

# Healy Community Wildfire Protection Plan 2024

## Appendix A - Community Ignitability Analysis



The following supplemental information for the Healy CWPP project details community hazard ratings. These ratings help prioritize the recommendations in Appendix D.

**This should be read with the respective CWPP documents for Denali Borough, Cantwell, McKinley Village, Healy and Anderson, including the Appendixes B, C and D.**

**This report was funded by the US Forest Service through the Alaska Division of Forestry and Fire Protection. It was prepared for the Denali Borough by Bintel Inc with partners Fire Adaptive Solutions, FirePoint Forestry and Athena Intelligence.**



# Healy CWPP Appendix A

## COMMUNITY IGNITABILITY ANALYSIS

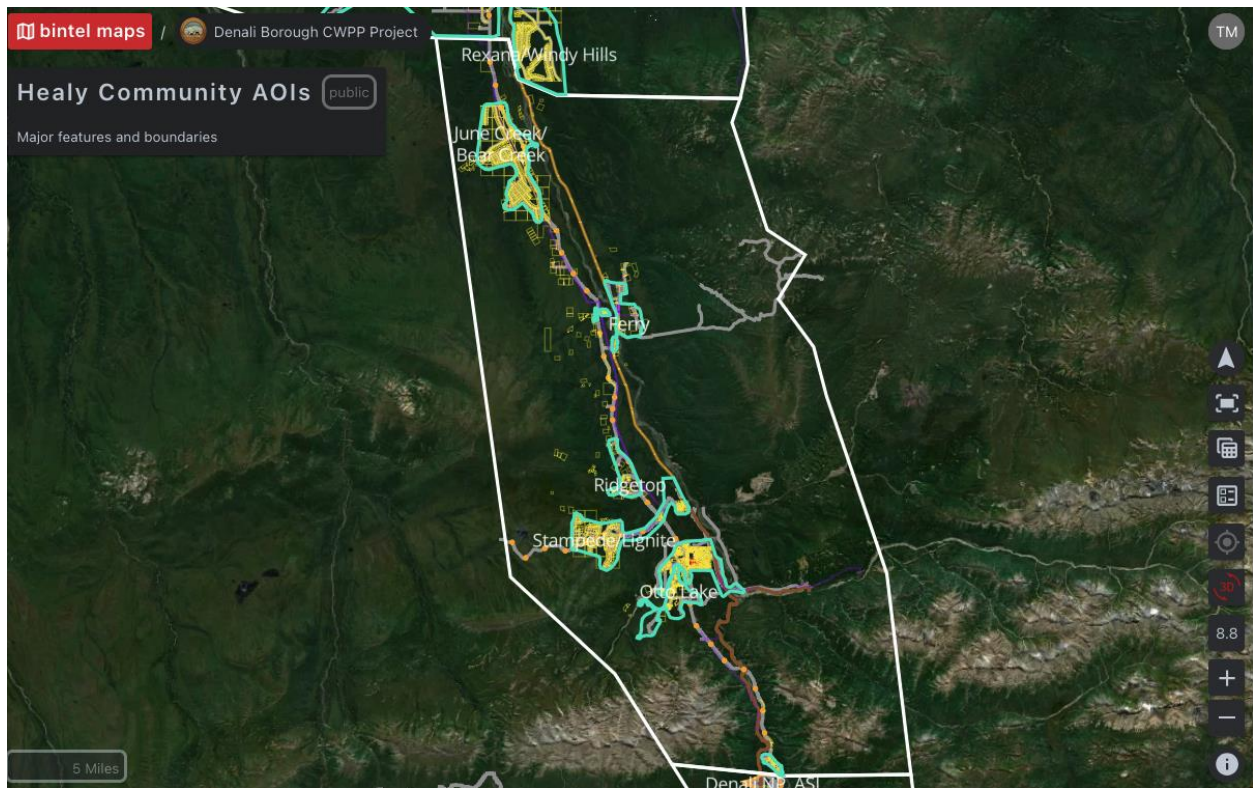


Figure 1 – Healy AOI Community Boundaries

Healy Alaska ICHR Ratings (2024)		
Community Name	Score	Adjective Rating
Ridgetop	86	Very High
June Creek/Bear Creek	73	Very High
Stampede/Lignite	68	High
Ferry	60	High
Nenana River Canyon	57	High
Rock Creek	52	High
Central Healy	47	Moderate
Otto Lake	45	Moderate

Rating Categories: Low < 30; Moderate 31-50; High 51-70; Very High 71-90; Extreme > 90.

Table 1 - Healy ICHR Ratings

# Healy CWPP Appendix A

## Purpose

The purpose of dividing residential areas into hazard zones (Communities) is to group the most heavily populated WUI/WI residential areas into hazard categories for prioritization of recommendations. This is accomplished through the use of the Interface/Intermix Community Hazard Rating (ICHR) tool, which is designed to analyze Home Ignition Zone (HIZ) hazard and mitigation factors within WUI/WI developments.

This document should be read in conjunction with the Denali Borough and Healy CWPP and Appendixes for context, definition of terms and recommended action plans.

## Methodology

The ICHR analysis incorporates data gathered in the field regarding structural ignitability, conditions in the home ignition zone, manmade fuel hazards and suppression factors with IFTDSS fire behavior modeling and GIS zonal analysis to generate a hazard score of 0 to 100 points where a 0 represents the lowest possible hazard and 100 the greatest. Adjective ratings for ICHR numeric scores are as follows: 30 or less = Low, 31-50 = Moderate, 51-70 = High, 71-90 = Very High and >90 = Extreme. For a more detailed discussion of the methodology behind these ratings please see Appendix C: Methodology.

## Description

There are eight Communities in the study area. ICHR scores have been used to sort these Communities into one of five adjective rating categories: low, moderate, high, very high and extreme. The Community boundaries and ratings are shown in Figure 1 and Table 1. In Figure 1 the study area boundary is shown in white, and the Community boundaries are shown in turquoise.

Of the eight Communities, Ridgetop and June Creek/Bear Creek rated very high. Stampede/Lignite, Ferry, Nenana River Canyon and Rock Creek rated as high hazard. Central Healy and Otto Lake rated as moderate.

The following Community descriptions are an overview of the general characteristics of the area. They focus on structural ignitability and Home Ignition Zone (HIZ) hazards (both natural and man-made) based on field observations, fire behavior modeling and GIS zonal analysis. This view is not intended to describe every home or street but rather what is average or typical for that Community.

# Healy CWPP Appendix A

## IGNITABILITY DISCUSSION – RIDGETOP

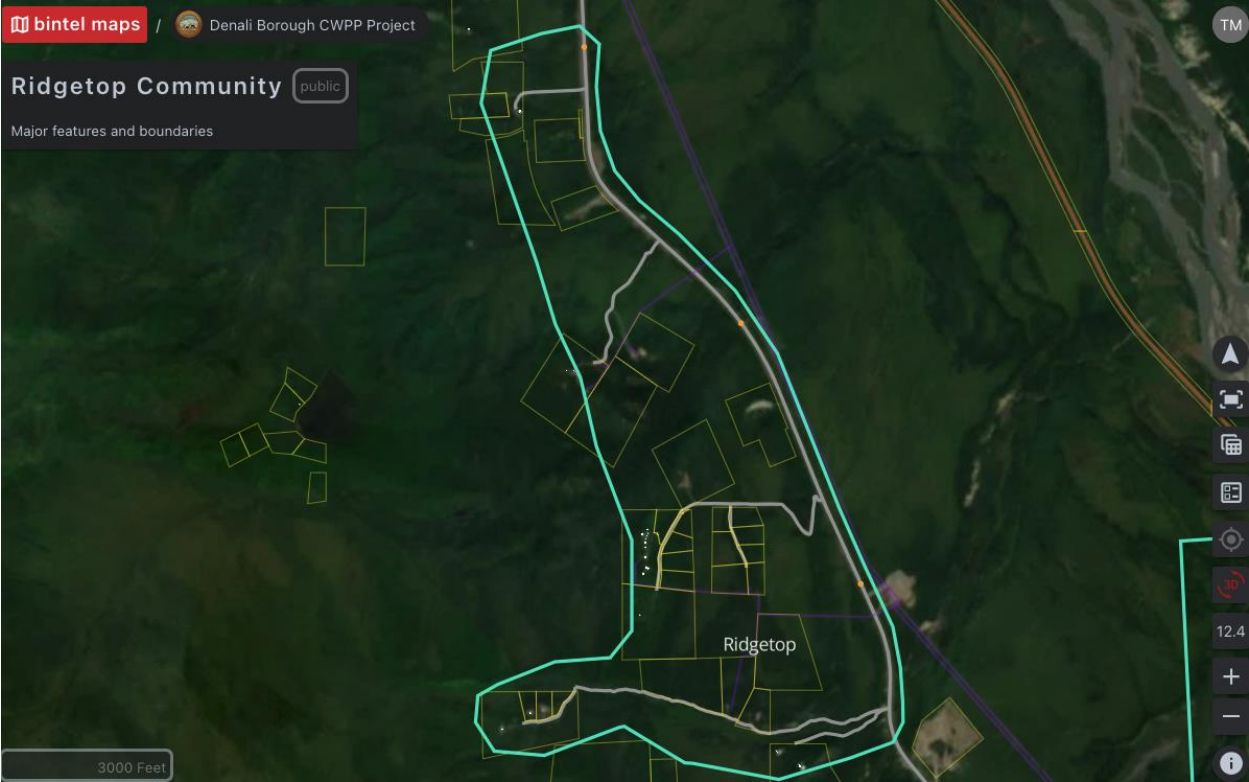


Figure 2 – Ridgetop



Figure 3 - Ridgetop

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## IGNITABILITY DISCUSSION – RIDGETOP

### Zone Characteristics and Hazards

<b>Hazard Rating:</b>	<b>Very High</b>
<b>Utilities Above or Below Ground:</b>	Overhead power, heating oil and coal
<b>General Construction:</b>	Primarily wood siding with ignition resistant (IR) roof
<b>Dual Access Roads:</b>	No
<b>Road Widths, Slope and Surface:</b>	Steep, narrow dirt roads and driveways, some rough
<b>Water Supply:</b>	Dip/draft 2.1 to 3.8 miles, mean distance 3 miles
<b>Proximity to Fire Station:</b>	3.8 – 6.4 miles, mean distance 5 miles

**ICHR Hazard Rating  
Very High**

Widely spaced homes on large lots. Mostly older construction, but there are a few newer homes. There are also some rental cabins in this Community. Wood siding or heavy timber with an asphalt or metal roof is the most common construction type. Flammable decks, stairs and projections are common, some properties have flammable outbuildings. Heating is supplied by electricity, wood stoves, fuel oil or coal and some homes have oil tanks or wood piles too close to structures. Most of the homes are built on ridgetops and mid-slope in steep, complex topography. Black and white spruce stands dominate the vegetation throughout and surrounding this Community. Some properties have partial defensible space clearings, but most have native vegetation too close to structures.

The topography rises steeply from the Parks highway with slopes of up to 30° and a mean slope of 8°, which makes this the steepest Community in the Healy AOI. The topography is complex with steep ridges and drainages. Elevations range from 1,299 feet to 1,932 feet. All the homes in Ridgetop are accessed from the Parks Highway by dead-end roads. These are generally rough, narrow dirt roads, surrounded by thick timber. There are tight hairpin turns that would be difficult for large suppression apparatus. Roads are marked at their intersection with the Parks Highway with reflective signage. There is only one other road intersection in this Community. Most houses don't have a visible address marker.

The only water for fire suppression is dip or draft from natural water sources or by tender shuttle from the Tri-Valley fire station in Central Healy. This is the nearest fire station to this Community and is between 3.8 and 6.4 miles away from the homes. The railroad runs to the east of this Community between the Parks Highway and the river.

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## IGNITABILITY DISCUSSION – JUNE CREEK/BEAR CREEK



Figure 4 - June Creek/Bear Creek



Figure 5- June Creek/Bear Creek

# Healy CWPP Appendix A

## IGNITABILITY DISCUSSION – JUNE CREEK/BEAR CREEK

### Zone Characteristics and Hazards

<b>Hazard Rating:</b>	<b>Very High</b>
<b>Utilities Above or Below Ground:</b>	Overhead power, heating oil and propane tanks
<b>General Construction:</b>	Wood siding with mix of roof types
<b>Multiple Access Roads:</b>	Yes, but see text
<b>Road Widths, Slope and Surface:</b>	Flat dirt/gravel roads and driveways, most adequate width
<b>Water Supply:</b>	Dip/draft 1.1 to 3.8 mile, mean distance 2.5 miles
<b>Proximity to Fire Station:</b>	13.2– 17.5 miles, mean distance 15.5 miles

**ICHR Hazard Rating**  
**Very High**

Bear Creek has approximately five homes located on both sides of Parks Hwy. Homes are primarily older construction. Almost all structures have wood siding with a mix of roof types including asphalt shingle, tar paper and metal. Some homes have flammable outbuildings and piles of flammable materials within 30 feet of homes. This includes wood piles, construction materials and other flammables. There are some abandoned structures and others in poor condition. Construction materials and styles are similar in June Creek. June Creek has two entrances from Parks Hwy., but the north and south entrances are not connected. Kennedy Road is not an entrance to the homes. It is a dead end that doesn't go through. There is a nightly rental complex (Sweet Seclusion) on the south side of June Creek and at least 13 other full-time residential properties. There are roads and several lots that have been platted but not built in this Community. Some homes do not have power and there are some dry cabins. Other homes have overhead power lines and ag tanks for water. Heating is supplied by electricity, wood stoves, fuel oil or propane and some homes have oil/propane tanks or wood piles too close to structures. Very few homes have any defensible space. Vegetation varies from grass/shrub to white spruce stands. Aspen/birch also occurs in some areas.

Although this Community has some slopes of up to 28°, there are significant portions that are flat to low angle. The total area has a mean slope of only 3°. Elevations range from 804 feet to 1,305 feet. This community is accessed by very rough roads with variable markings. There are several narrow sections and roads/driveways overgrown by vegetation. A few homes are accessed by dead end roads or driveways. While most homes have more than one way in, access to all relies on the Parks Highway. Most houses don't have a visible address marker.

The only water for fire suppression is dip or draft from natural water sources or by tender shuttle from Tri-Valley FD in Healy. This is the nearest fire station to this Community, and it is between thirteen and seventeen miles away from the homes. The railroad line runs along the eastern side of this Community, but it is on the opposite side of the river.

# Healy CWPP Appendix A

## IGNITABILITY DISCUSSION – STAMPEDE/LIGNITE

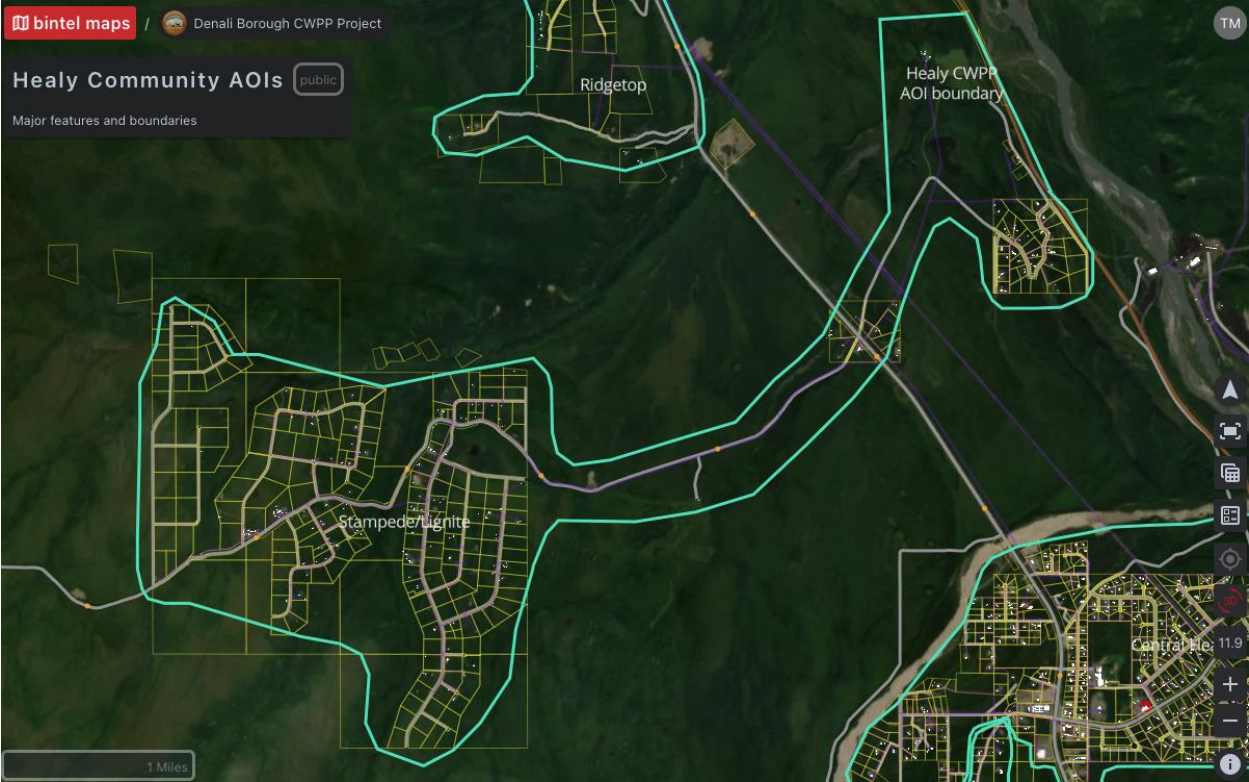


Figure 6 - Stampede/Lignite



Figure 7 - Stampede/Lignite



# Healy CWPP Appendix A

## IGNITABILITY DISCUSSION – STAMPEDE/LIGNITE

### Zone Characteristics and Hazards

<b>Hazard Rating:</b>	<b>High</b>
Utilities Above or Below Ground:	Overhead power, heating oil and propane tanks
General Construction:	Primarily combustibile siding with mixed roof types
Dual Access Roads:	No
Road Widths, Slope and Surface:	Paved and dirt roads. Some rough, narrow sections
Water Supply:	Dip/draft 0 to 4 miles, mean distance 2.4 miles
Proximity to Fire Station:	2.23 – 5.6 miles, mean distance 3.9 miles

#### ICHR Hazard Rating High

Most of the homes in this Community are older wood siding construction, but there are some newer homes and homes are still being built. There are also permanently parked mobile homes that have been added on to. Flammable decks, stairs and/or projections are common features, and some properties have flammable outbuildings. There are many dry cabins in this Community. Electricity is supplied by overhead power lines. Heat is usually provided by coal or oil-fired boilers, but there may be some homes with propane tanks. Some homes have oil tanks, propane tanks, coal piles or wood piles too close to structures. Most of the existing homes have native vegetation too close to structures. Structure density is somewhat higher than other Communities in the Healy AOI, but homes are still widely spaced compared to Central Healy. Although there are significant timber stands near the homes, they are broken by more tundra-like vegetation. The Lignite Road area has hilly terrain that becomes steeper as you get further from the Parks Highway heading towards the Nenana River. Stampede Road climbs away from Parks Hwy. and most of these homes are significantly higher than the highway.

The steepest terrain is on the north side where some homes are located mid-slope and on ridges. Although slopes of up to 27° occur within this Community, there are significant areas near the Parks Hwy. and along Lignite Road that are flatter. The total area has a mean slope of 4.6°. Elevations range from 1,171 feet to 2,090 feet. Lignite Road is paved, but narrow and heavy vegetation grows right up to the asphalt in several sections. Other roads and driveways in this Community are dirt or gravel. There are several homes that can only be accessed by long dirt driveways with rough surfaces. Stampede road is tighter than Lignite but has a few good turnarounds. Street signs are generally good, but only some homes have address markers.

Although there is no municipal water or hydrant network in this Community, the Panguingue HOA has a communal well and there are dip/draft water sources. Water is also available by tender shuttle from Tri-Valley Fire. There is a grass landing strip for private planes in this Community. The coal tipple over the Nenana River on Industrial Way (AKA Tipple Road, east of the Stampede/Lignite Community) is considered critical infrastructure for the Usibelli Mine.

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## IGNITABILITY DISCUSSION – FERRY

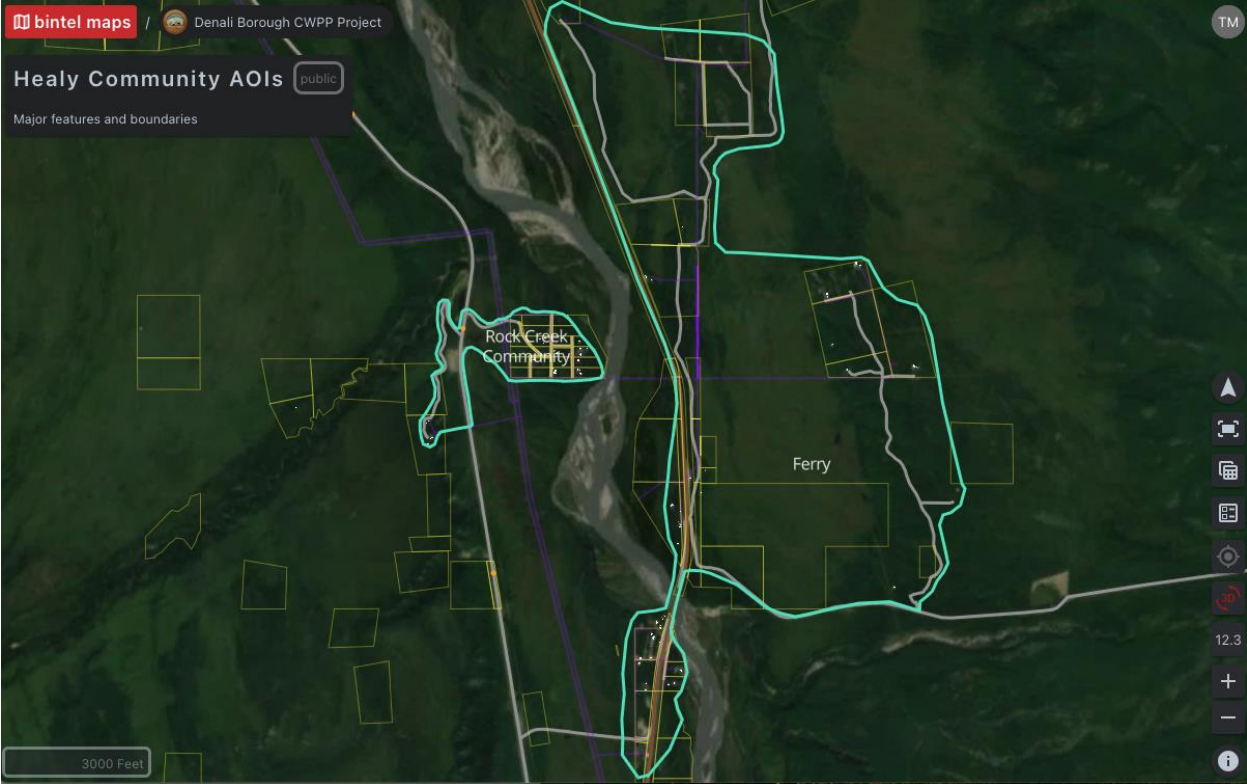


Figure 8 - Ferry



Figure 9 - Ferry

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## IGNITABILITY DISCUSSION – FERRY

### Zone Characteristics and Hazards

<b>Hazard Rating:</b>	<b>High</b>
<b>Utilities Above or Below Ground:</b>	Above ground power lines, fuel oil or propane tanks
<b>General Construction:</b>	Primarily flammable siding. Flammable roof types common
<b>Dual Access Roads:</b>	No
<b>Road Widths, Slope and Surface:</b>	Rough dirt access that is known to flood
<b>Water Supply:</b>	Dip/draft from the Nenana River, see text.
<b>Proximity to Fire Station:</b>	10 – 13 miles, mean distance 11.3 miles

**ICHR Hazard Rating**  
**High**

Ferry has homes on both sides of the Nenana River. Homes are widely scattered north and east of the railroad bridge. Most of the homes are log or wood siding cabins with metal roofs, however some structures have flammable roof types such as wood shake shingles. Many properties have detached garages, sheds and/or other outbuildings. Most of these outbuildings are wood with a mix of roof types and very flammable. Some homes have piles of flammable materials in yards within 30 feet of structures. This includes wood piles, building materials and car parts. In addition to its flammability, this clutter could impede mitigation and suppression work. Few (if any) homes have any defensible space. There are dry cabins and some homes on the north side of the railroad bridge without power. Heating is supplied by electricity, fuel oil, coal or wood. Vegetation consists of heavy stands of white spruce and deciduous trees. There is only one way in and out and this dirt access road is narrow in some spots and has a rough driving surface. This road has also been known to flood. The railroad runs very close to homes in this Community and homes on the east side of the river can only be accessed by the railroad bridge. A narrow UTV (not a side-by-side) may be driven across, but not cars. Cars can only be driven across when the river is frozen. Some of the homes north and east of the railroad bridge are very remote and can only be reached by long, dirt dead-end roads and driveways.

Slopes in Ferry vary from flat up to 21° but the mean slope is only 2.6°. The area around most of the homes is flat to gently sloping. Elevations range from 968 feet to 1,273 feet. The only street sign is at the Ferry turnoff on Parks Hwy. Most homes do not have visible address markers. Those that do are inconsistent in type and placement and only a few homes have reflective address markers.

The closest water for fire suppression would be dip or draft from the Nenana River. The nearest fire department is Tri-Valley which is 10 to 13 miles from homes in this Community and fire apparatus cannot cross the railroad bridge to access the homes on the north side of Ferry.

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## IGNITABILITY DISCUSSION – NENANA RIVER CANYON



Figure 10 – Nenana River Canyon

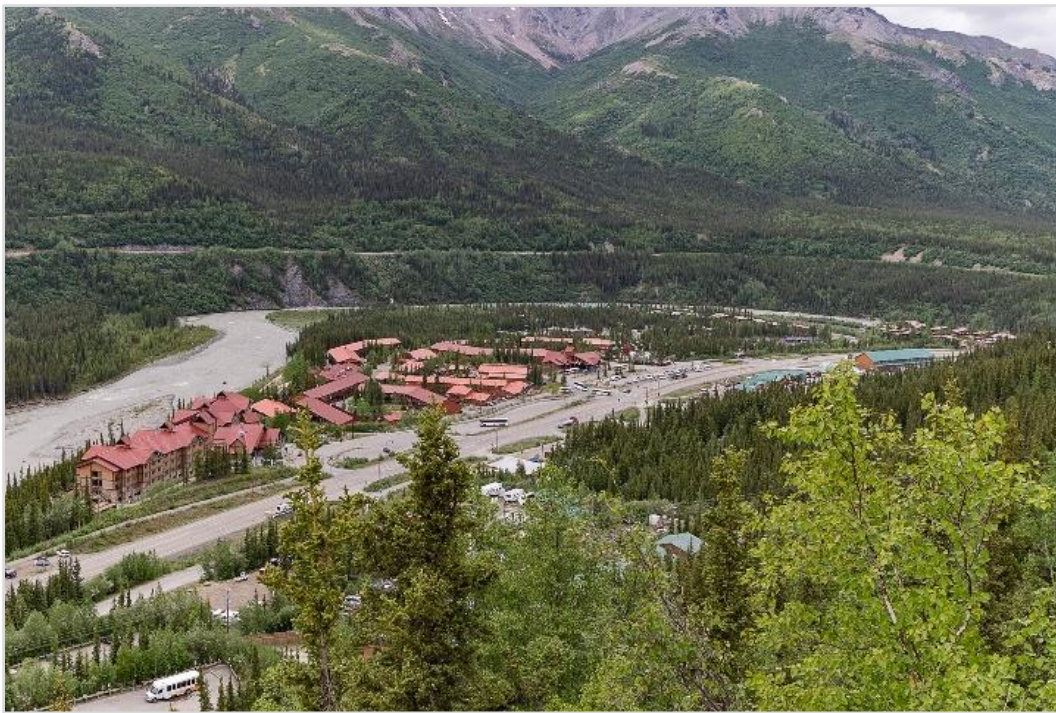


Figure 11 - Nenana River Canyon

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## IGNITABILITY DISCUSSION – NENANA RIVER CANYON

### Zone Characteristics and Hazards

<b>Hazard Rating:</b>	<b>High</b>
<b>Utilities Above or Below Ground:</b>	Above ground power lines, fuel oil or propane tanks
<b>General Construction:</b>	Primarily flammable siding with asphalt or metal roof
<b>Dual Access Roads:</b>	No
<b>Road Widths, Slope and Surface:</b>	Vary from paved multi-lane highway to steep dirt single lanes
<b>Water Supply:</b>	Dip/draft water available in this Community
<b>Proximity to Fire Station:</b>	6.4 – 7.5 miles, mean distance 7 miles

**ICHR Hazard Rating  
High**

This is the primary commercial area for visitors to the Denali National Park. This area consists of seasonal lodges, retail shops, restaurants and businesses with some year-round employee housing. Dneali Princess Wilderness Lodge and the McKinley Chalet Resort are on the west side of Parks Hwy. and houses a large percentage of the overnight visitors that travel to Denali National Park. This area is a complex of resort-like hotels, lodges, event buildings and shops. There are also lodges on the east side of Parks Hwy., along with retail stores and restaurants. Housing areas have also been built into the hillside above the road. These are accessed by a very steep, narrow road with tight switchbacks. The Boardwalk is on the east side adjacent to Parks Hwy. This area is occupied residentially in the summer, mostly by employees of the stores and restaurants on the Boardwalk. There are no full-time residents in these buildings. Some of the larger employers in this ASI house seasonal and year-round residents on their properties.

There are dense spruce forests on both sides of the road. Nenana River Canyon has the steepest, most complex topography in the Healy AOI with slopes of up to 35° and a mean slope of 11.5°. Elevations range from 1,476 feet to 2,057 feet. The 2024 Riley fire burned in the east side of Denali National Park close to this Community.

As with all the other Communities in this AOI, fire response will be from the Tri-Valley Fire Department in Healy.

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## IGNITABILITY DISCUSSION – ROCK CREEK COMMUNITY

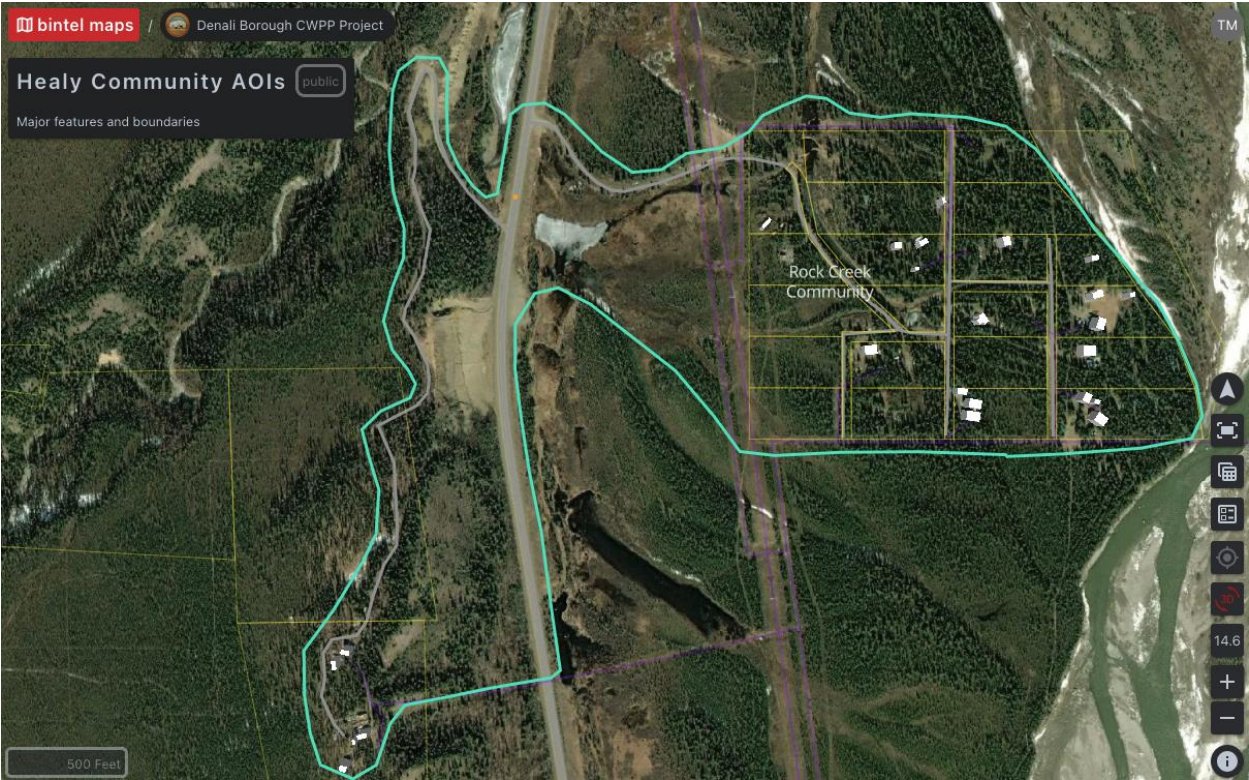


Figure 12 - Rock Creek Community



Figure 10 - Rock Creek Community

# Healy CWPP Appendix A

## IGNITABILITY DISCUSSION – ROCK CREEK COMMUNITY

### Zone Characteristics and Hazards

<b>Hazard Rating:</b>	<b>High</b>
<b>Utilities Above or Below Ground:</b>	Above ground power lines, fuel oil or propane tanks
<b>General Construction:</b>	Primarily flammable siding. Mostly metal or asphalt roofs
<b>Dual Access Roads:</b>	No
<b>Road Widths, Slope and Surface:</b>	Dirt access roads. Some sections rough, narrow and overgrown
<b>Water Supply:</b>	Dip/draft water in this Community.
<b>Proximity to Fire Station:</b>	11.4 – 11.8 miles

#### ICHR Hazard Rating High

Most of the homes are heavy timber or wood siding cabins with metal roofs. Many properties have detached garages, sheds and/or other outbuildings. Most of these outbuildings are wood siding with a mix of roof types. Although some homes have clearances, most are too close to native vegetation, and few have any defensible space. There are overhead powerlines, and heating is supplied by electricity, fuel oil, coal or wood. Vegetation is generally thick stands of white spruce, but aspen/birch also occur. There are a few grassy areas and there is a rock quarry on the west side of Parks Hwy. There is only one way in and out and on each side of Parks Hwy. All the roads are dead-ends, and there are many sections with heavy vegetation growing right up to the driving surface. Most of the access roads and driveways are rough and narrow. Some are unmaintained two-tracks. There are few pullouts or turnarounds for apparatus.

The topography in Rock Creek is steep and complex with slopes up to 32°, however most of the homes east of Parks Hwy. are in flat or gently sloping terrain. Homes on the west side of Parks Hwy. are built at the top of steep slopes. The mean slope in this Community is 6.6°. Elevations range from 981 feet to 1,316 feet. Street signs are present on both sides of Parks Hwy, but some interior intersections are not marked. Most homes do not have visible address markers.

The closest water for fire suppression would be dip or draft from ponds in and near this Community. The nearest fire department is Tri-Valley which is 11 to 12 miles from homes in Rock Creek. The railroad line runs along the eastern side of this Community, but it is on the opposite side of the river.

# Healy CWPP Appendix A

## IGNITABILITY DISCUSSION – CENTRAL HEALY

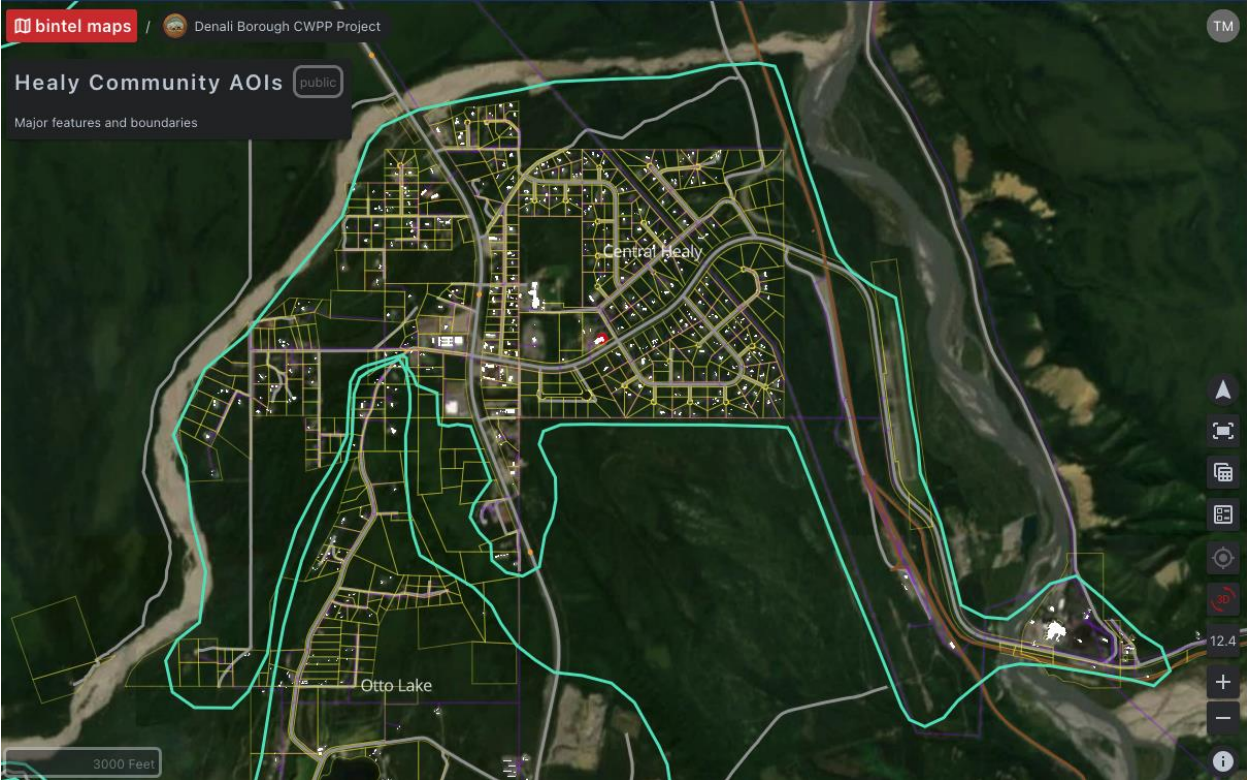


Figure 14 - Central Healy



Figure 15 - Central Healy



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## IGNITABILITY DISCUSSION – CENTRAL HEALY

### Zone Characteristics and Hazards

<b>Hazard Rating:</b>	<b>Moderate</b>
Utilities Above or Below Ground:	Above ground power lines, fuel oil or propane tanks
General Construction:	Primarily flammable siding. Mostly metal or asphalt roofs
Dual Access Roads:	Yes, but all rely on Parks Highway
Road Widths, Slope and Surface:	Mix of paved, gravel and dirt access roads
Water Supply:	Water supply at FD station
Proximity to Fire Station:	Station in this Community. Mean distance to homes 1 mile
Hazard Rating:	Moderate

#### ICHR Hazard Rating Moderate

The central area of Healy has the highest density of residential development in the AOI and consists of restaurants, businesses, schools and commercial development areas mixed in with seasonal and year-round residences. Most of the seasonal employee housing for Holland America-Princess is in this Community and during the summer this causes a significant increase in the population. Lot sizes tend to be small and homes close together especially close to Parks Hwy. Homes in Central Healy have been built on both sides of Parks Hwy. with mixed construction types. Most homes have wood siding or log construction with metal or asphalt roofs. Many properties have detached garages, sheds and/or other outbuildings. Most of these outbuildings are wood siding with a mix of roof types. Although there are large clearances in the central core most of the homes are too close to native vegetation, and only some have any defensible space. There are overhead powerlines, and heating is supplied by electricity, fuel oil, coal or wood. Vegetation is generally thick stands of white spruce, but aspen/birch also occur. There are multiple ways in and out of Central Healy, but all of them rely on Parks Hwy. Many homes are accessed by dead-end roads or long driveways. Many of these do not have pullouts or turnarounds for apparatus.

Although there are slopes up to 30° and some homes built mid-slope or at the top of rises, most of the homes are in flat or gently sloping terrain. The mean slope in this Community is only 2.9°. Elevations range from 1,234 feet to 1,781 feet. Street signs are present and reflective at most intersections. Some homes have reflective address markers visible from the street, but many others do not. Tri-Valley maintains water tanks and a water tender for fire suppression.

This community houses Tri-Valley Fire which responds to all fire and EMS calls in the Healy CWPP AOI. Tri-Valley Fire covers from Mile Post 231 on the Parks Highway to Mile Post 274 in the north and has a contract in place for automatic mutual-aid to calls in Rexana/Windy Hills in the Anderson CWPP AOI. The railroad line runs along the eastern side of this Community.

# Healy CWPP Appendix A

## IGNITABILITY DISCUSSION – OTTO LAKE

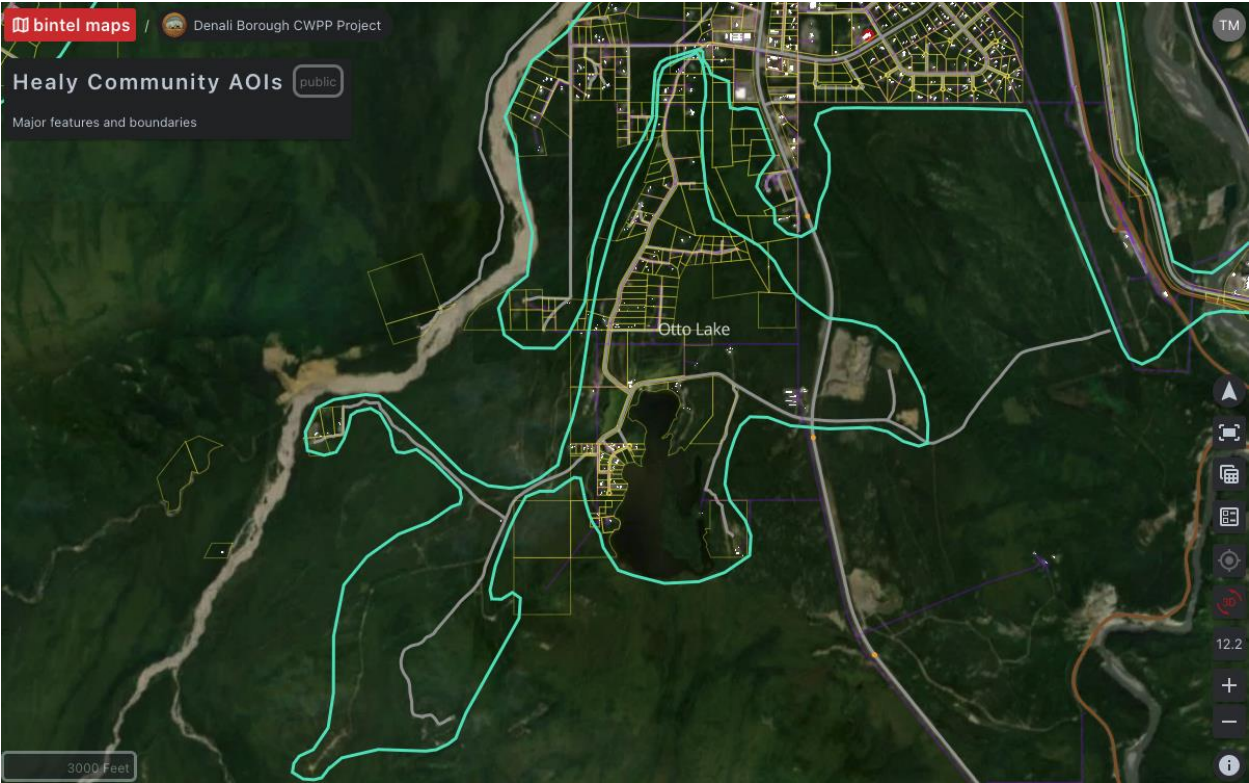


Figure 16 - Otto Lake



Figure 17 - Otto Lake

# Healy CWPP Appendix A

## IGNITABILITY DISCUSSION – OTTO LAKE

### Zone Characteristics and Hazards

<b>Hazard Rating:</b>	<b>Moderate</b>
Utilities Above or Below Ground:	Above ground power lines, fuel oil or propane tanks
General Construction:	Primarily flammable siding. Mostly metal or asphalt roofs
Dual Access Roads:	Yes, but see text
Road Widths, Slope and Surface:	Some dirt access roads with rough surfaces
Water Supply:	Dip/draft water in this Community.
Proximity to Fire Station:	0.8 miles to 3.6 miles. Mean distance < 2 miles

**ICHR Hazard Rating  
Moderate**

Otto Lake is the most southern development in the Healy AOI. The homes immediately around the lake are widely spaced on hilly terrain. There are some horse properties and some homes with paved driveways. Most of the homes are heavy timber or wood siding construction with metal roofs. Several have flammable decks, stairs or other projections. Many properties have detached garages, sheds and/or other outbuildings. Most of these outbuildings are wood siding with a mix of roof types. Many of the homes around the lake have some clearances but most are still too close to native vegetation. Most homes are surrounded by native fuels and away from the lake, few have any defensible space. There are overhead powerlines, and heating is supplied by electricity, fuel oil, coal or wood. This area has a nearly continuous fuelbed of mixed spruce and deciduous forest broken only by some large industrial clearings and grassy meadows north of the lake. There are multiple ways in and out of this Community, but they all rely on the Parks Hwy. Some of the homes are located on dead-end roads and driveways with heavy vegetation growing right up to the driving surface in some areas. Most of these, however, have at least some pullouts or turnarounds for apparatus. Away from the lake there are one or two homes on Pioneer Road and two more on Boghole Road. Both roads are rough dirt with poor surfaces, but all these homes have some clearance to the forest and at least partial defensible space.

Away from the lakeshore the topography remains hilly with slopes up to 20°. The mean slope in this Community is 3.8°. Elevations range from 1,522 feet to 2,448 feet. Street signs are present, but some of the remote intersections in the southern part of this Community may not be marked. Many homes do not have visible address markers.

The closest water for fire suppression would be dip or draft from Otto Lake. The nearest fire department is Tri-Valley which is 0.8 to 3.6 miles from homes in Otto Lake.