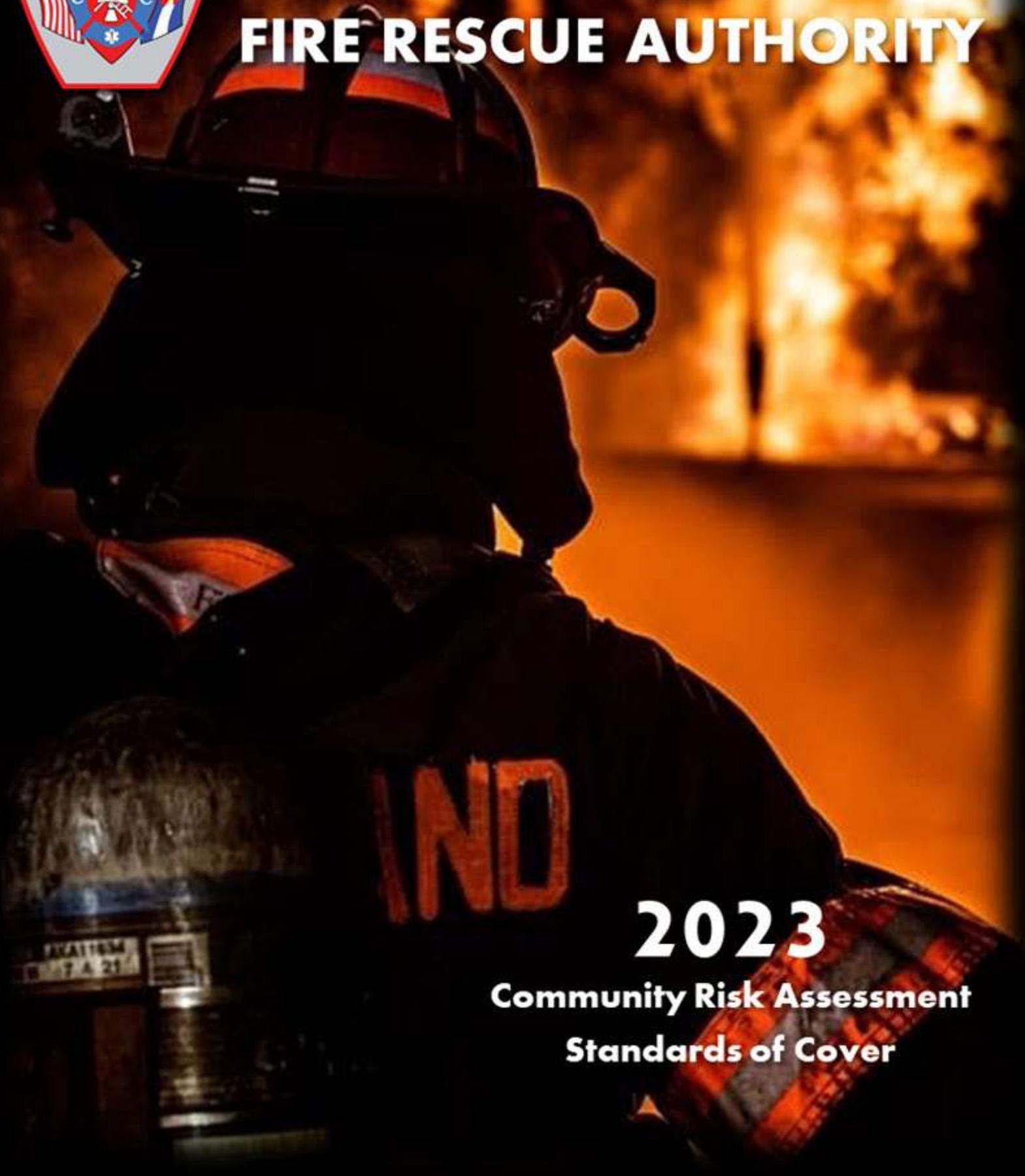




# LOVELAND

## FIRE RESCUE AUTHORITY



**2023**

**Community Risk Assessment  
Standards of Cover**

# Community Risk Assessment Standards of Cover



2023 Publication

Previous Publications: 2017, 2022

Authors:

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Assistant Chief Tim Smith



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# ACKNOWLEDGEMENTS

Every excellent public service agency with any length of history is indebted to those individuals and previous members who chose to deny comforts, accept responsibility, and forge a new path in the name of forward progress, increased accountability, and a culture of continual quality improvement. The Loveland Fire Rescue Authority would like to recognize the following individuals for their commitment, compassion, and courage in setting the agency on such a path:

**Randy Mirowski, Fire Chief (ret)**  
**Loveland Fire Rescue Authority**

Chief Randy Mirowski is widely recognized as the catalyst for some of the most radical and positive change to occur at LFRA in the last several decades. Chief Mirowski had the vision to combine the City of Loveland Fire Department and the Loveland Rural Fire Protection District into the Loveland Fire Rescue Authority to solidify quality fire service delivery for Loveland area residents for the foreseeable future. Chief Mirowski also set LFRA on course for continual quality improvement through the adoption of the CFAI accreditation model and authored the agency's original strategic plan.

**Mark Miller, Fire Chief (ret)**  
**Loveland Fire Rescue Authority**

Chief Mark Miller's leadership guided LFRA through a difficult maturation process which included the financial separation of the Authority from the City, the replacement of the Authority's policies and procedures, the transition of the agency's employee's from the City to the Authority, the construction and staffing of the first Authority owned station, the design and planning of the agencies second Authority owned station, challenging financial environments, and many more hurdles that put the value of the CFAI accreditation process and strategic planning on full display.

**Ty Drage, Accreditation Manager/Lieutenant (ret)**  
**Loveland Fire Rescue Authority**

Accreditation Manager/Lt. Drage successfully carried LFRA across the finish line of the agency's initial accreditation. As part of that initial process, Lt Drage authored the lion's share of the agency's first Self-Assessment, Community Risk Assessment, and Standards of Cover documents. Much of Lt. Drage's research, effort, and words are still present and found to be indispensable within the pages of this newly updated Standards of Cover.

**Michael Cerovski, Accreditation Manager/Division Chief (ret)**  
**Loveland Fire Rescue Authority**

Accreditation Manager/Div. Chief Michael Cerovski ensured LFRA maintained the course charted through the accreditation process over the previous five years. This included data management, compliance reporting, key implementations of the previous strategic plan, and setting the agency up for a successful second accreditation process.



## **2023 LFRA Accreditation Team**

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Captain Ben Andersen

Captain Adam Baukol

Captain Bryan Clark

Captain Dave Friedrichsen

Captain Mark Lyons

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Battalion Chief / Fire Marshal Carie Dann

Battalion Chief Jason Goodale

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## Letter from the Fire Chief

On behalf of the members of the LFRA, I'm proud to present the Loveland Fire Rescue Authority 2023 Community Risk Assessment and Standards of Cover. This document is the culmination of hard work from many LFRA members both past and present, but more importantly, it represents LFRA's commitment to transparency and open communication with the citizen's and visitors we serve.

The purpose of this document is to provide a system that assists with assessing community risks, defining baseline and benchmark emergency response performance objectives, planning

future station locations, determining apparatus and staffing patterns, evaluating workload and ideal unit utilization, measuring service delivery performance, and supporting strategic planning and policy development relative to resource procurement and allocation.

I hope that you, as a citizen or visitor to the Loveland community rest with confidence knowing that if ever requested, you will receive a customer friendly, professional, all-hazards response from the men and women of the Loveland Fire Rescue Authority. I invite each of you to take an in-depth look at the resources, deployment models and performance standards that we have created to address the risks within our community and to respond to your requests for service efficiently and effectively.

Lastly, as part of our effort to continually improve the quality of our response and performance, we welcome an open line of communication with members of the community. We welcome your feedback, both positive and constructively critical regarding your experience with our response. A survey is intermittently hosted through the Authority's website and through the City of Loveland to elicit community feedback. If you'd prefer to provide direct feedback, I invite you to email me directly at [tim.sendelbach@lfra.org](mailto:tim.sendelbach@lfra.org) any time you feel an aspect of our service needs attention or provide additional insight about the service you received.

Sincerely,

Timothy E. Sendelbach  
Fire Chief



# Chapter 1 – Community Overview

Loveland Fire Rescue Authority (LFRA) is a consolidated fire protection and emergency service agency specializing in fire and rescue-related services. The City of Loveland and the Loveland Rural Fire Protection District are located 50 miles north of Denver, Colorado, along the eastern foothills of the Rocky Mountains, and the Arapahoe National Forest. The organizations 119 uniformed (sworn) members and 14 civilian support staff members provide the work force for the agency. LFRA operates ten (10) stations, seven (7) are staffed 24/7/365 with a minimum of three (3) personnel, two (2) stations are staffed by LFRA volunteers, and the Northern Colorado Regional Airport station is staffed 40 hours per week by a dedicated Aircraft Rescue and Firefighting (ARFF) Engineer, with additional coverage provided on an as-needed basis for aircraft flight stand-by services. The agency operates nine full-time fire companies, including six engines, one rapid response vehicle, one aerial truck company and one heavy rescue company. Within the agency’s response area are portions of the neighboring communities of Johnstown, Masonville, Big Thompson Canyon, and the Pinewood Reservoir area. The most recent US Census data from 2020, indicates that approximately 107,601 people live within the 187 square mile area served by LFRA.

## **Legal Basis for the Agency**

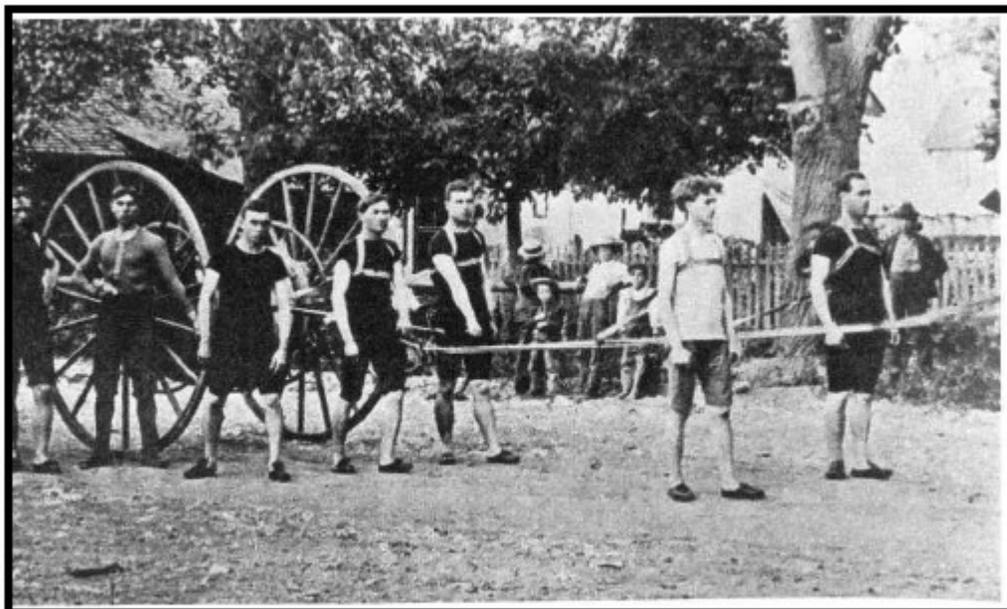
LFRA was formed in January 2012 through the consolidation of the City of Loveland Fire Department and the Loveland Rural Fire Protection District. Prior to consolidation, the City of Loveland Fire Department had provided service to both jurisdictions, since approximately 1950, through contractual agreement. However, this relationship was far from stable and required annual review and renewal. This often led to delays in maintaining the contract. In 2012, the City and Rural District adopted an intergovernmental agreement (IGA) establishing Loveland Fire Rescue Authority as a separate government entity. This IGA and its amendments are the legal basis for LFRA’s existence and outline the governance, management, funding, and operation of the agency. A five-person board of directors, appointed by the City Council and Rural District Board, governs Loveland Fire Rescue Authority. The board includes two members of City Council, two members from the Rural District Board, and the Loveland City Manager. At the time the authority was formed, all LFRA personnel were city employees assigned to the authority and all capital assets were leased to the authority. In 2015, LFRA began working to mature the agency by moving personnel and capital assets under the Authority’s ownership. All employees were transferred into the Authority in November, all apparatus transitioned into the



Authority two years later in 2017. The fire stations and the training center are maintained by a combination of Authority ownership and lease agreements through the City.

### **A Brief History of the Agency**

Loveland’s fire department has served the community since 1883, when it was first organized under Frank Bartholf as the Bartholf Hose Company. Members of the company considered themselves to be “the elite of Loveland” and required substantial personal wealth or status as prominent local merchants.



*(Bartholf Hose Cart Race Team)*

On July 8, 1887, the Loveland Board of Trustees approved a motion to form the Loveland Hook and Ladder Company. In contrast to the Bartholf Hose Company, the Loveland Hook and Ladder Company aimed to cater its membership to the “common” man though it provided almost identical services to the citizens. Despite sharing a firehouse, these two companies functioned totally separately and even developed an intense rivalry between themselves. This rivalry eventually led the Board of Trustees to enact Ordinance Number 41 on March 6, 1894. While this ordinance maintained the separate companies, it was the first step in the development of the Loveland Fire Department.

On February 21, 1911, a petition was presented to the Town Council, from the Fire Department, to consolidate the Bartholf Hose Company and the Loveland Hook and Ladder Company No 1. The council adopted a resolution that read: “Now therefore be it resolved the said two fire companies are hereby consolidated and authorized to organize under the name of the Loveland Fire Department.”



In 1911, the Loveland Fire Department was authorized to have a staff of forty volunteer firefighters. In 1912, Loveland Fire Department officially became a combination fire department with the hiring of the first paid driver. In the 1950's, the department was authorized to have a maximum of fifty volunteer firefighters. The 50's and 60's saw an increase in the number of paid staff that culminated with a maximum of sixty volunteers and fifteen paid staff by the 1970's.



*(1975 Sutphen Aerial)*

The 1980's and 90's saw additional increases up to 57 volunteers and 46 paid staff until the department slowly began the transition closer to an all-paid staffing model in the 2000's. The remaining volunteers were then required to sign up for shifts and/or serve as a member of one of the on-duty companies. All volunteer field officer ranks were discontinued by 2006 and the last volunteer was hired as a paid member in 2017.

The early Loveland Fire Department had a unique responsibility in that it provided fire service to both the City of Loveland and the rural areas surrounding the city. Before the formation of the Rural Fire Protection District, the Fire Department and city questioned the prudence of responding outside of city limits. The city pumper was not allowed to respond outside of the city limits- and thus, in 1935, a decision was made to purchase a second pumper that would be dedicated to provide service to residents of the rural area. Ultimately, the Loveland Rural Fire Protection District was formed on June 20, 1950. The money was raised through a mill levy to purchase a fire apparatus and establish a contract with the City of Loveland to pay the wages of one of the four department employees, and to pay fifty dollars a month for fire engine rental. The newly formed Rural District relied on the Loveland Volunteer Fire Department and supported their service through these contracts and annual contributions towards training and equipment. The Rural District surrounds the City of Loveland and covers approximately 159 square



miles. In 2005, Fire Station 8 was constructed by the Rural District to provide an operational base for the Big Thompson Canyon Volunteer Fire Department. The Rural District also maintained an additional station in the Storm Mountain area of Big Thompson Canyon. A third station (Station 7) was previously maintained by the Rural District in the Cedar Park/Drake area but was destroyed in a flood in 2013. A new Station 7 was built and staffed by the Authority in 2020 to augment response in both the Rural and City response areas. From its inception until the formation of the Authority (2012), the Rural District relied upon a contractual agreement with the City of Loveland to provide services in the Rural District with a combination of Loveland Fire Department members and Big Thompson Canyon VFD volunteers.

On January 1, 2012, the City of Loveland and the Loveland Rural Fire Protection District entered into an Intergovernmental Agreement (IGA) which established the LFRA as a separate government entity. The Big Thompson Volunteer Fire Department was officially dissolved in January of 2021. The Authority is now responsible for providing all emergency services within the boundaries of the Loveland Rural Fire Protection District and the City of Loveland which encompasses just over 187 square miles.



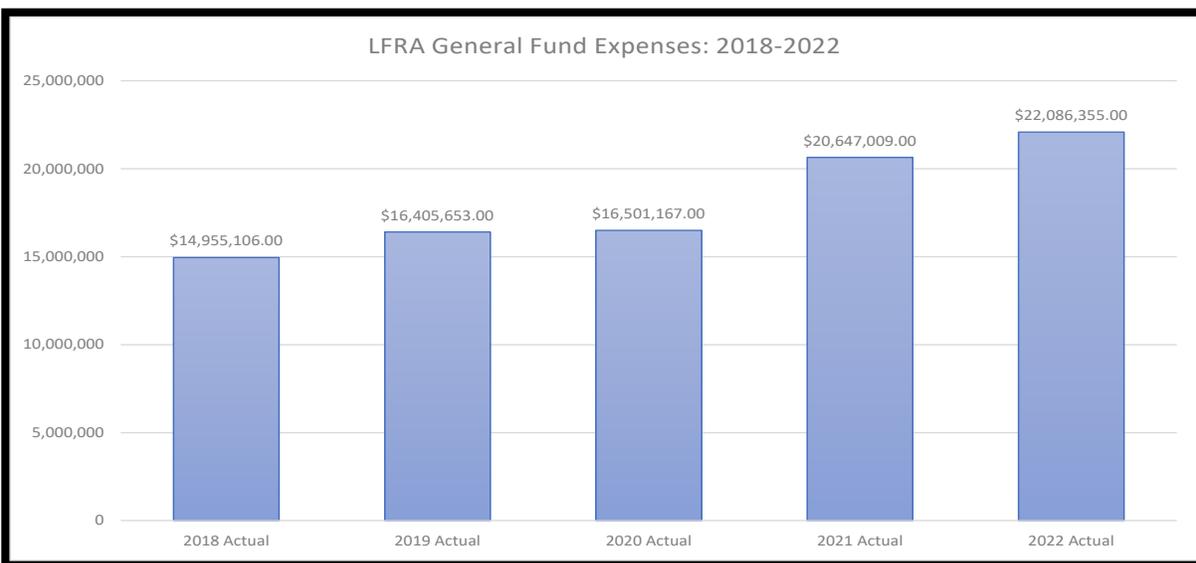
*(LFRA Fire Station 7)*



## Agency Funding and Finances

LFRA is primarily funded by the City of Loveland and the Loveland Rural Fire Protection District through a combination of property taxes in the Rural District and from the City general fund (property and sales taxes). LFRA also generates a small amount of revenue from permits, reimbursements for specialized deployments, and impact fees that were implemented in 2018 for new development in the Rural District. The Authority uses a revenue allocation formula for determining the contribution ratios for both the City of Loveland and the Rural District into funding the LFRA's operational costs. The IGA has established the ratio to be 82% of operational costs funded by the City of Loveland and 18% funded by the Rural District. The formula is based on the historical division of call volume between the City and Rural District. These percentages are not intended to be exact or modified based on the previous year, but to be a rolling average of most recent history. Approximately 20 years of call trends were analyzed to establish these percentages and the formula is evaluated on an annual basis during the budget development process.

For 2022, LFRA had an actual budget of \$22,086,355 to cover all operations and ancillary administrative costs to include but not limited to human resources, information technology, fleet management, facilities management, legal, finance, and risk. As many other public service agencies know all too well, the financial climate surrounding emergency services has been difficult for a very long time for a variety of reasons including structural, political, and events such as the global pandemic all have a significant impact on organizational budgets. LFRA was certainly no exception to these financially related challenges.

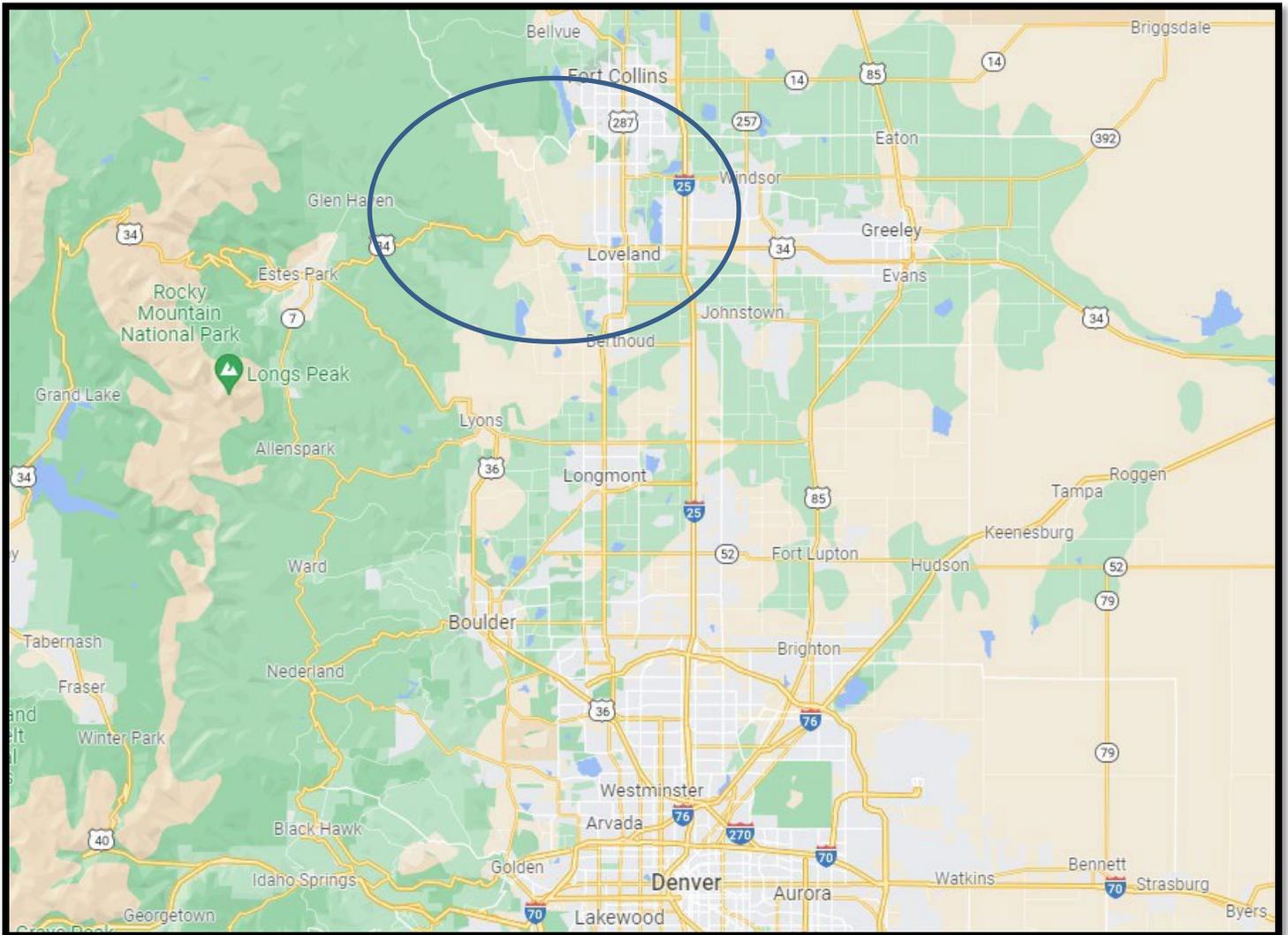


*(LFRA Approved Budget for the last 5 years)*



## **Description of the Jurisdiction**

LFRA is located within Larimer County approximately 50 miles north of Denver, Colorado. LFRA serves the City of Loveland and the Loveland Rural Fire Protection District, covering approximately 187 square miles. Within this area, land uses vary from light industry, high-rise hotels and apartment buildings to agriculture and farm acreage.



*(LFRA's location in northern Colorado)*

The city of Loveland is located less than one hour east of both Rocky Mountain National Park and the Roosevelt National Forest. The region offers a wide variety of diverse outdoor recreation opportunities including hiking and biking trails; city, county, and state parks; lakes and rivers; golf courses and athletic fields; as well as indoor and outdoor swimming and recreation facilities. Loveland is home to a thriving arts community highlighted by over 300 sculptors and a publicly displayed art collection valued collectively at more than \$6 million dollars.





*(Public Art by Lake Loveland)*

## **Surrounding Jurisdictions**

LFRA maintains healthy and effective relationships with all the emergency service agencies with borders that are adjacent to or within our response area. Formalized automatic and mutual aid agreements have been established with all the surrounding jurisdictions.

### ***Thompson Valley EMS***

Thompson Valley EMS (TVEMS) is the advanced life support ambulance provider for the entire LFRA response area. TVEMS provides ALS response and transport to medical care facilities. LFRA works collaboratively with TVEMS and at times will provide an additional EMT during transport for critical patients. The Thompson Valley Health Services District is the governing body for TVEMS. TVEMS currently has (6) response stations. From those stations TVEMS responds with (7) ALS two-person ambulances and three paramedic supervisors.



### ***Poudre Fire Authority***

Poudre Fire Authority (PFA) shares LFRA's northern border. PFA is the largest of LFRA's neighboring departments and protects the City of Fort Collins and the communities within the Poudre Valley Fire Protection District. PFA covers a 230 square mile service area with 193 uniformed personnel and 31 civilian full-time employees. PFA currently has 14 stations that act as static planning zones.

### ***Windsor Severance Fire Rescue***

Windsor Severance Fire Rescue (WSFR) is located along the northeastern border of LFRA's jurisdiction. WSFR provides fire and rescue services to approximately 31,551 residents within a 97 square mile response area that includes the towns of Windsor and Severance, as well as unincorporated portions of both Weld and Larimer counties. WSFR provides coverage from four (4) staffed fire stations.

### ***Berthoud Fire Protection District***

The Berthoud Fire Protection District (BFPD) is located along LFRA's southern border and includes a 103 square mile service area. BFPD provides services to approximately 24,000 residents from two (2) staffed fire stations.

### ***Front Range Fire Rescue***

Front Range Fire Rescue (FRFR) is a specialized fire district located along the southeastern edge of the LFRA response area. FRFR was formed as the result of an intergovernmental agreement between the Johnstown and Milliken Fire Protection Districts. FRFR provides fire and rescue services from three (3) fire stations to a coverage area of approximately 74 square miles.

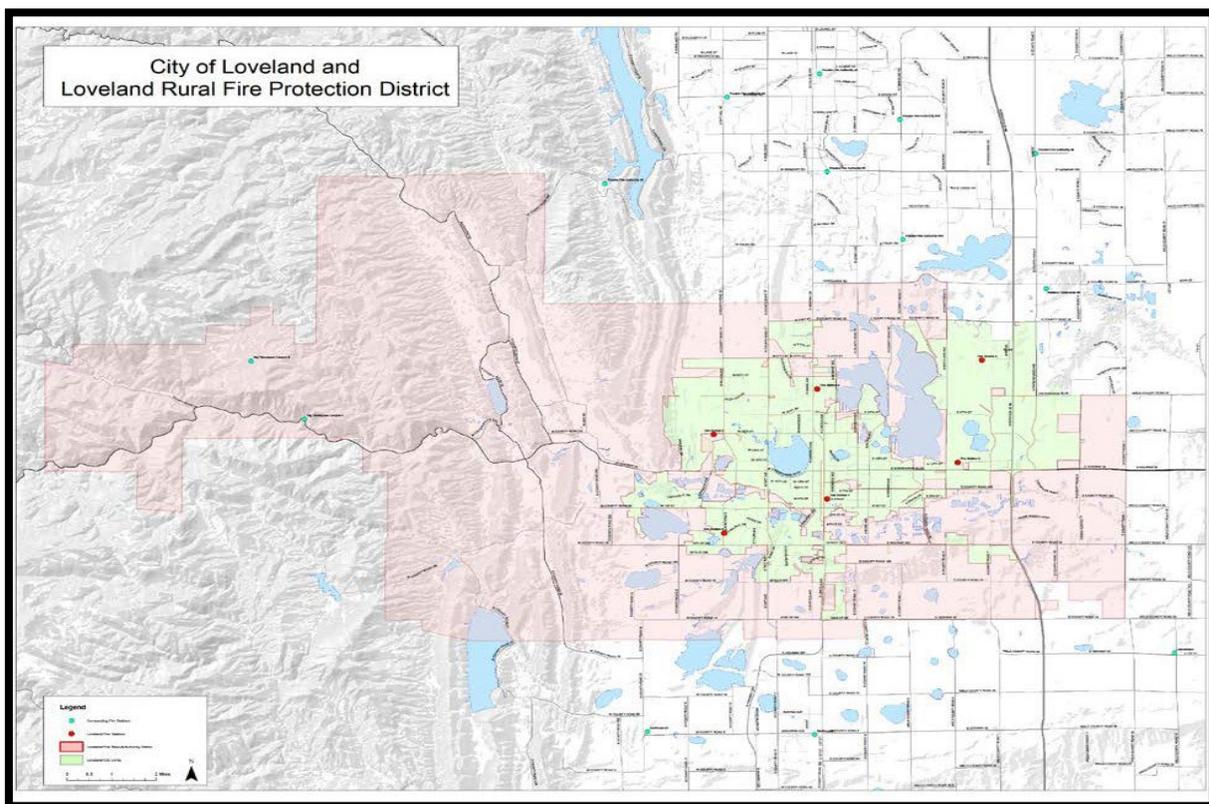
### ***Estes Valley Fire Protection District***

The Estes Valley Fire Protection District (EVFPD) is located at the western edge of LFRA's response area, adjacent to Rocky Mountain National Park. EVFPD provides fire and rescue services from two (2) fire stations to coverage area of approximately 66 square miles.



## Geography and Topography

LFRA's response area is situated along the eastern edge of the Rocky Mountains, in an area commonly referred to as Colorado's northern Front Range. The area's most prominent geological features are the Rocky Mountains to the west and numerous freshwater lakes, ponds rivers and waterways throughout the district. The elevation is 4,982 feet above sea level. The topography in the wildland urban interface (WUI) portions of the response area are predominantly low rolling hills, directly adjacent to the eastern range of the Rocky Mountains at an average elevation of 5,000 feet above sea level. There are also steep mountainous areas within the wildland urban interface that have elevations over 7,000 feet above sea level.

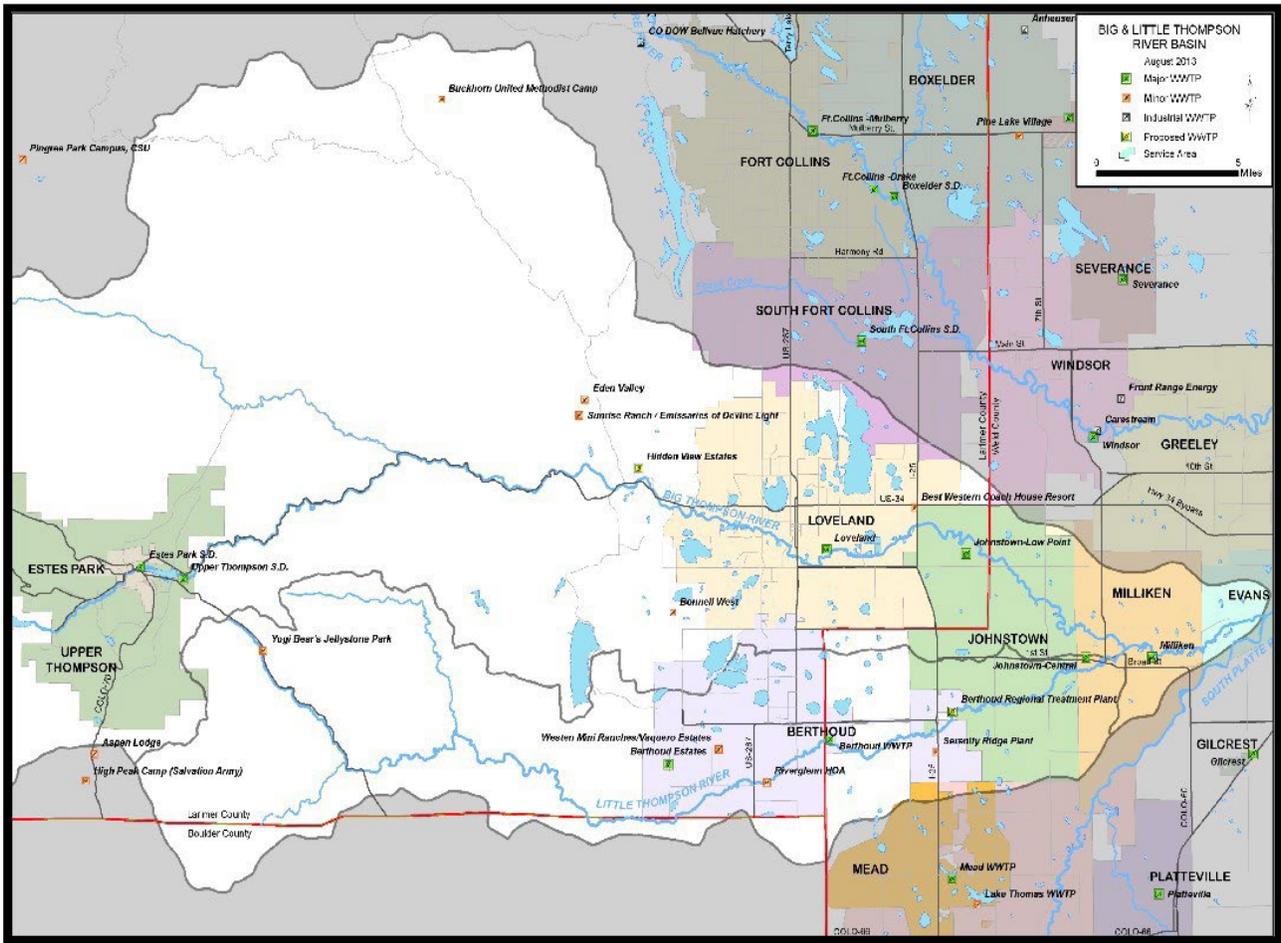


*(LFRA's Topography)*

The Big Thompson River runs diagonally from the west through the response area. The response area also contains numerous streams, lakes, and ponds. Two large public recreation lakes are located within the LFRA district: Boyd Lake State Park near the eastern boundary and Carter Lake in the western foothills. Boyd Lake State Park is a 1,700-surface acre lake that is managed by the Colorado Division of Parks and Wildlife. It is the fourth busiest park in Colorado's State Park system and hosts approximately 579,000 visitors annually. In addition to boating of all kinds, approximately 150 acres of park facilities also include 148 full-hookup camp sites, numerous picnic areas, a public swimming beach and miles of



hiking and biking trails. Larimer County Parks operates the 1,100-acre Carter Lake in the foothills west of Loveland and Berthoud. The lake is surrounded by more than 1,000 acres of land that include campgrounds, public beaches, and an extensive trail network.



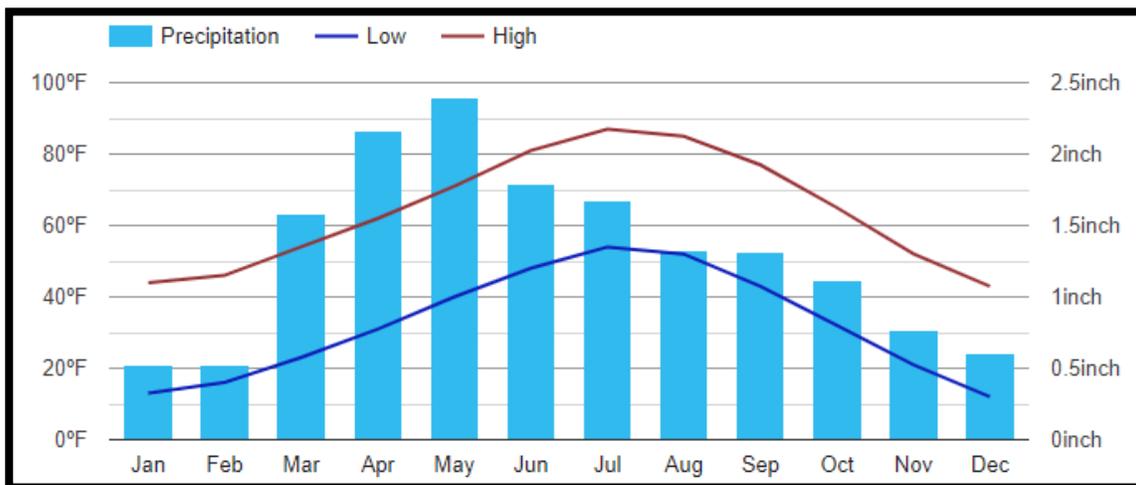
*(Big Thompson Watershed)*

## **Climate**

The Loveland area enjoys a moderate climate with an annual average of approximately 223 sunny days according to US Climate Data. The relatively low humidity tends to make winters feel warmer and summers cooler than might be experienced in the mid-western part of the country. The average high and low temperatures range from 87°F in July to an average low of 12°F in December. The highest recorded temperature was 105°F in July 2005, while the lowest recorded temperature was -31°F in December 1990. The area receives approximately 15.76 inches of annual precipitation, with the wettest month usually being in May. While the area typically receives moderate amounts of snowfall, snow can and often does become extreme, particularly in the months of March and April.



The region is susceptible to severe thunderstorms and other severe weather events. Lightning is one of the most common and frequent weather-related hazards in the region. Lightning causes numerous fires in the wildland and wildland-urban interface throughout the year.



*(Precipitation by month, www.weather.com)*

Another severe weather phenomenon, the microburst, is a short-lived weather event characterized by a very localized and intense column of sinking air. Microbursts are most common during the spring and summer. The sudden and intense winds created by a microburst pose a tremendous hazard to aircraft as well as to any wildland fires that may be active. The winds associated with microbursts are strong enough to knock over fully grown trees.

There have been several significant and tragic weather-related events in the front range of Colorado. Tremendous flooding occurred in September of 2013. Several cities, including Loveland, had their communities literally divided by water. The City of Loveland had water from the Big Thompson Canyon flowing across all north-south roads from the mouth of the canyon well beyond Interstate 25 into Weld County.

Colorado broke an 87-year-old record for most days without measurable snowfall in 2021. The dry conditions coupled with significant wind events were factors in two fatal wildland fires. On Nov 16th, 2021, the Kruger Rock fire near Estes Park burned approximately 147 acres. The pilot of a fixed-engine plane was killed in a crash while attempting to battle the fire despite the erratic winds. Colorado saw its most significant fire loss on December 30, 2021. The Denver Post reports that “The Marshall Fire destroyed more than 1,000 homes and burned across 6,000 acres in Superior and Louisville, CO and unincorporated Boulder County driven east by hurricane-force winds. It is reported the property loss for



the Marshall Fire is approximately a half-billion dollars. One man was killed, and one woman remains missing.”

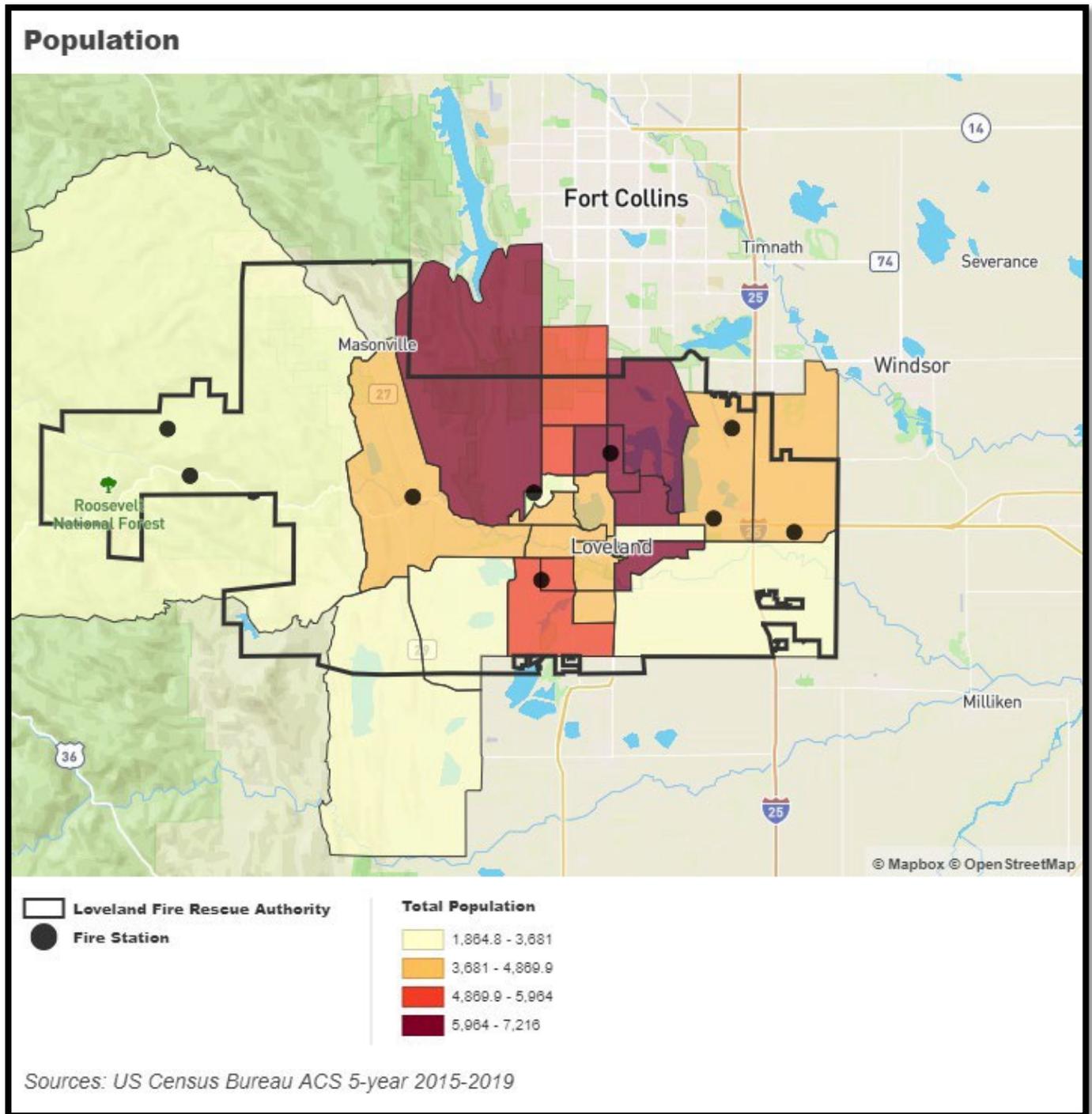


*(Photos of The Marshall Fire from The Denver Post online)*

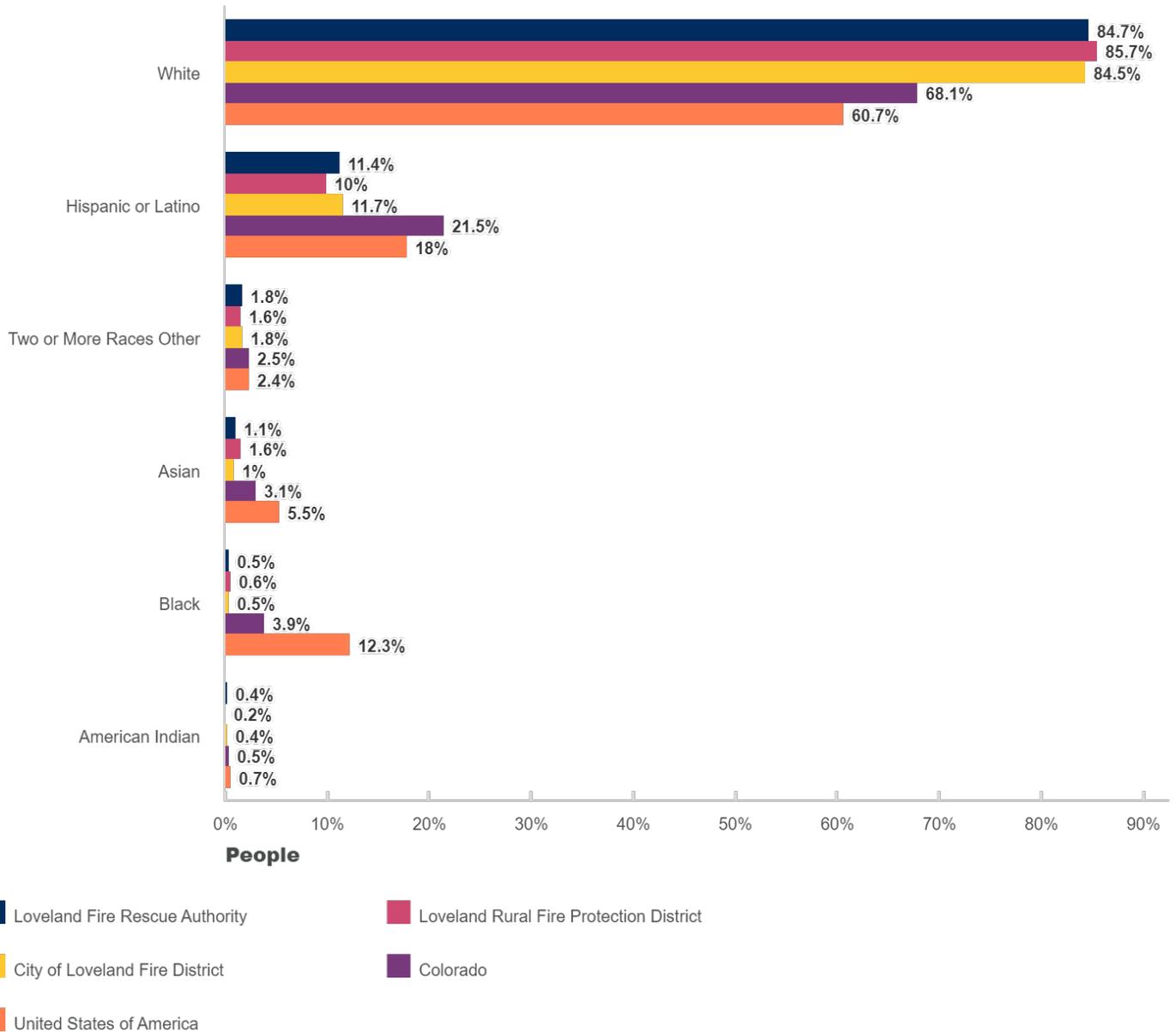


## Population and Demographics

The 2020 Census estimates the population of the agency to be approximately 107,601 people, with 80,540 people living within the City of Loveland and an additional 27,061 people living in the Loveland Rural Fire Protection District. The estimated population of the agency is expected to increase to over 110,000 by 2025.



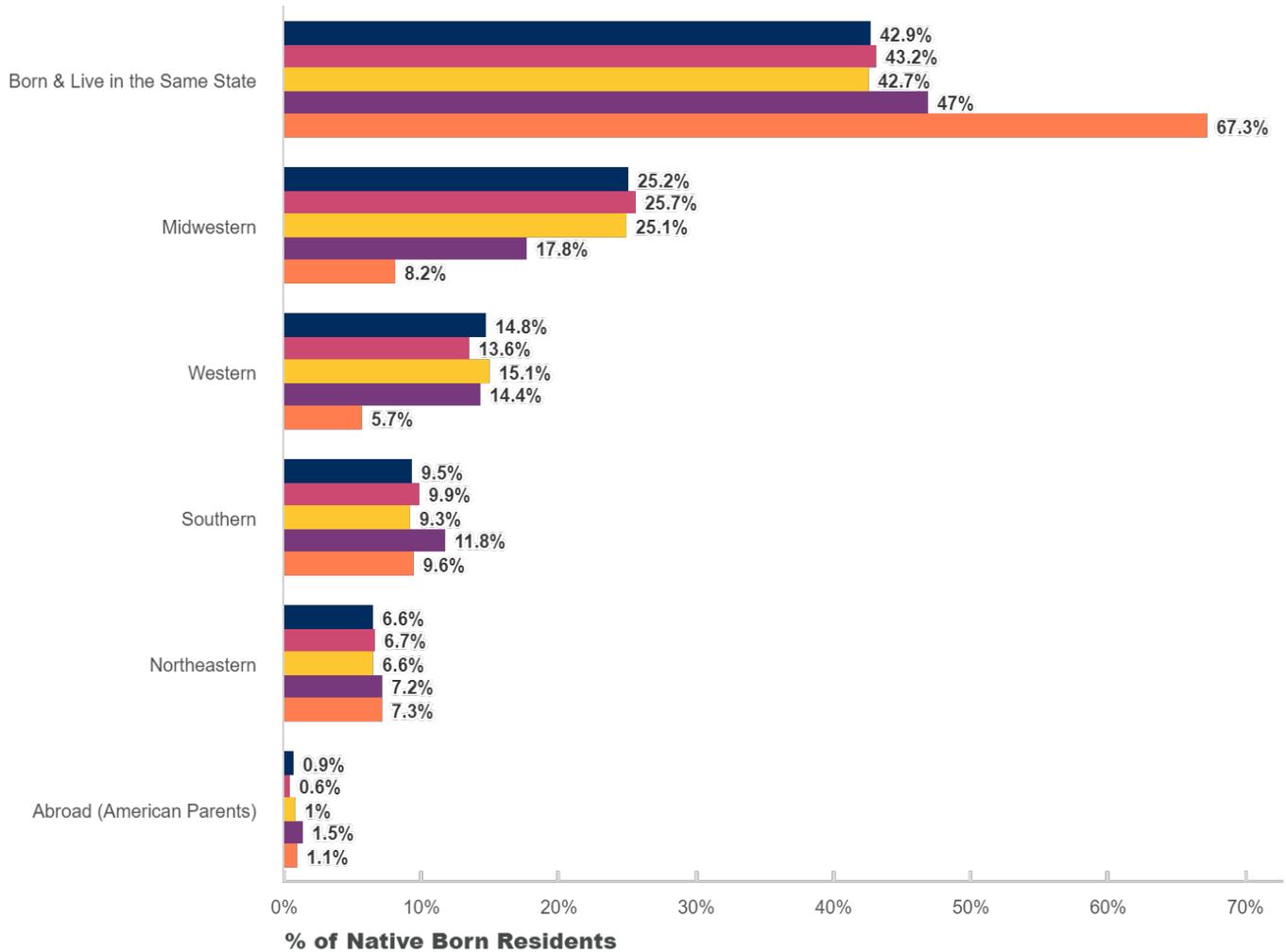
## Race/Ethnicity Totals



The highest population density for the agency is in the north and east portions of the district. The Race/Ethnicity demographics show that the community is predominantly White, followed by Hispanic and Latino.



## Region of Birth for Our Native Born Residents



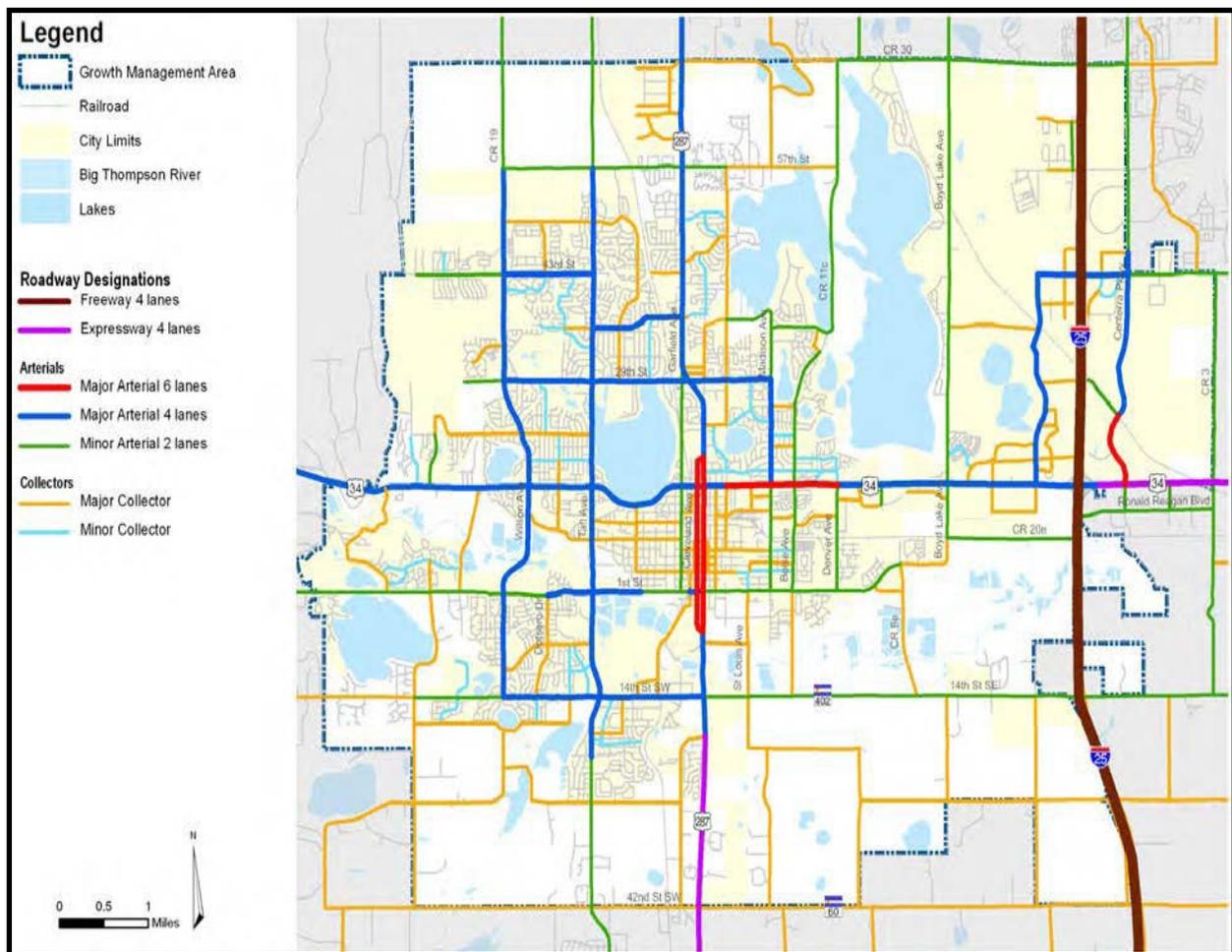
According to the US Census and American Community Survey, almost half of the people in the district were born in Colorado. This is actually a much smaller percentage compared to the rest of the United States, which is almost 70 %.



# Transportation

## Streets

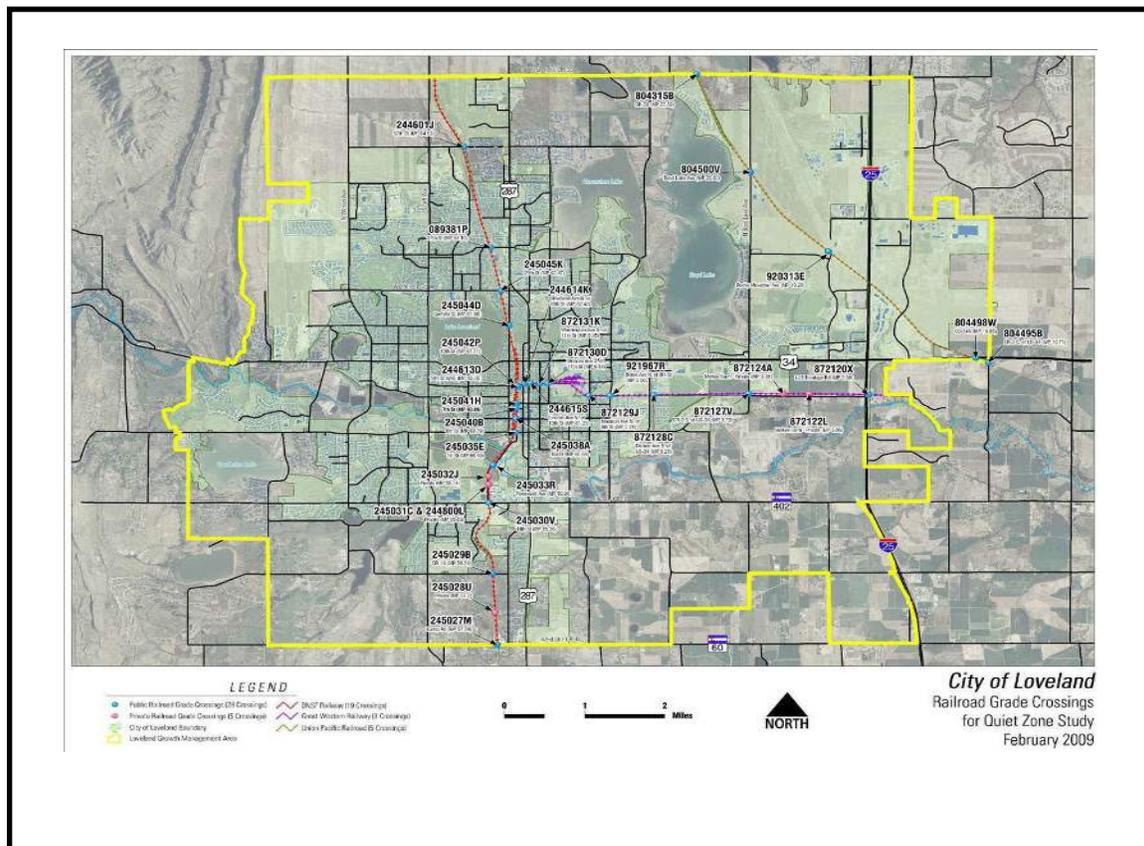
The City of Loveland cooperates with Larimer County in master planning urban streets through the Larimer County Urban Area Street Standards document. According to the City of Loveland 2035 Transportation Plan, the street network within the city of Loveland has approximately 330 miles of arterial, collector and local streets. Loveland’s historic core is identified as the downtown area bounded on the south by 1st Street, on the east by Madison Avenue, on the north by Eisenhower Boulevard, and on the west by Taft Avenue. The city’s downtown core was fully developed early in Loveland’s history and consists of a tight grid of residential streets and commercial streets with many options for traversing the area by vehicle.



*(Loveland’s grid of residential streets)*



The growth experienced since the late 1970s has resulted in fewer through streets, more curving roads, and cul-de-sacs. The presence of many lakes and ponds also helps to isolate sections of the city, making through travel more difficult in the areas beyond the city's urban core. Loveland classifies streets using the hierarchy of arterial, collector and local streets. The functional classification of streets is related to the degree of mobility or access they provide. Arterial streets function primarily to provide mobility through the community and typically are two, four or six lanes wide, carrying traffic volumes in excess of 7,000 vehicles per day, providing limited access and accommodate higher travel speeds. Collector streets have less restricted access points, "collecting" traffic from local areas by providing mobility through connections to the arterial network. Collectors typically consist of two lanes and carry 1,000 to 7,000 vehicles per day. In addition to the street network within Loveland, there are also three active rail lines traversing the city. The Burlington Northern-Santa Fe (BNSF) runs north to south through the city, the Union Pacific Railroad (UPRR) runs northwest to southeast through the city, and the Great Western Railway (GWR) runs east to west through the city. The primary east-west thoroughfare in the city is Eisenhower Boulevard, which crosses the railway by way of an overpass, allowing for consistent and unobstructed east-west travel through the city.

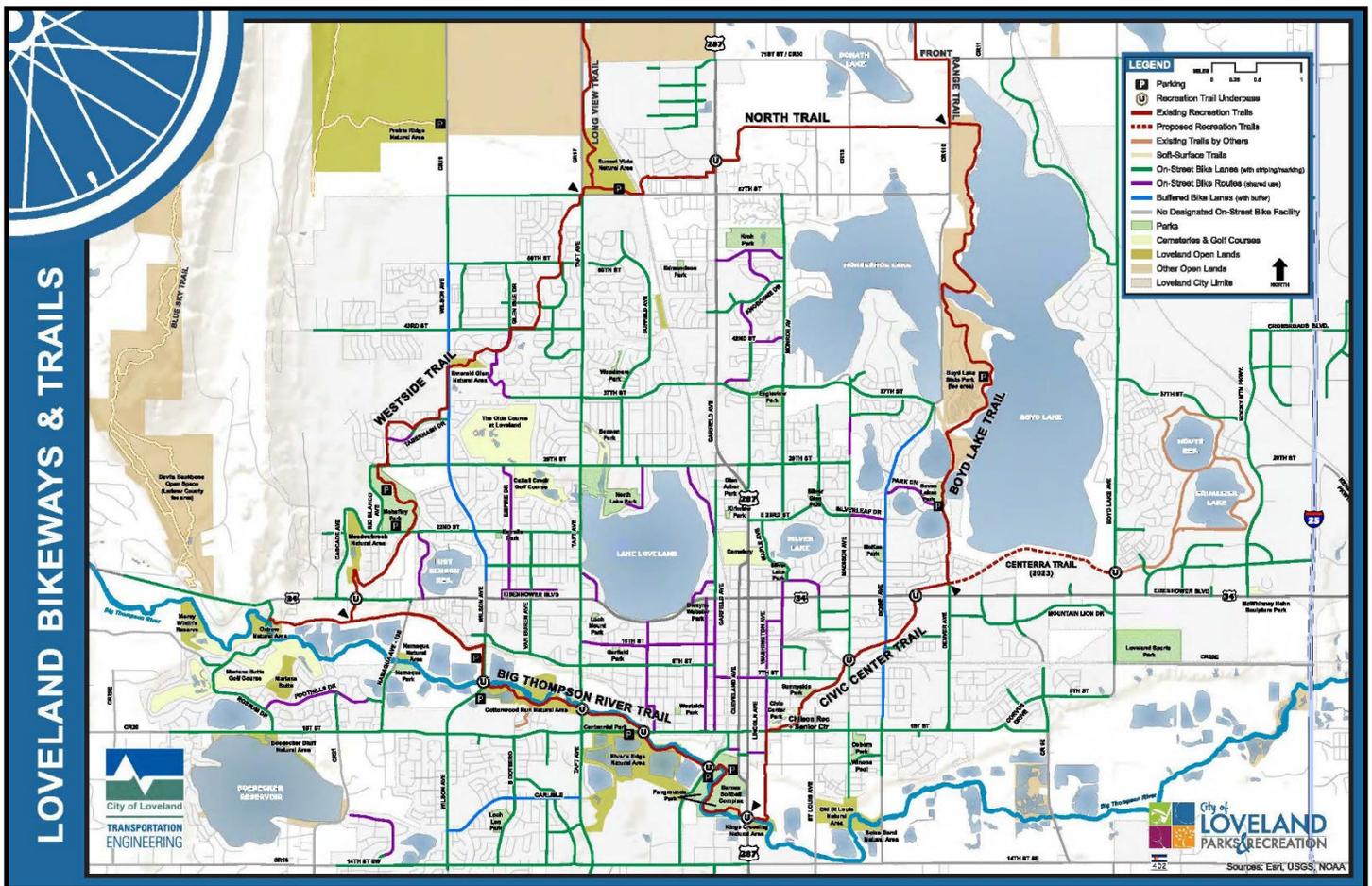


(Loveland Railroad crossings)



# Trails

The City of Loveland manages and maintains approximately 26 miles of paved recreation trail that loops around the city and connects to other regional trails. Trail sections include corridors along the Big Thompson River, irrigation canals and Boyd Lake State Park, through neighborhoods, parks, and open lands, and under and over city streets, providing non-motorized access to many destinations throughout the community. Existing regional trail connections link to Fort Collins' trail system, and the future planned trail network will connect more neighborhoods within Loveland and join with other northern Colorado communities.



(City of Loveland bikeways and trails)



## Airport

Located in the heart of Northern Colorado along Interstate 25, the Northern Colorado Regional Airport (FNL) is minutes away from downtown Loveland, Fort Collins, Greeley, Windsor, and Estes Park. It is 50 miles north of downtown Denver and is the closest Airport to Rocky Mountain National Park, accommodating millions of visitors annually. The Airport, identified by the Federal Aviation Administration as “FNL”, and is classified as a primary commercial service airport. FNL was founded in 1963, with operations beginning in 1964. The operation and maintenance of the Northern Colorado Regional Airport is a joint venture between the City of Loveland and the City of Ft Collins, with full management and policy-making authority vested equally in both cities. The Airport is a vital asset to a major commercial center in the Loveland/Ft Collins area and a key component of the region’s growing high-tech, innovation-focused economy, contributing approximately \$300 million in economic impact to the region annually. A new terminal is scheduled to be built in 2024 at no cost to local taxpayers.

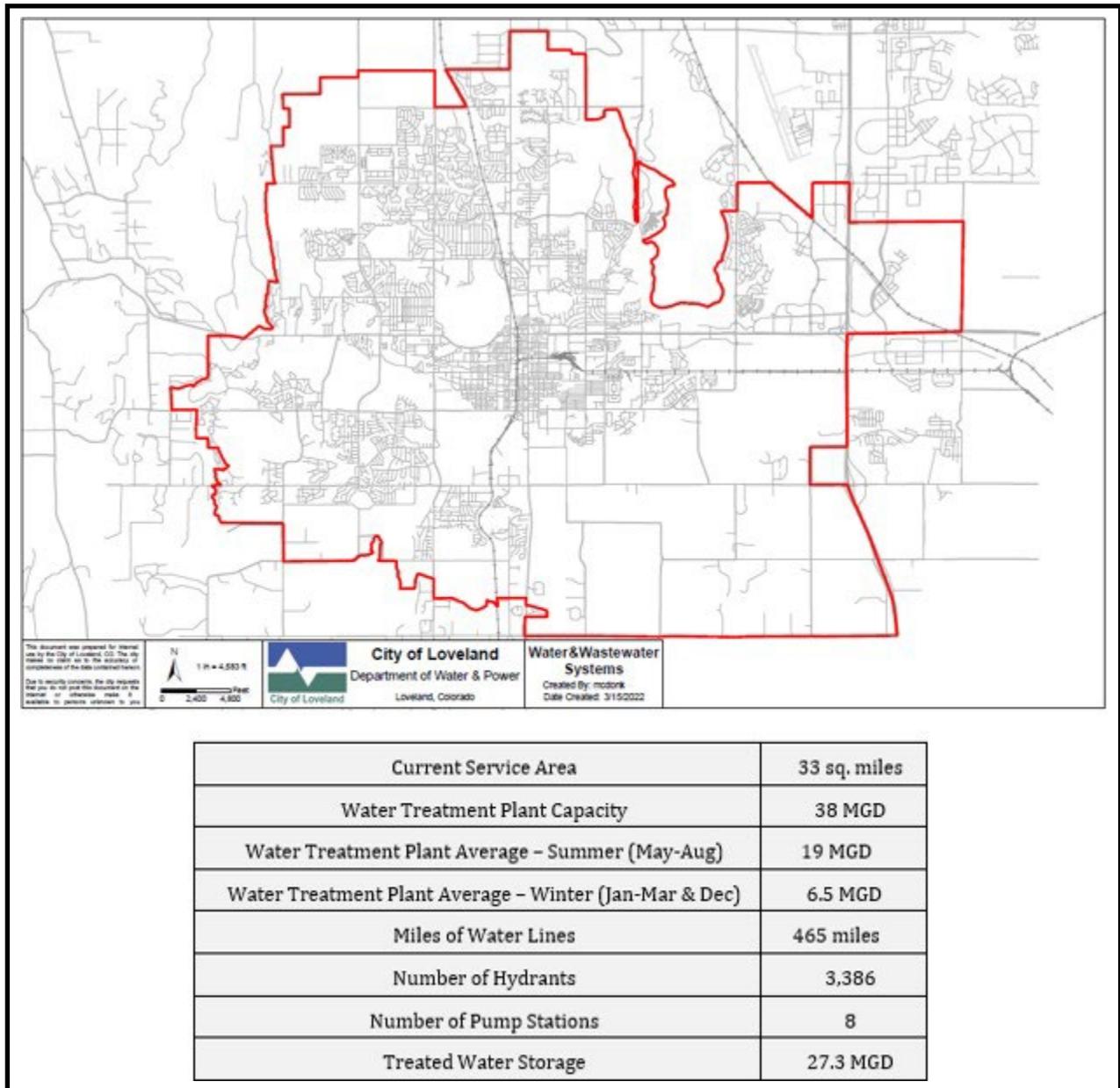


*(Projected New Terminal in 2024 at the Northern Colorado Regional Airport)*



## Water Distribution Systems

Domestic water supply and distribution systems within the LFRA response area are maintained by five (5) entities: City of Loveland, Town of Johnstown, Fort Collins-Loveland Water District, Little Thompson Water District, and North Carter Lake Water District. The City of Loveland Water and Power Department maintains the water supply and distribution system within the city limits, delivering treated water to roughly 45,000 addresses.



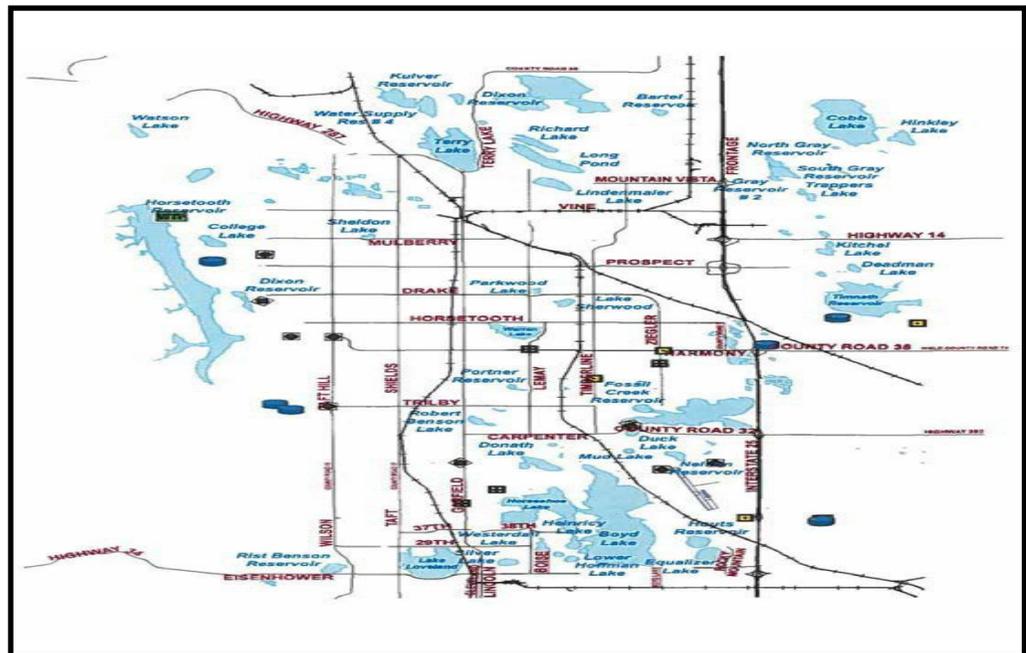
*(The City of Loveland Water Area)*



The **City of Loveland** maintains a water distribution system of approximately 500 miles of pipe, varying in size from four to 48 inches in diameter. Piping within the City system has been constructed of steel, cast iron, ductile iron and polyvinyl chloride (PVC). Recently, the city has worked to replace many older and/or smaller mains with PVC to ensure longevity and reliability to customers. Supplementing the City's natural water sources are water storage tanks situated throughout the system, that provide more than 27 million gallons (MG) of storage, help equalize distribution system pressure, meet peak hour demands, and supply fire hydrants. Most of the City's water distribution system operates by gravity; however, there are booster pump stations that operate to maintain adequate water pressure to areas of higher elevation.

The **Fort Collins-Loveland Water District (FCLWD)** provides and maintains a water distribution system to a service area of roughly 60 square miles, serving approximately 19,000 total taps. The FCLWD serves approximately 16,000 addresses in the northern portion of the LFRA response area. The FCLWD boundaries are generally Harmony Road to the north, 57th Street to the south, the "foothills" to the west and Larimer/Weld County line to the east. The FCLWD water delivery system consists of 26 pressure zones with three close loop booster pump systems, fire (5) pump stations and five (5) storage tanks.

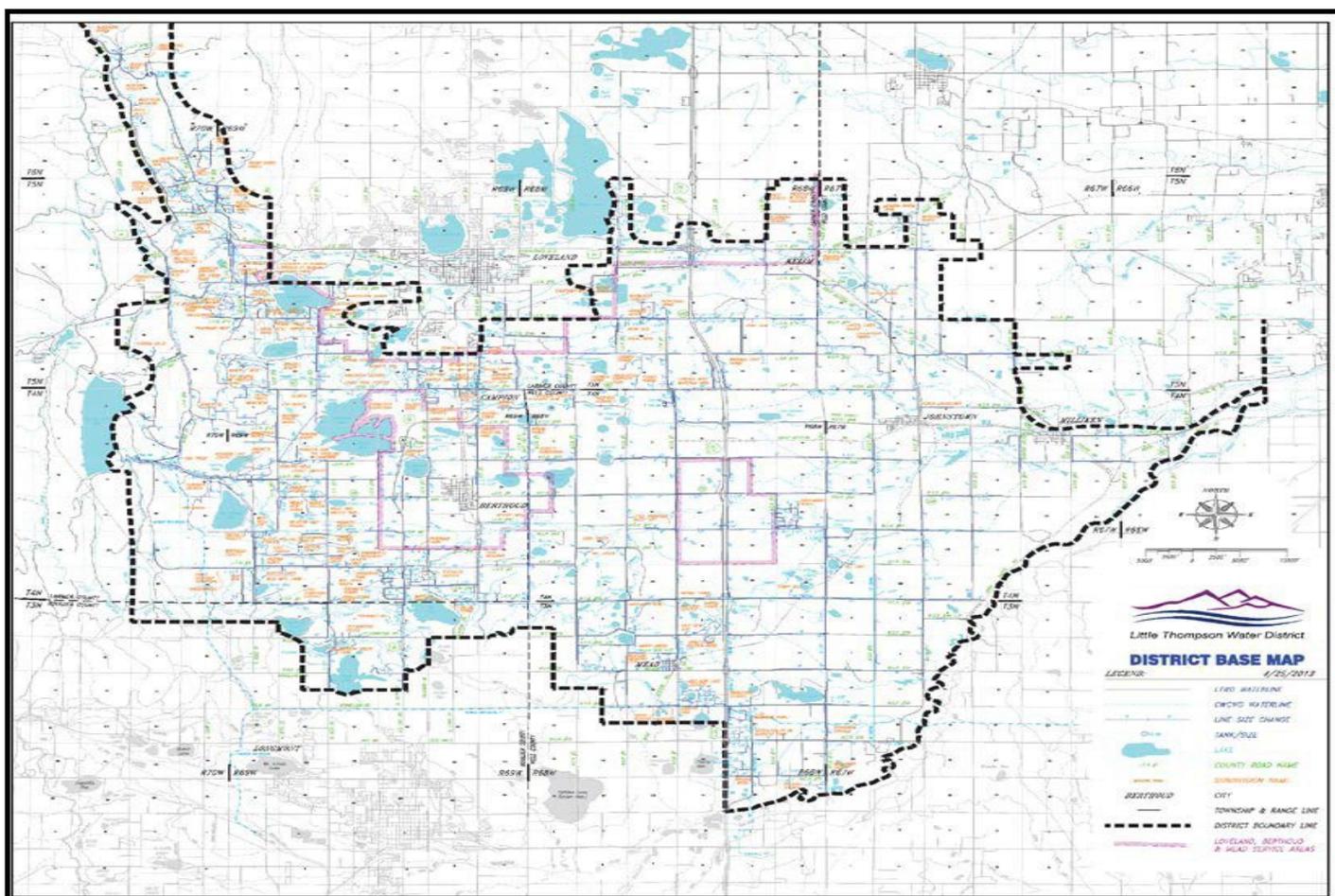
FCLWD owns and maintains 451 hydrants within the LFRA service area. All hydrants are installed on minimum six (6) inch branch lines and most feature a steamer outlet and two 2-½ inch outlets. The district has 1,758 total taps in the LFRA jurisdiction (1,131 in the rural district).



*(Fort Collins-Loveland Water District)*



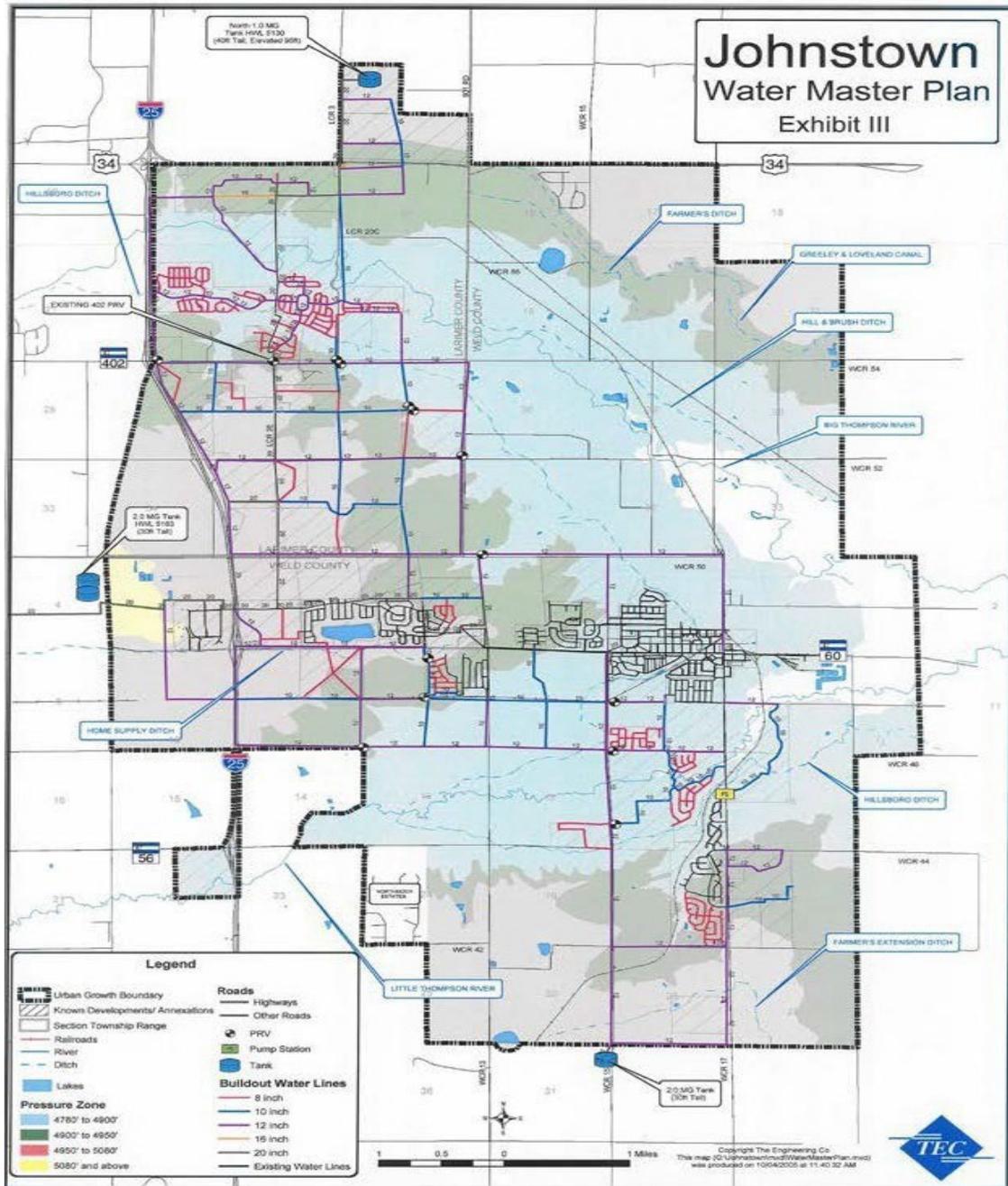
The **Little Thompson Water District (LTWD)** maintains much of the water distribution system in the southern and western portions of the LFRA service area. LTWD covers nearly 300 square miles that is bounded to the north by the City of Loveland, to the south by the Longs Peak Water District, to the west by the foothills and to the east by the City of Greeley. The LTWD distribution system consists of more than 670 miles of water lines, ranging from one (1) inch to 42 inches in diameter. LTWD owns and maintains 16 pressure zones and 450 fire hydrants within the LFRA service area. The service area within LFRA has decreased slightly in recent years, as some areas south of East Eisenhower Boulevard and west of Interstate 25 were annexed into the city and thus became part of the City water district.



*(Little Thompson Water District)*



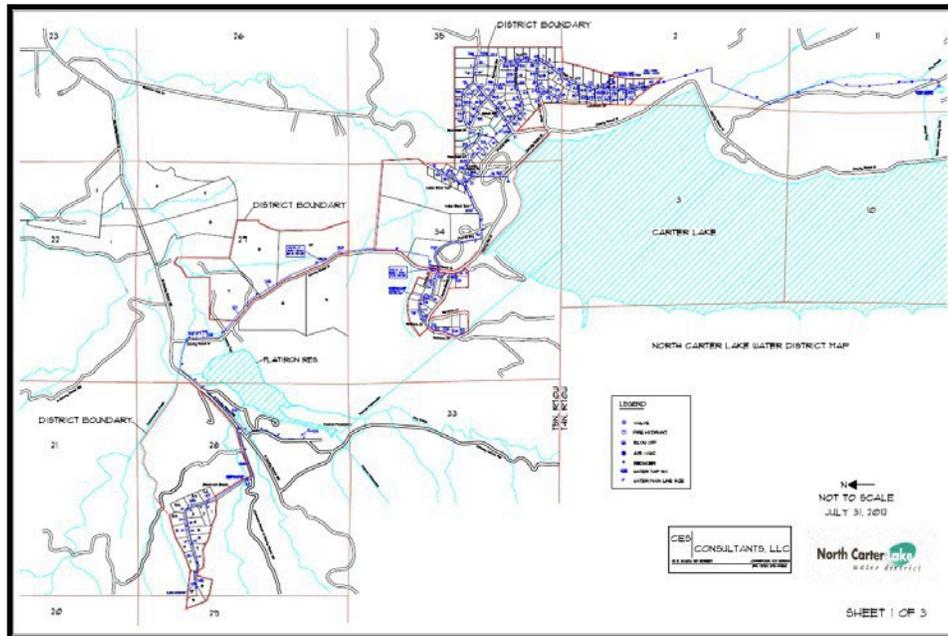
The **Town of Johnstown Water Department** operates and maintains a distribution system within the Town limits, which includes residential and commercial developments within portions of the Loveland Rural Fire Protection District in the area of Interstate 25 and East Eisenhower Boulevard. Approximately one- third of Johnstown's water supply is provided to areas within the LFRA service area.



*(Johnstown Water District)*



The **North Carter Lake Water District (NCWLD)** provides domestic water to approximately 145 homes and businesses in proximity to Carter Lake, in the foothills west of Loveland. The district mostly serves residential units and has few hydrants usable for firefighting.



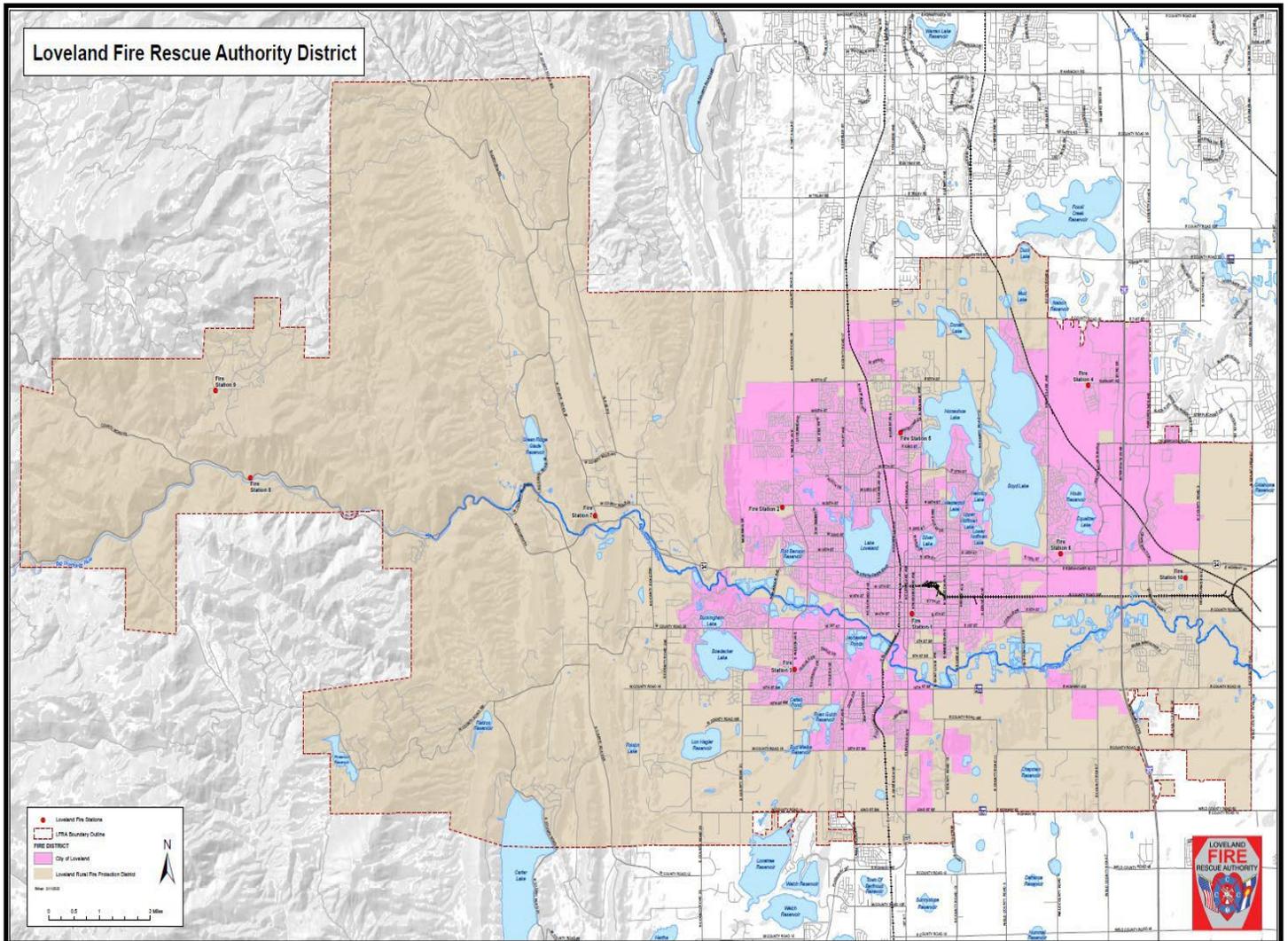
*(North Carter Lake Water District)*

The **Chimney Hollow Reservoir Project**, which is the main component of the overall Windy Gap Firming Project, is a collaboration between nine municipalities, two water districts and a power provider, working together to build Chimney Hollow Reservoir. The new reservoir will be located west of Carter Lake in southern Larimer County and will store 90,000 acre-feet of water when built. The project will provide 30,000 acre-feet annually. Onsite construction began in August 2021, and is expected to last four years. The construction cost is being contracted at \$485.4 million. In addition to water storage for future generations, the project will include various environmental and wildlife habitat features. Larimer County will manage day use recreation on both Chimney Hollow Reservoir and the county-owned adjacent Chimney Hollow Open Space. Northern Colorado faces projected water shortfalls in the coming decades, but the Chimney Hollow Reservoir Project is addressing this issue and will be vital in helping local communities meet the challenges ahead.



# Chapter 2 – Services Delivered by the Agency

LFRA is a combination fire department that uses full-time career firefighters, augmented by volunteer firefighters covering the unincorporated Town of Drake, Storm Mountain, and the Big Thompson Canyon to provide a wide array of emergency and non-emergency services to a response area of approximately 187 square miles. LFRA is a “full- service” fire department that provides all types of emergency services including fire suppression, wildland firefighting, emergency medical services, hazardous materials response, technical rescue, tactical fire, and aircraft rescue and firefighting.



*(LFRA's response district)*



## **Mission, Vision and Values**

LFRA is committed to providing the highest quality services to the citizens who are served by the agency. The agency's mission statement is:

*"Through commitment, compassion and courage, the mission of the Loveland Fire Rescue Authority is to protect life and property."*

Within the mission statement are the agency's core values of Commitment, Compassion and Courage – termed "the 3C's." LFRA personnel promote the mission by focusing efforts on "the 4R's" of Response, Readiness, Resources and Relationships. The timeless values of the 3C's and the 4R's serve as benchmarks by which the quality of the agency's service delivery is measured. These values provide the guiding framework that directs and prioritizes all agency resources. All personnel within the LFRA family embrace the vision of *"Building Enduring Greatness."* Employees are committed to the concept of continuous improvement.

In 2018 LFRA created a document that captures the cultural framework that LFRA embraces, entitled *The LFRA Way*. This document is given to all employees and defines the cultural pillars for LFRA. The organizational tenets that are spelled out in the LFRA Way are embedded into performance reviews and play an integral role in maintaining LFRA's core values. Among these tenets are LFRA's Non- Negotiables: THE THREE C'S – Commitment, Compassion, and Courage...our values with an emphasis on Compassion. CUSTOMER SERVICE – How we treat the "Smith Family". SEEKING CONTINUAL IMPROVEMENT – Progressive, ability to change, and fluidity. OTHERS CENTERED ORGANIZATION – Respect for others. "We strive to be an organization of 'AND THEN SOME' members who have a passion for serving and helping others."

## **Responsibilities of the Agency**

In general, the public fire service saves lives and property from natural and/or human-caused situations and prevents harm through planning and pre-incident planning. LFRA exists to provide protection, public safety, and support to its citizens. A community's fire protection and emergency services system must reflect the needs and desires of the community, and it must be managed and operated within an affordable and efficient financial system. Economic conditions over the past several years have re-emphasized the importance of sound financial stewardship and community involvement in all aspects of planning and operations.



LFRA is organized into three (3) divisions: Administration, Operations, and Risk Reduction & Readiness. The fire chief oversees the administration division while the operations and risk reduction & readiness division are each led by an assistant chief.

The Operations Division responds to all calls for service and provides the following types of service: structural firefighting, wildland and urban interface firefighting, emergency medical services, special operations (water rescue, hazardous materials response, large animal rescue, urban search and rescue, and tactical fire), fire alarm investigations, pre-incident planning and public assistance.

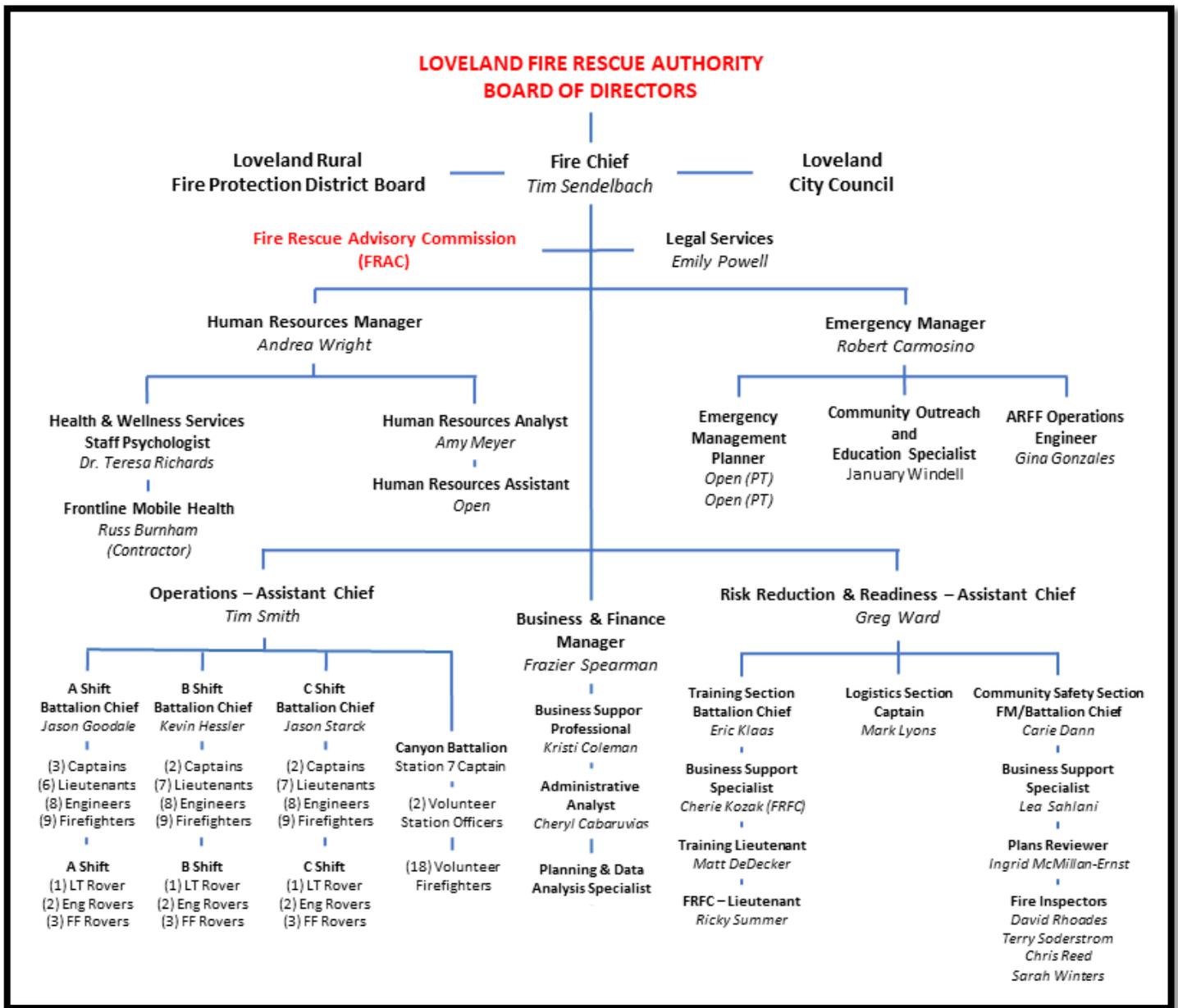
The Risk Reduction & Readiness Division provides fire prevention and community safety as well as oversight of the training battalion and the newly implemented logistics section. Risk Reduction includes the responsibilities of fire code enforcement, new construction plan review, development services, permit administration, fire investigation, public outreach, and records management.

The Administration Division provides all business-related functions of the organization including, but not limited to, strategic leadership, financial planning, budgeting, reporting, payroll, accounts payable, accounts receivable, customer service, and support to Boards and Commissions.

## **Agency Organization**

LFRA is organized under the Fire Chief who reports to the LFRA Board of Directors. The Operations Division comprises the largest group of LFRA employees, encompassing all fire suppression personnel. The Operations Division functions under a one-battalion system, with a single Battalion Chief on-duty at all times. Assisting the on-duty Battalion Chief is a 40-hour Battalion Chief assigned to coordinate the agency's training programs. Off-duty Battalion Chiefs and Captains provide 24/7 support as an "On-Call Battalion 42." This position covers the system when Battalion 41 is occupied with a high-risk call or a call of extended duration. Operations Division personnel are divided into three (3) shifts. In November of 2019 LFRA went to the 48/96 (48 hours on duty, 96 hours off duty) schedule and provides coverage 365 days per year. Each shift is staffed with a Battalion Chief, two (2) Captains, seven (7) Lieutenants, ten (10) Engineers, and ten (10) full-time Firefighters. An ARFF Engineer is typically on-duty Monday through Friday during normal business hours. If that individual is off-duty, the position is back-filled with off-duty personnel to provide required ARFF coverage at the airport. The daily staffing level is 32 personnel.





*(LFRA's Organizational Chart)*

## Community Expectations

A committee was established in November 2009 to determine the most effective governance model for providing fire and rescue services. The committee was formed by representatives of Loveland Fire and Rescue, the Loveland Rural Fire Protection District, and Loveland City Council. Through the process of evaluating the governance model, the committee established the expected service levels that would be provided by the organization. In some cases, service levels were determined to be legally mandated by fire codes, federal regulations, national standards, or local/regional standards. The committee



established the following list of services that were expected to be provided by Loveland Fire Rescue Authority:

**Essential Fire/Rescue Services:**

Structural firefighting

Vehicle, Grass, and Rubbish Firefighting

Emergency Medical Services

Hazardous Materials Operations

Non-Technical Rescue Calls (Single apparatus response i.e., Child locked in a vehicle) Vehicle Extrication

Fire Prevention (Plan Review) Fire Investigation

**Value-Added Services:**

Specialized and Technical Rescue

Wildland Firefighting Operations (Deployments or Extended Assignments) Tactical Fire Operations (with Loveland Police Department SWAT)

Fire Prevention (Inspection Services) Community Safety

Emergency Management Community Outreach/Education

Regionalization of Services (i.e., Front Range Fire Consortium)



The committee was unanimous in their statement that, regardless of the service being provided, the most important element to be addressed by LFRA was staffing for the Authority. Agency staffing level has a direct influence on both the quality and quantity of services provided by LFRA. The community served by LFRA expects the agency to provide a skilled response with a sufficient number of personnel to establish initial actions for incident mitigation. LFRA uses the list of essential services to prioritize efforts in personnel training. Value-added services continue to be topics for training, but they are given a lesser priority than essential services.

### **Insurance Services Office (ISO) Rating**

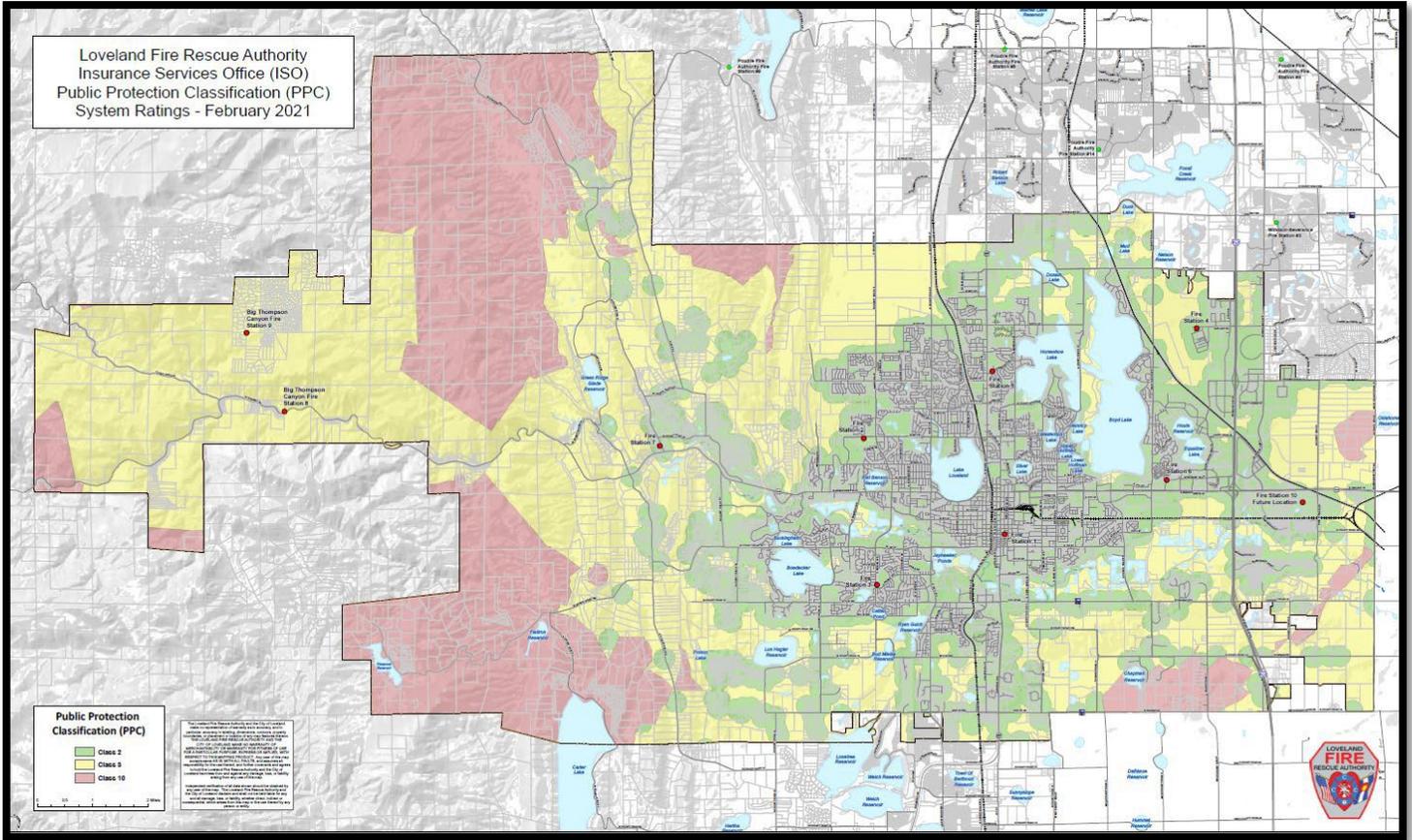
Established in 1971, the Insurance Services Office (ISO) is the primary source of fire-related insurance risk to municipalities. ISO evaluators visit and evaluate municipal fire service organizations approximately once every five (5) to ten (10) years. ISO performs a comprehensive analysis of the complete fire protection system for the municipality, including the dispatch center, water supply infrastructure, and all aspects of fire service organization and operations. LFRA was evaluated in September of 2020 and yielded the overall ratings found below:

**LFRA FPSA (Fire Protection Service Area: Public Protection Classification rating of 2** – This rating applies to all areas within five (5) road miles of an LFRA fire station and within 1,000 feet of a fire hydrant.

**LFRA FDS (Fire Department Service): PPC rating of 3/10** – This is the area to which LFRA must bring its own water supply, via water tender shuttle operations. All areas within five (5) road miles of an LFRA fire station and beyond 1,000 feet of a fire hydrant receive the “3” rating. Locations beyond five (5) road miles of an LFRA fire station are classified as a 10.

**BTCVFD FDS (Fire Department Service): PPC rating of 3/10** – This rating applies primarily to the Big Thompson Canyon which is covered by LFRA Volunteers. All locations within five (5) road miles of Fire Station 8 in Drake receive the “3” rating. Locations beyond five (5) road miles from that fire station are classified as a 10.





*(LFRA ISO Public Protection Classification Rating Feb 2021)*



## **Fire Rescue Advisory Commission**

LFRA actively and regularly seeks citizen input regarding services provided by the agency. The primary source of this input is from the Fire Rescue Advisory Commission (FRAC). FRAC is currently an fourteen (14) member advisory body containing members from both the city and rural portions of the LFRA response area. FRAC meets the first Wednesday of every month in the Fire Administration building. Members of FRAC serve as an advisory body to the Loveland Fire Rescue Authority in the implementation and revisions of the fire authority strategic plan. In addition, the commission serves as an advisory body to the Fire Chief concerning fire protection, rescue, and emergency management issues.

During the COVID pandemic, FRAC members did not meet for an extended time. When Larimer County eased restrictions for in-person meetings, several FRAC members chose to no longer serve on the commission. In November of 2021, a request for applications was made to the community. In December of 2021, interviews were held to fill the vacated positions. The commission was reorganized to be better represent the response district and began meeting regularly again in January 2022.

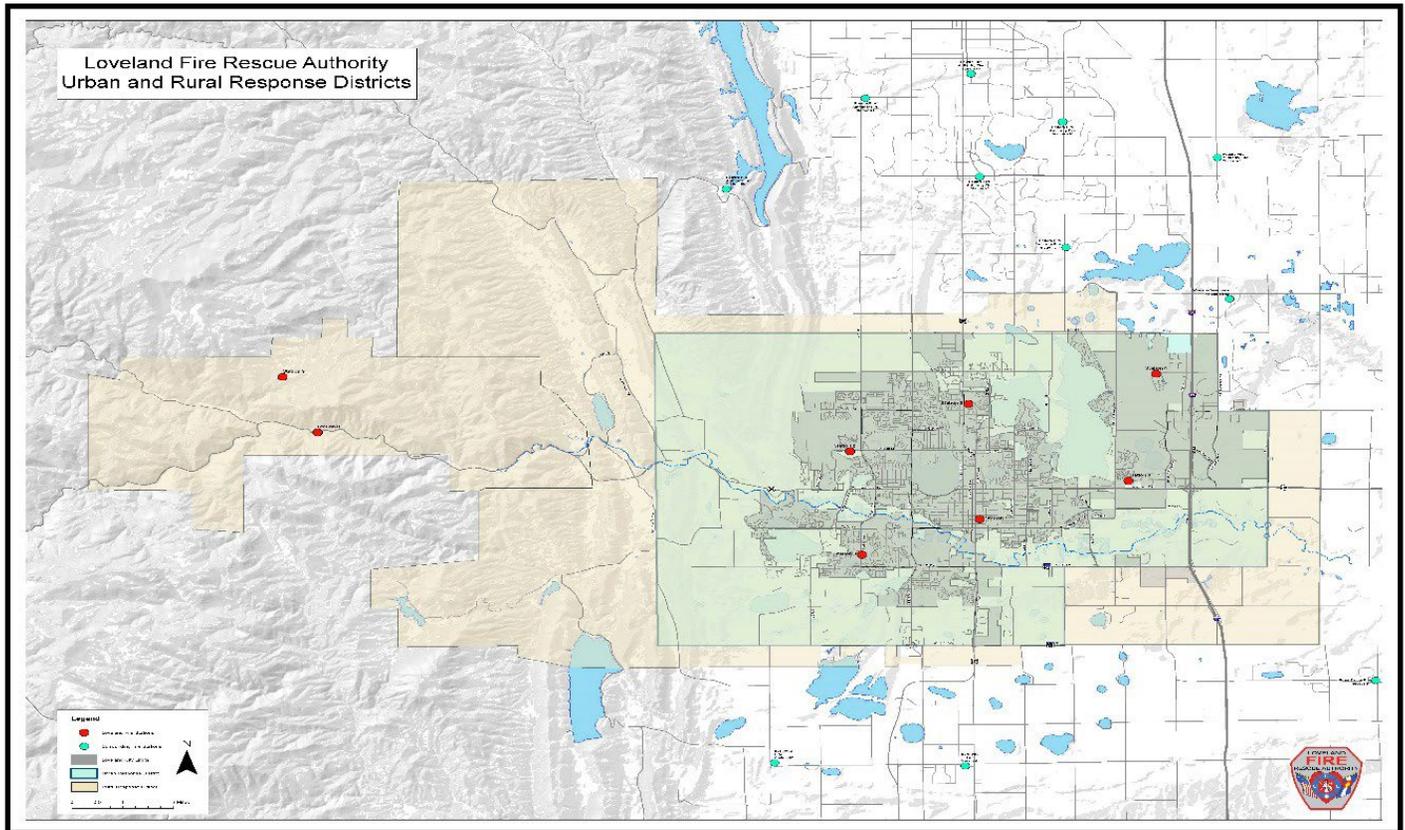
## **Community Surveys**

The City of Loveland actively seeks citizen feedback on City services and amenities, including public safety, with an annual Quality of Life Survey that is distributed to a sample of City residents. The City of Loveland Survey has not been distributed in several years and LFRA decided to send out its own external customer survey in December of 2021. The survey was crafted to gather input that can be used to make organizational decisions and shape revisions to the strategic plan. The results of that survey are still being analyzed at this time. LFRA will use the FRAC group to assist with the analysis of the information and incorporate the results into changes or revisions to the strategic plan as appropriate.

## **Performance Goals**

LFRA provides fire protection, rescue and emergency medical services to a large area that includes urban, suburban and rural environments. LFRA strives to provide uniform and consistent services regardless of where an incident may occur. However, it is unrealistic to expect to provide the same level of service relative to response time and deployment capabilities when comparing areas proximal to the urban core of Loveland versus areas in the remote western portions of the response area. To assist the agency in measuring performance in an around the densely populated city of Loveland, LFRA has established an Urban Response Area and a Rural Response Area to delineate service levels.





*(Urban and Rural Response Areas)*

## **Service Level Indicators**

With the development of the 2018 LFRA Strategic Plan, the agency established seven (7) service level indicators, **The Significant Seven**, that are used to measure and affect positive change and assist the organization in its efforts for continuous improvement. These indicators have been tracked to provide historical comparison to identify trends and explain performance-related variances. As stated previously, the customer satisfaction portion of the performance measure was not able to be tracked as the City of Loveland did not complete its annual Quality of Life survey for several years.

<b>Loveland Fire Rescue Authority</b>					
<b>Service Level Indicators</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
Total # of Calls	8,813	8,968	9,056	9,925	10,807
90th percentile 1st due response time to structure fires urban	07:33	7:26	8:05	9:09	08:07
Fires contained to room of origin	40%	22%	22%	47%	29%
Operational cost per capita	\$146.12	\$158.44	\$155.96	\$180.86	\$205.26
Fire loss per capita	\$15.34	\$12.73	\$15.80	\$19.55	\$31.56
Structure Fire Loss/Save ratio	75%	86%	79%	92%	84%
Businesses Inspected	518	437	63	336	

*(LFRA Significant Seven performance indicators)*



## **Fire Suppression**

LFRA responds to a wide variety of structure fire calls. The most common structure fires in the LFRA response area involve one and two-family residential structures. However, the agency also responds to a variety of commercial structure fires, including industrial buildings, schools, mercantile occupancies, nursing homes, hospitals, high-rise and/or multi-family residential structures. Additionally, LFRA provides fire suppression services for fires involving mobile property such as passenger vehicles, recreational vehicles, aircraft, boats, rail, and road freight transport vehicles. LFRA's fire stations are strategically distributed to provide a base of operations from which the agency's apparatus and personnel are deployed. Each Type I fire engine is equipped 750 gallons of water, a 1500 gallon per minute pump, more than 3000 feet of supply and attack hose, ground ladders, basic vehicle extrication equipment and a broad assortment of firefighting and salvage tools and equipment. The 100-foot aerial tower is equipped with 300 gallons of water, a 2000 gallon per minute fire pump, more than 2000 feet of supply and attack hose, several ground and roof ladders, two complete sets of hydraulic extrication tools, stabilization equipment and other tools and equipment for firefighting and specialized rescue operations. The heavy rescue is equipped with a large assortment of ground and roof ladders, two complete sets of hydraulic extrication tools, and a wide variety of tools and equipment to support the agency's special operations team. LFRA also operates an air/light rescue unit that is cross-staffed with the aerial tower, several reserve engines and a reserve 100-foot aerial ladder.



*(Residential Structure Fire 2018)*



## **Wildland Firefighting**

The LFRA Wildland Program provides emergency response to wildland fire incidents in the LFRA district as well as in surrounding jurisdictions and across the United States. In addition to emergency response, the program provides wildland fire safety and mitigation education to residents within the LFRA district. The program coordinates the training and equipment necessary for LFRA firefighters engaged in wildland fire response. The LFRA wildland program is funded and equipped for fighting wildland and Wildland Urban Interface (WUI) fires. Every LFRA station is equipped with a wildland firefighting apparatus in the form of a Type 3, 4, or 6 engine or a water tender. Each of those apparatus as well as the type 1 engines in the district are equipped with wildland firefighting tools, PPE, hose and appliances.



*(Wildland Fire 2020)*



## Emergency Medical Services

LFRA is a non-transporting agency and provides basic life support (BLS), first response medical care. All response personnel are required to maintain certification as an Emergency Medical Technician – Basic, through the Colorado Division of Public Health and Environment (CDPHE). All apparatus is outfitted with BLS equipment including automated external defibrillators (AEDs), resuscitation devices and trauma supplies. Advanced life support (ALS) and patient transport is provided by Thompson Valley EMS (TVEMS). The goal of the EMS program is to provide the highest level of patient care to the citizens served. Consequently, the program aims to continuously improve the level of training provided to agency personnel and to strengthen the relationship with TVEMS. To that end, LFRA and TVEMS annually participate in combined Cardiac Arrest Scenario based training. These trainings are scheduled during the month of December and have happened for approximately the last 15 years.



*(Thompson Valley EMS)*



## **Technical Rescue**

LFRA provides specialty-trained personnel for technical rescue in confined space, trench rescue, swift water, dive rescue, high and low angle rope rescue, large animal rescue, and collapse rescue. LFRA responds to these technical incidents within the LFRA response area as well as in our auto-aid response area. LFRA also has five (5) personnel attached to Colorado Task Force 1(CO-TF1) for national response.



*(Big Thompson Flood 2013)*

## **Tactical Fire**

The LFRA Tactical Fire team (TacFire) was formed in 2007 when it was identified that the agency needed to improve equipment, training and support for the Loveland Police Department's (LPD) Special Weapons and Tactics (SWAT) team. TacFire began with LFRA providing support to LPD SWAT for forcible entry, high angle access, hazardous materials response and mitigation, fire control, and rescue of injured persons during SWAT operations. The mission of TacFire has evolved to provide highly trained personnel to support SWAT operations in a hostile hazard zone.

TacFire personnel participate in approximately 60 hours of annual training, including four (4) 10-hour training days and 20 hours of specialized training. The increasing need for a unified response between Law Enforcement, EMS and Fire, continues to demonstrate the need for this unique form of response in our society today.



*(TacFire Training Exercise)*



## **Aircraft Rescue Firefighting (ARFF)**

LFRA provides aircraft rescue firefighting for the Northern Colorado Regional Airport (FNL). The airport is in the northeastern portion of the LFRA response area, adjacent to Interstate 25, and is the location of LFRA Fire Station 4. Station 4 staffing is covered solely by LFRA ARFF personnel. A 40-hour ARFF engineer is assigned to the airport, coordinating ARFF standbys, training, FAA annual inspections, and certification management. When the 40-hour ARFF engineer is unavailable, off or on-duty ARFF personnel will cover FAA required standbys. The primary aircraft at the airport is general aviation (GA); however, it services corporate jets, commercial airlines, and military aircraft. The airport supports GA (3) and helicopter (1) flight schools. In addition, the Department of Fire Prevention and Control deploys its Single Engine Air Tanker (SEAT) for wildfire incidents. FNL is the only airport in the United States selected, in 2013, to operate and test a remote tower system. The Colorado remote tower is operational and in phase I. The airport is scheduled to build a new terminal by 2024, enhancing safety and security and potentially adding more commercial carriers. Residential and commercial development around FNL has steadily increased and is predicted to continue. LFRA is primarily responsible for responding to accidents or incidents occurring on airport property.



*(ARFF Live Fire Drills)*



## **Community Safety Division**

The purpose of the LFRA Community Safety Division (CSD) is to ensure new and existing buildings are constructed and maintained to meet life-safety codes and standards, and to reduce risk in the community through proactive code adoption and enforcement and post incident fire investigations. The division reviews all development projects and completes final inspections and acceptance testing for compliance with the most currently adopted fire code. CSD hired two additional Fire Inspectors in 2022 (first quarter and third quarter) to assist with annual fire safety inspections, new- construction inspections and plan reviews. Staff is developing a team process to keep fire investigations from becoming a personnel gap. A Community Education & Engagement Specialist was hired in January to support the Community Outreach Program.



*(Recruit Academy tour of new construction)*



## **Resource Deployment**

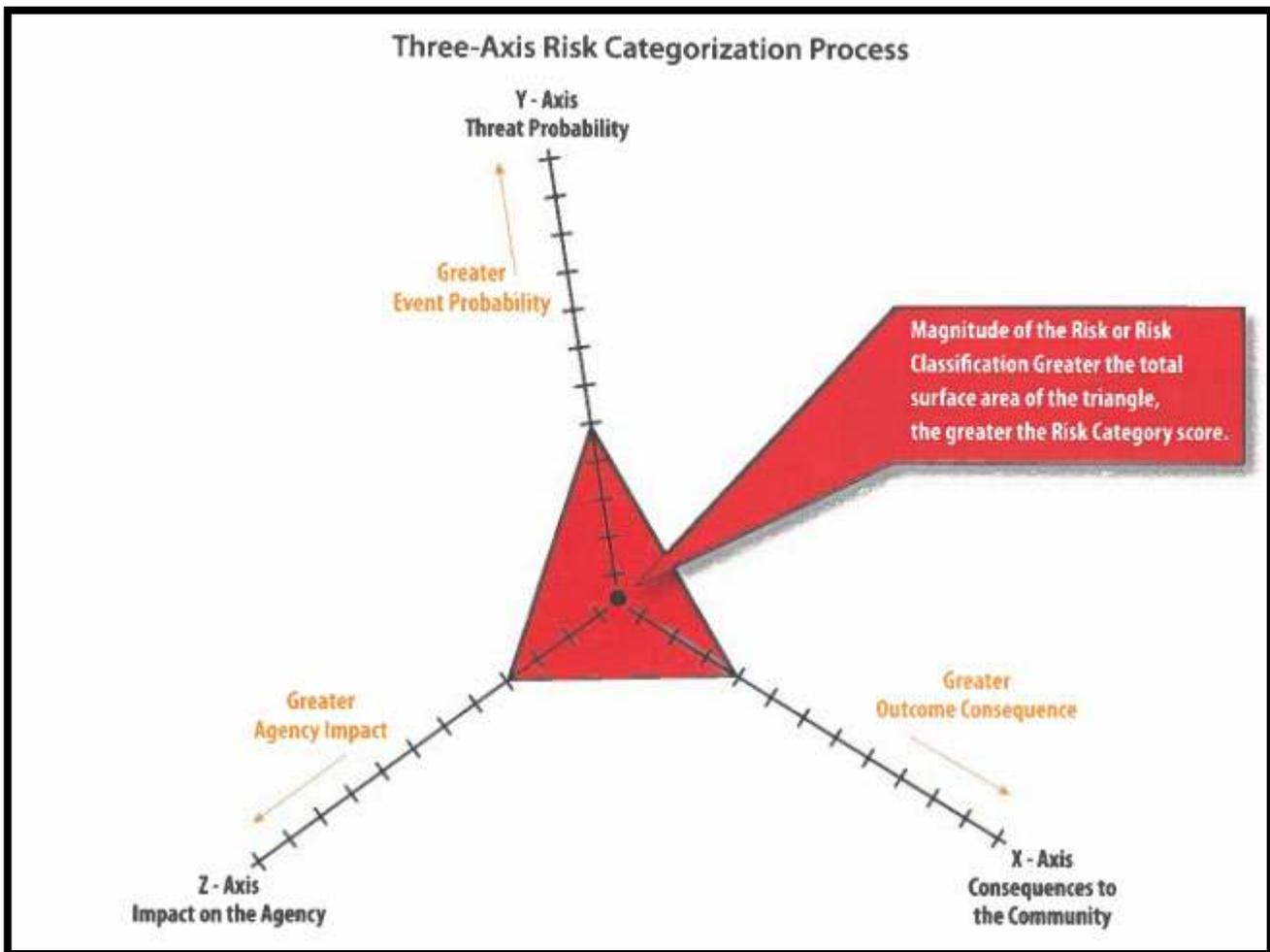
LFRA's Operations Division maintains 32 on-duty personnel 24 hours per day, 7 days per week, operating out of seven (7) staffed fire stations, the airport fire station and two (2) volunteer stations. LFRA apparatus are staffed with a minimum of three (3) personnel (Officer, Engineer and Firefighter), and the quick response vehicle is staffed with a minimum of two (2) personnel (Officer, and Firefighter). Front-line apparatus includes six (6) engine companies, one (1) truck company, one (1) heavy rescue, one (1) quick response vehicle and one (1) Battalion Chief.

<b>FIRE STATION 1</b>	<b>FIRE STATION 2</b>	<b>FIRE STATION 3</b>
Engine 41 (first due engine) Battalion 41 (On duty BC) Engine 52 (reserve engine) Engine 416 (Type 6 engine) Ladder 52 (Reserve aerial ladder) Battalion 42 (Backup On-call BC)	Engine 42 (first due engine) Rescue 42 (first due truck) Engine 426 (Type 6 engine)  Dive Rescue 42  Rescue Boat on Trailer	Engine 43 (first due engine) Engine 433 (Type 3 engine) Engine 53 (Reserve engine)  Tender 43 (Water Tender)
<b>FIRE STATION 4</b>	<b>FIRE STATION 5</b>	<b>FIRE STATION 6</b>
ARFF 44 (first due ARFF)  ARFF 53 ARFF 54	Engine 45 (first due engine)  Tender 45 (Water Tender)	Squad 46 (quick response vehicle) TWR 46 (Aerial Tower)  Rescue 46 (Light rescue)
<b>FIRE STATION 7</b>	<b>FIRE STATION 8</b>	<b>FIRE STATION 9</b>
Engine 47 (first due engine) Engine 474 (Type 4 engine) Engine 476 (Type 6 engine) UTV 47 (UTV on a trailer)	Engine 48 (first due engine) Water Tender 48 Engine 486 (Type 6)	Engine 49 (first due engine) Engine 494 (Type 4) Engine 496 (Type 6) UTV 49
<b>FIRE STATION 10</b>	<b>LFRA TRAINING CENTER</b>	
Engine 50 (first due engine) Engine 506 (Type 6 engine) Hazmat 50 (HazMat Truck) Decon 50 (Decon Trailer)	Engine 51 (reserve Engine) Collapse/Trench Rescue Trailer Training UTV on Trailer Telehandler w/ trailer	



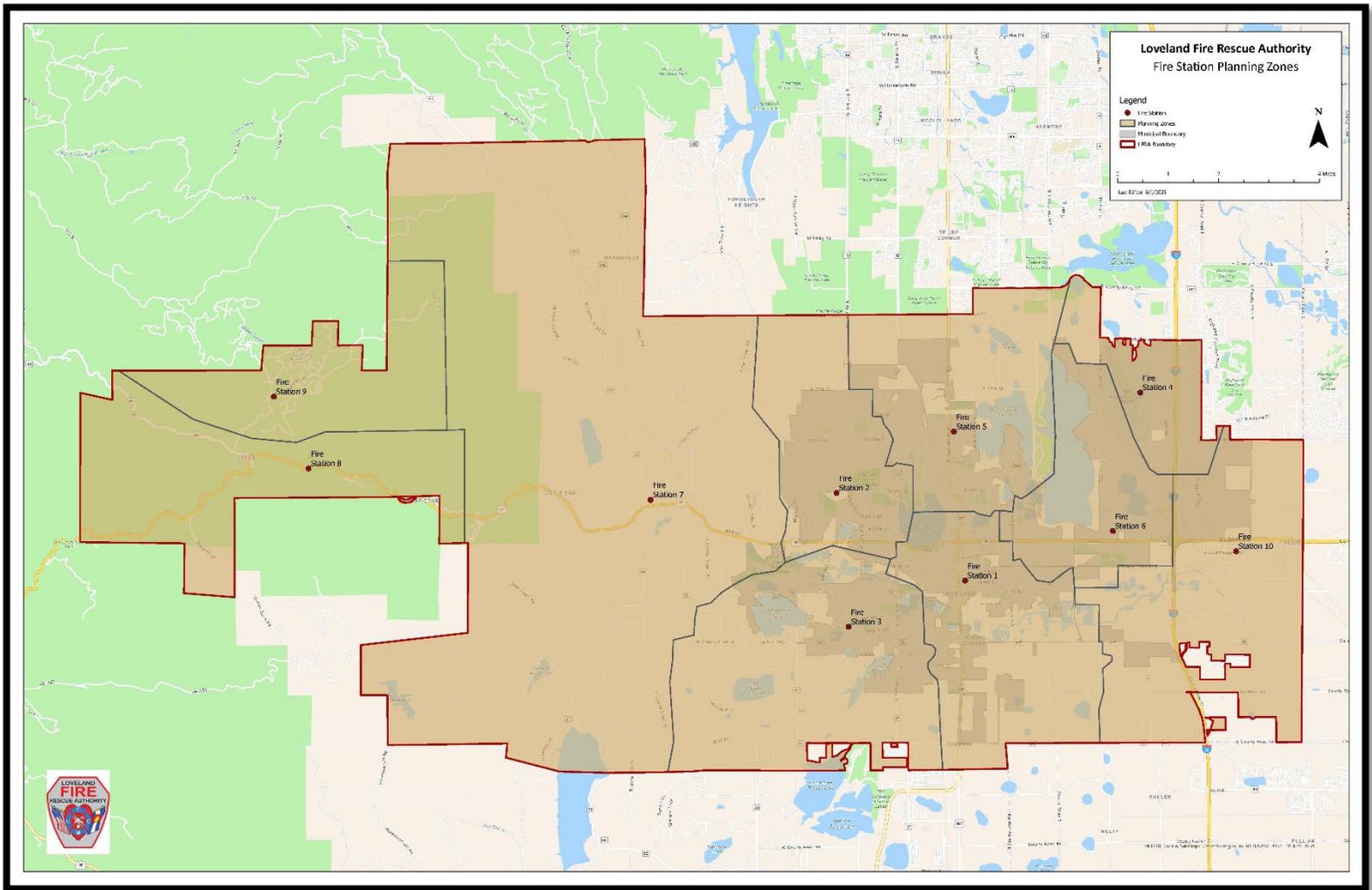
# Chapter 3 – Community Risk Assessment

LFRA uses a three-axis risk assessment methodology based on probability, consequence to the community and impact to the organization. The three-axis methodology allows LFRA to deploy a defined response specific to the potential risk considering how frequently or probable the incident occurs or will occur combined with the potential impact to the community and the organizational resources. This methodology has been applied for each of the following Classes of Risk: Fire (structural & other fires), Grass/Wildland Fires, Emergency Medical Services (EMS), Rescue (Technical/Extrication), Hazardous Materials, and Aviation Rescue Firefighting (ARFF). LFRA has defined a specific effective response force to respond to and mitigate each of these identified risks within our response area.



## Fire Station Planning Zones

Each LFRA fire station is geographically located to provide first-due coverage to a designated portion of the overall response area. Given the dynamic nature of the modern fire service, LFRA uses an automated vehicle locator (AVL) system to help the Loveland Emergency Communications Center (LECC) send the closest apparatus, regardless of where the incident occurs. However, LFRA continues to use fire station planning areas to assist with assessing first-due coverage and analyzing apparatus response performance, population density as it relates to total response standards, and specific risks inherent to each planning zone.



*(LFRA Planning Zones)*



## **Fire Station 1 Planning Zone Description**

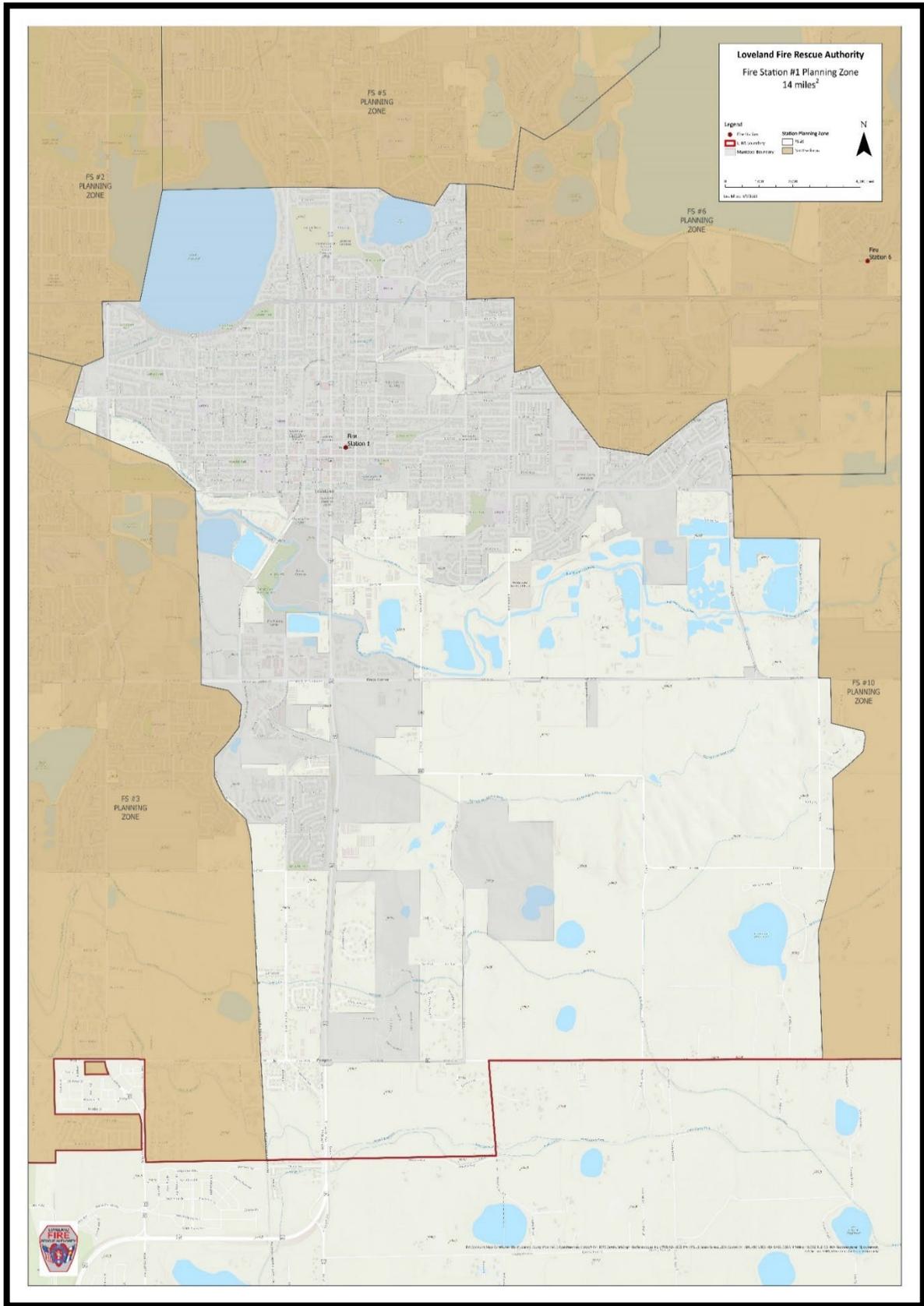
Fire Station 1 is located at **410 E 5th St, Loveland, CO 80537**, and is attached to the west end of the Fire Administration Building (FAB). The FAB is on the second floor while the first floor is used by the City of Loveland Building and Planning Divisions. Engine 41 operates out of Fire Station 1. The station also houses Battalion 41 as well as several secondary, reserve and support apparatus.

<b>APPARATUS ASSIGNED TO STATION 1</b>			
<b>Designation</b>	<b>Apparatus Type</b>	<b>Service #</b>	<b>Year</b>
Engine 41	First-due Engine Company	0303	2020
Battalion 41	First-due Chief Officer	0104	2017
Ladder 52	Reserve Aerial Apparatus	0202	2000
Engine 416	Crossed staffed Type 6	0211	2019
Engine 52	Reserve Engine	0112	2010
Battalion 42	On call Battalion Chief	0101	2013
Air 41	Bauer Compressor Trailer	0605	2019



*(LFRA Engine 41)*





*(Station 1 Planning Zone)*





*(LFRA Station 1)*

## **Station 1 Overview of Risk and Target Hazards**

### **Overview of Risk:**

The response area protected by Fire Station 1 is approximately 14 square miles and includes the oldest area of downtown as well as a very densely populated areas of the city. Some of the older buildings along 4th Street are non-sprinkled and feature interconnected basements from the early years of City development. A long-term urban renewal project has begun in the downtown area, spearheaded by the City of Loveland Downtown Development Authority.

### **Social Vulnerabilities:**

Station 1's planning area population has been assessed and identified the following vulnerabilities:

- Employment and Job Access – areas within this planning zone are at 3% unemployed
- Poverty and Affordability - The median Household income is \$82,543.00
- Disabilities – people living with disabilities between 14 %
- Language Isolation – households with limited English spoken 6 %

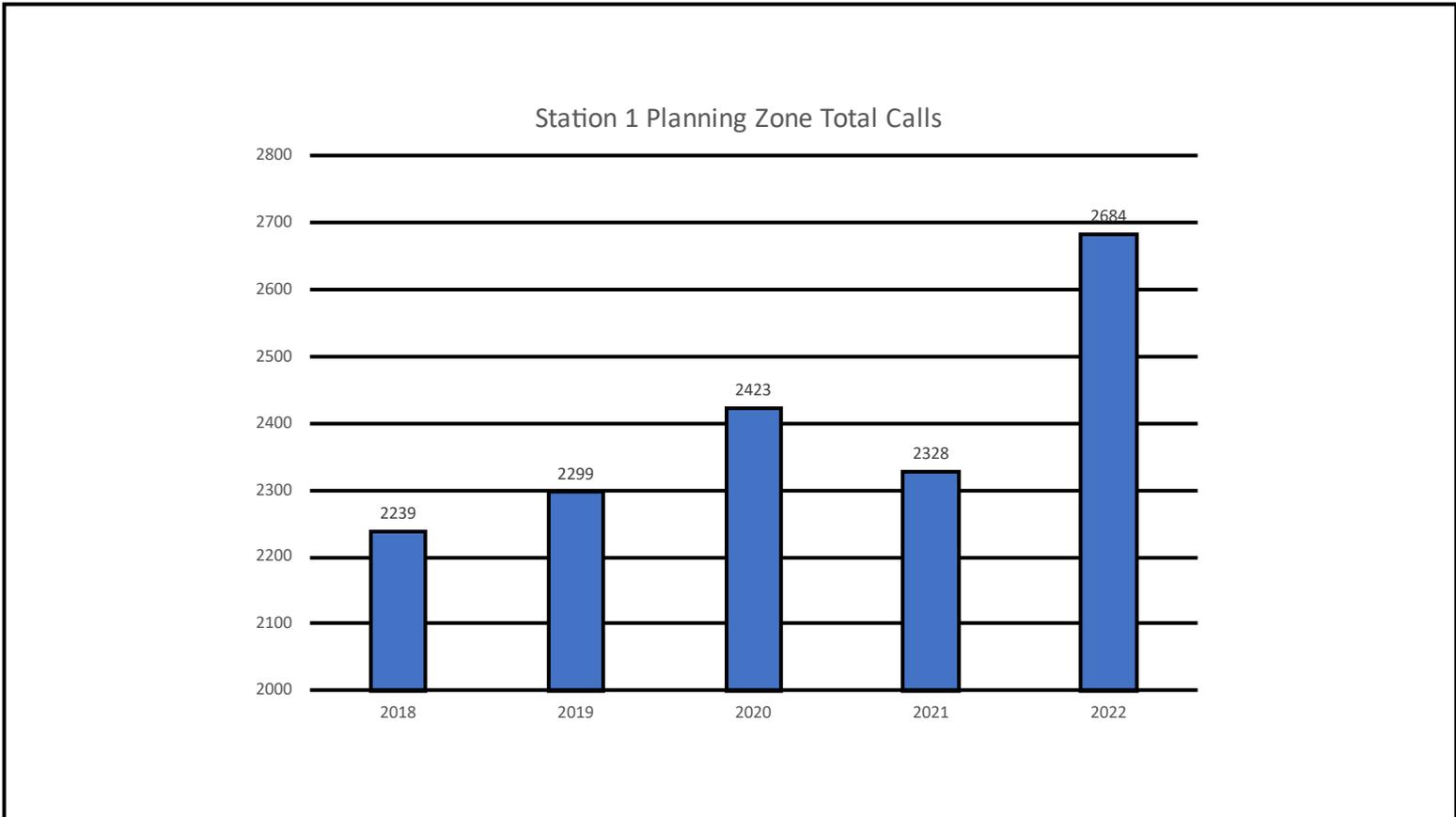


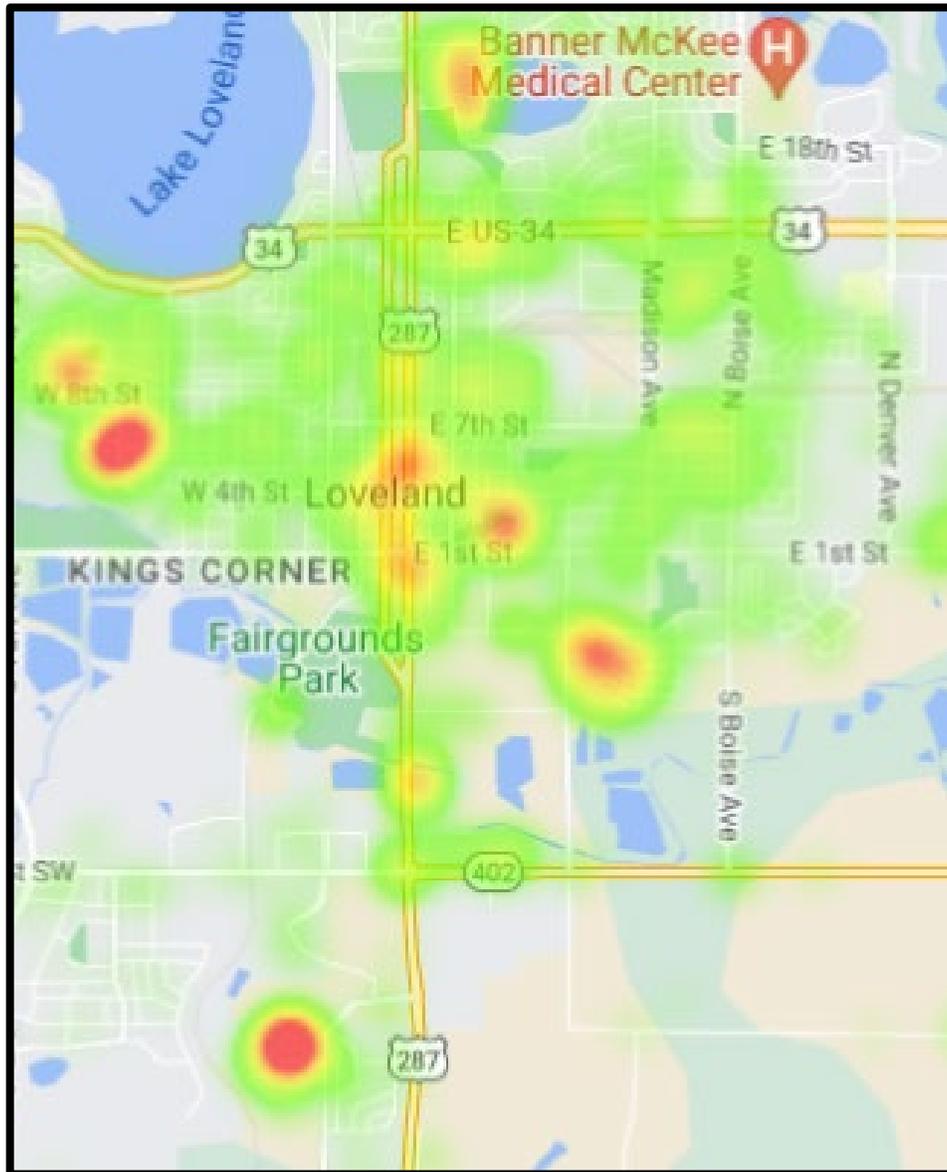
- Low Education Attainment – age 25 and over w/o a High School Diploma/GED 2.2%

**Operational Vulnerabilities:**

Station 1 remains the busiest station in the response district despite being a single company station. The concept of “reliability” (the number of times a planning zone has concurrent calls) needs to be evaluated more closely. A unique risk identified around station 1 is the number of people experiencing homelessness. The City estimates approximately 125 to 150 additional people are in the downtown area that are without homes. Engine 41 crews routinely respond to illegal campfires and medical calls within a growing number of “homeless camps”.

**Baseline Data**





*(Heat map of incidents in station 1 planning zone 2018-2022)*



**Target Hazards in the Station 1 Planning Zone:**

<b>REASON</b>	<b>OVAP SCORE</b>	<b>DISTRICT</b>
Assisted Living	x 36.3	1
Assisted Living	x 34.83	1
Assisted Living	Master Tennant	1
Assisted Living	x 34.83	1
Assisted Living	x 33.6	1
Assisted Living	x 36.13	1
Assisted Living	x 30.43	1
Assisted Living	x 30.43	1
HazMat	Master Tennant	1
HazMat	x 33.47	1
HazMat	17.2	1
HazMat	x 30.43	1
HazMat	x 28.4	1
High Occ Load	x 35.2	1
High Occ Load	x 42.4	1
High Occ Load	x 32.27	1
High Occ Load	x 38.8	1
High Occ Load	x 40	1
High Occ Load	x 31.98	1
Infrastructure	x 37.64	1
Infrastructure	x 30.64	1
Infrastructure	Master Tenant	1
Infrastructure	x 36.56	1
School	33	1
School	Master Tennant	1
School	37	1
School	31	1
School	28	1
School	31	1
School	28	1
School	Master Tennant	1
School	31	1
School	29.87	1



## **Fire Station 2 Planning Zone Description**

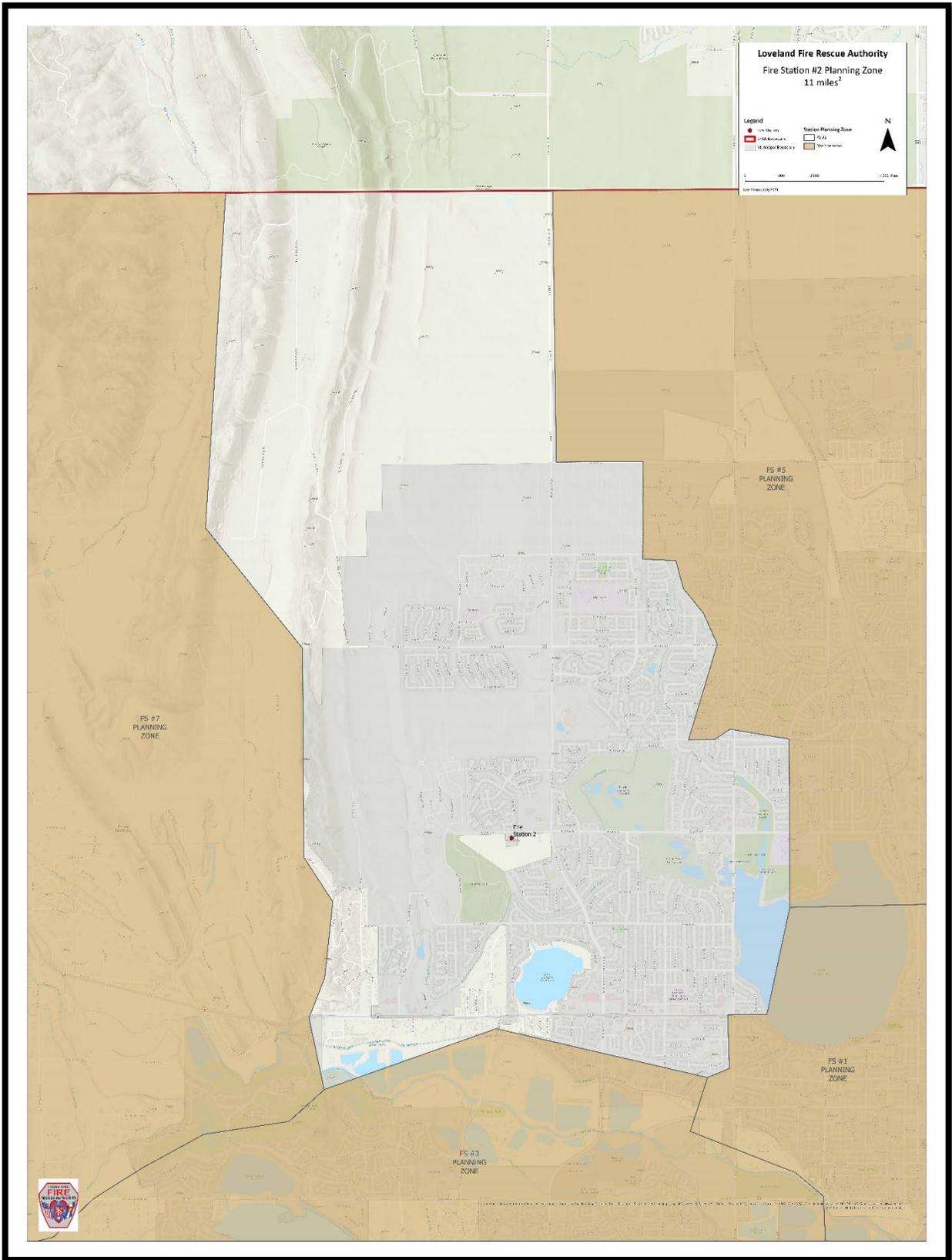
Fire Station 2, located at **3070 W 29th St, Loveland, CO 80538** (originally at 2750 N Taft Ave), was identified during the 2012 strategic planning process to be in a poor location that allowed for excessive overlap of response areas with other fire stations. As a result, a new Fire Station 2 was constructed in 2014. Fire Station 2 runs as a double company station, housing both Engine 42 and Rescue 42. The station contains the majority of LFRA's special operations apparatus and equipment.

<b>APPARATUS ASSIGNED TO STATION 2</b>			
<b>Designation</b>	<b>Apparatus Type</b>	<b>Service #</b>	<b>Year</b>
Engine 42	First-due Engine Company	0301	2017
Rescue 42	First-due Truck Company	0850	2013
Engine 426	Cross staffed Type 6	0212	2019
Water Rescue 42	Cross-staffed Water Rescue	0312	2005
Boat 42 Trailer	Water Rescue Boat Trailer	0617	2012



*(Engine 42 & Rescue 42)*





*(Station 2 Planning Zone)*





*(LFRA Station 2)*

### **Overview of Risk:**

The response area protected by Fire Station 2 is approximately 11 square miles and is extremely diverse, ranging from remote wilderness in the western mountains to moderate density suburban neighborhoods around Lake Loveland. Risks within the response area include not only the wildland-urban interface, but also US Highway 34, the Big Thompson River, Lake Loveland, and several remote wilderness areas. The northwest portion of LFRA's coverage area is experiencing rapid population growth and corresponding residential construction, as the cities of Loveland and Fort Collins continue to grow closer together.

### **Social Vulnerabilities:**

Station 2's planning area population has been assessed and identified the following vulnerabilities:

- Employment and Job Access – areas within this planning zone are 2% unemployed

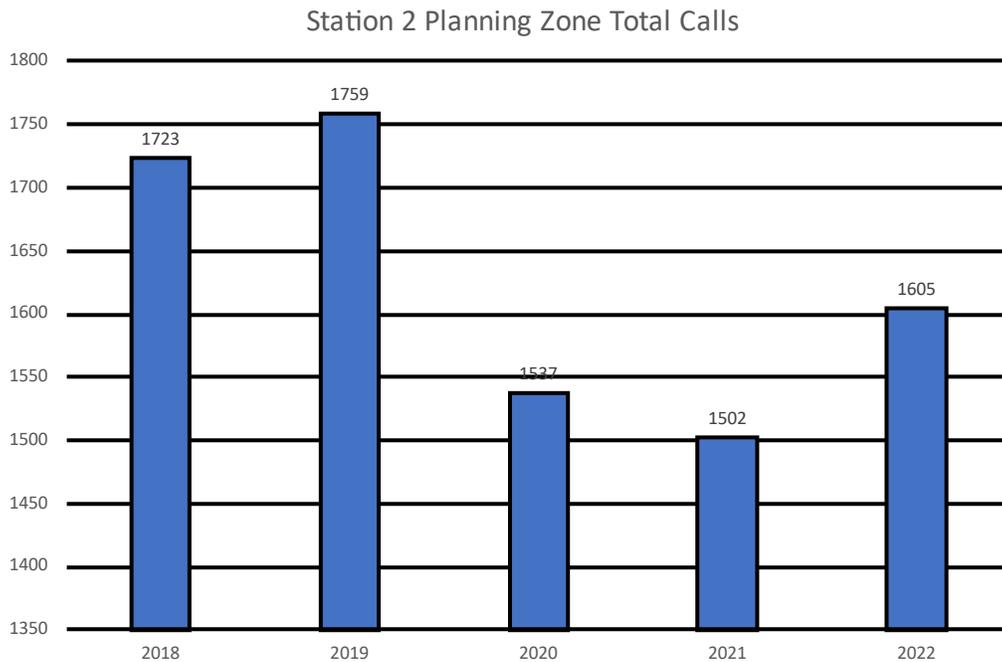


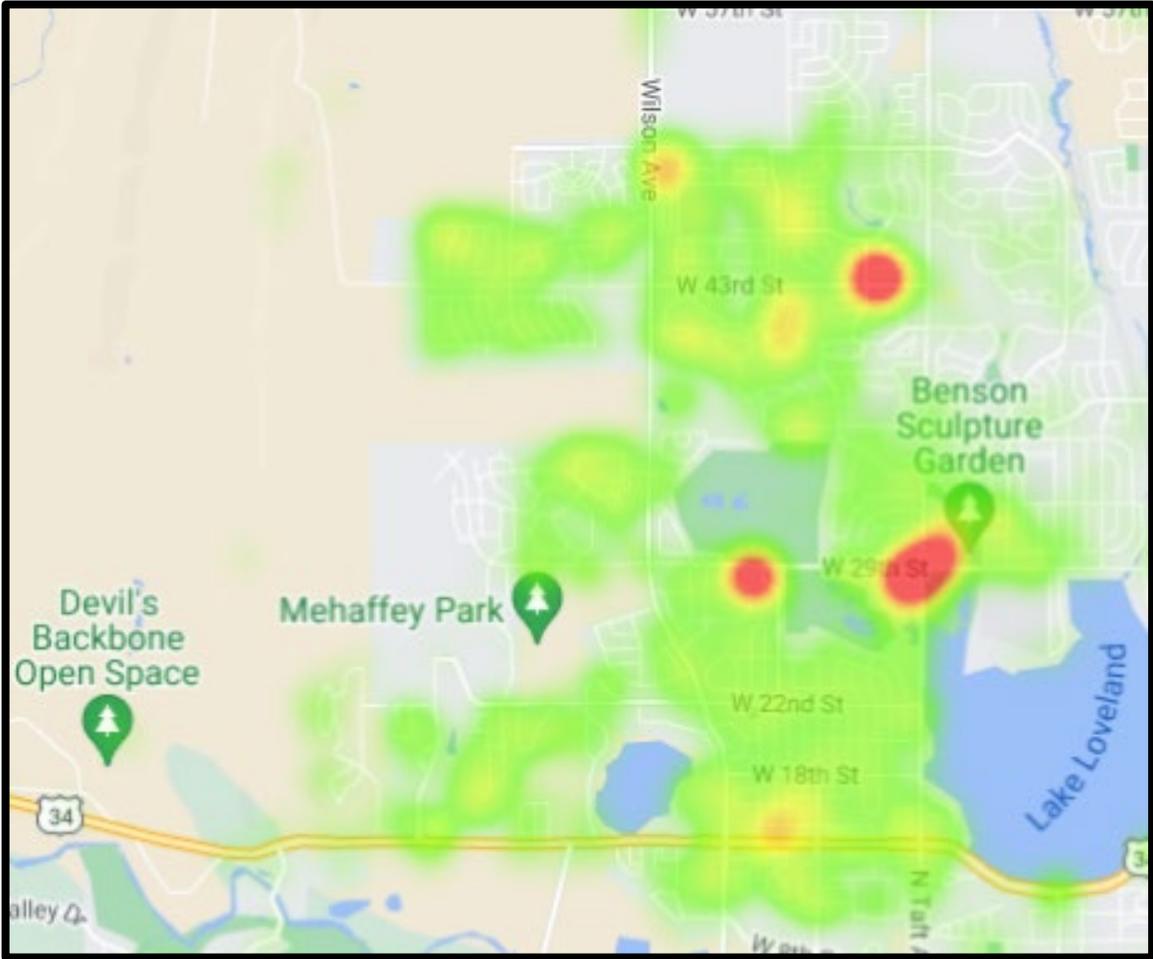
- Poverty and Affordability - The median Household income is \$82,232
- Disabilities – people living with disabilities between 13%
- Language Isolation – households with limited English spoken 7%
- Low Education Attainment – age 25 and over w/o a High School Diploma/GED 1.4%

**Operational Vulnerabilities:**

With the addition of Station 7, the call volume for Station 2 has dropped slightly. As Station 2 is a double company house with Engine 42 and the Rescue 42, it has a higher reliability than Station 1. Station 2 houses all the special operations equipment for technical rescue, including the Dive Truck & Boats. Station 10 in September of 2022 and the Hazmat Truck was relocated to Station 10 to make it closer to interstate 25 which has a higher risk of hazmat related incident.

**Baseline Data:**





(Heat map of Station 2 incidents 2018-2022)

**Target Hazards in the Station 2 Planning Zone:**

<b>REASON</b>	<b>OVAP SCORE</b>	<b>DISTRICT</b>
Assisted Living	x 34.4	2
Assisted Living	x 30.8	2
Assisted Living	x 33.73	2
Assisted Living	x 38.53	2
Assisted Living	x 40	2
Assisted Living	x 31.98	2
HazMat	x 25.67	2
High Occ Load	Master Tennant	2
Infrastructure	x 30.64	2
Institutional	x 25.67	2
School	30	2
School	31	2
School	32.04	2
School	31	2
School	32	2



### **Fire Station 3 Planning Zone Description**

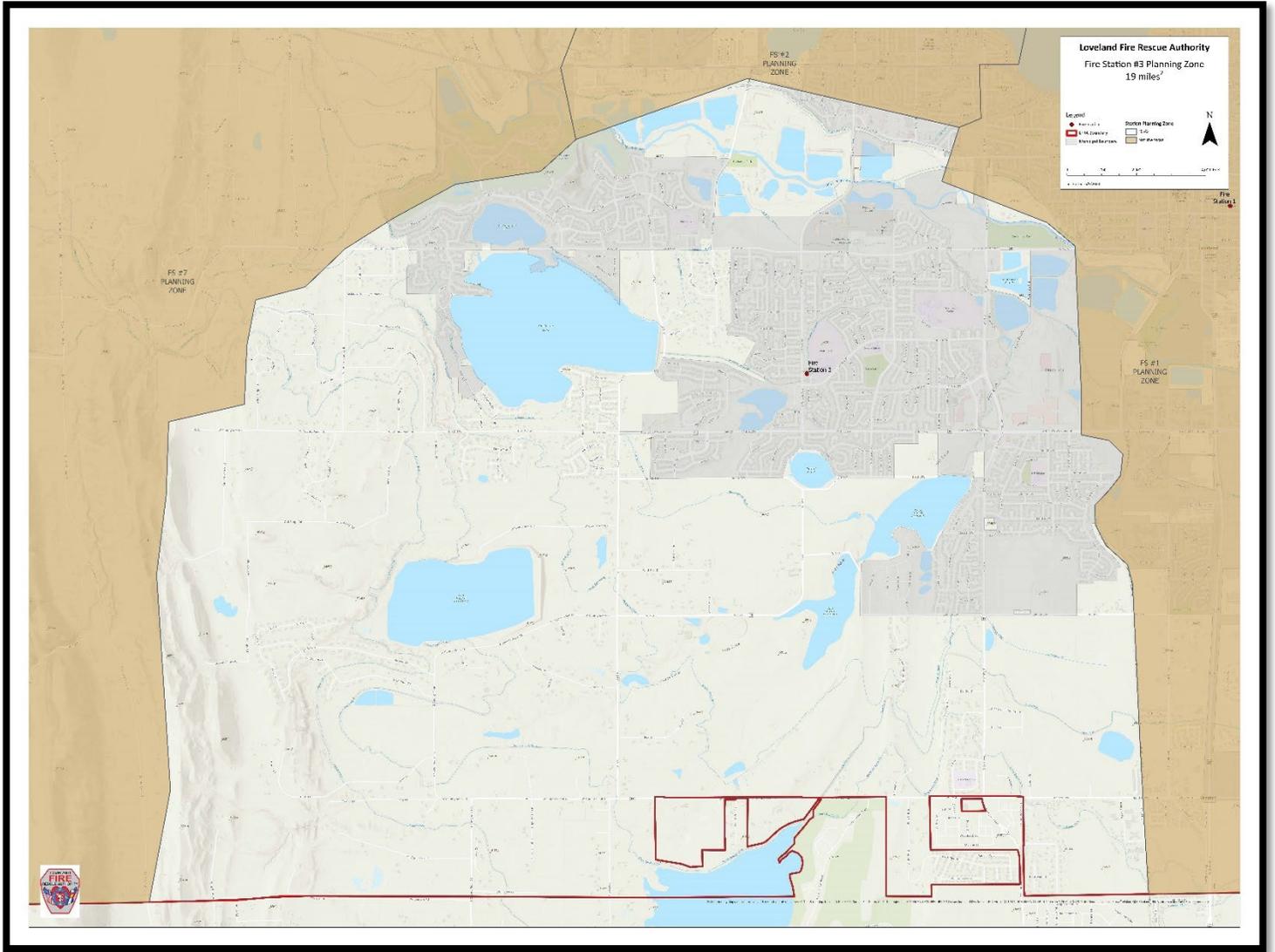
Fire Station 3, located at **900 S Wilson Ave, Loveland, CO 80537**, is the oldest of Loveland's fire stations, having been originally constructed in 1979. Engine 43's station planning area was roughly 65 square miles until Station 7 was constructed in 2020. It now has a response area of approximately 19 square miles. Much of this planning area is now residential with some wildland-urban interface zones south of US Highway 34. Station 3 houses Engine 43, Tender 43 and Engine 433 used for wildland fire response. Station 3 is scheduled to be relocated approximately ½ mile to the west in 2023.

<b>APPARATUS ASSIGNED TO STATION 3</b>			
<b>Designation</b>	<b>Apparatus Type</b>	<b>Service #</b>	<b>Year</b>
Engine 43	First-due Engine Company	0300	2016
Engine 433	Cross-staffed Wildland Engine	0500	2017
Tender 43	Water Tender	0402	2017
Engine 53	Reserve Engine	0111	2008



*(LFRA Engine 43)*





*(Station 3 Planning Zone)*





*(LFRA Fire Station 3)*

### **Overview of Risk:**

The response area protected by Fire Station 3 is similar to that of Station 2, including moderate density suburban neighborhoods. Risks within the response area include the wildland-urban interface, and several bodies of water including Boedecker Lake and Lon Hagler Reservoir. The Forge, located on the former Agilent Technology campus, is a developing industrial facility of more than 800,000 square feet.

### **Social Vulnerabilities:**

Station 3's planning area population has been assessed and found the following vulnerabilities:

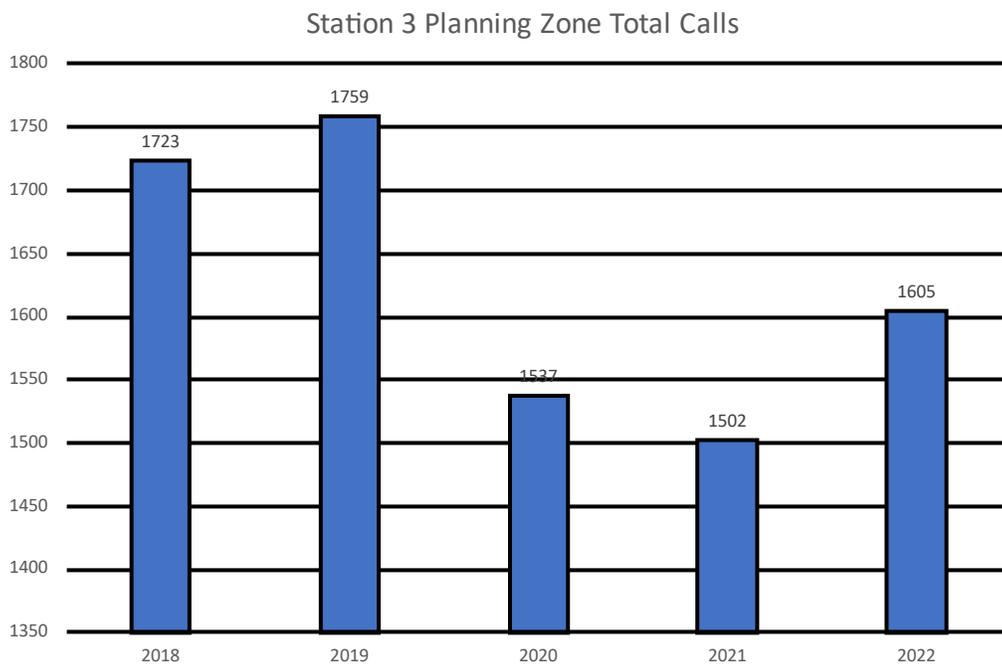
- Employment and Job Access – areas within this planning zone are between 3% unemployed
- Poverty and Affordability – The median Household income is \$79,026
- Disabilities – people living with disabilities between 12%
- Language Isolation – households with limited English spoken 5%
- Low Education Attainment – age 25 and over w/o a High School Diploma/GED 2.5%

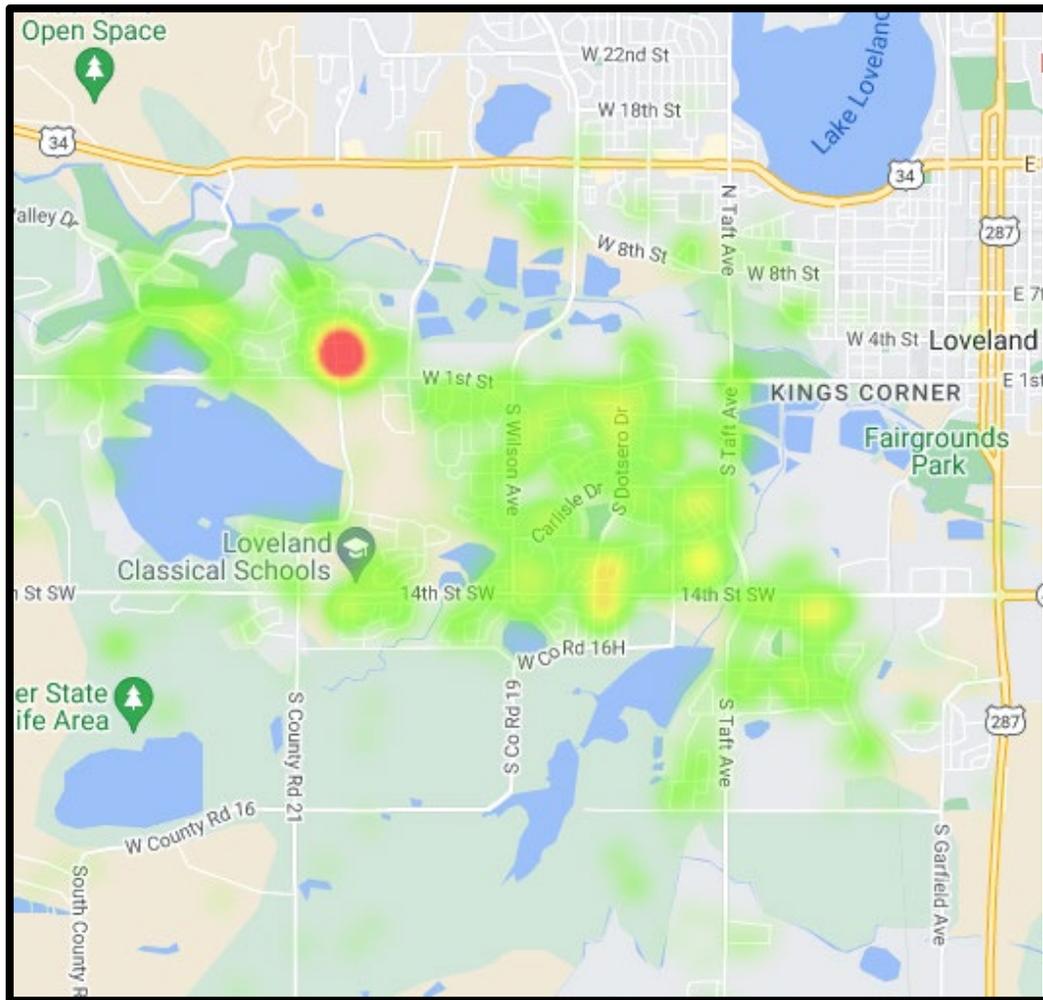


**Operational Vulnerabilities:**

Station 3’s call volume was not affected as much as Station 2’s with the addition of Station 7. Station 3 is a unique station in that the crew assigned has several “jump rigs” including a type 3 wildland engine and a water tender. Companies that have jump rigs for a specialized response take longer to “turn out” as they need to get all their personal protective equipment moved over to the jump rig. This has been addressed in the current standards of cover for this accreditation cycle.

**Baseline Response Data:**





(Heat map of Station 3 incidents 2018-2022)

**Target Hazards in the Station 3 Planning Zone:**

<b>REASON</b>	<b>OVAP SCORE</b>	<b>DISTRICT</b>
Assisted Living	x 29.6	3
HazMat	x 23.47	3
HazMat	24	3
Infrastructure	x 22.98	3
Infrastructure	x 26.27	3
Infrastructure	x 28.67	3
School	30	3
School	29	3
School	30	3
School	28	3
School	33	3
School	31	3
School	29	3
School	30	3



## **Fire Station 4**

Fire Station 4, located at **4900 Earhart Rd, Loveland, CO 80538**, was constructed in 1995 and provided aircraft rescue firefighting (ARFF) coverage with a staffed engine company until 2012, when the engine crew was reassigned to Fire Station 6. Fire Station 4 contains LFRA's ARFF apparatus, FNL airport operations personnel, and their associated apparatus. Station 4 is approximately 5 square miles.

<b>APPARATUS ASSIGNED TO STATION 4</b>			
<b>Designation</b>	<b>Apparatus Type</b>	<b>Service #</b>	<b>Year</b>
ARFF 44 (First Due)	ARFF apparatus	0904	2015
ARFF 53 (Reserve)	ARFF apparatus	0903	1993
ARFF 54 (Reserve)	ARFF apparatus	0902	1996



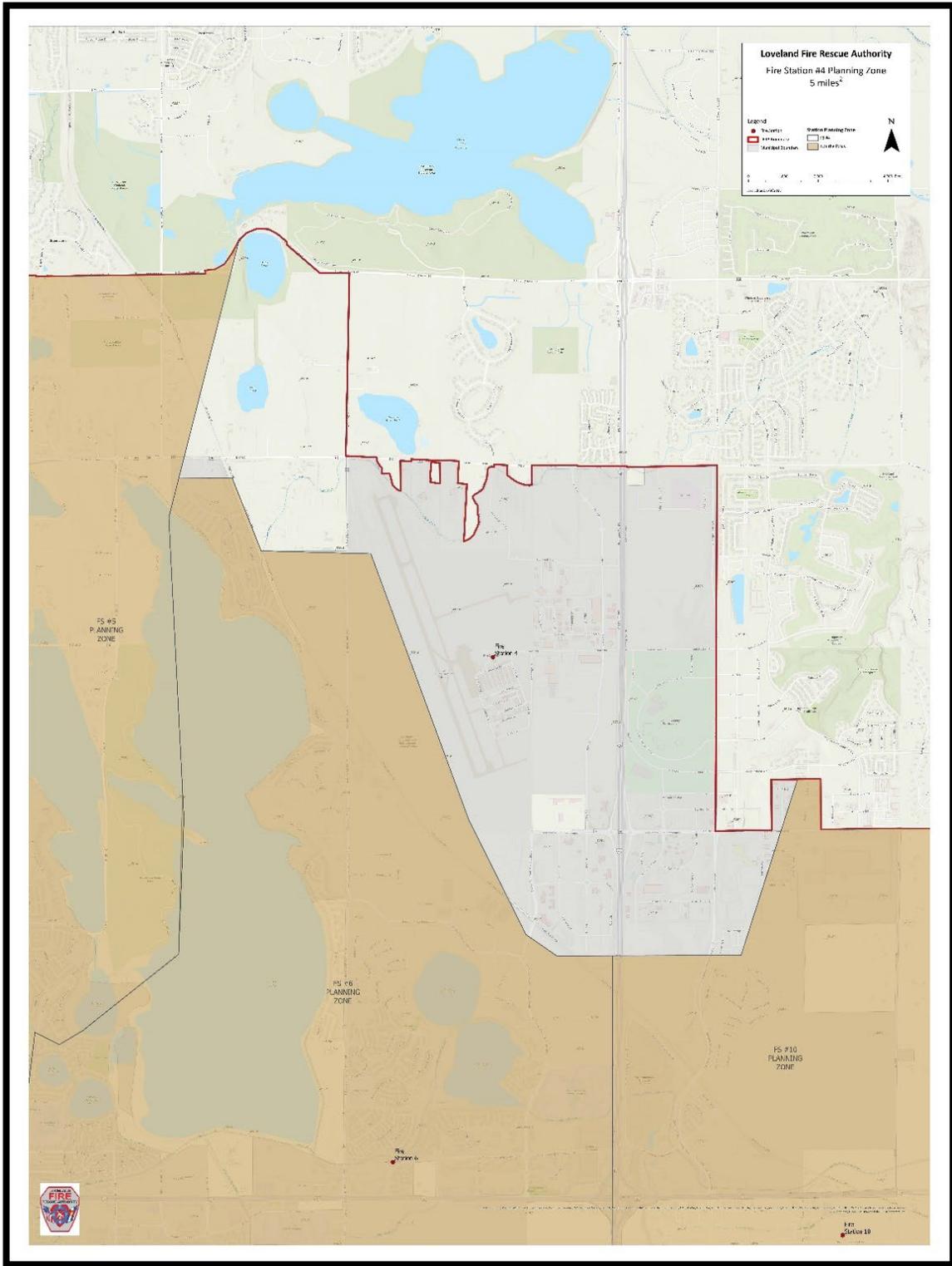
*(LFRA ARFF 44)*





*(LFRA Station 4)*





*(Station 4 Planning Zone)*



## **Fire Station 5 Planning Zone Description**

Fire Station 5, located at **251 Knobcone Dr, Loveland, CO 80538**, was built in 1998 to improve the agency's ability to provide service to the northern portions of the response area. The Station 5 planning zone is approximately 14 square miles. There has been a steady amount of new construction in the Station 5 planning zone as Loveland and Ft. Collins continue to grow closer together. With the closest unit dispatch in place with Poudre Fire Authority (PFA), both agencies travel into each other's district for coverage regularly. The station houses Engine 45 and Water Tender 45.

<b>APPARATUS ASSIGNED TO STATION 5</b>			
<b>Designation</b>	<b>Apparatus Type</b>	<b>Service #</b>	<b>Year</b>
Engine 45	First-due Engine Company	0301	2020
Water Tender 45	Cross-staffed Water Tender	0401	2017



*(LFRA Engine 45)*







*(LFRA Station 5)*

### **Overview of Risk:**

The response area protected by Fire Station 5 consists primarily of suburban residential neighborhoods and smaller mercantile occupancies; however, there are also several moderate sized industrial operations. Residential growth has been steadily increasing in this region. The greatest risk within this response area is US Highway 287 that connects the City of Loveland with the City of Fort Collins. Another significant risk is Boyd Lake State Park, which is the fourth busiest state park in Colorado, hosting 579,000 visitors annually.

### **Social Vulnerabilities:**

Station 5's planning area population has been assessed and found the following vulnerabilities:

- Employment and Job Access – areas within this planning zone are between 4% unemployed
- Poverty and Affordability – The median Household income is \$85,307
- Disabilities – people living with disabilities between 12%
- Language Isolation – households with limited English spoken 8%

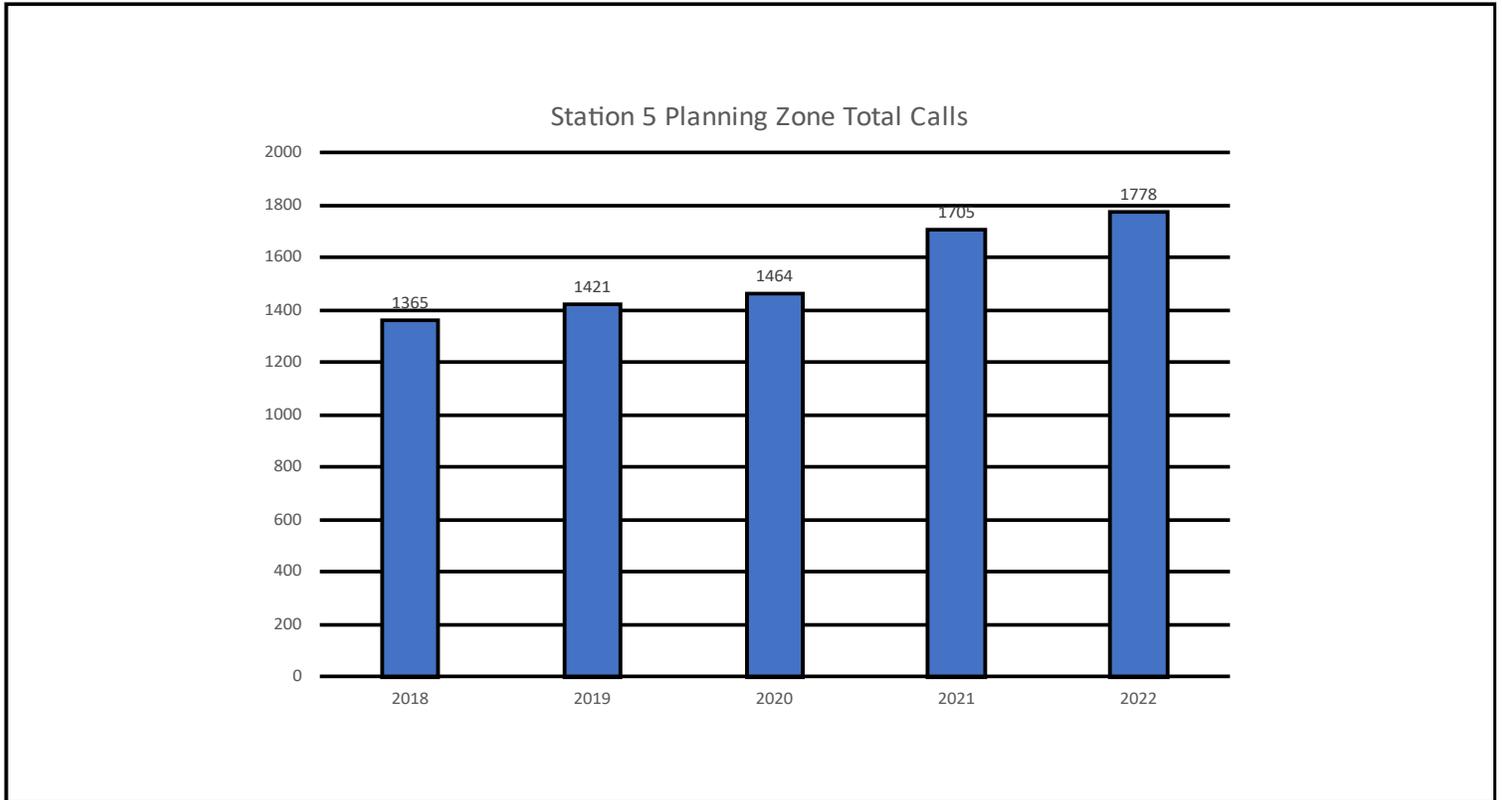


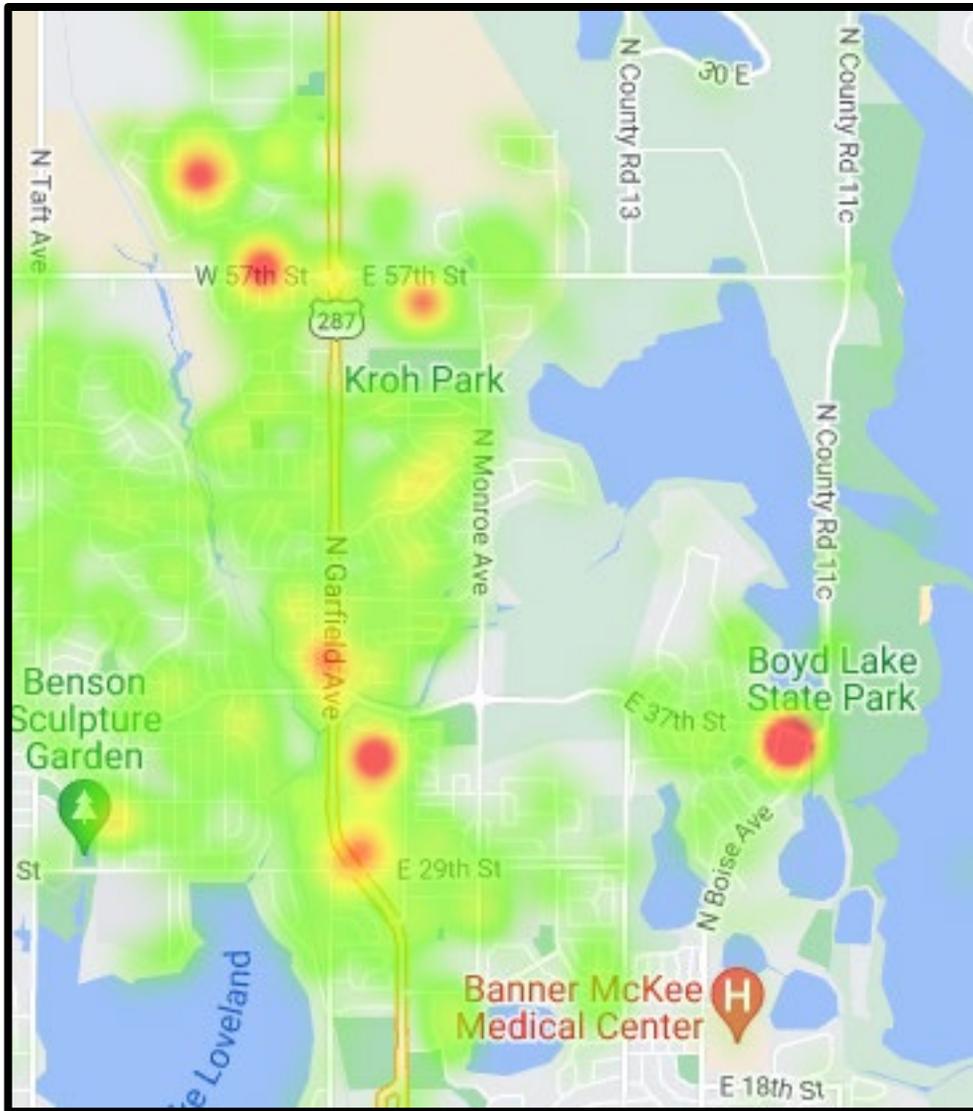
- Low Education Attainment – age 25 and over w/o a High School Diploma/GED 2.7%

**Operational Vulnerabilities:**

Station 5’s call volume has increased steadily over the last five years. Engine 45 is one of the units that is directly affected by the decreased reliability of Station 1, often having to respond into their district for coverage.

**Baseline Data:**





(Heat map of Station 5 incidents 2018-2022)

**Target Hazards:**

REASON	OVAP SCORE	DISTRICT
HazMat	26	5
High Occ Load	Master Tenant	5
High Occ Load	Master Tennant	5
Infrastructure	x 26.27	5
School	26	5
School	30	5
School	31	5
School	33	5
School	35	5



## **Fire Station 6 Planning Zone Description**

Fire Station 6, located at **4325 McWhinney Blvd, Loveland, CO 80538**, was originally constructed in 2004 to provide service to the rapidly growing eastern end of the response area. Through the strategic planning process, it was identified that LFRA had an opportunity to improve service delivery and the station was renovated in 2012 to house a second active company. Fire Station 6 runs as a double company station, housing both Squad 46 (quick response vehicle) and Tower 46. The station also contains secondary and support apparatus. The station's planning area encompasses approximately 10 square miles.

<b>APPARATUS ASSIGNED TO STATION 6</b>			
<b>Designation</b>	<b>Apparatus Type</b>	<b>Service #</b>	<b>Year</b>
Squad 46	Quick Response Vehicle	0209	2003
Tower 46	First-due Truck Company	0700	2015
Rescue 46	Cross-staffed Rescue Apparatus	0352	2003



*(Engine 46 & Tower 46)*







*(LFRA Fire Station 6)*

### **Overview of Risk:**

The response area protected by Fire Station 6 is approximately 10 square miles and remains the fastest growing of all LFRA response areas. Mixed use residential and commercial development is operating at a very fast pace along the I-25 corridor.

Several new suburban residential neighborhoods are currently being developed throughout the area. In addition to the highways, one of the greatest risks in this response area is Praxair, a large industrial facility that produces and stores a variety of cryogenic liquids.

### **Social Vulnerabilities:**

Station 6's planning area population has been assessed and found the following vulnerabilities:

- Employment and Job Access – areas within this planning zone are between 3% unemployed

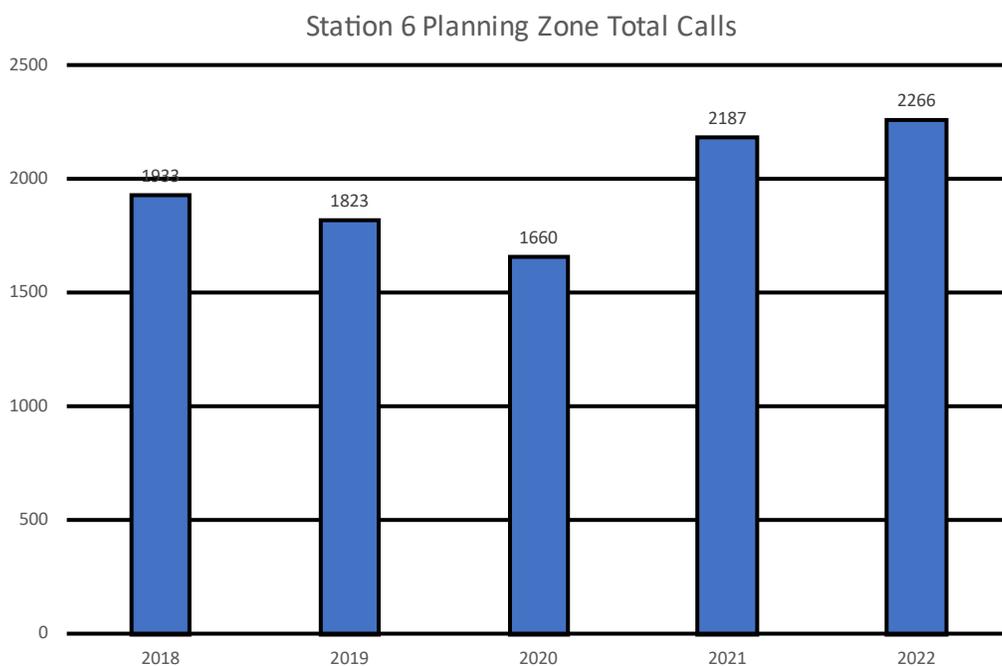


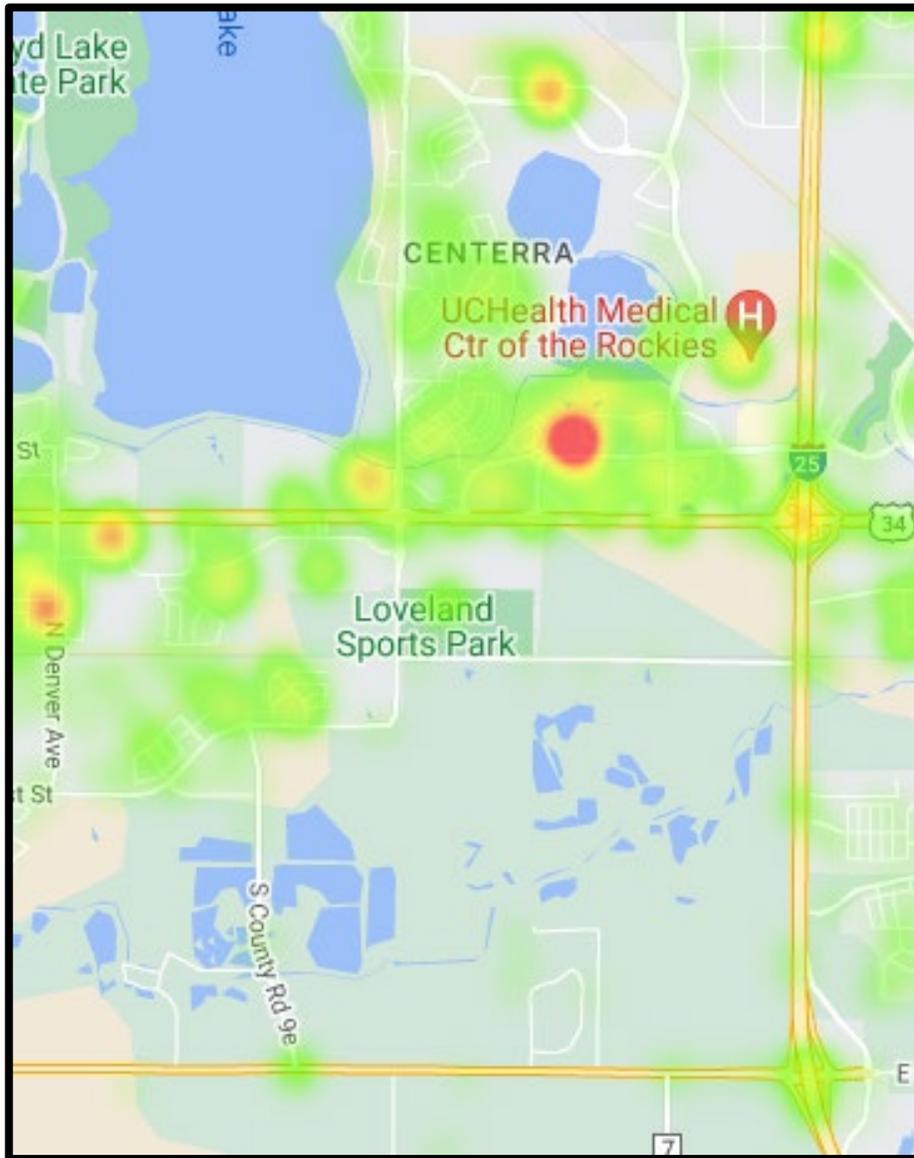
- Poverty and Affordability - The median Household income is \$98,864
- Disabilities – people living with disabilities between 11%
- Language Isolation – households with limited English spoken 6%
- Low Education Attainment – age 25 and over w/o a High School Diploma/GED 2.6%

**Operational Vulnerabilities:**

Station 6’s call volume continues to increase. The opening of Station 10 will be very beneficial to reduce that load. There is a very large amount of commercial growth around Station 4 and analysis has begun to evaluate the need to begin staffing Station 4 with a 24-hour crew. This would improve the coverage for Station 6 by reducing the overall size and improving response times.

**Baseline Data:**





*(Heat map of Station 6 incidents 2018-2022)*



**Target Hazards in the Station 6 Planning Zone:**

<b>Reason</b>	<b>OVAP Score</b>	<b>District</b>
Assisted Living	x 30	6
HazMat	26	6
HazMat	29	6
HazMat	x 30.43	6
HazMat	x 25.3	6
HazMat	30	6
HazMat	x 24.2	6
HazMat	x 19.8	6
HazMat	27	6
HazMat	Master Tennant	6
High Occ Load	42	6
High Occ Load	x 28.3	6
Infrastructure	x 21.62	6
Infrastructure	x 28.67	6
Institutional	x 29.7	6
Institutional	x 34.07	6
Institutional	31	6
School	30	6
School	Master Tennant	6



## **Fire Station 7 Planning Zone Description (includes Stations 8 and 9)**

Fire Station 7, located at **2629 N Co Rd 27, Loveland, CO 80538**, was opened in March of 2020. Station 7 is LFRA's furthest staffed station to the west and includes response zones for the Big Thompson Canyon Stations 8 and 9. Station 7 was built to reduce response times to our rural district in the west and ease the call volume for Stations 2 and 3.

<b>APPARATUS ASSIGNED TO STATION 7</b>			
<b>Designation</b>	<b>Apparatus Type</b>	<b>Service #</b>	<b>Year</b>
Engine 47	First-due Engine Company	0302	2019
Engine 474	Type 4 Wildland Engine	0501	2020
Engine 476	Type 6 Wildland Engine	0159	2005
UTV 47	All-Terrain Vehicle	0908	2020



*(LFRA Engine 47)*







*(LFRA Fire Station 7)*

### **Overview of Risk:**

The response area covered by Station 7 which incorporates the response area for 8 and 9 is approximately 95 square miles. Two of the greatest risks are US Highway 34 between Loveland and Estes Park, and the Big Thompson River. Residential development is scattered throughout all areas, with limited small-scale mercantile occupancies along US Highway 34. The Big Thompson River has experienced two (2) significant flood events, including a flash flood that took place on the night of July 31, 1976 that killed 144 people and a multi-day flood event during early September 2013 that destroyed much of the roadway through the canyon resulting in more than \$2 billion dollars and damaged and claiming the lives of 8 people. In May of 2018 the rebuild project for US HWY 34 was completed, opening up the passage from Loveland to Estes Park and Rocky Mountain National Park. The other significant risk is wildland fires, as was experienced in 2020 with the State's largest wildfire, the Cameron Peak Fire. Cameron Peak Fire burned for nearly five months and consumed more than 208,000 acres including the northwest border of our fire district.



## Social Vulnerabilities:

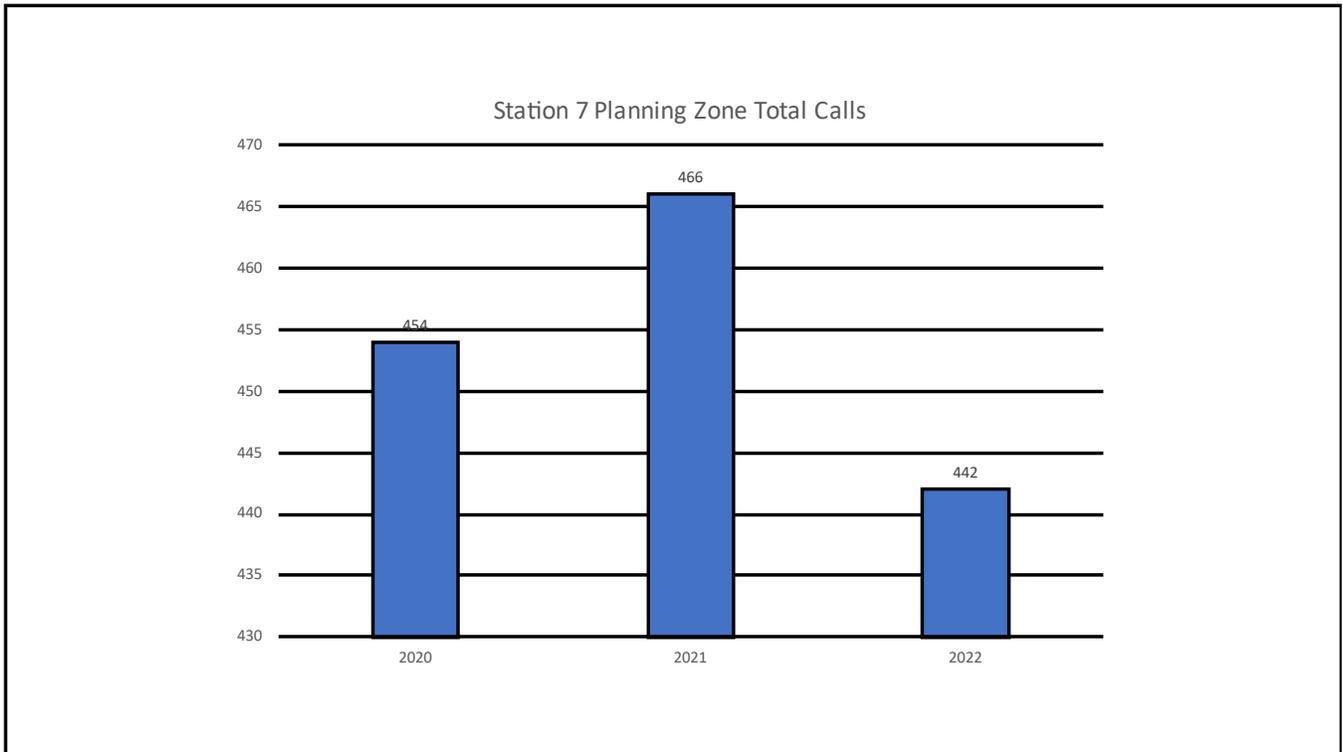
Station 7's planning area population has been assessed and identified the following vulnerabilities:

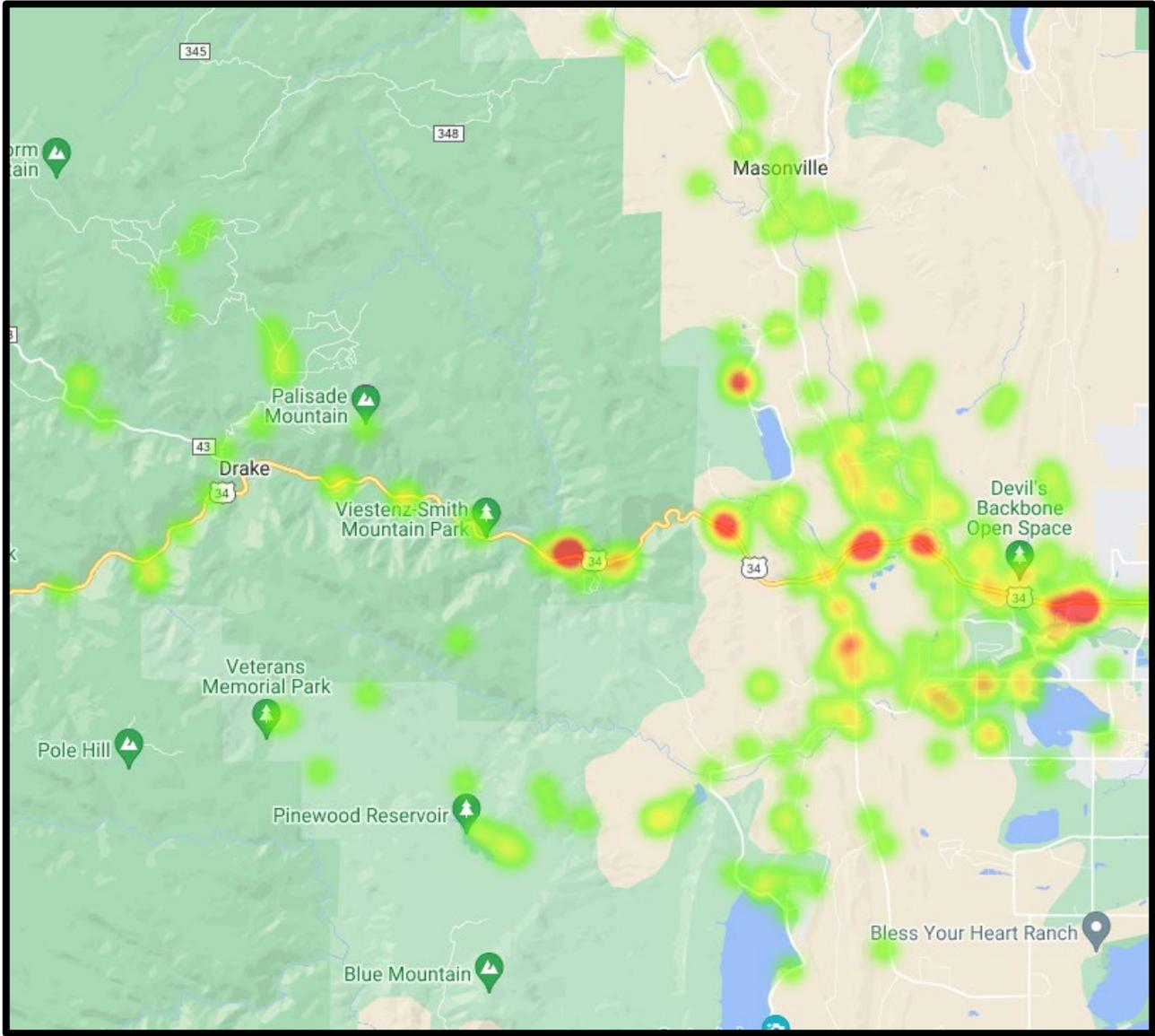
- Employment and Job Access – areas within this planning zone are between 1% unemployed
- Poverty and Affordability - The median Household income is \$103,581
- Disabilities – people living with disabilities between 9%
- Language Isolation – households with limited English spoken 6%
- Low Education Attainment – age 25 and over w/o a High School Diploma/GED 1.5%

## Operational Vulnerabilities

Station 7 has been in service for approximately three years and its call volume is much lower than other stations. As it is furthest away from all other planning zones, it has the potential to be on scene for an extended period of time before assembling the effective response force for higher risk incidents. Engine 47 has been equipped with similar vehicle extrication and stabilizing equipment to address motor vehicle incidents in the remote areas of its response area.

## Baseline Data:





*(Heat map of station 7 incidents 2020-2022)*

**Target Hazards in the Station 7 Planning Zone:**

<b>REASON</b>	<b>OVAP SCORE</b>	<b>DISTRICT</b>
Infrastructure	38	7
Infrastructure	31	7
Infrastructure	32	7
Infrastructure	26	7
School	35	7



## **Fire Station 8 Planning Zone Description**

Fire Station 8, located at **1461 Big Thompson Canyon Rd Drake, CO 80515**, was built by the Loveland Rural Fire Protection District in 2005 to provide an operational base for the BTCVFD (Big Thompson Canyon Volunteer Fire Department). The station is staffed by LFRA volunteers and houses Engine 48, Engine 486 and Water Tender 48. The building contains a meeting room as well as accommodations to support a part-time or seasonal crew.

<b>APPARATUS ASSIGNED TO STATION 8</b>			
<b>Designation</b>	<b>Apparatus Type</b>	<b>Service #</b>	<b>Year</b>
Engine 48	Cross staffed Type Engine	0160	2009
Water Tender 48	Cross-staffed Water tender	0400	2017
Engine 486	Cross-staffed Wildland Engine	0201	2013



*(LFRA Engine 48)*





*(LFRA Station 8)*



## **Fire Station 9 Planning Zone Description**

The BTCVFD membership constructed a new Fire Station 9, located at **100 Palisade Mountain Dr Drake, CO 80515**, in the Cedar Park community on top of Storm Mountain. The original station was built in 1979 and finally received electricity in 1987. The new station was placed in service in February 2016. The station is staffed by LFRA volunteers. It houses Engine 49, Engine 496 and Engine 494 a US Forest Service 6x6.

<b>APPARATUS ASSIGNED TO STATION 9</b>			
<b>Designation</b>	<b>Apparatus Type</b>	<b>Service #</b>	<b>Year</b>
Engine 496	Ford F-550	0448	2001
Engine 49	Freightliner/General	0556	1998
Engine 494	Jeep 6X6 (State Owned)	0553	1968



*(LFRA Engine 49)*





*(LFRA Station 9)*



## Fire Station 10 Planning Zone Description

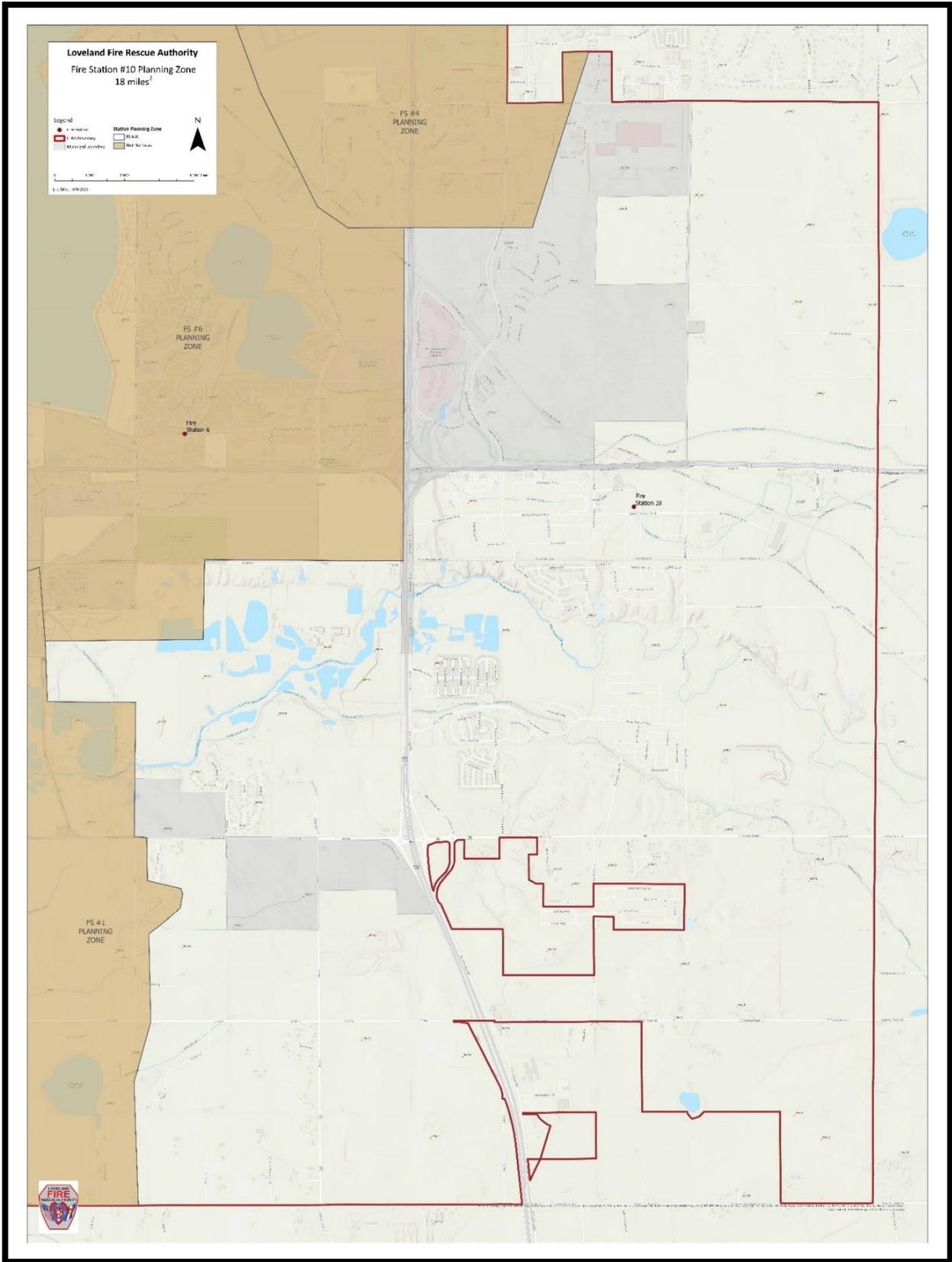
Fire Station 10, located at **4301 Ronald Reagan Blvd, Johnstown, CO 80534**, is our newest station and opened in September of 2022. Station 10 is LFRA's furthest staffed station to the east. Station 10 was built to reduce response times to our rural district in the east and ease the call volume for Station 6.

<b>APPARATUS ASSIGNED TO STATION 10</b>			
<b>Designation</b>	<b>Apparatus Type</b>	<b>Service #</b>	<b>Year</b>
Engine 50	First-due Engine Company	0303	2020
Engine 506	Cross-staffed Wildland Engine	0212	2019
HazMat 50	HazMat	0306	2007
Decon 50	Decon Trailer	0616	2004



*(LFRA Engine 50)*





*(Station 10 Planning Zone)*





*(LFRA Station 10)*

**Overview of Risk:**

The response area covered by Station 10 is approximately 18 square miles. Station 10 is also a rapidly developing area. It is mixed use with commercial, industrial, and residential development. Two large shopping areas (The Promenade Shops at Centerra and 25/34), Johnstown Heights Behavioral Health, Northern Colorado Rehabilitation Hospital and Riverview Middle School (PK-8) Thompson School District.

**Social Vulnerabilities:**

Station 10's planning area population has been assessed and identified the following vulnerabilities:

- Employment and Job Access – areas within this planning zone are between 1% unemployed
- Poverty and Affordability - The median Household income is \$142,684
- Disabilities – people living with disabilities between 7%
- Language Isolation – households with limited English spoken 6%
- Low Education Attainment – age 25 and over w/o a High School Diploma/GED .4%

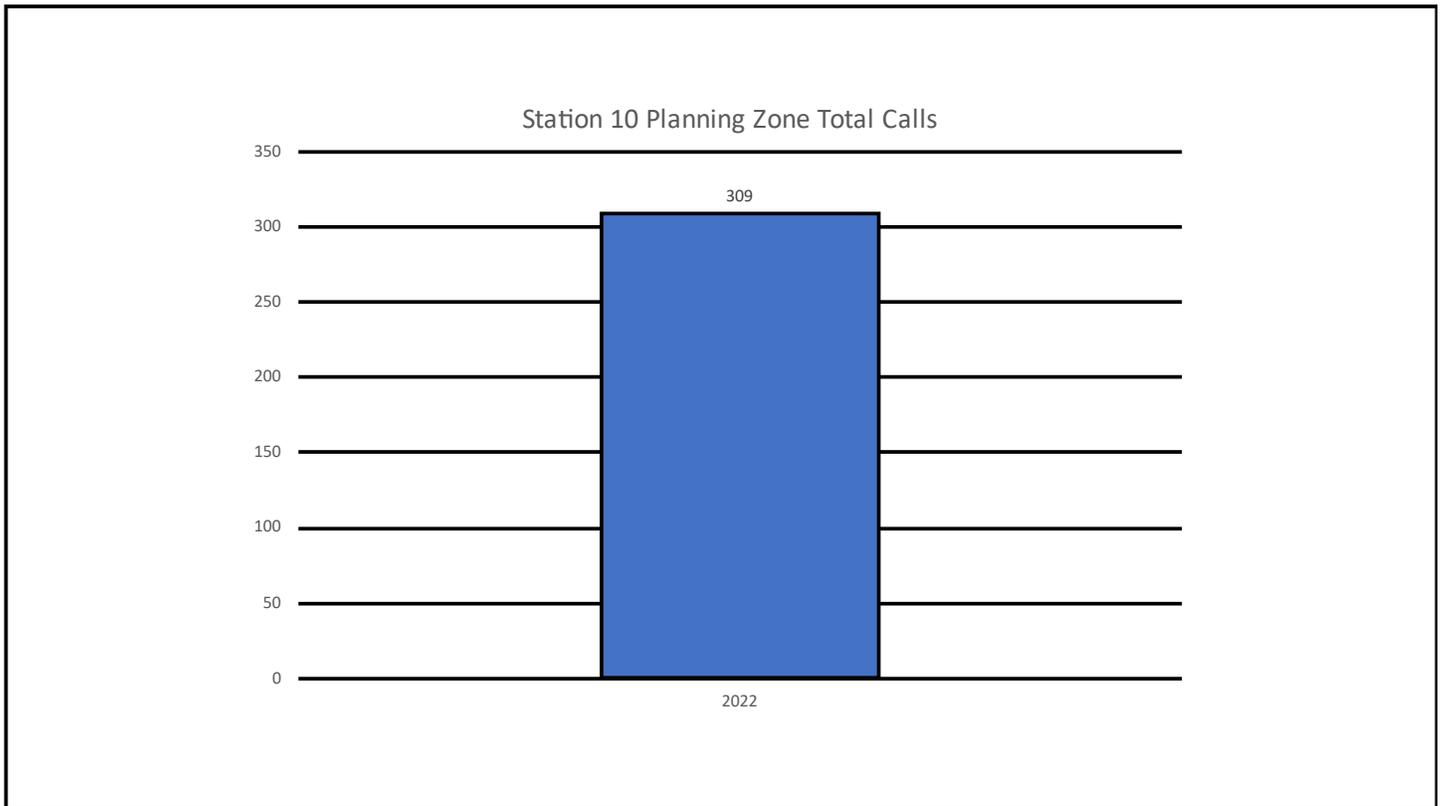


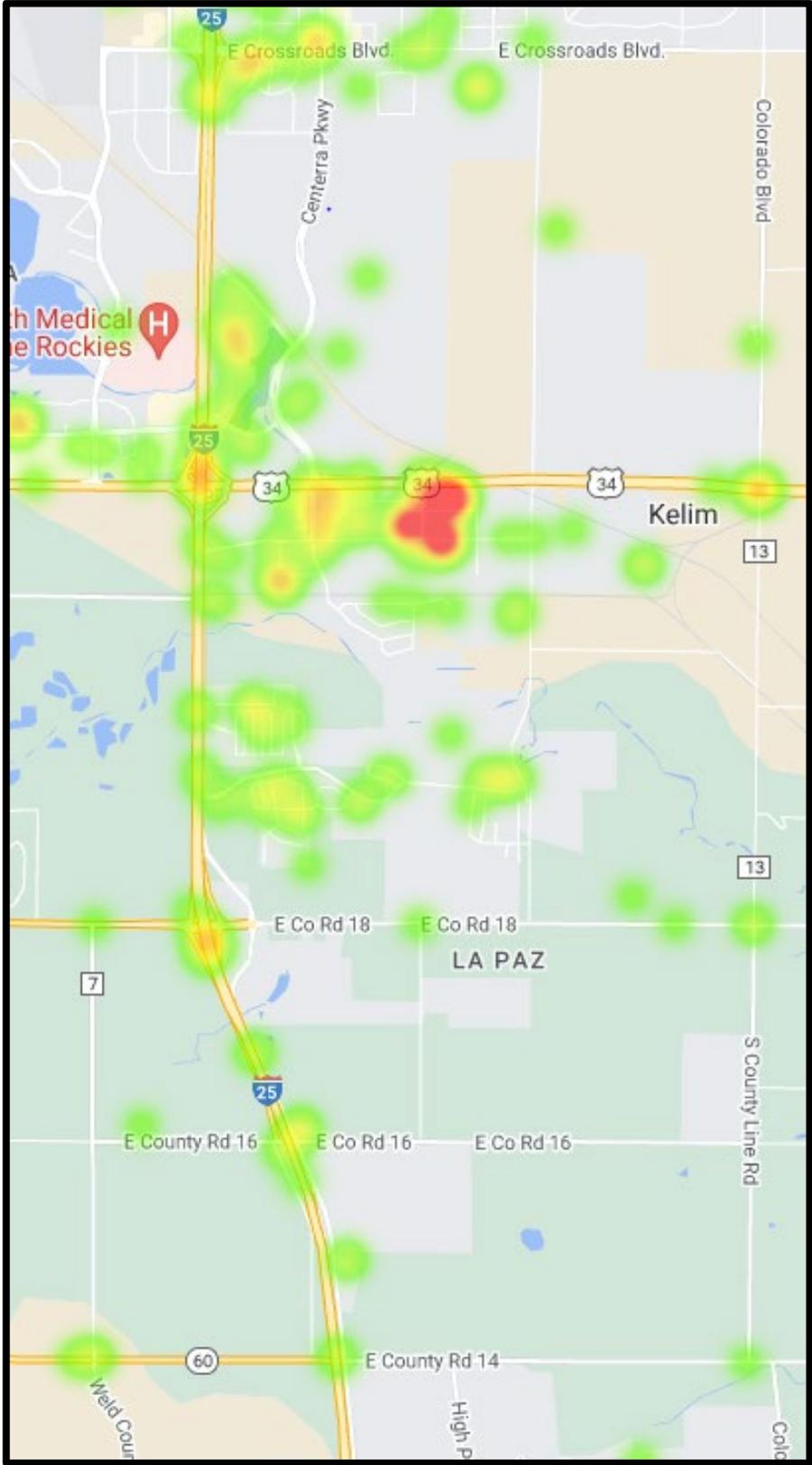
## Operational Vulnerabilities

Station 10 has been in service for approximately half a year and its call volume has picked up much of the responses on north bound I-25 thus reducing the load on Tower 46s daily responses.

Engine 50 is our second engine that has been equipped with similar vehicle extrication & stabilizing equipment to address motor vehicle incidents in the remote areas of its response area.

## Baseline Data:





*(Heat map of station 10 incidents 2022)*



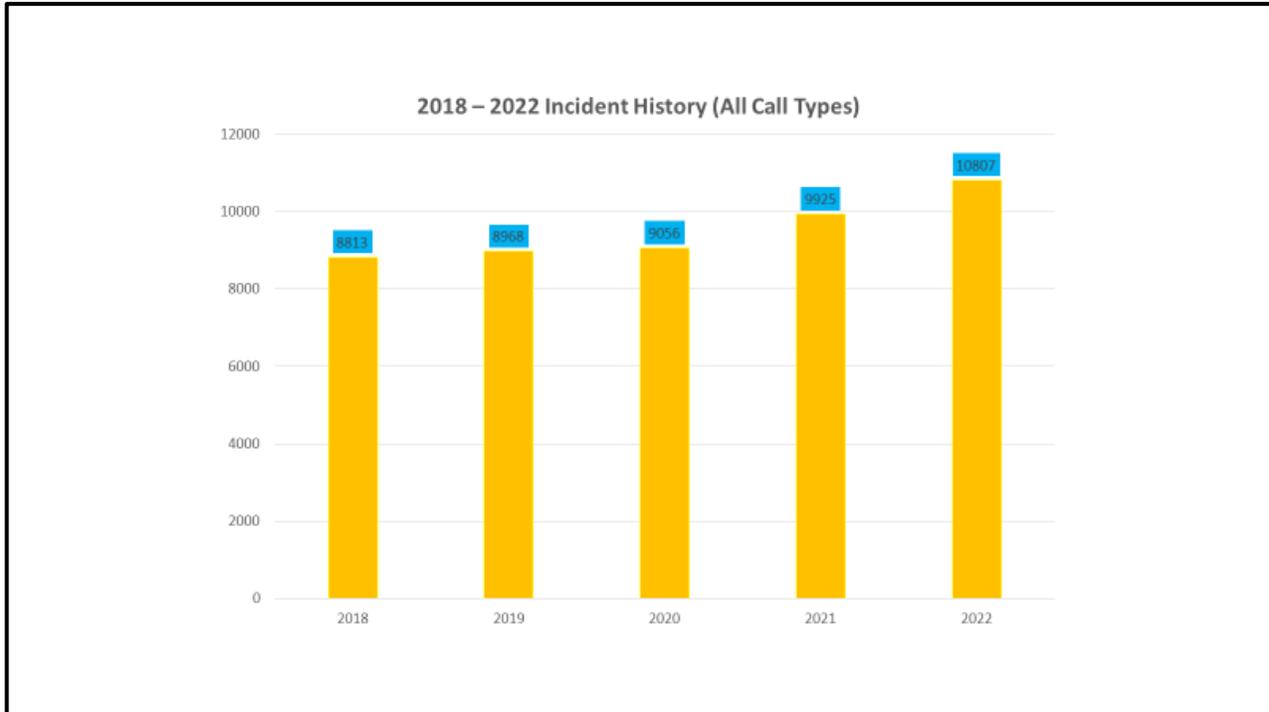
**Target Hazards in the Station 10 Planning Zone:**

<b>REASON</b>	<b>OVAP SCORE</b>	<b>DISTRICT</b>
Infrastructure	38	10
Infrastructure	31	10
Institutional	32	10
Institutional	26	10
School	35	10



## Incident History

To paint an accurate picture of incident occurrence and to help LFRA improve understanding of incident trends, five (5) years of agency call volume was analyzed according to frequency of occurrence, station area, incident category type, and incident location. A basic analysis of call volume revealed that LFRA's overall call volume has increased by nearly 18% since 2018.



<b>LFRA Incident Type History (all call types)</b>						
<b>2018-2022</b>						
<b>NFIRS Series</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>% Change (2018-2022)</b>
100 - Fire	166	173	179	184	200	<b>+17%</b>
200 - Explosion	2	9	6	11	11	<b>+550%</b>
300 - Rescue and EMS	5065	5941	6319	6843	7424	<b>+47%</b>
400 - Hazardous Condition	310	331	318	359	452	<b>+45%</b>
500 - Service Call	883	905	955	1168	1314	<b>+49%</b>
600 - Good Intent	1149	853	580	653	578	<b>-50%</b>
700 - False Alarm	860	751	692	702	821	<b>-4.5%</b>
800 - Severe Weather	7	1	2	2	3	<b>-57%</b>
900 - Special Incident	8	4	8	7	4	<b>-50%</b>



## **Fire Related Risk**

Public fire protection is a function of local government that is provided solely by Loveland Fire Rescue Authority. Fire-related risks within LFRA's response area include Structure fires, and other types of fire. The agency examined past history of fire-related incidents and evaluated both the probability of an incident occurring as well as the risks presented to the public.

The number of personnel and apparatus assigned to a given incident should be dictated by the potential risk/consequence to the public, as well as the expected tasks needed to effectively bring the incident under control. LFRA's apparatus response plans were updated in 2020 to "right size" our response to structure fires. Further, in 2023, a new 3-axis methodology was adopted along with new critical task analysis to improve our deployment model and system coverage.

To further assess risk, each station's response area is considered a planning zone in which specific buildings have been identified as to the potential risk. The methodology for identifying these specific buildings is called OVAP (Occupancy Vulnerability Assessment Profile) and the numeric calculation for identifying these buildings is built into our record management system for building inspections. The OVAP calculation assigns a numeric value based on the building's use, construction, fire protection systems, and number of people that can occupy the building and the impact to the infrastructure.

## **Fire Methodology**

Using our dispatch incident types, fire incidents were grouped into 23 categories. Incident data was collected using NFIRS and CAD information from the past 4 years. The below methodology was used to create the 3-axis score with consideration given to critical task analysis and current response alarms. Our NFIRS data found it difficult to divide the true number of incidents LFRA responded to during those times. We are looking to improve this data moving forward.

## **Probability Ranking**

<b>Score</b>	<b>Frequency</b>
2	Very Low Potential (Annual)
4	Low Potential (Quarterly)
6	Moderate Potential (Monthly)
8	High Potential (Weekly)
10	Very High Potential (Daily)



## Impact Ranking (Critical Tasks)

Score	Impact to LFRA Personal/Resources
2-Very Low	Single Company (Squad)/2
4-Low	Two Company/ 3-7
6-Moderate	Three-Four Companies/ 8-14
8-High	Five Companies 15-20
10-Very High	Six or More Companies/ >20

## Consequence Rating

Score	Life Loss	Financial
2	No Loss	Minimal Loss \$ 0-250K
4	Potential Loss	Minor Loss \$250k-500k
6	Single Life	Moderate Loss \$501k-1M
8	Single Life / Potentially Multiple Lives	High Loss \$1M-3M
10	High Probability of Multiple Lives Lost	Significant Loss >\$3M

P – Probability

I – Impact

C – Consequence

Risk Score Range	RISK
0-15	LOW
16-25	MOD
26-123	HIGH

Structure Fire

2019-2022 NFIRS Data

P	I	C	Problem Type	Score	Risk
2	2	2	Investigation Fire	4.89	LOW
2	2	4	Explosion	8.48	LOW
4	2	2	Other Fire-Non Structure	8.48	LOW
6	2	2	Vehicle Fire Small	12.32	LOW
2	4	4	Other Structure Fire	13.85	LOW
8	2	2	Alarm Fire Residential	16.24	MOD
8	2	2	Bonfire	16.24	MOD
4	4	4	Vehicle Fire Commercial	19.59	MOD
10	2	2	Alarm Fire Commercial	20.19	MOD
6	4	4	Water Flow Alarm	26.53	HIGH
2	8	8	Multi-Family Structure Fire	48	HIGH
8	8	6	Residential Structure Fire	65.96	HIGH
6	10	10	Commercial Structure Fire	92.73	HIGH



## **Grass/Wildland Fire Risk**

Colorado has recently experienced two of the most tragic and largest wildland fires in its history. The Cameron Peak Fire burned 208,663 acres in Larimer and Jackson County in 2020. In January of 2022 The Marshall Fire burned over 1,000 homes in Boulder County with an estimated damage of \$500 million in homes. The risk of wildland fire to the LFRA response area is High/Maximum.

Wildland fires occur during all months of the year; however, they tend to occur more frequently during the summer months when temperatures are higher. These fires burn homes, damage infrastructure and natural resources, kill and injure firefighters and the public, and impact wildlife and directly affect local economies and the environment. The number and severity of these fires has increased with the rise in population and expanding developments within the wildland-urban interface area. As the urban population increases and City limits expand, the incidents should be expected to increase in frequency. Risks commonly associated with wildland fires include physical injury to the public and emergency responders, hazardous material release into the atmosphere, reduction in water quality in water shed and “run off” areas, and firefighting vehicle and aircraft accidents.

<b>GRASS/WILDLAND FIRES BY STATION PLANNING AREA</b>						
<b>Station Area</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>Total</b>
1	4	12	13	6	7	<b>42</b>
2	14	12	1	6	3	<b>36</b>
3	12	7	3	3	6	<b>31</b>
5	14	9	7	1	4	<b>35</b>
6	14	21	14	15	19	<b>83</b>
7	0	0	16	11	11	<b>38</b>
10	0	0	0	0	2	<b>2</b>
Mut Aid	1	0	0	9	6	<b>16</b>
<b>Total</b>	<b>59</b>	<b>61</b>	<b>54</b>	<b>51</b>	<b>58</b>	<b>283</b>

### **Wildland Response Methodology**

Wildland Response was broken down into 5 incident problems from the overall list sent out. Incident data was collected from the last 4 years using CAD response data. Large scale (Type I) incidents were thrown out as anomalies. The below methodology was used to create the 3-axis score with consideration given to critical task analysis and current response alarms.



## Probability Ranking

Score	Frequency
2	Very Low Potential (Annual)
4	Low Potential (Quarterly)
6	Moderate Potential (Monthly)
8	High Potential (Weekly)
10	Very High Potential (Daily)

## Impact Ranking (Critical Tasks)

Score	Impact to LFRA Personal/Resources
2-Very Low	Single Company (Squad)/2
4-Low	Two Company/ 3-7
6-Moderate	Three-Four Companies/ 8-14
8-High	Five Companies 15-20
10-Very High	Six or More Companies/ >20

## Consequence Rating

Score	Property Loss	Financial
2	Grass/Landscape	Minimal Loss \$ 0-250K
4	Outside Smoke Investigation	Minor Loss \$250k-500k
6	Un Confirmed Wildland Fire	Moderate Loss \$501k-1M
8	Wildland Fire	High Loss \$1M-3M
10	Greater Alarm Wildland Fire	Significant Loss >\$3M

P – Probability

I – Impact

C – Consequence

Score	RISK
0-13	LOW
13-20	MOD
21-30	HIGH

	P	I	C	Problem Type	Score	Risk
CAD	6	2	2	Grass/Landscape Fire	12.32883	LOW
	6	2	2	Illegal Burn	12.32883	LOW
	6	2	2	Smoke Invest. Outside	12.32883	LOW
	6	2	2	Unconfirmed WL Fire	12.32883	LOW
	8	2	2	Bonfire	16.24808	MOD
	2	10	6	Wildland Fire	45.51923	HIGH



NFIRS	P	I	C	Problem Type	Score	Risk
140	4	2	2	Natural vegetation fire	8.485281	LOW
631	6	2	2	Authorized controlled burn	12.32883	LOW
142	6	2	2	Brush Fire	12.32883	LOW
143	6	2	2	Grass Fire	12.32883	LOW
561	8	2	2	Unauthorized burning	16.24808	MOD
651	8	2	2	Smoke scare, odor of smoke	16.24808	MOD
141	2	6	10	Forest, woods, wildland fire	45.51923	HIGH



## **Emergency Medical Services (EMS) Risks**

LFRA provides basic life support (BLS) emergency medical service. In recognizing the importance of providing a skilled response to all calls for service, all response personnel maintain certification as Emergency Medical Technician–Basic (EMT-B). Thompson Valley EMS (TVEMS) provides all advanced life support (ALS) and ambulance transport services throughout the LFRA response area. TVEMS ambulances are staffed with at least one EMT-Paramedic and one EMT-B. EMS calls account for approximately 70% of the agency’s annual call volume.

The Loveland Emergency Communications Center (LECC) is the dispatch center for both LFRA and TVEMS. LECC uses an emergency medical dispatching (EMD) system that allows the dispatchers to obtain information to categorize calls for service according to the level of severity. The intent of the emergency medical dispatch system is to assign resources based on anticipated severity of the incident.

An incident classified as an Echo medical is deemed to be the greatest severity, with reports that the patient is not breathing and/or has no pulse. One of the primary goals of LFRA’s EMS program is to improve survivability from sudden cardiac arrest, which is a leading cause of death in the United States. The Sudden Cardiac Arrest Association reports that more than 90% of sudden cardiac arrest victims die due to lack of immediate cardiopulmonary resuscitation and use of an automated external defibrillator.

<b>EMS CALLS BY STATION PLANNING AREA</b>						
<b>Station Area</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>Total</b>
1	1440	1636	1918	1697	1982	<b>8673</b>
2	1114	1224	1086	1082	1102	<b>5608</b>
3	555	709	690	791	908	<b>3653</b>
5	853	1046	1069	1260	1288	<b>5516</b>
6	1021	1223	1201	1568	1498	<b>6511</b>
7	0	0	238	298	273	<b>809</b>
10	0	0	0	0	194	<b>194</b>
<b>Total</b>	<b>4983</b>	<b>5838</b>	<b>6202</b>	<b>6696</b>	<b>7245</b>	<b>30,964</b>



## **EMS Methodology**

Using the EMD codes, EMS incidents were combined into eight (8) categories. Incident data was collected using NFIRS and CAD information from the past 4 years. The below methodology was used to create the 3-axis score with consideration given to critical task analysis and current response alarms.

### **Probability Ranking**

<b>Score</b>	<b>Frequency</b>
2	Very Low Potential (Annual)
4	Low Potential (Quarterly)
6	Moderate Potential (Monthly)
8	High Potential (Weekly)
10	Very High Potential (Daily)

### **Impact Ranking (Critical Tasks)**

<b>Score</b>	<b>Impact to LFRA Personal/Resources</b>
2-Very Low	Single Company (Squad)/2
4-Low	Two Company/ 3-7
6-Moderate	Three-Four Companies/ 8-14
8-High	Five Companies 15-20
10-Very High	Six or More Companies/ >20

### **Consequence Rating**

<b>Score</b>	<b>Life Loss</b>	<b>Financial</b>
2	No Loss	Minimal Loss \$ 0-250K
4	Potential Loss	Minor Loss \$250k-500k
6	Single Life	Moderate Loss \$501k-1M
8	Single Life / Potentially Multiple Lives	High Loss \$1M-3M
10	High Probability of Multiple Lives Lost	Significant Loss >\$3M



P – Probability  
 I – Impact  
 C – Consequence

Risk Score Range	RISK
0-21	LOW
22-34	MOD
35-123	HIGH

EMS 2019-2022 NFIRS Data

P	I	C	Problem Type	Score	Risk
8	2	2	Omega	16.24	LOW
4	4	4	Motor Vehicle Accident w/ 3+ Patients	19.59	LOW
2	4	6	Shooting/Stabbing	19.79	LOW
10	2	2	Alpha/Bravo	20.2	LOW
10	2	2	Motor Vehicle Accident w/ Unknown Injuries	20.2	LOW
10	2	2	Motor Vehicle Accident – Alpha PD Request	20.2	LOW
2	4	8	Mass Casualty Incident (MCI)	25.92	MOD
10	2	4	Motor Vehicle Accident w/ Injuries	32.12	MOD
10	2	4	Charlie/Delta	32.12	MOD
8	2	6	Echo	36.76	HIGH



## **Special Operations**

LFRA's Special Operations is responsible for providing specialty-trained personnel in confined space, trench rescue, water rescue, high and low angle rope rescue, large animal rescue, collapse rescue and hazardous materials. LFRA's Special Operations trained members responds to these technical incidents within the LFRA response area as well as in our auto-aid response area. Special Operations is managed by the Station 42 (Technical Rescue) and Station 50 (HazMat) Captains and overseen by the Special Operations Battalion Chief. LFRA also has five (5) personnel attached to Colorado Task Force 1(CO-TF1) for national response.

## **Technical Rescue Risks**

The area of technical rescue encompasses several disciplines, including vehicle extrication, water/ice rescue, structural collapse/USAR, trench rescue, rope rescue, and large animal rescue. Vehicle extrication is a skill that is maintained by all members of the Operations Division. Special Operations members who are trained in Operations-level, Technician-level, and Specialist- level within the various disciplines of technical rescue are mostly based out of Station 42 with the station Captain coordinating all components of Technical Rescue with oversight from the Special Operations Battalion Chief.



<b>TECHNICAL RESCUE INCIDENTS BY TYPE</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
Search for Person on Land (340, 341,343)	1	1	5	5	7
Water/Ice Search and Rescue (342, 360 - 365)	18	11	24	25	14
Vehicle Extrication (352)	14	15	7	27	21
Extrication from Machinery (357)	0	0	1	2	0
Elevator Rescue (353)	12	25	20	24	27
Trench/Below-Grade Rescue (354)	0	4	1	2	2
Confined Space Rescue (355)	0	1	0	1	0
Structural Collapse (351)	1	0	0	1	0
High-Angle Rescue (356)	1	2	4	2	1
Animal Rescue (540-542)	9	6	13	7	10
<b>ANNUAL TOTALS</b>	<b>56</b>	<b>65</b>	<b>75</b>	<b>96</b>	<b>82</b>

<b>TECHNICAL RESCUE CALLS BY STATION PLANNING AREA</b>						
<b>Station Area</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>Total</b>
1	9	16	24	16	17	<b>82</b>
2	8	13	3	8	6	<b>38</b>
3	11	5	5	8	9	<b>38</b>
5	12	7	12	19	12	<b>62</b>
6	15	22	13	22	23	<b>95</b>
7	0	0	14	13	11	<b>38</b>
10	0	0	0	0	4	<b>4</b>
Mut Aid	1	2	4	10	2	<b>19</b>
<b>Total</b>	<b>56</b>	<b>65</b>	<b>75</b>	<b>96</b>	<b>82</b>	<b>376</b>



## **Technical Rescue Incidents**

There is tremendously wide range of technical rescue incidents which could reasonably be expected to occur within the LFRA response area. The agency is staffed and equipped to provide an initial response to assess and stabilize the incidents that are most likely to occur. Incidents that could be expected to exceed a “first alarm” incident or necessitate Technician-level expertise in a technical rescue discipline, will be upgraded as needed by the Incident Commander. Special Operations consists of LFRA personnel with the following advanced training in the various technical rescue disciplines:

- 4 – Collapse Rescue Technicians
- 4 – Collapse Rescue Specialist (USAR – Structural Engineer)
- 4 – Confined Space Technicians
- 2 – Large Animal Rescue Technicians
- 15 – Rope Rescue Technicians
- 6 – Trench Rescue Technicians
- 13 – Public Safety Divers
- 17 – Swift Water Rescue Technicians

## **Tech Rescue Methodology**

Tech Rescue was broken down into 15 incident problems from CAD and 20 NFIRS incident types. Incident data was collected from the last 4 years using CAD/NFIRS response data. The below methodology was used to create the 3-axis score with consideration given to critical task analysis and current response alarms.

## **Probability Ranking**

<b>Score</b>	<b>Frequency</b>
2	Very Low Potential (Annual)
4	Low Potential (Quarterly)
6	Moderate Potential (Monthly)
8	High Potential (Weekly)
10	Very High Potential (Daily)

## **Impact Ranking (Critical Tasks)**

<b>Score</b>	<b>Impact to LFRA Personal/Resources</b>
2-Very Low	Single Company (Squad)/2
4-Low	Two Company/ 3-7
6-Moderate	Three-Four Companies/ 8-14
8-High	Five Companies 15-20
10-Very High	Six or More Companies/ >20



## Consequence Rating

Score	Life Loss	Financial	Area of Evacuation
2	No Loss	Minimal Loss \$ 0-250K	Single City Block
4	Potential Loss	Minor Loss \$250k-500k	2-4 City Block
6	Single Life	Moderate Loss \$501k-1M	5-10 City Block
8	Single Life / Potentially Multiple Lives	High Loss \$1M-3M	11-20 City Block
10	High Probability of Multiple Lives Lost	Significant Loss >\$3M	21 of Greater City Block

P – Probability

I – Impact

C – Consequence

Risk Score Range	RISK
0-15	LOW
16-25	MOD
26-48	HIGH

Tech. Rescue

2019-2022 NFIRS Data

P	I	C	Problem Type	Score	Risk
4	2	2	331 - Lock-in (if lock out , use 511 )	8.485281	LOW
2	2	2	341 - Search for person on land	4.898979	LOW
2	2	2	342 - Search for person in water	4.898979	LOW
4	4	6	350 - Extrication, rescue, other	26.533	HIGH
2	2	4	351 - Extrication of victim(s) from building/structure	8.485281	LOW
4	6	4	352 - Extrication of victim(s) from vehicle	26.533	HIGH
6	4	2	353 - Removal of victim(s) from stalled elevator	19.79899	MOD
2	8	8	354 - Trench/below-grade rescue	48	HIGH
2	8	8	355 - Confined space rescue	48	HIGH
2	8	8	356 - High-angle rescue	48	HIGH
2	6	4	357 - Extrication of victim(s) from machinery	19.79899	MOD
2	6	4	360 - Water & ice-related rescue, other	19.79899	MOD
4	6	4	361 - Swimming/recreational water areas rescue	26.53	HIGH
2	6	4	362 - Ice rescue	19.79899	MOD
2	6	6	363 - Swift water rescue	28.14249	HIGH
2	6	6	364 - Surf rescue	28.14249	HIGH
2	6	6	365 - Watercraft rescue	28.14249	HIGH
2	4	4	372 - Trapped by power lines	13.85641	LOW
6	6	2	542 - Animal rescue	19.79899	MOD
6	4	2	555 - Defective elevator, no occupants	19.79899	MOD



Risk Score Range	RISK
0-24	LOW
25-40	MOD
41-70	HIGH

Tech. Rescue			2019-2022 CAD Data		
P	I	C	Problem Type	Score	Risk
2	6	2	Animal Rescue	12.32883	LOW
4	6	8	Building Collp Res	44.18144	HIGH
4	6	8	Building Collp Com	44.18144	HIGH
6	2	2	Child Locked Vehicle	12.32883	LOW
6	8	8	Conspace	65.96969	HIGH
8	4	2	Elevator Rescue	25.92296	MOD
6	8	8	Extrication	65.96969	HIGH
6	6	8	Rope Rescue	54.33231	HIGH
2	8	8	Trench	48	HIGH
6	6	8	Water Rescue	54.33231	HIGH
6	2	4	Unconfirmed W/R	19.79899	LOW
8	4	4	Search Call	33.94113	MOD
2	4	4	Search Rescue	13.85641	LOW
2	8	8	Extrication Bus/Semi	48	HIGH
4	4	6	Ice Rescue	26.533	MOD



### **Low Risk Technical Rescue Overview (NFIRS: 331,341,342)**

An incident that can be controlled by one or two companies. A low-risk Technical Rescue incident has a low probability, impact on fire department and poses no threat to life. A low-risk incident is identified as an incident that does not require technical level training or equipment. If either are needed or undetermined, then the incident should be considered a moderate to high-risk incident. Examples: Child locked in a Vehicle, Unconfirmed water rescue or search/rescue call

### **Moderate Risk Technical Rescue Overview (NFIRS: 353, 362,542)**

An incident that can be controlled by three or four companies. A moderate-risk Technical Rescue incident has a low to moderate probability, moderate impact on fire department and poses potential loss to life. A moderate-risk incident is identified as an incident that requires both operations and technical level training or equipment. If additional technician level trained personnel are needed, then the incident should be considered a high-risk incident and the incident commander will request additional resources. Examples: Animal Rescue, Elevator Rescue, Ice Rescue

### **High Risk Technical Rescue Incidents Overview (NFIRS: 350,354,355,356,363)**

An incident that can be controlled by five or more companies. A High -risk Technical Rescue incident has a high impact on fire the department and poses life loss or loss of multiple lives. A High-risk incident is identified as an incident that requires technical level training and equipment. If additional technician level trained personnel are needed, then the incident commander will request additional resources and technician level trained regional resources. Examples: Swift Water Rescue, High/Low Angle Rope Rescue, Trench Rescue, Confined Space Rescue and Vehicle Extrication.



## **Hazardous Materials (HazMat) Risks**

A hazardous material can be defined as any item or agent (biological, chemical, radiological, and/or physical) which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors. There are a wide variety of hazardous materials that are in use, or pass through, the LFRA response area on a daily basis. LFRA has established various processes and plans to identify sources of hazardous materials, mitigate the risks they may pose, and respond to incidents involving known or suspected hazardous materials. LFRA has a dedicated Hazmat unit that is cross-staffed as a jump rig that contains specialized equipment to identify and mitigate hazardous material incidents. The Hazmat unit is housed at station 50.

Hazmat response profiles and risk evaluation are determined by the size/quantity of material(s) being released as well as the condition of any victims as described by the reporting party. Current NFIRS incident types do not account for this. To analyze the response performance of these calls LFRA has “combed” the data to determine the following response profiles: Low Risk – Single engine response, Medium Risk – Two Engines and a Battalion Chief, High Risk – Full First Alarm (Three engines, two support companies, a Battalion Chief and an ambulance with a paramedic supervisor) as well as the Hazmat Unit.

## **HazMat Methodology**

HazMat was broken down into 9 incident problems from CAD and 13 NFIRS incident types. Incident data was collected from the last 4 years using CAD/NFIRS response data. The below methodology was used to create the 3-axis score with consideration given to critical task analysis and current response alarms.

### **Probability Ranking**

<b>Score</b>	<b>Frequency</b>
2	Very Low Potential (Annual)
4	Low Potential (Quarterly)
6	Moderate Potential (Monthly)
8	High Potential (Weekly)
10	Very High Potential (Daily)



### Impact Ranking (Critical Tasks)

Score	Impact to LFRA Personal/Resources
2-Very Low	Single Company (Squad)/2
4-Low	Two Company/ 3-7
6-Moderate	Three-Four Companies/ 8-14
8-High	Five Companies 15-20
10-Very High	Six or More Companies/ >20

### Consequence Rating

Score	Life Loss	Financial	Area of Evacuation
2	No Loss	Minimal Loss \$ 0-250K	Single City Block
4	Potential Loss	Minor Loss \$250k-500k	2-4 City Block
6	Single Life	Moderate Loss \$501k-1M	5-10 City Block
8	Single Life / Potentially Multiple Lives	High Loss \$1M-3M	11-20 City Block
10	High Probability of Multiple Lives Lost	Significant Loss >\$3M	21 of Greater City Block

P – Probability

I – Impact

C – Consequence

### HazMat 3 axis Risk Categorization

Score	RISK
0-20	LOW
21-40	MOD
41-60	HIGH

HazMat	2019-2022 CAD Data			Score	Risk
P	I	C	Problem Type		
8	2	2	Fuel Less 10	16.24808	LOW
4	4	2	Fuel more 10	19.79899	LOW
4	2	2	HazMat Invest	8.485281	LOW
4	8	8	HazMat Response	55.42563	HIGH
2	6	8	Oil/Gas	36.76955	MOD
6	2	2	CO Alarm	12.32883	LOW
8	4	2	INT. Gas Leak	25.92296	MOD
8	4	2	EXT. Gas Leak	25.92296	MOD
2	8	6	Train Derailment	36.76955	MOD

HazMat	2019-2022 NFIRS DATA			Score	Risk
P	I	C	Problem Type		
2	2	2	400 - Hazardous condition, other	4.898979	LOW
2	2	2	410 - Combustible/flammable gas/liquid condition, other	4.898979	LOW
4	2	2	411 - Gasoline or other flammable liquid spill	8.485281	LOW
8	4	2	412 - Gas leak (natural gas or LPG)	25.92296	MOD



4	2	2	413 - Oil or other combustible liquid spill	8.485281	LOW
2	2	2	420 - Toxic condition, other	4.898979	LOW
4	2	2	421 - Chemical hazard (no spill or leak)	8.485281	LOW
4	8	8	422 - Chemical spill or leak	55.42563	HIGH
2	8	4	423 - Refrigeration leak	25.92296	MOD
6	2	2	424- Carbon Monoxide incident	19.79899	LOW
2	4	4	451 - Biological hazard, confirmed or suspected	13.85641	LOW
6	2	2	736 - CO detector activation due to malfunction	12.32883	LOW
6	2	2	746 - Carbon monoxide detector activation, no CO	12.32883	LOW



<b>HAZMAT CALLS BY STATION PLANNING AREA</b>						
<b>Station Area</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>Total</b>
1	45	56	39	37	67	<b>244</b>
2	41	31	20	22	58	<b>172</b>
3	34	27	29	18	41	<b>149</b>
5	34	33	46	45	49	<b>207</b>
6	33	42	43	45	54	<b>217</b>
7	0	0	9	4	16	<b>29</b>
10	0	0	0	0	10	<b>10</b>
Mutual Aid	0	0	0	3	0	<b>3</b>
<b>Totals</b>	<b>187</b>	<b>191</b>	<b>186</b>	<b>174</b>	<b>295</b>	<b>1033</b>

LFRA is the designated emergency response authority (DERA) for the LFRA response area through an MOU with Larimer County Sheriff's Office (LCSO) which is the DERA for Larimer County. All LFRA Operations Division personnel are required to maintain Hazardous Materials Operations certification or higher. All LFRA engines and support services apparatus carry equipment to allow them to mitigate small-scale hazardous materials incidents, such as fuel spills of less than 10 gallons. The HazMat response assignment for a report of any hazardous materials incident more significant consists of one (1) closest engine, Engine 50, Rescue 42, Support Company, HazMat 50, and the on-duty Battalion Chief.



## Aircraft Rescue and Firefighting (ARFF) Risks

The Northern Colorado Regional Airport (FNL) is an ideal location for the novus to experienced aviator. Due to the prime location, it provides a series of risks associated with a wide variety of aircraft. The primary aircraft at the airport is general aviation (GA); however, it services corporate jets, commercial airlines, and military aircraft. There are several flight schools which reside at the airport for general aviation and helicopters. Additionally, the Department of Fire Prevention and Control (DFPC) has a base camp and deploys its Single Engine Air Tanker (SEAT) for wildfire incidents. The continued development of commercial and residential growth in the area has created an added level of risk as the development of these have continued to encroach upon the airport property. Air traffic has amplified over the years as the cities surrounding Loveland have developed, which has increased the potential of aircraft incidents even with the addition of the remote traffic control tower. LFRA's ARFF engineer, and the automatic assignment of on-duty apparatus (Squad 46) increases our ability to confirm LFRA is meeting FAA requirements. ARFF incidents can be categorized as low frequency, high risk incidents. The agency has trained and certified 6 ARFF personnel per shift providing more coverage to the system for aircraft emergencies. There are five (5) different response plans based on risk for ARFF incidents.

<b>INCIDENT CATEGORY</b>	<b>GENERAL DESCRIPTION</b>	<b>FAA REQUIRED ACTIONS</b>
ARFF Stand By (462)	Scheduled Air Carrier with 31 or more souls on board	ARFF personnel will standby in station ready for immediate response.
ARFF Ground Emergency	Aircraft on ground with fuel/oil leak, overheated wheels, etc.	ARFF personnel will respond to pre-determined location on airport property.
Alert 1	Aircraft in-flight emergency with minor problem (oil leak, rough running engine)	ARFF personnel will consider this an "emergency standby"
Alert 2	Aircraft in-flight emergency with major problem (engine fire, smoke in cabin, no landing gear)	LFRA personnel will respond to the scene of the emergency to initiate action.
Alert 3	Aircraft Crash	Automatic first alarm



<b>ARFF CALLS BY YEAR</b>						
	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>Total</b>
ARFF Stand By	65	65	27	84	140	<b>381</b>
Ground Emergency	0	1	1	3	1	<b>4</b>
Alert 1	1	1	0	6	6	<b>10</b>
Alert 2	1	0	1	2	6	<b>13</b>
Alert 3	2	2	0	3	3	<b>13</b>
<b>Total</b>	<b>69</b>	<b>69</b>	<b>29</b>	<b>98</b>	<b>156</b>	<b>421</b>

### **ARFF Methodology**

The methodology that was used to create the ARFF Risk was based off the 3 Axis of probability of occurrence, Consequences to community and Impact on department resources. To determine the “Probability of occurrence” data was collected through both CAD incident types and NFIRS incident types over the past 5 years. This information on call types gave information on the frequency for each call type. The data collected from both collection points showed very little differences and differences that were noticed were only a difference of 1 to 3 calls and had no impact on the trend of call types.

### **Probability Ranking**

<b>Score</b>	<b>Frequency</b>
2	Very Low Potential (Annual)
4	Low Potential (Quarterly)
6	Moderate Potential (Monthly)
8	High Potential (Weekly)
10	Very High Potential (Daily)

### **Impact Ranking (Critical Tasks)**

<b>Score</b>	<b>Impact to LFRA Personal/Resources</b>
2-Very Low	Single Company (Squad)/2
4-Low	Two Company/ 3-7
6-Moderate	Three-Four Companies/ 8-14
8-High	Five Companies 15-20
10-Very High	Six or More Companies/ >20

### **Consequence Rating**

<b>Score</b>	<b>Property Loss/Size</b>	<b>Financial</b>	<b>Life Loss</b>
2	Small (GA)	\$50K – 1M	Zero Loss
4	GA-Medium (Corporate)	\$5M – 40M	Potential
6	GA-Medium (Corporate)	\$5M – 40M	Single Loss
8	Large (Commercial)	\$60M – 112M	Zero Loss
10	Large (Commercial)	\$60M – 112M	Greater than 1 Loss



P – Probability  
 I – Impact  
 C – Consequence

Score	RISK
0-15	LOW
16-30	MOD
31+	HIGH

ARFF			2018 - 2022 CAD DATA		
P	I	C		Score	Risk
2	4	2	Ground Emergency (Small Aircraft)	8.485	LOW
2	6	4	Ground Emergency (Medium Aircraft)	19.798	MOD
2	8	8	Ground Emergency (Large Aircraft)	48	HIGH
4	2	2	Alert 1: In Flight (Minor-Small Aircraft)	8.485	LOW
2	2	4	Alert 1: In Flight (Minor - Medium Aircraft)	8.4853	LOW
2	2	8	Alert 1: In Flight (Minor - Large Aircraft)	16.248	MOD
4	6	4	Alert 2: In Flight (Major - Small Aircraft)	26.533	MOD
2	10	8	Alert 2: In Flight (Major - Medium Aircraft)	59.397	HIGH
2	10	8	Alert 2: In Flight (Major - Large Aircraft)	59.396	HIGH
4	6	4	Alert 3: Crash (Small Aircraft)	26.533	MOD
2	10	8	Alert 3: Crash (Medium Aircraft)	59.397	HIGH
2	10	10	Alert 3: Crash (Large Aircraft)	73.485	HIGH

ARFF			2018 - 2022 NFIRS DATA		
P	I	C		Score	Risk
4	6	4	135 - Aircraft fire. Includes fires originating in or on an aircraft, regardless of use.	26.533	MOD
2	4	2	251 - Excessive heat, overheat scorch burns with no ignition. Excludes lightning strikes with no ensuing fire (814).	8.485	LOW
4	6	4	322 - Motor vehicle accident with injuries. Includes collision with other vehicle, fixed objects, or loss of control resulting in leaving the roadway.	26.533	MOD
4	6	4	324 - Motor vehicle accident with no injuries.	26.533	MOD
4	6	4	460 - Accident, potential accident, other.	26.533	MOD
4	6	4	462 - Aircraft standby. Includes routine standby for takeoff and landing as well as emergency alerts at airports.	26.533	MOD
2	4	2	510 - Person in distress, other.	8.485	LOW
4	6	2	611 - Dispatched and canceled en route. Incident cleared or canceled prior to arrival of the responding unit. If a unit arrives on the scene, fill out the applicable code.	19.798	MOD



4	6	2	622 - No incident found on arrival at dispatch address.	19.798	<b>MOD</b>
2	4	2	651 - Smoke scare, odor of smoke, not steam (652). Excludes gas scares or odors of gas (671).	8.485	<b>LOW</b>
4	6	4	733 - Smoke detector activation due to malfunction.	26.533	<b>MOD</b>



## **Weather, Topography and Civil Disturbance Risks**

Loveland Fire Rescue Authority (LFRA) views weather-related risks and human-caused risks from a regional perspective. These risks may be found within any planning zone in the LFRA response area and may occur at any time. LFRA's Office of Emergency Management has worked with other municipal organizations in the Larimer County region to develop the Northern Colorado Regional Hazard Mitigation Plan for the purpose of improving understanding of these risks. The primary purpose behind this plan is to assist the affiliated organizations, including LFRA, with being prepared for natural and man-made hazards to reduce risk and prevent loss.

**Severe Winds** – Severe winds can occur at any time, and in any location along the Front Range of northern Colorado. Wind speeds of up to 100 miles per hour have been recorded. Severe wind events can cause widespread power outages, downed and/or arcing power lines, as well as damage to buildings and vehicles. Severe wind events coupled with wildland fires or structure fires can magnify the event exponentially and cause catastrophic damage.

**Drought** – Colorado is a semi-arid state and is constantly at risk for drought. A number of hazards are associated with drought, the greatest of which is an increased fire danger in the wildland/urban interface and in open space areas. Severe drought could also deplete water sources in the areas where natural water sources are used for firefighting purposes. Drought situations can last for several years and take many years to recover. All residents, commercial facilities, industry and agricultural businesses are affected by drought conditions.

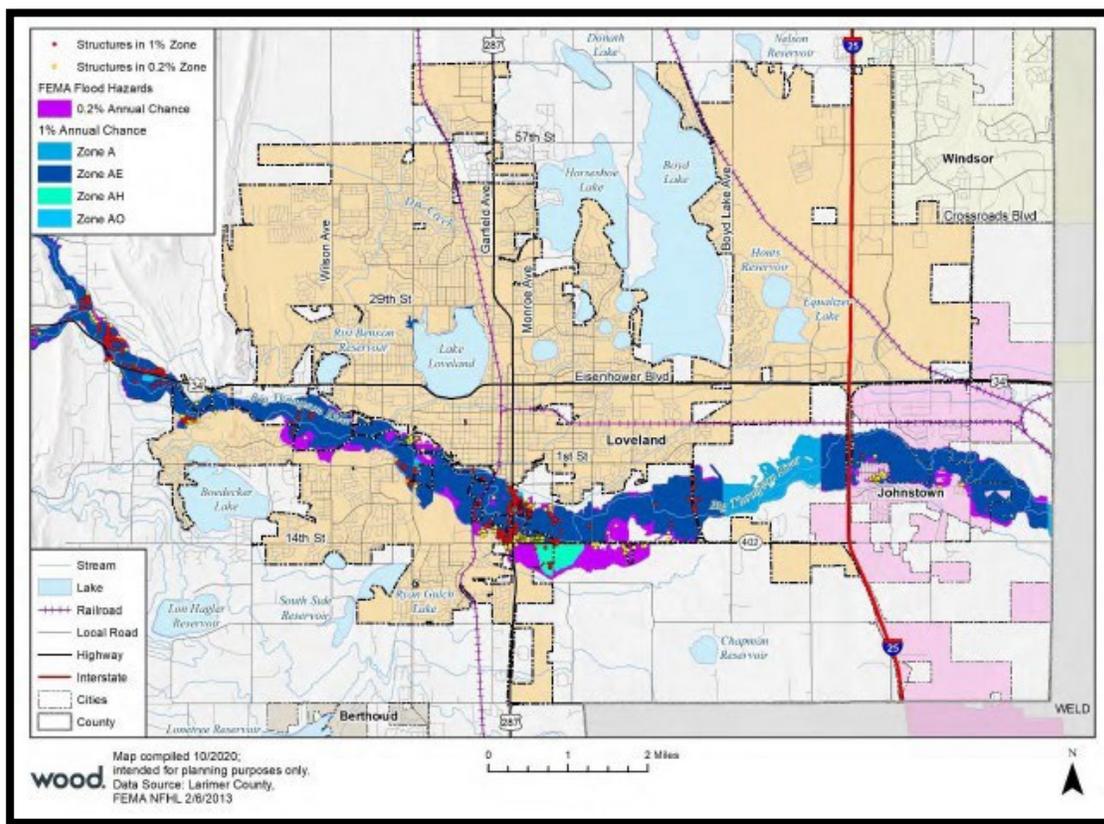
**Winter Storms** - Winter storms vary significantly in size, strength, intensity, duration, and impact on the community. The effects of winter storms depend on temperature extremes, wind and wind chill temperatures, and snowfall. Winter storms may also include blizzards and ice storms, although ice storms are relatively infrequent in this dry climate. Blizzards are associated with considerable snowfall accompanied by winds of 35 mph or more. Typically, winter storms are short-lived, but the snowfall may remain for several days. Winter storms can impact the community in a short period of time by disrupting transportation systems, causing utility outages, and delaying emergency response. At-risk populations include the elderly, people experiencing homelessness, and individuals using medical equipment or with daily medical needs. Structural damage may occur but is most often the result of tree limbs falling due to heavy snow loads.

**Tornados** – Tornados are rare for LFRA's response area as most tornados occur further to the east. There have been two recent tornados that have affected LFRA, in May of 2008, and June 2015. Both of these tornados were in adjacent fire response areas and LFRA responded to assist as mutual aid

partners.



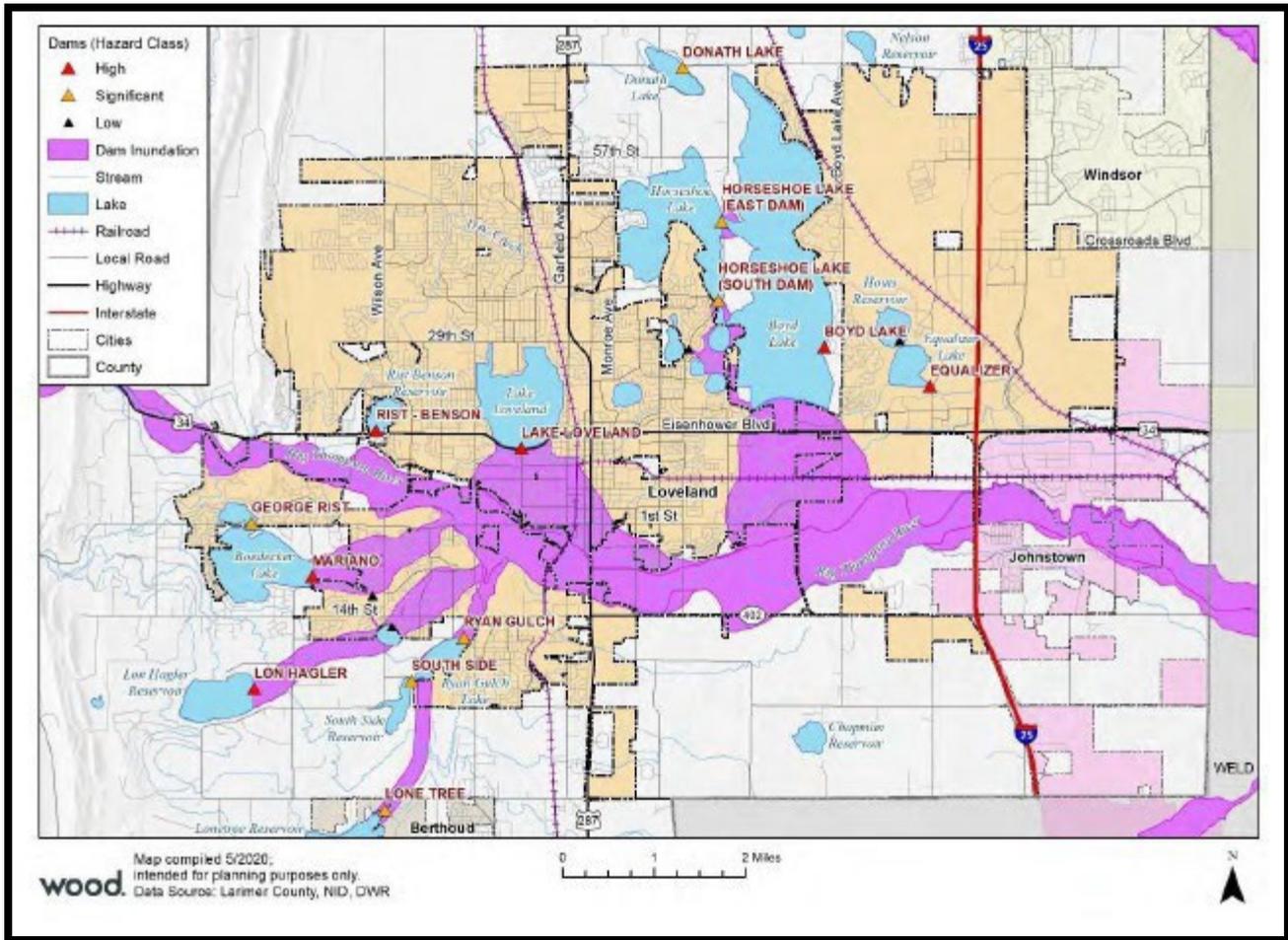
**Flooding** – Loveland and Larimer County have all been affected by flash flooding. This hazard is considered to be one of the greatest risks in the region. Two significant floods (1976 and 2013) have resulted in significant loss of life and property. LFRA works collaboratively with the City of Loveland and Larimer County to monitor anticipated flood events and plan for future events. In 1987, the City of Loveland adopted the Floodplain Building Code and Floodplain Regulations. These two documents encompass the contents and requirements of the National Flood Insurance Program and are updated and revised annually. The city continues to make improvements to their Flood Management Plan and all departments and divisions of City government, participate in planning efforts to improve preparedness.



*(Flood Hazard Area for LFRA)*

**Dam Failure** – The 2021 Larimer County Hazard Mitigation Plan identified 11 dams upstream of Loveland and identify 110 parcels potentially at risk of dam inundation. These parcels were valued at approximately \$ 50 million dollars with an estimated 275 residents in those parcels.





*(Dam Failure Area for LFRA)*

**Civil Disturbance** – In the United States there is growing tension politically. Locally in the LFRA response area it has been seen at City Council meetings, as well as at School Board meetings. The potential risk for civil unrest to become dangerous exists at most government buildings as well as our schools, parks, churches and large entertainment venues. LFRA works and trains closely with members of Law Enforcement in anticipation of violent events such as active assailants. The station Captain at Station 5 is in charge of the TacFire program and coordinates all mutual aid trainings with Law Enforcement and Thompson Valley EMS. A mutual aid civil unrest task force system was established in 2020. Pre-determined task forces are identified and available for notification / dispatch by LETA 911 at the request of any participating agency.

**Operational Implementation of Risk Assessment**

The following section is a brief overview of risks inherent to firefighting operation and LFRA’s strategy to match actions to incident risk. The majority of the Community Risk Assessment deals with



risk to the citizens within our response area. LFRA does not include risk to firefighters in the overall community risk assessment, however, LFRA has gone to great lengths to emphasize tactical risk assessment and firefighter safety in response. In general, the fire service recognizes that there are three (3) incident priorities that should be applied to all incidents and employee actions:

**Life Safety:** Provide for citizen and firefighter safety

**Incident Stabilization:** Mitigate the incident circumstances

**Property Conservation:** Reduce property loss due to the incident

The public expects fire service professionals to evaluate and understand the risks inherent with hazard zone activities. Historically, most fire service agencies have attempted to categorize risk levels as High, Medium, and Low.

**High Risk:** We may risk our lives a lot, within a structured plan, to save savable lives and property.

**Moderate Risk:** We may risk our lives a little, within a structure plan, to save savable property.

**Low Risk:** We will not risk our lives at all to save lives or property that is already lost.

In 2015, LFRA determined that the categorization of risk as high/medium/low was unclear and oftentimes left the firefighter wondering if their actions truly correlated with the stated risk level. To help clarify risk and the corresponding actions that should be expected, LFRA established an improved risk profile system. This risk profile is used by the incident commander to evaluate risk versus gain prior to assigning personnel to a hazard zone. Any time that an established incident benchmark is reached, the risk profile is re-evaluated by all personnel operating on the incident scene and the appropriate risk profile is broadcast by the incident commander over the fireground tactical radio channel. All personnel actions taken on scene are expected to align with the risk profile established for that phase of the incident response. LFRA personnel are expected to apply the risk profile and incident priorities to all incidents when developing an incident action plan.

**Life Risk:** Incident circumstances indicate that civilian and/or firefighter lives may be saved by aggressive action applied within a structured plan.

**Property Risk:** Incident circumstances indicate that no civilian and/or firefighter lives should be risked because of a non-survivable hazard zone.

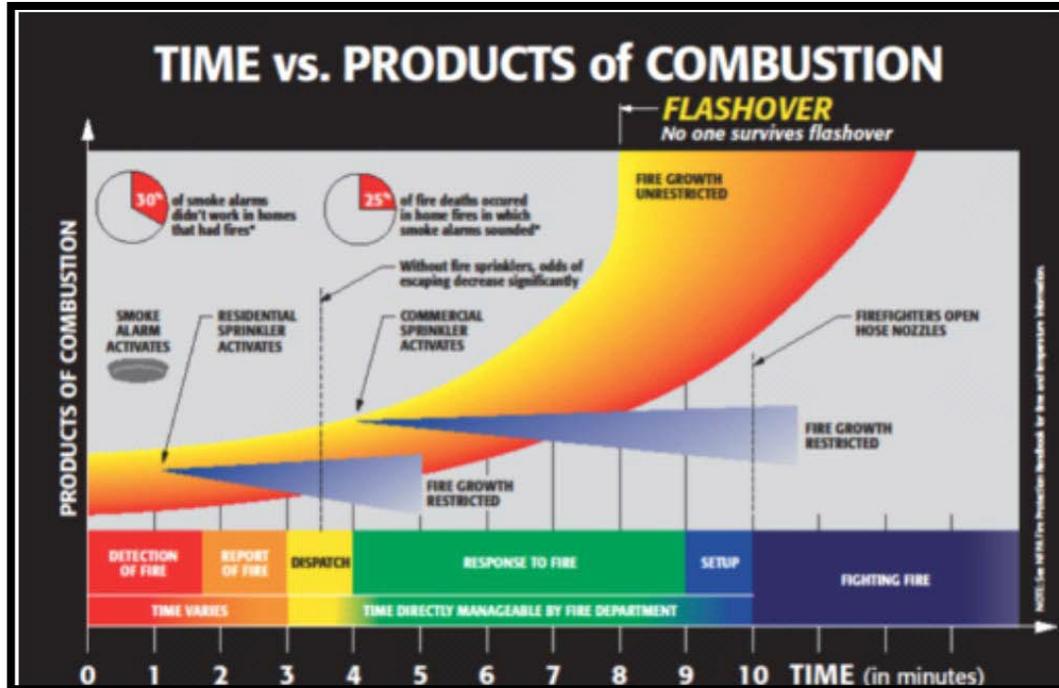


# Chapter 4 – Standards of Cover

Factors driving Loveland Fire Rescue Authority’s response performance are regularly examined and analyzed to help the agency develop data-driven methodologies to understand the agency’s ability to respond to current and anticipated calls for service. Historical incident data is the best source of information for determining the probability of future incidents and for projecting trends in incident occurrence.

## Relationship Between Outcome and Response Time

LFRA’s response performance goal is to deploy an effective and efficient emergency response to minimize loss of life and property damage. In terms of fire suppression operations, a sufficient number of personnel must arrive on scene with the appropriate resources and within an appropriate time frame to accomplish the critical tasks necessary to extinguish the fire. While every fire demonstrates different circumstances, fire behavior can, and should be, anticipated. A key point in the growth of any fire is the transition to flashover, which is the time at which all available fuel packages within the entire fire area simultaneously reach their ignition temperature. This produces a hostile fire event, with extreme heat, rapid free burning, extremely high pressure, and tremendous smoke production, which nobody can survive.

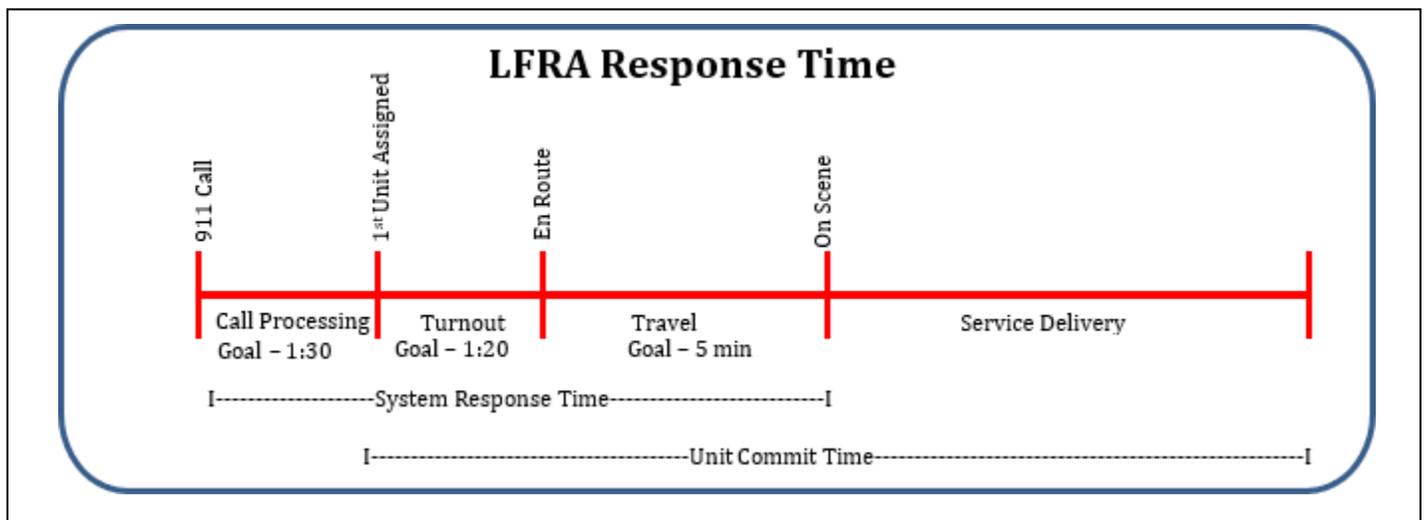


*(Time versus Products of Combustion)*



The typical fire growth curve in comparison to those portions of the overall incident timeline can be controlled or otherwise influenced by the fire service agency. It can be inferred that an increased response time leads to decreased success in containing a fire to room or area of origin. Similarly, increased response time has a negative effect on occupant survival. It is necessary for the agency to have a timely response to the incident while also implementing a skilled response for there to be the greatest opportunity for success.

Through the various analytical tools available to LFRA, the agency is able to accurately calculate and report resource utilization and analyze performance in relation to specific call type reported, incident type found and/or geographic region. In order to accurately report LFRA’s response performance, it is first necessary to establish a common understanding of the processes and time calculations involved in this analysis. Viewed graphically, these various time periods are often referred to as a “cascade of events,” meaning that each event happens in sequence with the other events.



*(Cascade of Events)*

**Alarm Handling Time:** Also referred to as “Call Processing Time.” This is the time period that is used by the Loveland Emergency Communications Center (LECC) to receive a 911 call and assign appropriate units. CAD time stamps utilized include phone pickup and 1st unit assigned. This time period specifically measures the time it takes for the LECC to receive a 911 call, gather information, create an incident, and assign at least one (1) LFRA apparatus to the incident.

*Loveland Fire Rescue Authority has adopted a standardized 90 second alarm handling benchmark for all risk profiles.*



Influences and discrepancies: The LECC uses The National Academy EMD Protocol to process alarms for medical emergencies. This is a critical component of the LECC's accreditation process as well as the general information gathering process used to dispatch the correct resources/response profile. This EMD process lends to longer alarm processing times for EMS responses that, unlike other risk profiles, are less flexible or receptive to time-based improvements. However, the EMD protocol is also considered the initiation of patient care for medical emergencies in many cases. After the dispatcher has completed intake and resource dispatching, the dispatcher attempts to keep the reporting party on the phone and provide instructions for patient care which is provided within the EMD Protocol/Programming (i.e., instructions for delivering bystander CPR). Due to the possibility of significant variations in the EMD protocol and alarm processing based on the medical condition of the patient, LFRA has rejected the creation of a "standard deviation" for EMS alarm handling benchmarks.

Turnout Time: The time period between when an apparatus is assigned to an incident and when that apparatus goes enroute to the incident, as captured by the apparatus officer pushing the "Responding" button on the laptop or notifying Dispatch via radio. CAD time stamps utilized include "Assigned" and "Enroute". This time period measures the time it takes for a crew to receive notification of an assignment, report to their assigned apparatus, don the appropriate personal protective equipment, and mount the apparatus. Some individuals may refer to this time period as "Reflex Time." This term should be avoided because it has many different definitions.

Loveland Fire Rescue Authority has adopted a standardized 80 second turnout time benchmark for all non-jump rig responses (all ARFF, all EMS, all fire suppressions, low & moderate risk wildland, low & moderate risk HazMat, and low & moderate risk tech rescue).

*Loveland Fire Rescue Authority has adopted a standardized 110 second turnout time benchmark for all jump rig responses (high-risk wildland, high-risk Hazmat, and high-risk tech rescue.) This is to compensate for the increased time required for personnel to move themselves and their personal equipment over to the additional apparatus needed to respond to the more specialized risk profile.*

Influences and discrepancies: The Loveland Emergency Communications Center employs a station/apparatus alerting system that is compatible with LFRA as well as several other emergency response agencies. The system employs a variety of tones that alert those stations and/or apparatus that are assigned to a given incident. Based on the technology applied to these tones, each incident will have a time lag between the time that the Dispatcher assigns each apparatus to an incident and when each apparatus receives the tones indicating that they have been assigned to that incident. Thus, the calculated



Turnout Time for each apparatus will include some variable amount of time that cannot be accurately calculated.

Additionally, because Turnout Time includes several activities that must be performed, that time will be extended for larger fire stations. Extended turnout times could also be encountered if the personnel are exercising, involved in a training activity, using the restroom, or are otherwise engaged in some activity other than waiting for an incident to occur.

Travel Time: The time it takes for an apparatus to arrive on the scene of a reported incident. CAD time stamps utilized include individual apparatus “Enroute” to “Arrived”. As with turnout time, this time period can be calculated for each apparatus assigned to an incident. LFRA measures the travel time for the first-due apparatus as well as the travel time for the remainder of the effective response force to arrive on scene.

*Loveland Fire Rescue Authority has adopted a standardized 5-minute travel time benchmark for first due apparatus in the urban response area and a standardized 14-minute travel time benchmark for first due apparatus in the rural response area.*

*Loveland Fire Rescue Authority has adopted a standardized 9-minute travel time benchmark for the effective response force in the urban environment and a standardized 18-minute travel time benchmark for the effective response force in the rural response area. Please note that some risk categories contain variable sized ERF's, including ERF's accomplished with a single company. In this case, the benchmark performance statement will be based off the largest potential ERF within the category.*

Possible sources of discrepancy: This time period is one of the easiest to calculate because of what it measures; however, two variables have a profound impact on the length of time it takes for an apparatus to travel to the scene of an incident. First, the volume of traffic on the road that is traveled by the apparatus will have an obvious effect on travel time. The greater the volume of traffic, the longer it will take to get to the incident. The second variable is the actual distance the apparatus must travel. This variable is discussed further below, in the Urban Response Area section of this document.

Total Response Time: The time it takes for the entire 911 response system to deliver the appropriate resources. The Total Response Times referenced in this document can simply be thought of as “alarm handling time + turnout time + travel time.”



*Loveland Fire Rescue Authority has adopted a standardized 7 minutes and 50 seconds total response time benchmark for the first due apparatus in the urban response area and a standardized 16 minute and 50 seconds total response time benchmark for the first due apparatus in the rural response area. This may deviate by 30 seconds for jump rig responses.*

*Loveland Fire Rescue Authority has adopted a standardized 11 minute and 50 second total response time benchmark for the effective response force in the urban response area and a 20 minute and 50 seconds total response time benchmark for the effective response force in the rural response area. This may deviate by 30 seconds for jump rig responses. Please note that some risk categories contain variable sized ERF's, including ERF's accomplished with a single company. In this case, the benchmark performance statement will be based off of the largest potential ERF within the category.*

## **Computer Aided Dispatch Improvements**

In September of 2020, improvements from an intergovernmental agreement (Combine Regional Information System Project "CRISP" IGA) between Larimer County, Larimer Emergency Telephone Authority, City of Fort Collins, Town of Estes Park, City of Loveland, and Colorado State University went into effect to create a new county-wide dispatch CAD system. The Central Square platform was selected for implementation across all dispatch centers and has provided for redundancy or multiple layers of back up in the event one dispatch center goes down. This system also allows for the sharing of response information county wide reducing and even eliminating the increased processing time for calls that had to be previously transferred from one center to the next.

This new CAD system also provided an opportunity for agencies to explore a closest unit dispatching system, effectively eliminating the old system of response areas that were defined by out-of-date travel times, who received the funding from the property, or other historical data and agreements. LFRA and Berthoud had been operating on a closest unit concept since 2017, but the new system expanded to include the Estes Valley Fire District, Poudre Fire Authority, and Wellington Fire District. This system is programmed to deploy the closest appropriate resource without regard to jurisdiction. The closest unit concept has greatly increased the response depth for each agency involved.

## **Fire Station Alerting System Improvements**

Beginning with the construction of the new Fire Station 2 in 2012, LFRA started implementing a new station alerting system (Phoenix G2). By late 2015, LFRA had obtained funding to implement the Phoenix G2 system in all the existing career fire stations (e.g., Stations 1,3,5,6) and has continued the installation of the system for stations built since this time (e.g., Stations 7 and 10). Lastly, in 2019, LFRA was also able to complete phase 2 of the Phoenix G2 implementation. This enhancement has allowed the



dispatch process to become automated based on data input from the Loveland Emergency Communications Center (LECC) dispatchers while they are speaking with a 911 caller. It also has the added benefit of waking only the company(ies) assigned to any call for service, thus improving firefighter health and safety by increasing opportunities for uninterrupted sleep for those apparatus not assigned to the incident.

Key elements of the Phoenix G2 Station Alerting System include:

- Computer-based notification system that integrates audio and visual alerting devices.
- Refined audio notification systems that support firefighter health and safety.
- Message boards located in apparatus bays to allow responders to monitor their turnout times.
- Enhanced doorbell notifications for each station doorbell.
- Modular design that allows for future system enhancements, as needed by the agency. Examples could include automatic overhead door opening devices.
- Access to computer-based maintenance and troubleshooting.
- Secondary/redundant alerting system that is mobile phone (iOS) based.
- Company-specific alerting infrastructure for Phase 2 of the project.
- Internet-based alerting infrastructure for Phase 2 of the project

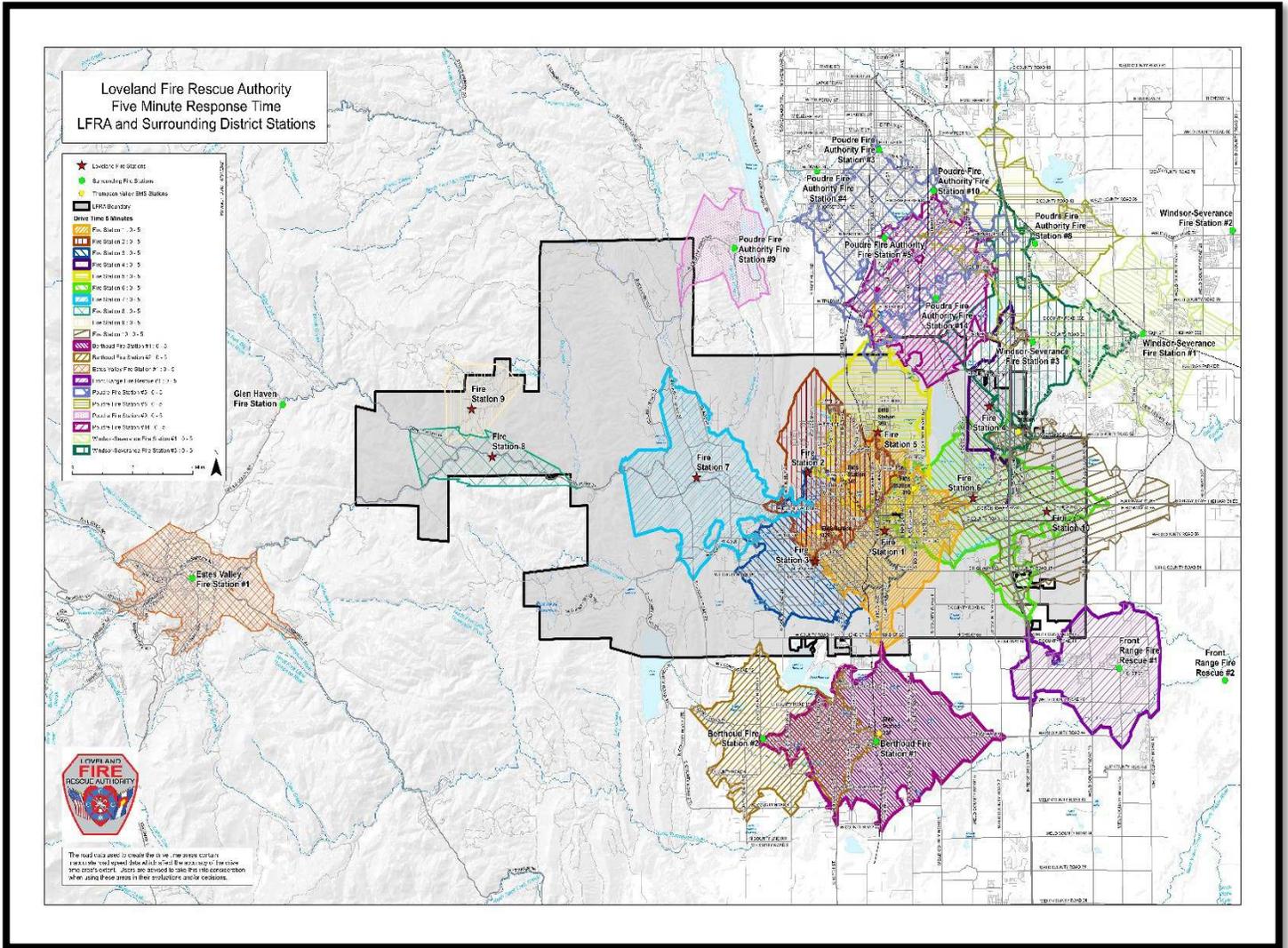
## **Resource Distribution**

Distribution refers to the number of resources located throughout the response area. In other words, distribution looks at the locations of fire stations to provide personnel and equipment for initial response to calls for service. In an ideal situation, every fire station would be located so as to equally distribute call volume among all stations. Unfortunately, that is rarely a possibility. Truthfully, fire station location is generally driven by growth of the community. The same can be said for LFRA's fire station locations, with some exceptions. As mentioned previously, Fire Station 2 was relocated to its present location based on incident response analysis that showed its previous location was inefficient in terms of overlap with adjacent fire station planning areas. As LFRA faces the reality of maintenance and repair costs of the current Station 3, incident response data is being utilized to show that relocating Station 3 slightly farther southwest would improve travel times to the western portion of Engine 3's response area without sacrificing travel times in other portions of the historical jurisdiction due to overlap with adjacent companies and closest unit dispatching. A new site for Station 3 has already been selected and secured with construction beginning in the latter half of 2023.

Fire station planning areas are used by LFRA to assist in addressing coverage based on a calculated



five (5) minute response time from the station location. With the full implementation of closest unit dispatching, LFRA does not use fire station planning areas to assign incident responses anymore. LFRA's automated vehicle location (AVL) system allows the dispatch system to assign the closest appropriate apparatus to a given response profile. The AVL system improves response performance during hours when apparatus are mobile in the LFRA response area, rather than stationary in their quarters.



*(Five (5) Minute Drive Time from LFRA & Auto Aid Stations)*



## **Resource Concentration**

The concentration of resources examines the placement of multiple resources in proximity to support establishing an effective response force (ERF) on an emergency scene within an established timeframe. In other words, LFRA must place a sufficient number of resources in strategic locations throughout the response area so that enough resources can arrive on scene quickly enough to mitigate the circumstances of any given incident. Larger and more complex incidents require a larger ERF, while smaller or simpler incidents require a correspondingly smaller ERF. Thus, it can be inferred that a greater amount of time will be necessary to assemble the requisite personnel and equipment for a larger and more complex incident than for a smaller and simpler incident.

## **Critical Task Analysis**

When a citizen calls 911, they expect a skilled response by a sufficient number of personnel to effectively mitigate the circumstances of their emergency. Loveland Fire Rescue Authority (LFRA) has established several response plans that are intended to provide that skilled response to a wide variety of emergency and non-emergency calls for service. In developing those response plans, LFRA has performed a critical task analysis to develop an understanding of the amount of work that each member should reasonably be expected to perform on any given incident. The analysis of these critical tasks improves agency awareness about the adequacy of current staffing levels, aid agreements, and other resources in terms of their ability to provide a sufficient number of personnel and equipment to an emergency scene in a timely manner to effectively perform these critical tasks. Critical tasks can be defined as those tasks that must be performed to successfully mitigate the circumstances of the incident. Critical tasks are based upon risk assessment summaries, agency policies and procedures, accepted industry standards, National Fire Protection Association guidelines, and expert counsel. The analysis of these tasks and the numbers of personnel needed to complete them serves as the basis and rationale for establishing a risk-specific effective response force (ERF). In other words, the critical task analysis provides data that allows LFRA to determine the appropriate apparatus response plan to effectively control the circumstances of each incident type. It is important to note that LFRA understands that some situations will necessitate dependence on neighboring agencies to provide personnel and equipment through automatic-aid and/or mutual-aid agreements. Where applicable, this has been built into the ERF determination.

LFRA originally began researching time to task completion with the live fire training that was conducted after construction was completed on the agency's live fire training facility in the Fall of 2009.



Since 2009, the agency has continued to monitor company proficiency through both live fire training scenarios as well as Company Qualifications Testing (CQTs). Additionally, after the implementation of the CRISP IGA and closest unit dispatching throughout the county, LFRA began the first round of CQT style training with its auto aid partners- primarily Front Range Fire Rescue and Berthoud Fire Protection District. This training provides a more realistic view of fire ground performance due to the implementation of closest unit dispatching and is establishing new baselines to help identify areas for improvement and training.

<b>ACTION/ BENCHMARK</b>	<b>90th Percentile (2009)</b>	<b>90th Percentile (2016)</b>	<b>90th Percentile (2021)</b>
<b>1<sup>st</sup> Line Down</b>	2:23	2:23	Not Measure
Initial 360 Survey	Not Measured	2:00	2:46
Risk Profile Aired	Not Measured	2:36	Not Measured
Door Forced & Controlled	Not Measured	4:24	3:50
<b>1<sup>st</sup> Line Inside</b>	5:18	4:48	5:26
2 <sup>nd</sup> Line Down (dry)	9:02	6:22	Not Measured
Water Supply Established	10:10	9:25	Not Measured
Fire Located	10:21	9:51	09:23
<b>Entry to Fire Located</b>	5:03	4:37	3:54
Fire Controlled	11:13	12:31	10:37
<b>Entry to Fire Controlled</b>	5:54	7:47	5:38
Horizontal Ventilation	10:27	11:55	Not Measured
Victim Located	Not Measured	Not Measured	8:52
Victim #1 Out	10:14	5:57	13:31
Victim #2 Out	13:46	11:37	Not Measured
Primary Search Complete	14:57	16:00	13:05

*(Critical Fireground Tasking)*

## **2023 Risk Analysis Update**

In response to recommendations made as a result of a December 2022 peer team site visit, the LFRA underwent a complete overhaul of its previous risk analysis and methodology. As described in the above CRA, the LFRA decided to move away from a 2-axis methodology in favor of a 3-axis methodology. This resulted in the realignment of many responses within the various categories. Previously, the LFRA had not categorized any emergent responses below medium or moderate risk, with Technical Rescue (Lock Out/In) being the lone exception. The new 3-axis methodology (1) introduced the consideration of “impact” or “system draw down” and (2) utilized a significantly more accurate consideration of probability or frequency. The resulting realignment of these categories has now made it necessary to report on system performance in new low risk categories within Fire Suppression, Wildland, EMS, and HazMat.



## **Modified Categories**

The new three axis methodology also resulted in several categories containing significant disparities between the associated event type's ERFs. In an effort to most accurately reflect the data, some categories have been modified as too not too favorably skew the reported performance. In categories containing both single and multi-company ERFs, the single company ERF's have been removed from the reported ERF performance measures. The affected categories include: low risk fire, low risk, hazmat, and low risk ARFF.

Additionally, some of these categories include disparities between multi-company responses. Moving forward, the LFRA is working towards new solutions to better capture this within the performance statements and data presentation.

## **Data Methodology**

Data methodology and establishing new data methodology became a major component to re- analyzing LFRA's resource deployment. Several different individuals had completed various components of LFRA's initial and ongoing data analysis since the organization's initial accreditation, but no methodology had previously been cemented in policy to ensure that all data being compared was "apples to apples". A new policy was drafted to ensure that all baseline data was analyzed in a consistent format and that all future analysis would be comparable to baseline.

<b>PERFORMANCE MEASURE</b>	<b>THRESHOLD</b>
Alarm Handling	00:04:04
Turnout Time	00:02:32
Travel Time Urban	00:08:07
Travel Time Rural	00:14:05
Total Response Time Urban	00:12:04
Total Response Time Rural	00:17:50



One of the most significant changes to this methodology was the use of the inter-quartile range (IQR) to identify and eliminate outliers from the data set. Previous analysis essentially used the “eye test” to identify and remove outliers- and may or may not have included investigation into the incident in question. For the purpose of analyzing distribution and concentration with the LFRA response area, LFRA utilized the IQR method to develop thresholds to remove statistical outliers.

## **Low-Risk Fire Suppression Overview**

CAD Nature Codes: Investigation Fire, Explosion (unspecified), Other Fire (non-structure), Bonfire, Alarm Fire Residential, Alarm Fire Commercial, Waterflow, Vehicle Fire Small, Vehicle Fire Commercial.

NFIRS Codes: 112-118, 121-123, 131-138, 711-715, 731-736, 741-746

LFRA’s new risk analysis determined that low-risk fire suppression responses primarily involved fires in structures other than a building, cooking fires contained to the cooking vessel, fire in a mobile property, trash fires, chimney fires, and passenger vehicle fires. This type of incident typically requires a single company response with an ERF of 2-3 people. Example Low Risk Fire Suppression CTA/ERF’s have been listed below for reference. A complete list of CTA/ERF’s for the Fire Suppression classification can be found in the Appendix.

Most of the Low-Risk Fire Responses were previously categorized as medium or moderate risk responses that had been modified as part of a 2020 effort to “right size” responses and increase system resiliency. LFRA had been experiencing a large drain on resource availability for reported structure fires. This was due to sending three engines, two support companies, a battalion chief, and a TVEMS med unit to every reported structure fire. This tied up five of LFRA’s eight on duty companies leaving large holes in system coverage. As one might imagine, a significant number of these incidents resulted in no fire being found.

In response, LFRA worked to “right size” system responses by developing “unconfirmed structure fire” profiles that differ based on the building type. This process was also implemented for wildland fire responses. Since implementing these changes over the last several years, LFRA has been able to maintain a higher level of system coverage at all times. Additionally, due to the quality of information intake occurring at the LECC, very few unconfirmed structure fires have been required to be upgraded to a full first alarm.



<b>Bonfire</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Command/360/IAP	Co. Officer	Squad/Engine
Investigate & Extinguish	DO/FF	
<b>3 Critical Tasks</b>	<b>2 Personnel</b>	<b>1 Unit</b>

<b>Alarm Fire Commercial</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Command/360/IAP	Co. Officer	Engine
Alarm Panel	DO	
Investigate	FF (w/CO)	
<b>3 Critical Tasks</b>	<b>3 Personnel</b>	<b>1 Unit</b>

<b>Waterflow</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Command/360/IAP	Co Officer	Engine
Investigate	FF (w/ CO)	
Alarm Panel	DO	
Control Water	Co Officer/FF	2nd Due Co.
<b>4 Tasks</b>	<b>4 Personnel</b>	<b>2 Units</b>

<b>Vehicle Fire Small</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Command/360/IAP	Co Officer	Engine
Pump Operation	DO	
Extinguish	FF (w/ CO)	
Stabilize & Access	Co Officer/FF	Squad/Engine
<b>4 Tasks</b>	<b>4 Personnel</b>	<b>2 Units</b>



<b>Vehicle Fire Commercial</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Command/360/IAP	Co Officer	Engine
Pump Operation	DO	
Extinguish	FF (w/ CO)	
Stabilize & Acces	Co Officer	Engine
	FF (w/ CO)	
Water Supply	DO	
<b>5 Tasks</b>	<b>6 Personnel</b>	<b>2 Units</b>

<b>Structure Fire Other</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Command Upgrade	Chief Officer	BC
Command/360/IAP	Co Officer	Engine
Pump Operation	DO	
Fire Attack 1st Line	FF (w/ CO)	
Fire Attack 2nd Line	Co Officer	Engine
	FF (w/ CO)	
Water Supply	DO	
<b>6 Tasks</b>	<b>7 Personnel</b>	<b>3 Units</b>

<b>Other Fire Non-Structure</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Command/360/IAP	Co Officer	Engine
Investigate		
Pump Operation	DO	
Extinguish	FF (w/ CO)	
<b>4 Tasks</b>	<b>3 Personnel</b>	<b>1 Unit</b>

## **Low-Risk Fire Suppression: Baseline System Performance**

The following information contains response data from all low-risk fire suppressions activities to which LFRA responded during the time period from January 1, 2018, through December 31, 2022. During this time period, the agency operated with a designated Urban Response Area and a Rural Response Area.

For 90 percent of all low-risk fire suppression, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer and one (1) engineer or firefighter, is: 9 minutes and 23 seconds in the urban response area, and 11 minutes and 18 seconds in the rural response zone. The first due apparatus for all structure fire risk levels is capable of: establishing incident command, performing a 360-degree scene size-up, developing an appropriate incident action plan, and requesting additional



resources. The first arriving engine is capable of: delivering a minimum of 750 gallons of tank water with a minimum of a 1500 gpm rated fire pump, deploying an appropriate fire attack hose line, providing sufficient water flow via the on-board tank and pump, and applying water to the fire. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of all low-risk fire suppression, the total response time for the arrival of the appropriate low-risk fire suppression effective response force (ERF) is: 10 minutes and 52 seconds in the urban response area and 15 minutes and 10 seconds in the rural response zone. The ERF shall be capable of the appropriate combination of: upgrading incident command, designating an imbedded safety officer, providing an uninterrupted water supply, advancing a primary and secondary attack line for fire control, completing forcible entry/access, stabilizing a vehicle, deploying any necessary equipment to support fire suppression operations, and performing salvage and overhaul. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

### **Low-Risk Fire Suppression: Performance Benchmarks**

For 90 percent of all low-risk fire suppression, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer and one (1) engineer or firefighter, shall be: 7 minutes and 50 seconds in the urban response area, and 16 minutes and 50 seconds in the rural response zone. The first due apparatus for all structure fire risk levels is capable of: establishing incident command, performing a 360-degree scene size-up, developing an appropriate incident action plan, and requesting additional resources. The first arriving engine is capable of: delivering a minimum of 750 gallons of tank water with a minimum of a 1500 gpm rated fire pump, deploying an appropriate fire attack hose line, providing sufficient water flow via the on-board tank and pump, and applying water to the fire. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.



Low Risk Fire Suppression 90 <sup>th</sup> Percentile			2018-2022	2022	2021	2020	2019	2018	Benchmark	Performance Gap
<b>Alarm Handling</b>	Pickup to Dispatch	All	01:22	01:22	N/A	N/A	N/A	N/A	01:30	-00:08
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	All	01:52	01:52	N/A	N/A	N/A	N/A	01:20	+00:32
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	06:53	06:53	N/A	N/A	N/A	N/A	05:00	+01:53
		Rural	09:08	09:08	N/A	N/A	N/A	N/A	14:00	-04:52
	Travel Time ERF Concentration	Urban	08:10	08:10	N/A	N/A	N/A	N/A	09:00	-00:50
		Rural	10:42	10:42	N/A	N/A	N/A	N/A	18:00	-07:18
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit Distribution	Urban	09:23	09:23	N/A	N/A	N/A	N/A	07:50	+01:33
			N= 391	N= 391	N= 0	N= 0	N= 0	N= 0		
		Rural	11:18	11:18	N/A	N/A	N/A	N/A	16:50	-05:32
			N= 70	N= 70	N= 0	N= 0	N= 0	N= 0		
	Total Response Time ERF Concentration	Urban	10:52	10:52	N/A	N/A	N/A	N/A	11:50	-00:58
			N= 362	N= 362	N= 0	N= 0	N= 0	N= 0		
Rural	15:10	15:10	N/A	N/A	N/A	N/A	20:50	-04:50		
	N= 60	N= 60	N= 0	N= 0	N= 0	N= 0				

\*New reporting category for 2022

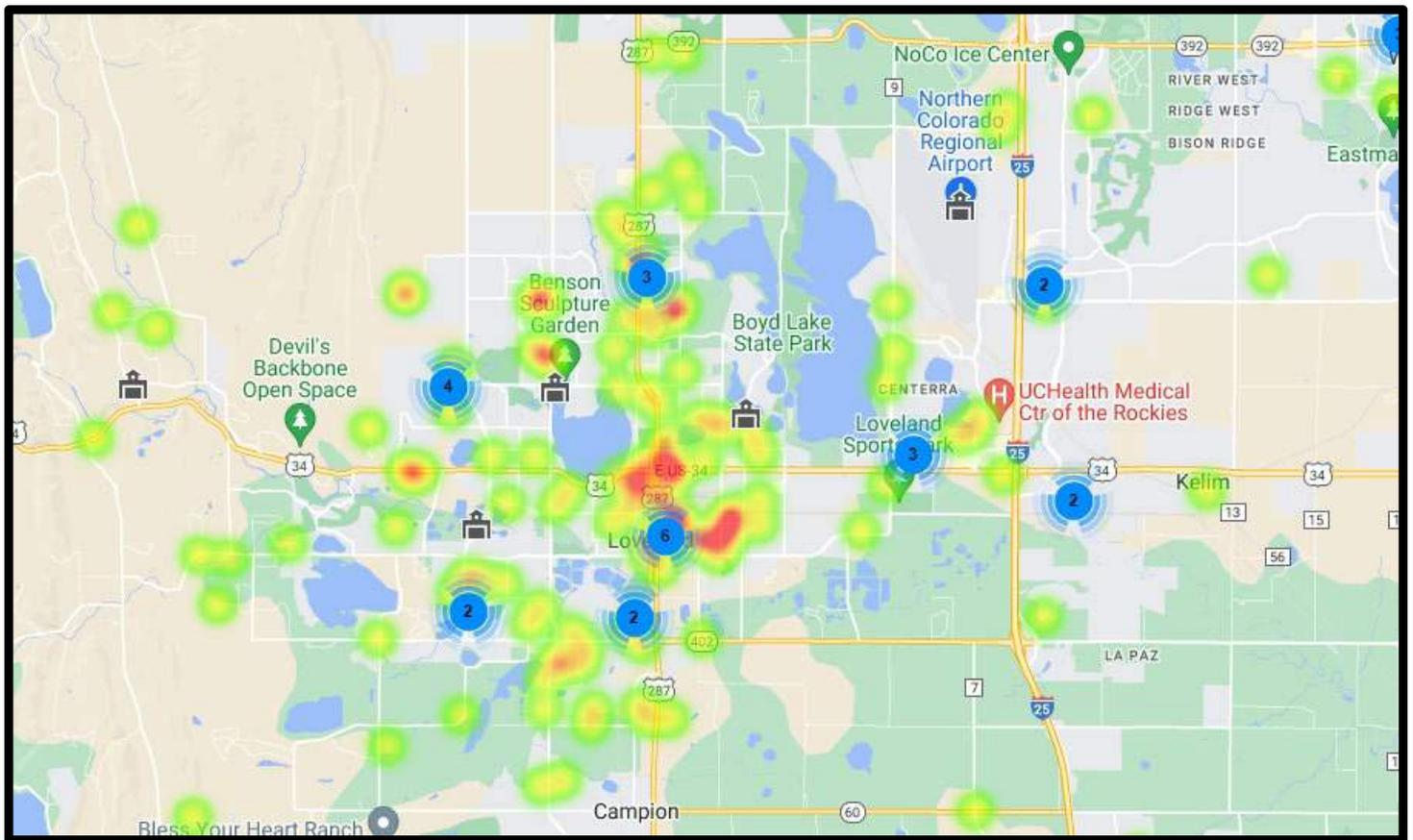


## **Moderate-Risk Fire Suppression Overview**

CAD Nature Codes: Residential Structure Fire, Multi-Family Structure Fire

NFIRS Codes: 111

With essentially all of the responses previously categorized as moderate-risk fire suppression migrating down to low risk, residential and multi-family structure fires migrated down from high-risk to take their spot within the new 3-axis methodology. The NFIRS code 111 responses are now manually separated to reflect this change.



*(Heat map of Building Fires from 2018-2022)*



<b>Residential Structure Fire</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Command Upgrade	BC	BC
Command/360/IAP	Co Officer	Engine
Pump Operation	DO	
Fire Attack 1st Line	FF (w/ CO)	
Search	Co Officer	1st Due Support
	FF	
Utilities	DO	
Fire Attack 2nd Line	Co Officer	2nd Due Engine
	FF	
Water Supply	DO	
Flow Path/Vent	Co Officer	2nd Due Support
	FF	
RIC	Co Officer	
	DO	
	FF	
Safety	Chief Officer	2nd Due BC
<b>11 Tasks</b>	<b>16 Personnel</b>	<b>7 Units</b>

<b>Multi-Family Structure Fire</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Command Upgrade	BC	BC
Command/360/IAP	Co Officer	Engine
Pump Operation	DO	
Fire Attack 1st Line	FF (w/ CO)	
Search	Co Officer	1st Due Support
	FF	
Utilities	DO	
Fire Attack 2nd Line	Co Officer	2nd Due Engine
	FF	
Water Supply	DO	
Flow Path/Vent	Co Officer	2nd Due Support
	FF	
RIC	Co Officer	
	DO	
	FF	
Safety	Chief Officer	2nd Due BC
<b>11 Tasks</b>	<b>16 Personnel</b>	<b>7 Units</b>



## **Moderate-Risk Fire Suppression: Baseline System Performance**

The following information contains response data from all moderate-risk structure fires to which LFRFA responded during the time period from January 1, 2018, through December 31, 2022. During this time period, the agency operated with a designated Urban Response Area and a Rural Response Area.

For 90 percent of all moderate-risk fire suppression, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer and one (1) firefighter, is: 9 minutes and 26 seconds in the urban response area, and 12 minutes and 51 seconds in the rural response zone. The first due apparatus for all structure fire risk levels is capable of: establishing incident command, performing a 360-degree scene size-up, developing an appropriate incident action plan, and requesting additional resources. The first arriving engine is capable of: delivering a minimum of 750 gallons of tank water with a minimum of a 1500 gpm rated fire pump, deploying an appropriate fire attack hose line, providing sufficient water flow via the on-board tank and pump, and applying water to the fire. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of all moderate-risk fire suppression, the total response time for the arrival of the appropriate moderate-risk fire suppression effective response force (ERF) is: 14 minutes and 52 seconds in the urban response area and 19 minutes and 07 seconds in the rural response zone. The ERF is capable of: upgrading incident command, designating an imbedded safety officer, providing an uninterrupted water supply, advancing a primary and secondary attack line for fire control, completing forcible entry, completing a primary search of the structure, providing a rapid intervention crew, controlling utilities, establishing operational groups and/or divisions as appropriate, deploying ladders and other necessary equipment to support fireground operations, and performing salvage and overhaul. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

## **Moderate-Risk Fire Suppression: Performance Benchmarks**

For 90 percent of all moderate-risk fire suppression, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer and one (1) firefighter, shall be: 7 minutes and 50 seconds in the urban response area, and 16 minutes and 50 seconds in the rural response area. The first due apparatus for all structure fire risk levels shall be capable of: establishing incident command, performing a 360-degree scene size-up, developing an appropriate incident action plan, and requesting additional resources. The first arriving engine shall be capable of: delivering a minimum of



750 gallons of tank water with a minimum of a 1500gpm rated fire pump, deploying an appropriate fire attack hose line, providing sufficient water flow via the on-board tank and pump, and applying water to the fire. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of all moderate-risk fire suppression, the total response time for the arrival of the appropriate moderate-risk fire suppression effective response force (ERF) shall be: 11 minutes and 50 seconds in the urban response area and 20 minutes and 50 seconds in the rural response zone. The ERF shall be capable of: upgrading incident command, designating an imbedded safety officer, providing an uninterrupted water supply, advancing a primary and secondary attack line for fire control, completing forcible entry, completing a primary search of the structure, providing a rapid intervention crew, controlling utilities, establishing operational groups and/or divisions as appropriate, deploying ladders and other necessary equipment to support fireground operations, and performing salvage and overhaul.

Mod Risk Fire Suppression 90 <sup>th</sup> Percentile			2018-2022	2022	2021	2020	2019	2018	Benchmark	Performance Gap
<b>Alarm Handling</b>	Pickup to Dispatch	All	01:37	01:15	01:15	01:40	01:39	01:42	01:30	+00:07
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	All	01:58	02:02	01:59	01:57	02:02	01:54	01:20	+00:38
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	06:32	04:56	06:26	06:28	06:39	06:37	05:00	+01:32
		Rural	09:07	09:07	08:22	08:32	09:27	09:09	14:00	-04:53
	Travel Time ERF Concentration	Urban	09:26	13:21	08:21	09:11	09:00	09:52	09:00	+00:26
		Rural	12:18	18:22	11:17	08:04	11:48	13:17	18:00	-05:42
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit Distribution	Urban	09:19	07:42	06:46	09:02	09:29	09:22	07:50	+01:29
			N= 1337	N= 21	N= 282	N= 290	N= 433	N= 311		
		Rural	12:30	11:41	12:06	11:48	12:11	13:17	16:50	-04:20
			N= 256	N= 9	N= 39	N= 37	N= 77	N= 94		
	Total Response Time ERF Concentration	Urban	11:50	16:26	11:01	11:39	11:26	12:32	11:50	00:00
			N= 437	N= 12	N= 88	N= 91	N= 110	N= 136		
Rural		15:29	21:01	12:13	11:22	14:10	16:17	20:50	-05:21	
		N= 91	N= 4	N= 21	N= 17	N= 26	N= 23			

\*Much of Med Risk Fire Suppression re-categorized into low risk



## **High/Max-Risk Fire Suppression Overview**

CAD Nature Codes: Commercial Structure Fire

NFIRS Codes: 111

The LFRA risk analysis re-categorized high and maximum risk to include all confirmed working commercial structure fires with additional criteria to differentiate maximum risk fires. To summarize the criteria for the maximum risk fire suppression category, LFRA has established that a structure that meets the following criteria shall be classified within the maximum profile:

1. Occupancies that meet LFRA target hazard criteria with either a (1) “significant risk” OVAP score of 40+ or a (2) “moderate risk” score of 15-39 in a high-risk occupancy classification (e.g., critical infrastructure, hazmat, health care facility, high occupancy, etc.).

These target hazards are identified and categorized in the above-described planning zones to be made available to appropriate responding companies. All target hazards are also identified within the LECC CAD system notes to ensure that any company responding to a target hazard is aware of its status as a target hazard and the primary reason for such (e.g., critical infrastructure, hazmat, health care facility, high occupancy, etc.).

Due to the unique type and number of critical tasks that may have to be performed, multiple response profiles have been created to address the specific needs. At the time of this writing, there is currently no procedure identified for being able to properly separate out high and maximum risk fire suppression responses. For this reason, and the minimal number of maximum risk responses, high and maximum risk profiles are analyzed together.



<b>Commercial Structure Fire</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Command Upgrade	BC	BC
Command/360/IAP	Co Officer	Engine
Pump Operation	DO	
Fire Attack 1st Line	FF (w/ CO)	
Access	Co Officer	Heavy Rescue
	FF	
Utilities	DO	
Fire Attack 2nd Line	Co Officer	2nd Due Engine
	FF	
Water Supply	DO	
Roof Report	Co Officer	Tower
	DO	
	FF	
Search	Co Officer	3rd Due Engine
	FF	
FDC	DO	
RIC	Co Officer	4th Due Engine
	DO	
	FF	
Safety	Chief Officer	2nd Due BC
<b>13 Tasks</b>	<b>20 Personnel</b>	<b>8 Units</b>



## **High/Max-Risk Fire Suppression: Baseline System Performance**

The following information contains response data from all high/max-risk structure fires to which LFRA responded during the time period from January 1, 2018, through December 31, 2022. During this time period, the agency operated with a designated Urban Response Area and a Rural Response Area. Additional geographic zones are currently being developed to improve data analysis capabilities.

For 90 percent of all high/max-risk structure fires, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer and one (1) firefighter, is: 14 minutes and 08 seconds in the urban response area, and 12 minutes and 01 seconds in the rural response zone. The first due apparatus for all structure fire risk levels is capable of: establishing incident command, performing a 360-degree scene size-up, developing an appropriate incident action plan, and requesting additional resources. The first arriving engine is capable of: delivering a minimum of 750 gallons of tank water with a minimum of a 1500 gpm rated fire pump, deploying an appropriate fire attack hose line, providing sufficient water flow via the on-board tank and pump, and applying water to the fire. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of all high/max-risk structure fires, the total response time for the arrival of the effective response force (ERF), staffed with at least 16 firefighters\*, engineers and officers, is: 19 minutes and 08 seconds in the urban response area and 29 minutes and 31 seconds in the rural response zone. The ERF is capable of: upgrading incident command, assigning an imbedded safety officer, providing an uninterrupted water supply, advancing a primary and secondary attack line for fire control, completing forcible entry, completing a primary search of the structure, providing a rapid intervention crew, controlling utilities, establishing operational groups and/or divisions as appropriate, deploying ladders and other necessary equipment to support fireground operations, and performing salvage and overhaul. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

\*New 20-person ERF to be implemented in 2023



## **High/Max-Risk Fire Suppression: Performance Benchmarks**

For 90 percent of all high/max-risk structure fires, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer and one (1) firefighter, shall be: 7 minutes and 50 seconds in the urban response area, and 16 minutes and 50 seconds in the rural response area. The first due apparatus for all structure fire risk levels shall be capable of: establishing incident command, performing a 360-degree scene size-up, developing an appropriate incident action plan, and requesting additional resources. The first arriving engine shall be capable of: delivering a minimum of 750 gallons of tank water with a minimum of a 1500gpm rated fire pump, deploying an appropriate fire attack hose line, providing sufficient water flow via the on-board tank and pump, and applying water to the fire. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of all high/max-risk structure fires, the total response time for the arrival of the effective response force (ERF), staffed with at least 20\* firefighters, engineers and officers, shall be: 11 minutes and 50 seconds in the urban response area and 20 minutes and 50 seconds in the rural response zone. The ERF shall be capable of: upgrading incident command, assigning an imbedded safety officer, providing an uninterrupted water supply, advancing a primary and secondary attack line for fire control, completing forcible entry, completing a primary search of the structure, providing a rapid intervention crew, controlling utilities, establishing operational groups and/or divisions as appropriate, deploying ladders and other necessary equipment to support fireground operations, and performing salvage and overhaul. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

\*New 20 person ERF to be implemented in 2023

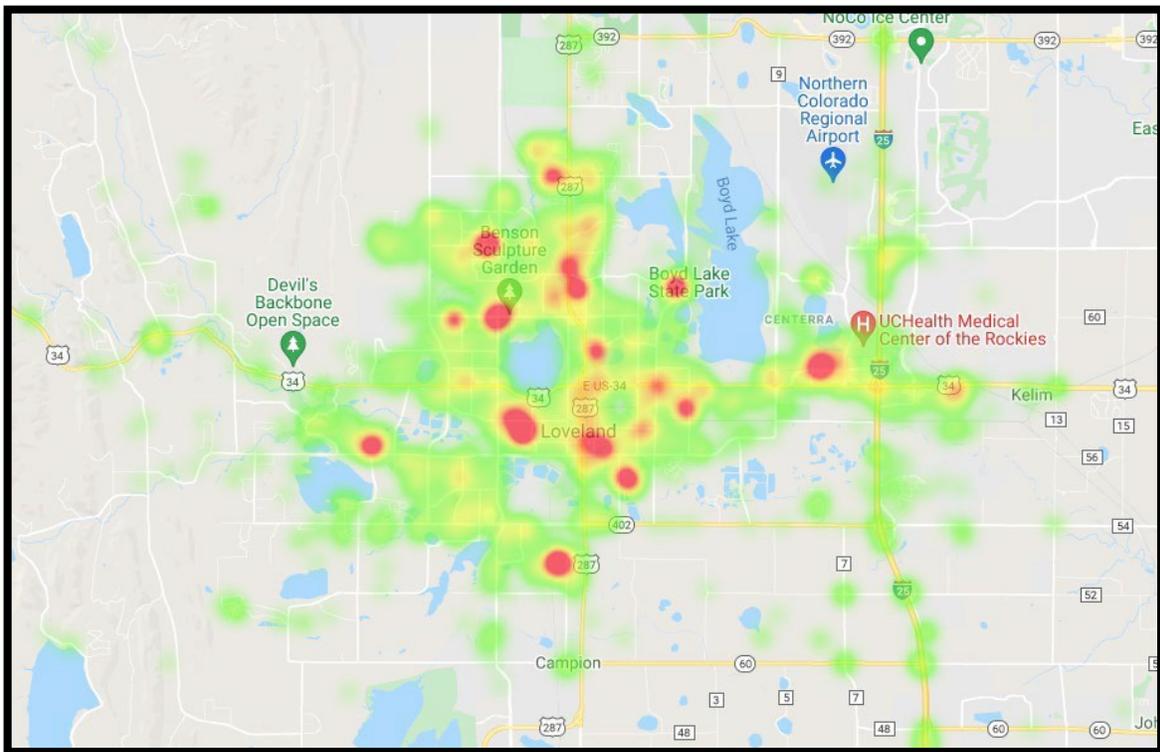


High Risk Fire Suppression 90 <sup>th</sup> Percentile			2018-2022	2022	2021	2020	2019	2018	Benchmark	Performance Gap
<b>Alarm Handling</b>	Pickup to Dispatch	All	02:17	01:33	02:49	01:49	02:05	02:11	01:30	+00:47
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	All	02:20	02:03	02:17	02:22	02:18	02:20	01:20	+01:00
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	06:11	05:24	06:19	05:16	06:39	05:37	05:00	+01:11
		Rural	10:07	N/A	07:24	04:44	10:32	09:56	14:00	-03:53
	Travel Time ERF Concentration	Urban	13:11	17:28	13:31	16:04	09:17	09:44	09:00	+04:11
		Rural	28:32	N/A	12:40	11:08	26:24	12:17	18:00	+10:32
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit Distribution	Urban	08:18 N= 72	08:39 N= 5	09:09 N= 19	08:05 N=20	07:26 N= 15	07:33 N= 13	07:50	+00:28
		Rural	11:50 N= 23	N/A N= 0	11:00 N= 6	08:32 N= 3	12:15 N= 5	11:28 N= 9	16:50	-05:00
	Total Response Time ERF Concentration	Urban	15:41 N= 40	19:41 N= 4	15:09 N= 10	18:19 N= 6	12:16 N= 12	14:01 N= 8	11:50	+03:51
		Rural	31:30 N= 8	N/A N= 0	18:20 N= 2	14:36 N= 1	29:34 N= 2	29:23 N= 3	20:50	+10:40



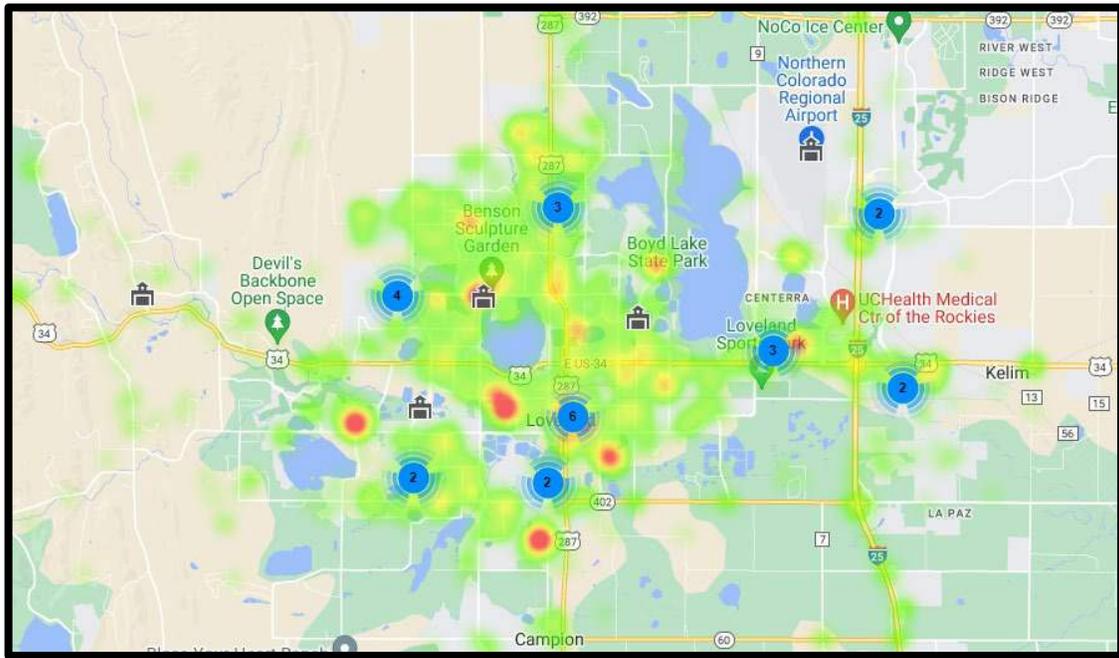
## **Emergency Medical Services (EMS) All**

The scope of LFRA's emergency medical services program is limited to providing basic life support (BLS), including provision of supplemental oxygen and an automated external defibrillator (AED), based on patient need and treatment protocols. Emergency medical service in the LFRA response area is augmented by Thompson Valley EMS, which provides advanced life support (ALS) and ambulance transport. TVEMS transports patients to the nearest appropriate hospital emergency department for assessment and treatment. EMS service demand is heavily influenced by population density and commercial development.



*(Heat map of all EMS Incidents 2017-2021)*





*(Heat map of all EMS Incidents 2018-2022)*

Previously, the LFRA reported all emergent EMS responses together due to limitations in separating out data within the classification and the absence of a reportable low risk category. With the transition to a 3-axis methodology, reporting has expanded to include three categories that mirror the other classifications and are accurately separated via the new methodology.

Furthermore, as a result of the new methodology, there now exists an increase in variability between ERF's within the three categories. If no performance statement is provided for the ERF, this is due to the ERF being equal to a single company response. In the case of variable ERF's within the category, the largest ERF was considered for the ERF performance statements.

The following critical task analysis includes all LFRA apparatus that are normally assigned by the Loveland Emergency Communications Center, based on the response plan that is generated from the emergency medical dispatch (EMD) procedures. LFRA apparatus are not routinely assigned to medical incidents that receive an EMD code of Alpha or (most) Bravo. Due to the total number of CTA/ERF's within the EMS classification, only a sampling is provided below. A full list is provided within the appendix.



<b>MVA Unknown Injury</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Command/Safety	Co Officer	Engine
Documentation		
Scene Stabilization	DO	
Pt Care	FF	
<b>3 Tasks</b>	<b>3 Personnel</b>	<b>1 Unit</b>

<b>Omega-Alpha-Bravo</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Command/Safety	Co Officer	Squad/Engine
Documentation		
Pt Care	DO/FF	
<b>3 Tasks</b>	<b>2 Personnel</b>	<b>1 Unit</b>

<b>Charlie/Delta</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Command/Safety	Co Officer	Squad/Engine
Documentation		
Pt Care	DO/FF	
<b>3 Tasks</b>	<b>2 Personnel</b>	<b>1 Unit</b>

<b>MVA w/ Injury</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Command/Safety	Co Officer	Engine
Documentation		
Scene Stabilization	DO	
Pt Care	FF	
<b>3 Tasks</b>	<b>3 Personnel</b>	<b>1 Unit</b>



<b>MCI-AA</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
(Unified) Command	Chief Officer	BC
Safety/Documentation	Co Officer	Squad/Engine
Triage	DO/FF	
Pt Care	3+	2nd Due Co
<b>4 Tasks</b>	<b>6 Personnel</b>	<b>3 Units</b>

<b>Echo</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Command/Safety	Co Officer	Engine
Documentation		
Compressions	DO	
Ventilations	FF	
<b>4 Tasks</b>	<b>3 Personnel</b>	<b>1 Unit</b>

### **Low-Risk EMS Overview**

CAD Nature Codes: Bravo, MVA w/ Unknown Injury, MVA 3+ Patients, Shooting, Stabbing

NFIRS Codes: 311, 321-324

### **Low-Risk Emergency Medical Services (EMS): Baseline System Performance**

The following information contains response data from low-risk EMS incidents with an CAD nature code of Bravo, MVA w/ Unknown Injury, MVA 3+, Shooting, and Stabbing to which LFRA responded during the time period from January 1, 2018, through December 31, 2022.

For 90 percent of low-risk EMS, the total response time for the arrival of the first due apparatus, staffed with at least two (2) firefighters is: 10 minutes and 18 seconds in the urban response area, and 13 minutes and 53 seconds in the rural response zone. The first due apparatus is capable of: performing a 360-degree scene survey; sizing up the situation; requesting additional resources; initiating patient care to include conducting a patient assessment, obtaining vital signs and patient medical history, managing a victim’s airway, providing supplemental oxygen, providing CPR and/or administering early defibrillation.

For 90 percent of low-risk EMS, the total response time for the arrival of the appropriate low-risk EMS effective response force (ERF) is: 10 minutes and 18 seconds in the urban response area and 13 minutes and 53 seconds in the rural response zone. The ERF is capable of the appropriate combination of stabilizing the scene for safety, expanding care to multiple patients, and triage in the event of a mass casualty incident. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.



## Low-Risk Emergency Medical Services (EMS): Performance Benchmarks

For 90 percent of all low-risk EMS, the total response time for the arrival of the first due apparatus, staffed with at least two (2) firefighters, shall be: 7 minutes and 50 seconds in the urban response area, and 16 minutes and 50 seconds in the rural response area. The first due apparatus for all EMS incidents shall be capable of: performing a 360-degree scene survey; sizing up the situation; requesting additional resources; initiating patient care to include conducting a patient assessment, obtaining vital signs and patient medical history, managing a victim’s airway, providing supplemental oxygen, providing CPR and/or administering early defibrillation.

For 90 percent of all low-risk EMS, the total response time for the arrival of the appropriate low-risk EMS effective response force (ERF) shall be: 11 minutes and 50 seconds in the urban response area and 20 minutes and 50 seconds in the rural response zone. The ERF is capable of the appropriate combination of: stabilizing the scene for safety, expanding care to multiple patients, and triage in the event of a mass casualty incident. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

Low Risk EMS 90 <sup>th</sup> Percentile			2018- 2022	2022	2021	2020	2019	2018	Benchmark	Performance Gap
<b>Alarm Handling</b>	Pickup to Dispatch	All	02:03	02:03	N/A	N/A	N/A	N/A	01:30	+00:33
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	All	01:46	01:46	N/A	N/A	N/A	N/A	01:20	+00:26
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	07:11	07:11	N/A	N/A	N/A	N/A	05:00	+02:11
		Rural	10:14	10:14	N/A	N/A	N/A	N/A	14:00	-03:46
	Travel Time ERF <b>Concentration</b>	Urban	07:11	07:11	N/A	N/A	N/A	N/A	05:00	+02:11
		Rural	10:14	10:14	N/A	N/A	N/A	N/A	14:00	-03:46
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	10:18	10:18	N/A	N/A	N/A	N/A	07:50	+02:28
			N= 148	N= 148	N= 0	N= 0	N= 0	N= 0		
		Rural	13:53	13:53	N/A	N/A	N/A	N/A	16:50	-02:57
	Total Response Time ERF <b>Concentration</b>	Urban	10:18	10:18	N/A	N/A	N/A	N/A	07:50	+02:28
			N= 148	N= 148	N= 0	N= 0	N= 0	N= 0		
		Rural	13:53	13:53	N/A	N/A	N/A	N/A	16:50	-02:57
			N= 81	N= 81	N= 0	N= 0	N= 0	N= 0		

\*New reporting category for 2022



## **Moderate-Risk EMS Overview**

CAD Nature Codes: Charlie/Delta, MVA with Injuries, MCI

NFIRS Codes: 311, 321-323

## **Moderate-Risk Emergency Medical Services (EMS): Baseline System Performance**

The following information contains response data from all EMS incidents with an CAD nature code of Charlie, Delta, MVA's w/ Injury, and Mass Casualty Incidents to which LFRA responded during the time period from January 1, 2018, through December 31, 2022.

For 90 percent of all moderate-risk EMS, the total response time for the arrival of the first due apparatus, staffed with at least two (2) firefighters is: 9 minutes and 23 seconds in the urban response area, and 13 minutes and 45 seconds in the rural response zone. The first due apparatus is capable of: performing a 360-degree scene survey; sizing up the situation; requesting additional resources; initiating patient care to include conducting a patient assessment, obtaining vital signs and patient medical history, managing a victim's airway, providing supplemental oxygen, providing CPR and/or administering early defibrillation.

For 90 percent of all moderate-risk EMS, the total response time for the arrival of the appropriate moderate-risk EMS effective response force (ERF) is: 9 minutes and 23 seconds in the urban response area and 13 minutes and 45 seconds in the rural response zone. The ERF is capable of the appropriate combination of stabilizing the scene for safety, expanding care to multiple patients, and triage in the event of a mass casualty incident. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

## **Moderate-Risk Emergency Medical Services (EMS): Performance Benchmarks**

For 90 percent of all moderate-risk EMS, the total response time for the arrival of the first due apparatus, staffed with at least two (2) firefighters, shall be: 7 minutes and 50 seconds in the urban response area, and 16 minutes and 50 seconds in the rural response area. The first due apparatus for all EMS incidents shall be capable of: performing a 360-degree scene survey; sizing up the situation; requesting additional resources; initiating patient care to include conducting a patient assessment, obtaining vital signs and patient medical history, managing a victim's airway, providing supplemental oxygen, providing CPR and/or administering early defibrillation.

For 90 percent of all moderate-risk EMS, the total response time for the arrival of the appropriate moderate-risk EMS effective response force (ERF) shall be: 11 minutes and 50 seconds in the urban



response area and 20 minutes and 50 seconds in the rural response zone. The ERF is capable of the appropriate combination of stabilizing the scene for safety, expanding care to multiple patients, and triage in the event of a mass casualty incident. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

Mod Risk EMS 90 <sup>th</sup> Percentile			2018- 2022	2022	2021	2020	2019	2018	Benchmark	Performance Gap
<b>Alarm Handling</b>	Pickup to Dispatch	All	02:52	02:51	02:50	02:59	02:52	02:45	01:30	+01:22
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	All	01:49	01:45	01:52	01:54	01:50	01:44	01:20	+00:29
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	05:44	05:53	05:49	05:46	05:39	05:29	05:00	+00:44
		Rural	09:40	09:10	09:22	09:20	10:15	10:01	14:00	--04:20
	Travel Time ERF <b>Concentration</b>	Urban	05:44	05:53	05:49	05:46	05:39	05:29	05:00	+00:44
		Rural	09:40	09:10	09:22	09:20	10:15	10:01	14:00	-04:20
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	09:12	09:15	09:09	09:28	09:05	09:05	07:50	+01:22
			N=1890 9	N=4234	N=3934	N=3371	N=3828	N=3542		
		Rural	13:09	12:30	12:49	12:45	13:31	13:54	16:50	-03:41
			N=3363	N=752	N=706	N=623	N=643	N=639		
	Total Response Time ERF <b>Concentration</b>	Urban	09:12	09:15	09:09	09:28	09:05	09:05	07:50	+01:22
			N=1890 9	N=4234	N=3934	N=3371	N=3828	N=3542		
		Rural	13:09	12:30	12:49	12:45	13:31	13:54	16:50	-03:41
			N=3363	N=752	N=706	N=623	N=643	N=639		

\*Formerly High Risk EMS



## **High-Risk EMS Overview**

CAD Nature Codes: Echo

NFIRS Codes: 321

## **High-Risk Emergency Medical Services (EMS): Baseline System Performance**

The following information contains response data from all EMS incidents with an EMD code of Echo, to which LFRA responded during the time period from January 1, 2018, through December 31, 2022.

For 90 percent of all high-risk EMS, the total response time for the arrival of the first due apparatus/ERF, staffed with at least two\* (2) firefighters is: 8 minutes and 47 seconds in the urban response area, and 13 minutes and 23 seconds in the rural response zone. The first due apparatus is capable of: performing a 360-degree scene survey; sizing up the situation; requesting additional resources; initiating patient care to include conducting a patient assessment, obtaining vital signs and patient medical history, managing a victim's airway, providing supplemental oxygen, providing CPR and/or administering early defibrillation. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

\* New 3 person ERF being implemented in 2023

## **High-Risk Emergency Medical Services (EMS): Performance Benchmarks**

For 90 percent of all high-risk EMS, the total response time for the arrival of the first due apparatus/ERF, staffed with at least three\* (3) firefighters, shall be: 7 minutes and 50 seconds in the urban response area, and 16 minutes and 50 seconds in the rural response area. The first due apparatus for all EMS incidents shall be capable of: performing a 360-degree scene survey; sizing up the situation; requesting additional resources; initiating patient care to include conducting a patient assessment, obtaining vital signs and patient medical history, managing a victim's airway, providing supplemental oxygen, providing CPR and/or administering early defibrillation. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

\* New 3 person ERF being implemented in 2023



High Risk EMS 90 <sup>th</sup> Percentile			2018- 2022	2022	2021	2020	2019	2018	Benchmark	Performance Gap
<b>Alarm Handling</b>	Pickup to Dispatch	All	02:03	01:57	01:40	02:31	02:30	01:54	01:30	+00:33
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	All	01:50	01:40	01:49	01:42	01:54	01:41	01:20	+00:30
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	05:16	05:26	06:04	04:47	05:29	04:41	05:00	+00:16
		Rural	09:09	08:35	09:07	07:37	07:44	11:08	14:00	-04:51
	Travel Time ERF <b>Concentration</b>	Urban	05:16	05:26	06:04	04:47	05:29	04:41	05:00	+00:16
		Rural	09:09	08:35	09:07	07:37	07:44	12:19	14:00	-04:51
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	08:06	08:52	08:40	07:53	07:52	07:47	07:50	+00:16
			N= 251	N= 31	N= 34	N= 14	N= 74	N= 98		
		Rural	14:16	10:17	11:27	10:22	11:53	14:23	16:50	-02:34
			N= 48	N= 13	N= 3	N= 3	N= 14	N= 15		
	Total Response Time ERF <b>Concentration</b>	Urban	08:06	08:52	08:40	07:53	07:52	07:47	07:50	+00:16
			N= 251	N= 31	N= 34	N= 14	N= 74	N= 98		
Rural	14:16	10:17	11:27	10:22	11:53	14:23	16:50	-02:34		
	N= 48	N= 13	N= 3	N= 3	N= 14	N= 15				

\*Formerly Max Risk EMS



## **Wildland Fire All**

Grass and wildland fires vary in size, location and intensity as influenced by the fuels, weather and topography associated with the incident. LFRA routinely responds to many small grass fires that are handled by the first-due engine company. However, there are several locations within the response area that present unique hazards that dictate enhanced response plans.

Similar to the analysis conducted, in 2020, on system reliability in regard to structure fire responses, it was also found that the previous wildland fire response profiles were having a profound impact on system coverage. As a result, an unconfirmed wildland fire response was added as well. As with all classifications, wildland fire now reflects the new (2023) 3-axis methodology.

## **Low-Risk Wildland Fire Overview**

CAD Nature Codes: Authorized Burn, Grass or Landscape Fire

NFIRS Codes: 140, 631-632

<b>Grass or Landscape Fire</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
360/Size up	1 Officer	Squad/Engine/Brush
Incident Command		
Pump Operator	DO/FF	
Fire Control		
<b>4 Tasks</b>	<b>2 Personnel</b>	<b>1 Unit</b>

## **Low-Risk Wildland Fire: Baseline System Performance**

The following information contains response data from low-risk wildland incidents to which LFRA responded during the time period from January 1, 2017, through December 31, 2021. During this time period, the agency operated with a designated Urban Response Area and a Rural Response Area.

For 90 percent of all low-risk wildland fire, the total response time for the arrival of the first due apparatus/ERF, staffed with at least one (1) officer and one (1) firefighter, is: 7 minutes and 03 seconds in the urban response area, and 5 minutes and 47 seconds in the rural response zone. The first due apparatus for all wildland risk levels is capable of: delivering a minimum of 300 gallons of tank water with a minimum of 150 gpm rated pump capacity, establishing incident command, performing a scene size-up, developing an appropriate incident action plan, requesting additional resources, establishing an anchor point, and initiating fire attack. These actions are completed in accordance with departmental



standard operating procedures while providing for the safety of responders and the general public.

## **Low-Risk Wildland Fire: Performance Benchmarks**

For 90 percent of all low-risk wildland fire, the total response time for the arrival of the first due apparatus/ERF, staffed with at least one (1) officer and one (1) firefighter, shall be: 7 minutes and 50 seconds in the urban response area, and 16 minutes and 50 seconds in the rural response area. The first due apparatus for all wildland risk levels shall be capable of: delivering a minimum of 300 gallons of tank water with a minimum of 150 gpm rated pump capacity, establishing incident command, performing a scene size-up, developing an appropriate incident action plan, requesting additional resources, establishing an anchor point, and initiating fire attack. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

Low Risk Wildland Fire 90 <sup>th</sup> Percentile			2018- 2022	2022	2021	2020	2019	2018	Benchmark	Performance Gap
<b>Alarm Handling</b>	Pickup to Dispatch	All	01:56	01:56	N/A	N/A	N/A	N/A	01:30	+00:26
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	All	01:47	01:47	N/A	N/A	N/A	N/A	01:20	+00:27
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	04:38	04:38	N/A	N/A	N/A	N/A	05:00	-00:22
		Rural	02:47	02:47	N/A	N/A	N/A	N/A	14:00	-11:13
	Travel Time ERF <b>Concentration</b>	Urban	04:38	04:38	N/A	N/A	N/A	N/A	09:00	-05:22
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	18:00	N/A
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	07:03	07:03	N/A	N/A	N/A	N/A	07:50	-00:47
			N= 5	N= 5	N= 0	N= 0	N= 0	N= 0		
		Rural	05:47	05:47	N/A	N/A	N/A	N/A	16:50	-11:03
	Total Response Time ERF <b>Concentration</b>	Urban	07:03	07:03	N/A	N/A	N/A	N/A	11:50	-04:47
			N= 5	N= 5	N= 0	N= 0	N= 0	N= 0		
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	20:50	N/A
			N= 0	N= 0	N= 0	N= 0	N= 0			

\*New reporting category for 2022



## **Moderate-Risk Wildland Fire Overview**

CAD Nature Codes: Smoke Scare, Odor of Smoke, Unauthorized Burning, Grass Fire, Brush Fire

NFIRS Codes: 142-143, 561, 650-652

Moderate-risk wildland ERF's experienced significant changes as part of the implementation of the 3-axis methodology as it no longer contains multi-company responses within the category. The new benchmark performance statements will reflect this change, but 201-2022 data still reflects old risk deployment strategies and baseline performance statements, along with the performance tables, will reflect this until the new deployment strategies are implemented and old performance data is cycled out with each passing year.

<b>Smoke Investigation Outside</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Command	1 Officer	Squad
Engine Operator	DO/FF	
<b>2 Tasks</b>	<b>2 Personnel</b>	<b>1 Unit</b>

<b>Unconfirmed Wildland Fire</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Command	1 Officer	1 <sup>st</sup> Due Engine
Engine Operator	DO	
Fire Attack	FF	
<b>3 Tasks</b>	<b>3 Personnel</b>	<b>1 Unit</b>

## **Moderate-Risk Wildland Fire: Baseline System Performance**

The following information contains response data from moderate-risk wildland incidents to which LFRA responded during the time period from January 1, 2018, through December 31, 2022. During this time period, the agency operated with a designated Urban Response Area and a Rural Response Area.

For 90 percent of all moderate-risk wildland fire, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer and one (1) firefighter, is: 9 minutes and 50 seconds in the urban response area, and 16 minutes and 32 seconds in the rural response zone. The first due apparatus for all wildland risk levels is capable of: delivering a minimum of 300 gallons of tank water with a minimum of 150 gpm rated pump capacity, establishing incident command, performing a scene size-up, developing an appropriate incident action plan, requesting additional resources, establishing an anchor point, and initiating fire attack.



For 90 percent of all moderate-risk wildland fire, the total response time for the arrival of the effective response force (ERF), staffed with seven (7) firefighters, engineers and officers, is: 14 minutes and 54 seconds in the urban response area and 22 minutes and 43 seconds in the rural response zone. The ERF is capable of upgrading incident command; establishing imbedded safety officers; establishing lookouts, communications, escape routes, and safety zones (LCES); establishing an uninterrupted water supply; reinforcing the anchor point; and establishing operational groups and/or divisions as appropriate. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

### **Moderate-Risk Wildland Fire: Performance Benchmarks**

For 90 percent of all moderate-risk wildland fire, the total response time for the arrival of the first due apparatus/ERF, staffed with at least one (1) officer and one (1) firefighter, shall be: 7 minutes and 50 seconds in the urban response area, and 16 minutes and 50 seconds in the rural response area. The first due apparatus for all wildland risk levels shall be capable of: delivering a minimum of 300 gallons of tank water with a minimum of 150 gpm rated pump capacity, establishing incident command, performing a scene size-up, developing an appropriate incident action plan, requesting additional resources, establishing an anchor point, and initiating fire attack. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

\*New ERF's being implemented in 2023 eliminated multi-company responses from the moderate-risk category.



Mod Risk Wildland Fire 90 <sup>th</sup> Percentile			2018- 2022	2022	2021	2020	2019	2018	Benchmark	Performance Gap
<b>Alarm Handling</b>	Pickup to Dispatch	All	02:02	02:22	01:37	01:40	02:19	02:00	01:30	+00:32
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	All	02:07	01:49	02:21	02:04	01:54	01:57	01:50	+00:17
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	06:34	05:51	06:39	05:27	06:56	06:39	05:00	+01:34
		Rural	11:19	09:05	13:01	08:30	09:43	10:08	14:00	-02:41
	Travel Time ERF <b>Concentration</b>	Urban	08:26	12:03	07:43	07:09	08:12	08:46	09:00	+01:44
		Rural	15:47	15:57	10:26	18:37	10:15	20:34	18:00	+01:47
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	09:37	09:26	09:03	08:13	09:45	09:53	08:20	+01:17
			N= 567	N= 14	N= 64	N= 47	N= 61	N= 81		
		Rural	14:12	13:58	16:53	16:01	11:10	12:06	17:20	-03:08
	N= 78	N= 14	N= 17	N= 13	N= 15	N= 19				
	Total Response Time ERF <b>Concentration</b>	Urban	11:04	17:10	10:37	10:15	10:09	11:29	12:20	+02:34
			N= 141	N= 12	N= 37	N= 26	N= 26	N= 40		
Rural		18:35	19:33	13:30	21:00	13:13	23:52	21:20	+01:23	
N= 85	N= 10	N= 44	N= 10	N= 11	N= 10					



## High Risk Wildland Fire Overview

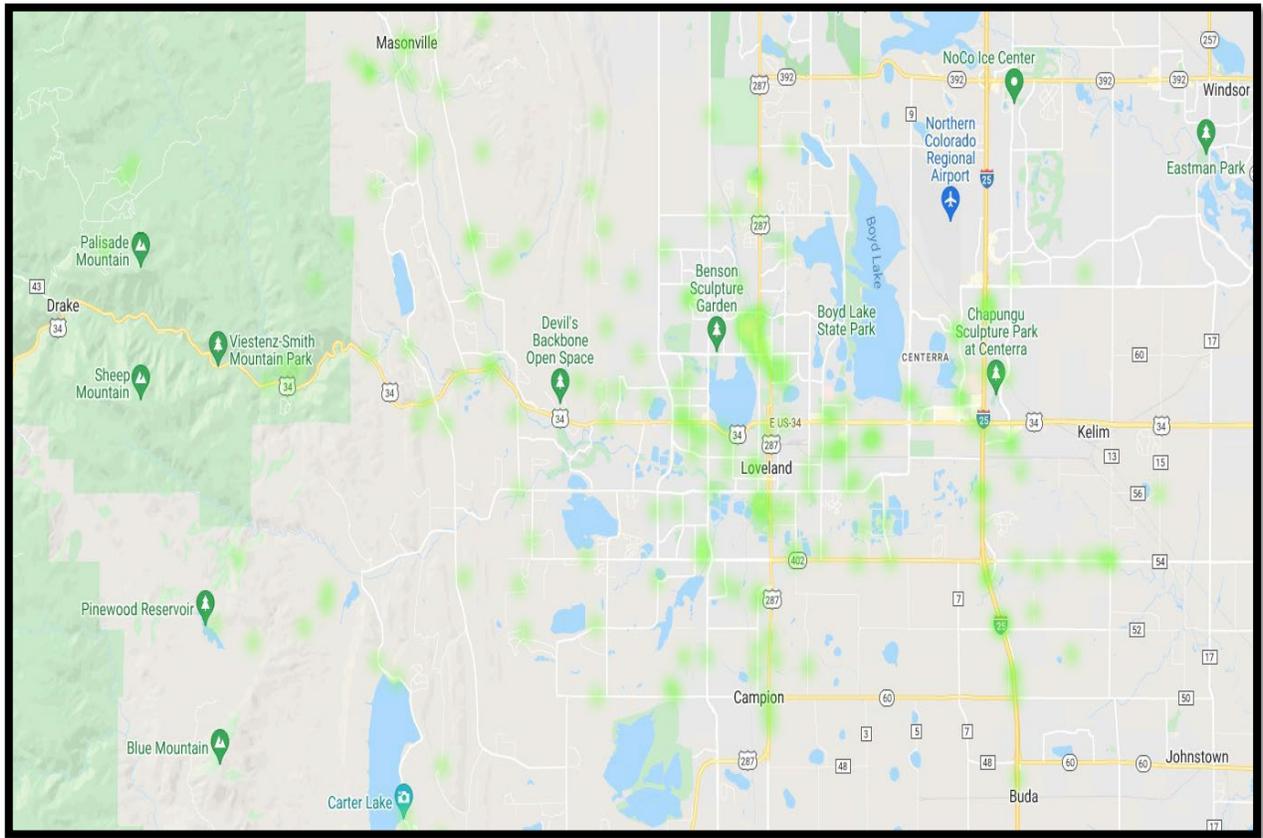
CAD Nature Codes: Wildland Fire

NFIRS Codes: 141

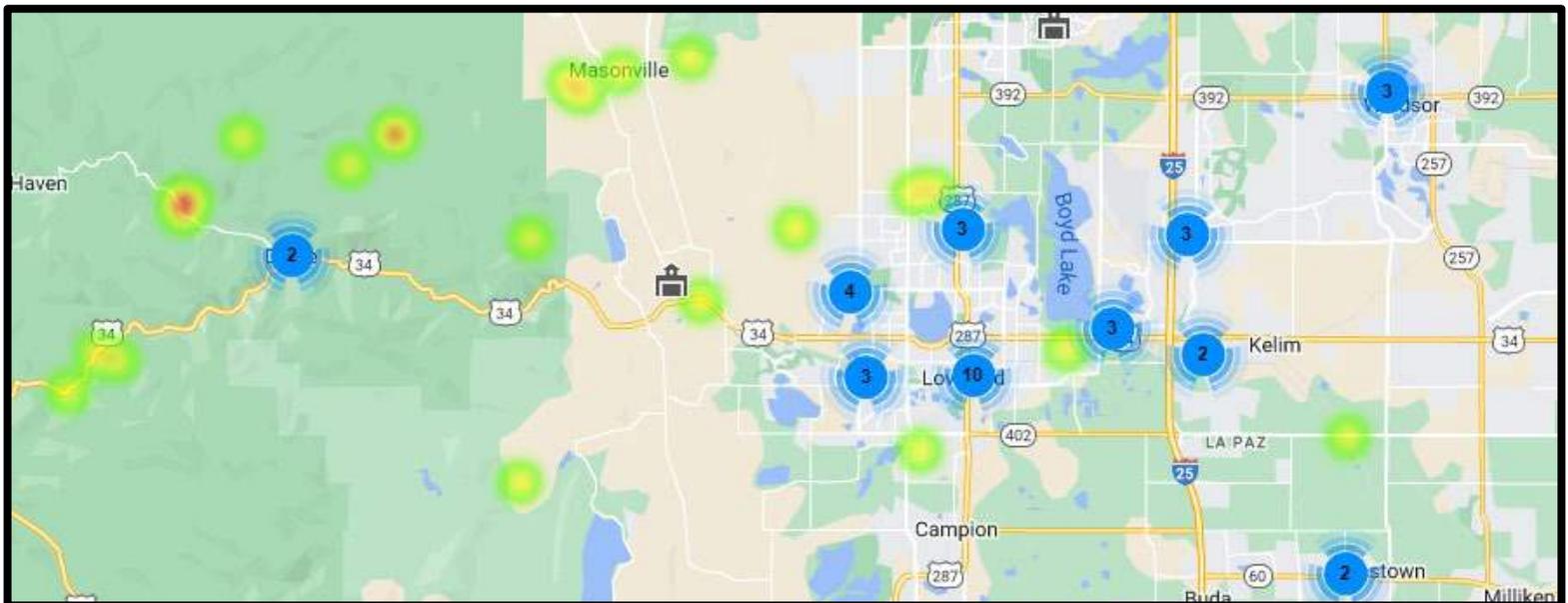
As with most jurisdictions on the Colorado Front Range, any grass or wildland fire exceeding the ability of one or two companies presents a very significant threat to our community. Topography, arid climate, localized wind events, and an ever-growing wildland urban interface have demonstrated how catastrophic these events can become under the right combination of conditions. To respond to this ever-increasing risk, the LFRA 1st alarm wildland assignment has increased in recent years to reflect an additional company and a 2,000-gallon tender in an attempt to front load resources as best as possible to these high-risk events.

<b>Confirmed Wildland Fire</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Initial Incident Command	1	1st Due Engine
Size Up/Lookout		
Pump Operator		
Fire Control Primary Flank	1	2nd Due Engine
Fire Control Secondary Flank	2	
Initial Water Supply	1	
Extended Water Supply	1	
Extended Command	1	Tender
		Battalion Chief
<b>8 Tasks</b>	<b>8 Personnel</b>	<b>4 Units</b>





*(Heat map of Grass/Wildland Fires from 2017-2021)*



*(Heat map of Wildland Fires from 2018-2022)*



## **High Risk Wildland Fire: Baseline System Performance**

The following information contains response data from all high-risk wildland incidents to which LFRA responded during the time period from January 1, 2018, through December 31, 2022. During this time period, the agency operated with a designated Urban Response Area and a Rural Response Area.

For 90 percent of all high-risk wildland fire, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer and one (1) firefighter, is: 9 minutes and 52 seconds in the urban response area, and 15 minutes and 11 seconds in the rural response zone. The first due apparatus for all wildland risk levels is capable of: delivering a minimum of 300 gallons of tank water with a minimum of 150 gpm rated pump capacity, establishing incident command, performing a scene size-up, developing an appropriate incident action plan, requesting additional resources, establishing an anchor point, and initiating fire attack. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of all high-risk wildland fire, the total response time for the arrival of the effective response force (ERF), staffed with seven\* (7) firefighters, engineers, and officers, is: 25 minutes and 2 seconds in the urban response area and 29 minutes and 20 seconds in the rural response zone. The ERF is capable of upgrading incident command, establishing imbedded safety officer, establishing lookouts, communications, escape routes, and safety zones (LCES), establishing an uninterrupted water supply, reinforcing the anchor point, and establishing operational groups and/or divisions as appropriate. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

\*New ERF of 8 being implemented in 2023

## **High Risk Wildland Fire: Performance Benchmarks**

For 90 percent of all high-risk wildland fire, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer and one (1) firefighter, shall be: 8 minutes and 20 seconds in the urban response area, and 17 minutes and 20 seconds in the rural response area. The first due apparatus for all wildland risk levels shall be capable of: delivering a minimum of 300 gallons of tank water with a minimum of 150 gpm rated pump capacity, establishing incident command, performing a scene size-up, developing an appropriate incident action plan, requesting additional resources, establishing an anchor point, and initiating fire attack. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of



responders and the general public.

For 90 percent of all high-risk wildland fire, the total response time for the arrival of the effective response force (ERF), staffed with eight\* (8) firefighters, engineers, and officers, shall be: 12 minutes and 20 seconds in the urban response area and 21 minutes and 20 seconds in the rural response zone. The ERF shall be capable of upgrading incident command, establishing imbedded safety officers, establishing lookouts, communications, escape routes, and safety zones (LCES), establishing an uninterrupted water supply, reinforcing the anchor point, and establishing operational groups and/or divisions as appropriate. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

\*New ERF of 8 being implemented in 2023

High Risk Wildland Fire 90 <sup>th</sup> Percentile			2018- 2022	2022	2021	2020	2019	2018	Benchmark	Performance Gap
<b>Alarm Handling</b>	Pickup to Dispatch	All	02:24	N/A	02:30	02:06	02:20	02:17	01:30	+00:54
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	All	02:04	N/A	02:04	02:09	01:58	02:01	01:50	+00:14
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	05:37	N/A	05:34	05:20	06:23	05:35	05:00	+00:37
		Rural	10:16	N/A	11:08	09:54	10:28	11:48	14:00	-03:44
	Travel Time ERF <b>Concentration</b>	Urban	20:48	N/A	26:32	09:54	13:46	06:27	09:00	+11:48
		Rural	19:28	N/A	18:20	22:20	14:20	15:53	18:00	+01:28
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	08:42	N/A	10:18	08:11	08:51	07:51	08:20	+00:22
			N= 84	N= 0	N= 17	N= 16	N= 25	N= 26		
		Rural	14:33	N/A	13:43	13:41	15:22	14:44	17:20	-02:47
			N= 64	N= 0	N= 14	N= 18	N= 18	N= 14		
	Total Response Time ERF <b>Concentration</b>	Urban	23:58	N/A	28:37	12:52	16:41	07:59	12:20	+11:38
			N= 13	N= 0	N= 5	N= 3	N= 3	N= 2		
Rural	28:10	N/A	21:14	32:48	16:09	18:35	21:20	+06:50		
	N= 15	N= 0	N= 4	N= 6	N= 2	N= 3				



## **Hazardous Materials (HazMat) All**

Hazardous materials incidents range in complexity from a small spill that can be handled by a single engine company, to large-scale and highly complex incidents that involve numerous mutual aid partners. LFRA's goal is to provide personnel and equipment capable of mitigating smaller scale incidents with a group of personnel trained to the Hazardous Materials Operations level. These personnel are expected to initiate defensive actions to prevent the spread of contamination beyond an initial containment zone. LFRA personnel do not routinely perform offensive hazmat mitigation activities. The agency's Special Operations Team members, currently based out of Fire Station 2, provide the Technician-level expertise for the agency. In late 2019, LFRA transitioned to a specialty station concept. This transition relocated the hazmat unit from downtown (centrally located) to Station 2 on the west side of the urban response area. Station 10 is currently under construction and set to open in late 2022. Once Station 10 goes into service, this station will take over responsibility as the hazmat specialty station to (1) relocate the hazmat unit to be closer to the higher hazmat risks relative to the interstate, railroad tracks, and Loveland's highest density area for commercial occupancies and (2) relieve the SOT program from one of many complex disciplines.

Hazardous materials emergencies are divided into risk profiles to better define the types and quantities of resources that may be needed to effectively manage and mitigate the incident. These levels are dynamic and can be upgraded or downgraded as further information becomes available to the Incident Commander. However, because hazmat risk/response profiles can be based on size of release, location of release, materials released, or any number of other factors- the NFIRS incident typing didn't provide a clear path for separating moderate and high-risk hazmat responses. To overcome this, the hazmat data sets were manually combed to provide the most appropriate and accurate delineation for the risk profiles.



## Low-Risk HazMat Overview

CAD Nature Codes: Fuel Spill, CO Alarm, HazMat Investigation

NFIRS Codes: 400-411, 413-421, 424, 451, 736, 746

<b>Hazmat Investigation</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Command	1 Officer	1st Due Engine
360/Size Up	DO/FF	
Investigation		
<b>3 Tasks</b>	<b>3 Personnel</b>	<b>1 Unit</b>

<b>Fuel Spill &lt; 10 Gallons</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
360/Size up	Co. Officer	1st Due Engine
Incident Command		
Offensive Mitigation	DO/FF	
Defensive Mitigation		
<b>4 Tasks</b>	<b>3 Personnel</b>	<b>1 Unit</b>

<b>CO Alarm with patients</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Initial Incident Command	1	1st Due Engine
360/Size Up		
Initial EMS Evaluation	1	
Interior Inv/Air Monitoring	2	
Ventilation		
Incident Command	1	Battalion Chief
<b>6 Tasks</b>	<b>5 Personnel</b>	<b>2 Units</b>

<b>Fuel Spill &gt; 10 Gallons &lt; 500 Gallons</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
360/Size up	1	1st Due Engine/Support
Defensive Mitigation	3	
Fire Suppression	2	
Offensive Mitigation	3	Engine 50/Hazmat 50
Incident Command	1	Battalion Chief
<b>5 Tasks</b>	<b>10 Personnel</b>	<b>4 Units</b>



## **Low-Risk HazMat: Baseline System Performance**

The following information contains response data from all low-risk hazardous materials incidents to which LFRA responded during the time period from January 1, 2018, through December 31, 2022. During this time period, the agency operated with a designated Urban Response Area and a Rural Response Area.

For 90 percent of all low-risk hazmat, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer and one (1) firefighter, is: 9 minutes and 29 seconds in the urban response area and 12 minutes and 8 seconds in the rural response area. The first due apparatus is capable of the appropriate combination of: establishing incident command, performing a scene size-up, developing an appropriate incident action plan, establishing initial containment zones, deploying air monitoring equipment, determining the need for additional resources, implementing gross decontamination, and implementing incident-specific defensive actions. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of low-risk hazmat incidents, the total response time for the arrival of the appropriate low-risk HazMatHaz effective response force (ERF) is: 16 minutes and 53 seconds in the urban response area and 12 minutes and 8 seconds in the rural response area. The ERF is capable of completing localized evacuations, initiating emergency decontamination, and completing incident specific defensive actions. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

## **Low-Risk HazMat: Performance Benchmarks**

For 90 percent of all low-risk hazmat, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer, and one (1) firefighter, shall be: 7 minutes and 50 seconds in the urban response area, and 16 minutes and 50 seconds in the rural response area. All personnel on the first arriving apparatus shall all, at a minimum, be certified to the Hazardous Materials Operations level and shall be capable of: establishing incident command, performing a scene size-up, developing an appropriate incident action plan, establishing initial containment zones, deploying air monitoring equipment, determining the need for additional resources, implementing gross decontamination, and implementing incident-specific defensive actions. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of all low-risk hazmat, the total response time for the arrival of the appropriate low-



risk HazMat effective response force (ERF) shall be: 12 minutes and 20 seconds in the urban response area and 21 minutes and 20 seconds in the rural response area. The ERF is capable of completing localized evacuations, initiating emergency decontamination, and completing incident specific defensive actions. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

Low Risk HazMat 90 <sup>th</sup> Percentile			2018- 2022	2022	2021	2020	2019	2018	Benchmark	Performance Gap
<b>Alarm Handling</b>	Pickup to Dispatch	All	02:04	02:04	N/A	N/A	N/A	N/A	01:30	+00:34
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	All	01:53	01:53	N/A	N/A	N/A	N/A	01:20	+00:33
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	07:10	07:10	N/A	N/A	N/A	N/A	05:00	+02:10
		Rural	10:27	10:27	N/A	N/A	N/A	N/A	14:00	-03:33
	Travel Time ERF <b>Concentration</b>	Urban	13:31	13:31	N/A	N/A	N/A	N/A	09:00	+04:31
		Rural	10:27	10:27	N/A	N/A	N/A	N/A	18:00	-07:33
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	09:29 N= 40	09:29 N= 40	N/A N= 0	N/A N= 0	N/A N= 0	N/A N= 0	07:50	+01:30
		Rural	12:08 N= 6	12:08 N= 6	N/A N= 0	N/A N= 0	N/A N= 0	N/A N= 0	16:50	-04:42
	Total Response Time ERF <b>Concentration</b>	Urban	16:53 N= 40	16:53 N= 40	N/A N= 0	N/A N= 0	N/A N= 0	N/A N= 0	11:50	+05:03
		Rural	12:08 N= 6	12:08 N= 6	N/A N= 0	N/A N= 0	N/A N= 0	N/A N= 0	20:50	-08:42

\*New reporting category for 2022



## Moderate-Risk HazMat Overview

CAD Nature Codes: Oil/Gas Facility, Gas Leak Interior, Gas Leak Exterior, Train Derailment

NFIRS Codes: 412, 423

<b>Inside Gas Leak</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Initial Incident Command	1	1st Due Engine
360/Size Up		
Interior Investigation	2	
Air Monitoring		
Ventilation		
Incident Command	1	Battalion Chief
<b>6 Tasks</b>	<b>5 Personnel</b>	<b>2 Units</b>

<b>Exterior Gas Leak</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Initial Incident Command	1	1st Due Engine Officer
360/Size Up		
Investigation	2	1st Due Engine
Initial Air Monitoring		
Fire Suppression Line		
Surrounding Struct. Air Mon.	2	1st Due Support
Access Control	1	
Incident Command	1	Battalion Chief
<b>8 Tasks</b>	<b>8 Personnel</b>	<b>3 Units</b>

<b>Oil and Gas Fire/Explosion</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Initial Incident Command	1	1st Due Engine
360/Size Up		
Site RP Contact		
Fire Suppression	2	
Exposure Protection	2	Support
Access	3	Support
Water Supply	2	2nd/3rd Due Engine
Tender Operations	2	1st/2nd Due Tender
Incident Command	1	Battalion Chief
Air Monitoring	1	2nd/3rd Due Engine
<b>9 Tasks</b>	<b>11 Personnel</b>	<b>8 Units</b>



<b>Train Derailment/Crash</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Initial Incident Command	1	1st Due Engine
360/Size Up		
Hazmat Group Supervisor	1	Engine 50/Hazmat 50
Primary Entry Team	2	
Backup Entry Team	2	Support
Emergency/Technical Decon	6	2nd/3rd Due Engine
Technical Reference		
Air Monitoring	1	1st Due Engine
Initial Evacuation	2	
Incident Command	1	Battalion Chief
<b>10 Tasks</b>	<b>17 Personnel</b>	<b>9 Units</b>

### **Moderate-Risk HazMat: Baseline System Performance**

The following information contains response data from all moderate-risk hazardous materials incidents to which LFRA responded during the time period from January 1, 2018, through December 31, 2022. During this time period, the agency operated with a designated Urban Response Area and a Rural Response Area.

For 90 percent of all moderate-risk hazmat incidents, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer and one (1) firefighter, is: 9 minutes and 18 seconds in the urban response area and 13 minutes and 45 seconds in the rural response area. The first due apparatus is capable of the appropriate combination of: establishing incident command, performing a scene size-up, developing an appropriate incident action plan, establishing initial containment zones, deploying air monitoring equipment, determining the need for additional resources, implementing gross decontamination, and implementing incident-specific defensive actions. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of moderate-risk hazmat incidents, the total response time for the arrival of the appropriate moderate-risk HazMat effective response force (ERF) is: 15 minutes and 16 seconds in the urban response area and 16 minutes and 24 seconds in the rural response area. The ERF is capable of completing localized evacuations, initiating emergency decontamination, and completing incident specific defensive actions. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.



## **Moderate-Risk HazMat: Performance Benchmarks**

For 90 percent of all moderate-risk hazmat incidents, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer, and one (1) firefighter, shall be: 8 minutes and 20 seconds in the urban response area, and 17 minutes and 20 seconds in the rural response area. All personnel on the first arriving apparatus shall all, at a minimum, be certified to the Hazardous Materials Operations level and shall be capable of: establishing incident command, performing a scene size-up, developing an appropriate incident action plan, establishing initial containment zones, deploying air monitoring equipment, determining the need for additional resources, implementing gross decontamination, and implementing incident-specific defensive actions. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of all moderate-risk hazmat incidents, the total response time for the arrival of the appropriate moderate-risk HazMat effective response force (ERF) shall be: 12 minutes and 20 seconds in the urban response area and 21 minutes and 20 seconds in the rural response area. The ERF is capable of completing localized evacuations, initiating emergency decontamination, and completing incident specific defensive actions. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.



Mod Risk HazMat 90 <sup>th</sup> Percentile			2018- 2022	2022	2021	2020	2019	2018	Benchmark	Performance Gap
<b>Alarm Handling</b>	Pickup to Dispatch	All	01:39	01:27	01:27	01:29	01:56	01:49	01:30	+00:09
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	All	01:56	01:47	01:58	01:58	01:57	01:57	01:50	+00:06
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	06:13	06:21	06:31	05:49	05:46	06:28	05:00	+01:13
		Rural	09:30	09:34	09:56	09:02	09:17	09:23	14:00	-04:30
	Travel Time ERF <b>Concentration</b>	Urban	11:07	09:14	08:06	10:44	11:56	13:51	09:00	+02:07
		Rural	12:36	12:09	10:00	12:07	13:27	11:59	18:00	-05:24
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	09:01	09:26	09:01	08:24	09:06	08:39	08:20	+00:41
			N= 394	N= 79	N= 73	N= 63	N= 89	N= 90		
		Rural	13:01	12:05	11:37	13:11	14:08	12:56	17:20	-04:19
			N= 113	N= 19	N= 14	N= 28	N= 23	N= 29		
	Total Response Time ERF <b>Concentration</b>	Urban	13:37	11:32	10:40	12:42	13:55	16:10	12:20	+01:17
			N= 260	N= 67	N= 50	N= 39	N= 41	N= 63		
Rural	15:13	14:24	12:17	14:12	17:24	14:55	21:20	-06:07		
	N= 69	N= 16	N= 7	N= 13	N= 13	N= 20				

## High-Risk HazMat Overview

CAD Nature Codes: HazMat Response

NFIRS Codes: 422

Incidents involving an increased hazard or a larger affected area. This type of incident may pose a threat to life and/or property. It may require limited scale evacuations. Examples: Spill of more than 100 gallons of a petroleum product. Evacuation area exceeds the immediate area. Railcar derailment with real or suspected mechanical or chemical damage to the container. LPG accident involving tank equal to or greater than 500 gallons. Spill or leak requiring notification of a state agency.

Hazardous materials incidents that involve a severe hazard and/or a large area may pose an extreme threat to life and property and require large-scale evacuations. Incidents of this magnitude could require involvement from regional, state and/or federal agencies. Examples may include multiple alarm fires involving real or suspected hazardous materials, railcar derailment involving HazMat on fire or impinged by fire, or rupture of high pressure compressed natural gas (CNG) transmission line.



<b>(1<sup>st</sup> Alarm) HazMat Response</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Initial Incident Command	1	1st Due Engine
360/Size Up		
Hazmat Group Supervisor	1	Engine 50/Hazmat 50
Primary Entry Team	2	
Backup Entry Team	2	Support
Emergency/Technical Decon	6	2nd/3rd Due Engine
Technical Reference	1	Support
Air Monitoring	1	1st Due Engine
Initial Evacuation	2	
Incident Command	1	Battalion Chief
<b>10 Tasks</b>	<b>17 Personnel</b>	<b>9 Units</b>

### **High-Risk HazMat: Baseline System Performance**

The following information contains response data from all high-risk hazardous materials incidents to which LFRA responded during the time period from January 1, 2018, through December 31, 2022. During this time period, the agency operated with a designated Urban Response Area and a Rural Response Area.

For 90 percent of all high-risk hazmat, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer and one (1) firefighter, is: 9 minutes and 46 seconds in the urban response area and 12 minutes and 3 seconds in the rural response area.

The first due apparatus is capable of: establishing incident command, performing a scene size-up, developing an appropriate incident action plan, establishing initial containment zones, deploying air monitoring equipment, determining the need for additional resources, implementing gross decontamination, and implementing incident-specific defensive actions. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of high-risk hazmat, the total response time for the arrival of the effective response force (ERF), staffed with 15 firefighters, engineers, and officers, is: 12 minutes and 0 seconds in the urban response area. No baseline data available for high-risk hazmat incidents in the rural area. The ERF is capable of upgrading incident commander; establishing technical decontamination; and providing at least two (2) personnel certified to the Hazardous Materials Technician level capable of entering a potentially contaminated atmosphere while wearing appropriate personal protective equipment to establish air monitoring, perform product transfer, collect material for analysis, and/or rescue victims. These actions are completed in accordance with departmental standard operating procedures while providing for the



safety of responders and the general public.

### **High-Risk HazMat: Performance Benchmarks**

For 90 percent of all high-risk hazmat incidents, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer, and one (1) firefighter, shall be: 8 minutes and 20 seconds in the urban response area, and 17 minutes and 20 seconds in the rural response area. All personnel on the first arriving apparatus shall all, at a minimum, be certified to the Hazardous Materials Operations level and shall be capable of: establishing incident command, performing a scene size-up, developing an appropriate incident action plan, establishing initial containment zones, deploying air monitoring equipment, determining the need for additional resources, initiating emergency decontamination, and implementing incident-specific defensive actions. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of all high-risk hazmat incidents, the total response time for the arrival of the effective response force (ERF), staffed with seventeen (17) firefighters, engineers, and officers, shall be: 12 minutes and 20 seconds in the urban response area and 21 minutes and 20 seconds in the rural response area. The ERF shall be capable of upgrading incident commander; establishing technical decontamination; and providing at least two (2) personnel certified to the Hazardous Materials Technician level capable of entering a potentially contaminated atmosphere while wearing appropriate personal protective equipment to establish air monitoring, perform product transfer, collect material for analysis, and/or rescue victims. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.



High Risk HazMat 90 <sup>th</sup> Percentile			2018- 2022	2022	2021	2020	2019	2018	Benchmark	Performance Gap
<b>Alarm Handling</b>	Pickup to Dispatch	All	01:57	01:31	01:54	01:20	01:45	02:56	01:30	+00:27
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	All	02:04	02:15	01:55	02:01	01:38	01:39	01:50	+00:14
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	05:45	05:14	05:58	04:11	N/A	03:14	05:00	+00:45
		Rural	09:24	N/A	09:50	06:02	07:56	N/A	14:00	-04:36
	Travel Time ERF <b>Concentration</b>	Urban	08:28	06:00	N/A	08:45	N/A	N/A	09:00	-00:32
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	18:00	N/A
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	09:26 N= 16	08:34 N= 2	08:39 N= 8	10:15 N= 4	N/A N= 0	05:14 N= 2	08:20	+01:06
		Rural	12:09 N= 6	N/A N= 0	12:20 N= 2	07:48 N=2	10:57 N= 2	N/A N=0	17:20	-05:11
	Total Response Time ERF <b>Concentration</b>	Urban	12:00 N= 2	10:44 N= 1	N/A N= 0	12:08 N= 1	N/A N=0	N/A N= 0	12:20	-00:20
		Rural	N/A N= 0	N/A N= 0	N/A N= 0	N/A N=0	N/A N= 0	N/A N= 0	21:20	N/A



## **Technical Rescue Incidents All**

There is tremendously wide range of technical rescue incidents which could reasonably be expected to occur within the LFRA response area. The agency is staffed and equipped to provide an initial response to assess and stabilize the incidents that are most likely to occur. Incidents that could be expected to exceed a “first alarm” incident or necessitate Technician-level expertise in a technical rescue discipline, will be upgraded as needed by the Incident Commander. Technical Rescue consists of LFRA personnel with the following advanced training in the various technical rescue disciplines:

- 4 – Collapse Rescue Technicians
- 4 – Collapse Rescue Specialist (USAR – Structural Engineer)
- 4 – Confined Space Technicians
- 2 – Large Animal Rescue Technicians
- 15 – Rope Rescue Technicians
- 6 – Trench Rescue Technicians
- 13 – Public Safety Divers
- 17 – Swift Water Rescue Technicians

## **Low-Risk Technical Rescue Overview**

CAD Nature Codes: Unconfirmed Water Rescue, Animal Rescue, Search, Child Locked in a Vehicle

NFIRS Codes: 331, 341-342, 351, 372

<b>Search/Rescue</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
360/Size up & Initial Access	Officer, DO and FF	1st Due Engine/Support
Secondary access	3	Second Due
Upgraded Incident Command	1	Battalion Chief
<b>5 Tasks</b>	<b>7 Personnel</b>	<b>3 Units</b>



<b>Unconfirmed Water Rescue</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Size up/ Initial Command	1	1st Due Engine
Investigation	2	
Witness Interview	2	2nd Due
Site Access Control	1	
Upgraded Command	1	BC
<b>5 Tasks</b>	<b>7 Personnel</b>	<b>3 Units</b>

<b>Large Animal Rescue</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Establish Incident	1	1 <sup>st</sup> Engine
Command		
Scene Size-up/360		
Incident Safety		
Secure the scene/Zoning	2	Engine 2
Large Animal Rescue Equipment	3	
Animal Contact	3	Rescue 2
Technical Rigging		
Assumption of Incident	1	1 <sup>st</sup> Battalion Chief
Command		
Assumption of Incident Safety	1	Safety Officer
<b>9 Tasks</b>	<b>11 personnel</b>	<b>5 units</b>

### **Low-Risk Technical Rescue: Baseline System Performance**

The following information contains response data from low-risk technical rescue incidents to which LFRA responded during the time period from January 1, 2018, through December 31, 2022. During this time period, the agency operated with a designated Urban Response Area and a Rural Response Area.

For 90 percent of low-risk technical rescue, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer, and one (1) firefighter, is: 10 minutes and 59 seconds in the urban response area and 13 minutes and 34 seconds in the rural response area. Every first due apparatus carries basic low-angle rope rescue equipment, cribbing, mechanical advantage tools, personal floatation devices, water rescue rope throw bags, surface ice rescue equipment and swift water rescue boards, and is capable of: establishing incident command, conducting a scene size-up, establishing scene security, requesting additional resources as necessary, and providing and operating



the tools and equipment necessary to implement a rapid rescue. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of all low-risk technical rescue incidents, the total response time for the arrival of the appropriate low-risk Tech Rescue effective response force (ERF) is: 10 minutes and 59 seconds in the urban response area and 13 minutes and 34 seconds in the rural response area. The ERF is capable of upgrading incident command, establishing imbedded safety officers, establishing patient contact, staging responding apparatus, and implementing appropriate rescue techniques. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

### **Low-Risk Technical Rescue Incidents: Performance Benchmarks**

For 90 percent of all low-risk technical rescue incidents, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer, and one (1) firefighter, shall be: 7 minutes and 50 seconds in the urban response area, and 16 minutes and 50 seconds in the rural response area. The first due apparatus to a technical rescue incident shall be capable of: establishing incident command, conducting a scene size-up, establishing scene security, requesting additional resources as necessary, and providing and operating the tools and equipment necessary to implement a rapid rescue. All first due apparatus shall carry basic low-angle rope rescue equipment, cribbing, mechanical advantage tools, personal floatation devices, water rescue rope throw bags, surface ice rescue equipment and swift water rescue boards. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of all low-risk technical rescue incidents, the total response time for the arrival of the appropriate low-risk Tech Rescue effective response force (ERF) shall be: 11 minutes and 50 seconds in the urban response area and 20 minutes and 50 seconds in the rural response area. The ERF is capable of upgrading incident command, establishing imbedded safety officers, establishing patient contact, staging responding apparatus, and implementing appropriate rescue techniques. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.



Low Risk Tech Rescue 90 <sup>th</sup> Percentile			2018- 2022	2022	2021	2020	2019	2018	Benchmark	Performance Gap
<b>Alarm Handling</b>	Pickup to Dispatch	All	01:39	01:13	01:43	N/A	01:40	01:08	01:30	+00:09
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	All	01:22	01:29	01:35	N/A	01:21	01:17	01:20	+00:02
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	07:42	07:01	04:39	N/A	06:13	07:50	05:00	+02:42
		Rural	11:27	06:05	N/A	N/A	12:03	N/A	14:00	-02:33
	Travel Time ERF <b>Concentration</b>	Urban	07:42	07:01	04:39	N/A	06:13	07:50	05:00	+02:42
		Rural	11:27	06:05	N/A	N/A	12:03	N/A	14:00	-02:33
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	11:04	10:38	07:36	N/A	10:54	11:01	07:50	+03:09
			N= 29	N= 7	N= 2	N= 0	N= 9	N= 11		
		Rural	13:34	07:27	N/A	N/A	14:15	N/A	16:50	-03:16
			N= 2	N= 1	N= 0	N= 0	N= 1	N= 0		
	Total Response Time ERF <b>Concentration</b>	Urban	10:57	10:38	07:36	N/A	10:54	11:01	11:50	-00:51
			N= 29	N= 7	N= 2	N= 0	N= 9	N= 11		
Rural	13:34	07:27	N/A	N/A	14:15	N/A	20:50	-07:16		
	N=2	N= 1	N= 0	N= 0	N= 1	N= 0				



## Moderate-Risk Technical Rescue Overview

CAD Nature Codes: Search Call, Ice Rescue, Elevator Rescue

NFIRS Codes: 353, 357, 360, 362, 542

<b>Search Call</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
360/Size up & Initial Access	Officer, DO and FF	1st Due Engine/Support
Secondary access	3	Second Due
Upgraded Incident Command	1	Battalion Chief
<b>5 Tasks</b>	<b>7 Personnel</b>	<b>3 Units</b>

<b>Ice Rescue</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
360/Size up	1 Officer	1st Due Engine
Incident Command		
Primary Rescuer		
Shore Support		
Backup Rescuer	FF	Second Due
Shore Support	DO and OFFICER	
Upgraded IC	BC	Battalion Chief
<b>7 Tasks</b>	<b>7 Personnel</b>	<b>3 Units</b>

<b>Elevator Rescue</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Establish Incident	1	1 <sup>st</sup> Due Engine
Command		
Scene Size-up/360		
Incident Safety		
Machine room/shut down power/Lock out tag out	1	1 <sup>st</sup> Due Support Apparatus
Occupant contact	1	
Crew to stalled floor or floor above/below	3	
<b>7 tasks</b>	<b>6 personnel</b>	<b>2 Units</b>



## **Moderate-Risk Technical Rescue: Baseline System Performance**

The following information contains response data from moderate-risk technical rescue incidents to which LFRA responded during the time period from January 1, 2018, through December 31, 2022. During this time period, the agency operated with a designated Urban Response Area and a Rural Response Area.

For 90 percent of all moderate-risk rescue incidents, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer, and one (1) firefighter, is: 7 minutes and 44 seconds in the urban response area and 15 minutes and 25 seconds in the rural response area. Every first due apparatus carries basic low-angle rope rescue equipment, cribbing, mechanical advantage tools, personal floatation devices, water rescue rope throw bags, surface ice rescue equipment and swift water rescue boards, and is capable of: establishing incident command, conducting a scene size-up, establishing scene security, requesting additional resources as necessary, and providing and operating the tools and equipment necessary to implement a rapid rescue. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of all moderate-risk technical rescue incidents, the total response time for the arrival of the appropriate moderate-risk Tech Rescue effective response force (ERF) is: 9 minutes and 51 seconds in the urban response area and 22 minutes and 39 seconds in the rural response area. The ERF is capable of: upgrading incident command, establishing imbedded safety officers, establishing patient contact, staging responding apparatus, and implementing appropriate rescue techniques. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

## **Moderate-Risk Technical Rescue: Performance Benchmarks**

For 90 percent of all moderate-risk technical rescue incidents, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer, and one (1) firefighter, shall be: 8 minutes and 20 seconds in the urban response area, and 17 minutes and 20 seconds in the rural response area. The first due apparatus to a technical rescue incident shall be capable of: establishing incident command, conducting a scene size-up, establishing scene security, requesting additional resources as necessary, and providing and operating the tools and equipment necessary to implement a rapid rescue. All first due apparatus shall carry basic low-angle rope rescue equipment, cribbing, mechanical advantage tools, personal floatation devices, water rescue rope throw bags, surface ice rescue equipment and swift water rescue boards. These actions shall be completed in accordance with



departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of all moderate-risk technical rescue incidents, the total response time for the arrival of the appropriate moderate-risk Tech Rescue effective response force (ERF) shall be: 12 minutes and 20 seconds in the urban response area and 21 minutes and 20 seconds in the rural response area. The ERF shall be capable of: upgrading incident command, establishing imbedded safety officers, establishing patient contact, staging responding apparatus, and implementing appropriate rescue techniques. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

Mod Risk Tech Rescue 90 <sup>th</sup> Percentile			2018- 2022	2022	2021	2020	2019	2018	Benchmark	Performance Gap
<b>Alarm Handling</b>	Pickup to Dispatch	All	01:32	01:06	02:20	01:53	00:40	01:24	01:30	+00:02
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	All	01:41	01:40	01:22	01:15	02:40	01:37	01:50	-00:09
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	05:24	05:23	05:24	03:48	04:05	02:39	05:00	+00:24
		Rural	10:53	09:32	03:48	10:56	04:00	N/A	14:00	-03:07
	Travel Time ERF <b>Concentration</b>	Urban	08:03	07:33	05:43	N/A	08:49	N/A	09:00	-00:57
		Rural	22:49	12:34	04:47	24:00	07:00	N/A	18:00	+04:49
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	07:48	07:39	07:48	04:43	05:01	07:12	08:20	-00:32
			N= 21	N= 17	N= 1	N= 1	N= 1	N= 1		
	Rural	16:14	13:03	06:33	16:26	05:11	N/A	17:20	-01:06	
		N= 12	N= 4	N= 1	N= 6	N= 1	N= 0			
	Total Response Time ERF <b>Concentration</b>	Urban	09:53	09:52	08:07	N/A	09:45	N/A	12:20	-02:27
			N= 18	N= 16	N= 1	N= 0	N= 1	N= 0		
	Rural	26:17	16:05	07:32	25:28	08:11	N/A	21:20	+04:57	
		N= 12	N= 4	N= 1	N= 6	N= 1	N= 0			



## High-Risk Technical Rescue Overview

CAD Nature Codes: Building Collapse, Confined Space Rescue, Rope Rescue, Trench Rescue, Water Rescue, MVA with Extrication, Extrication Bus/Semi

NFIRS Codes: 350, 352, 354-356, 361, 363-365

<b>Building Collapse</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Establish Incident	1	1 <sup>st</sup> Engine
Command		
Scene Size-up/360		
Incident Safety		
Zoning/Recon	1	
Triage/Patient Care	1	
Operational Support	3	Tower 46
Rescue Group Supervisor	1	R42
Runner		
Cut Station		
Shoring Teams	2	
Shoring Teams	3	E42
Command Upgrade	1	1 <sup>st</sup> BC
Incident Safety	1	2 <sup>nd</sup> BC
<b>13 Tasks</b>	<b>14 Personnel</b>	<b>6 units</b>

<b>Confined Space</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Establish Incident	1	1 <sup>st</sup> Engine
Command		
Scene Size-up/360		
Recon & Rigging Support	2	
HazMat Group Sup	1	E50/Haz50
Air Monitoring & Vent	2	



Rescue Group Supervisor	1	R42
Entry Control Officer		
Rescue Team #1	2	
Forward Operations Control	1	E42
Rigging		
Rescue Team #2 (back up)		
Air supply/communications	1	Air Trailer
Command Upgrade	1	1 <sup>st</sup> Battalion Chief
Incident Safety	1	2 <sup>nd</sup> BC
<b>15 Tasks</b>	<b>15 Personnel</b>	<b>8 units</b>

<b>Rope Rescue</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Establish Incident	1	1 <sup>st</sup> Engine
Command		
Scene Size-up/360		
Belay/Equipment/Set up		
Triage/Establish Patient Contact	1	
Rigging/Haul	2	E42
Attendant/Rescue Team #2		
Rescue Group Supervisor	1	1 <sup>st</sup> Support
Rigging/Haul	2	
Edge	1	2 <sup>nd</sup> Support
Attendant/Rescue Team #1	1	
Control	1	
Command Upgrade	1	1 <sup>st</sup> Battalion Chief
Incident Safety	1	2 <sup>nd</sup> BC
<b>14 Tasks</b>	<b>14 Personnel</b>	<b>6 units</b>



<b>Trench Rescue</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Establish Incident	1	1 <sup>st</sup> Engine
Command		
Scene Size-up/360		
Recon/Triage/Establish Patient Contact	1	1
	1	
Air Monitoring/Vent	3	E50/HZ50
Shoring/Rigging/Haul	3	E42
Rescue Team #2		
Rescue Group Supervisor	1	R42
Shoring/Rigging/Haul	2	
Rescue Team #2		
Shoring/Rigging/Haul	3	2 <sup>nd</sup> Support
Command Upgrade	1	1 <sup>st</sup> Battalion Chief
Incident Safety	1	2 <sup>nd</sup> BC
<b>12 Tasks</b>	<b>17 Personnel</b>	<b>7 units</b>



<b>Dive Rescue</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Establish Incident	1	1 <sup>st</sup> Due Engine
Command		
Scene Size-up/360		
Witness Interviews	2	
Triangulation/Last seen point		
Dive Operations – Primary, Secondary Diver, Tender	3	E42
Rescue Group Supervisor	3	R42
90% Diver and Tender		
Command Upgrade	1	1 <sup>st</sup> Battalion Chief
Incident Safety	1	2nd BC
<b>10 tasks</b>	<b>11 personnel</b>	<b>5 Units</b>

<b>Swiftwater Rescue</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Establish Incident	1	1 <sup>st</sup> Engine
Command		
Scene Size-up/360/		
Witness interviews	2	
Establish Last Seen Point		
1 Rescue Group Supervisor	3	R42
1 Boat Attendant		
1 Patient care		
1 Downstream Contain	3	2 <sup>nd</sup> Due Engine
1 Upstream Safety	3	3 <sup>rd</sup> Due Engine
3-4 Near shore ropes*	3	2 <sup>nd</sup> Support
Assumption of Incident	1	1 <sup>st</sup> Battalion Chief
Command Upgrade		
Incident Safety	1	2nd BC
<b>14 Tasks</b>	<b>17 Personnel</b>	<b>7 units</b>



<b>MVA w/ Extrication</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Establish Incident	1	1 <sup>st</sup> Engine
Command		
Scene Size-up/360		
Secure Safety	1	
Triage/Establish Patient Contact	1	
Blocking Engine/Scene Perimeter	1	2 <sup>nd</sup> Engine
Fire Protection Line	2	
Vehicle Stabilization/Extrication	3	1 <sup>st</sup> Support
Vehicle Stabilization/Extrication	3	2nd Support Unit
Command Upgrade	1	1 <sup>st</sup> Battalion Chief
Incident Safety	1	2nd BC
<b>11 Tasks</b>	<b>14 Personnel</b>	<b>6 Units</b>

<b>Extrication Bus/Semi</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Recommended Unit</b>
Establish Incident	1	1 <sup>st</sup> Engine
Command		
Scene Size-up/360		
Secure Safety	1	
Triage/Establish Patient Contact	1	
Blocking Engine/Scene Perimeter	1	2 <sup>nd</sup> Engine
Fire Protection Line	2	
Hazard Mitigation	3	3 <sup>rd</sup> Due Engine
Vehicle Stabilization/Extrication	3	1 <sup>st</sup> Support
Vehicle Stabilization/Extrication	3	2nd Support Unit
Command Upgrade	1	1 <sup>st</sup> Battalion Chief
Incident Safety	1	2nd BC
<b>12 Tasks</b>	<b>17 Personnel</b>	<b>7 Units</b>



## **High-Risk Technical Rescue: Baseline System Performance**

The following information contains response data from high-risk technical rescue incidents to which LFRFA responded during the time period from January 1, 2018, through December 31, 2022. During this time period, the agency operated with a designated Urban Response Area and a Rural Response Area.

For 90 percent of all high-risk technical rescue, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer, and one (1) firefighter, is: 9 minutes and 49 seconds in the urban response area and 14 minutes and 51 seconds in the rural response area. Every first due apparatus carries basic low-angle rope rescue equipment, cribbing, mechanical advantage tools, personal floatation devices, water rescue rope throw bags, surface ice rescue equipment and swift water rescue boards, and is capable of: establishing incident command, conducting a scene size-up, establishing scene security, requesting additional resources as necessary, and providing and operating the tools and equipment necessary to implement a rapid rescue. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of all high-risk technical rescue, the total response time for the arrival of the appropriate high-risk Tech Rescue effective response force (ERF) is: 20 minutes and 1 seconds in the urban response area and 29 minutes and 44 seconds in the rural response area. The ERF is capable of upgrading incident command, establishing imbedded safety officers, establishing patient contact, staging responding apparatus, and implementing appropriate rescue techniques. These actions are completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

## **High-Risk Technical Rescue: Performance Benchmarks**

For 90 percent of all high-risk technical rescue, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer, and one (1) firefighter, shall be: 8 minutes and 20 seconds in the urban response area, and 17 minutes and 20 seconds in the rural response area. The first due apparatus to a technical rescue incident shall be capable of: establishing incident command, conducting a scene size-up, establishing scene security, requesting additional resources as necessary, and providing and operating the tools and equipment necessary to implement a rapid rescue. All first due apparatus shall carry basic low-angle rope rescue equipment, cribbing, mechanical advantage tools, personal floatation devices, water rescue rope throw bags, surface ice rescue equipment and swift water rescue boards. These actions shall be completed in accordance with departmental



standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of all high-risk technical rescue, the total response time for the arrival of the appropriate high-risk Tech Rescue effective response force (ERF) shall be: 12 minutes and 20 seconds in the urban response area and 21 minutes and 20 seconds in the rural response area. The ERF shall be capable of upgrading incident command, establishing imbedded safety officers, establishing patient contact, staging responding apparatus, and implementing appropriate rescue techniques. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

High Risk Tech Rescue 90 <sup>th</sup> Percentile			2018- 2022	2022	2021	2020	2019	2018	Benchmark	Performance Gap
<b>Alarm Handling</b>	Pickup to Dispatch	All	02:21	02:27	02:04	02:52	02:03	01:51	01:30	+00:51
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	All	01:51	01:56	01:51	01:38	01:49	01:48	01:50	+00:01
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	05:30	04:32	06:02	04:37	05:00	05:46	05:00	+00:30
		Rural	10:21	08:58	08:53	09:25	12:03	11:29	14:00	-03:39
	Travel Time ERF <b>Concentration</b>	Urban	13:20	10:21	13:22	19:48	N/A	12:51	09:00	+04:20
		Rural	22:16	12:59	26:25	24:25	10:32	20:45	18:00	+04:16
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	08:26	09:38	08:18	07:18	09:56	07:41	08:20	+00:06
			N= 135	N= 10	N= 45	N= 20	N= 33	N= 27		
		Rural	13:29	12:19	11:36	13:15	15:41	13:36	17:20	-03:51
			N= 85	N= 14	N= 23	N= 15	N= 11	N= 22		
	Total Response Time ERF <b>Concentration</b>	Urban	16:50	13:07	15:37	21:54	N/A	15:26	12:20	+04:30
			N= 20	N= 7	N= 5	N= 3	N= 0	N= 5		
Rural	24:13	15:22	31:15	27:28	12:38	22:56	21:20	+02:43		
	N= 31	N= 4	N= 13	N= 6	N= 4	N= 4				



## Aircraft Rescue Fire Fighting (ARFF) All

Aircraft incidents vary in complexity based on the type of incident, aircraft specification, passengers, weather, time of day, and geographical location of the incident. There are five (5) incident types: Aircraft Standby, Ground Emergency, Alert 1 (in-flight: minor), Alert 2 (in-flight: major) and Alert 3 (aircraft crash). The LFRA risk methodology then further delineates incident response profiles and risk categorization based on aircraft size.

The LFRA quantitatively complies with Federal Aviation Administration (FAA) standards, ARFF personnel certifications, and equipment to mitigate aircraft emergencies. Northern Colorado Regional Airport (FNL) is categorized as an Index C airport, which can receive large aircraft between 126 and 159 feet due to the runway length of 8000'. Station 4 staffing is covered solely by LFRA operations; one 40-hour ARFF engineer is assigned to the airport to coordinate ARFF standbys, training, FAA annual inspections, and certification management. When the 40-hour ARFF engineer is unavailable, on or off-duty ARFF-qualified personnel are required to cover per FAA regulations. FAA requires an ARFF apparatus must be on the scene of all aircraft incidents "ON" airport property. If an aircraft incident happens off-property, the ERF remains the same, but the ARFF apparatus may or may not deploy based on geographical location.

### Low-Risk ARFF Overview

CAD Nature Codes: Ground Emergency (small), Alert 1 (small/medium/large), Alert 2 (small), Alert 3 (small)

NFIRS Codes: 462, 135

<b>Ground Emergency (Small Aircraft)</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Needed Recommended Unit</b>
Establish Incident Command	1 Officer	2 Engine + <b>ARFF (IIS) +1</b>
360-degree scene size-up, develop IAP		
Incident Safety Officer		
Position Apparatus	1 DO / 1 ARFF DO	
Operate apparatus Pump		
ARFF Apparatus		
Use Appropriate Tool	1 Firefighter	
Deploy appropriate attack hose line		
EVAC	1 Officer / 1 Firefighter	
<b>9 Tasks</b>	<b>6 Personnel</b>	<b>2 Unit (ERF)</b>



<b>Alert 1- In-Flight: Minor (Small/Medium/Large Aircraft)</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Needed Recommended Unit</b>
Incident Command	1 Officer	1 Engine + 1 ARFF (IIS) + 1
ARFF Apparatus	1 DO	
Tactical Staging	1 Firefighter	
<b>2 Tasks</b>	<b>3 Personnel</b>	<b>1 Unit (ERF)</b>

<b>Alert 2 - In Flight: Major (Small Aircraft)</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Needed Recommended Unit</b>
Incident Command	1 Battalion Chief	1 BC
ARFF Apparatus	1 DO / 1 ARFF DO	1 ARFF (IIS) + 1
Fire Attack	1 Officer / 1 Firefighter	1 Engines
Evacuation / Rescue	1 Officer / 1 Firefighter	1 Support
Access / Perimeter	1 Officer / 1 Firefighter	1 Type 6 Engine
<b>5 Tasks</b>	<b>9 Personnel</b>	<b>4 Unit (ERF)</b>

<b>Alert 3: Crash (Small Aircraft)</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Needed Recommended Unit</b>
Incident Command	1 Battalion Chief	1 BC
ARFF Apparatus	1 DO / ARFF DO	1 ARFF (IIS) + 1
Fire Attack	1 Firefighter / 1 Officer	1 Engines
Evacuation / Rescue	2 Firefighters / 1 Officer	1 Support
Access / Perimeter	2 Firefighters	1 Type 6 Engine
<b>5 Tasks</b>	<b>9 Personnel</b>	<b>4 Unit (ERF)</b>

Low

## **Risk ARFF: Baseline System Performance**

The following information contains response data from low-risk ARFF incidents to which LFRA responded during the time period from January 1, 2018, through December 31, 2022. During this time period, the agency operated with a designated Urban Response Area and a Rural Response Area.

For 90 percent of all low-risk ARFF, the total response time for the arrival of the first due apparatus/ERF, staffed with at least one (1) officer, one (1) engineer, and one (1) firefighter, is: 9 minutes and 29 seconds in the urban response area. No qualifying data in the previous 5 years within the rural response area. The first due apparatus/ERF is capable of establishing command, providing runway/taxiway travel path and closure report via airport operations, identifying staging area, developing an incident action plan, completing a 360-degree size-up (when applicable), requesting additional resources, and initiating the first and highest identified priority (evacuation, rescue, egress



protection, or fire attack). The first arriving engine can deliver a least 750 gallons of tank water, with a minimum 1500 GPM fire pump, fire attack lines, extrication, and forcible entry equipment. The first arriving ARFF apparatus is capable of off-road pump and roll, delivering a minimum of 1500 gallons of tank water with a 1500 GPM fire pump (375 GPM “low flow”/750 GPM “high flow”), 205 gallons of foam, and 500 pounds of dry chem, and hydro-chem capability. It has an appropriate fire attack hose line, Rhino bumper turret, and FLIR camera.

\*No qualifying low-risk ARFF ERF data between 2018 and 2022

## **Low-Risk ARFF: Performance Benchmarks**

For 90 percent of all low-risk ARFF, the total response time for the arrival of the first due apparatus/ERF, staffed with at least one (1) officer, one (1) engineer, and one (1) firefighter, shall be: 7 minutes and 50 seconds in the urban response area, and 16 minutes and 50 seconds in the rural response area. The first due apparatus/ERF shall be capable of establishing command, providing runway/taxiway travel path and closure report via airport operations, identifying staging area, developing an incident action plan, completing a 360-degree size-up (when applicable), requesting additional resources, and initiating the first and highest identified priority (evacuation, rescue, egress protection, or fire attack). The first arriving ARFF apparatus is capable of off-road pump and roll, delivering a minimum of 1500 gallons of tank water with a 1500 GPM fire pump (375 GPM “low flow”/750 GPM “high flow”), 205 gallons of foam, and 500 pounds of dry chem, and hydro-chem capability. It has an appropriate fire attack hose line, Rhino bumper turret, and FLIR camera.

For 90 percent of all low-risk ARFF, the total response time for the arrival of the appropriate low-risk ARFF effective response force (ERF) is: 11 minutes and 50 seconds in the urban response area and 20 minutes and 50 seconds in the rural response area. The ERF is capable of upgrading incident command, designating a safety officer, providing an uninterrupted water supply, primary and secondary attack line for fire control, completing forcible entry, completing evacuation, a primary search of the aircraft, patient triage and collection, establish operational groups and/or divisions as appropriate, and deploy ladders and other necessary equipment to support fireground operations. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.



Low Risk ARFF 90 <sup>th</sup> Percentile			2018- 2022	2022	2021	2020	2019	2018	Benchmark	Performance Gap
<b>Alarm Handling</b>	Pickup to Dispatch	All	03:04	03:04	N/A	N/A	N/A	N/A	01:30	+01:34
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	All	02:19	02:19	N/A	N/A	N/A	N/A	01:20	+00:59
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	05:03	05:03	N/A	N/A	N/A	N/A	05:00	+00:03
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	14:00	N/A
	Travel Time ERF <b>Concentration</b>	Urban	05:03	05:03	N/A	N/A	N/A	N/A	09:00	-03:57
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	18:00	N/A
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	09:29	09:29	N/A	N/A	N/A	N/A	07:50	+01:39
			N= 4	N= 4	N= 0	N= 0	N= 0	N= 0		
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	16:50	N/A
	Total Response Time ERF <b>Concentration</b>	Urban	09:29	09:29	N/A	N/A	N/A	N/A	11:50	-02:21
			N= 4	N= 4	N= 0	N= 0	N= 0	N= 0		
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	20:50	N/A
			N= 0	N= 0	N= 0	N= 0	N= 0			

\*New reporting category for 2022

## Moderate-Risk ARFF Overview

CAD Nature Codes: Ground Emergency (medium), Alert 2 (medium), Alert 3 (medium)

NFIRS Codes: 462, 135

<b>Ground Emergency (Medium Aircraft)</b>		
Critical Task Description	Number of Personnel	Needed Recommended Unit
Incident Command Upgrade	1 Battalion Chief	1 BC
360-degree scene size-up, develop IAP		
Incident Safety Officer		
Position Apparatus	1 DO/ 1 ARFF DO	2 Engines / 1 ARFF (IIS) + 1
Operate apparatus Pump		
ARFF Apparatus		
Water Supply	1 DO	
Deploy appropriate initial attack hose line	1 Officer / 1 Firefighter	
Perform initial evacuation		
Deploy appropriate 2nd attack hose line	1 Officer / 1 Firefighter	
Perform Evacuation / Access	1 Officer / 1 Firefighter	1 Support
<b>11 Tasks</b>	<b>10 Personnel</b>	<b>4 Unit (ERF)</b>



<b>Alert 2 - In Flight: Major (Medium Aircraft)</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Needed Recommended Unit</b>
Incident Command	1 Battalion Chief	1 BC
ARFF Apparatus	1 DO / ARFF DO	1 ARFF (IIS) + 1
Fire Attack	1 Firefighter / 1 Officer	2 Engines
Water Supply	1 DO	1 Tender
Evacuation / Rescue	2 Officer / 4 Firefighters	1 Support
Access / Perimeter	2 Firefighters	1 Type 6 Engine
<b>6 Tasks</b>	<b>13 Personnel</b>	<b>6 Unit (ERF)</b>

<b>Alert 3: Crash (Medium Aircraft)</b>		
<b>Critical Task Description</b>	<b>Number of Personnel</b>	<b>Needed Recommended Unit</b>
Incident Command	1 Battalion Chief	1 BC
ARFF Apparatus	1 DO / ARFF DO	1 ARFF (IIS) + 1
Fire Attack	1 Firefighter / 1 Officer	2 Engines
Water Supply	1 DO	1 Tender
Evacuation / Rescue	2 Officer / 4 Firefighters	1 Support
Access / Perimeter	2 Firefighters	1 Type 6 Engine
<b>6 Tasks</b>	<b>13 Personnel</b>	<b>6 Unit (ERF)</b>

### **Moderate-Risk ARFF: Baseline System Performance**

The following information contains response data from moderate-risk ARFF incidents to which LFRA responded during the time period from January 1, 2018, through December 31, 2022. During this time period, the agency operated with a designated Urban Response Area and a Rural Response Area.

For 90 percent of all moderate-risk ARFF, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer, and one (1) firefighter, is: 8 minutes and 3 seconds in the urban response area. No qualifying data in the previous 5 years within the rural response area. The first due apparatus is capable of establishing command, providing runway/taxiway travel path and closure report via airport operations, identifying staging area, developing an incident action plan, completing a 360-degree size-up (when applicable), requesting additional resources, and initiating the first and highest identified priority (evacuation, rescue, egress protection, or fire attack). The first arriving engine can deliver a least 750 gallons of tank water, with a minimum 1500 GPM fire pump, fire attack lines, extrication, and forcible entry equipment. The first arriving ARFF apparatus is capable of off-road pump and roll, delivering a minimum of 1500 gallons of tank water with a 1500 GPM fire pump (375 GPM “low flow”/750 GPM “high flow”), 205 gallons of foam, and 500 pounds of dry chem, and hydro-chem capability. It has an appropriate fire attack hose line, Rhino bumper turret, and FLIR camera.



For 90 percent of all moderate-risk ARFF, the total response time for the arrival of the appropriate moderate-risk ARFF effective response force (ERF) is: 21 minutes and 39 seconds in the urban response area. No qualifying data in the previous 5 years within the rural response area. The ERF is capable of upgrading incident command, designating a safety officer, providing an uninterrupted water supply, primary and secondary attack line for fire control, completing forcible entry, completing evacuation, a primary search of the aircraft, patient triage and collection, establish operational groups and/or divisions as appropriate, and deploy ladders and other necessary equipment to support fireground operations. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

### **Moderate-Risk ARFF: Performance Benchmarks**

For 90 percent of all moderate-risk ARFF, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer, and one (1) firefighter, shall be: 7 minutes and 50 seconds in the urban response area, and 16 minutes and 50 seconds in the rural response area. The first due shall be capable of establishing command, providing runway/taxiway travel path and closure report via airport operations, identifying staging area, developing an incident action plan, completing a 360-degree size-up (when applicable), requesting additional resources, and initiating the first and highest identified priority (evacuation, rescue, egress protection, or fire attack). The first arriving ARFF apparatus is capable of off-road pump and roll, delivering a minimum of 1500 gallons of tank water with a 1500 GPM fire pump (375 GPM “low flow”/750 GPM “high flow”), 205 gallons of foam, and 500 pounds of dry chem, and hydro-chem capability. It has an appropriate fire attack hose line, Rhino bumper turret, and FLIR camera.

For 90 percent of all moderate-risk ARFF, the total response time for the arrival of the appropriate moderate risk effective response force (ERF) shall be: 11 minutes and 50 seconds in the urban response area and 20 minutes and 50 seconds in the rural response area. The ERF shall be capable of upgrading incident command, designating a safety officer, providing an uninterrupted water supply, primary and secondary attack line for fire control, completing forcible entry, completing evacuation, a primary search of the aircraft, patient triage and collection, establish operational groups and/or divisions as appropriate, and deploy ladders and other necessary equipment to support fireground operations. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.



Mod Risk ARFF 90 <sup>th</sup> Percentile			2018- 2022	2022	2021	2020	2019	2018	Benchmark	Performance Gap
<b>Alarm Handling</b>	Pickup to Dispatch	All	01:56	00:44	02:16	N/A	N/A	N/A	01:30	+00:26
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	All	01:38	00:55	01:55	N/A	N/A	N/A	01:20	+00:18
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	05:38	05:43	01:21	N/A	N/A	N/A	05:00	+00:38
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	14:00	N/A
	Travel Time ERF <b>Concentration</b>	Urban	18:49	18:49	N/A	N/A	N/A	N/A	09:00	+09:49
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	18:00	N/A
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	08:37	08:38	02:51	N/A	N/A	N/A	07:50	+00:47
			N= 1	N= 2	N= 1	N= 0	N= 0	N= 0		
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	16:50	N/A
	Total Response Time ERF <b>Concentration</b>	Urban	21:39	21:39	N/A	N/A	N/A	N/A	11:50	+09:49
			N= 1	N= 1	N= 0	N= 0	N= 0	N= 0		
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	20:50	N/A
			N= 0	N= 0	N= 0	N= 0	N= 0			



## High-Risk ARFF Overview

CAD Nature Codes: Ground Emergency (large), Alert 2 (large), Alert 3 (large)

NFIRS Codes: 462, 135

Ground Emergency (Large Aircraft)		
Critical Task Description	Number of Personnel	Needed Recommended Unit
Incident Command Upgrade	1 Battalion Chief	1 BC
360-degree scene size-up, develop IAP		
Incident Safety Officer		
Position Apparatus	1 DO/ 1 ARFF DO	2 Engines / 1 ARFF (IIS) + 1
Operate apparatus Pump		
ARFF Apparatus		
Water Supply	1 DO	
Deploy appropriate initial attack hose line	1 Officer / 1 Firefighter	
Perform initial evacuation		
Deploy appropriate 2nd attack hose line	1 Officer / 1 Firefighter	
Perform Evacuation / Access	2 Officer / 1 DO/ 2 Firefighter	2 Support
<b>11 Tasks</b>	<b>13 Personnel</b>	<b>5 Unit (ERF)</b>

Alert 2 - In Flight: Major (Large Aircraft)		
Critical Task Description	Number of Personnel	Needed Recommended Unit
Incident Command	1 Battalion Chief	1 BC
ARFF Apparatus	1 DO / ARFF DO	1 ARFF (IIS) + 1
Fire Attack	1 Firefighter / 1 Officer	3 Engines
2nd Attack Line	1 Firefighter / 1 Officer	
Water Supply	1 DO	1 Tender
Evacuation / Rescue	4 Firefighters / 2 Officer	2 Support
Rescue	2 Firefighters / 1 Officer	
Access / Perimeter	2 Firefighters	1 Type 6 Engine
<b>8 Tasks</b>	<b>18 Personnel</b>	<b>8 Unit (ERF)</b>

Alert 3: Crash (Large Aircraft)		
Critical Task Description	Number of Personnel	Needed Recommended Unit
Incident Command	1 Battalion Chief	1 BC
ARFF Apparatus	1 DO / ARFF DO	1 ARFF (IIS) + 1
Fire Attack	1 Firefighter / 1 Officer	3 Engines
2nd Attack Line	1 Firefighter / 1 Officer	
Water Supply	1 DO	1 Tender
Evacuation / Rescue	4 Firefighters / 2 Officer	2 Support
Rescue	2 Firefighters / 1 Officer	
Access / Perimeter	2 Firefighters	1 Type 6 Engine
<b>8 Tasks</b>	<b>18 Personnel</b>	<b>8 Unit (ERF)</b>



## **High-Risk ARFF: Baseline System Performance**

The following information contains response data from high-risk ARFF incidents to which LFRA responded during the time period from January 1, 2018, through December 31, 2022. During this time period, the agency operated with a designated Urban Response Area and a Rural Response Area.

For 90 percent of all high-risk ARFF, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer, and one (1) firefighter, is: 10 minutes and 0 seconds in the urban response area. No qualifying data in the previous 5 years within the rural response area. The first due apparatus is capable of establishing command, providing runway/taxiway travel path and closure report via airport operations, identifying staging area, developing an incident action plan, completing a 360-degree size-up (when applicable), requesting additional resources, and initiating the first and highest identified priority (evacuation, rescue, egress protection, or fire attack). The first arriving engine can deliver a least 750 gallons of tank water, with a minimum 1500 GPM fire pump, fire attack lines, extrication, and forcible entry equipment. The first arriving ARFF apparatus is capable of off-road pump and roll, delivering a minimum of 1500 gallons of tank water with a 1500 GPM fire pump (375 GPM “low flow”/750 GPM “high flow”), 205 gallons of foam, and 500 pounds of dry chem, and hydro-chem capability. It has an appropriate fire attack hose line, Rhino bumper turret, and FLIR camera.

For 90 percent of all high-risk ARFF, the total response time for the arrival of the appropriate high-risk ARFF effective response force (ERF) is: 15 minutes and 53 seconds in the urban response area. No qualifying data in the previous 5 years within the rural response area. The ERF is capable of upgrading incident command, designating a safety officer, providing an uninterrupted water supply, primary and secondary attack line for fire control, completing forcible entry, completing evacuation, a primary search of the aircraft, patient triage and collection, establish operational groups and/or divisions as appropriate, and deploy ladders and other necessary equipment to support fireground operations. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.



## **High-Risk ARFF: Performance Benchmarks**

For 90 percent of all high-risk ARFF, the total response time for the arrival of the first due apparatus, staffed with at least one (1) officer, one (1) engineer, and one (1) firefighter, shall be: 7 minutes and 50 seconds in the urban response area, and 16 minutes and 50 seconds in the rural response area. The first due apparatus shall be capable of establishing command, providing runway/taxiway travel path and closure report via airport operations, identifying staging area, developing an incident action plan, completing a 360-degree size-up (when applicable), requesting additional resources, and initiating the first and highest identified priority (evacuation, rescue, egress protection, or fire attack). The first arriving engine can deliver a least 750 gallons of tank water, with a minimum 1500 GPM fire pump, fire attack lines, extrication, and forcible entry equipment. The first arriving ARFF apparatus is capable of off-road pump and roll, delivering a minimum of 1500 gallons of tank water with a 1500 GPM fire pump (375 GPM “low flow”/750 GPM “high flow”), 205 gallons of foam, and 500 pounds of dry chem, and hydro-chem capability. It has an appropriate fire attack hose line, Rhino bumper turret, and FLIR camera.

For 90 percent of all high-risk ARFF, the total response time for the arrival of the appropriate high-risk ARFF effective response force (ERF) shall be: 11 minutes and 50 seconds in the urban response area and 20 minutes and 50 seconds in the rural response area. The ERF shall be capable of upgrading incident command, designating a safety officer, providing an uninterrupted water supply, primary and secondary attack line for fire control, completing forcible entry, completing evacuation, a primary search of the aircraft, patient triage and collection, establish operational groups and/or divisions as appropriate, and deploy ladders and other necessary equipment to support fireground operations. These actions shall be completed in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.



High Risk ARFF 90 <sup>th</sup> Percentile			2018- 2022	2022	2021	2020	2019	2018	Benchmark	Performance Gap
<b>Alarm Handling</b>	Pickup to Dispatch	All	01:33	01:51	00:44	N/A	01:04	01:44	01:30	+00:03
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	All	02:05	01:40	01:42	N/A	02:03	00:00	01:20	+00:35
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	07:01	02:55	05:54	N/A	08:47	03:31	05:00	+02:01
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	14:00	N/A
	Travel Time ERF <b>Concentration</b>	Urban	13:58	N/A	N/A	N/A	13:58	N/A	09:00	+04:58
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	18:00	N/A
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit <b>Distribution</b>	Urban	08:21	05:23	07:31	N/A	11:04	04:20	07:50	+00:31
			N= 11	N= 3	N= 4	N= 0	N= 3	N= 1		
		Rural	N/A	N/A	N/A	N/A	N/A	N/A	16:50	N/A
			N= 0	N= 0	N= 0	N= 0	N= 0	N= 0		
	Total Response Time ERF <b>Concentration</b>	Urban	15:53	N/A	N/A	N/A	15:53	N/A	11:50	+04:03
			N= 1	N= 0	N= 0	N= 0	N= 1	N= 0		
Rural	N/A	N/A	N/A	N/A	N/A	N/A	20:50	N/A		
	N= 0	N= 0	N= 0	N= 0	N= 0	N= 0				



# Chapter 5 – Compliance Methodology

Continuous evaluation and communication of performance will reflect the Loveland Fire Rescue Authority’s renewed commitment to continuous quality improvement (CQI). Through the reevaluation of the agency’s performance, gaps in our efforts to institutionalize the accreditation process as the basis of CQI became apparent. Much of this is rooted in information sharing and the approach to decision making processes. Furthermore, highly accurate and reliable data must be the starting point for this CQI.

As part of the 2022-2027 Standards of Cover revision process, a data methodology procedure was minted to ensure that the data outcomes/performance measures were consistent for all current reporting and would establish an “apples to apples” comparison for all future data analysis. Responsibility for ongoing compliance is a shared effort between the accreditation manager (or their designee) and the executive level chief officers of the organization.

The Loveland Fire Rescue Authority has adopted the CFAI compliance model, as outlined in Quality Improvement Through Accreditation and the LFRA Standards of Cover Revision and Compliance policy to meet the needs of the, at minimum, annual evaluation process.



1. Establish/Review Performance Measure
  - a. Timeline: Annual and as-needed
  - b. Identify levels of service provided
  - c. Levels of service identified
  - d. Levels of risk categorized
  - e. Performance objectives and measures developed
  - f. Distribution performance measures adopted
  - g. Concentration performance measures adopted
  - h. This entire exhaustive process may need not occur at every annual review, but it is important to review the underlying assumptions to ensure they have not changed. The potential for new risks or required services must also be evaluated.
2. Evaluate Performance
  - a. Timeline: Monthly, Quarterly, and/or Annual
  - b. Evaluate system performance by service delivery programs
  - c. Evaluate service reliability by planning zone
  - d. Identify performance gap between benchmark and baseline/actual performance
3. Develop Compliance Strategy's
  - a. Timeline: Ongoing
  - b. Maximization of existing resources
  - c. Alterations to deployment strategies or deployment behaviors
  - d. Alternative methods to provide service at desired level
  - e. Budget estimates as necessary
  - f. Use of annual program appraisals as necessary for goal/objective revision and financial planning
4. Communicate Expectation to the Organization
  - a. Timeline: Monthly/Quarterly



- b. Benchmark performance is clearly explained to all line personnel
- c. Performance measures/gaps are communicated to all line personnel on a monthly basis
- d. New compliance strategies are communicated and implemented
- e. Appropriate levels of training are provided for compliance strategies or changes to operations
- f. Communicate consequences of non-compliance
- g. Empower all personnel to identify the need to alter processes that may contribute to increased system performance

## 5. Validate Compliance

- a. Timeline: Monthly/Quarterly and Annual
- b. Monthly/quarterly evaluation as necessary and able
- c. Annual evaluation at minimum
- d. Monthly/Quarterly may include:
  - i. Performance by unit, performance by shift, reliability by planning zone
- e. Annual may include:
  - i. Performance by unit, first-due unit, ERF, and overall performance
  - ii. System demands and/or performance by time of day, day of week, and month of year
  - iii. Review of performance by governing bodies
  - iv. Adjustments of service level objectives as necessary
- f. Results of compliance validation process may trigger the need to cycle back to previous steps for revalidation of benchmark performance, development of new compliance strategies, and then the re-communication of expectations to the organization.

## 6. Make Adjustments and Repeat Process

- a. Timeline: Ongoing/As-needed



## Chapter 6 – Overall Evaluation and Recommendations

The agency has evaluated both itself and the community it serves, in terms of hazards, risks, service delivery, and response performance. This evaluation was conducted in comparison to established standards as well as fire service “best practice” recommendations. Throughout all assessments, the agency was able to identify not only when things were done well, but also areas where improvements could be made.

Procedures have been established to help the agency remain vigilant in the assessment of the agency and the programs and services delivered. To continue to promote the pursuit of excellence, the following recommendations are made, based on the lessons learned during the development of this document:

Recommendation 1: The agency’s commitment to accreditation and transparent reporting for the purpose of continual quality improvement should be recognized through the formal adoption of the Community Risk Assessment and Standards of Cover to symbolize a contractual agreement between the Loveland Fire Rescue Authority and the citizens within the response area.

*2023 Update: The LFRA and LFRA Board formally adopted the 2022-2027 Community Risk Assessment and Standards of Cover to affirm its commitment to transparent reporting and continual quality improvement. The LFRA will continue to uphold this recommendation with all significant future edits, with a planned formal adoption of the 2023 CRA-SOC at the end of July (LFRA Board Meeting).*

Recommendation 2: The agency should share and explain the contents of this document with all department membership and key external stakeholders to ensure that it is understood by all.

Recommendation 3: The agency should continue to evaluate response performance in comparison with population density, resource allocation, and community risk to ensure that performance goals and objectives are met.

*2023 Update: The LFRA continues to evaluate response performance in comparison to population density, resource allocation, and community risk. The agency intends to expand the scope of its data analysis with the addition of a GIS/Data Analyst later in 2023.*



**Recommendation 4:** The agency should analyze alarm handling and turnout time on a monthly basis. These results should be communicated to both the dispatch center and the operations staff to identify performance gaps as they happen and not after they happen. This communication shall come from the Division Chief of Operations who is ultimately responsible for improving these performance measures.

*2023 Update: Mid 2022 the Loveland Emergency Communication Center began producing alarm handling times for all structure fires and Echo medical responses. The report covers alarm handling times for incidents with less than 1:30, 1:31 to 2:00, and 2:01 and greater.*

**Recommendation 5:** The agency should hire a professional data analyst for the purpose of increasing the agency's data mining, analytic review process and to provide oversight and consistency in reporting. Likewise, the agency should explore options for alternate means of data processing and automation of analytics to ensure accuracy and reduce human error.

*2023 Update: As part of the 2023-2027 LFRA Strategic plan, the agency is slated to hire a GIS/Data Analyst position in the later part of 2023. The agency is also currently utilizing an Admin Analyst position and Business and Finance Manager position to explore possible options for automation.*

**Recommendation 6:** The agency should strengthen the institutionalization of the CFAI accreditation process through the use of a new 5-year, rotational accreditation manager assignment with oversight of a multi-rank accreditation steering committee to assist the manager as necessary. Over time, this rotational position will (1) increase ownership of the accreditation process through clearly defined roles and responsibilities, (2) increase the number of members within the organization who are highly experienced in the accreditation process, (3) improve agency understanding of the accreditation process through regular communication from a streamlined source, and (4) provide leadership to ensure that decision making processes are rooted in the accreditation methodology and consistent with performance goals and/or the agency's strategic plan.

**Recommendation 7:** The agency should ensure the strategic plan is updated every 3-5 years to ensure the plan is relevant to the outcomes and goals as measured and communicated to the community.

*2023 Update: In the early part of 2023, The LFRA completed a fresh strategic planning process that will guide the organization for a five-year period (2023-2027). This new strategic plan supersedes a previous plan that was originally intended to run through 2026. This previous plan had an intended life span of 9 years, from the date of publishing, which proved to be too long a period of time to effectively and strategically plan. The new 2023-2027 LFRA Strategic Plan timeline is now consistent with CFAI*



*recommendations and industry best practices for strategic planning processes.*

**Recommendation 8:** The agency should explore methodologies for increasing communication related to performance measures/gaps to all line level personnel on a monthly/quarterly basis. This will likely require completion of recommendations 4 and 5 to provide the necessary personnel to expand the functions of the core accreditation team.

**Recommendation 9:** Complete construction of Station 10, improving distribution of resources on the eastern edge of the response area.

*2023 Update: Following completion of construction, the LFRA took possession of and began providing service from Station 10 in September of 2022.*

**Recommendation 10:** Implement the new QRV company in Station 6 to replace the engine company being relocated to Station 10. Closely monitor the effectiveness of the QRV concept for possible implementation in other districts as a solution for improving unit reliability.

*2023 Update: LFRA implemented the new QRV company at Station 6 in on December 30th of last year. The LFRA Risk Reduction and Readiness Division is currently gathering information and developing a methodology to evaluate the effectiveness of the QRV concept as it's been implemented. The LFRA Operations Division will be sure to evaluate these findings under the consideration of implementing QRV's in other districts.*

**Recommendation 11:** More clearly define the process for ensuring pre-incident plans are completed for target hazards, as well as all business occupancies in the LFRA response area.

*2023 Update: LFRA is currently implementing and training employees on the use of a new pre-incident planning process that utilizes the "First Due" software.*

**Recommendation 12:** Ensure all agency policies and procedures have been updated and uploaded into Lexipol by the end of 2022. The agency should also develop a method to ensure policies are periodically and systematically reviewed.

*2023 Update: LFRA is still migrating the remaining Administrative Procedures and Guidelines to Lexipol to become either a Policy or Procedure.*

