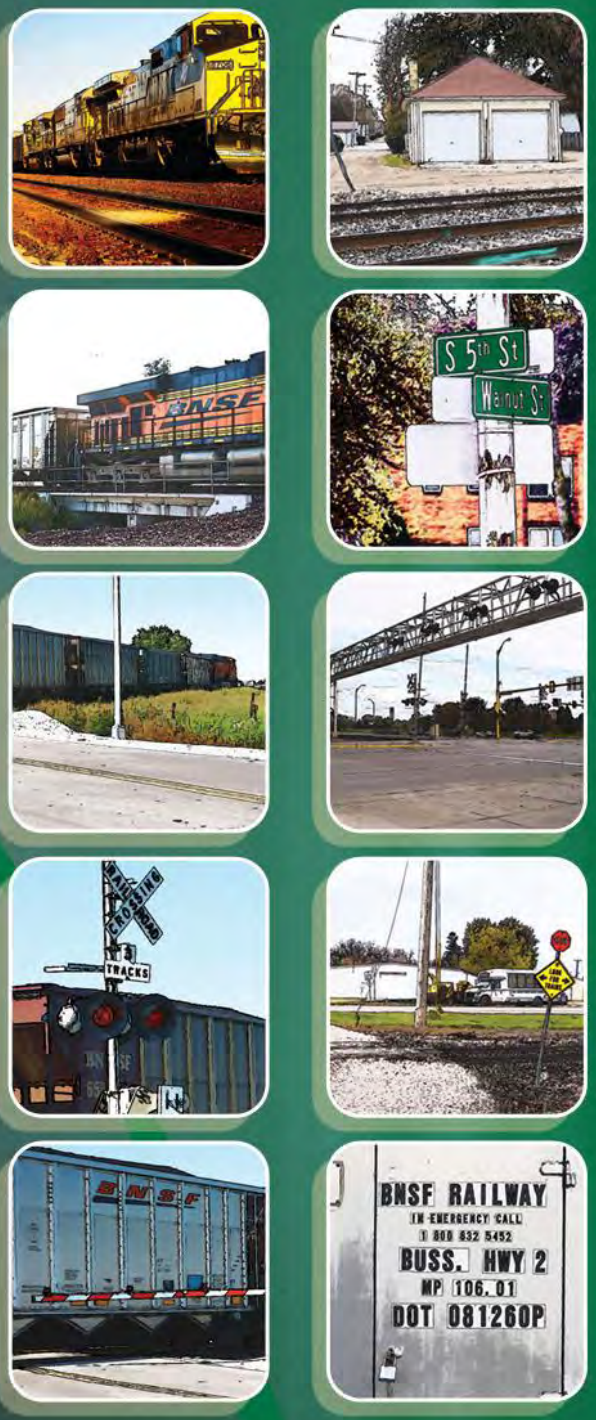
M.P.O. M.P.O. M.P.O.

Grand Forks - East Grand Forks
Metropolitan Planning Organization

Grand Forks – East Grand Forks Freight Rail Access Study

Final Report



OLSSON ASSOCIATES | SRF Consulting Group, Inc.

Table of Contents

Table of Figures

Executive Summary

> *"Preparation for successful freight facility development begins with an understanding on the part of the community and local government of community vision and goals and the logical steps that need to be taken to move the community toward that development. A vision is not just words on paper, but clear understanding, developed in a collaborative process, of how the community sees itself in the future."*
>
> *- Freight Facility Location Selection: A Guide for Public Officials*[1]

Land uses that generate large amounts of freight are typically key sources of income, jobs, and tax revenues that drive local and regional economies. However, if not carefully planned, the many positive benefits from freight-generating land uses can also create significant dis-benefits such as noise, air quality problems, traffic delays, infrastructure damage and safety issues. In conducting thus Rail Access Study, the Grand Forks-East Grand Forks (GF/EGF) MPO took the first steps to include freight issues in their planning process. For the GF/EGF Region, an important first step in identifying rail served land uses was the issue of property locations that provide the best access to existing railroad infrastructure. In response to the stakeholder concerns heard during the LRTP process, the GF/EGF MPO issued a Request for Proposals (RFP) in February of 2013 to seek assistance in identifying property parcels in the area with the potential for future rail served industrial use.

At the start of the study, more than 500 property parcels were identified in the GF/EGF area that held the potential for future commercial / industrial development. Through an analysis of key variables such as ease of access to the highway network, utility availability and willingness to sell; as well as, stakeholder outreach and community involvement, a list of sixty-four viable properties has been identified. The next steps in this process will depend on expressions of *needs* by potential businesses looking to develop facilities with access to rail services. Business location decisions start with the identification of a need, and through the study effort public officials in the GF/EGF area will be in a better position to respond to potential new business needs, and support the community through better planned economic development.

An important consideration in the context of the GF/EGF area is its location relative to the BNSF Great Northern Corridor mainline rail, which traverses the northern states between Chicago and ports of the Pacific Northwest. This mainline also serves the Bakken oil fields which have resulted in a surge in the number of rail cars hauling crude oil on the BNSF mainline tracks that pass through GF/EGF. Currently, BNSF operates a yard in Grand Forks off Demers Avenue. This yard provides carload service, often considered the traditional means of moving goods by rail for shippers that use a relatively small number of cars. In discussions with BNSF during the study process, the railroad indicated that when considering new services in GF/EGF, preferences would be given to unit train services. Unit train services offered by Class 1 railroads refer to trains typically hauling 100 -120 cars carrying a single commodity between a single shipper and a single receiver.

Stakeholder Involvement and Public Outreach

Outreach with stakeholders in the GF/EGF Region occurred throughout the study, four community meetings were also held, and opportunities for public input were also provided through an interactive website maintained by the GF/EGF Community Foundation. The purpose of stakeholder interviews was twofold; first, to determine

[1] National Cooperative Freight Research Program; NCFRP Report 13. *Freight Facility Location Selection: A Guide for Public Officials,* pg. 20. 2011.

the current level of rail services in GF/EGF, and second, to determine how improved access to rail services might impact the area's current transportation options.

Businesses interviewed during the study included eight rail shippers, two regional motor carriers and BNSF. Regional businesses value existing rail service for its cost effective access to national and international markets. However, some businesses were experiencing delays for cars that were blamed primarily on increases in oil traffic but they also acknowledged recent improvements by BNSF had reduced delays on some subdivisions. Trucking companies noted relatively few issues with the GF/EGF street transportation network, but noted some desired updates including Mill Road and 48th Street North. Problem intersections included 42nd and DeMers and the intersection of Gateway Drive (US 2) and Washington Avenue.

BNSF provided information about train volumes on each of the several mainlines running through GF/EGF, as well as general volume information for the major rail served businesses in the study area. BNSF also suggested the best sites for new rail access would be north of Grand Forks due to the flat terrain and lower costs for land and associated rail infrastructure. The railroad views the GF/EGF Region as a good business opportunity for BNSF provided new facilities are designed for unit trains, suggesting that individual or multiple car shipments can be handled through the existing yard off DeMers Avenue in Grand Forks.

Public officials and neighborhood groups were generally in agreement that areas north of Grand Forks were most attractive for future rail served developments. Representatives of the University of North Dakota (UND) raised concerns about more frequent rail traffic through the DeMers yard which lies between the main campus and a growing number of student housing developments. In 2012 a student died taking a popular short-cut crossing tracks away from the designated crossing. UND is suggesting a pedestrian overpass from north to south over the rail yard to help manage problems created by students crossing the tracks.

Site Viability Analysis

The method for determining preliminary site viability was based foremost on proximity to existing rail lines and the following factors:

- **Vacancy**: Each parcel was screened to determine if the parcel was vacant using aerial photography.
- **Railroad Crossings:** Parcels were screened to avoid new at-grade railroad crossings that would be required to access a parcel.
- **Useable Acres:** Total developable acreage accounting for wetlands and floodplains.
- **Zoning/Future Land Use:** Parcels currently zoned and/or guided for future industrial uses
- **Transportation Network Access:** Access to major transportation corridors (i.e., U.S. Highway 2, Interstate 29, and other Truck Routes/10-Ton roadways)
- **Utilities:** Access to existing urban and rural services (i.e., water and sanitary sewer)

Maps displaying the study area, parcels, viability score, and properties selected for further analysis are found in **Appendix A** of the final report**.**

The initial site viability analysis reduced the number of available properties from 568 to 66 parcels owned by 31 unique landowners. A second round of analysis was conducted to further differentiate the most suitable parcels by exploring; w*illingness to sell, acquisition cost, infrastructure cost,* and r*ail design flexibility*. Two land-owners indicated they did not wish to sell reducing the viable list to 64 properties, however to maintain a

high-level of flexibility for future development, the other criteria were not used to cull the list of properties further .

Conceptual Rail Design Methodology

Seven rail access design concepts were developed for six of the highest ranking parcels. Information on each of the parcels for which concepts were developed are shown in the table below. Property location, owner, size and assessed value are listed for each parcel.

High Ranking Parcels and Preliminary Rail Access Design Concept Costs

Parcel #	Township/City	State	Owner	Acres	County-Assessed Value	Est. Rail Design & Construction Cost
165 *(2 concepts)*	Falconer Township (Grand Forks)	ND	Bill Lee (Trustee of Avonne Goodman Trust)	131.80	$143,600	Concept 1: $2,766,015 Concept 2: $3,431,164
243	Falconer Township/GF	ND	Ardell & Ina Korynta	126.50	$156,800	$2,735,303
93	Town of Huntsville Township/EGF	MN	Keith Driscoll	108.12	$344,900	$1,889,528
238	Brenna Township/GF	ND	Bateman Farms	73.50	$85,700	$2,638,678
223	Grand Forks Township /GF	ND	Grand Forks Region EDC	48.29	$65,500	$3,341,915
250	City of Grand Forks	ND	Minnkota Power Cooperative, Inc.	20.00	$25,300	$2,109,609

Street Network Analysis & Improvements

An important component of this study is the impact of rail freight moving on local street network to be loaded or after being unloaded from the rail system. Proximity to existing truck routes was a key criterion for narrowing the list of viable properties. As a result, while the number of individual viable properties remains sizeable, many are adjacent and have similar attributes in terms of street network access to existing truck routes. Because of this, most of the street network improvements identified for new or improved access to individual parcels are sketch-level design improvements that would benefit truck access overall on the street network in the GF/EGF area.

To analyze the various components of a safe and efficient freight roadway system, the study team adapted a methodology developed for the *Twin Cities Metro Area Freight Connectors Study* performed for the Minnesota Department of Transportation.[2] The study identified various types of features and the characteristics that, combined together, provided an adequacy score for any route that was analyzed. The features reviewed for the GF/EGF Freight Rail Access Study included:

1. Bridge Condition
2. Railway Crossings
3. Turning Radii
4. Vertical Clearance
5. Lane Width

[2] Twin Cities Metro Area Freight Connectors Study. Minnesota Department of Transportation, (Wilbur Smith Associates and SEH Consulting), October 2006. http://www.dot.state.mn.us/ofrw/PDF/TCMAfreightConnectorsFinalReport.pdf

6. Roadway Weight Capacity

These six roadway design features can be assigned point values based on their ability to meet design standards best suited to accommodate large trucks. This performance template can then be applied to develop a performance score card for existing or new truck routes in the GF/EGF Region. Performing a detailed analysis for each of the truck routes in the study area was beyond the scope of this study, and in some cases the necessary data to populate the score card will require additional field data collection.

Impacts on Quiet Zones

Two additional impacts on the street network from train traffic include delays/wait times at railroad at-grade crossings, whose impacts increase with more and longer trains, and potential impacts on quiet zones from increased train traffic traveling through the region. As part of the study impacts from any future proposed developments were examined relative to existing quiet zones. There are currently five quiet zones in the City of Grand Forks, that include 10 total crossings. The FRA Quiet Zone Rule states that each quiet zone must be at least one-half mile in length with one-quarter mile of clearance between each quiet zone crossing and the next adjacent non-quiet zone crossing. Through the quiet zone evaluation process, three highway-rail crossings on the west side of Grand Forks and one crossing along the Glasston Subdivision (paralleling 42nd Avenue) were identified as having potential for quiet zone impacts based on developable parcels located nearby. The crossings potentially impacted include:

- **West Wye:** Demers Avenue W. (086876F)
- **East Wye:** Demers Avenue E. (086875Y)
- **North 55th Street:** N. 55th Street (086750Y)
- **Hillsboro:** Gateway Drive/USH 2 (062505C)

There are two other crossings along the Hillsboro Subdivision (6th Avenue North and University Avenue) that are part of the quiet zone; however, there were no developable parcels identified near these crossings so they would not be impacted.

There are three unique quiet zone scenarios worth noting in regards to the addition of a new crossing. First, if a new crossing is added outside of the one-quarter mile quiet zone extent, it may be installed as a non-quiet zone crossing and will have no impact on the existing crossings. Second, if a new crossing is added inside of the one-quarter mile quiet zone extent, it must be incorporated into the adjacent quiet zone crossing. The new crossing would be subject to all of the regulations specified in the FRA Rule. Additionally, the one-quarter mile clear zone would extend beyond the new crossing, increasing the impact area of the quiet zone.

In a third potential scenario, if one or more non-quiet zone crossings are implemented outside of the original one-quarter mile clear zone, but at a later date, a new crossing is implemented inside of the clear zone, it would be necessary that the adjacent crossings be incorporated into the existing quiet zone until a one-quarter mile gap is established between the last quiet zone crossing and the next adjacent non-quiet zone crossing.

Potential Street Network Improvements

Strategies to accommodate potential increased traffic related to improved and/or expanded rail access were also identified by the study. Because the list of viable properties remains relatively diverse, the street network improvements identified focused on improving the overall freight network in the GF/EGF area, beneficial for all shippers (including any potential new or expanding rail-served business), instead of targeting specific users.

As part of the 2040 Long Range Transportation Plan, projects were identified that would solve critical freight issues. Throughout the street network analysis and stakeholder outreach, many of these projects were confirmed as important and beneficial for freight by public and private stakeholders. The list of those projects is included in the body of the final report, and in the 2040 LRTP.

One notable intersection identified in the LRTP as an emerging issue, especially for trucks, is Gateway Drive, Washington Street and 5th Street in Grand Forks. The intersection also includes a railroad crossing. The timing and spacing of the stoplights, as well as heavy traffic and challenging truck turns, make this a particularly strong candidate for improvements. The LRTP identifies some improvements in the Illustrative Project List that include reconstruction, new traffic signals and adding turn lanes. However, as part of the Freight Rail Access Study, three new concepts for the intersection to improve both freight and overall traffic movements were also presented. The concepts identified were designed to take a new approach to fixing this intersection. Concept 3, in particular, is a dramatic (and costly) solution that would eliminate the at-grade railroad crossing, which would only be necessary if the North Dakota Mill or another business added traffic to the Mill Spur or the spur itself was extended north for further rail development.

The study team also performed an analysis of turning radii on each intersection on truck routes in GF/EGF. Using the roadway design criteria outlined earlier, each intersection was characterized as 'Preferred' or 'Less than Adequate'. Preferred intersections are able to accommodate tractor semi-trailer combinations with a 67 foot wheelbase or longer; Less than Adequate intersections cannot accommodate tractor semi-trailer combinations with a 67 foot wheelbase without encroachments into adjacent lanes. The 'Less than Adequate' intersections are candidates for improvement, which, depending on the cost and availability of the right of way, can be an inexpensive way to improve the safety and flow of truck traffic on freight routes. Costs of these types of turn lane/curb improvements run between $50,000 and $200,000 each.[3] Those intersections found be to be less than adequate included:

- 32nd Avenue & Columbia Road
- US 2/Gateway Drive & Columbia Road
- US 2/Gateway Drive & US 81/Washington Street

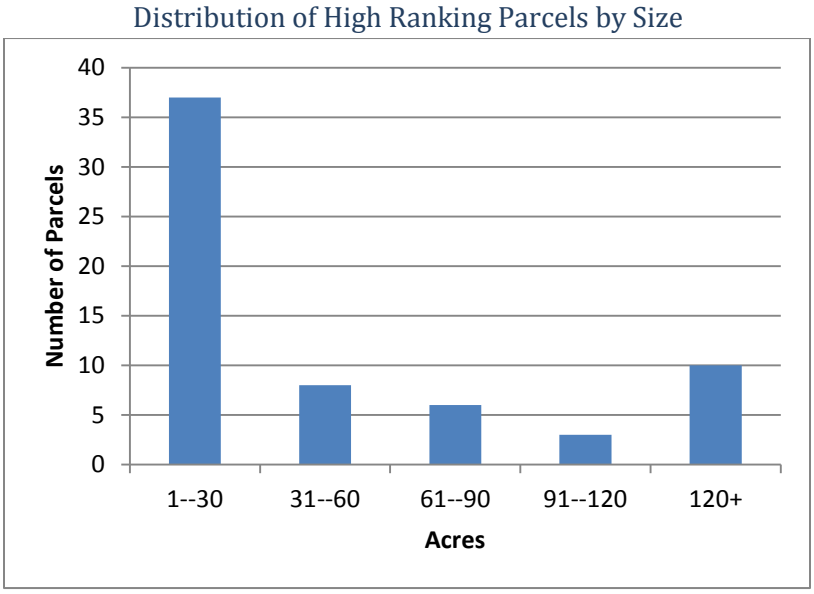
Conclusions and Recommendations

This study undertook a broad stakeholder outreach effort and site viability analysis to identify properties in the GF/EGF area that are available and best suited for providing industrial/commercial access to rail services on the BNSF Railway. The study also analyzed the local street network and developed conceptual designs for rail access for a several sizes of property developments. This forward thinking effort is the first step toward the greater inclusion of freight in the MPO planning process as well as the deliberate inclusion of freight in the broadly defining the future vision of GF-EGF. However, this study should be viewed as the starting point and an effort that will need additional attention to bring about a comprehensive and coordinated plan for developing future rail served industry in the GF-EGF Region.

The study effort started with over 500 potential properties and narrowed that inventory by roughly 90% to those properties most suited for future rail served development. However, of the more than 60 remaining properties, many do not fit well the BNSF model of handling unit train-sized facilities. It must be noted, however, that many of the parcels identified are adjacent properties belonging to a single owner. As a result, the inventory

[3] These cost estimates are intended only as a rough indication of costs; they do not include traffic signal location or right-of-way acquisition.

provides ample sites for future land use flexibility, but may need to be further delineated through continued discussions with BNSF. The following bar chart shows the distribution by size of the 64 sites identified by the study.



As noted, there are many small, adjacent parcels owned by the same owner; there are also several parcels greater than 120 acres. This diversity has the ability to accommodate a variety of potential shippers. However, BNSF Railway, in their input to the study, noted that in developing service to new sites they generally prefer large land parcels that can accommodate full unit train loadings. This is a direction common among many Class I railroads who are seeking to increase productivity on existing infrastructure, such that their operations are not interrupted by switching many different small shippers into one manifest train (that carries multiple different products). This further outlines the need to work with BNSF to verify what is possible for each of the sites identified in this study, but also to identify at least one 400+ acre site that could accommodate a large shipper. Adding one or more of those sites to the inventory identified herein would allow for a more comprehensive set of options for potential businesses and would allow the MPO to plan ahead for the accommodation of a large shipper within the city's overarching goals and development plan.

Recommendation 1: Engage in detailed discussions with BNSF regarding local service possibilities and development

This study provided the MPO with a workable list of sites best suited for rail access in GF/EGF. Another important step will to work with BNSF to confirm the rail access possibilities of those sites, favor the sites which would work best within BNSF's daily operations, and eliminate any sites which would adversely affect operations or otherwise be not ideal for rail development. Discussing both current operations and outlook for the future level of service with BNSF is vital as well. Further developing a positive working relationship with BNSF is another positive outcome of this effort.

Recommendation 2: Work to identify one or more larger parcels (400+ acres) to accommodate a unit train loading facility

As has been discussed at various points throughout this report, BNSF's preferred model is large, unit train loading facilities which load over 100 cars with the same commodity (often grain, coal, oil, chemicals, or other agricultural products). This model allows for ideal efficiency for the railroad; instead of picking up a few cars at many small sites, the train is full when it enters the network and travels to its destination without any stops. The advantage of economies of scale is beneficial for both the shipper(s) and the railroad. Though smaller sites are critical for shippers and provide business to BNSF, and some can physically accommodate a loop track with which to load large trains (for an example of this, please see **Appendix A** for the rail access development concept for Parcel #243, which is only 127 acres), identifying one or more 400+ acre sites in the GF/EGF region would complete the MPO's comprehensive list of rail access development options with which to recruit businesses, and also would provide an opportunity to plan ahead and incorporate the possibility of a site and facility of this size into the region's planning process.

Recommendation 3: Create a Rail-Served Industrial Development Marketing Package

After the current study has been vetted by BNSF and an accurate and comprehensive list of sites and their characteristics is gathered, creating a marketing package that is clear, concise and visually appealing would provide the cities and MPO with a powerful tool to help recruit and inform businesses. This step would help ensure the information gathered through this and other relevant studies would be put to use in attracting businesses to competitive locations in the area while directing them to the sites with the least negative public impacts.

Recommendation 4: Monitor crossing delay due to train traffic

The Bakken oil field development is quickly changing the landscape of North Dakota. The number of rail carloads hauling crude oil in the U.S. surged 83% from 2011 to 2013.[4] For Grand Forks/East Grand Forks, this means more trains with over 100 cars are traveling through town each day, and because of their length, these trains which take a longer time to clear crossings. Additionally, rail shipments are increasing from other sources, and more unit trains may be coming to the region if and when the Northern Plains Nitrogen plant begins operation (currently set for 2017). While this means more jobs and increased economic activity, it also could create more and/or longer delays at railroad crossings. As discussed in the report, GF/EGF already has some significant wait times at certain crossings. To avoid increasing those wait times at more crossings in the future, delays at crossings should be monitored and recorded in a consistent format and periodically evaluated to capture how/if changing rail traffic is affecting delays. This provides the MPO with better information which it can use in discussions with BNSF, but also methodically builds the case for state or federal dollars to construct grade separations at the most problematic crossings. The MPO could also pursue an in-depth study of current train traffic and attempt to forecast that into the future, but predicting future traffic with accuracy is extremely difficult, as shown by the recent oil boom.

Recommendation 5: Perform field collection to obtain data on local truck routes

In Section 7 of this report, which details the street network analysis and data collection, it is noted that some of the data necessary to evaluate the street network in Grand Forks/East Grand Forks is unavailable and/or not collected by any unit of government. These include turning radii, lane width, and weight capacity. The consultant team relied upon virtual evaluation of intersections, discussions with MnDOT and NDDOT, and assumptions based on current design standards to estimate these factors for the GF/EGF street network

[4] Association of American Railroads; reported by the Associated Press March 13, 2014.

evaluation. For a more precise and meticulous evaluation, data on turning radii, lane width and weight capacity will need to be gathered; however, these factors would require field collection. A full complement of accurate and current data is necessary to evaluate the regional street network's ability to safely and efficiently accommodate freight transportation. This effort would prove particularly helpful when evaluating the route(s) a potential new or expanded business would use to bring trucks in and out of its facility.

1. Introduction

> *"Preparation for successful freight facility development begins with an understanding on the part of the community and local government of community vision and goals and the logical steps that need to be taken to move the community toward that development. A vision is not just words on paper, but clear understanding, developed in a collaborative process, of how the community sees itself in the future."*
>
> *- Freight Facility Location Selection: A Guide for Public Officials*[5]

Land uses that generate large amounts of freight are typically key sources of income, jobs, and tax revenues that drive local and regional economies. However, if not carefully planned, the many positive benefits from freight-generating land uses can also create significant dis-benefits such as noise, air quality problems, traffic delays, infrastructure damage and safety issues. In conducting this Rail Access Study, the Grand Forks-East Grand Forks (GF/EGF) MPO took the first steps to include freight issues in their planning process. This study also serves to help ensure better understanding between public and private sector stakeholders about future directions the region will take related rail freight land uses and economic development.

For the GF/EGF Region, an important first step in identifying rail served land uses was the issue of property locations that provide the best access to existing railroad infrastructure. In response to the stakeholder concerns heard during the LRTP process, the GF/EGF MPO issued a Request for Proposals (RFP) in February of 2013 to seek assistance in identifying property parcels in the area that have the potential for future rail served industrial use:

> *The purpose of the study would be to work with stakeholders to identify property that has potential for accessing the railroad. The study will locate potential properties in the metro area that would fit into the criteria the railroad has for accommodating access. This would involve coordinating with the local land use plans to ensure potential properties have the appropriately designated land use. The study would include the planning level concepts of how rail access could be accomplished, along with the appropriate planning level costs.*[6]

At the start of this study, more than 500 property parcels were identified in the GF/EGF area that held the potential for future commercial / industrial development. Through an analysis of key variables such as ease of access to the highway network, utility availability and willingness to sell; as well as, stakeholder outreach and community involvement, a list of sixty-four viable properties has been identified. The next steps in this process will depend on expressions of *needs* by potential businesses looking to develop facilities with access to rail services Business location decisions start with the identification of a need, and through this study effort public officials in the GF/EGF area will be in a better position to respond to potential new business needs, and support the community through better planned economic development.

[5] National Cooperative Freight Research Program; NCFRP Report 13. *Freight Facility Location Selection: A Guide for Public Officials,* pg. 20. 2011.
[6] Grand Forks –East Grand Forks Freight Rail Access Study; Request for Proposals for Transportation Planning Services. February, 2013.

2. Background

In 2012, while engaging stakeholders during public involvement efforts in support of the Grand Forks/East Grand Forks (GF/EGF) MPO Long Range Transportation Plan (LRTP), issues were raised regarding freight transportation by rail and the so called "*last mile"* needs of trucks accessing the rail network.

There are many considerations in conducting due diligence for land uses that can be serviced by railroads. NCFRP Report 13, *Freight Facility Location Selection: A Guide for Public Officials* suggests six key issues for public agencies wishing to successfully development rail served facilities:

1. Understanding business supply chains, carriage requirements, and the flow of goods.
2. Providing good connections to transportation infrastructure and operating networks.
3. Appreciating the competitive advantages and disadvantages among supply chains, among freight carriers, and among the facilities they use.
4. Examining how proposed developments can affect economic development and local conditions such as traffic flows, noise levels, or utility capacity.
5. Developing land use regulation that allows for development, efficient operation, and transportation connections while maintaining and promoting sustainability.
6. Building public willingness and support of these projects.

It is also important to understand that rail services offered by Class I railroads should be thought of as several distinct services, including; manifest or carload service, unit train service and intermodal service. Each of these rail services have very different characteristics, and require very different "foot prints" for track layout and space for equipment needs. Currently, BNSF operates a yard in Grand Forks off Demers Avenue. This yard provides carload service, often considered the traditional means of moving goods by rail for shippers that use a relatively small number of cars. *Manifest trains* are assembled from a variety of cars types including boxcars, flatcars, hoppers, gondolas and other specialized cars travelling in mixed trains of different commodities, going to different origins and destinations. Manifest train service is relatively slow, since cars must be sorted between trains at classification yards. Carload rail terminals usually contain numerous sidings to sort rail cars by destination. An example of this service might be a food manufacturer who orders several cars of bulk sugar each month by rail.

Unit train service offered by Class 1 railroads refer to trains typically hauling 100 -120 cars carrying a single commodity between a single shipper and a single receiver. Unit train service is used for large volume commodities like coal, grain, automobiles, and increasingly crude oil, where the volume of goods is sufficient to fill an entire train of the same commodity travelling from one origin to one destination. Unit train service is much faster than manifest service, and is a far more efficient utilization of Class I railroad assets. Demand for unit train service has grown in recent years with demand for the underlying commodities, and the desire of Class I railroads to maximize the utilization of their assets.

The Bakken oil development and the lack of a well-developed pipeline network to serve the Bakken region has resulted in a surge in the number of rail cars hauling crude oil on the BNSF mainline tracks that pass through GF/EGF. During the past several years capacity issues have resulted in service delays and more recently detours of Amtrak trains. In early 2014, after meeting with North Dakota's Congressional delegation, BNSF

pledged changes and new investments in North Dakota during 2014 of $600 million.[7] As will be discussed in the next section, BNSF indicated during an interview that when adding new services in GF/EGF, preferences will be given to unit train services.

The study process undertaken to assess the viability of potential rail served properties involved eight tasks broken into three phases:

1. **Understanding the Context**: During this initial phase GIS data was gathered and mapped to visually show the existing rail network through GF/EGF, as well as, current and future land use and zoning features in the study area. During this phase initial public meetings were held, and the majority of stakeholder outreach was conducted. The result of this phase was the identification of initial properties with potential access to rail, and initial screens to narrow the list of those most viable for rail service.
2. **Develop Concepts:** In this phase two more community meeting were held and outreach continued with a focus on landowners. In this phase the existing truck route network in the region was mapped and analyzed for its capacity to handle higher volumes of large truck traffic. As information about the willingness of landowners to consider commercial/industrial development of their properties was gathered, a variety of rail siding concepts were developed for different land parcel configurations.
3. **LRTP Integration and Final Report:** Based on the truck route analysis projects for improving regional street mobility were identified and compared to projects already in the LRTP. In addition, the available data gathered about the local road network was presented along with a framework for future use as a performance management tool. Finally, the results of the study were summarized into this final report.

The remainder of this report highlights the major study tasks and presents the key findings and recommendations from the study effort.

3. Stakeholder Outreach

The purpose of stakeholder interviews throughout the freight community in GF/EGF was twofold; first, to determine the current level of rail services in the region and second, to determine how improved access to rail services might impact the area's current transportation options. The responses were used to surface all potential advantages/disadvantages, comments, and concerns surrounding particular sites and regions in GF/EGF in order to identify issues and compare potential sites for additional industrial development.

Stakeholders were identified in consultation with the study Steering Committee and recommendations from interviewees. The stakeholders interviewed includes: freight shippers, motor carriers, public agencies, neighborhood groups, and landowners. Three interview guides were created to address the pertinent questions for the first three groups identified above, while customized questions were used for the others.

A total of 20 interviews were completed with the vast majority taking place over a two month period from June through July 2013. Most of the interviews were completed in-person, at participant offices in GF/EGF, while a few were completed via teleconference due to location or schedule issues. Additionally, three public meetings were held, taking place in May, December, and March of 2013. For a full discussion of the project's outreach efforts please see **Grand Forks-East Grand Forks Rail Access Study: Stakeholder Outreach Summary.**

[7] *BNSF to take steps to ease logjam of ND rail shipments,* Prairie Business Magazine, online addition: http://www.prairiebizmag.com/event/article/id/17795/. Published February 12, 2014.

Rail Shippers

Interviews were completed with eight businesses and other entities involved with shipping freight by rail. The variety of the entities interviewed provided a comprehensive view of rail shipping and receiving in GF/EGF and the value it provides to the community. Rail allows businesses to send products all over the world. For example, North Dakota Mill ships flour to cities all along the east coast, serving small craft bakeries and other specialized markets. Access to rail services allows regional businesses to ship internationally as well; for example, Philadelphia Macaroni ships some finished product through containers to places like Singapore, Australia, and Malaysia, among others. Several companies are considering (or have previously considered) expanding their rail access, whether it is through a more frequent switch, adding storage capacity, or physically upgrading or constructing new spurs. One example is JR Simplot, which had a siding that was in poor condition and unused. The plant began shipping by rail just over one year ago after making upgrades to track and redesigning a siding to accept larger cars.

A number of rail service issues did surface during interviews. Some businesses reported experiencing delays for cars that until recently had been uncommon. Most of the shippers interviewed contributed delay on increases in oil traffic (and related industries) on the line. Shippers also noted that delays had become lengthier; and one business had purchased additional rail cars because they were not receiving empty cars back fast enough to meet demand. Other businesses had also experienced equipment delays on the Devils Lake Subdivision. However, it was also noted that a number of recent improvements by BNSF had reduced the time to receive cars from Minot, ND from seven days to one. Fringe issues included communication problems with the central management of the railroad. Roadway improvements were another concern voiced by shippers. The most often mentioned road improvement was to extend 36th Street either west to 42nd Street or north to 27th Avenue.

One major development in the area worth noting is the Northern Plains Nitrogen (NPN) fertilizer plant, a new start facility investment of approximately $1.5 billion. NPN intends to begin operations in 2017. The plant will be shipping about 4,500 cars per year outbound and will be serviced by its own ‘wye’ and loop track in order to accommodate unit trains. Discussions with NPN indicated that early in the development process they entertained shared rail access ideas to their planned rail spur, but these discussions began to slow their project planning, so for now NPN is focused first and foremost on getting their facility online.

A unique concern to the GF/EGF area is the proximity of the University of North Dakota (UND) campus to the existing rail yard and more frequent rail traffic. The UND campus is home to tens of thousands of students, faculty, and staff most of the year, so a leak or derailment, especially of any hazardous materials, could be a serious problem. Other problems include students crossing the BNSF tracks in the downtown yard to access new off campus housing developments that are increasing in popularity. One student died in 2012 when crossing the tracks away from the designated crossing. UND is suggesting a pedestrian overpass from north to south over the rail yard to help manage problems created by students crossing the tracks.

As a rail customer, UND Facilities Management brings coal inbound to their steam plant which services the entire university, the Altru Health Center, and other nearby buildings. The boilers are old and in line for updates and a potential expansion could result in yet more rail traffic in Grand Forks. At one time UND was considering moving the plant and coal storage facility west, away from the center of campus, but the high cost of that option made it unviable.

Motor Carriers

Interviews were completed with two regional motor carriers to learn more about traversing GF/EGF by truck. Both companies noted relatively few issues with the GF/EGF street transportation network. Some updates are necessary, though, in their view. These include Mill Road, which is narrow and old and difficult to navigate for trucks, and both mentioned 48th Street North as a road with lots of truck traffic. Problematic intersections include 42nd and DeMers (mostly creating delays for commuters) and the intersection of Gateway Drive (US 2) and Washington Avenue, which is very busy and slows down further with a high volume of trucks turning left on Washington to access the North Dakota Mill. Expansion possibilities mentioned included south of the current industrial park and the north side of town near Waste Management and Strata Corporation. As far as additional industrial development, the only potential problem raised could be residents' access to the Riverside Neighborhood from Mill Road if more trucks are traveling to the north side of US 2. Increased volume there could also add to the congestion at the Gateway Drive/Washington Ave intersection mentioned above.

BNSF

During the first two months of the study, representatives of BNSF Railway were engaged on several occasions mostly informally during meetings associated with the study. A conference call was also held with the BNSF regional economic development representative. The GF/EGF regional Road Master for BNSF provided information about train volumes on each of the several mainlines running through GF/EGF, as well as general volume information for the major rail served businesses in the study area. He also indicated that three of the mainline tracks have good access for major development opportunities in the future. There are some underutilized properties with existing access or underutilized capacity that present opportunities for expansion including north of American Crystal Sugar in East Grand Forks.

During a conference call with BNSF's Economic Development Specialist the railroad indicated that the best sites for new rail access would be north of Grand Forks due to the flat terrain and lower costs for land and associated rail infrastructure. The AMTRAK route, which is the Devil's Lake subdivision west from Grand Forks and the Hillsboro sub south from Grand Forks would be the most expensive. Remote control switches are now required at a cost of $1.25 million per switch and a unit train loading facility would require two switches and 10,000 feet of rail. BNSF also indicated that East Grand Forks would likely not be as attractive as other areas on the North Dakota side of the river, as the rail parallels Hwy 2 in East Grand Forks, potentially requiring extra crossings, and the business environment is not as attractive in Minnesota as it is in North Dakota. North Dakota has a streamlined business review process which has worked well on numerous recent rail infrastructure improvements.

Overall, BNSF views GF/EGF as a good business opportunity for the railroad provided new facilities are designed for unit trains. Individual or multiple car shipments can be handled through the Grand Forks yard, though he also stated the yard may be limited in adding more manifest train traffic. BNSF indicated unit train facilities would likely require 425+ acres.

Public Agencies

Interviews were completed with six public agencies and nonprofits. Economic development representatives indicated that one of the driving forces behind conducting the study is the desire to increase the region's viability for businesses looking to locate near the Bakken oil filed to service the growing oil and gas industry, as well as attract other businesses that view access to rail transport as a key location factor. It was noted that several businesses had considered GF/EGF over the past couple of years, but decided against locating in the

area for various reasons. While not all of the reasons for not choosing GF/EGF were known, rail access had been mentioned as a factor in some cases.

For many public agency representatives the most significant issue regarding new rail access and higher rail traffic was the ability to maintain existing quiet zones. The work done to implement quiet zones in Grand Forks was noted and also that the areas in which they were installed have seen less noise complaints. All also agreed that efforts should be continued to install more quiet zones, with the Chamber of Commerce noting that East Grand Forks failed to adopt quiet zones when Grand Forks did because of funding issues and hesitation to close a crossing for an access road. Other common issues included complaints about beet trucks during the harvest, and the 42nd/ DeMers intersection which causes significant delays for commuters.

Public agency representatives agreed that the south and southwest areas of Grand Forks ought to remain and continue to grow as residential areas. In their view, the most sensible part of town for industrial development was the north side, specifically north Washington Street (north of US 2). Important points noted were that this area fits with current and future land uses and that trucks have access to I-29 without having to travel through town (by accessing I29 through the north Washington interchange). The Chamber of Commerce noted that southeast of American Crystal Sugar in East Grand Forks could be a possible area for increased industrial development but that the Minnesota side of town is less desirable than North Dakota for tax reasons.

One trend to note is that GF/EGF, through the Chamber of Commerce, has worked hard to develop business relationships with the Bakken area in order to capitalize on the boom in oil activity. Through several trips to the area, a strong partnership has been formed, and now there are 110 GF/EGF businesses doing business with the Bakken area of North Dakota.

Neighborhood Groups

Interviews were completed with two organized neighborhood groups. The representatives for both neighborhood groups were engaged and interested in the study. Concerns focused around noise—train horn noise in particular—and both stressed the benefits of quiet zones and trying to integrate those in to this study. Locomotive engineers sounding their horns at night were a specific concern, especially if the nearby rail lines saw increased traffic from additional industrial development. The other main point of concern was delays at crossings due to trains, though both groups acknowledge that delays are somewhat unavoidable and a part of living in Grand Forks.

Both representatives noted the old charm of Grand Forks and a desire to keep that quality of life unaffected as much as possible while acknowledging that development is generally good for the city. Riverside in particular has many young families with children and safety is critical; also suggested was that the city to add a trail, bike path, green space or some other public benefit if/when additional development occurs. Both groups suggested the government release information and actively work with the public so that residents understand what is going on.

Online Public Outreach—EngagetheForks.com

In addition to meeting with neighborhood groups, an existing public engagement website set up by the GF/EGF Community Foundation posted open questions about future rail access were posted to www.EngagetheForks.com.

Residents and stakeholders were able to visit the site and post answers to two questions:

- *Along existing railroad tracks, where do you think the best site or sites would be for improved freight rail access in the Grand Forks and East Grand Forks Area?*
- *While planning for future freight rail access in the Grand Forks and East Grand Forks Area, what are the key issues you believe should be considered?*

Responses to the first question included suggestions to build a new spur on the north side of town to avoid the Gateway Drive/5th Street/Washington Street intersection, and expanding the existing industrial parks in GF/EGF. The second question elicited several more responses, including suggestions such as:

- Build spur lines to avoid intersecting roads
- Move the rail north of Highway 2
- With any additional railroad development in Grand Forks, pedestrian and cyclist access should be taken into account as well as automobile crossings. Supporting Rails-With-Trails partnerships and adding in additional grade-separated crossings for tracks and the rail yard would go far toward reducing the number of issues the tracks in town cause.
- Trains should be able to travel through Grand Forks without making any noise.
- Move rail yard to industrial park

Landowners

After completing the first round of site analysis, 66 individual parcels owned by 31 unique landowners were identified as the best candidates for expanded rail access in the GF-EGF region. These 31 landowners were given two weeks' notice of a special landowner meeting that occurred December 5, 2013 at the GF/EGF Metropolitan Planning Organization offices. At the meeting, there was a presentation on the purpose, methodology and preliminary results of the study followed by a discussion session in which landowners could interact with high-resolution maps of the highest-ranked parcels and ask questions of the consultant team and MPO staff. Attendees were also provided with a packet that included a copy of the presentation, a copy of Technical Memorandum 1 which details the scoring methodology and inventories each property, and survey that they were asked to return. The survey asked the following questions, in addition to providing space for additional comments:

- *Did the meeting (or packet) address all questions you had about the Grand Forks/East Grand Forks Rail Access Study?*
- *Do you believe the study process for identifying potential rail accessible development properties is fair and unbiased?*
- *Would you like your land parcel(s) to remain as a candidate for future economic development involving industrial rail access?*

Five unique landowners attended this meeting along with one city council member from East Grand Forks. After the meeting, the packets were mailed to the remaining 26 landowners who did not attend the meeting and were given two weeks to respond by mail or phone. Four surveys were returned by mail and two phone calls providing feedback were received. In total, there were 11 responses for a response rate of over 35% (11/31).

Individual responses will be kept confidential per the disclaimer included with the landowner survey. However, the general consensus is that landowners in the GF/EGF region are willing to consider selling or developing their property for expanded rail access. They understand that rail-served businesses are an important part of the region's economy and opportunities exist to increase utilization of this asset through economic development. The purpose and objective of the study was easily understood and supported by all respondents.

Of the 11 responses, only one indicated that they were not interested in selling or developing the parcel in question. The other 10 responses indicated that they would like their property to remain in the study as a potentially developable parcel. This represents a 91% positive response rate (10/11).

Non-responsive Landowners: The project team gathered information from seven of the 20 landowners who did not attend the meeting or respond by phone or email from the Grand Forks EDC. This extra step was taken to further ensure that no parcels identified as potential future development sites should be excluded. Of these seven landowners, six were willing to remain in the study as a potential site. One landowner was identified as currently using their property, therefore unlikely to sell. Two of these six willing landowners were actively willing to develop their property; one had recently sold a piece of land for this purpose; and the last three are public agencies who are open to development on their holdings.

Combining this information from direct interactions with landowners, there were 16 landowners (out of the 18 who responded/information was gathered on) who were willing to remain as candidates for development in the study. The overall breakdown is as follows: out of 31 unique landowners, 16 were willing to develop, two were unwilling (reducing the potentially viable properties from 66 to 64), and 13 were non-responsive/no information was able to be gathered. For a more thorough discussion of the outreach described above, please see the **Stakeholder Outreach Summary.**

4. Preliminary Site Viability Analysis

The following section outlines the methodology used to determine a preliminary site viability analysis for the GF/EGF Freight Rail Access Study. The parcels selected for this analysis were generally located adjacent to existing rail lines and determined by the GF/EGF MPO. Parcels within the study area were first screened to determine their vacancy and direct access to existing rail lines. This screening method is documented below:

1. **Vacancy**: Each parcel was screened to determine if the parcel was vacant using aerial photography, as the parcel data did not include building square footage. Parcels that were identified as vacant will be carried forward for further analysis.
2. **Railroad Crossings:** There is an existing railroad located along the west side of U.S. Highway 2 as it heads east out of the City of East Grand Forks. As part of this analysis, potentially developable parcels were identified along both sides of U.S. Highway 2. Study area parcels located on the east side of U.S. Highway 2 do not have direct access to the railroad, and would require the railroad to cross U.S. Highway 2. This would introduce an at-grade railroad crossing to access these parcels. Obtaining a new crossing without closing or modifying existing crossings is highly unlikely; therefore, the parcels east of U.S. Highway 2, and others that cross a major roadway, will not be considered for further analysis.

Based on these two screening methods, the remaining parcels within the study area were further evaluated. The viability criteria selected for this analysis included:

- **Useable Acres:** Total developable acreage accounting for wetlands and floodplains.
- **Zoning/Future Land Use:** Parcels currently zoned and/or guided for future industrial uses
- **Transportation Network Access:** Access to major transportation corridors (i.e., U.S. Highway 2, Interstate 29, and other Truck Routes/10-Ton roadways)
- **Utilities:** Access to existing urban and rural services (i.e., water and sanitary sewer)

Scoring Methodology

The following section highlights the specific scoring methodology applied to each parcel to determine their viability score. This analysis was primarily done in GIS using available data provided by the GF/EGF MPO and other public data sources. See **Technical Memorandum 1** for a comprehensive description of the methodology, data sources used, scoring tables and parcel maps.

Useable Acres

The first step in determining usable acreage of each site calculated the number of acres within the 100 year floodplain and subtracted this land area from each parcel's total acreage. Parcel ownership was then analyzed to identify parcels which are adjacent to others under the same ownership. Where adjacently owned parcels were identified, the total useable acreage from all parcels was summed. A one to five point scoring system was used to score total useable acres.

Note: In addition to floodplains, the study area parcels were also cross-checked for impacts to National Wetlands Inventory (NWI) and Public Waters Inventory (PWI) wetlands. However, no NWI or PWI wetlands have been designated on the study area parcels.

Zoning & Future Land Use

Existing Zoning

Existing zoning districts (Grand Forks and East Grand Forks) were overlaid onto the parcel data. Parcels with a majority of land area within an industrial zoning assignment (I1 or I2) were scored with one point.

Future Land Use

Future land use layers (Grand Forks and East Grand Forks) were overlaid onto existing parcel data. Parcels with a majority of land area within an industrial future land use category were scored with 1 point.

Transportation Network Access

Access to the transportation network was determined through three measures, as detailed below.

I-29 Ramps

A one-mile buffer was calculated around the four I-29 entrance/exit ramps (North Washington Street, Gateway Drive (US 2), Demers Avenue, and 32nd Avenue South). Parcels which intersected these one-mile buffers were assigned one point.

U.S. Highway 2

A half-mile buffer was calculated around the U.S. Highway 2 intersections of roadways on the North Dakota Truck Route/Minnesota 10-Ton (Municipal State Aid) system. Parcels which intersect these half-mile intersection buffers were assigned one point.

Note: ND Truck Routes and MN 10-Ton roadways (MSAs) were coded manually based off of the 2035 Long Range Transportation Plan freight map (see Grand Forks – East Grand Forks 2035 Long Range Transportation Plan, Figure 5).

North Dakota and Minnesota Truck/10-Ton Routes

A 200-foot buffer surrounding the Truck Route/10-Ton roadway system was calculated to capture parcels immediately adjacent to these roadways. Parcels which intersect this 200-foot buffer were assigned one point.

Utilities

Water and Sanitary Sewer

Access to water and sanitary sewer infrastructure was determined for all parcels in the study area by creating a 100-foot buffer around water and sewer trunk lines, and intersecting this buffer with the parcel data. Parcels fully or partially within the buffer were determined to have water and/or sanitary service available, and were assigned one point for each service, with a maximum of two points.

Electric *Utilities*

Data to determine electric utility connections was unavailable from Xcel Energy due to security and privacy issues. As a result, the site assessment process did not include criteria for electric utility availability.

Tier 2 Urban Reserve/Rural Services Area

The viability analysis took into consideration rural services for the City of Grand Forks. This analysis utilized the City of Grand Fork's "Tier 2 Urban Reserve Area," as defined by the City's Comprehensive Plan. The Plan defines this area as largely undeveloped land for future growth. If growth occurs, it will be required to develop at urban standards in order to be compatible with future City services. The Plan also notes that potential residential, commercial and industrial locations should be identified to prevent future incompatible development.

This analysis also took into consideration parcels located in East Grand Forks which currently have private water and sewer service. In general, these parcels are located east of the American Crystal Sugar site (map ID # 135) and were assigned one point.

Site Viability Maps and Scoring Table

Maps displaying the study area, parcels, viability score, and properties selected for further analysis are found in **Appendix A.** Figures 1 -3 display the study area parcels in GF/EGF. Figures 4 -6 display the viability scores for all parcels in the study area, as well as parcels which are adjacent to land under the same ownership. Figures 7 – 9 display the parcels which received a viability score of seven points or greater, were determined to be vacant, and would not require a railroad crossing of U.S. Highway 2. The parcels adjacent to land under the same ownership are also displayed on these figures. The memorandum also includes context maps, such as freight volumes, zoning, existing land uses, and future land uses (Figures 10 – 13).

5. Secondary Site Viability Analysis

The following section outlines the methodology and data collection of the second round of viability analysis, intended to further differentiate the most suitable parcels for expanded rail access in the GF/EGF Region. After the first round of site viability analysis, 64 parcels owned by 31 unique landowners remained for the second round of site viability analysis.

One of the unique aspects of the GF/EGF region discovered through course of the study process is that unlike many urban communities, GF/EGF has many viable parcels for improved/expanded rail access in the immediate area. The fact that the region has an ample inventory of potential properties available for rail served industrial development is a benefit that many communities often find as a challenge. However, in the case of the GF/EGF region, the large inventory of viable properties may also create challenges if future requests for rail service become dispersed across the area. Due to increasing demands for rail services, especially on the Great Northern Corridor lines operated by BNSF, the business model for Class I railroads has favored consolidated loading facilities over the use of many individual sidings.

The purpose of the second round site viability criteria are intended to provide additional pertinent information about each of the initial high ranking sites and further identify and separate the sites by their potential and likelihood of obtaining rail access for industrial development. The criteria explored in this second round of analysis include; w*illingness to sell, acquisition cost, infrastructure cost/feasibility,* and *rail design flexibility*. The combination of the application of these criteria to the existing high-ranking parcels and the development of preliminary rail access design concepts will provide GF/EGF with a thoroughly vetted list of potential rail access development sites of different sizes and types with which to demonstrate to potential new or expanded businesses the various possibilities the area can offer.

See **Technical Memorandum 2** for a comprehensive list of the 64 properties, their owners, first round viability score and the results of the second round of site viability analysis.

Willingness to Sell

To determine landowners' willingness to sell, the consultant conducted several types of outreach to get a direct response regarding willingness to sell for each of the 31 unique landowners. In addition to two public meetings, the consultant team also mailed a letter inviting each landowner to a separate landowner meeting on December 5th, 2013. Those landowners who responded to the invitation by attending the meeting were given packets with information about the study and a brief survey to gather additional feedback about their willingness to sell. Landowners who did not attend the meeting were mailed the same packets containing study information and the survey. For those that did not respond throughout the study, the Grand Forks Region EDC was able to provide information on willingness to sell for a handful of landowners with whom they had worked with in the past. Only two landowners responded that they were not willing to consider selling their property for development, resulting in 64 parcels after the second round site viability criteria were applied.

For further discussion of landowner outreach, please refer to **Technical Memorandum 2** and/or the project's **Stakeholder Outreach Summary**.

Acquisition Cost

Land values were gathered from parcel records kept by Grand Forks County, ND and Polk County, MN. Though these County-Assessed Values are not market rate, they were the only readily available data from which to draw and can be used as a basis of comparison. However, since many parcels are rural, the cost differences in large part are determined by size and individual negotiations.

Infrastructure Cost/Feasibility

Infrastructure cost and feasibility focused on two potential issues that could make developing rail access difficult to approve, uneconomical due to increased/additional costs, or both: new at-grade railroad crossings or a crossing within a ¼ mile of a quiet zone. These factors do not necessarily prohibit development, but make it much more difficult and/or costly.

Rail Design Flexibility

The main factor determining flexibility' of a site is in rail design—that is, ability to accommodate various types of rail spurs determined by size and geometry. For example, a long, narrow site, but large by acreage, might only accommodate long ladder tracks. Unit train loading facilities usually require approximately 400 acres to be reasonably accommodated with space for the industrial user. In comparing normal, rectangular/square rural parcels, the larger a site the more variety of types of rail spurs can be built—making the site more desirable and flexible to various types of users. For this analysis, sites were separated by acreage in intervals of 30 acres and assigned a score from 1-5, with 5 being the most flexible in terms of rail design.

See **Technical Memorandum 2** for a complete description of the methodology, data sources used, and scoring tables discussed above.

6. Conceptual Rail Design Methodology

This section details the parcels for which concept-level rail access designs were developed. Seven concepts were designed for six of the highest ranking parcels. The parcels differ in size, location, and layout; they also have no major infrastructure costs or feasibility issues (see Section 4 above). The variety of parcels utilized is intended to provide the GF/EGF MPO with a set of conceptual plans which can be used to demonstrate the various rail access and industrial development possibilities that the GF/EGF Region has to offer to businesses, landowners and public officials.

Information on each of the parcels, for which concepts were developed, listed in descending order of size in acres, can be found in **Figure 1** below. Property location, owner, size and assessed value are listed for each parcel. See **Appendix A** to view the conceptual rail designs for each site.[8]

Figure 1: Conceptual Rail Access Design Parcels

Parcel #	Township/City	State	Owner	Acres	County-Assessed Value	Est. Rail Design & Construction Cost
165 *(2 concepts)*	Falconer Township (Grand Forks)	ND	Bill Lee (Trustee of Avonne Goodman Trust)	131.80	$143,600	Concept 1: $2,766,015 Concept 2: $3,431,164
243	Falconer Township/GF	ND	Ardell & Ina Korynta	126.50	$156,800	$2,735,303
93	Town of Huntsville Township/EGF	MN	Keith Driscoll	108.12	$344,900	$1,889,528
238	Brenna Township/GF	ND	Bateman Farms	73.50	$85,700	$2,638,678
223	Grand Forks Township /GF	ND	Grand Forks Region EDC	48.29	$65,500	$3,341,915
250	City of Grand Forks	ND	Minnkota Power Cooperative, Inc.	20.00	$25,300	$2,109,609

[8] **Note:** *These are preliminary rail design concepts drawn by study team engineers. They do not represent any further engineering or construction-level design, analysis or planning. They are for demonstrative purposes only.*

7. Street Network Analysis & Improvements

An important component of this study is the impact of rail freight moving on local street network to be loaded or after being unloaded from the rail system. While some businesses may load or unload shipments to or from rail directly at plant locations, it is more common that rail shipments move first or finally across the roadway network; often referred to as the *"last mile."* As a result, having efficient street network access to Interstate 29 and/or US 2 is another important step for identifying commercial/industrial land parcels suitable for future expanded rail access. This section presents a summary evaluation of the GF/EGF street network, suggests potential improvements to enhance truck access to rail served properties, and discusses general improvements to enhance truck movements of freight in the area. Please see **Technical Memorandum 3** for the full street network analysis.

Data Analysis

The purpose of the study is to identify properties suitable for expanding freight rail access in the GF/EGF region, and using a screening process described in Technical Memorandum 1, the list of potential properties was narrowed from over 500 to 64 discrete parcels held by 31 land owners. Proximity to existing truck routes was a key criterion for narrowing the list of viable properties. As a result, while the number of individual viable properties remains sizeable, many are adjacent and have similar attributes in terms of street network access to existing truck routes. Because of this, most of the street network improvements identified for new or improved access to individual parcels are sketch-level design improvements that would benefit truck access overall on the street network in the GF/EGF area. Additional network analysis was also performed on the existing designated truck routes in each city; for maps of the routes overlaid on the highest-ranked railroad adjacent parcels please see **Appendix A**.

Truck Access Route Design Analysis

To analyze the various components of a safe and efficient freight roadway system, the study team adapted a methodology developed for the *Twin Cities Metro Area Freight Connectors Study* performed for the Minnesota Department of Transportation.[9] The study identified various types of features and the characteristics that, combined together, provided an adequacy score for any route that was analyzed. The features have significance for non-freight traffic, but are particularly important for the safety, accommodation and efficiency/convenience of trucks; these include bridge condition, railway crossings, turning radii, vertical clearance, lane width and roadway weight capacity. For GF/EGF, this methodology was adapted by selecting the six criteria mentioned above and delineating the characteristics into categories of; *Preferred, Adequate*, or *Less-than-Adequate*. The criteria were then applied to the truck route system in GF/EGF. The features and their criteria are briefly discussed below; the comprehensive methodology, data sources and criteria are available in **Technical Memorandum 3**.

Truck Route Adequacy Scoring Criteria[10]

Bridge Condition

Bridge condition assesses the physical and structural condition of a bridge to determine whether commercial vehicle traffic may be safety accommodated. The sufficiency rating formula evaluates highway bridge data by calculating four separate factors to obtain a metric indicative of the overall bridge condition. The resulting

[9] Twin Cities Metro Area Freight Connectors Study. Minnesota Department of Transportation, (Wilbur Smith Associates and SEH Consulting), October 2006. http://www.dot.state.mn.us/ofrw/PDF/TCMAfreightConnectorsFinalReport.pdf

[10] All Scoring Criteria data tables are contained within Appendices A and B at the end of this report.

score from 1 to 100 suggests that a score of 100 represents an entirely sufficient bridge and 0 represents an entirely deficient bridge.

Five bridges on truck routes in the GF/EGF Region were examined. Of the five bridges examined, four have sufficiency ratings of 50 or above (The Sorlie Bridge however is only slightly over this threshold). The Kennedy Bridge has a rating of 48.5, resulting in a less than adequate bridge condition. As will be discussed later in this section, both the Kennedy and Sorlie Bridges were identified in previous planning studies for replacement.

Railway Crossings

At-grade railroad crossings can present both delays to trucks hauling freight raising the cost of shipping products. For this criterion, an 'Estimated Daily Delay" time for each crossing was calculated and given in a range from the low-end estimate (the average train delay from a weeklong sample of crossing events at Gateway and 42nd) to the high-end estimate (calculated from the assumption each train is a unit train and requires 8.67 minutes to clear, from a previous SRF report). To characterize these crossings, it was assumed that crossing delays of less than an hour per day are preferred, that delays of 60 minutes to 90 minutes are adequate; and delays of more than 90 minutes per day are inadequate. This range of characterization is based upon the high-end estimate calculation.

Using these criteria just one crossing in GF/EGF falls into the Less than Adequate category: the 42nd Street/DeMers crossing in Grand Forks. However, a second crossing; US-2/ 4th Street SE is currently approaching 90 minutes of delay, and three other crossings exceed 75 minutes. It is important to note that this metric is used only as a means of comparison for crossings in GF/EGF. It is not intended to be a precise representation of specific amount of delay (in minutes) per day at each crossing. From consultations with NDDOT and MnDOT, it was determined that both states use the *Railroad-Highway Grade Crossing Handbook – Revised Second Edition, August 2007* as a primary resource in making decisions related to highway/rail grade separations (along with other criteria). The handbook contains a series of questions and threshold metrics intended to provide guidance for public officials about when to consider grade separations. Two of these metrics deal directly with traffic/delay levels: crossing exposure and daily vehicle hours of delay. Though there are many other criteria and issues to evaluate when considering grade separation, exposure and vehicle hours of delay are two important measures to track consistently over time. If GF/EGF continues to experience long delays and increasing vehicle traffic at certain crossings (like 42nd and DeMers Ave. and 42nd and Gateway Dr.), the MPO should closely monitor the crossings experiencing the most delay using exposure and daily vehicle hours of delay as metrics. A more thorough discussion of these performance measures is provided in **Technical Memorandum 3.**

As part of the freight rail access study, SRF also examined the potential impact of increased train traffic on existing quiet zones. While the examination looked at the 10 crossings found in the existing five quiet zones and found no immediate impacts, but that depending which parcels within the city may be developed, four crossings within existing quiet zones could be impacted. The complete discussion of quiet zones can be found in **Technical Memorandum 3.**

Example: Gateway Drive & 42nd Street

One crossing that has seen an increase in train traffic is the intersection at Gateway Drive and 42nd Street. Recently, longer trains have caused delays of approximately ten minutes a few times a week. Despite the current inconvenience, this intersection causes increased concern for two reasons. First is

that train traffic is expected to increase, both from oil and grain unit trains and expanded manifest train cars if industrial development with rail access is realized. There is uncertainty about how extensive the delay and/or safety impact would be with increased train traffic, especially at an already busy crossing like Gateway/ 42nd.

Secondly, UND has additional concerns about this intersection. Since 42nd Street is the westward boundary of the campus, a train blocking the intersection (at Gateway Drive or DeMers Ave) cuts off the campus from the west. If an accident involving a train were to occur, this would create problems for access, especially in an emergency situation. This problem may be exacerbated if train traffic were to considerably increase. However, this in-depth analysis of train times/schedules/traffic forecasts is beyond the scope of this Rail Access Study. Further study is warranted regarding the delay and safety impacts of potential increased train traffic throughout GF/EGF, as demonstrated by the example of the Gateway Drive and 42nd Street crossing/intersection.

Grade Crossing Safety

On steep at-grade rail crossing approaches, trucks require longer distances to accelerate and cross railroad tracks following a complete stop. More time is also required by trucks to clear at-grade rail crossings, and may also require longer sight distances at un-signalized crossings to ensure that trucks clear safely. State highway agencies are required by USDOT to have a Crossing Safety Program that addresses all public crossings and selects safety improvements based on prioritized Hazard Indices for each crossing to be able to use FHWA Section 130 Highway-Rail Crossing Safety funds. Both North Dakota and Minnesota use the USDOT Accident Prediction Formula (APF) as their Hazard Index Formula. The APF addresses safety at the program level rather than at the individual crossing. Individual at-grade rail crossing adequacy criteria can also be extended using other factors such as design, site distance, and others. Conducting the field survey work required to adequately address individual crossings in the GF/EGF region is beyond the scope of the current study, but as train and vehicle traffic volumes in the region increase, developing a safety metric for at-grade crossing may be another worthwhile follow-on effort.

Turning Radii

A large truck making a right turn through an inadequate intersection can cause property damage, injury, and/or create traffic conflicts with other motorists. When the rear wheels of a large truck track outside the lane edge or shoulder of an intersection, the truck may strike objects or persons on the street edge (fire hydrants, signs or pedestrians) near the intersection. Alternatively, to avoid tracking across curbs in an intersection with insufficient turning radii, trucks often must encroach on opposing traffic lanes.

The minimum turning radius for truck is defined as the path of the outer front wheel, following a circular arc at a very low speed, and is limited by the vehicle's steering mechanism. It is recommended that "preferred" intersections accommodate tractor semi-trailer combinations with a 67 foot wheelbase or longer. Using an intersection design template overlaid on aerial photographs it was determined that all but three intersections on existing truck routes rated as preferred. See **Technical Memorandum 3** for the full analysis.

Vertical Clearance

This metric is defined as the vertical clearance height at bridges along the route required to accommodate truck traffic. Preferred heights are generally 16 feet or above. See **Technical Memorandum 3** for the vertical clearances for overhead bridges on GF/EGF truck routes.

Lane Width

Lane width can have significant implications on truck driver safety and comfort. Trucks are significantly wider than passenger cars, and as a result the problems resulting from inadequate lane widths are greater for trucks. The AASHTO Green Book encourages wide lanes (12 feet or greater) when designing roads to accommodate trucks. See **Technical Memorandum 3** for the lane width for current truck routes in the GF/EFG Region.

Roadway Weight Capacity

Transportation agencies design highway infrastructure based on predicted truck traffic volumes and axle weights. The majority of pavement wear is attributed to heavy truck traffic. While Interstate, U.S. and State Highways allow axle weights of 10 tons and gross weights of 80,000 pounds, many city and county highways are rated at limits less than 10 tons. See **Technical Memorandum 3** for the roadway weight capacity for current truck routes in the GF/EGF Region.

Applying the Street Network Criteria to a Specific Route

The previous discussion of truck routes identified six roadway design features that can be assigned point values based on the criteria discussed. While some of these initial criteria need further development for a clear assignment of points, **Figure 2** provides an example of how points can be assigned points, that when summed for a particular route, from point of origin to the access of a major highway, can be used to develop a performance measure for existing and new truck routes in the region. Apply points as suggested below (or a more refined scale), and normalized with additional information such as route length and daily truck volumes, will allow the GF/EGF MPO to develop a score card for truck routes in the region.

Figure 2: Example Point Assignment for Regional Truck Routes

		Design Feature Point Assignments		
	Design Features	Preferred	Adequate	Less than Adequate
1	Bridge Condition	0	1	2
2	Grade Crossing Delay	0	1	2
3	Intersection Turning Radii	0	0	1
4	Vertical Clearance	0	1	2
5	Lane Width	0	1	2
6	Weight Capacity	0	0	1

When an industrial development is in the permitting phase with Grand Forks or East Grand Forks, the development of the suggested scoring system can help the GF/EGF MPO analyze a route from the proposed development to the highway, applying the criteria discussed to obtain information about what impacts the development might have and what design standards/features the business might want to implement to make local access for their trucks as safe and efficient as possible.

Data Challenges

Though the criteria used to develop the performance template for the region's truck routes are comprehensive and effective for analysis, the consultant team encountered several data collection challenges. For example, specific design data for the turning radii of individual intersections was not available, which forced the use of software and aerial photography to be used to do a one-by-one analysis of each truck route intersection. Vertical clearance data was difficult to determine except for bridges and interstates. Lane width data is not kept by MnDOT, NDDOT or either city or county; assumptions were made based on conversations with the agencies. Roadway weight capacity is known from design standards of North Dakota truck routes and Minnesota MSA routes. For data sources where assumptions were necessary or the sources were incomplete,

it was determined that complete and up-to-date data would only be available through on-site collection, which was beyond the scope of the current study.

Site-to-Highway Route Segments

Though the majority of miles traveled for trucks shipping in and out of GF/EGF will be on the truck routes analyzed in this memorandum, virtually every truck must travel some distance on a local, non-truck route or access road. Often times these roads do not meet the optimal/preferred criteria discussed above, especially for turning radii and other important access characteristics. When a business intends to expand or relocate in GF/EGF, it is important to consider the most likely route the business' trucks will take from the highway/truck network to the site, and ensure that those access roads are able to accommodate the large size and weight of trucks.

Impacts on Quiet Zones

Two additional impacts on the street network from train traffic include delays/wait times at railroad at-grade crossings, whose impacts increase with more and longer trains, and potential impacts on quiet zones from increased train traffic traveling through the region.

Quiet Zone Analysis

As part of the Rail Access Study, the GF/EGF MPO wanted to make sure that any future proposed development does not interfere or interrupt Grand Forks existing quiet zones. There are a total of five quiet zones in Grand Forks with a total of 10 crossings included. The FRA Quiet Zone Rule states that each quiet zone must be at least one-half mile in length with one-quarter mile of clearance between each quiet zone crossing and the next adjacent non-quiet zone crossing. This is due to federal regulations that require locomotives to sound their horns no more than one-quarter mile in advance of a crossing.

Through this quiet zone evaluation process, three highway-rail crossings on the west side of Grand Forks and one crossing along the Glasston Subdivision (paralleling 42nd Avenue) were identified as having potential for quiet zone impact based on developable parcels located nearby. The crossings potentially impacted are listed below and depicted in maps in Attachment 6 to this memorandum:

- **West Wye:** Demers Avenue W. (086876F)
- **East Wye:** Demers Avenue E. (086875Y)
- **North 55th Street:** N. 55th Street (086750Y)
- **Hillsboro:** Gateway Drive/USH 2 (062505C)

There are two other crossings along the Hillsboro Subdivision (6th Avenue North and University Avenue) that are part of the quiet zone; however, there were no developable parcels identified near these crossings so they were not included in this analysis.

Potential Impacts of New Crossings

Many of the potentially viable parcels are located within or near these three crossings. For many of these parcels to become functional, it may be necessary to install new at-grade crossings along these tracks. However, the location of these new crossings may have implications for the three proposed quiet zone crossings and/or any additional new crossings in the vicinity.

There are three unique quiet zone scenarios worth noting in regards to the addition of a new crossing. First, if a new crossing is added outside of the one-quarter mile quiet zone extent, it may be installed as a non-quiet

zone crossing and will have no impact on the existing crossings. Second, if a new crossing is added inside of the one-quarter mile quiet zone extent, it must be incorporated into the adjacent quiet zone crossing. The new crossing would be subject to all of the regulations specified in the FRA Rule. Additionally, the one-quarter mile clear zone would extend beyond the new crossing, increasing the impact area of the quiet zone.

In a third potential scenario, if one or more non-quiet zone crossings are implemented outside of the original one-quarter mile clear zone, but at a later date, a new crossing is implemented inside of the clear zone, it would be necessary that the adjacent crossings be incorporated into the existing quiet zone until a one-quarter mile gap is established between the last quiet zone crossing and the next adjacent non-quiet zone crossing.

Potential Street Network Improvements

As mentioned above, strategies to accommodate potential increased traffic related to improved and/or expanded rail access were to be identified in the study. However, though the initial purpose was to pinpoint a handful of properties for access, it was discovered that there are many viable parcels for improved/expanded rail access in the area, each with their own benefits and challenges. Because of this, the street network improvements identified are geared towards the improvement of the overall freight network in the GF/EGF Region, beneficial for all shippers (including any potential new or expanding rail-served business), instead of targeting specific users.

Proposed Freight Movement Improvement Projects

As part of the 2040 Long Range Transportation Plan, projects were identified that would solve critical freight issues. Throughout the street network analysis and stakeholder outreach, many of these projects were confirmed as important and beneficial for freight by public and private stakeholders. Below is a list of the potential projects to improve freight movement in GF/EGF, consisting of those listed in the LRTP that were confirmed by the current study team as well as newly identified potential freight improvement projects (noted in *italics)*.

- Construction of a bridge crossing the Red River at Merrifield Road
  - 2040 LRTP Street and Highway Plan: Illustrative. Estimated Cost (2013): $21,384,000
  - Part of south bypass/truck relief route
- Construction of an I-29 interchange at Merrifield Road
  - 2040 LRTP Street and Highway Plan: Illustrative. Estimated Cost (2013): $8,984,000
  - Part of south bypass/truck relief route
- Construction of a grade separation for the BNSF rail crossing at Demers Avenue and 42nd Street[11]
  - 2040 LRTP Street and Highway Plan: Illustrative. Estimated Cost (2013): $21,384,000
- Continue to study need/feasibility of a north bypass/truck relief route
  - 2040 LRTP Street and Highway Plan: Illustrative. Estimated Cost TBD
- Signal and intersection improvements to Washington Street, Gateway Drive and North 5th Street, at and near the railroad crossings
  - 2040 LRTP Street and Highway Plan: Illustrative. Estimated Cost (2013): $25 million
- Extend 36th Street north to connect with a new E-W Collector street (20th Avenue North) and connect with 42nd Street
  - 2040 LRTP Street and Highway Plan: Long-term. Estimated Cost (2013): $2.37 million

- Implement recommendations from the Mill Spur Feasibility Study (August 2010):
  - Crossing Closures:
    - 7th Avenue North, 6th Avenue North and public alley closed between University Avenue and 4th Avenue North
  - Implement active warning devices, gates and flashers & median improvements:
    - Gateway Drive, University Avenue, 10th Avenue North, 5th Avenue North, 8th Avenue North, and 2nd Avenue North
  - Landscaping and trail improvements
- Columbia Road overpass rehabilitation/replacement (weight limit is 20,000 pounds gross weight)
  - Currently listed as a Mid-Term Rehabilitation for the City of Grand Forks investment at $5.72 million
- Kennedy Bridge (US 2) Major Improvement
  - Currently rated 'structurally deficient', #1 on both MnDOT and NDDOT's "Projects of Significance"
  - Short-term investment estimated at $25 million
- Sorlie Bridge (DeMers Ave) Major Improvement (40,000 pounds gross weight limit)
  - Currently rated just over 1 point (out of 100) away from 'structurally deficient', #2 and #3 on MnDOT and NDDOT's "Projects of Significance"
  - Short-term investment estimated at $29 million
- *Re-examine Gateway Drive/Washington Street/ 5th Street intersection*
  - *This intersection has major challenges that will only worsen with increased automobile, truck and train traffic. Signal improvements may not be enough to alleviate these problems in the future. Study team engineers developed three new potential designs for more substantial modifications to this problematic intersection. These conceptual designs can be found in the next subsection beginning on page 21.*
- *South 48th Street Rural to Urban Design Conversion (widening)*
  - *Backs up during morning and afternoon rush hour times, but is otherwise sufficient. If growth in the industrial park continues, or concerns arise regarding access to the fire station during rush hour times, the City could consider expanding the road by one or two lanes*
- *Review & Implement Truck-Accommodating Design Standards for future roadway projects*
  - *The study team suggests reviewing the following report: NCHRP Report 505: Review of Truck Characteristics as Factors in Roadway Design, and those like to determine if current roadway design standards are providing for the optimal conditions for truck travel, and if not, consider implementing the truck-friendly standards*
- *Initiate an in-depth study to address highway-rail safety improvement strategies, focusing on grade separations, throughout the GF/EGF region*
  - *With quickly changing rail traffic and possible population growth in the area, it is recommended that a comprehensive study be completed based on rail and highway traffic forecasts. This type of study will strategically position the region for TIGER grants which could assist with the high cost of grade separations and other safety/efficiency improvements.*

The study team recognizes that transportation budgets for GF/EGF region are fiscally constrained and the LRTP of GF/EGF stresses preservation of the system. Based on the GF/EGF LRTP's financial forecasts, there is essentially no money left over for expansion projects. Thus, many of the freight-beneficial projects above (the expansion projects) are listed as illustrative.

In addition to the projects above, study team engineers drew preliminary concepts to more dramatically alter the intersection of Washington Street, Gateway Drive and North 5th Street to cater potential improvements to trucks and truck turns (listed above). They also performed an analysis of turning radii on each intersection of truck routes in GF/EGF to determine where a standard 67-foot wheelbase truck would encroach on adjacent lanes. A description and analysis of both is below.

Potential New Option for Intersection of Gateway Drive/Washington Street/ 5th Street

The intersection of Gateway Drive, Washington Street and 5th Street in Grand Forks has already been identified in the LRTP as an emerging issue, especially for trucks. The intersection also includes a railroad crossing. The timing and spacing of the stoplights, as well as heavy traffic and challenging truck turns, make this a particularly strong candidate for improvements. The LRTP identifies some improvements in the Illustrative Project List that include reconstruction, new traffic signals and adding turn lanes. However, study team engineers came up with three new concepts for the intersection to improve both freight and overall traffic movements. The concepts identified were designed to take a new approach to fixing this intersection. Concept 3, in particular, is a dramatic (and costly) solution that would eliminate the at-grade railroad crossing, which would only be necessary if the North Dakota Mill or another business added traffic to the Mill Spur or the spur itself was extended north for further rail development.

Included in **Appendix A** to this report are preliminary drawings of the concepts; below are their technical descriptions and respective costs.

Concept Plan 1

The purpose of this improvement would be to assist large truck traffic traveling eastbound on Gateway Drive with making left turns on N. Washington Street. The existing intersection has an approximate 140 degree turning angle and is difficult for large trucks maneuver through and has the potential create delays and cause accidents. The roadway would consist of a 42-ft 3-lane curbed roadway connecting Gateway Drive to N. Washington Street and would extend approximately 1600 feet. This location would run through the existing entrance for the Grand Forks fairgrounds, along the east edge of the River Cities Speedway and angle northeasterly to intersect with N. Washington Street. Signalized intersections would be constructed at the intersections with N. Washington Street and Gateway Drive. Also a portion of the entrance to North Dakota Mill & Elevator would be reconstructed to allow for better flow of trucks through the new intersection. It is anticipated that no buildings would be require removal with this option. Total estimated costs: $980,000.

Concept Plan 2

The purpose of this improvement would be to assist large truck traffic traveling eastbound on Gateway Drive with making left turns on N. Washington Street. The existing intersection has an approximate 140 degree turning angle and is difficult for large trucks maneuver through and has the potential create delays and cause accidents. The roadway would consist of a 42-ft, 3-lane curbed roadway connecting Gateway Drive to N. Washington Street and would extend approximately 650 feet. This location would be an extension of N. 20th Street and proceed northeasterly through the Titan Machinery property and intersect N. Washington Street approximately 1,000 feet northwest of the intersection with Gateway Drive. A signalized intersection would be constructed at N. Washington Street and the existing signals would be expanded at the intersection of Gateway Drive and N. 20th Street. Two businesses would require removal/relocation for this option. Total estimated costs: $1,695,000.

Concept Plan 3

The purpose of this improvement would be to eliminate delays along Gateway Drive due to rail traffic and to allow easier truck access to N. Washington Street from the surrounding commercial areas. This concept would consist of building an overpass along Gateway Drive eliminating the intersection with N. Washington Avenue and the railroad crossing east of the intersection. The approaches to the overpass would be constructed as a 4-lane curbed section and would be constructed using MSE walls to minimize right-of-way impacts. To allow access from Gateway Drive to N. Washington Street, a 42-ft, 3-lane curbed roadway would be constructed at the intersection of Gateway Drive and N. 20th Street. N. 20th Street would be extended northeasterly to intersect with N. Washington Street approximately 1,000 feet of the current intersection of N. Washington Road and Gateway Drive. The Gateway Drive/N. 20th Street intersection traffic signals would be up updated and the N. 20th Street/N. Washington Street intersection would be signalized. On the east side of the overpass U.S. Business 2 and 11th Avenue N. would be improved to allow for additional truck traffic and a signalized intersection would be constructed at the intersection of 11th Avenue N with Gateway drive. Due to the MSE wall construction N. 4th Street intersection with Gateway Drive would be closed and cul-de-sacs constructed at both closure locations. Three businesses would require removal/relocation for this option. Total estimated costs: $10,079,000.

Turning Radii Improvements

In addition to the projects above, study team engineers performed an analysis of turning radii on each intersection on a truck route in GF/EGF. Using the criteria detailed in Section 1, each intersection was characterized as 'Preferred' or 'Less than Adequate'. Preferred intersections are able to accommodate tractor semi-trailer combinations with a 67 foot wheelbase or longer; Less than Adequate intersections cannot accommodate tractor semi-trailer combinations with a 67 foot wheelbase without encroachments into adjacent lanes. The 'Less than Adequate' intersections are candidates for improvement, which, depending on the cost and availability of the right of way, can be an inexpensive way to improve the safety and flow of truck traffic on freight routes. Costs of these types of turn lane/curb improvements run between $50,000 and $200,000 each.[12] Based on the available data and analysis the following intersections were identified as Less than Adequate:

- 32nd Avenue & Columbia Road
- US 2/Gateway Drive & Columbia Road
- US 2/Gateway Drive & US 81/Washington Street

See **Technical Memorandum 3** for a more detailed description and the full data analysis.

8. Conclusions and Recommendations

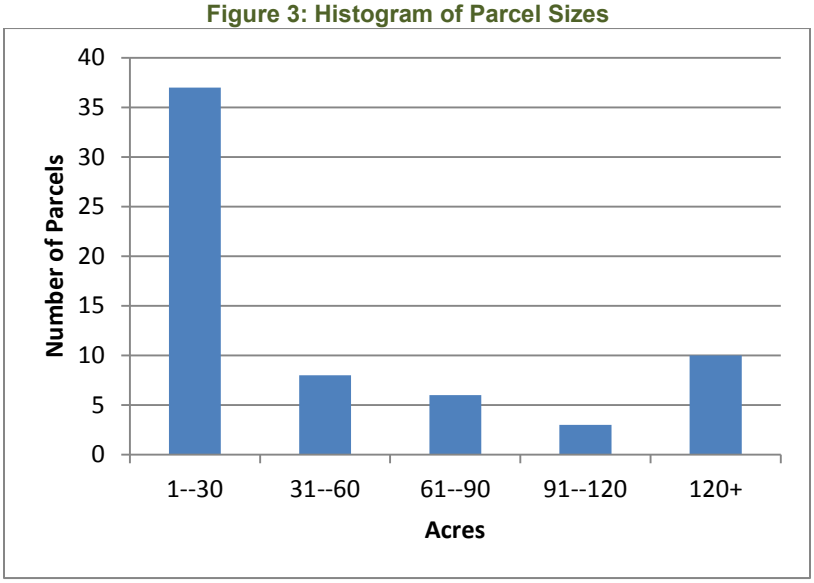
This study undertook a broad stakeholder outreach effort and site viability analysis to identify properties in the GF/EGF Region that are available and best suited for providing industrial/commercial access to rail services from the BNSF Railway. The study also analyzed the local street network and developed conceptual designs for rail access for a several sizes of property developments. This forward thinking effort is the first step toward the greater inclusion of freight in the GF/EGF MPO planning process as well as the deliberate inclusion of freight in the broadly defining the future vision of GF-EGF Community. However, this study should be viewed

[12] These cost estimates are intended only as a rough indication of costs; they do not include traffic signal location or right-of-way acquisition.

as the starting point and an effort that will need additional attention to bring about a comprehensive and coordinated plan for developing future rail served industry in the GF-EGF Region.

Class I railroads continue to move toward unit train facilities that require large land parcels. The existing effort started with over 500 potential properties and narrowed that inventory by roughly 90% to those properties most suited for future rail served development. However, of the more than 60 remaining properties, many do not fit the model preferred by BNSF for handling unit trains. It must be noted, however, that many of the parcels identified are adjacent properties belonging to a single owner. As a result, the inventory provides ample sites for future land use flexibility, but may need to be further delineated through continued discussions with BNSF. **Figure 3** below shows the distribution by size of the 64 sites identified by the study.

Figure 3: Histogram of Parcel Sizes



As noted, there are many small, adjacent parcels owned by the same owner; there are also several parcels greater than 120 acres. This diversity has the ability to accommodate a variety of potential shippers. However, BNSF Railway, in their input to the study, noted that in developing service to new sites they generally prefer large land parcels that can accommodate full unit train loadings. This is a direction common among many Class I railroads who are seeking to increase productivity on existing infrastructure, such that their operations are not interrupted by switching many different small shippers into one manifest train (that carries multiple different products). This further outlines the need to work with BNSF to verify what is possible for each of the sites identified in this study, but also to identify at least one 400+ acre site that could accommodate a large shipper. Adding one or more of those sites to the inventory identified herein would allow for a more comprehensive set of options for potential businesses and would allow the MPO to plan ahead for the accommodation of a large shipper within the city's overarching goals and development plan.

Recommendation 1: Engage in detailed discussions with BNSF regarding local service possibilities and development

This study provided the MPO with a workable list of sites best suited for rail access in GF/EGF. Another important step will to work with BNSF to confirm the rail access possibilities of those sites, favor the sites which would work best within BNSF's daily operations, and eliminate any sites which would adversely affect operations or otherwise be not ideal for rail development. Discussing both current operations and outlook for

the future level of service with BNSF is vital as well. Further developing a positive working relationship with BNSF is another positive outcome of this effort.

Recommendation 2: Work to identify one or more larger parcels (400+ acres) to accommodate a unit train loading facility

As has been discussed at various points throughout this report, BNSF's preferred model is large, unit train loading facilities which load over 100 cars with the same commodity (often grain, coal, oil, chemicals, or other agricultural products). This model allows for ideal efficiency for the railroad; instead of picking up a few cars at many small sites, the train is full when it enters the network and travels to its destination without any stops. The advantage of economies of scale is beneficial for both the shipper(s) and the railroad. Though smaller sites are critical for shippers and provide business to BNSF, and some can physically accommodate a loop track with which to load large trains (for an example of this, please see **Appendix A** for the rail access development concept for Parcel #243, which is only 127 acres), identifying one or more 400+ acre sites in the GF/EGF region would complete the MPO's comprehensive list of rail access development options with which to recruit businesses, and also would provide an opportunity to plan ahead and incorporate the possibility of a site and facility of this size into the region's planning process.

Recommendation 3: Create a Rail-Served Industrial Development Marketing Package

After the current study has been vetted by BNSF and an accurate and comprehensive list of sites and their characteristics is gathered, creating a marketing package that is clear, concise and visually appealing would provide the cities and MPO with a powerful tool to help recruit and inform businesses. This step would help ensure the information gathered through this and other relevant studies would be put to use in attracting businesses to competitive locations in the area while directing them to the sites with the least negative public impacts.

Recommendation 4: Monitor crossing delay due to train traffic

The Bakken oil field development is quickly changing the landscape of North Dakota. The number of rail carloads hauling crude oil in the U.S. surged 83% from 2011 to 2013.[13] For Grand Forks/East Grand Forks, this means more trains with over 100 cars are traveling through town each day, and because of their length, these trains which take a longer time to clear crossings. Additionally, rail shipments are increasing from other sources, and more unit trains may be coming to the region if and when the Northern Plains Nitrogen plant begins operation (currently set for 2017). While this means more jobs and increased economic activity, it also could create more and/or longer delays at railroad crossings. As discussed in the report, GF/EGF already has some significant wait times at certain crossings. To avoid increasing those wait times at more crossings in the future, delays at crossings should be monitored and recorded in a consistent format and periodically evaluated to capture how/if changing rail traffic is affecting delays. This provides the MPO with better information which it can use in discussions with BNSF, but also methodically builds the case for state or federal dollars to construct grade separations at the most problematic crossings. The MPO could also pursue an in-depth study of current train traffic and attempt to forecast that into the future, but predicting future traffic with accuracy is extremely difficult, as shown by the recent oil boom.

Recommendation 5: Perform field collection to obtain data on local truck routes

In Section 7 of this report, which details the street network analysis and data collection, it is noted that some of the data necessary to evaluate the street network in Grand Forks/East Grand Forks is unavailable and/or not

[13] Association of American Railroads; reported by the Associated Press March 13, 2014.

collected by any unit of government. These include turning radii, lane width, and weight capacity. The consultant team relied upon virtual evaluation of intersections, discussions with MnDOT and NDDOT, and assumptions based on current design standards to estimate these factors for the GF/EGF street network evaluation. For a more precise and meticulous evaluation, data on turning radii, lane width and weight capacity will need to be gathered; however, these factors would require field collection. A full complement of accurate and current data is necessary to evaluate the regional street network's ability to safely and efficiently accommodate freight transportation. This effort would prove particularly helpful when evaluating the route(s) a potential new or expanded business would use to bring trucks in and out of its facility.

Appendix A: GF/EGF Rail Access Study Maps & Design Concepts

Begin on following page

Contents:

FIGURE 1: GRAND FORKS PROPERTY OWNERS ADJACENT TO RAILROAD

Railroads

Parcels

\# Railroad Adjacent Properties

(# corresponds with "MAP ID" in property info table)

INSET A

27th Ave N

Washington St N

Columbia Rd N

GRAND FORKS/ EAST GRAND FORKS FREIGHT RAIL ACCESS STUDY

0 1,000 2,000 Feet

SRF

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

FIGURE 2: GRAND FORKS PROPERTY OWNERS ADJACENT TO RAILROAD

Railroads

Parcels

\# Railroad Adjacent Properties
(# corresponds with "MAP ID" in property information table)

INSET A

INSET A

Demers Ave
69th St S
17th Ave S
32nd Ave S
47th Ave S
62nd Ave S
2nd Ave NE
29

GRAND FORKS/ EAST GRAND FORKS FREIGHT RAIL ACCESS STUDY

0 0.5 1 Miles

SRF

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

FIGURE 3: EAST GRAND FORKS PROPERTY OWNERS ADJACENT TO RAILROAD

Railroads

Parcels

Railroad Adjacent Properties

(# corresponds with "MAP ID" in property info table)

GRAND FORKS/ EAST GRAND FORKS FREIGHT RAIL ACCESS STUDY

0 0.25 0.5 Miles

SRF

INSET A

INSET A

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

FIGURE 4: GRAND FORKS PRELIMINARY SITE VIABILITY ANALYSIS

Railroad

Parcels *(# corresponds with "MAP ID" in property info table)*

Adjacent Parcels Owned by One Property Owner

Viability Score

- 0 - 2 points (Lowest)
- 3 - 4
- 5 - 6
- 7 - 10 points (Highest)

Viability Scoring Methodology

The full methodology is documented in Technical Memorandum #1, dated November 20, 2013.

Viability Scoring is based on proximity to utility infrastructure/future service, useable acreage, proximity to transportation infrastructure, and zoning/future land use.

GRAND FORKS/ EAST GRAND FORKS FREIGHT RAIL ACCESS STUDY

0 0.25 0.5 Miles

SRF

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

FIGURE 5: GRAND FORKS PRELIMINARY SITE VIABILITY ANALYSIS

Railroads

Parcels *(# corresponds with "MAP ID" in property info table)*

Adjacent Parcels Owned by One Property Owner

Viability

- 0 - 2 points (Lowest)
- 3 - 4
- 5 - 6
- 7 - 10 points (Highest)

Viability Scoring Methodology

The full methodology is documented in Technical Memorandum #1, dated November 4, 2013.

Viability Scoring is based on proximity to utility infrastructure/future service, useable acreage, proximity to transportation infrastructure, and zoning/future land use.

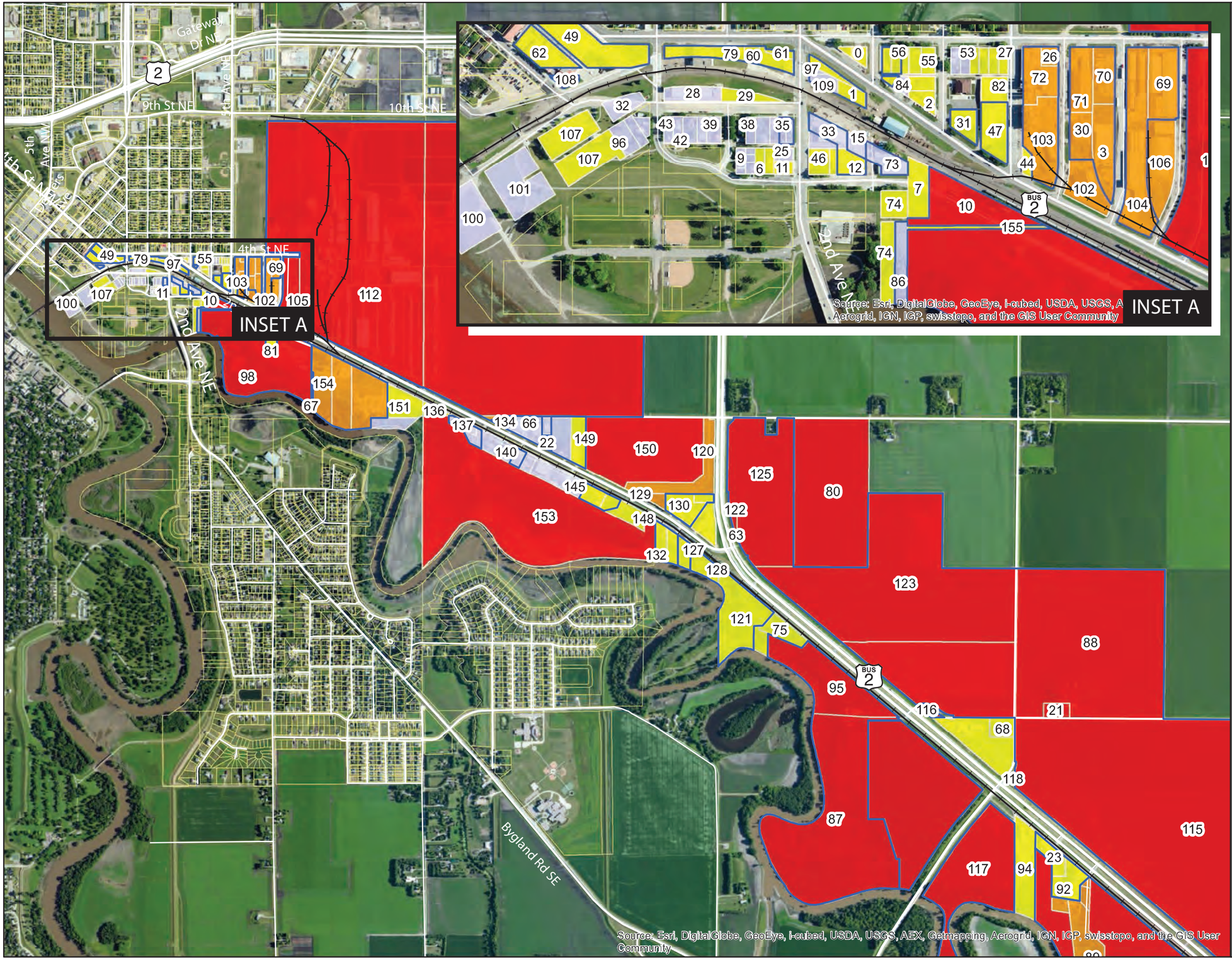
GRAND FORKS/ EAST GRAND FORKS FREIGHT RAIL ACCESS STUDY

0 0.5 1 Miles

SRF

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

FIGURE 6: EAST GRAND FORKS PRELIMINARY SITE VIABILITY ANALYSIS



Railroad

Parcels *(# corresponds with "MAP ID" in property information table)*

Adjacent Parcels Owned by One Property Owner

Viability Score

- 0 - 2 points (Lowest)
- 3 - 4
- 5 - 6
- 7 - 10 points (Highest)

Viability Scoring Methodology

The full methodology is documented in Technical Memorandum #1, dated November 20, 2013.

Viability Scoring is based on proximity to utility infrastructure/future service, useable acreage, proximity to transportation infrastructure, and zoning/future land use.

GRAND FORKS/ EAST GRAND FORKS FREIGHT RAIL ACCESS STUDY

0 0.25 0.5 Miles

SRF

FIGURE 7: GRAND FORKS HIGHEST SCORED VACANT PARCELS

INSET A

27th Ave N

Washington St N

Columbia Rd N

Railroads

Parcels *(# corresponds with "MAP ID" in property info table)*

Adjacent Parcels Owned by One Property Owner

Viability Score

7 - 10 points (Highest)

Viability Scoring Methodology

The full methodology is documented in Technical Memorandum #1, dated November 20, 2013.

Viability Scoring is based on proximity to utility infrastructure/future service, useable acreage, proximity to transportation infrastructure, and zoning/future land use.

GRAND FORKS/ EAST GRAND FORKS FREIGHT RAIL ACCESS STUDY

0 0.25 0.5 Miles

SRF

FIGURE 8: GRAND FORKS HIGHEST SCORED VACANT PARCELS

Railroads

Parcels *(# corresponds with "MAP ID" in property info table)*

Adjacent Parcels Owned by One Property Owner

Viability Score

7 - 10 points (Highest)

Viability Scoring Methodology

The full methodology is documented in Technical Memorandum #1, dated November 4, 2013.

Viability Scoring is based on proximity to utility infrastructure/future service, useable acreage, proximity to transportation infrastructure, and zoning/future land use.

GRAND FORKS/ EAST GRAND FORKS FREIGHT RAIL ACCESS STUDY

0 0.5 1 Miles

SRF

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

FIGURE 9: EAST GRAND FORKS HIGHEST SCORED VACANT PARCELS

Railroads

Parcels *(# corresponds with "MAP ID" in property information table)*

Adjacent Parcels Owned by One Property Owner

Viability Score

7 - 10 points (Highest)

Note: No East Grand Forks parcels are ranked higher than 9 points.

Viability Scoring Methodology

The full methodology is documented in Technical Memorandum #1, dated November 20, 2013.

Viability Scoring is based on proximity to utility infrastructure/future service, useable acreage, proximity to transportation infrastructure, and zoning/future land use.

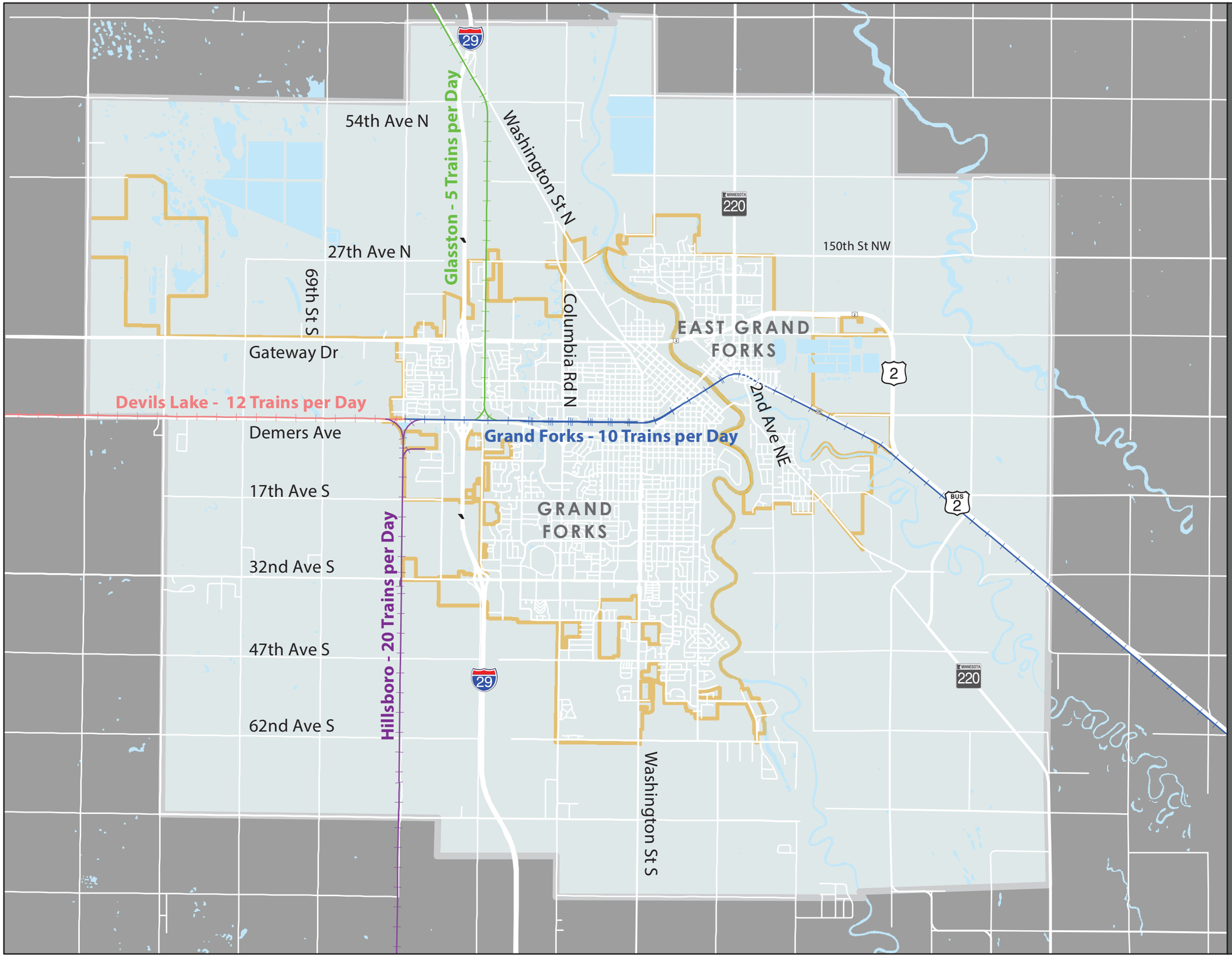
GRAND FORKS/ EAST GRAND FORKS FREIGHT RAIL ACCESS STUDY

0 0.25 0.5 Miles

SRF

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

FIGURE 10: DAILY FREIGHT VOLUMES



MPO Boundary

Municipal Boundaries

Railroad Subdivisions

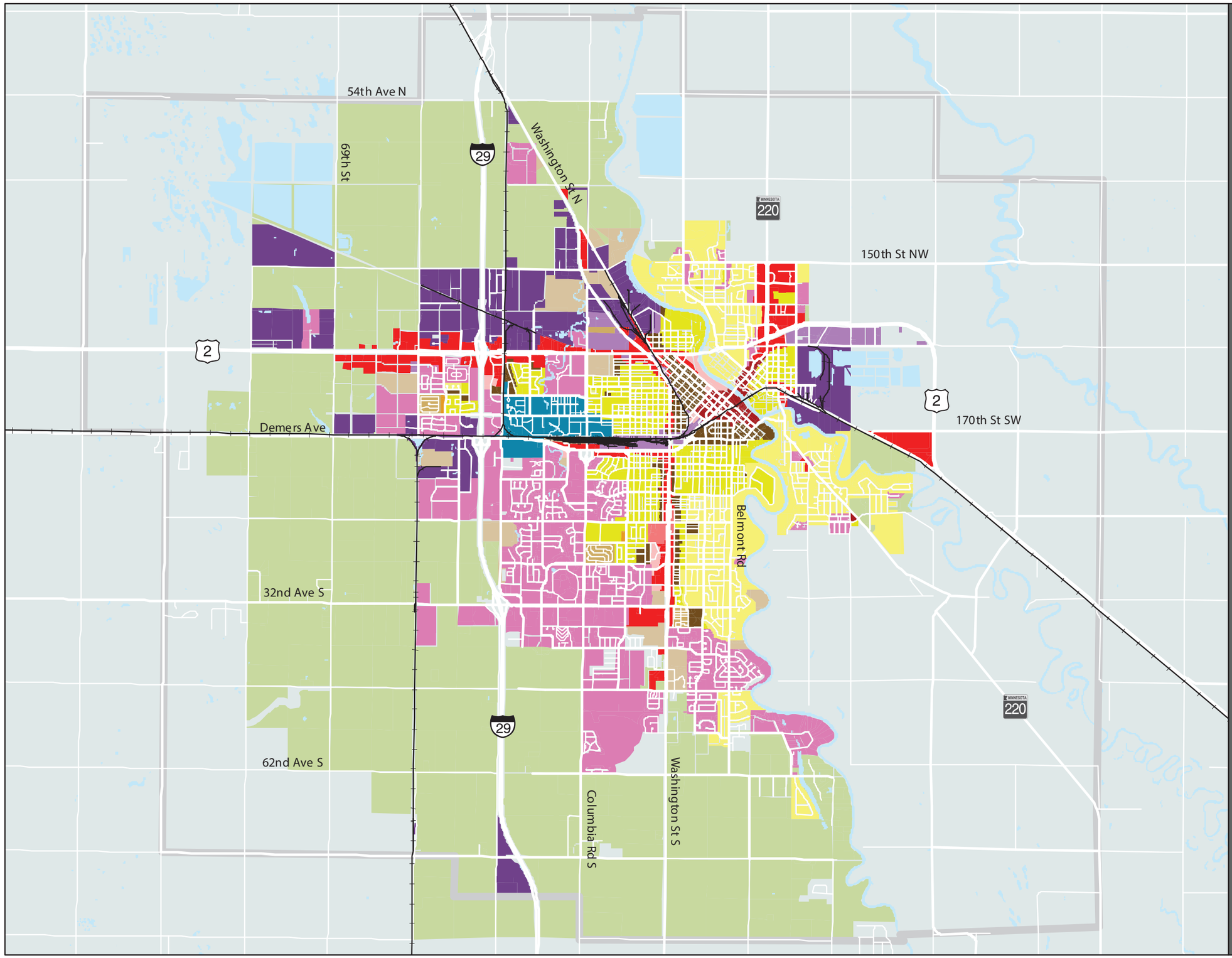
- Glasston
- Hillsboro
- Devils Lake
- Grand Forks

GRAND FORKS/ EAST GRAND FORKS FREIGHT RAIL ACCESS STUDY

0 0.5 1 2 Miles

SRF

FIGURE 11: ZONING



Railroads

Water Features

MPO Boundary

Zoning District

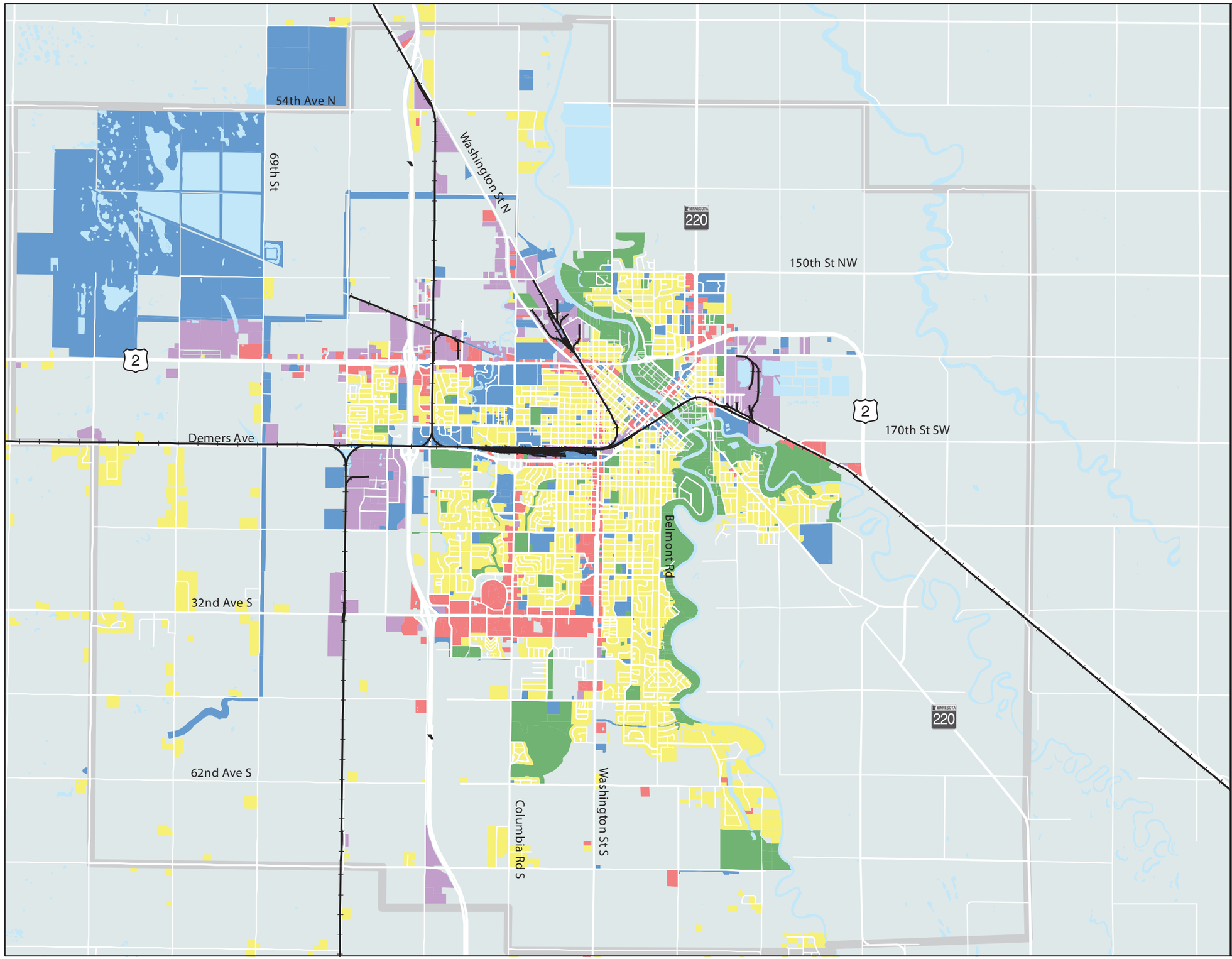
- A1 - Agricultural Preservation
- A2 - Agricultural Reserve
- B1 - Limited Business
- B2 - Shopping Center
- B3 - General Business
- B4 - Central Business
- I1 - Light Industrial
- I2 - Heavy Industrial
- PUD - Planned Unit Development
- R1 - Single Family Residential
- R2 - One & Two-Family Residential
- R3 - Medium Density Residential
- R4 - High Density Residential
- R5 - Mobile Home Residential
- UD - University District

GRAND FORKS/ EAST GRAND FORKS FREIGHT RAIL ACCESS STUDY

0 1 2 Miles

SRF

FIGURE 12:
EXISTING LAND USE



Railroads

Water Features

MPO Boundary

Land Use

- Residential
- Commercial
- Industrial
- Institutional
- Public/Open Space
- Vacant

**GRAND FORKS/
EAST GRAND FORKS
FREIGHT RAIL
ACCESS STUDY**

0 1 2 Miles

SRF

FIGURE 13: FUTURE LAND USE

54th Ave N
69th St
Washington St N
29
220
150th St NW
2
Demers Ave
170th St SW
Belmont Rd
32nd Ave S
62nd Ave S
Columbia Rd S
Washington St S

- Railroads
- Water Features
- MPO Boundary

Land Use

- Residential
- Commercial
- Industrial
- Institutional
- Mixed
- Public/Open Space
- Growth Area
- Urban Expansion Reserve
- Vacant

GRAND FORKS/ EAST GRAND FORKS FREIGHT RAIL ACCESS STUDY

0 1 2 Miles

SRF

FIGURE 1
GRAND FORKS QUIET ZONE CROSSINGS ANALYSIS

Railroads

Railroad Quiet Zone Crossings

1/4 Mile Quiet Zone Buffer

Parcels *(# corresponds with "MAP ID" in property info table)*

Adjacent Parcels Owned by One Property Owner

Viability Score

0 - 2 points (Lowest)

3 - 4 points

5 - 6 points

7 - 10 points (Highest)

Parcels Impacted by Quiet Zone

GRAND FORKS/ EAST GRAND FORKS FREIGHT RAIL ACCESS STUDY

0 0.05 0.1 Miles

SRF

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

FIGURE 2
GRAND FORKS QUIET ZONE CROSSINGS ANALYSIS

Railroads

Railroad Quiet Zone Crossings

1/4 Mile Quiet Zone Buffer

Parcels *(# corresponds with "MAP ID" in property info table)*

Adjacent Parcels Owned by One Property Owner

Viability Score

0 - 2 points (Lowest)

3 - 4 points

5 - 6 points

7 - 10 points (Highest)

Parcels Impacted by Quiet Zone

GRAND FORKS/ EAST GRAND FORKS FREIGHT RAIL ACCESS STUDY

0 0.25 Miles

SRF

Demers Ave

17th Ave S

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Parcel #165 – Rail Concept 1 (1 of 2)

Parcel Description

Township/City/State:

- Falconer Township /Grand Forks/ ND

Owner:

- Bill Lee (Trustee of Avonne Goodman Trust)

Acres: 131.80

Highway Access: I-29 two miles north; US 2 two miles south

County-Assessed Value: $143,600

Rail Concept Description

The proposed close-ended industrial setout tracks allow bi-directional access from the existing mainline. The clear length is sufficient for accommodating a unit train, although staging would be required. This setup would be ideal for manifest delivery and departure and this site provides versatility for receiving pits, elevators, conveyors, storage, or transloading.

Concept Cost Estimate*

Tract 165 - Concept 1 Cost Estimate Breakdown				
Item/Description	**Unit**	**Qty**	**Unit Price**	**Extension**
Track and Bedding	TF	8,099	$250	$ 2,024,700
Turnout (#11)	EA	4	$150,000	$600,000
Crossing	LF	48	$200	$9,600
Engineering Design	LS	1	5%	$131,715
		Total	----------	**$ 2,766,015.00**

**rounded to the nearest dollar*

Abbreviations:

- TF = Track Foot
- EA = Each
- LF = Linear Foot
- LS = Lump Sum

Parcel #165 – Rail Concept 2 (2 of 2)

Parcel Description

Township/City/State:

- Falconer Township /Grand Forks/ ND

Owner:

- Bill Lee (Trustee of Avonne Goodman Trust)

Acres: 131.80

Highway Access: I-29 two miles north; US 2 two miles south

County-Assessed Value: $143,600

Rail Concept Description

This concept limits the inbound and outbound directions of operation as the ladder track leader switches directly onto the mainline. The proposed single-ended industrial tracks allow single direction access from the existing mainline. The clear length is sufficient for accommodating a unit train, although staging would be required. This setup would be ideal for manifest delivery and departure and this site provides versatility for receiving pits, elevators, conveyors, storage, or transloading.

Concept Cost Estimate*

Tract 165 - Concept 2 Cost Estimate Breakdown				
Item/Description	**Unit**	**Qty**	**Unit Price**	**Extension**
Track and Bedding	TF	11,694	$250	$ 2,923,375
Turnout (#9)	EA	2	$90,000	$180,000
Turnout (#11)	EA	1	150,000	$150,000
Crossing	LF	72	$200	$14,400
Engineering Design	LS	1	5%	$163,389
		Total	----------	**$ 3,431,164**

** rounded to the nearest dollar*

Abbreviations:

- TF = Track Foot
- EA = Each
- LF = Linear Foot
- LS = Lump Sum

Parcel #243 – Rail Concept

Parcel Description

Township/City/State: Falconer Township /Grand Forks/ ND
Owner: Ardell and Ina Korynta
Acres: 126.50
Highway Access: I-29 1.25 miles southwest; US2 one mile south
County-Assessed Value: $156,800

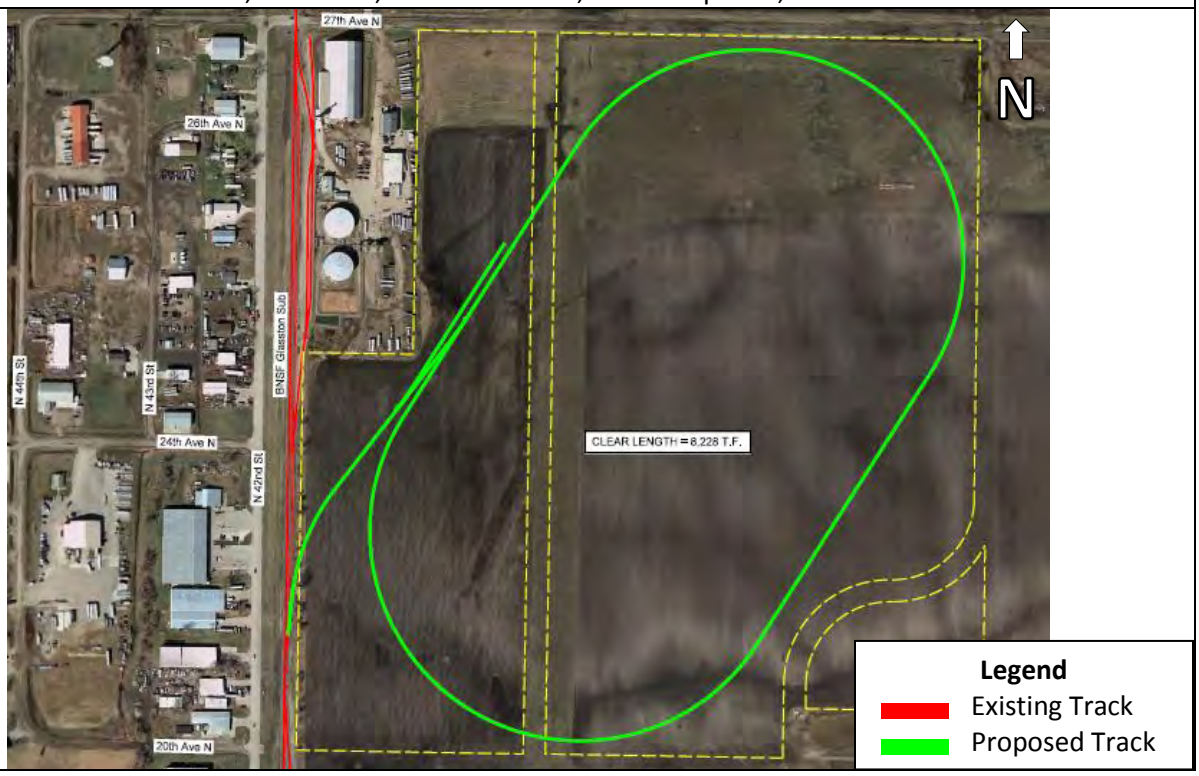
Rail Concept Description

This proposed industrial loop track is ideal for unit train delivery, loading/unloading, storage, and departure since all movements can occur with no staging and power can remain on site. Additional storage, bad order, or transload tracks can be constructed along the perimeter. Single direction access must be achieved through an existing siding.

Concept Cost Estimate*

Tract 243 - Concept Cost Estimate Breakdown				
Item/Description	**Unit**	**Qty**	**Unit Price**	**Extension**
Track and Bedding	TF	8,543	$250	$ 2,135,850
Turnout (#11)	EA	3	$150,000	$450,000
Crossing	LF	96	$200	$19,200
Engineering Design	LS	1	5%	$130,253
		Total	----------	**$ 2,735,303**

Abbreviations: TF =Track Foot; EA = Each; LF = Linear Foot; LS = Lump Sum; **rounded to the nearest dollar*



Parcel #93 – Rail Concept

Parcel Description

Township/City/State: Town of Huntsville Township, East Grand Forks/ MN
Owner: Keith Driscoll
Acres: 108.12
Highway Access: Adjacent to US2
County-Assessed Value: $344,900

Rail Concept Description

The proposed industrial tracks allow single direction access from the existing mainline. This setup would be ideal for manifest delivery and departure and this site provides versatility for receiving pits, elevators, conveyors, storage, or transloading.

Concept Cost Estimate*

Tract 93 - Concept Cost Estimate Breakdown				
Item/Description	**Unit**	**Qty**	**Unit Price**	**Extension**
Track and Bedding	TF	6,200	$250	$ 1,549,950
Turnout (#9)	EA	1	$90,000	$90,000
Turnout (#11)	EA	1	$150,000	$150,000
Crossing	LF	48	$200	$9,600
Engineering Design	LS	1	5%	$89,978
		Total	----------	**$1,889,528**

Abbreviations: TF =Track Foot; EA = Each; LF = Linear Foot; LS = Lump Sum; **rounded to the nearest dollar*

Parcel #238 – Rail Concept

Parcel Description

Township/City/State: Brenna Township, Grand Forks/ ND
Owner: Bateman Farms
Acres: 73.50
Highway Access: I-29 two miles southeast
County-Assessed Value: $85,700

Rail Concept Description

The proposed industrial tracks allow single direction access from the existing mainline. This setup would be ideal for manifest delivery and departure and this site provides versatility for receiving pits, elevators, conveyors, storage, or transloading. Because this siding is located on the BNSF Hillsboro Subdivision, which also carries AMTRAK trains, a remote control power-operated turnout is required as part of the signalization cost.

Concept Cost Estimate*

Tract 238 - Concept Cost Estimate Breakdown				
Item/Description	**Unit**	**Qty**	**Unit Price**	**Extension**
Track and Bedding	TF	4,292	$250	$1,702,950
Turnout (#9)	EA	1	$90,000	$90,000
Turnout (#11)	EA	1	$150,000	$150,000
Crossing	LF	48	$200	$9,600
Signalization	EA	1	$1,250,000	$1,250,000
Engineering Design	LS	1	5%	$66,128
		Total	----------	**$ 2,638,678**

Abbreviations: TF =Track Foot; EA = Each; LF = Linear Foot; LS = Lump Sum; **rounded to the nearest dollar*

Parcel #223 – Rail Concept

Parcel Description

Township/City/State: Grand Forks Township, Grand Forks/ ND
Owner: Grand Forks EDC
Acres: 48.29
Highway Access: I-29 less than one mile southeast
County-Assessed Value: $65,500

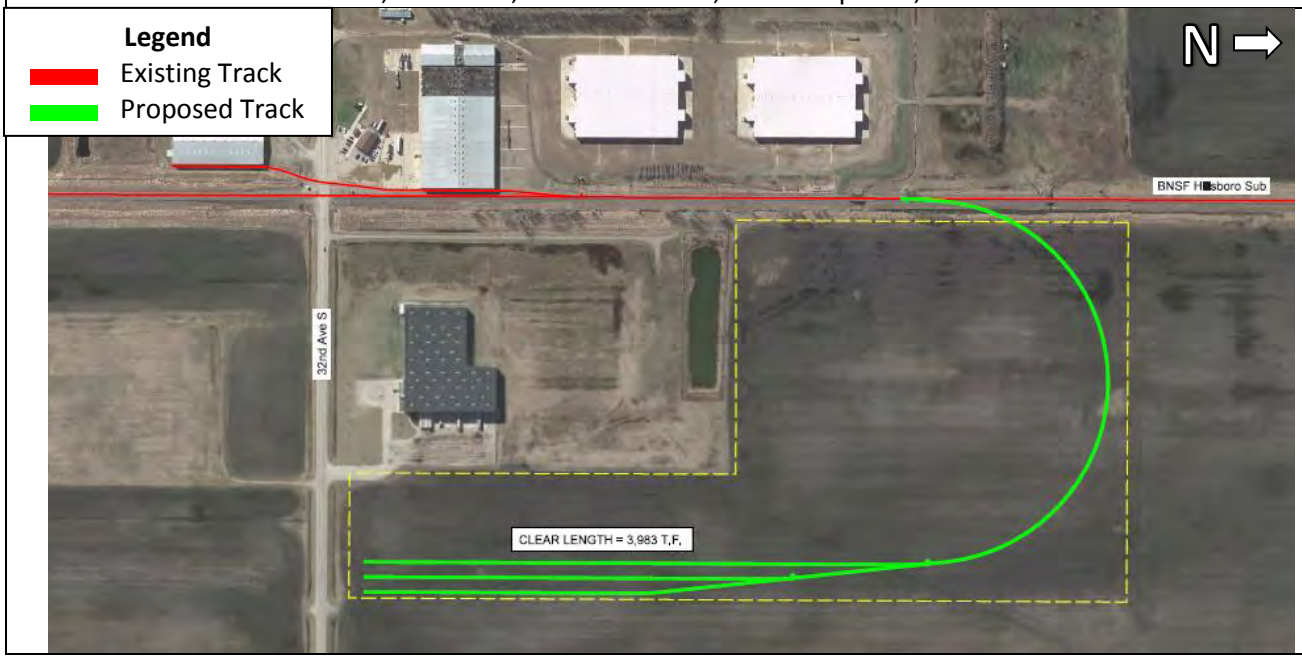
Rail Concept Description

The proposed industrial tracks allow single direction access from the existing mainline. This setup would be ideal for manifest delivery and departure and this site provides versatility for receiving pits, elevators, conveyors, storage, or transloading. Because this siding is located on the BNSF Hillsboro Subdivision, which also carries AMTRAK trains, a remote control power-operated turnout is required as part of the signalization cost.

Concept Cost Estimate*

Tract 223 - Concept Cost Estimate Breakdown				
Item/Description	**Unit**	**Qty**	**Unit Price**	**Extension**
Track and Bedding	TF	6,592	$250	$1,647,900
Turnout (#9)	EA	2	$90,000	$180,000
Turnout (#11)	EA	1	$150,000	$150,000
Crossing	LF	72	$200	$14,400
Signalization	EA	1	$1,250,000	$1,250,000
Engineering Design	LS	1	5%	$99,615
		Total		**$ 3,341,915**

Abbreviations: TF =Track Foot; EA = Each; LF = Linear Foot; LS = Lump Sum; **rounded to the nearest dollar*



Parcel #250 – Rail Concept

Parcel Description

Township/City/State: City of Grand Forks/ ND
Owner: Minnkota Power Cooperative, Inc.
Acres: 20
Highway Access: I-29 1.5 miles northeast
County-Assessed Value: $25,300

Rail Concept Description

This concept is designed to accommodate only a relatively small number of cars. These cars would be delivered by the local service crew to the Grand Forks rail yard to be built into a part of a manifest train. This rail concept provides the same service that is provided to many other smaller rail freight shippers in the Grand Forks area. Because this siding is located on the BNSF Hillsboro Subdivision, which also carries AMTRAK trains, a remote control power-operated turnout is required as part of the signalization cost.

Concept Cost Estimate*

Tract 250 - Concept Cost Estimate Breakdown				
Item/Description	**Unit**	**Qty**	**Unit Price**	**Extension**
Track and Bedding	TF	2,276	$250	$569,075
Turnout (#9)	EA	1	$90,000	$90,000
Turnout (#11)	EA	1	$150,000	$150,000
Crossing	LF	48	$200	$9,600
Signalization	EA	1	$1,250,000	$1,250,000
Engineering Design	LS	1	5%	$40,934
		Total		**$ 2,109,609**

Abbreviations: TF =Track Foot; EA = Each; LF = Linear Foot; LS = Lump Sum; **rounded to the nearest dollar*

Examples of most of the concepts discussed in this section already exist in the GF/EGF area. Several of these examples are shown and discussed on the following pages.

Current Examples of Rail Design Concepts in the GF/EGF Area[1]

Ladder Tracks

The North Dakota Mill, the nation's largest state-owned mill, has a large amount of trackage on its property because of its sheer size as a facility that runs 24/7 and ships flour all over the country. As the photo above shows, the Mill has ladder track on both the north and south sides of the plant; this allows for empty cars to immediately be loaded or unloaded through the facility and stored for re-use. The mill also has its own car mover which allows them to sort and adjust the cars on site at their own discretion, maximizing their trackage. Outbound the Mill ships 14-20 rail cars per day, seven days per week; inbound they bring in 27-car train segments a few times per week.

North Dakota Mill
1823 Mill Rd
Grand Forks, ND 58203

[1] Aerial photography: Google Maps, 2014

Open-Ended Industrial Tracks

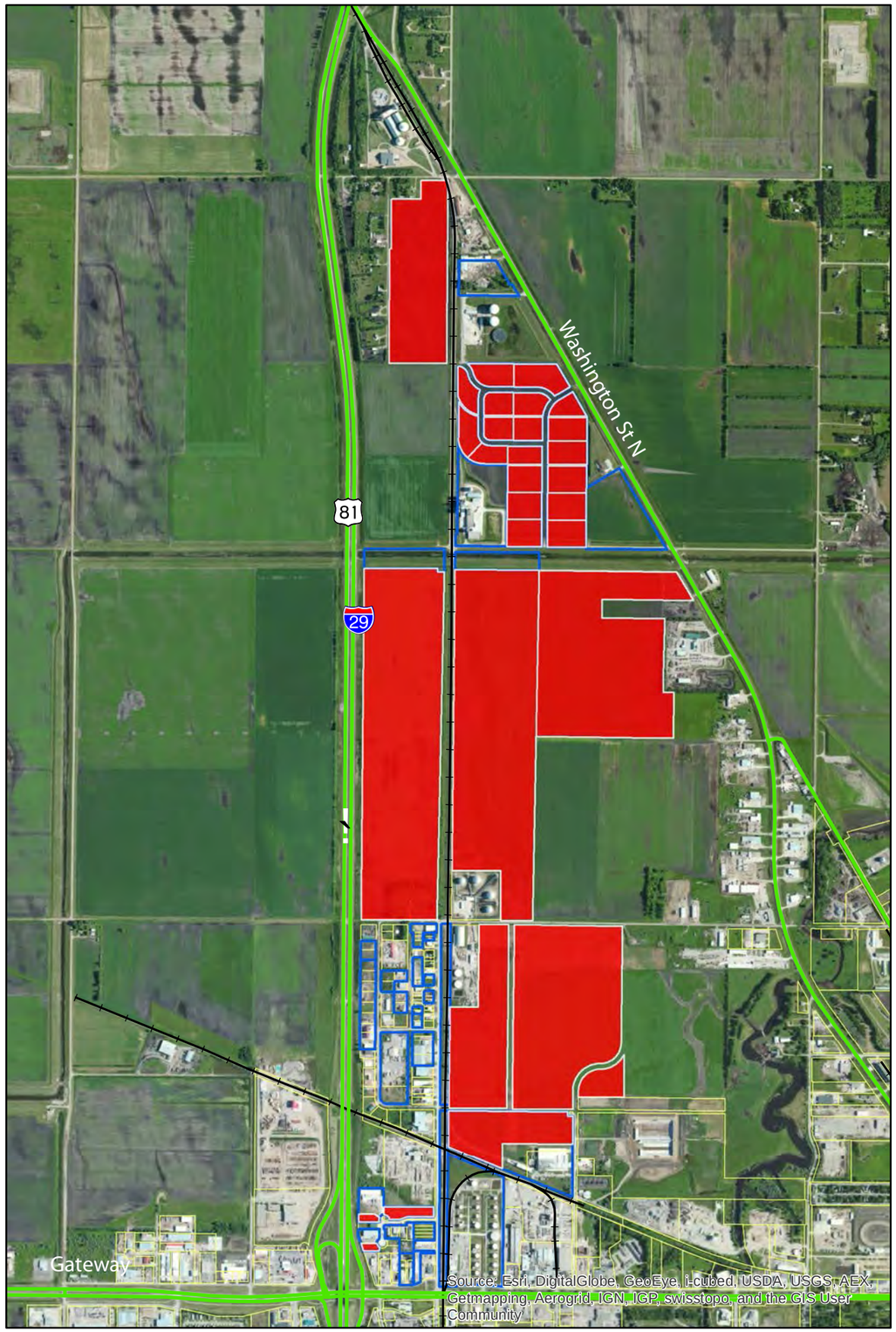
Philadelphia Macaroni produces dry noodles and finished consumer noodle products. Their open-ended layout allows cars to be unloaded at the facility to the left of the plant in the photo above. Since all of Philly Mac's product travels outbound by truck, and some inputs are brought in by truck, their rail spur only handles approximately 15 cars per week. Their spur can accommodate ten cars at a time. These cars contain flour generally from Minot, ND as well as some from Idaho and Montana.

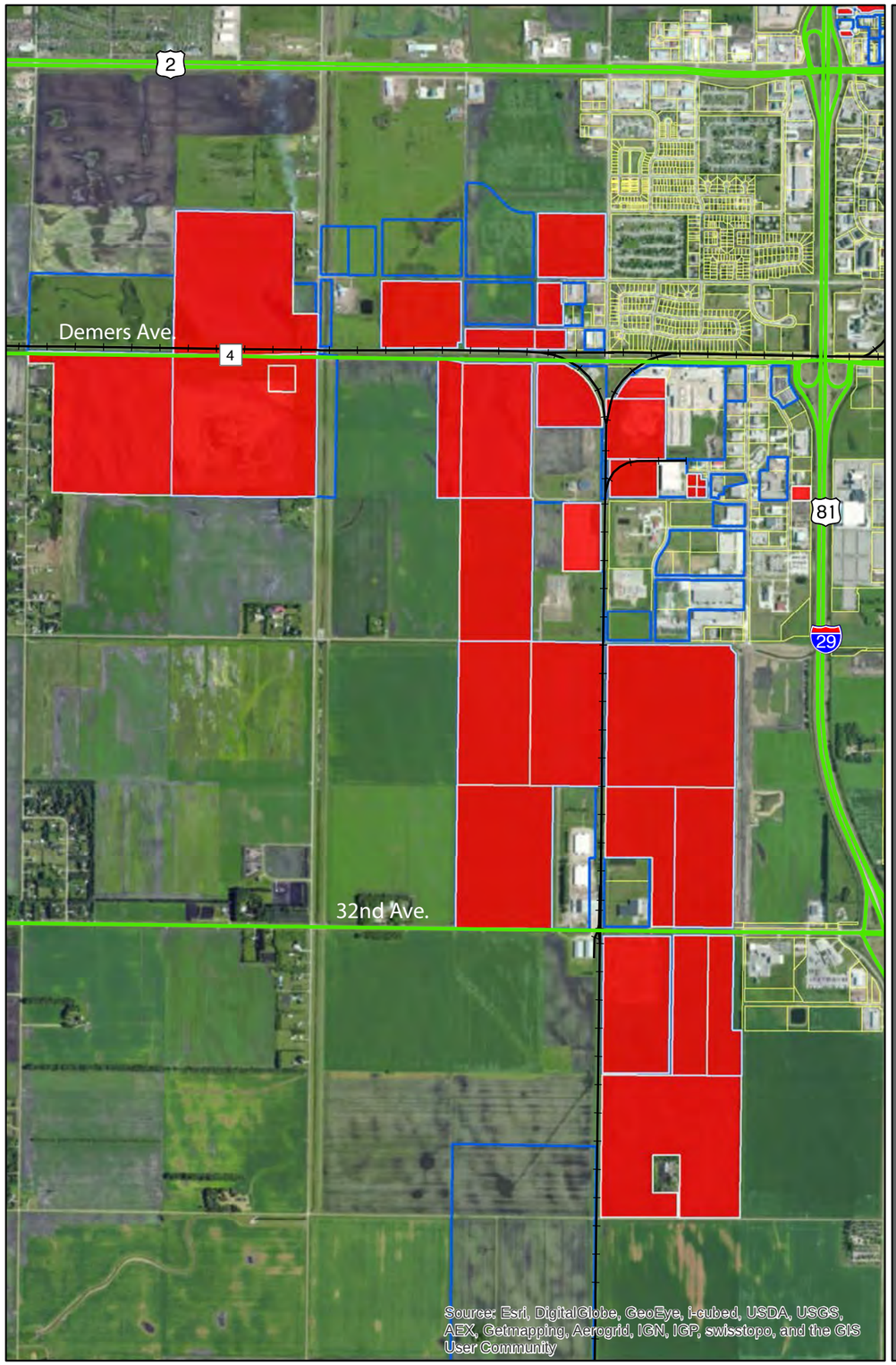
Philadelphia Macaroni
1801 N 36th St
Grand Forks, ND 58203

Close-Ended Industrial Tracks

The closed-ended layout at the Cenex Asphalt Terminal allows the facility to bring in tank cars of liquid asphalt cement (AC) efficiently; with two points of entry, cars can be dropped off and picked up after unloading without maneuvering the train back and forth. In addition to efficient loading or unloading of a specific range of cars, users with tracks similar to Cenex's normally do not require a large amount of storage.

Cenex Asphalt Terminal
4115 27th Ave
Grand Forks, ND 58203





GRAND FORKS & EAST GRAND FORKS TRUCK ROUTES

Railroads

Truck Routes

Adjacent Parcels Owned by One Property Owner

Parcels

Viability Score

7 - 10 points (Highest)

Viability Scoring Methodology

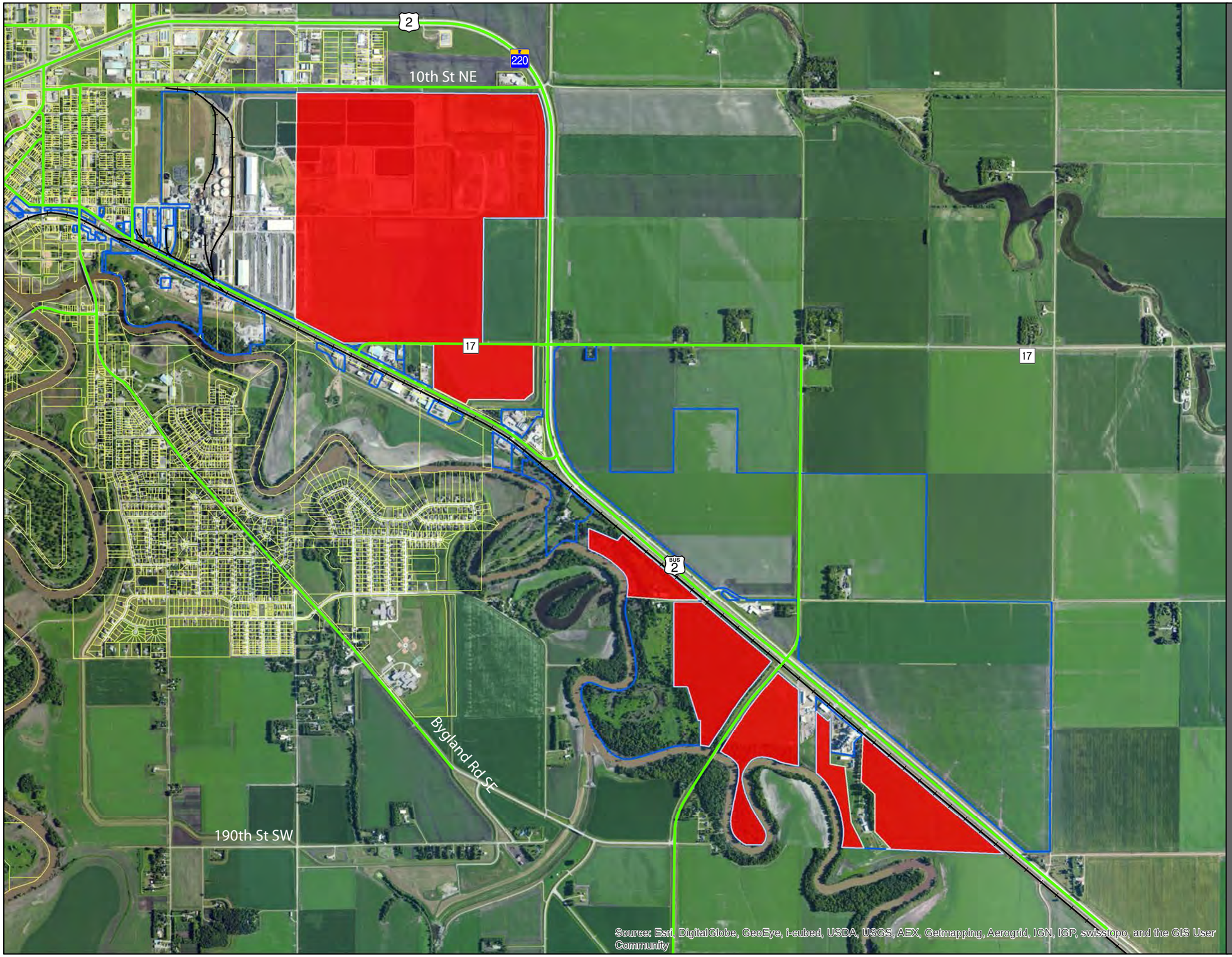
The full methodology is documented in Technical Memorandum #1, dated November 4, 2013.

Viability Scoring is based on proximity to utility infrastructure/future service, useable acreage, proximity to transportation infrastructure, and zoning/future land use.

GRAND FORKS/ EAST GRAND FORKS FREIGHT RAIL ACCESS STUDY

SRF

Not to Scale



GRAND FORKS & EAST GRAND FORKS TRUCK ROUTES

Railroads
Truck Routes/MSA Roadways
Adjacent Parcels Owned by One Property Owner
Parcels
Viability Score
7 - 10 points (Highest)

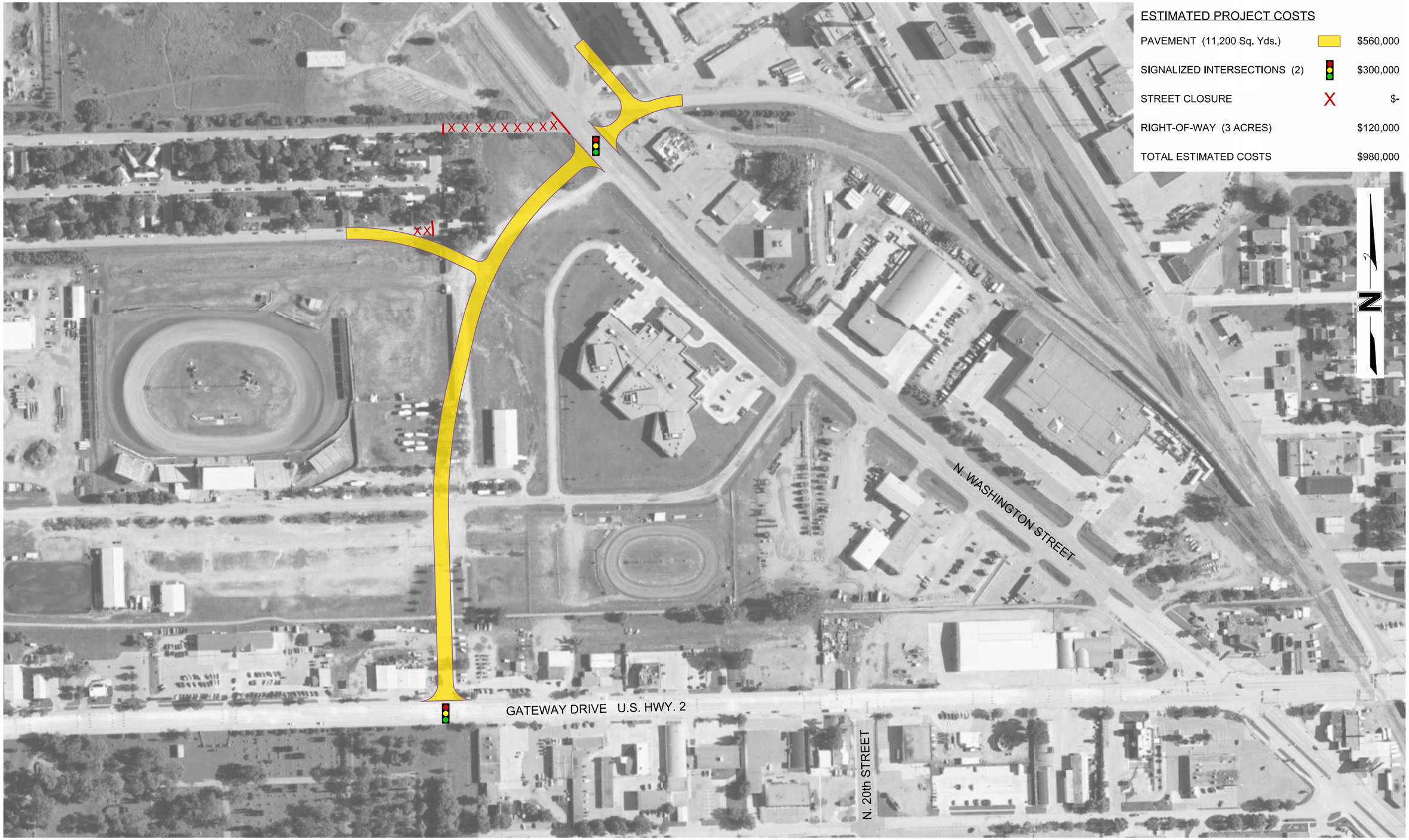
Viability Scoring Methodology
The full methodology is documented in Technical Memorandum #1, dated November 4, 2013.

Viability Scoring is based on proximity to utility infrastructure/future service, useable acreage, proximity to transportation infrastructure, and zoning/future land use.

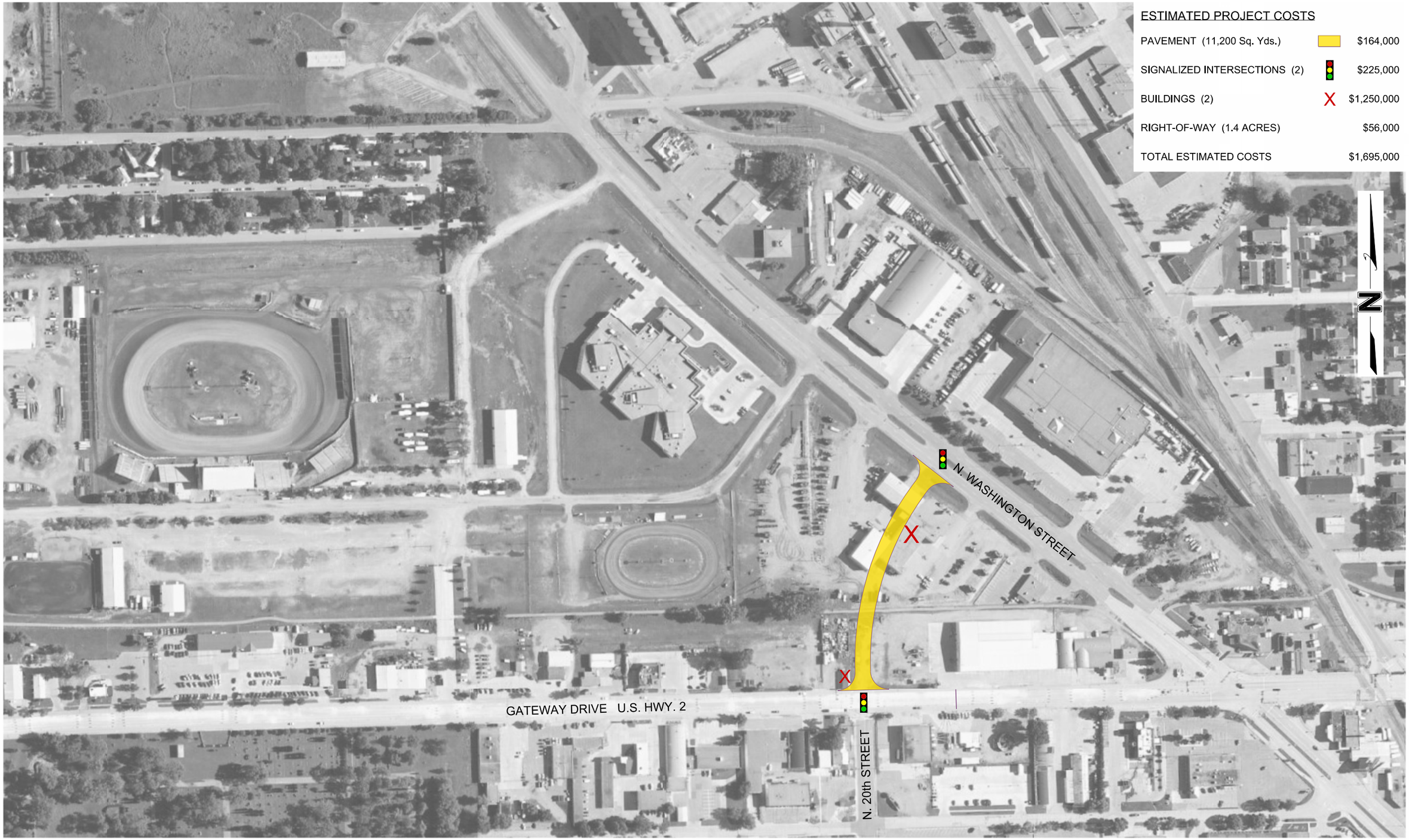
GRAND FORKS/ EAST GRAND FORKS FREIGHT RAIL ACCESS STUDY

0 0.25 0.5 Miles

SRF

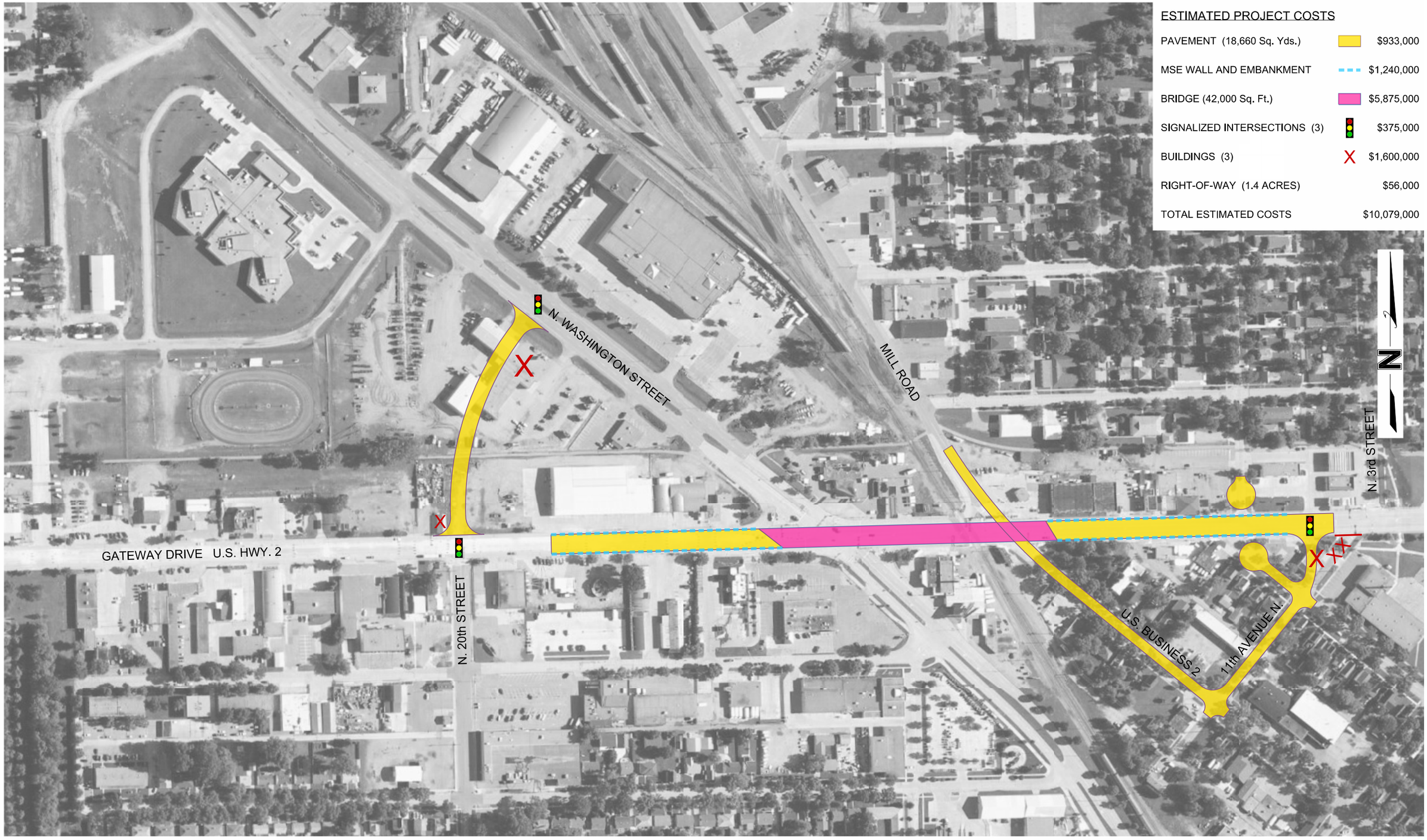


PROJECT NO: 013-1224 DRAWN BY: MWP DATE: 02/17/2014	CONCEPT PLAN 1	OLSSON ASSOCIATES 2111 South 67th Street, Suite 200 Omaha, NE 68106 TEL 402.341.1116 FAX 402.341.5895	EXHIBIT 1



PROJECT NO: 013-1224 DRAWN BY: MWP DATE: 02/17/2014	CONCEPT PLAN 2	EXHIBIT 2

OLSSON ASSOCIATES
2111 South 67th Street, Suite 200
Omaha, NE 68106
TEL 402.341.1116
FAX 402.341.5895



ESTIMATED PROJECT COSTS

PAVEMENT (18,660 Sq. Yds.)		$933,000
MSE WALL AND EMBANKMENT		$1,240,000
BRIDGE (42,000 Sq. Ft.)		$5,875,000
SIGNALIZED INTERSECTIONS (3)		$375,000
BUILDINGS (3)	X	$1,600,000
RIGHT-OF-WAY (1.4 ACRES)		$56,000
TOTAL ESTIMATED COSTS		$10,079,000

PROJECT NO: 013-1224	CONCEPT PLAN 3	EXHIBIT
DRAWN BY: MWP		3
DATE: 02/17/2014		

OLSSON ASSOCIATES
2111 South 67th Street, Suite 200
Omaha, NE 68106
TEL 402.341.1116
FAX 402.341.5895