and erosion.

PREVIOUS PLANS

The Village and surrounding communities and organizations have prepared several plans to address natural hazards. Below is a summary of these plans and a brief description of the recommendations that were included.

2001 Comprehensive Plan

The Village Council recognized the threats of natural hazards when it adopted the first Comprehensive Plan in 2001. The Comprehensive Plan included the following recommendations:

1. Natural hazards include but are not limited to avalanches, rock and mud slides, fires and floods.
2. The Village is mapping areas of potential natural hazards. Any person(s) proposing to develop within the identified areas must prepare (at his/her expense) a more detailed study of potential hazards and propose mitigating measures to assure the public safety and welfare.
3. The Village may determine if there are specific areas in which no development may take place because of probable endangerment to the health, safety and welfare of the residents, visitors and businesses of the Village.

2010 Master Plan

The 2010 Master Plan included a variety of recommendations and concerns related to natural hazards. The master Plan identifies several community concerns during public meetings. These concerns were.....

.....under the category of "Environmental" -

- "Develop a storm water runoff management plan."
- "Development on steep slopes above Kachina could compromise safety of lower development."

.....under the category of "Safety "

- "Healthy forest (urban interface)"

The 2010 Master Plan also included a series of GOALS and ACTIONS related to natural hazards. These are outlined below:

ENVIRONMENTAL GOAL

"Preserve, protect and maintain Village's high water quality."

ENVIRONMENTAL ACTIONS

"Identify sources of non-point pollution and to develop mitigation measures to limit negative impacts on local waterways. Study should include Best Management Practices (BMPs) to control erosion from construction sites."

RESIDENTIAL DEVELOPMENT GOAL

"To limit the amount of tree cutting, erosion, stream damage and other detrimental effects to the natural environment as a result of residential development."

RESIDENTIAL DEVELOPMENT ACTION

Village's P & Z Commission and Staff will continue to research and develop ordinances that address the following:

- "The creation of criteria for development on lots with steep slopes that minimize cut and fill as well as tree cutting."
- "Create guidelines whereby newly developed lots are fire-wise while retaining a maximum amount of natural foliage and trees."

In addition to the GOALS and ACTIONS, the Master Plan includes a set of development criteria under the Regulatory Plan section for each area of the Village. The criterion primarily focused on minimizing cut-and-fill, reducing impermeable surfaces, and fire safety and protection.

2013 NM State Forestry Assessment

The State Forestry Division completed this assessment to provide recommendations for hazardous fuel treatments. It utilized the data from the 2009 Taos County CWPP as a reference for the assessment. Although the Taos County CWPP identifies the Village as a moderate risk, the NM Forestry Assessment concluded that the Village is a "high hazard community" due to drought and insect infestation impacts to forest health in and around the Village.

2015 Firewise Community Action Plan

The Firewise Board is required to submit an annual Action Plan to the state Department of Forestry in order to maintain the Village's status as a Firewise Community. The 2016 Action Plan summarizes the history and background of the Firewise Board, outlines previous accomplishments, and identifies several projects for 2016. The Action Plan calls for GIS mapping of properties with adequate (or inadequate) defensive space, multiple mass mailings to educate the community about

What is a Forest Plan and why does it matter?

- A forest plan is a comprehensive document that guides forest management, use, and resource protection for a period of 10—15 years.
- It is designed to balance and integrate multiple uses with the restoration and maintenance of forest and water ecosystems.
- It identifies areas that may be suitable for special designations, such as research natural areas, wild and scenic rivers, and wilderness.
- All subsequent proposals and projects must comply with the approved forest plan.

- Carson National Forest Plan
Revision 101Forest 101

defensive space and to share recent success stories, a series of “Firewise Education Days”, consideration of an ordinance to mandate thinning, ongoing participation in regional meetings and activities, and purchasing additional sirens. The Action Plan also calls for a Community Wildfire Protection Plan (CWPP) specific to the needs, risks, and opportunities of the Village.

2016 U.S. Forest Service Management Plan

The Carson National Forest is operating from a Forest Management Plan created in 1983. According to the US Forest Service web page regarding the revised Forest Plan, “The Carson National Forest will be in the process of revising its Forest Plan to incorporate changed conditions, best available science, and new public issues beginning October, 2013”

- <http://www.fs.usda.gov/main/carson/landmanagement/planning>

The Plan is intended to promote “healthy, resilient, diverse, and productive national forests and grasslands with a range of social, economic, and ecological benefits now and for future generations.” The Plan will represent a major policy shift from forest fire suppression to fire management.

2009 & 2015 Taos County Community Wildfire Protection Plan

Taos County adopted a CWPP in 2009. A CWPP Core Team met throughout 2015 to update the 2009 CWPP. The CWPP includes a Community at Risk rating for all communities within the County. The ratings were determined through vigorous CORE Team input, mapping data and fire modelling, professional forestry consultation, and local knowledge. The CWPP gives the Village a “Moderate” Final Risk Rating.

Taos Valley Watershed Coalition Landscape Restoration Strategy

The Landscape Restoration Strategy (LRS) was developed over seven months during 2014-2015 by the Taos Valley Watershed Coalition.

The goal of the Coalition is to protect, improve and restore the water quality, quantity, and ecological function of the forests and streams in the Rio Grande watershed within Taos County to the benefit of both local and downstream beneficiaries of the water supply arising from these watersheds.

The Landscape Restoration Strategy is a combination of local knowledge of forest conditions, forest ecology, and mapping studies to recommend the most appropriate forest treatments across the Taos valley watershed.

TSV Inc. Glading

TSV Inc. is glading the ski runs at the “Minnesotas” and the “Wild West” to protect the ski mountain from forest fire and to create more terrain for skiers and snow boarders.

EXISTING ORDINANCES

- Zoning Regulations (Ordinance 14-30)

The zoning regulations include many standards that must be met in order to develop properties within the Village. These include cut and fill, terrain management, fire resistant building materials, and prohibitions and restrictions of developing in or near avalanche zones.

- Subdivision Regulations (Ordinance 10-25)

The subdivision regulations include extensive provisions for clustered developments. Clustered development is permitted in any subdivision to “encourage creative and flexible site design that is sensitive to the land’s features and adapts to the natural topography.”

- Building Codes & Other Ordinances

The Village Council adopted several ordinances that regulate building design and construction with specific standards to prevent fire and other potential hazards. These ordinances include:

- 2007-10 – Adopting the New Mexico Building Code
- 1997 - 11 – Adopting the Plumbing and Mechanical Code
- 1997 - 12 – Adopting the Electrical Code
- 1997 - 23 – Creating the Fire Department
- 2007-44 – Adopting the International Urban – Wildland Interface Code
- 2004-2002 & 2002a - Open Fires and Fireworks

The Village Council amends these ordinances from time to time to reference the most current versions of applicable building codes.

GOAL, POLICIES, OBJECTIVES

The goal, policies, and objectives present a framework for evaluating new development proposals and for implementing hazard mitigation efforts.

GOAL

The Village is adapted to natural hazards and prepared to mitigate the potential impacts.

POLICIES

General

1. The Village recognizes that natural hazards represent a serious threat to the safety and economy of the Village. In order to protect the health, safety and welfare of the community, the Village will require specific engineering or planning studies to demonstrate that a proposed development will not increase the threat of natural hazards and to include recommendations to mitigate the potential impacts.
2. Natural hazards can have disastrous impacts within the Village but also across the entire landscape. Therefore, the Village will collaborate with all levels of government and community organizations to identify and minimize the threats of natural hazards and to leverage financial and technical resources to mitigate the impacts.

Fire

1. The Village will collaborate with all levels of government and community organizations, including The Nature Conservancy, Taos County CWPP Core Team, the US Forest Service, and New Mexico Forestry, and the Firewise Board in completing the Village Community Wildfire Protection Plan.
2. The Village will support the Firewise Board in promoting Education Day and other special events associated with forest fire prevention and education.

3. The Village will make every effort to provide educational materials and financial incentives to the community prior to considering ordinances that mandate forest fire protection measures on private property. The Village will lead by example with regard to fire prevention and protection efforts.

Flood & Erosion

1. The Village recognizes the critical role that wetlands and streams have in preventing floods and preserving water quality. New development should not only prevent damage to surface waters but should actively restore and preserve surface water and wetlands.
2. New development should include infrastructure and drainage improvements that are designed to accommodate the 100-year flood event to protect lives and property.
3. The Village will encourage on-site water retention through best practices in “light imprint” storm water management, including the use of rain barrels, rain gardens, bio-swales, and other permaculture designs.
4. The Village encourages clustered development as a method to avoid unnecessary roads and driveways which contribute to erosion and landslides. Clustered development will take advantage of the limited developable area and encourage adjacent property owners to share driveway access and avoid inappropriate development on steep slopes that can cause erosion, landslides, and unnecessary cut and fill for building footprints, access roads, utility trenches, and driveways.

Avalanche

1. The Village will provide education materials and maps about the causes and consequences of developing and living near avalanches.

Landslides

1. The Village will require professional geotechnical engineering of proposed structures on steep slopes exceeding 15 percent to protect properties from landslides.

OBJECTIVES

1. Adopt a Community Wildfire Protection Plan

The CWPP will provide specific strategies and objectives for government agencies, community organizations, and landowners about the types and specific locations of treatments necessary to reduce wildfire hazards within the upper Rio Hondo watershed. It will also include specific recommendations for public education, improving the capacity of the Village’s Public Safety and Volunteer Fire

Departments. The CWPP will be consistent with the Taos County CWPP update and the Landscape Restoration Strategy described by the Taos Valley Watershed Coalition.

2. Update the Village Web Page

Use GIS mapping software and web-based applications to provide maps and other materials to inform the community about meetings, funding opportunities, prescribed burns, risk assessments, public meetings regarding

3. Implement Forest Treatments

The Village will work with the US Forest Service, private property owners, TSV Inc., State Forestry, and community organizations in funding the recommended forest treatments within the upper Rio Hondo watershed. Potential funding sources include the US Forest Service Non Federal Lands grants, Community Forestry Restoration Projects, and the Rio Grande Water Fund.

4. Update the Zoning Regulations

The zoning regulations will be amended to clarify the development standards to increase protection of riparian areas and wetlands and to require grading and drainage plans for all proposed development.

5. Adopt the 2012 International Code Council Wildland-Urban Interface Code.

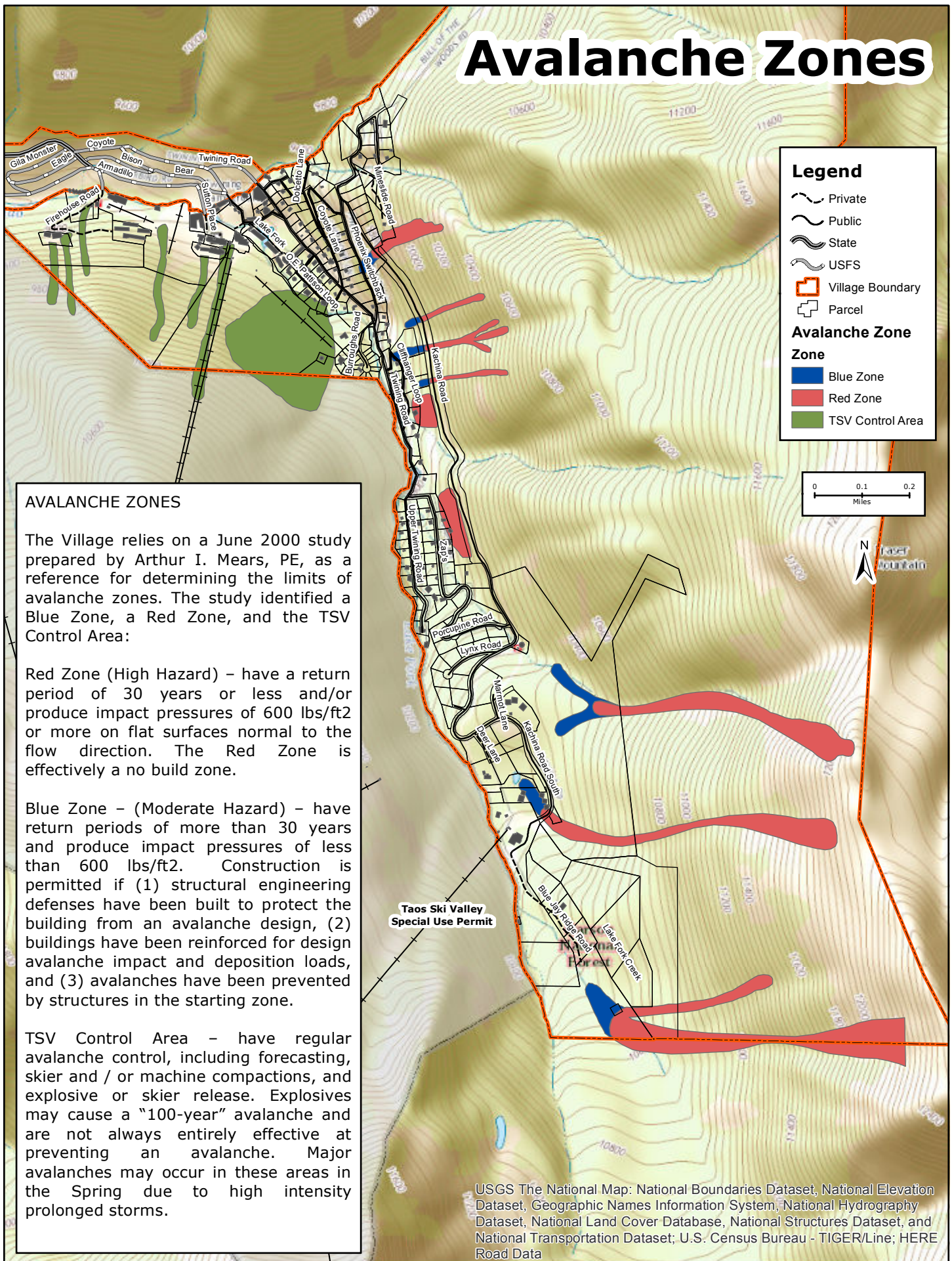
The Village Council adopted the 2003 code; however, adopting the 20123 code will improve the fire prevention requirements for new construction.

6. "Create guidelines whereby newly developed lots are fire-wise while retaining a maximum amount of natural foliage and trees." This objective is carried forward from the 2010 Master Plan.

CONCLUSIONS

To be concluded....

Avalanche Zones



FireWise Community Assessments



Legend

no data

Rating

extreme

high

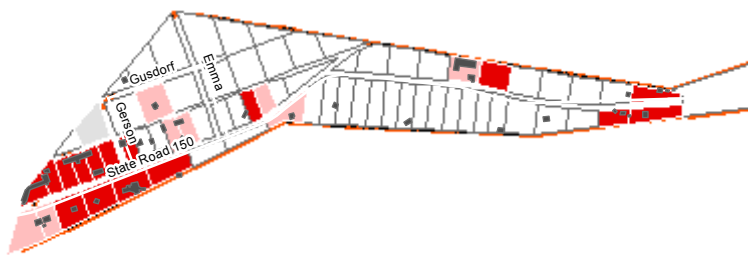
med

low

Village Boundary

0 0.25 0.5
Miles

Amizette



The Community Assessment was based on the degree of defensive space on individual properties. The Assessment was performed by members of the Firewise Board of Directors.