Meridian Fire Department

Community Risk Assessment | Standards of Cover

Meridian City Council

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Our Mission

To protect and enhance our community through professionalism and compassion.

Our Vision

A premier organization recognized for providing a safe community through professionalism, innovative actions and community involvement.

Our Guiding Principles

COMPASSION

We will provide friendly and compassionate service to each other and the public we serve.

PROFESSIONALISM

We will dedicate ourselves to be an educated workforce striving to meet the community's and our employees' changing needs.

HONESTY

We will conduct ourselves in an honest manner and be transparent in our interactions.

OWNERSHIP

Ownership of our department will be expressed through tradition, loyalty, and dedication.

TRUST

We will earn and maintain trust through integrity, our actions, and holding to commitments.

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MESSAGE FROM THE FIRE CHIEF

I am pleased to present the first published edition of Meridian Fire Department's Community Risk Assessment-Standards of Cover (CRA-SOC). This foundational document represents a nearly yearlong effort, several drafts, and countless employee hours and dedication to creating the first ever CRA-SOC for the MFD. The CRA-SOC is one of several key documents required for MFD's effort to become accredited by the Commission on Fire Accreditation International. (CFAI)

MFD utilized a comprehensive risk assessment process and three years of data (2020-2022) to evaluate current service capabilities and performance. Data has been evaluated against consensus national standards and city-adopted response time criteria to determine areas of compliance and noncompliance. Constructing the Standards of Cover has identified areas for improvement in service delivery that will enhance the safety and quality of services that MFD provides to the community.

The CFAI model ensures that the performance goals that MFD adopts are realistic, verified and validated. Plans to address compliance gaps are established and include implementation timelines. CRA-SOC findings indicate areas for improvement in call processing, turnout times and travel times in order to improve overall performance. Current deployment models are being evaluated based on the risk assessment conducted.

Year-over-year analysis indicates that residential occupancies are experiencing the highest fire loss levels among all types of occupancies. Targeted risk reduction programs to address fire and EMS needs have been developed and are in initial stages of implementation.

MFD utilizes a collaborative approach to enhance emergency services delivery that includes established automatic and mutual aid agreements through the Joint Powers Agreement (JPA) with numerous regional agencies.

As part of the CRA-SOC development process, the department identified an opportunity for possible improvement in the Idaho Survey and Ratings Bureau (ISRB) score – from 3 to 2. An improvement in the ISRB rating likely would mean a reduction in some commercial and residential property insurance premiums.

I am proud to present our Community Risk Assessment-Standards of Cover, second edition, as a piece of the department's determined effort to become one of only 300 agencies with international accreditation. This work represents our never-ending pursuit of continuous quality improvement to provide the best possible fire and rescue services to our community.

Kris Blume, Fire Chief
Meridian Fire Department

INTRODUCTION

This is the first edition of the Meridian Fire Department (MFD) Community Risk Assessment-Standards of Cover (CRA-SOC). The development of a CRA-SOC represents the next step in MFD's continuing efforts to become a more methodical, systematic, and data-driven organization. This document is also a requirement for accreditation through the Commission on Fire Accreditation International (CFAI).

Core Elements of the CRA-SOC:

- The Community Risk Assessment is a comprehensive evaluation that identifies, prioritizes, and defines the risks that pertain to the overall community.[1]

- The Standards of Cover consists of a systematic approach to determine the distribution and concentration of fixed and mobile resources of MFD that is based on community risk and the community's performance expectations.

Community Risk Assessment I Standards of Cover

Assesses the community fire and non-fire risk

Measures current service program performance

Sets performance goals

Forecasts future workloads

Plans for future unit staffing and station locations

Provides a platform for maintaining and improving current service delivery

Provides elements for the strategic planning process

[1]National Fire Protection Association. (2020). NFPA 1300, Standard on Community Risk Assessment and Community Risk Reduction Plan Development.

Introduction

The development of the CRA-SOC generally followed the process outlined by the CFAI.[2] National Fire Protection Agency (NFPA) 1201: *Standard for Providing Fire and Emergency Services to the Public* was referenced to compare MFD's current service delivery organization structure against a national consensus standard. A table illustrating MFD's fire and emergency service delivery to its community compared to NFPA 1201 standard reference elements is in **Appendix A**.

The department utilized a consultant to facilitate the process. Department and dispatch center databases were used to analyze response time data, and internal city resources were used to develop relevant geographic information systems (GIS) maps. In addition, local and federal databases were consulted for demographic and other relevant information.

Gaining community and internal stakeholder input was a high priority for MFD as part of the CRA-SOC development process. Information and survey results from strategic planning external stakeholder meetings in August of 2021, and strategic planning internal team meetings that took place in 2021, 2022 and 2023 were incorporated into this process.

This report is organized into the following sections:

- Section 1 provides an overview of the **structure and management** of MFD and community characteristics.

- Section 2 includes an overview of the **service programs currently delivered**, both emergency and nonemergency.

- Section 3 represents the **community risk assessment** portion of the document. It includes assessment of large-scale, potentially department-wide risks such as fire, EMS, hazmat and technical rescue risks in the community. The risk assessment process also includes the development of critical tasks to determine the associated effective response force (ERF) to respond to and mitigate different levels and categories of risk.

- Section 4 describes the **current deployment** of fixed and mobile resources and the performance of emergency services provided, with an emphasis on response time elements.

- Section 5 provides an **evaluation of the current deployment and performance.** This section also includes community expectations and MFD performance goals.

- Section 6 presents the department's **six-step plan** for maintaining and improving response capabilities.

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[2]Center for Public Safety Excellence. (2020). Quality Improvement for the Fire and Emergency Services. Chantilly, VA.

- Section 7 is the last section of the document. It outlines **key findings and associated recommendations** resulting from the development of the CRA–SOC.

The command staff and Meridian Firefighters Local 4627 have reviewed the data collected and performance objectives developed during the many months of the CRA–SOC preparation and have endorsed the plan for maintaining and improving performance.

The CRA–SOC is designed to be a living, dynamic document that will be reviewed and updated on a yearly basis by a standing department committee to ensure that the most effective and efficient fire and emergency services are delivered to Meridian residents, business owners and visitors.

SECTION 1

Department Area Characteristics

Meridian will create vibrant places for our citizens, embrace sustainable practices, and preserve natural spaces. We will provide innovatively designed parks and recreational offerings. We will respond to citizen desires to be stewards of our natural environment. We will partner with our community and developers to create beautiful open spaces, and cultivate art and cultural opportunities.

- City of Meridian Stategic Plan

SECTION 1 – DEPARTMENT AREA CHARACTERISTICS

Meridian is located in Ada County just west of Boise, in the southwestern part of Idaho. Meridian is part of the area known as the Treasure Valley that includes the cities of Boise, Nampa, Eagle, Star, Kuna, Caldwell and Middleton.

The area of city impact[3] contains 60-square miles, including approximately 34-square miles within city limits. The 2020 census put Meridian's population at 117,635, making it the second largest city in Idaho. It has become the area's new regional epicenter.

Money Magazine ranks Meridian as the 3rd best place to live in the U.S.[4] According to AreaVibes,[5] Meridian has a livability rating of 85 (exceptional rating), as well as an A+ amenities and crime rate. Meridian's strong economy, access to higher education institutions, pro-business climate, and family–friendly atmosphere all contribute to the city's many accolades. Meridian's vision statement reflects these attributes.

> *By 2035, Meridian will be the West's premier community in which to live, work and raise a family.*
>
> – City of Meridian Vision Statement

LEGAL BASIS FOR EXISTENCE AND DESCRIPTION OF GOVERNANCE MODEL

Meridian Fire Department's legal basis for existence and associated responsibilities is defined in the City of Meridian's Code of Ordinances, Title 5 – Fire Regulations, Chapter 1 – Fire Department.[6] This ordinance states that the fire chief shall be an appointed position and be responsible for all functions, powers and duties listed in the chapter. The chapter also outlines the emergency and nonemergency service responsibilities of the fire department.

The City of Meridian has a mayor who serves a four-year term. There are six city council members who each serve a four-year term. Every two years, three city council seats are up for election. The city council meets on the 1st, 2nd, 3rd and 4th Tuesdays of the month for work sessions and public hearings. All meetings are open to the public and are held at Meridian City Hall.

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[3]These are areas of land that may become part of, and served by the City of Meridian.
[4]Bhardwaj, P., et al., 2020. The Best Places to Live in America. https://money.com/collection/best-places-to-live-2020/.
[5]AreaVibes (2022). Meridian Idaho Livability. https://www.areavibes.com/meridian-id/livability/.
[6]https://library.municode.com/id/meridian/codes/code_of_ordinances?nodeId=TIT5FIRE.

DEPARTMENT HISTORY

In early 1908, the City of Meridian formed its first fire department when a group of volunteers successfully tested a newly-purchased Champion double cylinder chemical fire extinguisher. With LeRoy Adams as the first fire chief, the department started out fairly small, serving only 600 residents at the time. In 1911, local blacksmith Jacob Eames followed Chief Adams as the second fire chief.

That same year, a new fire bell was purchased for $52.50. It weighed 550 pounds, was 36 inches tall and made from cast steel. This bell was rung directly from the central telephone station switchboard. The bell was eventually retired and found a new home ringing in touchdowns at Meridian High School during football games. In the year 2010, the bell was found underneath the high school bleachers and returned to its original owner – Meridian Fire Department. The bell was restored and dedicated on September 11, 2011 – the bell's 100-year anniversary and the 10-year anniversary of the September 11th attacks. It is currently located in front of Station 1.

A new fire truck was also purchased in 1911. It was fully equipped with two 35-gallon chemical tanks, 100 feet of chemical hose, 1,200 feet of fire hose, a siren whistle, the latest type of flashlight, new nozzles, and gas masks for a total purchase price of $1,200.

Around 1924, blacksmith and skilled mechanic Amos Whiteley took the job of fire chief, followed by Ira Vorhees in 1936. In 1945, as the city and department continued to grow, Roger Welker took over the fire chief position. Chief Welker remained chief until 1983, dedicating 38 years to the department. In the early 1950's, during Welker's time as chief, a partnership was formed with the Rural Fire Protection District to better serve and protect citizens in city limits and rural areas. A decision was made to jointly fund and house all the fire equipment in one station located at the center of the district. This partnership proved to be very beneficial to the City Volunteer Fire Department and Rural Fire Protection District – and continues today.

Rescue One, a volunteer response team, was organized in 1976 to cover medical emergencies and did so for 18 years before these calls were handled by the expanding fire department.

The first full-time employee was Ray "Skip" Voss. He joined the department in 1977 as fire marshal. In late 1983, Kenny Bowers became Meridian Fire's sixth fire chief. Kenny served in this capacity part time until 1992 when he moved into the position full time. Chief Bowers hired the first full-time firefighter, Steve Gempler, in 1992. In October 1999, Joe Silva came on board as assistant chief of operations and training. The department had grown enough by the year 2000 that the first administrative secretary, Greta Seals, was hired. Under Chief Bowers' direction, Meridian Fire Built three new fire stations and equipped them with the necessary apparatus. He was instrumental in starting the thermal imaging program, the defibrillator program, and establishing Meridian Fire's first fire safety center which opened in 2005. That same year, Meridian Fire agreed to have Ada County Paramedics move into Fire Station 2 to help provide better EMS coverage for the citizens of Meridian.

Year	Event
1908	City Volunteer Fire Dept. formed LeRoy Adams (First Chief)
1911	Chief Jacob Eames
1924	Chief Amos Whiteley
1936	Chief Ira Vorhees
1945	Chief Roger Welker
1951	Rural Fire District formed
1983	Chief Ken Bowers
1998	Joint Powers Agreement between City & Rural
2005	Chief Ron Anderson
2010	Chief Mark Niemeyer
2021	Chief Kris Blume
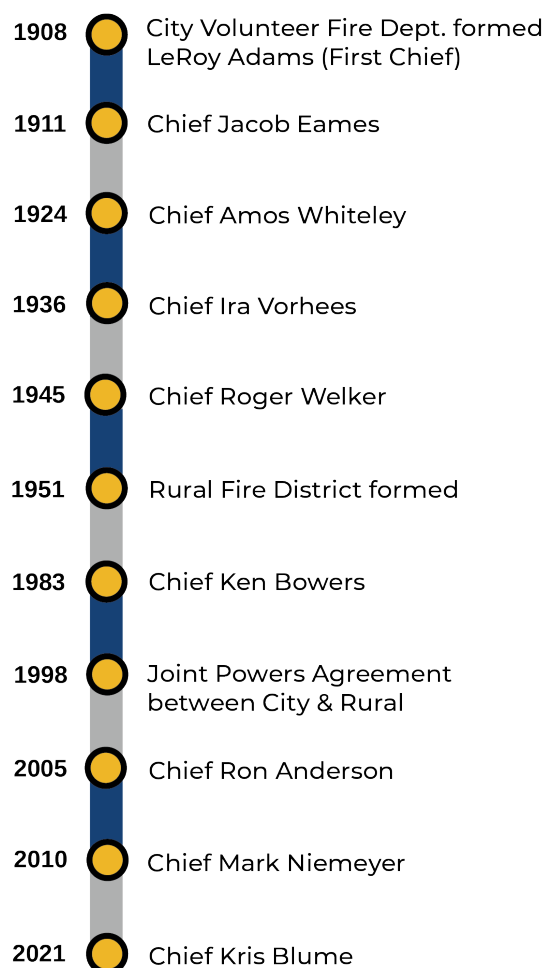
Ron Anderson accepted the position of fire chief for the City of Meridian in April of 2005. Under his direction, Meridian Fire was successful in adding a paramedic engine company program to the department. He oversaw the completion of two new fire stations and a state-of-the-art training tower. The department also acquired its first aerial ladder truck.

Chief Anderson retired in April of 2010 and the department's Deputy Chief of EMS, Mark Niemeyer, was promoted to Fire Chief. Chief Niemeyer left the department in November of 2020 and Kris Blume was appointed fire chief in early 2021.

Today the department runs on a $20 million dollar budget, which does not include capital costs for new apparatus or stations. There are six stations, a training tower and a fire safety center within the district, five first response engines and two ladder trucks. The department employs a total of 125 people and responds to over 9,000 calls per year.

ORGANIZATIONAL OVERVIEW

Citizens of Meridian	**City of Meridian**	**Meridian Rural Fire District Commissioners**

Fire Chief

Public Safety Information Officer

Prevention Deputy Chief/Fire Marshal	**Operations** Deputy Chief	**Administration** Deputy Chief	**Administrative Services** Division Manager
Prevention Captains (3)	**Division Chief EMS**	**Division Chief Logistics**	**Administrative Assistant II**
	EMS Coordinator	**Logistics Captain**	**Records Clerk**
	Division Chief Training	**Division Chief Health & Safety**	**Administrative Assistant I**
	Training Captains (2)	**Community Risk Reduction Division Manager**	
		Public Education & Prevention Specialist	
		Community Risk Reduction Specialist	

Battalion Chief A Shift	**Battalion Chief** B Shift	**Battalion Chief** C Shift
Captains Engineers Firefighters	**Captains Engineers Firefighters**	**Captains Engineers Firefighters**

Revised: 09.01.23

FUNDING SOURCES

The city has two governmental funds. The general fund illustrated in **Figure 1.1** is the general operating fund of the city. It derives most of its income from property tax, and funds the operations of the city. It includes the development services fund, used to account for revenue and expenses of the community planning and development function, and the public safety fund – used to set aside funds for police and fire capital projects. The capital projects budget is used to account for financial resources for the acquisition of major capital items such fire stations.

Figure 1.1

- Wastewater – $45,682,735 | 21%
- Police – $39,790,792 | 18%
- Fire – $37,955,656 | 18%
- Water – $26,502,237 | 12%
- Administration – $25,389,004 | 12%
- Parks – $24,412,567 | 11%
- Community Development – $9,009,334 | 4%
- Public Works – $6,878,529 | 3%
- Utility Billing – $1,369,058 | 1%
- Total – $216,989,912
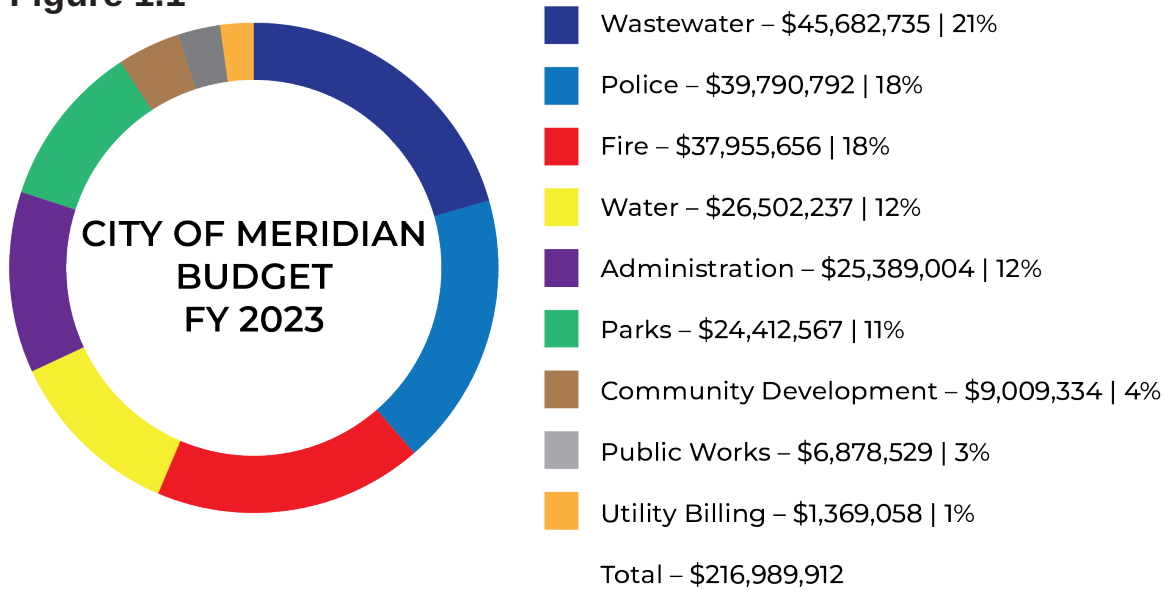
MERIDIAN FIRE DEPARTMENT BUDGET INFORMATION

Figure 1.2

- Capital Outlay – 47% | $17,808,502
- Personnel Costs – 44% | $16,862,961
- Operations Costs – 8% | $3,211,627
- Transfers – $ 72,566
- Total – $37,955,656

Source: City of Meridian

Section 1: Department Area Characteristics

Figure 1.3

FIRE OPERATIONS BUDGET FY 2023

- Equipment – $840,236 | 44%
- Maintenance – $409,741 | 22%
- Travel/Training – $161,938 | 9%
- Insurance – $106,148 | 6%
- Utilities – $54,875 | 3%
- Inspection/Testing – $94,745 | 5%
- Communications – $178,255 | 9%
- Professional Services – $3500
- Other – $25,674 | 1%
- Advertising – $21,159 | 1%
- Rentals & Leases – $1000

Total – $1,897,271

DEPARTMENT REVENUE

Figure 1.4

FIRE DEPARTMENT REVENUE Oct 1, 2022-June 8, 2023

- Impact Fees – $1,966,803 | 48%
- Intergovernmental Contracts – $1,179,042 | 29%
- Licenses/Permits – $57,715 | 1%
- Donations – $900,000 | 22%
- Charges of Services – $0

Total – $4,103,560
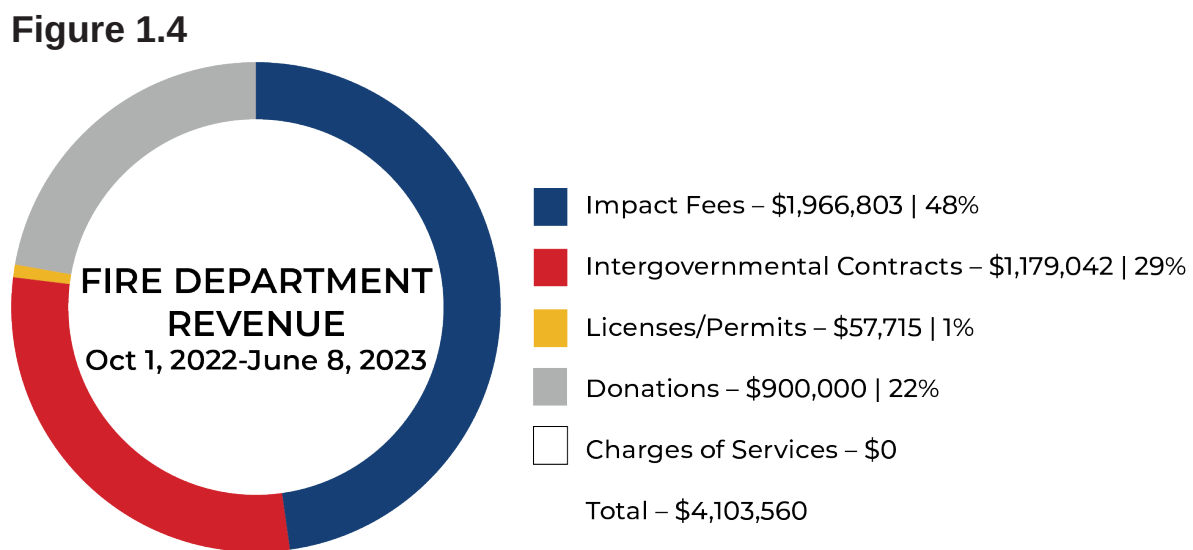
Source: City of Meridian

CLIMATE

According to the Köppen climate classification, Meridian has a dry summer subtropical climate referred to as Mediterranean. Meridian receives an average of 11.5 inches of rain and 18 inches of snow a year. January is the wettest month; the driest month is July. January is the coldest month of the year with an average temperature of 30 degrees Fahrenheit; July is the warmest month of the year with an average high of 93 degrees Fahrenheit.

Figure 1.5   Average Highs, Lows, Humidity*
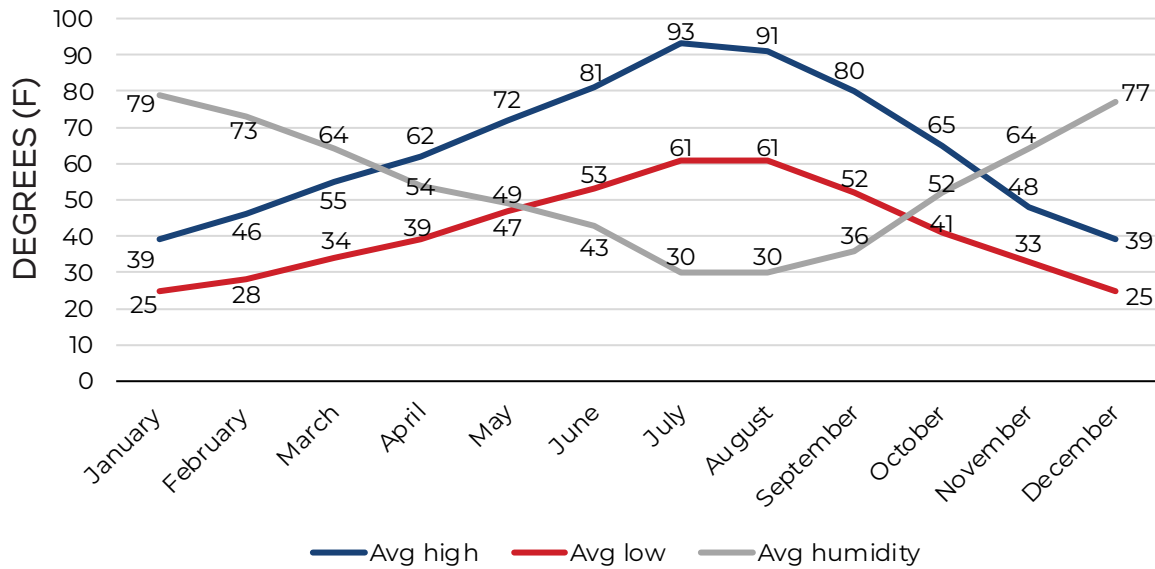
Figure 1.6   Average Rainfall and Snowfall*
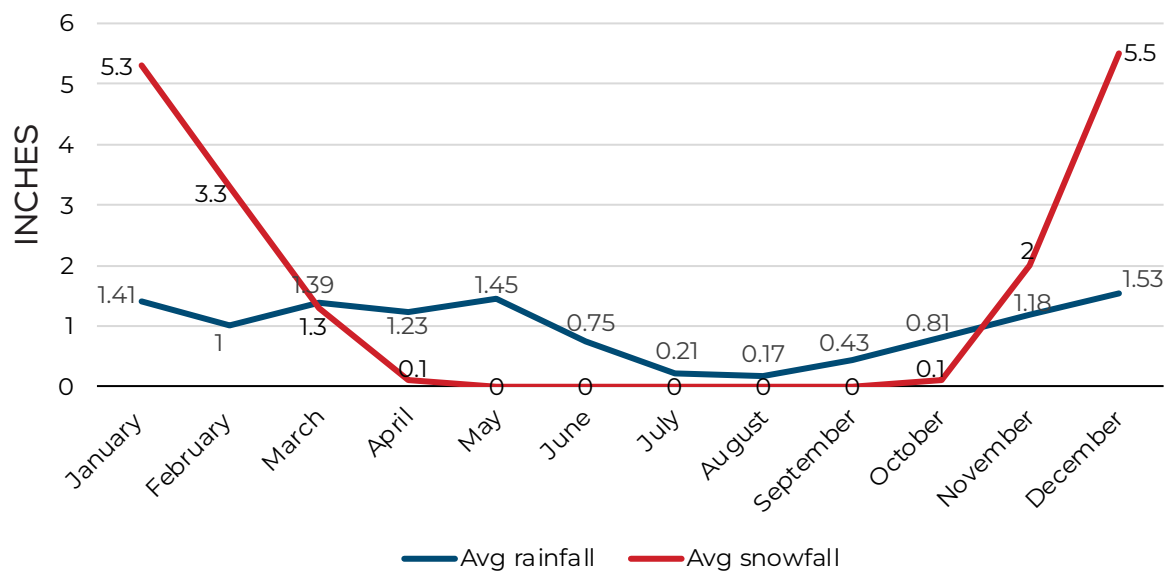
*Data from the National Weather Service, Boise Air Terminal

TOPOGRAPHICAL DESCRIPTION AND FEATURES

The majority of Meridian lies on a flat plain in the north central part of the Treasure Valley. Meridian's elevation varies from approximately 2,500 to 2,700 feet above sea level with a very gradual increase in elevation from west to east, except for a low bench feature along the southeast edge of the city. The city has an extensive network of irrigation canals ranging from relatively shallow depth and diameter to larger canals – up to 20 feet wide and six feet deep. The city also has several small creeks that flow in a general northwest to southeast direction. There are no major rivers or lakes within the city limits. The Boise River is the closest sizable waterway. It is the north border of the city of Meridian. **Appendix 1.1** identifies Meridian waterways.

GEOLOGY

Meridian lies in an area known as the Western Snake River Plain that is approximately 60 miles wide and 135 miles long.[7] From 2 million to 9 million years ago, Lake Idaho covered a large area of this rift zone, including the area where Meridian is now located, and up to an elevation of 3,800 feet; approximately 1,200 feet above today's Meridian elevation. The lake was some 200 miles long and 35 miles wide. The lake was apparently destroyed 2 million to 4 million years ago by melting glaciers that caused the lake to overflow and drain west, in a massive flood that carved Hells Canyon, the deepest canyon in North America.

There are several inactive volcanoes south and east of Meridian in the area known as the Yellowstone Hotspot. The risk of volcanic activity from beyond the immediate region is discussed in **Section 3**.

[7]Geology of Southwest Idaho. Bureau of Land Management. https://www.blm.gov/sites/blm.gov/files/documents/files/MediaCenter_PublicRoom_Idaho_Geology-of-%20SouthwestIdaho.pdf.

There are three active faults in Idaho capable of having some effect on Meridian. They primarily run along the base of the Lost River Range. The earthquake risk in the region is discussed in **Section 3**.

WATER RESOURCES

The City of Meridian obtains its water supply from 26 wells that draw groundwater from three underground aquifers. Booster stations are utilized to obtain the necessary pressure. The city water supply has five pressure zones and 6,000 hydrants. Hydrant location maps are in **Appendices 1.2-1.7**. The city's water department provides all inspection and maintenance for hydrants. There are no private hydrants in city limits.

The city scored 38.05 out of a possible 40 points in the most recent Idaho Surveying and Rating Bureau's rating (2019), equating to a water resources percentage of 93%. The overall MFD rating is further discussed in **Section 4**.

The city has a 20-year master plan to ensure an adequate water supply for the community's needs through the year 2037.[8]

[8]City of Meridian Master Water Plan https://meridiancity.org/water/files/Water%20Master%20 Plan%202018%20Exectuive%20Summary.pdf

Section 1: Department Area Characteristics

POPULATION AND DEMOGRAPHICS

As indicated at the beginning of this section, the City of Meridian's 2020 census population was 117,635, which represents an extraordinary increase of 57% from the 2010 census. This rate of growth ranked sixth in the country.

Figure 1.7

Meridian Population 1990-2020
(U.S. Census Data)
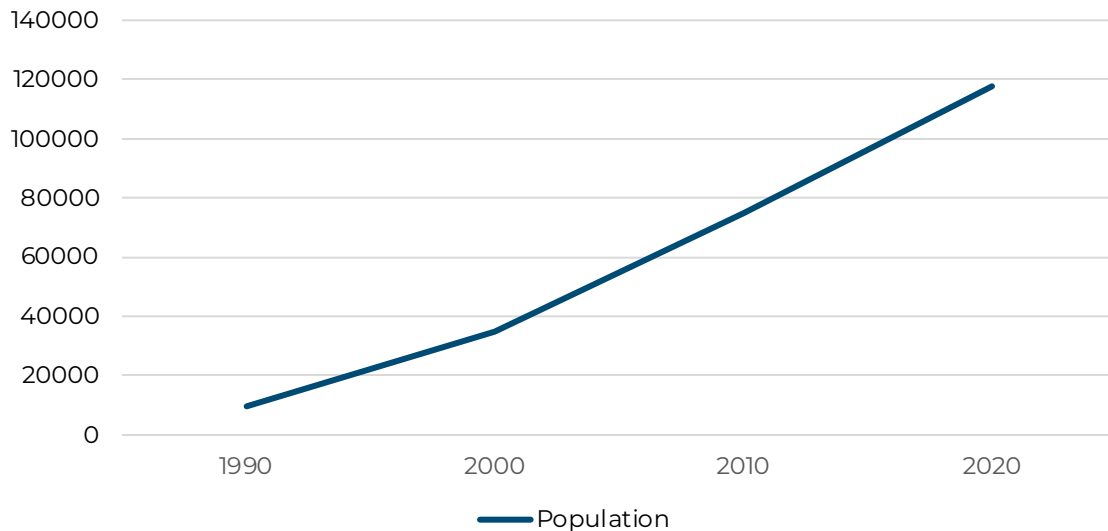
The City of Meridian finance department estimated the 2022 population to be 133,470, an increase of 13.6% in two years. Data indicates that this growth trend will continue over the next nine years.

Figure 1.8

Meridian Projected Population

Section 1: Department Area Characteristics
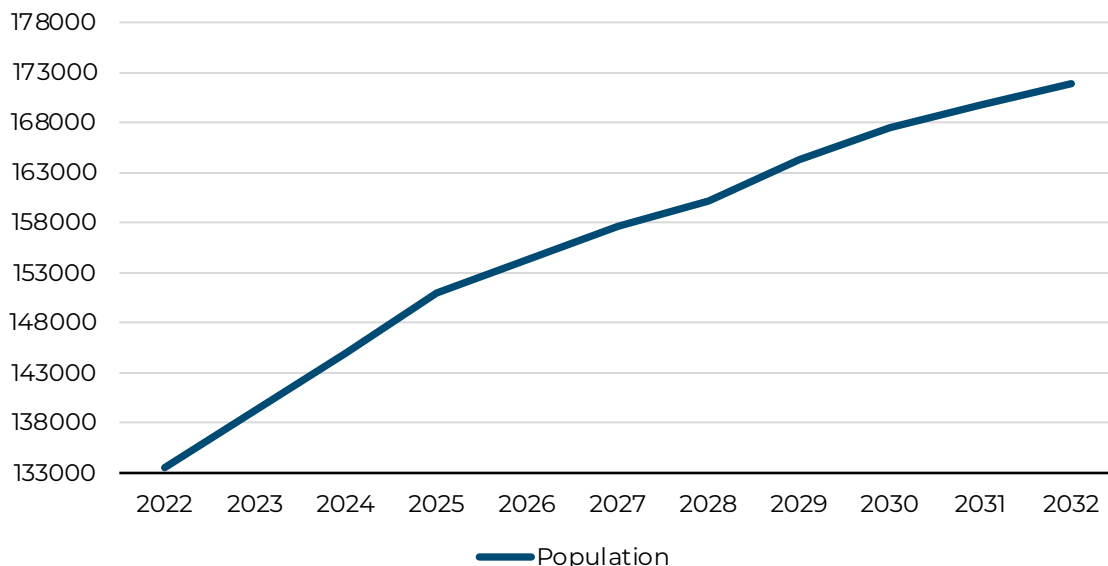
Demographic and other relevant data (U.S. census data unless otherwise indicated) are listed in the table below.

Description	City of Meridian Statistic
Population/square mile (based on 2022 population estimate)	3,460 (urban classification)
Female	50.3%
Male	49.7%
Median resident age	36
Persons under 5 years	6.8%
Persons under 18 years	28.2%
Persons 65 years and older	12.4%
With a disability under 65 years	5.7% (2016-2020)
2020 median household income	$76,403*
Estimated median house value	$534,518**
Home ownership percentage	76.2***
High school graduate or higher	91.4%
Bachelor's degree or higher	41.4%
Percentage living in poverty	6.5%

*https://datausa.io/profile/geo/meridian-id

**Zillow, December 15, 2022, https://zillow.com/meridian-id/home-values/.

***DATAUSA, May 11, 2022, https://datausa.io/profile/geo/meridian-id/#:~:text=In%20 2019%2C%20the%20median%20property,the%20homeownership%20rate%20was%20 76.2%25.

Figure 1.9

POPULATION BY RACE

- White – 88.3%
- Hispanic – 6.9%
- Asian – 1.9%
- Black/African American – 1.0%
- Mixed – 1.7%
- Other – 0.2%

Source: U.S. census, 2020

Section 1: Department Area Characteristics
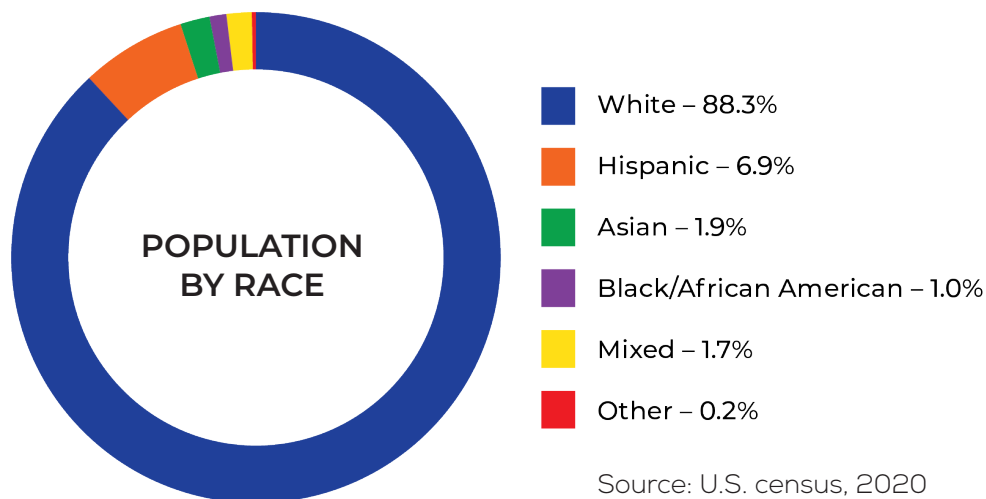
AREA ECONOMICS

The largest employment categories in Meridian are health care and social assistance, retail trade, and professional, scientific and technical services.

A Sample of Meridian Employers

Employer	Employees	Employer	Employees
West Ada School District	1,500-1,999	City of Meridian	500-749
Blue Cross of Idaho	1,000-1,499	Power Engineers	250-499
Walmart	1,000-1,499	Fred Meyer Stores	250-499
Scentsy, Inc.	1,000-1,499	ESI	250-499
Albertsons	500-749	Idaho State Police	250-499

Source: Idaho Department of Labor

Figure 1.10

Meridian Total Assessed Valuation 2012-2022

Assessed Value (billions)
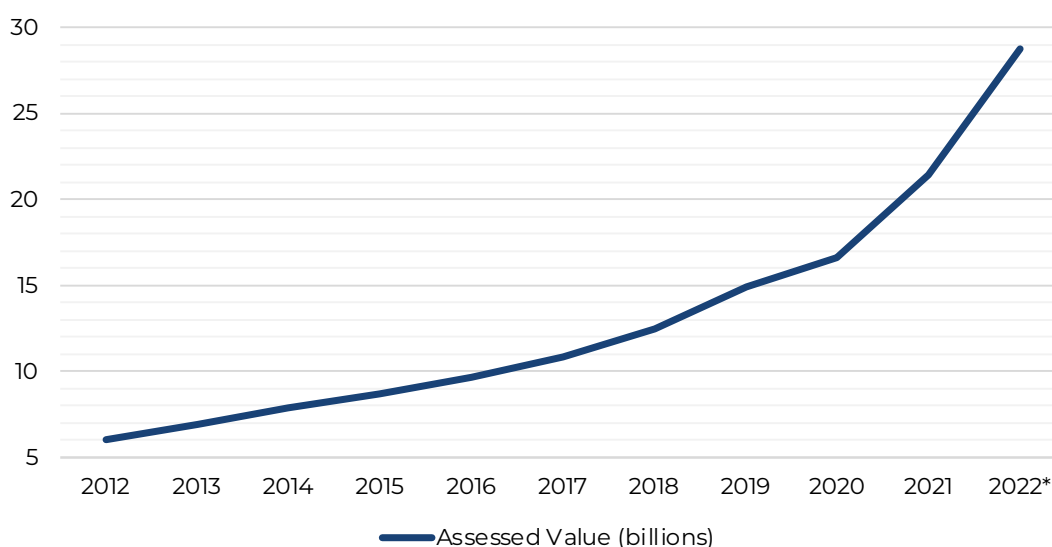
Total assessed value has had significant gains the past 10 years, with the steepest gain coming in the past year – a 34% increase in total assessed value.[9]

LAND USE

Current zoning and future land use maps are illustrated in **Figures 1.11** and **1.12**. The city has also completed an extensive land use and development report. Excerpts from the report including percentages of future land use groups (residential, mixed use, employment and civic), permit hot spots and other land use information are located in **Appendices 1.8** through **1.11**.

[9]Ada County Assessor's Office. https://adacounty.id.gov/assessor/dashboard

ZONING MAPS

Figure 1.11

Figure 1.12
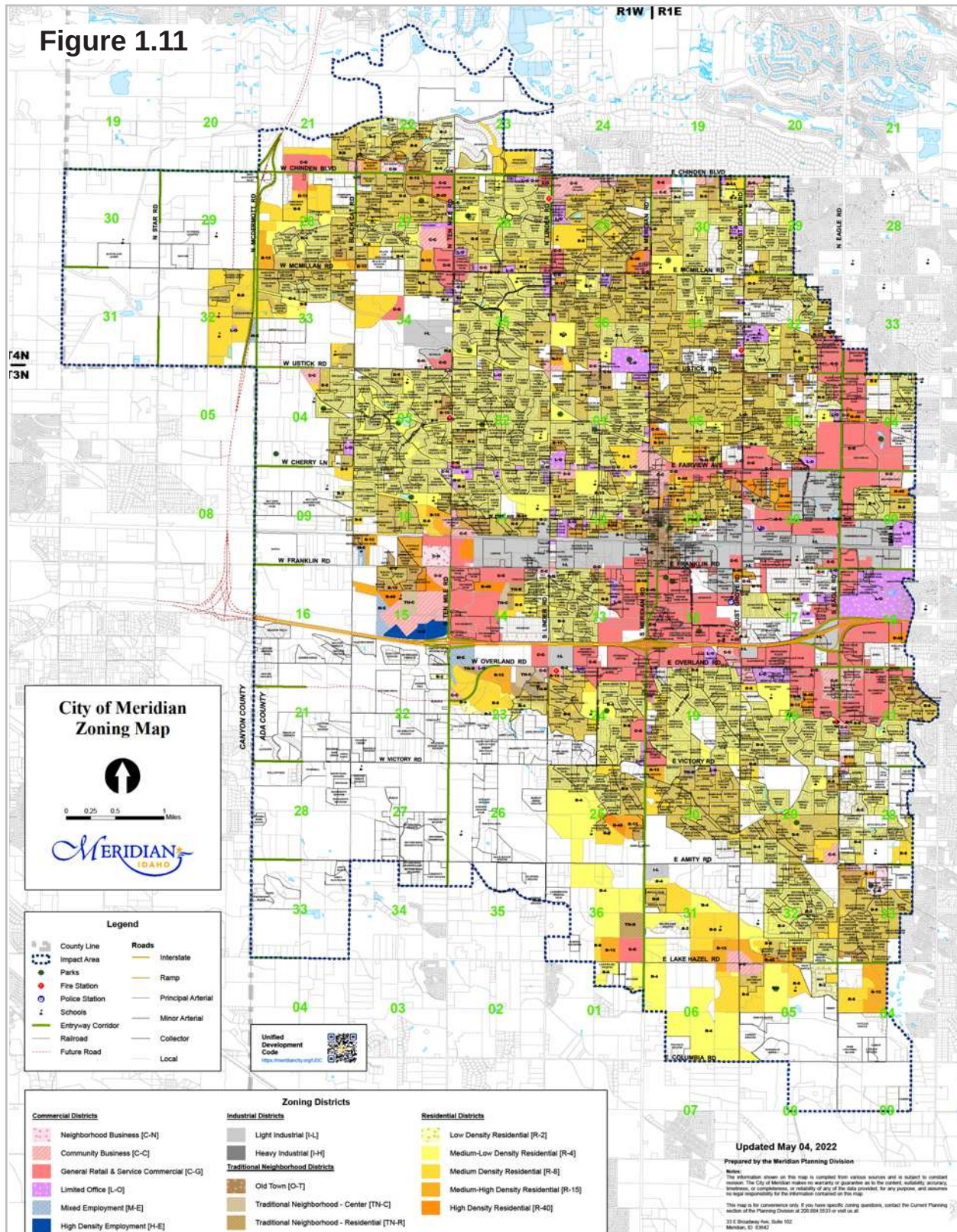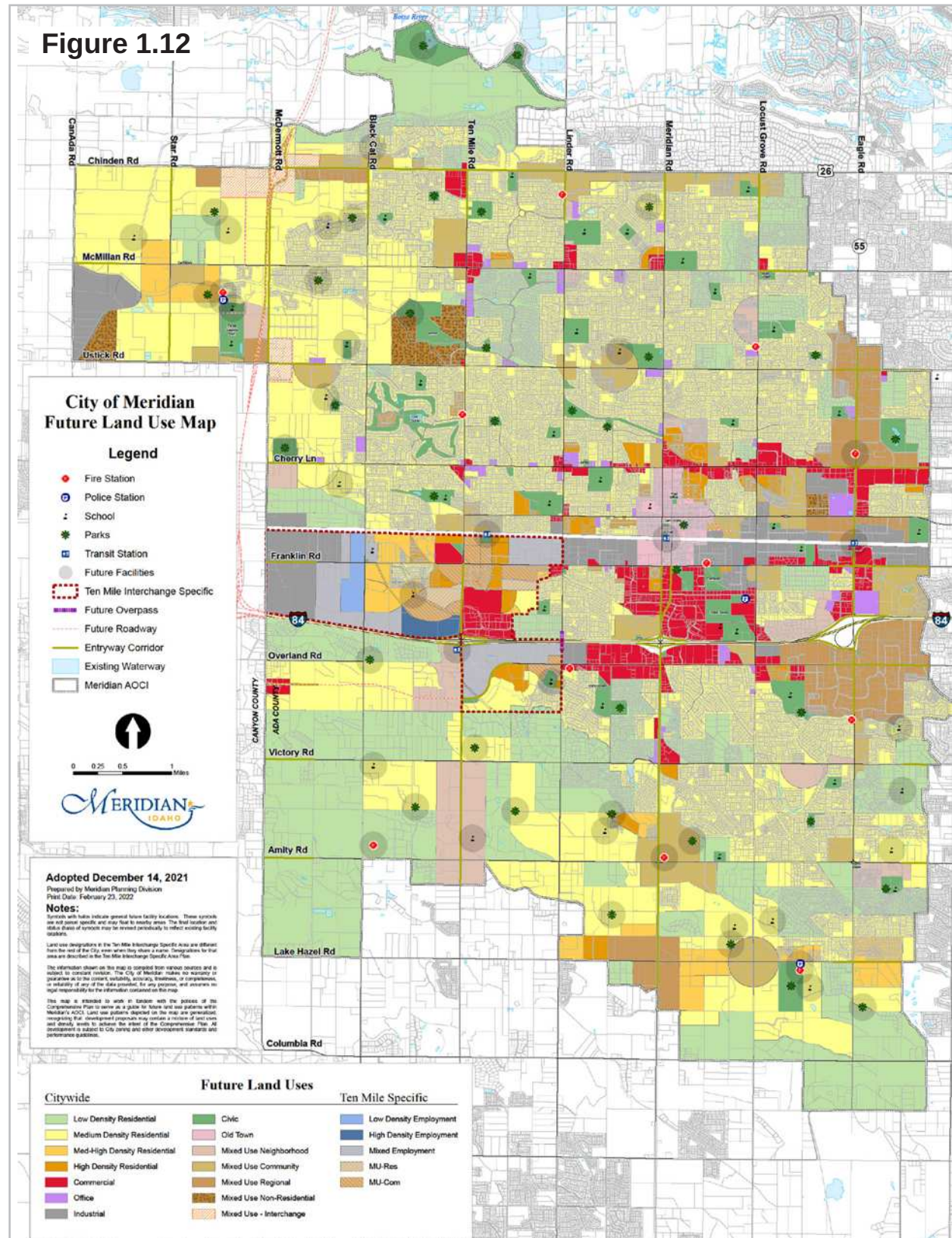
GENERAL DESCRIPTION OF OCCUPANCIES

Meridian is primarily a bedroom community with a growing number of industrial and commercial occupancies. The oldest residential occupancies are in the downtown core area, roughly 1 to 1½ miles in radius. The ages of the residences generally decrease as the distance from the downtown core increases, with the newest residences in the perimeter areas of the city. Eagle Road, a main arterial roadway, is a corridor of entertainment, restaurants and mercantile occupancies. There are several big box occupancies along West Chinden Road (U.S. Route 26) on the north side of Meridian. Ten Mile Road is a corridor for many office occupancies.

Most industrial occupancies are adjacent to Franklin Road, which runs east–west in south-central Meridian. There are several new apartment and condominium occupancies in the downtown core area and a relatively large number of three to four-story apartment complexes located farther out from the downtown core. Eighteen companies have their main offices in Meridian.

St. Luke's Meridian Medical Center is a 167-bed hospital and a Level IV trauma center located near Interstate 84 and South Eagle Road. In addition to smaller extended care facilities scattered throughout the city, there are several large extended care facilities offering differing levels of care. There are 15 elementary schools, seven middle schools, three academy style schools, and six high schools in Meridian.[10]

[10]West Ada School District.

SERVICE TYPE INFRASTRUCTURE

The city's wastewater division operates and maintains a centralized wastewater treatment facility and over 400 miles of sewer lines located throughout the city. There are several 138 and 230 kilovolt transmission lines that run throughout the city along with their supporting substations.

There are high-pressure natural gas transmission lines present in the far southwestern and northwestern areas of the city. There are 132 federally-licensed cell phone towers in Meridian. The department maintains a list of other critical service and building infrastructure that is guided by the Federal Emergency Management Agency (FEMA) critical infrastructure definition.[11]

[11]FEMA defines critical infrastructure as those assets, systems, networks and functions – physical or virtual – so vital to the United States that their incapacitation or destruction would have a debilitating impact on security, national economic security, public health/safety or any combination of those matters.

TRANSPORTATION INFRASTRUCTURE

The Boise Valley Railroad transects Meridian in a general east-west direction near the south-central portion of the city. Products carried consist primarily of potatoes, lumber, fertilizer and fuels. Train volume is low; approximately two trains per day and generally fewer than 15 cars each.

Interstate 84 also transects the width of Meridian in a general east-west direction for approximately eight miles. U.S. Route 26 crosses two relatively small areas of Meridian on the city's far north side in an east-west direction. State Highway 55 runs north-south creating several of the busiest intersections in the state. The balance of vehicle transportation infrastructure consists of two-lane and four-lane arterial roadways. **Figure 1.13** represents a 12% increase in daily traffic over the past five years on I-84 at Meridian Road.

Figure 1.13 - Interstate 84 at Meridian Road 2018-2023 Daily Traffic Volume (Month of June)[12]

[12]https://apps.itd.idaho.gov/apps/roadwaydata/counters/278/index.html
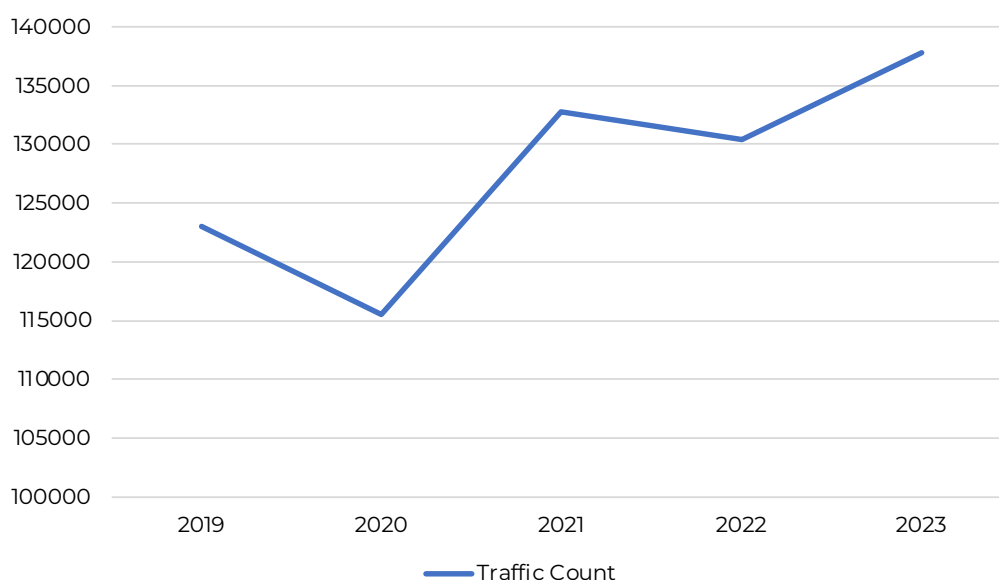
Although there are currently a limited number of bicycle-only pathways within city limits, many of Meridian's surface streets have designated bike lanes. The Meridian Pathways Master Plan[13] proposes an extensive pathway network stemming from along the existing canal system and within and around the city. The plan includes an inventory of existing pathways and micropaths, as well as a comprehensive network of future pathways that will connect residents to schools, parks, businesses, neighborhoods and various recreational and entertainment destinations.

There is no airport in Meridian. The closest airports are Nampa Municipal Airport, an FAA general aviation-designated airport seven miles west of Meridian, and Boise Airport – a joint commercial and military airport nine miles southeast of Meridian.

GROWTH

As noted earlier in this section, growth is occurring rapidly in Meridian as the following figures indicate.

Development Status (as of May 2022)	Number of Units
Final Plat completed, ready to start, or under construction	2,824
Approved units	2,115
Entitled and annexed units	2,256
In conceptual/pre-plan stage	1,209

[13]Meridian Pathways Master Plan. https://meridiancity.org/parks/files/MPMP%20Table%20of%20Contents%20January%202010.pdf

BUILDING OCCUPANCIES

Occupancy	Estimated Date of Occupancy
Eagle View Landing – two multi-story office and retail buildings	2023
Altair Apartments – Three four-story apartment occupancies	2023
Records Apartments – Two six-story apartment occupancies	2023-2024
Ten Mile and Franklin development – Two four-story commercial and apartment occupancies	2023-2024
Scheels Sporting Goods	2024
Target commercial development	2024
South Tower	2024
Black Cat development – 65,000-square-foot heavy industrial building and several light industrial buildings	2024
Community Block – seven-story occupancy	2025

These occupancies are in various stages of plan development and construction. In addition to the projects listed, there are several other large-scale projects in Meridian's near future. These include the city's robust master plan for the downtown area called Destination Downtown.[14] The plan includes mixed commercial occupancies including restaurants, businesses and specialty retail shops. Planned residential occupancies include apartments, townhouses, condominiums, duplexes and single-family homes. Structured parking and some new streets are also part of the master plan.

Eagle View Landing near Interstate 84 and Eagle Road is a 73-acre mixed-use development featuring office, retail, medical and corporate spaces. As noted in the table above, two large occupancies at this site are under construction.

A project called the The Bridge at Village at Meridian will include two six-story buildings with more that 500 units; primarily residential with 33,000 square feet of retail space on the ground floor. The two buildings will be connected by a pedestrian bridge. The project includes a large parking garage.

The Orchard Park development in North Meridian is a large mixed-use development with parking, office space, retail establishments and sites for future development of residential units. The anchor building will include two parallel structures spanning 65,000 square feet, and a water surfing pool.

[14]Destination: Downtown, Where Meridian Lives. https://www.meridiandevelopmentcorp.com/ sites/default/files/imce/Vision%2BDocument_052510.pdf.

SECTION 2

Department Programs and Services

Fire departments are the most common local-level disaster management resource in the world.

– Damon P. Coppola, Introduction to International Disaster Management (Third Edition), 2015

SECTION 2 – DEPARTMENT PROGRAMS AND SERVICES

Prevention Division

The prevention division provides proactive service delivery including fire inspections, building plan review, and fire investigations. Inspections are completed by occupancy type at one, two or three-year frequencies to check for compliance with fire prevention codes. There are maintenance inspections to ensure that fire sprinklers, fire alarm systems, exits and exit sign lighting are in good working order. Investigation of fires are performed by certified fire investigators to determine origin and cause. Findings are utilized to prioritize fire inspections and develop focused public education programs to help minimize fire loss in the community.

Community Risk Reduction Division

Public education is a vital part of how Meridian Fire Department best provides community risk reduction services to the community. The goal of MFD's public education program is to provide every citizen in the Meridian community with the highest level of safety awareness training available. Public education programs currently being delivered include CPR training, child car seat program, hazard safety inspections, smoke and fire alarm education, and assistance with elementary school fire prevention education.

Nonemergency Services Provided By Shift Personnel

On-duty shift personnel provide several nonemergency services to the community. These include station tours, public education, smoke detector service, presence at community events, and even rescuing animals from precarious situations.

Fire Suppression

Meridian Fire Department provides emergency response to a wide range of fire suppression-related incidents from small grass and dumpster fires to residential, commercial and industrial occupancy fires.

NFPA 1710: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* is utilized as a guide and planning resource. The department maintains a constant staffing of 23 firefighters who staff five engine companies and two truck companies. There is one shift battalion chief who oversees daily operations and provides incident command for multi-company incidents. The department also cross-staffs two type 6 brush rigs and a water tender.

All fire apparatus at the time of their manufacture date met requirements of NFPA 1901: *Standard for Automotive Fire Apparatus.*

Emergency Medical Services

Emergency medical services make up the majority of MFD's emergent call volume. MFD provides both basic life support (BLS) and advanced life support (ALS) level emergency medical services and all MFD firefighters are certified EMTs at minimum, with 44 uniformed personnel certified as paramedics.[15] MFD's goal is to staff one paramedic per station per shift.

The Emergency Medical Services division chief is responsible for the overall supervision, operational readiness and effectiveness of medical operations and administration. The EMS division chief also has regional responsibilities that include participation in pre-hospital care committees and liaison responsibilities with the department's medical directors.

[15]As defined by the Idaho Department of Health and Welfare, Division of Public Health – Bureau of Emergency Medical Services.

MFD is part of the Ada County/City Emergency Services System (ACCESS),[16] a Joint Powers Agreement (JPA) between Ada County Paramedics and Meridian, Boise, Kuna, Star, and Eagle Fire Departments. ACCESS's mission is to coordinate EMS service, training, and education between all partner agencies to provide the highest and most consistent level of care to the community. Ada County Paramedics provides ALS ambulance transport for the county.

Hazardous Materials

All MFD firefighters are trained to the operations level per NFPA 472: *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents.* They are able mitigate basic hazardous materials emergencies such as small flammable liquid spills, carbon monoxide alarms, small to moderate diameter natural gas line breaks and small pressurized vessel leaks. These are defined as Level I hazmat incidents.[17] For hazmat emergencies that extend beyond the capabilities of MFD (a Level II event), the Boise Fire Department Hazmat Team is available with technician level skills and equipment.

Technical Rescue

MFD responds to various types of technical rescue calls in the community. It can typically manage all types of vehicle extrication rescues. For trench rescue, high angle, confined space, swift water, and other more technically complex rescues, MFD has an automatic aid agreement with Boise Fire Department. All MFD firefighters have awareness level training per NFPA 1670: *Standard on Operations and Training for Technical Search and Rescue Incidents* in the various technical rescue disciplines, and all personnel have technician level training for extrication functions. The Boise Fire Department technical rescue team is available with technician level skills and equipment.

[16]https://adacounty.id.gov/paramedics/.
[17]As defined in the Ada County HAZMAT Response Plan. November 2018. https://adacounty.id.gov/emergencymanagement/wp-content/uploads/sites/39/HAZMAT-2018-Web.pdf.

SECTION 3

All-Hazard Community Risk Assessment

The essence of risk management lies in maximizing the areas where we have some control over the outcome while minimizing the areas where we have absolutely no control over the outcome.

–Peter L. Bernstein

SECTION 3 – ALL-HAZARDS COMMUNITY RISK ASSESSMENT

Hazards, in the context of this document are any dangerous conditions with the potential to cause harm to people and loss to property; including fires, medical emergencies, the release of hazardous materials, entrapments, and other hazards. Risk can be defined as an estimate of the probability of a hazard-related incident occurring and the severity, harm or damage that could result.[18]

Meridian Fire Department has the responsibility of responding to emergencies associated with these hazards, and the associated risk that comes with them, both to the public and firefighters. MFD exists not only to respond to emergency incidents, but also to proactively prevent or mitigate the impact of such incidents within the community.

A comprehensive community risk assessment provides a focused and systematic approach for the department to develop risk management/reduction strategies and tactics. The Vision 20/20 Project's "Community Risk Assessment: A Guide for Conducting Community Risk Assessment" document defines community risk assessment as the identification of potential and likely risks within a particular community and the process of prioritizing those risks. It is the critical initial step in emergency preparedness, which enables organizations to mitigate (if possible), plan, prepare, and deploy appropriate resources to attain a desired outcome.[19]

RISK MANAGEMENT

Risk management for a fire department can be defined as the identification and evaluation of risks; and the development, selection and implementation of up-front control measures to lessen the probability of a harmful consequence.[20]

Quoting again from the Vision 20/20 document, community risk reduction (CRR), is a desired outcome of a community risk assessment (CRA). CRR is defined as a process to identify and prioritize local risks, followed by the integrated and strategic investment of resources (emergency response and prevention) to reduce their occurrence and impact.[21]

The NFPA 1300: *Standard on Community Risk Assessment and Community Risk Reduction Plan Development* and the Vision 20/20 document recommend that following development of the CRA, a community risk reduction plan be

[18]Manuele, Fred A. (2008). Advanced Safety Management, Hoboken NJ: John Wiley & Sons, p.113.
[19]Stouffer, John A. Vision 20/20. Community Risk Reduction: A Guide for Conducting a Community Risk Assessment. Version 1.5 Rev. 02/16.
[20]Graham, Gordon. www.firenuggets.com.
[21]Stouffer, John A. Vision 20/20. Community Risk Reduction: A Guide for Conducting a Community Risk Assessment. Version 1.5 Rev. 02/16.

constructed based on the findings of the CRA.

Meridian Fire Department is following this recommendation as described in MFD's 2022-2024 Strategic Plan, Goal 6A. It is important to note that there is always residual risk. It is not possible to eliminate all risk. The public's tolerance of risk as represented through the elected mayor and council, and the chief's perspective of risk, determine the allocation of risk and the acceptable level of residual risk to the community.

Create and implement a sustainable and effective community risk reduction plan that is reviewed and measured on a regular basis.[22]

MFD's methodology approach to the community risk assessment process incorporated procedures from three best-practice documents: Vision 20/20's *Community Risk Assessment: A Guide for Conducting Community Risk Assessment*, the Center for Public Safety Excellence's (CPSE) *Quality Improvement for the Fire and Emergency Services* and NFPA 1300: *Standard on Community Risk Assessment and Community Risk Reduction Plan Development*.

Figure 3.1 Vision 20/20 Project

IDENTIFY RISKS

- Acquire data that identifies risk
- Develop community profile
- Identify causal factors and populations at greatest risk
- Identify target hazards

PRIORITIZE RISKS

- Describe risk attributes and vulnerability
- Utilize a scoring system to prioritize risk

[22]Meridian Fire Department 2022-2024 Strategic Plan. January 2022. https://meridiancity.org/fire/files/Meridian%20Fire%20Strategic%20Plan%20Final%20Web%20Version.pdf.

Figure 3.2 CPSE Quality Improvement for the Fire and Emergency Services

Figure 3.3 NFPA 1300 *Standard on Community Risk Assessment and Community Risk Reduction Plan Development*

STEP 1	Recognize the need to conduct a community risk assessment (CRA), and develop a community risk reduction plan (CRR) based on the CRA.
STEP 2	Define the problem by identifying the potential risks and the root cause. Develop programs that are appropriate to mitigate the identified risks that exist within the available categories.
STEP 3	Collect empirical data (verifiable and validated) regarding the community's demographics, building stock profile, geography, past loss history and potential likelihood or anticipated future events.
STEP 4	Analyze the data.
STEP 5	Identify gaps; areas where actual conditions vary from desired outcomes.
STEP 6	Validate the CRA by comparing the findings of the CRA with the available data, to ensure they are consistent with the community's level of acceptable risk, capabilities and resources. All risks considered in the CRA might not be addressed in the CRR plan.

The 2021 Meridian Fire Department Community Risk Assessment was also utilized as a resource in this process.

Section 3: All-Hazard Community Risk Assessment

GEOGRAPHIC PLANNING ZONES

As part of the community risk assessment process, MFD defined six geographic planning zones (GPZs). These zones were defined by MFD senior staff members by identifying areas with similar risk factors such as population density, occupancies, incident history, travel time and others.
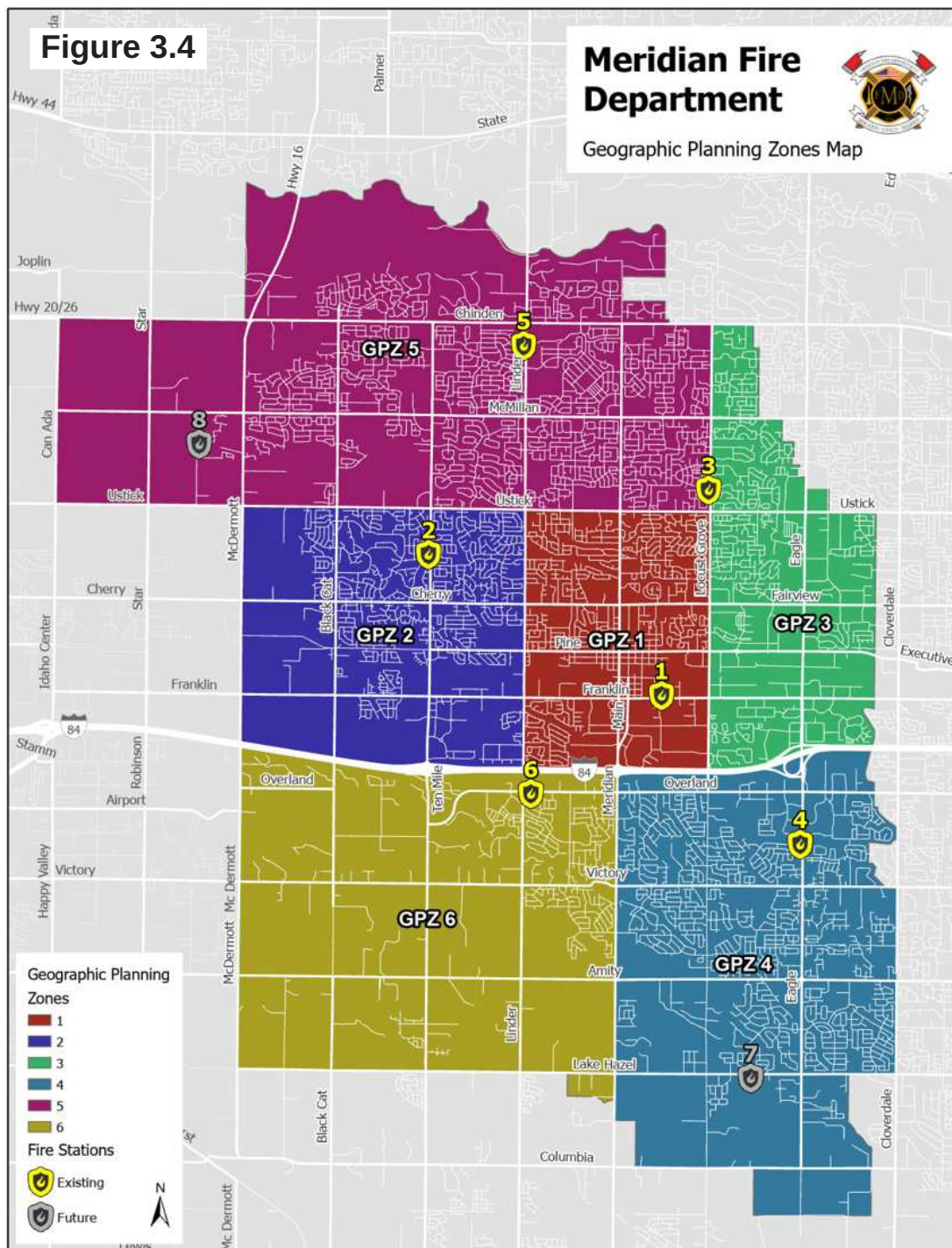

Figure 3.4

Figure 3.5 Geographic Planning Zone 1

Geographic Planning Zone 1

General description	Station 1 covers this area of central Meridian. GPZ 1 includes the older area of the city which includes many legacy construction homes and businesses. There are multiple large commercial occupancies and a number of mid- and high-rise buidlings under construction.			
Critical infrastructure and significant features	Interstate 84; Boise Valley Railroad, Meridian Speedway Racetrack; Ada County Dispatch; Idaho State Police; Meridian Police Department; City Hall; domestic water infrastructure; several large commercail manufacturers			
Square miles	% Total response area miles	5.4		8.4%
Total call volume 2020-2022	% Call volume 2020-2022	6,453		23.6%
Population density		4,054		
Population		22,056		
Service program		EMS	Fire	Hazmat	TRT
Risk category		High	High	High	High

Downtown Meridian

Figure 3.6 Geographic Planning Zone 2

Geographic Planning Zone 2

General description	Station 2 covers this area in the west central area of Meridian. It includes an older section of the city with several medium density single-family residence subdivisions and farms on the western edge of the zone. Many new multi-family apartment complexes are being built in this area.		
Critical infrastructure and significant features	Boise Valley Railroad; Meridian High School; several middle and elementary schools; sewer treatment plant; The Lofts and The Flats (mid-rise center hallway apartment complexes) and deeded retirement communities; Interstate 84		

Square miles	% Total response area miles	8.2	12.7%
Total call volume 2020-2022	% Call volume 2020-2022	3,888	14.2%
Population density		2,718	
Population		22,228	

Service program	EMS	Fire	Hazmat	TRT
Risk category	Moderate	Moderate	Moderate	Low

The Lofts at Ten Mile in Meridian

Figure 3.7 Geographic Planning Zone 3

Geographic Planning Zone 3

General description	Station 3 covers what is known as the Eagle Road corridor, which has a high concentration of commercial development. GPZ 3 also includes single- and multi-family residences and several assisted living facilities and senior communities.		
Critical infrastructure and significant features	Boise Valley Railroad; Eagle Road (busiest roadway in the city); Interstate 84; St. Luke's Meridian Medical Center; Touchmark Assisted Living Facility; The Village at Meridian retail center; Scentsy corporate headquarters.		
Square miles	% Total response area miles	6.1	9.4%
Total call volume 2020-2022	% Call volume 2020-2022	5,543	20.3%
Population density		3,696	
Population		22,433	
Service program	EMS	Fire	Hazmat	TRT
Risk category	High	Moderate	Moderate	Moderate

The Village at Meridian

Figure 3.8 - Geographic Planning Zone 4

Geographic Planning Zone 4

General description	GPZ 4 contains some of the city's busies arterial roadways, as well as a substantial section of Interstate 84. Overland Road in the north half of the GPZ contains a considerable number of commercial developments. Along with single- and multi-family residences, this GPZ contains a large number of assisted living facilities.			
Critical infrastructure and significant features	Interstate 84; several large hotels; multiple call centers; Mountain View High School, several elementary schools; large commercial corridor; UPS hub; several multi-story assisted living facilities.			
Square miles	% Total response area miles	12.8		19.8%
Total call volume 2020-2022	% Call volume 2020-2022	4,424		16.2%
Population density		2,285		
Population		29,204		
Service program		EMS	Fire	Hazmat	TRT
Risk category		Moderate	Moderate	Moderate	Moderate

Top Golf Boise

Figure 3.9 Geographic Planning Zone 5

Geographic Planning Zone 5

General description	GPZ 5 includes several medium-density single-family residence subdivisions, significant commercial and cultural occupancies, and farmland in the edges of its response district. GPZ also contains multiple large single family residences greater than 4,000 ft².			
Critical infrastructure and significant features	Two high schools; two middle schools, State Route 16; several large assisted living facilities; Mormon Temple of Meridian; south channel of the Boise River; Costco; Walmart; Winco			
Square miles	% Total response area miles	18.8		29.1%
Total call volume 2020-2022	% Call volume 2020-2022	5,382		19.7%
Population density		2,354		
Population		44,247		
Service program		EMS	Fire	Hazmat	TRT
Risk category		Moderate	Moderate	Low	Low

The Church of Jesus Christ of Latter Day Saints, Meridian Idaho Temple

Figure 3.10 Geographic Planning Zone 6

Geographic Planning Zone 6

General description	Station 6 covers this area in the southwest quadrant of Meridian. A majority of future development in Meridian will be in this section. There is still some farmland in the southwest area of the zone, but much is currently under development. Interstate 84 is to the north.
Critical infrastructure and significant features	Large commercial buildings including Bish's RV and Camping World. Roaring Springs Water Part and Wahooz Family Fun Zone are also located in this zone. Meridian Road and Ten Mile Road exchanges off Interstate 84 are located on the north end of the zone.

Square miles	% Total response area miles	13.3	20.6%
Total call volume 2020-2022	% Call volume 2020-2022	1,632	6.0%
Population density		633	
Population		8,851	
Service program		EMS	Fire	Hazmat	TRT
Risk category		Low	Low	Low	Low

Roaring Springs Water Park

UNIQUE RISKS ASSOCIATED WITH MERIDIAN

At-Risk Population

According to the United States Fire Administration (USFA), older adults (65 years and older) are 2.5 times more likely to die in a fire than the general population. The oldest adults, those 85 years old and older, are 3.8 times more likely to die in a fire. Children 4 years old and under are twice as likely to die in a fire than children in the 5 to 9 and 10 to 14 age groups.[23] Persons with physical and mental disabilities also experience a higher likelihood of death due to fire because of limited mobility, health, sight, hearing, or mental ability, as well as other factors. The NFPA reports that physical disabilities are a contributing factor in 15% of home fires.[24]

At-Risk Populations in Meridian

Demographic	Percentage of Meridian's Population
Under five years old	6.3%
65 years and older	12.6%
Persons with disabilities	6.6%
Total percentage of higher fire risk population in Meridian	25.5%

Source: U.S. census population estimates, July 2022

This equates to just over one in four individuals being at a significantly higher risk of fire death than the general population in Meridian.

Vehicle Traffic

Meridian's rapid growth is contributing to more congested roadways and vehicle crashes. This negatively impacts MFD in several ways. As traffic on the roadways increases, MFD's travel response times increase. This is evident in the response time data in Section 4 of this document. As the number of vehicle accidents increases, so does the amount of time MFD personnel are exposed to hazardous road and traffic conditions.

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[23]USFA. (October 2021). Volume 21, Issue 8. Fire Risk in 2019. https://www.usfa.fema.gov/downloads/pdf/statistics/v21i8.pdf.

[24]NFPA Fire Analysis & Research. Physical Disability as a Factor in Home Fire Deaths Fact Sheet. https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Fact-sheets/disabilityfactsheet.ashx#:~:text=NFPA%20estimates%20that%20physical%20disability,home%20fire%20deaths%20per%20year.

As a result of increased traffic volume in Meridian, roadway construction activity is high and is expected to remain very active for the foreseeable future. The Ada County Highway District has many intersection and roadway projects planned for 2022 through 2026.[25] Road construction forces MFD units to use detours and/or substantially reduce speeds through construction zones, leading to an increase in response times.

The projected population growth rates for the City of Meridian in the next five to 10 years are expected to be at or above their current rate (5-6%), indicating that this risk for MFD is expected to continue.

New Mid and High-Rise Occupancies (Greater than four stories)

The City of Meridian has numerous mid to high-rise occupancies either under construction or planned in the next three years. These occupancies bring new fire suppression and rescue challenges to MFD that have not been previously present. These include high angle rescue, communications, getting firefighters and required equipment to fires on higher stories, breathing air supply, evacuating or rescuing numerous occupants, and unpredictable fire spread behavior. These challenges require a unique approach to firefighting strategy and tactics at these occupancies.

MFD has been proactive in preparing for incidents at these structures, including training on high-rise strategy and tactics and code adoption for firefighter air replenishment systems (FARS) that provide a patent air supply to above-ground floors during firefighting operations.

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[25]City of Meridian roadway and intersection projects for 2022-2026 may be viewed online at https://www.achdidaho.org/Documents/PlansPrograms/ProjectsMap.pdf.

Boise Valley Railroad

As noted in Section 1, the Boise Valley Railroad transects Meridian in a general east-west direction near the south-central portion of the city. The railroad transports a wide variety of products including hazardous materials.

Interstate 84

Meridian Fire Department covers approximately eight miles of Interstate 84 (I-84), including a portion of I-84 west of the city limits. It is the busiest highway in the state. **Figure 1.13** in Section 1 illustrates a significant growth in traffic volume on I-84. Increased traffic volume equates to more motor vehicle crashes. Meridian's growth rate is occurring at a rapid pace and the natural connection between traffic volume and crash frequency would be expected to continue.

The interstate also represents a substantial hazmat risk as over-the-road trucking accounts for over 60% of all transportation of hazardous materials (by weight) in the U.S.[26] As the city's population continues to grow in proximity of the freeway, the associated hazmat exposure risk also will grow.

I-84 poses a very high risk to firefighters as they perform their fire, EMS, hazmat and technical rescue functions on the freeway. The National Institute of Occupational Safety and Health (NIOSH) recognizes that firefighters face a serious risk of being struck and killed by traffic when providing emergency assistance along busy highways.[27] Firefighters are frequently working adjacent to passing traffic that is often traveling at much higher speeds than traffic on local arterial roadways. This, combined with distracted or impaired drivers, make incidents on the interstate one of the highest-risk working environments for firefighters.

[26]U.S. Department of Transportation – Bureau of Transportation Statistics. https://data.bts.gov/stories/s/Moving-Goods-in-the-United-States/bcyt-rqmu/.
[27]https://www.cdc.gov/niosh/updates/fireinj.html.

Earthquakes

Meridian is within the influence of several active faults capable of producing sizable earthquakes. These include the Western Idaho Seismic Zone 25-50 miles north of Boise and the Sawtooth Fault along the east side of the Sawtooth Mountains near Stanley, Idaho. These faults are capable of producing 6.0-7.0 magnitude earthquakes on the Richter scale.

There have been two large earthquakes likely associated with these faults in Idaho in modern times. On October 28, 1983 the Borah Peak earthquake registered a magnitude of 6.9. It was the largest and most damaging earthquake in Idaho history, and caused significant damage to the towns of Challis and Mackay. There were no injuries and only minimal nonstructural damage in Meridian.

On March 31, 2020, the Stanley earthquake (with a magnitude of 6.5) occurred approximately 73 miles northwest of Meridian. It was the strongest earthquake in Idaho in nearly 40 years. While the earthquake was felt in Meridian, it did not cause significant damage.

There have not been any large-scale earthquakes in the Treasure Valley area. The closest earthquake to Meridian occurred in 2013, approximately 30 miles north of the city. It had a 1.7 magnitude and did not cause any damage within the city.

There are several upstream dams that are vulnerable to damage or failure from earthquakes, that in turn could cause potential flooding along the Boise River. This is likely the biggest threat to Meridian from an earthquake, along with potential structural damage. **Appendix 3.1** is a U.S. Geological Survey (USGS) earthquake risk map that shows Meridian to be in a low-risk area.

Volcanoes

The 2018 update to the U.S. Geological Survey National Survey Volcanic Threat Assessment includes two Idaho volcanoes in the report; Black Butte Crater, located approximately 50 miles north of Twin Falls; and Wapi Lava Field, located approximately 60 miles west of Pocatello.[28] Both volcanoes are listed as low threats; ranked 136 and 137 respectively out of 161 volcanoes named in the report. While the risk of a volcanic eruption within the state is low, Meridian could be affected by volcanic activity from outside the state, particularly from Washington and Oregon. Seven volcanoes in Oregon and Washington are categorized by the USGS as very high threats. It is not a question of if these

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[28]https://pubs.usgs.gov/sir/2018/5140/sir20185140.pdf.

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volcanoes will erupt, but when. The pyroclastic flow (ash) from these volcanoes could be a risk to Meridian. As a result of the 1980 Mount St. Helens eruption, the northern half of Idaho was covered with one-half to two inches of ash fallout.[29] Forecast maps for a future Mount St. Helens eruption show Meridian on the outer fringes of possible ash fallout.[30] Although no predictive ash fallout maps for Oregon volcanoes were found, it is logical to assume because of its more southern location, the possibility of ash fallout in Meridian from Oregon volcanoes is higher than from those in Washington.

In recent years there has been much media attention given to the Yellowstone Caldera (also known as the Yellowstone Supervolcano), approximately 250 miles east of Meridian. There is conflicting research regarding when this volcano could erupt, ranging from decades to thousands of years from now. The USGS Yellowstone Volcano Observatory 2021 Annual Report states that there continues to be some subsidence of the caldera floor and slight uplift along the north caldera floor, and the deformation is similar to what occurred in the late 1990s. According to the report, the volcano alert level remains at normal. Another USGS website states that there is no evidence that a catastrophic eruption at Yellowstone is imminent, and such events are unlikely to occur in the next few centuries.[31] The USGS has, however published a map indicating that Meridian could receive substantial ash cover in the event of a Yellowstone eruption. The map is located in **Appendix 3.2**.

RISK ASSESSMENT METHODOLOGY – THE THREE-AXIS RISK MODEL

As discussed earlier in this section, risk can be thought of as a function of probability, consequence and impact. These three factors are defined as follows:

- **Probability** is the chance or likelihood of a risk occurring.

- **Consequence** is the effect of an incident has on the community and individuals.

- **Impact** is the effect an incident has on Meridian Fire Department as it pertains to the resources required to mitigate the emergency and the duration to do so.
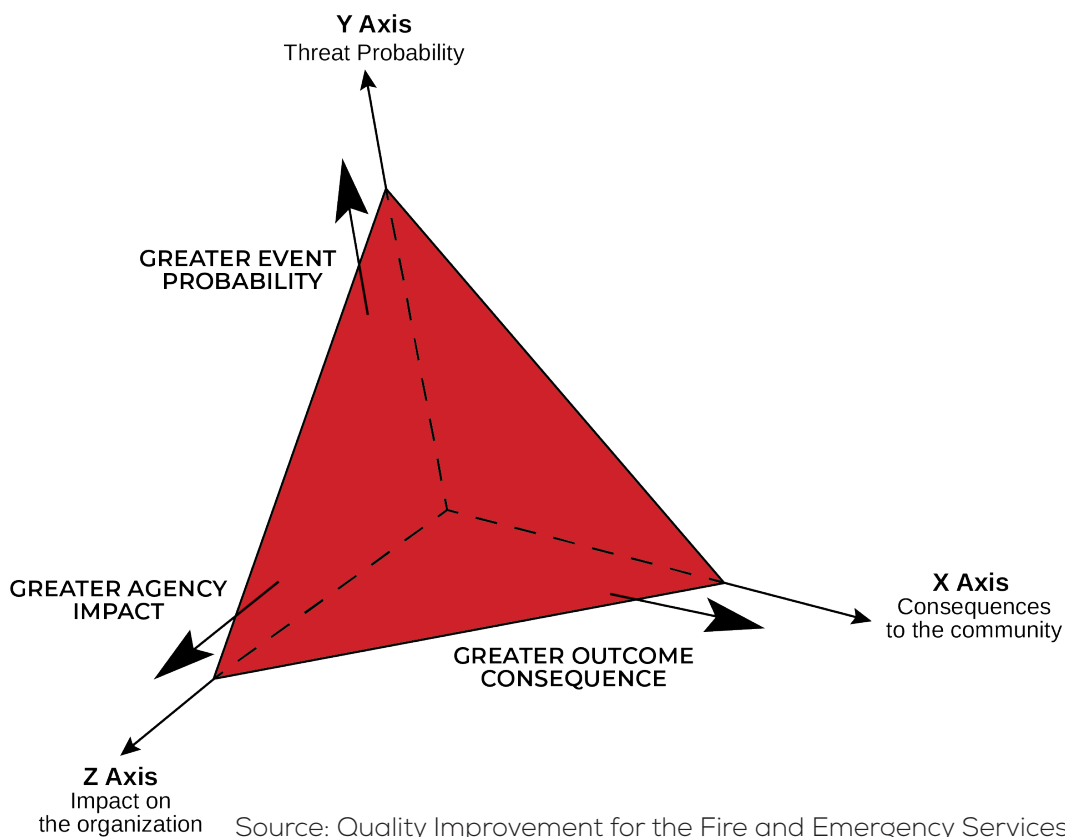
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[29]htttps://pubs.usgs.gov/gip/msh/ash.html.
[30]https://www.usgs.gov/media/images/ash-cloud-simulation-mount-st-helens.
[31]htttps://www.usgs.gov/volcanoes/yellowstone/questions-about-supervolcanoes.

To incorporate these three factors, MFD chose to utilize the three-axis risk model to calculate a score for incident types in each of the service classifications including EMS, fire, hazmat, technical rescue and wildland/grass fires. The three-axis risk model is illustrated in **Figure 3.11**.

Figure 3.11 - 3 Axis Risk Model

Y Axis
Threat Probability

GREATER EVENT
PROBABILITY

GREATER AGENCY
IMPACT

X Axis
Consequences
to the community

GREATER OUTCOME
CONSEQUENCE

Z Axis
Impact on
the organization

Source: Quality Improvement for the Fire and Emergency Services

Each axis variable (probability, consequence and impact) was scored on a scale of one to 10; one being the lowest risk, 10 being the maximum possible risk. MFD staff assigned a score to each axis. The X axis was based on subjective opinion and experience of senior MFD staff. The Y and Z axes were based on incident history and the amount of MFD resources and time needed to mitigate a particular risk. Using Heron's formula below, scores were calculated and a visualization of the resulting risk score was generated. These risk scores were used to develop risk categories; low, moderate, high and in a few cases, maximum.

Figure 3.12. Heron's Formula

$$\sqrt{\frac{(PC)^2}{2} + \frac{(CI)^2}{2} + \frac{(IP)^2}{2}}$$

This process also included the identification of critical tasks and resulting effective response force for a particular risk category. This process allows the department to determine the required resources (effective response force) to ensure a positive outcome for a particular risk. Critical task and effective response force are defined as:

- **Critical task** – A time-sensitive work function that in conjunction with other work functions is essential to ensuring that an incident is stabilized to the performance level desired by the community.

- **Effective response force** – The number of personnel and type of apparatus necessary to complete all the identified critical tasks.

EMERGENCY MEDICAL SERVICES RISK ASSESSMENT

EMS incidents are the most common emergency Meridian Fire Department responds to, representing 61 percent of the total call volume in 2022. Medical emergencies pose a risk to every resident and visitor in Meridian, from low acuity, non–life-threatening events to true life-threatening cardiac or traumatic injury events. Of MFD's emergency service delivery programs, emergency medical services represents the greatest opportunity to save lives in the community.

As with any of the emergency services MFD provides, time is of the essence. Two types of EMS incidents are especially time sensitive: cardiac arrest and traumatic injury. **Figure 3.13** illustrates the American Heart Association's Chain of Survival for cardiac arrest.

### Figure 3.13 - Chain of Survival for Cardiac Arrest

Source: American Heart Association

MFD has influence on four of the six critical links of this chain: providing education about the importance of early activation of the emergency response system, high-quality CPR, defibrillation, and advanced resuscitation.

The first three links are all time-critical tasks that are highly dependent on bystander education, appropriate resources, and response times. EMS response time performance is discussed in Sections 4 and 5.
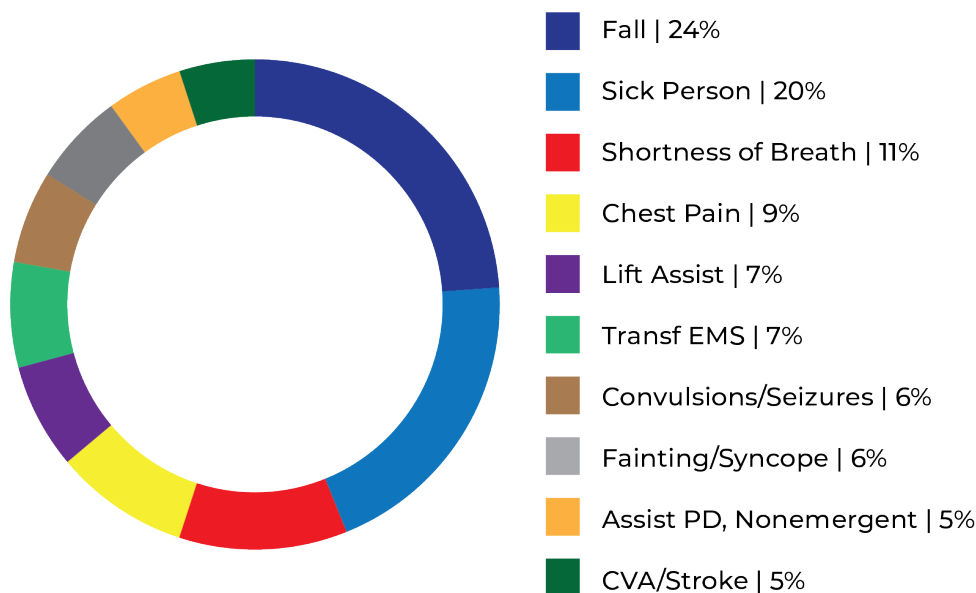
Prompt initiation of defibrillation is essential in the chain of survival, as indicated in **Figure 3.14**.

Figure 3.14 - Chance of Survival from Cardiac Arrest

Minutes to Defibrillation
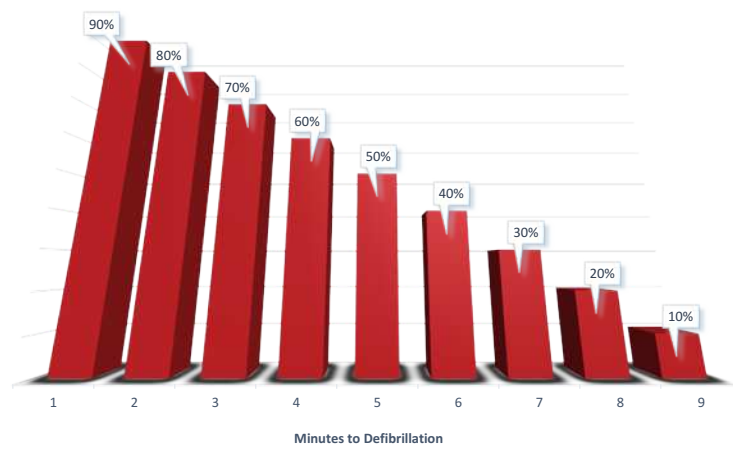
The other EMS incident type that is especially time sensitive is traumatic injury. MFD uses the Idaho Trauma Triage Guidelines to level traumas based on severity. Priority 1 Traumas are the most time critical, and early BLS and ALS treatment for these trauma patients is essential for increasing the chances of survival.

Figure 3.15 Top Ten EMS Calls by Percentage – 2022

- Fall | 24%
- Sick Person | 20%
- Shortness of Breath | 11%
- Chest Pain | 9%
- Lift Assist | 7%
- Transf EMS | 7%
- Convulsions/Seizures | 6%
- Fainting/Syncope | 6%
- Assist PD, Nonemergent | 5%
- CVA/Stroke | 5%

A Meridian Fire Department work group developed the following EMS risk level categories:

| EMS Risk Level Categories	
Low	EMS calls requiring a single unit response for evaluation with a low incidence of transport. This category includes low acuity sick persons, back pain, falls, minor wounds, etc.
Moderate	ALS calls likely requiring transport and have the potential for ALS internventions.This category includes chest pain, shortness of breath, general medical, and lower priority trauma calls.
High	Calls that are immediately dangerous to life and health including high priority trauma calls, cardiac arrests, drownings, and stabbings or gun shot wounds.
Maximum	Mass casualty incidents including ASHER events or multiple patients.

The three-dimensional risk scoring tool described earlier in this section was used to score each EMS risk category. This was followed by the development of critical tasks and effective response forces.

EMS - Low Risk	
Critical Task	Personnel Required
Command/safety	1*
Patient care	1
Total	**2**
Effective Response Force - 1 engine, truck, or ambulance company	

*Can assist with other tasks as necessary.

RISK SCORE = 2
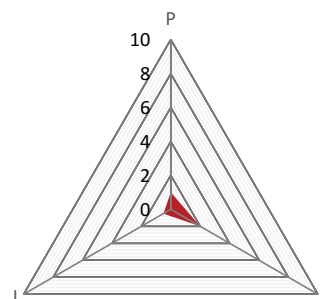
EMS - Moderate Risk	
Critical Task	Personnel Required
Command/safety	1*
Patient care	2
Transport	2
Total	**5**
Effective Response Force - 1 engine or truck company, 1 medic ambulance	

*Can assist with other tasks as necessary.

RISK SCORE = 20
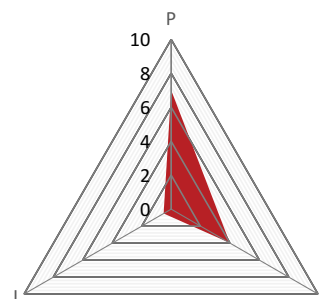
EMS - High Risk	
Critical Task	Personnel Required
Command/safety	1*
EMS Supervisor	1
Patient care	3
Transport	2
Total	**7**
Effective Response Force - 1 engine or truck company, 1 medic BC, 1 medic ambulance	

*Can assist with other tasks as necessary.

RISK SCORE = 6
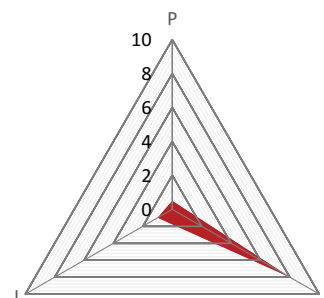
EMS - Maximum Risk	
Critical Task	Personnel Required
Command	1
Safety	1
Treatment Group Supervisor	1
Transport Group Supervisor	1
Patient care	9
Transport	8
Total	**21**
Effective Response Force - 3 engine or truck companies, 2 BCs, 4 medic ambulances, 2 medic BCs	
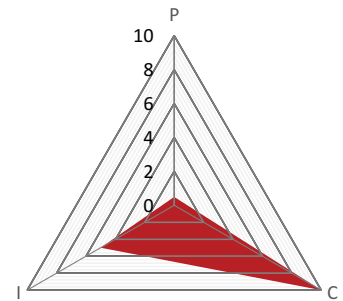
*Initial ERF can be augmented based on additional information received en-route or on-scene

RISK SCORE = 36

Emergency medical service represents the greatest opportunity to save lives in the community.

FIRE RISK ASSESSMENT

Nationwide, there continues to be a downward trend in reported home fires. NFPA reports an over 50% decrease in these fires since 1980.[32] While Meridian generally follows this nationwide trend, it remains a substantial risk to the community in terms of potential life and property loss. Section 4 of this document presents a three-year history of fire loss data.

The majority of residential occupancies in Meridian are of newer construction, often described as modern or lightweight construction. This contrasts with houses built several decades ago, often described as legacy or traditional construction. The lightweight construction, as well as several other current trends in residential structures, has increased the risk for a severe outcome from a structure fire. Underwriters Laboratory considers four specific factors that collectively are called the UL Modern Fire Formula.[33]

| Larger homes | Open house geometries | Increased fuel loads (BTUs) due to hydro-carbon-based furnishings | Newer and lighter construction materials |

[32]Aherns, M. and Haheshwari, R. Home Structure Fires. October 2021. NFPA Research.
[33]Analysis of Changing Residential Fire Dynamics and its Implications on Firefighter Operational Timeframes. Underwriters Laboratories. https://newscience.ul.com.

Larger homes, open floor plans, hydrocarbon-based furnishings, and lighter construction materials result in the following negative impacts regarding house fires:

- Faster fire spread
- Shorter time to flashover[34]
- Rapid changes in fire behavior
- Shorter escape times
- Shorter time to structural collapse
- Greater exposure of carcinogens resulting from smoke to firefighters

Figure 3.16 Fire Progression to Flashover
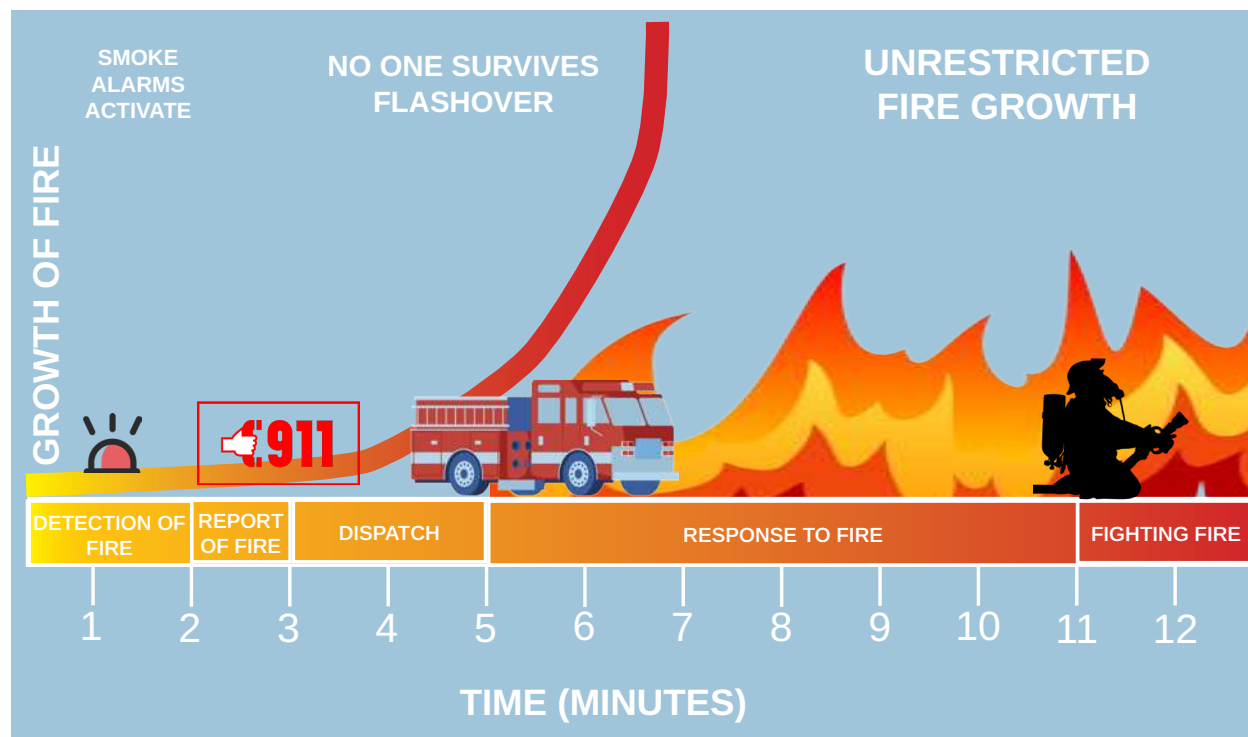
This graphic represents the benchmark/target dispatch and response to fire times. Current Meridian Fire Department performance times are located in Section 4.

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[34]Flashover is when all surfaces and contents of a space (room) reach their ignition temperature nearly simultaneously resulting in full room fire involvement. Flashover is generally not a survivable event for occupants or firefighters.

Fire Risk and Home Sprinkler Systems

The NFPA in its Home Structure Fires 2021 research report demonstrates a compelling case for home sprinkler systems.[35]

Statistic Category	Statistic
Percentage of fires with operating sprinklers in which sprinklers were effective in controlling the fire	97%
Civilian deaths per 1,000 reported fires	
Without sprinkler system	8.1
With sprinkler system	1.0
Percent reduction with sprinklers	88%
Civilian injuries per 1,000 reported fires	
Without sprinkler system	33
With sprinkler system	23
Percent reduction with sprinklers	28%
Firefighter injuries per 1,000 reported fires	
Without sprinkler system	51
With sprinkler system present	11
Percent reduction when sprinklers present	78%
Average loss per fire	
Without sprinkler system	$21,700
With sprinkler system	$8,200
Percent reduction with sprinklers	62%

The following is a position statement from the United States Fire Administration (USFA) relating to residential sprinklers:

> It is the position of the USFA that all citizens should be protected against death, injury and property loss resulting from fire in their homes. All homes should be equipped with both smoke alarms and residential fire sprinklers, and all families should have and practice an escape plan. The USFA fully supports all efforts to reduce the tragic toll of fire losses in this nation, including the current International Residential Code that requires residential fire sprinklers in all new residential construction.[36]

[35]NFPA Home Structure Fires. December 2017. https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Building-and-life-safety/oshomes.pdf.

[36]United States Fire Administration. https://www.usfa.fema.gov/about/sprinklers_position.html#:~:text=It%20is%20the%20position%20of,practice%20an%20emergency%20escape%20plan.

There is overwhelming evidence that a fire agency's ability to keep a fire to room of origin is a critical element in preventing fire deaths. Statistics in the table below show that when a fire is confined to the room of origin versus extending beyond the room of origin, the rate of deaths and property loss is nine times less.[37] NFPA also reports that three-quarters of residential fire deaths occur when the fire extends beyond the three most common rooms of origin: living rooms, bedrooms, and kitchens.[38]

Flame Spread	Rate Per 1,000 Fires		
	Civilian Deaths	Civilian Injuries	Avg. Dollar Loss/Fire
Confined fires or contained fire identified by incident type	0	8.7	$200
Confined fire or fire spread confined to object of origin	0.4	11.1	$1,200
Confined to room of origin, including confined fires and confined to object	1.8	23.8	$4,000
Spread beyond the room of origin but confined to floor of origin	16.2	76.3	$35,000
Spread beyond floor of origin	24.6	55.0	$65,900

MFD advocates for fire sprinklers in new construction homes to reduce property damage and prevent both civilian and firefighter injuries and deaths. This is in line with item 15 of the National Fallen Firefighters Foundation 16 Firefighter Safety Initiatives – Advocacy must be strengthened for the enforcement of codes and the installation of home fire sprinklers.[39]

For homeowners of sprinklered homes, the likelihood of being saved by a sprinkler in a fire is greater than being saved by an air bag in a vehicle crash.[40]

[37]Source: NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments, 2020 Edition, Annex A.

[38]NFPA. Home Structure Fires. December 2017. https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Building-and-life-safety/oshomes.pdf.

[39]Everyone Goes Home 16 Firefighter Safety Initiatives. https://www.everyonegoeshome.com/16-initiatives/.

[40]https://www.nist.gov/publications/comparing-performance-residential-fire-sprinklers-other-life-safety-technologies.

Section 3: All-Hazard Community Risk Assessment

A Meridian Fire Department fire risk team utilized the three-dimensional risk model to determine four risk categories: low, moderate, high and maximum. In conjunction with this task, the team developed critical tasks and effective response forces to manage each of the category risks.

Additionally, the fire team scored specific occupancy types within the MFD service area. The scores may be found in **Appendix 3.3**.

| Fire Risk Level Categories	
Low	Fire alarms, smoke odor investigations, dumpster fires, car fires without structures threatened, barbeque fires
Moderate	Appliance fires, chimney fires, reported structure fires without confirmation, room and contents fires.
High	Working residential fire, any reported structure fire with a vicitm, commerical and industrial occupancy fires
Maximum	Occupancies over 4 stories, large health care and extended care facilities (including assisted living and hospitals), large big box commercial structure fires

Fire - Low Risk	
Critical Task	Personnel Required
Command/safety	1*
Pump operation	1
Fire attack	1
Total	**3**
Effective Response Force - 1 engine company	

*Can assist with other tasks as necessary.

RISK SCORE = 1
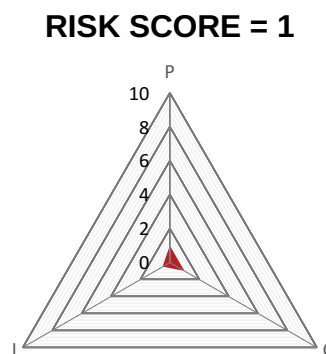
| Fire - Moderate Risk	
Critical Task	Personnel Required
Command/safety	1
Water supply	1*
Secure utilities	1*
Pump operation	1
Initial attack line	2
Primary Search	2
2nd attack line/secondary search	2
Ventilation	3
Rapid Intervention Crew/on deck	3
Total	**14**
Effective Response Force - 3 engine companies, 1 truck company, 1 BC	

RISK SCORE = 18
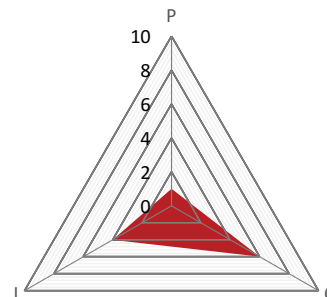
*Can assist with other tasks once initial assignment is complete.

Fire - High Risk	
Critical Task	Personnel Required
Command	1
Safety/Accountability	1
Water supply - 2 hydrants	2*
Secure utilities	1*
Pump operation/FDC connection	2
Initial attack line	2
2nd attack line/secondary search	2
Backup line	2
Primary search	2
Ventilation/Aerial Operations	4
Rapid Intervention Crew/on deck	3
Rehab/patient care	2
Medical group supervisor	1
Total	**23**
Effective Response Force - 4 engine companies, 2 truck companies, 2 BCs, 1 medic ambulance, 1 medic BC	

RISK SCORE = 40
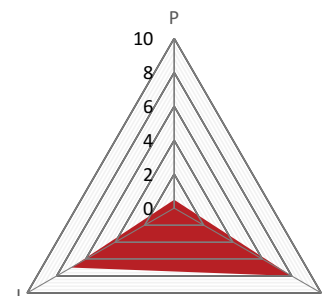
*Can assist with other tasks as necessary.

Fire - Maximum Risk	
Critical Task	Personnel Required
Command	1
Safety/Accountability	2
Water supply - 3 hydrants	3*
Secure utilities	1*
Pump operation/FDC connection	2
Initial attack line	2
2nd attack line/secondary search	2
Backup line	2
Master streams	2
Primary search	4
Ventilation/Aerial Operations	4
Rapid Intervention Crew/on deck	3
Evacuation	PD or 3* MFD
Rehab/patient care	4
Medical group supervisor	1
Total	**35**
Effective Response Force - 5 engine companies, 3 truck companies, 2 BCs, 1 Safety Officer, 2 medic ambulances, 1 medic BC	

*Can assist with other tasks once initial assignment is complete.

RISK SCORE = 71
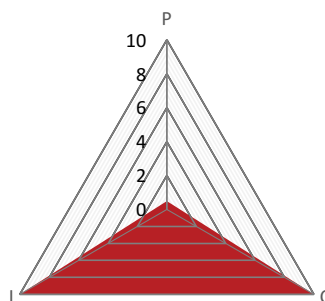
HAZMAT RISK ASSESSMENT

Meridian has a wide range of hazmat risks ranging from carbon monoxide (CO) alarms to potential large-scale hazmat events on Interstate 84. The MFD fire risk team utilized the three-dimensional risk scoring tool to score each hazmat risk category. This was followed by the development of critical tasks and effective response forces. There are two regional Hazmat teams within an hour of Meridian, one managed by the Boise Fire Department and the other by the Caldwell Fire Department. Both teams have technician-level personnel available for high-risk hazmat incidents.

Hazmat Risk Level Categories	
Low	CO alarms, small flammable liquid spills, small (<4 in diameter line) outdoor gas leaks
Moderate	Large flammable liquid spills, gas leaks inside structures
High	Any hazmat incident requiring technician level personnel

Hazmat - Low Risk	
Critical Task	Personnel Required
Command/safety	1*
Size up/recon/air monitoring as needed/spill mitigation	1*
Patient assessment/treatment as needed	1*
Total	**3**
Effective Response Force - 1 engine company	

RISK SCORE = 1
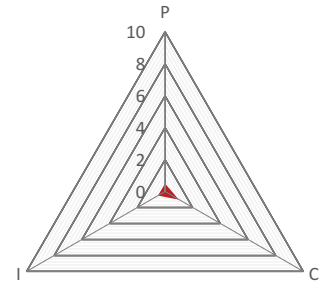
*Can assist with other tasks as necessary.

Hazmat - Moderate Risk	
Critical Task	Personnel Required
Command/safety	1
Size up/recon/air monitoring as needed	1
Pump operation	1
Protection/decon line	2
Spill mitigation	2
Evacuation	PD
Patient assessment/treatment as needed	2*
Total	**7**
Effective Response Force - 2 engine companies, 1 BC	

RISK SCORE = 6
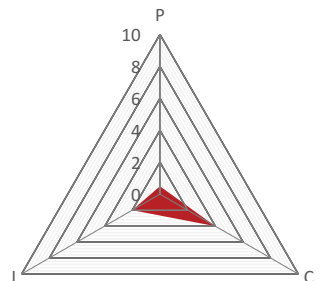
*Can assist with other tasks if no patient care is needed.

Section 3: All-Hazard Community Risk Assessment

Hazmat - High Risk		
Critical Task	Personnel Required	
Command	MFD-1	...
Safety - Scene	MFD-1	...
Safety - Hazmat group	...	BFD-1*
Initial isolation, evacuation, & identification	MFD-3	...
Hazmat group supervisor	...	BFD-1*
Air monitoring	MFD-1	BFD-1*
Research/identification	...	BFD-2*
Entry team	...	BFD-2*
Backup	...	BFD-2*
Decon	MFD-3	BFD-1*
Medical group supervisor	ACP-1	...
Patient treatment/transport	ACP-2	...
Total MFD/ACP/BFD	**12**	**10**
Effective Response Force - 1 MFD engine company, 1 MFD truck company, 1 MFD BC, 1 MFD safety officer, 1 BFD engine company, 1 BFD truck company, 1 BFD hazmat response unit, 1 BFD BC, 1 BFD safety officer, 1 medic ambulance, 1 medic BC		

RISK SCORE = 23
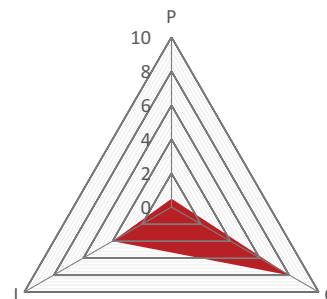
*Technician level

TECHNICAL RESCUE RISK ASSESSMENT

Meridian has technical rescue risks that include routine to complex extrication, trench rescue, confined space, canal water rescue, high-angle rescue and building collapse.[41] Except for extrication and some water rescues, MFD lacks the resources to provide for the majority of the technical rescue categories and relies on resources from Boise or Eagle Fire Department to fulfill this need. Vehicle extrication incidents are the most common form of technical rescue to which MFD responds. As such, all MFD personnel are trained to the technician level of NFPA 1670: *Standard on Operations and Training for Technical Search and Rescue Incidents*.

| Extrication Risk Level Categories	
Low	Elevator rescue.
Moderate	Conventional vehicle or machinery extraication with standard hydraulic extrication tools.
High	Complex, technical extrication requireing specialized extrication equipment and technician level personnel, or extrications with more than 4 patients.

[41]Building collapse risk is primarily in the form of partial building collapse due to impact from a vehicle, and to a much lesser risk, collapse from an earthquake event.

Extrication - Low Risk	
Critical Task	Personnel Required
Command/safety	1*
Lockout/tag out	1*
Extrication/stabilization	2*
Patient communication	1*
Patient assessment/treatment as needed	2*
Total	**3**
Effective Response Force - 1 engine or truck company	

RISK SCORE = 1
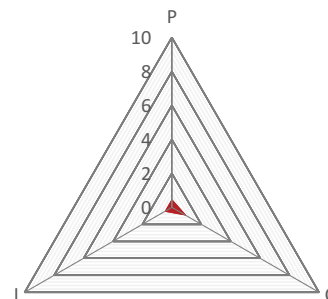
*Can assist with more than one task
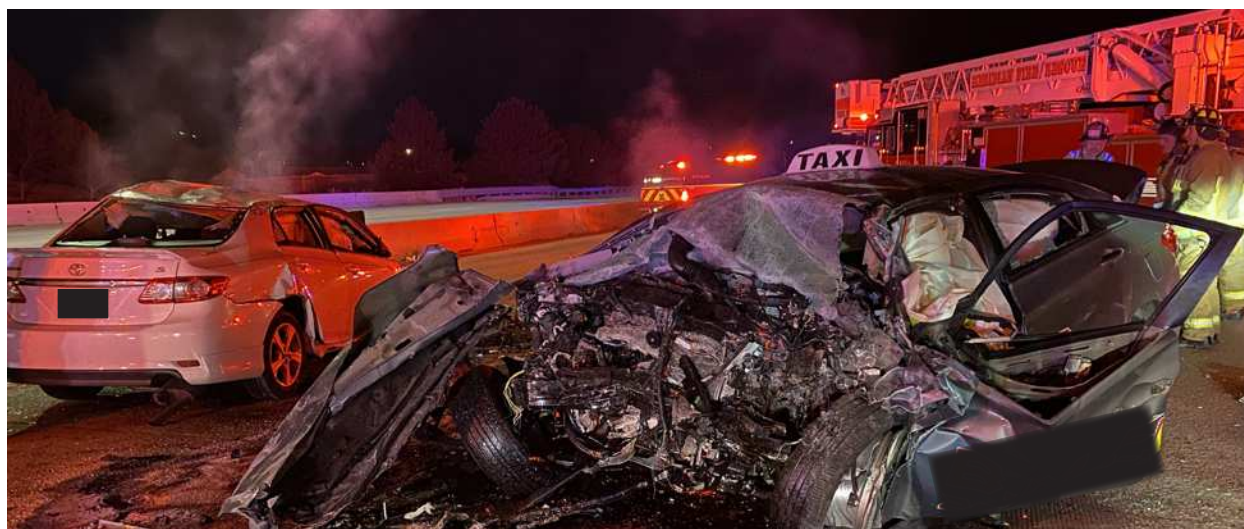
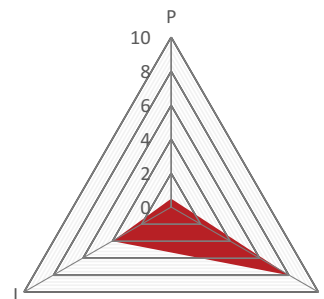| Extrication - Moderate Risk	
Critical Task	Personnel Required
Command/safety	1
Triage	1 or 2*
Protection line	1
Pump operator	1
Extrication/stabilization	3
Patient treatment/transport	2
Medical group supervisor	1
Total	**11**
Effective Response Force - 1 engine company, 1 truck company, 1 BC, 1 medic ambulance, 1 medic BC	

RISK SCORE = 6

*Can assist with other tasks as necessary.

Section 3: All-Hazard Community Risk Assessment
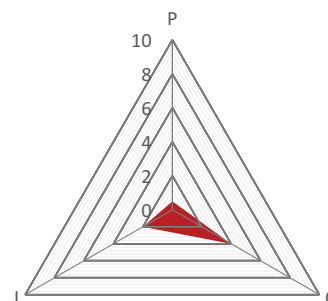
Extrication - High Risk	
Critical Task	Personnel Required
Command	1
Safety	1
Triage	2*
Protection line	1
Pump operator	1
Extrication/stabilization	6
Patient treatment/transport	2
Medical group supervisor	1
Total	**15**
Effective Response Force - 2 engine companies, 1 truck company, 1 BC, 1 safety officer, 1 medic ambulance, 1 medic BC	

RISK SCORE = 23

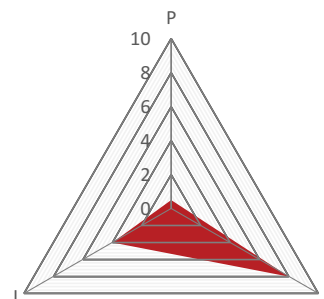*Can assist with other tasks as necessary.

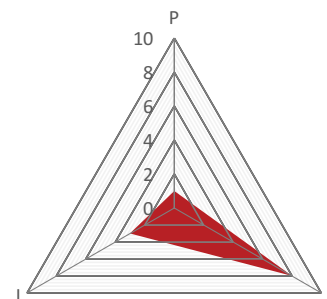| Trench Rescue - High Risk		
Critical Task	Personnel Required	
Command	MFD-1	...
Safety - scene	MFD-1	...
Safety - rescue group	...	BFD-1*
Initial size-up and scene stabilization	MFD-3	...
Rescue group supervisor	...	BFD-1*
Shoring/panel team	MFD-4	BFD-4*
Rescue group	...	BFD-4*
Medical group supervisor	ACP-1	...
Patient treatment/transport	ACP-2	...
Total MFD/ACP/BFD	**12**	**10**
Effective Response Force - 1 MFD engine company, 1 MFD truck company, 1 MFD BC, 1 MFD safety officer, 1 BFD engine company, 1 BFD truck company, 1 BFD heavy rescue, 1 BFD BC, 1 BFD safety officer, 1 medic ambulance, 1 medic BC		

RISK SCORE = 23

*Can assist with other tasks as necessary.

Water Rescue - High Risk		
Critical Task	Personnel Required	
Command	MFD-1	...
Safety	MFD-1	...
Rescue group supervisor	...	EFD-1*
Upstream spotter	MFD-1	...
Downstream spotter	MFD-1	...
Rescue group	...	EFD-3*
Shore group	MFD-3	...
Medical group supervisor	ACP-1	...
Patient treatment/transport	ACP-2	...
Total	**10**	**4**
Effective Response Force - 1 engine company, 1 truck company, 1 BC, 1 EFD rescue, 1 medic ambulance, 1 medic BC		

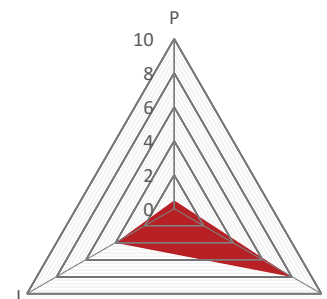*Technician level

RISK SCORE = 18

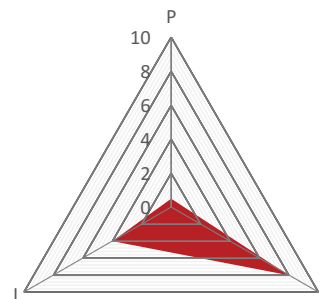| Confined Space Rescue - High Risk		
Critical Task	Personnel Required	
Command	MFD-1	...
Safety - Scene	MFD-1	...
Safety - rescue group	...	BFD-1*
Initial size-up and scene stabilization	MFD-3	...
Rescue group supervisor	...	BFD-1*
Air monitoring	MFD-1	BFD-1*
Rigging/rope tender	...	BFD-6*#
Rescue group support	MFD-4	...
Entry	...	BFD-3*
Backup	...	BFD-3*
Patient treatment/transport	ACP-2	...
Total MFD/ACP/BFD	**12**	**15**
Effective Response Force - 1 MFD engine company, 1 MFD truck company, 1 MFD BC, 1 MFD safety officer, 1 BFD engine company, 1 BFD truck company, 1 BFD heavy rescue, 1 BFD Hazmat unit, 1 BFD BC, 1 BFD safety officer, 1 medic ambulance, 1 medic BC		

*Technician level
#Technicians will transition to entry and backup tasks upon rigging completion.

RISK SCORE = 23

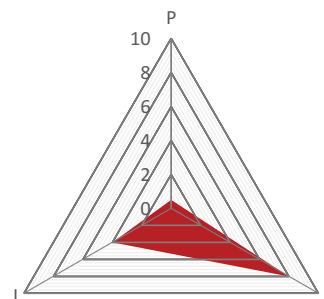| High Angle Rescue - High Risk		
Critical Task	Personnel Required	
Command	MFD-1	...
Safety - scene	MFD-1	...
Safety - rescue group	...	BFD-1*
Initial size-up and scene stabilization	MFD-3	...
Rescue group supervisor	...	BFD-1*
Rigging/rope tender	...	BFD-3*
Rescue group	...	BFD-3*
Rescue group support	MFD-4	...
Backup	...	BFD-2*
Medical group supervisor	ACP-1	...
Patient treatment/transport	ACP-2	...
Total MFD/ACP/BFD	**12**	**10**
Effective Response Force - 1 MFD engine company, 1 MFD truck company, 1 MFD BC, 1 MFD safety officer, 1 BFD engine company, 1 BFD truck company, 1 BFD heavy rescue, 1 BFD BC, 1 BFD safety officer, 1 medic ambulance, 1 medic BC		

*Technician level

RISK SCORE = 23

Building Collapse Rescue - High Risk		
Critical Task	Personnel Required	
Command	MFD-1	...
Safety - scene	MFD-1	...
Safety - rescue group	...	BFD-1*
Initial size-up and scene stabilization	MFD-3	...
Air monitoring	...	BFD-1*
Rescue group supervisor	...	BFD-1*
Stabilization and rescue group	...	BFD-7*
Rescue group support	MFD-4	...
Medical group supervisor	ACP-1	...
Patient treatment/transport	ACP-2	...
Total MFD/ACP/BFD	**12**	**10**
Effective Response Force - 1 MFD engine company, 1 MFD truck company, 1 MFD BC, 1 MFD safety officer, 1 BFD engine company, 1 BFD truck company, 1 BFD heavy rescue, 1 BFD BC, 1 BFD safety officer, 1 medic ambulance, 1 medic BC		

*Technician level

RISK SCORE = 23

WILDLAND FIRE RISK ASSESSMENT

While there is no area in Meridian's response area that is considered a true wildland-urban interface, there are still agricultural properties, including hay fields, that have the potential to catch fire. These areas are quickly becoming a thing of the past as more and more housing developments take over what was once farmland. MFD also responds to automatic and mutual aid requests for brush fires in Eagle, Kuna, Star/Middleton, Nampa, and Boise, all of which have a WUI. While there is no true wildland risk in Meridian, a risk assessment was completed as units could be taken out of service for an extended period of time while assisting partner agencies. For the purposes of the self-assessment manual, Meridian is not considered to have a wildland program as no true wildland risk exists in its response area. On average, less than 30 total acres of agricultural or farmland burn annually in Meridian's response district.

Wildland/Grass/Agricultural Fire Risk Level Categories	
Low	Small isolated or roadside fire with little to no spread; isolated tree or shrub fire.
Moderate	Grass or wildland fire that is not threatening any infrastructure, low to moderate spread. Haystack fires or agricultural fires not threatening structures.
High	Any size grass, wildland, or agricultural fire that is threatening any infrastructure.

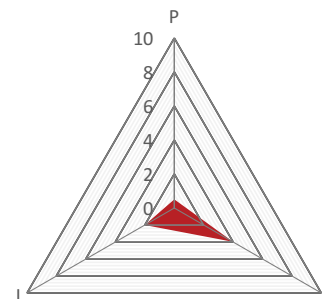| Wildland/Grass/Ag Fire - Low Risk	
Critical Task	Personnel Required
Command/safety	1*
Pump operation	1*
Fire attack	1
Total	**3**
Effective Response Force - 1 engine or brush company	

*Can also assist with other tasks as necessary.

RISK SCORE = 1
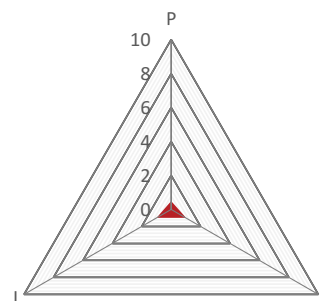
Wildland/Grass/Ag Fire - Moderate Risk	
Critical Task	Personnel Required
Command/safety	1
Pump operation	2*
Water supply	1
Fire attack - two lines + hand tool work	4
Total	**7**
Effective Response Force - 2 engine or brush companies, 1 BC	

RISK SCORE = 6

*Can also assist with other tasks as necessary.

Wildland/Grass/Ag Fire - High Risk	
Critical Task	Personnel Required
Command	1
Safety	1
Water supply	1*
Pump operation	3*
Fire attack - two lines + hand tool work	4
Structure protection	4*
Total	**14**
Effective Response Force - 2 engine or brush companies, 1 engine company, 1 truck company, 1 BC	

RISK SCORE = 28
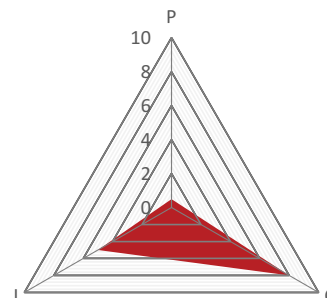
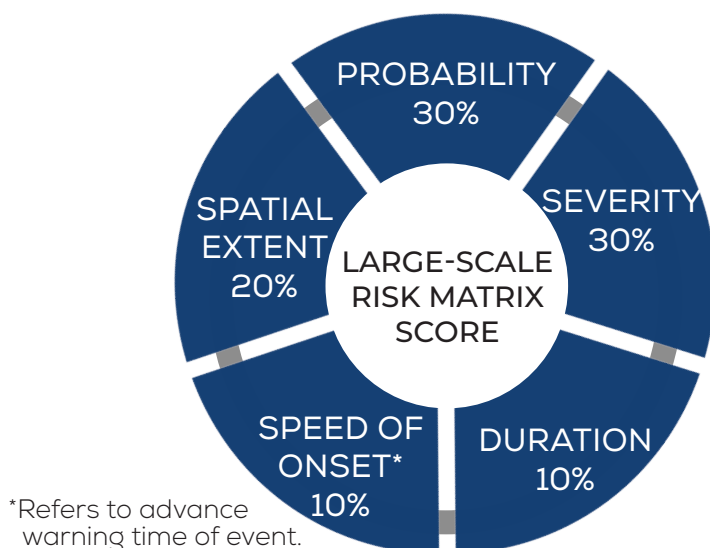*Can also assist with other tasks as necessary.

LARGE-SCALE CITYWIDE EVENT RISK ASSESSMENT

In addition to the four classifications of risk previously discussed, Meridian Fire Department has also assessed large-scale citywide risks. These risks likely would require additional resources beyond MFD's capability, and have extended incident time periods.

A five-dimensional profile risk index (PRI) was utilized by MFD's senior staff, resulting in the identification and ranking of six large-scale risks. The PRI process consisted of rating five elements with an associated weighted value.[42]

The elements and their associated weighted values are illustrated in **Figure 3.17**.

Figure 3.17 Profile Risk Index (PRI)

PROBABILITY 30%

SEVERITY 30%

SPATIAL EXTENT 20%

LARGE-SCALE RISK MATRIX SCORE

SPEED OF ONSET* 10%

DURATION 10%

*Refers to advance warning time of event.

The completed profile risk index scoring matrix can be located in **Appendix 3.4**. The weighted average scores were categorized into a risk level as defined by the scoring range in the table below.

Score	Risk
1 – 1.9	Low
2.0 – 2.9	Moderate
3.0 – 3.9	High
4.0 – 4.9	Very High

[42]Source: Beyond the Basics, Best Practices in Local Mitigation Planning. www.mitigationguide.org, and National Fire Academy On-Campus Executive Fire Officer Community Risk Reduction course curriculum.

Discussion of each large-scale risk and the associated category rating/PRI score follows – listed in order of the highest associated PRI score.

Extreme Weather Event	PRI Score – 3.3	Risk Category – High

Meridian is vulnerable to extreme weather events such as severe thunderstorms, snowstorms and heat waves. The most recent extreme weather event was "Snowmageddon" during December 2016 and January 2017 when nearly 40 inches of snow fell during that period of time. Conditions were such that Meridian required help from the Idaho National Guard to help remove snow. Extreme weather events can cause a multitude of risks to the public and can have a significant effect on emergency service delivery, including the ability to get to an incident and the demand an extreme weather event puts on the department.

Extended Power/Cellular/Internet Blackout	PRI Score – 3.0	Risk Category – High

Meridian citizens depend on a patent source of electricity and cellular/internet connectivity for safe and effective day-to-day living. Meridian's critical infrastructure, including MFD fire stations, have backup power sources. The majority of the general population and businesses do not. MFD defines this risk as a widespread electrical grid failure that goes beyond eight hours and possibly lasts for days, and/or an extended cellular or internet outage of similar duration. Such an event would have a significant impact on both the community and the department.

Large-Scale Hazmat Event	PRI Score – 2.8	Risk Category – Moderate

A large-scale hazmat incident at a facility or on a highway would require numerous regional as well as potentially state-level resources, and could pose a serious risk to nearby residential populations. Effects from such an incident could pose both acute and long-term effects for the public as well as the environment. Identifying the scope of a large-scale hazmat incident early in its inception by qualified personnel is critical to initiating the response of appropriate resources to help ensure stabilization in an expeditious manner.

Active Shooter Incident	PRI Score – 2.4	Risk Category – Moderate

An active shooter event is an event involving one or more suspects who participate in an ongoing, random or systematic shooting spree, demonstrating the intent to harm others with the objective of mass murder.[43] This risk is an

[43]International Association of Fire Chiefs Position Statement: Active Shooter and Mass Casualty Terrorist Events. https://www.iafc.org/topics-and-tools/resources/resource/iafc-position-active-shooter-and-mass-casualty-terrorist-events.

example of the ever-changing, all-hazards nature of the fire service. Active shooter events have increased in frequency across the country in recent years, thereby increasing the probability of such an event. In addition to the initial severity of the event to the public and first responders, long-term effects on MFD personnel are significant and were a contributing factor to the severity score. MFD, along with the Meridian Police Department, West Ada School District and many other local and state agencies are working together on a project to meet NFPA 3000: *Standard for Active Shooter/Hostile Event Response.*

Terrorism Event	PRI Score – 2.4	Risk Category – Moderate

In the context of this risk, a terrorism event is an intentional act that results in many victims and may occur in the form of a conventional explosive, or a chemical, biological, radioactive or nuclear weaponized device. The potential for a large number of victims and the potential for the use of a unconventional device to create harm and the resulting risk posed to first responders all contributed to the risk score of this event.

Flood Event	PRI Score – 2.0	Risk Category – Moderate

The Boise River has potential for flooding along the north boundary of Meridian. Causes of flooding would be from excessive snowmelt, rainfall, or a dam failure of secondary rivers that feed into the Boise River. The speed of onset for such an event depends on the cause. Snowmelt and excessive rainfall (the most likely scenario) would allow for longer preparation time than a dam failure, that would reduce the time of preparation to a few hours.

Meridian Large-Scale Risks and the Ada County Hazard Mitigation Plan

The current Ada County Hazard Mitigation Plan includes a Meridian Hazard Risk Ranking using the Hazus Model[44] as shown below.

Rank	Hazard	Risk Score	Risk Category
1	Extreme weather	24	Medium
2	Flood	18	Medium
3	Earthquake	16	Medium
4	Drought	9	Low
5	Dam/canal failure	6	Low
6	Landslide	6	Low
7	Wildfire	0	Low

[44]The Hazus Model is the risk assessment tool used by FEMA. https://www.fema.gov/flood-maps/products-tools/hazus.

Section 3: All-Hazard Community Risk Assessment

SECTION 4

Current Deployment and Performance

If you can't measure it, you can't improve it.

– Peter Drucker

SECTION 4 - CURRENT DEPLOYMENT AND PERFORMANCE

STAFFING

Meridian Fire Department is a career department with six stations, each staffed with 24-hour shift personnel. A department-wide staffing level policy ensures adequate personnel are on duty each shift. MFD operates on a three platoon, 48/96 schedule. The table below represents the daily staffing levels at each station. In addition to the staffing levels indicated, there is a shift battalion chief on duty at Station 1. Two new stations will open in late 2023, increasing the department's minimum staffing to 27.

Station	Minimum Staffing
1	8*
2	3
3	3
4	3
5	4
6	3

*Includes battalion chief

MOBILE RESOURCES/APPARATUS

Engines

MFD has six engine companies, each staffed with three personnel. Engine companies are dispatched to all call types and are the primary unit to initiate service. All MFD engines have 1,500 gallons per minute pumping capacity, 750 gallons of water, and 800 feet of supply hose. Each engine has an equipment inventory that meets NFPA 1901: *Standard for Automotive Fire Apparatus* and Idaho Surveying and Rating Bureau (ISRB) equipment requirements. This equipment includes ground ladders, saws, a variety of forcible entry tools, fans, attack lines and an assortment of other equipment and supplies. In addition, all MFD engines carry a basic set of hydraulic power extrication tools and advanced life support EMS equipment.

Ladder Trucks

MFD staffs two 100-foot platform ladder trucks with four personnel each. The ladder trucks carry all equipment listed in NFPA 1901 and ISRB standards, including two 35-foot extension ladders, 28-foot and 24-foot extension ladders, chain and circular saws, two full sets of extrication equipment, various size air bags, a multitude of additional rescue and forcible entry tools, and ALS equipment and supplies.

Tender

A 3,000-gallon water tender is cross-staffed at Station 2. The tender responds on fire incidents where there are no hydrants, or hydrants that are beyond the reach of the compliment of supply line carried on an engine. It also responds to wildland fires for water supply to support mobile apparatus. The tender carries two portable tanks that enable a tender shuttle operation with the assistance of additional tenders from neighboring departments.

Brush Trucks

A brush truck (wildland engine) is an apparatus specifically designed to fight wildland and grass fires. MFD cross-staffs two 4x4 Type 6 brush trucks. Each truck has a small water tank and pump, as well as small diameter attack lines and wildland-specific hand tools.

Command Vehicle

A command vehicle consists of a one-ton pickup truck or SUV that carries the necessary communication and equipment resources required by an incident commander to command a large incident. Shift battalion chiefs and 40-hour chief officers are each assigned a command vehicle.

MFD Apparatus Distribution

Station	Front Line Apparatus Assigned	Cross-Staffed Apparatus	Reserve Apparatus
1	Truck 31 – 2021 Pierce Velocity 100' platform Battalion 31 – 2022 Ford F350	Engine 37 - 2023 Pierce EnforcerWW	2000 Pierce Dash engine 2008 Pierce Arrow 100' platform 2004 Pierce Dash engine 2008 Pierce Contender engine
2	Engine 32 – 2016 Pierce Enforcer	Tender 32 – 2001 Central States 3,000-gallon tender	
3	Engine 33 – 2015 Pierce Arrow	Brush 38 – 2012 Type 6 engine (temp)	
4	Engine 34 – 2018 Pierce Enforcer	Brush 37 – 2009 Type 6 engine (temp)	
5	Truck 35 – 2023 Pierce Velocity 100' Aerial tower quint		
6	Engine 36 – 2018 Pierce Enforcer		

MFD maintains three reserve engines and one reserve ladder truck. One engine is committed to the training division.

FIXED RESOURCES/STATIONS AND FACILITIES

Figure 4.1 Fire Station Map
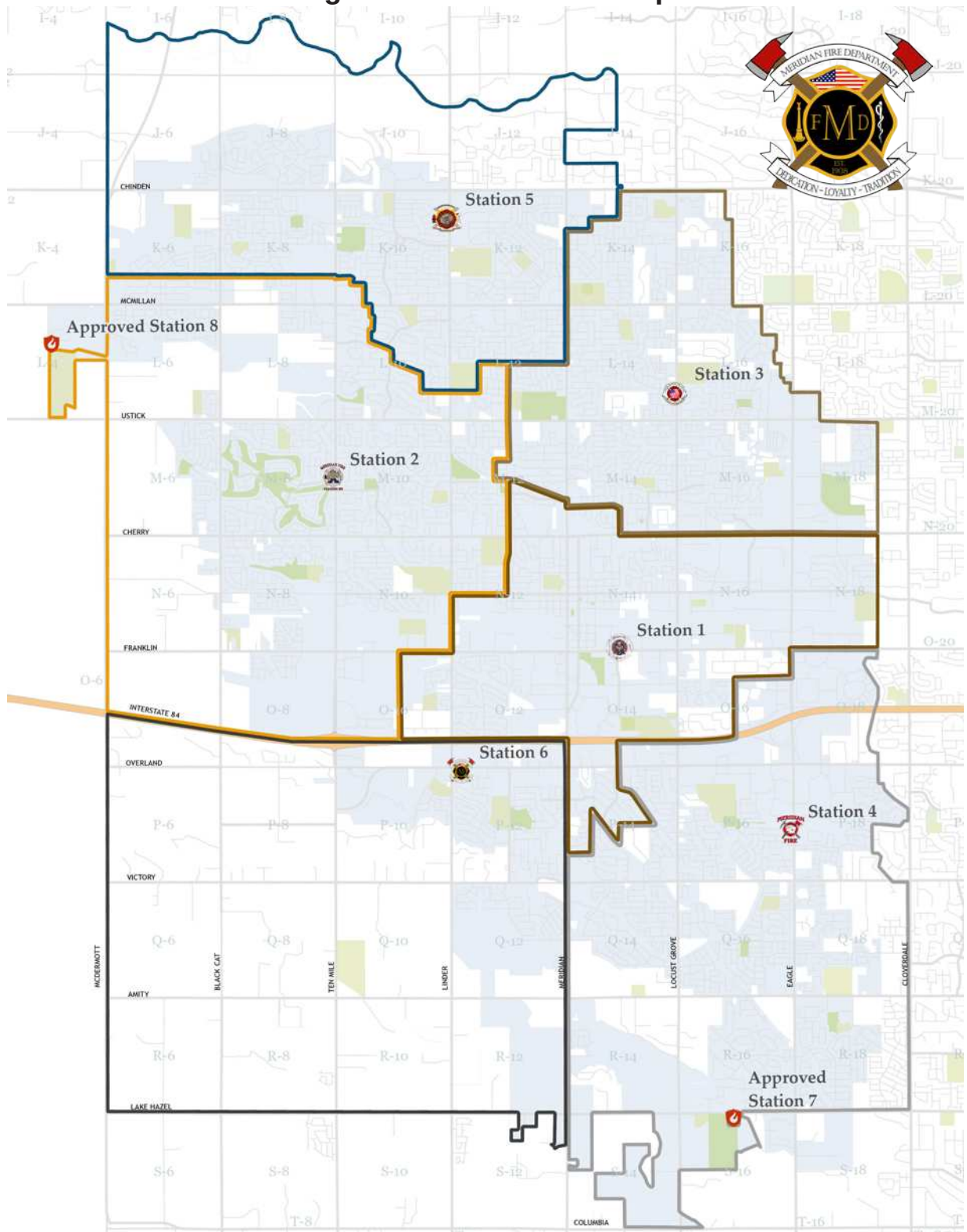
540 E. Franklin Road

Year Built - 2000

Square Footage 11,700

Personnel Assigned Per Shift – 5

Sprinklered – Yes

Apparatus Assigned - T31, BC31, E37 (temporary)

STATION 1

2401 N. Ten Mile Rd.

Year Built - 2001

Square Footage 6,770

Personnel Assigned Per Shift – 3

Sprinklered – Yes

Apparatus Assigned E32, WT32

STATION 2

3545 N. Locust Grove Rd.

Year Built – 2003

Square Footage 6,823

Personnel Assigned Per Shift – 3

Sprinklered – Yes

Apparatus Assigned E33, BR38 (Temporary)

Station 3

2515 S. Eagle Rd.

Year Built – 2006

Square Footage 7,077

Personnel Assigned Per Shift – 3

Sprinklered – Yes

Apparatus Assigned E34, BR37 (temporary)

Station 4

6001 N. Linder rd.

Year Built – 2008

Square Footage 7,360

Personnel Assigned Per Shift – 4

Sprinklered – Yes

Apparatus Assigned T35

STATION 5

1435 W. Overland Rd.

Year Built – 2020

Square Footage 10,226

Personnel Assigned Per Shift – 3

Sprinklered – Yes

Apparatus Assigned E36

STATION 6

1223 E. WATERTOWER ST.

TRAINING CENTER
BUILT – 2014
SQUARE FOOTAGE – 12,760
PERSONNEL – 4
SPRINKLERED – YES
───────────
SCENARIO VILLAGE
BUILT – 2021
SQUARE FOOTAGE – 11,698
SPRINKLERED – NO
APPARATUS – 1 TRAINING
ENGINE

TRAINING CENTER &
SCENARIO VILLAGE

Photo Courtesy: Marc Walters Photography

1901 E. LEIGH FIELD DR.

YEAR BUILT – 2001

SQUARE FOOTAGE
1,000

PERSONNEL – 3

SPRINKLERED – YES

FIRE SAFETY CENTER

33 E. BROADWAY AVE.

YEAR BUILT – 2008

SQUARE FOOTAGE
5,600 DEDICATED TO
FIRE DEPARTMENT

PERSONNEL – 20

SPRINKLERED – YES

ADMINISTRATION

Section 4: Current Deployment and Performance

Meridian has a mutual aid agreement with Nampa Fire Department and automatic aid agreements with all other fire agencies in Ada County.[45]

Figure 4.2 Ada County Fire Districts
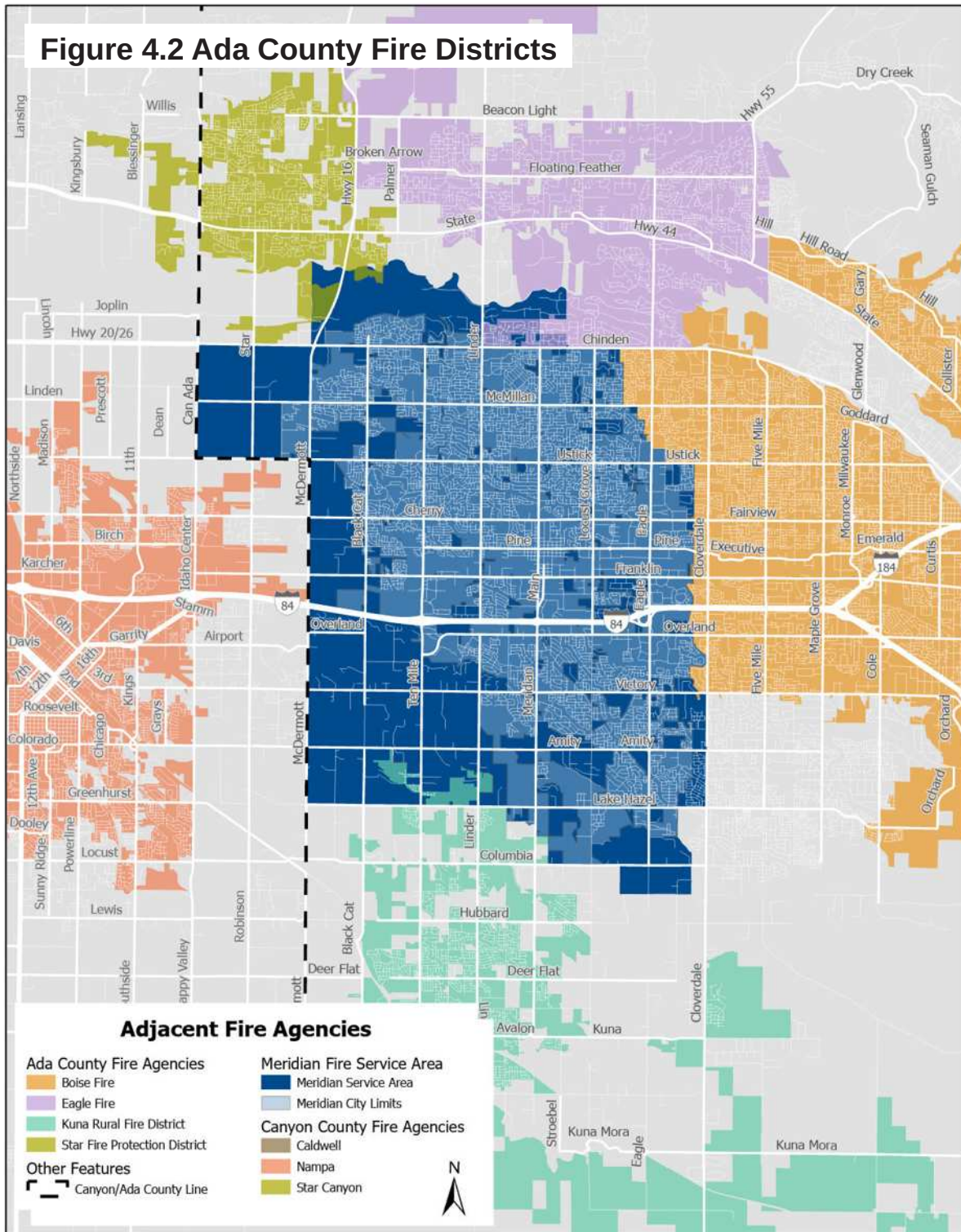
[45]Automatic aid is defined as dispatching the closest unit(s) to emergent calls regardless of jurisdictional boundaries. Mutual aid must be requested on an incident-by-incident basis.

PERFORMANCE

Idaho Surveying and Rating Bureau

The Idaho Surveying and Rating Bureau (ISRB) evaluates and rates fire departments in the state. The ISRB uses the 2012 ISO Fire Suppression Rating Schedule to rate a fire department on a scale of 1 to 10, with 1 being the highest rating. Components of the rating include receiving and handling of alarms, fire department prevention and suppression and water supply capabilities. The most recent rating ISRB performed for the City of Meridian was in 2019. The city received a rating of 3. The scoring breakdown of the rating is summarized in the table below. Full fire suppression rating schedule reports may be found in **Appendices 4.1 and 4.2**.
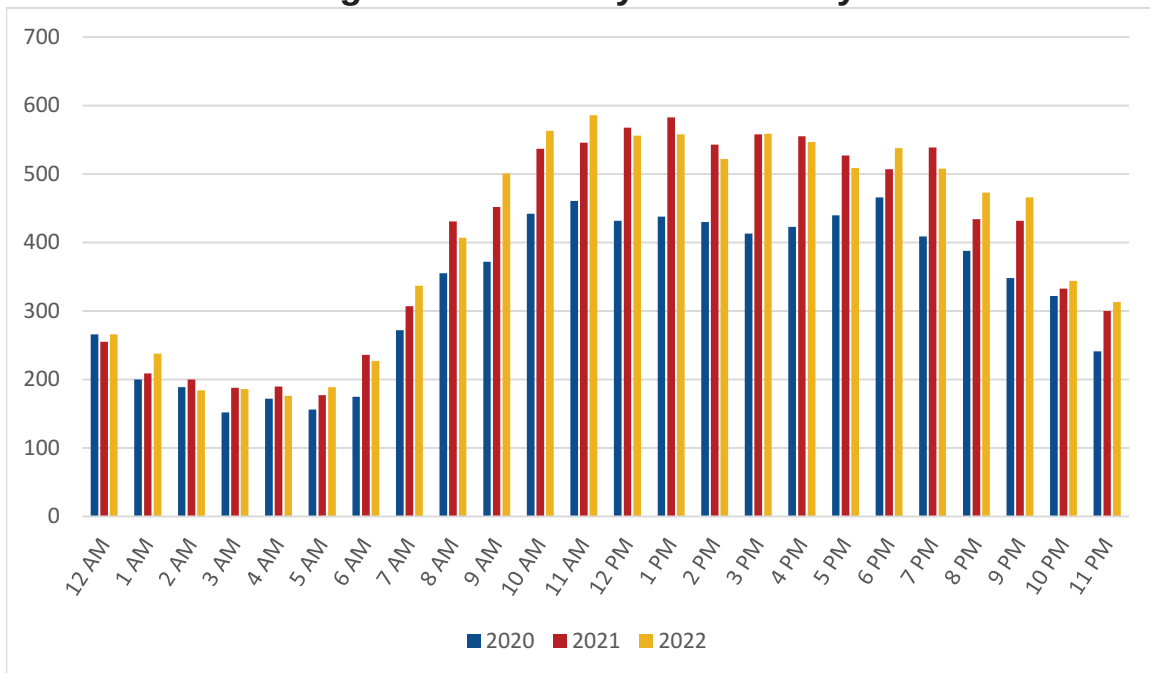
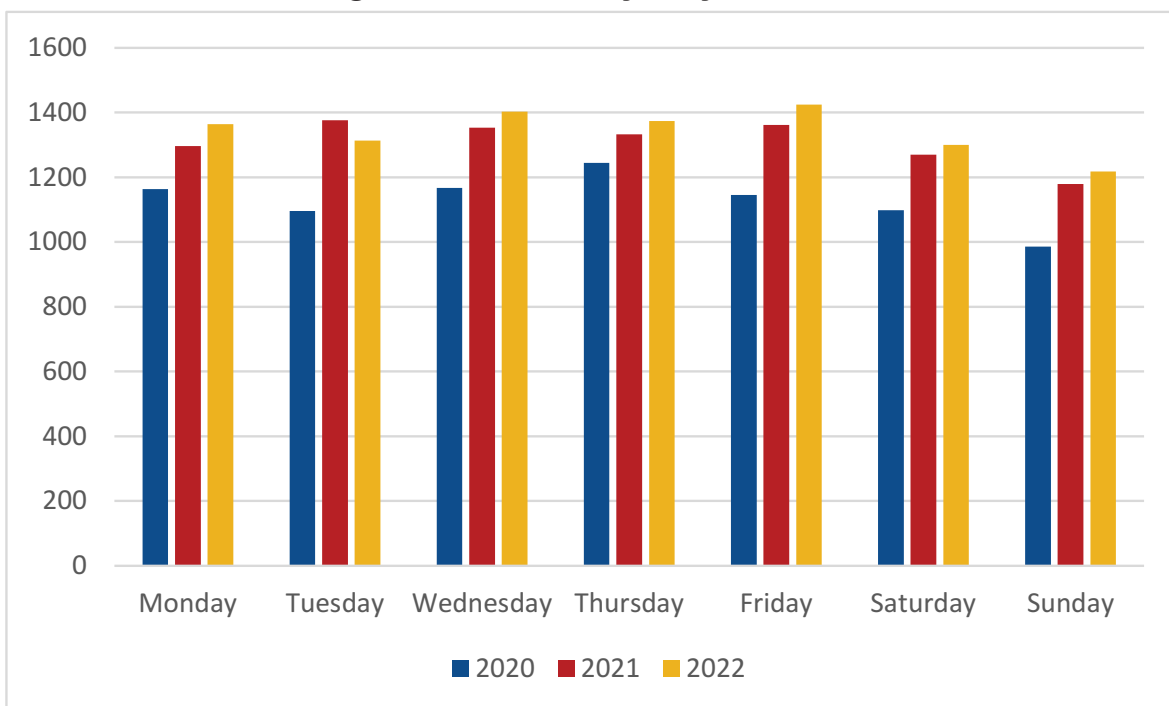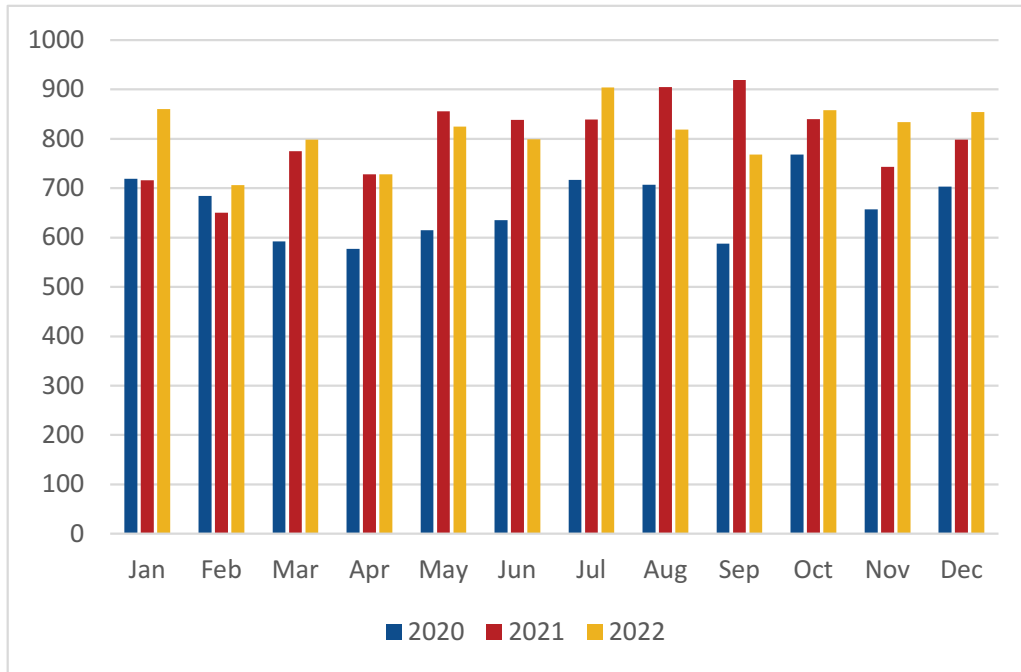| Rating Metric	Score	Total Points Possible	% Total Possible
Receiving/handling of alarms	10.0	10.0	100%
Fire department	29.65	50.0	59%
Water supply	38.05	40.0	95%

Figure 4.3 Fire Property Loss
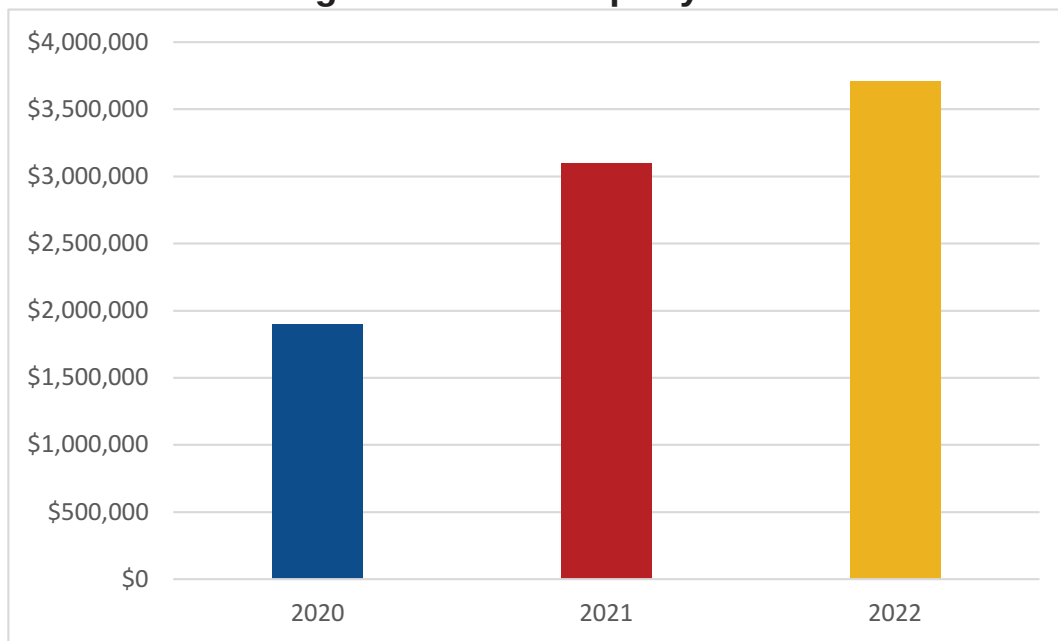
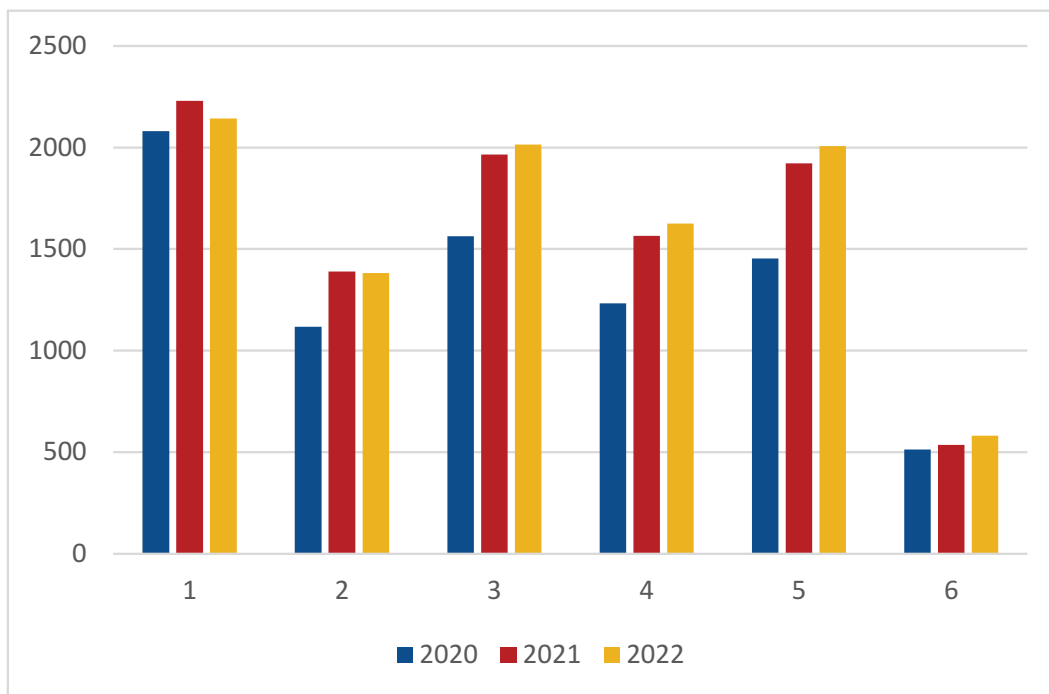**Temporal Analysis**

Figure 4.4 Calls by Time of Day

Figure 4.5 Calls by Day of Week

Figure 4.6 Calls by Month

Figure 4.7 Call Volume by GPZ

Figure 4.8 2022 Calls – Volume and Type

Legend:
- EMS - 72.8%
- Fire - 10.7%
- Public Service - 7.3%
- Lift Assist - 4.6%
- Hazmat - 3.0%
- Extrication - 0.9%
- Wildland/Grass/Ag - 0.7%
- Technical Rescue - 0.1%

Figure 4.9 Calls by Unit

|	Truck 31	Engine 32	Engine 33	Engine 34	Engine 35	Engine 36	Batt. 31	Brush 34	Brush 35	Tender 32
2020	1459	1550	1574	1513	1072	1110	350	28	22	17
2021	1695	1820	1768	1778	1386	1174	414	27	30	20
2022	1737	1792	1877	1799	1452	1229	438	47	39	27
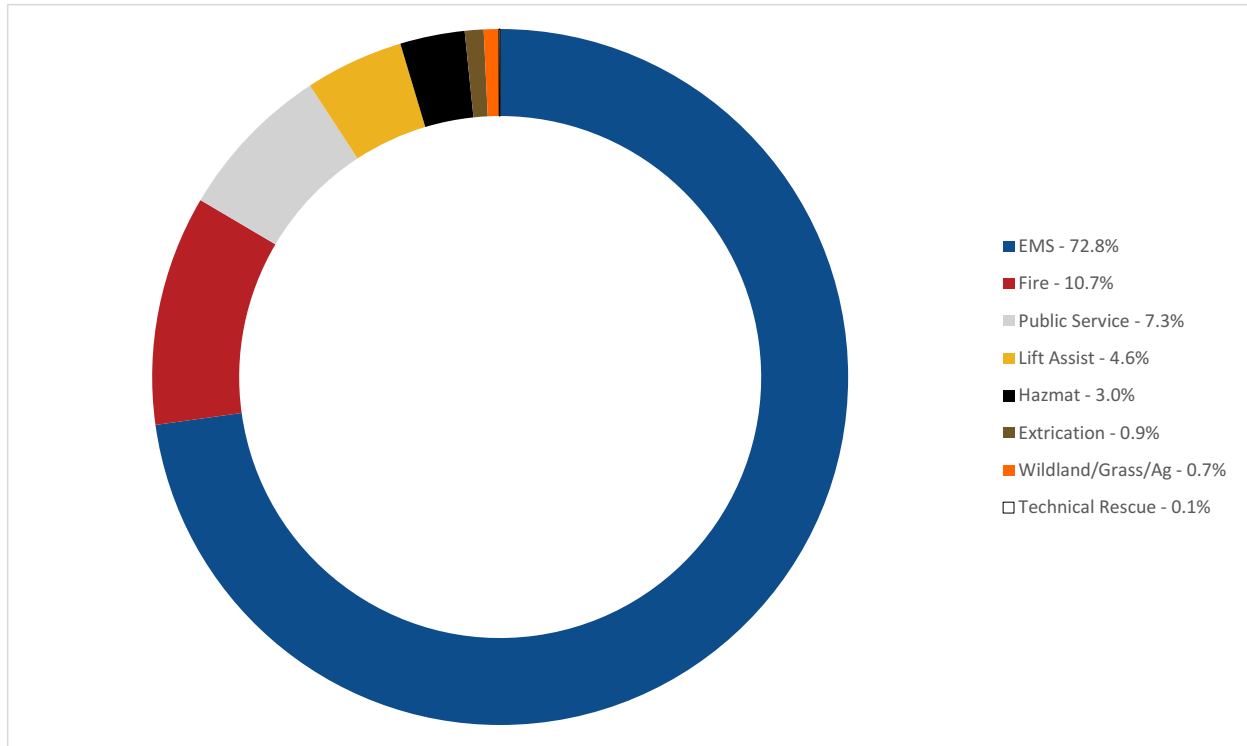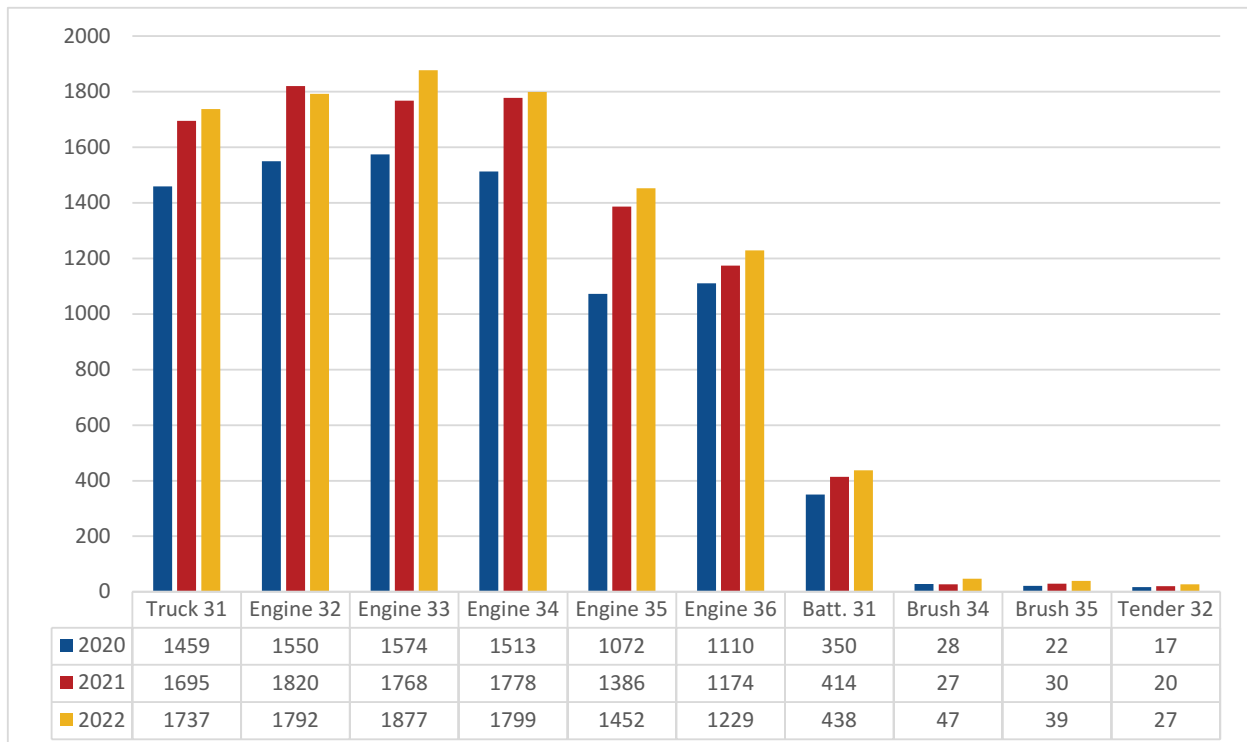
This chart illustrates a 36% increase in call volume from 2018 to 2022.

### Figure 4.10 Call Volume Increase 2018-2022
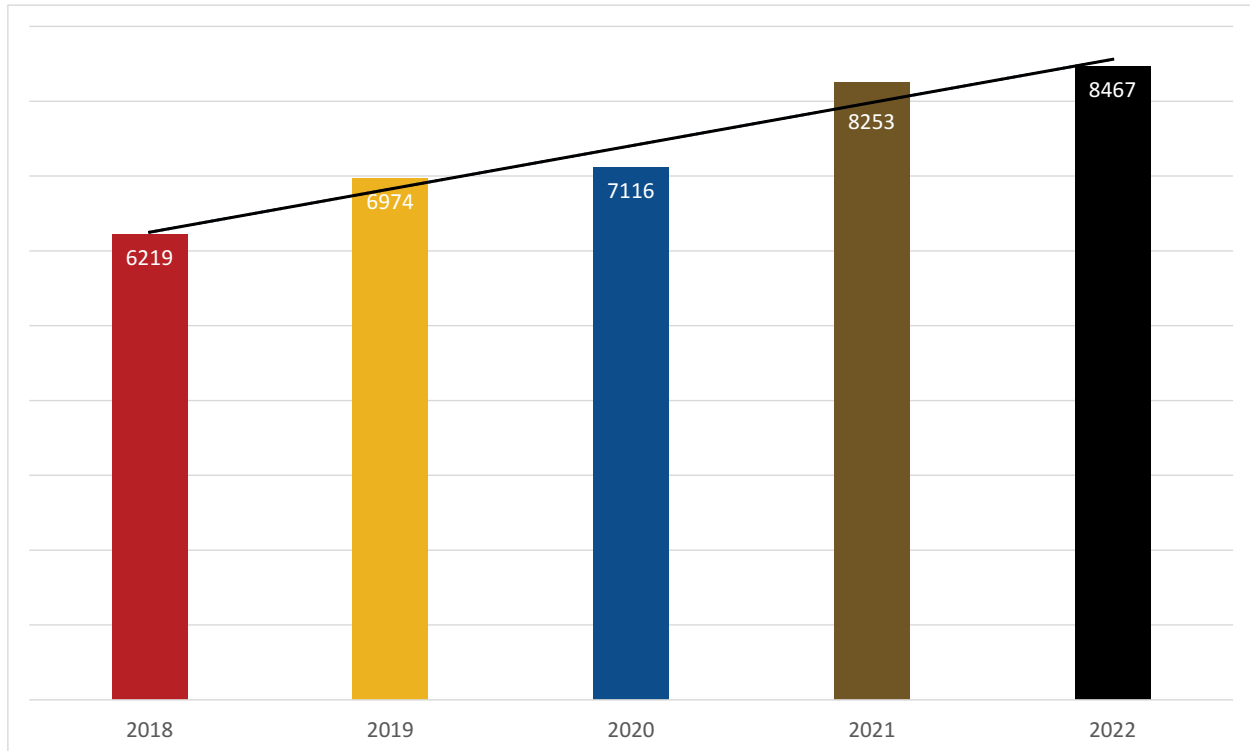
As **Figure 4.11** indicates, almost all call type volumes increased from 2020 to 2022, ranging from a 0% increase in technical rescue calls to just over a 50% increase in public service calls. Hazmat calls decreased by 5%.

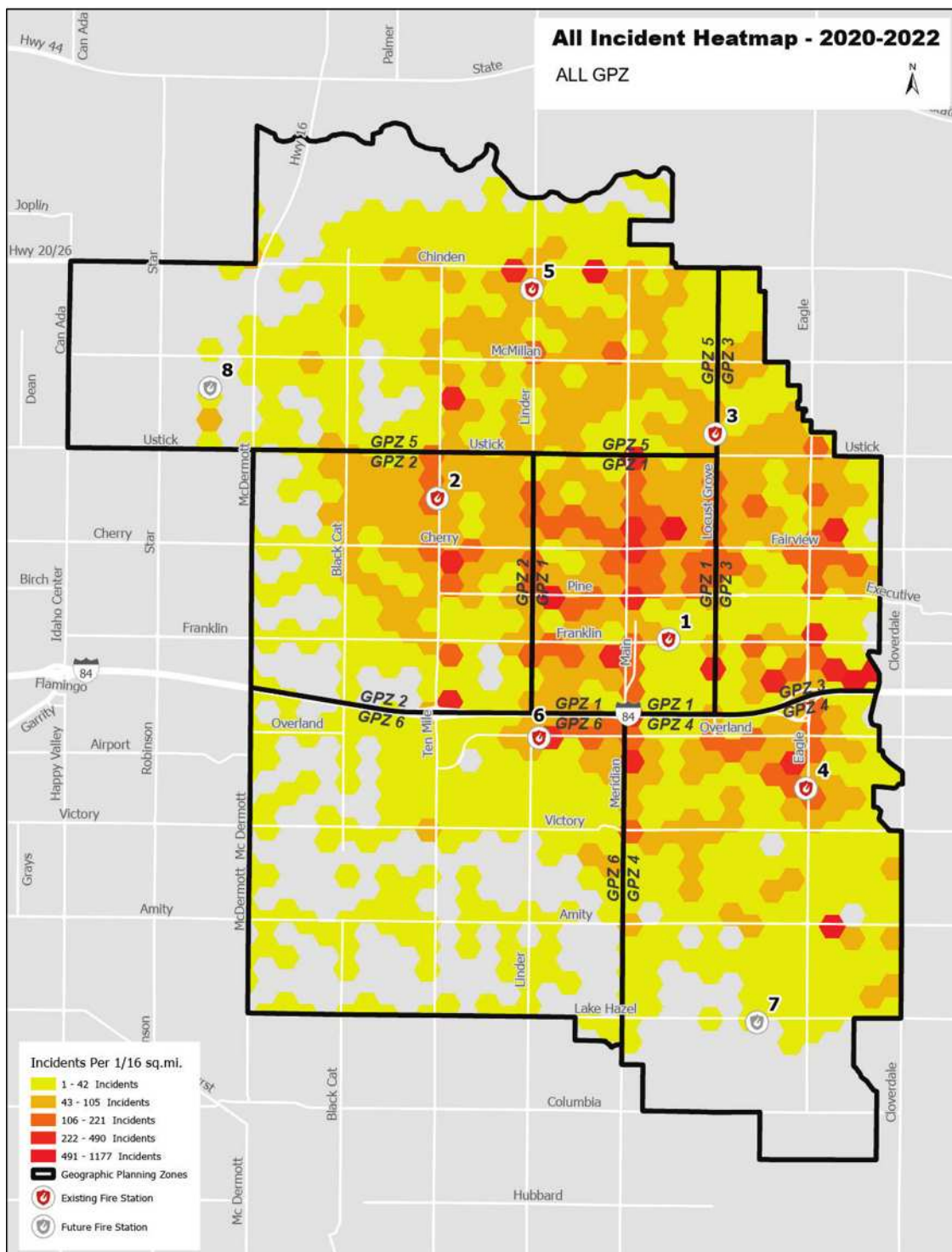## Figure 4.11 Call Volume Increase by Call Type – 2020-2022
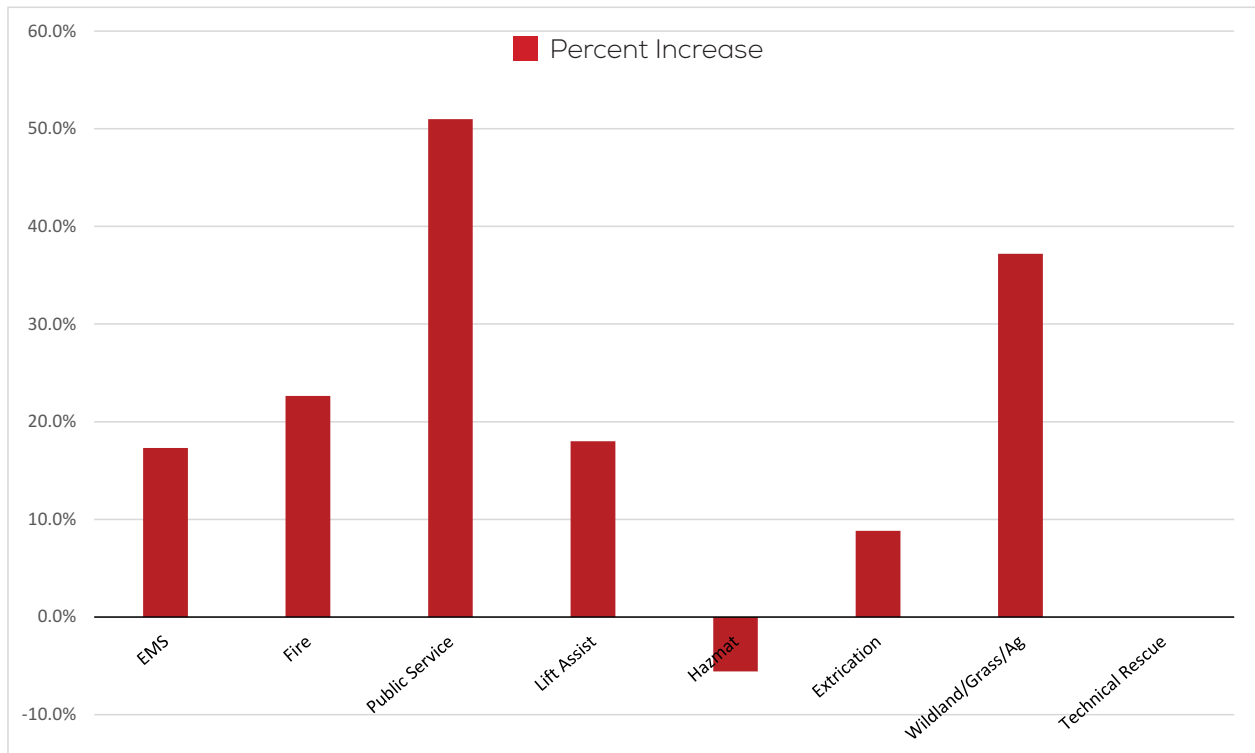
Figure 4.12 Apparatus Call Volume Growth by Percentage – 2020-2022
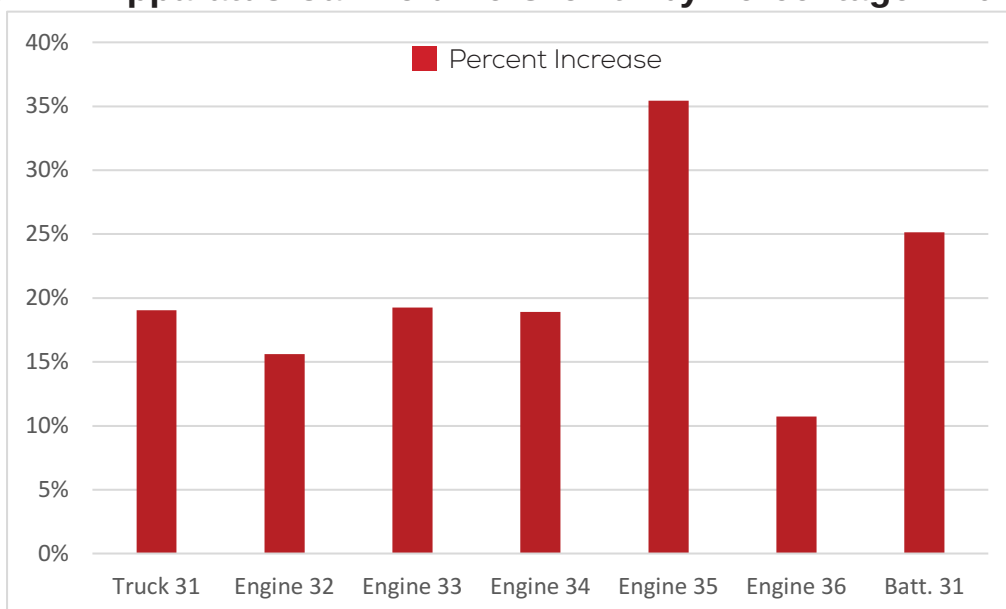
The following heat map depicts total call volume in the service area from 2020 to 2022. Total call volume maps for specific geographic planning zones may be found in the **Appendices**.

Figure 4.13 All Incident Heat Map – All GPZs

The following heat map depicts EMS call volume from 2020 to 2022. EMS call volume maps for specific geographic planning zones may be found in the **Appendices**.

Figure 4.14 EMS Incident Heat Map – All GPZs

The following heat map depicts structure fire call volume for 2020 through 2022. Fire call volume maps for specific geographic planning zones may be found in the **Appendices**.

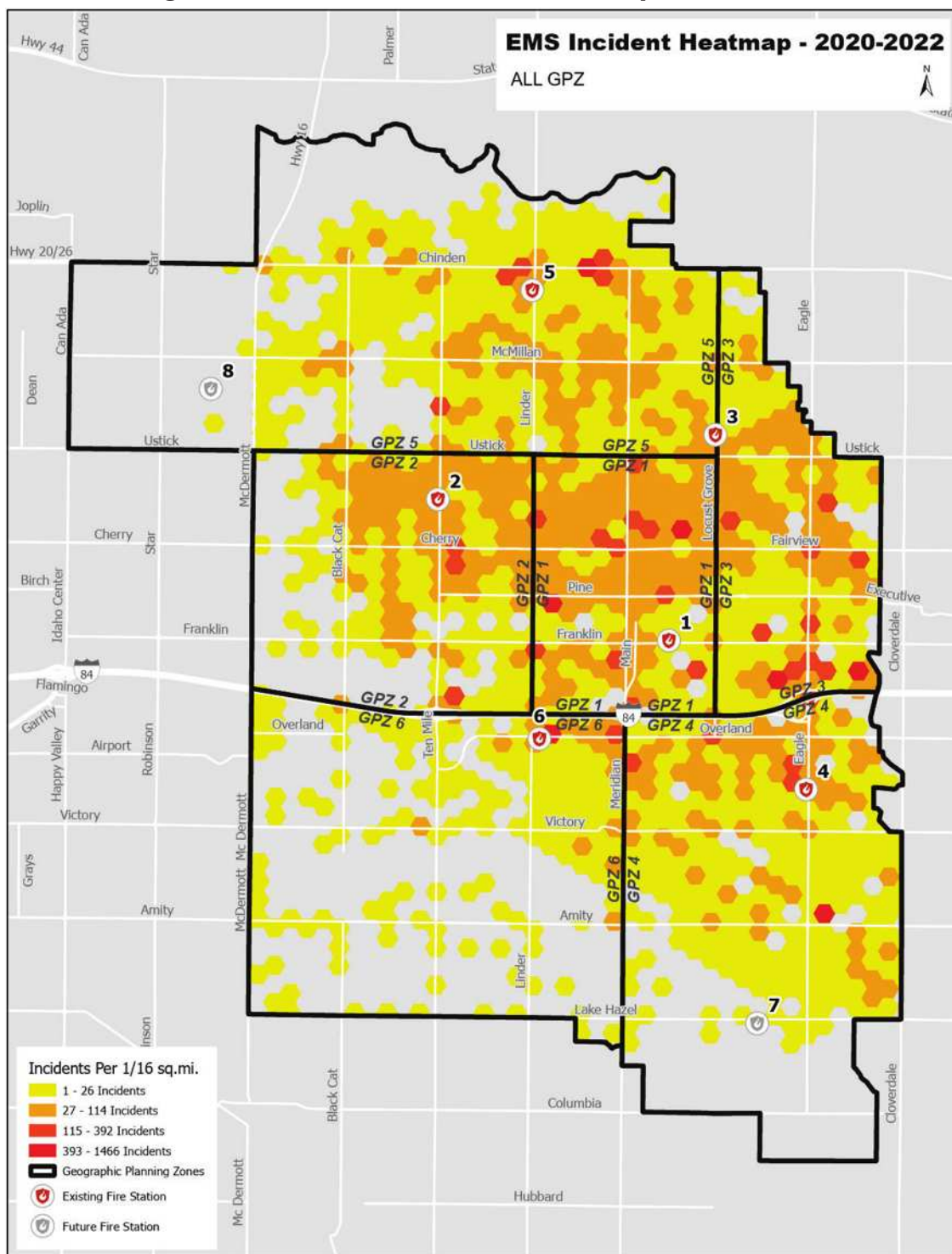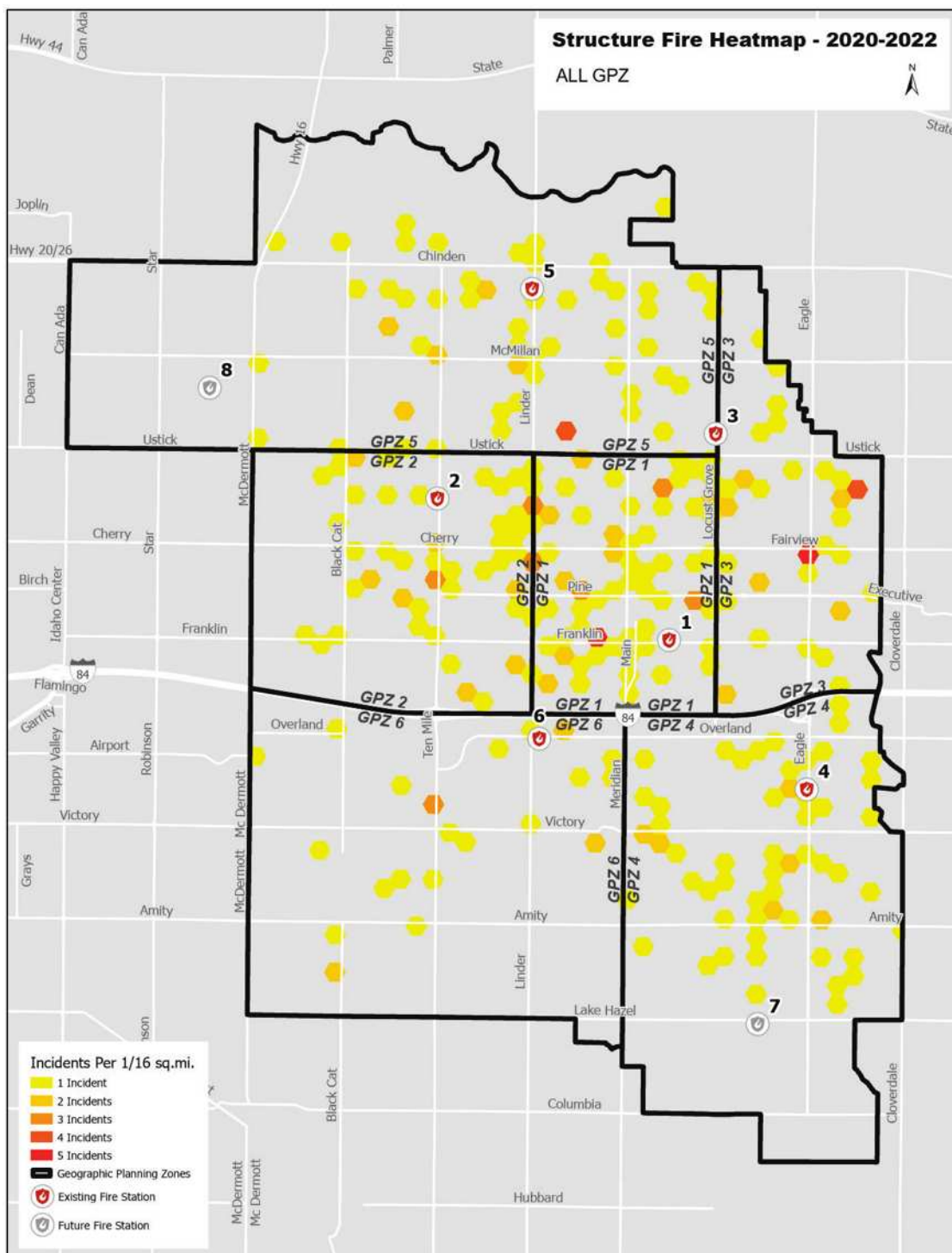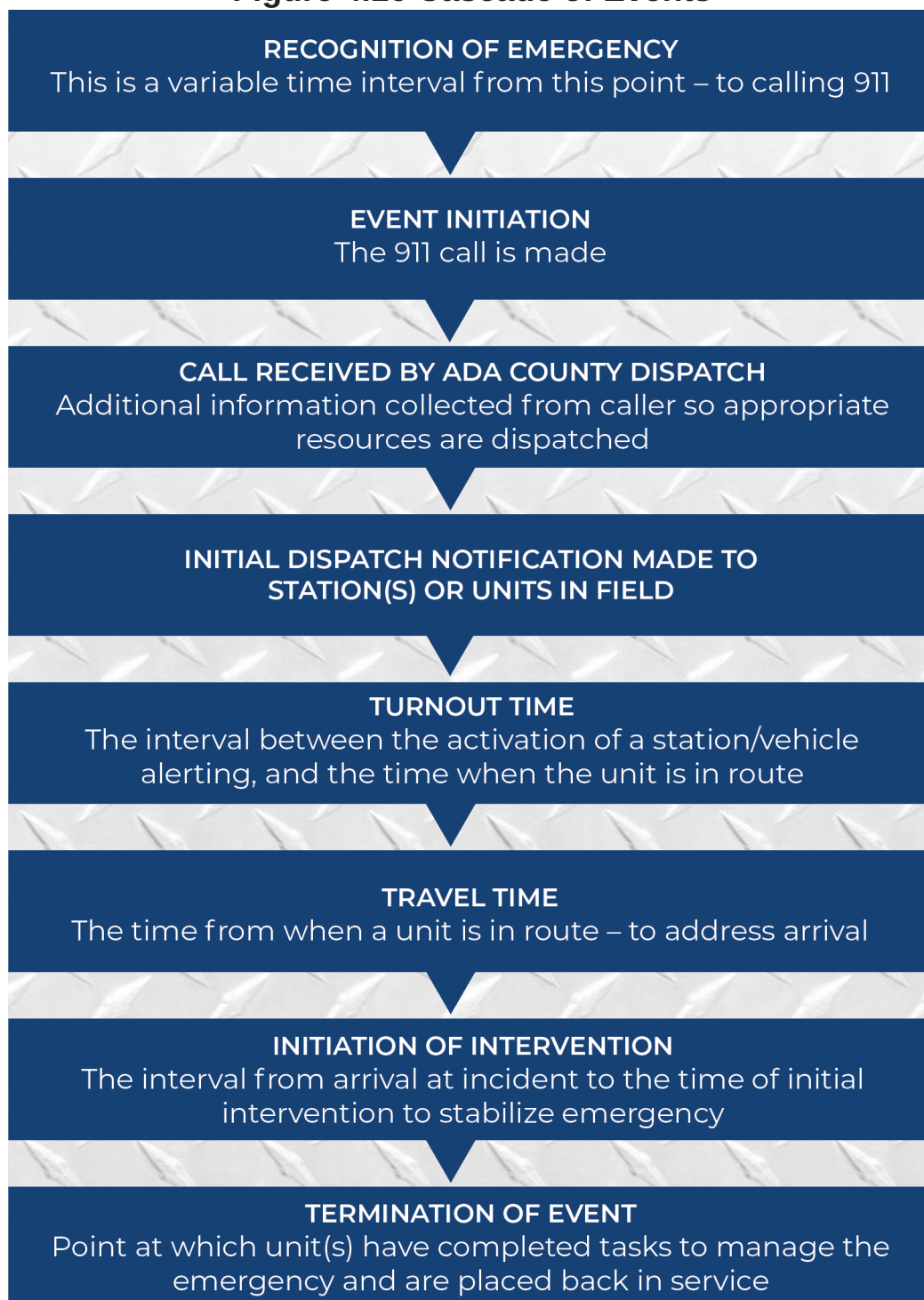**Figure 4.15 Structure Fire Heat Map – All GPZs**

CASCADE OF EVENTS

For every emergency MFD responds to, there is a sequence of steps known as a cascade of events. These steps are illustrated in **Figure 4.16**.

Figure 4.16 Cascade of Events

RECOGNITION OF EMERGENCY
This is a variable time interval from this point – to calling 911

EVENT INITIATION
The 911 call is made

CALL RECEIVED BY ADA COUNTY DISPATCH
Additional information collected from caller so appropriate resources are dispatched

INITIAL DISPATCH NOTIFICATION MADE TO STATION(S) OR UNITS IN FIELD

TURNOUT TIME
The interval between the activation of a station/vehicle alerting, and the time when the unit is in route

TRAVEL TIME
The time from when a unit is in route – to address arrival

INITIATION OF INTERVENTION
The interval from arrival at incident to the time of initial intervention to stabilize emergency

TERMINATION OF EVENT
Point at which unit(s) have completed tasks to manage the emergency and are placed back in service

COMPONENTS AND STATISTICAL METHODS USED FOR REPORTING RESPONSE TIMES

Meridian Fire Department has chosen to report its response time performance to the 90th percentile versus the traditional average response time reporting method. The department also employs an outlier policy to remove significant deviants from data sets.

The preferred 90th percentile method represents performance that occurs nine times out of 10. For example, if MFD has a total response time (TRT) of 12 minutes, the level of response time would occur 90% of the time at a TRT of 12 minutes or less. Ten percent of the time the TRT would exceed 12 minutes.

MFD uses three variables to measure total response time at the 90th percentile as shown below.

Figure 4.17 Total Response Time

- **Call processing time** (alarm handling) is defined as the time interval from when the alarm is acknowledged at the communication center until response information begins to be transmitted via voice or electronic means to the station(s) and/or units in the field. MFD receives dispatch services from the Ada County Dispatch Center.

- **Turnout time** is defined as the time interval that begins when the station(s) and/or units in the field notification process commences by either an audible alarm or visual annunciation, or both – and ends at the initiation of travel. (Wheels turning.)

- **Travel time** is defined as the time interval that begins when a unit is in route to the emergency incident and ends when the unit arrives at the scene. (Wheels stopped.)

- T**otal response time** makes up all three of these measurable variables.

Response Time Discussion

For the second edition of the CRA/SOC, the Meridian Fire Department chose to create an outlier policy to address data discrepancies found during an analysis of response times. On occasion, human or technological errors can cause various aspects of the total response time (alarm handling, turnout, and travel time) to appear exceedingly long. In other cases, the way certain calls are dispatched (such as calls involving law enforcement) may cause alarm handling or turnout times to appear excessive. To this end, the department adopted an outlier policy and captured it in an official administrative operating guideline (ASOG). Outliers are established with regards to current system performance, analysis of actual performance with each element, and industry accepted statistical procedures (i.e. standard deviation, normal distribution).

Additionally, MFD made the choice to use data directly from computer aided dispatch (CAD) rather than through their record management system (RMS), ESO solutions, for reporting response times. This decision was made based on several factors and events that occurred over the last year. Historically, MFD has shared a joint ESO account with its Ada County/City Emergency Services System partners, Boise Fire Department, Ada County Paramedics, Star Fire, Eagle Fire, and Kuna Fire, for the last 10 years. In early spring 2023, ACCESS was informed by ESO that during an attempted upgrade to the software, all of the departments had data that had been compromised. This included a call processing time of 0:00 for all call types, as well as batches of calls missing for entire months at a time. In addition, ESO stopped connecting with NFIRS and no NFIRS data was uploaded from ESO to the state fire marshal's office. ACCESS and MFD are actively working on solutions with ESO, however the department has been informed that data from ESO from the last several years is unreliable and may or may not ever be recovered.

In light of this, MFD made the decision to use CAD data, recognizing the limits of that data in the process. The use of CAD data will produce accurate call processing, travel times, and turnout times, however, it is difficult to classify call types and risk levels with 100 percent accuracy. Ada County Sheriff's Office 911 Emergency Dispatch Center (dispatch) will always upgrade a call based on the most recent information (reported structure fire to working fire, unconscious to code blue, etc) however, they do not always downgrade calls based on reports from crews or bystanders (for example, if a reported structure fire is just smoke from a BBQ). Recognizing these limitations, a committee of department members set out to classify dispatched call types by risk and category to the best of their ability. This also means that in the low-risk categories, some non-emergent call types were included as many of these calls are upgraded or downgraded based on the responding units' discretion.

The data gathered represents the department's response times to all identified categories and levels of risk to the best of the department's ability. The department recognizes the limitations of the data and is working to continually improve its data gathering process.

The following three tables represent Meridian Fire Department's current EMS response time performance at the 90th percentile. The response times represent all population densities. Rather than separate response times and target times based on rural versus urban classification, the department has elected to adopt a single target time for both rural and urban areas. As the city continues its rapid development pace, there will be less and less "rural" areas in Meridian each year.

RESPONSE TIME PERFORMANCE

Low Risk EMS - 90th Percentile Times - Baseline Performance			2020-2022	2022	2021	2020	Target
Alarm Handling	Pick-up to Dispatch	Urban	0:03:12	0:03:08	0:03:09	0:03:25	0:01:30
Turnout Time	Turnout Time 1st Unit	Urban	0:02:12	0:02:42	0:01:56	0:01:56	0:01:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	0:09:54	0:09:22	0:09:58	0:10:35	0:05:00* 0:07:45**
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	n=2377 0:13:33	n=891 0:13:20	n=811 0:13:26	n=675 0:14:02	 0:10:35

*Emergent
**Non-Emergent

Low Risk EMS category contains non-emergent and emergent call types. Due to how calls are dispatched, company officers are given discretion to respond to many low risk call types (Alpha level call types in dispatch) either code or non-code, depending on the notes from the call. Currently there is no way to determine from CAD call data if a unit responded code or non-code to an alpha level call, and as low risk EMS calls constitute a large volume of MFD's calls, it is valid to include them in a performance review. Future use of RMS data (if fixed) should be able to parse out emergent vs non-emergent call types more easily for future evaluations.

Moderate Risk EMS - 90th Percentile Times - Baseline Performance			2020-2022	2022	2021	2020	Target
Alarm Handling	Pick-up to Dispatch	Urban	0:03:16	0:03:14	0:03:14	0:03:19	0:01:30
Turnout Time	Turnout Time 1st Unit	Urban	0:01:34	0:01:46	0:01:22	0:01:30	0:01:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	0:08:00	0:07:45	0:08:04	0:08:13	0:05:00
	Travel Time ERF **Concentration**	Urban	0:12:01	0:11:42	0:12:13	0:12:08	n/a
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	n=15499	n=5472	n=5397	n=4630	
			0:11:27	0:11:18	0:11:24	0:11:43	0:07:50
	Total Response Time ERF **Concentration**	Urban	n=12984	n=4739	n=4398	n=3847	
			0:15:28	0:15:20	0:15:31	0:15:30	0:13:20

High Risk EMS - 90th Percentile Times - Baseline Performance			2020-2022	2022	2021	2020	Target
Alarm Handling	Pick-up to Dispatch	Urban	0:02:14	0:01:52	0:02:15	0:02:28	0:01:30
Turnout Time	Turnout Time 1st Unit	Urban	0:01:22	0:01:29	0:01:14	0:01:14	0:01:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	0:06:38	0:06:41	0:06:47	0:06:36	0:05:00
	Travel Time ERF **Concentration**	Urban	0:18:29	0:19:18	0:17:14	0:20:43	n/a
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	n=605	n=230	n=211	n=164	
			0:09:03	0:08:59	0:09:05	0:09:06	0:07:50
	Total Response Time ERF **Concentration**	Urban	n=269	n=102	n=96	n=71	
			0:21:19	0:21:14	0:19:03	0:24:04	0:15:00

Maximum Risk EMS - 90th Percentile Times - Baseline Performance			2020-2022	2022	2021	2020	Target
Alarm Handling	Pick-up to Dispatch	Urban	n<10	n<10	n<10	n<10	0:01:30
Turnout Time	Turnout Time 1st Unit	Urban	n<10	n<10	n<10	n<10	0:01:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	n<10	n<10	n<10	n<10	0:05:00
	Travel Time ERF **Concentration**	Urban	n<10	n<10	n<10	n<10	n/a
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	n=1	n=1	n=0	n=0	
			n<10	n<10	n<10	n<10	0:07:50
	Total Response Time ERF **Concentration**	Urban	n=1	n=1	n=0	n=0	
			n<10	n<10	n<10	n<10	0:25:00

Low Risk Fire - 90th Percentile Times - Baseline Performance			2020-2022	2022	2021	2020	Target
Alarm Handling	Pick-up to Dispatch	Urban	0:02:41	0:02:39	0:02:35	0:02:51	0:01:30
Turnout Time	Turnout Time 1st Unit	Urban	0:01:58	0:02:30	0:01:24	0:01:33	0:01:30
Travel Time	Travel Time 1st Unit **Distribution**	Urban	0:09:44	0:09:43	0:09:45	0:09:38	0:05:00
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	n=3234	n=1223	n=1088	n=923	
			0:13:10	0:13:36	0:12:51	0:13:09	0:08:00

Moderate Risk Fire - 90th Percentile Times - Baseline Performance			2020-2022	2022	2021	2020	Target
Alarm Handling	Pick-up to Dispatch	Urban	0:02:05	0:01:56	0:02:11	0:01:59	0:01:30
Turnout Time	Turnout Time 1st Unit	Urban	0:01:15	0:01:32	0:00:57	0:00:56	0:01:30
Travel Time	Travel Time 1st Unit **Distribution**	Urban	0:07:08	0:06:43	0:07:13	0:07:17	0:05:00
	Travel Time ERF **Concentration**	Urban	0:13:50	0:14:23	0:13:12	0:12:58	n/a
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	n=330	n=109	n=119	n=102	
			0:09:08	0:09:13	0:09:24	0:08:52	0:08:00
	Total Response Time ERF **Concentration**	Urban	n=84	n=30	n=27	n=27	
			0:15:36	0:17:32	0:15:28	0:14:57	0:11:00

High Risk Fire - 90th Percentile Times - Baseline Performance			2020-2022	2022	2021	2020	Target
Alarm Handling	Pick-up to Dispatch	Urban	0:01:44	0:01:50	0:01:16	0:01:41	0:01:30
Turnout Time	Turnout Time 1st Unit	Urban	0:01:10	0:01:29	0:00:59	0:00:37	0:01:30
Travel Time	Travel Time 1st Unit **Distribution**	Urban	0:07:08	0:07:19	0:07:04	0:05:58	0:05:00
	Travel Time ERF **Concentration**	Urban	0:24:59	n<10	n<10	n<10	n/a
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	n=43	n=14	n=15	n=14	
			0:08:16	0:09:20	0:09:40	0:07:23	0:08:00
	Total Response Time ERF **Concentration**	Urban	n=11	n=6	n=4	n=1	
			0:27:24	n<10	n<10	n<10	0:25:00

Low Risk Hazmat - 90th Percentile Times - Baseline Performance			2020-2022	2022	2021	2020	Target
Alarm Handling	Pick-up to Dispatch	Urban	0:02:47	0:02:50	0:02:40	0:02:44	0:01:30
Turnout Time	Turnout Time 1st Unit	Urban	0:01:59	0:02:39	0:01:34	0:01:36	0:01:30
Travel Time	Travel Time 1st Unit **Distribution**	Urban	0:08:32	0:08:12	0:08:21	0:08:45	0:05:00
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	n=583	n=180	n=176	n=227	
			0:11:33	0:11:21	0:11:19	0:12:11	0:08:00

Moderate Risk Hazmat - 90th Percentile Times - Baseline Performance			2020-2022	2022	2021	2020	Target
Alarm Handling	Pick-up to Dispatch	Urban	0:02:28	0:02:41	0:02:14	0:02:34	0:01:30
Turnout Time	Turnout Time 1st Unit	Urban	0:01:12	0:01:44	0:00:49	0:01:01	0:01:30
Travel Time	Travel Time 1st Unit **Distribution**	Urban	0:07:33	0:07:56	0:07:20	0:06:58	0:05:00
	Travel Time ERF **Concentration**	Urban	0:10:30	0:12:10	0:10:10	0:09:04	n/a
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	n=143	n=56	n=56	n=31	
			0:10:36	0:11:10	0:09:36	0:08:16	0:08:00
	Total Response Time ERF **Concentration**	Urban	n=61	n=24	n=23	n=14	
			0:12:56	0:15:11	0:12:22	0:11:18	0:10:00

High Risk Hazmat - 90th Percentile Times - Baseline Performance			2020-2022	2022	2021	2020	Target
Alarm Handling	Pick-up to Dispatch	Urban	0:03:38	n<10	n<10	n<10	0:01:30
Turnout Time	Turnout Time 1st Unit	Urban	0:01:04	n<10	n<10	n<10	0:01:30
Travel Time	Travel Time 1st Unit **Distribution**	Urban	0:10:43	n<10	n<10	n<10	0:05:00
	Travel Time ERF **Concentration**	Urban	n<10	n<10	n<10	n<10	n/a
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	n=16	n=8	n=6	n=2	
			15:24	n<10	n<10	n<10	0:08:00
	Total Response Time ERF **Concentration**	Urban	n=0	n=0	n=0	n=0	
			n<10	n<10	n<10	n<10	0:25:00

Low Risk Extrication - 90th Percentile Times - Baseline Performance			2020-2022	2022	2021	2020	Target
Alarm Handling	Pick-up to Dispatch	Urban	0:02:51	0:02:51	n<10	n<10	0:01:30
Turnout Time	Turnout Time 1st Unit	Urban	0:01:37	0:02:04	n<10	n<10	0:01:30
Travel Time	Travel Time 1st Unit **Distribution**	Urban	0:06:35	0:06:06	n<10	n<10	0:05:00
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	n=20	n=10	n=6	n=4	
			0:10:35	0:09:59	n<10	n<10	0:08:00

Moderate Risk Extrication - 90th Percentile Times - Baseline			2020-2022	2022	2021	2020	Target
Alarm Handling	Pick-up to Dispatch	Urban	0:01:03	0:00:53	0:01:03	0:01:14	0:01:30
Turnout Time	Turnout Time 1st Unit	Urban	0:01:17	0:01:32	0:01:04	0:01:18	0:01:30
Travel Time	Travel Time 1st Unit **Distribution**	Urban	0:07:00	0:06:54	0:06:44	0:07:16	0:05:00
	Travel Time ERF **Concentration**	Urban	0:19:37	0:14:27	0:26:07	0:17:31	n/a
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	n=189	n=57	n=74	n=58	
			0:08:16	0:07:43	0:07:50	0:08:55	0:08:00
	Total Response Time ERF **Concentration**	Urban	n=39	n=12	n=13	n=14	
			0:21:00	0:15:57	0:27:05	0:18:36	0:15:00

High Risk Extrication - 90th Percentile Times - Baseline Performance			2020-2022	2022	2021	2020	Target
Alarm Handling	Pick-up to Dispatch	Urban	n<10	n<10	n<10	n<10	0:01:30
Turnout Time	Turnout Time 1st Unit	Urban	n<10	n<10	n<10	n<10	0:01:30
Travel Time	Travel Time 1st Unit **Distribution**	Urban	n<10	n<10	n<10	n<10	0:05:00
	Travel Time ERF **Concentration**	Urban	n<10	n<10	n<10	n<10	n/a
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	n=4	n=1	n=0	n=3	
			n<10	n<10	n<10	n<10	0:15:00
	Total Response Time ERF **Concentration**	Urban	n=1	n=0	n=0	n=1	
			n<10	n<10	n<10	n<10	0:25:00

High Risk Technical Rescue (All Types) - 90th Percentile Times - Baseline Performance			2020-2022	2022	2021	2020	Target
Alarm Handling	Pick-up to Dispatch	Urban	0:02:49	n<10	n<10	n<10	0:01:30
Turnout Time	Turnout Time 1st Unit	Urban	0:01:12	n<10	n<10	n<10	0:01:30
Travel Time	Travel Time 1st Unit **Distribution**	Urban	0:09:45	n<10	n<10	n<10	0:05:00
	Travel Time ERF **Concentration**	Urban	n<10	n<10	n<10	n<10	n/a
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	n=11	n=4	n=4	n=5	
			0:11:42	n<10	n<10	n<10	0:15:00
	Total Response Time ERF **Concentration**	Urban	n=0	n=0	n=0	n=0	n=0
			n<10	n<10	n<10	n<10	0:15:00* 0:25:00**

*For high risk water rescues
**For all other high risk technical rescue incidents

Low Wildland/Grass/Ag Fire Risk Technical Rescue - 90th Percentile Times Baseline Performance			2020-2022	2022	2021	2020	Target
Alarm Handling	Pick-up to Dispatch	Urban	0:02:00	n<10	0:02:11	n<10	0:01:30
Turnout Time	Turnout Time 1st Unit	Urban	0:01:37	n<10	0:01:26	n<10	0:01:30
Travel Time	Travel Time 1st Unit **Distribution**	Urban	0:10:55	n<10	0:08:56	n<10	0:05:00
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	n=30	n=7	n=15	n=8	
			0:13:51	n<10	0:10:40	n<10	0:08:00

Moderate Wildland/Grass/Ag Fire Risk Technical Rescue - 90th Percentile Times - Baseline Performance			2020-2022	2022	2021	2020	Target
Alarm Handling	Pick-up to Dispatch	Urban	0:02:57	0:02:37	0:02:54	0:03:21	0:01:30
Turnout Time	Turnout Time 1st Unit	Urban	0:01:33	0:01:41	0:01:04	0:01:23	0:01:30
Travel Time	Travel Time 1st Unit **Distribution**	Urban	0:09:13	0:08:19	0:08:01	0:12:01	0:05:00
	Travel Time ERF **Concentration**	Urban	0:35:52	n<10	n<10	0:20:42	n/a
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	n=101	n=39	n=30	n=32	
			0:13:08	0:11:03	0:12:54	0:14:33	0:08:00
	Total Response Time ERF **Concentration**	Urban	n=29	n=7	n=9	n=13	
			0:38:07	<10	<10	0:22:29	0:10:00

High Wildland/Grass/Ag Fire Risk Technical Rescue - 90th Percentile Times - Baseline Performance			2020-2022	2022	2021	2020	Target
Alarm Handling	Pick-up to Dispatch	Urban	0:01:47	0:01:39	n<10	n<10	0:01:30
Turnout Time	Turnout Time 1st Unit	Urban	0:01:34	0:01:55	n<10	n<10	0:01:30
Travel Time	Travel Time 1st Unit **Distribution**	Urban	0:07:28	0:06:53	n<10	n<10	0:05:00
	Travel Time ERF **Concentration**	Urban	n<10	n<10	n<10	n<10	n/a
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	n=22	n=12	n=6	n=4	
			0:09:09	0:08:16	n<10	n<10	0:08:00
	Total Response Time ERF **Concentration**	Urban	n=2	n=0	n=1	n=1	
			n<10	n<10	n<10	n<10	0:12:00

The development of these response time tables was limited to those categories that had 10 or more calls (n) for each of the reporting years. In cases where there were at least 10 calls over the reported time frame (2020-2022), data was reported for the time range but not for each individual year. As "n" values decrease, statistical significance and reliability decrease. For risk levels and categories with less than 10 calls, the data obtained cannot be used or interpreted in a meaningful way.

The following risk categories did not have enough call volume for the reporting years to meet the 10 calls/year requirement for reporting certain response time data:

- Maximum-Risk EMS
- High-Risk Fire – Effective response force travel and total response times for each year.
- High-Risk Hazmat
- Low-Risk Extrication
- High-Risk Extrication
- High-Risk Technical Rescue
- Low-Risk Wildland
- Moderate-Risk Wildland
- High-Risk Wildland

SECTION 5

Evaluation of Current Deployment and Performance

We need to bring down our response times to meet our current goals, and that means doing the right thing to deliver the services our current residents expect and demand.

— Mayor Robert Simison, State of the City, June 2021

SECTION 5 – EVALUATION OF CURRENT DEPLOYMENT AND PERFORMANCE

COMMUNITY EXPECTATIONS OF MFD SERVICES

During the strategic planning process in the second half of 2021, Meridian Fire Department gained input from the community by holding two external stakeholder workshops. The workshop attendees represented a cross-section of the community including representatives from city departments, neighboring fire departments, residents and business owners. One of the goals was to measure and rank attendees' expectations of MFD and the current service delivery programs. The tables below show survey results.

Rank	Expectation	Score	Value
1	Ensuring maximum safety of firefighters.	3.85	Essential
Tie 2*	Adequate staffing, apparatus and equipment for emergency response.	3.56	Essential
2*	Ensuring a high level of competency/training of personnel.	3.56	Essential
3	Expedient response times to emergencies.	3.44	High
4	Ensuring MFD provides the most effective, evidence-based emergency medical services.	3.37	High
5	Ensuring that firefighters are adequately compensated to maintain retention/experience.	3.30	High
6	Professionalism of MFD personnel.	3.15	High
7	Providing a comprehensive community risk reduction program that includes enforcing fire codes and providing public education/community involved prevention programs.	3.11	High
8	Community involvement and presence at schools, community events, neighborhood activities, etc.	2.59	High

Scale: 0-1.4 Low, 1.5-2.4 Medium, 2.5-3.4 High, 3.5-4.0 Essential

Rank		Program	Score	Value
1		Fire Suppression	3.76	Essential
2		Emergency Medical Services	3.67	Essential
3		Fire Investigation	3.41	Very Important
4		Special Operations – Hazardous Materials Emergencies and Technical Rescue	3.31	Very Important
5		Domestic Preparedness and Planning – Large-scale natural and man-made disasters	3.19	Very Important
Tie	6*	Public Education – CPR and in-school fire prevention classes	3.07	Very Important
	6*	Wildland Fire Prevention and Mitigation	3.07	Very Important
	6*	Community Involvement – Presence at community events, neighborhood activities, etc.	3.07	Very Important

> Scale: 0-1.4 Somewhat Important, 1.5-2.4 Important
> 2.5-3.4 Very Important, 3.5-4.0 Essential

The external stakeholders also were surveyed regarding two components of response time; turnout time and travel time. **Figure 5.1** shows that stakeholders were nearly split in their response time expectations – from four minutes – to just under six minutes. Call processing time was not included in the survey question.

Figure 5.1 Stakeholder Survey

- ■ 5:00 to 5:59 Minutes – 52%
- ■ 4:00 to 4:59 Minutes – 48%
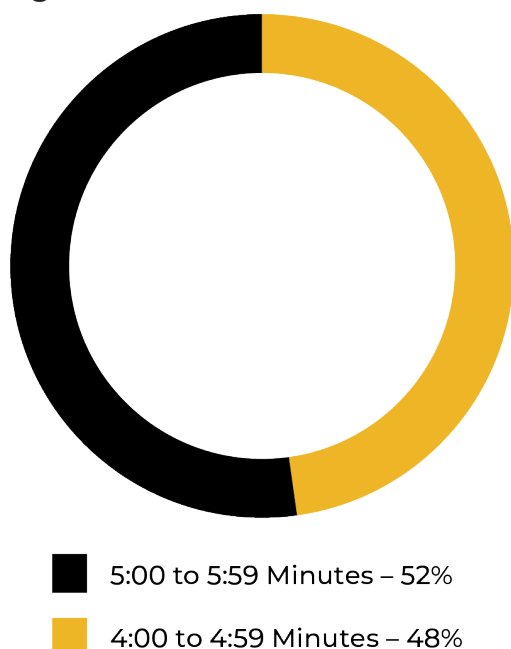
SERVICE LEVEL PERFORMANCE GOALS AND OBJECTIVES

Meridian Fire Department (MFD) has established performance objectives and associated response time benchmarks (targets) for all emergency service classifications.

Emergency Medical Services (EMS)

For 90% of all **low-risk medical incidents**, the benchmark total response time for the first arriving engine or truck company or medic ambulance shall be 10 minutes and 35 seconds. The first arriving unit shall be capable of establishing incident command, providing basic life support (BLS) care to include the use of automatic external defibrillators (AED).

For 90% of all **moderate-risk medical incidents**, the benchmark total response time for the effective response force (ERF) staffed with a minimum of one engine or truck company and one medic ambulance for a minimum of 5 personnel shall be 13 minutes and 20 seconds. The ERF shall be capable of establishing incident command, providing advanced life support (ALS) treatment and transport for a single-patient incident.

For 90% of all **high-risk medical incidents**, the benchmark total response time for the ERF staffed with a minimum of one engine or truck company, one medic ambulance and one medic battalion chief (minimum of 7 personnel) shall be 15 minutes. The ERF shall be capable of establishing incident command, scene safety and providing ALS treatment and transport.

For 90% of all **maximum-risk medical incidents**, the benchmark total response time for the ERF staffed with a minimum of three engine or truck companies, two battalion chiefs, four medic ambulances, and two medic battalion chiefs (minimum of 21) shall be 25 minutes. The ERF shall be capable of establishing incident command, scene safety, and providing patient treatment and transport for mass casualty incidents.

Fire

For 90% of all **low-risk fire incidents**, the benchmark total response time for the first arriving engine company staffed with a minimum of three firefighters shall be 8 minutes. The first arriving apparatus shall be capable of providing 750 gallons of water with a pumping capacity of 1,500 gallons per minute: establishing incident command, providing initial size-up, and initiating fire attack.

For 90% of all **moderate-risk fire incidents**, the benchmark total response time for the effective response force (ERF) consisting of three engine companies, one truck company, and one battalion chief (minimum of 14 firefighters) shall be 11 minutes. The ERF shall be capable of establishing incident command and safety, securing utilities, establishing a continuous water supply, operating multiple fire attack lines, establishing a rapid intervention crew, performing search and rescue operations, and carrying out appropriate ventilation operations.

For 90% of all **high-risk fire incidents**, the benchmark total response time for the ERF consisting of four engine companies, two truck companies, two battalion chiefs, one medic ambulance and one medic battalion chief (minimum of 23 personnel) shall be 25 minutes. The ERF shall be capable of establishing incident command and safety, securing utilities, establishing a continuous water supply from at least two sources, supporting a fire sprinkler connection if present, operating multiple fire attack lines, establishing a rapid intervention crew, performing search and rescue operations, carrying out appropriate ventilation operations, and providing patient care and transport as needed.

For 90% of all **maximum risk fire incidents**, the benchmark total response time for the ERF consisting of five engine companies, three truck companies, 2 battalion chiefs, one safety officer, two medic ambulances, and one medic battalion chief (minimum of 35 personnel) shall be 30 minutes. The ERF shall be capable of establishing incident command and safety, securing utilities, establishing a continuous water supply from at least three sources, supporting a fire sprinkler connection, operating multiple fire attack lines and master streams, establishing a rapid intervention crew, performing search, rescue, and evacuation operations, carrying out appropriate ventilation and aerial operations, establishing rehab, and providing patient care and transport as needed.

Hazmat

For 90% of all **low-risk hazardous materials incidents** (Level I), the benchmark total response time for the first arriving engine company staffed with a minimum of three firefighters shall be 8 minutes. The first arriving unit shall be capable of establishing incident command and scene size-up, air monitoring, and patient assessment if needed.

For 90% of all **moderate-risk hazardous materials incidents** (Level I), the benchmark total response time for the ERF consisting of two engine companies and one battalion chief (minimum of seven firefighters) shall be 10 minutes. The ERF shall be capable of establishing incident command and safety, scene size-up, air monitoring, initiating evacuation if necessary, deploying exposure lines, supporting utility company mitigation efforts, and initiating patient treatment if necessary.

For 90% of all **high-risk hazardous materials incidents** (Level II), the benchmark total response time for the ERF consisting of one MFD engine company, one MFD truck company, one MFD battalion chief, one MFD safety officer, one Boise Fire Department (BFD) engine company, one BFD truck company, one BFD hazmat response unit, one BFD battalion chief, one BFD safety officer, one medic ambulance and one medic battalion chief (minimum 22 personnel) shall be 25 minutes. The ERF shall be capable of establishing incident command and safety, scene size-up, air monitoring, initiating evacuation if necessary, deploying exposure lines, supporting utility company mitigation efforts, providing decon, and initiating patient treatment and transport if necessary. Boise Fire will provide technician level personnel capable of entry into hot zone and hazmat mitigation.

Extrication

For 90% of all **low-risk extrication incidents** the benchmark total response time for the first arriving engine or truck company staffed with a minimum of three firefighters shall be 8 minutes. The first arriving unit shall be capable of establishing incident command, scene size-up, extrication, stabilization, and patient assessment if needed.

For 90% of **moderate-risk extrication incidents** the benchmark total response time for the ERF consisting of one engine company, one truck company, one battalion chief, one medic ambulance, and one medic battalion chief (total of 11 personnel) shall be 15 minutes. The ERF of shall be capable of establishing incident command and safety, vehicle stabilization, performing vehicle or mechanical extrication functions, and patient treatment and transport.

For 90% of **high-risk extrication technical rescue incidents** the benchmark total response time for the ERF consisting of two engine companies, one truck company, one battalion chief, one safety officer, one medic ambulance, and one medic battalion chief (total of 15 personnel) shall be 25 minutes. The ERF shall be capable of establishing incident command and safety, vehicle stabilization, performing vehicle or mechanical extrication functions, and providing patient treatment and transport for multiple patients.

Technical Rescue

For 90% of **high-risk trench technical rescue incidents** the benchmark total response time for the ERF consisting of one MFD engine company, one MFD truck company, one MFD battalion chief, one MFD safety officer, one BFD engine company, one BFD truck company, one BFD heavy rescue, one BFD battalion chief, one BFD safety officer, one medic ambulance, and one medic battalion chief (total of 22 personnel) shall be 25 minutes. The ERF shall be capable of establishing incident command and safety, performing necessary shoring functions, rescue, and patient treatment and transport.

For 90% of **high-risk water rescue incidents** the benchmark total response time for the ERF consisting of one engine company, one truck company, one battalion chief, one Eagle Fire Department rescue, one medic ambulance, and one medic battalion chief (total of 14 personnel) shall be 15 minutes. The ERF shall be capable of establishing incident command and safety, upstream and downstream spotters, rescue and retrieval teams, and patient treatment and transport.

For 90% of **high–risk confined space technical rescue incidents** the benchmark total response time for the ERF consisting of one MFD engine company, one MFD truck company, one MFD battalion chief, one MFD safety officer, one BFD engine company, one BFD truck company, 1 BFD heavy rescue, one BFD Hazmat unit, one BFD battalion chief, one BFD safety officer, one medic ambulance, and one medic battalion chief (total of 27 personnel) shall be 25 minutes. The ERF shall be capable of establishing incident command and safety, performing air monitoring, establishing entry and back up teams, rigging and rope tending, and providing patient treatment and transport.

For 90% of **high–risk high–angle technical rescue incidents** the benchmark total response time for the ERF consisting of one MFD engine company, one MFD truck company, one MFD battalion chief, one MFD safety officer, one BFD engine company, one BFD truck company, one BFD heavy rescue, one BFD battalion chief, one BFD safety officer, one medic ambulance, and one medic battalion chief (total of 22 personnel) shall be 25 minutes. The ERF shall be capable of establishing incident command and safety, rigging and rope tending, rescue and backup teams, and patient treatment and transport.

For 90% of **high–risk building collapse technical rescue incidents** the benchmark total response time for the ERF consisting of one MFD engine company, one MFD truck company, one MFD battalion chief, one MFD safety officer, one BFD engine company, one BFD truck company, one BFD heavy rescue, one BFD battalion chief, one BFD safety officer, one medic ambulance, and one medic battalion chief (total of 22 personnel) shall be 25 minutes. The ERF shall be capable of establishing incident command and safety, completing stabilization operations, air monitoring, rescue operations, and patient treatment and transport. For 90% of high-risk canal water rescue incidents the benchmark total response time for the ERF – consisting of one engine company, one truck company, one battalion chief, one EFD rescue, one medic ambulance and one medic battalion chief (total of 14 personnel) – shall be 15 minutes, 0 seconds total response time in both urban and rural planning zones. The ERF shall be capable of establishing command and safety, technical rescue supervision, upstream and downstream spotters, rescue and retriever teams and patient treatment/transport.

Wildland/Grass/Agricultural Fires

For 90% of all **low-risk wildland/grass/agricultural fire incidents**, the benchmark total response time for the first arriving engine or brush company staffed with a minimum of three firefighters shall be 8 minutes. The first arriving apparatus shall be capable of establishing incident command and fire attack.

For 90% of all **moderate-risk wildland/grass/agricultural fire incidents**, the benchmark total response time for the effective response force (ERF) consisting of two engine or brush companies and one battalion chief (minimum of seven firefighters) shall be 10 minutes. The ERF shall be capable of establishing incident command and safety, establishing a water supply, and operating multiple fire attack lines.

For 90% of all **high-risk wildland/grass/agricultural fire incidents**, the benchmark total response time for the effective response force (ERF) consisting of two engine or brush companies, one engine company, one truck company, and one battalion chief (minimum of 14 firefighters) shall be 12 minutes. The ERF shall be capable of establishing incident command and safety, establishing a water supply, operating multiple fire attack lines, and protecting immediate exposures.

PERFORMANCE GAP DISCUSSION

Call Processing

90th percentile alarm handling times for high risk EMS as listed in Section is 2 minutes, 14 seconds. The performance standard listed in NFPA 1221: *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, is one minute at the 90th percentile.

90th percentile alarm handling times for high risk fire as listed in Section is 1 minutes, 44 seconds. Alarm handling times increase substantially in the moderate and low risk categories of all risk types and exceed nationally accepted standards in almost every category. Even with a conservative target time of 1 minute and 30 seconds for all alarm handling, alarm handling times continue to be excessive.

The following charts illustrate trends in response time elements including alarm handling time, turnout time, travel time, and total response time for moderate and high risk fire and EMS calls for 2020-2022. These call types were chosen as they represent 75 percent of Meridian's call volume.

Figure 5.2 Moderate Risk EMS Alarm Handling Time – Trending
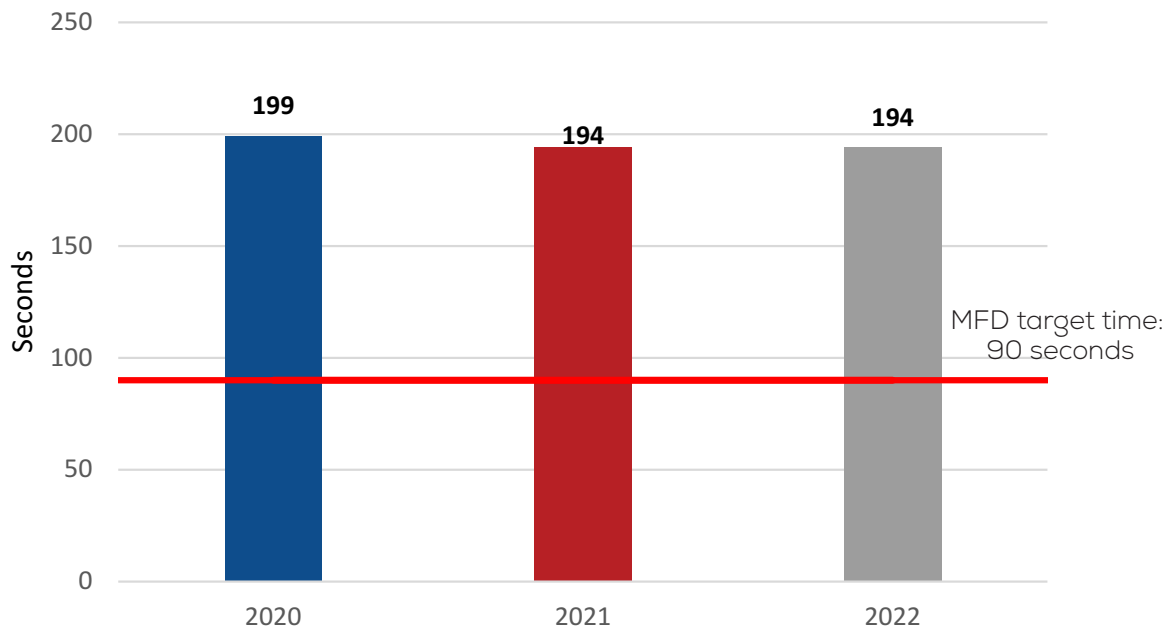
Figure 5.3 Moderate Risk EMS Turnout Time – Trending

Section 5: Evaluation of Current Deployment and Performance
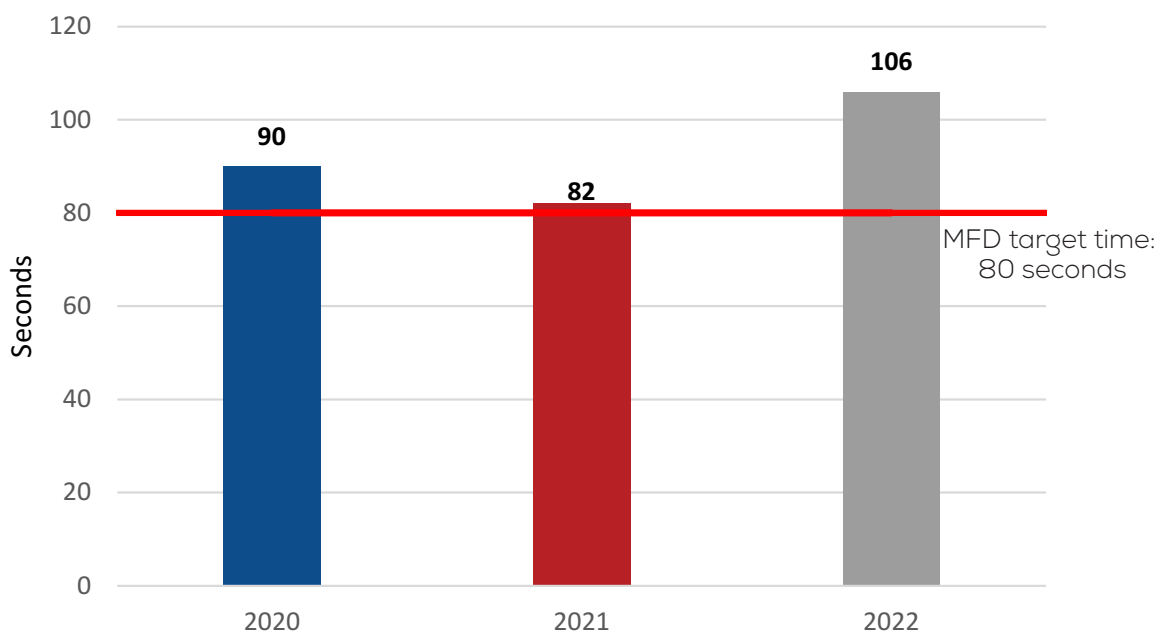
Figure 5.4 Moderate Risk EMS Travel Time – Trending

MFD target
time:
300 seconds
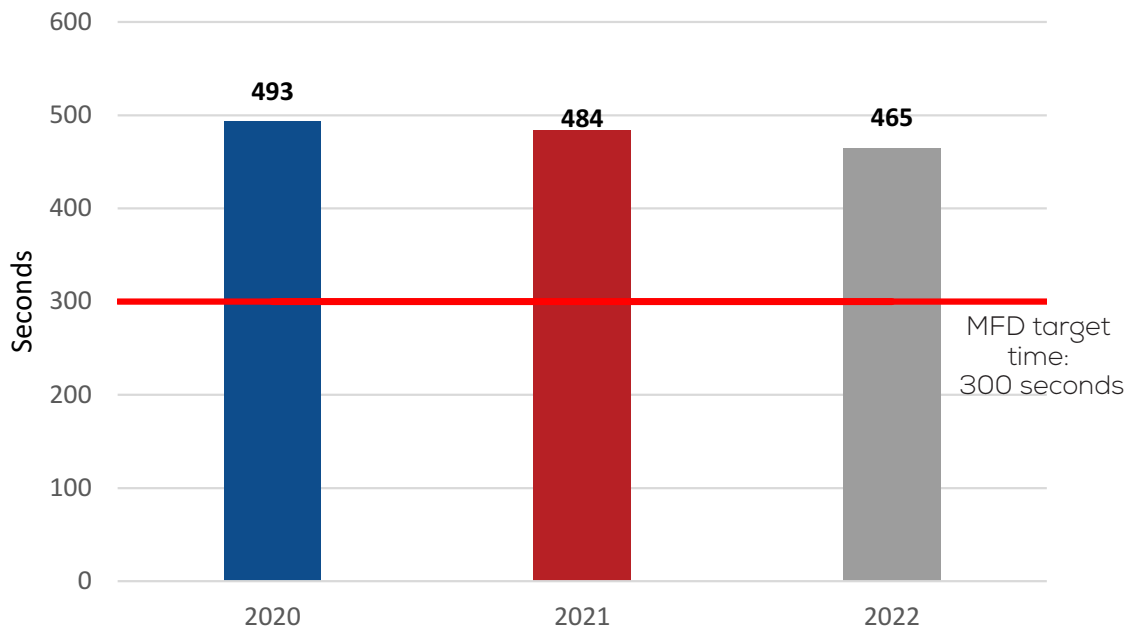
Figure 5.5 Moderate Risk EMS Total Response Time – Trending

MFD target
time:
470 seconds
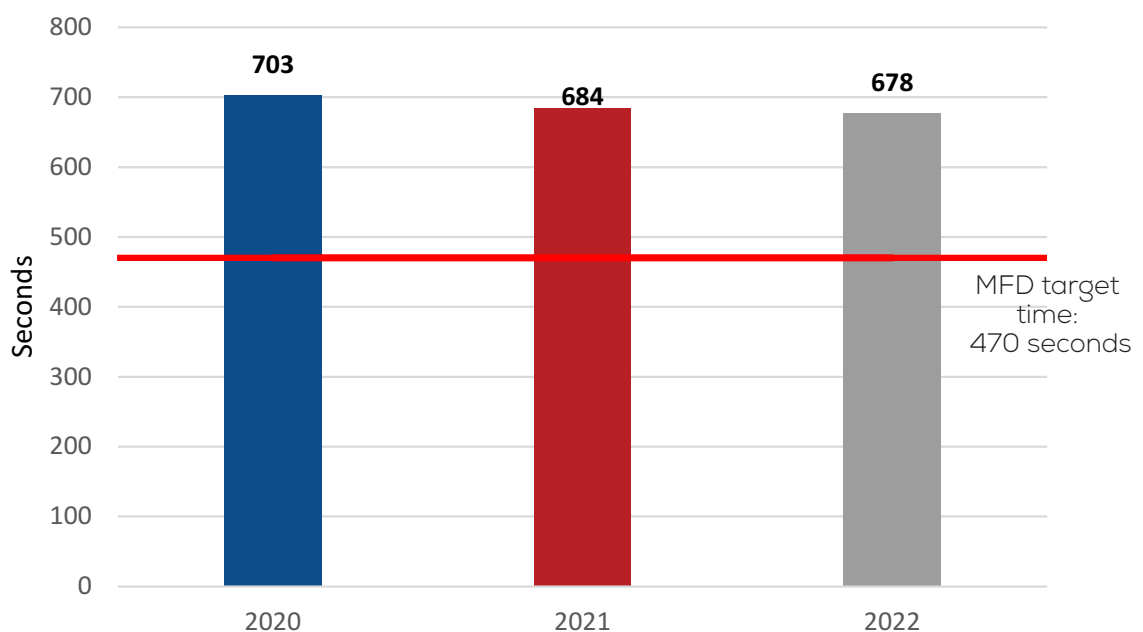
Figure 5.6 High Risk EMS Alarm Handling Time – Trending
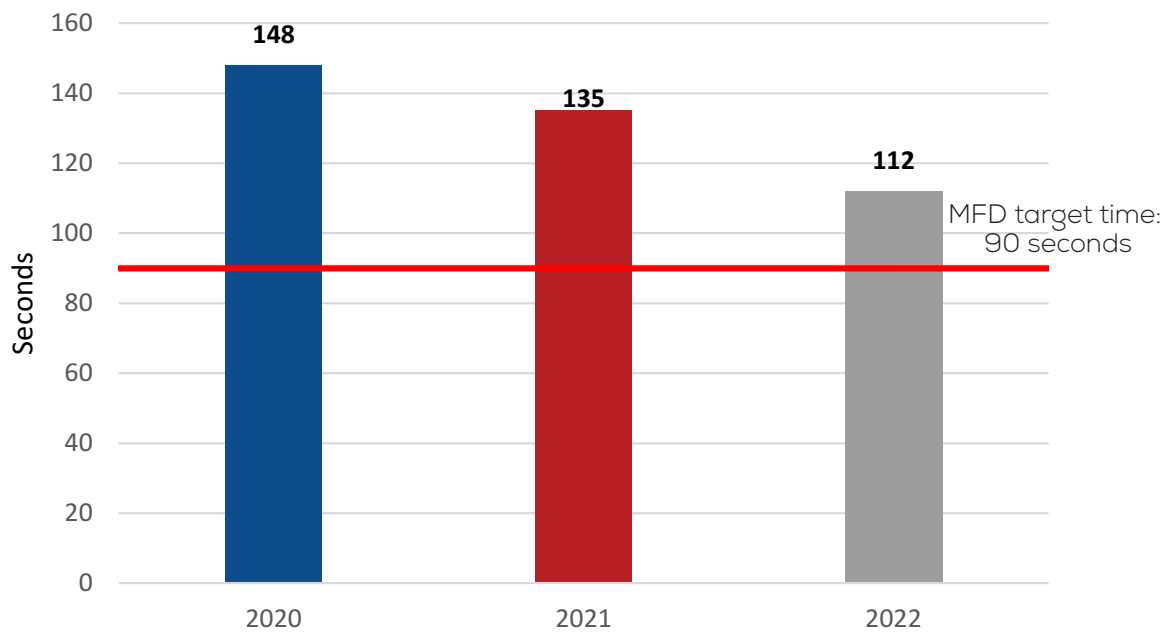
Figure 5.7 High Risk EMS Turnout Time – Trending
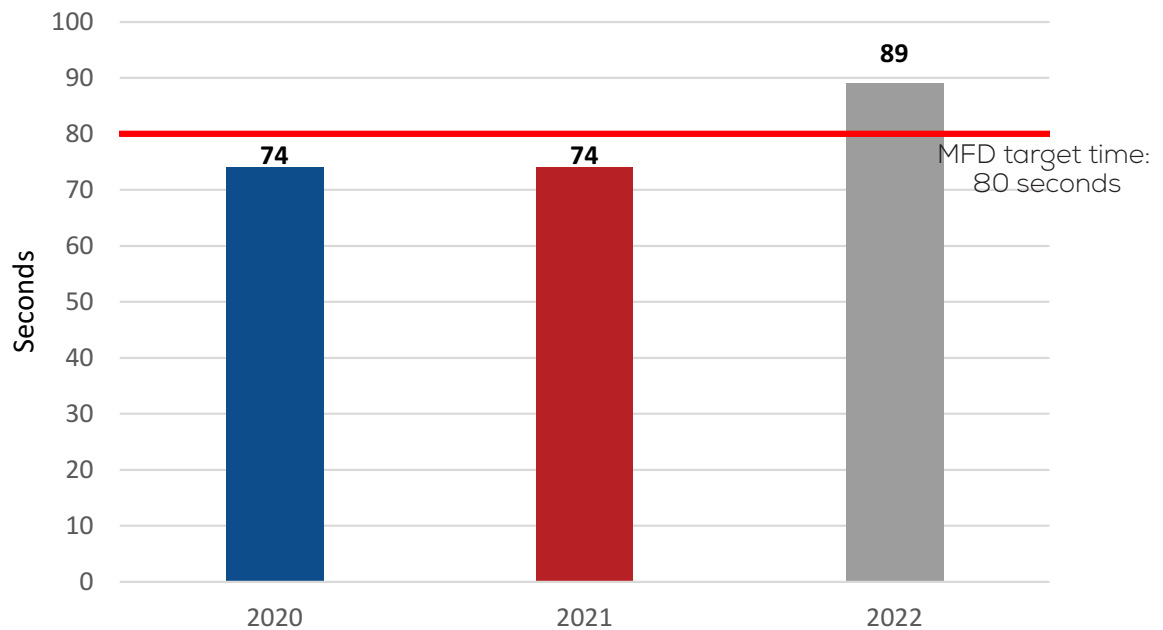
Figure 5.8 High Risk EMS Travel Time – Trending
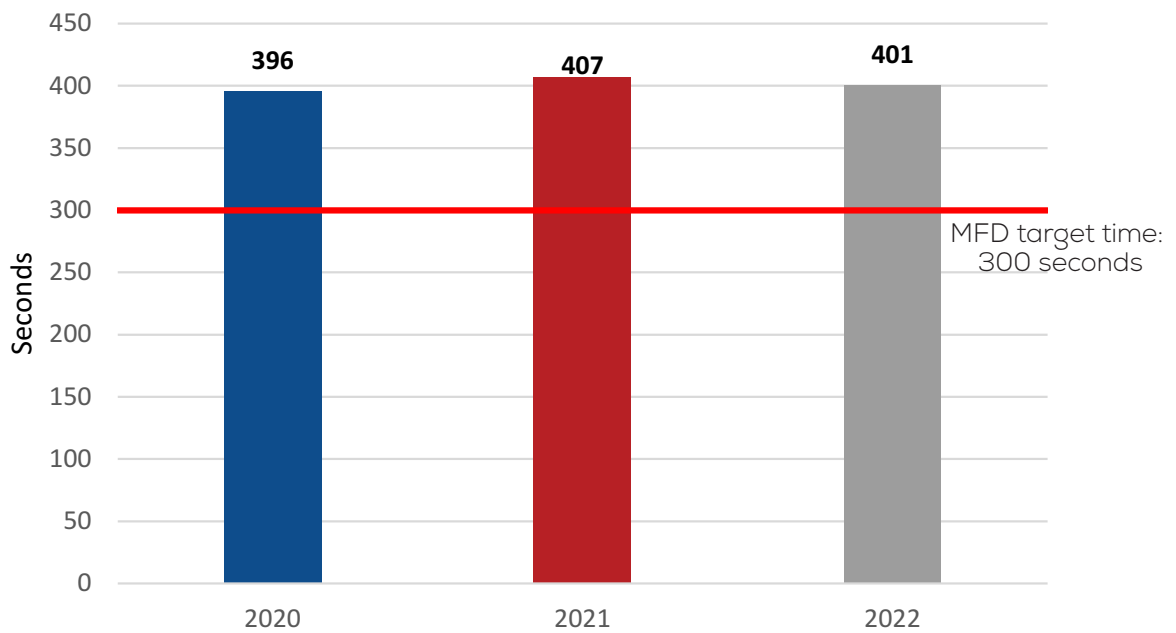
Figure 5.9 High Risk EMS Travel Time – Trending
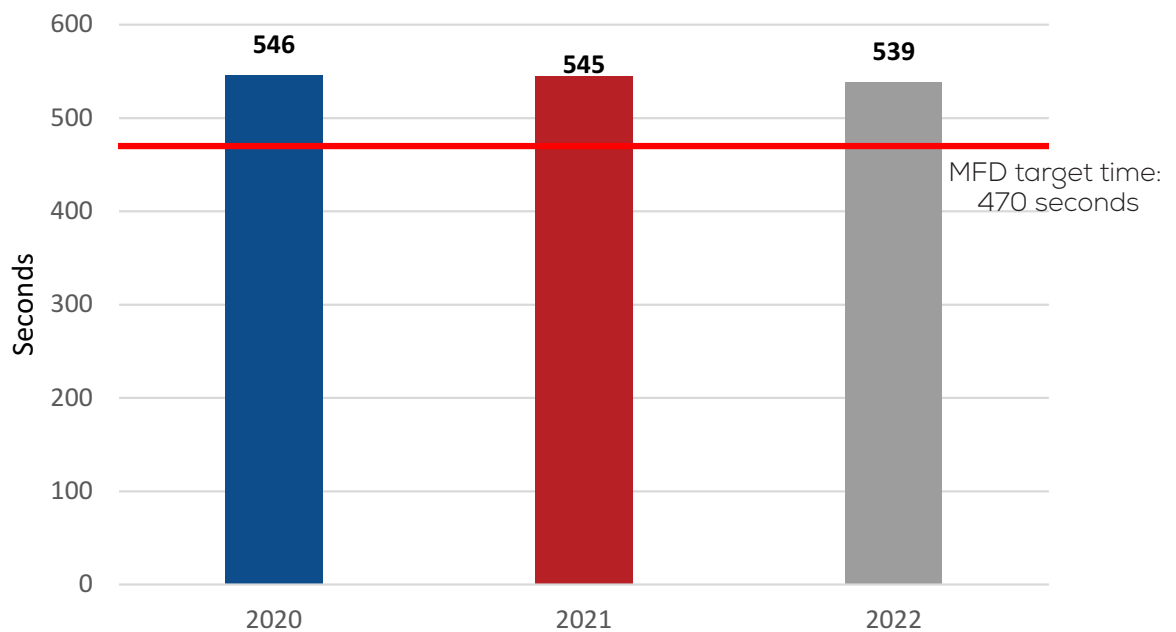
Figure 5.10 Moderate Risk Fire Alarm Handling Time – Trending
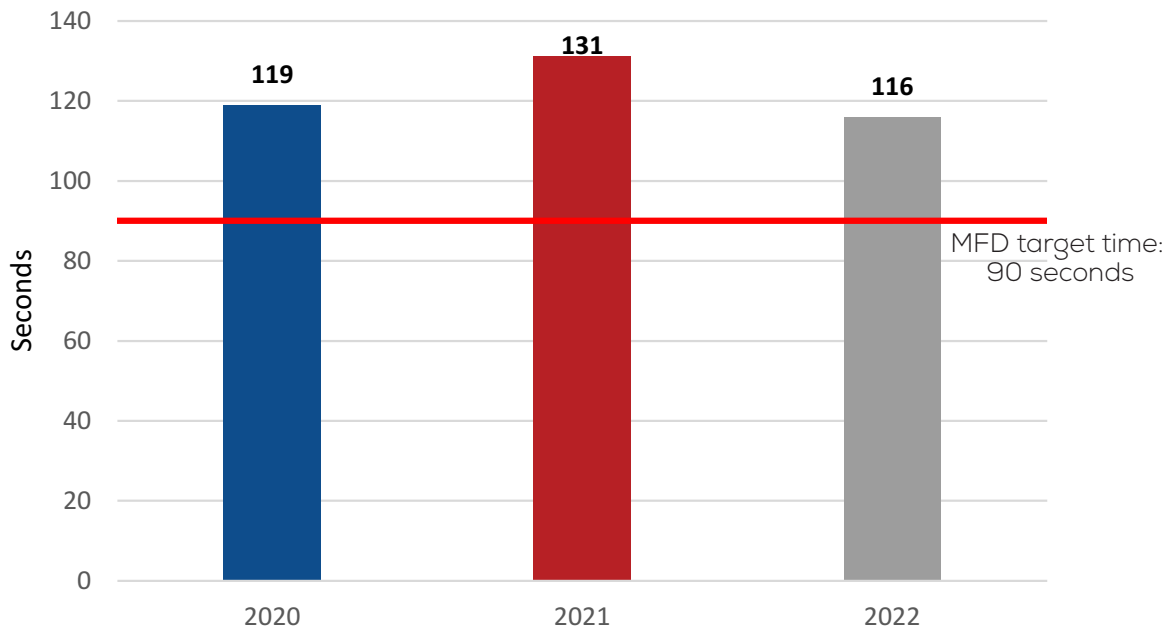
Figure 5.11 Moderate Risk Fire Turnout Time – Trending
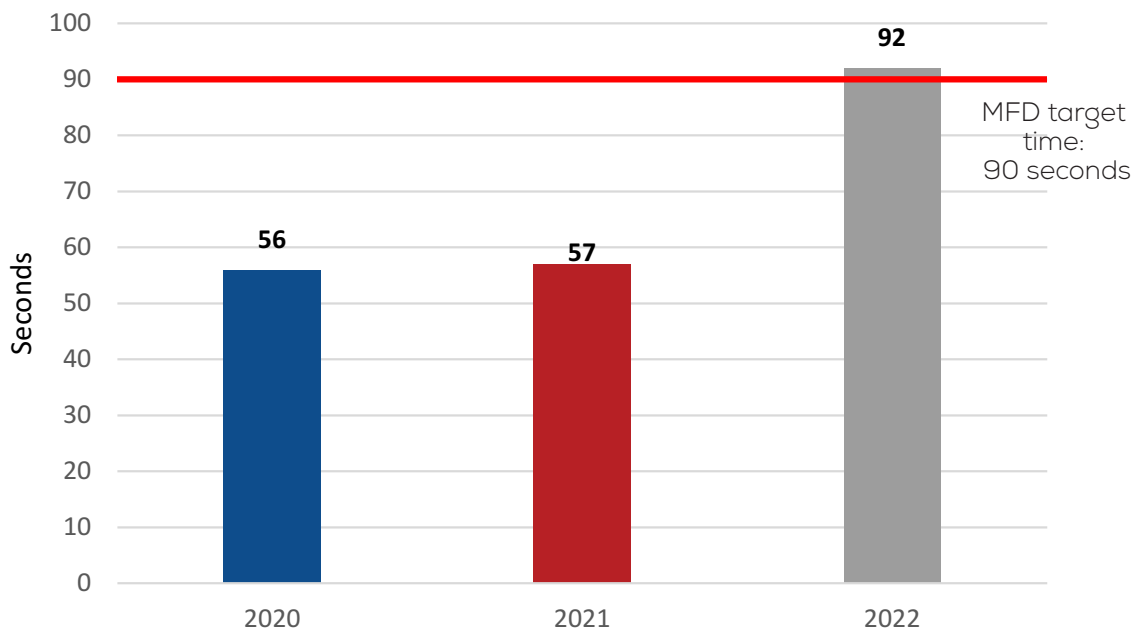
Figure 5.12 Moderate Risk Fire Travel Time – Trending
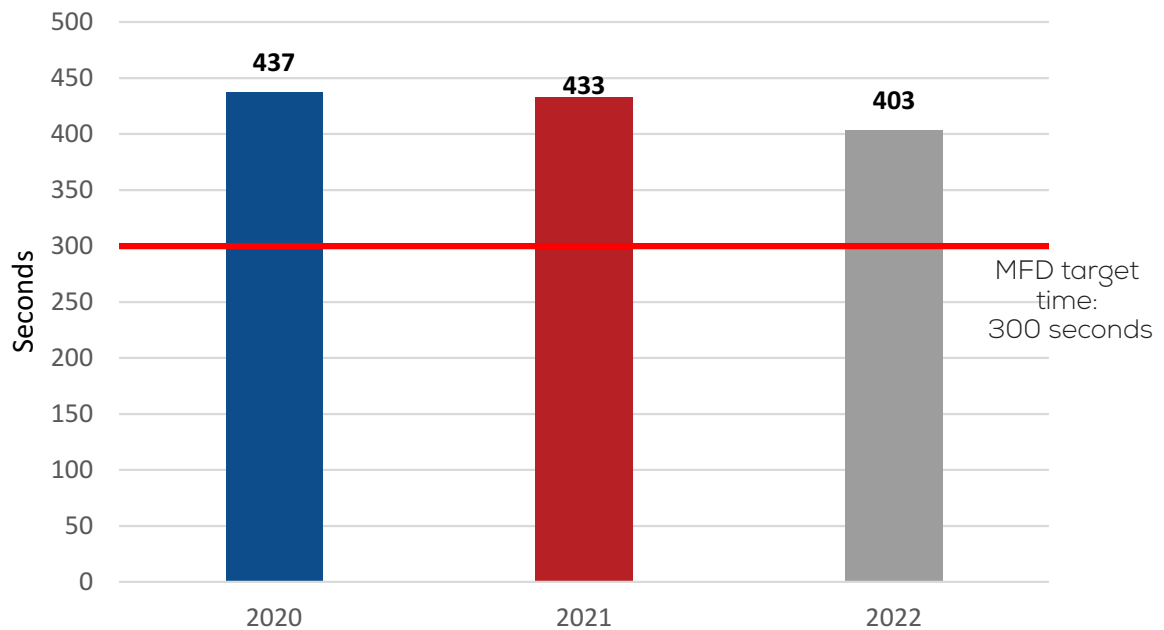
Figure 5.13 Moderate Risk Fire Total Response Time – Trending
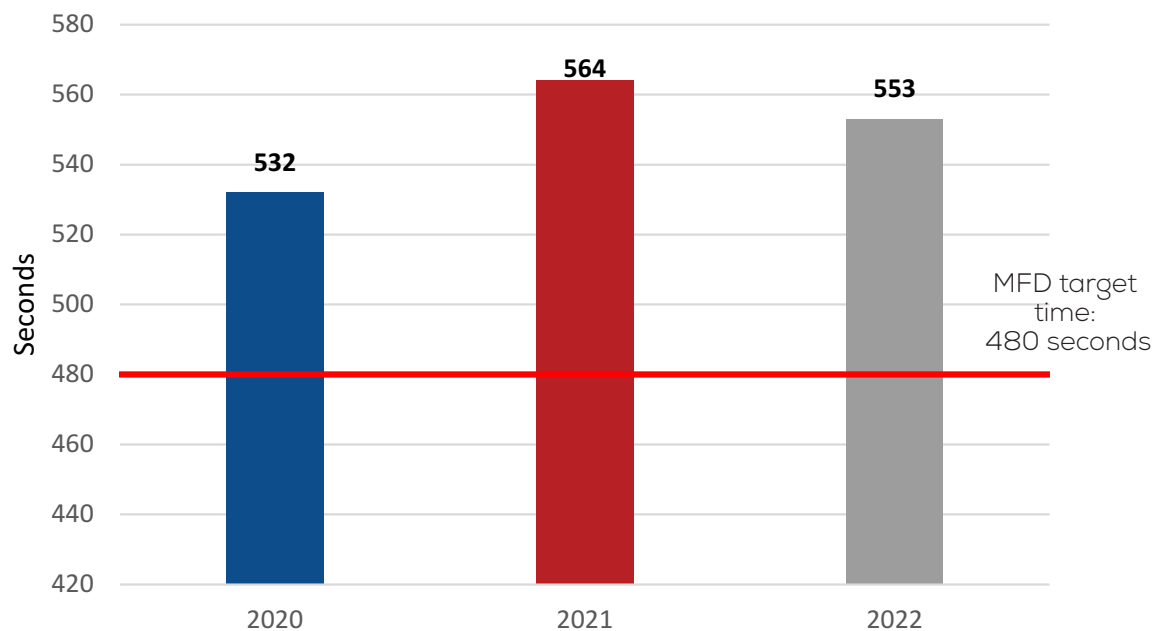
Figure 5.14 High Risk Fire Alarm Handling Time – Trending
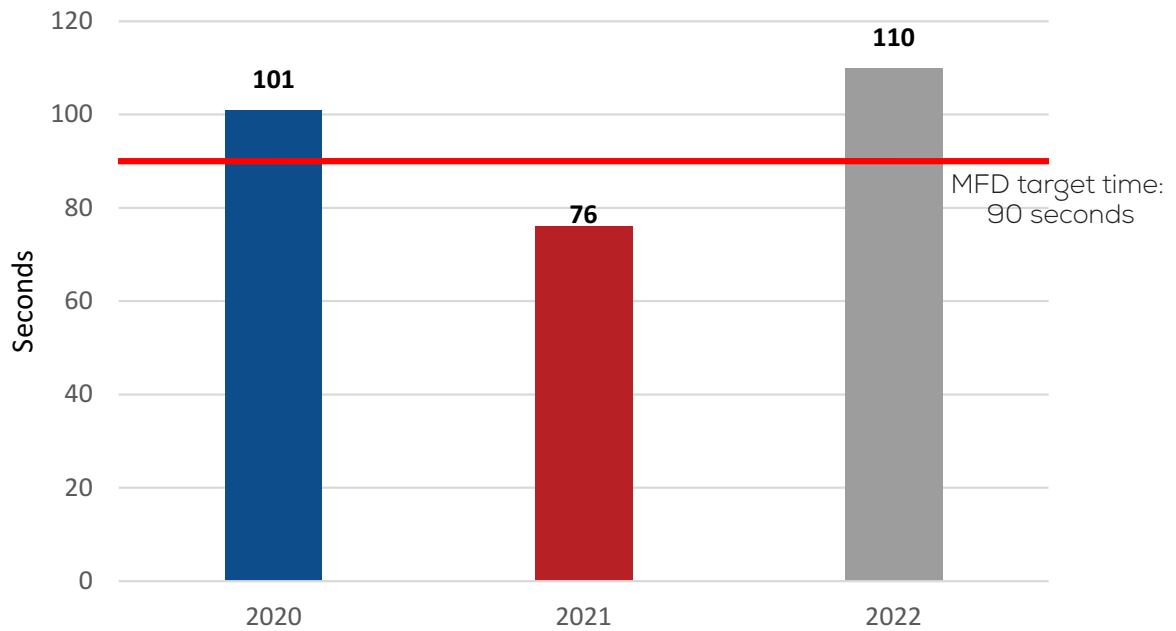
Figure 5.15 High Risk Fire Turnout Time – Trending
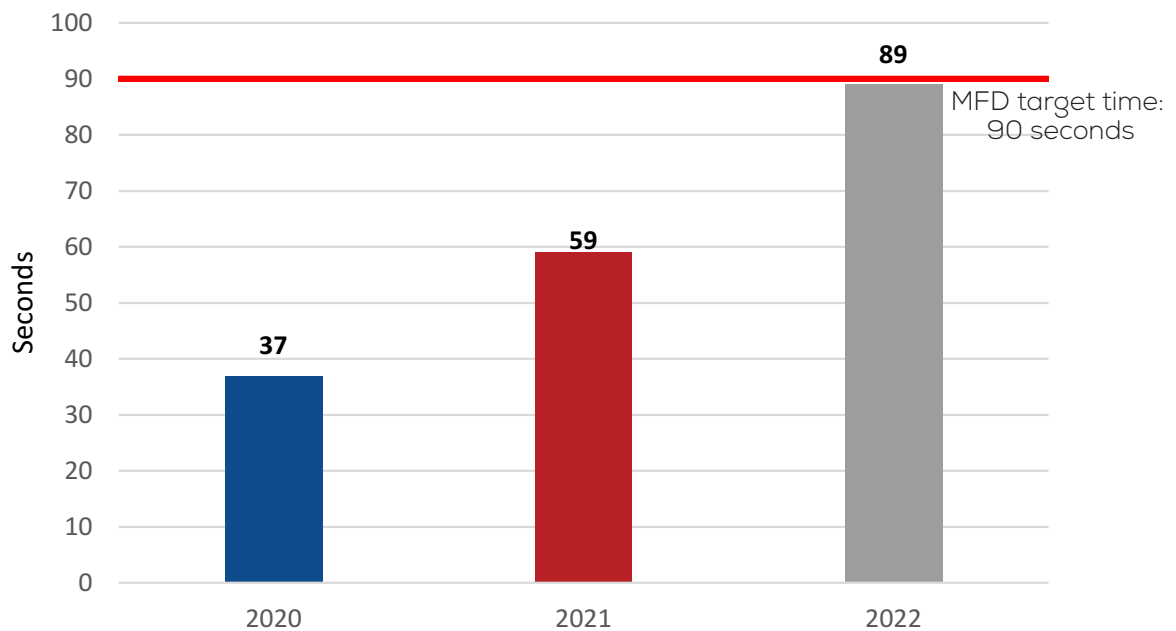
Figure 5.16 High Risk Fire Travel Time – Trending
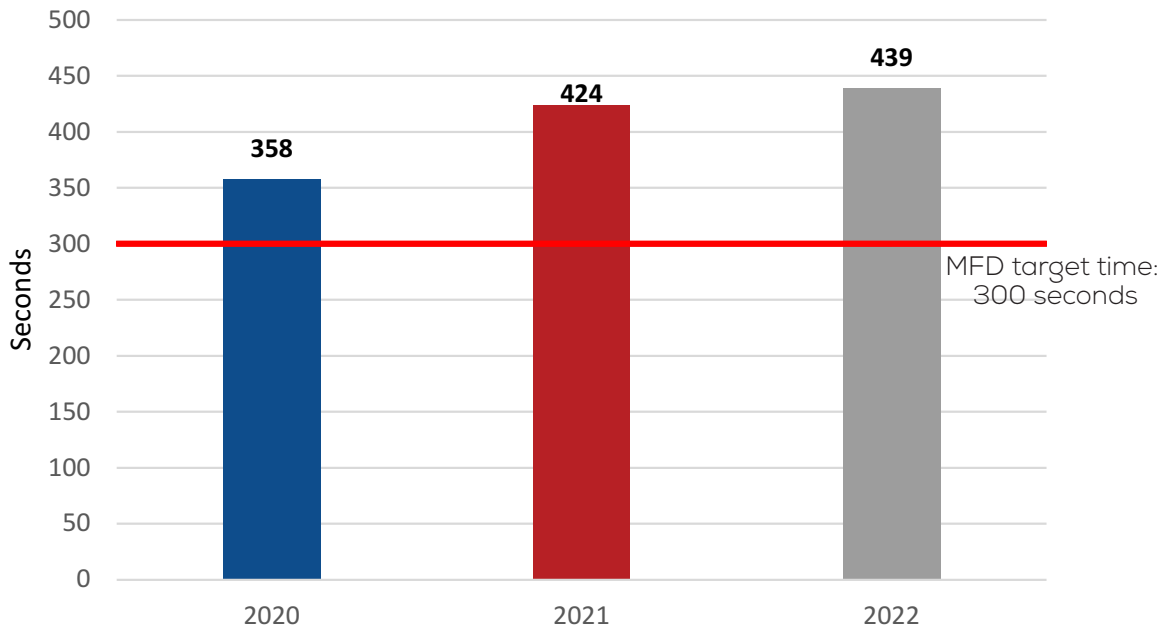
Figure 5.17 High Risk Fire Total Response Time – Trending
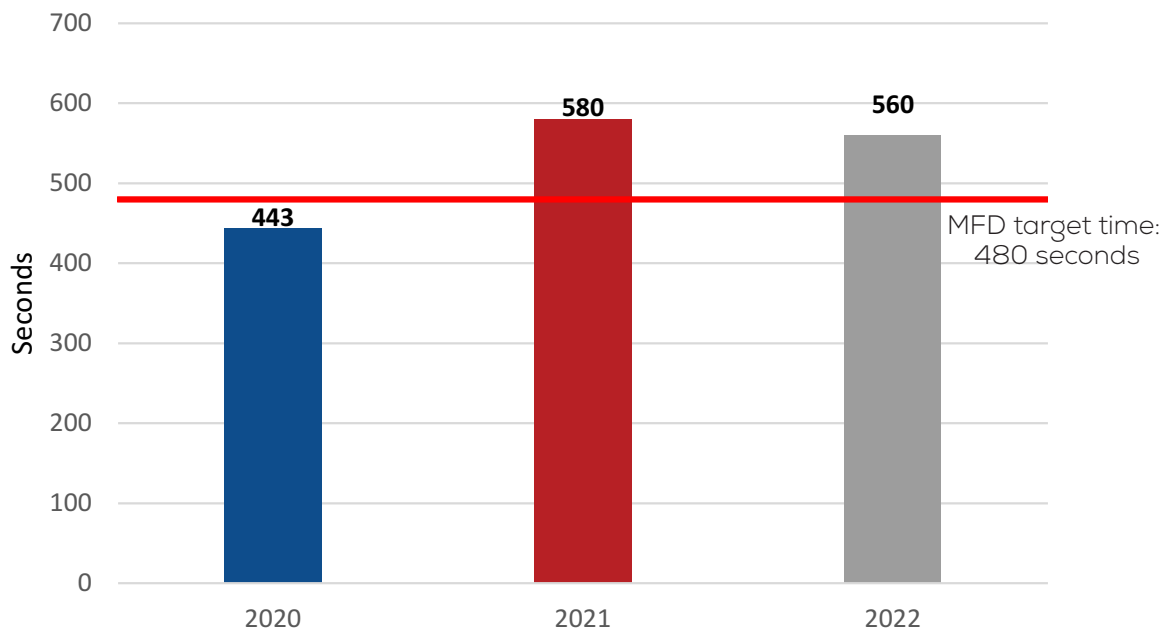
Response Time Comparison

As part of evaluating current performance, response times from seven Commission on Fire Accreditation International (CFAI) accredited agencies were collected. Response time data was limited to EMS calls since this call type rep-resents the majority of Meridian Fire Department's total call volume. Response times from only accredited departments were collected to ensure the data had been validated and verified by CFAI. Response time data from MFD and the accredited agencies is presented in the table below.

Agency	Population Served	# of Stations	Alarm Handling Time	Turnout Time	Travel Time	Total Response Time
MFD (2020-2022)	**134,000**	**6 (8*)**	**3:16**	**1:34**	**8:00**	**11:27**
Northwest FD (Arizona)	130,000	11	1:49	1:30	6:07	7:16
Olathe FD (Kansas)	143,000	8	2:17	1:15	5:47	6:44
College Station FD (Texas)	126,000	6	1:31	2:00	5:02	7:38
Spokane Valley FD (Washington)	136,000	10	1:02	1:59	5:11	6:43
Suprise FD (Arizona)	153,000	7	1:32	1:16	6:41	7:30
Arvada FD (Colorado)	133,000	8	1:51	1:27	5:25	7:47
Gainseville FD (Florida)	135,000	9	2:01	1:16	6:31	9:22

*Two stations under construction at the time of printing

PERFORMANCE GAP SUMMARY

The Meridian Fire Department has analyzed the three components of total response time (alarm handling, turnout, and travel time) as well as overall total response time for all the risk levels and categories to identify performance gaps. Each of these components and total response times are discussed below.

Alarm handling time performance in most of the risk category classifications for the reporting period is well above the MFD target time of 90 seconds. Call processing for moderate-risk EMS calls (the overall leading call category in MFD) was 115 percent above the MFD target time in 2020 and 2021, and 121 percent above in 2022. High-risk EMS call processing times also exceeded the MFD target time by a range of 64 percent in 2020 to 24 percent in 2022.

Call processing times for low-risk fire incidents exceeded the MFD target times by a range of 72 to 90 percent. Call processing times for moderate risk fire calls exceeded the MFD target time by an average of 35 percent. Call processing times for high-risk fire calls were markedly better, with a range of 14 percent below to 22 percent above the target time.

Turnout time performance varied between EMS calls and other call classifications. Low-risk EMS calls exceeded the MFD target time by 45 to 102 percent. Turnout times for moderate-risk EMS (the highest MFD call volume category) calls in 2020 and 2021 were slightly above the target time, with 2022 turnout times at 22 percent above the target time. Turnout times for high-risk EMS calls were below or just above the established target time.

Turnout times for low-risk fire calls for the reporting period were lower than the target time by a range of seven percent below in 2021 to 67 percent above the target time in 2020. Turnout times for moderate-risk fire calls ranged from 38 percent below the target time in 2020 to two percent above in 2022. Turnout times for high-risk fire calls ranged from one percent below the target in 2022 to 59 percent below in 2020. Turnout times increased in many categories for year 2022. In the beginning of 2022, a new feature of 'acknowledging' a call on apparatus mobile data terminals (MDTs) was added prior to placing the apparatus 'enroute' to a call. MFD will investigate this feature as a possible cause of increased turnout times for 2022 compared to previous years.

Travel times generally exceeded target times by at least one-third. Performance for moderate-risk EMS first due ranged from 64 percent above in 2020 to 55 percent above the MFD target time in 2022. High-risk EMS first due times averaged 31 percent above the target time.

Low-risk fire travel times (for emergent calls) ranged from 93 to 95 percent above the MFD target time. Moderate-risk fire first due travel times ranged from 34 to 46 percent above the MFD target time. High-risk fire first due travel times ranged from 19 percent above in 2020 to 46 percent above in 2022. Moderate-risk fire ERF travel times ranged from 62 percent above in 2020 to 80 percent above in 2022. First due travel times for hazmat, extrication and wildland/grass fires had a range of 35 to 75 percent above the established target time, with 2020 wildland/grass fire first due travel times having an exceptionally long travel time for the reporting period.

Overall, there appears to be a trending increase in travel times.

Total response time performance for moderate-risk EMS first due ranged from 44 percent to 49 percent above the MFD target time, while EMS moderate-risk effective response force (ERF) total response times ranged from three to four percent below the target time. First due total response time for high-risk EMS calls ranged from 15 to 16 percent above the target time. EMS times for ERF high-risk calls ranged from 20 percent to 44 percent above the target time.

Fire low-risk total response times ranged from 60 to 70 percent above the target time. Moderate-risk fire first due times ranged from 11 to 17 percent above the target time for the reporting period. Moderate-risk fire ERF total response times ranged from 22 percent above in 2020 to 43 percent above the target time in 2022. High-risk fire first due total response times ranged from seven percent below in 2020 to 21 percent above the target time in 2021.

For the balance of the call types, moderate-risk extrication first due total response times were the best, ranging from two percent below to 11 percent above.

Moderate-risk wildland first due times varied from 38 to 82 percent above the target time. Low-risk hazmat first due times ranged from 64 to 75 percent above the target time, with moderate-risk hazmat first due times ranging from 20 to 39 percent above the target time. Moderate-risk extrication first due times range from no gap to 11 percent above the target time. Moderate risk extrication ERF call times ranged from 54 percent above in 2022 to an extreme 260 percent above the target in 2021.

A review of the response time data in this section demonstrates that the focus areas for performance gap improvement should be call processing and travel times. Details of the performance improvement plan are contained in Sections 6 and 7

SECTION 6

Plan for Improving and Maintaining Response Capabilities

Without continual growth and progress, such words as improvement, achievement and success have no meaning.

– Benjamin Franklin

SECTION 6 – PLAN FOR IMPROVING AND MAINTAINING RESPONSE CAPABILITIES

The development of the Community Risk Assessment – Standards of Cover (CRA-SOC) is a significant component of MFD's commitment to provide the highest level of service possible to the community. A key element of that commitment is ensuring there is a plan moving forward to maintain and improve community risk reduction and emergency response capabilities as described in the CRA-SOC. Components of the plan are illustrated in **Figure 6.1**, followed by a more detailed discussion.

Figure 6.1 - Compliance Model

Step 1 – Establish and Review Performance Objectives

To establish performance objectives, Meridian Fire Department has performed the following:

- Identified services provided

- Completed a risk assessment

- Defined levels of service

- Identified and categorized levels of risk

- Developed performance distribution/concentration measures and associated objectives

Updating and establishing any new performance measures should occur when:

- There is a change in the type(s) of services delivered by MFD

- New laws or regulations require a change in the method of service delivery by MFD

- Significant change occurs in MFD boundaries (growth or contraction)

- The city council, mayor, or fire chief feel there is a need to adjust performance service delivery and associated performance objectives

Step 2 – Evaluate Performance

MFD evaluates performance at several levels:

- Department level

- Geographic planning zone level

- Unit level (first due)

- Effective response force level

Step 3 – Develop Compliance and Improvement Strategies

The SOC team will develop compliance and improvement strategies that will include developing a performance improvement plan by March 2024 that considers the following elements:

- Ensure maximization of existing resources including recommendations for new response models as needed

- Evaluation of partnering opportunities (additional or enhanced mutual or auto aid agreements)

- Consideration of alternate means of service delivery

- Recommendations for additional mobile and fixed resources as needed to improve or maintain service delivery

Step 4 – Communicate Expectations

The CRA–SOC clearly outlines service level response performance objectives. These performance objectives need to be clearly communicated to the MFD personnel responsible for service delivery, as well as support service personnel. The methods for communicating performance objective expectations may include, but are not limited to:

- Direct communication with crews by the battalion chiefs

- Review of expectations and performance objective statistics at fire officer staff meetings

- Posting of the CRA-SOC on the department's website and intranet

Using these and potentially other methods of communication, the SOC team will develop a plan to communicate expectations by March 2023. The plan also will include an element by which members can give feedback regarding the expectations.

Step 5 – Validate Compliance

Validating compliance will include the following mechanisms:

- Monthly performance reports that include performance data by unit, station, and shift battalion will be developed and distributed to all fire officers

- Quarterly performance reports will be developed, delivered and reviewed at the SOC team quarterly meetings

- A comprehensive annual performance report will be developed by the SOC team. The annual report will include all aspects of:

  - Performance compliance for the previous calendar year

  - Any significant trends that were identified as a result of analyzing performance

  - Any new external influences or altered conditions, new growth and development trends and new or changing risks

The annual report shall be submitted to the city for review and comment.

Step 6 – Make Necessary Adjustments

The operations division can review performance reports to validate compliance, identify performance gaps, and formulate a plan with the SOC team for performance improvement.

In addition to developing an annual performance report as outlined in Step 5, the SOC team will review the entire CRA-SOC annually, and make any necessary adjustments. Following the SOC team annual review, the CRA-SOC will be submitted to the city council for adoption.

SECTION 7

Key Findings and Recommendations

True commitment includes making a personal commitment to all members of the department and the citizens of the City of Meridian. This commitment promises that our best efforts will be the standard of performance at all times.

– Chief Kris Blume, Meridian Ethos Manual

SECTION 7 - KEY FINDINGS AND RECOMMENDATIONS

These key findings and recommendations were developed by the consultant and MFD senior staff.

Key Finding #1

As presented in Section 5, current call processing times are excessive.

Recommendations

- In partnership with Ada County Dispatch Center and other fire agencies that utilize the dispatch center, develop a performance improvement plan.
- Include a performance measurement element that aligns with the bench-mark call processing time in this document in any future dispatch contract agreement.
- Initiate an orientation program that involves dispatch center observation experiences for MFD captains and an MFD ride-along program for dispatchers.

Key Finding #2

MFD has minimal capability to respond to hazmat and several technical rescue scenarios beyond the basic response level.

Recommendations

- Develop a special operations committee to evaluate the community and department's current and future needs for technical rescue and hazmat personnel. The committee should also evaluate the department's training and equipment needs.
- Create training opportunities with partnering agencies, such as Eagle and Boise Fire Departments, who currently have technician level trained personnel, to enhance MFD's initial scene operations.
- Develop a plan that enables MFD to respond to high-risk hazmat and technical rescue calls with more resources in order to manage the initial incident more effectively. Elements of the plan could include determining an appropriate minimum daily staffing of hazmat technicians who are trained to the level outlined in NFPA 472, Chapter 7, and technical rescue technicians who are trained as outlined in NFPA 1670, Chapters 5, 6, 7 and 11.

Key Finding #3

There is likely potential for an improvement in the current Idaho Surveying and Rating Bureau (ISRB) rating.

Recommendation

- With assistance from ISRB, determine the probability of improving the current rating – based on improvements made in community risk reduction and operations services in the past three years.

Key Finding #4

In 2016 the city adopted a five-minute travel time objective, however this objective has not been met since its adoption.

Recommendation

- Develop a service delivery model to accomplish a five-minute travel time at the 90th percentile and present to city council.

Key Finding #5

There is a need to develop MFD specific proactive and reactive response plans for the identified large-scale risks.

Recommendations

- Develop large-scale proactive and reactive response plans beginning with the highest scoring large scale risks.
- Develop a pre-planning policy including a document that can be shared across shifts and crews and is available on the department's MDTs.

Key Finding #6

False alarm calls account for 7.7% of the total call volume (2022 data) . This volume of calls contributes to extended travel times for other concurrent calls, unnecessary traffic exposure during and returning from the response, and time taken away from other work activities such as training, apparatus and equipment upkeep and functions.

Recommendation

- Determine the primary causes of the false alarms and develop an action plan that includes a false alarm reduction benchmark.

Key Finding #7

Service and good intent calls account for more than a quarter of total call volume.

Recommendation

- Explore other service delivery options for service and good intent options other than front-line companies.

Key Finding #8

There is a need to establish a 10 or 20-year master plan for the fire department.

Recommendation

- Develop an action plan in order to complete fire department master plan.

GLOSSARY

Adequate: Providing what is needed to meet a given objective without being in excess.

Advanced Life Support (ALS): Emergency medical treatment beyond basic life support level as defined by the medical authority having jurisdiction.

Alarm: A signal or message from a person or device indicating the existence of a fire, medical emergency or other situation that requires fire department action.

Alarm Answering Time: The time interval that begins when the alarm is received at the communication center and ends when the alarm is acknowledged at the communication center.

Alarm Handling Time: The time interval from the receipt of the alarm at the primary public safety answering point (PSAP) until the beginning of the transmittal of the response information via voice or electronic means to emergency response facilities (ERFs) or the emergency response units (ERUs) in the field.

Alarm Processing Time: The time interval from when the alarm is acknowledged at the communication center until response information begins to be transmitted via voice or electronic means to emergency response facilities (ERFs) and emergency response units (ERUs).

Alarm Transfer Time: The time interval from the receipt of the emergency alarm at the public safety answering point (PSAP) until the alarm is first received at the communication center.

Automatic Aid: A plan developed between two or more fire departments for immediate joint response on first alarms.

Baseline Performance: Current level of performance.

Benchmark Performance: Level of performance the department is trying to achieve long term.

Community Risk Assessment (Analysis): The evaluation of a community's fire and non-fire hazards and threats, considering all pertinent facts that increase or decrease risk in order to define standards of cover.

Company: A group of MFD members:

- Under the direct supervision of an officer

- Trained and equipped to perform assigned tasks

- Usually organized and identified as engine companies, ladder companies, rescue companies, squad companies or multi-functional companies

- Operating with one piece of fire apparatus (engine, ladder truck, rescue, squad) except where multiple apparatus are assigned that are dispatched and arrive together; continuously operate together and are managed by a single company officer

- Arriving at the scene on fire apparatus

Concentration: Spacing of multiple resources arranged so that an initial effective response force can arrive on scene within the time frames outlined in the on-scene performance objectives.

Credible: Capable of being believed; believable as verified and/or validated.

Critical Task: A time-sensitive work function that is essential, along with other work functions to ensure a positive outcome for a performance objective.

Deployment: The strategic assignment and placement of fire agency resources such as fire companies, fire stations and specific staffing levels for those companies required to mitigate community emergency events.

Distribution: Geographic location of all first-due resources for initial intervention. Generally measured from fixed response points, such as fire stations, and expressed as a measure of time.

Effective Response Force (ERF): The minimum amount of staffing and equipment that must reach a specific emergency zone location within a maximum prescribed total response time and is capable of initial fire suppression, EMS and/or mitigation. The ERF is the result of the critical tasking analysis conducted as part of a community risk assessment.

Fire Protection System: The regular interaction of dependent and independent sources of fire protection services, and includes both public and private organizations, apparatus, equipment, fixed and mobile, facilities, methods, human resources and policies by the authority having jurisdiction.

First-Due Area: The portion of a jurisdiction that each response company has been assigned to be the first unit to arrive at the scene of an emergency. Usually the first-due company is responsible for most activities in that area. See Distribution.

Frequency: The number of occurrences per unit time at which observed events occur or are predicted to occur.

Geographic Planning Zones: The establishment of organized geographical response areas by size (square miles or kilometers), unique occupancy, demographic type or other risk-relevant characteristics.

Hazard: A condition that presents the potential for harm or damage to people, property or the environment.

Incident: An occurrence, either human-caused or a natural phenomenon, that requires action or support by emergency services personnel to prevent or minimize loss of life or damage to property and/or natural resources.

Incident Commander: The fire department member in overall command of an emergency incident.

Incident Safety Officer: An individual appointed to respond or assigned at an incident scene by the incident commander to perform the duties and responsibilities of that position as part of the command staff.

Mutual Aid: Reciprocal assistance by emergency services under a prearranged plan.

Outputs: The specifically intended types of results that can be expected form the activities and inputs that are placed into service.

Outcomes: Something that follows an applied activity as a result or consequence.

Percentile: One-hundredth parts; 90/100=90%.

PSAP: Public Safety Answering Point.

Rapid Intervention Crew (RIC): A dedicated crew of firefighters assigned for rapid deployment to rescue lost or trapped members.

Risk: A measure of the probability and severity of adverse effects that result from an exposure to a hazard.

Standards of Cover: Those written policies and procedures that establish the distribution and concentration of fixed and mobile resources of an organization.

Total Response Time: The sum of alarm handling (call processing), turnout and travel times.

Travel Time: The time interval that begins when a unit is in route to the emergency incident and ends when the unit arrives at the scene.

Turnout Time: The time interval that begins when the emergency response facilities (ERFs) and emergency response units (ERUs) notification process begins by either an audible alarm or visual annunciation or both, and end at the beginning point of travel time.

Working Fire: Any fire within a structure or building fire causing significant damage to the building and its contents. Generally requires commitment of all initial effective response force (ERF).

Appendix A.1 NFPA 1201 Compliance Table

	Reference Element	Compliance Status
4.1.1	Fire-emergency service organization (FESO) has adopted statement of purpose including general services provided, area served and delegation of authority.	YES ☒ NO ☐
4.1.2	Levels of services determined by FESO or by AHJ.	YES ☒ NO ☐
4.1.3	Resources/personnel are determined by FESO or AHJ.	YES ☒ NO ☐
4.2.1	AHJ responsible for FESO-established legal authority for operation of FESO.	YES ☒ NO ☐
4.2.2	FESO operates within and complies with existing laws within its jurisdiction and responsibilities.	YES ☒ NO ☐
4.3.1	FESO delivers program to develop public awareness and cooperation in management of risk-based analysis of relevant data in a community risk assessment.	YES ☒ NO ☐
4.3.2	Level of service provided, and degree of risk is by local determination.	YES ☒ NO ☐
4.3.3.1	FESO has programs developed to regularly evaluate all parts of service area in which hazardous situations could develop.	YES ☒ NO ☐
4.3.3.2	Examinations concentrate on locations identified with high levels of hazards.	YES ☒ NO ☐
4.3.4	FESO assists in reducing risk to persons/ organizations in service area.	YES ☒ NO ☐
4.3.5	FESO provides customer service-oriented programs as listed in 4.3.5	YES ☒ NO ☐
4.3.6.1	FESO communicates closely with government authority, chief executive and governing body.	YES ☒ NO ☐
4.3.6.2	FESO keeps members of AHJ informed of department's achievements, operations and challenges.	YES ☒ NO ☐
4.3.6.3	FESO seeks input from public regarding expectations and satisfaction with services provided.	YES ☒ NO ☐
4.4.1	There is a master plan.	YES ☐ NO ☒
4.4.2	Master plan provides for service area wide management strategy and includes existing and anticipated growth.	YES ☐ NO ☒
4.4.3	Master plan includes evaluation of specific types and levels of risk in a service area.	YES ☐ NO ☒

	Reference Element	Compliance Status
4.4.4	Master plan is directly related to improving and maintaining effectiveness and efficiency of FESO.	YES ☐ NO ☒
4.4.5	Master plan takes a proactive approach to the community's changing need for service.	YES ☐ NO ☒
4.4.6	FESO includes research and development component that encompasses all aspects of fire/ emergency services provided.	YES ☒ NO ☐
4.4.7	Research and planning includes ongoing relationships with other agencies involved in service area.	YES ☒ NO ☐
4.4.8	FESO leaders kept informed of development plans, projected service demands, operational plans, alternative approaches and problems that could develop as change occurs.	YES ☒ NO ☐
4.4.9	Master planning process includes attempt at future emergency needs of a service area for a minimum of ten years.	YES ☐ NO ☒
4.4.10	Master planning is used to develop and maintain fire/emergency services resources to manage levels of risk that will prevail in the service area.	YES ☐ NO ☒
4.4.11	Master planning process includes consideration of alternative approaches to risk management.	YES ☐ NO ☒
4.4.12	Master planning process includes the FESO preparing contingency plans for implementation in the event of curtailed availability of local government.	YES ☐ NO ☒
4.5.1	FESO has a fire chief and organizational structure that facilitates effective and efficient management of its resources to carry out mandate as in 4.1.2	YES ☒ NO ☐
4.5.2	FESO has an organizational structure adequate to accomplish its mission.	YES ☒ NO ☐
4.5.3.1	Fire department has developed and adopted formal policy statement that includes types and levels of services to be provided by the department, the service area and delegation of authority to management personnel.	YES ☒ NO ☐
4.5.3.2	Policy statement is reviewed periodically and updated to reflect current conditions.	YES ☒ NO ☐
4.5.3.3	Fire department in conjunction with AHJ determines the organization, number and distribution of operating line units of the department.	YES ☒ NO ☐

	Reference Element	Compliance Status
4.5.3.4	Fire department has organizational plan that illustrates the relationship of individual operating divisions to the organization.	YES ☒ NO ☐
4.6.1	Automatic and mutual aid arrangements have formal written agreements in place.	YES ☒ NO ☐
4.6.2	All personnel have training to ensure compatible operations.	YES ☒ NO ☐
4.6.3	Company staffing models are defined between departments included in the agreements.	YES ☒ NO ☐
4.6.4	Operational methods are as uniform as practical.	YES ☒ NO ☐
4.7	Finance – Not evaluated as part of the CRA-SOC development process.	N/A
4.8	Asset Control – Not evaluated as part of the CRA-SOC development process.	N/A
4.9	Audit – Not evaluated as part of the CRA-SOC development process.	N/A
4.10	Risk Management Plan – Not evaluated as part of the CRA-SOC development process.	N/A
4.11	Professional Development – Not evaluated as part of the CRA-SOC development process.	N/A
4.12	Emergency Management Program – Not evaluated as part of the CRA-SOC development process.	N/A
4.13	Management Information Systems (MIS) – Not evaluated as part of the CRA-SOC development process.	N/A
4.14.1	FESO ensures provision of reliable communication systems to facilitate prompt delivery of services.	N/A
4.14.2.1	All emergency communications facilities and equipment comply with NFPA 1221 – Not evaluated as part of the CRA-SOC development process.	N/A
4.14.3	Non-emergency Communications – Not evaluated as part of the CRA-SOC development process.	N/A
4.15	Annual Report – Not evaluated as part of the CRA-SOC development process.	N/A
5.1.1.1	FESO has a defined process for addressing factors in the community that affect risk for fire and other emergencies.	YES ☒ NO ☐
5.1.1.2	The process includes relevant engineering challenges and potential solutions with respect to 1) community risk assessment 2) water supply 3) planning 4) resource deployment.	YES ☒ NO ☐

	Reference Element	Compliance Status
5.1.2	FESO is responsible for identifying and addressing these factors in the community that affect risk for fires and other emergencies.	YES ☒ NO ☐
5.2.1	Research and planning function encompasses examination of all aspects that relate to current demands and future needs of the community.	YES ☒ NO ☐
5.2.2	Research and planning is directed toward improving and maintaining responsive approach to the community's changing needs.	YES ☒ NO ☐
5.3.2	FESO ensures the availability of sufficient water supplies for firefighting throughout the community.	YES ☒ NO ☐
5.3.3.1	FESO has written policies/procedures for utilization of piped and static water supplies that account for weaknesses or deficiencies and provide for contingency plans in the event of service outages.	YES ☒ NO ☐
5.3.3.2	Written agreements are in place with entities that have available water sources that are privately owned or under the control of a separate public authority.	N/A
8.1	FESO provides resources, planning and training that are consistent with the level of service identified in the scope of authority and responsibilities for emergency operations.	YES ☒ NO ☐
8.2	FESO utilizes NFPA 1561 as the incident management system for all emergency operations.	YES ☒ NO ☐
8.3	Results are used from the community risk assessment to prepare a plan for the timely and sufficient coverage of incidents that could occur.	YES ☒ NO ☐
8.4	FESO has developed the deployment of resources implementation plan in accordance with NFPA 1710.	YES ☒ NO ☐
8.5	Safety, Health and Risk Management – Not evaluated as part of the CRA-SOC development process.	N/A
8.6	Incident Reporting – Not evaluated as part of the CRA-SOC development process.	N/A
8.7	FESO provides emergency medical service that maintains a close working relationship with medical authority to provide applicable level of medical supervision for service level which the FESO is authorized to deliver.	YES ☒ NO ☐

Appendix 1.1 Meridian Waterways
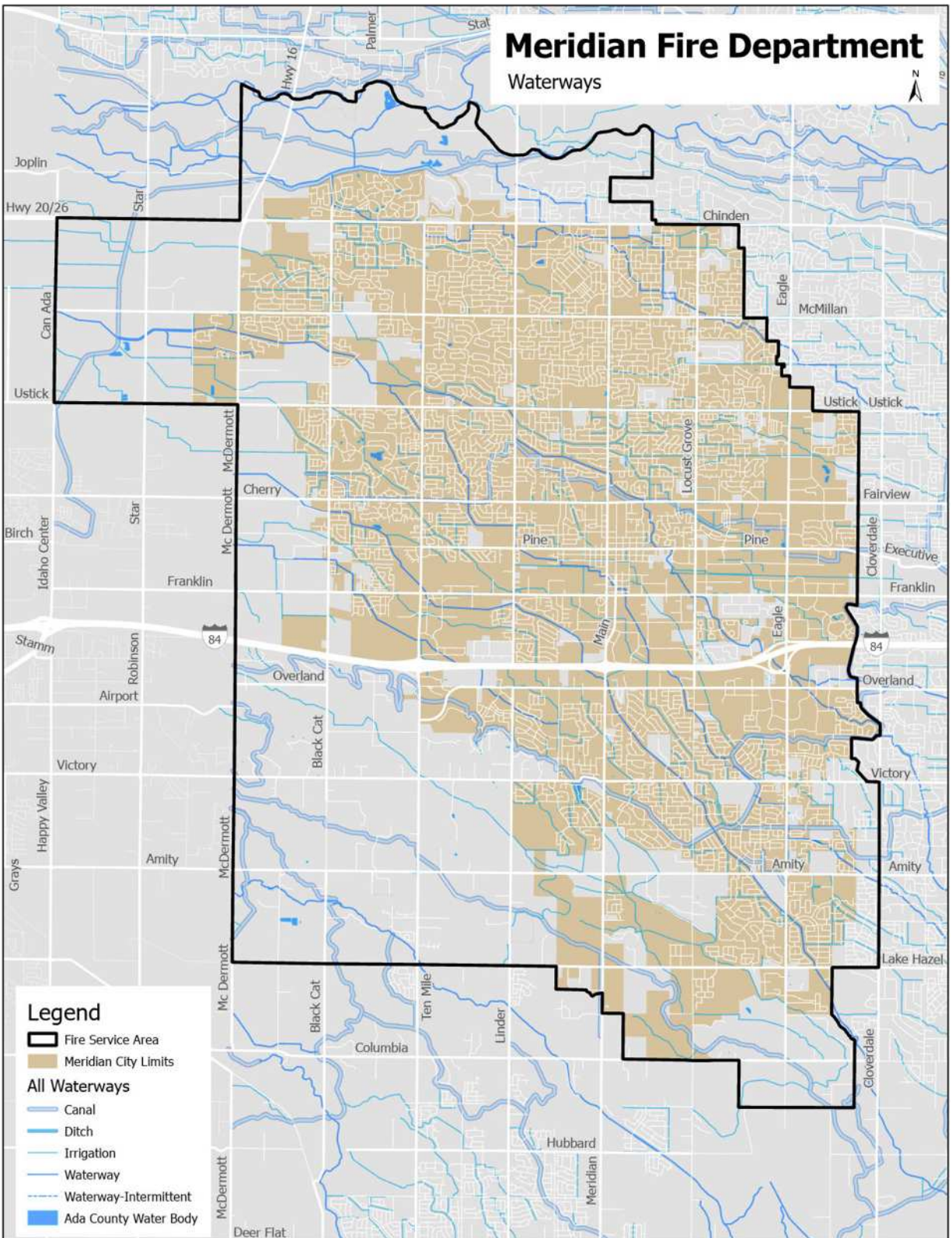
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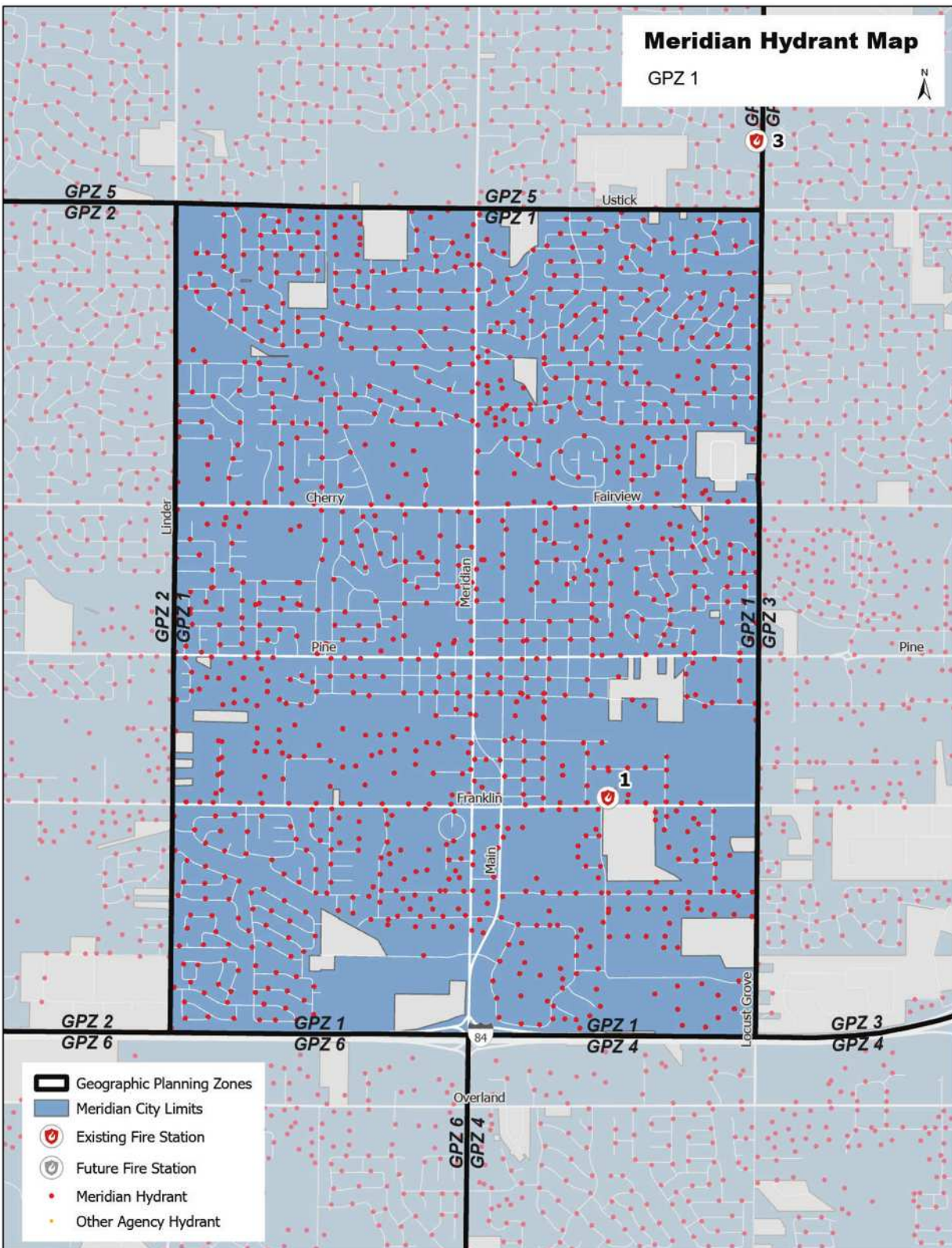
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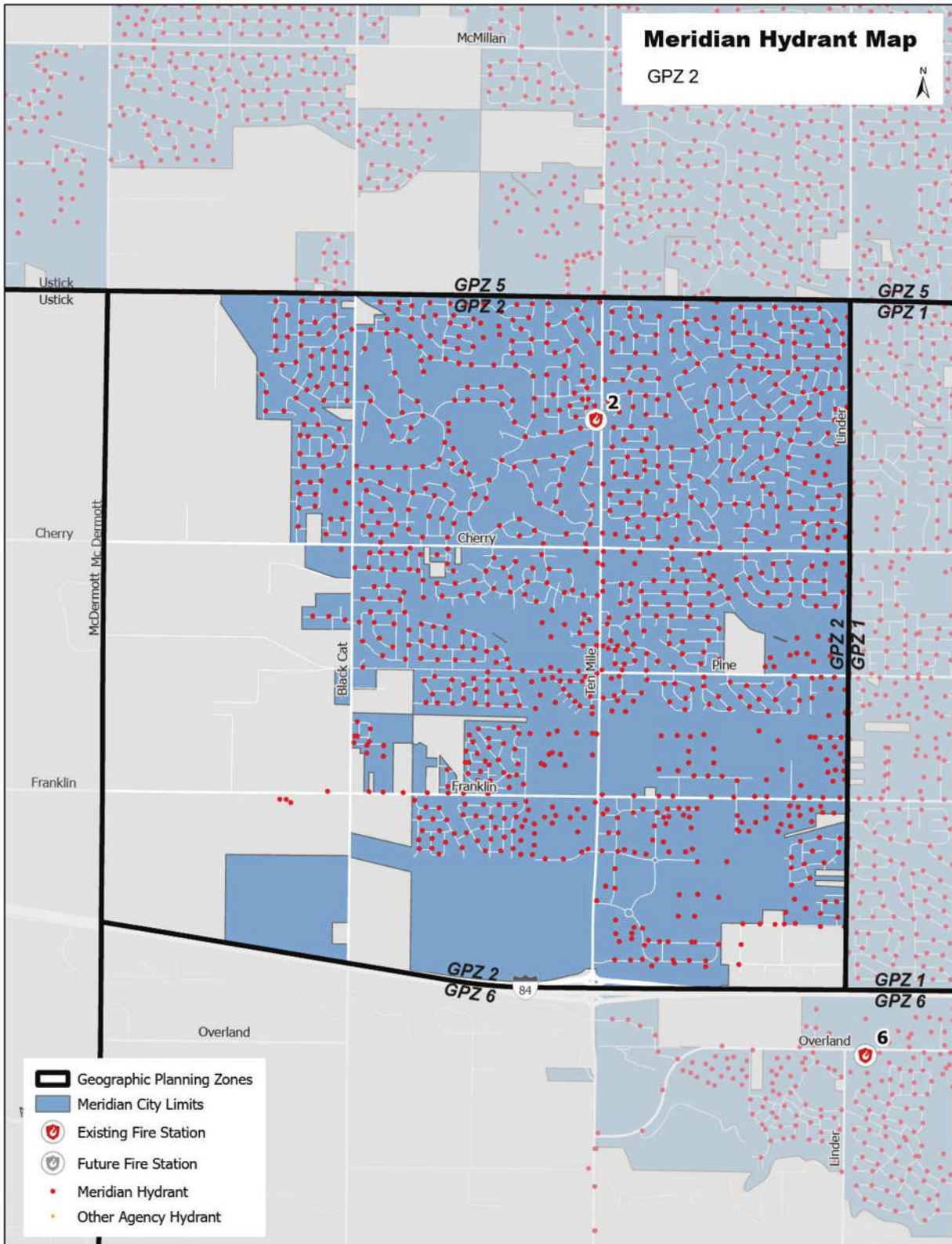
Appendix 1.4 Hydrant Map - GPZ 3
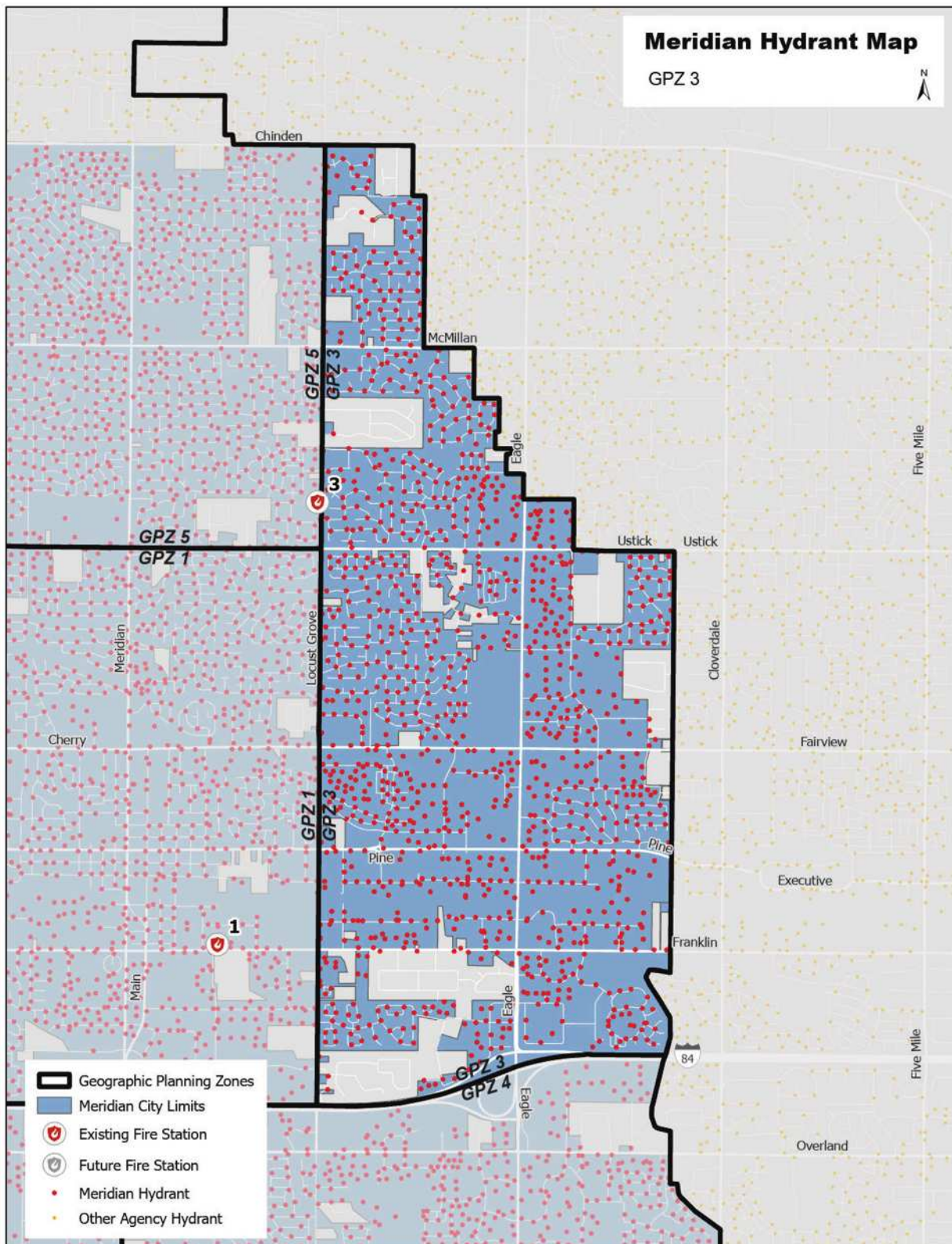
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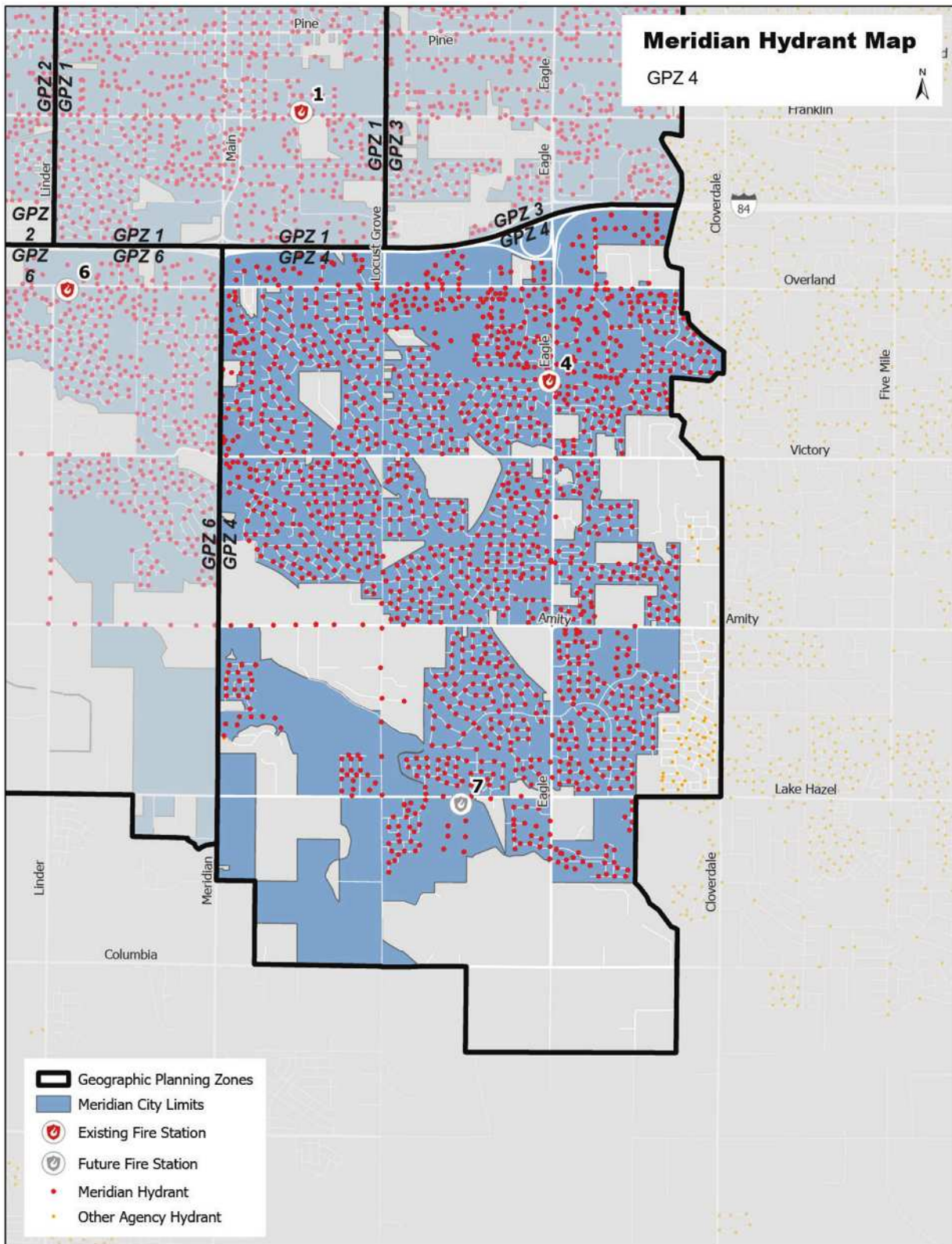
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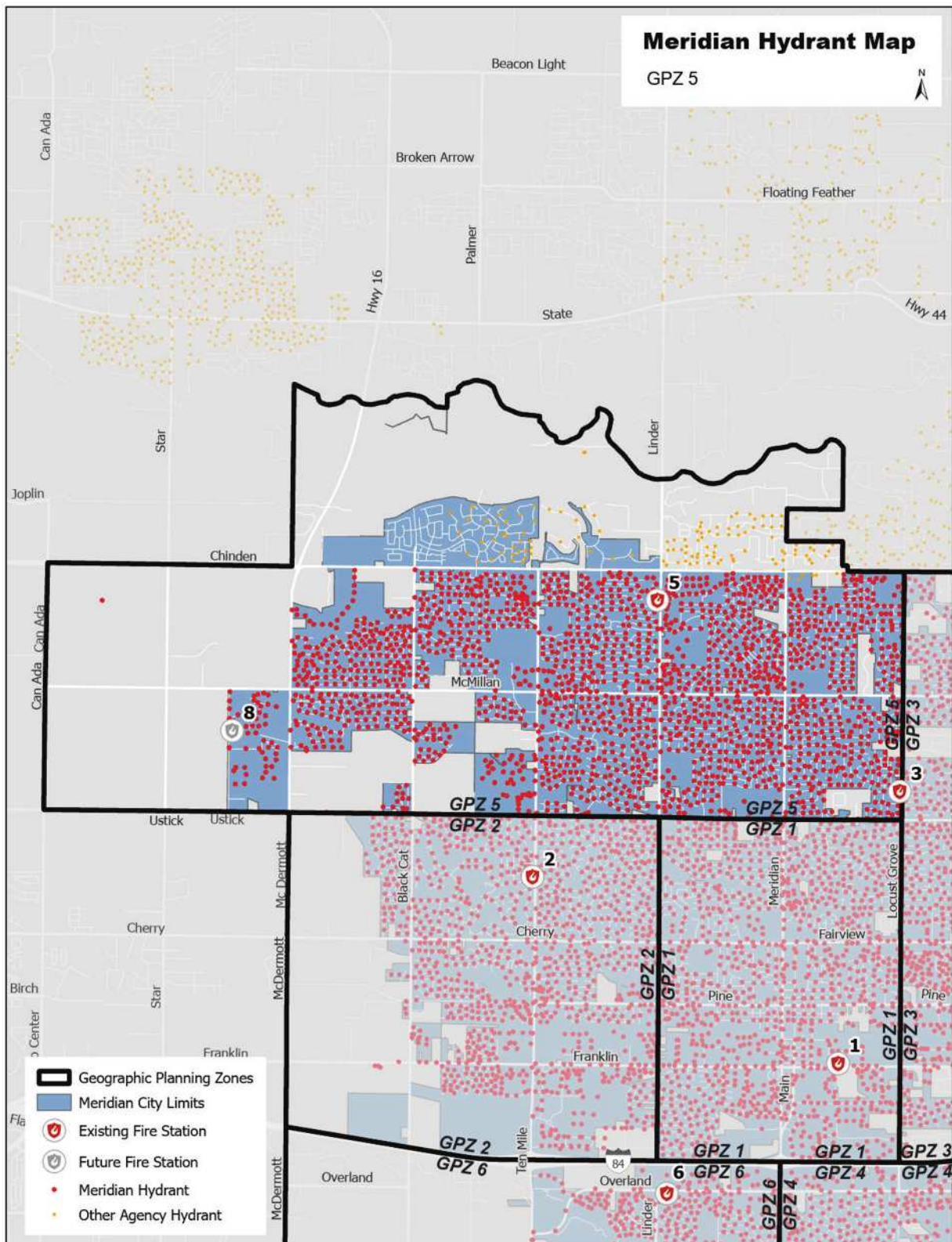
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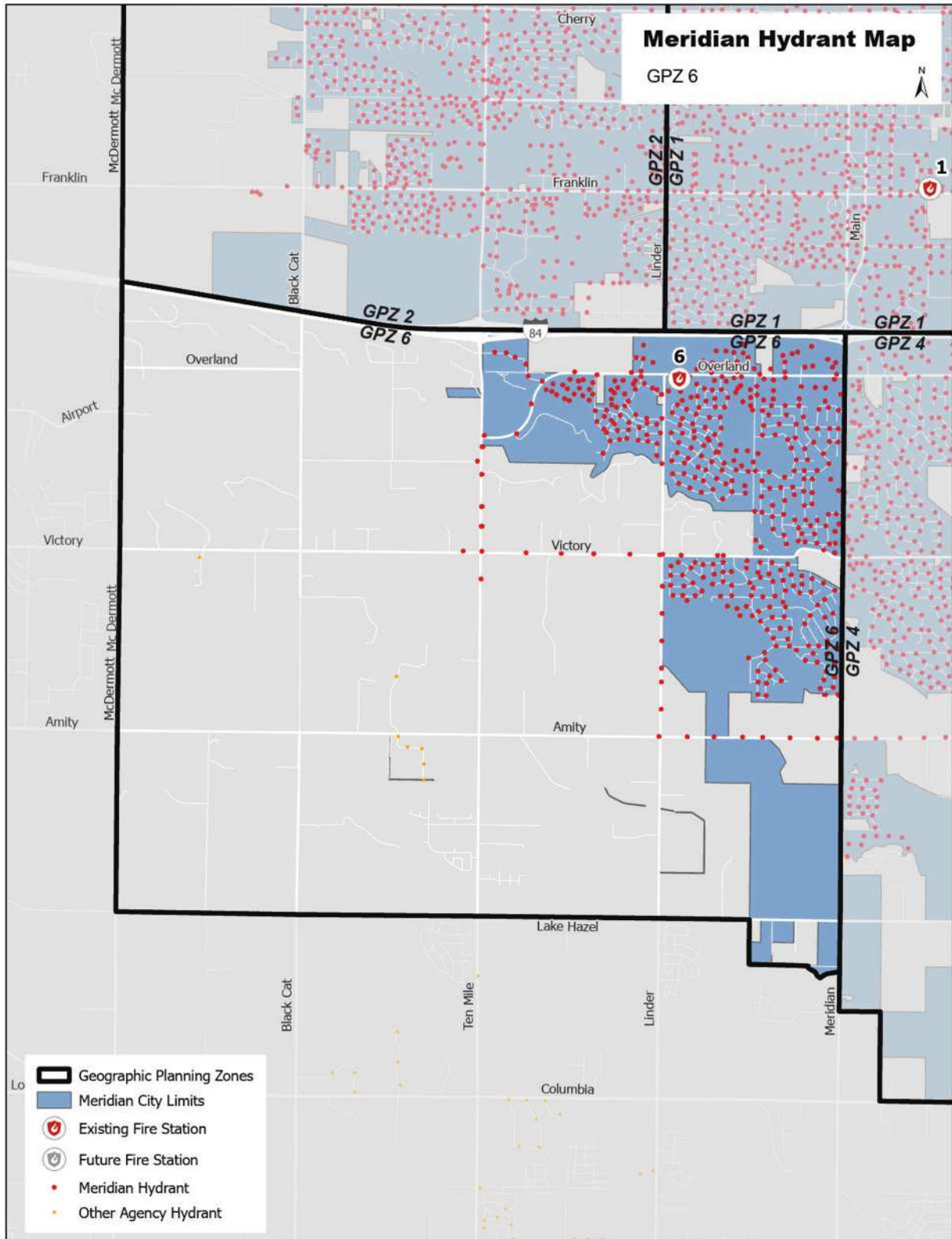
Appendix 1.8 - Future Land Use Areas

FUTURE LAND USES

Future land uses are designated and defined in the City of Meridian Comprehensive Plan. For the purposes of this report, land uses are characterized and combined into four groups:

○ *Residential.* Includes low density residential (LDR), medium density residential (MDR), medium-high density residential (MHDR), and high density residential (HDR).

○ *Mixed Use.* Includes mixed use neighborhood (MU-N), mixed use community (MU-C), mixed use regional (MU-R), mixed use non-residential, (MU-NR) mixed use interchange (MU-I), old-town (O-T), mixed use commercial (MU-Com), and mixed use residenial (MU-Res).

○ *Employment.* Includes commercial (Com), office (Off), industrial (Ind), high density employment (HDE), low density employment (LDE), and mixed employment (ME),

○ *Civic.* Includes Civic only. Other designations such as Gas and Park are no longer used.

The following tables and charts are current as of April 4th, 2022.

Future Land Use Area by Groups (Acres) | 2022

- Employment, 3,876 — 10.2%
- Civic, 1,680 — 4.4%
- Mixed Use, 5,747 — 15.2%
- Residential, 26,604 — 70.2%
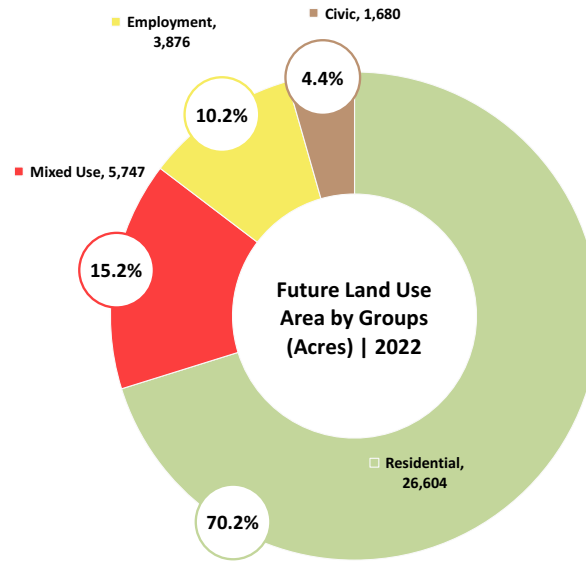
Note: Land use groups are for comparative purposes only, and do not correlate with City of Meridian Comprehensive Plan text or City zoning districts. See the following page for a table of all individual acreage values. Land Use areas are for the entire Area of City Impact and not just annexed lands.

Land Use & Development Report 2022 | Future Land Uses

Appendix 1.9 - Land Valuation

SUMMARY OF DEVELOPMENT INFORMATION

The following land valuation information and parcel information is based on Ada County Assessor records, and does not necessarily reflect market rates. This information is intended to inform comparisons of taxable land values only. While not exhaustive, the following are a sample of indicators used to compile this data:

○ County Property Code. This is used in conjunction with zoning districts, to determine whether a property is being used for a residence, commercial property, or other.

○ Zoning District. This is used in almost all indicators to group types of development together.

○ Improvement Values. This is used most frequently to determine if a property is developed or not. It is often used with a minimum improvement assumption and minimum square foot assumption values, such that small improvements like an old houses or small shed on large properties, are excluded from developed property aggregate.

**Total Developed Land Values by Zoning District Group | 2022**

Dollars (y-axis: 0 to 25,000,000,000)

- Total 20,653,959,600
- Employment, 958,963,000
- Commercial, 2,699,431,500
- Traditional, 217,421,600
- Residential, 16,778,143,500

Total Value
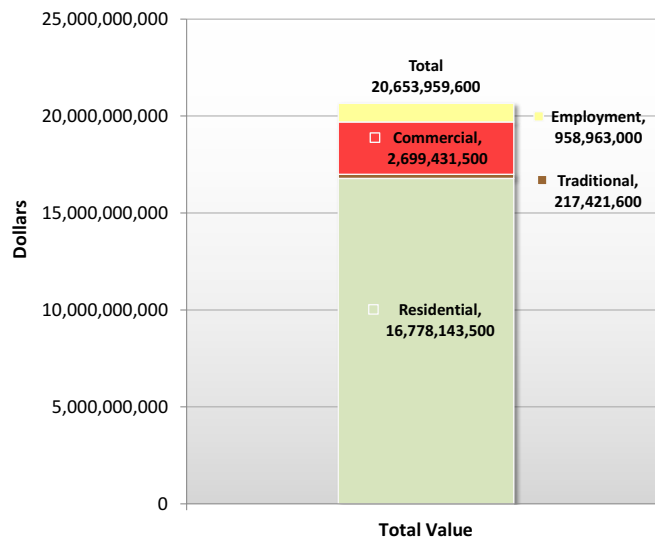
Note: These values do not reflect improvement costs on exempt land, such as City facilities, Schools, Churches, those properties with tax exemptions, etc. See Zoning section for explanation of zoning district groups. For explanation of developed land, see the Introduction section.

Land Use & Development Report 2022 | Land Valuation

Source: https://meridiancity.org/planning/files/Land%20Use%20Report%202022.pdf

Appendix 1.10
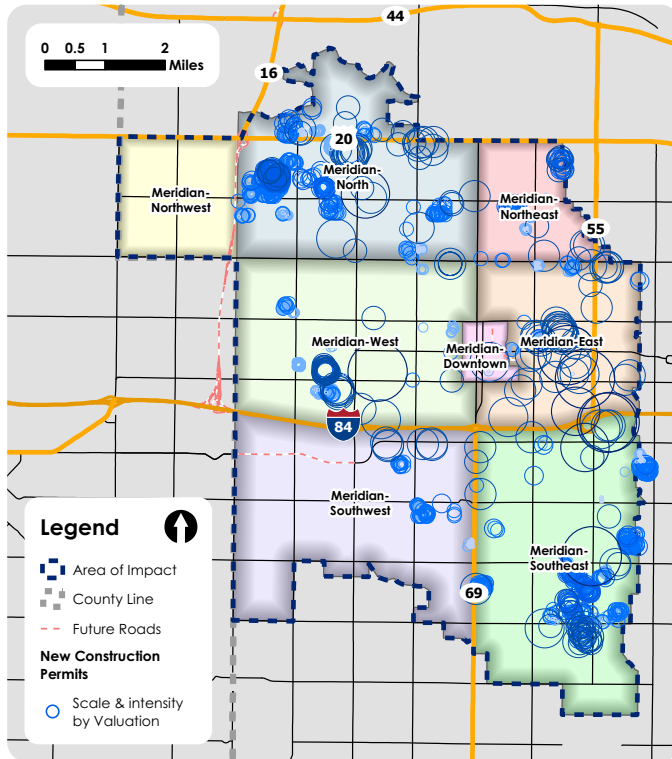
MAP

PERMITS BY DEMOGRAPHIC AREAS

The map to the left shows N.C. permits geolocated by address and correlated by relative permit value.

- Typically commercial permits such as large retail, office, and multifamily projects, are of significantly greater value than other permits,. There are fewer of these permit types. One multi-family permit may for example be for many dwelling units.

- The larger the permit value, the larger the ring.

- Areas of many dense smaller overlapping rings are typically single-family homes in traditional subdivisions. Increasingly, some of these may also be commercially owned.

The demographic areas defined on the map are named by their geographic area within the City. Downtown Meridian is the only one not generally defined entirely by major roadway corridors, or by the Area of City Impact boundary.

Appendix 1.11
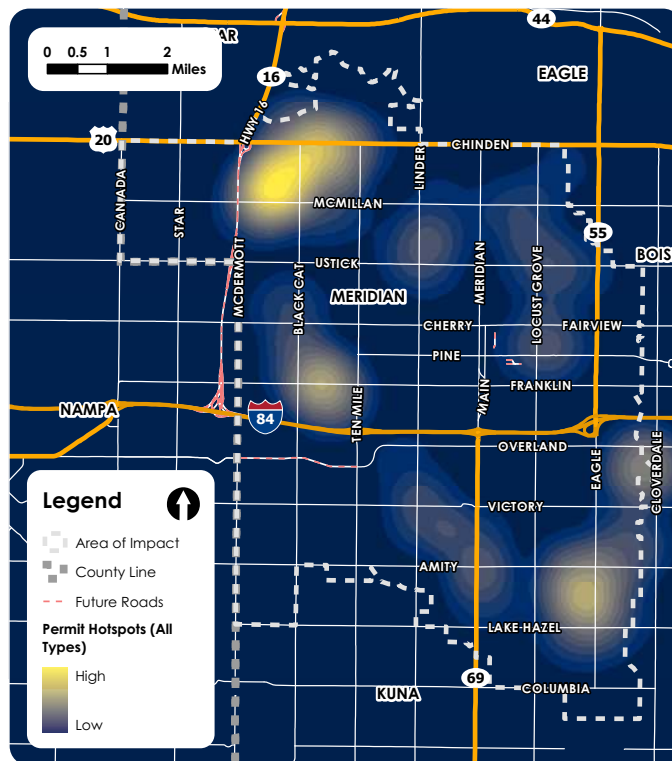
MAP

N.C. PERMIT HOT SPOTS

The map to the left shows all applicable permits types across the City. Hot spots are areas defined as being of high density, either in the total number of points (permit addresses), or in a "population" control field such as dwelling units or permit value.

This map looks at the density of permits only, and does not use a population control.

The search radius is set at 1 mile or 5,280 feet, and displays values in relative acres.

Source: https://meridiancity.org/planning/files/Land%20Use%20Report%202022.pdf

Appendix 3.1 Earthquake Risk Map
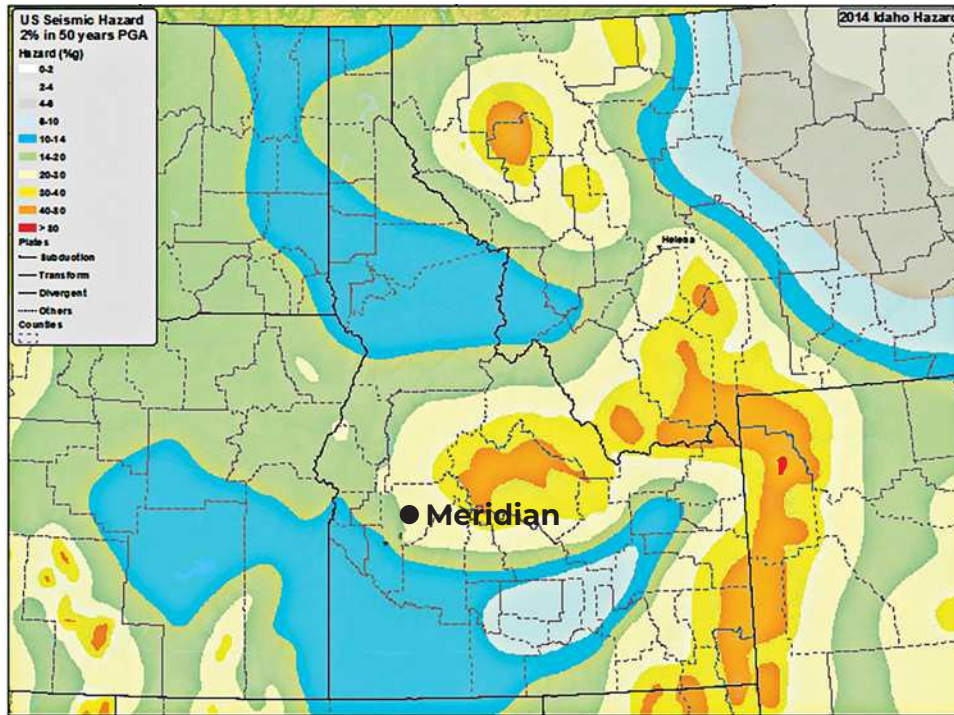
Appendix 3.2 Ash Distribution from a Yellowstone Supereruption
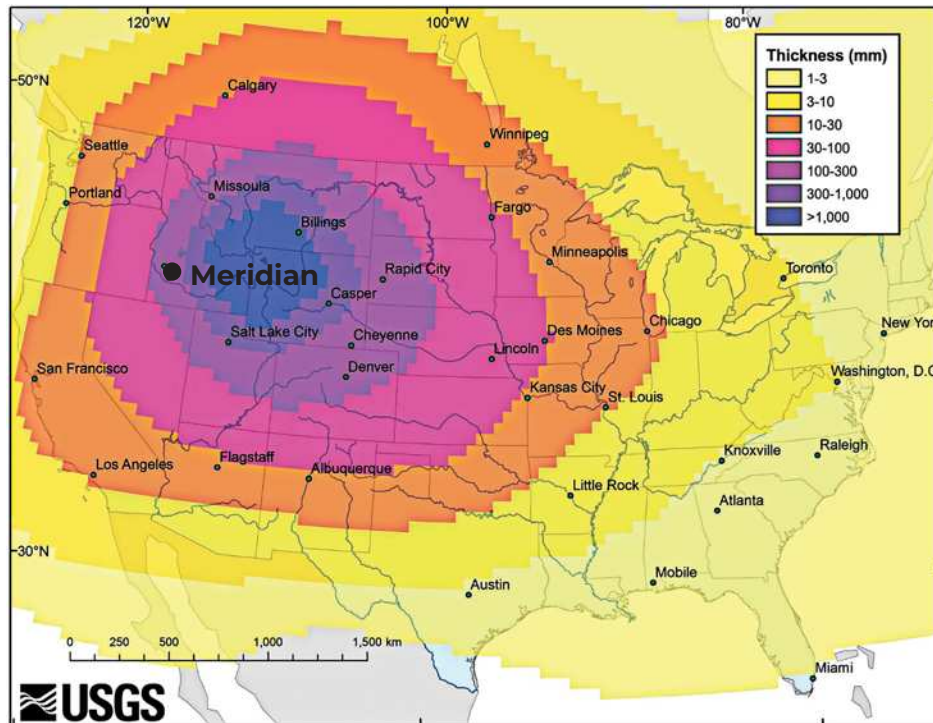
Source: U.S. Geological Survey (USGS)

Appendix 3.3 Selected Fire Risk Assessment Occupancy Scoring

Occupancy	Probability	Consequence	Impact	Risk score	Risk category
Mobile home	3	1	5	11	Moderate
Fast food restaurant	1	2	7	11	Moderate
Single family residence	2	2	7	14	Moderate
Convenience market	1	2	8	13	Moderate
Self-storage facility	1	4	8	24	Moderate
Medium one-story commercial bldg.	1	4	8	25	Moderate
Retail strip mall	1	4	9	26	High
Camping World	1	4	10	29	High
Albertsons	1	4	10	29	High
Big box retail	1	4	10	29	High
Two to four-story hotel	1	4	10	29	High
Small extended care facility	1	4	10	29	High
Large two to four-story apartment bldg.	1	5	10	36	High
Scentsy	1	5	10	36	High
Large place of worship	1	5	10	36	High
Large extended care facility	1	7	10	50	Maximum
Five to eight-story building	1	7	10	50	Maximum
St. Luke's	1	8	10	57	Maximum
Elementary, middle, high school	1	8	10	57	Maximum

Appendix 3.4 Large-Scale Risk Profile Risk Index (PRI) Scoring

	Probability (30%)	Severity (30%)	Speed of Onset (20%)	Spatial Extent (10%)	Duration (10%)	Risk Category Total Score
Extreme Weather						
Score 1-5	3	3	3	5	4	High
Weighted Score	0.9	0.9	0.6	0.5	0.4	3.3
Communitywide Extended Blackout/Internet Outage						
Score 1-5	1	3	5	4	4	High
Weighted Score	0.3	0.9	1.0	0.4	0.4	3.0
Large-Scale Hazmat Incident						
Score 1-5	2	2	5	1	4	Moderate
Weighted Score	0.6	0.6	1.0	0.1	0.4	2.7
Active Shooter						
Score 1-5	1	3	5	1	4	Moderate
Weighted Score	0.3	0.6	1.0	0.1	0.4	2.4
Terrorism Event						
Score 1-5	1	3	5	1	4	Moderate
Weighted Score	0.3	0.6	1.0	0.1	0.1	2.1
Flood Event						
Score 1-5	1	2	2	3	5	Moderate
Weighted Score	0.3	0.6	0.4	0.3	0.5	2.1

Appendix 4.1 Fire Suppression Rating Schedule Report – Meridian

Idaho Surveying and Rating Bureau, Inc.
CITY of **Meridian**
Date of Evaluation **November 13, 2019** Report Printed **January 30, 2020**

Fire Suppression Rating Schedule Report

| Categories Evaluated	Maximum Credit	Credit Received	Percent of Max Cr.
Receiving and Handling of Alarms			
Credit for Telephone Service	2.00	2.00	100%
Credit for Operators	3.00	3.00	100%
Credit for Dispatch Circuits	5.00	5.00	100%
TOTAL ALARM POINTS	**10.00**	**10.00**	**100%**
Fire Department			
Credit for Engine Companies	10.00	6.34	63%
Credit for Reserve Pumpers	1.00	0.63	63%
Credit for Pump Capacity	5.00	5.00	100%
Credit for Ladder Service	5.00	1.78	36%
Credit for Reserve Ladder/Service	1.00	0.28	28%
Credit for Distribution	4.00	2.07	52%
Credit for Company Personnel	15.00	6.67	44%
Credit for Training	9.00	6.88	76%
TOTAL FIRE DEPARTMENT POINTS	**50.00**	**29.65**	**59%**
Water Suppies			
Credit for Water System(s)	35.00	35.00	100%
Credit for Hydrants	2.00	2.00	100%
Credit for Inspection & Conditions	3.00	1.05	35%
TOTAL WATER SUPPLIES POINTS	**40.00**	**38.05**	**95%**

SUMMARY   Fire Defense Classification =   **3**

Total Grading Points	77.70
Divergency	7.17
Final Grading Points	70.53

Alarms

Fire Department

Water Supplies

1st Ed (08-02)   Grading Report
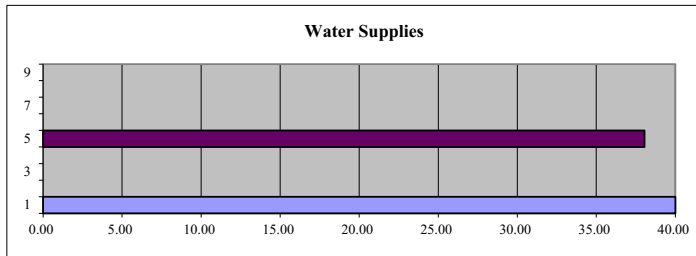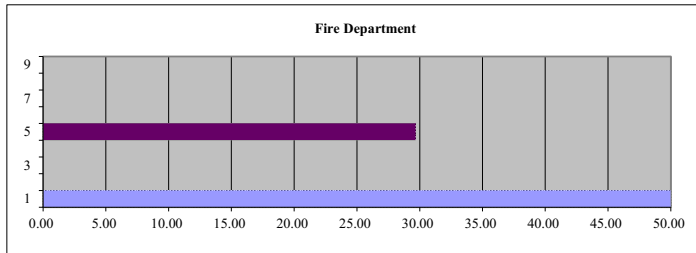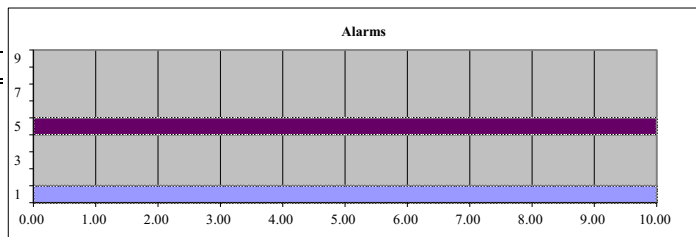
Appendix 4.2 Fire Suppression Rating Schedule Report – RFPD

Idaho Surveying and Rating Bureau, Inc.
CITY of   **Meridian R.F.P.D.**
Date of Evaluation   **November 13, 2019** Report Printed   **January 30, 2020**

Fire Suppression Rating Schedule Report

Categories Evaluated	Maximum Credit	Credit Received	Percent of Max Cr.
Receiving and Handling of Alarms			
Credit for Telephone Service	2.00	2.00	100%
Credit for Operators	3.00	3.00	100%
Credit for Dispatch Circuits	5.00	5.00	100%
TOTAL ALARM POINTS	**10.00**	**10.00**	**100%**
Fire Department			
Credit for Engine Companies	10.00	9.51	95%
Credit for Reserve Pumpers	1.00	0.95	95%
Credit for Pump Capacity	5.00	5.00	100%
Credit for Ladder Service	5.00	1.74	35%
Credit for Reserve Ladder/Service	1.00	0.48	48%
Credit for Distribution	4.00	1.37	34%
Credit for Company Personnel	15.00	7.14	48%
Credit for Training	9.00	6.88	76%
TOTAL FIRE DEPARTMENT POINTS	**50.00**	**33.07**	**66%**
Water Suppies			
Credit for Water System(s)	35.00	31.22	89%
Credit for Hydrants	2.00	2.01	101%
Credit for Inspection & Conditions	3.00	1.88	63%
TOTAL WATER SUPPLIES POINTS	**40.00**	**35.11**	**88%**

SUMMARY   Fire Defense Classification =   **3**

Total Grading Points	78.18
Divergency	4.33
Final Grading Points	73.85

Alarms

Fire Department

Water Supplies

1st Ed (08-02)   Grading Report
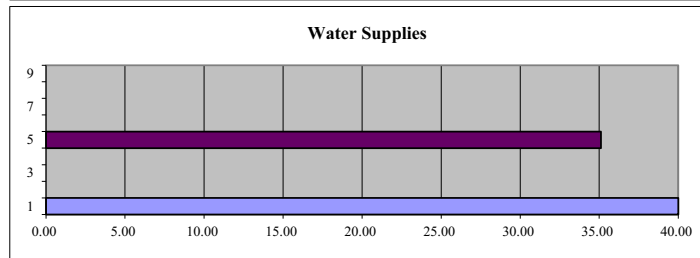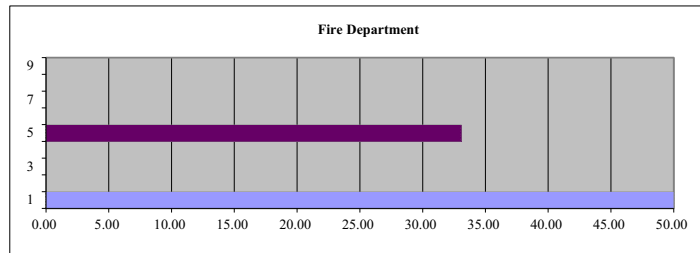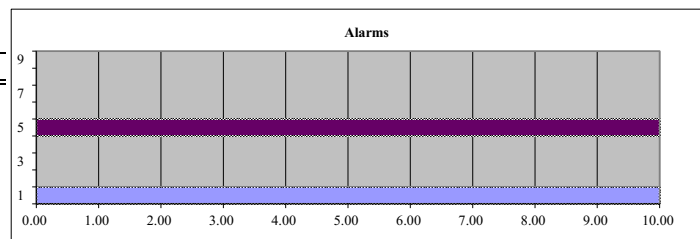
Appendix 4.3 All Incident Heat Map – GPZ 1
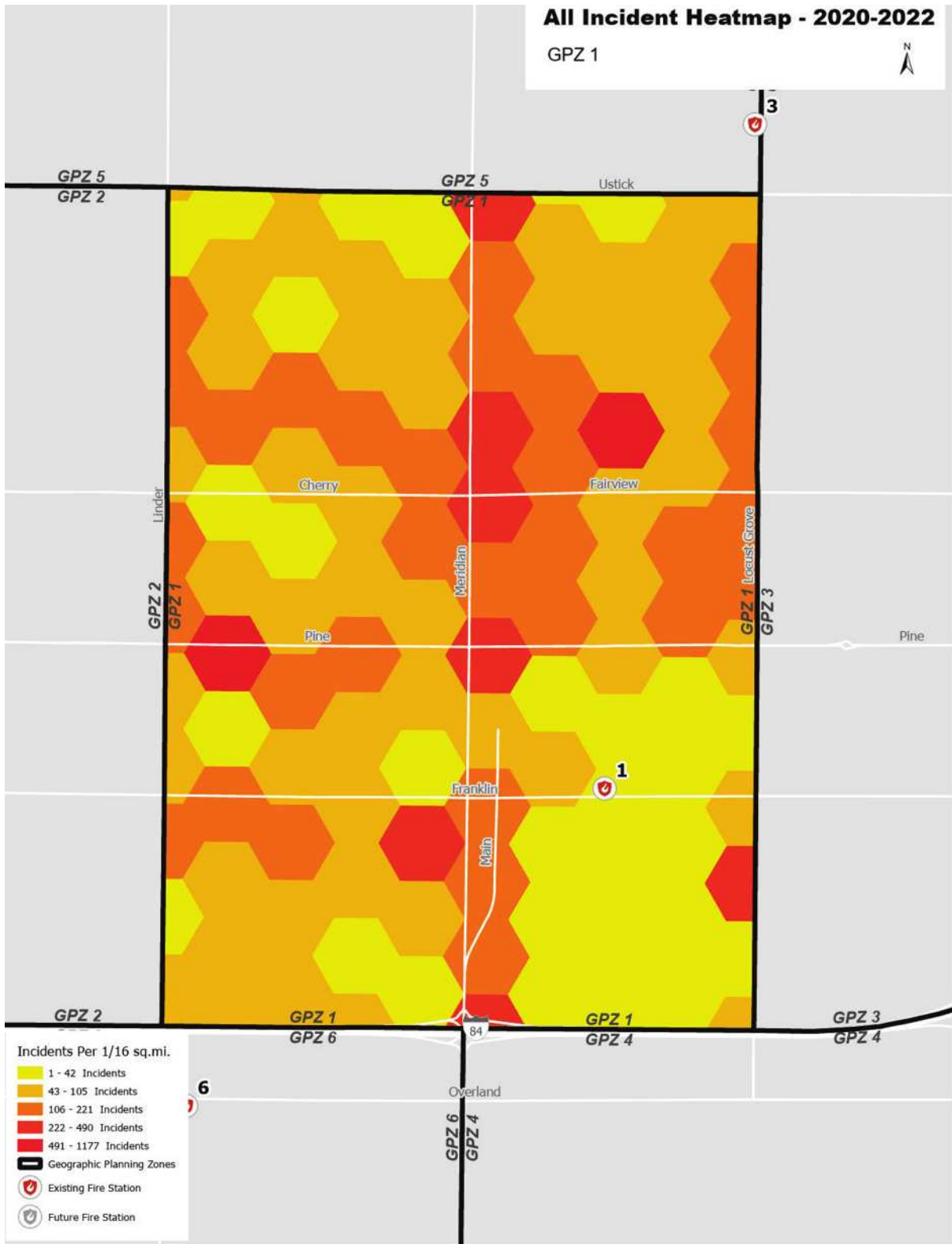
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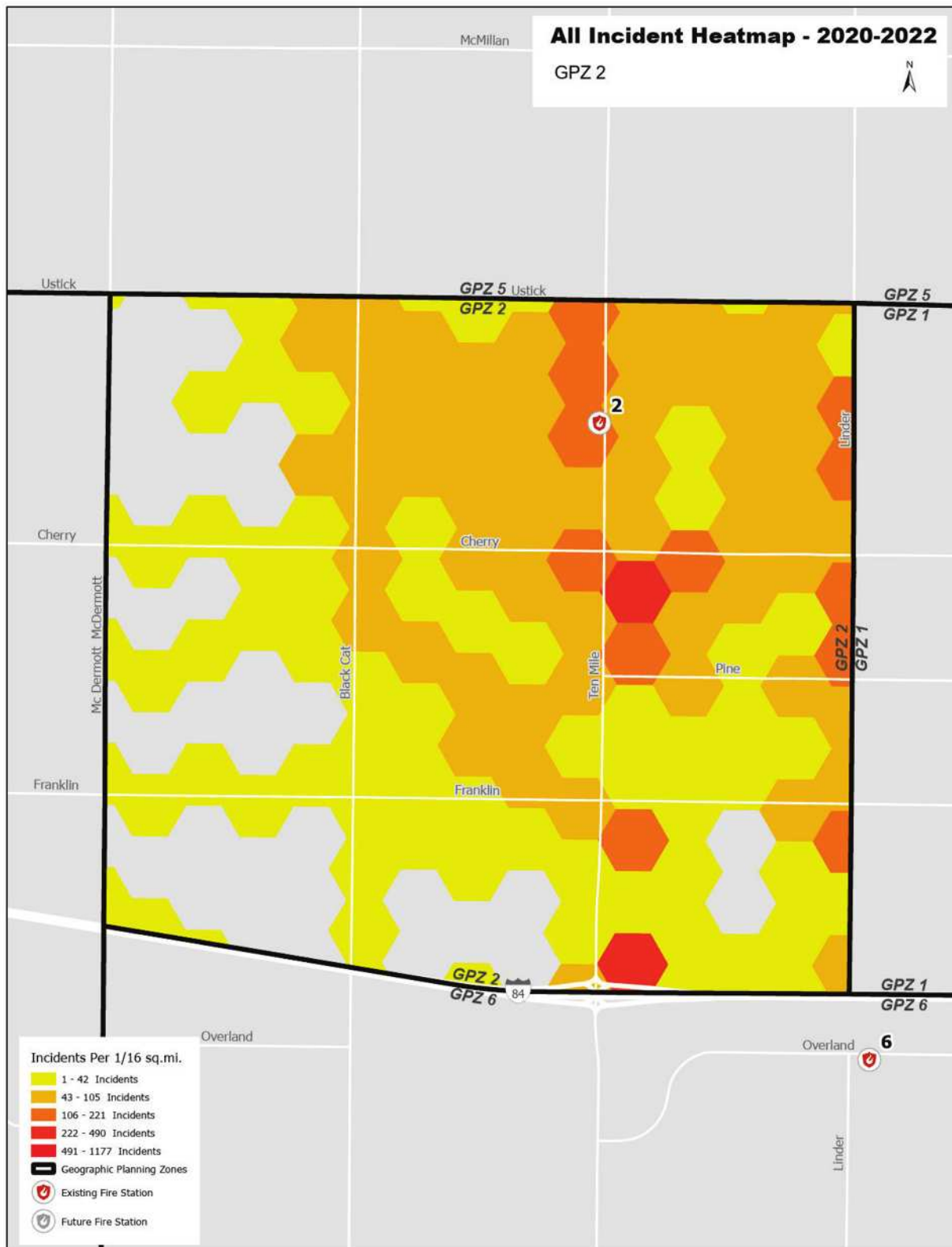
Appendix 4.5 All Incident Heat Map – GPZ 3
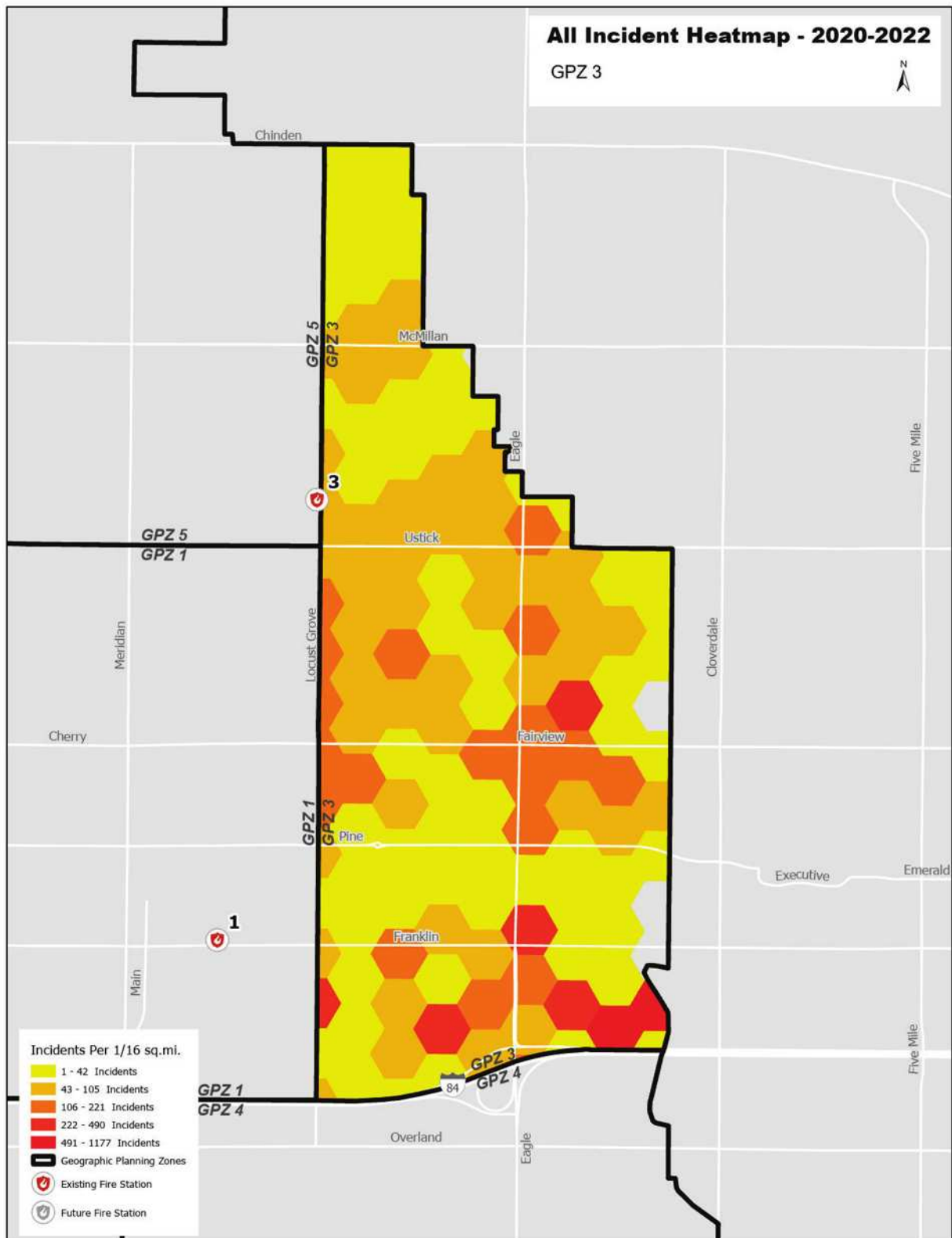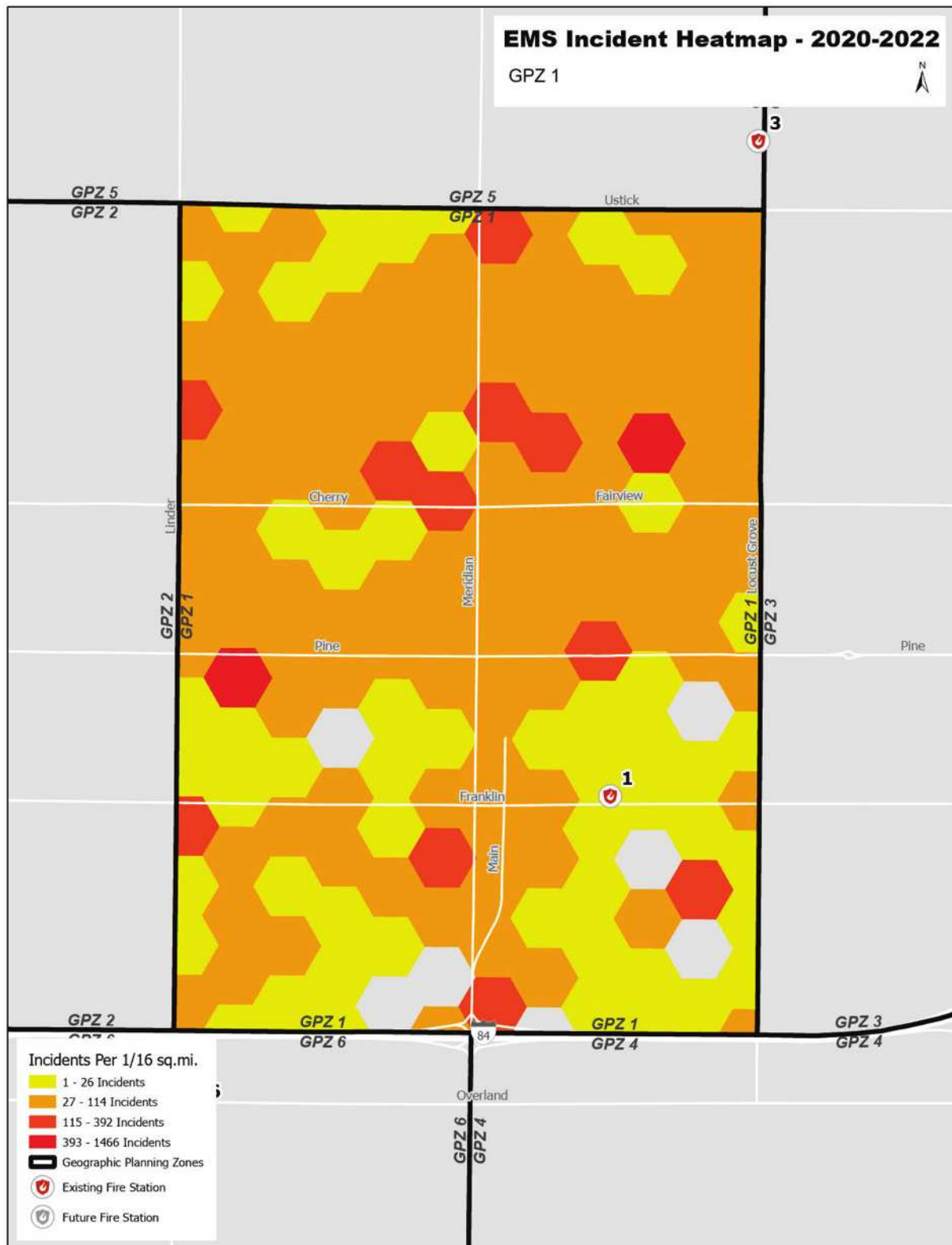
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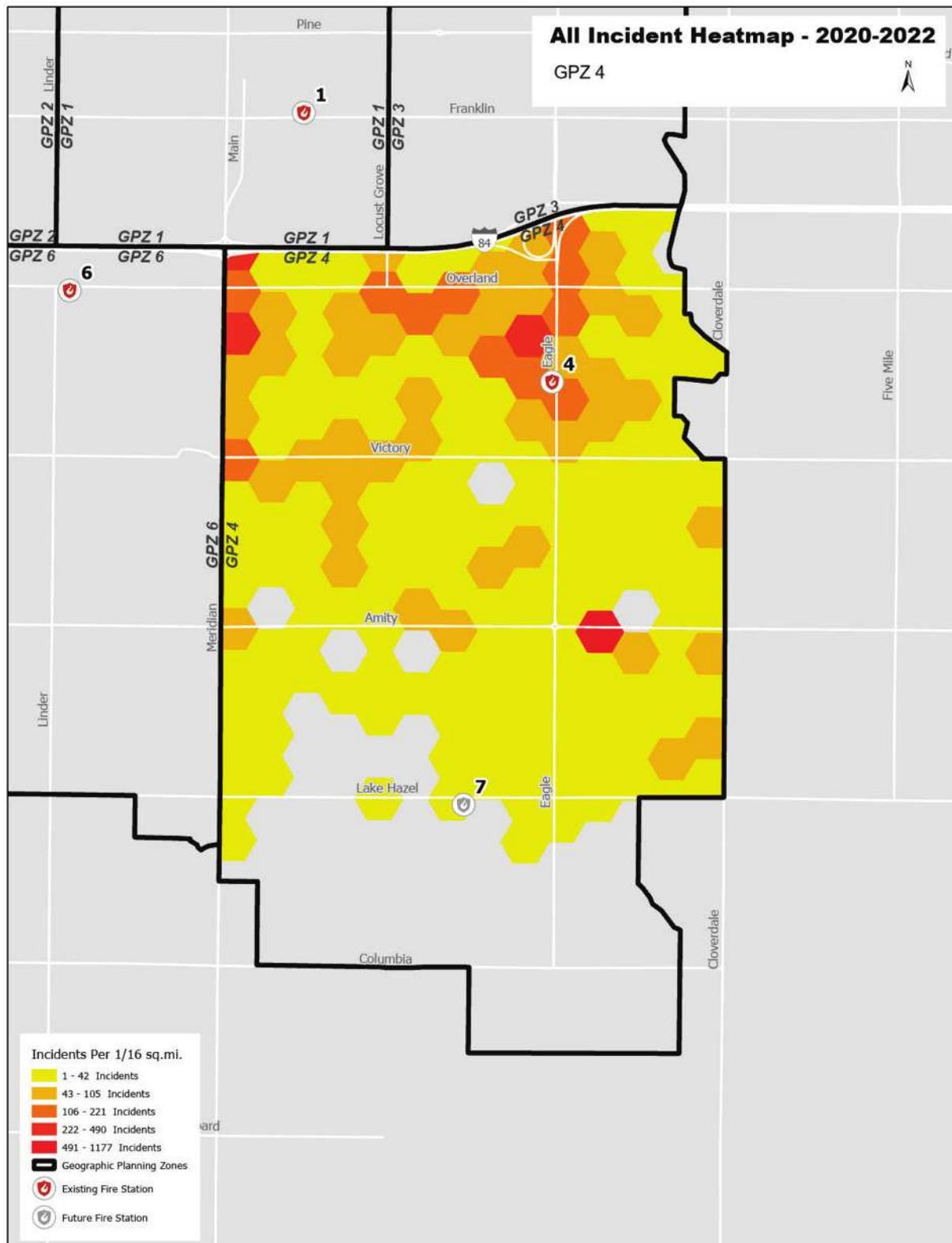
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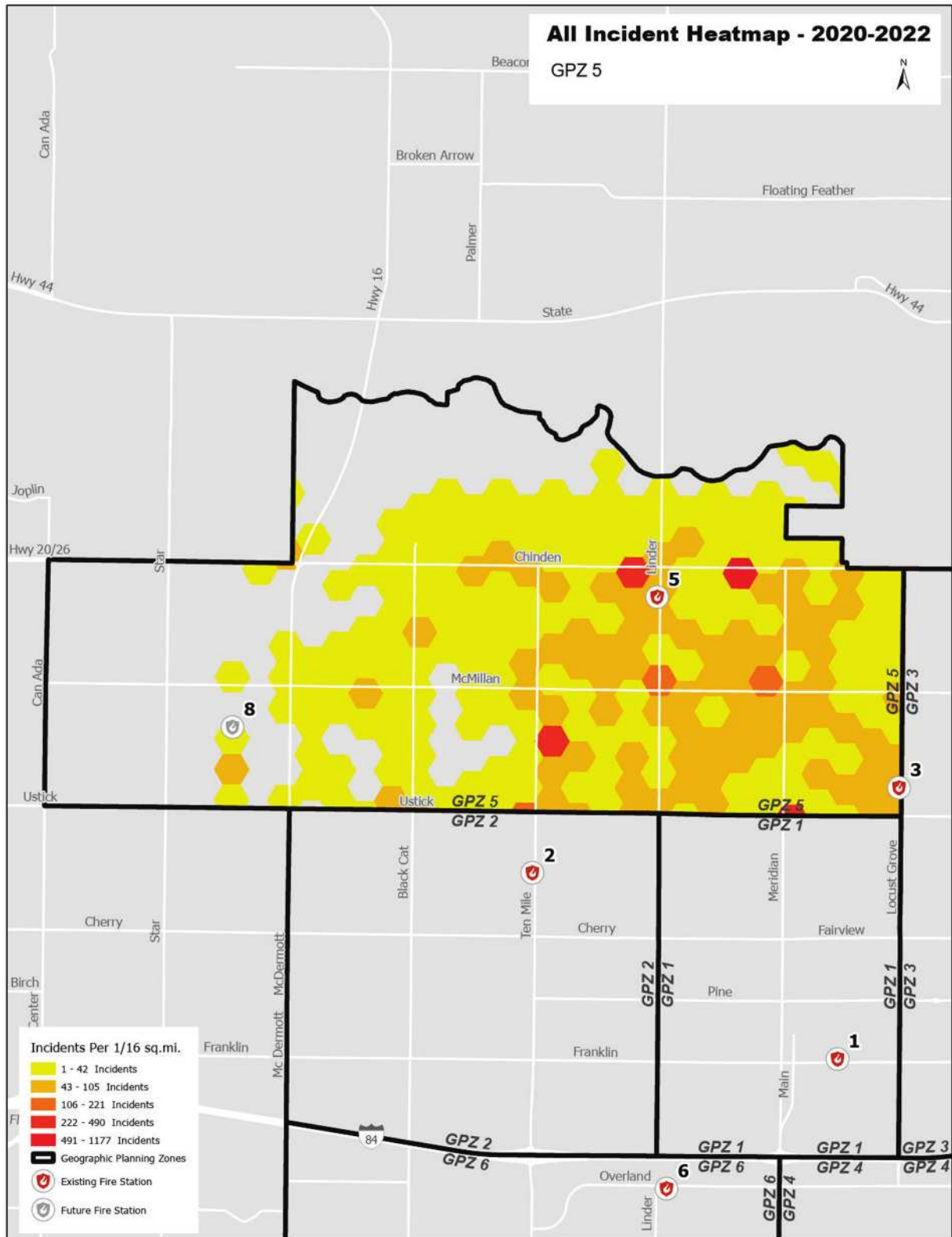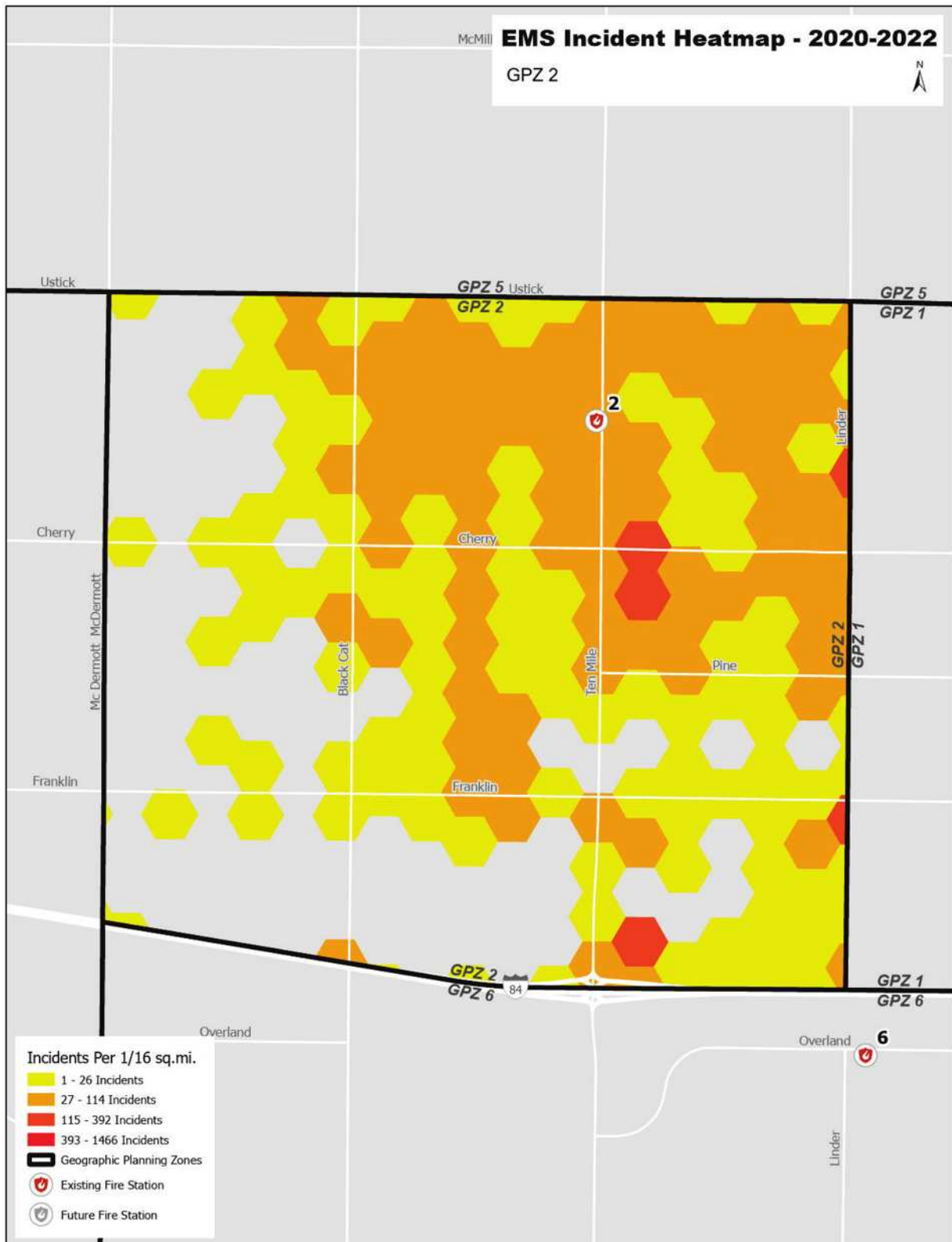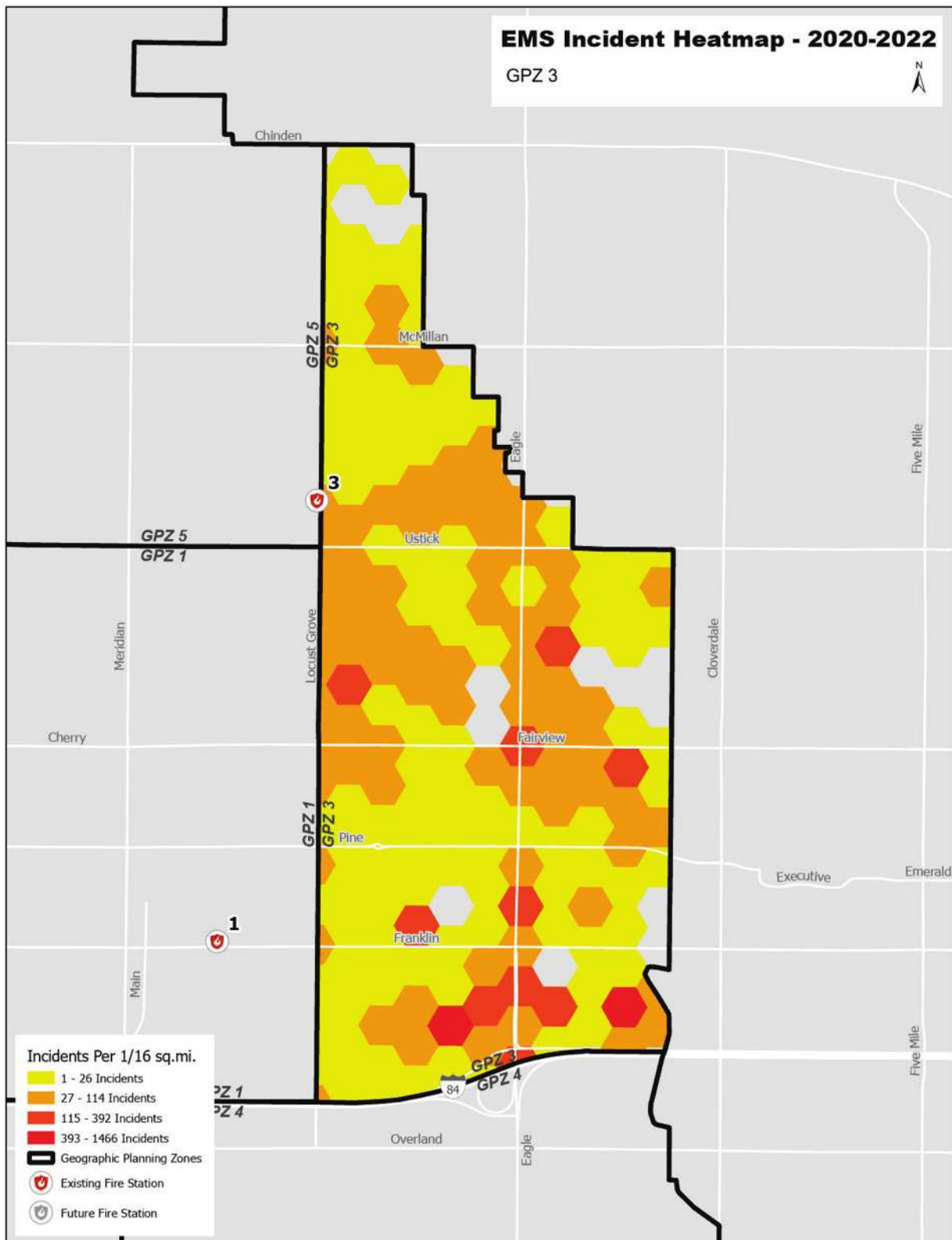
Appendix 4.8 All Incident Heat Map – GPZ 6
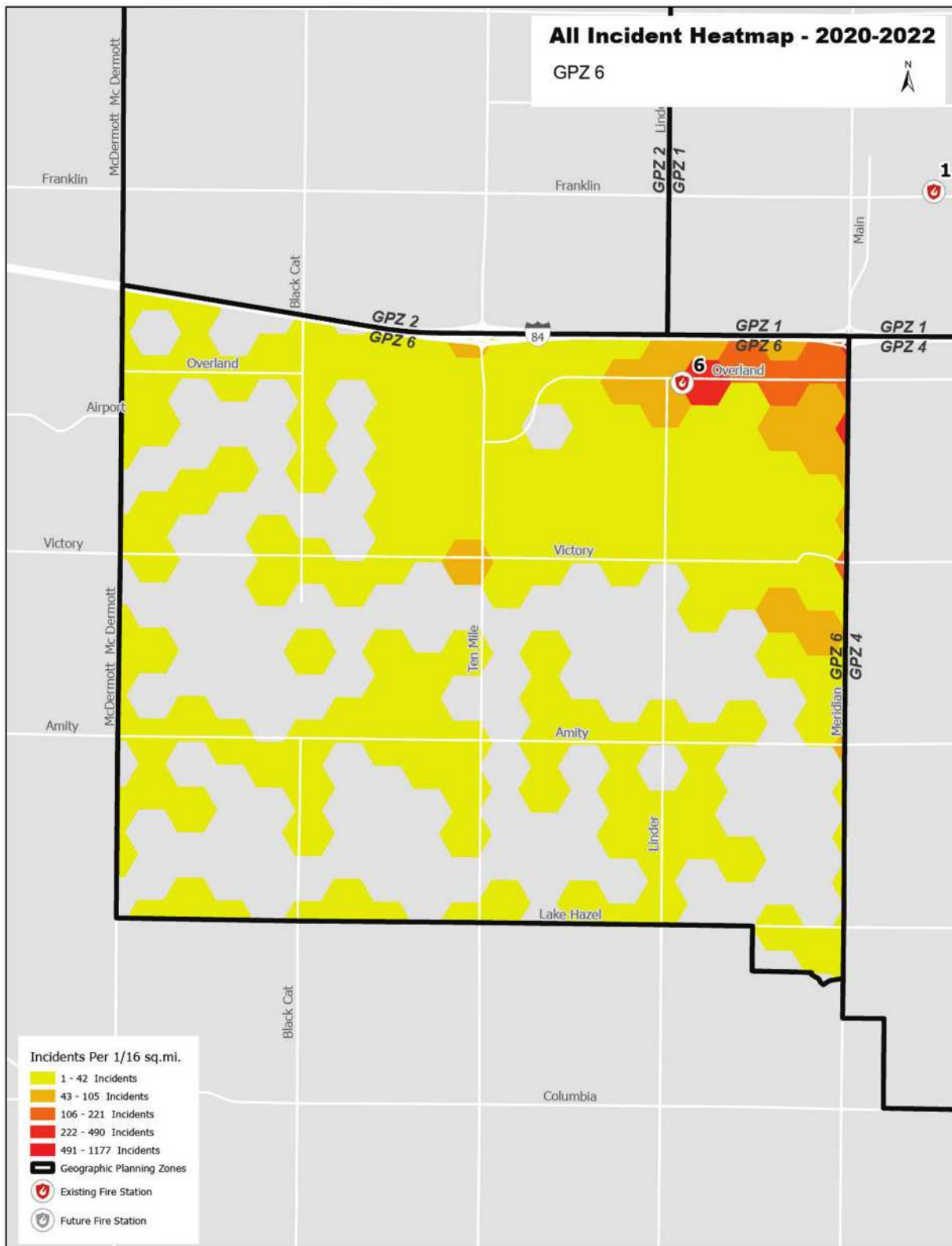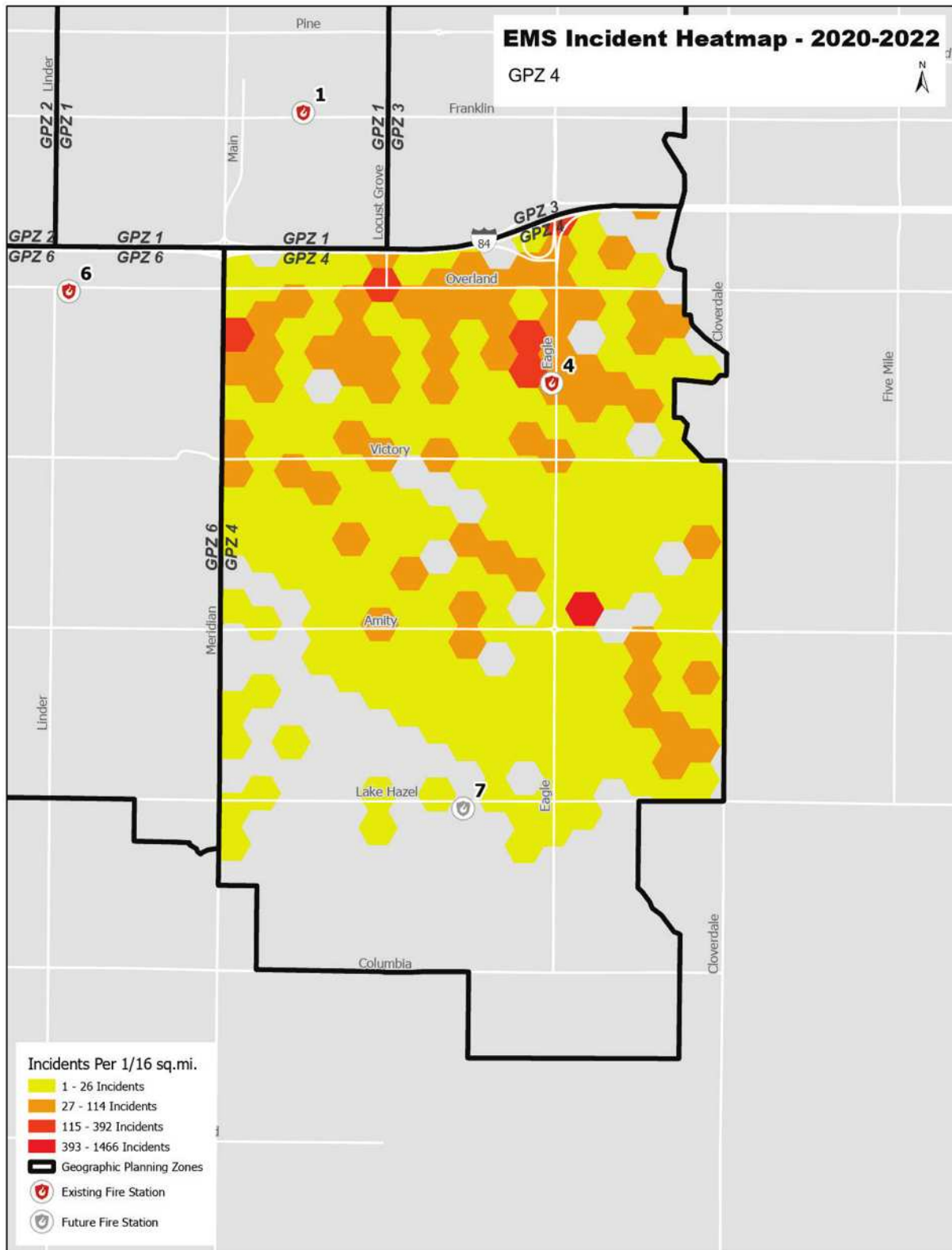
Appendix 4.9 EMS Incident Heat Map – GPZ 1

Appendix 4.10 EMS Incident Heat Map – GPZ 2
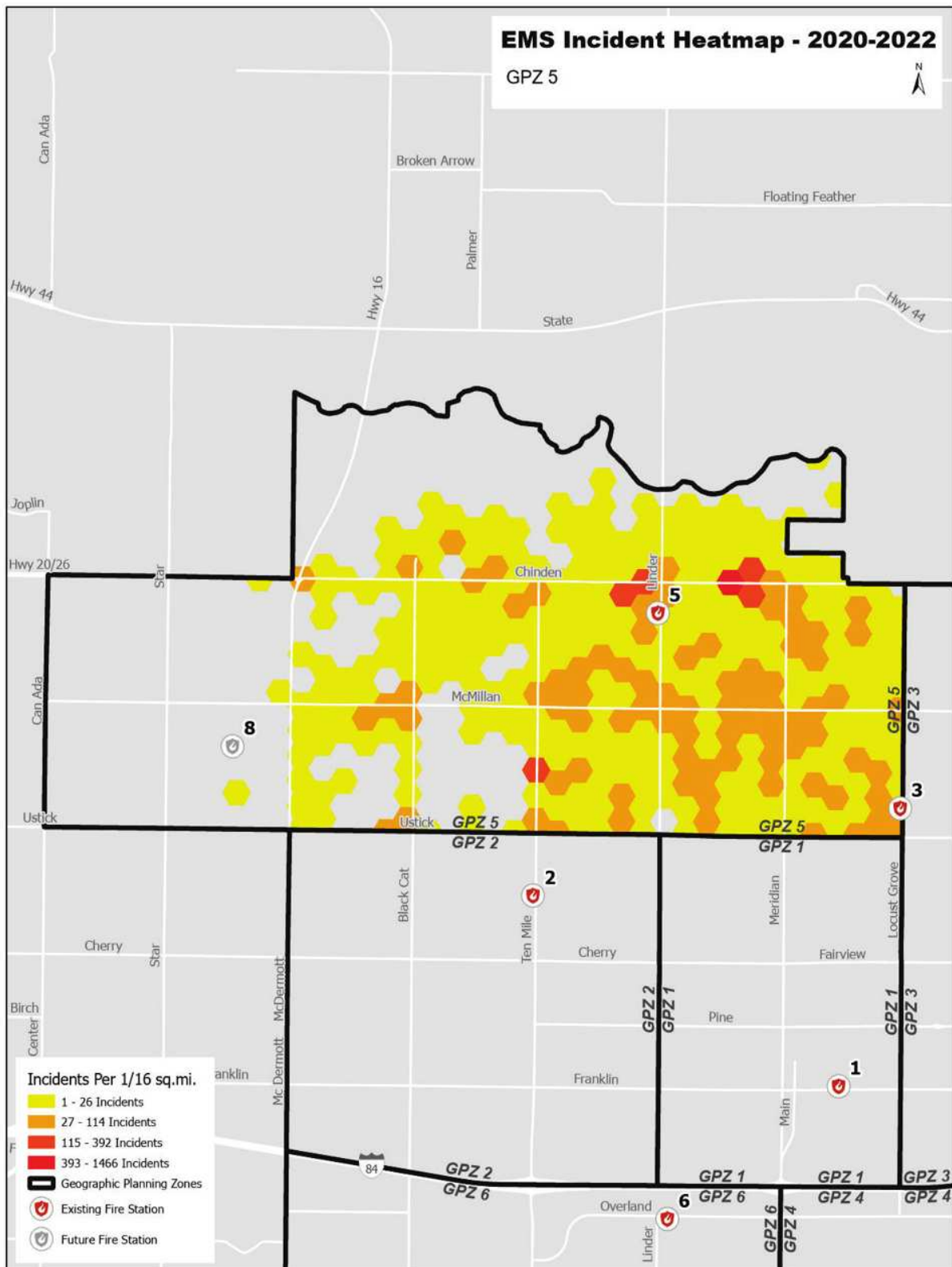
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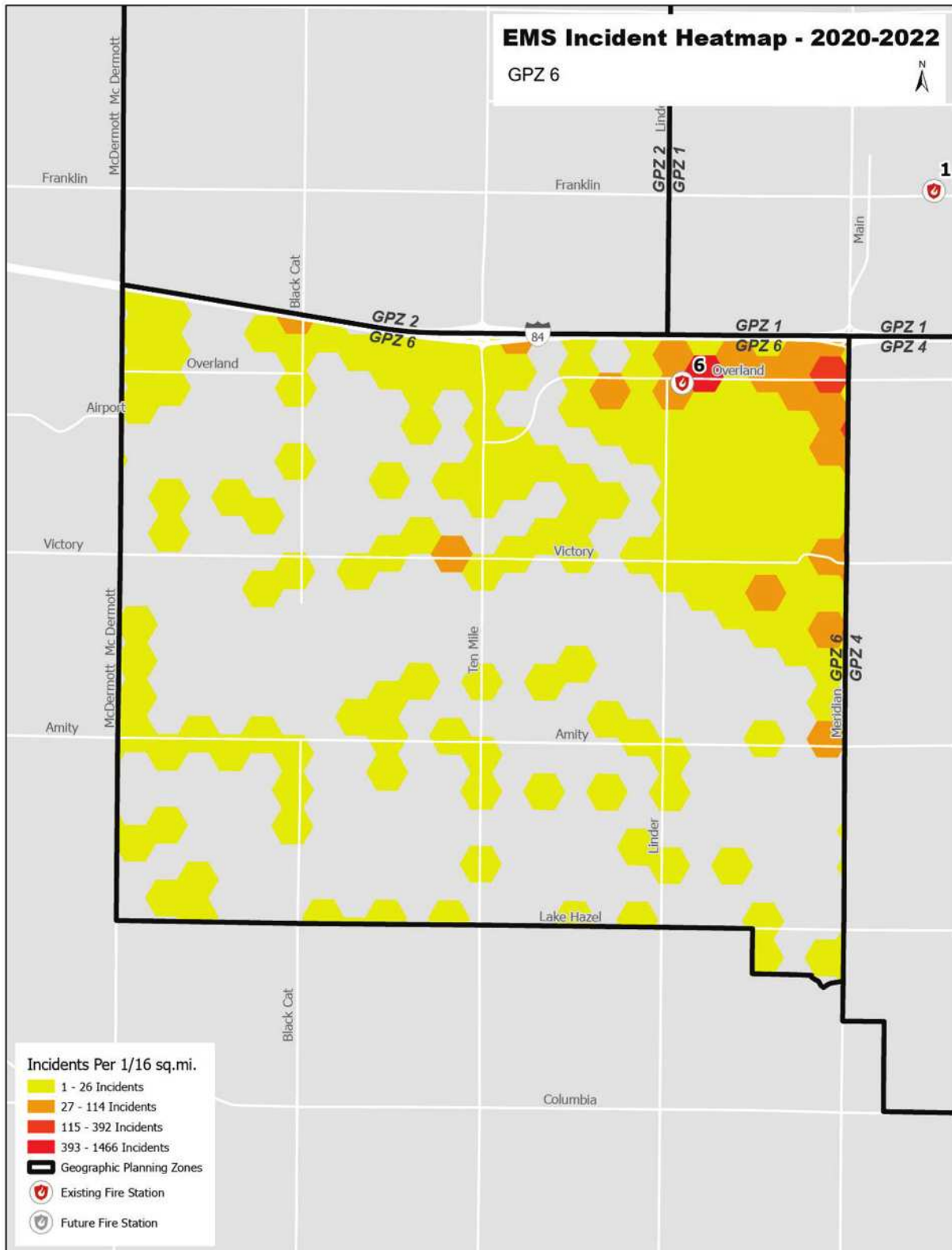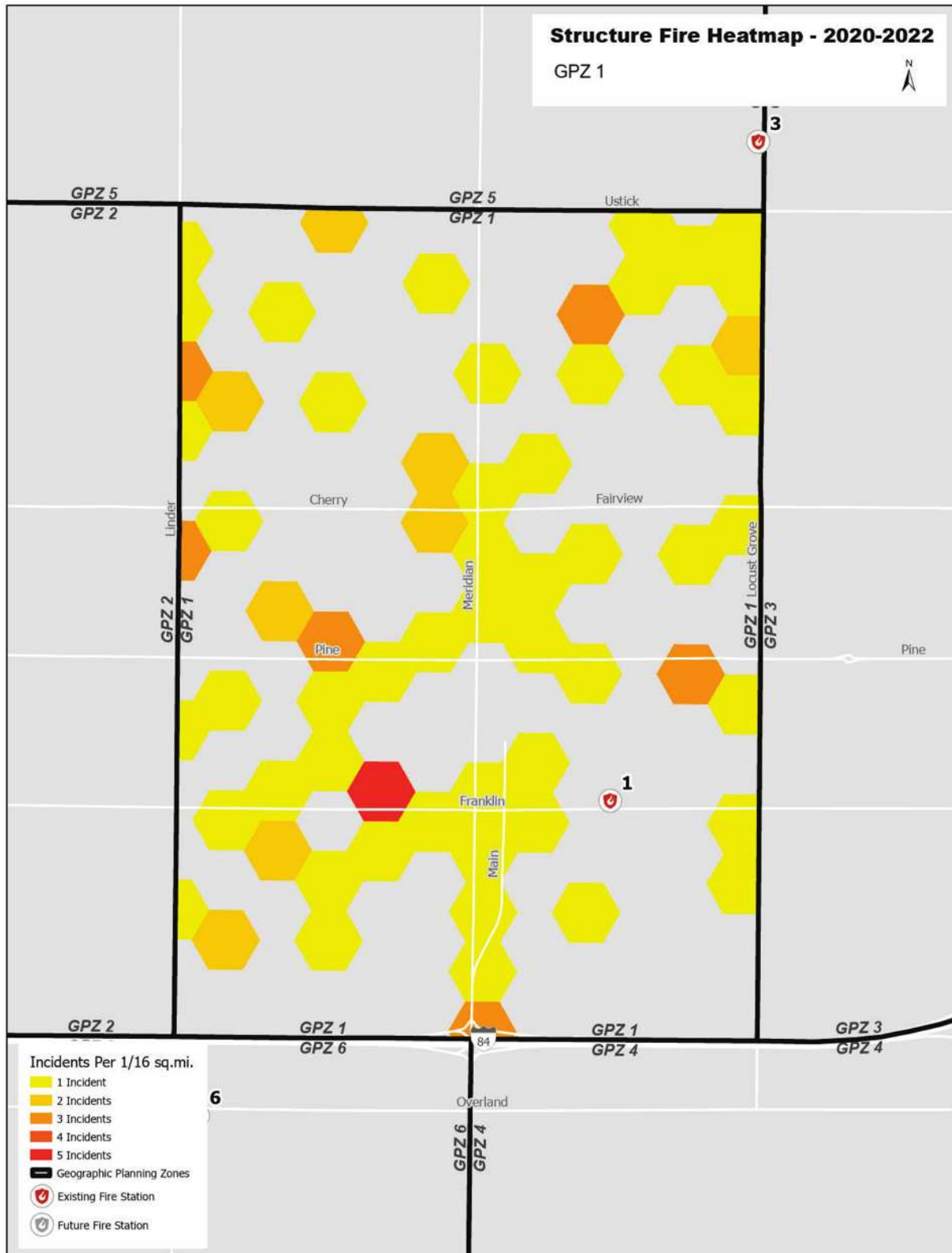
Appendix 4.12 EMS Incident Heat Map – GPZ 4

Appendix 4.13 EMS Incident Heat Map – GPZ 5

Appendix 4.14 EMS Incident Heat Map – GPZ 6

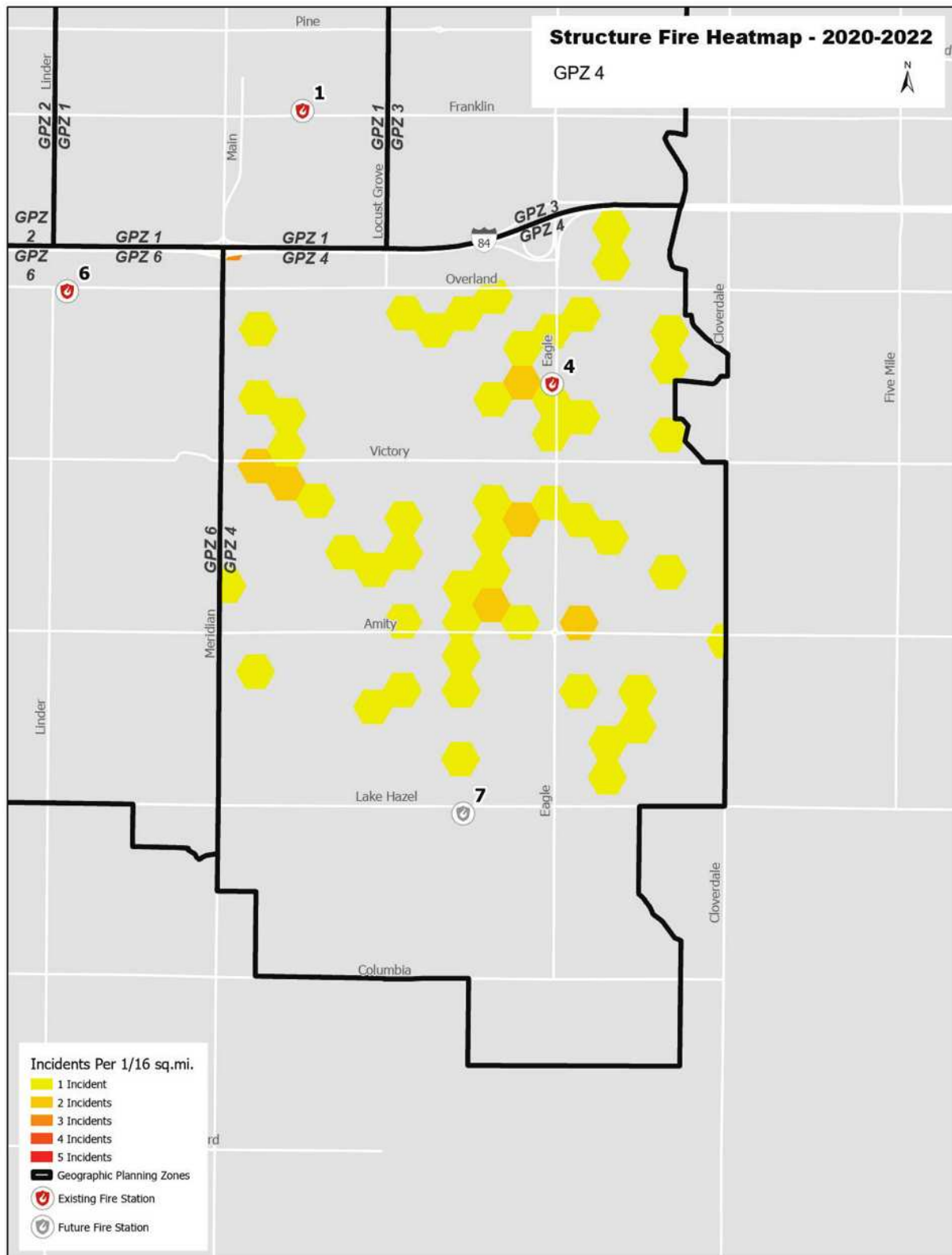## Appendix 4.15 Structure Fire Incidents Heat Map – GPZ 1
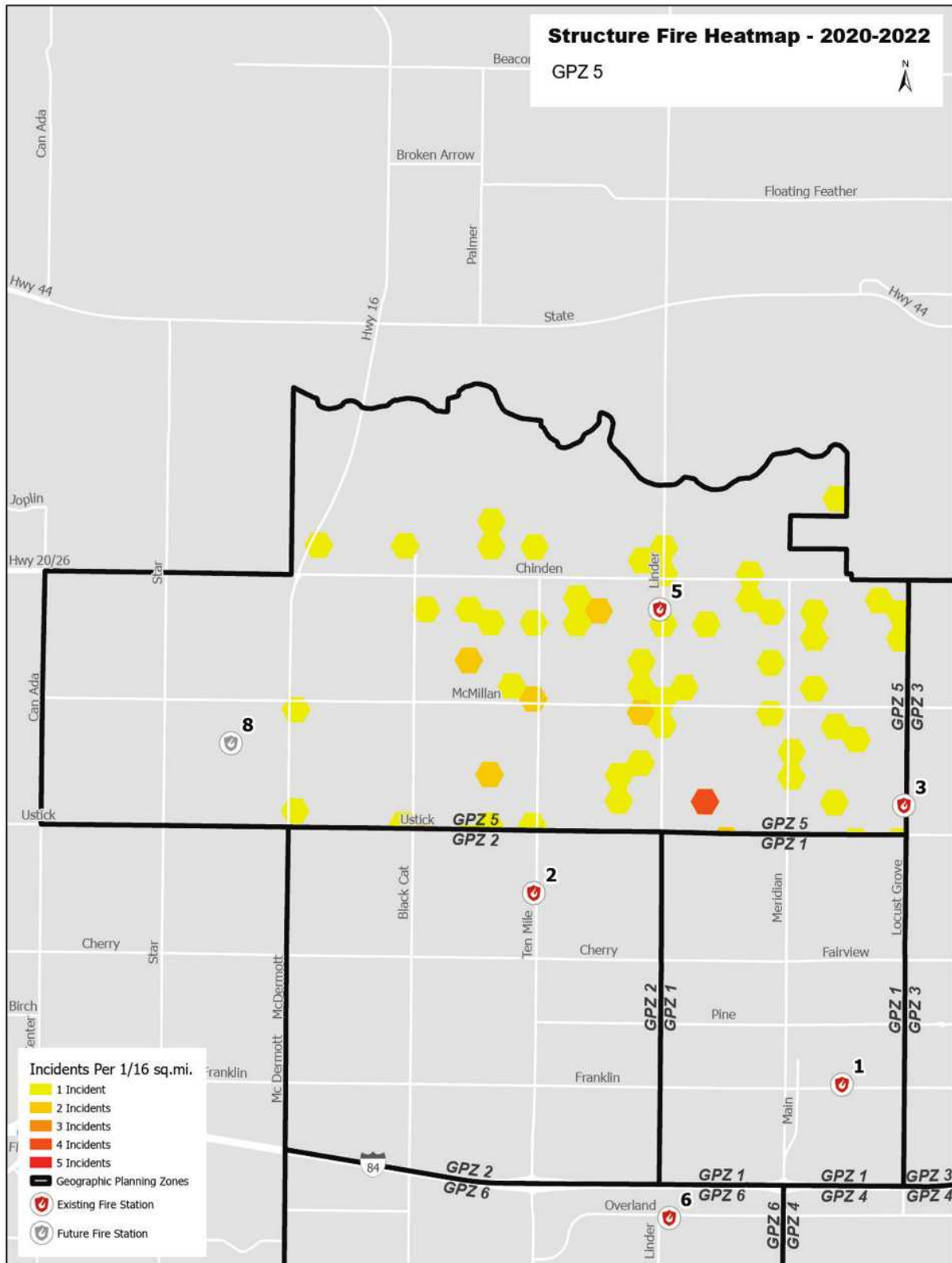
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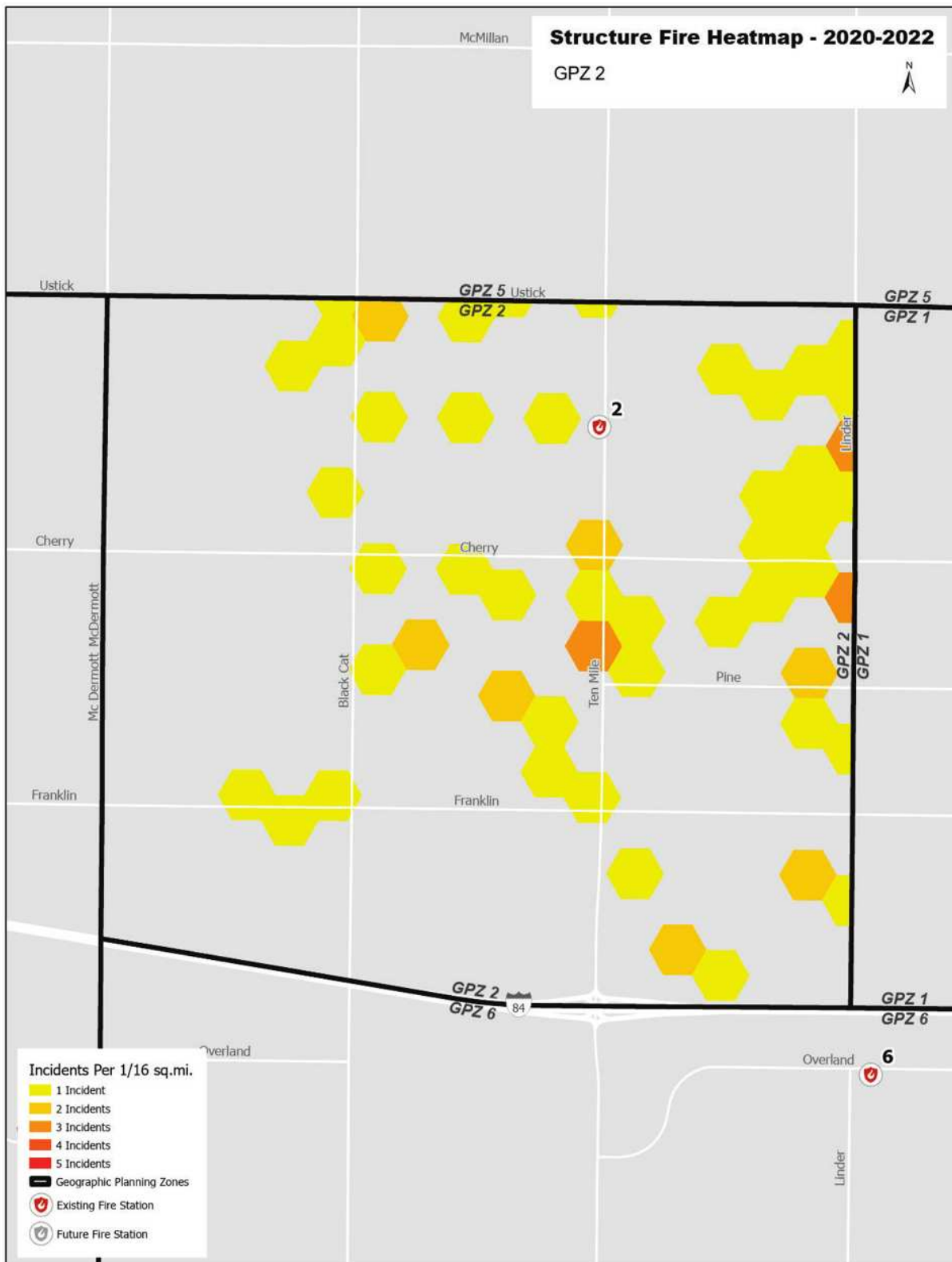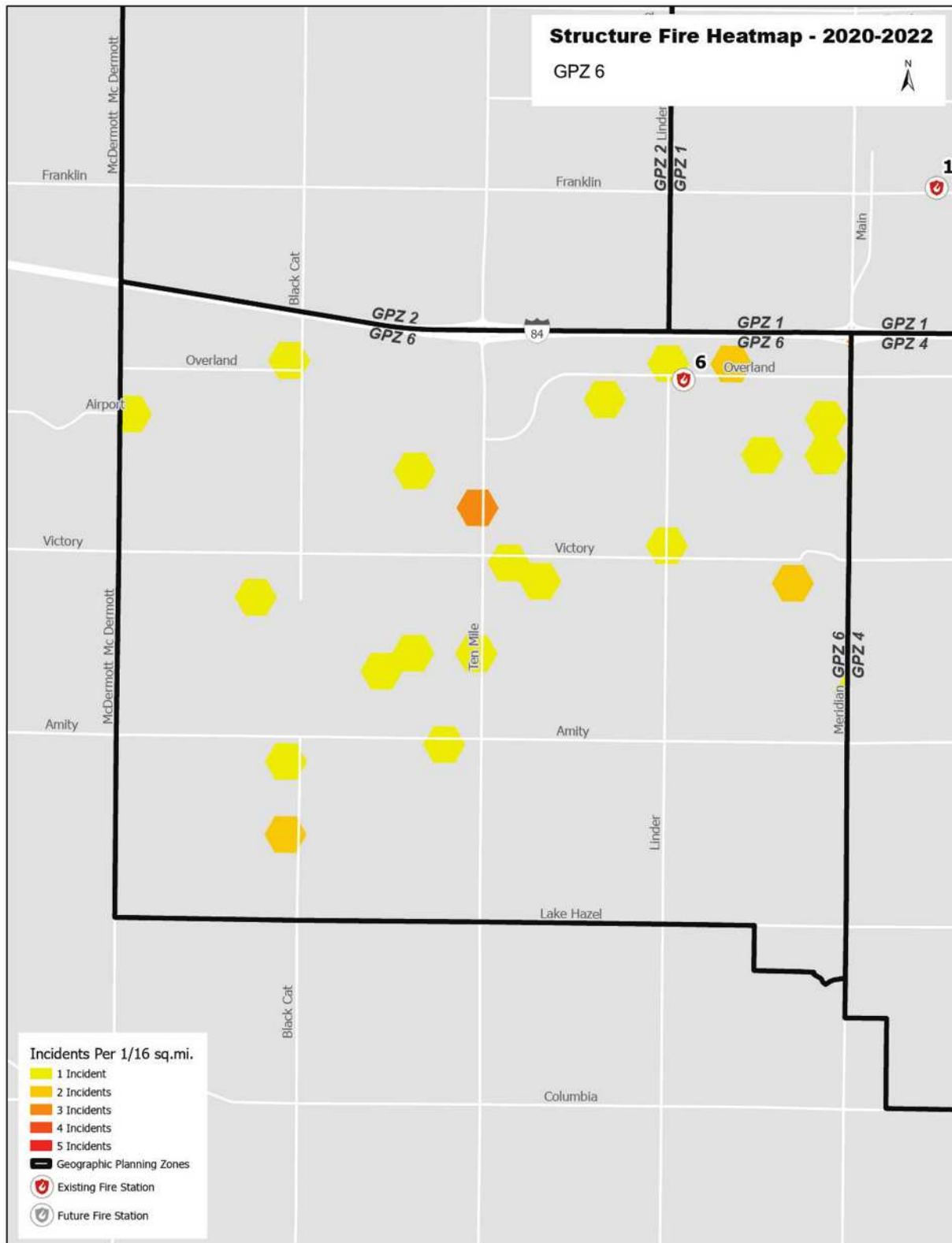
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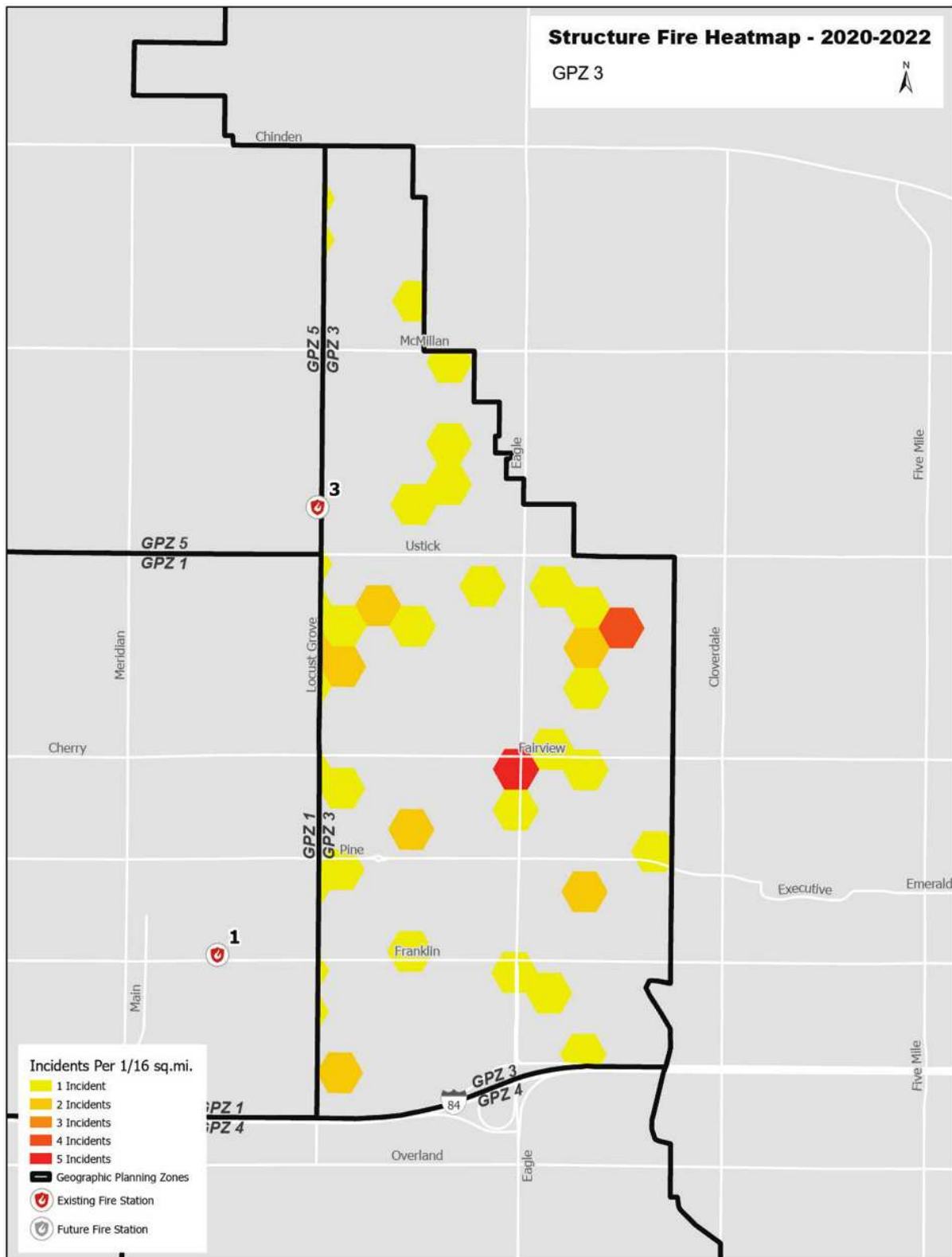
Appendix 4.18 Structure Fire Incidents Heat Map – GPZ 4

Appendix 4.19 Structure Fire Incidents Heat Map – GPZ 5

Appendix 4.20 Structure Fire Incidents Heat Map – GPZ 6

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