

Fire Station Feasibility and
Facility Study for:

**Elk River Fire
Department**

Elk River, MN

August 16, 2017



INTRODUCTION

The Elk River Fire Department has been serving the community of Elk River as a paid-on-call department since 1881. Most recently the department has been utilizing two fire stations, Station No. 1 located at 415 Jackson Ave NW and Station No. 2 located at 13073 Orono Parkway NW. Station No. 1 was constructed in 1972 and served as the City's only station until Station No. 2 was constructed in 2003. Station No. 2 currently serves as the Department's headquarters station and is joined with the Police Department in the City of Elk River Public Safety Building.

There are a number of developing issues in the City of Elk River that are pertinent to the need or direction of this study:

- The City has a number of barriers that have an impact on response time including Highway 10, Highway 169, the Mississippi River, and the BNSF Railroad.
- Station No. 1 was constructed in 1972 and has had a number of renovations and expansions.
- Elk River Fire Department has for the past several years offered firefighter training to candidates from surrounding communities. This effort is a revenue generator for the department.
- The Department has little in the way of training facilities. Both Stations No. 1 & 2 have classroom style training rooms, but the department lacks any purpose built training facilities for the physical aspects of their training.
- The Elk River Fire Department currently provides fire service to the City of Elk River, Big Lake Township and the City Otsego.

This study uses GIS mapping to determine the best possible arrangement of stations in the community to provide best possible response times. From that data comes a series of recommendations regarding remodeling, expansion and new facilities.

Facility recommendations are also provided regarding the Elk River Police Department. The Police Department facilities were designed with some shell space provided for future expansion or growth within the department. The Law Enforcement section of the report examines the Police Department's operations to explore the need for expansion or renovations.

The Study also looks at the question of training facilities for the entire City. Fire, police, municipal utilities and public works all have a need for training. A portion of the study examines the concept of a centralized training facility for the City.

The City of Otsego has been considering the construction of a fire station at the intersection of 85th Street and Park Street to better serve their City. This station would assumedly be constructed by Otsego and operated by Elk River Fire Department. The study includes this station location and its impact on both Elk River and Otsego.

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SECTION 1 – STATION LOCATION AND RESPONSE TIME STUDY

Five Bugles Design and our GIS mapping partner, Graef Engineering, used GIS mapping technology to create response time mapping of the department’s existing stations. This data is then compared to required response times from NFPA 1720 and well as Department policy and historical response. A gap analysis is generated that defines areas where response times can be improved so that new station(s) locations can be recommended. Finally, response time maps are created that project the department’s response times from the newly recommended locations.

Additional mapping and consideration is given to land use, soils, population densities and other pertinent data. Applicable mapping is included in this section. All mapping is included in the appendix.

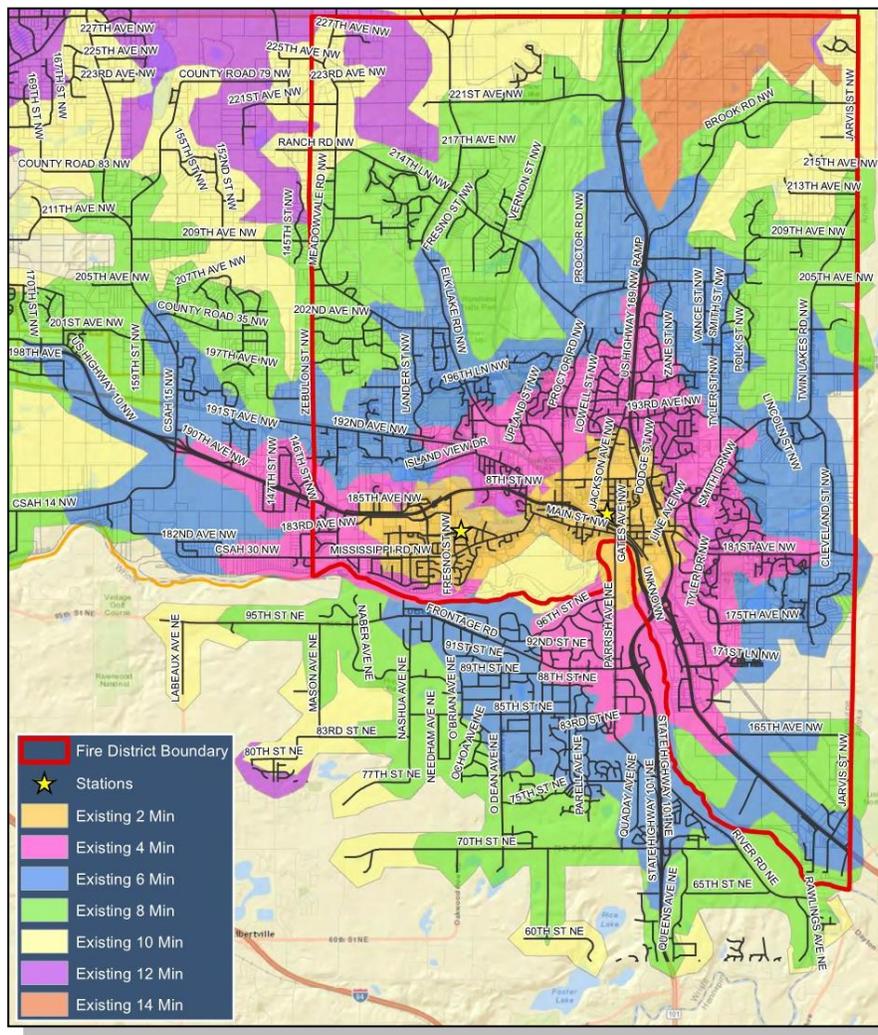


Figure 10: Existing Stations Response Time Mapping

Elk River Fire Department
 Elk River, MN
 Fire Station Feasibility and Facilities Study

GIS mapping was created for the existing station location (figure 10) representing the projected emergency response time superimposed on the department’s response area showing two-minute incremental response zones. The Elk River Fire Department is not capable of responding to all areas of the City of Elk River within a recommended eight-minute response time* from its existing stations.

*Eight-minute response zones are used for this analysis as an approximation of NFPA 1720 guidelines which specifies required response from paid-on-call departments. When added to a six minute or less response to the station, which Elk River Fire Department generally meets, the total response should be less than the 14 minutes required for rural population centers. It should be noted that this analysis is not intended to prove that the department meets NFPA1720, but to recommend optimal response characteristics to the City.

It is important to remember that the map in figure 10 is showing response time from the station to the scene and does not include response time to the station. Elk River is faced with some unique challenges due to barriers that are created by Highways 10 and 169, the BNSF Railroad and the Mississippi River. At certain times of the day, the response time for staff to get to the station can be much longer than average. The following map shows the relationship of staff residences to the stations relative to those barriers.

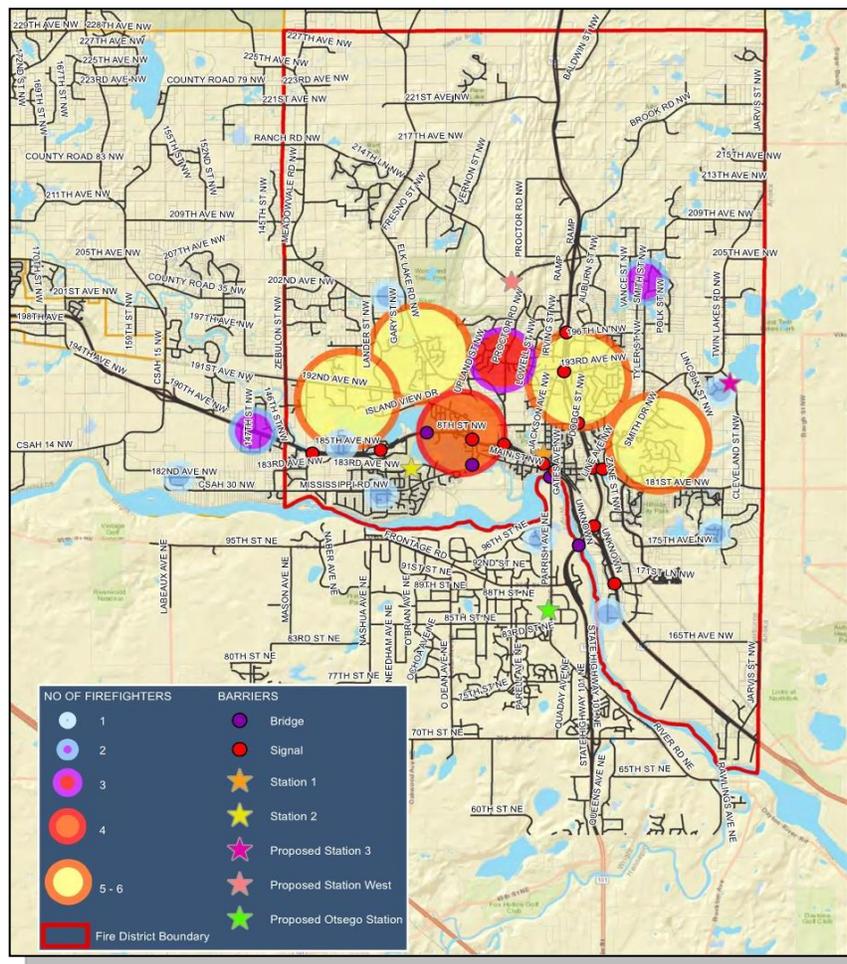


Figure 21: Major Barriers for Mobility

It is the team’s recommendation that a four station model will better serve the City and the areas of the adjoining communities that are the Elk River Fire Department’s responsibility. This model would have the following characteristics:

1. The existing headquarters station at the Public Safety Building would remain.
2. A new station would be built in Otsego (on property currently owned by the City of Otsego and designated for a future fire station) to serve the southern reaches of the service area that are currently challenged by the Mississippi River. It is assumed that this would be constructed by the City of Otsego, but staffed by Elk River Fire Department personnel.
3. A new station would be constructed east of Highway 169.
4. Station No. 1 would be reconstructed further north. This eliminates current overlap with Station No. 2 and would serve a growing population in the northern part of the City.

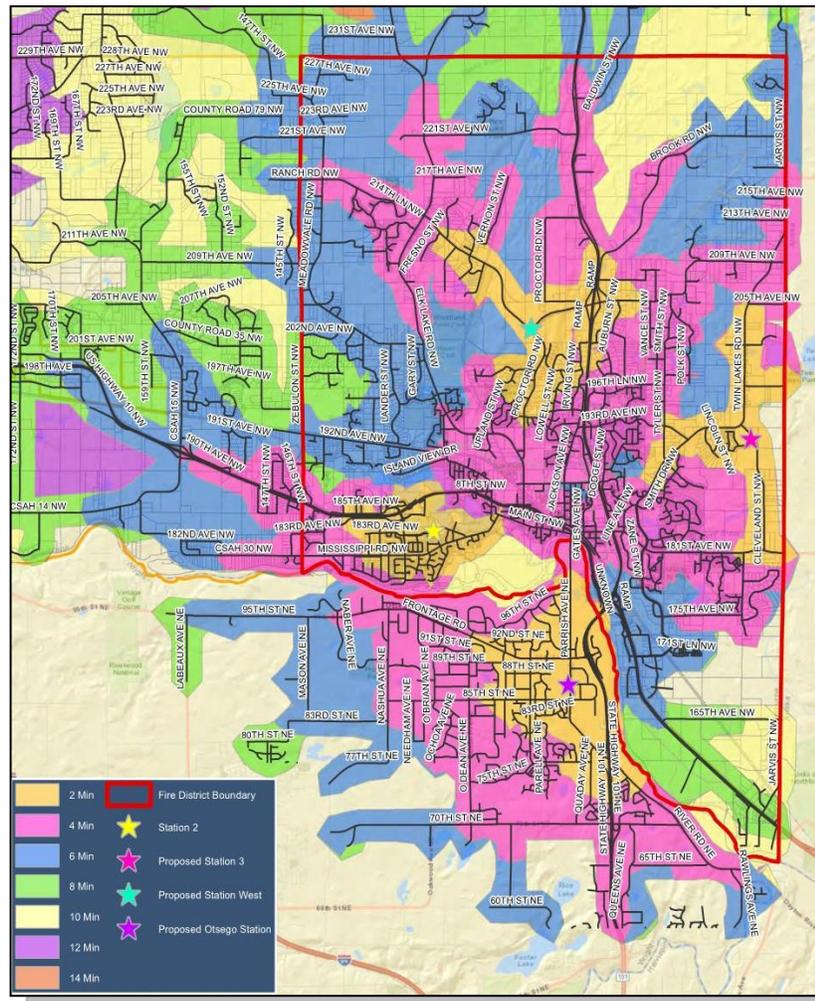


Figure 23: Alternate Final Build Out Response Zones

Phased Implementation

The four station model is not immediately necessary. Station No. 1 currently serves an important function in that it is located close to existing firefighter residences. Also, current population densities in the northern parts of the City do not yet justify that station. Future city planning efforts should however include acquiring land as shown in figure 23. The following map shows response times with an interim four station model that includes current Station No. 1 to be still in service. Again, a station in Otsego is assumed to be constructed by the City of Otsego as it will mostly serve that community.

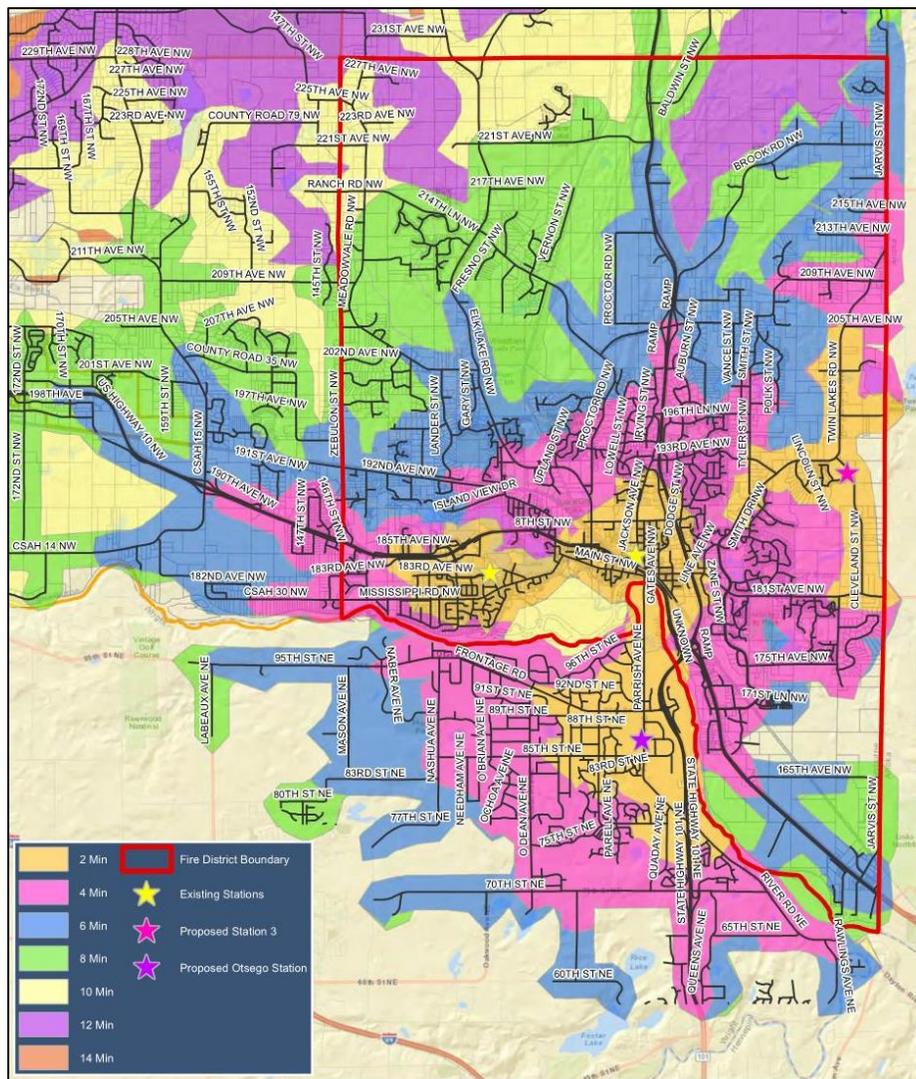


Figure 22: Final Build Out Response Zones

SECTION 2 – SPACE NEEDS ANALYSIS

The space needs portion of the study is informed by the Station Location section and assumes the following:

1. The Elk River Fire Department administration will remain at the Public Safety Building, as will current fire response.
2. A new satellite station will be required on the east side of Highway 169.
3. Station No. 1 is reaching the end of its useful life. Multiple remodeling and expansions have extended it to fit its entire lot and large expenditures now or in the future would be inappropriate.

Probable costs for expansion and remodeling work is expressed as square foot costs due to the early stages of this work. These estimates are further represented as a range of potential costs; it should be assumed that the final cost will be somewhere between the low and high range presented.

2.1 - Station No. 2 Space Needs Recommendations

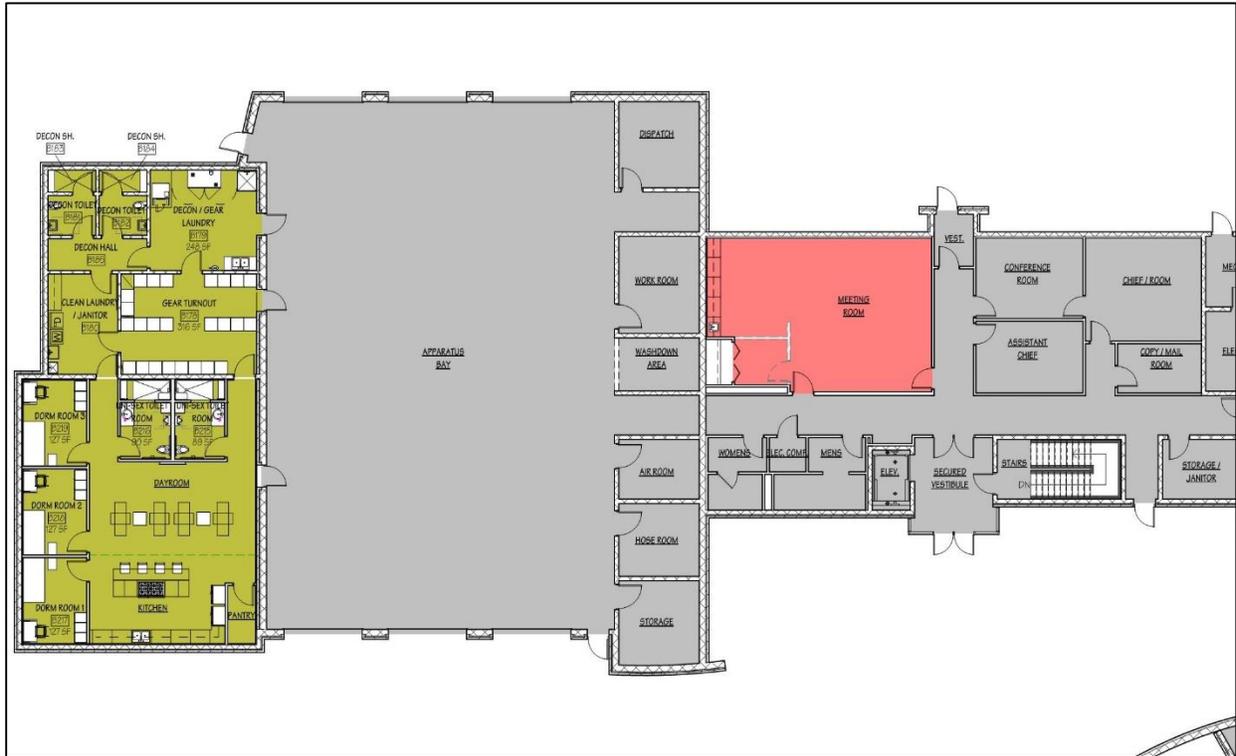
Station No. 2 is the newest of the department’s facilities and has been well maintained. Recent renovations by the department have developed reasonable accommodations for the administrative staff, however the remainder of the station is lacking in station personnel space. The team recommends the following additional spaces be added to provide necessary staff support space.

SPACE	20 YEAR NEED
Decontamination Spaces	1,054 SF
Office/Living Spaces	488 SF
Staff Support Spaces	1,295 SF
Mechanical and Electrical Spaces	142 SF
Total New Construction	2,978 SF
Renovations of Training Room	800 SF
Total	3,779 SF

Some items of note regarding the above recommendations:

1. Gear, equipment and personnel decontamination is a growing concern within the fire industry due to growing evidence of increased cancer risks from larger quantities of carcinogens in today’s fires.
2. Space is provided for Officer Offices that can, over time, become combined sleeping quarters should the department need to implement duty crews in coming years.

- Station No. 2 Training Room is too small for current need with growth of the training program. Expanding it will eliminate the station kitchen which should be replaced in any addition.



Recommended Fire Station No. 2 Additions and Renovations

Probable Cost for this work is developed using square foot costs. Low and high ranges are established due to the early nature of the project. The range is established using costs from Engineering New Record (a national construction cost source) and Five Bugles Designs historical cost data base. It should be assumed that the final construction cost will fall between the low and high range.

	Low Range	High Range
Cost of Construction	\$579,709	\$644,198
Other Costs (FF&E, Technology, Contingencies, Fees and Legal)	\$261,968	\$322,905
Total	\$841,676	\$967,103

2.2 - Proposed East Station and Otsego Station (Elk River Station No. 3 and Otsego Station)

The station location portion of the study recommends a satellite station on the east side of Highway 169 as well as one south of the Mississippi River. These stations could be essentially identical, three bay stations.

SPACE	20 YEAR NEED
Apparatus Bays	5,040 SF
Apparatus Support	3,252 SF
Training	4,413 SF
Administration/Office	1,630 SF
Living Quarters	900 SF
Mechanical and Electrical Spaces	2,285 SF
Total	17,520 SF



Potential East Station Site on City Owned Property at 191 St. Ave NW and Cleveland St. NW

Probable Cost for these Stations are developed using square foot costs. Low and high ranges are established due to the early nature of the project. The range is established using costs from Engineering New Record (a national construction cost source) and Five Bugles Designs historical cost data base. It should be assumed that the final construction cost will fall between the low and high range.

	Low Range	High Range
Cost of Construction	\$3,735,370	\$4,134,503
Other Costs (FF&E, Technology, Contingencies, Fees and Legal)	\$1,017,680	\$1,408,357
Total	\$4,735,050	\$5,542,860

2.3 Northwest Station (Station No. 1 Replacement)

Station No. 1 has reached the end of its useful life. The community is not, however, at a point where replacement of this station is warranted. The report recommends that only minor upkeep and maintenance be performed on this facility with a goal of replacing it in the next 10 years. The following are recommended space needs for this facility as a fire station and training facility for the Elk River Fire Department only. See Section No. 4 of the report of discussions of a potential Elk River Regional Training Center.

SPACE	20 YEAR NEED
Apparatus Bays	7,655 SF
Apparatus Support	4,452 SF
Training	5,045 SF
Administration/Office	3,810 SF
Living Quarters	1,295 SF
Tempered Storage Spaces	1,700 SF
Mechanical and Electrical Spaces	3,593 SF
Total	27,550 SF

A few items of note regarding these spaces:

1. As noted, the department has few opportunities for training in other facilities. This facility therefore has a larger training element.
2. Training spaces indicated in this facility are those spaces required specifically by the fire department. Section No. 4 of the report details other training opportunities and needs from other City of Elk River Departments.

Probable Cost for these Stations are developed using square foot costs. Low and high ranges are established due to the early nature of the project. The range is established using costs from Engineering New Record (a national construction cost source) and Five Bugles Designs historical cost data base. It should be assumed that the final construction cost will fall between the low and high range.

	Low Range	High Range
Cost of Construction	\$5,808,379	\$6,426,788
Other Costs (FF&E, Technology, Contingencies, Fees and Legal)	\$1,439,430	\$2,029,450
Total	\$7,247,809	\$8,456,238

Note: This station is not recommended for a number of years. Costs should be adjusted to account for inflation to the midpoint of expected construction once that date had been determined.

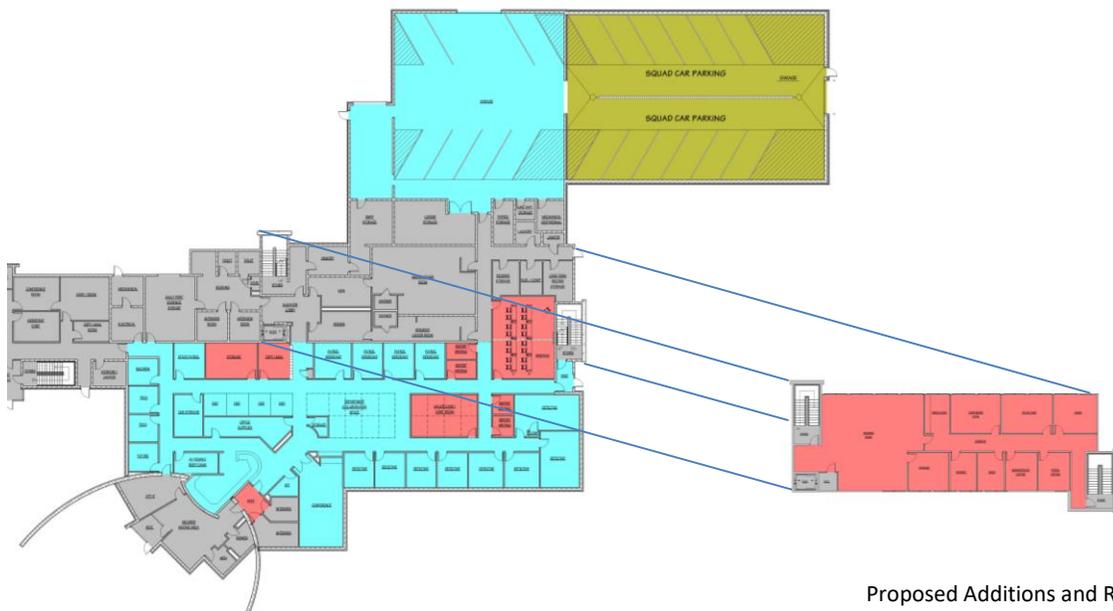
SECTION 3 – LAW ENFORCEMENT CENTER

The Elk River Police Department has been operating out of the Public Safety Building since its construction in 2003. At that time, approximately 4000 SF was constructed as shell space for future build out. While the facility is in fairly good shape, there are some operational and some space needs challenges that have been identified:

1. While it is not the scope of this project to identify normal maintenance issues, it should be noted that many systems in the building are approximately 15 years old with a 20-25 year expected life. Maintenance funds should be increased over the coming years to account for failing mechanicals. Any major construction efforts should include replacement of heat pumps and major mechanicals in those locations.
2. There was only enough garage space built for 11 squad cars. Current requirement is for 26 vehicles.
3. There have been a number of changes to personnel and staffing structures.

The following plans show suggested plan changes to the facility to resolve these issues. The work is divided into 4 categories:

- No Work: No construction work required.
- Minor Work: Mostly fit and finish type work as required to accomplish work shown and to provide new finishes.
- Major Work: Movement or construction of walls and subsequent changes to mechanical and electrical systems.
- Additions: Construction of additional space.



Proposed Additions and Renovations
at Police Department

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Probable Cost for expansions and renovations at the Police Department are developed using square foot costs. Low and high ranges are established due to the early nature of the project. The range is established using costs from Engineering New Record (a national construction cost source) and Five Bugles Designs historical cost data base. It should be assumed that the final construction cost will fall between the low and high range.

	Low Range	High Range
Cost of Construction	\$2,334,675	\$2,690,435
Other Costs (FF&E, Technology, Contingencies, Fees and Legal)	\$685,259	\$896,941
Total	\$3,019,934	\$3,587,376

SECTION 4 – REGIONAL TRAINING CENTER

There are a number of training centers with fire service specific venues in the State of Minnesota; unfortunately, most of them are not in the northwest metro area. Elk River's training program is growing and has become a revenue source for the department. The department's existing facilities have some classroom type training facilities, but are lacking in the type of physical training props that are critical to developing a safe and efficient fire staff such as stair towers, stand pipes, confined space training, rappelling, smoke and maze training. Other large scale training activities that would be important to Elk River Fire Department would include water rescue, rail car, and vehicle extractions.

Other Departments within the City also have training concerns. The following is a brief list of the types of training the City should be considering:

Fire Department:

- Live Burn Tower
- Training Tower (rappelling)
- Rubble Pile
- Rail Car

Police Department:

- Traffic Stop Training
- Accident Scene Investigation
- SWAT Training with buildings, buses, trains and vehicles

Elk River Municipal Utilities:

- Construction and demolition of electrical substations
- Cross training with Fire Department on power and gas shut-offs.

Public Works Department:

- Small equipment training; backhoes, skid steers

Street Department

- Utilities installation training.

There is also a need for classroom style training to compliment the physical training elements listed above.

It should be noted that the construction of this training facility does not negate the need for a fire station in this same general location. The required fire station is covered under Section No. 2 of the report. There is likely some overlap of spaces that should be explored at the time of construction for either or both facilities.

Two critical elements are to be considered with any training center of this sort; buildings and training props.

The facility will require flexible meeting and training spaces, personnel support and break areas, and administrative space. The following program allows for meeting space for 100 to 150 people in a variety of different sized spaces. It also provides for locker and shower spaces for trainees and appropriate break areas to provide catered meals for day long training events. The detailed space program is available in the appendix.

SPACE	20 YEAR NEED
Training Support	1,944 SF
Training	8,339 SF
Training Office	3,553 SF
Tempered Spaces	3,810 SF
Mechanical and Electrical Spaces	842 SF
Total	17,677 SF

Adequate site is required to not only allow for the training activity, but to do so safely and in isolation from other training props and activities. Similarly, there is an opportunity to share spaces such as a train car used to stage fire response as well as SWAT tactics training. These issues will need to be explored in detail at time of implementation of this plan.

The areas estimated below are given in a range since implementation of this element of the study is anticipated to be a number of years in the future. A more detailed planning effort that examines a specific mix of activities tailored to available funding should be done prior to purchasing property.

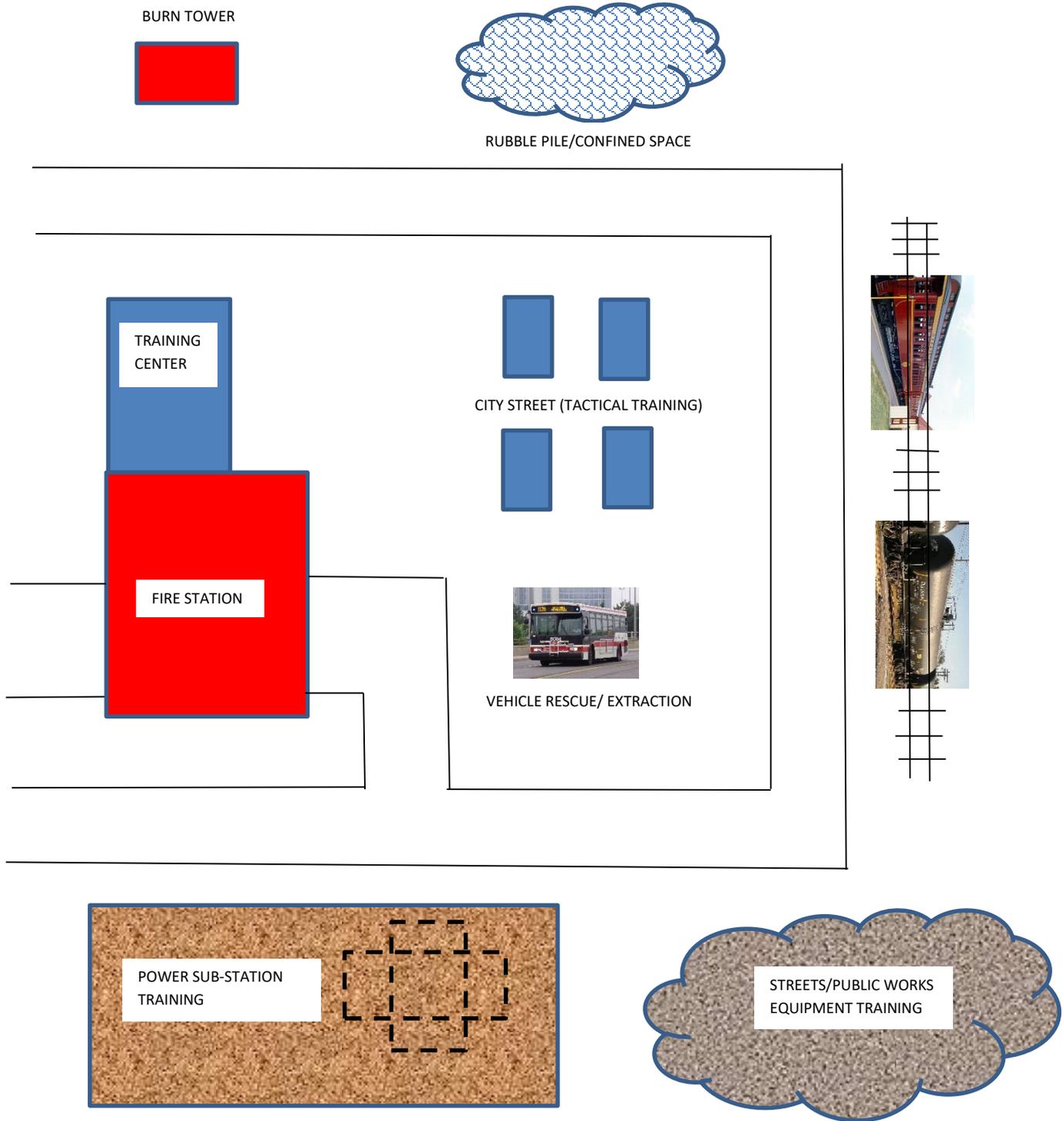
SPACE	AREA
Fire Department	4-6 Acres
Police Department	2-4 Acres
Elk River Municipal	3-4 Acres
Public Works and Streets Departments	3-4 Acres
Parking, Roads and Circulation	50%
Total	18-27 Acres

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Estimates of probable construction costs for the training center, exclusive and site costs will include the following:

SPACE	AREA
Training Center - Building	5,000,000
Fire Department North Station	\$8,500,000
Burn Tower (Custom, Cast Concrete)	\$3,000,000
Rubble Pile	\$250,000
Train Car and Bus	\$500,000
SWAT/Rescue Village	\$2,500,000
Public Works and Streets Departments	\$50,000
Municipal Utilities (Transformer Station Training)	\$1,250,000
Total	\$21,050,000

Training Center Concept Diagram



SECTION NO. 5 - CONCLUSIONS AND RECOMMENDATIONS

The following recommendations and conclusions are offered in the order of importance that they should be considered in future planning.

Conclusion No. 1: Response time mapping of current station locations indicates some gaps in coverage. These gaps in coverage are exacerbated by barriers such as limited access highways, the Mississippi River, and general traffic congestion at peak travel times.

Recommendation: Construct a new, 17,500 SF, 3 bay, satellite fire station on the east side of Highway 169. Total project cost will range from \$4.7M to \$5.5M.

Conclusion No. 2: Some of the gaps in coverage are occurring in portions of the City of Otsego served by the Elk River Fire Department. Mapping shows that solving this issue with a new station in Otsego will also reduce response times to the southern portions of Elk River, especially during heavy traffic times.

Recommendation: Work with the City of Otsego to construct a new, 17,500 SF, 3 bay, satellite fire station similar to the new East Station for City of Elk River. Total project cost will range from \$4.7M to \$5.5M. The study assumes the station would be financed by the City of Otsego and operated by Elk River Fire Department.

Conclusion No. 3: Station No. 2, Elk River Fire Department's Headquarters station in the Public Safety Building provides a good base of operations for the department's full time staff. However, it is lacking in station personnel (paid-on-call staff who report to this station) support spaces such as locker rooms, showers, offices and dayroom facilities. Construction of a new East Fire Station will also create an equity issue between the stations.

Recommendation: Construct an addition to Station No. 2 of approximately 3,800 SF to include support spaces for station staff. Project Cost will range from \$850K to \$1M.

Conclusion No. 4: The Elk River Fire Department's Firefighter Training Program has become a regional asset and revenue generator. A small increase in the size of the existing training room will allow this activity to continue and to grow.

Recommendation: Expand the training room at Station No. 2 to incorporate the kitchen as part of the expansion project outlined in Conclusion No. 3. Costs for this work are included with Recommendation No. 3.

Conclusion No. 5 (Police Department): In 2003, the Elk River Police Department planned in expansion space in the form of 4,000 SF of shell space on a second floor. They have experienced enough growth in the intermediate years to warrant building out that space, as well as to construct minor changes throughout the facility to improve workflow.

Conclusion No. 6 (Police Department): The existing Police Department squad garage was only constructed to hold 11 vehicles; the department now has over 20. Moreover, the amount of expensive electronics and fit out that is added to a squad car upon purchase is often as much as the squad car itself.

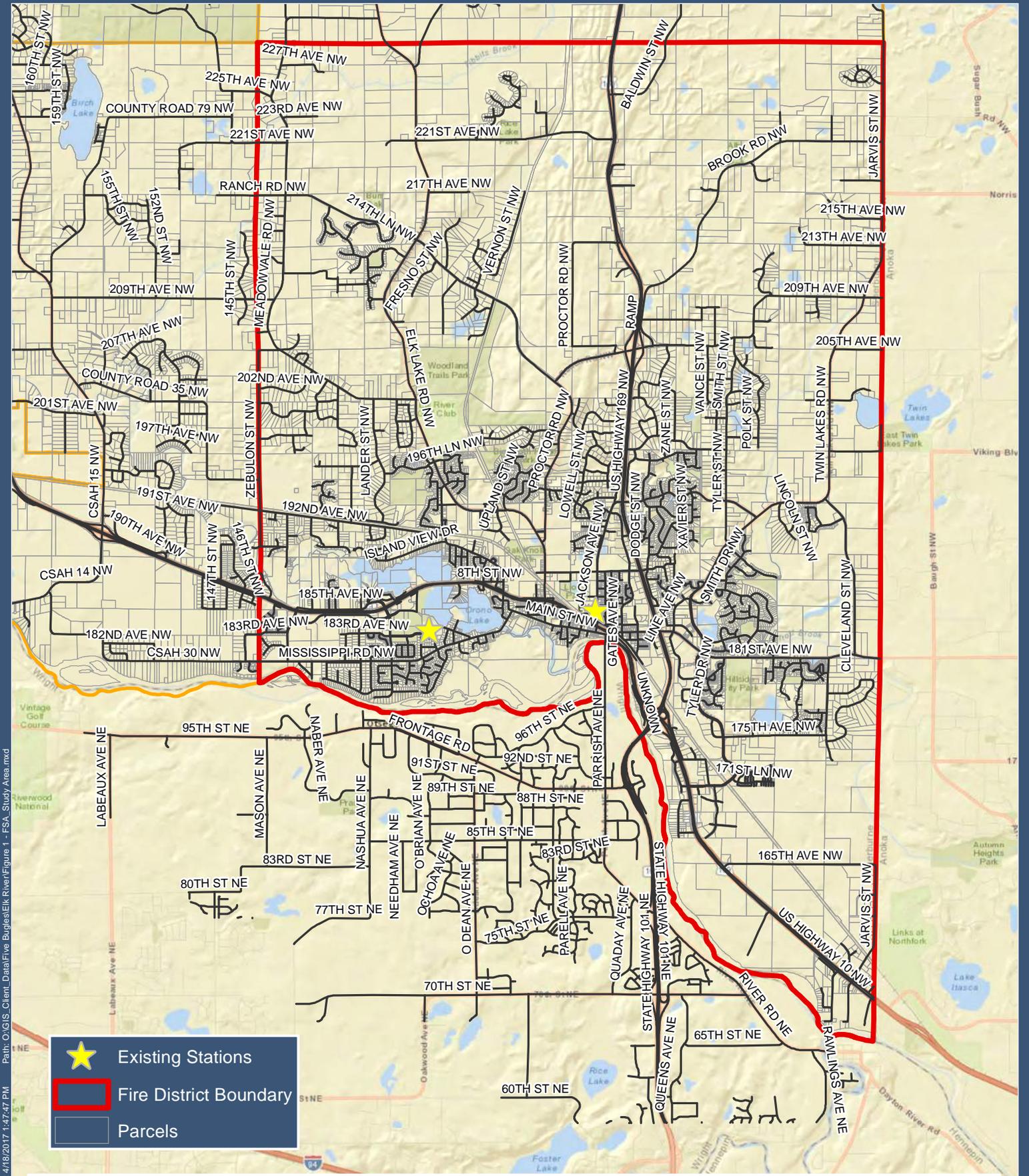
Recommendation: When the considering addition to the fire department portions of the building, consider adding a squad car expansion and completing other interior renovations and buildouts recommended in this report. Project Cost will range from \$3M to \$3.6M.

Conclusion No. 7: Station No. 1 has reached the end of its useful life. It is however well located for response by firefighters and there are not yet enough calls for service in the northwest quadrant of the city to justify a new station. This will likely change as the community continues developing to the north. Begin planning for a Northwest Station to replace Station No. 1.

Recommendation: Acquire property as it becomes available. Plan for additional space in that acquisition for a Regional Training Center. Begin seeking regional, state, and federal partners for this effort. Study revenue generating options to determine cost shares so that participants can begin planning.

APPENDIX A

STATION LOCATION MAPPING



★ Existing Stations
 Fire District Boundary
 Parcels

0 1,400 2,800 5,600

Feet

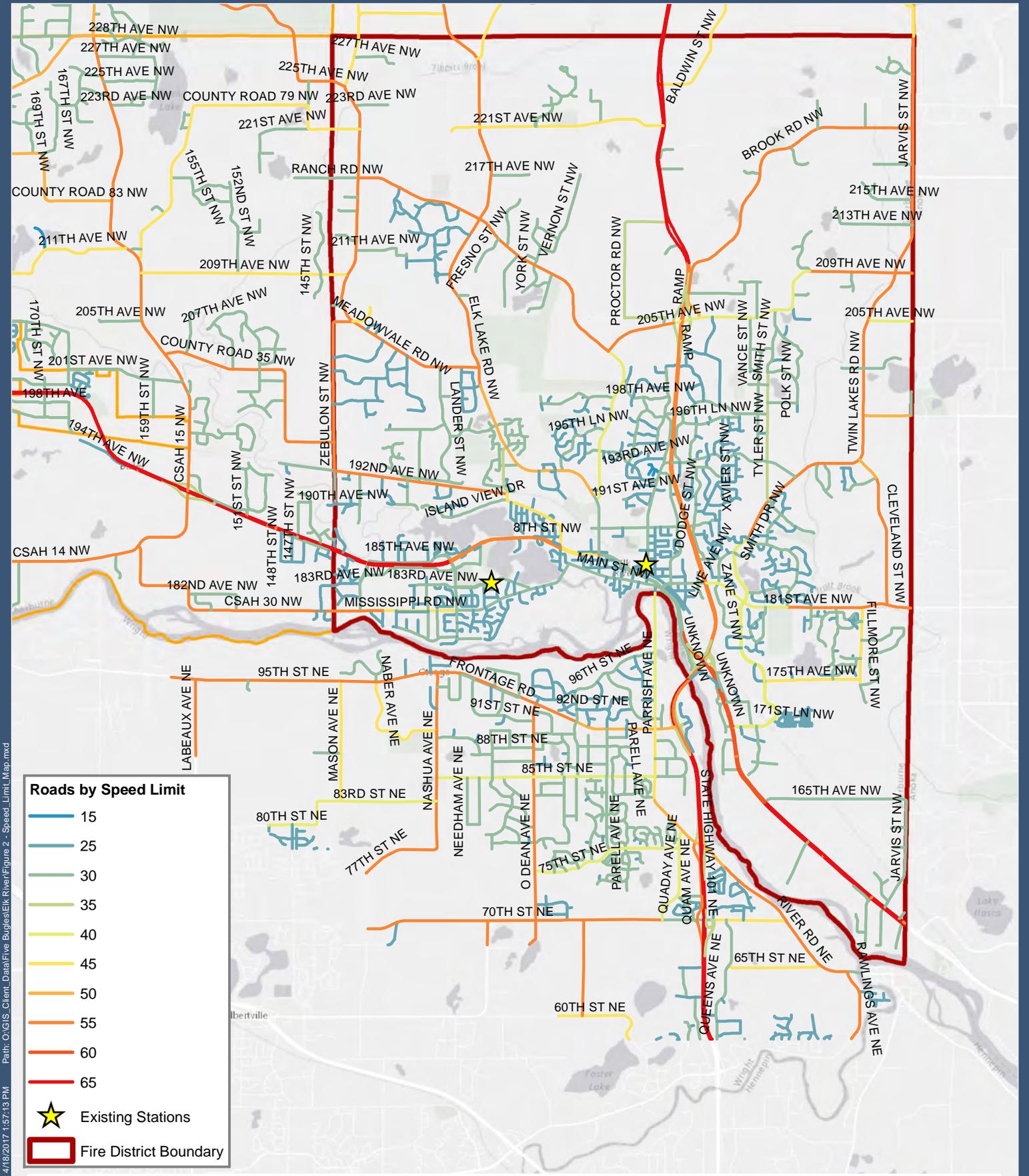
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1 in = 6,500 ft

FIRE STATION RESPONSE STUDY AREA
FIRE STATION LOCATION STUDY
 CITY OF ELK RIVER
 SHERBURNE COUNTY, MINNESOTA

FIGURE 1
GRaEF

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Roads by Speed Limit

- 15
- 25
- 30
- 35
- 40
- 45
- 50
- 55
- 60
- 65

★ Existing Stations

▭ Fire District Boundary

0 1,550 3,100 6,200



1 in = 7,000 ft

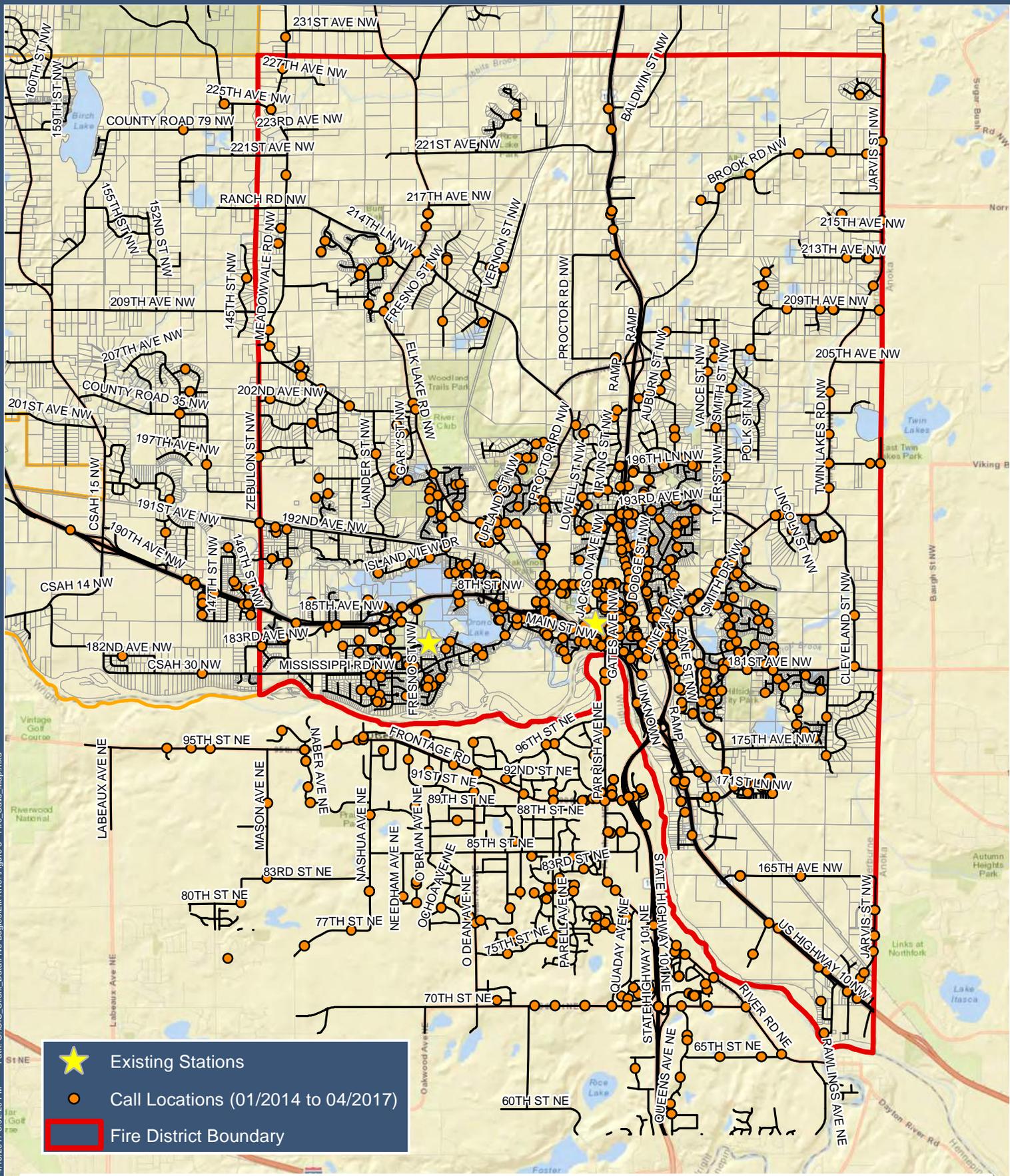
ROAD SPEED LIMIT MAP
FIRE STATION LOCATION STUDY
 CITY OF ELK RIVER
 SHERBURNE COUNTY, MINNESOTA

FIGURE 2



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User: 1918 Date Saved: 4/18/2017 3:02:29 PM Path: O:\GIS Client Data\Five Bugles\Elk River\Figure 3 - Fire Calls_Map.mxd



-  Existing Stations
-  Call Locations (01/2014 to 04/2017)
-  Fire District Boundary

0 1,400 2,800 5,600
Feet

1 in = 6,500 ft



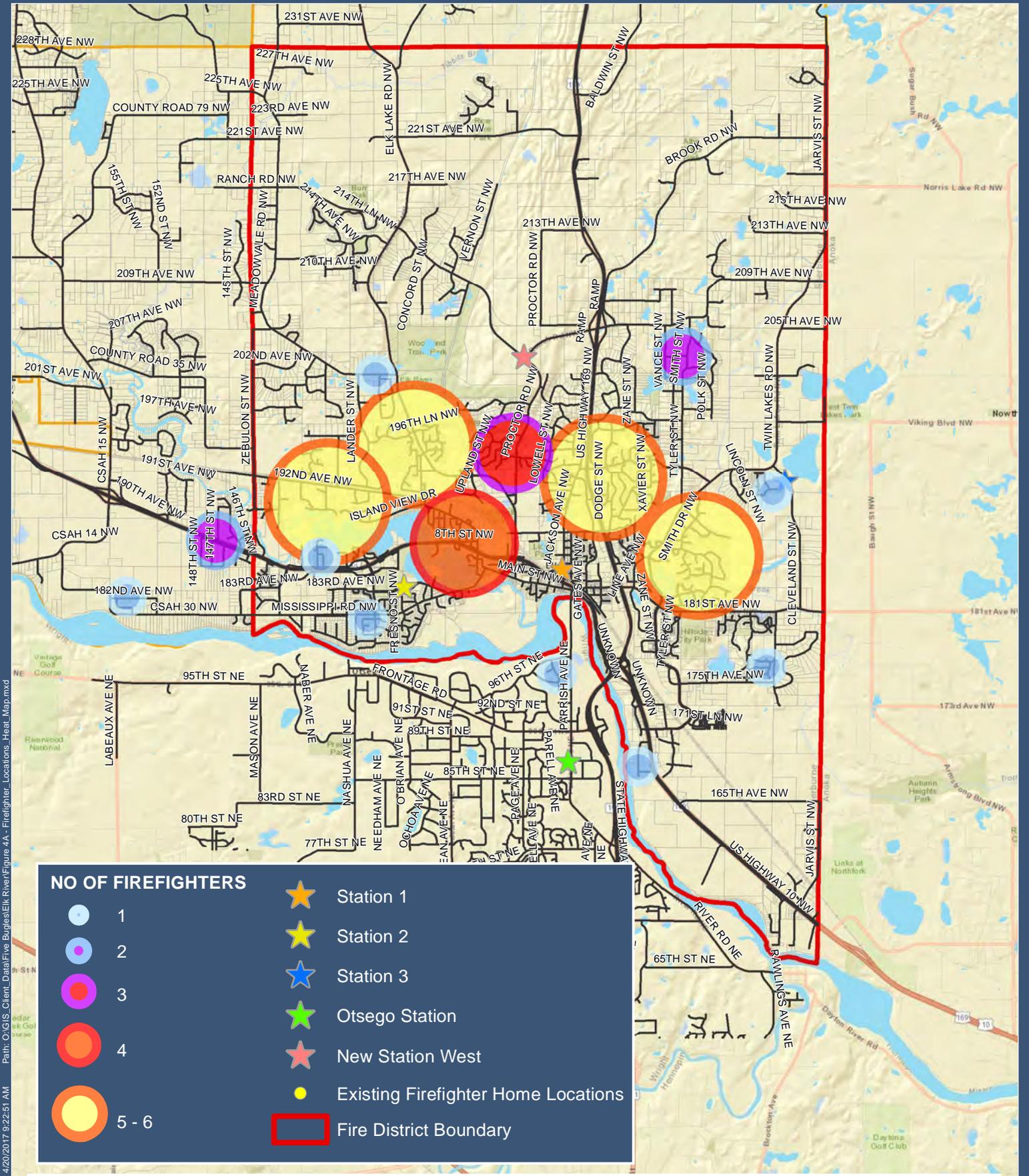
FIRE CALLS MAP (2014 THROUGH 2017)

FIRE STATION LOCATION STUDY

CITY OF ELK RIVER
SHERBURNE COUNTY, MINNESOTA

FIGURE 3





Path: O:\GIS_Client_Data\Five_Burgles\Elk River\Figure 4A - Firefighter Home Locations Heat Map.mxd
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NO OF FIREFIGHTERS

- 1
- 2
- 3
- 4
- 5 - 6

- Station 1
- Station 2
- Station 3
- Otsego Station
- New Station West
- Existing Firefighter Home Locations
- Fire District Boundary

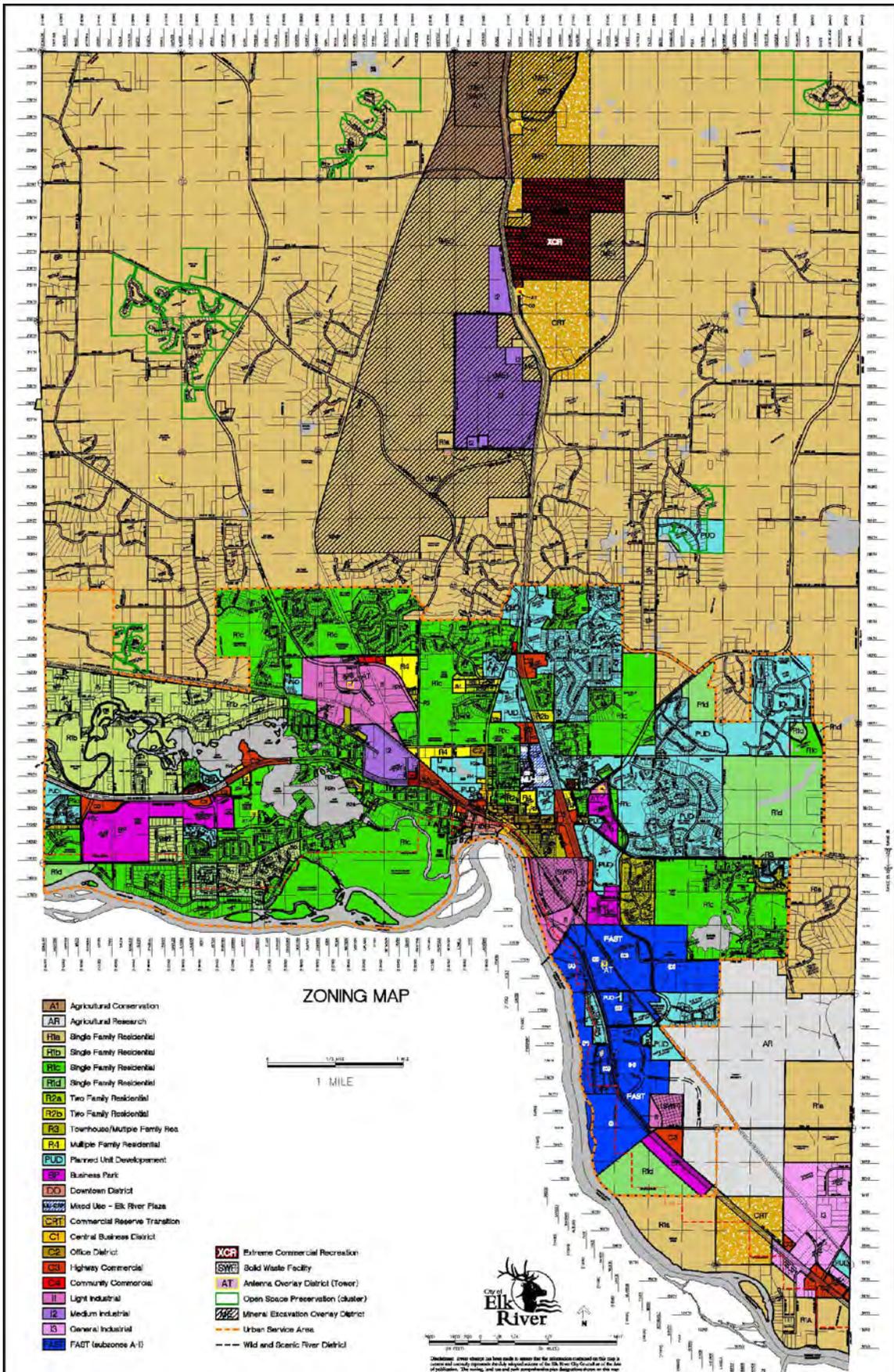
0 1,550 3,100 6,200



1 in = 7,083 ft

FIREFIIGHTER HOME LOCATIONS HEAT MAP
FIRE STATION LOCATION STUDY
 CITY OF ELK RIVER
 SHERBURNE COUNTY, MINNESOTA





0 1,400 2,800 5,600

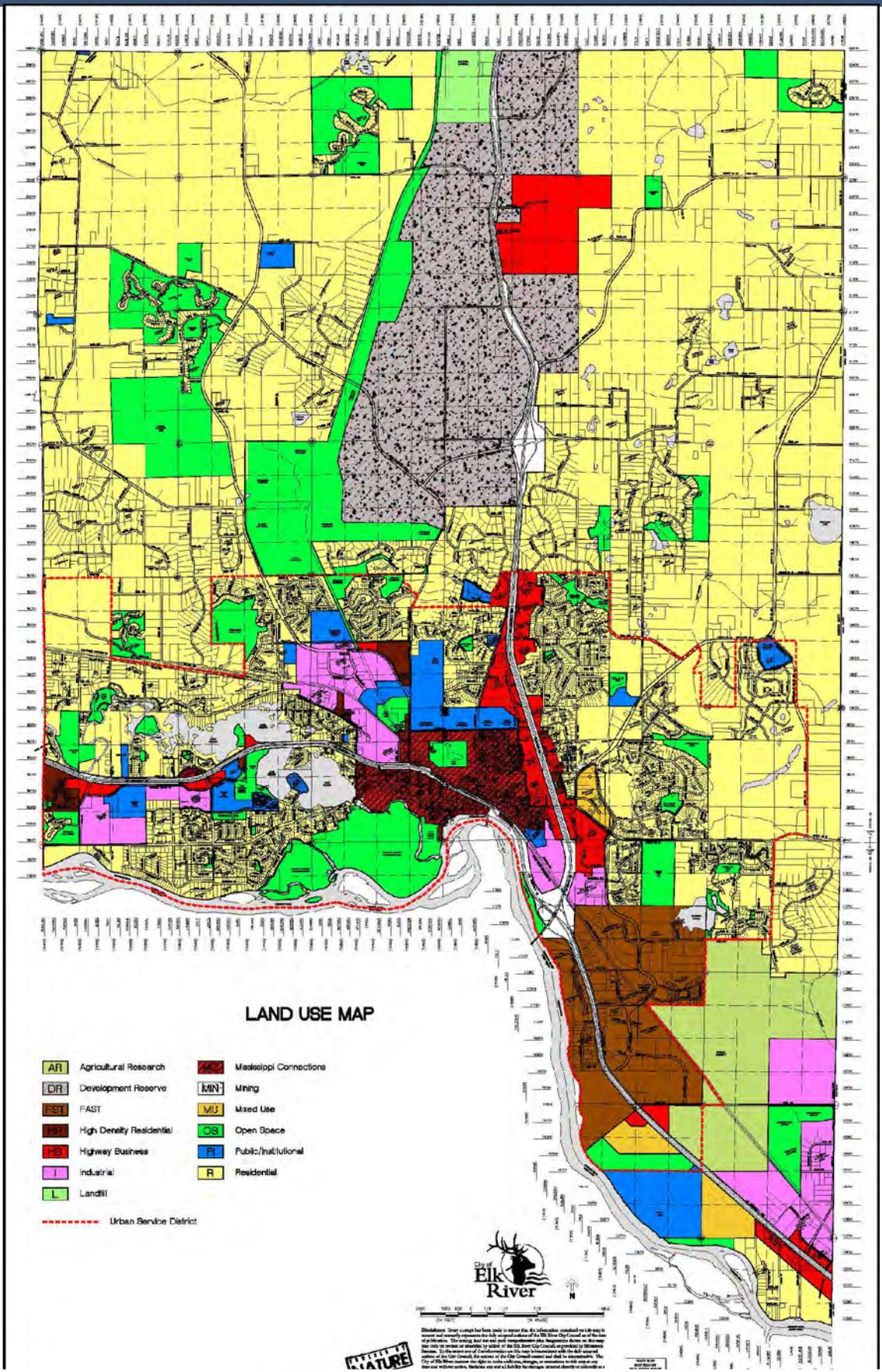


1 in = 6,500 ft

ZONING MAP
FIRE STATION LOCATION STUDY
 CITY OF ELK RIVER
 SHERBURNE COUNTY, MINNESOTA

FIGURE 5A

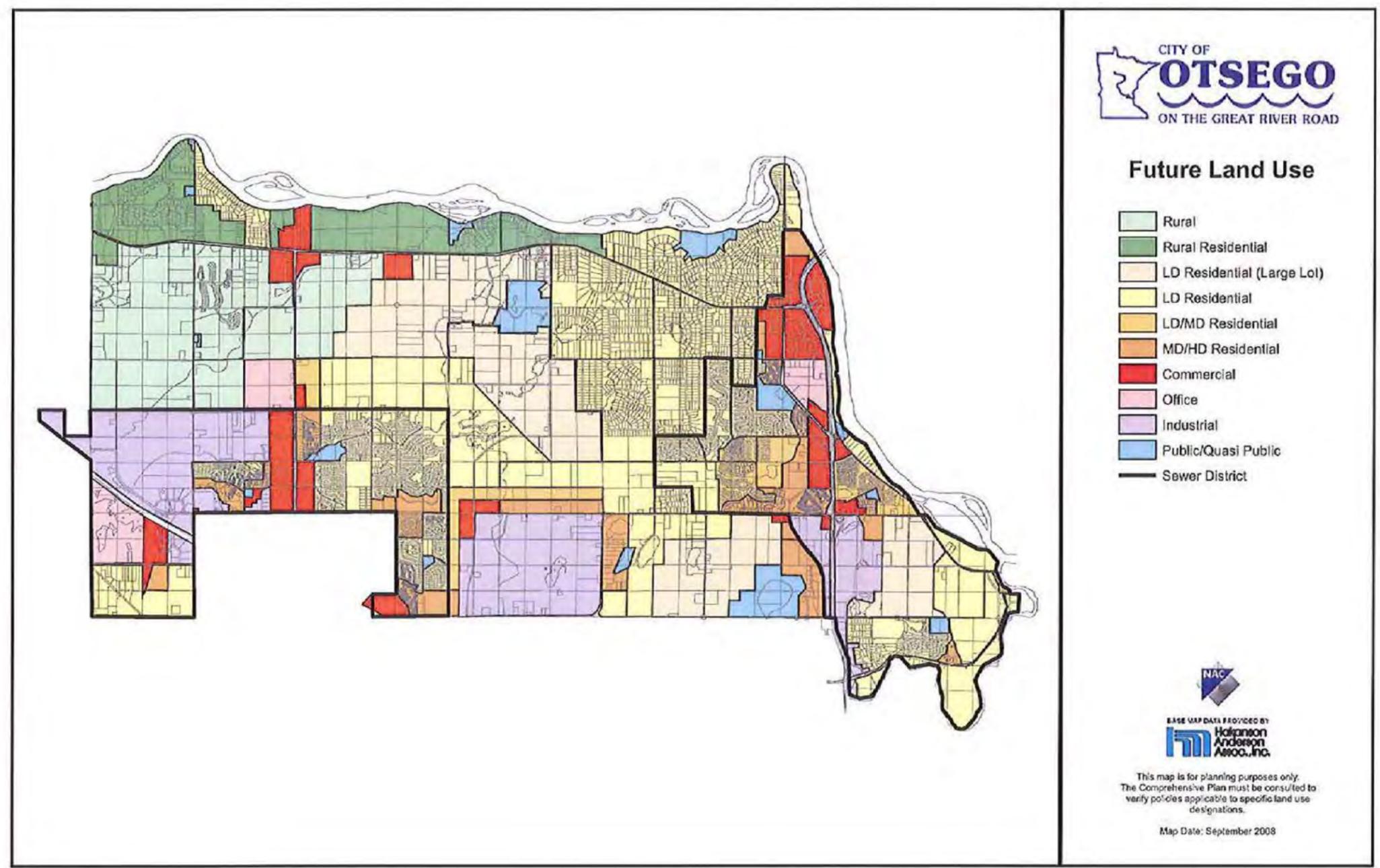




LAND USE PLAN MAP
FIRE STATION LOCATION STUDY
 CITY OF ELK RIVER
 SHERBURNE COUNTY, MINNESOTA

FIGURE 6A

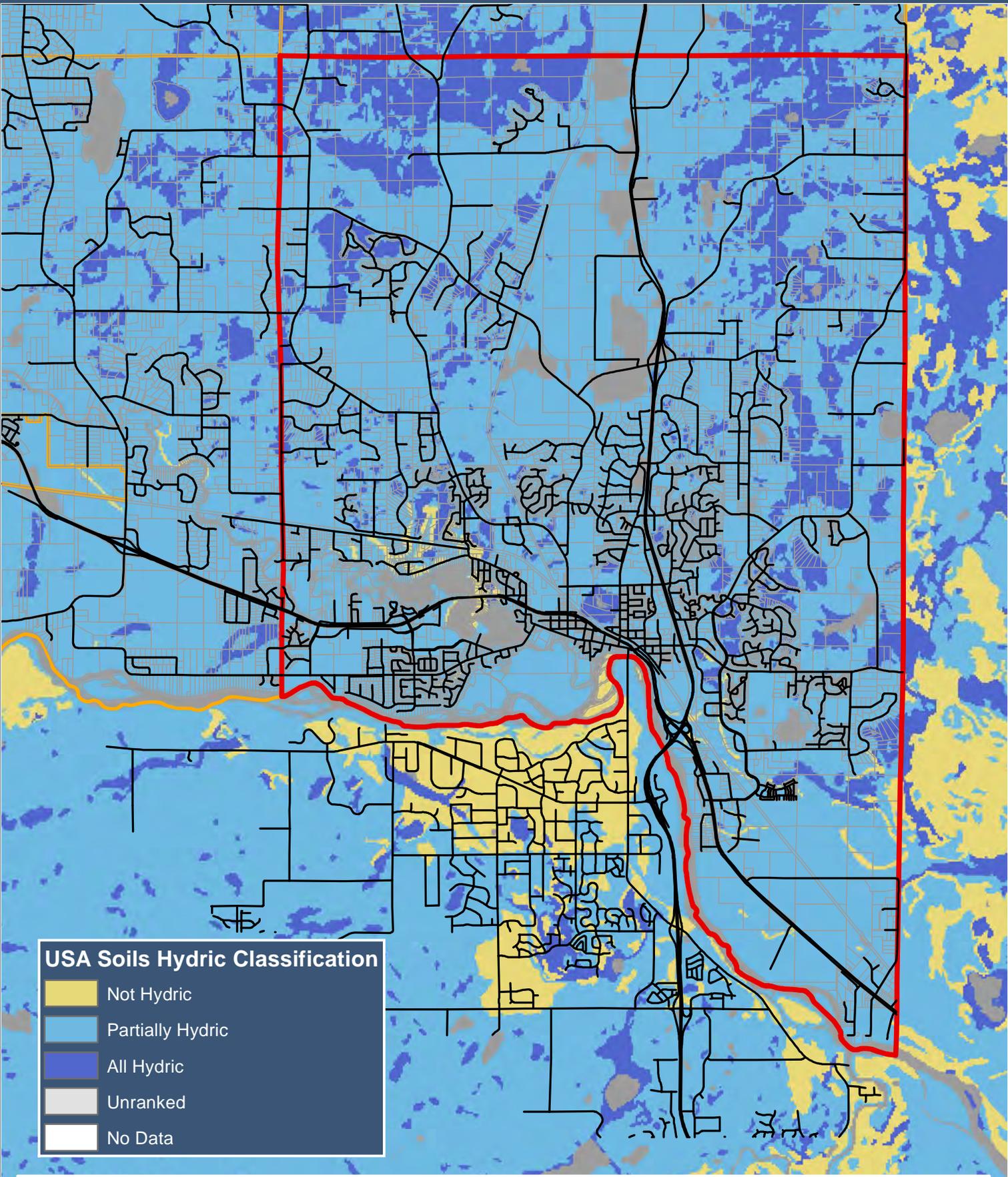




FUTURE LAND USE MAP
FIRE STATION LOCATION STUDY
CITY OF OTSEGO
WRIGHT COUNTY, MINNESOTA

User: 1918 Date Saved: 4/18/2017 2:49:17 PM Path: O:\GIS_Client_Data\Five Bugles\Elk River\Figure 7B - Future Land Use_Map.mxd

User: 1918 Date Saved: 4/18/2017 2:52:25 PM Path: O:\GIS_Client_Data\Five_Bugles\Elk River\Figure 8 - Soil_Survey_Map.mxd



USA Soils Hydric Classification

- Not Hydric
- Partially Hydric
- All Hydric
- Unranked
- No Data

0 1,400 2,800 5,600

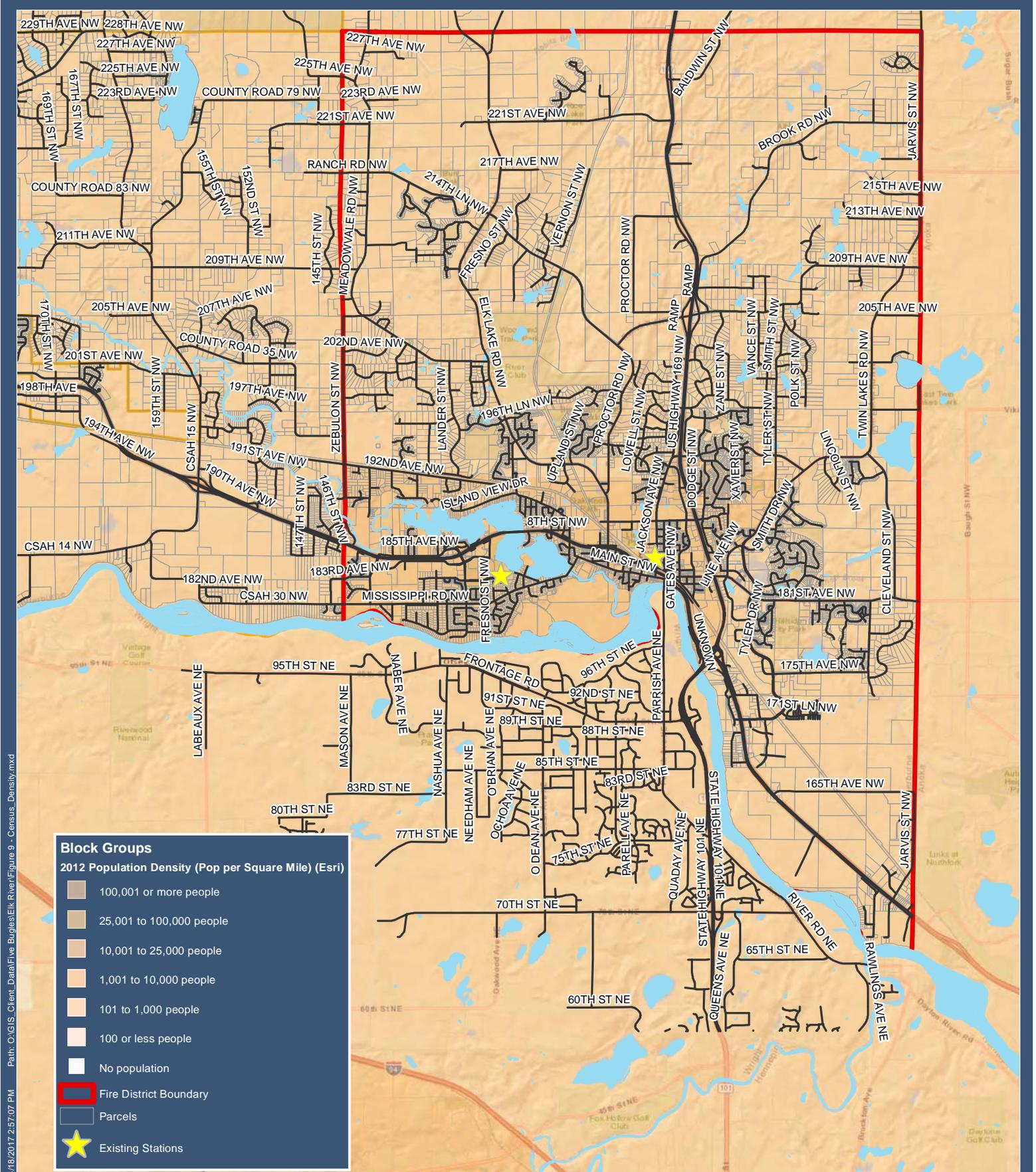


1 in = 6,500 ft

SOIL SURVEY MAP
FIRE STATION LOCATION STUDY
CITY OF ELK RIVER
SHERBURNE COUNTY, MINNESOTA

FIGURE 8

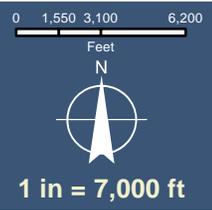




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Block Groups
 2012 Population Density (Pop per Square Mile) (Esri)

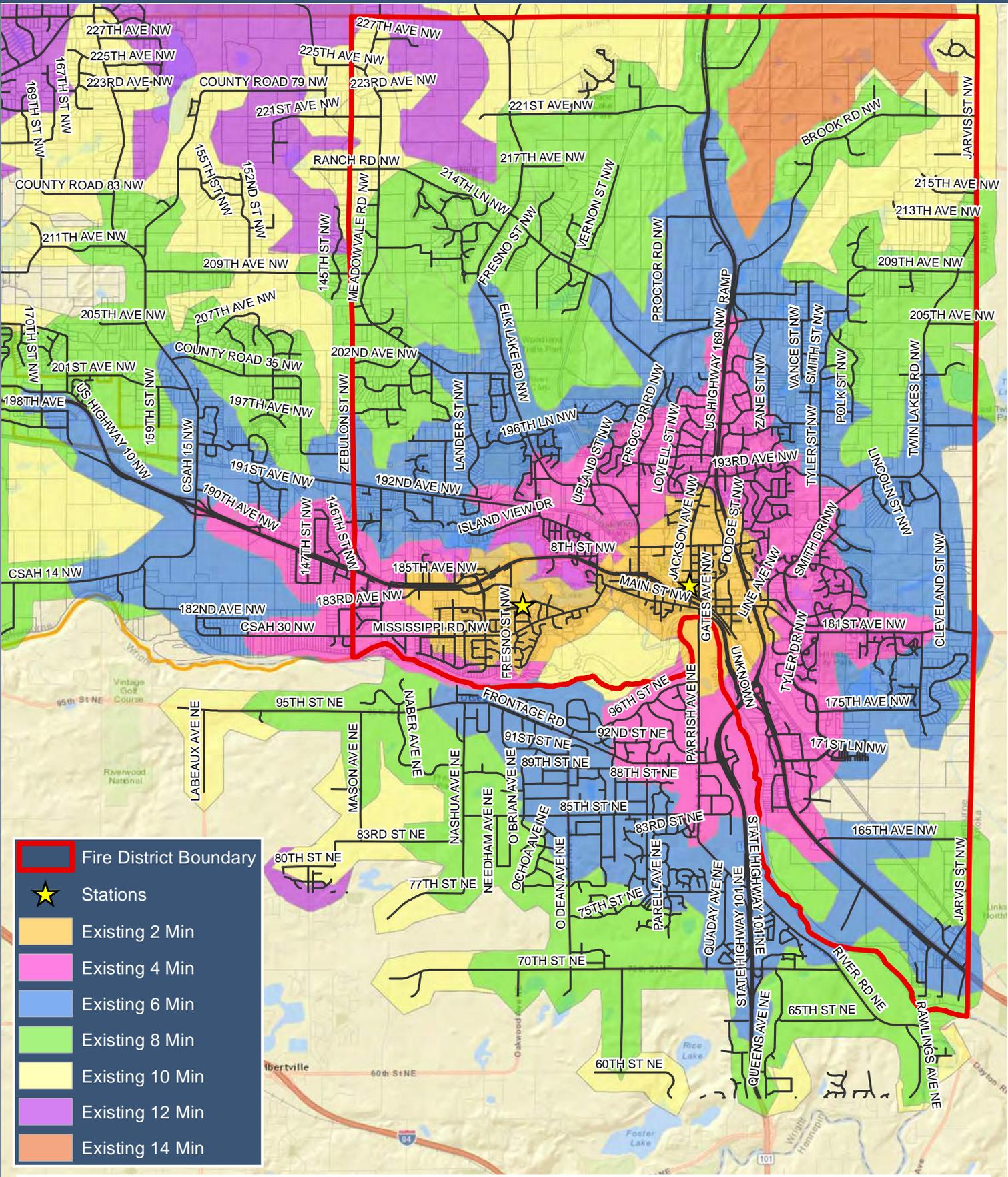
- 100,001 or more people
- 25,001 to 100,000 people
- 10,001 to 25,000 people
- 1,001 to 10,000 people
- 101 to 1,000 people
- 100 or less people
- No population
- Fire District Boundary
- Parcels
- Existing Stations



POPULATION DENSITY MAP
FIRE STATION LOCATION STUDY
 CITY OF ELK RIVER
 SHERBURNE COUNTY, MINNESOTA

FIGURE 9

User: 1918 Date Saved: 4/19/2017 8:28:12 AM Path: O:\GIS_Client_Data\Fire_Bugle\Elk River\Figure 10 - Existing_Response_Zones_1_2.mxd



-  Fire District Boundary
-  Stations
-  Existing 2 Min
-  Existing 4 Min
-  Existing 6 Min
-  Existing 8 Min
-  Existing 10 Min
-  Existing 12 Min
-  Existing 14 Min

0 1,400 2,800 5,600



1 in = 6,500 ft

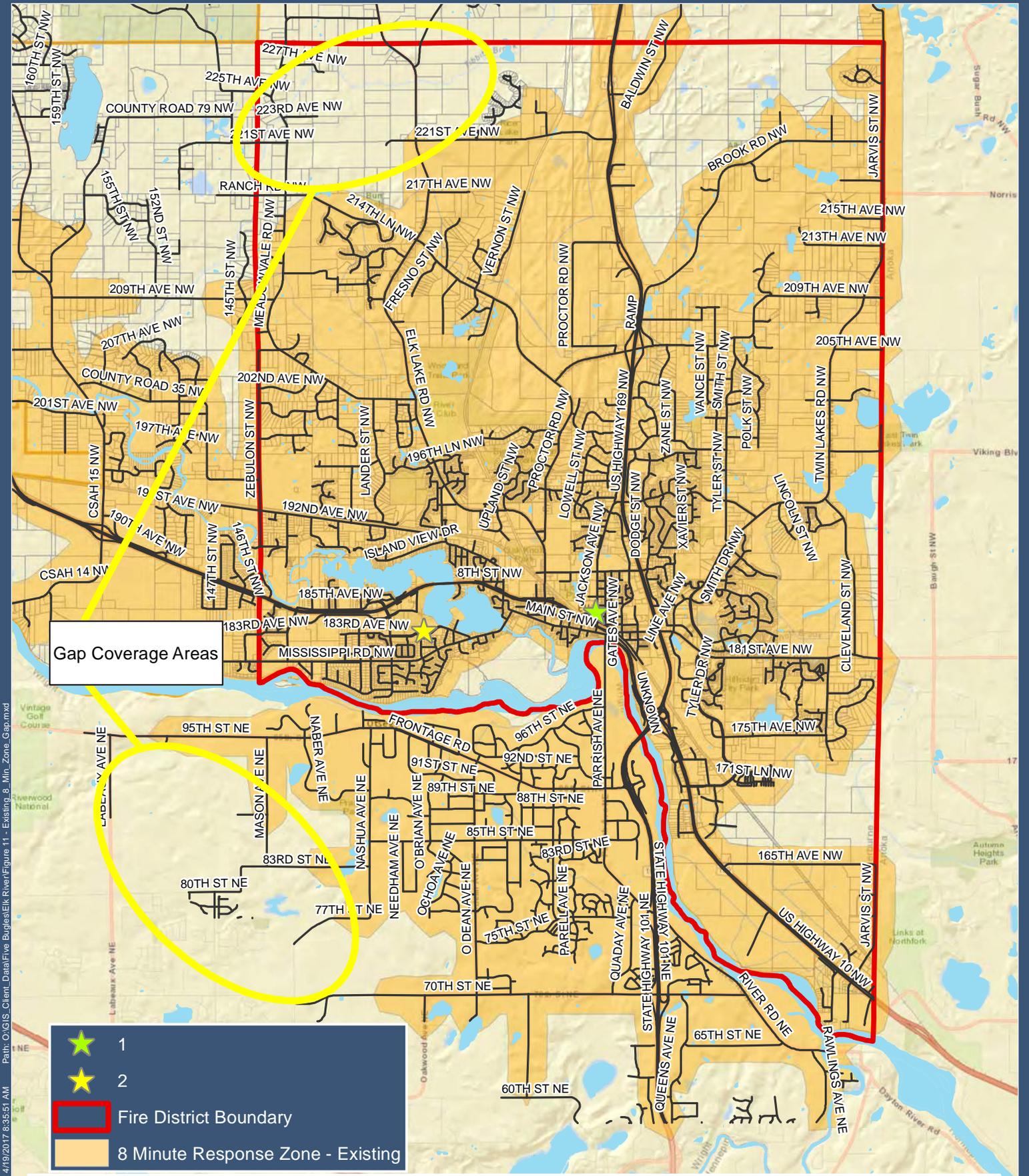
EXISTING STATIONS 1 & 2 RESPONSE ZONES

FIGURE 10

FIRE STATION LOCATION STUDY

CITY OF ELK RIVER
SHERBURNE COUNTY, MINNESOTA





Gap Coverage Areas

	1
	2
	Fire District Boundary
	8 Minute Response Zone - Existing

0 1,400 2,800 5,600



1 in = 6,500 ft

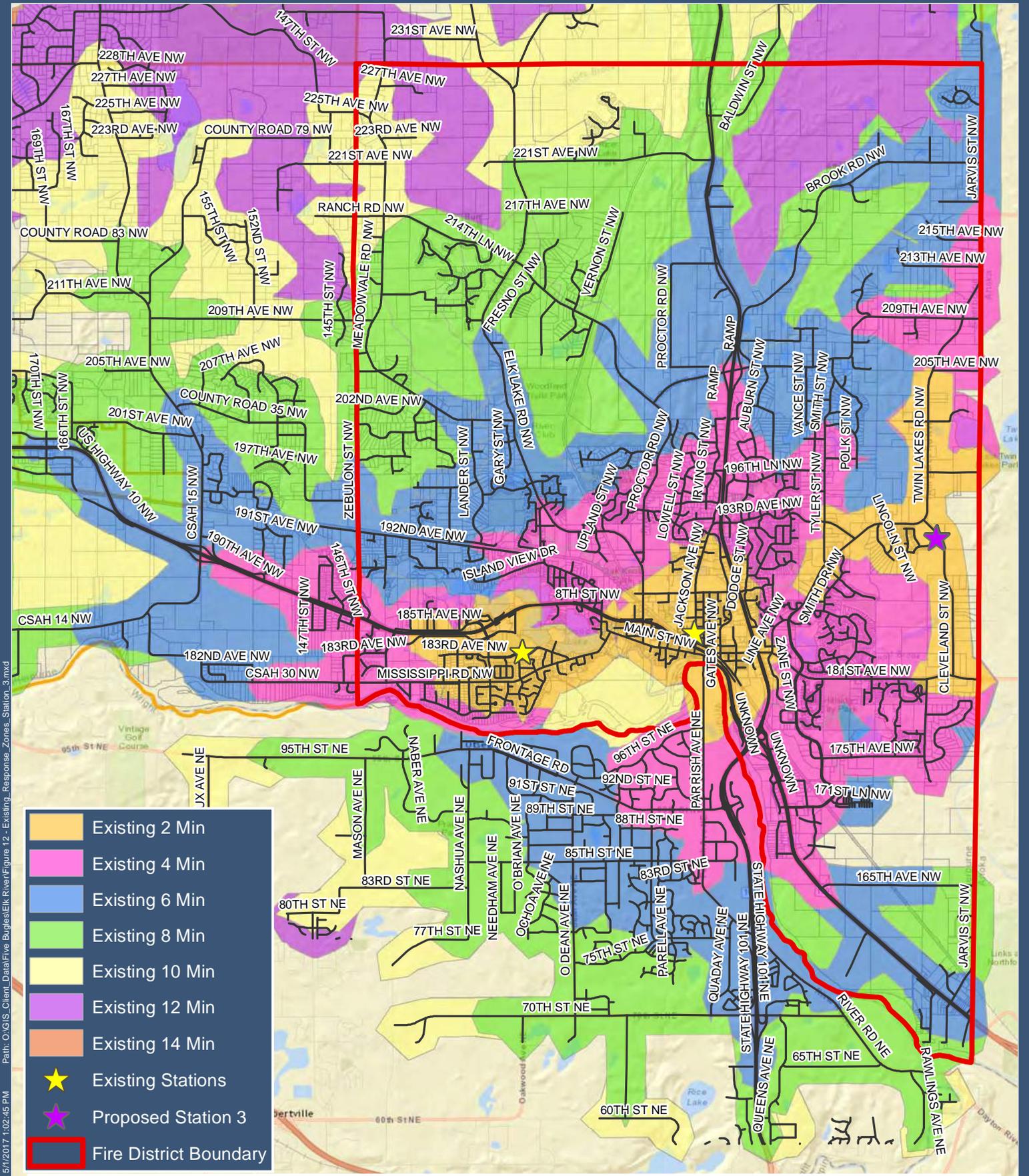
EXISTING 8 MINUTE RESPONSE ZONES GAP ANALYSIS FIGURE 11

FIRE STATION LOCATION STUDY

CITY OF ELK RIVER
SHERBURNE COUNTY, MINNESOTA



User: 1918 Date Saved: 4/19/2017 8:35:51 AM Path: O:\GIS_Client_Data\Five_Bugles\Elk River\Figure 11 - Existing 8_Min_Zone_Gap.mxd



	Existing 2 Min
	Existing 4 Min
	Existing 6 Min
	Existing 8 Min
	Existing 10 Min
	Existing 12 Min
	Existing 14 Min
	Existing Stations
	Proposed Station 3
	Fire District Boundary

0 1,400 2,800 5,600



1 in = 6,500 ft

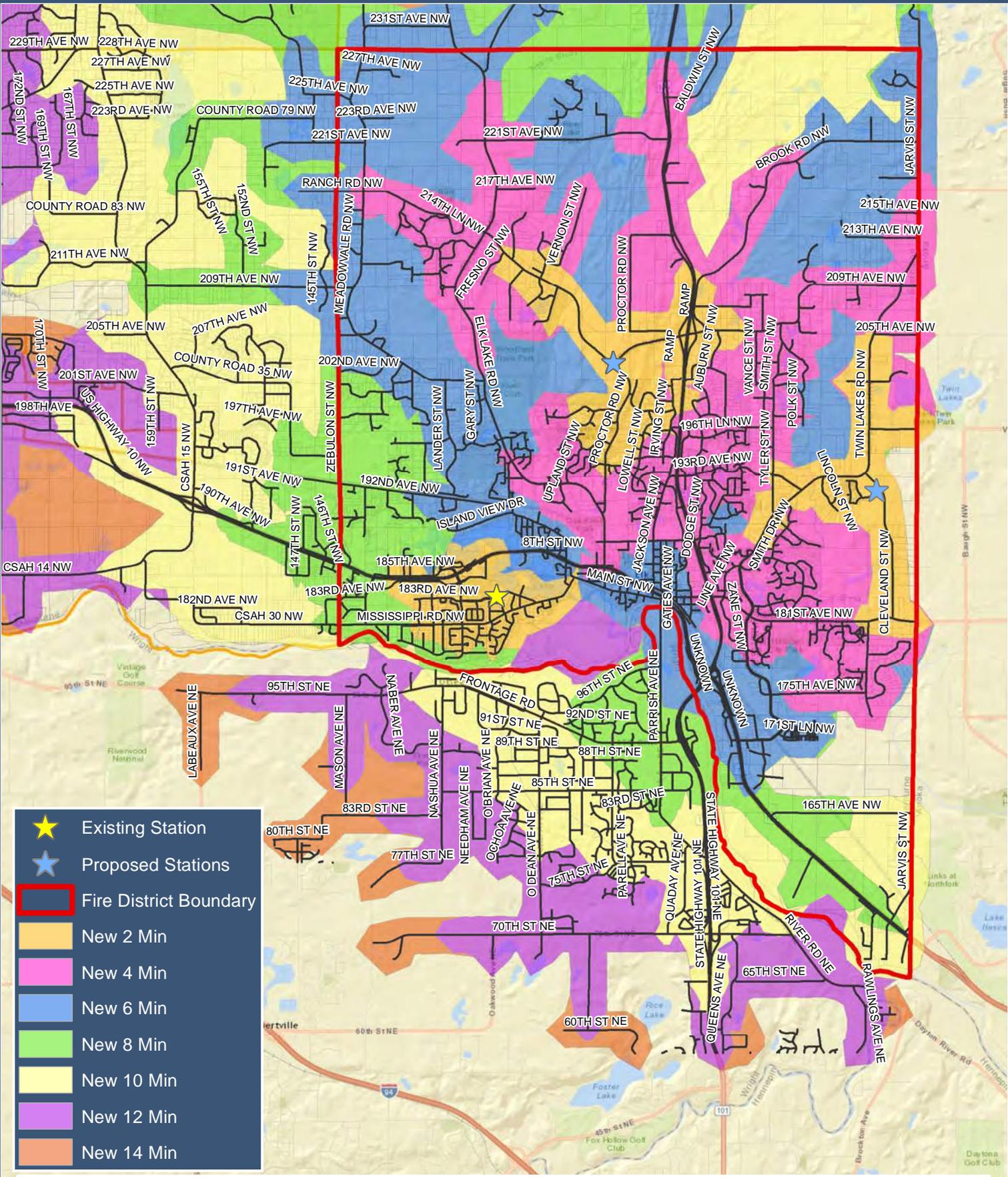
EXISTING STATION RESPONSE ZONES WITH PROPOSED STATION 3 **FIGURE 12**
FIRE STATION LOCATION STUDY

CITY OF ELK RIVER
SHERBURNE COUNTY, MINNESOTA



User: 1918
 Date Saved: 5/12/2017 1:02:45 PM
 Path: O:\GIS_Client_Data\Five_Bugles\Elk River\Figure 12 - Existing_Response_Zones_Station_3.mxd

Path: O:\GIS_Client_Data\Five_Bugles\Elk River\Figure 13 - Existing_2.3_New_Station_W.mxd
Date Saved: 4/19/2017 9:32:04 AM
User: 1918



- ★ Existing Station
- ★ Proposed Stations
- ▭ Fire District Boundary
- ▭ New 2 Min
- ▭ New 4 Min
- ▭ New 6 Min
- ▭ New 8 Min
- ▭ New 10 Min
- ▭ New 12 Min
- ▭ New 14 Min

0 1,550 3,100 6,200



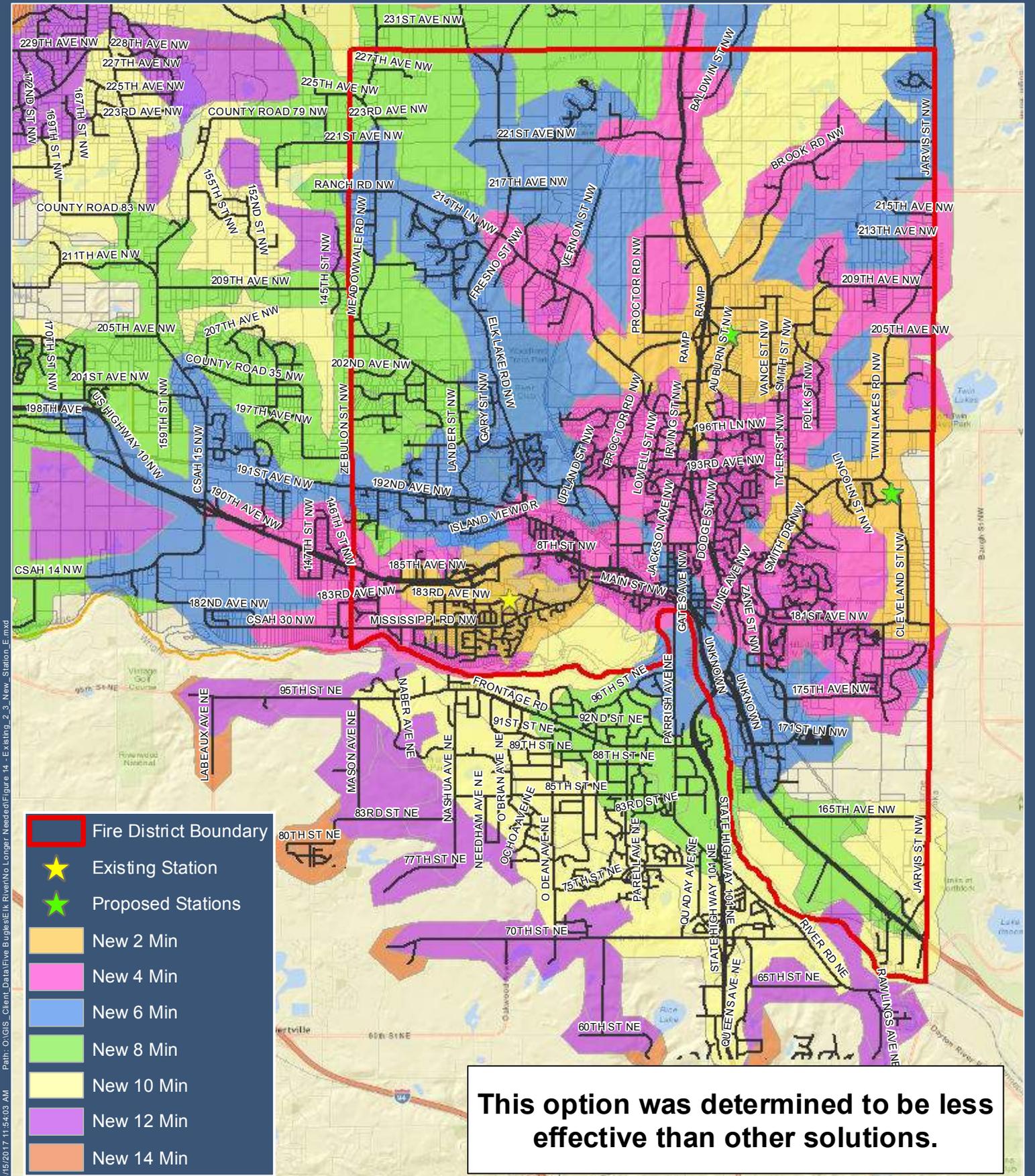
1 in = 7,000 ft

PROPOSED WEST SITE RESPONSE ZONES

FIRE STATION LOCATION STUDY

CITY OF ELK RIVER
SHERBURNE COUNTY, MINNESOTA





-  Fire District Boundary
-  Existing Station
-  Proposed Stations
-  New 2 Min
-  New 4 Min
-  New 6 Min
-  New 8 Min
-  New 10 Min
-  New 12 Min
-  New 14 Min

This option was determined to be less effective than other solutions.

0 1,550 3,100 6,200



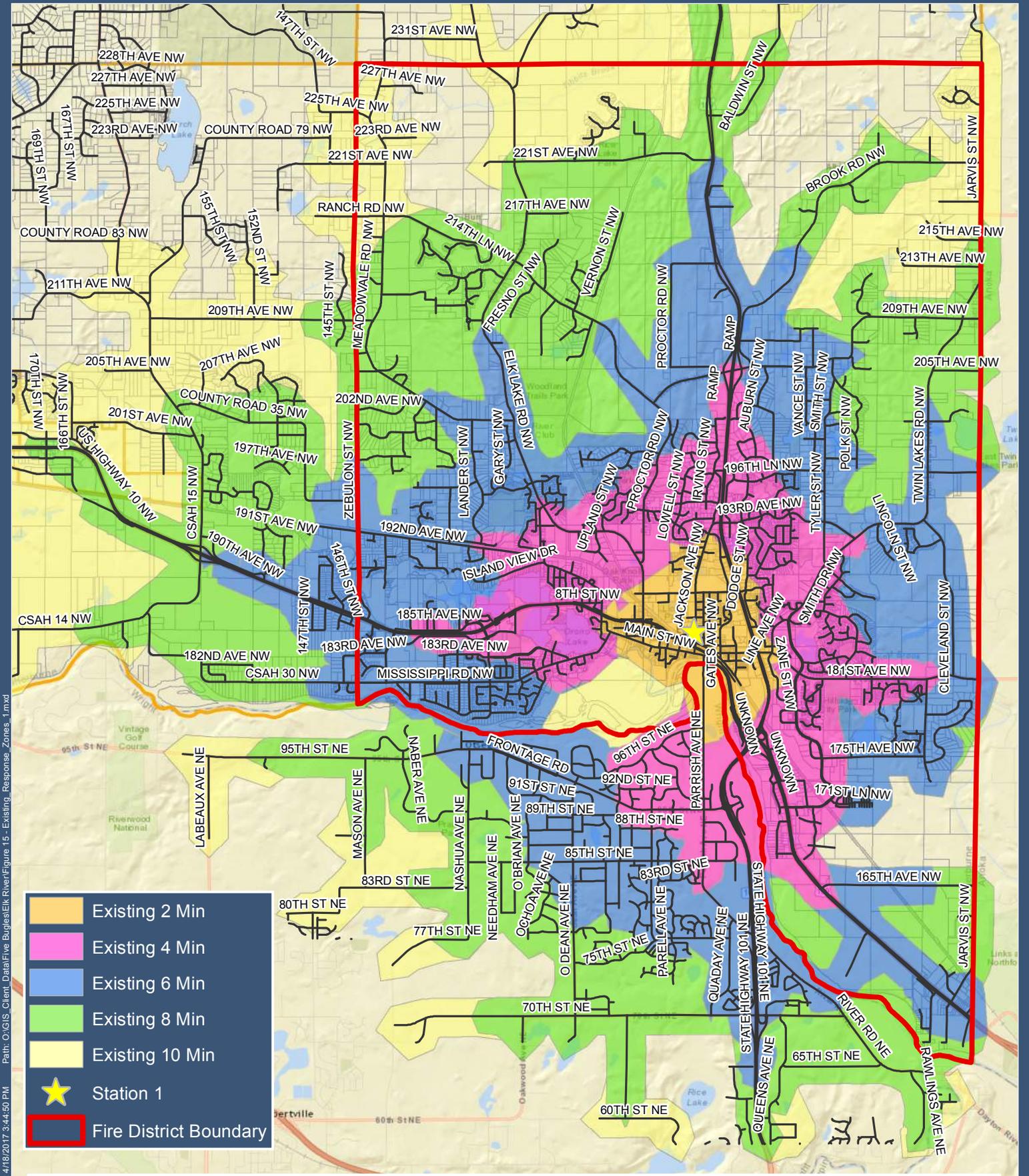
1 in = 7,000 ft

PROPOSED EAST SITE RESPONSE ZONES
FIRE STATION LOCATION STUDY
 CITY OF ELK RIVER
 SHERBURNE COUNTY, MINNESOTA

FIGURE 14



User: 1771
 Date Saved: 8/15/2017 11:54:03 AM
 Path: O:\GIS_Client_Data\Fire Budgets\Elk River\No Longer Needed\Figure 14 - Existing_2_3_New_Station_E.mxd



- Existing 2 Min
- Existing 4 Min
- Existing 6 Min
- Existing 8 Min
- Existing 10 Min
- Station 1
- Fire District Boundary

0 1,400 2,800 5,600



1 in = 6,500 ft

EXISTING STATION 1 RESPONSE ZONES

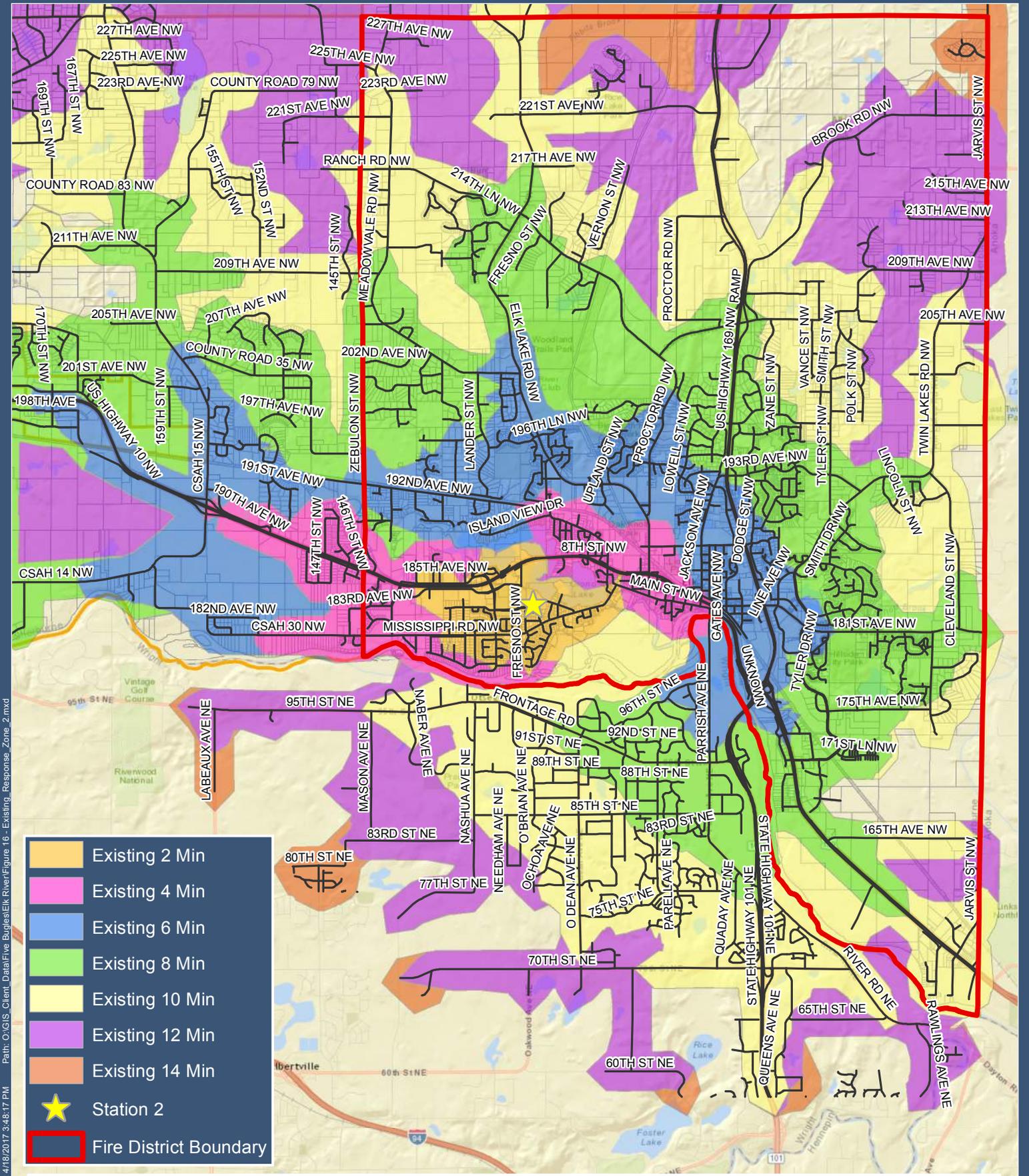
FIRE STATION LOCATION STUDY

CITY OF ELK RIVER
SHERBURNE COUNTY, MINNESOTA

FIGURE 15



User: 1918 Date Saved: 4/18/2017 3:44:50 PM Path: O:\GIS_Client_Data\Five_Bugles\Elk River\Figure 15 - Existing_Response_Zones_1.mxd



- Existing 2 Min
- Existing 4 Min
- Existing 6 Min
- Existing 8 Min
- Existing 10 Min
- Existing 12 Min
- Existing 14 Min
- Station 2
- Fire District Boundary

0 1,400 2,800 5,600



1 in = 6,500 ft

EXISTING STATION 2 RESPONSE ZONES

FIRE STATION LOCATION STUDY

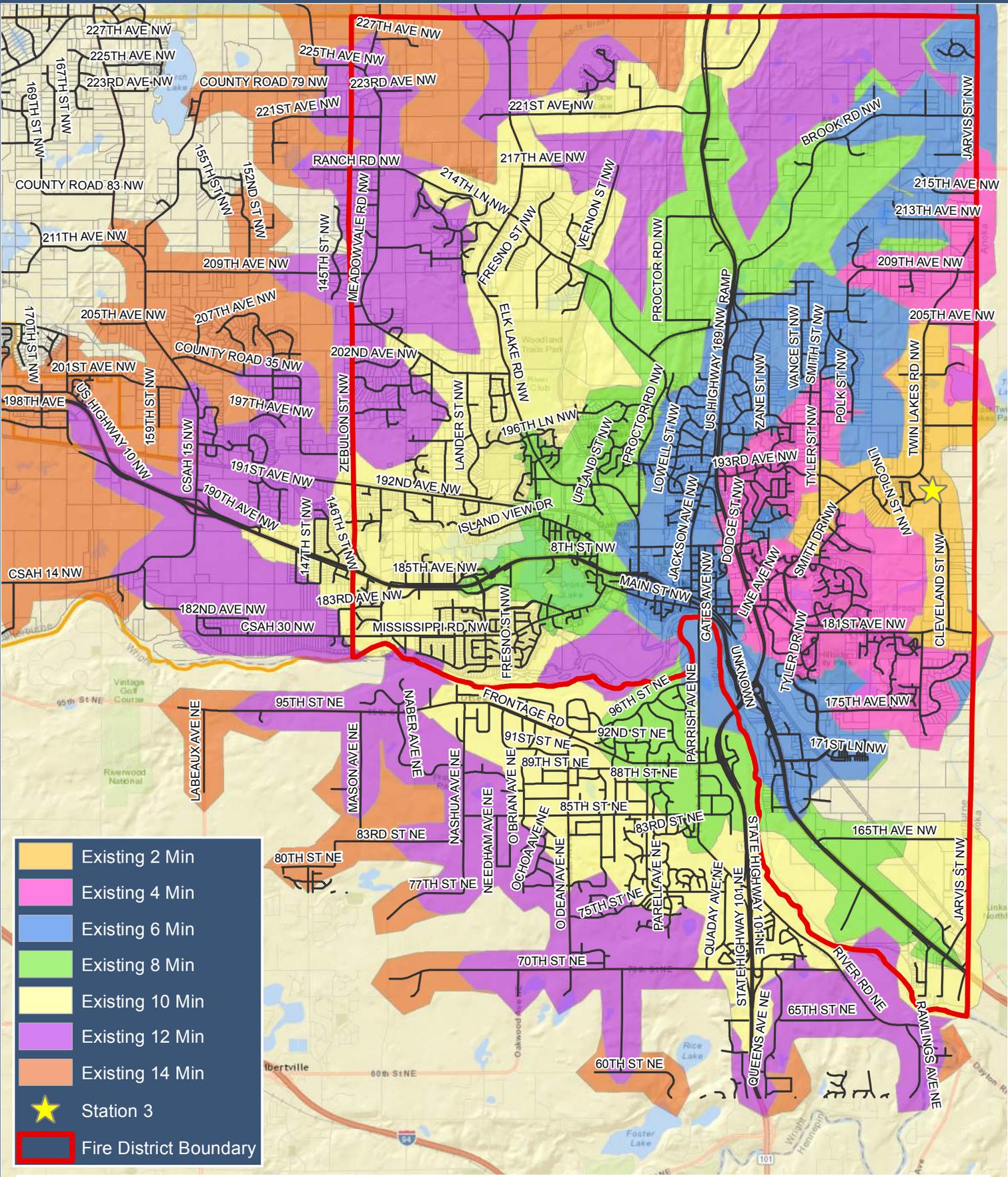
CITY OF ELK RIVER
SHERBURNE COUNTY, MINNESOTA

FIGURE 16



User: 1918 Date Saved: 4/18/2017 3:48:17 PM Path: O:\GIS_Client_Data\Five Bugles\Elk River\Figure 16 - Existing_Response_Zone_2.mxd

Path: O:\GIS_Client_Data\Five_Bugles\Elk River\Figure 17 - New_Station_3_Response_Zones.mxd
Date Saved: 4/18/2017 3:50:35 PM
User: 1918



-  Existing 2 Min
-  Existing 4 Min
-  Existing 6 Min
-  Existing 8 Min
-  Existing 10 Min
-  Existing 12 Min
-  Existing 14 Min
-  Station 3
-  Fire District Boundary

0 1,400 2,800 5,600



1 in = 6,500 ft

PROPOSED STATION 3 RESPONSE ZONES

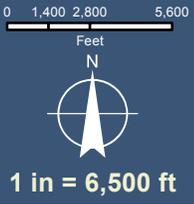
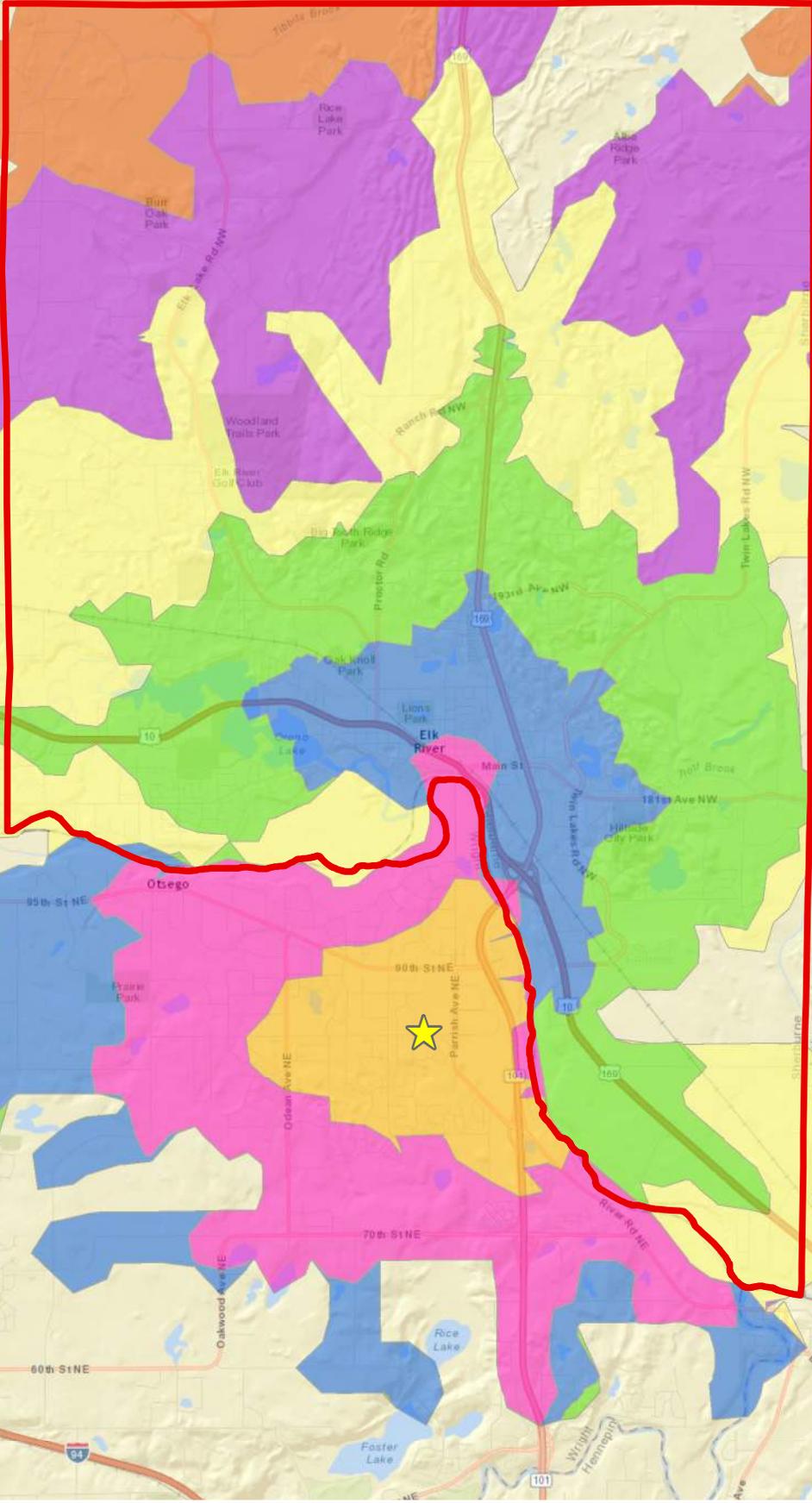
FIRE STATION LOCATION STUDY

CITY OF ELK RIVER
SHERBURNE COUNTY, MINNESOTA

FIGURE 17



-  New 2 Min
-  New 4 Min
-  New 6 Min
-  New 8 Min
-  New 10 Min
-  New 12 Min
-  New 14 Min
-  Proposed Otsego Station
-  Fire District Boundary



PROPOSED OTSEGO STATION RESPONSE ZONES
FIRE STATION LOCATION STUDY
CITY OF ELK RIVER
SHERBURNE COUNTY, MINNESOTA





-  Station 1
-  Station 2
-  Proposed Station 3
-  Proposed Otsego Station
-  Proposed Station West
-  Fire District Boundary

0 1,400 2,800 5,600



1 in = 6,500 ft

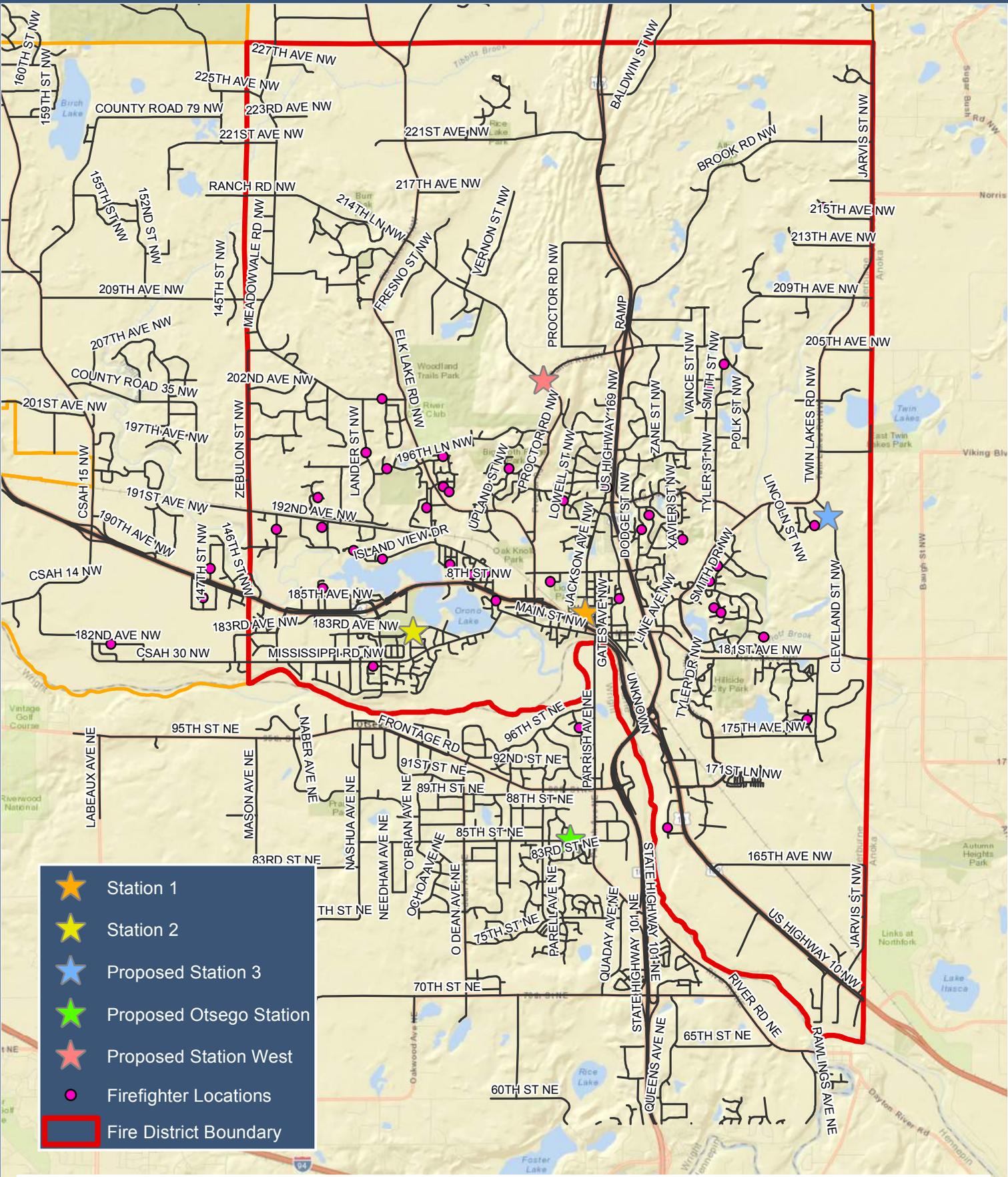
ALL SITES - EXISTING AND POTENTIAL
FIRE STATION LOCATION STUDY
 CITY OF ELK RIVER
 SHERBURNE COUNTY, MINNESOTA

FIGURE 19

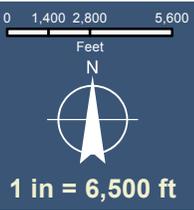


User: 1918
 Date Saved: 8/15/2017 3:22:57 PM
 Path: O:\GIS_Client_Data\Five_Bugles\Elk River\Figure 25 - All Sites.mxd

Path: O:\GIS_Client_Data\Five_Bugles\Elk River\Figure 26 - All Sites - Firefighter Locations.mxd
Date Saved: 8/15/2017 3:24:25 PM
User: 1918



- ★ Station 1
- ★ Station 2
- ★ Proposed Station 3
- ★ Proposed Otsego Station
- ★ Proposed Station West
- Firefighter Locations
- ▭ Fire District Boundary

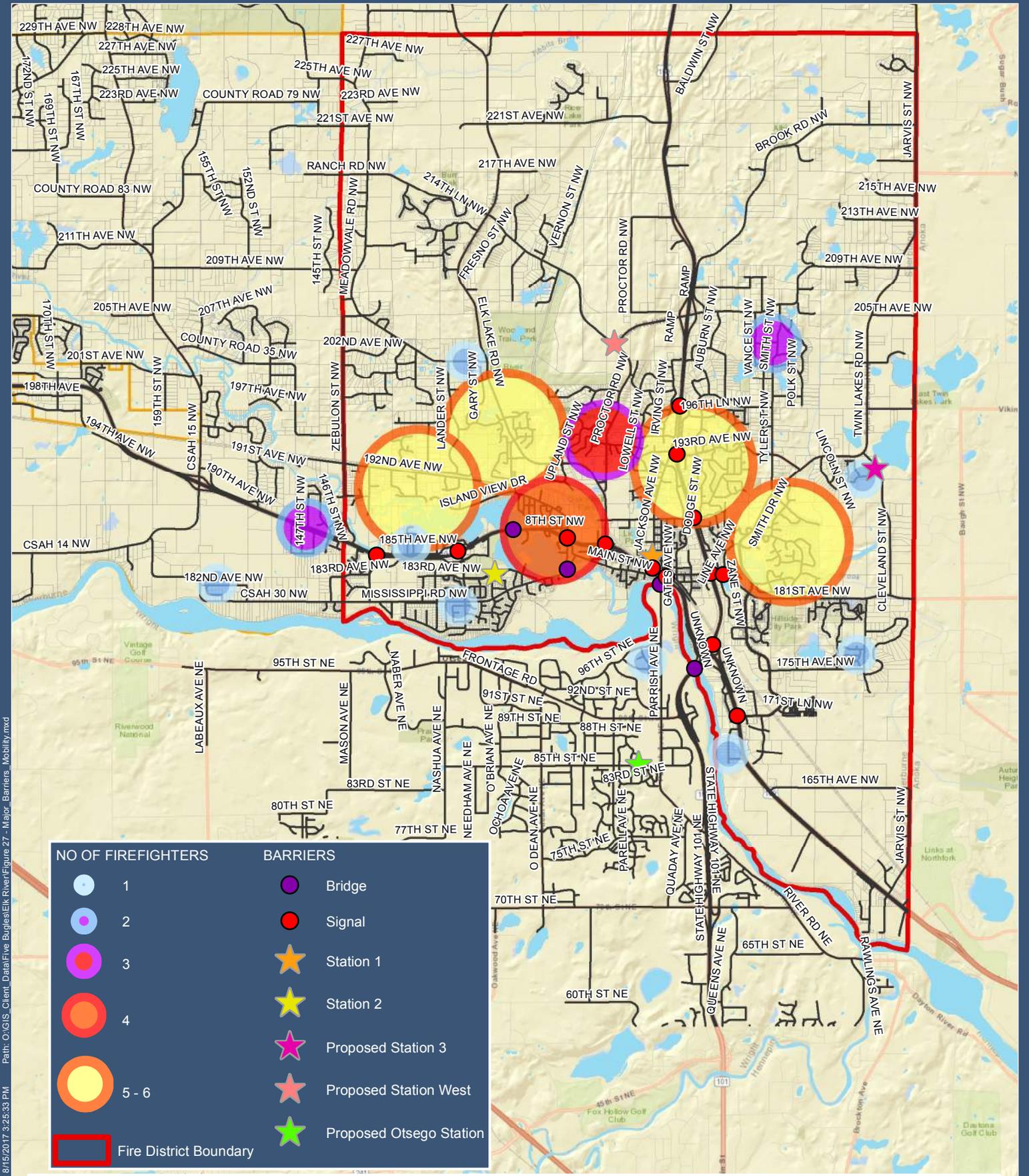


ALL SITES WITH FIREFIGHTER LOCATIONS

FIRE STATION LOCATION STUDY

CITY OF ELK RIVER
SHERBURNE COUNTY, MINNESOTA

FIGURE 20
GRaEF



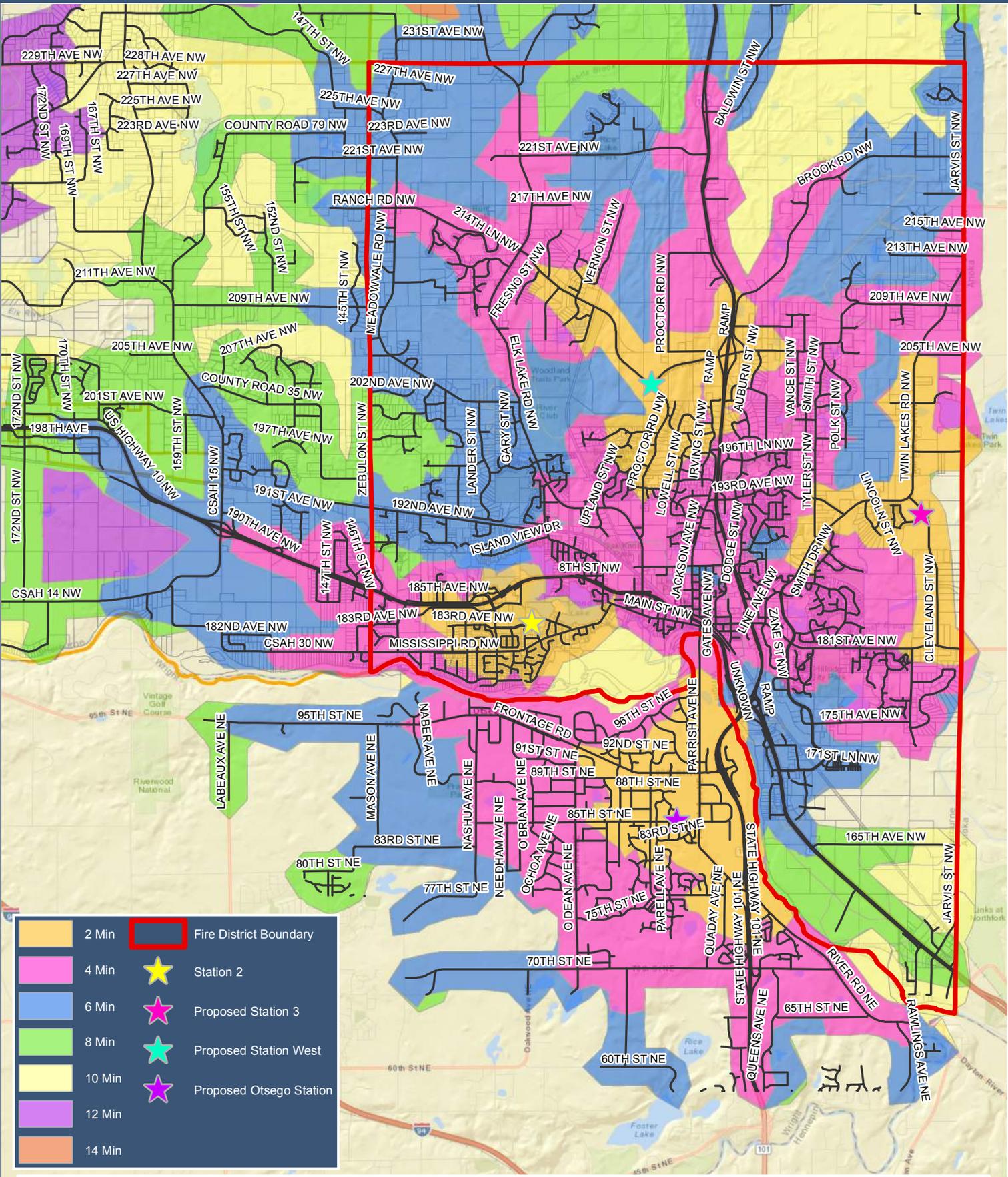
User: 1918
 Date Saved: 8/15/2017 3:25:33 PM
 Path: O:\GIS_Client_Data\Five Bugles\Elk River\Figure 27 - Major Barriers_Mobility.mxd



MAJOR BARRIERS FOR MOBILITY
FIRE STATION LOCATION STUDY
 CITY OF ELK RIVER
 SHERBURNE COUNTY, MINNESOTA

FIGURE 21
GRaEF

User: 1918 Date Saved: 8/15/2017 3:29:47 PM Path: O:\GIS_Client_Data\Five_Bugles\Elk River\Figure 23 - Build_Out_3_ West.mxd



	2 Min		Fire District Boundary
	4 Min		Station 2
	6 Min		Proposed Station 3
	8 Min		Proposed Station West
	10 Min		Proposed Otsego Station
	12 Min		
	14 Min		



ALTERNATE FINAL BUILD OUT RESPONSE ZONES **FIGURE 23**
FIRE STATION LOCATION STUDY
 CITY OF ELK RIVER
 SHERBURNE COUNTY, MINNESOTA



Call Analysis Per Zone

Zone	Zone Minutes	No. of Calls (1322 Total)	% of Calls	Covers City Boundary
Existing	2	581	43.90%	no
	4	960	72.60%	no
	6	1167	88.30%	no
	8	1282	97%	no
	10	1294	97.90%	yes
	12	1298	98.20%	yes
	14	1302	98.50%	yes
Station 1	2	499	37.70%	no
	4	849	64.20%	no
	6	1139	86.20%	no
	8	1276	96.50%	no
	10	1293	97.80%	yes
	12	1298	98.20%	yes
	14	1301	98.40%	yes
Station 2	2	56	4.20%	no
	4	225	17%	no
	6	739	56%	no
	8	1046	79.10%	no
	10	1241	93.90%	no
	12	1292	97.70%	no
	14	1296	98%	yes
Station 3	2	26	2%	no
	4	264	20%	no
	6	773	58.50%	no
	8	969	73.30%	no
	10	1207	91.30%	no
	12	1288	97.40%	no
	14	1299	98.30%	yes
New Station West	2	30	2.27%	no
	4	316	23.90%	no
	6	870	65.80%	no
	8	1083	81.90%	no
	10	1196	90.50%	no
	12	1299	98.30%	no
	14	1305	98.70%	no
Otsego Station	2	94	7.11%	no
	4	535	40.50%	no
	6	923	69.80%	no
	8	1175	88.90%	no
	10	1253	94.80%	no
	12	1290	97.60%	no
	14	1297	98.10%	yes

Firefighter Drive Times To Stations

Firefighter	Station 1	Station 1	Station 2	Station 2	Proposed Station 3	Proposed Station 3	Proposed North West	Proposed North West	Otsego	Otsego
	Minutes	Length (ft)	Minutes	Length (ft)	Minutes	Length (ft)	Minutes	Length (ft)	Minutes	Length (ft)
1	5.1	18418.8	5.8	19403.8	8.8	33493.5	4.3	20712.1	8.1	28529.1
2	3.7	13118.7	7.0	21732.1	6.2	25286.9	6.9	29859.5	5.9	21217.1
3	4.8	16582.4	8.1	25503.7	2.8	12262.0	7.4	31473.2	7.0	24988.7
4	5.1	21744.6	3.1	12868.5	9.5	38707.2	7.3	29903.3	7.8	31314.6
5	1.7	4252.0	4.4	11848.5	5.3	19326.7	4.0	12775.0	5.0	15422.1
6	2.8	7926.3	3.2	8059.8	7.2	24914.0	5.0	16085.0	5.5	17521.4
7	8.8	34477.5	12.1	43398.8	4.5	19345.6	6.3	25008.6	11.0	42883.8
8	3.9	10771.2	7.2	19692.5	2.2	8657.1	5.9	22915.5	6.1	19177.5
9	4.6	16898.8	5.0	17032.3	9.1	33886.4	6.1	21677.0	7.3	26493.8
10	6.1	20239.4	9.6	31275.8	4.7	16537.9	3.0	11231.0	8.8	28642.0
11	4.8	14928.7	5.2	15062.2	9.3	31916.4	6.5	20360.7	7.6	24523.8
12	2.5	6487.1	6.2	16827.2	4.4	13990.9	2.8	7829.0	5.6	20348.4
13	1.2	2808.3	4.9	12988.8	4.4	16977.9	4.3	17606.4	3.8	12473.8
14	3.3	10357.1	3.7	10490.6	7.7	27344.7	5.4	17549.5	6.0	19952.1
15	3.2	7850.2	5.5	15532.1	5.7	16777.9	2.4	7739.9	6.5	19020.3
16	4.0	11416.9	7.3	20338.1	3.7	15358.7	6.6	26307.6	6.2	19823.1
17	5.4	19042.7	8.6	27964.0	0.3	787.9	7.0	25499.5	7.5	27449.0
18	4.6	15771.2	1.5	3933.8	9.1	32670.6	6.9	23943.0	7.3	25278.0
19	3.2	7958.9	6.9	18299.0	4.5	13352.1	5.0	17392.2	6.0	19362.9
20	7.5	29005.4	4.9	17947.6	11.9	45904.8	9.7	37177.2	10.2	38512.2
21	2.6	7396.3	5.8	15795.2	6.5	22887.4	7.1	21568.1	1.7	5491.2
22	4.0	11034.7	7.3	19956.0	3.1	12182.5	6.0	23179.0	6.2	19441.0
23	4.6	14973.8	5.2	15958.8	8.2	30048.5	4.5	15205.6	7.5	25084.1
24	4.2	13234.8	4.6	13368.3	8.6	30222.4	5.8	18666.8	6.9	22829.8
25	2.2	6518.0	2.2	5767.7	6.7	23417.5	4.5	14733.9	4.9	15132.1
26	5.7	17863.5	6.3	18848.5	9.3	32938.2	5.5	24452.5	8.6	27973.8
27	3.4	9564.0	6.7	18485.3	2.5	10711.8	5.4	21708.3	5.6	17970.3
28	4.1	11206.5	7.3	20127.8	3.2	12354.3	6.1	23350.8	6.3	19612.8
29	5.2	19669.7	5.6	19803.2	9.6	36657.3	6.7	24447.9	7.9	29264.7
30	4.3	13642.5	4.9	14627.4	7.9	28717.2	4.2	13874.2	7.2	23752.8
31	5.4	18668.8	5.8	18802.3	9.8	35656.5	6.9	23447.0	8.1	28263.8
32	4.0	11424.3	5.7	16422.4	7.0	19997.9	2.2	6980.4	6.9	21534.6
33	4.5	14291.4	5.1	15276.4	8.2	29366.1	4.5	14523.2	7.4	24401.7
34	5.4	22378.9	3.4	13419.2	9.8	39278.3	7.6	30525.9	8.1	31885.7
35	4.9	15917.3	5.6	16902.2	8.6	30992.0	4.9	16149.0	7.9	26027.5
36	3.2	8007.5	7.0	18347.5	3.8	12016.1	3.7	14340.1	6.1	19411.4

37	2.8	6865.1	5.5	15713.2	5.3	15792.8	2.4	7921.0	6.1	18035.1
38	2.5	6638.4	6.2	16978.5	4.2	13167.8	3.8	14730.3	5.3	18042.3
39	7.2	34607.5	5.2	25731.5	11.7	51570.1	9.4	42766.2	9.9	44177.5
40	3.4	8493.2	7.2	18833.3	3.3	10651.9	4.4	16167.8	6.3	19897.1
41	5.9	16958.5	9.6	31011.6	4.4	15741.1	3.0	10966.8	8.5	27845.3
42	5.9	16958.5	9.6	31011.6	4.4	15741.1	3.0	10966.8	8.5	27845.3
43	2.5	7694.8	2.9	7828.3	6.9	24682.5	4.7	15853.5	5.2	17289.9
44	5.1	16895.2	3.1	8019.2	9.6	33857.8	7.3	25053.9	7.9	26465.2
45	3.9	12697.6	4.3	12831.1	8.0	29072.4	4.3	14229.5	6.6	22292.6
Average	4.3	14081.3	5.8	17779.2	6.5	23671.6	5.4	19752.3	6.9	23620.0
Mean	4.009483	12455.411	5.432224	16313.88	5.680443865	20410.30708	5.040904693	18223.53012	6.67557	22470.116
3rd Quartile	5.134785	16958.546	6.960382	19803.176	8.805443355	31916.37568	6.662949459	24447.88344	7.853801	27845.28

APPENDIX B
SPACE NEEDS ANALYSIS
&
PROBABLE PROJECT COST ANALYSIS

Fire Station No. 2
New East Fire Station
New Northwest Fire Station
Police Department (Probable Project Cost Only)
Training Center

Fire Station No. 2



SPACE NEEDS ANALYSIS

Project: Elk River Fire Department - Public Safety Building Fire Station No.2

Location: Elk River, MN

Date:

1-Aug-17

Apparatus Bays

Spaces	Existing	Length	x	Width	=	Ft ²	Quantity	Total Ft ²	Proposed Bay	Notes
Engines /Pumpers										
Engine(s)		45	x	18	=	810	0	0		
Rescue Pumper		45	x	18	=	810	0	0		
Quint		90	x	18	=	1620	0	0		
Aerial Apparatus										
Ladder/Snorkel		90	x	18	=	1620	0	0		
Aerial Platform		90	x	18	=	1620	0	0		
Telesquirt		90	x	18	=	1620	0	0		
Heavy Rescue Units										
Rescue Squad		45	x	18	=	810	0	0		
Tender		45	x	18	=	810	0	0		
Light Trucks/SUV's/Pickups										
Medium or Light Rescue		45	x	18	=	810	0	0		
Incident Command Vehicle		45	x	18	=	810	0	0		
Utility/Pickup		45	x	18	=	810	0	0		
Arson Unit		45	x	18	=	810	0	0		
Inspections Vehicle(s)		45	x	18	=	810	0	0		
Wildland Unit		45	x	18	=	810	0	0		
Trailers										
Haz Mat		22	x	18	=	396	0	0		
Incident Support Trailer (IST)		45	x	18	=	810	0	0		
Mass Casualty Unit		22	x	18	=	396	0	0		
Boat		22	x	18	=	396	0	0		
Snowmobile/ATV		22	x	18	=	396	0	0		
Portable Pump		22	x	18	=	396	0	0		
Firefighter Rehab Unit		22	x	18	=	396	0	0		
SCBA Clean and Fill		22	x	18	=	396	0	0		Same as IST
Portable lights		22	x	18	=	396	0	0		
Safe Escape Trailer		22	x	18	=	396	0	0		In Cold Storage
Other Equipment/Space										
Parade Vehicle/Trailer		45	x	18	=	810	0	0		1936 Chevy Fire Engine in Lobby
Vehicle Maintenance Bay		45	x	18	=	810	0	0		
Wash Bay		45	x	18	=	810	0	0		
Building Maintenance Equip		20	x	20	=	400	0	0		
EMS										
Ambulance		45	x	18	=	810	0	0		
First Responder		45	x	18	=	810	0	0		
EMS Command Vehicle		45	x	18	=	810	0	0		
Mass Casualty Trailer		22	x	18	=	396	0	0		
Staff Support Unit		25	x	18	=	450	0	0		
Other Space Need										
TOTAL	0						0	0		
									Subtotal (Ft²)	
									0	Efficiency Ratio of 5%
									0	Apparatus Floor Total (Ft²)

= Existing Equipment
 = Future Equipment

See also Training for other Apparatus and Large Equipment

		Number of Bays					
		3	4	5	6	7	8
Depth	Length						
	60	3600	4800	6000	7200	8400	9600
	80	4800	6400	8000	9600	11200	12800
	90	5400	7200	9000	10800	12600	14400
	100	6000	8000	10000	12000	14000	16000



SPACE NEEDS ANALYSIS

Project: Elk River Fire Department - Public Safety Building Fire Station No.2

Location: Elk River, MN

Date:

1-Aug-17

Administration/Office Spaces

Spaces	Existing	Length	x	Width	=	Ft ²	Quantity	Total Ft ²	Notes
Fire Chief		20	x	12	=	240	0	0	
Training Chief		16	x	12	=	192	0	0	
Fire Marshal/Investigator		16	x	12	=	192	0	0	
Evidence Storage		6	x	8	=	48	0	0	
Plan/Equip Storage		8	x	8	=	64	0	0	
Deputy/Battalion Chiefs		30	x	10	=	300	0	0	
Sleeping Room		10	x	13	=	130	0	0	
Toilet/Shower		8	x	10	=	80	0	0	
Officers Offices		10	x	13	=	130	3	390	Murphy Beds
Pub Ed Office		14	x	12	=	168	0	0	
Pub Ed Storage		6	x	8	=	48	0	0	
Inspections Unit									
Inspectors Office		14	x	12	=	168	0	0	
Plan Review		18	x	12	=	216	0	0	Open area with layout table
Conference Room		18	x	14	=	252	0	0	
Resource Library		2	x	10	=	20	0	0	Code Books
Record Storage		14	x	12	=	168	0	0	
Future Office		16	x	10	=	160	0	0	
Administrative Assist. Office		16	x	12	=	192	0	0	
Fax/Work/Copy		8	x	10	=	80	0	0	
Record Storage		8	x	10	=	80	0	0	
Misc. Office Supplies		4	x	6	=	24	0	0	
Conference Room		20	x	20	=	400	0	0	
Staff Toilets		8	x	8	=	64	0	0	
Watch/Comm Office		16	x	12	=	192	0	0	
POC Staging Area		8	x	12	=	96	0	0	
Study/Work Area		8	x	10	=	80	0	0	
Resource Library		2	x	10	=	20	0	0	Training Materials
New Gear and Uniform Storage		8	x	16	=	128	0	0	
General Storage		8	x	10	=	80	0	0	
Communications/ IT		10	x	20	=	200	0	0	
Public/Support Spaces									Public Entrance to Training Center
Entrance Vestibule		30	x	20	=	600	0	0	1936 Chevy
Walk-in Med Check/Ed Space		6	x	8	=	48	0	0	
Public Toilets		10	x	14	=	140	0	0	
Elevator		10	x	20	=	200	0	0	
Stairs		24	x	10	=	240	0	0	
Janitors Closet		6	x	4	=	24	0	0	
TOTAL	0							390	Subtotal (Ft²)
								98	Efficiency Ratio of 25%

488 Administration/Office Spaces Total (Ft²)



SPACE NEEDS ANALYSIS

Project: Elk River Fire Department - Public Safety Building Fire Station No.2

Location: Elk River, MN

1-Aug-17

Site

Spaces	Existing	Quantity	Notes
Parking			
Fire Staff Parking		8	Near new addition
EMS Staff Parking		0	
Public Parking		0	
Training Parking		0	
Total Parking		8	
Fire Apparatus Apron		0	
EMS Apparatus Apron		0	
Outdoor Training		0	
Outdoor Patio		1	
Enclosed Dumpster		0	
External Generator		0	
Storm Water Treatment		0	
Heliport Pad		0	
Extrication pavement		0	
Detatched storage building		0	
Live Burn Building		0	
Confined Space Prop		0	
Car Fire Prop		0	
Utility Fire Prop		0	
Rail Car Prop		0	
Hazmat Prop		0	
Other Agencies			



SPACE NEEDS SUMMARY

Project: Elk River Fire Department - Public Safety Building Fire Station No.2

Location: Elk River, MN

Date:

1-Aug-17

Totals		Existing Areas
Apparatus Bays	0	0
Apparatus Support	1,054	0
Training	0	0
Administration/Office	488	0
Living Quarters & Support	1,295	0
Tempered Spaces	0	0
	2,836	Station Footprint (Ft²) Sub Total
	142	Infrastructure (M & E) Space Factor 15%
	2,978	TOTAL PROGRAM SPACE REQUIRMENT

NOTES:



ESTIMATE OF PROBABLE COSTS FIRE DEPARTMENT STATION NO. 2

Project: Elk River Fire Department - Public Safety Building Fire Station No.2

Location: Elk River, MN

Date:

1-Aug-17

Potential Costs

				Low	High	Remarks
I. Site Acquisition						
Preferred Site			\$0	\$0		
Other Sites						
Sub Total				\$0	\$0	
II. Site Development						
Utility Extensions				15% \$0	20% \$0	
Unsuitable Soils/Rock Removal				\$0	\$0	
Natural Gas Extensions				\$0	\$0	
Storm Water				\$0	\$0	
Site Improvements (hardscape)	5%-10% of building costs			\$27,605	\$58,563	Typical hardscape
Sub Total				\$27,605	\$58,563	
III. Building Construction Costs						
	Size	Cost/SF				
RS Means (20165)	2,978	\$196.66			\$585,635	Building Only
Five Bugles Historic (2016/17)	2,978	\$185.40		\$552,104		Building Only
Cold Storage	0	\$151.87		\$0	\$0	Tempered construction
Sub Total				\$552,104	\$585,635	
IV. Furniture Fixtures and Equipment						
FF&E	Allowance			\$25,000	\$35,000	Assumes mostly new
Specific Equipment by Owner				\$0	\$0	SCBA, Exercise, vehicle exhaust
Others				\$0	\$0	
Sub Total				\$25,000	\$35,000	
V. Communications and Technology						
Technology	Allowance			\$15,000	\$20,000	Data systems, backbone, patch panels
Communications				\$0	\$0	Radio, Tower, Repeaters, Etc.
Audio Visual Equipment	Allowance			\$0	\$0	
Sub Total				\$15,000	\$20,000	
VI. Contingencies, Inflation and Other Costs						
Inflation to mid-point of construction	3%-5% total construction cost			\$32,845	\$34,960	Assume spring of 2018 construction start
Owners Contingency	10% of total construction costs			\$65,255	\$73,416	Unforeseen Conditions, Owner Changes, E&O
Sub Total				\$98,100	\$108,376	
VI. Professional Fees and Legal						
Architectural/Engineering	12% of Construction Costs			\$78,565	\$83,904	
Geotechnical Studies				\$15,000	\$25,000	
Commissioning				\$0	\$0	
LEED/Sustainability				\$0	\$0	
Hazardous Materials				\$0	\$0	
Testing and Inspections				\$15,000	\$25,000	
Legal	2.5-4% of Costs			\$15,303	\$25,625	Cost of borrowing, Att. Fees, etc.
Sub-Total				\$123,868	\$159,529	
TOTALS				\$841,676.31	\$967,103.20	

New East Fire Station





SPACE NEEDS ANALYSIS

Project: Elk River Fire Department - East Station/Otsego

Location: Elk River, MN

Date:

1-Aug-17

Apparatus Bays

Spaces	Existing	Length	x	Width	=	Ft ²	Quantity	Total Ft ²	Proposed Bay	Notes
Engines /Pumpers										
Engine(s)		45	x	18	=	810	1	810		
Rescue Pumper		45	x	18	=	810	0	0		
Quint		90	x	18	=	1620	0	0		
Aerial Apparatus										
Ladder/Snorkel		90	x	18	=	1620	0	0		
Aerial Platform		90	x	18	=	1620	0	0		
Telesquirt		90	x	18	=	1620	0	0		
Heavy Rescue Units										
Rescue Squad		45	x	18	=	810	0	0		
Tender		45	x	18	=	810	1	810		
Light Trucks/SUV's/Pickups										
Medium or Light Rescue		45	x	18	=	810	0	0		
Command Vehicle		45	x	18	=	810	0	0		
Utility/Pickup		45	x	18	=	810	1	810		
Arson Unit		45	x	18	=	810	0	0		
Inspections Vehicle(s)		45	x	18	=	810	0	0		
Wildland Unit		45	x	18	=	810	1	810		
Trailers										
Haz Mat		22	x	18	=	396	0	0		
Special Operations		22	x	18	=	396	0	0		
Mass Casualty Unit		22	x	18	=	396	0	0		
Boat		22	x	18	=	396	0	0		
Snowmobile/ATV		22	x	18	=	396	0	0		
Portable Pump		22	x	18	=	396	0	0		
Firefighter Rehab Unit		22	x	18	=	396	0	0		
SCBA Clean and Fill		22	x	18	=	396	0	0		
Portable lights		22	x	18	=	396	0	0		
Other Equipment/Space										
Parade Vehicle/Trailer		45	x	18	=	810	0	0		
Vehicle Maintenance Bay		45	x	18	=	810	0	0		
Wash Bay		45	x	18	=	810	0	0		
Building Maintenance Equip		20	x	20	=	400	0	0		
EMS										
Ambulance		45	x	18	=	810	0	0		
First Responder		45	x	18	=	810	0	0		
EMS Command Vehicle		45	x	18	=	810	0	0		
Mass Casualty Trailer		22	x	18	=	396	0	0		
Staff Support Unit		25	x	18	=	450	0	0		
Other Space Need								4800		
TOTAL	0						4	4,800		
									Subtotal (Ft²)	
									240	Efficiency Ratio of 5%
									5,040	Apparatus Floor Total (Ft²)

Assume (3) 80'-90' bays to allow for training, reserve vehicle storage and equipment placement issues

= Existing Equipment
 = Future Equipment

See also Training for other Apparatus and Large Equipment

		Number of Bays					
		3	4	5	6	7	8
Depth	Length						
	60	3600	4800	6000	7200	8400	9600
	80	4800	6400	8000	9600	11200	12800
	90	5400	7200	9000	10800	12600	14400
	100	6000	8000	10000	12000	14000	16000



SPACE NEEDS ANALYSIS

Project: Elk River Fire Department - East Station/Otsego

Location: Elk River, MN

Date:

1-Aug-17

Administration/Office Spaces

Spaces	Existing	Length	x	Width	=	Ft ²	Quantity	Total Ft ²	Notes
Fire Chief		20	x	12	=	240	0	0	
Assistant Chief		16	x	12	=	192	0	0	
Fire Marshal/Investigator		16	x	12	=	192	0	0	
Evidence Storage		6	x	8	=	48	0	0	
Plan/Equip Storage		8	x	8	=	64	0	0	
Deputy/Battalion Chiefs		30	x	10	=	300	0	0	
Sleeping Room		10	x	13	=	130	0	0	
Toilet/Shower		8	x	10	=	80	0	0	
Officers Offices		10	x	13	=	130	3	390	Murphy beds in offices
Pub Ed Office		14	x	12	=	168	0	0	
Pub Ed Storage		6	x	8	=	48	0	0	
Inspections Unit									
Inspectors Office		14	x	12	=	168	0	0	
Plan Review		18	x	12	=	216	0	0	Open area with layout table
Conference Room		18	x	14	=	252	0	0	
Resource Library		2	x	10	=	20	0	0	Code Books
Record Storage		14	x	12	=	168	0	0	
Future Office		16	x	10	=	160	0	0	
Administrative Assist. Office		16	x	12	=	192	0	0	
Fax/Work/Copy		8	x	10	=	80	0	0	
Record Storage		8	x	10	=	80	0	0	
Misc. Office Supplies		4	x	6	=	24	0	0	
Conference Room		20	x	20	=	400	0	0	
Staff Toilets		10	x	12	=	120	2	240	With showers
Watch/Comm Office		16	x	12	=	192	1	192	
POC Staging Area		8	x	12	=	96	0	0	
Study/Work Area		8	x	10	=	80	0	0	
Resource Library		2	x	10	=	20	0	0	Training Materials
New Gear and Uniform Storage		8	x	16	=	128	0	0	
General Storage		8	x	10	=	80	1	80	
Communications/ IT		10	x	10	=	100	1	100	
Public/Support Spaces									
Entrance Vestibule		10	x	15	=	150	1	150	Historic displays or vehicles
Walk-in Med Check/Ed Space		6	x	8	=	48	0	0	
Public Toilets		8	x	8	=	64	2	128	
Elevator		10	x	20	=	200	0	0	
Stairs		24	x	10	=	240	0	0	
Janitors Closet		6	x	4	=	24	1	24	
TOTAL	0							1,304	Subtotal (Ft²)
								326	Efficiency Ratio of 25%

1,630 Administration/Office Spaces Total (Ft²)



SPACE NEEDS ANALYSIS

Project: Elk River Fire Department - East Station/Otsego

Location: Elk River, MN

1-Aug-17

Site

Spaces	Existing	Quantity	Notes
Parking			
Fire Staff Parking		25	
EMS Staff Parking		0	
Public Parking		5	
Other Parking		0	
Total Parking		30	
Fire Apparatus Apron		1	
EMS Apparatus Apron		0	
Outdoor Training		0	
Outdoor Patio		1	
Enclosed Dumpster		1	
External Generator		1	
Storm Water Treatment		1	
Helipad Pad		0	
Extrication pavement		0	
Detatched storage building		0	
Other		0	
Other		0	
Other		0	



SPACE NEEDS SUMMARY

Project: Elk River Fire Department - East Station/Otsego

Location: Elk River, MN

Date:

1-Aug-17

Totals		Existing Areas
Apparatus Bays	5,040	0
Apparatus Support	3,252	0
Training	4,413	0
Administration/Office	1,630	0
Living Quarters & Support	900	0
Tempered Spaces	0	0
	15,235	Station Footprint (Ft²) Sub Total
	2,285	Infrastructure (M & E) Space Factor 15%
	17,520	TOTAL PROGRAM SPACE REQUIRMENT

NOTES:



ESTIMATE OF PROBABLE COSTS

Project: Elk River Fire Department - East Station/Otsego

Location: Elk River, MN

Date:

1-Aug-17

Potential Costs

			Low	High	Remarks
I. Site Acquisition					
Preferred Site		\$0	\$0		
Other Sites					
Sub Total			\$0	\$0	
II. Site Development					
Utility Extensions			\$0	\$0	
Unsuitable Soils/Rock Removal			\$0	\$0	
Natural Gas Extensions			\$0	\$0	
Storm Water			\$0	\$0	
Site Improvements (hardscape)	15%-20% of building costs		\$487,222	\$689,084	Typical hardscape
Sub Total			\$487,222	\$689,084	
III. Building Construction Costs					
	Size	Cost/SF			
RS Means (20165)	17,520	\$196.66		\$3,445,419	Building Only
Five Bugles Historic (2016/17)	17,520	\$185.40	\$3,248,148		Building Only
Cold Storage	0	\$151.87	\$0	\$0	Tempered construction
Sub Total			\$3,248,148	\$3,445,419	
IV. Furniture Fixtures and Equipment					
FF&E	3-5% of Building Construction		\$97,444	\$172,271	Assumes mostly new
Specific Equipment by Owner			\$0	\$0	SCBA, Exercise, vehicle exhaust
Others			\$0	\$0	
Sub Total			\$97,444	\$172,271	
V. Communications and Technology					
Technology	3-5% of Building Construction		\$97,444	\$172,271	Data systems, backbone, patch panels
Communications			\$0	\$0	Radio, Tower, Repeaters, Etc.
Audio Visual Equipment	Allowance		\$0	\$0	
Sub Total			\$97,444	\$172,271	
VI. Contingencies, Inflation and Other Costs					
Inflation to mid-point of construction	3%-5% total construction cost		\$208,304	\$223,952	Assume spring of 2018 construction start
Owners Contingency	5% of total construction costs		\$206,928	\$235,150	Unforeseen Conditions, Owner Changes, E&O
Sub Total			\$415,232	\$459,102	
VI. Professional Fees and Legal					
Architectural/Engineering	7-9% of Construction Costs		\$287,177	\$403,114	
Geotechnical Studies			\$15,000	\$25,000	
Commissioning			\$0	\$0	
LEED/Sustainability			\$0	\$0	
Hazardous Materials			\$0	\$0	
Testing and Inspections			\$15,000	\$25,000	
Legal	2.5-4% of Costs		\$90,383	\$151,598	Cost of borrowing, Att. Fees, etc.
Sub-Total			\$407,560	\$604,713	
TOTALS			\$4,753,050.38	\$5,542,859.70	

New Northwest Fire Station





SPACE NEEDS ANALYSIS

Project: Elk River Fire Department - New Northwest Station

Location: Elk River, MN

Date:

1-Aug-17

Apparatus Bays

Spaces	Existing	Length	x	Width	=	Ft ²	Quantity	Total Ft ²	Proposed Bay	Notes
Engines /Pumpers										
Engine(s)		45	x	18	=	810	2	1620		
Rescue Pumper		45	x	18	=	810	0	0		
Quint		90	x	18	=	1620	0	0		
Aerial Apparatus										
Ladder/Snorkel		90	x	18	=	1620	1	1620		
Aerial Platform		90	x	18	=	1620	0	0		
Telesquirt		90	x	18	=	1620	0	0		
Heavy Rescue Units										
Rescue Squad		45	x	18	=	810	0	0		
Tender		45	x	18	=	810	1	810		
Light Trucks/SUV's/Pickups										
Medium or Light Rescue		45	x	18	=	810	0	0		
Incident Command Vehicle		45	x	18	=	810	1	810		
Utility/Pickup		45	x	18	=	810	1	810		
Arson Unit		45	x	18	=	810	0	0		
Inspections Vehicle(s)		45	x	18	=	810	0	0		
Wildland Unit		45	x	18	=	810	1	810		
Trailers										
Haz Mat		22	x	18	=	396	0	0		
Incident Support Trailer (IST)		45	x	18	=	810	1	810		
Mass Casualty Unit		22	x	18	=	396	0	0		
Boat		22	x	18	=	396	0	0		
Snowmobile/ATV		22	x	18	=	396	0	0		
Portable Pump		22	x	18	=	396	0	0		
Firefighter Rehab Unit		22	x	18	=	396	0	0		
SCBA Clean and Fill		22	x	18	=	396	0	0		Same as IST
Portable lights		22	x	18	=	396	0	0		
Safe Escape Trailer		22	x	18	=	396	0	0		In Cold Storage
Other Equipment/Space										
Parade Vehicle/Trailer		45	x	18	=	810	0	0		1936 Chevy Fire Engine in Lobby
Vehicle Maintenance Bay		45	x	18	=	810	0	0		
Wash Bay		45	x	18	=	810	0	0		
Building Maintenance Equip		20	x	20	=	400	0	0		
EMS										
Ambulance		45	x	18	=	810	0	0		
First Responder		45	x	18	=	810	0	0		
EMS Command Vehicle		45	x	18	=	810	0	0		
Mass Casualty Trailer		22	x	18	=	396	0	0		
Staff Support Unit		25	x	18	=	450	0	0		
Other Space Need										
TOTAL	0						8	7,290		Subtotal (Ft²)
								365		Efficiency Ratio of 5%
								7,655		Apparatus Floor Total (Ft²)

= Existing Equipment
 = Future Equipment

See also Training for other Apparatus and Large Equipment

		Number of Bays					
		3	4	5	6	7	8
Depth	Length						
	60	3600	4800	6000	7200	8400	9600
	80	4800	6400	8000	9600	11200	12800
	90	5400	7200	9000	10800	12600	14400
100	6000	8000	10000	12000	14000	16000	



SPACE NEEDS ANALYSIS

Project: Elk River Fire Department - New Northwest Station

Location: Elk River, MN

Date:

1-Aug-17

Apparatus Support

Spaces	Existing	Length	x	Width	=	Ft ²	Quantity	Total Ft ²	Notes
Training Tower		30	x	20	=	600	1	600	
Hose/Gear Dryer		8	x	10	=	80	1	80	In Decon Spaces
Protective Gear Lockers		5	x	2	=	10	25	250	Separate from Ap Bay
Decon Spaces									
Dirty Restroom		8	x	8	=	64	1	64	Toilet and Shower with hose reel
Gear Laundry		10	x	10	=	100	1	100	Commercial extractor and dryer
Residential Laundry Equip.		8	x	10	=	80	1	80	See also Living Quarters
Equipment Decon		8	x	10	=	80	1	80	Cleaning backboards, etc.
Personnel Decon Locker Room		10	x	12	=	120	1	120	With (20) 1/2 lockers
Personal Decon Spaces		6	x	10	=	60	2	120	1 shower and 1 steam room
SCBA Equipment									
Work Room/SCBA		8	x	11	=	88	1	88	
SCBA Clean and Fill Room		8	x	12	=	96	1	96	
Vehicle Maintenance Room		10	x	12	=	120	1	120	
Hazmat. Booms and Other Storage		10	x	10	=	100	1	100	
General Storage		10	x	10	=	100	1	100	
Mezzanine		80	x	20	=	1600	1	1600	
Medical Related Spaces									
EMS Report Writing		8	x	12	=	96	0	0	
EMS Storage		8	x	10	=	80	1	80	
Regulated Storage		6	x	6	=	36	0	0	
Bio Hazard Control		6	x	6	=	36	0	0	
Janitors Closet		8	x	4	=	32	1	32	
TOTAL	0							3,710	Subtotal (Ft²)
								742	Efficiency Ratio of 20%
								4,452	Apparatus Support Total (Ft²)

35 x 16 = 560



SPACE NEEDS ANALYSIS

Project: Elk River Fire Department - New Northwest Station

Location: Elk River, MN

Date:

1-Aug-17

Administration/Office Spaces

Spaces	Existing	Length	x	Width	=	Ft ²	Quantity	Total Ft ²	Notes
Fire Chief		20	x	12	=	240	0	0	
Training Chief		16	x	12	=	192	1	192	
Fire Marshal/Investigator		16	x	12	=	192	0	0	
Evidence Storage		6	x	8	=	48	0	0	
Plan/Equip Storage		8	x	8	=	64	0	0	
Deputy/Battalion Chiefs		30	x	10	=	300	0	0	
Sleeping Room		10	x	13	=	130	0	0	
Toilet/Shower		8	x	10	=	80	0	0	
Officers Offices		10	x	13	=	130	2	260	Murphy Beds
Pub Ed Office		14	x	12	=	168	1	168	
Pub Ed Storage		6	x	8	=	48	1	48	
Inspections Unit									
Inspectors Office		14	x	12	=	168	0	0	
Plan Review		18	x	12	=	216	0	0	Open area with layout table
Conference Room		18	x	14	=	252	0	0	
Resource Library		2	x	10	=	20	0	0	Code Books
Record Storage		14	x	12	=	168	0	0	
Future Office		16	x	10	=	160	0	0	
Administrative Assist. Office		16	x	12	=	192	1	192	
Fax/Work/Copy		8	x	10	=	80	1	80	
Record Storage		8	x	10	=	80	1	80	
Misc. Office Supplies		4	x	6	=	24	1	24	
Conference Room		20	x	20	=	400	1	400	
Staff Toilets		8	x	8	=	64	2	128	
Watch/Comm Office		16	x	12	=	192	1	192	
POC Staging Area		8	x	12	=	96	0	0	
Study/Work Area		8	x	10	=	80	1	80	
Resource Library		2	x	10	=	20	1	20	Training Materials
New Gear and Uniform Storage		8	x	16	=	128	0	0	
General Storage		8	x	10	=	80	1	80	
Communications/ IT		10	x	20	=	200	1	200	
Public/Support Spaces									Public Entrance to Training Center
Entrance Vestibule		30	x	20	=	600	1	600	1936 Chevy
Walk-in Med Check/Ed Space		6	x	8	=	48	0	0	
Public Toilets		10	x	14	=	140	2	280	
Elevator		10	x	20	=	200	0	0	
Stairs		24	x	10	=	240	0	0	
Janitors Closet		6	x	4	=	24	1	24	
TOTAL	0							3,048	Subtotal (Ft²)
								762	Efficiency Ratio of 25%

3,810 Administration/Office Spaces Total (Ft²)



SPACE NEEDS ANALYSIS

Project: Elk River Fire Department - New Northwest Station

Location: Elk River, MN

1-Aug-17

Site

Spaces	Existing	Quantity	Notes
Parking			
Fire Staff Parking		25	
EMS Staff Parking		0	
Public Parking		100	
Training Parking		0	See public parking
Total Parking		125	
Fire Apparatus Apron		2	
EMS Apparatus Apron		0	
Outdoor Training		1	
Outdoor Patio		1	
Enclosed Dumpster		1	
External Generator		1	
Storm Water Treatment		1	
Heliport Pad		0	
Extrication pavement		1	
Detatched storage building		1	
Live Burn Building		1	
Confined Space Prop		1	
Car Fire Prop		1	
Utility Fire Prop		1	
Rail Car Prop		1	
Hazmat Prop		1	
Other Agencies			MMUA, Police Department



SPACE NEEDS SUMMARY

Project: Elk River Fire Department - New Northwest Station

Location: Elk River, MN

Date:

1-Aug-17

Totals		Existing Areas
Apparatus Bays	7,655	0
Apparatus Support	4,452	0
Training	5,045	0
Administration/Office	3,810	0
Living Quarters & Support	1,295	0
Tempered Spaces	1,700	0
	23,957	Station Footprint (Ft²) Sub Total
	3,593	Infrastructure (M & E) Space Factor 15%
	27,550	TOTAL PROGRAM SPACE REQUIRMENT

NOTES:



ESTIMATE OF PROBABLE COSTS

Project: Elk River Fire Department - New Northwest Station

Location: Elk River, MN

Date:

1-Aug-17

Potential Costs

			Low	High	Remarks
I. Site Acquisition					
Preferred Site		\$0	\$0		
Other Sites					
Sub Total			\$0	\$0	
II. Site Development					
Utility Extensions			\$0	\$0	
Unsuitable Soils/Rock Removal			\$0	\$0	
Natural Gas Extensions			\$0	\$0	
Storm Water			\$0	\$0	
Site Improvements (hardscape)	15%-20% of building costs		\$757,615	\$1,071,131	Typical hardscape
Sub Total			\$757,615	\$1,071,131	
III. Building Construction Costs					
	Size	Cost/SF			
RS Means (20165)	25,850	\$196.66		\$5,083,656	Building Only
Five Bugles Historic (2016/17)	25,850	\$185.40	\$4,792,585		Building Only
Cold Storage	1,700	\$151.87	\$258,179	\$272,000	Tempered construction
Sub Total			\$5,050,764	\$5,355,656	
IV. Furniture Fixtures and Equipment					
FF&E	2-4% of Building Construction		\$101,015	\$214,226	Assumes mostly new
Specific Equipment by Owner			\$0	\$0	SCBA, Exercise, vehicle exhaust
Others			\$0	\$0	
Sub Total			\$101,015	\$214,226	
V. Communications and Technology					
Technology	2-4% of Building Construction		\$101,015	\$214,226	Data systems, backbone, patch panels
Communications			\$0	\$0	Radio, Tower, Repeaters, Etc.
Audio Visual Equipment	Allowance		\$0	\$0	
Sub Total			\$101,015	\$214,226	
VI. Contingencies, Inflation and Other Costs					
Inflation to mid-point of construction	3%-5% total construction cost		\$318,552	\$342,762	Assume spring of 2018 construction start
Owners Contingency	5% of total construction costs		\$316,448	\$359,900	Unforeseen Conditions, Owner Changes, E&O
Sub Total			\$635,000	\$702,662	
VI. Professional Fees and Legal					
Architectural/Engineering	7-9% of Construction Costs		\$435,725	\$616,972	
Geotechnical Studies			\$15,000	\$25,000	
Commissioning			\$0	\$0	
LEED/Sustainability			\$0	\$0	
Hazardous Materials			\$0	\$0	
Testing and Inspections			\$15,000	\$25,000	
Legal	2.5-4% of Costs		\$136,676	\$231,364	Cost of borrowing, Att. Fees, etc.
Sub-Total			\$602,400	\$898,336	
TOTALS			\$7,247,809.41	\$8,456,237.79	

Police Department (Probable Project Cost Only)



ESTIMATE OF PROBABLE COSTS POLICE DEPARTMENT

Project: Elk River Fire Department - Public Safety Building Fire Station No.2

Location: Elk River, MN

Date:

2-Feb-17

Potential Costs

			Low	High	Remarks
I. Site Acquisition					
Preferred Site		\$0	\$0		
Other Sites					
Sub Total			\$0	\$0	
II. Site Development					
Utility Extensions			15% \$0	20% \$0	
Unsuitable Soils/Rock Removal			\$0	\$0	
Natural Gas Extensions			\$0	\$0	
Storm Water			\$0	\$0	
Site Improvements (hardscape)	5%-10% of building costs		\$111,175	\$244,585	Typical hardscape
Sub Total			\$111,175	\$244,585	
III. Building Construction Costs					
	Size	Cost/SF	(Plus 10%)		
New Construction	5,980	\$175.00	\$1,046,500	\$1,151,150.0	Building Only
Major Renovations	1,745	\$120.00	\$209,400	\$230,340	
Minor Renovations	12,095	\$80.00	\$967,600	\$1,064,360	
Cold Storage	0	\$151.87	\$0	\$0	Tempered construction
Sub Total			\$2,223,500	\$2,445,850	
IV. Furniture Fixtures and Equipment					
FF&E	Allowance		\$35,000	\$50,000	Assumes mostly new
Specific Equipment by Owner			\$0	\$0	
Others			\$0	\$0	
Sub Total			\$35,000	\$50,000	
V. Communications and Technology					
Technology	Allowance		\$15,000	\$20,000	Data systems, backbone, patch panels
Communications			\$0	\$0	Radio, Tower, Repeaters, Etc.
Audio Visual Equipment	Allowance		\$0	\$0	
Sub Total			\$15,000	\$20,000	
VI. Contingencies, Inflation and Other Costs					
Inflation to mid-point of construction	3%-5% total construction cost		\$126,388	\$138,022	Assume spring of 2018 construction start
Owners Contingency	10% of total construction costs		\$251,106	\$289,846	Unforeseen Conditions, Owner Changes, E&O
Sub Total			\$377,494	\$427,867	
VI. Professional Fees and Legal					
Architectural/Engineering	7-9% of Construction Costs		\$170,427	\$248,439	
Geotechnical Studies			\$15,000	\$25,000	
Commissioning			\$0	\$0	
LEED/Sustainability			\$0	\$0	
Hazardous Materials			\$0	\$0	
Testing and Inspections			\$15,000	\$25,000	
Legal	2.5-4% of Costs		\$57,338	\$100,634	Cost of borrowing, Att. Fees, etc.
Sub-Total			\$257,765	\$399,073	
TOTALS			\$3,019,933.80	\$3,587,375.58	

Training Center



SPACE NEEDS ANALYSIS

Elk River Fire Department - Regional Training Center

Elk River, MN

Date:

1-Aug-17

Administration/Office Spaces

Spaces	Existing	Length	x	Width	=	Ft ²	Quantity	Total Ft ²	Notes
Fire Chief		20	x	12	=	240	0	0	
Training Chief		16	x	12	=	192	1	192	
Fire Marshal/Investigator		16	x	12	=	192	0	0	
Evidence Storage		6	x	8	=	48	0	0	
Plan/Equip Storage		8	x	8	=	64	0	0	
Deputy/Battalion Chiefs		30	x	10	=	300	0	0	
Sleeping Room		10	x	13	=	130	0	0	
Toilet/Shower		8	x	10	=	80	0	0	
Training Assistant		10	x	13	=	130	1	130	Murphy Beds
Pub Ed Office		14	x	12	=	168	1	168	
Pub Ed Storage		6	x	8	=	48	1	48	
Inspections Unit									
Inspectors Office		14	x	12	=	168	0	0	
Plan Review		18	x	12	=	216	0	0	Open area with layout table
Conference Room		18	x	14	=	252	0	0	
Resource Library		2	x	10	=	20	0	0	Code Books
Record Storage		14	x	12	=	168	0	0	
Future Office		16	x	10	=	160	1	160	
Administrative Assist. Office		16	x	12	=	192	1	192	
Fax/Work/Copy		8	x	10	=	80	1	80	
Record Storage		8	x	10	=	80	1	80	
Misc. Office Supplies		4	x	6	=	24	1	24	
Conference Room		20	x	20	=	400	2	800	One for training, one for office staff
Staff Toilets		8	x	8	=	64	1	64	
Watch/Comm Office		16	x	12	=	192	0	0	
POC Staging Area		8	x	12	=	96	0	0	
Study/Work Area		8	x	10	=	80	0	0	
Resource Library		2	x	10	=	20	0	0	Training Materials
New Gear and Uniform Storage		8	x	16	=	128	0	0	
General Storage		8	x	10	=	80	0	0	
Communications/ IT		10	x	20	=	200	0	0	
Public/Support Spaces									Public Entrance to Training Center
Entrance Vestibule		30	x	20	=	600	1	600	1936 Chevy
Walk-in Med Check/Ed Space		6	x	8	=	48	0	0	
Public Toilets		10	x	14	=	140	2	280	
Elevator		10	x	20	=	200	0	0	
Stairs		24	x	10	=	240	0	0	
Janitors Closet		6	x	4	=	24	1	24	
TOTAL	0							2,842	Subtotal (Ft²)
								711	Efficiency Ratio of 25%

3,553 Administration/Office Spaces Total (Ft²)



SPACE NEEDS ANALYSIS

Elk River Fire Department - Regional Training Center

Elk River, MN

1-Aug-17

Site

Spaces	Size	Quantity	Notes
Parking			
Training Staff Parking		5	
Public Parking		95	Includes parking for large vehicles with trailers and fire trucks
Total Parking		100	
Fire Department			
Rubble Pile	1	Acre	
Burn Tower	0.5	Acre	
Train car	3	Acre	Shared with Police
Bus	Incl	Incl	Shared with Police
Police Department			
Traffic Stop Training	2	Acres	
Accident Scene Invest.	Incl	Incl	Consider small scale neighborhood block
Elk River Municipal			
Transformer Station	2	Acres	
Public Works/Streets Department			
	2	Acres	
Sub Total	10.5		
Roads and Circulation	50%		
Total Area Required	15.75		



SPACE NEEDS SUMMARY

Elk River Fire Department - Regional Training Center

Elk River, MN

Date:

1-Aug-17

Totals		Existing Areas
Training Support	1,944	0
Training	8,339	0
Training Office	3,553	0
Tempered Spaces	3,000	0
	16,835 Station Footprint (Ft²) Sub Total	0
	842 Infrastructure (M & E) Space Factor 15%	
	17,677 TOTAL PROGRAM SPACE REQUIRMENT	

NOTES:



ESTIMATE OF PROBABLE COSTS

Elk River Fire Department - Regional Training Center

Elk River, MN

Date:

1-Aug-17

Potential Costs

			Low	High	Remarks
I. Site Acquisition					
Preferred Site		\$0	\$0		
Other Sites					
Sub Total			\$0	\$0	
II. Site Development					
Utility Extensions			15% \$0	20% \$0	
Unsuitable Soils/Rock Removal			\$0	\$0	
Natural Gas Extensions			\$0	\$0	
Storm Water			\$0	\$0	
Site Improvements (hardscape)	5%-10% of building costs		\$158,836	\$336,638	Typical hardscape
Sub Total			\$158,836	\$336,638	
III. Building Construction Costs					
	Size	Cost/SF			
RS Means (20165)	14,677	\$196.66		\$2,886,381	Building Only
Five Bugles Historic (2016/17)	14,677	\$185.40	\$2,721,118		Building Only
Cold Storage	3,000	\$151.87	\$455,610	\$480,000	Tempered construction
Sub Total			\$3,176,728	\$3,366,381	
IV. Furniture Fixtures and Equipment					
FF&E	Allowance		\$25,000	\$35,000	Assumes mostly new
Specific Equipment by Owner			\$0	\$0	SCBA, Exercise, vehicle exhaust
Others			\$0	\$0	
Sub Total			\$25,000	\$35,000	
V. Communications and Technology					
Technology	Allowance		\$15,000	\$20,000	Data systems, backbone, patch panels
Communications			\$0	\$0	Radio, Tower, Repeaters, Etc.
Audio Visual Equipment	Allowance		\$0	\$0	
Sub Total			\$15,000	\$20,000	
VI. Contingencies, Inflation and Other Costs					
Inflation to mid-point of construction	3%-5% total construction cost		\$178,905	\$187,901	Assume spring of 2018 construction start
Owners Contingency	10% of total construction costs		\$355,447	\$394,592	Unforeseen Conditions, Owner Changes, E&O
Sub Total			\$534,352	\$582,493	
VI. Professional Fees and Legal					
Architectural/Engineering	12% of Construction Costs		\$409,268	\$450,962	
Geotechnical Studies			\$15,000	\$25,000	
Commissioning			\$0	\$0	
LEED/Sustainability			\$0	\$0	
Hazardous Materials			\$0	\$0	
Testing and Inspections			\$15,000	\$25,000	
Legal	2.5-4% of Costs		\$80,918	\$136,855	Cost of borrowing, Att. Fees, etc.
Sub-Total			\$520,186	\$637,818	
TOTALS			\$4,430,102.33	\$4,978,329.99	

FIRE FACILITIES ASSESSMENT

The following conditions report examines two aspects of the existing station; physical condition of the infrastructure and operational characteristics of the facility. These should be considered together when making decisions regarding the long term disposition of these facilities.

Station No. 1 415 Jackson Ave NW



Fire Station No. 1 was originally constructed in 1972 as a 3 bay station with drive through bays. It has been expanded twice increase the capacity for the fire department (1989) and to add space for Elk River Ambulance Service (2006). The facility has six apparatus bays dedicated to Fire and one dedicated to the Ambulance Service.

PHYSICAL CONDITION:

Building Envelope: This facility is predominantly a masonry load bearing structure with metal bar joists and metal deck for a roofing structure. Visible elements of the buildings superstructure, including exterior masonry walls appear to be in good condition.

Exterior doors and windows are in good, operable condition. Most windows are aluminum with insulated glazing.

The roof of the EMS portion is original to its construction (2006). The remainder of the roof was replaced in 2013. Both remain in serviceable condition.

Interior Fit and Finish: The facility is very clean and in good repair. The apparatus bay floors, walls and ceilings appear to have been recoated since construction. The support areas of the fire department however have seen heavy traffic and appear to be reaching the end of their useful life. Specifically, the kitchen area is small, cramped with dated cabinetry, counter tops and trim.

Only the 2006 addition provides ADA accessibility. Any major construction on the facility would require updating.

Mechanical/Electrical Infrastructure – A number of the buildings systems are original to its construction. Of most concern is the building’s electrical system. The facility relies on a number of inefficient HVAC systems to provide heating and cooling. The Office and training rooms are heated with aging gas fire roof top units. The apparatus bays are heated with ceiling mounted, gas fired heating units supported by air handlers. More efficient systems are available that will improve indoor air quality, reduce energy related costs, and reduce maintenance. Specifically, any new stations should consider an in-slab heating system for the apparatus bay. These systems provide heat at the ground level, dry the floor and equipment faster and are more efficient to operate than other systems.



The electrical service has reached its capacity. This single phase service is, however, inappropriate for the use; much of the support equipment for the department requires a three phase service. Accommodations were recently made in order to purchase a new SCBA Compressor unit due power concerns.

The building is not sprinklered which was compliant at the time of construction, but would not be compliant today. Any major work to the building should include adding a sprinkler system.

OPERATIONS

Drive through operations – Drive through fire stations are safer and more efficient than back-in stations. Safely backing a fire truck into a station requires a minimum of 3 personnel who have been trained in the specifics of the operation. This becomes even more unsafe when combined with Personal Protective Gear (turn out gear) stored on the apparatus floor. Station No. 1 has some drive through bays (2 of 6), but the approach that creates the drive through uses the parking lot for a neighboring property. If this situation were to change the department would be severely hampered by stacked equipment that could not be easily accessed. This condition should be resolved with an easement to allow this condition as long as the station is to remain.



The apparatus bay doors are small (12’X12’) as are the bay widths with some as narrow as 15’-4”.

Lot size – The existing facility, parking, drives, and aprons currently occupies the entire site. Fire trucks have large turning radii. A full department turn out for a fire call or training event could entail 35-40 members and staff at the station. Adequate training requires the deployment of vehicles on the aprons and the attachment and deployment of hoses and other equipment. There is currently no room for these activities and no opportunity to acquire more space.



Personnel and Equipment Decontamination Spaces – Recent studies related to the prevalence of cancers within the fire service is raising awareness of the contaminants

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A Division of Wendel Companies



released during fire events. Proper decontamination of equipment and personnel. Station No. 1 does not have appropriate facilities for current best practices. Installation of such might be cost prohibitive given the facilities age. Some of the specific challenges include:

- No showers or personnel decontamination spaces.
- Turnout gear is stored in the apparatus bays leading to increased contamination.
- Space for cleaning of gear, including trucks is limited, and shared with other uses.
- No direct vent exhaust available for trucks.

Staff Support Spaces – Staff support spaces such as Day Room and Office/Sleeping Rooms do not exist. Adding them would require reductions in other spaces that are needed or additions for which there is not room on site. Future construction at other Elk River Fire Department facilities is recommending construction of these spaces which will lead to inequities in the overall department.

Training – Training for fire departments comes in two types, classroom style and physical training. The facility has a small training room, but will not sit the entire compliment that shows up for a training. There is no space dedicated to the physical training activities such as hose and ladder drills, stairs, standpipes, confined space, etc.

Location – The station location study indicates that this facility is correctly located for the current demographics of Elk River. However, it there is response overlap with Station No. 2 and does not provide adequate response to the northern reaches of the City. A time can be envisioned when a station will be needed north of Station No. 1, and when fewer of the department’s personnel live within timely reach of the station. Also, it is located relatively close in both time and distance to Station No. 2 making a large percentage of its response redundant to that station.

Energy Efficiency – Energy usage was not a major consideration in building construction in 1972. Those portions of the building certainly do not meet current energy codes. Any major updating of the facility would require some energy usage improvements. Newer portions, with the possible exception the EMS addition are likely to only be slightly better performing.

RECOMMENDATIONS

Recommendation No. 1: Obtain an easement allowing the current drive through situation to continue to protect the department from a sudden change in operations due to change in that situation.

Recommendation No. 2: Station No. 2 is newer, serves as the Department Headquarters, is well located at the Government Center and will continue to serve the department well. Station No. 1 on the other hand is older, landlocked, and is not providing coverage that it could for the City. Future planning should assume replacement of Station No. 1 in the next 10 years. Minimize maintenance to repair where possible and replacement only when necessary.

Station No. 2
13073 Orono Parkway NW



PHYSICAL CONDITION

Building Envelope: Station No. 2 shares space in the Public Safety Building with the Elk River Police Department. It appears to be well constructed of load bearing masonry construction with metal bar joist and metal deck roof structure. It was constructed in 2003 and is well within its operating life, though some systems may be expected to need replacement in the coming years.

Exterior doors and windows are in good, operable condition with aluminum windows with insulated glazing.

The roof is original to its construction and within its operational limits.

Mechanical and Electrical Systems: The HVAC system is a Geothermal heat exchange system with a variety of heat pumps providing point of service control. This system seems to be operating well all though there are some reports of failing heat pumps in random areas of the building; which should be considered normal for the life of these systems. The building is sprinklered.

No concerns have been reported with the heating or electrical systems beyond normal maintenance.

OPERATIONS

Station No. 2 operates as the department's headquarters station. Changes made in recent years have reorganized the administrative offices to better function for that role. Otherwise the facility functions

well in its role as a fire station. There are however several challenges at this facility that should be addressed:

Staff Support Spaces: There are no spaces dedicated to the support of the Paid-On-Call staff such as Day Room, lockers and showers, equipment and personnel decontamination, office/living spaces. Paid-On-Call staff provide a great value to the City of Elk River. Providing spaces for them to clean up after fire calls and drills, to share a meal and decompress are critical to the physical and emotional health of the department. Creating spaces that the department wants to and can use at all hours provides the City with a ‘manned’ facility, greatly reducing response times.

Personnel and Equipment Decontamination Spaces – Recent studies related to the prevalence of cancers within the fire service is raising awareness of the contaminants released during fire events. Proper decontamination of equipment and personnel. Station No. 1 does not have appropriate facilities for current best practices. Installation of such might be cost prohibitive given the facilities age. Some of the specific challenges include:

- No showers or personnel decontamination spaces.
- Turnout gear is stored in the apparatus bays leading to increased contamination.
- Space for cleaning of gear, including trucks is limited, and shared with other uses.
- No direct vent exhaust available for trucks.

Training: The Department’s training program has been very successful and is seen as a revue generating program in the future. This will require expansion of the training room. There is currently no onsite physical training capability, nor is there room on site. This activity should be provided at other new stations as they are constructed.

RECOMMENDATIONS

Recommendation No. 1: Add support spaces (office, dayroom, kitchen, showers and lockers) similar to those recommended for the new East Station. This will allow the department to continue with best practices in their operations.

Recommendation No. 2: Implementation of Recommendation No. 1 will construct a kitchen at this facility as part of the addition. The existing kitchen area can then be used to enlarge the training room.



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