Garkane Energy Cooperative Wildland Fire Protection Plan

JULY 2020

PREPARED FOR

Garkane Energy Cooperative

PREPARED BY

SWCA Environmental Consultants

GARKANE ENERGY COOPERATIVE
WILDLAND FIRE PROTECTION PLAN

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1 INTRODUCTION

Formed in 1938, Garkane Energy Cooperative, Inc. (GEC) is a member-owned cooperative, whose mission is to provide superior, responsive customer service as well as energy services of value at fair prices, while cultivating a culture of safety in a manner that builds trust among its members and employees alike. The cooperative is located about 150 miles south of Salt Lake City, Utah; 200 miles northeast of Las Vegas, Nevada; and 200 miles north of Phoenix, Arizona. GEC serves all or parts of six counties in south-central Utah and two counties in north-central Arizona. Garkane serves four national parks (Zions, Bryce Canyon, Grand Canyon, and Capitol Reef), two National Monuments (Grand Staircase-Escalante and Pipe Spring), a National Recreation Area (Glen Canyon), three National Forests (Dixie, Fishlake, and Kaibab), and numerous State Parks. These federal and state lands encompass close to 90% of the total landmass of the Co-op's 14,000 square miles of service territory. Over 70 Garkane employees serve a total of 15,963 members, 13,640 of whom are in Utah. GEC's network includes approximately 325.5 miles of transmission line, 1320.1 miles of overhead distribution line, 770.5 miles of underground distribution line, and 33 substations (Figure 1).

Table 1. Garkane Energy Cooperative Service Area Statistics

County/ State	Acres	Miles of transmission	Miles of overhead distribution	Miles of underground distribution	Substations	Number of members
Garfield UT	2,196K	127.5	358.4	130.0	11	2,983
Iron UT	14K	0	0	0	0	0
Kane UT	1,896K	100.6	351.1	415.9	10	7,269
Piute UT	222K	5.7	64.1	7.0	1	194
Sevier UT	191K	24.6	66.9	25.7	1	547
Washington UT	27K	2.0	12.6	16.6	1	405
Wayne UT	1,086K	28.4	249.2	89.1	5	2,242
Coconino AZ	1,260K	36.7	97.4	18.0	3	688
Mohave AZ	1,635K	0	120.4	68.2	1	1,635

1.1 Organization of the Wildland Fire Protection Plan

The Plan includes the following sections:

Section 2: Overview

Section 3: Objectives of the Wildland Fire Protection Plan

Section 4: Wildfire Risk Analysis

Section 5: Wildfire Prevention Strategies and Protocols

Section 6: Community Outreach and Education

Section 7: Integration with Applicable Plans

Appendix A: GEC GIS Methods

Appendix B: Detailed Mapping of High-Risk Segments and Action Plan

Appendix C: Public Notifications

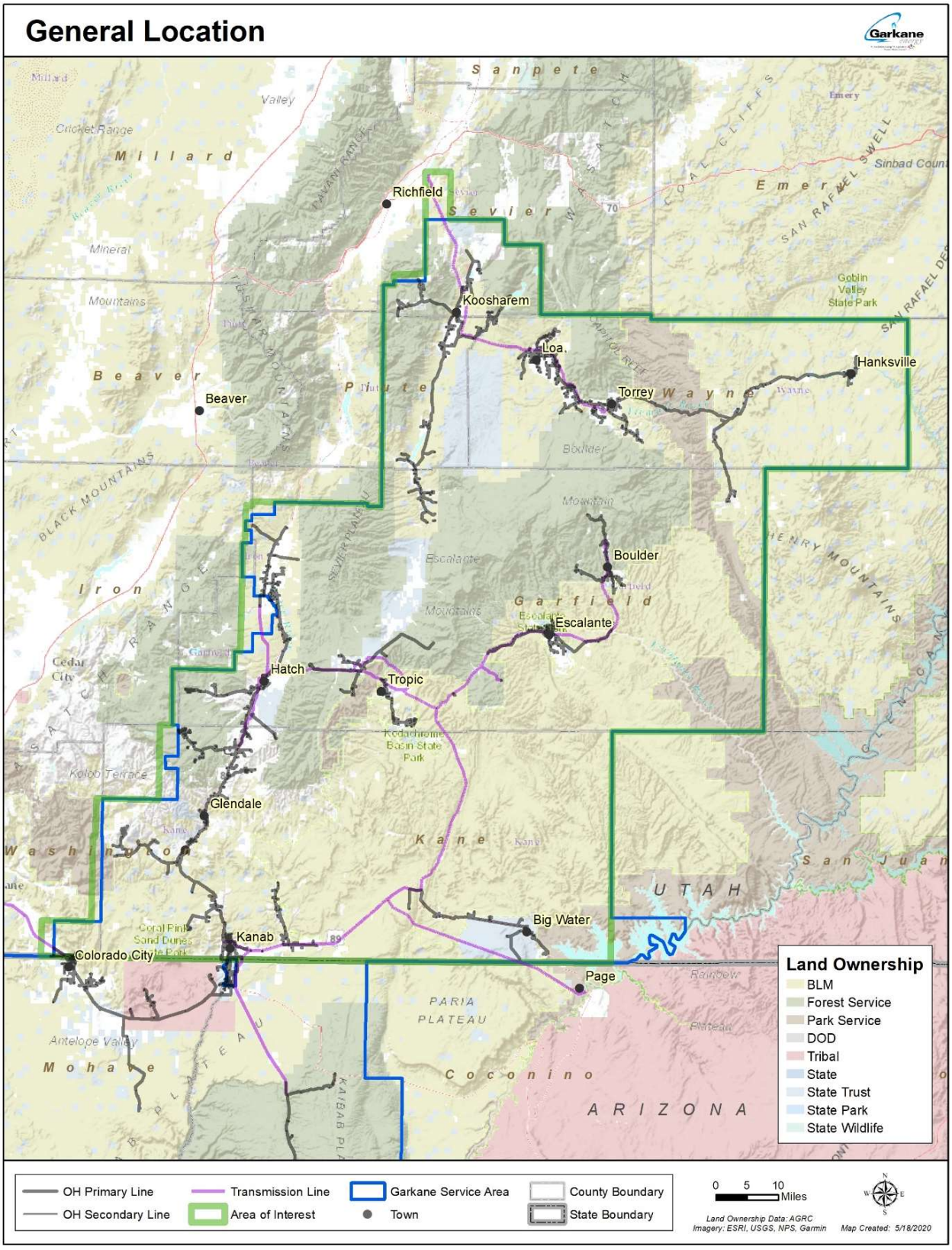

Figure 1. General project location, showing Garkane Energy Cooperative's infrastructure, Utah portion of the service area.

2 OVERVIEW

2.1 Policy Statement

Given recent increases in wildfire frequency and severity throughout Utah, on March 28, 2020, the Governor signed House Bill 66, Wildland Fire Planning and Cost Recovery, a law that grants the Public Service Commission rulemaking authority to enact rules establishing procedures for the review and approval of wildland fire protection plans. The law requires qualified utility and electric cooperatives to prepare and submit for approval a wildland fire protection plan in accordance with the requirements outlined in the Bill.[1]

2.2 Existing Wildfire Planning Efforts within the Service Area

The Plan is designed to align with wildfire mitigation goals identified in other existing land management plans already in place in the service area. The service area incorporates portions of Sevier County, Piute County, Wayne County, Garfield County, Kane County, Iron County, and Washington County. Within the counties are numerous Communities at Risk (CAR) from wildfire, which are referenced in the Utah Division of Natural Resources (DNR) Utah Wildfire Risk Assessment Portal (UWRAP)[2] and which may have specific wildfire mitigation measures proposed under municipal and county planning documents.

2.2.1 Sevier County

As of 2010, there are 20,802 residents in Sevier County (Six County Association of Governments [AOG] 2015). The county covers 1,976 square miles, and federal land accounts for 76% of the land ownership in the county. Much of the private land is not developable due to county zoning requirements for water access and 40 acres per house in much of the county (Utah State University Extension 2005). Sevier County shares one full-time fire warden with Wayne and Piute Counties.

As of May 2020, there is no Community Wildfire Protection Plan (CWPP) for Sevier County. There are four CWPPs that cover smaller communities within the county: Acord Lakes/Salina Creek (2013), Fishlake Basin (2012), Monroe Mountain/Cove Mountain (2013), and Clear Creek/Pahvant (2013). All plans list powerlines as a value at risk. Common mitigation actions in all four plans include fuel treatment projects around roads and buildings and property-owner education and outreach. These plans are not available online; Sevier County is covered under the Central Utah Regional Wildfire Protection Plan (RWPP)[3].

Based on this planning effort, there is one Garkane substation and approximately 2.9 miles of powerline at medium risk from wildfire in Sevier County.

2.2.2 Piute County

At 754 square miles, Piute County is one of the smallest of Utah's 29 Counties. As of 2010, there are 1,556 residents in Piute County, most of which live in towns along highway 89. Over 74% of the county

[1] House Bill 66: https://le.utah.gov/~2020/bills/static/HB0066.html

[2] Utah DNR Wildfire Risk Assessment Portal: https://wildfirerisk.utah.gov/

[3] Central Utah Regional Wildfire Protection Plan: https://digitallibrary.utah.gov/awweb/awarchive?item=31609

is federal or state owned (Utah State University Extension 2005). Much of the privately-owned land is not developable due to a lack of water and county zoning requirements which call for water access and 5 acres per house. Piute County shares one full-time fire warden with Sevier and Wayne Counties and has three volunteer fire departments (VFDs), located in Circleville, Junction, and Marysvale (Six County AOG 2015).

Although Piute County does not have a CWPP, Marysvale has a CWPP that identifies several wildfire protection goals: fuel reduction projects, equipment upgrades for first responders, and development of an emergency response plan. Specific mitigation actions in the plan include fuel break construction, fuel reduction projects, and—most pertinent to utilities—vegetation clearing under power lines (Marysvale, Utah 2005). This plan is not online and is quite outdated; plan updates are underway. The most recent wildfire planning document for the county is the Central Utah RWPP.

Based on this planning effort, there is one Garkane substation in the county and GIS analysis did not reveal any powerlines at medium or high risk from wildfire.

2.2.3 Wayne County

As of 2010, there are 2,778 residents in Wayne County (Six County AOG 2015), the majority of which live in towns in Rabbit Valley. State and federal governments own almost 96% of Wayne County's land. Much of the private land is not developable due to lack of water and county zoning ordinances. Any existing development occurs along Highway 24 and along SR 12 up onto Boulder Mountain. The entire county is served by a single fire district with 6 stations, 70 volunteers, a part-time paid fire chief, and a part-time fire marshal in addition to a shared fire warden with Sevier and Piute Counties.

When a fire exceeds the capability of local and area resources, additional regional and federal resources will be ordered through the Richfield Interagency Fire Center, except for the far eastern portion of the county, which is served by the Moab Fire Center (SWCA 2007a).

Wayne county officials are currently in the process of developing a CWPP and have identified county hazards and potential mitigation actions. These identified hazards include poor access to communities for emergency vehicles, limited defensible space surrounding communities, and limited communication to rural, seasonal populations. Potential future mitigation goals include road and infrastructure improvements, fuel reduction and defensible space creation, and increasing cell phone service throughout the region (Wayne County n.d.).

Garkane power is distributed into the county through a radial feed in one direction, through lines collocated along SR 24. In the past, fires in other counties have disrupted power to Wayne County. In turn this has disrupted emergency communications and endangered vulnerable populations, for example people with electrical oxygen generating devices and other medical devices. During previous fires in Sevier County, power was disrupted to all fire stations throughout Wayne County, since none have back-up power. Cellular phone systems also failed, and a Utah Department of Public Safety Communications site backup generator failed, resulting in a complete inability to dispatch or communicate with firefighters.

County fire personnel are concerned about the resiliency of the grid and the lack of any alternative to the single route feed to the county (Steve Lutz, Wayne County Fire Chief, personal communication, June 10, 2020). GEC have been working to address this concern, however the most recent project review, conducted in July of 2019, found that the lowest cost alternative to a single route feed would an estimated expenditure of roughly 18 million dollars. This alternative would not pay for itself over the expected life of the facilities. In time with continued improvements in technology, GEC are hopeful a more viable option will be identified.

Although the CWPP is not yet available, Wayne County is covered under the Central Utah RWPP.

Based on this planning effort, there are 5 Garkane substations and approximately 0.48 miles of powerline at medium risk from wildfire in Wayne County.

2.2.4 Garfield County

As of 2015, Garfield County is home to 5,009 residents (Five County AOG 2017), and 96% of the land in Garfield County is non-private land. Garfield County has 11 fire departments at risk to wildfire (SWCA 2007b).

In 2019, Garfield County developed a CWPP to address fuel management concerns following large wildfires in the county. The plan aims to motivate local governments and citizens to address issues impacting community safety and resilience to fire. The goals identified in the plan include improving response time to fire incidents, reducing fuel loads through timber harvest, and using prescribed fire as a management technique. While there is no specific action related to utilities, utilities are identified as a protected value in the county (Garfield County 2019).

The Garfield County CWPP is not available online; however, Garfield County is covered under the Southwest Utah RWPP.[4] There are also four community fire plans for Garfield County: Panguitch Lake, Boulder Town/Salt Gulch, Mammoth Creek, and Ruby's Inn (SWCA 2007b).

Based on this planning effort, there are 11 Garkane substations, and approximately 17.28 miles of utility lines are at medium risk to wildfire.

2.2.5 Kane County

As of 2015, Kane County is home to 7,131 residents (Five County AOG 2017), and 85% of Kane County is federally owned. The county has nine fire departments at risk to wildfire (SWCA 2007b).

In 2018, Kane County developed a CWPP to motivate local governments and citizens to act on issues affecting wildfire resilience and safety in their communities. In response to recent large fires in the county, the plan identifies several past accomplishments related to wildfire mitigation and future goals and mitigation actions. Past accomplishments included outreach and education, first responder training, firefighting equipment improvements, and fuel reduction projects. The goals in the plan are to continue these activities. Utilities are listed as a protected value, but there is no further mention of utilities in the plan (Kane County 2018). There are five community fire plans for Kane County: Glendale, Duck Creek, Zion Ponderosa, Zion View, and Bryce Woodlands (SWCA 2007b). Kane County is also covered under the Southwest Utah RWPP.

Based on this planning effort, there are 10 Garkane substations, approximately 53 miles of utility lines at moderate risk to wildfire, and 5.78 miles of line at high risk.

2.2.6 Iron County

As of 2015, Iron County has 48,368 residents (Five County AOG 2017); 77% of Iron County is public and urban land, and the county has nine fire departments (SWCA 2007a).

[4] Southwest Utah Regional Wildfire Protection Plan: https://digitallibrary.utah.gov/awweb/awarchive?type=file&item=31613

Iron County does not have a CWPP; the most recent wildfire planning document covering the county is the Southwest Utah RWPP. There are seven community wildfire protection plans in Iron County: Rainbow Meadows, Brian Head, Far West/Comstock, Cedar Highlands, Quichipa, New Castle, and Old Irontown.

Based on this planning effort, there are no Garkane substations and no miles of powerline found to be at risk from wildfire in Iron County. Although Garkane's service area boundary includes a very small piece of Iron County, there are presently no Garkane-managed power lines in this county.

2.2.7 Washington County

As of 2015, Washington County has 155,602 residents (Five County AOG 2017). Much of the county consists of federal National Park Service (NPS), U.S. Forest Service (USFS), and Bureau of Land Management (BLM) owned lands. Washington County has 21 fire departments (SWCA, 2007a).

Washington County does not have a CWPP; the most recent wildfire planning document covering the county is the Southwest Utah RWPP. There are 14 community plans for the county: New Harmony, Dammeron Valley, Winchester Hills, Leeds, Gunlock, Central/Brookside/Mountain Meadow, Kolob Terrace, Kolob M.I.A. Camp, Pine Valley, Diamond Valley, Enterprise, Veyo, Apple Valley, and Hildale City.

Based on this planning effort, there is one Garkane substation and no miles of powerline identified to be at medium or high risk from wildfire in Washington County.

2.2.8 Regional Planning Efforts

In 2015, the Six County AOG developed a pre-disaster mitigation plan to reduce community vulnerability to natural hazards. Identified wildfire mitigation strategies include fire break creation and maintenance, road improvements, first response equipment upgrades, and fuel reduction (Six County AOG 2015). The pre-disaster mitigation plan is available online[5].

In 2017, the Five County AOG developed a natural hazard mitigation plan covering Beaver, Garfield, Iron, Kane, and Washington Counties. The overarching goal of the plan is to reduce risk through education and outreach, collaboration, and mitigation actions. Specific wildfire mitigation actions include fuel reduction, education within the wildland-urban interface (WUI), and improved equipment for first responders. In much of the service area, the district fire warden, local VFDs, and state are all responsible for prevention, detection, and suppression of wildland fires on all non-federal wildland. Upon initial attack, the fire wardens will be notified as to the size and reinforcements necessary. When the fire exceeds the capability of local and area resources, additional regional and federal resources will be ordered through the Richfield Interagency Fire Center (Sevier County 2006). Support is furnished by local and area resources, including VFDs, State, BLM, and USFS resources.

2.2.9 Bureau of Land Management

In 2020, the BLM issued an instruction memorandum to establish policies regarding routine operation and maintenance activities on electric utilities' rights-of-way (ROW) to reduce wildfire risk. This memorandum establishes that the ROW holders have the authority to conduct operation and maintenance activities and that they must do everything reasonable to reduce wildfire risk within or in the immediate vicinity of their ROW. Furthermore, ROW holders must comply with any requirements to control or

[5] http://sixcounty.com/wp-content/uploads/2015-Final-Six-County-Pre-Disaster-Mitigation-Plan.pdf

prevent property damage and protect public health and safety. Unless in direct conflict with applicable laws and regulations, the BLM requests to be notified within 30 days of maintenance completion (BLM 2020).

In 2004, the BLM Cedar City Field Office developed the Southwest Utah Support Area Fire Management Plan. The plan is currently under revision. GEC should align any future iterations of this Plan with the revised fire management plan. The 2004 plan was developed to establish wildland fire management goals, including restoring fire as a management tool to the ecosystem, reducing fire suppression costs, reducing hazardous fuels, and protecting at-risk communities. Transmission lines are identified as a value at risk, and the vulnerability of transmission line corridors and rights-of-way (ROWs) to wildfire is discussed for each fire management unit. The BLM asserts that fire suppression will be practiced in all ROWs (BLM 2004).

2.2.10 U.S. Forest Service

Fire management planning for the Dixie and Fish Lake National Forests are housed within the Wildland Fire Decision Support System (WFDSS). That platform includes spatial data for locations of utility corridors within each National Forest. Each Forest also has response plans that guide fire response based on values at risk and estimated fire behavior. Actual response is dictated by resource availability at the time of the fire.

2.2.11 National Park Service

Fire Management for Bryce Canyon National Park and Cedar Breaks National Monument is guided by a joint Fire Management Plan for the units, dated 2010. Zion National Park fire management is guided by the 2005 Fire Management Plan. The NPS is currently reviewing options for updating these documents.

Federal agencies routinely develop fuel treatment planning to address hazardous fuels within their jurisdiction. GEC could work with the BLM, NPS and USFS to look for opportunities to treat fuels in and around the GEC right-of-way (ROW) to help mitigate wildfire risk in areas projected to have high or extreme fire behavior.

2.3 Purpose of the Wildfire Mitigation Plan

This Wildland Fire Protection Plan (Plan) describes the range of activities that GEC is taking or considering to mitigate the threat of power line–ignited wildfire, including the protocols and procedures that GEC would undertake, as well as industry best practices. The Plan complies with the requirements outlined under House Bill 66 to prepare a wildland fire protection plan by July 1, 2020, and every 3 years thereafter. The final plan has been reviewed by all pertinent agencies, including a third-party review by subject matter experts. The plan was adopted by the GEC Board of Directors on June 1, 2020. All sections of the Plan will be reviewed and revised on an annual basis, and the findings will be presented to the Board of Directors. The Plan will be fully revised every 3 years, which will include a revised risk analysis and development of plan recommendations to incorporate new technology and industry best practices.

2.4 Roles and Responsibilities

2.4.1 Company Structure

Table 2 below outlines the proposed assignments for implementation of the Plan. These assignments are subject to change.

Table 2. Strategy Leads

Strategy	Lead Personnel	Key Technical Personnel
Operational Practices	Operations Manager(s)	Jeff Vaughn, Rob Wolfley, Phillip Burr, Jeff Hafen
	Operations Superintendent	Casey Glover
System Hardening	Operations Superintendent	Casey Glover
	Engineering Manager	Bryant Shakespear
Enhanced Inspections	Facilities Inspector	Dan Taylor
Situational Awareness	Operations Superintendent	Casey Glover
	Engineering Manager	Bryant Shakespear
Reclosing and De-energization	Engineering Manager	Bryant Shakespear
	Substation Engineer	Daniel Thompson
Public Safety and Notification	Member Services	Neal Brown
Vegetation Management	Operations Manager(s)	Jeff Vaughn, Rob Wolfley Phillip Burr, Jeff Hafen, Kim Lathim
	Operations Superintendent	Casey Glover
Wildfire Response and Recovery	Chief Operating Officer	Bryant Shakespear

2.4.2 Coordination with Outside Entities

Figure 1 outlines the land ownership within the GEC service area. Contact information for all entities within the service area is provided in Section 7.

2.4.3 County

All counties in the state of Utah are affected by Utah Code Section 65A-8-6 (House Bill 146, which was passed by the Utah Legislature in the 2004 General Session and took effect in March of 2006).

Utah Code Section 65A-8-6 requires that counties meet eligibility requirements to enter into a cooperative agreement with the Utah Forestry, Fire and State Lands (FFSL) for wildfire protection. The Code states that counties shall:

- adopt a wildland fire ordinance based on minimum standards established by the division (FFSL);
- require that the county fire department or equivalent private provider under contract with the county meet minimum standards for wildland training, certification, and wildland fire suppression equipment based on nationally accepted standards as specified by the division (FFSL); and
- file with the division (FFSL) a budget for fire suppression costs.

Each of these eligibility requirements must be met before FFSL may enter into a cooperative agreement for wildfire protection with any county.

According to UWRAP data, 50 at-risk communities are situated within the GEC service area. These communities are identified at risk of significant impact by wildfire to their respective infrastructure and/or economy as identified by an interagency panel of wildfire experts in Utah. This designation provides support for a municipality to seek funding to mitigate wildfire risk to infrastructure.

2.4.4 State

There is a checkerboard of land ownership within the service area, including State Trust land adjacent to BLM land.

Wildfires that occur on state and private lands outside city limits are managed by the FFSL. Fire suppression efforts are coordinated through county fire wardens, who work with federal agencies and local fire departments (Utah Division of Emergency Management [UDER] 2019).[6]

2.4.5 Federal

The following federal land occurs in the service area: USFS (Dixie National Forest and Fish Lake National Forest); BLM (Kanab and Richfield Field Office); Grand-Staircase Escalante National Monument and Glen Canyon National Recreation Area.

Fire response in the service area is partially coordinated through the Color Country Interagency Fire Center and the Great Basin Coordination Center. This is a cooperative effort among the BLM, NPS, Bureau of Indian Affairs (BIA), USFS, and FFSL. Also coordinating fire response in the service area are the Central Utah Interagency Fire Center and the Richfield Interagency Fire Center, also a cooperative effort through the BLM, BIA, NPS, USFS, and FFSL (Great Basin Coordination Center 2020).

GEC works closely with federal agencies (NPS, BLM, USFS) to identify and remove hazard trees from ROWs that cross federal land. This requires a written summary of any work performed on federal land, including location, power line names, details regarding the tree or vegetation, date, etc.

3 OBJECTIVES OF THE WILDFIRE MITIGATION PLAN

GEC's overarching goal is to provide safe, reliable, and economic electric service to its members. In order to meet this goal, GEC routinely constructs, operates, and maintains its electrical lines and equipment in a manner that minimizes the risk of catastrophic wildfire posed by its electrical lines and equipment. The following outlines the objectives for wildfire mitigation identified in this document.

3.1 Minimizing Sources of Ignition

The goal of this Plan is to assess and minimize the probability that the GEC transmission and distribution system may contribute to or be the origin of a wildfire ignition. In addition, the Plan identifies measures to be taken to protect the system from wildfire damage to secure service for GEC members.

[6] Utah State Hazard Mitigation Plan: https://hazards.utah.gov/wp-content/uploads/Utah-State-Hazard-Mitigation-Plan-2019.pdf

3.2 Resiliency of the Electric System

An additional goal of this Plan is to ensure long-term resilience of the GEC electric system. Through implementing this Plan, GEC will be able to assess industry best practices and technologies that are designed to reduce the potential for a service interruption and improve and facilitate restoration of service.

3.3 Wildfire Prevention Strategies and Protocols

This Plan details a number of wildfire prevention strategies and protocols that are designed to prevent and/or mitigate the threat of wildfire to system infrastructure and to communities who depend on GEC service. These are described in more detail in Section 4.

- **Vegetation Management** – Measures to control vegetation near overhead transmission lines and clearance specifications, as well as hazardous fuels information to reduce potential wildfire spread.
- **Enhanced Inspections** – Assessment and diagnostic activities and mitigating actions. Inspections would focus on ensuring all infrastructure is in working condition and that vegetation clearance specifications are maintained.
- **Situation Awareness** – Methods to improve system awareness and environmental conditions.
- **Operational Practices** – Mitigating actions that are taken on a day-to-day basis to reduce wildfire risks. These actions prepare GEC for high-risk periods, associated with heavy winds and dry conditions.
- **System Hardening** – Technical and system upgrades aimed at reducing potential contact between infrastructure and fuel sources and making the system more resilient to wildfire and other natural disasters.
- **Procedures for De-energization and Reclosing** – Conditions under which lines may be de-energized to reduce wildfire risk or protect people and/or equipment during a wildfire incident, and the conditions for restoring service after the risk has abated.
- **Wildfire Response and Recovery** – Procedures for wildfire response in order to formalize protocols in the event of an ignition.
- **Public Safety and Notification** – Measures for engaging the community in identifying and reducing wildfire risk. Includes public warnings and notifications in the interest of public safety.

3.4 Identifying Unnecessary or Ineffective Actions

This Plan should be revised every 3 years. As part of that revision process, GEC would monitor the effectiveness of the wildfire mitigation strategies within this document to assess the merits of the modifications and to implement adaptive management to improve future results. During the annual review process, GEC should also update mitigation strategies through review of industry best practices.

4 WILDFIRE RISK ANALYSIS

The wildfire risk analysis process utilizes the DNR UWRAP, with some modifications, as outlined in Appendix A.

The purpose of the wildfire risk analysis is to identify areas within the GEC Utah service area that are particularly susceptible to high-intensity, severe wildfire behavior, so as to develop mitigation measures for preventing utility-related ignitions and to improve system resilience to outside wildfire threat.

4.1 Fire History

While firefighters suppress 95% of Utah wildfires on initial attack, adverse weather and topography, heavy fuel loads, and urban development can create catastrophic wildfire conditions (UDER 2019). The three largest fires in Utah have occurred since 2007, each burning more than 70,000 acres. 2007 saw the greatest number of acres burned in a single year since 2000; 1,385 wildfires burned almost 650,000 total acres. This total includes the largest wildfire in Utah's history, the Milford Flat fire, which impacted nearly 364,000 acres.

4.1.1 Sevier County

In Sevier County, at least 714 fire starts were reported by the state of Utah, BLM, and USFS between 1973 and 2017 (SWCA 2007a; Monitoring Trends in Burn Severity [MTBS] interagency database[7]). The areas of highest fire density are along Highway 89 and Highway 24 and atop the Sevier Plateau. Major wildfires include the Oldroys fire near Richfield in 2000, which burned 59,000 acres (SWCA 2007a).

4.1.2 Piute County

At least 97 wildfire starts were reported in Piute County between 1973 and 2017 (SWCA 2007a; MTBS). Most of these occurred in the Tushar Mountains located in the western portion of the county near Marysvale, Junction, and Circleville (SWCA 2007a).

4.1.3 Wayne County

At least 74 fire starts were reported in Wayne County between 1973 and 2017 (SWCA 2007; MTBS). The majority were located along the rim of the Aquarius Plateau, near the communities of Torrey, Teasdale, and Grover (SWCA 2007).

4.1.4 Garfield County

Over the last 40 years, Garfield County has experienced hundreds of wildfires, ranging from very small to over 40,000 acres. One of the largest fires since 2000 was the Bulldog fire, which burned approximately 31,726 acres on BLM land, north of Ticaboo (Five County AOG 2017).

4.1.5 Kane County

Kane County has experienced over 600 fires on BLM land alone, the largest of which have been the Dakota Hill fire in 2007 at 7,026 acres and the Big Wash fire in 2002 at 5,253 acres (Five County AOG 2017).

[7] MTBS: https://www.mtbs.gov/

4.1.6 Iron County

In Iron County, since 1976, there have been over 600 fires on BLM land. While the majority of these fires have been small, some have been quite large. The Baboon fire in 2012 burned 19,778 acres of BLM land (Five County AOG 2017).

4.1.7 Washington County

A large portion of Washington County has been affected by wildfire over the past 50 years. Between 1984 and 2017, there have been at least 78 wildfires in the county (MTBS). The largest fires have been the Westside fire in 2005 (66,900 acres) and the Jarvis fire in 2006 (50,697 acres) (Five County AOG 2017).

Figure 2 illustrates the moderate fire occurrence history within the GEC service area. The fires presented are large fires (greater than 100 acres) and do not represent all ignitions. Many of these large fires were located in close proximity to GEC infrastructure, likely because the lines are often collocated with highways, which tend to be an ignition source for wildfires.

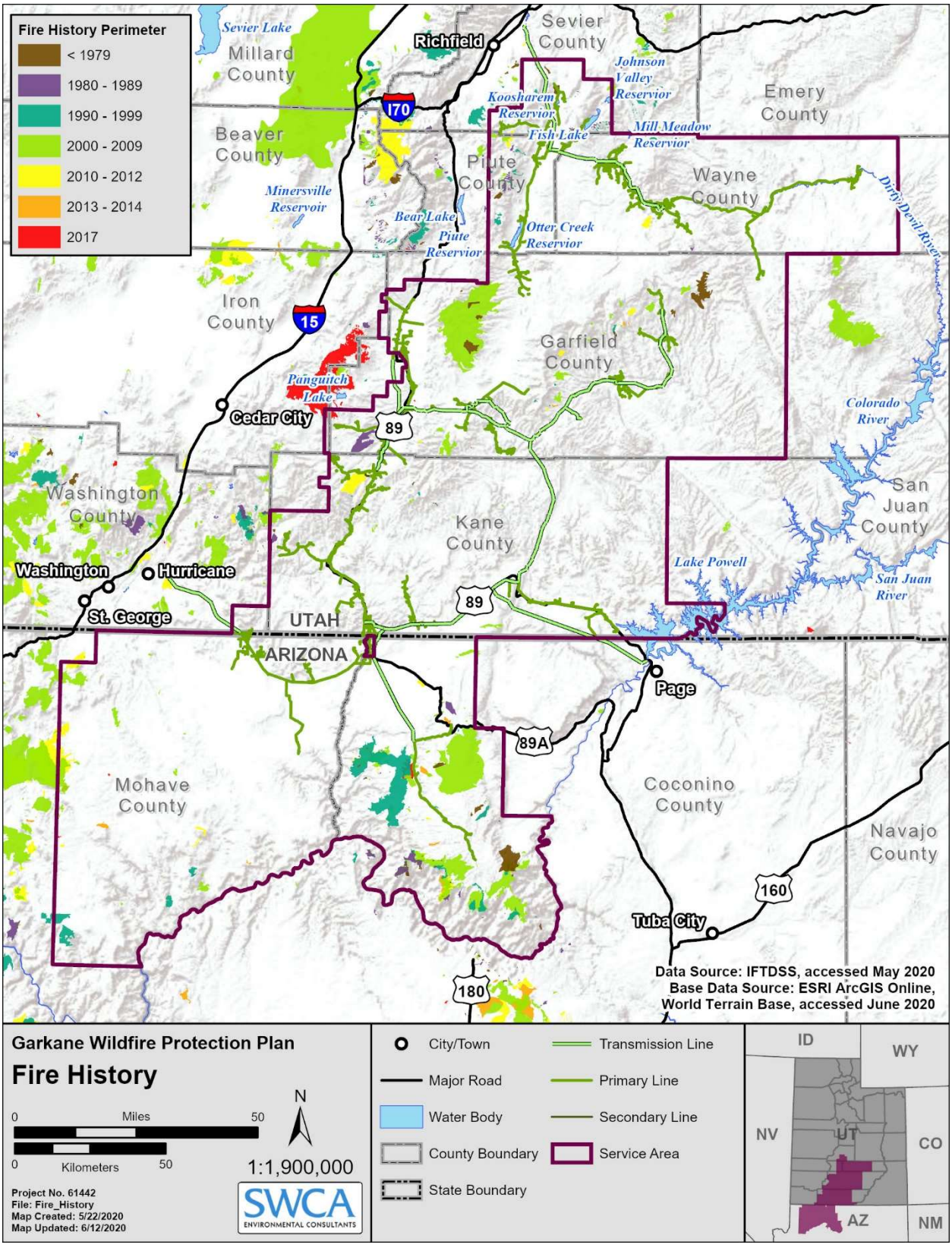

Figure 2. History of large fire occurrences within the GEC service area from the Interagency Fuel Treatment Decision Support System (IFTDSS).

4.2 Vegetation Communities

The GEC service area falls mostly within the Colorado Plateau and Wasatch and Uinta Mountains ecoregions, with a small portion in the Basin and Range province ecoregion. The Colorado Plateau lies between the Great Basin to the west and the Rocky Mountains to the east. The flora and fauna of the region include elements of each of these provinces in addition to endemic species that have evolved in areas of relative isolation atop the Plateau.

Wildfires were once common occurrences throughout the grasslands and forests of the Colorado Plateau. These regular wildfires helped maintain an open forest structure in the region's middle-elevation forests by preventing tree encroachment into mountain meadows and grasslands. In some areas, regular wildfires led to replacement of forested land with grassland or savannah. Fire suppression has disturbed this natural occurrence, and like other ecoregions, pinyon-juniper woodlands, ponderosa pine forests, and drier mixed-conifer forests of the Colorado Plateau have shifted from a fire regime of frequent, surface fires to one of stand-replacing, high-intensity fires (Grahame and Sisk 2002).

The Wasatch and Uintah Mountain ecoregion is a block of high montane habitat stretching from southeastern Idaho and southwestern Wyoming to isolated ranges of the Colorado Plateau in southern Utah. It is composed of high, glaciated mountains, dissected plateaus, foothills, and intervening valleys. The ecoregion encompasses two different mountain ranges; the Wasatch, a major north–south range; and the Uinta, one of few major east–west ranges in the United States (World Wildlife Fund 2001).

Continued grazing and 50 years of attempted fire exclusion, combined with favorable climatic conditions, have allowed juniper expansion to go unchecked (Ferry et al. 1995). Decreases in fire frequency are also significantly affecting ponderosa pine forests. Historically, the ponderosa pine ecosystem had frequent, low-intensity, surface fires that perpetuated park-like stands with grassy undergrowth (Barrett 1980, as cited in Ferry et al. 1995). In recent years, however, humans have attempted to exclude fire on these sites, resulting in ponderosa pine forests that are overstocked and subject to severe stand-destroying fires (Mutch et al. 1993, as cited in Ferry et al. 1995). Long-term fire suppression has also resulted in a loss of aspen.

The GEC service area is made up primarily up of pinyon-juniper, hardwood, and desert shrub communities (Figure 3). Adult juniper trees in mature stands are difficult to burn since the understory is usually sparse. Winds greater than 35 miles per hour are necessary to carry wind through the canopy of pure juniper stands (*Vegetation Types of the Wasatch-Cache National Forest* 1991, as cited in BLM 2005a). Frequency of ignitions in the desert shrub vegetation type has been estimated at 35 to more than 300 per year (FEIS 2004, cited in BLM 2005b). Fire-adapted plants are generally not found in these communities as these vegetation types have not burned enough historically to support them. Most desert shrub species do not readily regenerate following fire (SWCA 2007a).

Of notable concern in the GEC service area is Cheatgrass (*Bromus tectorum)*, a highly competitive invasive grass species from Eurasia. Cheatgrass has altered native plant community structure and promotes wildfire by increasing the risk of shorter fire return intervals (Bishop et al. 2019). As cheatgrass continues to spread throughout the west, new threats are placed on communities and infrastructure.

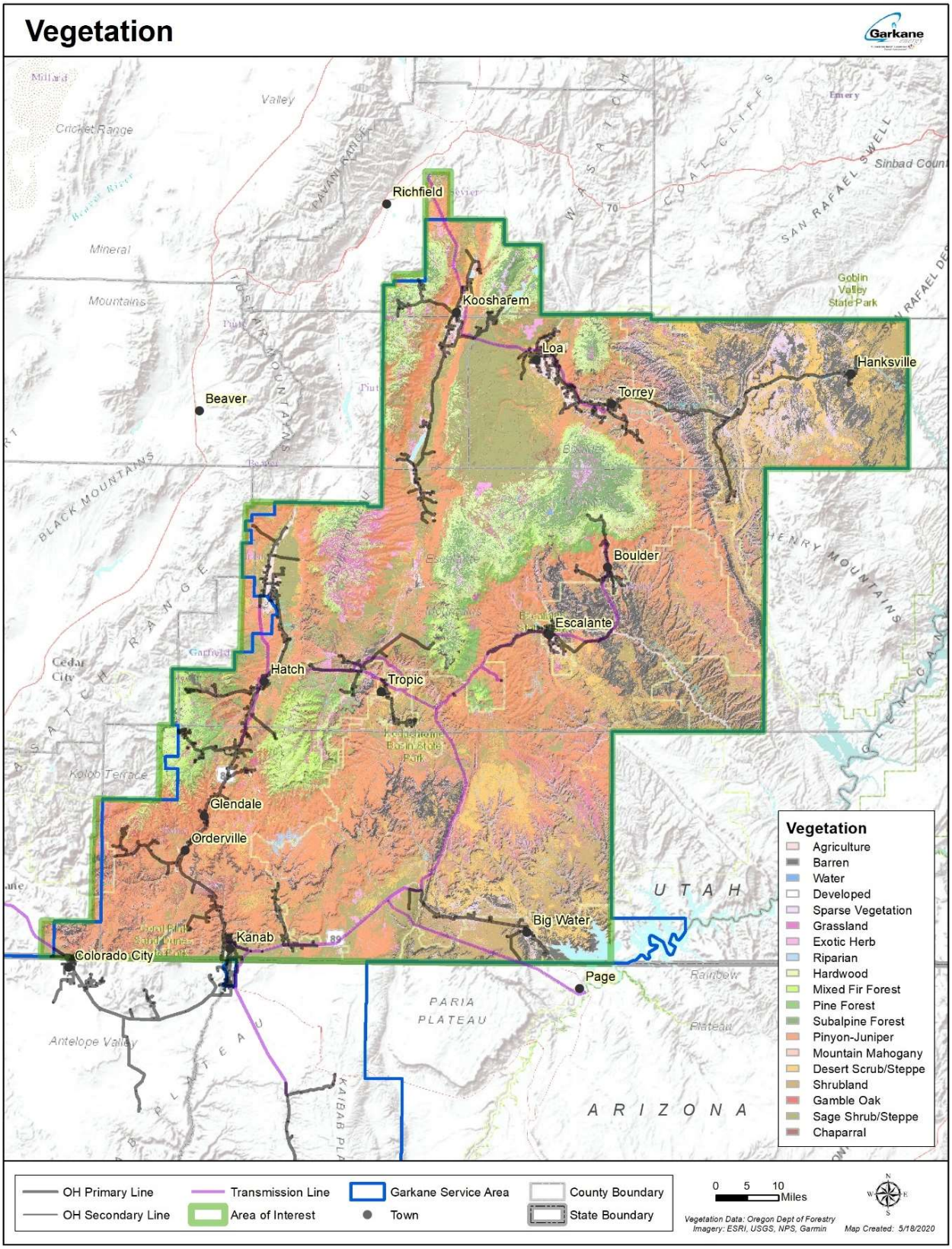

Figure 3. Vegetation classification from UWRAP.

4.3 Fuels

The fuels in the planning area are classified using Scott and Burgan's (2005) Standard Fire Behavior Fuel Model classification system. This classification system is based on the Rothermel surface fire spread equations, and each vegetation and litter type is broken down into 40 fuel models.

The general classification of fuels is by fire-carrying fuel type (Scott and Burgan 2005):

(NB) Non-burnable
(GR) Grass
(GS) Grass-Shrub
(SH) Shrub
(TU) Timber-Understory
(TL) Timber Litter
(SB) Slash-Blowdown

The fuel models that occur within the GEC line buffer (a 0.25-mile buffer on either side of the line) are shown in Table 3 and Figure 4. These data are based on data obtained from the Interagency Fuel Treatment Decision Support System (IFTDSS) and utilize 2016 LANDFIRE data.

Table 3. Scott and Burgan Fuel Model Composition within the 0.5-mile corridor for GEC Lines

Fuel Code	Fuel Type	Threat Type	Acres
91	NB1	Med	351.55
91	NB1	High	28.07
93	NB3	Med	165.40
93	NB3	High	53.00
98	NB8	Med	18.93
98	NB8	High	0.28
99	NB9	Med	115.35
99	NB9	High	13.94
101	GR1	Med	4,261.87
101	GR1	High	497.28
102	GR2	Med	856.98
102	GR2	High	143.24
103	GR3	Med	11.65
103	GR3	High	0.56
121	GS1	Med	1,286.37
121	GS1	High	156.88
122	GS2	Med	7,829.02
122	GS2	High	1,141.92
141	SH1	Med	138.35
141	SH1	High	0.84
142	SH2	Med	70.67
142	SH2	High	3.08
145	SH5	Med	3,452.80

Fuel Code	Fuel Type	Threat Type	Acres
145	SH5	High	662.36
147	SH7	Med	585.96
147	SH7	High	235.73
161	TU1	Med	35.47
161	TU1	High	5.88
162	TU2	Med	42.24
165	TU5	Med	312.64
165	TU5	High	68.34
181	TL1	Med	6.22
182	TL2	Med	33.07
182	TL2	High	12.10
183	TL3	Med	538.91
183	TL3	High	95.82
185	TL5	Med	171.01
185	TL5	High	1.89
186	TL6	Med	9.71
186	TL6	High	0.54
188	TL8	Med	441.84
188	TL8	High	12.15
189	TL9	Med	0.65

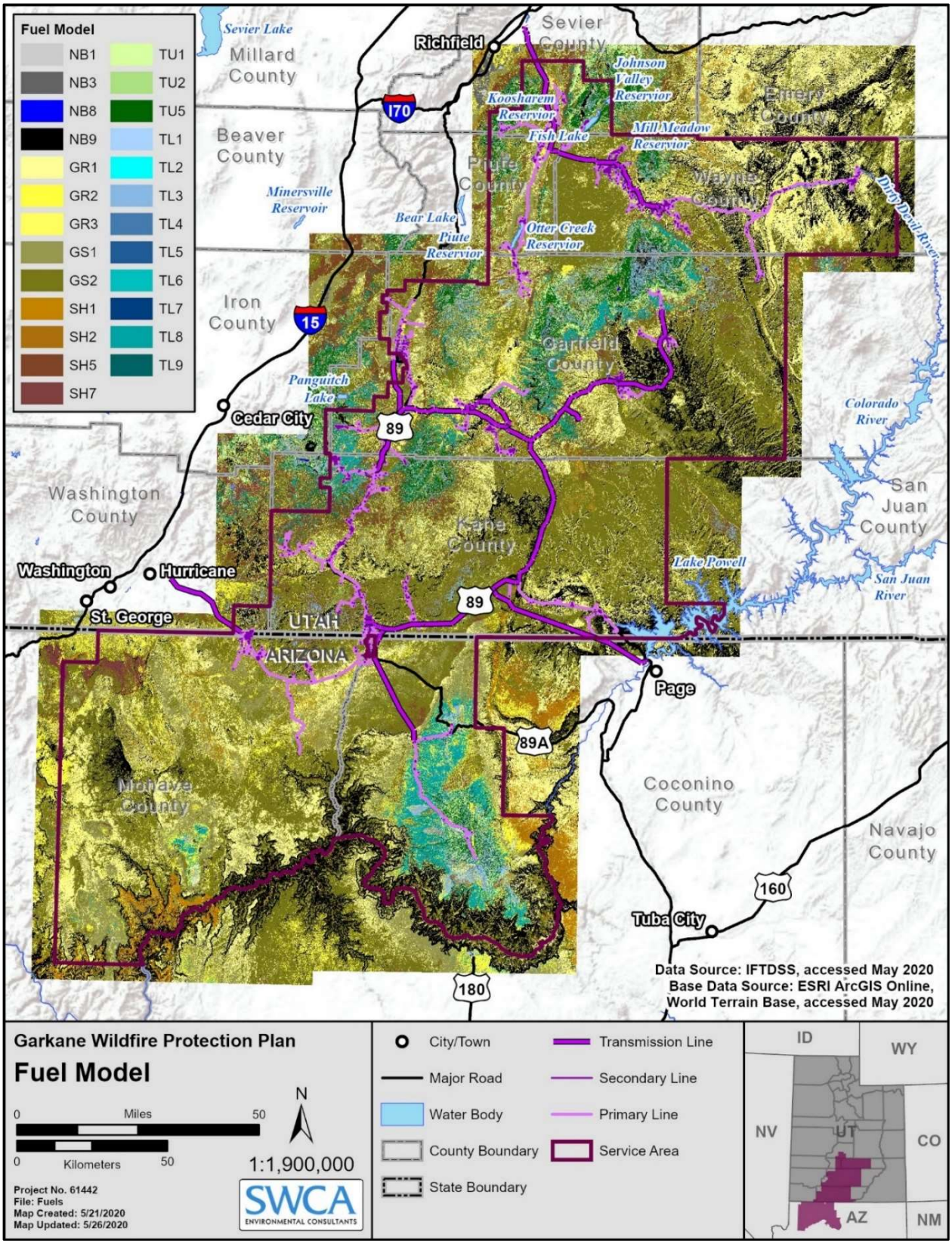

Figure 4. Fuel model classification for the GEC service area from IFTDSS.

The fuels that would contribute to fire behavior within the GEC service area are described below in Table 4.

Table 4. Fuel Model Descriptions

1.	**Nearly pure grass and/or forb type (Grass)**
i.	**GR1:** Grass is short, patchy, and possibly heavily grazed. Spread rate moderate (5–20 chains/hour); flame length low (1–4 feet); fine fuel load (0.40 ton/acre).
ii.	**GR2:** Moderately coarse continuous grass, average depth about 1 foot. Spread rate high (20–50 chains/hour); flame length moderate (4–8 feet); fine fuel load (1.10 tons/acre).
iii.	**GR3:** Very coarse grass, average depth about 2 feet. Spread rate high (20-50 chains/hour); flame length moderate (4-8 feet).
2.	**Mixture of grass and shrub, up to about 50% shrub cover (Grass-Shrub)**
i.	**GS1:** Shrubs are about 1 foot high, low grass load. Spread rate moderate (5–20 chains/hour); flame length low (1–4 feet); fine fuel load (1.35 tons/acre).
ii.	**GS2:** Shrubs are 1–3 feet high, moderate grass load. Spread rate high (20–50 chains/hour); flame length moderate (4–8 feet); fine fuel load (2.1 tons/acre).
3.	**Shrubs cover at least 50% of the site; grass sparse to non-existent (Shrub)**
i.	**SH1:** Low fuel load, depth about 1 foot, some grass fuels present. Spread rate very low (0–2 chains/hour); flame length very low (0–1 feet).
ii.	**SH2:** Moderate fuel load (higher than SH1), depth about 1 foot, no grass fuels present. Spread rate low (2–5 chains/hour); flame length low (1–4 feet); fine fuel load (5.2 tons/acre).
iii.	**SH5:** Heavy shrub load. Fuel bed depth 4–6 feet. Spread rate very high (50–150 chains/hour), flame length very high (12–25 feet).
iv.	**SH7:** Very heavy shrub load, possibly with pine overstory. Fuel bed depth 4–6 feet. Spread rate high (20–50 chains/hour); flame length very high (12–25 feet).
4.	**Grass or shrubs mixed with litter from forest canopy (Timber-Understory)**
i.	**TU1:** Fuel bed is low load of grass and/or shrub with litter. Spread rate low (2–5 chains/hour); flame length low (1–4 feet); fine fuel load (1.3 tons/acre).
ii.	**TU2:** Fuel bed is moderate litter load with shrub component. Spread rate moderate (5-20 chains/hour); flame length low (1-4 feet).
iii.	**TU5:** Fuel bed is high load conifer litter with shrub understory. Spread rate moderate (5-20 chains/hour); flame length moderate (4-8 feet).
5.	**Dead and down woody fuel (litter) beneath a forest canopy (Timber-Litter)**
i.	**TL1:** Light to moderate fuel load, fuels 1 to 2 inches deep. Spread rate very low (0-2 chains/hour); flame length very low (0-1 feet).
ii.	**TL2:** Low load, compact. Spread rate very low (0-2 chains/hour); flame length very low (0-1 feet).
iii.	**TL3:** Moderate load conifer litter. Spread rate very low (0-2 chains/hour); flame length low (1-4 feet).
iv.	**TL5:** High load conifer litter; litter slash or mortality fuel. Spread rate low (2-5 chains/hour); flame length low (1-4 feet).

v.	**TL6:** Moderate load, less compact. Spread rate moderate (5-20 chains/hour); flame length low (1-4 feet).
vi.	**TL8:** Moderate load and compactness may include small amount of herbaceous load. Spread rate moderate (5-20 chains/hour); flame length low (1-4 feet).
vii.	**TL9:** Very high load broadleaf litter; heavy needle-drape in otherwise sparse shrub layer. Spread rate moderate (5-20 chains/hour); flame length moderate (4-8 feet).
6.	**Insufficient wildland fuel to carry wildland fire under any condition (Non-burnable)**
i.	**NB1:** Urban or suburban development; insufficient wildland fuel to carry wildland fire.
ii.	**NB3:** Agricultural field, maintained in non-burnable condition.
iii.	**NB8:** Open water.
iv.	**NB9:** Bare ground.

4.4 Topography

The service area covers portions of the Basin and Range province, the Colorado Plateau, and the Wasatch and Uinta Mountains ecoregion.

The southwest corner of Utah is contained in two major physiographic provinces. Most of Iron and Washington Counties lie within the Basin and Range province, which generally consists of north–south-trending mountain ranges separated by broad arid valleys with interior drainage. Garfield and Kane Counties are located in the Colorado Plateau, which consists of uplifted sedimentary rock strata. As aforementioned, the Wasatch and Uinta Mountains ecoregion is composed of high, glaciated mountains, dissected plateaus, foothills, and intervening valleys, encompassing both the Wasatch and Uinta mountain ranges. Above an elevation of approximately 11,000 feet, alpine meadows, rockland, and talus slopes occur (World Wildlife Fund 2001). On a more localized scale, the area is also speckled with a variety of topographic features. Part of this area has experienced a great amount of volcanic activity, which is evident in extinct volcanoes, mountains, great lava fields, and mesas. Geologic forces have uplifted huge portions of the land and have created great rifts in others. Of particular notoriety are the erosional features of the area, including the great canyons and cliffs carved by water and wind that make up national and state parks in and around the service area such as Zion National Park, Bryce Canyon National Park, and Grand Staircase-Escalante National Monument (SWCA 2007b).

Topography is important in determining fire behavior. Steepness of slope, aspect (direction the slope faces), elevation, and landscape features can all affect fuels, local weather (by channeling winds and affecting local temperatures), and rate of spread of wildfire.

There are many steep slopes throughout the GEC service area that would influence fire

behavior and spread. The GEC service area is large and highly variable in topography. In the southwest portion of the service area, the landscape is made up of low-lying urban areas that are not topographically complex, surrounded by moderately topographically complex areas shaped by water features. Steep canyon walls, bluffs, benches, and terraces make up this canyon landscape. Aspect and slope vary widely throughout this region. Canyon topography makes up much of the remaining portions of the service area, with similar features including terraces, benches, and steep canyon walls.

The northwestern portion of the service area consists of flat, agricultural valleys, and more moderate hills. Steeper canyons can be found in the center of the service area in Bryce Canyon National Park and around Capitol Reef National Park.

4.5 Weather

Of the three fire behavior components, weather is the most likely to fluctuate. Accurately predicting fire weather remains a challenge for forecasters. As winds and rising temperatures dry fuels in the spring and summer, conditions can deteriorate rapidly, creating an environment that is susceptible to wildland fire. Fine fuels (grass and leaf litter) can cure rapidly, making them highly flammable in as little as 1 hour following light precipitation. Low live fuel moistures of shrubs and trees can significantly contribute to fire behavior in the form of crowning and torching. With a high wind, grass fires can spread rapidly, engulfing infrastructure and communities, often with limited warning for evacuation. There is high variability of up/down canyon winds. In steep topography this can lend to dramatic shifts in wind direction and speed over the course of minutes.

Figures 5–10 provide weather data across the project area. These locations were chosen based on the long period of record and geographic locations that represent the service area variability. The driest temperatures in the region occur during May through September, with temperatures reaching into the high 90s and low 100s in May through September. These dry conditions would elevate fire behavior during this period, as vegetation dries and becomes more available for combustion. The average monthly precipitation is low in June and increases rapidly in July as a result of monsoon rain patterns. Vegetation management and other wildfire mitigation measures should be completed prior to peak fire season (May–October).

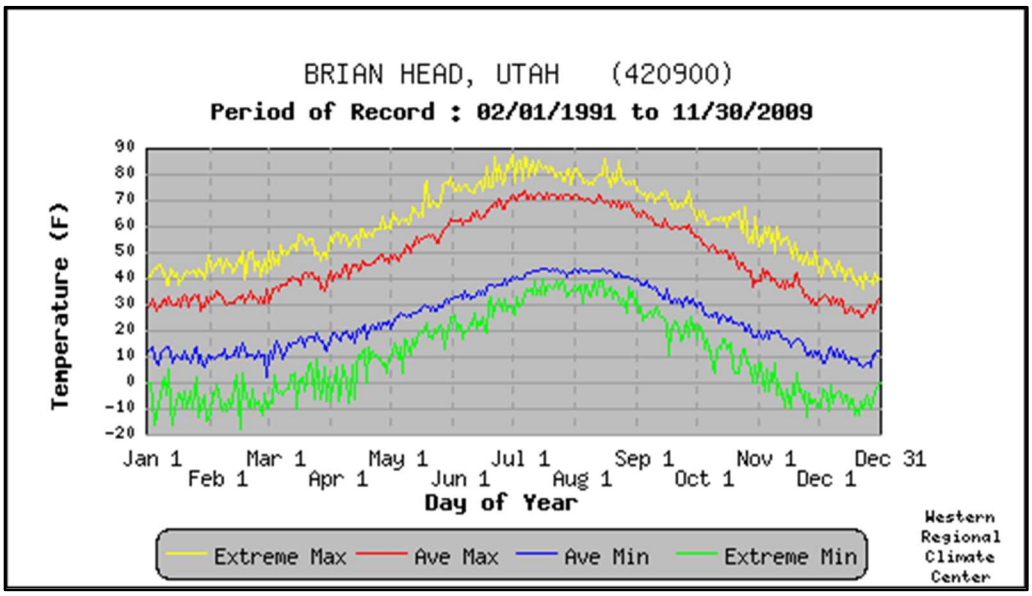

Figure 5. Daily temperature extremes and averages for Brian Head, Utah.

Source: Western Regional Climate Center

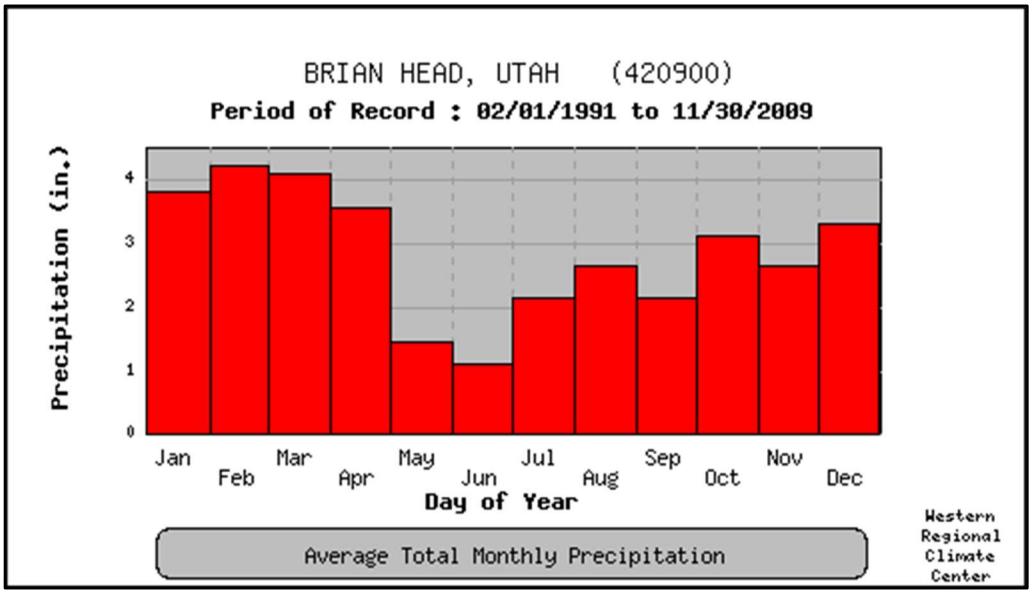

Figure 6. Monthly average precipitation for Brian Head, Utah.

Source: Western Regional Climate Center

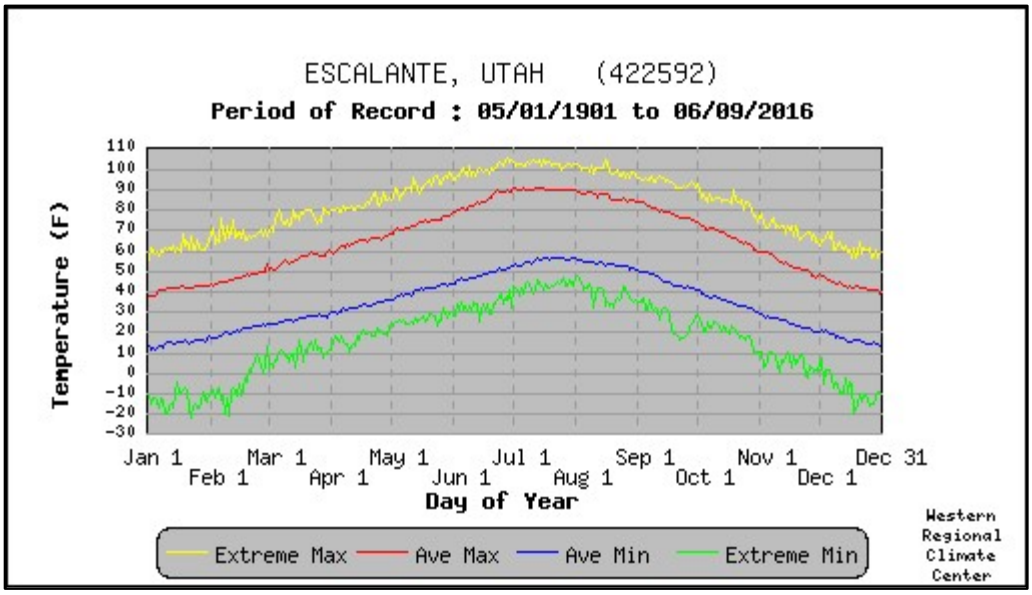

Figure 7. Daily temperature extremes and averages for Escalante, Utah.

Source: Western Regional Climate Center

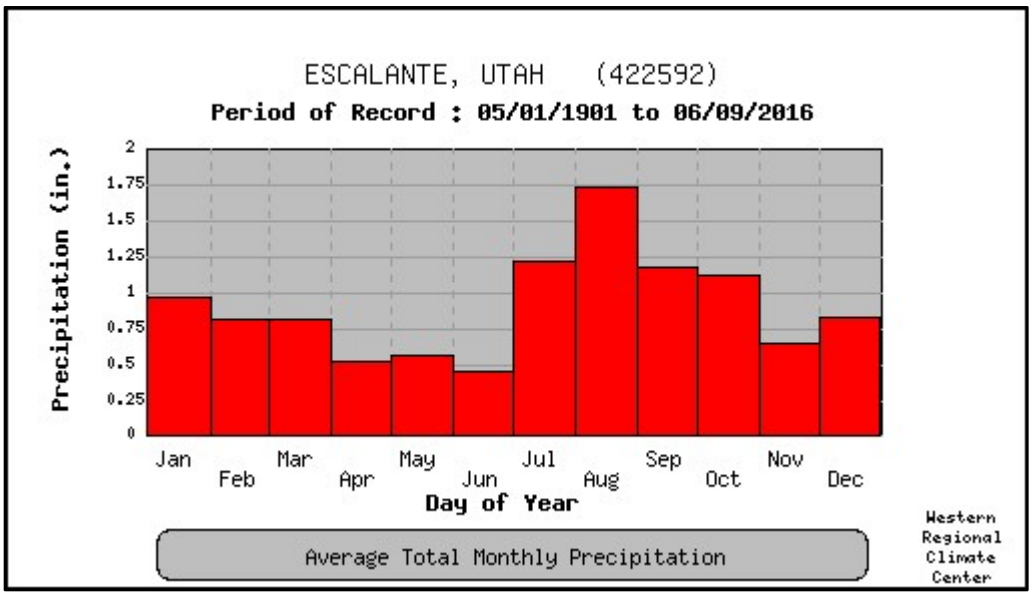

Figure 8. Monthly average precipitation for Escalante, Utah.

Source: Western Regional Climate Center

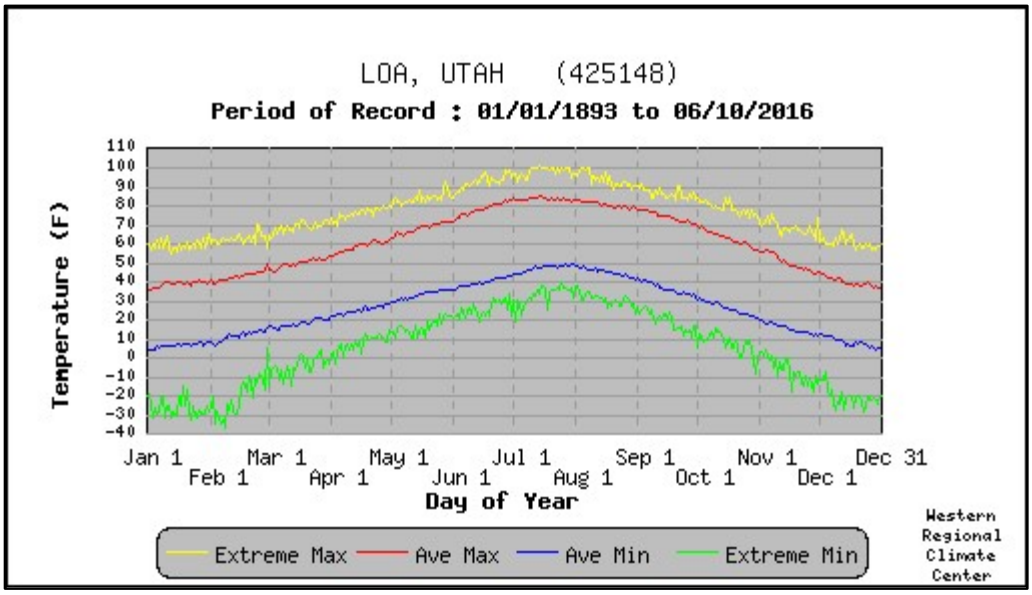

Figure 9. Daily temperature extremes and averages for Loa, Utah.

Source: Western Regional Climate Center

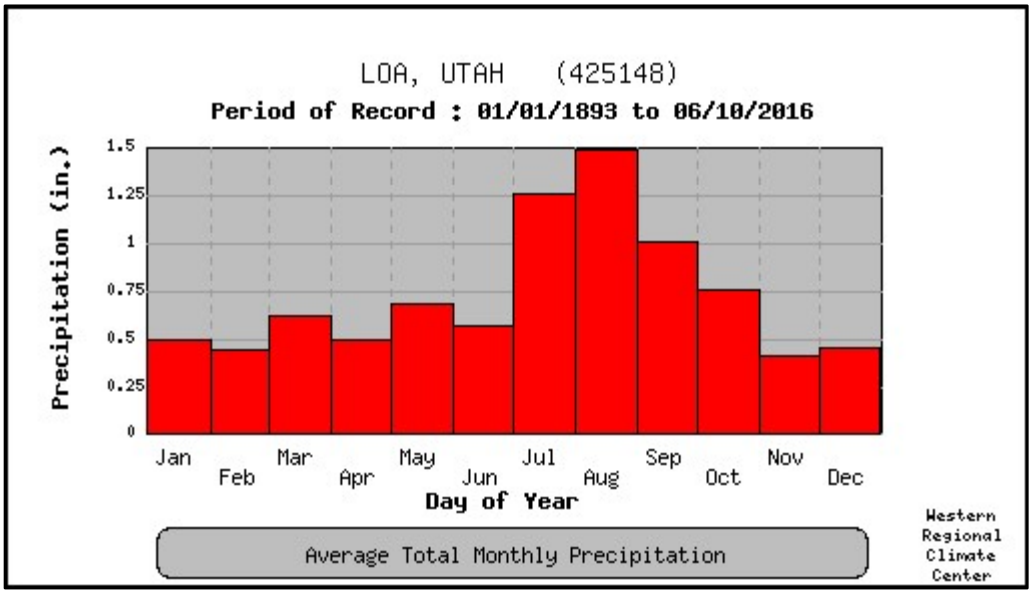

Figure 10. Monthly average precipitation for Loa, Utah.

Source: Western Regional Climate Center

4.6 Fire Behavior

This Plan utilizes UWRAP map products to support analysis of fire behavior and risk within the GEC service area. This analysis assists GEC in identifying areas that are most prone to wildfire in order to create a plan to prioritize vegetation management actions to mitigate potential fire effects. In areas predicted to have the highest fire behavior, GEC can also consider infrastructure improvements that ensure resilience of the grid. Furthermore, in areas where fire behavior is expected to be high, as a result of fuels, topography, weather and past fire occurrence, GEC can work with the community to identify actions that communities can take to mitigate against potential ignitions and to alert the community to prepare in the event of a wildfire event.

4.7 Analysis Approach

In order to assess wildfire risk in the service area and provide priority areas for which GEC should focus mitigation measures, GEC utilized baseline data from UWRAP and developed a custom wildfire threat layer utilizing the geographic information system (GIS) modelling approach described in Appendix A.

4.8 Wildfire Threat and Wildfire Risk

The primary data source used in the analysis was the UWRAP wildfire threat layer. The Fire Threat Index (FTI) in UWRAP is derived from historical fire occurrence, landscape characteristics including surface fuels, percentile weather derived from historical weather observations, terrain conditions, and the effectiveness of fire suppression resources (UWRAP 2020).

GEC identified that approximately 9% of their lines are located within areas of medium wildfire threat and 1% is at high wildfire threat level (Table 5). This amounts to 73.38 miles of overhead line at a medium threat, and 5.78 miles of line classified as high threat.

Table 5. Wildfire Threat Breakdown for GEC Overhead Lines within the Utah Service Area

Threat	Acres	Percent of Total Overhead Line
Medium	~34,730.7	9
High	~ 4,012.5	1
Total	**~38,743.2**	**10**

GEC identified some discrepancies with the UWRAP Wildfire Risk layer and how it weights infrastructure assets in the service area. Due to these concerns (which are outlined in Appendix A), GEC chose to use the *Fire Threat Index (FTI)* layer instead of the *Fire Risk Index (FRI)* layer to identify line segments that present an especially high wildfire threat (Figure 11).

Fourteen threat map locations were chosen where there was presence of threatened line. The extent was then expanded where threatened line was found adjacent to high-structure-density areas. Although other high-structure-density areas occur, such as Kanab, Hildale, Escalante, etc., these areas are not as susceptible to fire due to vegetation type and extent, so individual maps were not created for these locations. Analysis also focused on overhead lines only as this equipment is more vulnerable to vegetation encroachment and fire. The 14 threat maps are presented in Appendix B. Table B-1 in Appendix B describes those high-threat segments with associated mitigation measures that could be applied to mitigate that risk. A priority scale from low to high is applied across all high-threat segments to facilitate implementation based on the intensity of the threat- i.e. potential for intense fire behavior, poor access for suppression resources, high density of values at risk etc. This assessment of threat is based on desktop analysis. GEC will ground truth priority sections prior to proceeding with Plan implementation.

GEC can use Table B-1 as an action plan for implementing mitigation measures. The table can be revised during annual reviews and 3-year updates to show progress toward mitigation goals and to integrate new spatial data and modelling, as it becomes available.

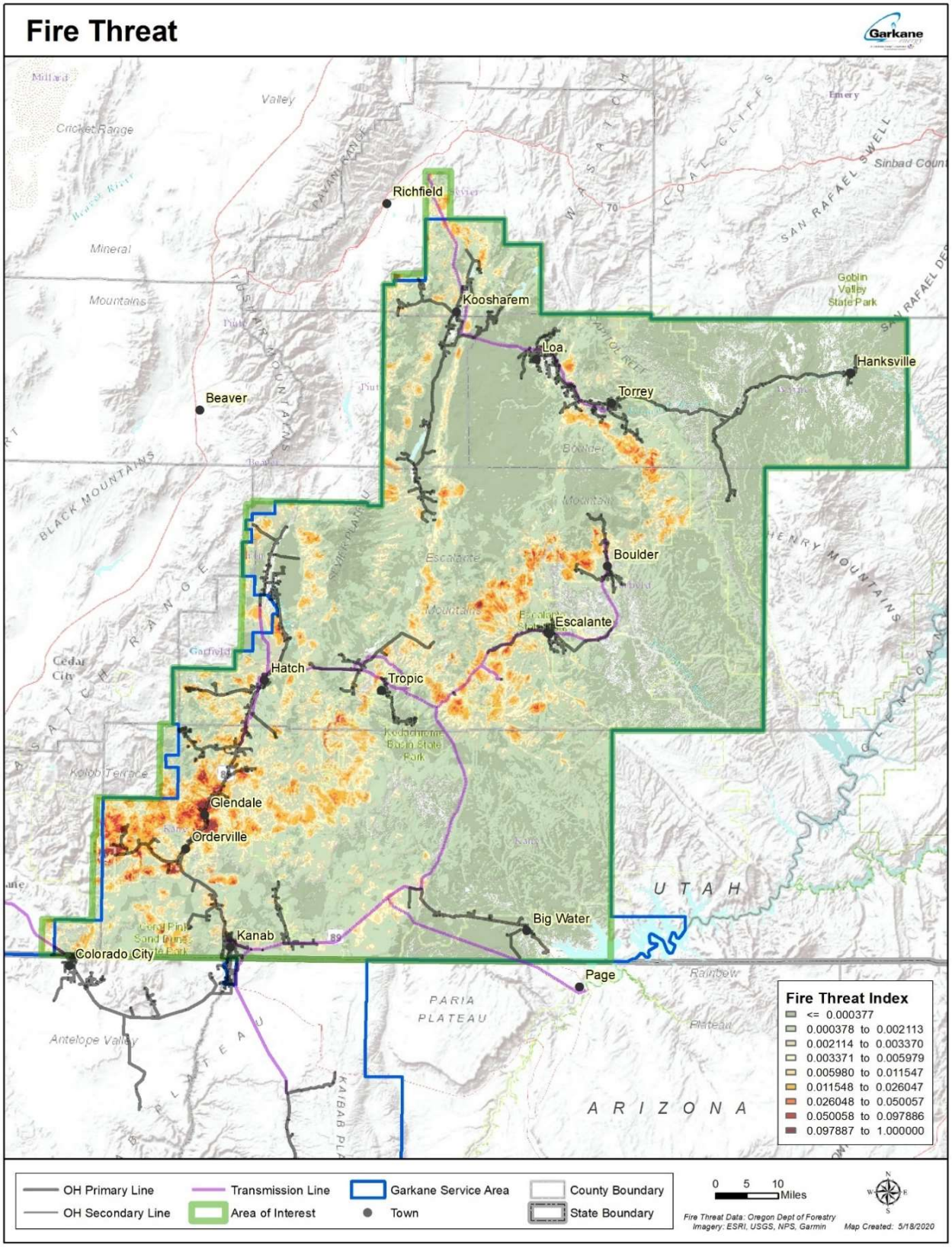

Figure 11. Fire threat for the GEC service area from UWRAP.

5 WILDFIRE PREVENTION STRATEGIES AND PROTOCOLS

5.1 Inspection Procedures

The inspection policies and procedures adopted by GEC are in accordance with Rural Utilities Service (RUS) Bulletin 1730-1 Exhibit A and NESC section 214 a-b.

GEC's overhead patrol and inspection programs focus on safety and reliability and are designed to identify conditions that may pose a hazard or the risk of an ignition or disruption of service. The overhead patrols and inspection programs are primarily focused on the identification, assessment, prioritization, and documentation of abnormal conditions. These conditions may occur due to operational use, degradation, deterioration, environmental changes, or third-party actions.

In addition, several preventive and corrective maintenance programs are focused on maintaining assets, replacing assets or targeted service reliability improvements, such as the pole test and line equipment inspection and testing. There are three defined levels for these routine distribution line inspections:

*-**A patrol inspection** is a simple visual inspection of applicable utility equipment and structures that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business. Overhead patrols of equipment and conductors are required to be completed every year in high fire threat areas and biannually system wide.*

*-**A detailed inspection** is one in which individual pieces of equipment and structures are carefully examined and opened, and the condition of each is rated and recorded. Overhead detailed inspections of equipment and conductors are required to be completed every 5 years in high fire threat areas and every 10 years in moderate and low fire risk areas.*

*-**An intrusive inspection** is defined as one that involves moving soil, taking samples for analysis, and/or using more sophisticated diagnostic tools beyond visual inspections or instrument reading. For wood poles that are over 15 years old and have not been previously subjected to intrusive inspections, an intrusive inspection must be performed. For wood poles that have previously passed an intrusive inspection, the follow-on intrusive inspection interval is 10 years.*

In addition to identifying and resolving immediate safety or reliability hazard conditions, a compliance inspector is required to identify and document the field scenarios that impact safety and reliability. All overhead assessments must be performed using visual observations and may also include diagnostic testing (e.g., hammer sound test, bore tests) to verify pole integrity. GEC uses a module of Partner Software called Distribution Inspection, to collect and track detailed inspection data. The software organizes the priority of each hazard as "OK," "Attention Needed," or "Immediate Attention Needed." The work resulting from data collected in the Partner Distribution Inspection module is prioritized based on several factors when evaluating an abnormal condition, including both the probability and impact of a failure or exposure to the public or workers. The Distribution Inspection module is directed to identify deficient conditions, create corrective notifications, and assign priority and risk to an identified hazard. Although a designated inspector generally performs these detailed and intrusive inspections, all crews and personnel have the tools and ability to perform such inspections and document accordingly.

5.1.1 Patrol Inspections

Patrol inspections are continuously performed by qualified personnel as they traverse GEC's service territory when performing work. Personnel are trained to do patrol inspections as they focus on safety and reliability, identifying conditions that may pose a hazard or the risk of an ignition. If a hazard is discovered, it is documented using GEC's Partner Distribution software. Each hazard identified will be documented by the qualified person doing the inspection and prioritized and scheduled appropriately by the Operations Manager and Operations Superintendent. If it is categorized as "Immediate Attention Needed," it is documented and the qualified person on-site will determine if there is a risk to the public. If there is risk, the inspector will immediately notify his/her supervisor and stay on-site to stand guard until the risk can be mitigated. Patrol inspections are done on GEC's system annually in high fire risk areas and biannually system wide. The Operations Manager and Operations Superintendent review the Partner software weekly to evaluate and prioritize the maintenance that is generated through the inspection process. These actions reduce the potential for component failures and facility damage and facilitate a proactive approach to repairing or replacing identified, degraded, or damaged components.

5.1.2 Detailed Inspections

Detailed inspections are generally performed by a designated inspector but can also be done by any qualified person. These inspections involve systematically visiting and inspecting every pole and documenting the findings. If a problem is discovered, it is documented using the Partner software. If is categorized as "OK," it is documented, and no action is needed. If it is categorized as "Attention Needed," it is documented by the qualified person doing the inspection and prioritized appropriately by the Operations Manager and Operations Superintendent. If it is categorized as "Immediate Attention Needed," it is documented and the qualified person on-site will determine if there is a risk to the public. If so, the inspector will immediately notify his/her supervisor and stay on-site to stand guard until the risk can be mitigated. Detailed inspections are performed on a 5-year cycle in high fire threat areas and a 10-year cycle in other areas.

5.1.3 Intrusive Inspections

Intrusive inspections are generally done by a qualified contractor or a designated inspector but can be done by any qualified person. These inspections involve systematically visiting and inspecting every pole and documenting the findings. There are three levels when doing intrusive inspections (pass, marginal, and fail). When a pole passes an intrusive test, the pole is on a 10-year test cycle. If a

pole is marginal, it will be revisited and tested annually to determine deterioration rate. If a pole has less than 67% if the original required strength it will be categorized as fail and will be changed out within 90 days. All data are documented using the Partner program. Poles under the "Intermediate" category would fall under the "Attention Needed" category in Partner. If a pole fails, it falls under the category "Immediate Attention Needed."

An example of a Partner Distribution Inspection report is provided in Figure 12.

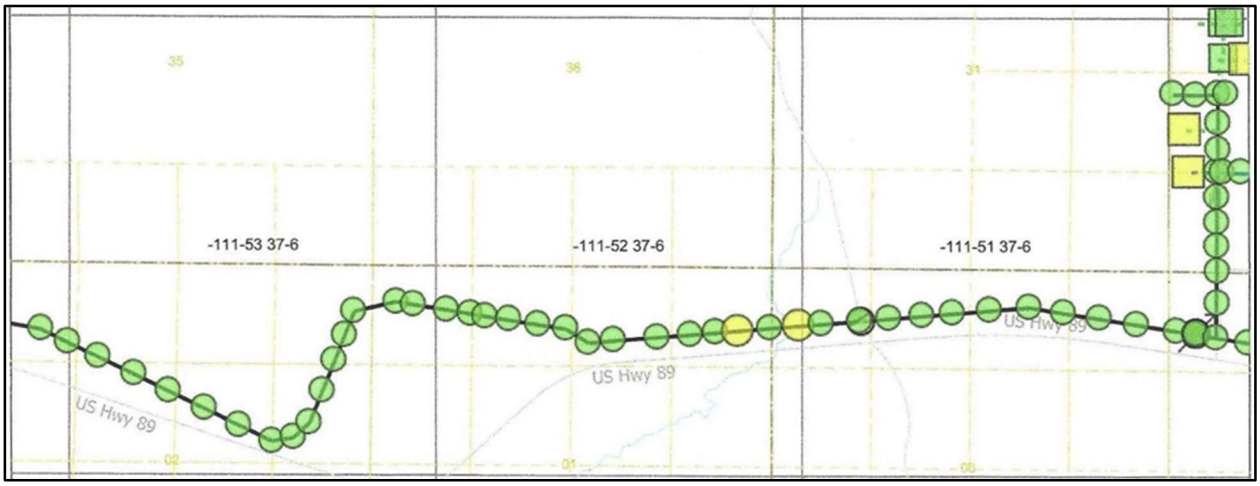

Figure 12. Example of Partner Distribution Inspection report.

Green: OK

Yellow: Needs Attention

Red: Immediate Attention if Needed

GEC's Operations Managers and Operations Superintendent should review the Partner software weekly to prioritize work generated by the inspection program. Inspectors should promptly communicate with the Operations Managers in their respective areas if any problems found are a threat to the public or are in the "Immediate Attention Needed" category. Any problem that is a threat to the public will be fixed immediately. Any problem that is not a threat to the public but is categorized as "Immediate Attention Needed" will be fixed within 90 days. Any inspections categorized as "Attention Needed" should be fixed within 1 year of the inspection.

5.2 Vegetation Management Protocols

The objective of vegetation management is to maintain GEC's property and ROWs in a manner that reduces the risk of wildland fires; ensures the safety of landowners, employees, and the public; and complies with National Electrical Safety Code, Rural Utility Service, federal, state, and local laws and regulations pursuant to the operation of electrical facilities. The following protocols will be followed:

A. GEC will seek required government permits or applicable authorization for vegetation and tree removal or trimming, including but not limited to federal, state, municipal, and tribal laws, ordinances, rules, and regulations. The Cooperative shall seek to trim/remove vegetation and/or trees that in the GEC's opinion present an immediate hazard, danger, or substantial risk to its system, employees, or public safety.

B. GEC will use hand cutting, pruning, and mechanical cutting to maintain proper clearances in accordance with recognized industry engineering and electrical safety practices.

C. A "hazardous tree" is a tree that is dead, is severely damaged, or may present reasonable risks to the GEC's lines and facilities. A hazardous tree may be in GEC's ROW, in a public ROW, or on private property. For the safety of the public and/or all involved, GEC may opt to remove a landowner's hazardous tree, or remove the line from service to allow the landowner to safely remove the hazardous tree. A hazardous tree shall be removed or pruned in accordance with this policy to mitigate safety hazards. GEC has a good working relationship and works closely with the NPS, USFS, and the BLM to identify and remove any hazardous tree from any ROW that crosses federal land. A summary of hazard vegetation work must be provided when working on federal land. This summary must include the following.

   1. The global positioning system (GPS) or geographic location of the trees or vegetation
   2. The power line name and/or number
   3. The species and status of the tree or vegetation (live or dead)
   4. The size class of the tree
   5. The date the trees were located
   6. The number, size class, and species of trees that were damaged or removed due to felling the hazard tree or vegetation if applicable
   7. The date when the action occurred
   8. The wildlife or fish species and/or their critical habitat in the vicinity of the action.

D. GEC will strive to remove all trees, whether hazardous or not, growing beneath GEC's lines in a public ROW or its own ROW. All trees that can be reasonably removed from private ROWs, with the landowners' permission, shall be removed. A special effort shall be made to remove all young trees in ROWs while they are small and before they become a hazard to the power line. Brush and other vegetation will be removed during regular tree trimming procedures.

E. Trees will be trimmed to the extent that the designated minimum clearance area will be kept free of growth until the next scheduled trimming cycle. If the trimming cycle is other than 3 years, as may be required for a fast-growing tree species or where limited trimming is permitted by the landowner, appropriate records will be maintained to ensure that timely primary trimming is accomplished. Areas identified as high fire risk areas will be inspected annually. GEC uses Partner software's ROW Maintenance module for documentation of vegetation monitoring and trimming. It also provides the ability to set revisit dates to alert GEC of areas in need of attention.

F. Landowners shall provide GEC access to all public ROWs and GEC easements where maintenance and cutting or pruning of vegetation and trees may be needed, in GEC's opinion, to avoid danger to the public or interference with the operation and maintenance of its power lines or facilities.

G. GEC has no affirmative duty to remove trees outside its ROWs. With a written request from a landowner, GEC may assist the landowner with the removal of a hazardous tree outside the ROW at no cost to the landowner, as long as GEC has identified the tree as a hazardous tree.

H. Removal of branches and other debris from vegetation and tree removal in or outside the ROW or easement is the sole responsibility of the landowner unless otherwise agreed upon in writing. Stumps will be cut as close to ground level as possible. Complete removal of a stump is the responsibility of the landowner.

I. GEC will maintain a tree trade-out program, which will allow a landowner to receive a tree to replace a tree GEC removes completely from the ROW provided the landowner 1) signs a tree trade-out contract; and 2) has an alternative planting location agreeable to GEC. GEC will remove the tree, including grinding the stump to ground level, if required, and provide the landowner a tree trade-out certificate. The landowner may choose to keep the wood.

J. GEC will control vegetation and trees around its property, including the fenced boundaries and within a substation, to ensure the safety of its landowners, employees, and public while maintaining the reliability and integrity of its facilities.

K. GEC will have a communication program for the public to notify GEC of trees in and around its power lines. GEC will encourage members to report trees that are potential hazards, in and outside the ROW, which may become a threat to public safety and/or the system's reliability.

5.2.1 GEC Tree Trimming Policy

The following guidelines will be used when obtaining a ROW for the purpose of building and maintaining utility lines:

- Trees, shrubs, or bushes will not be planted directly above underground or below overhead utility lines. Before digging, it is the member's responsibility to call 811 to locate the underground utility lines.
- All trees, shrubs, or bushes must remain at least 5 feet on either side of locates and flags designating underground utility lines.
- The member assumes responsibility for all trees, shrubs, or bushes that are planted in the utility easements. In the event that GEC has to excavate any utilities in the easement or maintain any equipment, GEC will not replace or be responsible for any trees, shrubs, or bushes that need to be removed.
- All 120/240/480-volt triplex/quadraplex services must maintain a minimum clearance of a 1-foot radius from all trees or branches.
- All open secondary wire requires a minimum clearance radius of 5 feet from all trees or branches.
- All primary wire requires a minimum clearance radius of 10 feet from all trees or branches.
- A GEC field representative will ensure that all tree trimming is complete prior to construction. No lines will be energized until clearances are met.
- A member always has the option of underground construction (at the member's expense) if the necessary overhead ROW clearances cannot be made.
- GEC is presently utilizing the "Shigo Method" for all tree trimming and maintenance applications. This method is endorsed and promoted by the National Arborist Association.

For all maintenance tree trimming where the member does not allow the Shigo Method, the member has the option to have the tree topped or shaped. If the member elects to have the tree topped or shaped, it will be at the member's expense. The member will be responsible for all hours spent by the contractor. The member will be required to reimburse GEC for payment made to the contractor every time a tree is trimmed by any option other than the Shigo Method. The 10-foot rule will apply to all primary conductors upon completion of topping or shaping.

Due to insurance and Occupational Safety and Health Administration (OSHA) regulations, only tree trimming contractors hired by GEC are allowed to work within 10 feet of primary conductors.

With these guidelines in place, and by utilizing the Shigo Method for tree trimming, GEC will rotate on a 3-year cycle for tree trimming and tree removal.

5.3 Modifications and Upgrades to Infrastructure

The following information outlines the corrections process that GEC employs for its infrastructure.

Table 6. GEC Correction Process

Line No.	Control No.	Correction Process
1	Cl	Overhead patrols and inspections
2	C2	Overhead conductor replacement
3	C3	Animal abatement
4	C4	Overhead equipment replacement
5	CS	Deteriorated pole replacement
6	CG	Vegetation management
7	C7	Protective equipment

- Cl – Overhead Patrol and Inspections: GEC patrols and inspects its overhead electric facilities to identify damaged facilities and other conditions that may pose a risk of wildfire ignition. Patrols and inspections are performed annually in high-risk wildfire areas and biannually system wide.
- C2 – Overhead Conductor Replacement: Programs under which an overhead conductor is either proactively replaced through a targeted program or replaced after a failure occurs. Conductor replacement work in high-risk wildfire areas and for conductors with a higher likelihood of failure is prioritized.
- C3 – Animal Abatement: The installation of new equipment or retrofitting existing equipment with protection measures intended to reduce animal contacts. This includes avian protection on distribution and transmission poles, such as jumper covers, bushing covers, perch guards, or perching platforms.
- C4 – Overhead Equipment Replacement: Proactive identification and replacement of critical, deteriorating overhead distribution equipment, such as cross-arms, transformers, capacitors, reclosers, and switches.
- CS – Deteriorated Pole Replacement: The identification and replacement of deteriorated wood distribution and transmission poles, including intrusive inspection work (pole test and treat) and replacement or remediation. GEC's program tests poles approximately every 10 years, which exceeds the inspection cycle compliance requirements, and incorporates wood preservation practices that also go beyond compliance. These factors allow GEC to identify and mitigate the decay of wood, which reduces failures.
- CG – Vegetation Management: GEC's Vegetation Management (VM) Program includes inspection and identification of vegetation that poses a potential safety hazard, as well as clearing and removal of vegetation, and quality assurance. The main components of this work are the routine VM Program, vegetation control, and quality assurance.

- C7 – Protective Equipment: The installation of new equipment (e.g., fuses, reclosers, and SCADA installations) that isolates equipment when abnormal system conditions are detected.

5.4 De-energizing Protocols

In the event of wildfire, GEC provides personnel to work directly with Incident Command and attends all incident meetings to provide input and coordination between fire operations and GEC system operation. If during a fire a distribution or transmission line is requested to be removed from service for the safety of firefighting personnel, GEC will work closely with Incident Command using industry clearance and safety procedures for any line outages to ensure the safe operation of fire crews and equipment.

GEC considered as an option putting all reclosers and circuit breakers on non-reclose settings to ensure that the power would go off and stay off in the case of any short circuit during the windy, hot, dry summer months. However, due to the radial nature inherent in the rural distribution and transmission lines of rural electric cooperative service territories, that action would put whole communities out of service for prolonged periods of time.

During the fire season (June 1 to October 31) GEC operations crews will not replace and re-energize blown fuses until they have driven the line downstream from the fuse to ensure that there are no conductors on the ground or among any dry vegetation and thus avoid starting a wildland fire. Also, after any line recloser locks out, the line crew will try the recloser only once before driving the length of the circuit for the same reasons.

5.5 Restoration of Service

GEC will restore power following an outage only after confirming that it is safe to do so. Crews will patrol all facilities de-energized during a loss of service to identify any damage that needs to be repaired before re-energizing. To reduce the outage impact to customers, GEC may use helicopter patrols in areas where visibility is not limited by vegetation. GEC assigns a task force consisting of supervisors, crews, and inspectors to each circuit or portions of a circuit. This structure enables GEC to patrol and perform step restoration. Step restoration is when a substation is re-energized, and circuits are subsequently safely energized in segments as patrols continue. Any necessary repairs are conducted while patrols continue to allow for restoration to proceed as efficiently as possible.

GEC has a sufficient work force and quality working relationship with bordering cooperatives, municipalities and IOUs in the area. In the event of a wildfire causing significant damage, GEC could call on crews from these entities to help with labor and materials. A list of key emergency contact telephone numbers (emergency agencies, key personnel, contractors and equipment suppliers and other utilities) are posted in GEC's SCADA room and are available to dispatchers (Table 7). GEC will also have a qualified person working closely with wildland firefighters via incident command to ensure the safety of their crews as it works to restore power as safely and efficiently as possible.

6 COMMUNITY OUTREACH AND EDUCATION

6.1 Public Safety and Notification

GEC regularly communicate with members on being prepared for planned outages and unplanned outages (see Appendix C for examples of regularly communicated messages to GEC members through the quarterly newsletter).

The following are actions that GEC currently employs and/or would consider adopting in order to improve public safety and notifications:

- GEC implements texting notification services to alert members of power outages. All members who have a cell phone or email on file with the coop, will receive updates on outage restoration efforts.
- GEC also encourage the use of generators for those members that rely on emergency communications and at-risk people who rely on medical devices.
- GEC provide transfer switches and install them to ensure generators are hooked up properly and according to safety specifications.
- GEC ensures that endangered populations have been communicated with during a planned or unplanned outage. It is company procedure to call all members who are on the medical list when there is a planned outage so they can prepare accordingly.
- Members can also receive information from the GEC Facebook page, which is updated regularly during a planned or extended outage.
- GEC will routinely coordinate with county emergency managers and fire staff prior to fire season to determine fire season outlook and potential red-flag periods.
- GEC coordinates during emergencies or large-scale outages with county emergency managers and fire staff in conjunction with agency dispatch.
- GEC has developed communication protocols with county health departments for emergency notifications to vulnerable members (i.e., medical facilities, schools, etc.) and ensures that emergency personnel have the power to run emergency communications to their constituents.
- GEC would consider the development of a web-based map for the public to see current outages and estimated restoration.

Additional public outreach options that could be employed in conjunction with county or local emergency managers include:

- Utilizing local radio and television media to broadcast public service messages.

GEC will compile and disseminate information to members regarding community wildfire preparedness, evacuation, and vigilance before and during fire season (FFSL Wildfire Preparedness Literature;[8] Ready,

[8] FFSL: https://ffsl.utah.gov/fire/wildfire-community-preparedness/

Set, Go;[9] Firewise;[10] Fire Adapted Communities[11]) and will work with state and government officials to provide a consistent public message to members regarding wildfire preparedness. The contact information presented below will be reviewed and updated on an annual basis.

7 INTEGRATION WITH APPLICABLE PLANS

GEC engages closely with the County Emergency Manager and attends the Utah Department of Public Safety Uintah Basin Infrastructure Resilience Council (IRC). During wildland fire events, GEC works in full coordination with incident command for the wildland event.

Section 2.3 outlines existing wildfire planning documents for entities within the service area. The contacts for these entities, in addition to important contact information for agency staff who may need to be contacted in the event of a wildfire, are included in Table 7.

Table 7. GEC and Agency Contact List

Name	Agency	Title	Phone	Email
Jeff Peterson	Utah Rural Electric Cooperative	Executive Director	801-885-6494	jpeterson@utahcooperatives.org
Alan Alldredge	Kane County	Emergency Manager	453-644-4995	Aalldredgekcso@kane.utah.gov
Denise Dastrup	Garfield County	Emergency Manager	435-676-1126	Denisedastrup@gmail.com
Jeanie Webster	Wayne County	Emergency Manager	435-836-1348	Jeanie@wayne.utah.gov
Steve Lutz	Wayne County	Fire Chief	801-979-1279	dobrosteve90@gmail.com
Bryan Thiriot	Five County AOG	Executive Director	435-673-3548 ext. #121	bthiriot@fivecounty.utah.gov
Nathan Wiberg	Five County AOG	Associate Planner	435-673-3548 ext. #105	nwiberg@fivecounty.utah.gov
Zach Leavitt	Six County AOG	Regional Planner	435-893-0737	zleavitt@sixcounty.com
Danon Hulet	FFSL	Southwest Area Manager	435-592-0099	danonhulet@uath.gov
Spencer Rollo	FFSL	Kane County Fire Warden	435-819-0671	spencerrollo@utah.gov
Josh Soper	FFSL	Garfield County Fire Warden	435-590-4718	joshsoper@utah.gov
John Schmidt	FFSL	WUI Coordinator	435-590-0353	johnschmidt@utah.gov
Brion Terry	FFSL	Tri-County Fire Warden	435-201-9722	bterry@utah.gov
Taylor Moosman	DNR	Assistant WUI Coordinator	385-245-4579	taylormoosman@utah.gov

[9] Ready, Set, Go: https://www.wildlandfirersg.org/s/?language=en_US

[10] Firewise: https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Firewise-USA/Firewise-USA-Resources/Firewise-USA-sites

[11] Fire Adapted Communities: https://fireadapted.org/

Name	Agency	Title	Phone	Email
Kevin Greenhalgh	Dixie National Forest	Fire Management Officer, Dixie National Forest	435-691-3771	kevin.greenhalgh@usda.gov
Gayle Sorenson	Fish Lake National Forest	Fire Management Officer, Fish Lake National Forest	435-896-1614	gayle.sorenson@usda.gov
Josh Tibbetts	BLM	Fire Management Officer, Color Country and Paria River Districts	435-865-3018	jtibbett@blm.gov
Nick Howell	BLM	District Fire Mitigation & Education Specialist	435-865-3026	nhowell@blm.gov
Greg Bartin	NPS	Fire Management Officer, Utah Group	435-668-9825	greg_bartin@nps.gov
Color Country Interagency Fire Center- Dispatch Center for most of GEC service area: 435-865-4600.				

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APPENDIX A

GEC GIS Risk Assessment Process

Garkane Wildfire Plan GIS Methods and Discussion – 2020

Acronyms

UT WRAP = Utah Wildfire Risk Assessment Portal

UT AGRC = Utah Automated Geographic Reference Center

Methods

Data Used

- Vegetation (UT WRAP)
- Fire threat (UT WRAP)
- Land ownership (UT AGRC)
- Building Footprints (UT AGRC)
- Overhead primary, secondary, and transmission lines (Garkane)
- Service area boundary (Garkane)

Analysis

1) Download UT WRAP data for entire area of interest at: https://wildfirerisk.utah.gov/
2) Process *Fire Threat Index (FTI)* raster:
    a) Convert FTI floating point raster to integer raster.
    b) Reclassify integer raster to keep only pixels with values representing the upper 15% range of threat areas across the 17 western states of the West Wide Risk Assessment (WWA) that produced the FTI data. "Medium," corresponding to Categories 6-7 (Moderate-High to High) in the WWA, is given a value of 1 to represent the 85-96.5% range of threat. "High," corresponding to Categories 8-9 (Very High to Extreme), is given a value of 2 to represent values indicating the 96.5-100% range of threat.
    c) Convert raster to polygon (parameters: do not simplify polygons, do create multipart polygons).
    d) Add a string field and based on the value of 1 or 2, populate records with "Medium" or "High" in the attribute table for symbology and reporting purposes.
3) Perform kernel density analysis with AGRC structure data:
    a) Download *Building Footprints* from UT AGRC (data last updated Oct 2018) at: https://gis.utah.gov/data/location/building-footprint/
    b) Clip to area of interest.
    c) Select out type: "Structure Likely"
    d) Create centroids for each polygon.
    e) Perform kernel density analysis (SR=1000, sq km, Planar) using centroids.
    f) Reclassify raster to keep only pixels with values representing areas with 20 or more buildings clustered together. "Medium" is given a value of 1 to represent a density of 20-80 structures. "High" is given a value of 2 to represent a density of greater than 80 structures.

g) Convert raster to polygon (parameters: do not simplify polygons, do create multipart polygons).

h) Add a string field and based on the value of 1 or 2, populate records with "Medium" or "High" in the attribute table for symbology and reporting purposes.

4) Identify medium/high threat and medium/high structure density line segments:

a) Select overhead primary, overhead secondary, and transmission lines that intersect with fire threat polygons produced in step 2.c

b) Clip the resulting line segments to the fire threat polys layer to avoid overhanging segments.

c) Select overhead primary, overhead secondary, and transmission lines that intersect with structure density polygons produced in step 3.g

d) Clip the resulting line segments to the structure density polygons to avoid overhanging segments.

Discussion

Garkane used UT WRAP data to assess risk in our distribution area. Ideally, we would have re-created the *Values Impact Rating (VIR)* layer used in UT WRAP's risk assessment model with a more spatially accurate *Wildland Development Areas (WDA)* layer and a less weighted *Infrastructure Asset (IA)* layer (Figure 1). Given the time constraints imposed by Utah's H.B. 66, recreating the more spatially accurate model was not feasible for the analysis in this version of Garkane's plan. Garkane anticipates conducting additional analysis as part of our future plan updates.

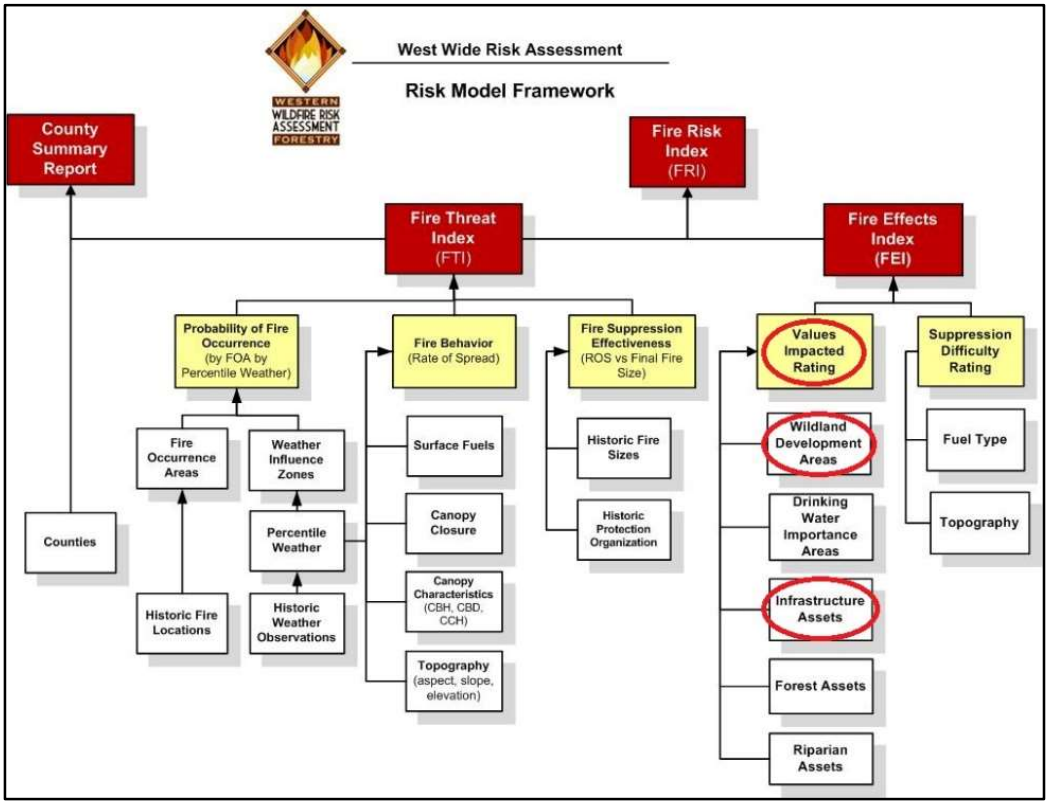

Figure 1. UT WRAP Risk Model Framework with layers circled in red that Garkane feels should receive additional analysis in future version of the plan.

There were three issues worth discussing that led Garkane to augment UT WRAP's risk assessment model:

1) *Wildland Development Areas (WDA)* – This layer appears to have been interpolated and/or analyzed at a scale that causes the actual developed areas to fall in the wrong locations, sometimes by as much as half a mile. We became concerned that life and property in rural developed areas was not being accurately spatially represented in this analysis. Additionally, we serve several communities comprised mostly of unoccupied vacation homes situated in forested areas. These seemed to us to be underrepresented in the *Where People Live (WPL)* data set, used as the basis for the WDA layer. To bridge this gap in representation of rural structures, we performed a kernel density analysis using a structures layer we acquired from AGRC and spot-verified against Garkane's structure base layer. We were able to add the results of this analysis to the high threat area maps, but we were unable to incorporate them into the risk assessment model. This was partially due to unknown factors like how the Oregon Department of Forestry assigned particular values and weights to layers contained within the VIR.
2) *Infrastructure Assets (IA)* – This layer gives very heavy risk weights to all infrastructure. It does not seem to differentiate between different types of infrastructure (e.g. very expensive sub stations vs. overhead line). We felt that these weights were unbalanced relative to other infrastructure considerations. Rural roads crossing undeveloped regions seemed to overwhelm other, more valuable assets.
3) *Ground-truthed Verification* – The risk assessment model did not factor in local ground-truthing or institutional experience. Input gathered from one area manager on threatened line segments highlighted an additional area of concern that our analysis did not pick up. This is a piece of single-phase primary line taking off to the south between our Paria and Buckskin substations (Ref. Map 9, FireMapSet). This area is comprised of densely vegetated pinyon-juniper, is difficult to access, and leads to several critical communication towers.

Ultimately, due to these issues we chose to use the *Fire Threat Index (FTI)* layer instead of the *Fire Risk Index (FRI)* layer to identify line segments that present an especially high wildfire threat. This means the results from the *Fire Effects Index (FEI)* layer in the risk assessment model were not incorporated in the GIS analysis.

Fourteen threat map locations were chosen where there was presence of threatened line. Extent was then expanded where threatened line was found adjacent to high structure density areas. Other high structure density areas occur, such as in Kanab, Hildale, Escalante, etc., however these areas are not as susceptible to fire due to vegetation type and extent, so individual maps were not created for these locations. Analysis also focused on overhead lines only as this equipment is more vulnerable to vegetation encroachment and fire.

Length of line threatened: ~73.38 miles classified Medium Threat
~ 5.78 miles classified High Threat
~79.16 miles TOTAL

Recommendations for Future GIS Analysis

- Receive input from Hatch and Loa Area Managers

- Re-create the *Infrastructure Assets* layer to incorporate varying costs of Garkane equipment, including underground cabinets, reclosers, substations, etc.
- Work with Oregon Department of Forestry or other contractors to recreate *Values Impacted Ratings* layer (VIR) and *Fire Risk Index* layer (FRI) using results from the kernel density analysis, new IA layer, and other sources
- Ground-truth line segments identified as medium/high threat

APPENDIX B

Detailed Mapping of High-Threat Segments with Action Plan

Table B-1. Description of High-Threat segments of the GEC Line

Map ID	Location	Description	Wildfire Risk Analysis Segment Indicator and Description	Mitigation Strategy	Priority (L, M, H)
Map 2	East Zion	Includes: East Zion communities: Willow Canyon Ponderosa Clear Creek Zion Canyon Buffalo Ridge Mineral	**Willow Canyon, Ponderosa, Clear Creek and Zion Canyon** all include high and medium threat line segments and high and medium area threat. Ponderosa is adjacent to an area of high structure density. These areas are located within mixed grass-shrub-timber fuels. These fuels can exhibit extreme rates of spread (>55ft/min) and extreme flame lengths (> 30ft). UWRAP recognizes all four areas as having a high density of values at risk. Portions of the areas fall in varied topography; steep grades could elevate fire behavior under certain conditions. These areas have been prone to historically high density of wildfire occurrence, likely due to their proximity to residential and recreational use areas. Lines in this area are composed of single phase and three phase distribution line. Willow Canyon, Ponderosa, and Clear Creek are protected by the Clear Creek OCR. A portion of Clear Creek and all of Zion Canyon are protected by the East Zion Recloser. Additional protective devices for each grouping include the following: Willow Canyon – FUS805; Ponderosa – FUS803; Clear Creek – FUS28680; Zion Canyon - FUS800.	• Fire prevention signage on the highway (work with the County and UDOT). • More frequent line and vegetation inspections. • Consider wider ROW clearance around high threat segments, especially in areas of high structure density.	High- due to the location along the highway and potential for ignitions.
			Buffalo Ridge and Mineral exhibit high and medium line threat and high and medium area threat. Buffalo Ridge has an area of high structure density. Both areas are made up of grass fuels, with some shrub component. These fuels can exhibit high and extreme rates of spread (30-44 ft/min) and high flame lengths (~ 20-30 ft). Slopes are moderate throughout much of the area, moderating potential fire growth. Both areas have seen a high density of previous wildfires, that appear to be associated with the highway, and are therefore likely attributed to passing motorists or other human activity. Lines in this area are composed of single phase and three phase distribution line protected by the East Zion Recloser. Additional protective devices for each grouping include the following: Buffalo Ridge – none; Mineral – FUS810, FUS809.	• Fire prevention signage on the highway (work with the County and UDOT). • More frequent line and vegetation inspections. • Consider wider ROW clearance around high threat segments, especially in areas of high structure density.	High- due to the location along the highway and potential for ignitions.

Map ID	Location	Description	Wildfire Risk Analysis Segment Indicator and Description	Mitigation Strategy	Priority (L, M, H)
Map 3	Mt Carmel, Orderville	Includes: Barracks Orderville Quarter Circle H Ranch Mt Carmel Mt Carmel Junction	**Barracks and Mt Carmel Junction** both include medium threat segments and medium to high area threat. These line segments occur along the highway and through areas dominated by grass and low shrub fuels. These fuel types can exhibit rapid rates of spread (33-44 ft/min) and moderate flame lengths (4-8 ft). Much of the risk along these segments is attributed to a high to extreme density of previous wildfire occurrence, which is associated with the proximity to the highway and therefore likely a result of passing motorists. Values at risk in the area are relatively low. Lines in this area are composed of single phase and three phase distribution line. Barracks is protected by the East Zion Recloser. Mt. Carmel Junction is protected by the Mt. Carmel Junction and Sands 34.5 Reclosers.	• More frequent vegetation inspections.	Moderate- due to the relatively low density of values at risk adjacent to the lines.
			Mt Carmel, Quarter Circle H Ranch and Orderville include medium and high risk segments and medium area risk. Mt Carmel and Orderville have areas of high structure density. These line segments pass through areas dominated by agricultural fuels, with some grass and shrub. These fuels exhibit low to moderate rates of spread (17-22 ft/min) and low to moderate flame lengths (~ 4ft). Much of the risk to these line segments can be attributed to the high density of values at risk, as well as the high to extreme historic fire occurrence. Lines in this area are composed of single phase and three phase distribution line. Orderville and Quarter Circle H Ranch are protected by the Sands 34.5 Recloser. Mt. Carmel is protected by the Mt. Carmel Town OCR and Sands 34.5 Recloser. Additional protective devices in Orderville include: Orderville Sub/Town REC, OCD74193.	• Fire prevention signage on the highway (work with the County and UDOT). • More frequent line and vegetation inspections. • Consider wider ROW clearance around high threat segments, especially in areas of high structure density.	High- due to the high density of values at risk adjacent to the lines, and the history of high fire occurrence.

Map ID	Location	Description	Wildfire Risk Analysis Segment Indicator and Description	Mitigation Strategy	Priority (L, M, H)
Map 4	Glendale, Alton	Includes: Glendale Lydia's Canyon Glendale Canyon Spencer Bench Alton	**Glendale, Lydia's Canyon and Glendale Canyon** include high and medium threat line segments and high and medium area threat. Glendale exhibits high and medium structure density. These line segments serve residential and commercial business in Glendale and north along Highway 89. As such, much of the GEC infrastructure is found in areas made up of urban, agricultural and grass fuels. These fuels can exhibit moderate rates of spread (16-22 ft/min) and low to moderate flame lengths (4-8 ft). Areas adjacent to the highway, outside of more urban developments may exhibit more extreme rates of spread and flame length, particularly on steeper grades. Much of the risk to these line segments can be attributed to the high density of values at risk, as well as the high to extreme historic fire occurrence, particularly to the area east of Glendale. Lines in this area are composed of single phase and three phase distribution line protected by the Alton 35 Recloser. Additional protective devices for each grouping include the following: Glendale Canyon – none; Lydia's Canyon – FUS831; Glendale – FUS1585, FUS827-GlendaleStep.	• Fire prevention signage on the highway directed at local and recreational users (work with the County and UDOT). • More frequent line and vegetation inspections. • Consider wider ROW clearance around high threat segments, especially in areas of high structure density.	High- due to the high density of values at risk adjacent to the lines, and the history of high fire occurrence.
			Spencer Bench includes high and medium threat line segments, and high and medium area threat. These line segments are found in shrub-timber fuels in areas of varied topography and some steep grades. These fuel types can exhibit extreme rates of spread (> 55ft/min) and extreme flame lengths (> 30ft). These lines are collocated with the highway and the greatest risk is attributed to an area of high fire occurrence, likely from passing motorists. Lines in this area are composed of single phase and three phase distribution line protected by the Alton 35 Recloser. Additional protective devices for Spencer Bench include: FUS1583, FUS1579.	• Fire prevention signage on the highway directed at local and recreational users (work with the County and UDOT). • More frequent line and vegetation inspections. • Consider wider ROW clearance around high threat segments, especially in areas of high structure density	High- due to the history of high fire occurrence and potential for extreme fire behavior.

Map ID	Location	Description	Wildfire Risk Analysis Segment Indicator and Description	Mitigation Strategy	Priority (L, M, H)
			Alton includes high and medium threat line segments and high and medium area threat. The community of Alton is an area of high structure density. The line segments in this area pass through a mixture of grass, shrub and timber fuels. The community of Alton is dominated by agricultural and urban fuels. Fire behavior in this area would be variable, with most fuels in immediate proximity to the lines exhibiting moderate rates of spread (22-33 ft/min) and moderate flame lengths (4-8ft). The area southwest of Alton is rated high due to a high density of previous fire occurrence. Lines in this area are composed of single phase and three phase distribution line protected by the Alton 35 Recloser. Additional protective devices for Alton include: FUS1586, FUS1587, FUS1588, FUS1591.	• Fire prevention signage on the highway directed at local and recreational users (work with the County and UDOT). • More frequent line and vegetation inspections. • Consider wider ROW clearance around high threat segments, especially in areas of high structure density	High- due to the history of high fire occurrence and density of values at risk.
Map 5	Duck, Mammoth and Swains Creek	Includes: Mammoth Creek Duck Creek Village Strawberry Seaman Canyon Swains Creek	**Duck Creek Village, Strawberry and Swains Creek** are all areas of high structure density, with some medium threat line segments and medium area threat. These lines cross a range of fuel types, dominated by timber fuels. These fuels exhibit low to moderate rates of spread (22-33 ft/min) and low to moderate flame lengths (4-8ft). Risk in these areas can be attributed to the density of residential structures and values at risk. All three areas exhibit high to extreme historic fire occurrence densities. Lines in this area are composed of single phase and three phase distribution line. Duck Creek is protected by the Duck Creek Village & Color Country Reclosers. Strawberry, Swains Creek, and Seaman Canyon are protected by the Duck Creek 35 Recloser. Additional protective devices for each grouping include the following: Duck Creek – FUS798, FUS796, FUS797, FUS795, FUS19-DCV-1740, FUS80959, FUS793, FUS792, FUS767, MV Quaken Aspen OCR, Meadow View Rim Road OCR, MV Unit F OCR, MV Mirror Lake OCR; Strawberry – FUS780, FUS782, FUS783, FUS54-Str-3801, FUS1562; Swains Creek – FUS772, Fuse-SC-3954, FUS771, FUS770, FUS769, FUS768.	• Fire prevention signage on the highway directed at local and recreational users (work with the County and UDOT). • More frequent line and vegetation inspections. • Consider wider ROW clearance around high threat segments, especially in areas of high structure density	High- due to the history of high fire occurrence and density of values at risk.
			Seaman Canyon is rated as a medium threat line segment. It is located within an area of heavy timber, which could low rates of spread by moderate flame lengths (4-8ft). Lines in this area are composed of single phase and three phase distribution line protected by the Duck Creek 35 Recloser.	• More frequent vegetation inspections.	Low- due to the low density of values at risk and the low potential fire behavior.

Map ID	Location	Description	Wildfire Risk Analysis Segment Indicator and Description	Mitigation Strategy	Priority (L, M, H)
			Mammoth Creek includes medium threat line segments, medium area threat and areas of high structure density. The lines pass through a mixture of fuels, dominated by timber fuels, areas of which could exhibit high rates of spread (44-55 ft/min) and high flame lengths, some in excess of 30ft. Risk in the area can be attributed largely to the density of values at risk, as well as an area of heavy fire occurrence towards the west portion of the community. Lines in this area are composed of single phase and three phase distribution line protected by the Mammoth Creek 3ph OCR. Additional protective devices for Mammoth Creek include: FUS676, FUS679, FUS680, FUS681, FUS675, FUS674.	• Fire prevention signage on the highway directed at local and recreational users (work with the County and UDOT). • More frequent line and vegetation inspections. • Consider wider ROW clearance around high threat segments, especially in areas of high structure density	High- due to the high density of values at risk and the history of high fire occurrence.
Map 6	Tod's Junction, Hatch, Bryce Woodlands	Includes: Elk Ridge Bryce Summit Bryce Woodlands Mammoth Ridge	**Elk Ridge and Bryce Summit** include medium threat line segments and medium area threat. The lines are collocated with the highway. Tod's Junction, within the Elk Ridge polygon, is an area of high structure density. The lines pass through varied fuels, dominated primarily with shrubs and some timber. These fuels could exhibit moderate to extreme rates of spread and moderate to extreme flame lengths, with some flame lengths in excess of 30ft. The areas have a low to moderate historic fire occurrence. Lines in this area are composed of single phase and three phase distribution line, as well as transmission line north of Tod's Junction. Elk Ridge is protected by the Elk Ridge 12.5 and Duck Creek 35 Reclosers. Bryce Summit is protected by the Cedar Mtn Line Recloser. Additional protective devices for Bryce Summit include: FUS696, FUS643. The transmission line is protected at the Hatch substation.	• Fire prevention signage on the highway directed at local and recreational users (work with the County and UDOT). • More frequent line and vegetation inspections. • Consider wider ROW clearance around high threat segments, especially in areas of high structure density	High- due to the high density of values at risk.

Map ID	Location	Description	Wildfire Risk Analysis Segment Indicator and Description	Mitigation Strategy	Priority (L, M, H)
			Bryce Woodlands include some small segments at moderate threat and some moderate area threat. The lines cross an area dominated by timber fuels which could exhibit high to extreme rates of spread (>55ft/min) and flame lengths in excess of 30ft. This area includes some steep grades which can elevate fire behavior under certain conditions. The area is also classified as having relatively high aggregate values at risk. Lines in this area are composed of single phase line. Bryce Woodlands is protected by the Cedar Mtn Line Recloser. Additional protective devices include Bryce Woodlands OCR, FUS664.	• More frequent line vegetation inspections. • Consider wider ROW in areas of heavy timber density, due to potential extreme flame lengths.	High- due to the potential extreme fire behavior, and values at risk.
			Mammoth Ridge includes a moderate threat line segment and some moderate area threat. This line crosses an area dominated by shrub and timber fuels which could exhibit high rates of spread (44-55ft/min) and flame lengths in excess of 30ft. This area includes some steep grades which can elevate fire behavior under certain conditions. The area is also classified as having relatively high aggregate values at risk. Lines in this area are composed of single phase distribution line protected by the Mammoth Creek Recloser. Additional protective devices include FUS1709.	• More frequent line and vegetation inspections. • Consider wider ROW in areas of heavy timber density, due to potential extreme flame lengths.	High- due to the potential extreme fire behavior, and values at risk.
Map 7 Dickinson Hill, Sevier River, Hercules Includes: Sevier River Hercules Dickinson Hill			**Sevier River** includes two small medium threat line segments and medium and high area risk. These line segments are located close to the highway and pass through grass and shrub fuels which could exhibit extreme rates of spread (>55ft/min) and extreme flame lengths (> 30ft). This area has seen moderate to high fire occurrence density and is an area that is classified as having relatively high values at risk. Lines in this area are composed of single phase distribution line protected by the Spry Sub Recloser. Additional protective devices include South Spry OCR.	• More frequent vegetation inspections.	High- due to the values at risk.
			Hercules includes a small line segment at medium threat. The fuels in the area are primarily agricultural, grass and shrub, with low rates and spread and flame length. The high risk along this segment can be attributed primarily to a history of high fire occurrence, likely due to the highway intersection and passing motorists. Lines in this area are composed of single phase and three phase distribution line protected by the Red Canyon Line Recloser. Additional protective devices include FUS748.	• Fire prevention signage on the highway directed at motorists (work with the County and UDOT)	Moderate- due to the high fire occurrence but relatively low fire behavior potential.

Map ID	Location	Description	Wildfire Risk Analysis Segment Indicator and Description	Mitigation Strategy	Priority (L, M, H)
			Dickinson Hill includes a small line segment with medium line threat and medium areas threat. The fuels in the area are a mixture of grass, shrub and timber which could exhibit extreme rates of spread (>55ft/min) and extreme flame lengths (> 30ft). This area has seen moderate to high fire occurrence density and is adjacent to Panguitch, an area with a high density of values at risk. Lines in this area are composed of transmission line protected at the Hatch Substation. Lines are owned by Garkane but do not fall within the service area; Garkane maintains a right of way for this line.	• More frequent vegetation inspections.	High- due to the values at risk.
Map 8	Cave Lakes, Kanab Creek	Includes: Cave Lakes Kanab Creek	**Kanab Creek** includes medium threat line segments and medium area threat. These lines are located within/adjacent to a riparian area with timber and shrub fuels. These fuels could exhibit high to extreme rates of spread (~50 f/min) and high to extreme flame lengths (20-30ft). The area has experienced moderate to high fire occurrence density. Because the lines are collocated with the highway, the area is classified as having relatively high values at risk, but is relatively remote, with limited structures or development. Lines in this area are composed of single phase and three phase distribution line protected by the Valley Circuit and Kanab City Sub N Reclosers. Additional protective devices include FUS881, FUS1609.	• Fire prevention signage on the highway directed at motorists (work with the County and UDOT).	Moderate- due to the potential high fire behavior, but relatively low values at risk.
			Cave Lakes includes some high threat line segments and high area threat. The greatest risk is associated with Cave Lakes Canyon, due to the presence of timber fuels, steep grades and a history of extreme fire occurrence. Fuels in the area could exhibit extreme rates of spread and extreme flame lengths, in excess of 30ft, elevated by the topography in the area. Lines in this area are composed of single phase and three phase distribution line protected by the Valley Circuit Recloser. Additional protective devices include FUS914, FUS1613.	• More frequent vegetation inspections.	Low – due to the remote nature of the lines and low density of values at risk.
Map 9	Buckskin, 5 Mile, Paria	Includes: Buckskin 5 Mile Paria	**Buckskin** includes segments of transmission line, collocated with Highway 89. The segments are in an area of medium area threat. The dominant fuels are grass and shrub and could exhibit high rates of spread (33-44 ft/min) and moderate to high flame lengths (4-8 ft). The high threat rating for these segments can be attributed largely to a history of high fire occurrence. Lines in this area are composed of transmission line protected at the Buckskin substation.	• More frequent vegetation inspections.	Moderate, due to the high fire occurrence, but low values at risk.

Map ID	Location	Description	Wildfire Risk Analysis Segment Indicator and Description	Mitigation Strategy	Priority (L, M, H)
			5 Mile is a segment of primary line known by the GEC Area Manager as medium risk. The line is located in an area of dense pinyon juniper and is difficult to access. It also feeds several critical communication towers. The fuels in this area could exhibit high rates of spread (33-44 ft/min) and moderate to high flame lengths (~ 20ft). Lines in this area are composed of single phase distribution line protected by the Buckskin Microwave OCR.	• More frequent vegetation inspections. • Drone inspections • Consider wider ROW due to access concerns and potential slow response times.	Moderate, due to access concerns and critical values at risk.
			Paria represents a segment of transmission line in an area of medium area threat. The dominant fuels are grass and shrub and could exhibit high rates of spread (33-44 ft/min) and moderate to high flame lengths (4-8 ft). The medium threat rating for this segment of line can be attributed largely to a history of moderate fire occurrence. Lines in this area are composed of transmission line protected at the Buckskin substation.	• More frequent vegetation inspections.	Moderate, due to the high fire occurrence, but low values at risk.
Map 10	Tropic, Barney Top	Includes: Tropic Barney Top	**The Barney Top** line segments are small areas of medium threat line within medium area threat. These line segments pass through shrub and timber fuels that could exhibit high rates of spread (33-44 ft/min) and high flame lengths (~20ft). These segments are in varied topography which could elevate fire behavior under certain conditions. All segments are in areas of relatively low values at risk. Much of the risk can be attributed to previously high fire occurrence. Lines in this area are composed of single phase distribution line protected by Pine Lake and Hwy 12 Crossing OCRs.	• More frequent vegetation inspections.	Moderate, due to the high fire occurrence, but low values at risk.
			Tropic line segments occur within a medium risk area. Lines are just north and west of the community of Tropic which has a high structure density and therefore high values at risk. Lines pass through shrub fuels that could exhibit extreme rates of spread (>55 ft/min) and flame lengths in excess of 30ft. The risk can also be attributed to a history of moderate to high fire occurrence. There are relatively low values at risk directly adjacent to the lines. Lines in this area are composed of single phase distribution line as well as a transmission. The distribution line is protected by the Tropic Cyn 1PH OCR. The transmission line is protected at the East Valley substation.	• Fire prevention signage on the highway directed at motorists (work with the County and UDOT). • More frequent line and vegetation inspections.	High- due to the potential extreme fire behavior and location close to the community of Tropic.

Map ID	Location	Description	Wildfire Risk Analysis Segment Indicator and Description	Mitigation Strategy	Priority (L, M, H)
Map 11	Highway 12, The Blues, Long Canyon	Includes: West of the Blues, The Blues Long Canyon	**West of the Blues** represents an area of transmission line with medium threat in a medium threat area. The line passes through grass-shrub fuels in an area of very variable topography that could elevate fire behavior. These fuels could exhibit high to extreme rates of spread (~55 ft/min) and high to extreme flame lengths (20-30 ft). The lines are in a more remote area with low values at risk. The area has a history of moderate fire occurrence. Lines in this area are composed of transmission line protected at the Henrieville substation.	• Fire prevention signage on the highway directed at motorists (work with the County and UDOT). • More frequent vegetation inspections.	Moderate – due to the low values at risk but potentially high to extreme fire behavior.
			The Blues represents an area of transmission line with medium threat in a medium threat area. The line passes through grass-shrub and timber fuels and varied topography. These fuels could exhibit high to extreme rates of spread (~55 ft/min) and high to extreme flame lengths (20-30 ft). The lines are in a more remote area with low values at risk. The area has a history of moderate fire occurrence. Lines in this area are composed of transmission line protected at the Henrieville substation.	• Fire prevention signage on the highway directed at motorists (work with the County and UDOT). • More frequent vegetation inspections. • Consider wider ROW in areas of heavy timber density, due to potential extreme flame lengths.	Moderate – due to the low values at risk but potentially high to extreme fire behavior.
			Long Canyon represents an area of transmission and distribution line with small sections of medium threat in a medium area threat. Lines pass through grass-shrub fuels. These fuels could exhibit extreme rates of spread (>55 ft/min) and extreme flame lengths (>30 ft). The lines are in an area of high density of aggregated values at risk. The area has experience low to moderate historic fire occurrence density. Lines in this area are composed of single phase and three phase distribution line, as well as transmission line. The single phase line is protected by the Head of Rocks OCR; three phase line is protected by the Esc West Ckt OCR. The transmission line is protected at the Henrieville substation.	• Fire prevention signage on the highway directed at motorists (work with the County and UDOT). • More frequent vegetation inspections.	Moderate- due to the patchy threat along the line, but higher density of values at risk.

Map ID	Location	Description	Wildfire Risk Analysis Segment Indicator and Description	Mitigation Strategy	Priority (L, M, H)
Map 12	Boulder, Salt Gulch	Includes: Boulder Salt Gulch	**Boulder** represents two small sections of medium threat transmission and distribution line, north of the community of Boulder. Lines pass through shrub and timber fuels which could exhibit high to extreme rates of spread (30-50 ft/min) and high to extreme flame lengths (20-30ft). The risk in the area can be attributed to the high density of values at risk, due to the proximity to the highway and an areas of high structure density. The area has experienced low to moderate historic fire occurrence but is bordered to the northwest by an area that has a history of frequent fire occurrence. Lines in this area are composed of single phase and three phase distribution line protected by the East Fork Ckt and Boulder Sub-Town Ckt Reclosers. The transmission line is protected at one end by the Boulder substation and at the other end by the Escalante substation.	• Fire prevention signage on the highway directed at motorists (work with the County and UDOT). • More frequent line and vegetation inspections. • Consider wider ROW in areas of heavy timber density, due to potential extreme flame lengths.	High- due to the location relative to areas of high values at risk, as well as a history of high fire occurrence in the vicinity.
			Salt Gulch represents a small section of distribution line located west of Boulder. The line passes through agricultural, shrub and some timber fuels. These fuels could exhibit high to extreme rates of spread (30-50 ft/min) and high to extreme flame lengths (20-30ft). The risk in the area can be attributed to adjacent high values at risk. Lines in this area are composed of single phase distribution line protected by the Salt Gulch OCR. Additional protective devices include FUS-SaltGulch-01.	• Fire prevention signage on the highway directed at motorists (work with the County and UDOT). • More frequent line and vegetation inspections. • Consider wider ROW in areas of heavy timber density, due to potential extreme flame lengths.	High- due to the location relative to areas of high values at risk.
Map 13	Antimony, Johns Valley Road	Includes: Johns Valley Road	**Johns Valley Road** includes a section of distribution line that is at medium threat in a medium threat area. The line passes through grass-shrub and some timber fuels. The fuels could exhibit high to very high rates of spread (30-50 ft/min) and high to very high flame lengths (20-30ft). The line passes through an area of high values at risk, largely due to the proximity to the highway and riparian areas and not as a result of structures. Lines in this area are composed of single phase distribution line protected by the Johns Valley OCR.	• More frequent vegetation inspections. • Consider wider ROW in areas of heavy timber density, due to potential extreme flame lengths.	Moderate- due to the high values at risk.

Map ID	Location	Description	Wildfire Risk Analysis Segment Indicator and Description	Mitigation Strategy	Priority (L, M, H)
Map 14	Sigurd, Bear Ridge, Koosharem Reservoir	Includes: Sigurd Bear Ridge Daniels Road	**Sigurd** represents a section of transmission line south of the community of Sigurd that is rated as medium threat. The line passes through primarily agricultural land, with some grass-shrub fuels. These fuels could exhibit moderate rates of spread (22-32 ft/min) and moderate flame lengths (4-8 ft). The risk associated with this section can be attributed to the close proximity of the line to an area of high structure density and high values at risk. Lines in this area are composed of transmission line protected at the Sigurd substation.	• Fire prevention signage on the highway directed at local residents and motorists (work with the County and UDOT).	High – due to the proximity to high density of values at risk.
			Bear Ridge represents two sections of transmission line that are rated as medium threat in a medium threat area. The lines pass through shrub and timber fuels that could exhibit very high rates of spread (44-55 ft/min) and extreme flame lengths, in excess of 30ft. The line is adjacent to steep grades that could elevate fire behavior. The area has a history of medium to high fire occurrence. Lines in this area are composed of transmission line protected at the Sigurd substation.	• More frequent line and vegetation inspections. • Consider wider ROW in areas of heavy timber density, due to potential extreme flame lengths.	High- due to the potential for extreme fire behavior.
			Daniels Road represents a section of distribution line with two small medium threat sections, adjacent to a medium threat area. The line passes through grass-shrub and some scattered timber fuels. These fuels could exhibit high to very high rates of spread (44-55 ft/min) and high to extreme flame lengths (20-30ft). The area has experienced a moderate to high fire occurrence history. Lines in this area are composed of single phase distribution line protected by the Burrville OCR. Additional protective devices include FUS1008.	• More frequent line and vegetation inspections. • Consider wider ROW in areas of heavy timber density, due to potential extreme flame lengths.	High- due to the potential for extreme fire behavior.

Map ID	Location	Description	Wildfire Risk Analysis Segment Indicator and Description	Mitigation Strategy	Priority (L, M, H)
Map 15	Bicknell, Teasdale, Torrey, Birch Creek	Includes: Black Ridge and Birch Creek	**Black Ridge and Birch Creek** exhibit medium line threat and medium area threat. Both areas are made up of grass-shrub fuels, with some long needle litter. These fuels can exhibit very high to extreme rates of spread (44-55+ ft/min) and extreme flame lengths (>30 ft). These areas incorporate some steep slopes, which can elevate fire behavior under certain conditions. The risk in these areas can be attributed to the historically moderate to high density of wildfire occurrence, likely due to their proximity to recreational use areas. The lines are in close proximity to three communities with high structure density. Lines in this area are composed of single phase distribution line protected by the Pine Creek 3-ph and Teasdale OCRs.	• Fire prevention signage on the highway directed at local residents and motorists (work with the County and UDOT). • More frequent line and vegetation inspections. • Consider wider ROW in areas of heavy timber density, due to potential extreme flame lengths.	High- due to the close proximity to three areas of high structure density and values at risk.

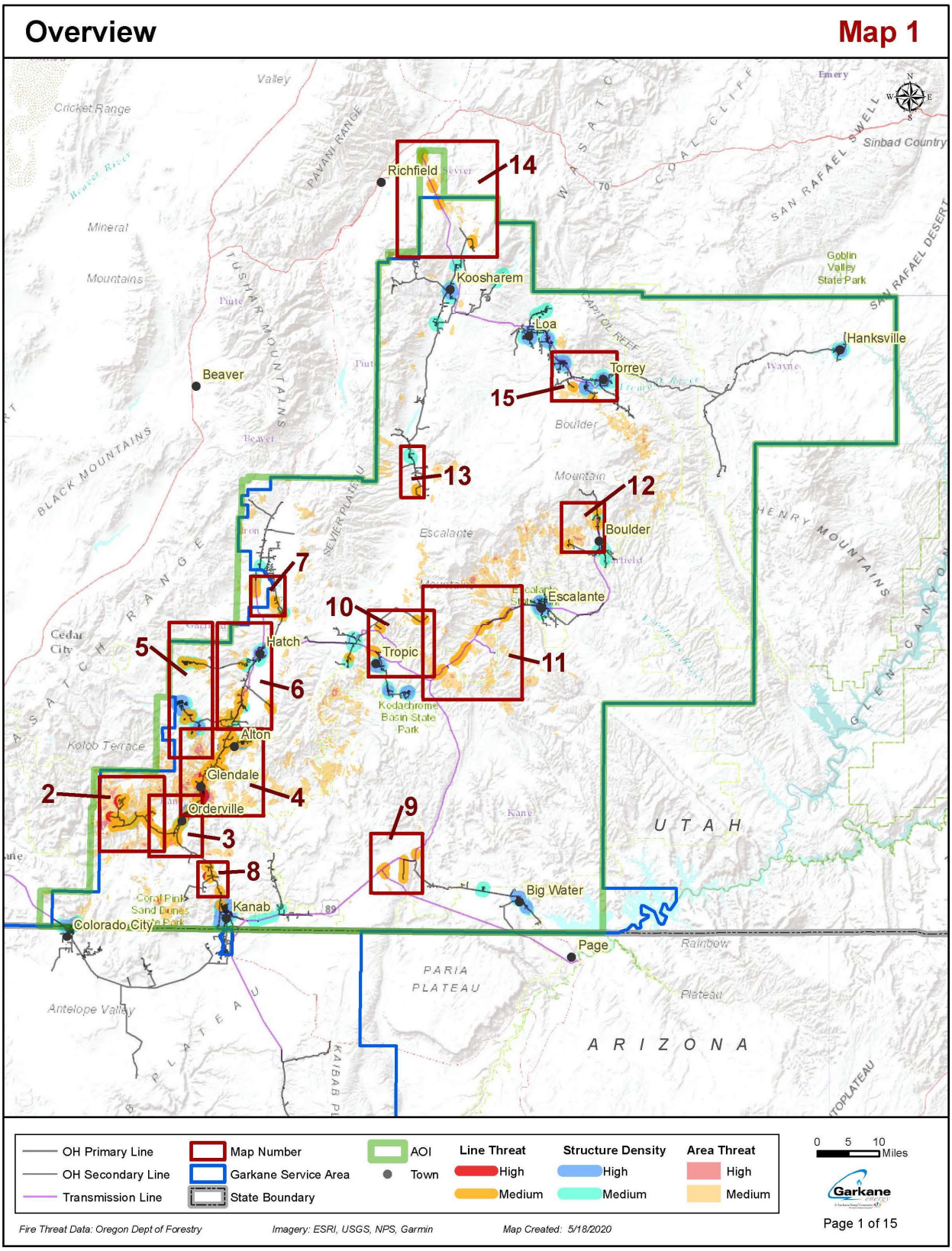

Figure B-1. Medium to high wildfire threat/risk (overview map; map 1 of 15).

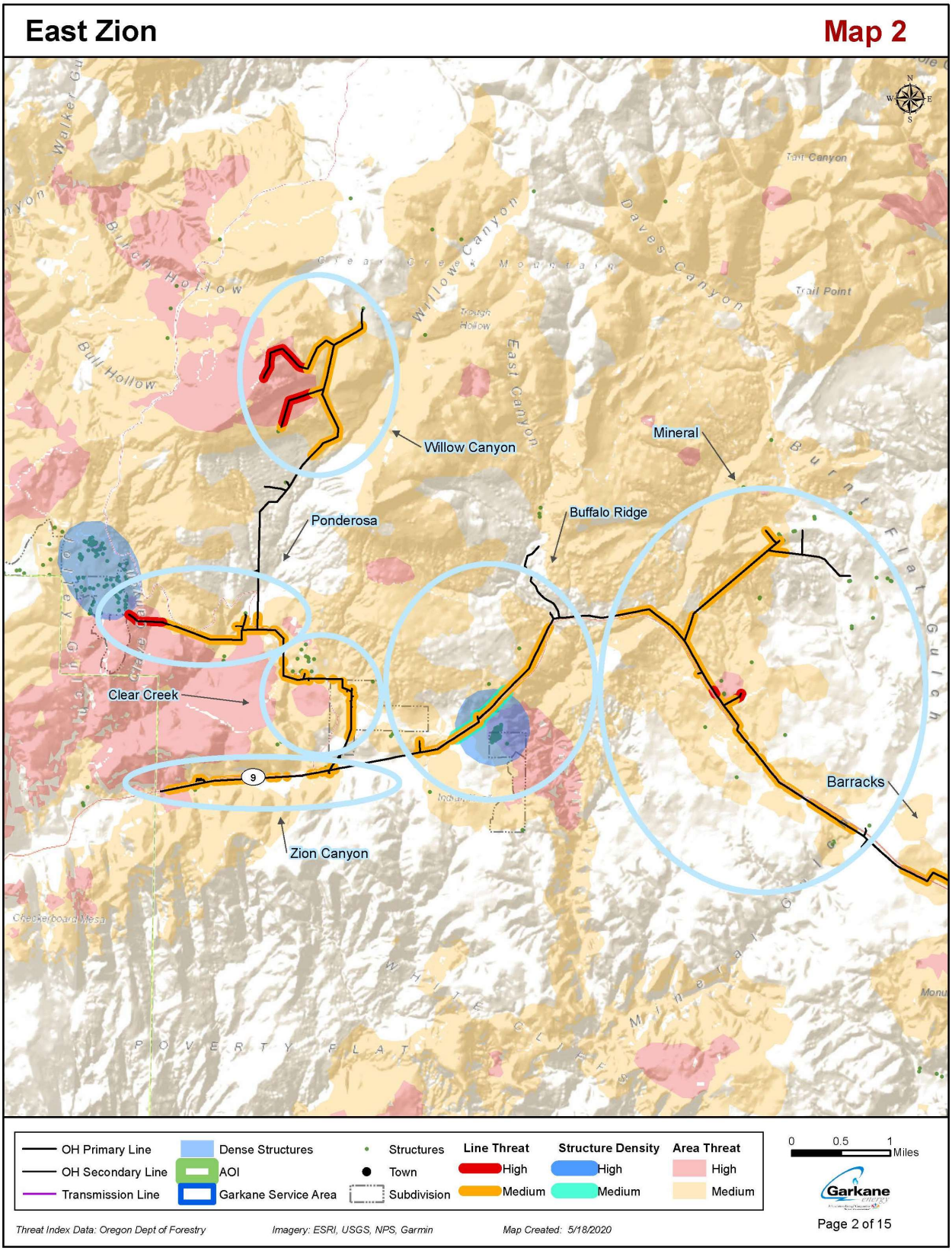

Figure B-2. Medium to high wildfire threat/risk (map 2 of 15).

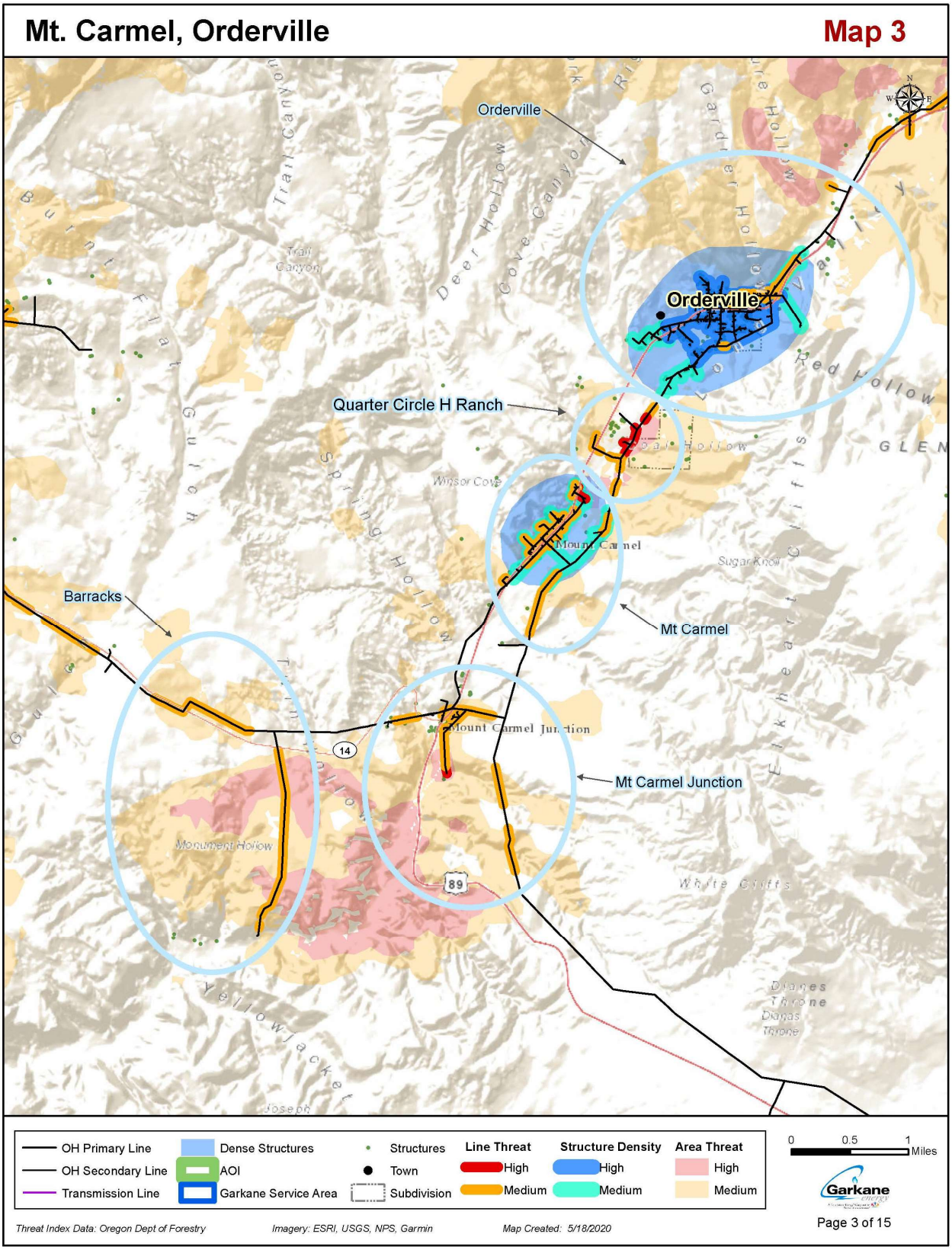

Figure B-3. Medium to high wildfire threat/risk (map 3 of 15).

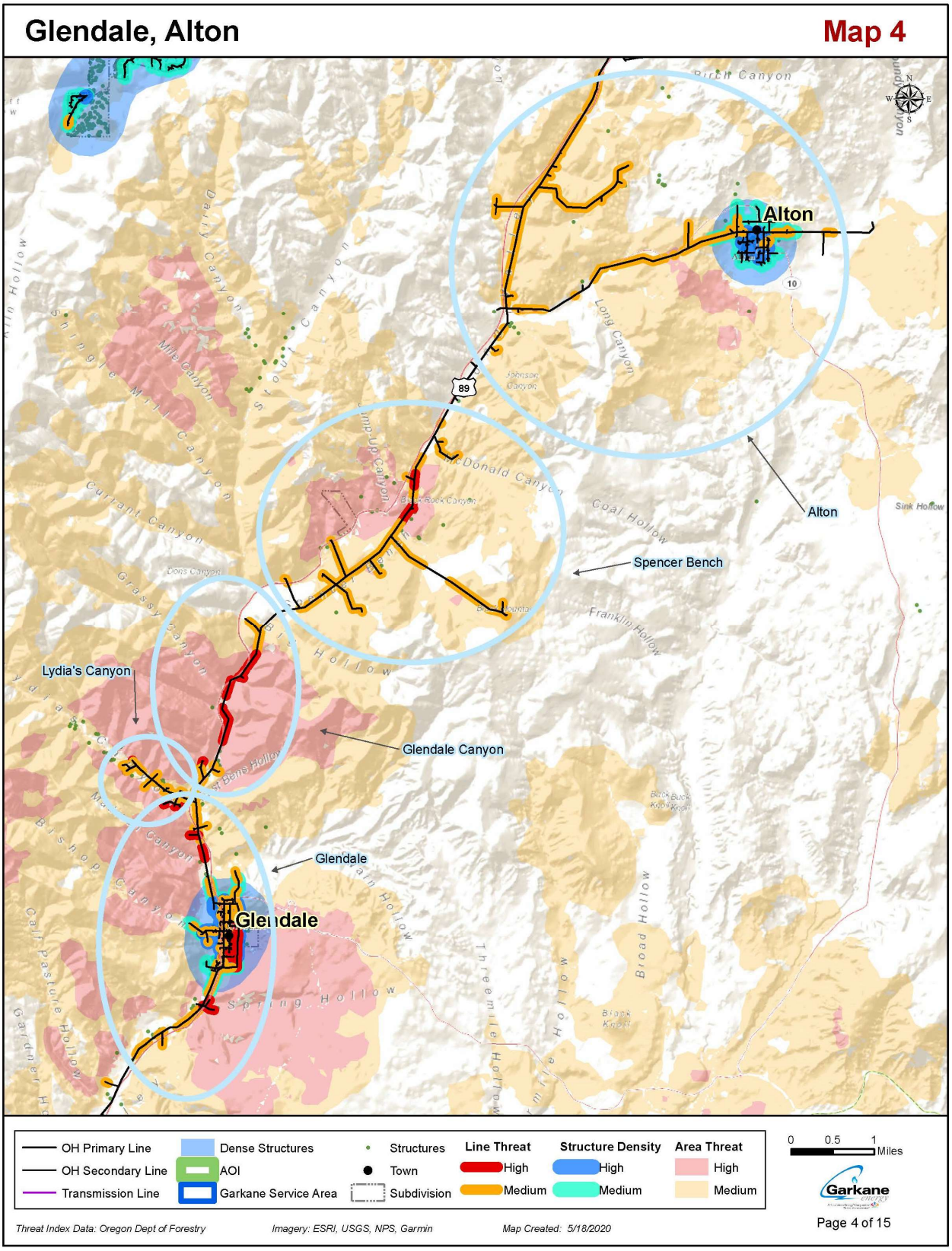

Figure B-4. Medium to high wildfire threat/risk (map 4 of 15).

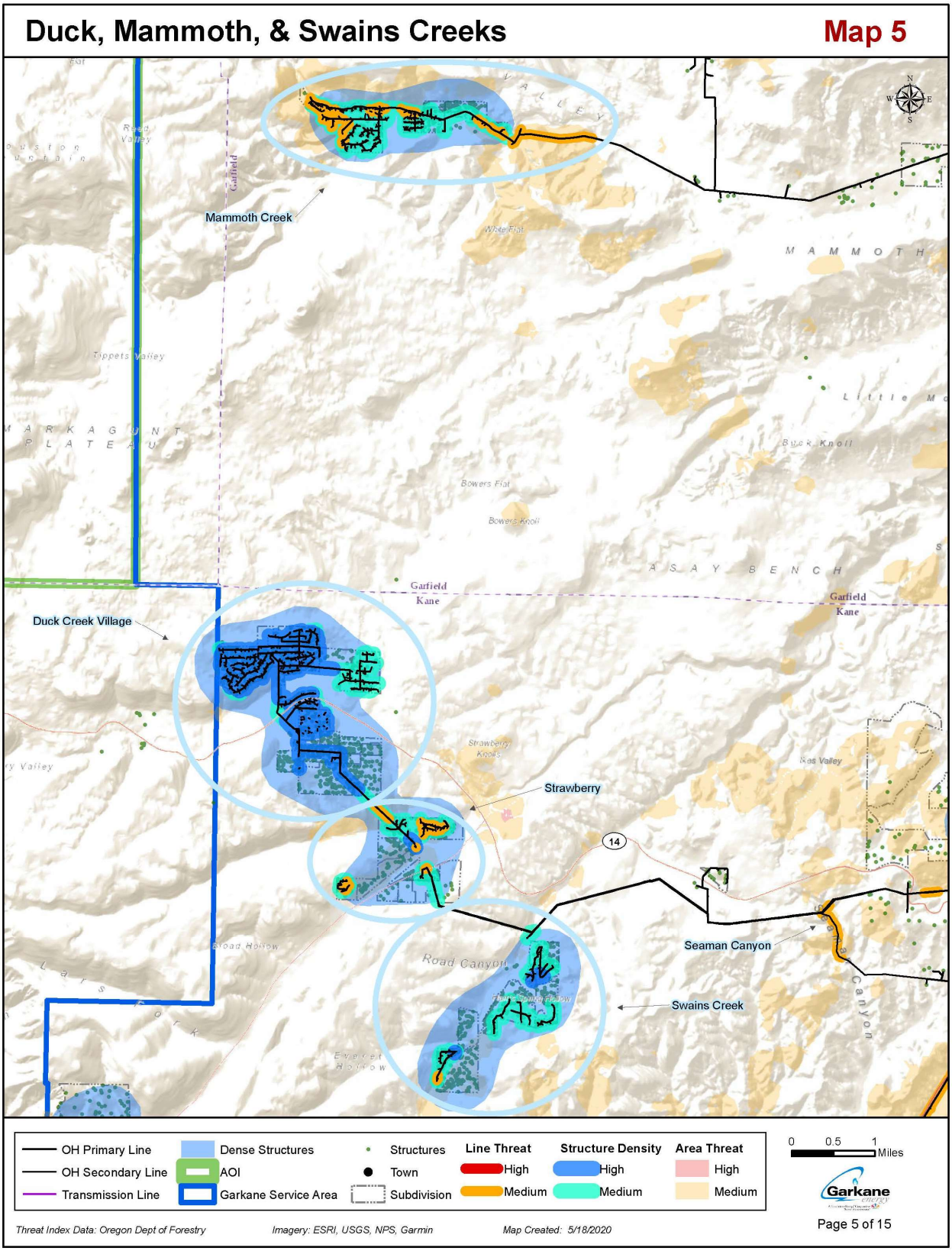

Figure B-5. Medium to high wildfire threat/risk (map 5 of 15).

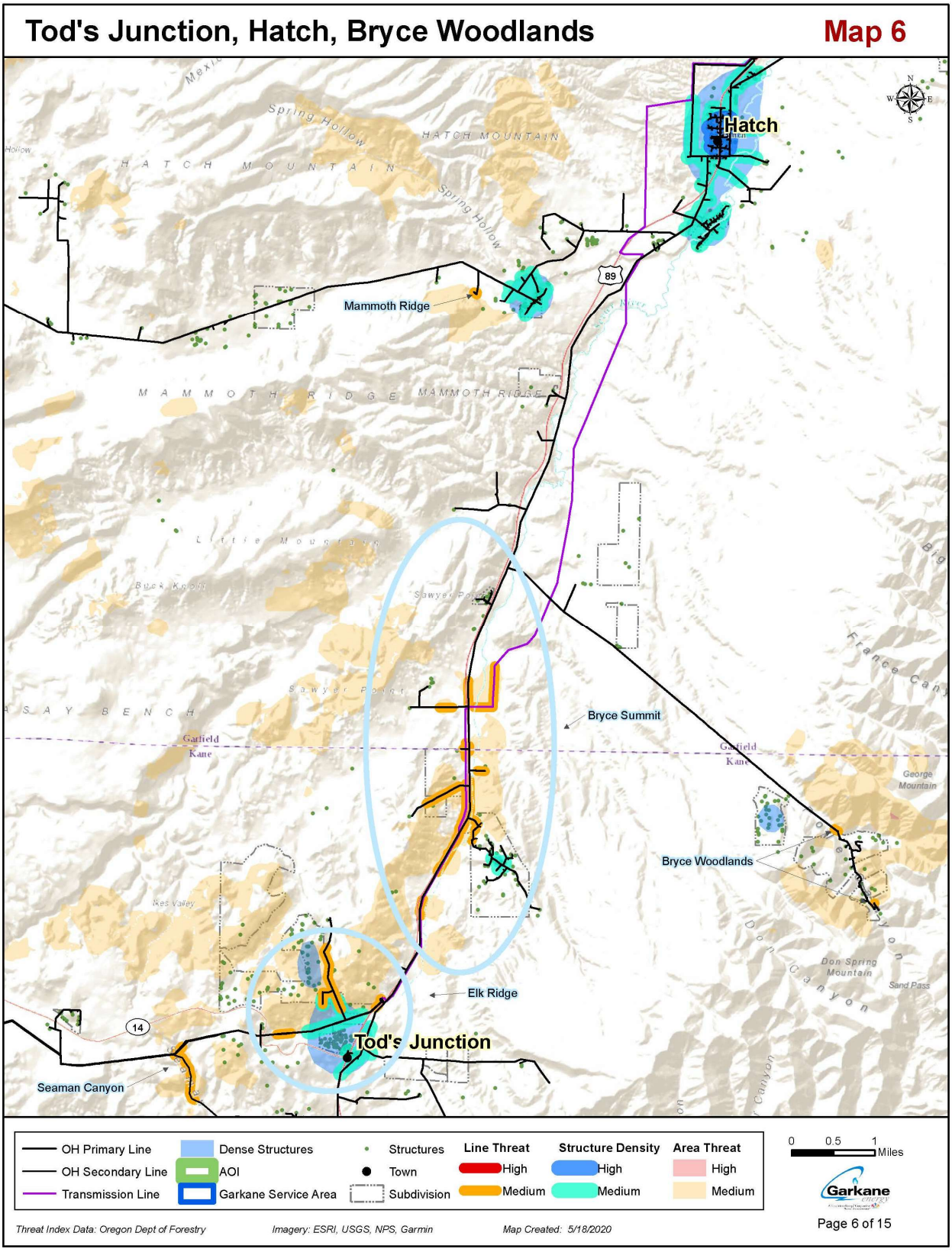

Figure B-6. Medium to high wildfire threat/risk (map 6 of 15).

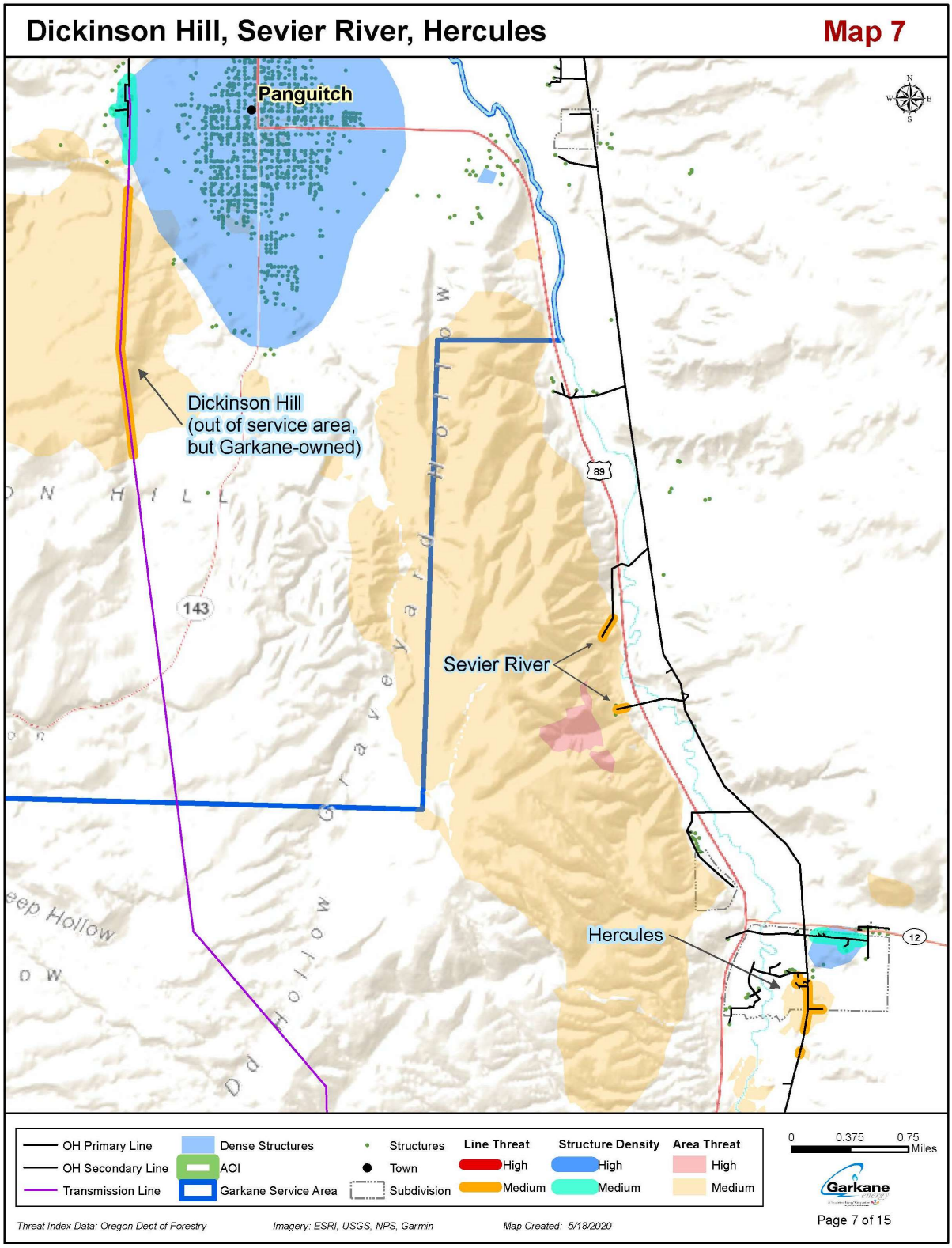

Figure B-7. Medium to high wildfire threat/risk (map 7 of 15).

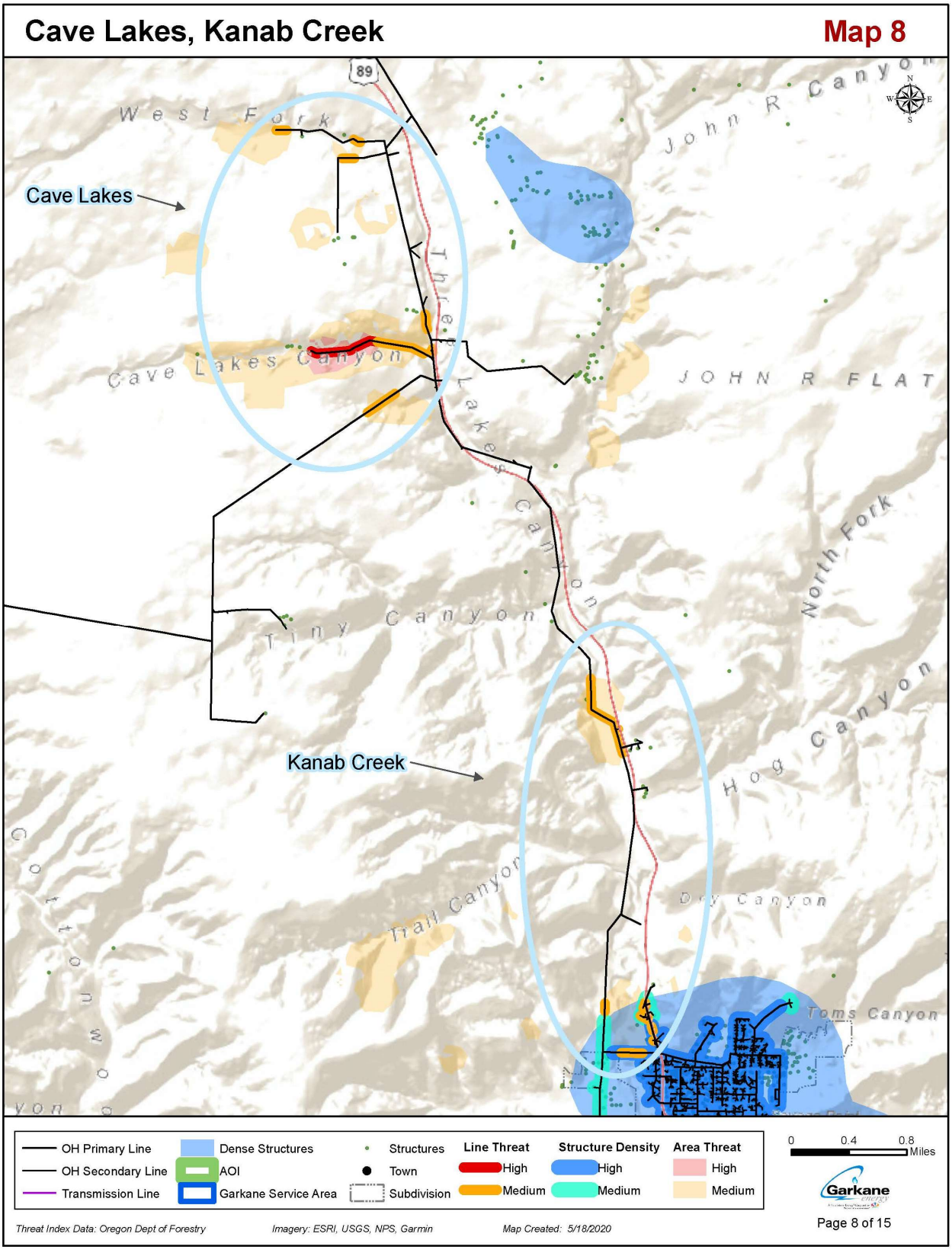

Figure B-8. Medium to high wildfire threat/risk (map 8 of 15).

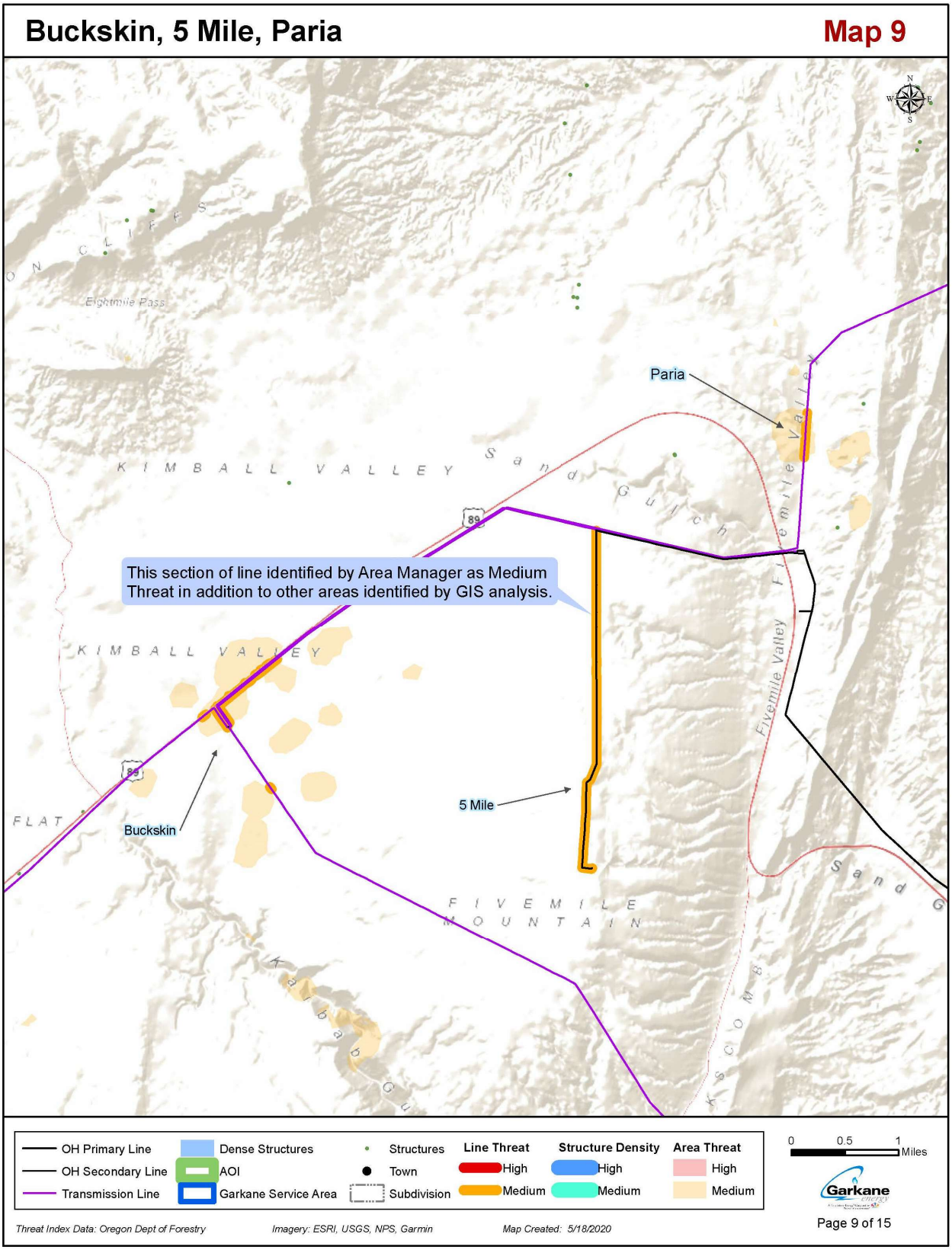

Figure B-9. Medium to high wildfire threat/risk (map 9 of 15).

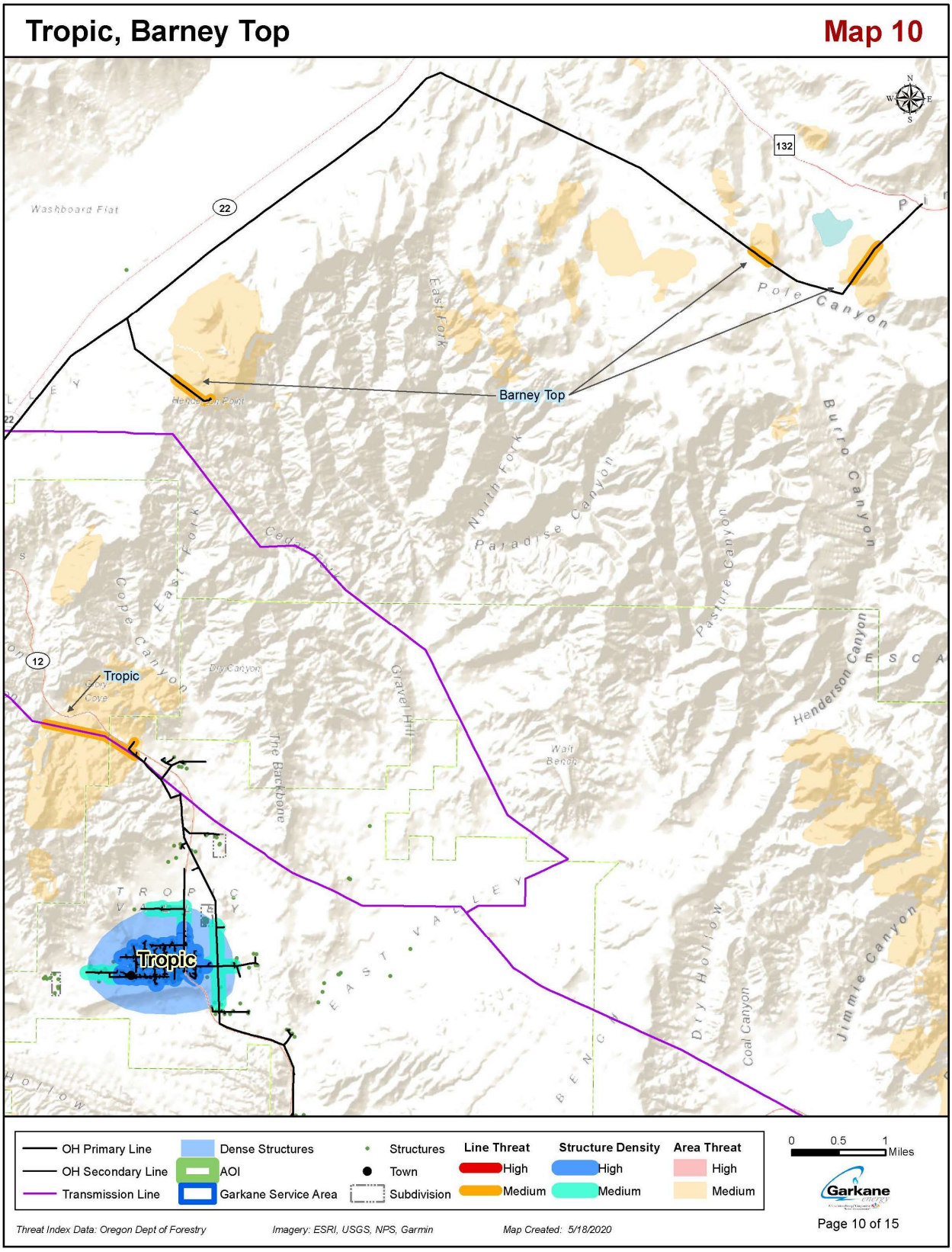

Figure B-10. Medium to high wildfire threat/risk (map 10 of 15).

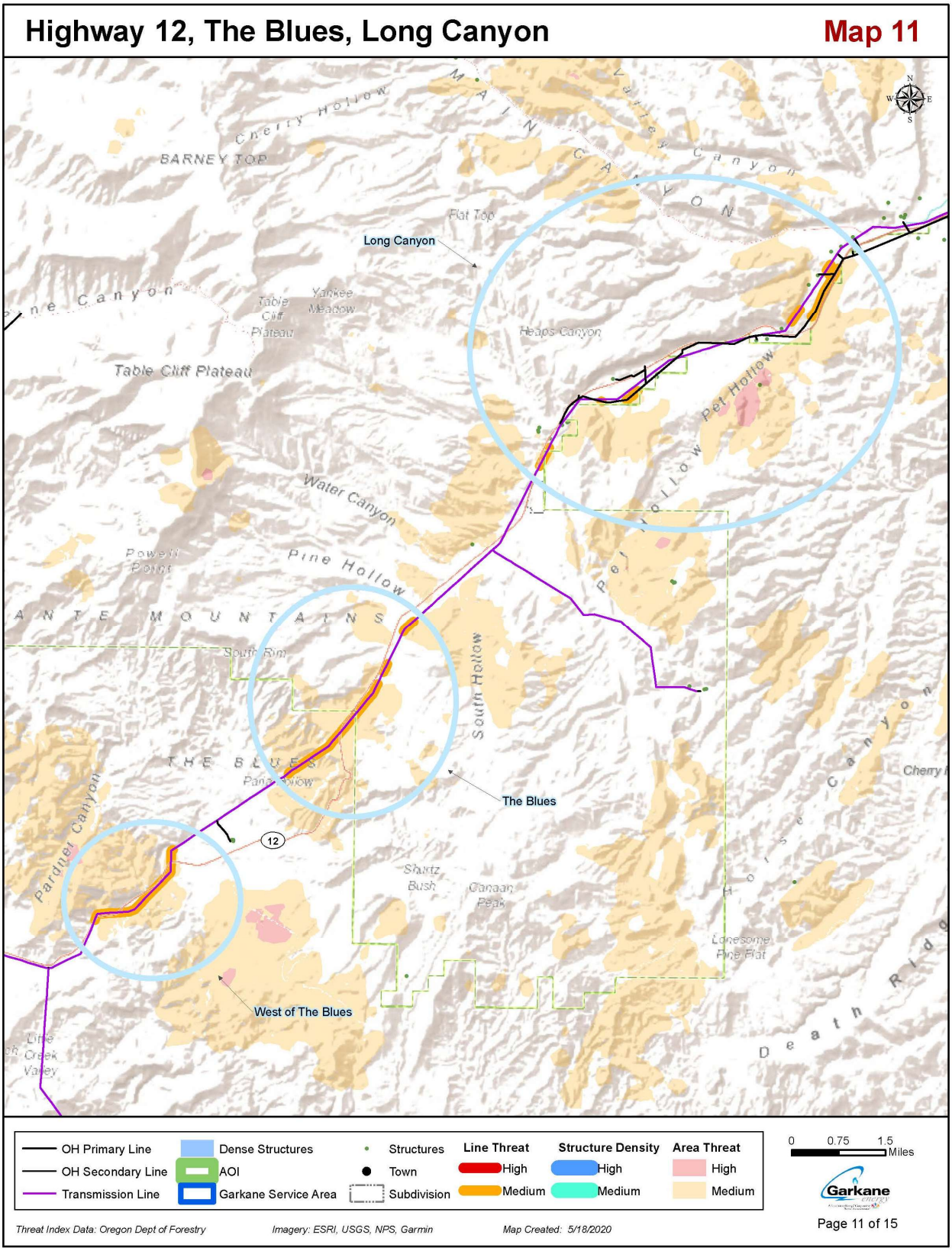

Figure B-11. Medium to high wildfire threat/risk (map 11 of 15).

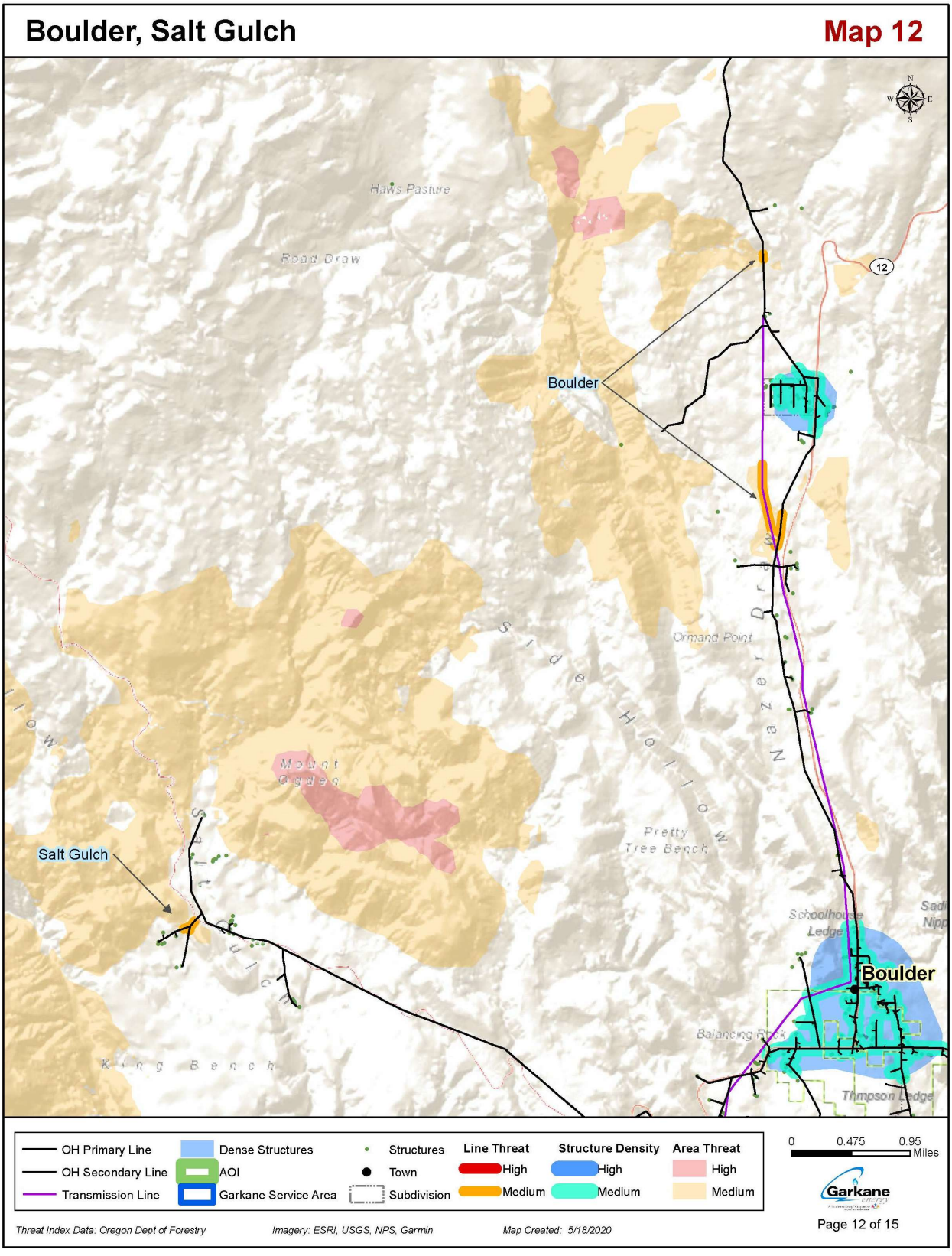

Figure B-12. Medium to high wildfire threat/risk (map 12 of 15).

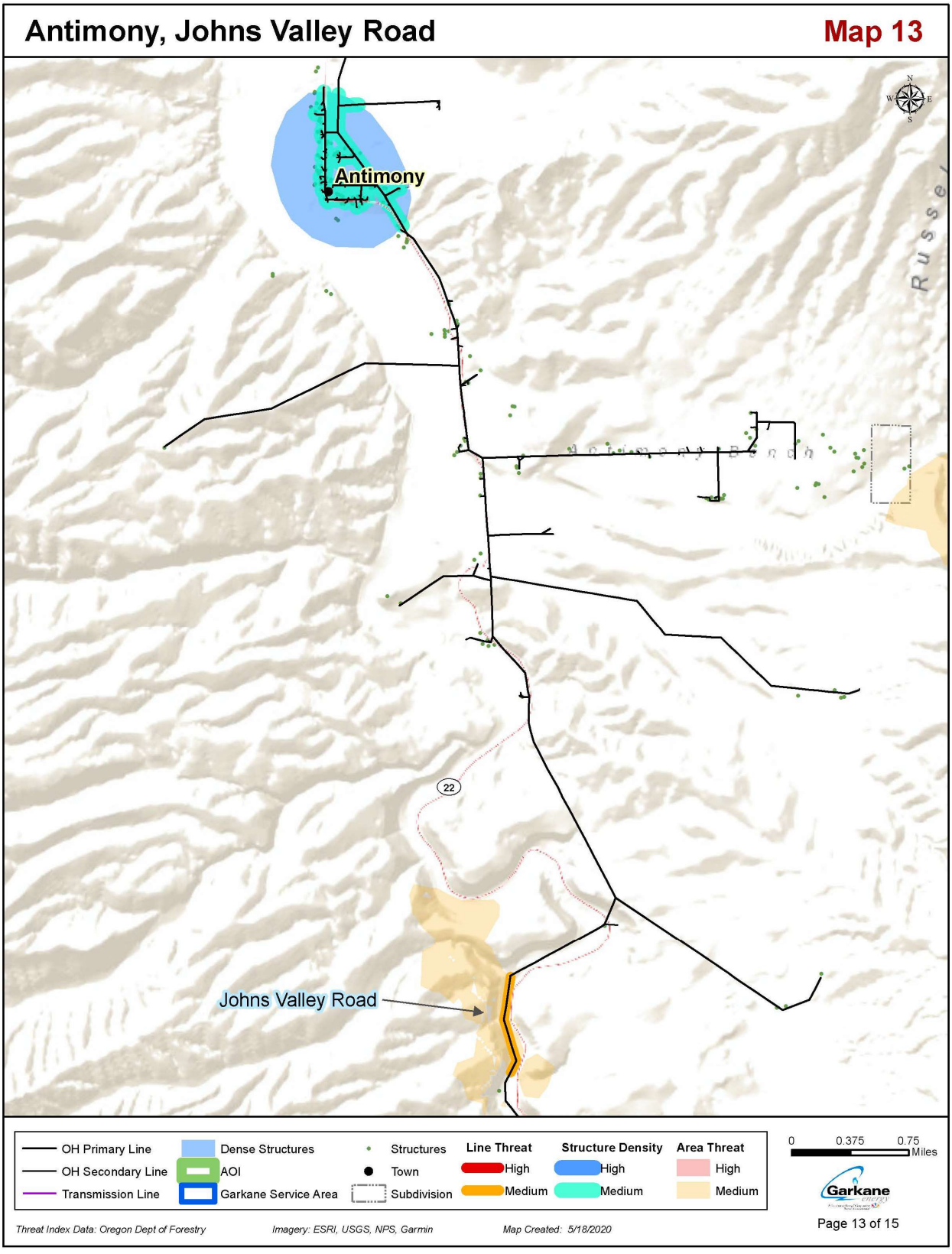

Figure B-13. Medium to high wildfire threat/risk (map 13 of 15).

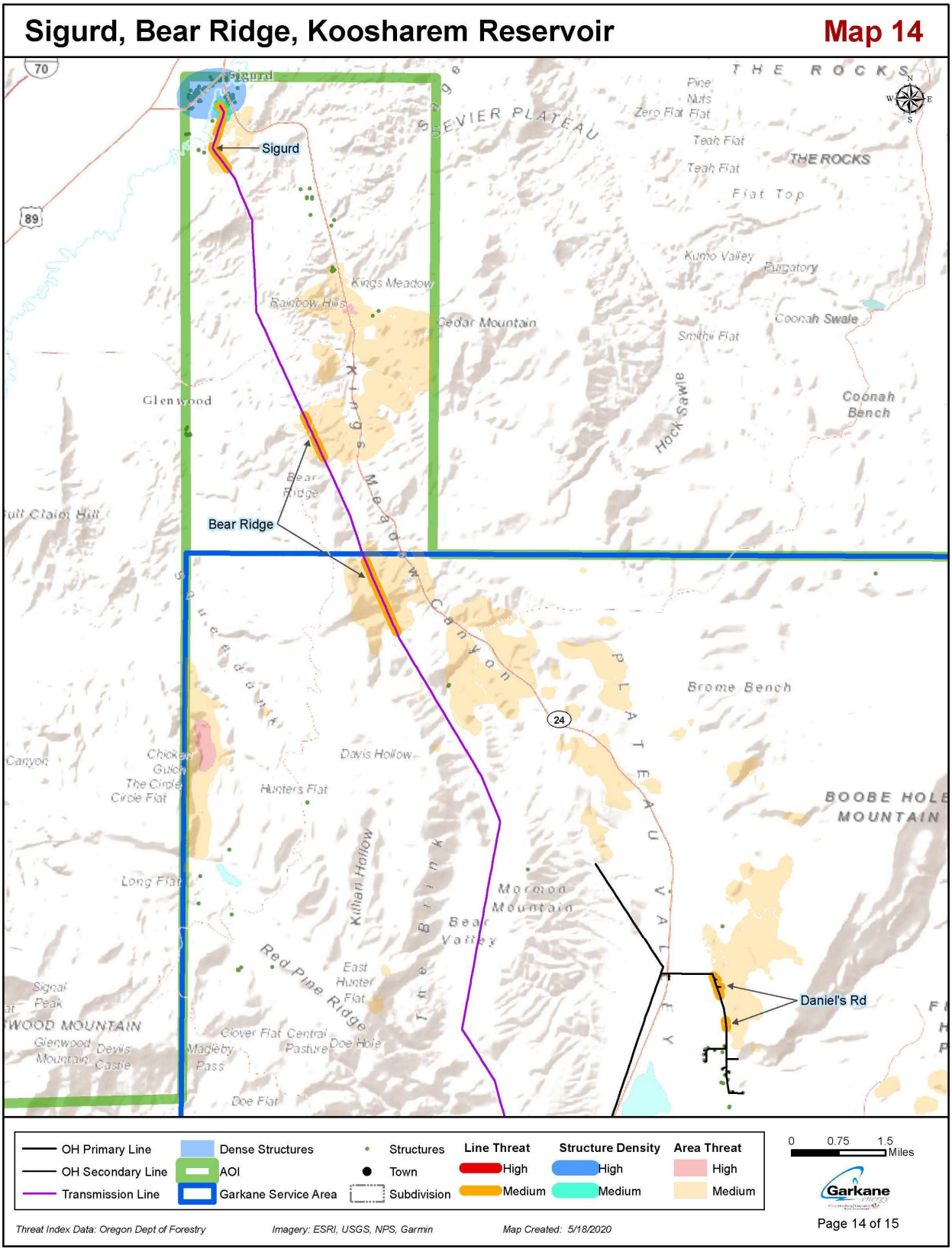

Figure B-14. Medium to high wildfire threat/risk (map 14 of 15).

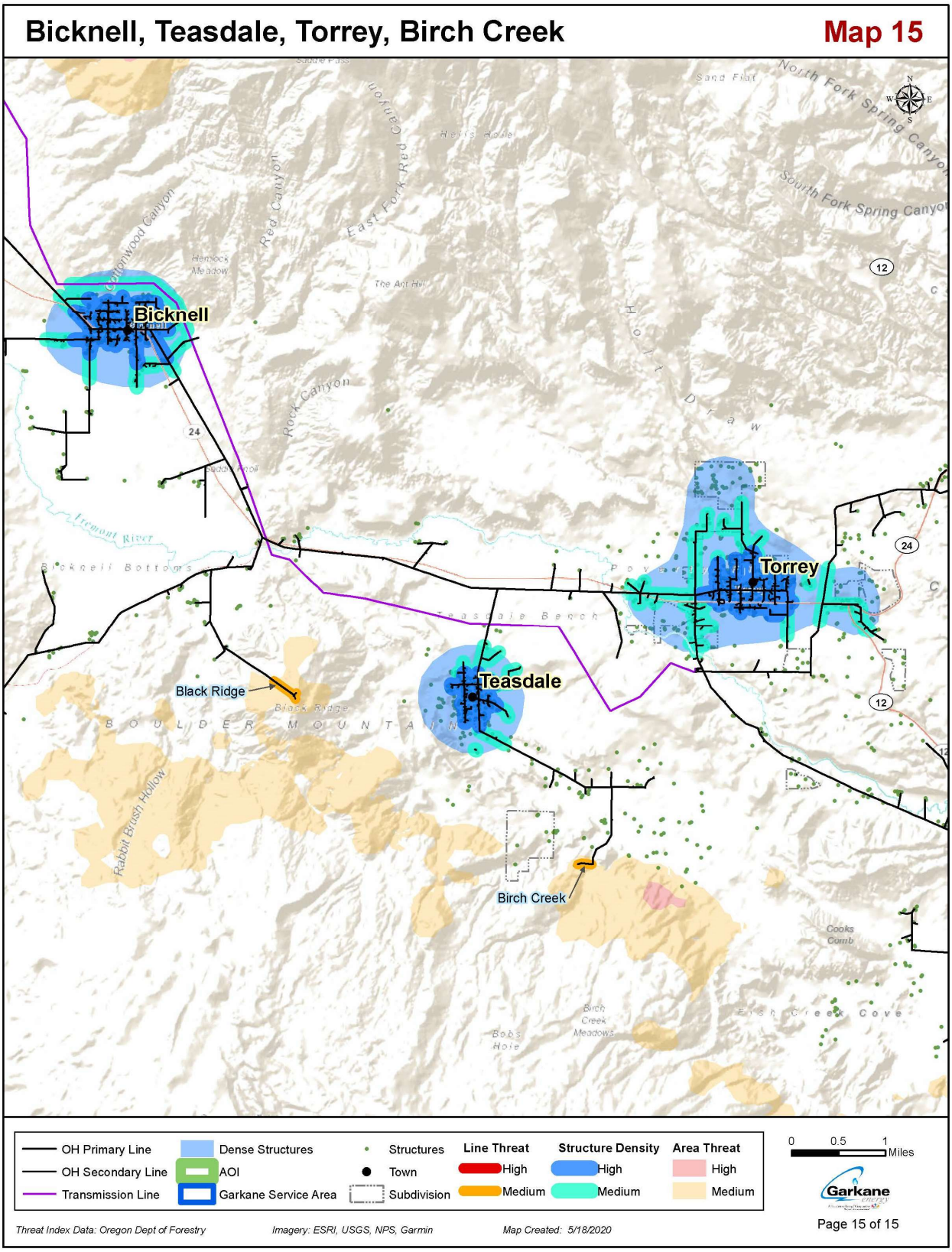

Figure B-15. Medium to high wildfire threat/risk (map 15 of 15).

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APPENDIX C

Public Notifications/Outreach

TEXT OUTAGE NOTIFICATION

Do you want to be notified via text, with info regarding power outages in your area?

Visit **www.garkaneenergy.com** under the **Member Services** tab labeled "Text Opt-In"

0000452105

Be Ready Before a Storm Strikes

Lights out? Store these items at home in case of an outage.

☐ **Water**
Three-day supply, one gallon per person per day.

☐ **Tools**
Flashlight and extra batteries, can opener, wind-up radio.

☐ **Food**
Three-day supply of non-perishable, high-energy food.

☐ **First Aid, Medicine**
First aid supplies, hand sanitizer, and at least a week's supply of medications for the family.

☐ **Documents**
Include copies of passports, birth certificates, and insurance policies.

Learn more at www.Ready.gov.

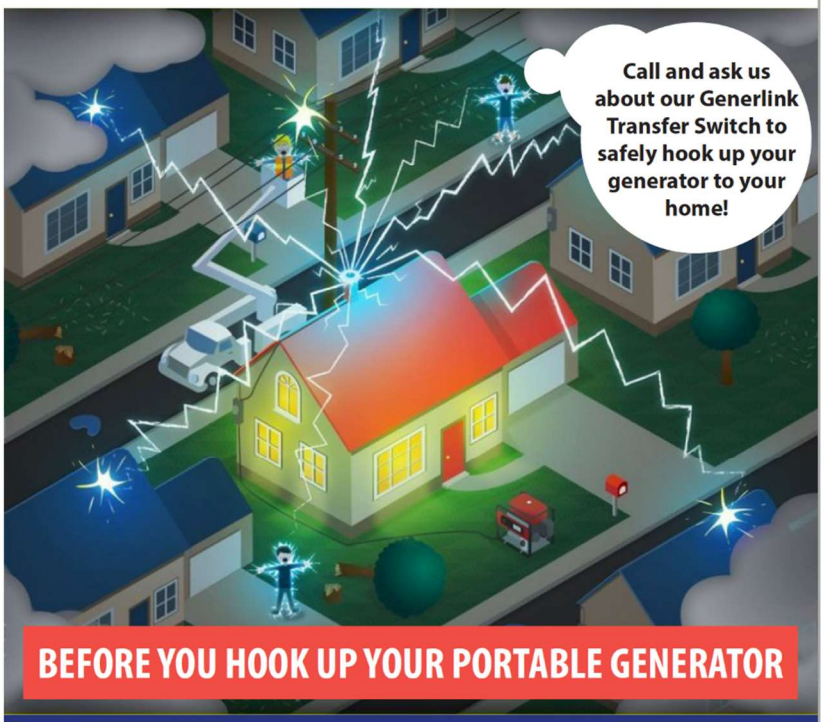
Source: American Red Cross, Federal

A Portable Generator Can Seem Like A Lifesaver During a Power Outage, But Make Sure It's Hooked Up Properly

When a storm hits and knocks out power to your home, you may want to use a generator. But, do you know about a potential danger with the use of generators? It's called "back-feed" and it can endanger you, a family member, or a lineworker working to restore the outage. Backfeed occurs when power travels back through the utility lines and re-energizes them.

A portable generator needs a properly installed transfer switch to safely power your house during a power outage. Transfer switches isolate utility power and generator power to prevent back-feeding, which can be deadly. Back-feed can follow wires and harm those nearby, including utility workers making repairs. Transfer switches also protect the home from electrical fires caused by short circuits and improper connections. Transfer switches should only be installed by a qualified electrician. Another reason to have a qualified electrician complete the work is if you plug your generator directly into a wall outlet, the wiring in your home is no longer protected by a circuit breaker or fuse in your power panel. The wiring in your home could then become overloaded, overheat, and start a fire.

When the power goes out, having a generator is a great backup to provide heat, light, and many other conveniences we've come to enjoy. Make sure you aren't creating unnecessary danger by properly and safely using your generator to prevent back-feed. It could save a life!



TIPS FOR SAFELY USING YOUR PORTABLE GENERATOR

- Never use a generator inside your home, garage, basement or enclosed area. Generators give off carbon monoxide.
- Never plug your generator directly into electrical wiring. This can energize power lines and endanger line workers.
- Have a qualified electrician install a power transfer switch.
- Protect your generator from exposure to wet conditions, such as rain, snow, or sprinklers.
- Never use flammable materials and never place anything on or under the generator.
- Never let children or pets near the generator or extension cords.
- Use battery-operated carbon monoxide detectors inside your home near where the generator is running.
- Always read and follow the manufacturer's instructions before running the generator.
- Keep the area clean and empty around the generator.