Adelmann Family Property

Alternative Urban Areawide Review and Draft Mitigation Plan
Elko New Market, Minnesota

January 7, 2020

ISG
Architecture
Engineering
Environmental
Planning
ISGInc.com

REPORT FOR:
City of Elko New Market
601 Main Street
Elko New Market, MN 55054
952.461.2777

FROM:
ISG
7900 International Drive, Suite 550
Minneapolis, MN 55425
952.426.0699

CITY OF ELKO NEW MARKET
SMALL-TOWN CULTURE. EMERGING POSSIBILITIES.

TABLE OF CONTENTS

Executive Summary iii

Draft Alternate Urban Areawide Review 1

Project Title 1
Proposer 1
Responsible Government Unit (RGU) 1
Reason for EAW Preparation 1
Project Location 1
Project Description 2
Cover Types 4
Permits and Approvals Required 5
Land Use 6
Geology, Soils, and Topography/Land Forms 11
Water Resources 13
Contamination/Hazardous Materials/Wastes 19
Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Rare Features) 21
Historic Properties 23
Visual 23
Air 24
Noise 25
Transportation 25
Impact on Infrastructure and Public Services 28
Cumulative Potential Effects 29
Other Potential Environmental Effects 30

Draft Mitigation Plan 31

8. Permits and Approvals Required 31
9. Land Use 32
11. Water Resources 33
12. Contamination/Hazardous Materials/Wastes 34
13. Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Rare Features) 35
18. Transportation 35

TABLES

Table 6-1. Project Size and Type 3
Table 7-1. Land Cover Types (Existing vs. Proposed Acres) 4
Table 8-1. Financial Assistance 5
Table 8-2. Permits and Approvals ..... 5 & 31
Table 10-1. Soils Characteristics within AUAR Study Area 12
Table 11-1. MDH Minnesota Well Index 14
Table 11-2. Estimated Potable Water Demand 18
Table 13-1. Existing Land Cover Types 21

APPENDICES

Appendix A: Project Location Maps ..... A
- Figure 1. Project Location Map
- Figure 2. USGS Topographic Map
- Figure 3. AUAR Boundary and LiDAR Map

Appendix B: Land Use Features ..... B
- Figure 4. Current Zoning Map
- Figure 5. Future Land Use Map
- Figure 6. MPCA Permitted Features

Appendix C: Natural Resources C
- Figure 7. Existing Land Cover Type
- Figure 8. Proposed Land Cover Type
- Figure 9. NRCS Soil Survey
- Figure 10. Surface Hydrology Features
- Figure 11. Ecological Features

Appendix D: Public Infrastructure ..... D
- Figure 12. Current Infrastructure Facilities
- Figure 13. Proposed Infrastructure Improvements
- Figure 14. Existing Stormwater Facilities and Drainage Areas
- Figure 15. Proposed Stormwater Facilities and Drainage Areas
- Figure 16. Existing Road Classification
- Figure 17. Proposed Road Classification
- Figure 18. Sidewalks and Trails Map

EXHIBITS

Exhibit A. Overall Site Plan ..... A
Exhibit B. Preliminary Geotechnical Report ..... B
Exhibit C. Minnesota Wetland Conservation Act and U.S. Army Corps of Engineers Approvals C
Exhibit D. Adelmann Phase I Environmental Site Assessment Report ..... D
Exhibit E. Minnesota Department of Natural Resources NHIS Letter and Correspondence ..... E
Exhibit F. State Historic Preservation Office Correspondence ..... F
Exhibit G. Traffic Study ..... G

EXECUTIVE SUMMARY

The Adelmann Family Property is located along County State Aid Highway 2 (260th Street East) and I-35, east of Elko New Market in Scott County. The property is comprised of six parcels totaling 242.5 acres which define the AUAR Study Area. Proposed future land uses within the AUAR Study Area include business/limited industrial park (104.7 acres), commercial (93.7 acres), medium density residential (19.3 acres), and public road right-of-way (24.8 acres).

One development scenario, comprised of the following land uses, is proposed:

- Business district (10.81 acres)
- Business/limited industrial park (57.72 acres)
- Highway (gateway) business/commercial district (82.29 acres)
- Medium density residential for six townhouses and eight four-plex (7.20 acres)

Non-developed acreage will remain as wetlands, wooded/forested, and brush/grassland.

Phased development is proposed to occur over several years, beginning with portions of the property located adjacent to the CSAH 2 (260th Street East) corridor. Infrastructure associated with a projected full build-out of the AUAR Study Area will include:

- Sanitary sewer and water service
- Stormwater management
- Public roads and trails
- Access improvements to CSAH 2 (260th Street East)

The initial draft mitigation plan contained in this AUAR specifies measures or procedures that will be used to avoid or minimize the potential impacts of development within the AUAR Study Area. There were no impacts identified in AUAR Items 10, 14, 15, 16, 17, 19, 20, or 21; therefore, these areas require no mitigation and are not included in the initial draft Mitigation Plan.

Regulatory requirements and/or mitigation measures have been identified for the remaining AUAR items (8, 9, 11, 12, 13, and 18) to reduce the level of potential impact within the AUAR Study Area.

DRAFT ALTERNATIVE URBAN AREAWIDE REVIEW

This Alternative Urban Areawide Review (AUAR) follows the format of an Environmental Assessment Worksheet (EAW, July 2013 version). Where the AUAR guidance (*Recommended Content and Format Alternative Urban Areawide Review Documents, September 2008*) provided by the Minnesota Environmental Quality Board (EQB) indicates that an AUAR response should differ notably from what is required for an EAW, the guidance is noted in *italics and underlined*.

1. ***Project Title:***
   Adelmann Family Property

2. ***Proposer:***
   Adelmann Farms New Market, LLC
   Contact person: Dave Adelmann
   Title: Owner
   Address: 8640 Harriet Avenue
   City, State, ZIP: Bloomington, MN 55420
   Phone: 612.919.1379
   Fax: N/A
   Email: dave@richfieldplumbing.com

3. ***RGU:***
   City of Elko New Market
   Contact person: Renee Christianson
   Title: Community Development Specialist
   Address: 601 Main Street
   City, State,ZIP: Elko New Market, MN 55054
   Phone: 952.461.2777
   Fax: N/A
   Email: rchristianson@cienm.mn.us

4. ***Reason for EAW Preparation:*** *(check one)*

   Required:
   ☐ *EIS Scoping*
   ☐ *Mandatory EAW*

   Discretionary:
   ☐ *Citizen petition*
   ☐ *RGU discretion*
   ☐ *Proposer initiated*

   AUAR Guidance: Not applicable to an AUAR

   If EAW or EIS is mandatory give EQB rule category subpart number(s) and name(s):
   AUAR Guidance: Not applicable to an AUAR

5. ***Project Location:***
   County: Scott
   City/Township: New Market Township
   PLS Location (Section, Township, Range): S ½ of Sec. 23 and NE ¼ of Sec. 26, T113N, R21W
   Watershed (81 major watershed scale): Mississippi River-Lake Pepin major watershed (38)
   Tax Parcel Number: 139.89230090, 89230081, 89230040, 89260071, 89260050 & 89260030
   GPS Coordinates: Long 44.5757, Long -93.3038
   Mailing address: 10675, 10680, 10880, and 10881 - 260th Street East, Elko New Market Township, MN 55020

   AUAR Guidance: Location and maps. a. The county map is not needed for an AUAR. b. The USGS map should be included. c. Instead of a site plan, include: (1) a map clearly depicting the boundaries of the AUAR and any subdistricts used in the AUAR analysis; (2) land use and planning and zoning maps as required in conjunction with items 9 and 27; and (3) a cover map as required for item 10. Additional maps may be included throughout the document wherever maps are useful for displaying relevant information.
   At a minimum attach each of the following to the EAW:

   - *County map showing the general location of the project.* **Appendix A – Figure 1.**
   - *U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable); USGS maps at this scale is unreadable due to the linear features and large project area.* **Appendix A – Figure 2.**
   - *Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan.* **Appendix C – Figures 7, and 8** and **Exhibit A.**

6. Project Description:

AUAR Guidance: Instead of the information called for on the form, the description section of an AUAR should include the following elements for each major development scenario included:

- *Anticipated types and intensity (density) of residential and commercial/warehouse/light industrial development throughout the AUAR area;*
- *Infrastructure planned to serve development (roads, sewers, water, stormwater system, etc.). Roadways intended primarily to serve as adjoining land uses within an AUAR area are normally expected to be reviewed as part of an AUAR. More "arterial" types of roadways that would cross an AUAR area are on optional inclusion in the AUAR analysis; if they are included, a more intensive level of review, generally including an analysis of alternative routes, is necessary;*
- *Information about the anticipated staging of various developments, to the extent known, and of the infrastructure, and how the infrastructure staging will influence the development schedule.*

The 242.5-acre Adelmann Family Property is located along CSAH 2 (260th Street East) and I-35 near Elko New Market in Scott County. **Appendix B – Figure 5** illustrates the proposed future land uses for the property which include

- Business/limited industrial park (104.7 acres)
- Commercial (93.7 acres)
- Medium density residential (19.3 acres)
- Public road right-of-way (24.8 acres)

All proposed future land uses are consistent with the guidance provided by the City of Elko New Market 2040 Land Use Plan.

As shown by Exhibit A, one development scenario is proposed which encompasses the following land uses:

- Business district (10.81 acres)
- Business/limited industrial park (57.72 acres)
- Highway (gateway) business/commercial district (82.29 acres)
- Medium density residential for six townhouses and eight four-plex (7.20 acres)

Non-developed acreage will remain as wetlands, wooded/forested, and brush/grassland.

Phased development is proposed to occur over several years, beginning with portions of the property located adjacent to the CSAH 2 corridor. Municipal sanitary sewer service is located within the north right-of-way of CSAH 2; therefore, development north and south of CSAH 2 may occur independently or concurrently. As shown in **Appendix D – Figure 12,** it is anticipated that subsequent development within the AUAR Study Area will expand north and south of CSAH 2. Additional infrastructure associated with full build-out of the AUAR Study Area will include the following:

Sanitary Sewer: Adjacent to the subject property, the Metropolitan Council has provided two connection points to the Metropolitan Council Environmental Services (MCES) Interceptor located along CSAH 2. One connection point will serve the entire portion of the AUAR Study Area located south of CSAH 2, and the second connection point will serve the southeast portion of the AUAR study area located north of CSAH 2. (**Appendix D – Figure 13**). The remaining portion of the AUAR Study Area located north of CSAH 2 will be serviced by the addition of a new trunk sanitary sewer located along the abandoned railroad grade, which will flow northeast into the MCES interceptor located along I-35. Full build-out of the AUAR Study Area will yield approximately 400,000 gallons per day into the existing MCES interceptor. Wastewater flows from the AUAR Study Area will not temporarily disrupt or negatively impact the efficiency or capacity of the MCES collection and treatment system (Empire plant in Empire Township, Dakota County). Sanitary sewer lines in the AUAR Study Area will range from 8 to 27 inches in diameter to service the users within the AUAR Study Area. Additional information regarding sanitary sewer infrastructure improvements can be found in Question No. 11.

Water Service: Potable water is currently located approximately one mile to the west of the Study Area, along CSAH 2. The existing 16-inch watermain will be extended to service the AUAR Study Area (**Appendix D – Figure 13**). Interior watermains will range from 12 to 16 inches in diameter with private service line connections. The water demand projected at full build-out is estimated at 402,620 gallons per day. Additional information on potable water infrastructure improvements can be found in Question No. 11.

Surface Water: A total of fourteen sub-watersheds are proposed for the AUAR Study Area. All proposed stormwater detention areas will be constructed in upland areas with a minimum of 10.0 acres of total designated land use. **Appendix D – Figure 15** provides additional details. Based on the full build-out scenario, 5.85 acres of cumulative wetland impacts are anticipated in multiple locations within the AUAR Study Area. Future projects which propose wetland impacts will be required to submit a formal sequencing analysis and wetland replacement plan for each lot or parcel. Additional information for surface water and stormwater control can be found in Question No. 11.

Transportation: By 2031, improvements to the overpass bridge and intersections 5 and 6 (southbound and northbound interchange ramps) will be necessary regardless of the associated development status at the AUAR Study Area. Additional recommended improvements include upgrades to the intersection of CSAH 2 and Xerxes Avenue, CSAH 2 and the eastern access to the CSAH 2 Frontage Road, CSAH 2 and Irving Avenue, and CSAH 2 and the I-35 ramps. The AUAR Study Area transportation corridors should be monitored and reevaluated on a regular basis as development occurs and as projections change. Additional information for transportation infrastructure improvements can be found in Question No. 18 and Exhibit G (Traffic Impact Study).

The summary of the magnitude of the development scenario is provided in Table 6-1.

Table 6-1. Project Size and Type

Magnitude of Development Scenario	
Total Project Acreage	242.5
Linear project length	Not Applicable
Number and type of residential units	6 townhouses, 8 four-plexes 38 Units Total (7.20 Acres)
Commercial building area (in acres)	93.10
Industrial building area (in acres)	57.72
Institutional building area (in square feet)	Not Applicable
Other Uses	Not Applicable
Structure height(s)	35 foot maximum per city ordinance

a. *Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.*

The purpose of the project is to provide for a variety of land uses as currently described in this AUAR document which are not currently available within the City of Elko New Market or the surrounding area. The location of the AUAR Study Area, along CSAH 2 and I-35, is a high visibility area for motorists entering and exiting Elko New Market. Based on its high visibility along these major transportation corridors, the subject property is considered highly desirable for commercial uses such as convenience gas, grocery, restaurants, as well as limited industrial type uses and medium density residential. The project will also provide an eastern gateway into the community.

This project is not being executed by a governmental unit, and approval of this project will be determined by the City of Elko New Market as the Responsible Government Unit (RGU) for this AUAR.

Beneficiaries of the project include the project proposer, the City, the local economy, area residents, potential businesses, and future service providers locating in the AUAR Study Area. The local economy will benefit from additional temporary jobs during the phased construction, and full/part time jobs during operations of the various businesses and industries locating to the AUAR Study Area.

b. *Are future stages of this development including development on any other property planned or likely to happen?* ☐*Yes* ☑No
If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

All planned and future phases of the development concept for the AUAR Study Area are included in this AUAR.

c. *Is this project a subsequent stage of an earlier project?* ☐*Yes* ☑No
If yes, briefly describe the past development, timeline and any past environmental review.

Pursuant to the "3-year look-back rule" (MN Rules 4410.4300 Subp. 1), surrounding development/projects that were previously constructed are not defined as an earlier project. These projects do not meet the criteria listed for 'timing' which include

- The existing project began after April 21, 1997.
- The construction of the existing project commenced less than three years before the date the application was submitted for the proposed project ("3-year look back).
- The existing project was not reviewed under a former environmental review.

7. ***Cover Types:*** *Estimate the acreage of the site with each of the following cover types before and after development:*

AUAR Guidance: The following information should be provided:

a. *Cover type map, at least at the scale of USGS topographic map, depicting:*
   i. *Wetlands – identified by type (Circular 39)*
   ii. *Watercourses – rivers, streams, creeks, ditches*
   iii. *Lakes – identify public waters status and shoreland management classification*
   iv. *Woodlands – breakdown by classes were possible*
   v. *Grassland – identify native and old field*
   vi. *Cropland*
   vii. *Current development*

b. *An "overlay" map showing anticipated development in relation to the cover types; this map should also depict any "protection areas," existing or proposed, that will preserve sensitive cover types. Separate maps for each major development scenario should generally be provided.*

Figures 7-1 and 8-1 show existing and proposed land cover types within the AUAR Study Area.

Table 7-1. Land Cover Types (Existing vs. Proposed Acres)

Land Cover Type	Before		After	
	Acres	Percentage	Acres	Percentage
Wetlands	42.5	18%	36.6*	15%
Deep Water/Streams**	0	0%	0	0%
Wooded/Forest	57.5	24%	24.4	10%
Brush/Grassland	71.5	29%	14.7	6%
Cropland	48.8	20%	0	0%
Lawn/Landscaping	9.9	4%	54.1***	23%
Impervious Surface	11.8	5%	102.7	42%
Stormwater Ponds	0.50	<1%	10.0	4%
Other (describe)	0	0%	0	0%
TOTAL	**242.5**	**100%**	**242.5**	**100%**

**Estimated wetland impacts (temporary and permanent) will be determined during design of each phase of development, individual parcel, lot, block, and phase of infrastructure. After acreages assumes permanent wetland impact conversion to Impervious Surface and/or Lawn/Landscape. Refer to Question 11.b.iv.1 for additional information.*

***Assumes streams that are two meters or more in depth during low flow conditions (per EQB's EAW Guidelines, October 2013). The project does not propose any temporary or permanent deep water or stream impacts.*

****Assumes a portion of this acreage will be seeded to native grass species in areas that will not be regularly mowed or maintained (areas to be determined).*

8. ***Permits and Approvals Required:*** *List all known local, state and federal permits, approvals, certifications, and financial assistance for the project. Include modifications of any existing permits, governmental review of plans, and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure. All of these final decisions are prohibited until all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.*

AUAR Guidance: A listing of major approvals (including any comprehensive plan amendments and zoning amendments) and public financial assistance and infrastructure likely to be required by the anticipated types of development projects should be given for each major development scenario. This list will help orient reviewers to framework that will protect environmental resources. The list can also serve as a starting point for the development of the implementation aspects of the mitigation plan to be developed as part of the AUAR.

Table 8-1. Financial Assistance

Funding Source	Fiscal Amount/Structure	Status
Scott County Economic Development Agency-Economic Development Incentive Program (Corridor Readiness Grant)	$103,334 (2017) $77,500 (2018)	2018 Distributed 2018 Pending

All required permits and approvals will be obtained prior to construction. Any necessary permits or approvals not listed in **Table 8-2** have not intentionally been omitted.

Table 8-2. Permits and Approvals

Unit of Government	Type of Application	Status
U.S. Army Corps of Engineers (USACE)	Section 401/404 of the Clean Water Act	To Be Obtained
Minnesota Pollution Control Agency (MPCA)	NPDES Construction Stormwater Permit	To Be Obtained
	NPDES Industrial Stormwater Permit	To Be Obtained (if applicable)
	Sanitary Sewer Extension	To Be Obtained
	Air Emissions Permit	To Be Obtained (if applicable)
	Hazardous Waste Generator License (Small to Minimal)	To Be Obtained (if needed)
Minnesota Department of Natural Resources (MDNR)	Water Appropriations For Construction Dewatering	To Be Obtained (if needed)
Minnesota Department of Health (MDH)	Watermain Extension	To Be Obtained
	Well Abandonment	To Be Submitted
Vermillion River Watershed Joint Powers Organization	Project Review	To Be Submitted (if applicable)

Scott County	Final Plat	To Be Submitted
	Work in Right of Way	To Be Submitted
	Access Permit	To Be Submitted (if applicable)
	Utility Accommodation Permit	To Be Obtained
City of Elko New Market	AUAR Approval	In Process
	Approval of Draft 2040 Comprehensive Plan	In Process
	Developers Agreement	To Be Submitted
	Preliminary and Final Plat	To Be Submitted
	Filling/Grading Permits	To Be Obtained
	Stormwater Management Plan	To Be Obtained
	Building, Plumbing, Electrical, and HVAC Permitting and Inspection	To Be Obtained
	Wetland Replacement Plan (pursuant to Wetland Conservation Act)	To Be Obtained
	Annexation	To Be Submitted
	Property Rezoning	To Be Submitted
	Site Plan Review	To Be Submitted
	Conditional Use Permit (per site)	To Be Obtained
	Site Permit	To Be Obtained
	Vacation of Right-of-Way or Easement (if applicable)	To Be Submitted (if applicable)

9. Land Use:

a. Describe:

i. Existing land use of the site as well as areas adjacent to and near the site, including parks, trails, prime or unique farmlands.

Existing land use within the AUAR Study Area is composed of a single farmstead with a barn and outbuildings, a flea market venue, grassland/pasture, wetlands, agricultural fields, forested upland, and a light commercial (trailer sales) business. Based on historical aerial photographs, the land has been farmed since at least 1937, and the light commercial business has been in operation since the 1970s.

Land use east of the AUAR Study Area encompasses the I-35 corridor. Forested areas surrounding the Vermillion River are located north of the AUAR Study Area. The area to the south is comprised of agricultural fields, and to the west is a mixture of rural residential properties farmsteads, agricultural fields, pastureland, upland and wetland forest, and light industrial businesses. There is also a small, rural industrial park located directly west of the AUAR Study Area on the south side of CSAH 2.

The project is not located within or near a local, State, or Federal Park, or other public recreational facility. An existing multiuse trail is currently located on the northern side of CSAH 2, currently ending at the CSAH 2/I-35 interchange. No vulnerable populations (nursing homes, daycares, schools, etc.) are located within or adjacent to

the AUAR Study Area. Portions of the AUAR Study Area includes farmlands of statewide importance. Please refer to question 10.b for additional soils information.

ii. *Plans. Describe planned land use as identified in comprehensive plan (if available) and any other applicable plan for land use, water, or resources management by a local, regional, state, or federal agency.*

AUAR Guidance: Water-related land use management districts should be delineated on appropriate maps and the land use restrictions applicable in those districts should be described. If any variances or deviations from these restrictions within the AUAR area are envisioned, this should be discussed.

City of Elko New Market 2030 Comprehensive Plan (February 25, 2010)

The proposed development scenario was reviewed for conformance to the current City of Elko New Market's 2030 Comprehensive Plan by reviewing the applicable chapters of Land Use, Natural Resources, and Public Facilities, as well as Appendices A, B, C, D, and E. For the purposes of this AUAR, the City of Elko New Market's 2030 Comprehensive Plan was used to determine general conformity. Based on conversations with the City at the time of AUAR preparation, it is expected that the proposed land uses within the AUAR Study Area will also remain in conformance with the uses proposed in the 2040 Future Land Use Plan which is the City is currently in the process of preparing. These uses include Business/Limited Industrial, Commercial, and Medium Density Residential. Further discussion of specific conformities are discussed in the following sections.

Chapter 4: Land Use

The 2030 Comprehensive Plan guides the vast majority of the AUAR Study Area (approximately 200 acres) to a "Gateway/Transportation Oriented Commercial" land use, with a small portion being guided to "General Commercial" and "Residential Mixed Use". The commercial uses guided by the 2030 Comprehensive Plan are characterized by a wide range of commerce, recreation, and entertainment uses whose trade area is the community and the region. Typical uses might include regional retail centers, service uses, sale of marine craft and automobiles, building supplies, lawn and garden, hotels, motels, restaurants, and gas stations.

Between 2017 and 2019, the City of Elko New Market Planning Commission and City Council re-envisioned the land uses adopted in the 2030 Comprehensive Plan. As a result of the changing demand for retail land and the introduction of e-commerce since the 2030 Comprehensive Plan was adopted, the draft 2040 Comprehensive Plan shows a re-guidance of a portion of the commercial area to include 'business park" type uses.

The development scenario proposed in this AUAR is not entirely consistent with the 2030 Comprehensive Plan but is consistent with the draft 2040 Comprehensive Plan which is currently in the approval process. The land uses proposed in the AUAR Study Area include commercial, business/limited industrial, and medium-density residential which are all consistent with the draft 2040 Plan. The business/limited industrial portion of the AUAR Study Area would only be allowable upon adoption of the 2040 Comprehensive Plan. The remaining areas are considered consistent with both the 2030 and draft 2040 Comprehensive Plans.

Chapter 7: Natural Resources

Portions of the AUAR Study Area are located in or adjacent to an identified concentration of natural resources surrounding the Vermillion River including grassland, shrubland, and woodland. Additional design considerations will be reviewed on a per development lot or parcel basis to ensure protection of adjacent natural resources, including but not limited to, erosion control measures, wetland preservation or enhancement, and open space designation.

Chapter 9: Public Facilities

The development scenario does not conflict with this chapter's goals, existing or proposed facilities, infrastructure improvements or expansion, or existing and proposed public utilities. The proposed sanitary system and watermain facilities within the AUAR Study Area will provide adequate capacity to accommodate the proposed development scenario. Additionally, the City's existing and proposed trunk watermain and sanitary sewer system can accommodate the anticipated flows, treatment capacities, and demands from the full-buildout development scenario. There are no public facilities currently planned in the AUAR Study Area, such as police stations, fire stations, libraries, or city halls.

Appendix A: Transportation Plan

The City's 2030 Transportation Plan, as well as subsequent studies, have identified the need for future capacity improvements at the I-35/CSAH 2 interchange and associated ramps (both northbound and southbound). In 2016,

state and local jurisdictions memorialized a long term plan for the overall interchange by adopting resolutions of support for an ultimate Diverging Diamond Interchange Design. Local roadways proposed within the AUAR Study Area are consistent with MnDOT's Level 1 Layout for the Diverging Diamond, the adopted 2030 Transportation Plan, and the Draft 2040 Transportation Plan.

Appendix B: Park and Trail Plan
The AUAR Study Area is currently outside the service area of the existing parks in the Elko New Market community. The City's adopted 2030 Park and Trail Plan proposes trail enhancements to the existing trail located along the north side of CSAH 2 and an additional trail running along the south side of CSAH 2 within the AUAR Study Area. The trail system along CSAH 2 is also identified as a desired trail corridor in Scott County's Park and Trail Plan, as well as the Metropolitan Council's Regional Park System Statement. The City and County Plans also identify a diagonal trail corridor through the subject property which connects the Vermillion River area to CSAH 2, running approximately along the former railroad right-of-way. Additional trails and sidewalks are planned throughout the AUAR Study Area as required by City Ordinances. Proposed trail and green space development within the AUAR Study Area are complimentary to the Park and Trail Appendix "B" to the City of Elko New Market 2030 Comprehensive Plan.

Appendix C: Water Plan
The AUAR Study Area will connect to the proposed watermain extension along the south side of CSAH 2. The City's adopted 2030 Water Plan also indicates the extension of trunk watermains (12" and 16") within the AUAR Study Area. Water system improvements proposed within the AUAR Study Area are consistent with the Water Plan Appendix "C" to the 2030 Comprehensive Plan and support the proposed uses and development at the AUAR Study Area.

Appendix D: Sanitary Sewer Plan
Sanitary sewer from a portion of the AUAR Study Area will flow to the existing MCES Interceptor located along CSAH 2 through the extension of trunk sanitary sewer lines to the north and south of CSAH 2. The most northerly portion of the AUAR Study Area will require construction of a trunk sanitary sewer line that will connect to the MCES Interceptor located along I-35. The sanitary sewer improvements planned within the AUAR Study Area are consistent with the Sanitary Sewer Appendix "D" to the 2030 Comprehensive Plan and support the proposed uses and scale of development.

Appendix E: Stormwater Management Plan
Stormwater management practices proposed within the AUAR Study Area are compatible with the water quantity and quality and erosion control goals and policies as identified in Appendix "E" to the 2030 Comprehensive Plan.

City of Elko New Market 2040 Comprehensive Plan (Drafted and in approval process)
The proposed development scenario was reviewed for conformance to the City's Draft 2040 Comprehensive Plan. Specifically reviewed were land use, parks and trails, transportation, and all utility components of the draft Plan. The development, as proposed within the AUAR Study Area, is consistent with the draft 2040 Comprehensive Plan.

Scott County 2040 Comprehensive Plan (Adopted June 18, 2019)
The Scott County 2040 Comprehensive Plan was reviewed for conformance to the proposed development scenario. The development scenario conforms to the goals and objectives cited in the following Land Use and Parks and Trails chapters of the Scott County 2040 Comprehensive Plan:

Chapter 5: Land Use
The Scott County 2040 Comprehensive Plan designates land use in the AUAR Study Area as Commercial and Urban Business Reserve. The majority of the land within the study area has a land use designation of Urban Business Reserve, which is intended to reserve land for future commercial and/or industrial development with urban services. Until such time as the land is annexed into a City and provided with urban services, there is limited residential development permitted (1 dwelling per 40 acres). A small portion of the property (19 acres), where the existing trailer sales business is located, is guided by the County Comprehensive Plan to a Commercial land use designation. This designation does permit commercial development in the unincorporated areas of the County. Development of the property within the AUAR Study Area is planned to occur once the property has been annexed into the City of Elko New Market. There are no conflicts between the proposed development and the Scott County 2040 Land Use Plan.

Chapter 7: Parks and Trails
The AUAR Study Area is identified in Chapter 7 of the Scott County 2040 Comprehensive Plan. The trail system proposed along CSAH 2 is identified as a desired trail corridor in Scott County's Park and Trail Plan, identified as the "Elko New Market-Blakeley-Doyle Kennefick Regional Trail Search Corridor". In addition, the AUAR Study Area is included in a "Future Study Area" which is identified in Scott County's Park and Trail Plan. The Future Study Area appears to focus along the Vermillion River and surrounding area which has been identified as a Natural Area Corridor in the County Plan. The City of Elko New Market will confer with Scott County officials during development of the property in regard to the identified "Future Study Area". The proposed CSAH 2 trail within the AUAR Study Area is consistent with Scott County's Park and Trail Plan.

Scott County Local Water Management Plan (2018-2028)
The project does not conflict with the identified water resources or objectives of the plan.

Vermillion River Watershed Joint Powers Organization Rules (2016 Management Plan Update)
Development within the AUAR Study Area may be subject to the current applicable standards and rules of the VRWJPO; including Wetland Alteration (Section 6.00), Buffer (Section 7.00), Erosion and Sediment Control (Section 8.00), Stormwater Management (Section 9.00), and Drainage Alteration (Section 10.00). The authority and scope of the VRWJPO rules (per Section 1.00) will apply to each individual lot or parcel within the AUAR Study Area if found nonconforming to the City of Elko New Market's Stormwater Management Plan as found in Appendix E of the 2030 Comprehensive Plan.

Additionally, according to Appendix B of the 2016 Management Plan Update, the VRWJPO has the authority to review and comment on development plans at project sites larger than 40 acres as well as projects that impact or are located near watercourses or unique natural resources. The project proposed for the AUAR Study Area is larger than 40 acres in size and may impact or be near watercourses or unique natural resources, giving the VRWJPO authority to review proposed development.

MPCA Impaired Waters List
The Vermillion River (a listed MPCA Section 303d Impaired Water for Escherichia coli and Mercury in fish tissue) is located 0.16 miles north of the AUAR Study Area (**Appendix C – Figure 10**). There are no other special waters within a 1-mile radius of the Project site.

iii. Zoning, including special districts or overlays such as shoreland, floodplain, wild and scenic rivers, critical area, agricultural preserves, etc.

The AUAR Study Area is currently under Scott County planning and zoning jurisdiction, with the portion of the AUAR Study Area north of County Road 2 zoned as Urban Business Reserve (UBR) and the portion of the AUAR Study Area south of County Road 2 zoned as both UBR and General Commercial (C-1) where the existing light commercial use is located. The Urban Business Reserve (UBR) district designates land for eventual urban and commercial uses once served it is by public utilities. The zoning designation may be amended once the land is annexed into an adjoining city or the site is developed and served by public utilities. The portion of the site zoned as C-1 allows for general retail and commercial uses. The intent is for the AUAR Study Area to eventually be annexed into the City of Elko New Market, at which time it would be zoned in the Urban Reserve (UR) district, the assumed base zoning designation at the time of annexation.

Based on the proposed variety of uses at the AUAR Study Area, portions of the site will need to be rezoned to the following Elko New Market zoning classifications:

Business Warehousing District (B-6)
The purpose of the B-6 Business Warehousing District is to provide for the establishment of wholesale and retail trade of large volume or bulk commercial items, storage and warehousing. The overall character of the B6 district is intended to be transitional in nature, thus industrial uses allowed within this district shall be limited to those which can compatibly exist adjacent to commercial and lower intensity activities. As outlined in the proposed development concept, a portion of the AUAR Study Area is expected to be rezoned to B-6.

Business Campus District (B-7)
As outlined in the development concept, approximately 16.95 acres of the AUAR Study Area will need to be rezoned to allow for the uses defined in the B-7 district including business offices and wholesale showrooms. Development

is intended for these uses with a high level of landscaping (minimum 30% area), amenities, pedestrian circulation, and architectural standards.

Highway (Gateway) Business District (B-4)
As outlined in the development concept, approximately 103.97 acres of the AUAR Study Area will need to be rezoned to allow for the uses defined in the B-4 district including service-oriented and commercial uses. Development is intended with a high regard for architectural appearance and site design to create an aesthetically appealing gateway to the larger Elko New Market community. The B-4 district requires a minimum 30% area to be landscaped.

Medium Density Residential District (R-3)
As outlined in the development concept, approximately 22.48 acres of the AUAR Study Area will need to be rezoned to allow for the uses defined in the R-3 district including a variety of housing options such as two-family dwellings, three-plexes, four-plexes, townhomes, and condominiums. The R-3 district requires a minimum 50% area to be landscaped.

The AUAR Study Area is not located in a shoreland district, floodplain, wild and scenic river segment, critical area, agricultural preserve, or airport safety zone. The portion of the property located north of CSAH 2 is enrolled in the Green Acres Program.

b. *Discuss the project's compatibility with nearby land uses, zoning, and plans listed in Item 9a above, concentrating on implications for environmental effects.*

AUAR Guidance: Designated parks, recreation areas, or trails. If development of the AUAR will interfere or change the use of any existing such resource, this should be described in the AUAR. The RGU may also want to discuss under this item any proposed parks, recreation areas, or trails to be developed in conjunction with development of the AUAR area.

The AUAR must include a statement of certification from the RGU that its comprehensive plan complies with the requirements set out at 4410.3610, subpart 1. The AUAR document should discuss the proposed AUAR area development in the context of the comprehensive plan. If this has not been done as part of the responses to items 6, 9, 18, 21, and others, it must be addressed here; a brief synopsis should be presented here if the material has been presented in detail under other items. Necessary amendments to comprehensive plan elements to allow for any of the development scenarios should be noted. If there are any management plans of any other local, state, or federal agencies applicable to the AUAR area, the document must discuss the compatibility of the plan with the various development scenarios studied, with emphasis on any incompatible elements.

The proposed project is considered to be compatible with adjacent land uses as described in Section 9.a.i. of this AUAR and consistent with planned land uses identified in the City's draft 2040 Comprehensive Plan. As described in detail in Section 9.a.ii. of this report, development of the northern portion of the property located north of CSAH 2 will require an amendment to the City's 2030 Comprehensive Plan. The City's Draft 2040 Comprehensive Plan has this portion of the property re-guided to a land use that is consistent with the proposed development plan.

Designated Parks, Recreation Areas, or Trails.
There is an existing bituminous path located along the north side of CSAH 2 within the AUAR Study Area. This bituminous path was constructed by the Metropolitan Council at the time the MCES Interceptor was constructed to serve the Elko New Market community and was constructed as a maintenance access road for the interceptor line. Although it was not constructed as a multi-use path, the community has utilized the access road as a community trail, with no objection from the Metropolitan Council. The existing maintenance road does not meet design requirements of a multi-use trail, both in terms of proximity to the CSAH 2 roadway (minimum setbacks) and width of the trail. Relocation and redesign of the trail is anticipated during the development process and/or reconstruction of the interchange. There are no other existing park or recreation facilities within the AUAR Study Area that will be affected by the proposed development. A number of sidewalks, pedestrian trails, and amenities are planned within the AUAR Study Area as depicted on **Exhibit A** which are consistent with local and regional comprehensive plans for the area. City, County, and Regional park and trail facilities are discussed in more detail in Section 9.a.ii. of this report.

There are no identified environmental conflicts or incompatibilities between the proposed project and nearby land uses, zoning, or other local or regional plans. Please refer to the information provided in item 9a. Trail enhancements to the existing multiuse trail to the north of CSAH 2 are planned as a component of the pedestrian circulation concept intended for the AUAR Study Area.

c. *Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 9b above.*

There are no identified environmental conflicts/incompatibilities between the proposed project and nearby land uses, zoning, or other local or regional plans. Please refer to the information provided in item 9a.

Design considerations included to protect and enhance natural resources surrounding the Vermillion River include on-site stormwater detention, wetland buffers and replacement, undeveloped open spaces and natural areas, and tree protection. The proposed 9.5 acres of stormwater detention is assumed based on the amount of impervious surface at the full buildout scenario. Additional stormwater control measures will be designed and constructed as individual parcels and lots develop within the AUAR Study Area. Each individual lot or project will be required to meet the stormwater management standards set forth in the current city code, ordinances, and NPDES Construction Stormwater Permit at the time of application.

Wetlands on site may be replaced in the northern portion of the AUAR Study Area to create a natural area and a buffer between the development scenario and Vermillion River, if feasible. Trees will be also be preserved in the northern portion of the site to enhance the natural area and buffer.

10. Geology, Soils and Topography/Land Forms:

a. *Geology – Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.*

AUAR Guidance: A map should be included to show any groundwater hazards identified.

The Minnesota Geological Survey (http://www.mngs.umn.edu/service.htm) indicates one type of bedrock (St. Croix Horst Sandstones) within the AUAR Study Area. Bedrock within the region varies from approximately 204 to 260 feet. The site is located on sandstone, siltstone, and conglomerate of the Hinckley, Fond du Lac, and Solar Church Terrain.

There are no known or mapped sinkholes, shallow limestone, shallow aquifers, or karst features identified within or near the AUAR Study Area, and the geotechnical report also did not identify any sinkholes, shallow limestone, shallow aquifers, or karst features within the AUAR Study Area. The Minnesota Geospatial Commons-Karst Features Inventory Points were also reviewed for these features, which yielded no known mapped occurrences within or near the AUAR Study Area. (ftp://ftp.gisdata.mn.gov/pub/gdrs/data/pub/us_mn_state_dnr/geos_karst_feature_inventory_pts/metadata/preview/jpg)

b. *Soils and topography – Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 11.b.ii.*

AUAR Guidance: The number of acres to be graded and number of cubic yards of soil to be moved need not be given; instead, a general discussion of the likely earthmoving needs for development of the area should be given, with an emphasis on unusual or problem areas. In discussing mitigation measures, both the standard requirements of the local ordinances and any special measures that would be added for AUAR purposes should be included. A standard soils map for the area should be included.

The NRCS Web Soil Survey (September 12, 2018) was reviewed for mapped soil unit characteristics within the AUAR Study Area. Mapped soils consist of 15 soil types, of which the predominant soil type is Hayden Loam soils, 2-6% slopes (30 percent of the AUAR Study Area). Soil characteristics and attributes are provided in the following **Table 10-1** and illustrated on **Figure 9** in **Appendix C**.

Table 10-1. Soil Characteristics within AUAR Study Area

Soil Symbol	Soil Unit Name	Acres	HEL	Hydrologic Group*	Hydric Rating	Farmland Classification
Bc	Blue Earth mucky silt loam, 0-1% slopes	3	NHEL	B/C	Hydric	Prime (if drained)
LbD	Estherville-Burnsville complex, 12-50% slopes	16	HEL	A	Predom. Non-Hydric	Not Prime
LbC	Estherville-Burnsville complex, 6-12% slopes	0.8	PHEL	A	Predom. Non-Hydric	Not Prime
Ga	Glencoe silty clay loam, 0-1% slopes	44	NHEL	C/D	Hydric	Prime (if drained)
HaD	Hayden loam, 10-22% slopes	4	HEL	C	Predom. Non-Hydric	Not Prime
HaD2	Hayden loam, moderately eroded, 10-22% slopes	5	HEL	C	Predom. Non-Hydric	Not Prime
HaE2	Hayden loam, 18-25% slopes	0.23	HEL	B	Non-Hydric	Not Prime
HaB	Hayden loam, 2-6% slopes	73	NHEL	C	Predom. Non-Hydric	Prime
HaC	Hayden loam, 6-10% slopes	8	PHEL	C	Predom. Non-Hydric	Statewide Importance
HaC2	Hayden loam, moderately eroded, 6-10% slopes	37	PHEL	C	Predom. Non-Hydric	Statewide Importance
HcD3	Hayden soils, severely eroded, 12-18% slopes	2	HEL	B	Non-Hydric	Not Prime
HcC3	Hayden soils, severely eroded, 6-12% slopes	2	PHEL	B	Non-Hydric	Statewide Importance
PbA	Houghton muck, 0-1% slopes	9	NHEL	A/D	Hydric	Not Prime
PaA	Klossner muck, 0-1% slopes	0.20	NHEL	C/D	Hydric	Statewide Importance
Wb	Webster-Glencoe silty clay loams	38	NHEL	B/D	Hydric	Prime (if drained)

Legend:

Highly Erodible Land
HEL: Highly Erodible Land
PHEL: Potentially Highly Erodible Land
NHEL: Not Highly Erodible Land

*Infiltration Rate
A: >0.30 inches/hour
B: 0.15-0.30 inches/hour
C: 0.05-0.15 inches/hour
D: <0.05 inches/hour

Hydric Rating
Hydric: 100%
Predominately Hydric: >67% and <100%
Partially Hydric: >33% and <67%
Predominately Non-Hydric: <1% and <33%
Not Hydric: 0% hydric

A majority of the AUAR Study Area is mapped as Prime Farmland or Prime Farmland if Drained (65 percent of the AUAR Study Area). The remaining soils are mapped as either Farmland of Statewide Importance or Not Prime Farmland. Approximately 13 acres located in the northeast portion of the study area has been identified by the MN DNR as an area of possible aggregate resources through the Aggregate Resource Mapping Program.

Topography of the AUAR Study Area is generalized as rolling from 1,058 to 1,134 msl, with higher elevations located in the southern half of the AUAR Study Area, and sloping north towards the abandoned railroad tracks and further north to the Vermillion River (**Figures 2 and 3** in **Appendix A**). Steep slopes (12% or greater) can be found in the northeast and southern portions of the AUAR Study Area.

The geotechnical evaluation report was completed for several locations within the AUAR Study Area on November 20, 2017 (**Exhibit B**). Eighteen (18) soil borings were taken throughout the site from depths of 15 to 25 feet. Clay topsoil was

present in most of the borings from 2 to 12 feet deep. General underlying soils consisted of lean clay or sandy lean clay and sands with varying amounts of silt, clay, and gravel. Glacial till was present in most of the borings below the topsoil and Alluvial deposits, at a depth of 7.5 to 25 feet.

Site conditions are consistent with the anticipated soil and hydrological conditions, requiring typical grading and excavation of unsuitable soils before development. Erosion capabilities of the soils are moderately susceptible as described by the NRCS Soil Erodibility (Kw) Factor rating which ranges from 0.24 and 0.37. Earthwork within the AUAR Study Area will be phased, starting with the excavation and embankment for infrastructure improvements, followed by the site grading for the development of individual sites.

Construction activities will temporarily expose soils to an increased risk of erosion from wind and precipitation. Appropriate erosion and sediment control best management practices (BMPs) will be selected and defined by each individual lot's Stormwater Pollution Prevention Plan (SWPPP). BMP selections will be based on the potential risk of erosion, current site conditions, and maintenance through the duration of each construction phase to reduce the potential of sedimentation occurring to surface water resources or migrating offsite. Temporary BMPs will be inspected and maintained (per the NPDES Construction Stormwater Permit) until permanent vegetation and stabilization has occurred. Permanent BMPs will be incorporated into each individual project design and Stormwater Pollution Prevention Plan (SWPPP) to minimize post-construction erosion and sedimentation.

11. Water Resources:

AUAR Guidance: Physical impacts on water resources. The information called for on the EAW form should be supplied for any of the infrastructure associated with the AUAR development scenarios, and for any development expected to physically impact any water resources. Where it is uncertain whether water resources will be impacted depending on the exact design of future development, the AUAR should cover the possible impacts through a "worst case scenario" or else prevent impacts through the provisions of the mitigation plan.

a. *Describe surface water and groundwater features on or near the site in a.i. and a.ii. below.*

   i. *Surface water – lakes, streams, wetlands, intermittent channels, and county/judicial ditches. Include any special designations such as public waters, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include MDNR Public Waters Inventory number(s), if any.*

   There are no lakes, designated wildlife lakes, migratory waterfowl feeding/resting areas, trout streams/lakes, MPCA or MDNR listed calcareous fens, and county or jurisdictional ditches within one mile of the AUAR Study Area.

   One unnamed USGS stream is located in the northwest corner of the AUAR Study Area. The unnamed watercourse is a tributary of the Vermillion River, which is located approximately 0.16 miles north of the AUAR Study Area (**Appendix C – Figure 10**). The Vermillion River continues to flow northeast and east before discharging into the Mississippi River 36 miles east of the AUAR Study Area.

   The MDNR Public Waters Inventory identifies the Vermillion River and three unnamed wetlands (#70000500, 70029600, 70032500) within one mile of the AUAR Study Area (**Appendix C – Figure 10**). The unnamed USGS stream segment which is a tributary of the Vermillion River within the AUAR Study Area (AUID 07040001-516) is designated as a Section 303d listed 2018 impaired water for Escherichia coli and mercury in fish tissue. Both impairments have an EPA-approved Total Maximum Daily Load (TMDL) and TMDL Implementation Plan.

   Twenty-two (22) wetlands totaling 42.45 acres were delineated in the AUAR Study Area (**Appendix C – Figure 7**). The wetland boundaries and types were approved by the Local Government Unit (City of Elko New Market, application #ELNM3-18) of the Minnesota Wetland Conservation Act and U.S. Army Corps of Engineers (File No. 2018-03159-JTB). The delineated wetlands were Type 2-Fresh (wet) Meadow/Sedge Meadow, Type 3-Shallow Marsh, Type 4-Deep Marsh, Type 5-Shallow, Open Water, Type 6-Shrub-carr, and Type 7-Hardwood swamp wetlands. Please refer to **Exhibits C and D** as well as EAW item 11.b.iv. for additional detailed information.

   ii. *Groundwater – aquifers, springs, seeps. Include: 1) depth to groundwater; 2) if project is within a MDH wellhead protection area; 3) identification of any onsite and/or nearby wells, including unique numbers and well logs if*

available. If there are no wells known onsite or nearby, explain the methodology used to determine this.

1) The Minnesota Department of Natural Resources Cooperative Groundwater Monitoring Website maintains data on groundwater levels. The closest observation well to the project location is MDNR Well #19097, which is located approximately 4 miles southeast of the AUAR Study Area. Water levels in the most recent data record (October 7, 2015) were measured at 1,004.42 ft. MSL.

   The geotechnical report (**Exhibit B**) encountered shallow groundwater at 2-5 feet below the ground surface in five borings (located at B2, B6, B8, B17, and B18). A majority of the remaining borings encountered groundwater from 7-15 feet, with three boring locations not encountering any groundwater. The report expects groundwater to be encountered in the range of 1,069 to 1,111 feet MSL; however, this may vary depending on relation to surface water or drainage ways.

2) The AUAR Study Area is not located within the City of Elko New Market Wellhead Protection Area (Elko-New Market) or the Drinking Water Supply Management Area.

3) According to the Minnesota Department of Health – Minnesota Well Index Online, there are five identified wells located within the AUAR Study Area (**Appendix D – Figure 12**).

Table 11-1. MDH Minnesota Well Index

Unique ID	Name	Well Type	Status
234025	Hole A	Test Well	Unknown
509171	N.D.S.	Domestic	Active
234026	Hole B	Test Well	Unknown
249593	Trader's Market 1	LN	Active
234027	Hole C	Test Well	Unknown

The previous and current landowners are not aware of any onsite or adjacent aquifers, springs, seeps, or wells, such as old farm wells or artesian wells that are not registered by the Minnesota Department of Health's Minnesota Well Index.

No permanent wells are proposed within the AUAR Study Area once construction has concluded.

b. Describe effects from project activities on water resources and measures to minimize or mitigate the effects in Item b.i. through Item b.iv. below.

i. Wastewater – For each of the following, describe the sources, quantities and composition of all sanitary, municipal/domestic and industrial wastewater produced or treated at the site.

AUAR Guidance: Observe the following points of guidance in an AUAR:

- *Only domestic wastewater should be considered in an AUAR – industrial wastewater would be coming from industrial uses that are excluded from review through the AUAR process;*
- *Wastewater flows should be estimated by land use subareas of the AUAR area; the basis of flow estimates should be explained;*
- *The major sewer system features should be shown on a map and expected flows should be identified;*
- *If not explained under item 6, the expected staging of the sewer system construction should be described;*
- *The relationship of the sewer system extension to the RGU's comprehensive sewer plan and (for metro area AUARs) to Metropolitan Council regional system plans, including MUSA expansions, should be discussed. For non-metro area AUARs, the AUAR must discuss the capacity of the RGU's wastewater treatment system compared to the flows from the AUAR area; any necessary improvements should be described;*

- *If on-site systems will serve part of the AUAR the guidance in EAW Guidelines on page 16 regarding item 18b under Residential development should be followed.*

1) *If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.*

   Wastewater flows are expected to be typical of the flows and characteristics of residential, commercial, and light industrial land uses. No pre-treatment of waste flows is expected based on the proposed land uses. Wastewater volumes of up to 400,000 gallons per day are anticipated from the AUAR Study Area after full build out-occurs. Proposed sanitary sewer pipe diameters will be 8 to 27 inches.

   The existing 42-inch sanitary sewer Metropolitan Council Environmental Services (MCES) interceptor flows west to east along the north side of CSAH 2. An 18-inch and a 27-inch sanitary sewer stub are located at the intersection of the eastern access Frontage Road with CSAH 2. **Appendix D – Figure 13** illustrates a boundary that indicates the approximate area which could be served immediately with the MCES interceptor. Connection to the MCES interceptor will provide service to portions of the AUAR Study Area south of CSAH 2 and the approximate southeast quarter of the AUAR Study Area north of CSAH 2. The remaining north half and southwest portions of the AUAR Study Area would be serviced by a new trunk sanitary sewer along the abandoned railroad grade, which flows northeast into the MCES interceptor (yellow line on **Appendix D – Figure 13,**). Construction staging of the proposed sanitary sewer system would begin at the eastern access of the Frontage Road with CSAH 2.

   The City of Elko New Market's wastewater treatment system was decommissioned in 2011. All waste flows from the City currently discharge directly into the MCES interceptor with a capacity of 2.9 million gallons per day. The MCES interceptor flows east to the Empire plant (Empire Township, Dakota County). Wastewater flows from the AUAR Study Area would not temporarily disrupt or negatively affect the operational efficiency of the MCES collection and treatment system.

   The proposed sanitary sewer system layout, flows, and connections to MCES interceptor are consistent with planned improvements and projected sanitary sewer system capacity detailed in the City of Elko New Market 2030 Comprehensive Plan and the DRAFT 2040 Comprehensive Plan.

2) *If the wastewater discharge is to a subsurface sewage treatment systems (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system.*

   There are no wastewater discharges proposed to any subsurface sewage treatment systems (SSTS).

3) *If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent limitations to mitigate impacts. Discuss any effects to surface or groundwater from wastewater discharges.*

   There are no wastewater discharges proposed to any surface water or groundwater resources.

ii. *Stormwater – Describe the quantity and quality of stormwater runoff at the site prior to and post construction. Include the routes and receiving water bodies for runoff from the site (major downstream water bodies as well as the immediate receiving waters). Discuss any environmental effects from stormwater discharges. Describe stormwater pollution prevention plans including temporary and permanent runoff controls and potential BMP site locations to manage or treat stormwater runoff. Identify specific erosion control, sedimentation control or stabilization measures to address soil limitations during and after project construction.*

AUAR Guidance: For an AUAR the following additional guidance should be followed in addition to that in EAW Guidelines:

- *It is expected that an AUAR will have a detailed analysis of stormwater issues;*
- *A map of the proposed stormwater management system and of the water bodies that will receive stormwater should be provided;*
- *The description of the stormwater systems would identify on-site and "regional" detention ponding and also indicate whether the various ponds will be new water bodies or converted existing ponds or*

wetlands. Where on-site ponds will be used but have not yet been designed, the discussion should indicate the design standards that will be followed.

- *If present in or adjoining the AUAR area, the following types of water bodies must be given special analyses:*
    - *Lakes: within the Twin Cities metro area a nutrient budget analysis must be prepared for any "priority lake" identified by the Metropolitan Council. Outside of the metro area, lakes needing a nutrient budget analysis must be determined by consultation with MPCA and MDNR staff;*
    - *Trout streams: if stormwater discharges will enter or affect a trout stream an elevation of the impacts on the chemical composition and temperature regime of the stream and the consequent impacts on the trout population (and other species of concern) must be included.*

The northern portion of the AUAR Study Area generally drains north toward the Vermillion River, while areas south of CSAH 2 (260th Street East) drain east under I-35 to a tributary of the Vermillion River (**Appendix D – Figure 14**). The composition of existing stormwater runoff is primarily high in total suspended solids, phosphorus, and nitrates from the dominant agricultural use within the AUAR Study Area.

Temporary erosion and sediment control best management practices (BMPs) will be installed, maintained/repaired, and amended throughout construction as required to remain compliant with the current NPDES Construction Stormwater Permit requirements at the time of permit coverage. SWPPP development and NPDES Construction Stormwater Permit coverage will occur per phase of plat, per buildable lot, in phases of multiple lots, or by individual parcels as development progresses throughout the AUAR Study Area.

Temporary BMPs may include (but are not limited to) silt fence, bio-rolls/filter logs, rock construction entrances, mulch/hydro mulch, and permanent native seeding or turf seeding in appropriate areas.

The project's co-permittees (primary contractor and owner) will be jointly responsible for all SWPPP components. The primary contractor will be responsible for all SWPPP components during active construction which includes amending the SWPPP as necessary, installation, maintenance, and repair of all temporary erosion and sediment control BMPs.

The quality of post-construction stormwater runoff from the project will be typical of an urban land use with impervious surfaces and lawn/landscaping generating higher concentrations of total suspended solids and total phosphorus. Stormwater runoff is proposed to be conveyed into three major drainage areas (two north and one south of CSAH 2/260th Street East). Three subwatersheds are proposed in the northeast major drainage area, seven subwatersheds in the northwest major drainage area, and four subwatersheds within the south major drainage area (**Appendix D – Figure 15**).

Proposed subwatersheds provide dedicated land use for one or two proposed stormwater detention areas, in addition to the existing stormwater detention areas located north and adjacent to CSAH 2 (260th Street East) and south of the Featherlite Trailer Sales site (**Appendix D – Figure 14**). All proposed stormwater detention will be constructed in upland areas with 9.5 acres of total designated land use.

All proposed stormwater detention areas assume a one-inch water quality volume over the net new impervious surfaces within the proposed subwatershed. The composite proposed impervious surface area is seventy-two percent (72%) of the total AUAR Study Area (**Appendix C – Figure 8**). The proposed business/limited industrial park (72% impervious), commercial (85% impervious), and medium density residential (65% impervious) land uses were used to calculate the composite area (**Appendix B – Figure 5**).

Conceptual detention locations and footprints (size) are placed in the most suitable locations of each proposed subwatershed based on the existing topography (**Appendix D – Figure 15**) and development scenario. The geotechnical report results show low-permeability soils (clay and lean clay sand) that are not adequate or functional for infiltration systems; therefore, volume reduction techniques will be customized to each individual detention design and/or building site. Additional stormwater management areas may be required on lots and parcels to meet volume control requirements.

Final detention design and permanent stormwater treatment will adhere to the current NPDES Construction Stormwater permit requirements, City of Elko New Market Environmental Protection Ordinances, and applicable Vermillion River Watershed Joint Powers Organization (VRWJPO) standards.

Currently, according to Appendix B of the VRWJPO's 2016 Management Plan Update, the VRWJPO has the authority to review and comment on development plans at project sites larger than 40 acres as well as projects that impact or are located near watercourses or unique natural resources. The AUAR Study Area is larger than 40 acres in size and may be located or impact watercourses or unique natural resources, giving the VRWJPO authority to review all future proposed developments in this area.

Stormwater runoff from the AUAR Study Area will not discharge to a "priority lake" as identified by the Metropolitan Council. Stormwater runoff is not anticipated to negatively affect the quality or quantity of adjacent wetlands or streams on or near the AUAR Study Area.

iii. *Water appropriation – Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a MDNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation.*

AUAR Guidance: If the area requires new water supply wells specific information about that appropriation and its potential impacts on groundwater levels should be given; if groundwater levels would be affected, any impacts resulting on other resources should be addressed.

Short-term temporary construction dewatering of surface or groundwaters may be required at the time of construction (depending on current field conditions) to facilitate construction activities for the placement of structural footings and utility lines. If dewatering is anticipated to exceed 10,000 gallons per day or 1,000,000 gallons per year, the contractor will be required to obtain a Water Appropriations Permit from the Minnesota Department of Natural Resources (MDNR) Division of Waters prior to initiating such activities. Measures to avoid, minimize, or mitigate the environmental effects from construction related to dewatering are unknown at this time, and therefore will be determined when developing the dewatering plans as required by a Stormwater Pollution Prevention Plan amendment of the NPDES Construction Stormwater Permit.

The five (5) registered active wells will be sealed according to MDH standards by a licensed well contractor. If unidentified wells are discovered during construction they will be reported to the Minnesota Department of Health and then sealed by a licensed well contractor according to MDH standards.

Potable water service will be provided by the City of Elko New Market's existing municipal wells and associated treatment, storage, and distribution system. The City currently draws water from three of four working wells (Elko #2, Elko #3, and Elko New Market #4) New Market #2 is only equipped for observing water levels in the aquifer and New Market #3 is normally off-line since there is no raw water line connecting it to the treatment facility. New Market well #3 can be manually placed on-line in case of an extreme emergency. (New Market #1 has been sealed and abandoned).

A review of available fire flows to sites just east of I-35 from the study area indicate the system could deliver 4,450 gallons per minute for 1.7 hours under the following conditions:

- With the largest well out of service
- With only treated water being supplied
- With all reservoirs full at the beginning of the demand period

The city currently has storage capacity based on common methods of calculating to meet firefighting and pressure demands for growth; however, elevated storage is planned in the vicinity of the study area when population/demand warrants it. Opportunities for land acquisition and distribution system improvements that support future storage on high ground south of Newton Circle will be sought as development occurs. Adding 1 million gallons of elevated storage in this area would boost fire flows to 7,500 gpm or greater for 2 hours.

Potable public water service is located to the west of the AUAR Study Area, along the south side of CSAH (260th Street East) at France Avenue. The intent is to connect the entire AUAR Study Area to the City of Elko New Market's existing 16-inch watermain by way of a 16-inch line extension. Watermain within the AUAR Study Area will be 12 to 16 inches in diameter with private service line connections.

Water demand for the full build-out scenario is estimated at 402,620 gallons per day based on proposed future land use acreages (**Exhibit A**). The individual future land use demands are shown in the following Table 11-2.

Table 11-2. Estimated Potable Water Demand

Future Land Use Type	Gallons Per Day/Acre	Land Use Acres	Estimated Water Demand (Gallons Per Day)
Business/Limited Industrial Park	3,500	57.7	202,020
Commercial/Business Campus District	2,000	93.1	186,200
Medium Density Residential	2,000*	7.2	14,400

**Assumed 100 gallons per day/person at 2.5 people/unit with 8 units/acre*

The City's water treatment system can currently supply 2.419 million gallons per day (MGD) of potable water to its distribution system. Under existing conditions and based on historical data, the City's peak day demand is expected to be 1.303 MGD which allows 1.116 MGD of availability for new demand.

The City maintains two elevated water storage tanks which provide a combined total capacity of 400,000 gallons. Along with other system storage, the City currently has approximately 318,000 gallons of "excess" finished water storage capacity which allows for new development. While growth in other areas would also reduce this reserve capacity, the treatment plant and other components of the system are expandable as may be needed to accommodate growth in all areas of the city.

Static water pressure in the vicinity ranges from approximately 52 psi to 74 psi dependent upon the water elevation within the elevated water storage tanks. As previously noted, assuming high service pumps were contributing and all reservoirs were full at the time of a large fire demand, the City estimates the system could deliver 4,450 gallons per minute for at least 1.7 hours. This also assumes the distribution and delivery system at the affected site will have adequate capacity to accommodate the maximum flow.

iv. Surface Waters

1) Wetlands – Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed, and identify those probable locations.

Road layouts avoid most of the delineated wetlands while providing functional traffic flows throughout the AUAR Study Area. For the purposes of this AUAR evaluation, assumptions on the placement of impervious surfaces, buildable lots/parcel boundaries, and individual building locations were overlaid onto delineated wetlands to estimate up to 5.85 acres of cumulative wetland impacts at multiple locations as a result of the full build-out scenario (**Exhibit A**).

Project proposers that intend to propose wetland impacts will be required to submit a formal sequencing analysis with a wetland replacement plan upon finalization of the construction plans for each lot or parcel. The wetland replacement plan will specify compensatory mitigation for all unavoidable permanent wetland impacts. The wetland impact areas will be mitigated on-site and/or through the purchase of offsite wetland bank credits from an approved wetland bank.

Exact locations of suitable on-site replacement sites or mitigation banks are speculative for this evaluation and are subject to change. As development within the AUAR Study Area progresses and grading plans are completed, potential on-site wetland mitigation areas will be evaluated by the City of Elko New Market (Local Government Unit for the Wetland Conservation Act) and U.S. Army Corps of Engineers. Potential on-site

mitigation locations may include areas north of the abandoned railroad grade and/or adjacent to proposed stormwater management detention areas (if feasible).

The purchase of wetland mitigation bank credits is entirely dependent on available bank credits in Bank Service Area No. 8 at the time of the replacement plan application. The wetland replacement plan will comply with the Minnesota Wetland Conservation Act (MN Rules 8420) and Section 404 of the Federal Clean Water Act.

2) *Other surface waters – Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicial ditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.*

AUAR Guidance: This item need only be addressed if the AUAR area would include or adjoin recreational water bodies.

One new road crossing is proposed over the Unnamed USGS stream located in the northwest portion of the AUAR Study Area. The purpose of the major collector road is to connect with a future road to provide an east-west travel corridor from Xerxes Avenue (County Road 19) to the AUAR Study Area and future developments west of the AUAR Study Area (**Appendix D – Figure 17**). The crossing is assumed to be designed with a box culvert, a natural stream bottom, and structural features to not impede fish passage or habitat. Stormwater runoff from the road sections will be treated in accordance with applicable permit and regulatory requirements. Development within the AUAR Study Area will not change the number or type of watercraft on any water body.

12. Contamination/Hazardous Materials/Wastes:

a. *Pre-project site conditions – Describe existing contamination or potential environmental hazards on or in close proximity to the project site such as soil or ground water contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.*

Minnesota Pollution Control Agency (MPCA) records indicate 27 potentially hazardous or contaminated sites within a one-mile radius of the AUAR Study Area, including one site within the AUAR Study Area. The MPCA's Master Entity System (MES) dataset of known sites within one mile of the AUAR Study Area is illustrated by **Appendix B – Figure 6**. There are eight documented spills or leaks from above or below ground storage tanks or hazardous waste storage/generators/sites within one mile of the AUAR Study Area.

APPRO Development authorized ISG to conduct a Phase I Environmental Site Assessment of the AUAR Study Area (Report dated September 14, 2018; **Exhibit D**). The purpose of the Phase I was to evaluate the potential for any hazardous substances or materials present on the site. Several visual indicators of hazardous materials, containers, distressed vegetation, soil mounds, odors, or suspicious land use activities were observed during the site visit in 2018. City and County officials were also interviewed and both were aware of multiple historical contaminations on the site.

ISG did identify one Historical Recognized Environmental Condition (HREC) and two Recognized Environmental Conditions (REC) associated with the AUAR Study Area. The HREC is associated with the release of gasoline from the former Registered Leaking Storage Tanks (LUAST), which was remediated to the satisfaction of the regulatory agencies and the site was issued a regulatory site closure. The two RECs, as described in Exhibit G, were based on environmental hazards observed from several areas of solid waste, hazardous materials, 55 gallon drums, and unregistered above ground/below ground storage tanks and other hazardous liquid containers.

Depending on the specific activities or land disturbing activities that are planned, further investigation and testing may be warranted in order to document the presence or absence of contamination at the subject property. Additional

investigation and testing may also be warranted to determine whether contamination levels may be above thresholds that might require reporting to applicable agencies or regulated handling and/or disposal.

If potentially contaminated materials (or other environmental hazards) are discovered during construction activities, the project proposer/contractor will immediately cease activities in the area, then take appropriate and reasonable actions to contain and reduce the human health and/or environmental risk prior to contacting the State of Minnesota Duty Officer, Scott County, and project proposer's representative. The development of a Contingency Plan or Response Action Plan will be initiated if analytical results characterize the discovered materials as a regulated contaminated waste.

b. *Project related generation/storage of solid wastes – Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of solid waste including source reduction and recycling.*

AUAR Guidance: For B, generally only the estimated total quantity of municipal solid waste generated and information about any recycling or source separation programs of the RGU need to be included.

Solid and liquid wastes generated from construction materials and equipment are expected in minimal amounts during periods of active construction. Wastes may include scrap wood, packaging, excess building materials, and sediment laden construction dewatering. The contractor will be required to immediately haul offsite and/or temporarily store and dispose of (or recycle) all waste in accordance with MPCA regulations and the NPDES Construction Stormwater Permit. Construction products will be kept in their manufactured containers and secured prior to the end of each work day.

Operational non-hazardous waste will be temporarily stored onsite (via residential and commercial dumpsters) and disposed offsite by a waste hauler. Waste reduction and recycling will be implemented in accordance with facility operational plans (if applicable) and available waste hauler programs.

c. *Project related use/storage of hazardous materials – Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location and size of any above or below ground tanks to store petroleum or other materials. Discuss potential environmental effects from accidental spill or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.*

AUAR Guidance: For C, Potential locations of storage tanks associated with commercial uses in the AUAR should be identified (e.g. gasoline tanks at service stations.

Hazardous materials (portable fuel tanks and lubricants) may be used for equipment operations and temporarily placed onsite in sealed containers (at all times) and under secured restricted access during non-working hours. These materials will only be used during active construction for refueling and maintenance of construction equipment. To ensure that fuel spills do not contaminate surface and ground waters, construction and maintenance activities should occur at reasonable distances from surface waters and steep sloped areas. The contractor will be required to abide by the Pollution Prevention Management Measures of the NPDES Construction Stormwater Permit. All hazardous materials will be removed from the site upon completion of construction.

Small quantities of hazardous materials may be stored and used within commercial and industrial buildings for general equipment maintenance, repair, or general cleaning use during normal operations (i.e. lubricants for mechanical processing equipment, cleaning solutions, etc.). These materials should be stored in their original portable containers from the manufacturer or vendor and housed indoors at all times. All hazardous materials will be inventoried and included in a Spill Prevention Control and Countermeasure Plan (if applicable per the facility), Hazardous Communications Plan, and Facility Plan. The types and quantities of chemicals are not expected to trigger the Superfund Amendments and Reauthorization Act (SARA) thresholds and/or tier II reporting. The potential for environmental impacts from accidental spills is minimal considering all storage, disposal, and hazardous material uses will take place indoors.

It is expected that convenience gas stations will locate in the AUAR Study Area. Exterior above/below underground storage tanks containing petroleum products or hazardous waste may be constructed by future owners, tenants, and operators of individual parcels or lots. Potential storage tanks may include gasoline, diesel, or other hazardous liquid and gas substances for light industrial processes. Individual business owners, tenants, and operators will be required to

incorporate the necessary site design parameters and required secondary containment with other preventative best management practices for the safe handling and storage of the specific hazardous substances.

d. *Project related generation/storage of hazardous wastes – Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of hazardous waste including source reduction and recycling.*

Hazardous waste generation and storage is expected to be minimal based on the proposed future land uses. Individual businesses may be required to obtain a Minnesota Pollution Control Agency Hazardous Waste Generator License (Small to Minimal). Future businesses located within the AUAR Study Area who generate hazardous waste are also required to be licensed and inspected by Scott County. Hazardous wastes created from routine construction activities are not expected. If unusual construction activities generate hazardous wastes, the project proposer and construction administrator will follow applicable local and state safe handling and disposal procedures.

13. Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Rare Features):

a. *Describe fish and wildlife resources as well as habitats and vegetation on or in near the site.*

AUAR Guidance: The description of the wildlife and fish resources should be related to the habitat types depicted on the cover types maps (of item 7). Any differences in impacts between development scenarios should be highlighted in the discussion.

The AUAR Study Area is currently active agricultural land, pasture for cattle (portions of brush/grassland), forested, and wetland. According to Table 13-1, the majority cover type (49%) is cropland and brush/grassland. One unnamed USGS stream is located in the northwest corner of the AUAR Study Area. The unnamed watercourse is a tributary of the Vermillion River, which is located approximately 0.16 miles north of the AUAR Study Area (**Appendix C – Figure 10**). Areas surrounding the AUAR Study Area have similar fish and wildlife resources and consist of rolling hills of agricultural row crops, wetlands, and wooded areas. Several wildlife species are assumed to occupy the surrounding habitats of the site, which are further described in EAW Question No. 13.b.

Table 13-1. Existing Land Cover Types

Land Cover Type	Acres	Percentage
Wetlands	42.5	18%
Deep Water/Streams**	0	0%
Wooded/Forest	57.5	24%
Brush/Grassland	71.5	29%
Cropland	48.8	20%
Lawn/Landscaping	9.9	4%
Impervious Surface	11.8	5%
Stormwater Ponds	0.50	<1%
Other (describe)	0	0%
TOTAL	**242.5**	**100%**

b. *Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota County Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-____) and/or correspondence number* (ERDB 20180074) *from which the data were obtained and attach the Natural Heritage letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.*

AUAR Guidance: For an AUAR, prior consultation with the MDNR Division of Ecological Resources for information about reports of rare plant and animal species in the vicinity is required. Include the reference numbers called for on the EAW form in the AUAR and include the MDNR's response letter. If such consultation indicates the need, an on-site habitat survey for rare species in the appropriate portions of the AUAR area is required. Areas of on-site surveys should be depicted on a map, as should any "protection zones" established as a result.

The MDNR Natural Heritage Information System (NHIS) search was completed for the entire proposed AUAR Study Area (refer to **Exhibit E**). The AUAR Study Area is not located within a Minnesota Biological Survey (MBS) site of biodiversity significance, nor are any state-listed species or native plant communities known to exist within or adjacent to the AUAR Study Area. Search results identified one documented rare feature within a one-mile radius of the AUAR Study Area that may be adversely affected by the proposed project. The western half of the north AUAR Study Area (north of CSAH 2/260th Street East) is within a Central Region Regionally Significant Ecological Area (RSEA) that is ranked High (refer to **Exhibit C – Figure 11**). The MDNR Central Region (in partnership with the Metropolitan Council for the 7-county metro area) identified these ecologically significant terrestrial and wetland areas by conducting a landscape-scale assessment based on the size and shape of the ecological area, land cover within the ecological area, adjacent land cover/use, and connectivity to other ecological areas. The purpose of the data is to inform regional scale land use decisions for local communities, especially as it relates to balancing development and natural resource protection. The designation provides no restrictive land use or development provisions. No specific habitat or species survey work has been conducted within the AUAR Study Area, however, a majority of the RSEA within the AUAR Study Area is comprised of agricultural land use.

The site may currently be utilized by migratory birds in the spring and fall. These species would typically include common waterfowl species and Mourning Doves. Other common wildlife species may utilize the AUAR Study Area for food and/or cover throughout the year. These species may include (but are not limited to) Whitetail Deer, Ring-Neck Pheasant, Cotton-Tail Rabbit, Raccoon, Red Fox, Coyote, Opossum, Striped Skunk, Red-Tailed Hawk, American Kestrel, American Crow, Wild Turkey, and Red-Wing Blackbird.

c. *Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.*

Approximately half of the AUAR Study Area provides temporary and low quality habitat cover value to the local wildlife populations during the growing season when row-crop agriculture and grazing cattle are present. Agricultural food sources also provide temporary value to the local and migratory waterfowl that may utilize the site during short-term migration periods of the year. The remaining natural habitats (wooded/forested and wetlands) will be impacted by up to 17% of their pre-project areas.

Wildlife may be temporarily displaced during construction activities. However, common wildlife is expected to occasionally visit or re-establish residence on the site and adjacent sites following construction. There are no anticipated effects to threatened and endangered species as a result of the proposed project.

Where current or future infestations of invasive plant species are identified (e.g. *Phalaris arundinacea*, also known as reed canary grass), appropriate control methods will be applied during construction and operations to limit the spread and impact of invasive species. During construction all disturbed lands will be permanently seeded to prevent the establishment and spread of invasive plant species.

One new road crossing is proposed over the Unnamed USGS for the purpose of providing a major collector road to connect with a future road to provide an east-west travel corridor from Xerxes Avenue (County Road 19) to the AUAR Study Area and future developments west of the AUAR Study Area (**Appendix D – Figure 17**). The crossing is assumed to be designed with a box culvert, natural stream bottom, and structural features that do not impede fish passage or habitat. Stormwater runoff from the road sections will be treated in accordance with applicable permit and regulatory requirements.

A majority of the surrounding area is currently utilized for agricultural purposes; therefore, removal of the existing habitat within the AUAR Study Area will have a minimal effect on the quantity of available food and cover to the local wildlife populations.

d. *Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to fish, wildlife, plant communities, and sensitive ecological resources.*

The layout of the proposed development (**Exhibit A**) has been designed to avoid and minimize impacts to the natural habitats in the following locations:

- Unavoidable wetland impacts will be minimized to the greatest extent feasible, considering the site constraints and the distribution of wetlands within the AUAR Study Area (such as special considerations per MN Rules 8420.0515).
- Tree removals will be limited to the extent possible within each lot or parcel. A majority of the forested area is located in the northern portion of the site, where development will be limited. Additionally, trees and shrubs will be planted as part of the landscaping plan for the associated development.
- Native prairie seeding may be incorporated in some non-mowed areas such as buffers along the perimeters of proposed stormwater detention areas.
- The USGS stream crossing is assumed to be designed with a box culvert, natural stream bottom, and structural features that do not impede fish passage or habitat. Stormwater runoff from the road sections will be treated in accordance with applicable permit and regulatory requirements prior to discharging into the stream.
- Measures to prevent the spread of invasive species during construction include working in non-infested areas first before moving to infested areas, thoroughly cleaning equipment after working in infested areas and before mobilizing to a different portion of the AUAR Study Area or a different off-site project, and revegetating disturbed areas as soon as possible after construction is completed in an area.

14. Historic Properties:

Describe any historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the site. Include: 1) historic designations, 2) known artifact areas, and 3) architectural features. Attach letter received from the State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.

AUAR Guidance: For an AUAR, contact with the State Historic Preservation Office and State Archeologist is required to determine whether there are areas of potential impacts to these resources. If any exist, an appropriate site survey of high probability areas is needed to address the issue in more detail. The mitigation plan must include mitigation for any impacts identified.

Information was requested and received from the Minnesota Historical Society State Historic Preservation Office (SHPO) on October 17, 2018 (**Exhibit F**). Upon SHPO conducting a search of the Minnesota Archaeological Inventory and Historic Structures Inventory, no previously known archaeological sites were identified within the same sections as the proposed project.

There are two historic structures listed in the vicinity of the project: The Mendota-Big Sioux River Road and Dodd Road. Section SC-NMT-007 is listed in Sections 24 and 25 of Township 113 North, Range 21 West, and east of I-35. The proposed project will have no direct or indirect adverse impacts to the surrounding historical structures.

15. Visual:

Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.

AUAR Guidance: Any impacts on such resources present in the AUAR should be addressed. This would include both direct physical impacts and impacts on visual quality or integrity.

If any non-routine visual impacts would occur from the anticipated development, this should be discussed here along with appropriate mitigation.

There are no scenic views or vistas on or in the vicinity of the project site. Views are primarily of pasture or active agricultural land, the community of Elko New Market to the southwest of the AUAR Study Area, and I-35 along the eastern project limits.

From the surrounding area, primarily CSAH 2 and I-35, current views of the property are agricultural, pasture, grassland, wetlands, and woodlands. Following the proposed development of the property, views of the property would be municipal development containing streets, trails, landscaping, parking lots, and commercial type buildings. Under the proposed

development scenario, exterior building materials may consist of steel, metal, concrete, wood or other building materials as approved by the Minnesota State Building Code and City of Elko New Market zoning codes. Building heights are variable; however, most heights will be 35 feet or less, or as permitted by the City's zoning codes. Perimeter landscaping and exterior lighting will be determined during the final design of each individual lot, as required by the applicable City of Elko New Market Development Ordinances. During the construction process there will be some temporary, minor disturbances to views due to construction machinery and temporary lighting. No visual nuisances, such as intense glare or significant light plumes are anticipated following development.

16. Air:

a. *Stationary source emissions – Describe the type, sources, quantities and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants, and any greenhouse gases. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used to assess the project's effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.*

   AUAR Guidance: This item is not applicable to an AUAR. Any stationary air emissions source large enough to merit environmental review requires individual review.

   Portable air emission sources such as generators, concrete plants, etc. may be used during certain phases of construction. Each piece of construction equipment will be used on-site, and therefore would be a previously permitted air emission source.

   Boilers for water heating, HVAC systems, and emergency backup generators are stationary source emissions that may be used to heat and cool the buildings during normal operations. The fuel source is expected to be natural gas; therefore, negligible amounts of hazardous, criteria pollutants, or greenhouse gases may be emitted. Equipment selections (if applicable) have not been finalized as they will be dependent upon the final development plan and the future tenants' needs. The pollutants, pollution control equipment (if needed), and regulatory requirements are unknown at this time; however, they are expected to be below state and federal regulatory thresholds. Each future tenant will evaluate expected emissions, limits, and monitoring requirements as it relates to the current MPCA Air Emission Permit regulations.

   There are no existing permitted air facilities or sensitive receptors within the vicinity of the AUAR Study Area.

b. *Vehicle emissions – Describe the effect of the project's traffic generation on air emissions. Discuss the project's vehicle-related emissions effect on air quality. Identify measures (e.g. traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.*

   AUAR Guidance: Although the Pollution Control Agency no longer issues Indirect Source Permits, traffic-related air quality may still be an issue if the traffic analysis indicates that development would cause or worsen traffic congestion. The general guidance for item 22 in EAW Guidelines should still be followed. Questions about the details of air quality analysis should be directed to the MPCA staff.

   The development scenario will increase truck and vehicle trips per day; however, total trips per day are not anticipated to significantly increase traffic congestion or decrease capacity of the local roadway system. Please refer to Item 18.b. for additional information. The project will not result in a significant decrease in air quality as congestion or diesel idling is not anticipated as a result of full build-out of the development scenario.

c. *Dust and odors – Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under item 16a). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.*

   AUAR Guidance: Dust, odors, and construction noise need not be addressed in an AUAR, unless there is some unusual reason to do so. The RGU might want to discuss as part of the mitigation plan, however, any dust control ordinances in effect.

   Dust common to construction and earth moving activities is expected (in the form of fugitive dust) during periods of dry weather. Dust will be visually monitored and recorded in conjunction with the NPDES Construction Stormwater Permit and City of Elko New Market inspections. Appropriate dust control best management practices (such as soil wetting,

misting/water vapor, and hydraulic additives) may be implemented (upon inspection or public complaint) by the contractor as necessary to control dust from leaving each construction site during all phases of construction. Specific dust control best management practices will be determined and implemented (as necessary) based on severity, weather conditions (i.e. wind speed), and current site conditions.

Dust and odors caused from vehicles in the parking lots and loading docks will vary depending on the number and types of vehicles actively moving in one area and current weather conditions. Pollutants generated from vehicle exhausts may concentrate and linger (possibly where vehicles congregate) which may cause a short-term odor that eventually dissipates.

Odors during normal operations are not anticipated to occur following development. Planned land use includes Business/Limited Industrial, Commercial, and Residential. Nuisance odors are not anticipated to occur at the project property boundaries or to off-site receptors.

17. Noise:

Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including 1) existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to state noise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

AUAR Guidance: Construction noise need not be addressed in an AUAR, unless there is some unusual reason to do so. The RGU might want to discuss as part of the mitigation plan, however, any construction noise ordinances in effect.

If the area will include or adjoin major noise sources a noise analysis is needed to determine if any noise levels in excess of standards would occur, and if so, to identify appropriate mitigation measures. With respect to traffic-generated noise, the noise analysis should be based on the traffic analysis of item 18.

As stated in the AUAR guidance, construction noise need not be addressed unless there is some unusual reason to do so. No unusual circumstances have been identified that would exceed State standards or necessitate a detailed noise analysis. City code restricts the hours for construction activity involving electric, diesel, or gas powered equipment to between the hours of 7:00 a.m. to 10:00 p.m. on weekdays, and 9:00 a.m. to 9:00 p.m. on weekends.

Existing and proposed ambient noise sources include vehicle traffic (local roads, County Road 2, and Interstate-35) and potential light industrial operations generated from portions of the AUAR Study Area slated for limited industrial development. Temporary exterior noise is expected while construction is taking place on-site which may range from 65-95 dBA, with construction taking place during the hours stipulated in Elko New Market City Code Chapter 5, Section 5.2.

Post-construction exterior noise is anticipated to be generated from intermittent truck traffic, loading/unloading activities, vehicle traffic on local roads, and stationary facility equipment (heating/cooling systems, ventilation fans, etc.). All exterior noise is expected to be less than the State of Minnesota noise rules in an industrial land use setting (<75 dBA) and commercial land use setting (<65 dBA) for the areas with limited industrial uses and commercial uses, respectively.

Normal operational and exterior noises for the commercial and industrial uses at the AUAR Study Area will not exceed the State of Minnesota statutory limits for residential receptors (NAC 1) for the portion of the AUAR Study Area planned for mixed-used residential uses (Minnesota Rules 7030.0040). There are no known sensitive noise receptors adjacent to the AUAR Study Area.

18. Transportation:

a. *Describe traffic-related aspects of project construction and operation. Include: 1) existing and proposed additional parking spaces, 2) estimated total average daily traffic generated, 3) estimated maximum peak hour traffic generated and time of occurrence, 4) indicate source of trip generation rates used in the estimates, and 5) availability of transit and/or other alternative transportation modes.*

   Heavy traffic will likely occur during the construction phases of the project with truck traffic, concrete and precast delivery, HVAC, electrical, utilities, etc. The total average daily traffic generated during construction will likely vary, ranging from minimal traffic on holidays and weekends to multi-crew operations on weekdays with favorable weather. The number of vehicles will also vary depending on the general contractor selected for construction, the contractor's means and methods, and the amount of active construction simultaneously occurring within AUAR Study Area. The overall project

will be constructed in multiple phases so the anticipated construction traffic is likely to occur in multiple phases over multiple years.

Once fully built as proposed **(Exhibit A)**, the AUAR Study Area will offer an estimated 3,519 parking stalls and 120 large vehicle parking stalls. Estimated total average daily traffic generated is expected to be approximately 34,000 vehicles per day for the full build-out scenario as shown in the Traffic Impact Study **(Exhibit G)**. However, many of these trips are internally captured within the development or are pulled from the existing highway traffic stream. After adjusting for internal captured and "pass-by" trips, the total average daily traffic new to the adjacent road network is 22,000 vehicles per day.

The land uses that make up this plan, as shown in the Traffic Impact Study prepared for this development, include the following:

- General Light Industrial (ITE Code 110)
- Manufacturing (ITE Code 140)
- Mini-Warehouse (ITE Code 151)
- Residential Condominium/Townhouse (ITE Code 230)
- Hotel (ITE Code 310)
- Single Tenant Office Building (ITE Code 715)
- Medical-Dental Office Building (ITE Code 720)
- Tractor Supply Store (ITE Code 810)
- Furniture Store (ITE Code 890)
- Shopping Center (ITE Code 820)
- Specialty Retail Center (ITE Code 826)
- Automobile Parts Sales (ITE Code 834)
- Automobile Sales (ITE Code 841)
- Recreational Vehicle Sales (ITE Code 842)
- Supermarket (ITE Code 850)
- Furniture Store (ITE Code 890)
- High Turnover (Sit-Down) Restaurant (ITE Code 932)
- Fast-Food Restaurants with Drive-Through Windows (ITE Code 934)
- Coffee/Donut Shop with Drive-Through Window (ITE Code 937)
- Gasoline/Service Station with Convenience Market (ITE Code 945)

The types and sizes of businesses that move into the development will ultimately determine the total daily traffic for the development. The individual land uses above may each generate their peak traffic at different times during the day. However, these differences will likely balance out and the maximum peak hour traffic is expected to occur during or near the adjacent highway's peak hours of traffic: weekdays from 7:00 AM to 8:00 AM and weekdays from 4:00 PM to 5:00 PM. By the time the development is fully developed, peak hour traffic is expected to be about 3,000 vehicles per day in the morning and 3,700 vehicles per day in the afternoon. Again, many of these trips are internally captured within the development or are pulled from the adjacent highway traffic. After adjusting for internal capture and "pass-by" trips, about 1,900 vehicles would be added to the road network during the morning peak hour and 2,400 vehicles during the evening peak hour. These trip generation numbers were determined using the ITE Trip Generation Manual 9th Edition and the ITE Trip Generation Handbook 2nd Edition.

Neither the City of Elko New Market nor Scott County offer formal public transportation to the AUAR Study Area. However, a land use goal as stated in the 2030 Elko New Market Comprehensive Plan is to "Encourage an integrated approach to land use, transportation and natural resources, including development review for a sufficient level of supportive services and infrastructure, compatibility of land use and natural features, support of pedestrian and transit oriented development of land use, and economic stability of the land use." While no mass transit plans for this area have been identified at this time, public transportation would benefit the development area by reducing the amount of vehicular traffic entering, exiting, and circulating within the AUAR Study Area.

b. Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system. If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW. Use the format and procedures described in the Minnesota Department of Transportation's Access Management Manual, Chapter 5 (available at: http://www.dot.state.mn.us/accessmanagement/resources.html) or a similar local guidance.

AUAR Guideline: For AUAR reviews a detailed traffic analysis will be needed, conforming to the MnDOT guidance as listed on the EAW form. The results of the traffic analysis must be used in the response to vehicle related air emissions (16.b) and in the noise aspect of item 17.

Per the Minnesota DOT Access Management Manual, a Traffic Impact Study is needed to identify capacity deficiencies at intersections affected by the planned development and to help identify feasible solutions to the deficiencies. A technical analysis was prepared **(Exhibit G)**, analyzing the area's existing conditions, future year conditions without the proposed development, and future year conditions with the proposed development. Areas requiring mitigation were identified, and recommendations were developed to address the deficiencies. Outputs of modeling calculations were prepared and placed in the report's appendices. Summaries of these modeling calculations were also provided within the report body. A comprehensive Traffic Impact Study was prepared **(Exhibit G)**, and can be referred to for additional detail on background traffic growth, trip generation, trip distribution, trip assignment, internal capture, and pass-by trip calculations.

This development's traffic impacts on CSAH 2 were analyzed using Synchro and SimTraffic software. By 2031, eastbound and westbound directions of CSAH 2 are expected to operate at an acceptable level of service (LOS A and B) during the studied peak. However, the adjacent minor streets including Xerxes Avenue, Newton Circle, Irving Avenue, and the northbound and southbound I-35 ramps are expected to operate at varying levels of service ranging from acceptable to unacceptable (LOS A to LOS F). In 2038 or at full development, levels of service for eastbound and westbound CSAH 2 are expected to decrease, and the side street levels of service will generally be unacceptable.

By 2031, improvements to the interstate overpass bridge and CSAH 2 intersections at both the northbound and southbound interchange ramps will be needed regardless of proposed development construction. Interim and long term options for I-35 interchange improvements have been detailed in the 2010 "CH 2 / I-35 Interchange Area Management Plan" (IAMP), which is available from the Minnesota Department of Transportation. Subsequent studies have also identified the need for future capacity improvements at the I-35/CSAH 2 interchange and associated ramps (both northbound and southbound). In 2016, state and local jurisdictions memorialized a long term plan for the overall interchange by adopting resolutions of support for an ultimate Diverging Diamond Interchange Design.

To accommodate development anticipated to occur by 2031, improvements to the studied intersections are needed. As the development progresses to full build-out, additional improvements will be needed. As businesses move into the development, traffic impact studies should be conducted as needed in order to track interim improvement needs. Additionally, the Study Area should be re-evaluated if growth projections, as described in the traffic impact study, change.

Based on the modeled 2031 conditions described in the Traffic Impact Study, to accommodate both major and minor street traffic, improvements are recommended at CSAH 2 intersections with Xerxes Avenue, the east access of the Frontage Road, Irving Avenue, the I-35 ramps, and some road links. The following are minimum recommendations:

- Implement roundabouts or traffic signal control at CSAH 2 intersections with Xerxes Avenue, the east access of the Frontage Road, and both I-35 ramps.
- Two travel lanes should be maintained both eastbound and westbound through the studied area.
- Close access to Irving Avenue and route to new access road to the west, as shown in the development plan.
- At the I-35 overpass, widen the bridge to accommodate four (4) travel lanes.
- Proposed business driveways should be placed in locations as to avoid impacts to future intersection turn lanes.

Assuming improvements to accommodate initial (2031) development are implemented as recommended, the following are minimum recommendations for the 2038 / full development build-out scenario described in the Traffic Impact Study **(Exhibit G)**:

- Implement roundabouts or traffic signal control at the CSAH 2' intersection with the west access of the CSAH 2 Frontage Road, if warranted according to future traffic impact studies.
- Add turn lanes at the CSAH 2 intersection with the east access of the Frontage Road and the southbound I-35 ramp.
- Proposed business driveways should be placed in locations as to avoid impacts to future intersection turn lanes.

c. *Identify measures that will be taken to minimize or mitigate project related transportation effects.*

Temporary traffic disruptions are not anticipated or planned for this project once construction is complete. If disruptions to local public roads are needed, proper traffic control measures will be implemented as specified in the Minnesota

Manual of Uniform Traffic Control Devices (MMUTCD). There are no identified long-term traffic minimization plans associated with facility operations.

The types of business that move into the development and the development rate will largely determine when changes in permanent intersection control are needed. Once traffic impact studies conclude that traffic signals or roundabouts are warranted, further study will be required to design the new intersection control. Recommended intersection improvements will require agreement and cooperation from Scott County, MnDOT, and the City of Elko New Market. Intersection improvements should consider Scott County's "Appendix A3 – Minimum Access Spacing Guidelines", as provided in the County's 2040 Comprehensive Plan. Once the recommended improvements are implemented, the area should be monitored as regular drivers adjust to the new traffic patterns. The AUAR Study Area corridors should be reevaluated on a regular basis as the area develops or as growth projections change.

19. Impact on Infrastructure and Public Services:

AUAR Guidance: This item should first of all summarize information on physical infrastructure presented under items (such 6, 17, 18 and 21). Other major infrastructure or public services not covered under other items should be discussed as well – this includes major social services such as schools, police, fire, etc. The RGU must be careful to include project-associated infrastructure as an explicit part of the AUAR review if it is to exempt from project-specific review in the future.

Fire and Police Protection Services

The Scott County Sherriff currently provides police protection for the AUAR Study Area. Once annexed into the City of Elko New Market, police protection will be the responsibility of the Elko New Market Police Department. Both the Scott County Sherriff and the Elko New Market Police Department have the capacity to respond and provide services to the AUAR Study Area. Additionally, the Elko New Market Fire Department protects 48 square miles, including New Market Township where the AUAR Study Area is currently located. Fire service can be provided to the AUAR Study Area in a timely manner. Hydrants will be located at all public road intersections and intermittently spaced within the AUAR Study Area to allow for adequate fire protection of all proposed buildings and structures.

Schools

The AUAR Study Area is served by the Lakeville School District. The district is able to accommodate any additional students that may accompany the multi-unit residential portion of the development concept. Proposed residential units include six townhouses and eight four-plex units.

Future Road Infrastructure Needs

According to the modeling done for the traffic study included in **Exhibit G**, by 2031 improvements to the interstate overpass bridge and the CSAH 2/I-35 intersection will be needed regardless of construction relating to the proposed development in the AUAR Study Area. Improvements needed as a result of the proposed development, including the addition of traffic signals, may be needed to accommodate development associated with Phase 1 of the development concept. Further improvements, including the installation of additional traffic signals, may be needed to accommodate development associated with Phase 2 of the development concept. Additional detail on specific recommended improvements can be found in Section 18.

City Maintenance

As the development of the AUAR Study Area progresses following the development concept, municipal streets will be added to serve individual sites as needed. With the addition of these new streets, additional maintenance will be necessary to keep the streets safe and convenient for continued public use. The City will maintain the public right-of-way in the AUAR Study Area as it is developed and assume maintenance responsibilities accordingly.

Refuse Collection

Solid waste collection will be contracted through the individual property owners and be handled by a licensed solid waste hauler through the City of Elko New Market. Property owners will be encouraged to compost and recycle. Any industrial waste generated from the industrial uses will adhere to additional industrial waste management guidelines.

Municipal Water

Potable public water service is located approximately one mile to the west of the AUAR Study Area, along the south side of CSAH 2 (260th Street East). The intent is to connect the entire AUAR Study Area to the existing 16-inch watermain by extending a 16-inch line to the study area. Watermain within the AUAR Study Area will be 12 to 16 inches in diameter with private service line connections.

Sanitary Sewer
The existing Metropolitan Council Environmental Services (MCES) sanitary interceptor runs parallel with, and along the north side of CSAH 2. It then turns north and runs along the west side of I-35. Service will be provided to the majority of the AUAR Study Area with 18-inch and 27-inch stubs located at the eastern CSAH 2 access into the site. The northern portion of the property will require installation of a trunk sewer line that will gravity flow to the east, into the interceptor located along the west side of I-35.

Stormwater Management
The northern portion of the AUAR Study Area drains north toward the Vermillion River. The southern section of the AUAR Study Area flows east under I-35 and eventually drains into a tributary of the Vermillion River. The majority of stormwater will be managed on site through a number of treatment basins located throughout the proposed development. Additional detail is available in Section 11.

20. ***Cumulative Potential Effects:*** *(Preparers can leave this item blank if cumulative potential effects are addressed under the applicable EAW Items)*

AUAR Guidance: Because the AUAR process by its nature is intended to deal with cumulative potential effects from all future developments within the AUAR area, it is presumed that the responses to all items on the EAW form automatically encompass the impacts from all anticipated developments within the AUAR area.

However, the total impact on the environment with respect to any of the items on the EAW form may also be influenced by past, present, and reasonably foreseeable future projects outside of the AUAR area. The cumulative potential effect descriptions may be provided as part of the responses to other appropriate EAW items, or in response to this item.

a. *Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.*

The geographical scales of the individual projects occurring in the proposed AUAR Study Area are limited to each project site, surrounding project sites within the AUAR Study Area, and natural resources adjacent to the AUAR Study Area. Environmental impacts (air, land, and water) will be required to meet Local, State, and Federal regulations through obtaining the applicable permits and providing engineering controls and/or mitigation (as required). Therefore, any potential project impacts that may result are not anticipated to combine with other environmental effects to result in a cumulative potential effect. Construction within the AUAR Study Area is expected to begin in 2020; however, timelines for construction of additional phases within the AUAR Study Area have not yet been proposed at this time.

b. *Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above*.

Other than detailed in this AUAR, there are no planned or foreseeable interim or future projects by the project proposer within the AUAR Study Area or near vicinity. It is expected that private development projects by other project proposers (outside of the AUAR Study Area) will occur on other properties located within or near the City of Elko New Market. A concept plan for an industrial development (Park I-35), located east of the CSAH 2/I-35 interchange, has been presented to the City of Elko New Market. There are no immediate plans to construct the Park I-35 industrial development. The timing of this potential development is unknown and will likely depend on market conditions and demand for large-scale industrial space. Traffic generated from the potential Park I-35 development would likely have a cumulative effect on the area transportation system, particularly the CSAH 2/I-35 interchanges. Other than Park I-35, the type, size, and scale of other future private projects are unknown; therefore, the cumulative potential effects from other future private projects on nearby resources cannot be determined at this time.

By 2031, improvements to the CSAH 2/I-35 interstate overpass bridge will be needed regardless of proposed development construction. State and local jurisdictions have agreed upon an ultimate Diverging Diamond Interchange Design. Although specific time frames for the interchange improvements are unknown, it is possible that this future project may coincide with the development time frames of the AUAR Study Area.

c. *Discuss the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects.*

Environmental impacts to habitat, air, and water resources resulting from the proposed development or other potential developments in the project vicinity will be mitigated or minimized through implemented engineering controls as required

by current and applicable regulatory programs (refer to **Table 8-2** Permits and Approvals). The long-term operations of the businesses and residential units may contribute to a minimal increase in the cumulative potential effects (past and present) on the surrounding surface water resources (wetlands, ditches, etc.) and air emissions from increased traffic. The proposed project is not anticipated to contribute to any significant environmental effects.

In addition to the potential environmental impacts addressed by items 1 to 18, the economic, employment, and sociological impacts of the project were considered. The economic and social impacts of the project on the local community are anticipated to be beneficial by bringing additional employment opportunities during construction and operations of the businesses, as well as convenient access to goods and services.

21. Other Potential Environmental Effects: *If the project may cause any additional environmental effects not addressed by items 1 to 19, describe the effects here, discuss the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.*

AUAR Guidance: If applicable, this item should be answered as requested by the EAW form.

There are no other known or potential environmental effects that were not discussed in items 1 to 20.

DRAFT MITIGATION PLAN

This initial Draft Mitigation Plan is submitted as part of the Draft AUAR to provide reviewers and regulators with an understanding of the actions that are advisable, recommended, or necessary to protect the environment and minimize potential impacts of the proposed development scenario. This initial Draft Mitigation Plan can be revised and updated based on comments received during the Draft AUAR comment period.

This Mitigation Plan is intended to satisfy the AUAR rules that require the preparation of a mitigation plan that specifies measures or procedures that will be used to avoid, minimize, or mitigate the potential impacts of development within the AUAR Study Area. Although mitigation strategies are discussed throughout the AUAR document, this plan will be formally adopted by the RGU as their action plan to prevent potentially significant environmental impacts.

The primary mechanism for mitigation of environmental impacts is the effective use of ordinances, rules, and regulations. The plan does not modify the regulatory agencies' responsibilities for implementing their respective regulatory programs nor create additional regulatory requirements. The plan specifies the legal and institutional arrangements that will assure that the adopted mitigation measures are implemented.

There were no impacts identified in Items 10, 14, 15, 16, 17, 19, 20, or 21; therefore, these areas require no mitigation and are not included in this Mitigation Plan. The remaining AUAR items (8, 9, 11, 12, 13, and 18) have identified regulatory requirements and/or mitigation measures that reduce the level of potential impact of development within the AUAR Study Area. The Mitigation Plan is formatted consistently with the sections of the AUAR for ease of reference.

8. Permits and Approvals Required:

All required permits and approvals will be obtained prior to construction. Any necessary permits or approvals not listed in **Table 8-2** have not intentionally been omitted.

Table 8-2. Permits and Approvals

Unit of Government	Type of Application	Status
U.S. Army Corps of Engineers (USACE)	Section 401/404 of the Clean Water Act	To Be Obtained
Minnesota Pollution Control Agency (MPCA)	NPDES Construction Stormwater Permit	To Be Obtained
	NPDES Industrial Stormwater Permit	To Be Obtained (if applicable)
	Sanitary Sewer Extension	To Be Obtained
	Air Emissions Permit	To Be Obtained (if applicable)
	Hazardous Waste Generator License (Small to Minimal)	To Be Obtained (if needed)
Minnesota Department of Natural Resources (MDNR)	Water Appropriations For Construction Dewatering	To Be Obtained (if needed)
Minnesota Department of Health (MDH)	Watermain Extension	To Be Obtained
	Well Abandonment	To Be Submitted
Vermillion River Watershed Joint Powers Organization	Project Review	To Be Submitted (if applicable)

Scott County	Final Plat	To Be Submitted
	Work in Right of Way	To Be Submitted
	Access Permit	To Be Submitted (if applicable)
	Utility Accommodation Permit	To Be Obtained
City of Elko New Market	AUAR Approval	In Process
	Approval of Draft 2040 Comprehensive Plan	In Process
	Developer's Agreement	To Be Submitted
	Preliminary and Final Plat	To Be Submitted
	Filling/Grading Permits	To Be Obtained
	Stormwater Management Plan	To Be Obtained
	Building, Plumbing, Electrical, and HVAC Permitting and Inspection	To Be Obtained
	Wetland Replacement Plan (pursuant to Wetland Conservation Act)	To Be Obtained
	Annexation	To Be Submitted
	Property Rezoning	To Be Submitted
	Site Plan Review	To Be Submitted
	Conditional Use Permit (per site)	To Be Obtained
	Site Permit	To Be Obtained
	Vacation of Right-of-Way or Easement (if applicable)	To Be Submitted (if applicable)

9. Land Use

Potential Impacts

- The Natural Resources Chapter (Chapter 7) of the City of Elko New Market 2030 Comprehensive Plan indicates portions of the AUAR Study Area are located in or adjacent to an identified concentration of natural resources surrounding the Vermillion River including grassland, shrubland, and woodland.

Mitigation Strategies

- Additional design considerations will be reviewed on a per development, lot, or parcel basis to ensure protection of adjacent natural resources, including but not limited to, erosion control measures, wetland preservation or enhancement, conservation easement dedication, and open space designation.

How Mitigation will be Applied and Assured

- Prior to development approval, natural resources within the project area will be reviewed for potential impacts and appropriate avoidance and minimization measures will be integrated into the site design layout.

Involvement by Other Agencies

- During the entitlement process, developers seeking approval of individual projects will coordinate with City of Elko New Market, Scott County, and MDNR to determine the natural resources impacted and specific mitigation strategies warranted.

11. Water Resources

Potential Impacts

- One new road crossing is proposed over the Unnamed USGS stream located in the northwest portion of the AUAR Study Area.

- Up to 5.85 acres of the 42.45 acres of delineated wetlands may be impacted as a result of the full build-out scenario assumptions based on the placement of impervious surfaces, buildable lots/parcel boundaries, and individual building locations.

- Shallow groundwater was encountered (2-15 feet below ground surface; 1,069 to 1,111 MSL) in several soil borings. Temporary dewatering excavations and operations may be required during project construction.

- The quality of post-construction stormwater runoff from the full build-out scenario will be typical of an urban land use with impervious surfaces and lawn/landscaping generating higher concentrations of total suspended solids and total phosphorus.

Mitigation Strategies

- The unnamed USGS stream crossing is assumed to be designed with a box culvert, natural stream bottom, and structural features that will not impede fish, amphibian, or reptile passage or habitat. In-stream construction would require temporary bypass and/or dewatering best management practices and seasonal restrictions. Stormwater runoff from the road sections will be treated in accordance with applicable permit and regulatory requirements.

- Project proposers that intend to propose wetland impacts will be required to submit a formal sequencing analysis with a wetland replacement plan upon finalization of the construction plans for each lot or parcel.

- Temporary dewatering operations will be phased as best as feasible to minimize short-term direct and indirect impacts to in-stream habitat and surrounding water resources.

- The quantity and discharge rate of stormwater runoff in post-development conditions will be designed to meet a no net increase of stormwater runoff from existing conditions.

- Stormwater runoff is proposed to be conveyed into three major drainage areas with multiple subwatersheds within each drainage area. Each subwatershed provides dedicated land use for one or two proposed stormwater detention areas, in addition to the existing stormwater detention areas. Additional stormwater management areas may be required on lots and parcels to meet the no net increase of stormwater runoff from existing conditions. Infrastructure will be constructed throughout the AUAR study area to convey stormwater runoff into each subwatershed area to help achieve water quantity requirements.

How Mitigation will be Applied and Assured

- Given the site constraints, it is anticipated that a portion of the wetland impacts may be replaced on-site and the remainder would be replaced by purchasing bank credits from a state wetland bank.

- Temporary construction dewatering will require a Temporary Water Appropriations General Permit 1997-0005 if less than 50 million gallons per year are anticipated for less than one year in duration.

- All proposed stormwater ponding areas will be constructed in upland areas with 9.5 acres of total designated land use. Stormwater detention designs assume a one-inch water quality volume over the net new impervious surfaces within the proposed subwatershed. The geotechnical report results show undesirable low permeable soils (clay and lean clay sand) that are not adequate or functional for infiltration systems. Therefore, volume reduction techniques will be customized to each individual detention design.

- Final detention design and permanent stormwater treatment requirements will adhere to the current NPDES Construction Stormwater permit, City of Elko New Market Stormwater Management Plan, and applicable Vermillion River Watershed Joint Powers Organization (VRWJPO) standards.

- Maintenance of the stormwater management areas will be performed by either the City of Elko New Market or the private developers to ensure long term effectiveness of the facilities.

Involvement by Other Agencies (if applicable)

- The proposed development(s) within the AUAR Study Area will require compliance with the MDNR, Vermillion River Watershed Joint Powers Organization, and the City of Elko New Market for water appropriations, water quality, volume control, runoff control, and erosion control.

- Wetland replacement plans and potential wetland mitigation areas would be evaluated by both the City of Elko New Market as the Wetland Conservation Act (WCA) Local Government Unit (LGU) and the U.S. Army Corps of Engineers (USACE).

12. Contamination/Hazardous Materials/Wastes

Potential Impacts

- The Phase I Environmental Site Assessment identified one Historical Recognized Environmental Condition (HREC) and two Recognized Environmental Conditions (REC) associated with the AUAR Study Area.

- Construction generated waste materials such as scrap wood, packaging, excess building materials, and other wastes are anticipated during project construction.

- Toxic or hazardous substances may be used during project construction.

- Small quantities of hazardous materials and wastes may be stored and used within commercial and industrial buildings for general equipment maintenance, repair, or general cleaning use during normal operations (i.e. lubricants for mechanical processing equipment, cleaning solutions, etc.).

Mitigation Strategies

- Further investigation and testing may be warranted in order to document the presence or absence of contamination at the subject property and/or whether contamination levels could be above thresholds that might require reporting to the applicable agencies or regulated handling and/or disposal.

- Contractors will be required to immediately haul off-site and/or temporarily store and dispose of (or recycle) all waste in accordance with MPCA regulations and the NPDES Construction Stormwater Permit.

- Construction products will be kept in their manufactured containers and secured prior to the end of each work day.

- Operational non-hazardous waste will be temporarily stored onsite (residential and commercial dumpsters) and disposed of off-site by a waste hauler. Waste reduction and recycling will be implemented in accordance with facility operational plans (if applicable) and available waste hauler programs.

- Individual business owners, tenants, and operators will be required to incorporate the necessary site design parameters and required secondary containment with other preventative best management practices for the safe handling and storage of specific hazardous materials and wastes.

How Mitigation will be Applied and Assured

- If potentially contaminated materials, other environmental hazards, or solid waste are discovered during construction activities, the project proposer/contractor will immediately cease activities in the area, and take appropriate and reasonable actions to contain and reduce the human health/environmental risk. The development of a Contingency Plan or Response Action Plan will be initiated if analytical results characterize the discovered materials as a regulated contaminated waste.

- Contractors will be required to abide by the Pollution Prevention Management Measures of the NPDES Construction Stormwater Permit and applicable MPCA regulations. All hazardous materials will be removed from the site upon completion of construction.

- All hazardous materials will be inventoried and included in a Spill Prevention Control and Countermeasure Plan (if applicable per the facility), Hazardous Communications Plan, and Facility Plan.

Involvement by Other Agencies (if applicable)

- The developer(s)/project representative will contact and coordinate remediation efforts with the State of Minnesota Duty Officer and MPCA.

- Individual businesses may be required to obtain a Minnesota Pollution Control Agency Hazardous Waste Generator License (Small to Minimal).

13. Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Rare Features)

Potential Impacts

- One new road crossing is proposed over the Unnamed USGS stream located in the northwest portion of the AUAR Study Area.

- Approximately half of the AUAR Study Area provides temporary and low quality habitat cover value to the local wildlife populations during the growing season when row-crop agriculture and grazing cattle are present. The remaining natural habitats (wooded/forested and wetlands) will be impacted by up to 17% of their pre-project areas.

- Up to 5.85 acres of the 42.45 acres of delineated wetland may be impacted as a result of the full build-out scenario assumptions relevant to the placement of impervious surfaces, buildable lots/parcel boundaries, and individual building locations.

Mitigation Strategies

- The unnamed USGS stream crossing is assumed to be designed with a box culvert, natural stream bottom, and structural features which do not impede fish, amphibian, or reptile passage or habitat.

- Tree removals will be limited to the extent possible within each lot or property parcel. Development will be minimized in the northern portion of the site where significant tree stands exist.

- Native prairie seeding may be incorporated in some non-mowed areas such as buffers along the upland perimeters of proposed stormwater detention areas.

- Alternative site design layouts will be considered to avoid or minimize temporary and permanent impacts to wetland areas.

How Mitigation will be Applied and Assured

- Native seeding, trees, and shrubs will be incorporated into the landscaping plans for the associated developments.

- Avoidance and minimization must be demonstrated for each proposed wetland impact and meet the criteria of Minnesota Rules 8420 and Section 404 of the Federal Clean Water Act.

Involvement by Other Agencies (if applicable)

- During the entitlement process, developers seeking approval of individual projects will coordinate with City of Elko New Market, Scott County, and MDNR to determine the natural resources impacted and specific mitigation strategies.

- Wetland replacement plans and potential wetland mitigation areas will be evaluated by both the City of Elko New Market as the Wetland Conservation Act (WCA) Local Government Unit (LGU) and USACE.

18. Transportation

Potential Impacts

- Parking suitable for traffic counts and vehicle types based on anticipated land uses are needed.
- Peak hour traffic is expected to be approximately 3,000 vehicles per day in the morning and 3,700 vehicles per day in the afternoon from trips internally captured and pulled from adjacent highway traffic. After adjusting for internal capture and “pass-by” trips, about 1,900 vehicles would be added to the road network during the morning peak hour (7:00 Am to 8:00 AM) and 2,400 vehicles during the evening peak hour (4:00 PM to 5:00 PM).

- The proposed development will have an impact on the surrounding transportation system and intersections located along CSAH 2 near the project vicinity. The development will accelerate failing levels of service at multiple intersections, causing the need for intersection control at various intersections.
- The types of business that move into the development and the development rate will largely determine when changes in permanent intersection control are needed.

Mitigation Strategies

- Provide adequate number of parking spaces and configurations per individual lot or parcel.
- Close existing access from Irving Avenue to CSAH 2, and route existing Irving Avenue users to a new roadway within the internal AUAR Study Area.
- Place proposed business driveways within AUAR Study Area in appropriate locations to avoid impacts to turn lanes of future CSAH 2 and internal AUAR Study Area intersections.
- At the discretion of the City of Elko New Market and/or Scott County officials, the AUAR Study Area corridors will be reevaluated on a regular basis as the area develops or as growth projections change.
- Implement roundabouts or traffic signal control at CSAH 2 intersections with Xerxes Avenue, the east access of the Frontage Road, and both I-35 ramps.

How Mitigation will be Applied and Assured

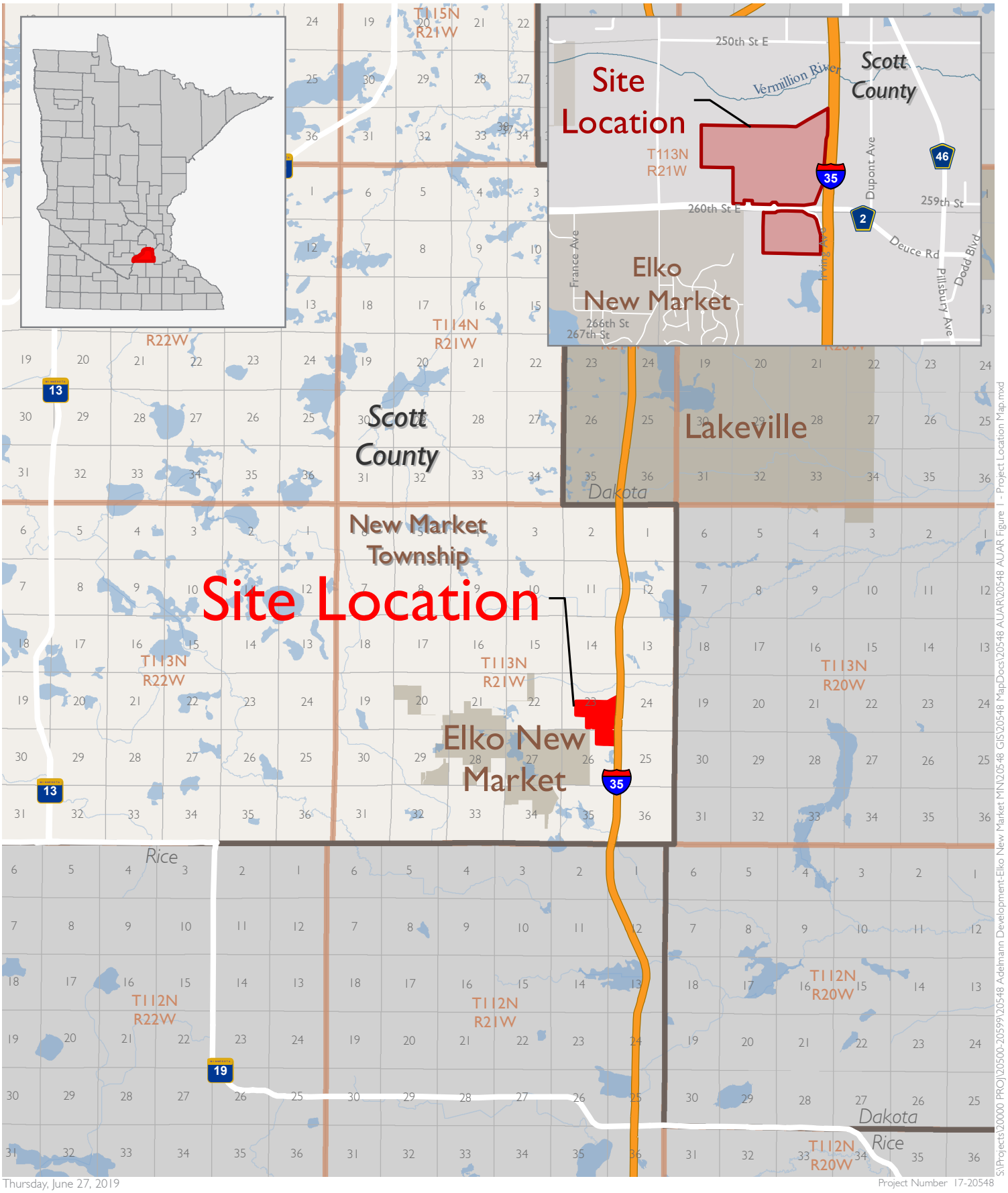
- Once the proposed full build-out is complete, the AUAR Study Area will offer 3,519 parking stalls and 120 large vehicle parking stalls.
- Close the Irving Avenue access to CSAH 2 when new internal connecting road is constructed.
- Regulate the placement of proposed business driveways during City of Elko New Market's driveway permit review process.
- The City will work with the developer, Scott County, and MnDOT during the development process to formulate plans for timing and funding of recommended intersection controls along the CSAH 2 corridor.
- Once traffic impact studies conclude that traffic signals or roundabouts are warranted at intersections along the CSAH 2 corridor, further study will be required to design the new intersection control. Intersection improvements should consider Scott County's "Appendix A3 – Minimum Access Spacing Guidelines", as provided in the County's 2040 Comprehensive Plan.
- Once the recommended improvements are implemented, the area will be monitored as regular drivers adjust to the new traffic patterns.

Involvement by Other Agencies (if applicable)

- Lay out internal AUAR Study Area roadway/intersection network with the City of Elko New Market officials.
- Developer(s) will coordinate with the City of Elko New Market, Scott County, and MnDOT as needed to implement the off-site roadway improvements.

Appendix A: Project Location Maps

Figure 1. Project Location Map
Figure 2. USGS Topographic Map
Figure 3. AUAR Boundary and LiDAR Map



Thursday, June 27, 2019

Project Number 17-20548

S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 AUAR\20548 AUAR Figure 1 - Project Location Map.mxd

0 1 2 Miles

1 in = 2 miles

N

Figure 1

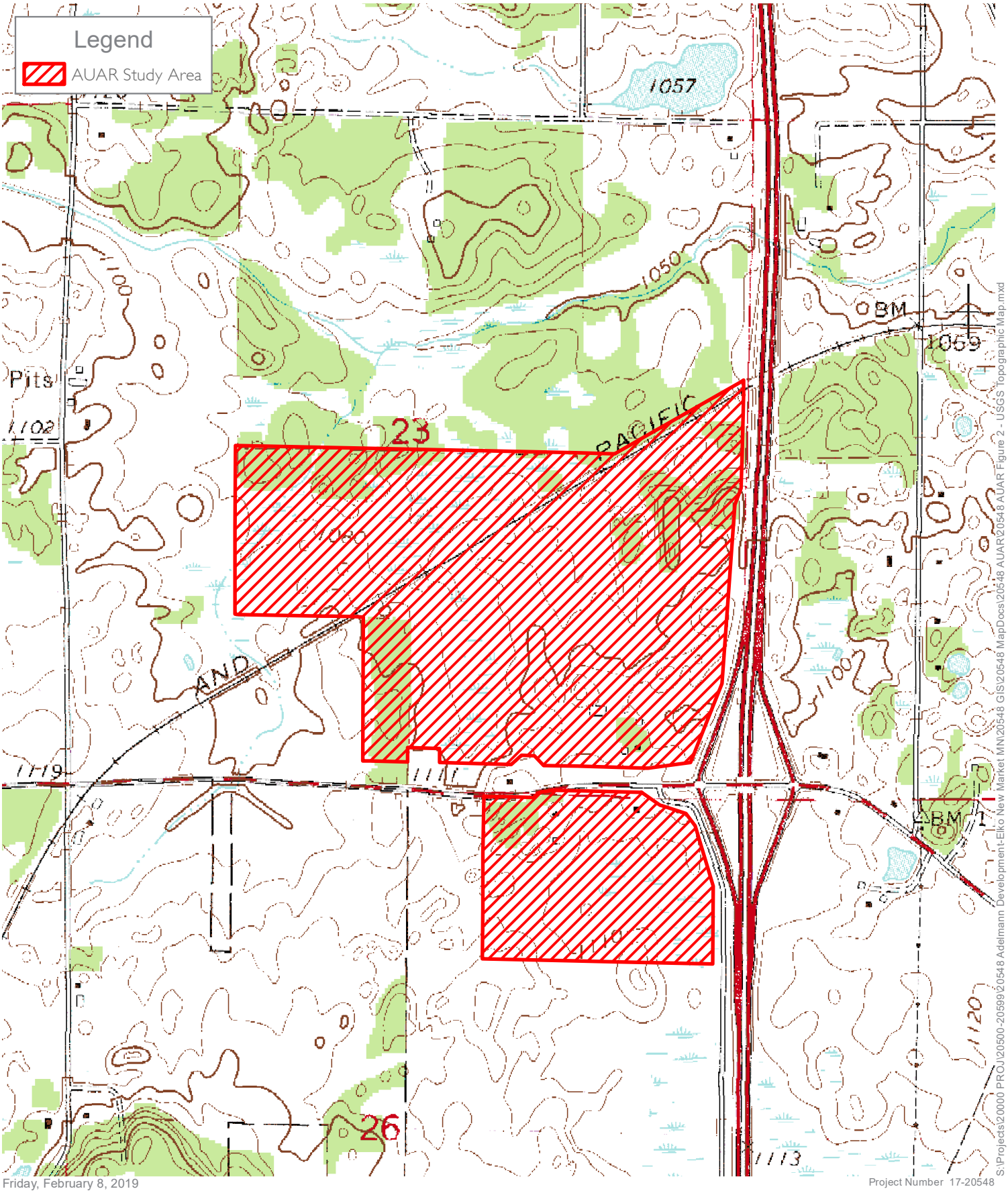
Project Location Map

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Municipalities (MN DOT, 6/24/2016)
Lakes (MN DNR, July, 2008)
Counties (MN DNR, July 2013)
PLSS (MnGeo/USGS)

ISG



Friday, February 8, 2019

Project Number 17-20548

S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 AUAR\20548 AUAR Figure 2 - USGS Topographic Map.mxd

0 500 1,000 Feet

1 in = 1,000 ft

N

Figure 2

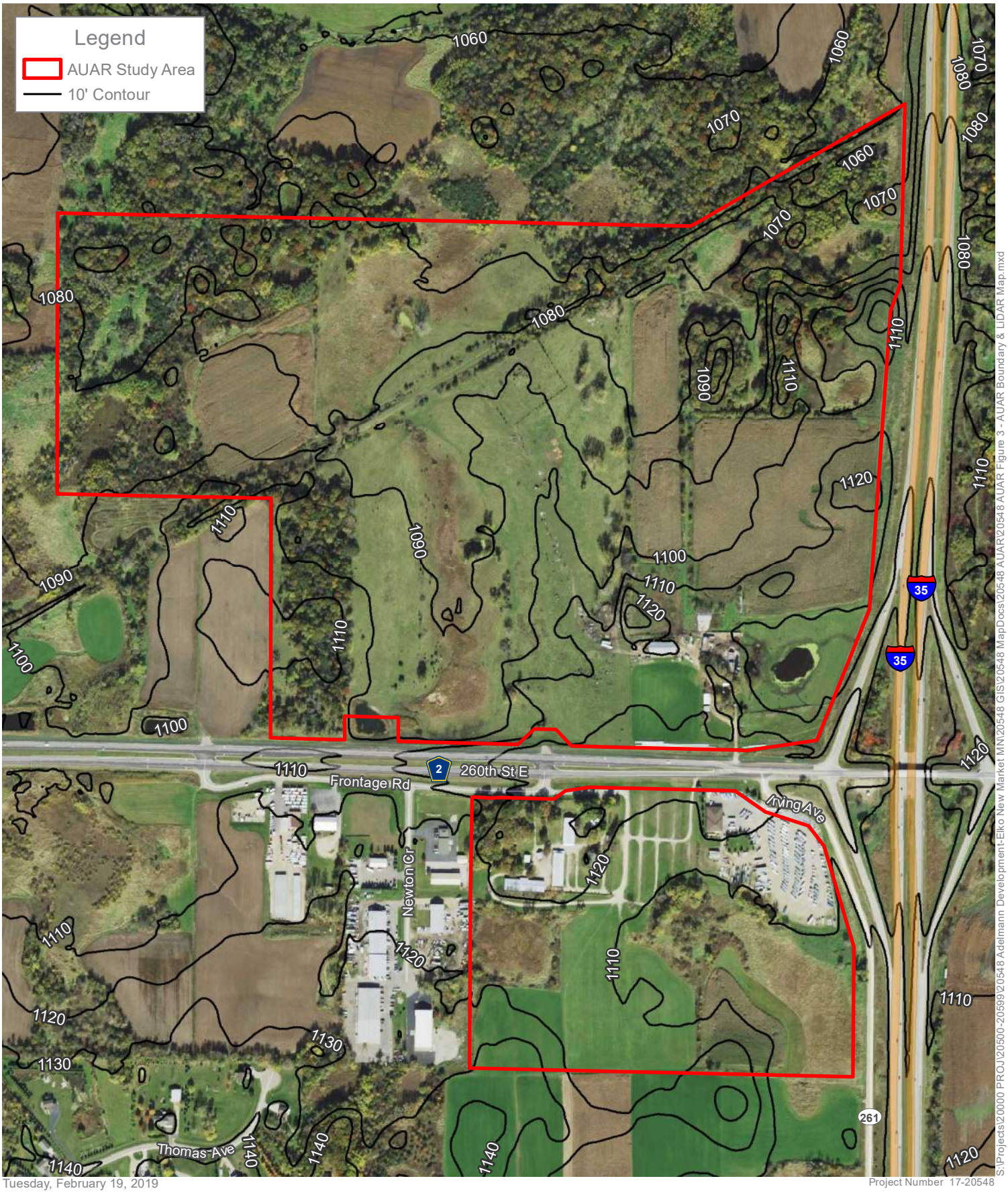
USGS Topographic Map

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
24k USGS Topo (MN State)

ISG



Tuesday, February 19, 2019

Project Number 17-20548

0 300 600 Feet

1 in = 600 ft

N

Figure 3

AUAR Boundary and LiDAR Map

Adelmann Family Property

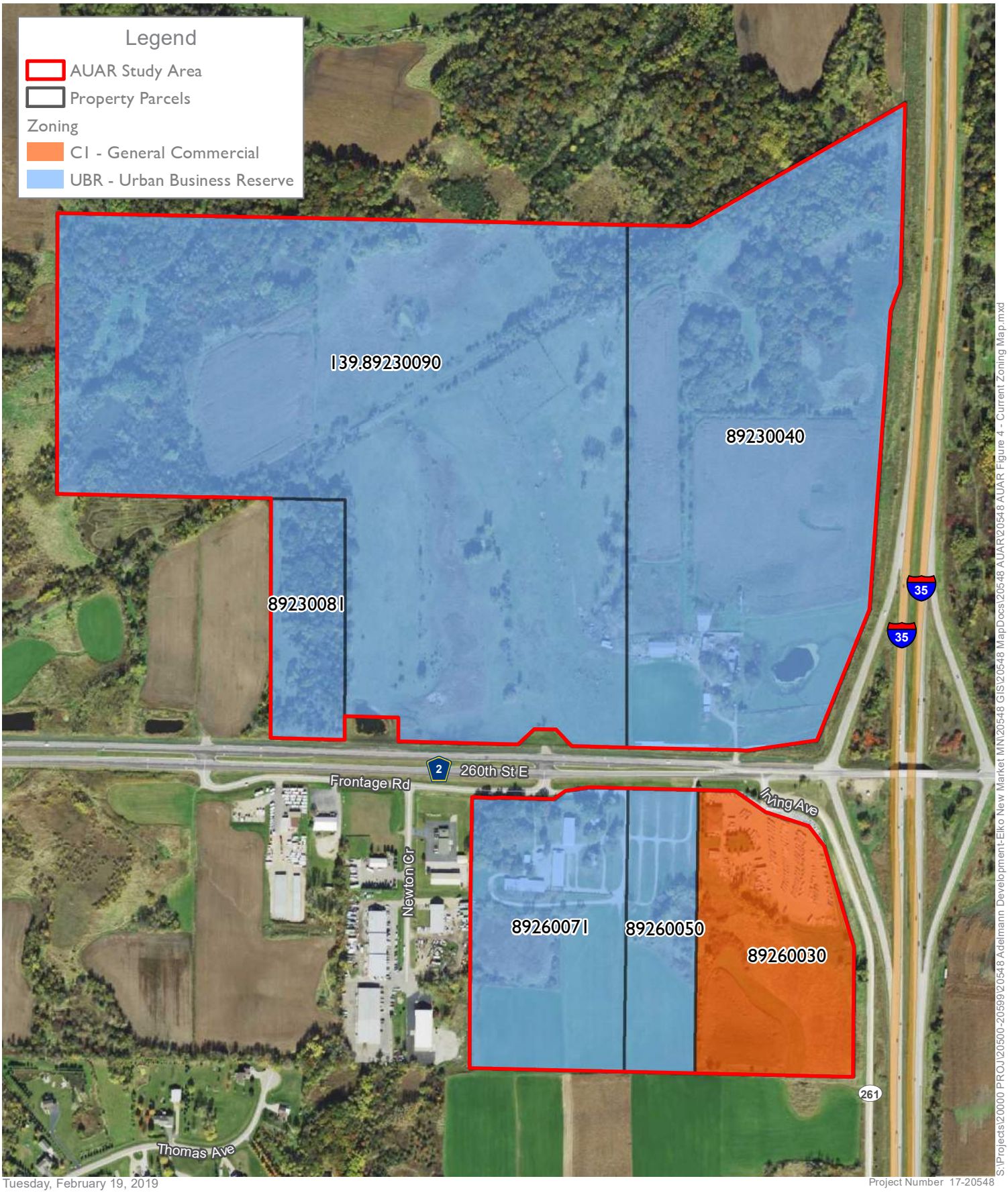
New Market Twp, Scott County, Minnesota

Source(s):
Orthophoto (MnGeo WMS, 2017)
Contours (MnGeo LiDAR, 2011)

ISG

Appendix B: Land Use Features

Figure 4. Current Zoning Map
Figure 5. Future Land Use Map
Figure 6. MPCA Permitted Features



Tuesday, February 19, 2019

Project Number 17-20548

S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 AUAR\20548 AUAR Figure 4 - Current Zoning Map.mxd

0 300 600 Feet

1 in = 600 ft

N

Figure 4

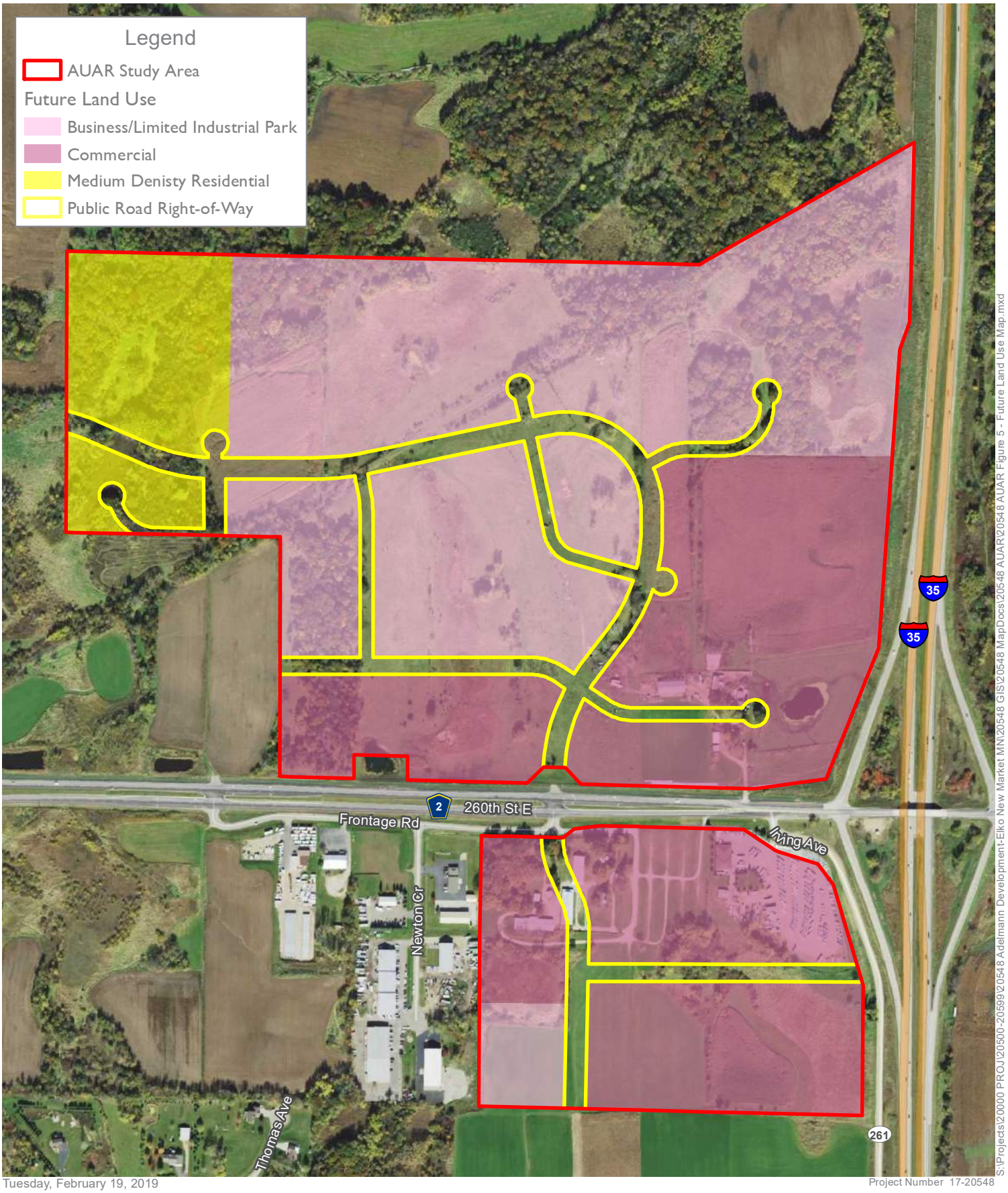
Current Zoning Map

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Orthophoto (MnGeo WMS, 2017)
Zoning/Parcels (Scott County, 2017)

ISG



Tuesday, February 19, 2019

Project Number 17-20548

S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 AUAR\20548 AUAR Figure 5 - Future Land Use Map.mxd

0 300 600 Feet

1 in = 600 ft

N

Figure 5

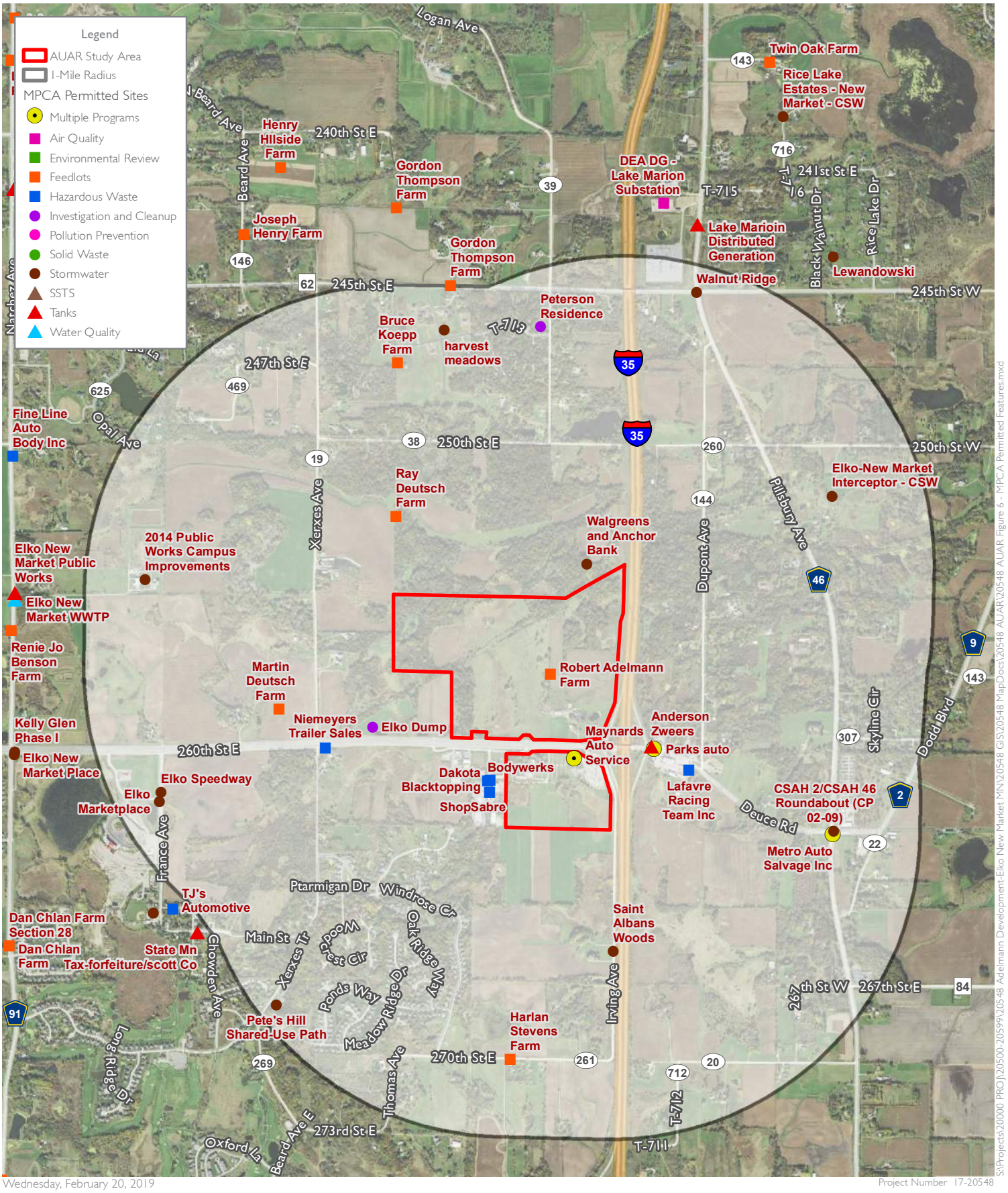
Future Land Use Map

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Orthophoto (MnGeo WMS, 2017)

ISG



0 1,100 2,200 Feet

1 in = 2,200 ft

N

Figure 6

MPCA Permitted Features

Adelmann Family Property

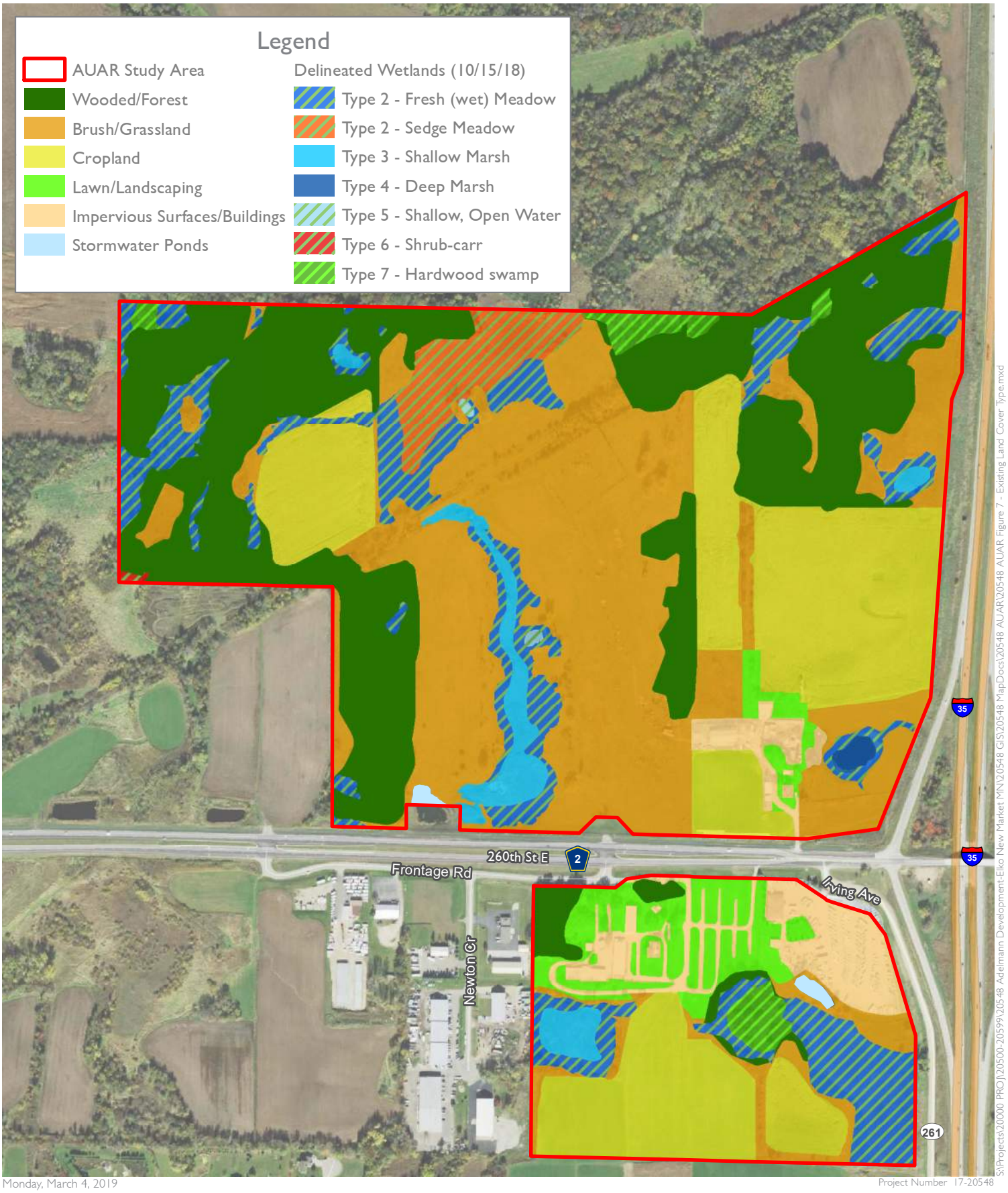
New Market Twp, Scott County, Minnesota

Source(s):
Orthophoto (MnGeo WMS, 2017)
Permitted Sites (MPCA, 7/20/2017)

ISG

Appendix C: Natural Resources

Figure 7. Existing Land Cover Type
Figure 8. Proposed Land Cover Type
Figure 9. NRCS Soil Survey
Figure 10. Surface Hydrology Features
Figure 11. Ecological Features



Monday, March 4, 2019

Project Number 17-20548

Figure 7

Existing Land Cover Type

Adelmann Family Property

New Market Twp, Scott County, Minnesota

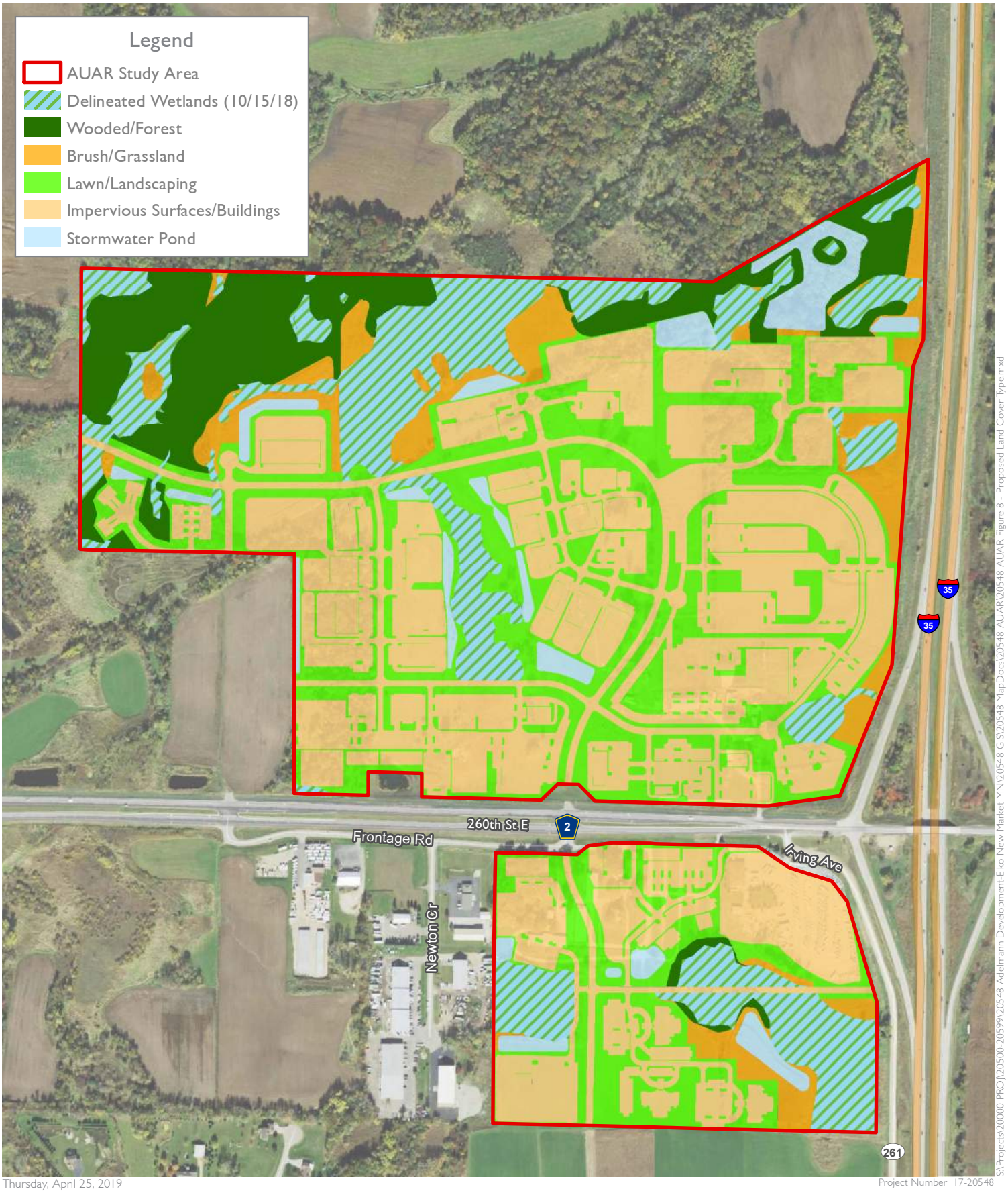
0 300 600 Feet

1 in = 600 ft

N

Source(s):
Orthophoto (MnGeo WMS, 2017)
Wetland Delineation (ISG, 2018)

ISG



Thursday, April 25, 2019

Project Number 17-20548

S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 AUAR\20548 AUAR Figure 8 - Proposed Land Cover Type.mxd

0 300 600 Feet

1 in = 600 ft

N

Figure 8

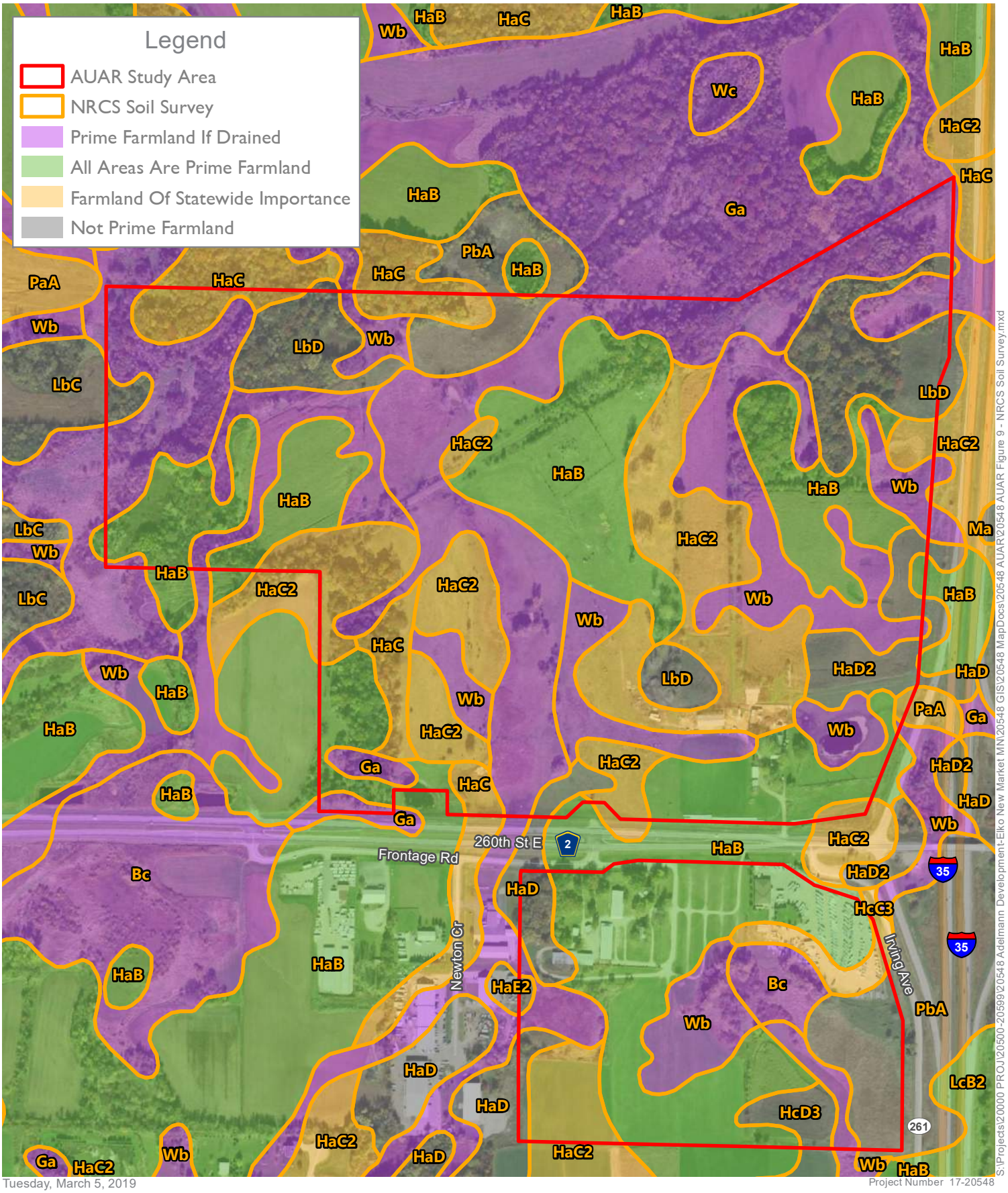
Proposed Land Cover Type

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Orthophoto (MnGeo WMS, 2017)
Wetland Delineation (ISG, 2018)

ISG



Tuesday, March 5, 2019

Project Number 17-20548

0 300 600 Feet

1 in = 600 ft

N

Figure 9

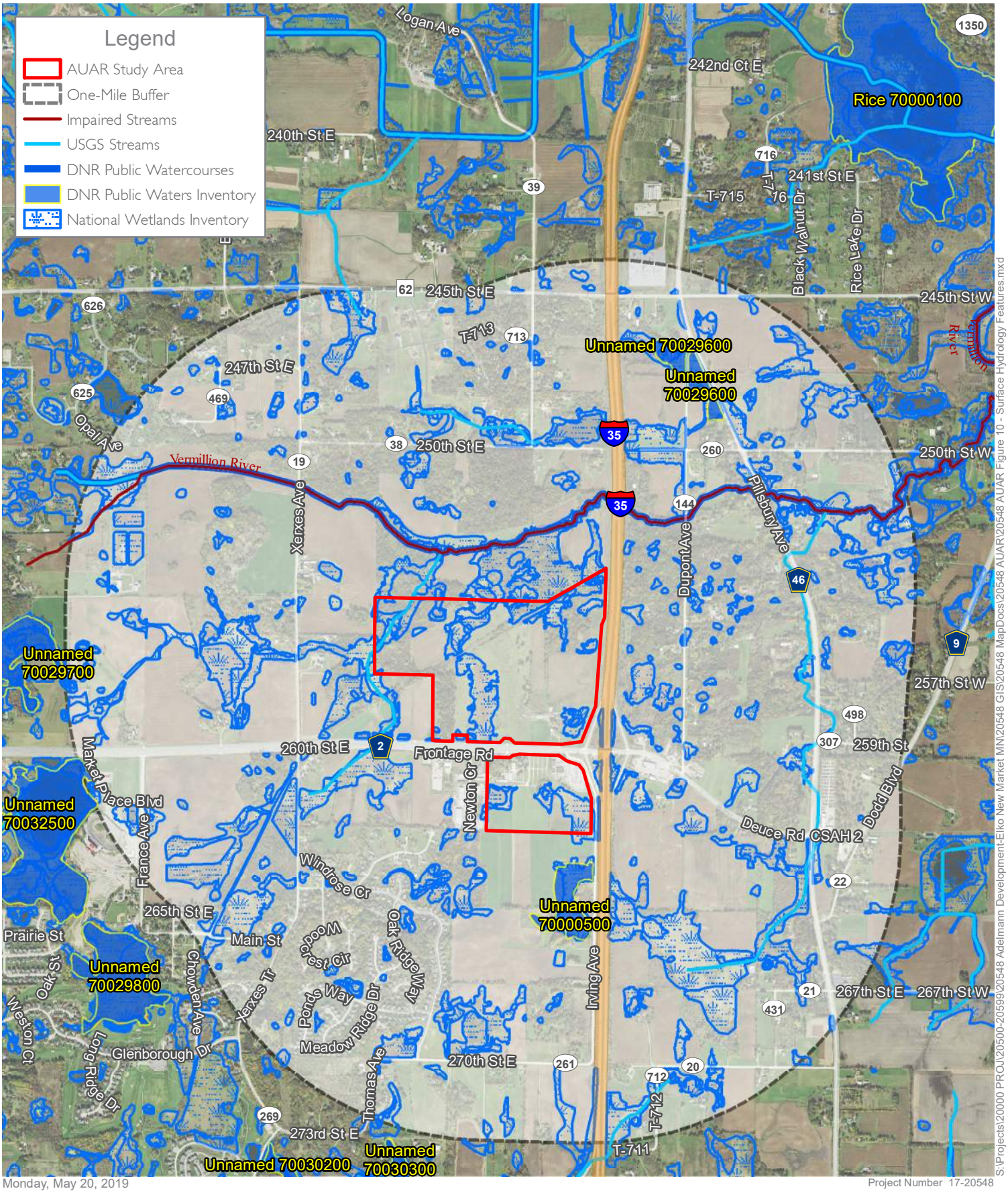
NRCS Soil Survey

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Orthophoto (MnGeo WMS, 2017)
Soil Survey (USDA, NRCS, 2018)

ISG



Monday, May 20, 2019

Project Number 17-20548

S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 AUAR\20548 AUAR Figure 10 - Surface Hydrology Features.mxd

0 1,100 2,200 Feet

1 in = 2,200 ft

N

Figure 10

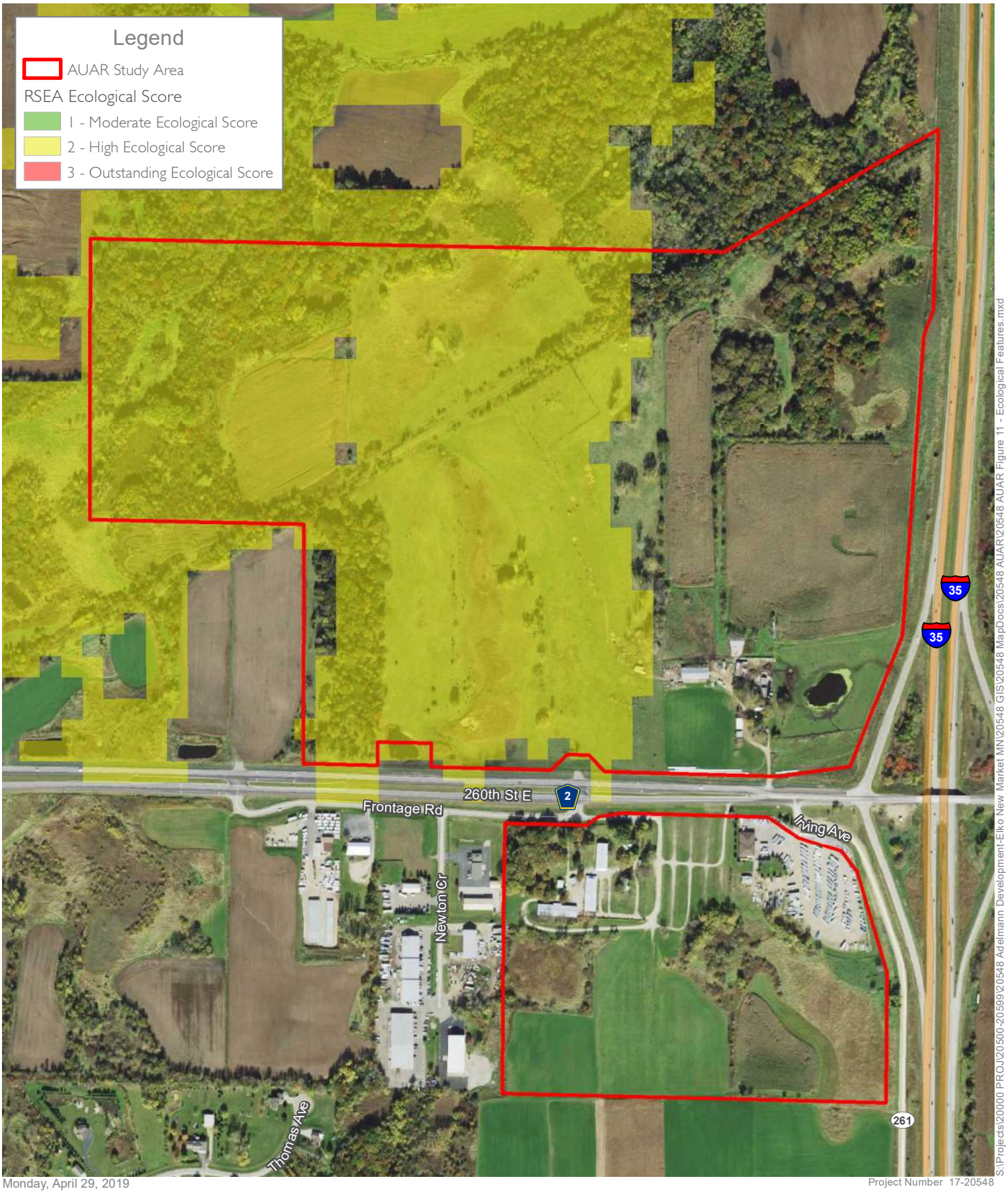
Surface Hydrology Features

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Orthophoto (MnGeo WMS, 2017)
Impaired Waters (MPCA, 2012)
NWI (MN DNR, 2014)
PWI (MN DNR, 2008)

ISG



Monday, April 29, 2019

Project Number 17-20548

0 300 600 Feet

1 in = 600 ft

N

Figure 11

Ecological Features

Adelmann Family Property

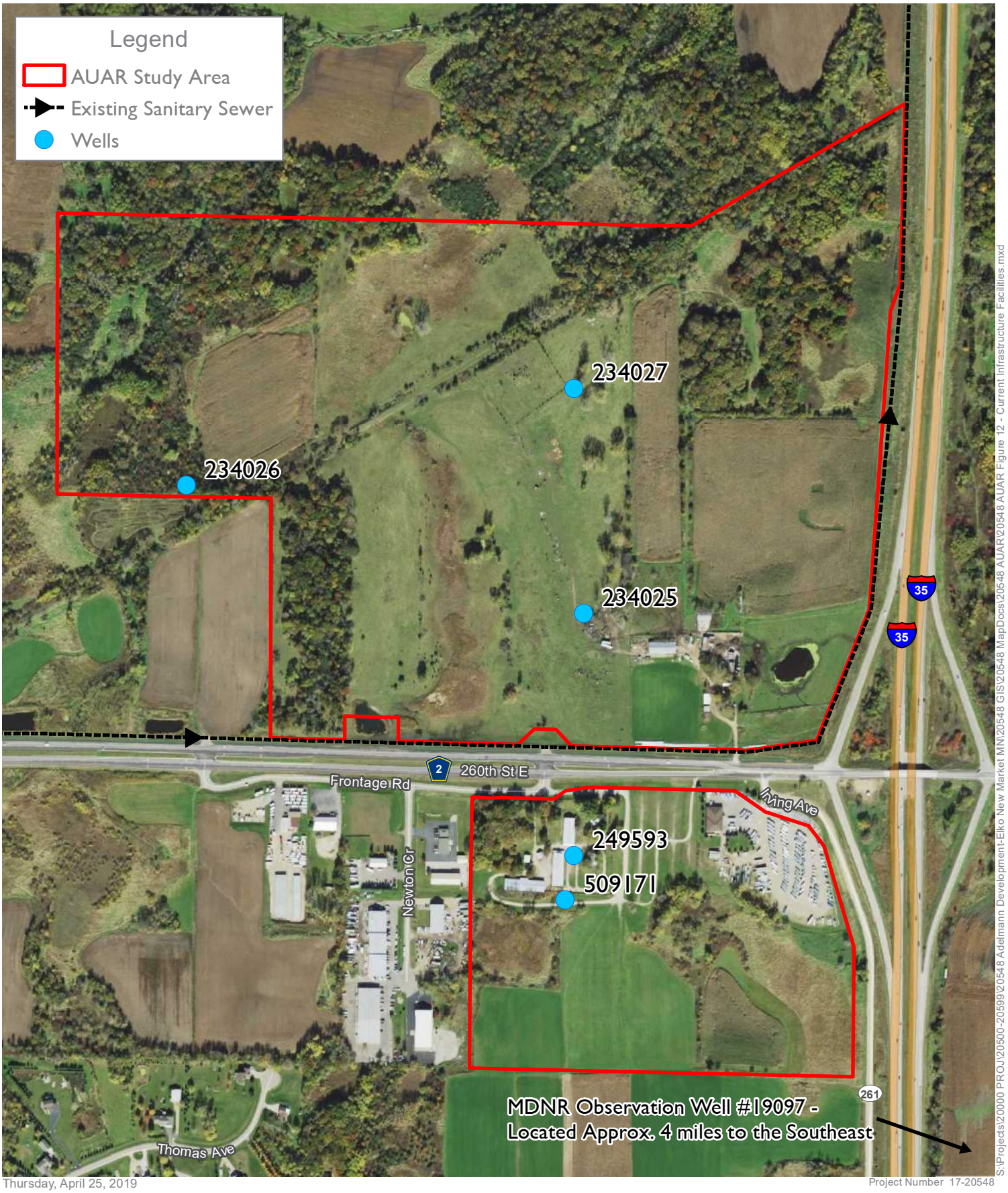
New Market Twp, Scott County, Minnesota

Source(s):
Orthophoto (MnGeo WMS, 2017)
Ecological Score (MnDNR, 2000)

ISG

Appendix D: Public Infrastructure

Figure 12. Current Infrastructure Facilities
Figure 13. Proposed Infrastructure Improvements
Figure 14. Existing Stormwater Facilities and Drainage Areas
Figure 15. Proposed Stormwater Facilities and Drainage Areas
Figure 16. Existing Road Classification
Figure 17. Proposed Road Classification
Figure 18. Sidewalks and Trails Map



Thursday, April 25, 2019

Project Number 17-20548

S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 AUAR\20548 AUAR Figure 12 - Current Infrastructure Facilities.mxd

0 300 600 Feet

1 in = 600 ft

N

Figure 12

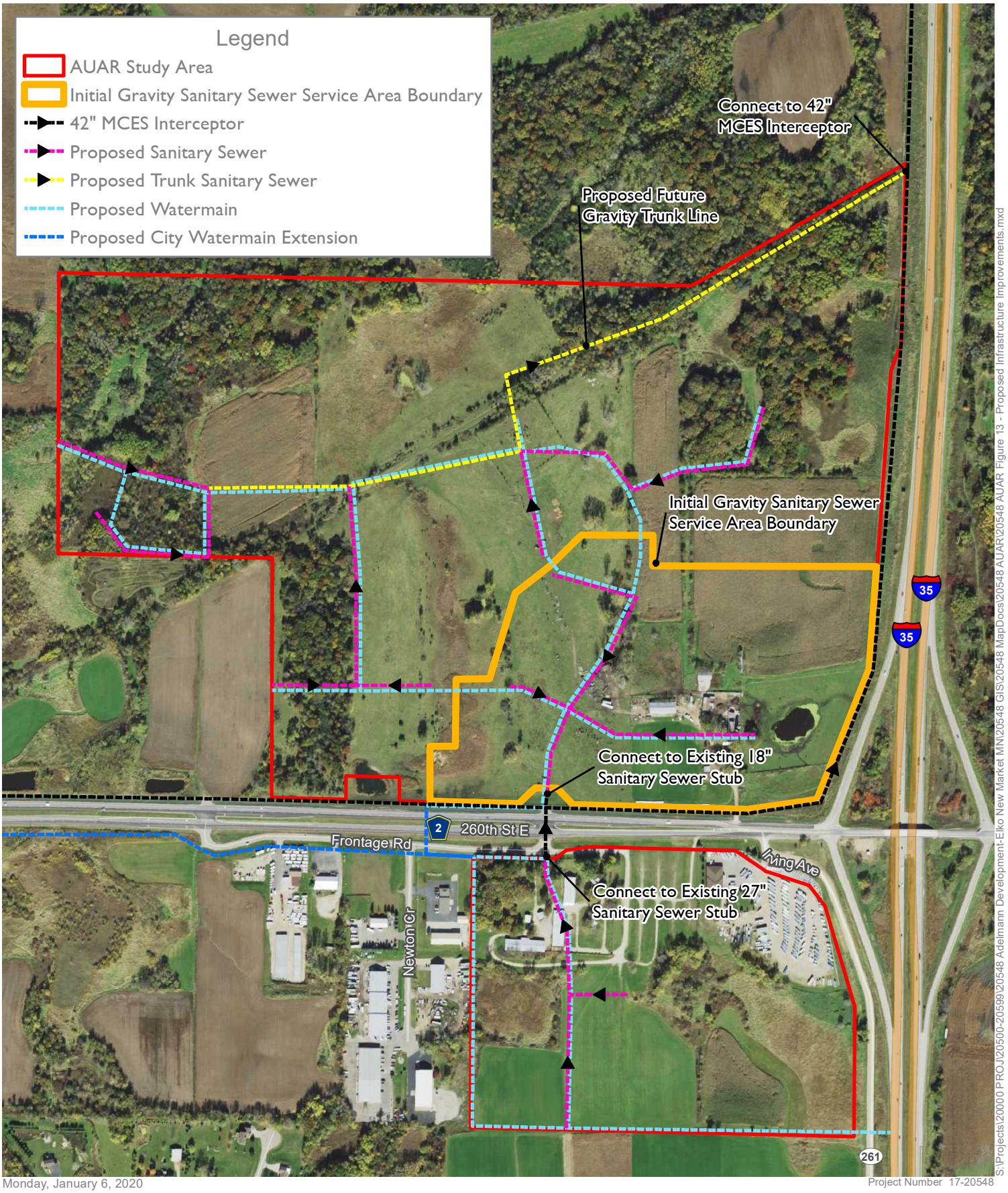
Current Infrastructure Facilities

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Orthophoto (MnGeo WMS, 2017)
Wells (MN Geological Survey, 2018)

ISG



Monday, January 6, 2020

Project Number 17-20548

S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 AUAR\20548 AUAR Figure 13 - Proposed Infrastructure Improvements.mxd

0 300 600 Feet

1 in = 600 ft

N

Figure 13

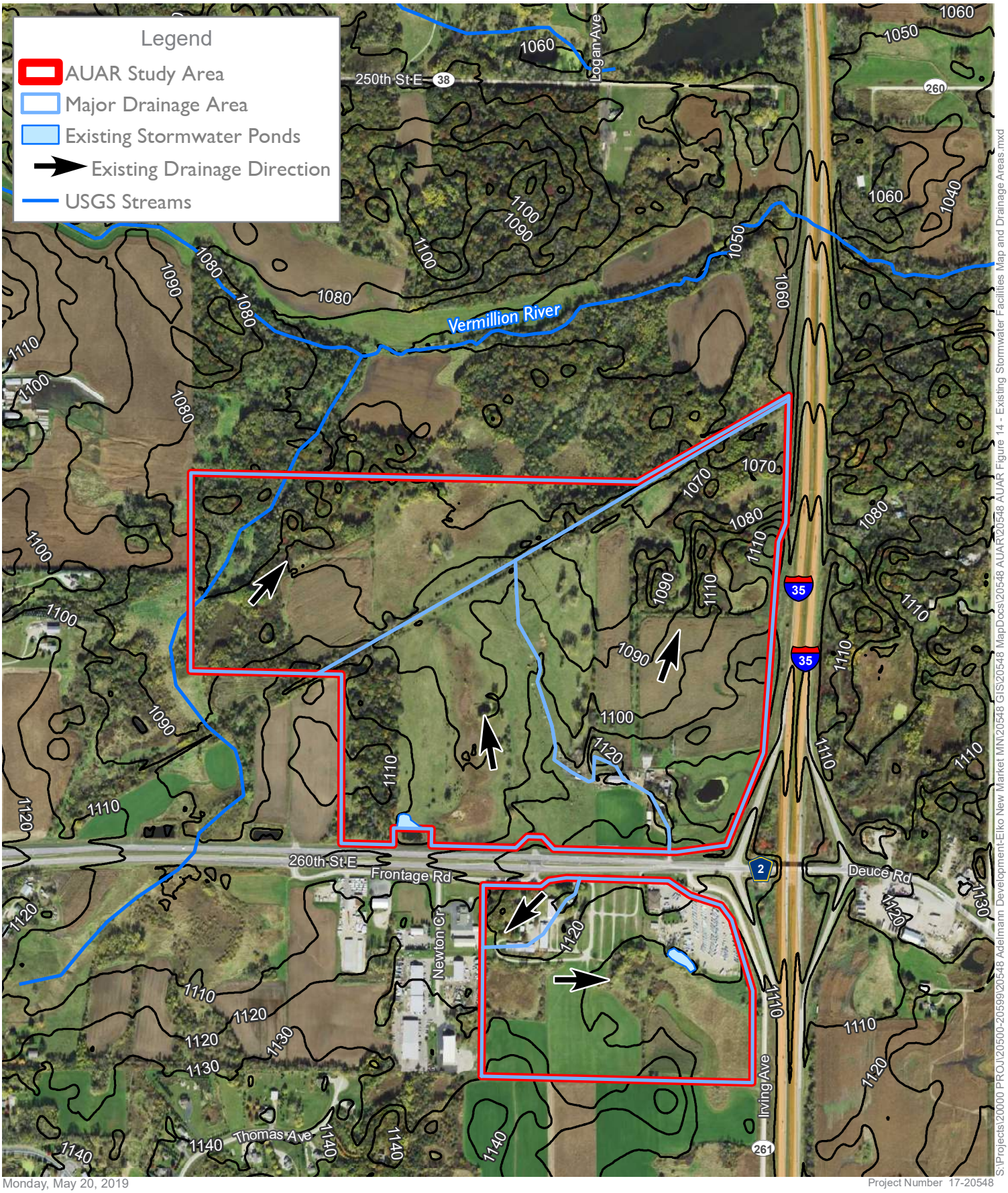
Proposed Infrastructure Improvements

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Orthophoto (MnGeo WMS, 2017)

ISG



Monday, May 20, 2019

Project Number 17-20548

S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 AUAR\20548 AUAR Figure 14 - Existing Stormwater Facilities Map and Drainage Areas.mxd

Figure 14

Existing Stormwater Facilities and Drainage Areas

Adelmann Family Property

New Market Twp, Scott County, Minnesota

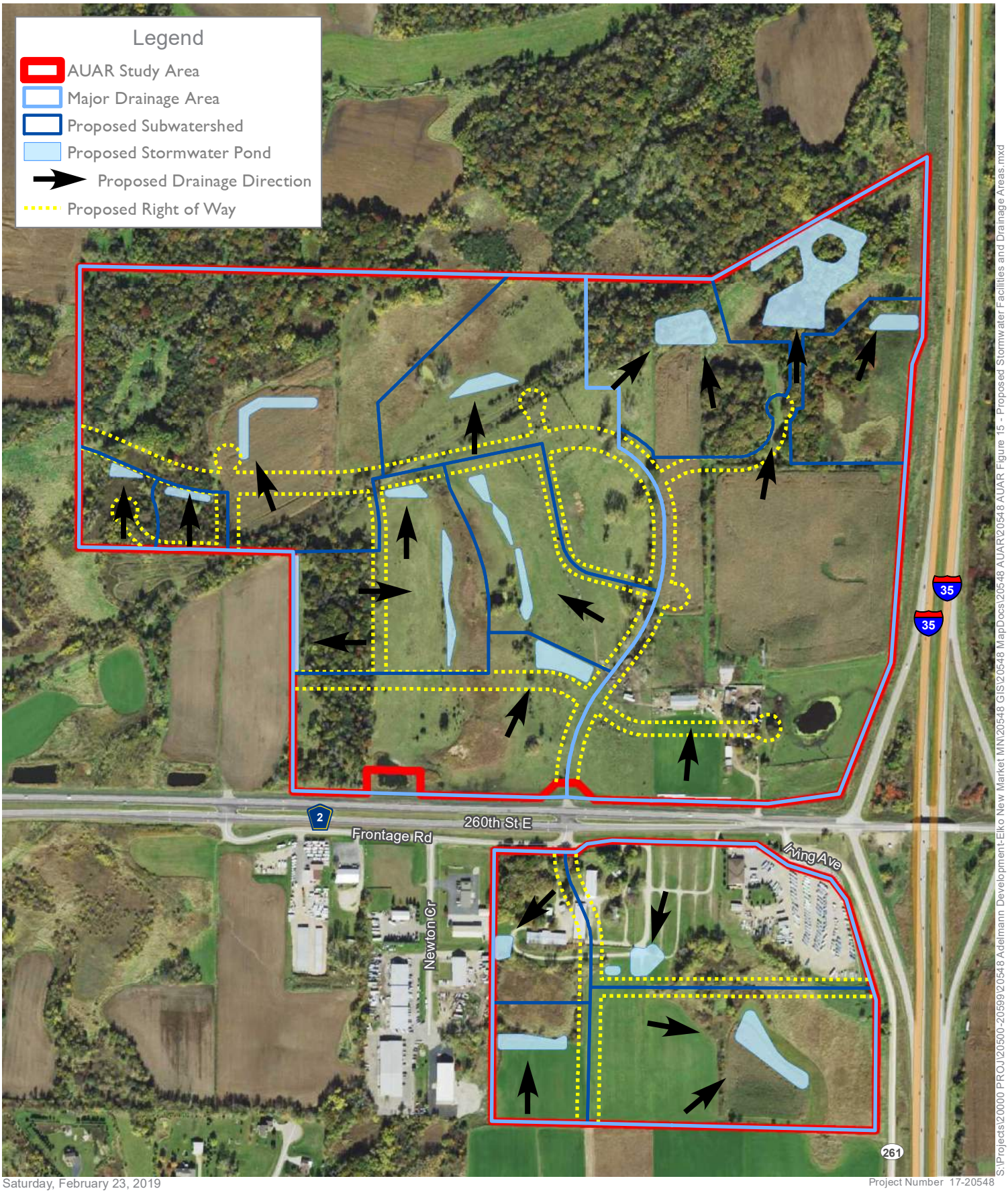
0 425 850 Feet

1 in = 850 ft

N

Source(s):
Orthophoto (MnGeo WMS, 2017)
Streams (USGS, 2009)

ISG



Saturday, February 23, 2019

Project Number 17-20548

S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 AUAR\20548 AUAR Figure 15 - Proposed Stormwater Facilities and Drainage Areas.mxd

0 300 600 Feet

1 in = 600 ft

N

Figure 15

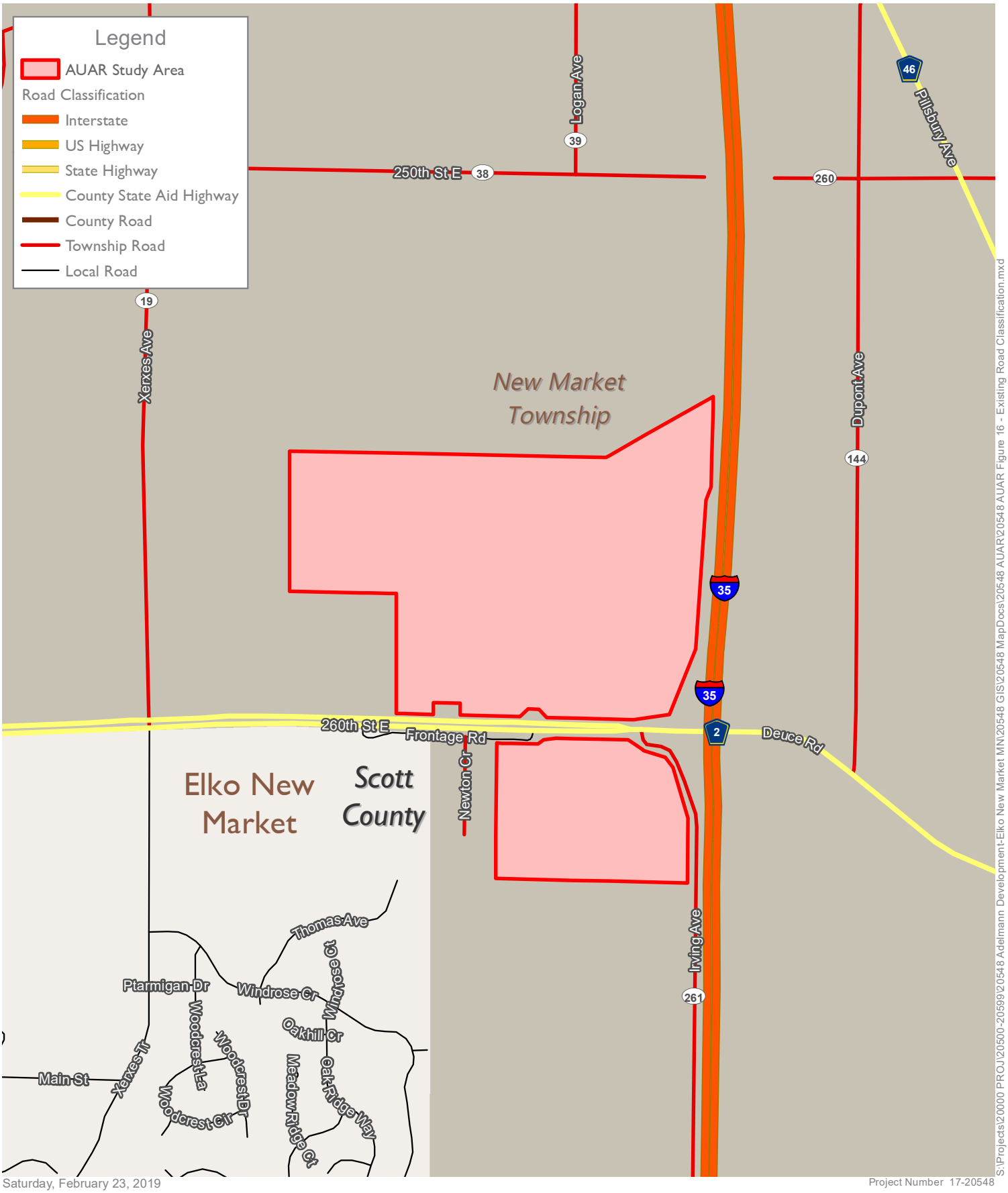
Proposed Stormwater Facilities and Drainage Areas

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Orthophoto (MnGeo WMS, 2017)

ISG



0 600 1,200 Feet

1 in = 1,200 ft

N

Figure 16

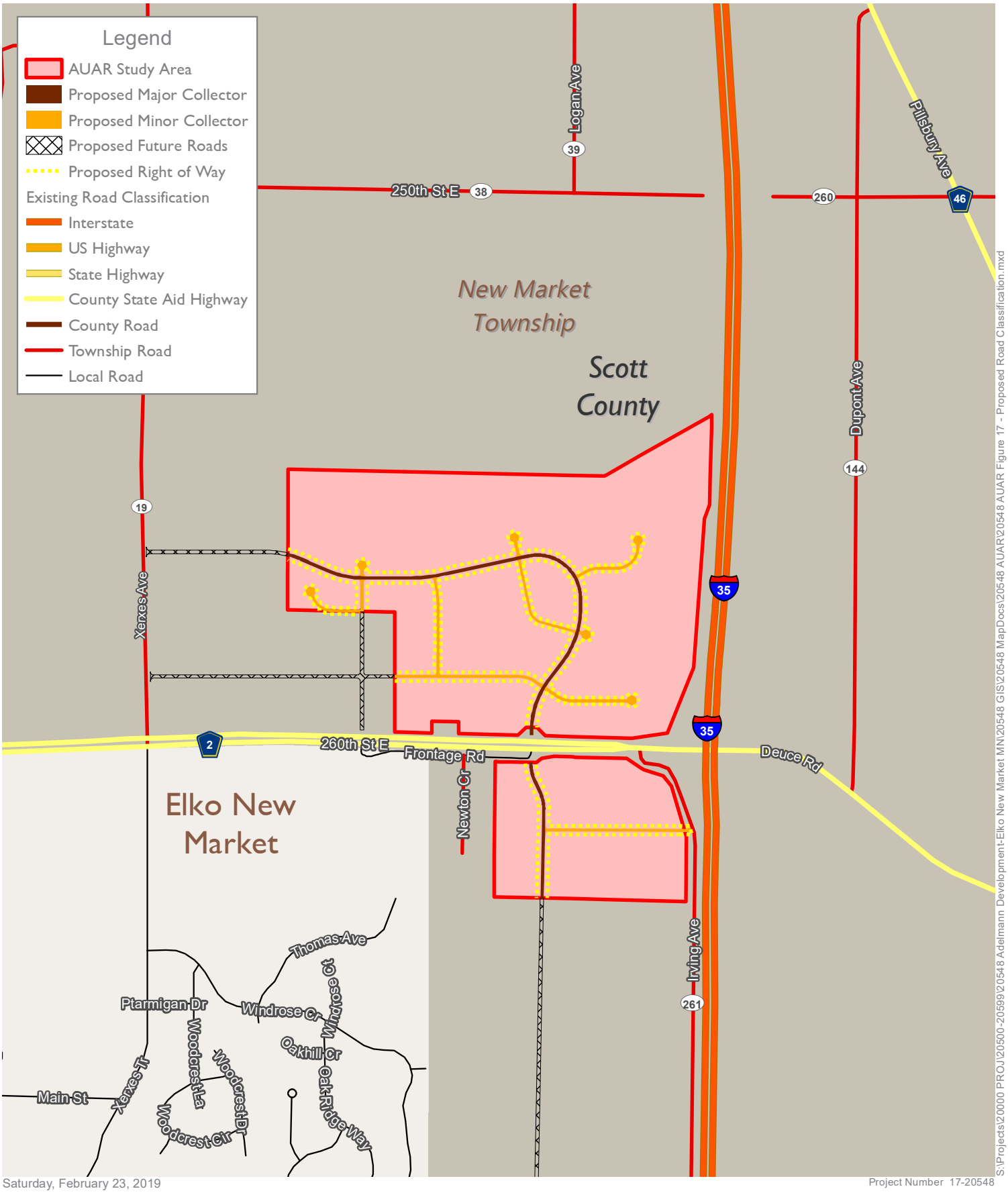
Existing Road Classification

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Municipalities (MN DOT, 6/24/2016)
Counties (MN DNR, July 2013)
Roads (MnDOT, 2012)

ISG



Saturday, February 23, 2019

Project Number 17-20548

S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 AUAR\20548 AUAR Figure 17 - Proposed Road Classification.mxd

0 600 1,200 Feet

1 in = 1,200 ft

N

Figure 17

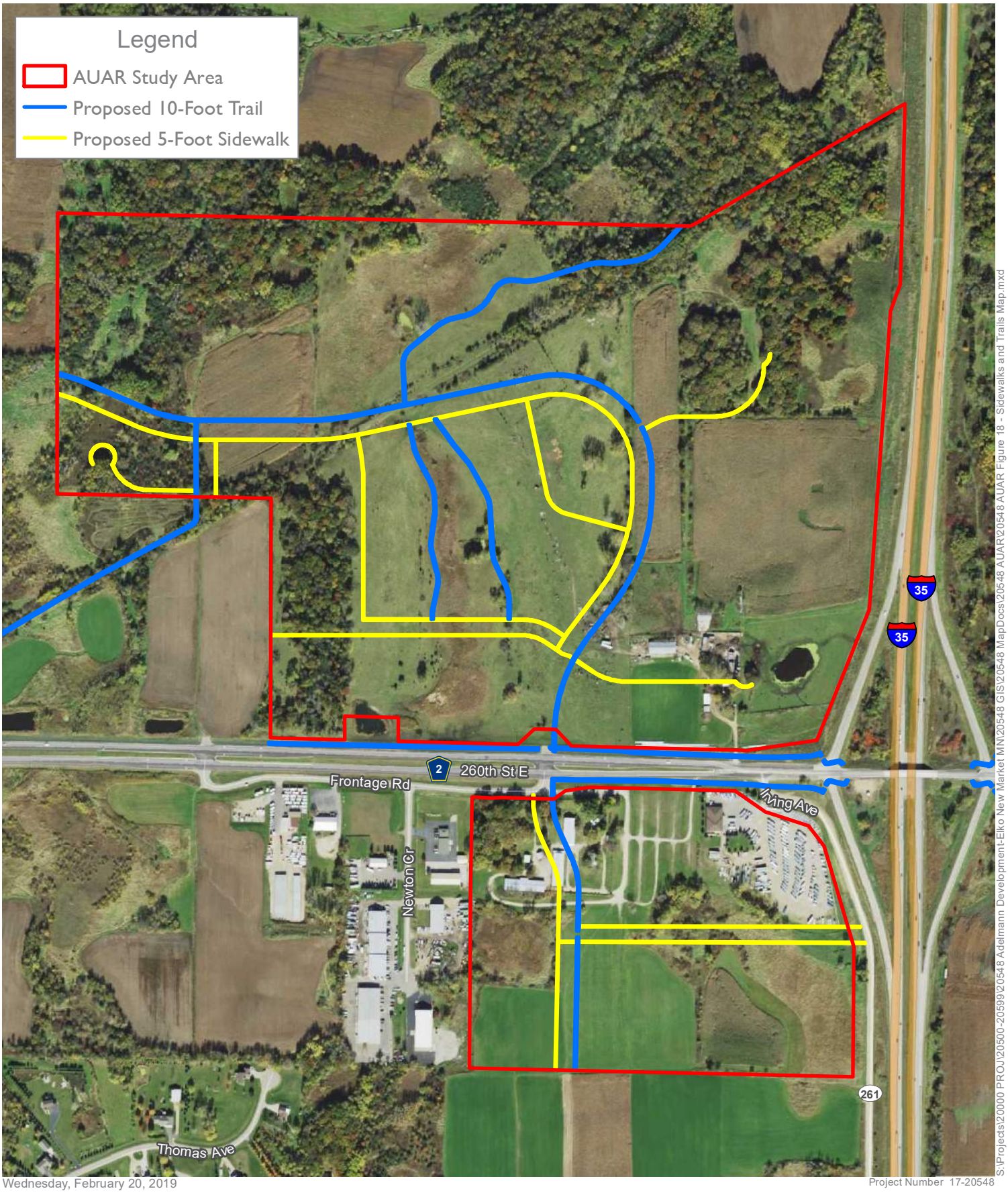
Proposed Road Classification

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Municipalities (MN DOT, 6/24/2016)
Counties (MN DNR, July 2013)

ISG



Wednesday, February 20, 2019

Project Number 17-20548

S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 AUAR\20548 AUAR Figure 18 - Sidewalks and Trails Map.mxd

0 300 600 Feet

1 in = 600 ft

N

Figure 18

Sidewalks and Trails Map

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Orthophoto (MnGeo WMS, 2017)

ISG

Exhibit A:

Overall Site Plan

Overall Concept Plan

SUMMARY

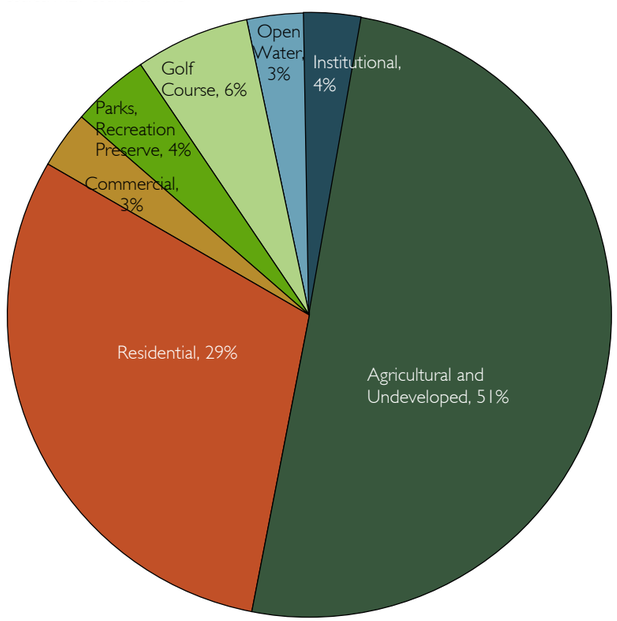
The expansive property is versatile for a wide range of development types. With its abundant wetlands (48.98 acres) acting as natural buffers between the various uses, visual separation throughout the site will be a key feature. Design standards will support a cohesive vision for The Property and support high-quality design.

The development over time will add the following:

BUSINESS CAMPUS DISTRICT	10.81 AC
BUSINESS / LIMITED INDUSTRIAL PARK	57.72 AC
HIGHWAY (GATEWAY) BUSINESS/ COMMERCIAL DISTRICT	82.29 AC
MEDIUM DENSITY RESIDENTIAL DISTRICT	7.20 AC

EXISTING ELKO NEW MARKET LAND USES

Source: MET Council & NAC



North Concept Plan

SUMMARY

The area located to the north and south of CSAH 2 should be seen as the first development priority. The land is guided to Highway (Gateway) Business, and is commercial use. The land has high visibility to those entering or exiting Elko New Market and is the first impression to the city. Careful detail to appearance with high quality development is anticipated within this area.

Retail stores and services, grocery, quick-service restaurants, etc. can keep family in-mind and provide additional attraction for future residents of the city while providing opportunities for services that are not locally available.

Future development along Interstate 35 provides high visibility for larger commercial uses – such as vehicle or implemented dealerships. In the northeast corner there is an opportunity for a business campus that would have high visibility and be surrounded by natural buffers from neighboring businesses. The locational strengths of the site, including the high visibility/accessibility, will continue to hold their value over time.

Tucked away, in the central portion of the site is a business / limited industrial park district. The limited manufacturing and general contractor operations facilities can serve the region, providing jobs to local and surrounding cities. A centralized pathway is provided to promote a healthy community and break from the standard daily routine. The pathways provide direct access to the county trail corridor system and to the retail services.

To the northwest of the site, a medium density residential area can begin to flourish. With 1-percent of the city land developed for multi-family residential and 28-percent for single-family detached (MET Council and NAC), the area provides alternative housing options including four-plexes and townhomes. The shared access will have direct transportation to CSAH 2 and to the Interstate. On days where a vehicle is not required, the communities within this area have the most direct access to the county trail system and to the local amenities the site has to offer.

Flexibility will be needed as the northern section of the site develops because it would be ideal to develop over time.

The North Concept includes developable areas of:

HIGHWAY (GATEWAY) BUSINESS/COMMERCIAL DISTRICT	52.45 AC
BUSINESS / LIMITED INDUSTRIAL PARK	53.76 AC
BUSINESS CAMPUS DISTRICT	10.81 AC
MEDIUM DENSITY RESIDENTIAL DISTRICT	7.20 AC

South Concept Plan

SUMMARY

South of CSAH 2, retail services, offices, hospitality, and limited manufacturing can coexist and provide additional services to travelers. The exit for Elko New Market is approximately 20 miles between Lakeville and Lonsdale. With typical gas and quick service amenities at these locations, there is an opportunity to expand upon these same services and become a new gateway stop along the Interstate. The right-out access of the site allows for vehicles to quickly reach I-35 while having a larger variety of retail and restaurants. The south has the same advantage as the north; with high visibility from the county roadway and Interstate, there is an opportunity to become a city staple and provide services currently not available within the city. Additionally, the site is located within a mile from the Elko Speedway and the Drive-in Theater - two of the principal attractions of the city.

Setback from the busy Interstate and buffered by natural wetlands, to the southeast portion provides an opportunity for hospitality to be developed. The closest hotel to the city is approximately 8 miles away, in New Prague. Amenities, like the north development, will be interconnected with sidewalks and trails, giving travelers the opportunity to explore the development and the option of a short-drive or bike ride to other features of the city.

The South Concept includes developable areas of:

HIGHWAY (GATEWAY) BUSINESS/ COMMERCIAL DISTRICT	29.84 AC
BUSINESS / LIMITED INDUSTRIAL PARK	3.96 AC

Exhibit B:

Preliminary Geotechnical Report

element™

Element Materials Technology
662 Cromwell Avenue
St Paul, MN
55114-1720 USA

P 651 645 3601
F 651 659 7348
T 888 786 7555
info.stpaul@element.com
element.com

Preliminary Geotechnical Exploration Program
Proposed Site Development – Adelman Property

NW and SW Corners of I35 and 260th Street East
Elko New Market, Minnesota
Element Materials Technology St. Paul Inc. Project No. ESP026601P

Prepared for:

APPRO Development

November 20, 2017

Professional Certification:
I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Mark Straight, P.E.
Senior Project Engineer
MN Reg. No. 41658

This report shall not be reproduced, except in full, without prior permission of Element Materials Technology.

EAR Controlled Data: This document contains technical data whose export and re-export/retransfer is subject to control by the U.S. Department of Commerce under the Export Administration Act and the Export Administration Regulations. The Department of Commerce's prior written approval is required for the export or re-export/retransfer of such technical data to any foreign person, foreign entity or foreign organization whether in the United States or abroad.

element™

November 20, 2017

Mr. Jim Connelly
APPRO Development
21476 Grenada Avenue
Lakeville, MN 55044

jimc@approdevelopment.com

RE: Preliminary Geotechnical Exploration Program
Proposed Site Development – Adelman Property
NW and SW Corners of I35 and 260th Street East
Elko New Market, Minnesota
Element Materials Technology St. Paul Inc. Project No. ESP026601P

Dear Mr. Connelly:

We have completed the geotechnical exploration and engineering analysis for the above referenced project. This report presents the results of our field and laboratory testing programs, and provides recommendations concerning the soil and groundwater conditions as they relate to the proposed site development.

The soil samples will be retained in our laboratory for 30 days, at which time we will dispose of them. If you desire Element Materials Technology St. Paul Inc. to retain the samples longer than 30 days, please notify us.

We are pleased to be of service to you in this important phase of the project. If there are any questions regarding the information contained in this report or if we can be of further service to you, please contact John Starke at (651) 659-7429, email: john.starke@elemnet.com or Mark Straight at (651) 659-7447, email: mark.straight@element.com.

Respectfully Submitted,

ELEMENT MATERIALS TECHNOLOGY ST. PAUL INC.

John Starke, P.E.
Senior Geotechnical Engineer
MN Reg. No. 23546

Mark Straight, P.E.
Senior Project Engineer
MN Reg. No. 41658

1.0 INTRODUCTION

This report presents the results of our recent geotechnical exploration program conducted for the proposed site development at the Adelman property located in Elko New Market, Minnesota. We understand a geotechnical exploration program was required to evaluate subsurface conditions within the project area and to aid in the design and construction of buildings and structures.

1.1 Scope of Work

We recently performed a geotechnical exploration program in accordance with our proposal dated October 14, 2016 and your subsequent email authorization to proceed. The scope of our work for the project was as follows:

1. Arrange to have buried public utilities marked through the Gopher-State One-Call system.
2. Explore the subsurface soil and groundwater conditions by drilling eighteen (18) Standard Penetration Test (SPT) soil borings to unit depths ranging from approximately 15' to 25' or to auger refusal upon bedrock/obstruction if occurring at shallower depth using an all-terrain mounted drill rig. Backfill the borings with auger cuttings, bentonite chips, or grout as per Minnesota Department of Health (MDH) guidelines.
3. Visually classify the extracted soil samples and perform laboratory testing on selected samples including moisture content, Atterberg Limits and grain size distribution tests to aid in soil classification and to determine engineering properties.
4. Prepare a geotechnical report which includes the following information:
   a. Logs of the soil test borings showing the soil and groundwater data, including N-values.
   b. A site plan showing the approximate boring locations.
   c. Written description of encountered soil and groundwater conditions.

d. Recommendations for site preparation for buildings and structures, roadways and stormwater infiltration basins including, allowable soil bearing capacities, backfilling and structural fill requirements, modulus of subgrade reaction for floor slabs and general support for floor slabs, utility cut and backfill procedures, and general roadway subgrade design parameters.
e. Estimates of soil infiltration rates based on encountered soils and laboratory gradation test results if applicable.
f. Discussion concerning other geotechnical items which may impact the constructability or geotechnical suitability of the site.

The scope of our work for this project and report is intended for geotechnical purposes only. This scope is not intended to explore for the presence or extent of environmental contamination at the site.

2.0 FIELD TESTING PROGRAM

2.1 Soil Borings

Eighteen (18) Standard Penetration Test (SPT) borings were drilled at the project site between September 15, 2017 and September 22, 2017. The approximate boring locations are shown on the attached Boring Location Plan. The borings were field staked and ground surface elevations measured and provided by ISG, a subcontractor of APPRO Development (APPRO), at the locations shown on the Boring Location Plan.

The SPT borings were performed with an all-terrain mounted rotary drill rig using split-barrel sampling procedures. Water level observations were made in the boreholes during and upon completion of the drilling and sampling operations. During the field operations, the drill crew maintained logs of the subsurface conditions including changes in stratigraphy and observed groundwater levels. The boring logs are attached.

After completion of the drilling operations, the boreholes were backfilled/grouted per the Minnesota Department of Health (MDH) guidelines.

Sampling and classification of soils were performed in general accordance with American Standards for Testing and Materials (ASTM) procedures, and are described on an attached sheet.

2.2 Surface Conditions

The combined project area encompasses approximately 200 acres of land located north and south of 260th Street East as shown outlined on the attached Boring Location Plan.

Project Area South of 260th Street East

The project area south of 260th Street East encompassing approximately 50 acres includes separate land uses; Twin Cities Featherlite Trailers, a commercial property, an apparently unoccupied private residence with outbuildings, active agricultural croplands and wetland areas. The project area is bounded on the east side by Irving Avenue and on the north side by 260th Street East and Newton Circle. Featherlite Trailers located at the northeast corner of the project area is an active trailer sales business having commercial/retail buildings and trailers present across this property. An apparently unoccupied private residence with several large outbuildings is located at the northwest corner of the project area bounded on the north side by Newton Circle. Located between the private residence and Twin Cities Featherlite Trailers is a grassed area bisected by gravel roadways presumably used for vehicle parking for flea market events held at the private residence property. The southern portion of the project area contains wetlands and agricultural lands. Two large wetland areas are present on the east and west central portions of the project area. Cropland encompasses the balance of the property to the south. Topography across the project area gently slopes from the north and south towards the east central portion of the site. Topography across the site ranges from an approximate high elevation of 1130' MSL near the north and south boundary to a low elevation of 1104' MSL near the east central portion of the site.

Project Area North of 260th Street East

The project area north of 260th Street East encompasses approximately 150 acres and includes a private residence and outbuildings located near the south east corner of the site, active and fallow croplands, woodlands, and wetlands. The project area is bounded on the east side by I35 and on the south side by 260th Street East. Bisecting the property, extending in a northeast to southwest orientation is an inactive railroad alignment. North of the rail alignment the property is dominated by wetlands, woodlands and cropland. The Vermillion River bisects the west portion of the project area, north of the rail alignment. A large wetland area is present mid-section of the project area, connected the north and south areas via culvert extending beneath the rail bed. A smaller wetland area is present at the northeast corner of the property. Ponds are present in the low wetland areas. Woodland areas are predominate at the northwest, west, and northeast corners of the project area. South of the rail alignment, east and west of the wetland area are active and fallow croplands. Topography across this area is somewhat variable ranging from an approximate high elevation of 1118' MSL near the south central portion of the property to low elevation of 1060' MSL at the far northeast corner. Higher elevations are generally present along the southeastern side of the project area, adjacent to I35. Lower elevations are generally present within the wetland areas, central to the project area and at the northeast corner of the property.

2.3 Subsurface Conditions

The subsurface conditions encountered at the test boring locations are shown on the test boring and test pit logs. The boring logs also indicate the possible geologic origin of the materials encountered. We wish to point out that the subsurface conditions at other times and locations on the site may differ from those found at our test locations. If different conditions are encountered during construction, it is necessary that you contact us so that our recommendations can be reviewed.

The borings indicated a generalized geologic soil profile consisting of topsoil at the surface underlain by various layers of predominately glacial till and alluvium soils.

Project Area South of 260th Street East (Borings B1 through B3)

The ground surface was mantled with approximately 2' to 2½' of topsoil consisting of black organic lean clay at borings B1 and B2. At boring B3, approximately 8" of aggregate base course was encounter at the surface. At borings B1 and B2 underlying the topsoil, extending to approximately 7½' to 12', respectively, was fine alluvium soil consisting of brown to gray Lean Clay (CL) with lenses of sand and silt. Based upon SPT blow counts (N-Values) obtained during drilling activities, the lean clay soil strength consistency ranged from very soft to firm at increased depth. Glacial till comprised of sandy lean clay with various amounts of gravel was encountered beneath the fine alluvium extending to the borings termination depth of 20½'. The glacial till was in a soft to firm condition based on the SPT blow counts.

At boring B3, below the aggregate base course material, extending to the boring termination depth of 20½' was coarse alluvium consisting of Silty Sand (SM) and Sand with Silt (SP-SM) with various amounts of gravel. Based upon SPT results (N-values) the density of the sand layers generally ranged from medium dense to dense.

Project Area North of 260th Street East (Borings B4 through B18)

With the exception of boring B10, at these boring locations the ground surface is mantled with approximately 1' to 4½' of topsoil consisting of predominately black organic sandy silt or organic sandy lean clay. At boring B10, fill soil consisting of a mixture of sandy silt and clayey sand was present from the ground surface to a depth of approximately 2'. A buried topsoil layer was then encountered extending to approximately 3½' below the drilling surface of boring B10.

Generally underlying the topsoil layers and extending to the termination depth of the borings was alternating stratum of fine alluvium, coarse alluvium, and glacial till soils consisting predominately of Lean Clay or Sandy Lean Clay (CL) and Sands with varying

amounts of silt and clay (SP, SP-SM, SM and SC) and gravel. The consistency of the cohesive clay layers based upon the SPT blow count (N-Value) generally ranged from soft to hard with increasing depth. The cohesive clay layers show a color profile ranging from brown to gray and generally increase in density with depth.

Generally the density of cohesionless sand layers based upon SPT blow counts (N-Values) ranged from loose to dense. At boring B14 very loose to loose Sand (SP), Sand with Silt (SP-SM), and Silt (ML) was present below the surface topsoil layer extending to a depth of approximately 16'.

Cobbles and possible boulders were encountered at several locations within the soil profile as shown on the soil boring logs. Soil borings B5, B7, B11, and B17 terminated upon drilling obstructions that most likely were cobbles and/or boulders encountered at depth. Boulders appeared to be also present at the surface and near soil boring location B11. We caution that cobbles, boulders and gravel pockets may also be present at other locations within site away from our soil borings.

2.4 Water Level Conditions

Water level observations were made during and after completion of the drilling operations. Groundwater was encountered at the time of drilling in all soil borings as noted on the attached boring logs except borings B7, B11, and B16. Groundwater was generally encountered below the drilling surface at depths ranging from approximately 2' at boring B18 to 15' at boring B10. The following tabulation lists groundwater depth and elevation recorded at each of the borings during drilling operations.

Boring No.	Recorded Water Depth (ft.)	Existing Ground Surface Elevation MSL (ft.)	Groundwater Elevation MSL (Nearest ½ ft.)
B1	12½	1110.3	1098
B2	5	1115.8	1111
B3	9	1117.5	1108½
B4	9½	1118.6	1109
B5	11	1111.2	1100
B6	4(2)	1087.5	1083½
B7	-(1)	1113.3	-
B8	3(2)	1072.0	1069
B9	13½	1085.1	1071½
B10	15	1108.6	1093½
B11	-(1)	1113.9	-
B12	9	1103.4	1094½
B13	7	1095.8	1089
B14	9½	1096.1	1086½
B15	7½	1085.9	1078½
B16	-(1)	1079.6	-
B17	3	1080.6	1077½
B18	2	1076.6	1074½

(1) Groundwater was not observed during drilling operations.

(2) Perched groundwater encountered at this location. Groundwater rose within the borehole during drilling operations.

Mottled and iron oxide stained soils were observed within several soil samples collected. This indicates groundwater was previously present within these soil layers.

In general, water levels may fluctuate throughout the year depending on variations in the amount of precipitation, degree of evaporation, surface run-off characteristics and other related hydrogeological factors.

It should be noted that silty and clayey soils encountered in the borings are relatively impervious or slow draining, it may take several days for groundwater in a borehole to rise to its hydrostatic level. If more accurate water level determinations are required, piezometers should be installed and the water level monitored over a period of time.

Groundwater may impact site grading activities if encountered during construction. The earthwork contractor should pay particular close attention to the area surrounding B17 and B18 where the ground surface elevation is low and groundwater is shallow. We recommend that the groundwater elevation in low areas of the site be reassessed prior to site construction. This can be accomplished by excavating test pits in these low areas and observing groundwater infiltration rates. The earthwork contractor may need to perform excavations as needed in selected areas around the site to fully evaluate groundwater conditions prior to construction. Excavations should be performed with at-grade equipment such as backhoes in an effort as to not disturb underlying supportive soils where groundwater and excessive moisture is present. Additional moisture conditioning (i.e. scarifying/disking and drying soils, etc.) may also be required by the earthwork contractor to obtain proper soil compaction and stability to soil layers as needed.

3.0 LABORATORY REVIEW AND TESTING

The soil samples obtained during the drilling operations were logged, labeled, sealed and delivered to our laboratory for further review. An Element geotechnical engineer classified the soil samples in general conformance with ASTM Standards. Selected soils were tested for moisture content determination, Atterberg Limits, and grain size distribution. The moisture content of the soil tested ranged from approximately 4 to 22 percent. Generally, the clayey type soils were on the higher moisture content range and could exceed optimal moisture conditions for obtaining proper compaction. In our opinion as a result of the higher moisture contents encountered, scarifying and drying the soil would be required during mass earthwork operations. The data obtained from the field and laboratory review are shown on the boring logs. The laboratory test results are either shown on the boring logs or attached to this report.

4.0 ENGINEERING REVIEW

The engineering recommendations made in this report are based on our understanding of the project as described in the following paragraphs. The recommendations are valid for a specific set of project conditions. If the characteristics of the project change from those indicated in this section, it is necessary that we be notified so we may determine whether the new conditions affect our recommendations.

4.1 Project Data

Preliminary project design information was not available to us at the time of this report preparation. However, we understand the site development concepts include a mix of commercial and light industrial type buildings. We were informed the buildings would be one or two story structures and generally constructed of precast concrete walls with steel columns, steel bar joists and metal roof decks. Structural loading conditions and foundation bearing loads were not specified however, considering this type of structures planned, we anticipate foundation bearing pressure loads ranging from approximately 2500 to 3000 pounds per square foot (psf) for these types of structures.

Site roads would need to be constructed to permit vehicle access to the various site use locations within the project area. We assume medium duty, typical 10-ton pavement section roadways would be constructed to meet these needs with more light duty 7-ton pavement sections used for general parking areas for cars and small trucks. We expect that the main access to project areas would be via 260th Street E. Furthermore, we were informed that infiltration ponds would be positioned in the vicinity of borings B1, B4, B14, and B16 depending on the encountered soil and groundwater conditions found at these locations.

4.2 Discussion/Building Site Preparation

Due to variability of the site topography we expect significant earthwork will be required to achieve a near level site grading plan. Presently, preliminary site development plans were not available to us for review and to aid us in developing appropriate soil correction plans for the construction sites. We request as these plans become available we are contracted to review our recommendations and provide additional comments as needed.

The borings generally encountered 1' to 2' of topsoil underlain by predominately coarse alluvium, fine alluvium, and glacial till soils. Generally the natural soils encountered beneath the overburden topsoil should be suitable for site development, however some softer/looser zones of soils were encounter during drilling that could influence site construction. Generally the soils strengthen with increased depth. In our opinion, the topsoil and very soft fine alluvial clays/silts near the surface are unsuitable for supporting new construction and would need to be soil corrected prior to foundation placement. In areas where loose granular sands were encountered additional soil compaction should be performed to aid in increasing density within these loose layers and minimize differential settlements prior to placing structures.

We do not recommend re-using highly frost susceptible soils including silt, topsoil, and fat clays as engineered fill to support the new construction. These soil types where encountered would need to be replaced with suitable engineered fill. In our opinion, moisture conditioning (i.e. scarifying, drying, disking, etc.) would be required of existing suitable natural soil to obtain the proper soil compaction requirements for building pad construction.

In our opinion, it should be feasible to support buildings on a normal spread footing foundation system following a site soil correction. Site preparation should consist of removing the surface vegetation, topsoil, thick tree root mats/stumps where encountered, and very soft clays/silts from the proposed building areas. Any

demolished building structures/pavements including utility lines or cisterns should also be removed by licensed contractors where applicable. Care during site preparation should be provided as to not to damage/undermine the surrounding construction or street areas.

The competent inorganic native soils should be suitable for building support. This would exclude the soft clays where encountered at the footing subgrade elevation. We recommend if these soft and loose layers were encountered within the upper 4' of the footing/foundation subgrade be excavated and replace with engineered fill as described below. The final excavation depths should be field verified after the final grading plan is established. Actual subcuts would depend on final grade elevation relative to where very soft clays were encountered and the building foundation design grade.

Any granular soil if encountered/exposed during earthwork activities should be subjected to thorough surface densification using a heavy, self-propelled vibratory compactor prior to additional fill placement provided the soils are not saturated and/or groundwater is present. We recommend the compactor make at least five (5) passes in mutually perpendicular directions. If perched water is present within granular layers this operation should be evaluated at the time of construction.

The following tabulation states the minimum recommended depth to competent soils for building support at the respective boring locations:

Boring Number	Existing Ground Surface Elevation (ft.) MSL	Minimum Excavation Depth (ft.)	Approximate Elevation of Competent Soil (Nearest ½ ft.) MSL
B1	1110.3	5	1105½
B2	1115.8	12	1104
B3	1117.5	2	1115½
B4	1118.6	2	1116½
B5	1111.2	1½	1109½
B6	1087.5	4	1083½
B7	1113.3	1½	1111½
B8	1072.0	4	1068
B9	1085.1	2	1083
B10	1108.6	4	1104½
B11	1113.9	1½	1112½
B12	1103.4	1½	1102
B13	1095.8	6	1090
B14	1096.1	7	1089
B15	1085.9	4½	1081½
B16	1079.6	2	1077½
B17	1080.6	4½	1076
B18	1076.6	7	1069½

Deeper excavations may be required in and around existing wetland areas depending on final construction plans. The recommended excavation depths should be evaluated by the geotechnical engineer once the preliminary site grading plans become available. At boring B2 soft clay soils were observed to depths of approximately 12'. If buildings and or structures are planned for this location, we recommend further investigation be conducted such as test pits to assess soil bearing capacity and load/settlement response for the structure foundation design.

Deeper excavations may be required to establish final site design grades (i.e. pond/infiltration areas, building pads, roads, etc.). We caution that soil conditions may change away from our boring locations and site review should be performed during

construction to perform additional testing to verify existing site conditions. This would include performing additional test pits for visual observations and soil compaction testing.

The subcuts were estimated based if a structure was planned at the boring location. We recommend that once the preliminary site development plans are complete, Element should review and update the above depth of subgrade cut based upon building specifications. Additional test pits and/or soil borings should be performed on the site to further identify the extent and quality of soft soils/loose soils in planned development areas once the preliminary site grading plan becomes available.

In the event that contaminated soil is encountered, proper environmental sampling, testing and disposal of site impacted soils should be performed. Environmental consultants should be hired to perform appropriate monitoring and testing during construction as needed. Contingences including specific environmental testing and soil disposal should be placed in the project budget to properly deal with impacted soils and unknowns if encountered during site construction. All encountered construction debris should be properly disposed of per standard construction practices.

Isolated dewatering may be required where perched groundwater is encountered to facilitate earthwork activities. This may be more prevalent in low lying areas or areas adjacent to existing wetlands where groundwater was noticed during our drilling activities. We noted that groundwater was observed in borings B17 and B18 close to the ground surface at depths of 3' and 2', respectively. If development is planned in these areas additional dewatering and drainage structures most likely would be required to facilitate earthwork activities and future development. Also excavation would need to be performed with at grade equipment such as large backhoes as to aid in minimizing disturbances to underlying saturated soils.

Test pitting should be performed by the contractor in the presence of the geotechnical engineer or their representative in order to help verify depths of subcuts. The

excavation bottoms should be observed by the geotechnical engineer to document the exposed soil conditions. This is a requirement of FHA Data Sheet 79G, "Land Development with Controlled Earthwork", if applicable to your project.

Where the excavation extends below bottom footing elevation, we recommend providing lateral oversize equal to 2' plus the depth of fill required to attain bottom of footing elevation (i.e. 2+1V:1H lateral oversize). This over-sizing is necessary to support the lateral loads exerted by the footings through the fill system. An illustration of this over-sizing is attached to this report. The walls of the excavation should be properly braced and shored if suitable sloping of excavations cannot be provided.

After the recommended excavation, engineered fill should be placed to attain final grades. We recommend the use of granular soil preferably having less than 20% passing the #200 sieve. The on-site inorganic soils, excluding: existing site fill, soil fouled or mixed with topsoil, topsoil, organic material, debris, existing construction, hydric soils, and/or silt/fat clay, or saturated soils that do not allow for proper soil compaction; may be used as engineered fill, provided the specified compaction level can be achieved. We anticipate some moisture conditioning (i.e. scarifying/disking and air drying, etc.) would most likely be required based on the apparent moisture of the soil samples obtained during the drilling work.

Below foundations and floor slabs, the engineered fill should be compacted to at least 98% of the Standard Proctor maximum dry density (ASTM D: 698). The moisture content of the fill should be maintained within 3% of optimum as determined by the Standard Proctor test, at the time of placement. Soil compaction tests should be performed to verify that proper compaction is achieved in the fill. We recommend in areas where fill is placed in depths greater than 10' to attain design grades that the specified soil compaction level be increased to a minimum of 100% of the Standard Proctor test. The increased soil density requirement will aid in minimizing post construction settlements occurring with structures placed on deep fill areas. We also recommend that a construction delay be built into the construction schedule where deep

fills exceed 15' to 20' to allow initial consolidation of underlying soils to occur of areas where deep fills are expected.

Fill compacted with heavy, self-propelled compaction equipment should be placed in lifts not exceeding 12 inches in loose thickness. Fill compacted with hand-operated compaction equipment should be placed in lifts not exceeding 6 inches in loose thickness.

The silty and clayey soils encountered at this site are susceptible to disturbance from construction traffic, especially in wet conditions. Therefore, we recommend positive surface drainage should be maintained so water is not allowed to pond on site and promote soil disturbance. We also recommend using the appropriate at-grade excavation equipment (i.e. backhoes, etc.) during earthwork operations to limit soil disturbance and degrading the underlying supportive soil. If soil becomes disturbed, additional excavation may be required.

After the recommended site preparation and soil correction has been performed, it is our opinion that footings can be designed for a net allowable bearing pressure of up to 3000 psf. This bearing pressure includes a factor of safety of at least three against shear failure of foundations. In our opinion, total and differential settlement should not exceed about one inch and one-half inch, respectively.

All perimeter foundations in heated building space should be placed at a minimum depth of 42 inches below exterior grades for frost protection. Interior footings may be placed at any convenient depth below the floor slab. In unheated areas where deeper frost penetration may occur, we recommend that the foundations have a minimum soil cover of 60 inches for frost protection.

4.3 Floor Slab Recommendations

Soil corrections as outlined above would need to be performed to support the floor slabs of the planned structures. Particular attention should be paid to properly compacting

the fill against the foundations and within the utility trench backfill beneath the floor slabs. Inadequate compaction at these locations may cause cracking of the slab from subsidence of the fill. The floor slabs may be designed to be structurally independent of the building foundations or walls.

All backfill placed to support the floor slabs, including within utility runs, should be compacted to at least 95% of the Standard Proctor (ASTM D: 698). If the floor slabs are used to support vehicle traffic then the compaction level should be increased to 100%. We recommend the upper 8" of the subgrade immediately below the floor consist of free draining sand containing less than 5% passing the #200 sieve or pea-gravel or gravel equivalent. The sand/pea gravel will help reduce capillary moisture transmission to the slab. In our opinion, a modulus of subgrade reaction, k, of 180 pounds per square inch per inch (pci) can be used in the floor slab design provided the soil corrections are performed as outlined in this report.

If moisture sensitive floor coverings are planned for the floor slab areas we recommend contacting the flooring manufacturing to determine the type of vapor barrier system required. We recommend a vapor barrier be placed directly below the floor slab to minimize moisture transmission through the floor slab concrete. Due to the high moisture contents of the on-site soils and perched groundwater conditions we recommend that a minimum thickness of 12-mil vapor barrier be used. The vapor barrier should be properly sealed around all edges prior to concrete slab placement.

The soil borings did encounter groundwater at several locations at the time of drilling. The highest groundwater relative to the drilling surface was at boring location B18 where groundwater was encountered at a depth of 2'. It can be expected that in areas of close proximity to wetlands, higher groundwater levels could be present certain times of the year. We recommend that if building and structures are planned in these areas a thorough analysis of the seasonal high groundwater levels should be conducted. Typical requirements by municipalities specify that the design of the lowest foundation slab elevations should be placed a minimum of 2' to 3' above the seasonal high

groundwater elevation. FHA "79G" loan requirements specify a 4' separation, if applicable to your project. Final design plans for slab areas should account for providing a suitable separation distance from the seasonal high groundwater levels.

4.4 Pavement Subgrade Preparation

We understand that the proposed pavement areas will be used primarily for commercial business traffic including semi-tractor trailers, large trucks and automobiles with an occasional garbage truck, moving van and/or bus. These pavement areas will be built for drive lanes, loading dock, and or staging areas supporting the development. Based upon similar type projects we assume that the pavement design needs to conform to a typical minimum 10-ton design standard for these areas. It is also our understanding that lighter duty 7-ton pavement areas would be constructed for light duty parking areas for cars and small trucks servicing the commercial development. We have assumed a design life of 20 years, typical of these types of pavement construction, with normal maintenance anticipated for our design.

In bituminous pavement design, the critical portion of the subgrade is the upper 3-foot zone in heavy-duty areas. This zone provides the primary strength and stability needed for flexible pavement materials.

Minimum site preparation should include removal of the surface vegetation, topsoil, any encountered existing unsuitable fill, existing construction, very soft clays and/or clayey sands and other surficial organics, stumps and thick root mats where encountered. Additional subcuts where applicable should be performed in street areas to allow for placement of a minimum of 2' thick granular layer beneath the Class 5 aggregate base underlain by geotextile fabric. In areas where existing granular sandy soils are present the excavation may be minimized. These areas should be inspected and tested to verify they meet the project specifications. The geotextile fabric should meet MnDOT Specification 3733 Type V for separating materials. The fabric should be properly sewn or overlapped per MnDOT Specifications. Construction traffic other than foot traffic should remain off of the fabric as not to damage it during placement. In selected low

lying areas and where very soft clays/silts are encountered the sand section should be increased to 2' thick. Appropriate transitions between section changes should be noted in the design documents. We recommend that the transitions/tapers should be a minimum of 20:1 (H:V) where different sections are coming together.

Based on the borings, the majority of the exposed soils will be primarily lean clays and silty/clayey sands. These natural soils at final subcut grade should be subjected to test rolling to help identify any weak zones in need of correction. Unstable subgrade should be removed and replaced prior to additional fill placement.

Where additional fill is needed in the upper 2 feet of subgrade, we recommend "Select Granular Borrow", which means Mn/Dot Specification 3149.2B is used and fill material is compacted to at least 100% Standard Proctor maximum dry density (ASTM D: 698). Portions of the natural on-site sands encountered in the borings would meet this requirement. The moisture content should be within 2% of the optimum as determined by the Standard Proctor tests. The compaction level can be reduced to 95% below the upper 3-foot zone.

The subgrade should be uniformly sloped to facilitate drainage of the base material within the pavement system, and to avoid any ponding of water beneath the pavement. Drain-tile should be incorporated into the design and placed at the bottom of the sand section behind the curb to collect any groundwater and divert it to appropriate storm sewers or drainage structures and/or outfalls. This is especially important when less permeable soils are below the base material. Final pavement design should take into consideration both positive surface and subsurface drainage.

We also recommend performing a proofroll test at final subgrade elevation prior to aggregate base and pavement placement to detect any unstable zones at subgrade and base grade elevations. The proofroll should be performed with a heavy, rubber tired vehicle such as a loaded tandem-axle dump truck traveling at walking speed over the

subgrade. If excessive yielding or rutting is noticed, additional soil corrections below subgrade should be performed.

4.5 Pavement Thickness Design

Assuming the pavement subgrade preparation is performed as recommended in the preceding section and the subgrade soils are judged suitable based on a proofroll test, we recommend the following pavement design be used:

Pavement Section	Pavement Thickness	
	Light Duty 7-Ton	Heavy Duty 10-Ton
Mn/DOT Spec. 2360 Type SP 12.5 Bituminous Wearing Course Mix (2,C) (SPWEB240C)	2"	2"
Mn/DOT Spec. 2360 Type SP 12.5 Bituminous Non Wear Course Mix (2,C) (SPNWB230C)	2"	3"
Mn/DOT Spec. 3138 Class 5 Aggregate Base, 100% Crushed Limestone Base Aggregate	9"	12"
Mn/DOT Spec. 3149.2B Select Granular Borrow	12"	24"
Mn/DOT Spec. 3733 Type V Geotextile Fabric	--	--
Approved Subgrade – Passes Proof-Roll Test	--	--

The recommended thickness is based on the recommended compacted select granular borrow layer placed beneath the Class 5 aggregate base. Pavement areas should also include drain-tile systems incorporated into the design placed at the bottom of the sand section and connected to the storm sewer system or suitable outfalls to allow for proper drainage so water does not pond beneath the pavement.

The above design assumes that a regular, conscientious maintenance program is performed. It is possible that seal coating may extend the pavement life somewhat. We caution that reduced pavement thickness may result in a reduced service life and increased maintenance.

The thicknesses recommended are assumed a minimum for construction. The design also assumed the aggregate base will be compacted to a minimum of 100% of the Standard Proctor density and the bituminous pavement placed and compacted to 92%

of the maximum theoretical density. Alternative pavement designs are available and may be applicable depending on the final proposed construction for the project site. We should be contacted to provide additional recommendations as needed as project plans are being finalized for the site.

The designer/developer should strongly consider utilization of a concrete pavement section in lieu of the bituminous pavement discussed above especially in loading or unloading areas, aprons/dolly pads for trailer and/or large truck storage, or in garbage bin areas where large truck traffic may impact bituminous pavement significantly. We recommend placement of a minimum of ten (10) inches of compacted Mn/DOT Class V aggregate base supporting a minimum concrete slab thickness of eight (8) inches after the subgrade is prepared as outlined above. The aggregate base provides a constructible base for concrete placement, reduces faulting, and helps dissipate loads. It is very critical for the proper performance of the concrete pavement section to be placed over approved subgrade. Proper soil compaction of the subgrade and around utilities is critical in the performance of the pavement and to minimize pavement settlements. Appropriate panel sizing, jointing, doweling, and edge reinforcement are critical for performance of the rigid pavement.

The concrete should have a minimum 28-day unit compressive strength of 4,000 psi and a minimum flexural strength of 580 psi. We recommend specifying 5 to 8 percent air entrainment to provide resistance to freeze-thaw deterioration. The designer should also designate a maximum water-cement ratio of 0.45 using a water-cement ratio of 0.40 or less for concrete exposed to deicers. We recommend the pavement be constructed in accordance with the American Concrete Institute: ACI 330-"Guide for Design and Construction of Concrete Parking Lots".

4.6 Underground Utilities

The undisturbed natural soils encountered in the borings appear to be suitable for support of typical buried utilities. The utilities should bear upon suitable natural soil or compacted engineered fill. The utilities should not be placed on topsoil or thick layers of

uncompacted fill. In areas where appreciable amounts of gravel, tree roots, cobbles or boulders are encountered we recommend over excavation and placement of a suitable pipe bedding material. The pipe bedding material should encompass the utility. Our concern is that the gravel, cobbles or boulders may damage the utilities by applying point loads to the pipes especially during backfilling operations. The gravel, cobbles, or boulders should be replaced with suitable engineered fill a suitable distance around the pipe of a minimum of 1'.

If loose/soft soils are encountered in the bottom of utility trenches, some subcutting or recompaction of the soils may be required. Isolated dewatering may be required to facilitate utility installation and backfilling procedures where invert pipe elevations are at or below the water table or where perched groundwater conditions are encountered. Geotextile fabric may also be required beneath bedding materials in wet soil condition areas. Fill placed as utility bedding should be either crushed rock or clean, well-graded granular soil. Due to the characteristics of the soils encountered at this site, proper shoring and/or size/slope of the excavation per OSHA guidelines should be used during utility installation.

All backfill in underground utility trenches should be placed and compacted as recommended in previous sections of this report. Utility trench backfill in paved areas should be compacted to 100% of the Standard Proctor value within the upper 3' of subgrade and a minimum of 95% below the top 3'.

4.7 Subsurface Water Control

As indicated in Section 2.4 of this report groundwater was observed in a number of borings during drilling. The observed groundwater levels in the soil borings depend on normal variations in precipitation and surface runoff amounts. It should be noted that the high ground water may affect site construction, especially in areas close to existing wetlands. The earthwork contractor should be made aware of potential high groundwater conditions at the site and be prepared to address during construction. Isolated dewatering may be required where the water table is encountered depending

on final design elevations of utilities or other structures placed at depth. Surface water should be controlled by maintaining positive surface drainage away from the building and paved areas.

4.8 Below Grade Walls and Lateral Earth Pressure

Backfill placed against the below-grade foundation walls will exert lateral loads against these walls. The lateral loads could be minimized if free-draining granular soils are used as backfill immediately against the walls. This would include sand classified as SP or SP-SM, containing no more than 10% material passing the #200 sieve, and preferably no more than 50% passing the #40 sieve. The granular backfill should extend at least two feet laterally from the bottom of the foundation walls and extend outward at a 30-degree angle to the surface. In areas that will support structures such as sidewalks or slabs, the exterior fill should be compacted to 95% of Standard Proctor density. Backfill under paved areas should be compacted to 100% of the Standard Proctor in the upper three feet. The backfill should not be placed until either the walls are adequately braced or after the floor has been installed, so as not to damage the foundation walls.

Using the free-draining backfill, it is our opinion the sands may transmit a lateral pressure to the foundation wall equivalent to that of a fluid having a density of 40 pounds per cubic foot (pcf) and 55 pcf in the active and at-rest pressure conditions, respectively. Usage of clay backfill may result in lateral earth pressures of 80 pcf or more, in the at-rest condition. We do not recommend using silt or fat clay or hydric soils as wall backfill. These soils should be replaced with suitable engineered fill where encountered.

If on-site soils are to be used for wall backfill the design should account for this much higher lateral pressure these soils will impose on the foundation walls as noted above.

The clayey and silty soils will exert higher lateral pressures on the basement/loading dock walls. Usage of clay backfill may result in lateral earth pressures of 80 pcf or

more, in the at-rest condition. In addition, these soils have low drainage capability. If water is allowed to enter this type of backfill, significant water pressures in addition to the soil pressures may also develop. Therefore, if you elect to backfill with the on-site clayey and silty soils, it is imperative that the proposed construction is designed to withstand the increased lateral pressure. Also, below grade foundation walls should be properly water-proofed and insulated per standard construction practices. Positive drainage away from the structures must be maintained during and at the completion of construction.

In addition to the soil pressure, water entering behind the walls may exert more pressures. Therefore, we recommend exterior drain tile be installed for the below grade walls. The drain tile system should be installed below floor grade on the outside of the foundation wall and should be surrounded by at least six inches of washed, coarse aggregate material which is enveloped in a geotextile fabric. The drain tile should be connected to a suitable outfall or sump where water can be discharged from the system. We are including a typical exterior drain tile system sketch attached to this report.

4.9 Soil Design Parameters – Retaining Wall Structures

We have estimated the earth pressure coefficients for active, at-rest and passive conditions for the soil types encountered at the site in the following tabulation:

Soil Type	N-value	Unit Wet Weight (pcf)	Active Earth Pressure Coefficient (K_a)	At-Rest Earth Pressure Coefficient (K_o)	Passive Earth Pressure Coefficient (K_p)	Coefficient of Sliding Friction
Sand (SP) to Sand with Silt (SP-SM)	4-14	115	0.31	0.47	3.2	0.45
	14+	120	0.27	0.43	3.7	0.45
Silty Sand (SM)	< 10	120	0.38	0.55	2.7	0.35
	10-25	125	0.35	0.52	2.9	0.40
	> 25	125	0.31	0.47	3.2	0.40
Clayey Sand (SC)	15-25	125	0.35	0.52	2.9	0.40
	> 25	125	0.31	0.47	3.2	0.40
Clays (CL)	All	125	0.41	0.58	2.5	0.35

The values in the preceding table do not include a factor of safety. The design engineer should also determine the appropriate surcharge if applicable to use in the design depending on the type of structure and what it is retaining. Again, we recommend performing the soil correction as outlined above and utilizing granular soils with less than 20% passing the #200 sieve as fill soil. These values were provided for informational purposes to aid the design team.

We recommend that the soils exposed at the bottom of proposed retaining walls (if included with project design) and the supportive fill behind/below the walls be observed and tested by the project soil engineer or their representatives to verify soil bearing capacity, soil types, and soil density for the intended wall design. This includes the appropriate aggregate drainage layers and geotextile reinforcement behind the walls. It is our understanding that the retaining walls would be designed by others and are in the preliminary planning phase at the time of this report. We should be contacted once final plans for the retaining walls type/design are made available so as to provide additional recommendations as needed.

4.10 Proposed Storm Water Infiltration Basins/Ponds

We understand that the proposed construction may include storm water infiltration basins and/or storm water ponds near borings B1, B4, B14, and B16. The soils at the basins preliminary design elevations, approximately 3' to 8½' below existing site grades, includes Lean Clay (CL), Clayey Sand (SC), Silty Sand (SM), and Sand (SP) with various amounts of gravel. In our opinion Lean clay (CL), Clayey Sand (SC), and Silty Sand (SM) type soils do not provide for good infiltration. These soils when encountered at the basin locations (borings B1 and B4) should be over excavated and replaced with clean granular sand or gravel with subsurface drainage systems (as needed) to obtain reasonable infiltration rates. This may not be cost effective. The designers should evaluate moving the infiltration basins to locations where more granular soils are present and better infiltration may be expected.

Conversely, lean clay soils if properly prepared and compacted may provide good pond liner material. We estimate the lean clay soils encountered by our soil borings (boring B1) would have permeability in the range of 10^{-5} to 10^{-6} cm/sec, or less, if properly prepared and compacted. Moisture conditioning (i.e. wetting or drying the soil) may be required during earthwork activities to obtain the proper soil compaction. Over excavation and slope stabilization may still be needed to be performed where pockets of sandy fill or sand lenses are encountered within close proximity of pond bottom and side slopes/walls of the proposed pond areas. Clayey soil exposed at the bottom and side slopes of the ponds should be uniformly compacted to a minimum of 92% of the Standard Proctor density in the upper 2' of exposed soil for this pond type.

Site preparation for infiltration basins should include stripping topsoil and excavating to basin bottoms. Additional excavation would be required to remove clayey/silty soil types that do not provide for good infiltration and replace with suitable drainage material if an infiltration basin type is preferred. Excavations for infiltration basins should also allow for the appropriate surface treatment to be placed carefully at the surface as to not compact underlying soils.

It should be noted that more silt and clay particles in the soil will lower permeability, which will lower the rate at which infiltration will occur through these soil layers.

Infiltration rates depend on void ratio, gradation, and the amount of fines in the soil. Material and fines washed into the basins and ponds can fill pore spaces and reduce infiltration over time. We recommend infiltration basins be properly maintained during their design life.

Construction traffic and other disturbances in the infiltration basin area can decrease infiltration rates by further compacting the soil and reducing voids. Topsoil layers placed at the surface and erosion into the basin can also further reduce infiltration.

During site construction we recommend soil testing be performed to verify soil conditions including classifying soil types and density of the soil used in the construction of the infiltration basins and ponds. During construction, approved soils placed in the infiltration basin should be scarified with a backhoe and placed without compacting the soil to minimize decreasing the infiltration rate. Additional testing may include performing a double ring infiltration test (ASTM: D3385) at the bottom of the basin after it has been constructed to verify the infiltration rate is sufficient for the design. We can perform this testing service if requested

Based on the provided site information, our soil borings performed at proposed basin locations, and laboratory test results estimated infiltration rates for various soil types are tabulated below.

Infiltration Basin Boring No.	Existing Ground Surface El. MSL (ft.)	Estimated Basin Bottom Design El. MSL (ft.)	Soil Type/ Classification at Basin Bottom Design Elevation	Hydrologic[1] Soil Group at Basin Bottom Design El.	Estimated Infiltration Rate at Basin Bottom Design El. (inches/hour)[3]
B1[2]	1110.3	1107.0	Lean Clay (CL)	D	0.06
B4	1118.6	1110.0	Silty Sand (SM)/Clayey Sand (SC)	C	0.2
B14	1096.1	1090.0	Sand (SP)/Sand with Silt (SP-SM)	B	0.45
B16	1079.6	1073.0	Sand (SP)/Silty Sand (SM)	B	0.45

(1) Soil Hydrologic Group Classification derived from the MN Stormwater Manual.

(2) Location not recommended for infiltration basin.

(3) Groundwater was encountered within the borings and this may affect the rate at which infiltration may occur, especially if the groundwater is at or higher than the proposed basin bottom. This should be taken into account with the design of the basins.

Considering the very low soil infiltration rates noted at boring B1, we recommend the basin at this location be designed for a stormwater retention pond or be relocated to a more favorable soil environment, having greater infiltration capacity.

4.11 General Comments

We recommend that all geotechnical related work, including foundation construction, subgrade preparation, and engineered fill placement, be observed by the project geotechnical engineer or their representatives. The geotechnical engineer will perform appropriate testing to verify the geotechnical conditions that have been anticipated during preparation of this report.

5.0 CONSTRUCTION CONSIDERATIONS

5.1 Excavation Safety

All excavations should comply with applicable O.S.H.A. standards including O.S.H.A. 29 CFR, Part 1926, Subpart P, "Excavations and Trenches". Excavation safety is the responsibility of the contractor. Reference to these O.S.H.A. requirements should be included in the project specifications.

5.2 Cold Weather Construction

Construction during cold weather should be exercised with care. We have included a sheet entitled “Precautions for Excavating and Refilling During Cold Weather”.

5.3 Field Observations and Testing

As variations in soil conditions may exist at locations and elevations other than those of our borings, we recommend the geotechnical engineer be retained to observe the soil conditions during site preparation. We recommend in-place field compaction tests be performed in the compacted fill.

5.4 Soil Sensitivity

The silty and clayey soils at this site are susceptible to disturbance from construction traffic, especially in wet conditions. If the soils become disturbed, additional excavation may be required. Therefore, proper excavation equipment should be used to minimize the potential for disturbance.

5.5 Additional Construction Precautions and Considerations

Moisture conditioning of the on-site soils may be required to obtain the proper soil compaction requirements. This may include scarifying or disking soils placed in thin lifts to allow to air dry as needed or adding moisture as needed to soil to obtain proper compaction. In our opinion, the use of proper soil compaction equipment should be used on site to obtain soil density requirements. This may include large self-propelled vibratory sheep-foot compactors used in clayey soil areas and smooth drum compactors in sandy areas.

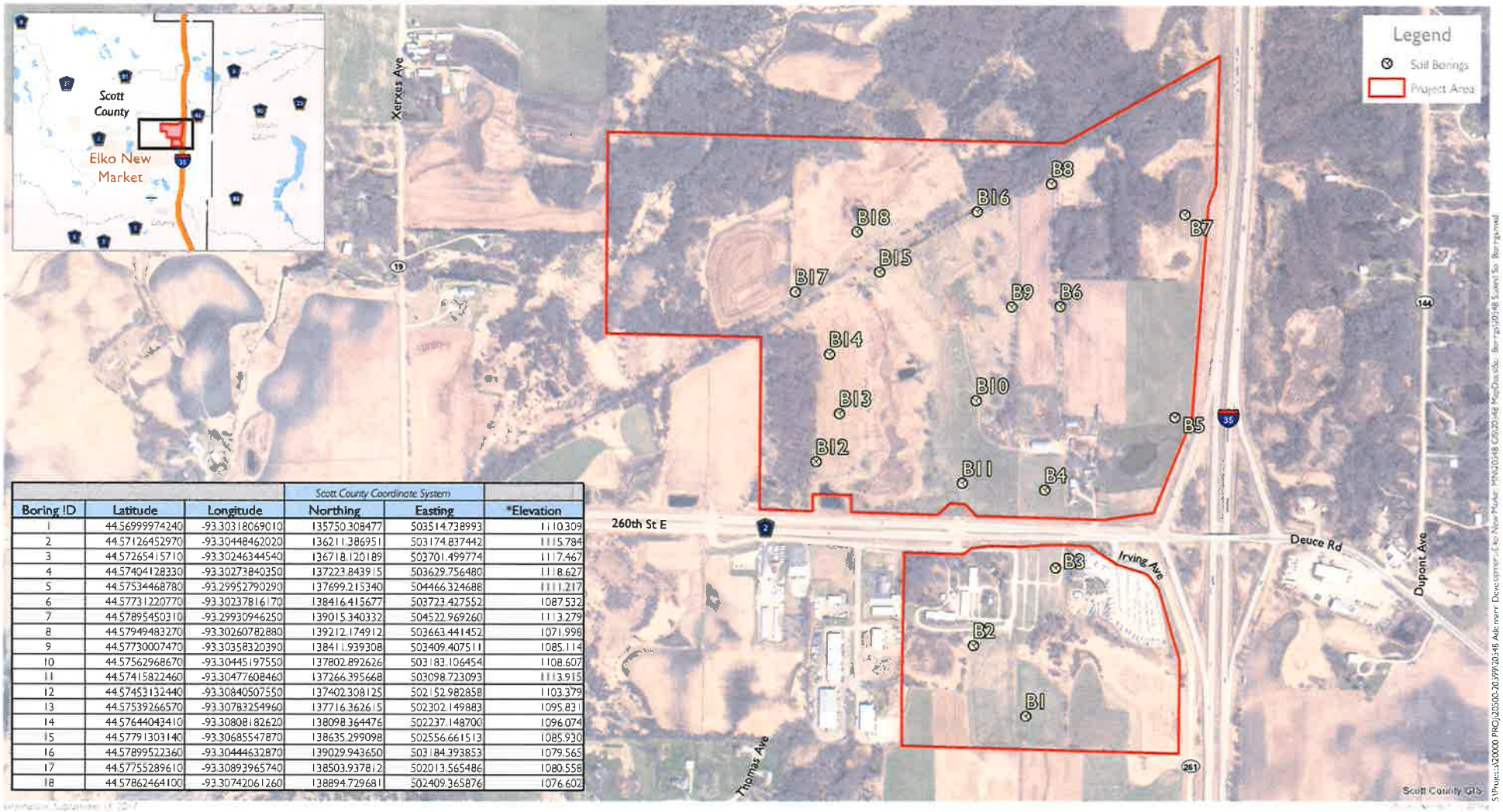
Due to the wide variety of soil types and conditions encountered on this site we recommend contingency be placed in the project budget to account for these variables. This may include but not limited to unit pricing in the bid documents for disposal of construction debris, deeper excavation than anticipated, the possible need to import select granular fill, moisture conditioning of soils, additional earthwork operations for the separation of unsuitable fill from usable fill, and additional testing/inspection work associated with this site, etc. We also recommend that a plan is in place for disposing of unsuitable soil at a location that would not affect future development. This may include placing the unsuitable fill in green space areas where structures or paved surfaces are not planned such as non-structural berms or open field areas, etc.

It is our understanding that this project is in the preliminary design phase and changes to the existing design may occur. If the design changes and moves subsequent to our work we should be contacted and contracted to provide additional engineering and analysis as needed.

6.0 REMARKS

This report is for the exclusive use of the parties to which it is addressed. The soil testing and geotechnical engineering services performed by Element Materials Technology St. Paul, Inc. for this project have been conducted in a manner with the level of skill and care ordinarily exercised by other members of the profession currently practicing in this area under similar budgetary and time constraints. No warranty, express or implied, is made.

Attachments:
- -Soil Boring Location Plans (1 page)
- -Soil Boring Logs B1-B18 (18 pages)
- -Grainsize Distribution Test Reports (17 pages)
- -Liquid and Plastic Limits Test Reports (2 pages)
- -Symbols and Terminology on Test Boring Logs (1 page)
- -Field Exploration Procedures (1 page)
- -Prerequisites for Sound Engineering Practice (1 page)
- -Excavation Oversizing (1 page)
- -Typical Exterior Drain-tile System (1 page)
- -Construction Observations and Testing (1 page)
- -Precautions for Excavating and Refilling During Cold Weather (1 page)
- -Requirements for FHA Earthwork Testing (1 page)
- -Risk Associated with Excavation Under Water (1-page)



			Scott County Coordinate System		
Boring ID	Latitude	Longitude	Northing	Easting	*Elevation
1	44.56999974240	-93.30318069010	135750.308477	503514.738993	1110.309
2	44.57126452970	-93.30448462020	136211.386951	503174.837442	1115.784
3	44.57265415710	-93.30246344540	136718.120189	503701.499774	1117.467
4	44.57404128330	-93.30273840350	137223.843915	503629.756480	1118.627
5	44.57534468780	-93.29952790290	137699.215340	504466.324688	1111.217
6	44.57731220770	-93.30237816170	138416.415677	503723.427552	1087.532
7	44.57895450310	-93.29930946250	139015.340332	504522.969260	1113.279
8	44.57949483270	-93.30260782880	139212.174912	503663.441452	1071.998
9	44.57730007470	-93.30358320390	138411.939308	503409.407511	1085.114
10	44.57562968670	-93.30445197550	137802.892626	503183.106454	1108.607
11	44.57415822460	-93.30477608460	137266.395668	503098.723093	1113.915
12	44.57453132440	-93.30840507550	137402.308125	502152.982858	1103.379
13	44.57539266570	-93.30783254960	137716.362615	502302.149883	1095.831
14	44.57644043410	-93.30808182620	138098.364476	502237.148700	1096.074
15	44.57791303140	-93.30685547870	138635.299098	502556.661513	1085.930
16	44.57899522360	-93.30444632870	139029.943650	503184.393853	1079.565
17	44.57755289610	-93.30893965740	138503.937812	502013.565486	1080.558
18	44.57862464100	-93.30742061260	138894.729681	502409.365876	1076.602

* Elevation values were generated from the Scott County LiDAR (model 1 meter DEM).

0 300 600 Feet

N

Figure 1
Staked Soil Borings
Adelmann Property
Elko New Market, Scott County, Minnesota

Source(s):
Orthophoto (Scott County 2016)
Soil Boring GPS (ISG, 9/11/2017)

ISG

Project No. ESP026601P

LOG OF BORING NO. B1

CLIENT: APPRO Development	ARCHITECT/ENGINEER: ISG
SITE: 260th Street East and Interstate 35, Elko New Market, Minnesota	PROJECT: Adelman Elko New Market Property Development

Northing 135750.308477,
Easting 503514.738993

Surface Elev.: **1110.3** ft. Datum: **MSL**

Description	Elev.	Depth (FT.)	Geology	Blows/12" N-Value RQD	Number	Type	In. Recovered In. Driven	Moisture, %	Dry Density PCF	Additional Data/ Remarks
TOPSOIL, organic lean clay, black to dark brown, moist (TOPSOIL)			TOPSOIL	AS	1	AUGER	12			
				AS	2	AUGER	12			
2.5	1107.8			5	3	SS	18	16		
LEAN CLAY, with sand, brown to gray, iron oxide staining present at 4', moist, soft to firm (CL)			FINE ALLUVIUM	6	4	SS	18	18		
		5								
7.5	1102.8			9	5	SS	18			Pq=1.75tsf
SANDY LEAN CLAY, with a little gravel, lenses of waterbearing sand at 12.5', brown to gray mottled, moist to wet, firm to hard (CL)			GLACIAL TILL	9	6	SS	18			
		10								
∇				9	7	SS	18			
				21	8	SS	18			
		15								
				16	9	SS	18			
20.5	1089.8	20								
End of Boring										

WATER LEVEL OBSERVATIONS	
WL	∇ 12.5

element materials technology
662 Cromwell Ave.
St. Paul, MN 55114
Telephone: 651-645-3601

STARTED	9/15/17	FINISHED	9/15/17
DRILL CO.	Element	DRILL RIG	ATV
DRILLER	KK	ASS'T DRILLER	WG
LOGGED BY	WG	APPROVED	MAS

ELEMENT LOG ESP026601P - ADELMAN NEW MARKET DEVELOPMENT - APPRO.GPJ LOG A GNNN08.GDT 11/27/17

Project No. ESP026601P

LOG OF BORING NO. B2

CLIENT: APPRO Development	ARCHITECT/ENGINEER: ISG
SITE: 260th Street East and Interstate 35, Elko New Market, Minnesota	PROJECT: Adelman Elko New Market Property Development

Northing 136211.386951,
Easting 503174.837442

Surface Elev.: 1115.8 ft. Datum: MSL

Description	Elev.	GEOLOGY	DEPTH (FT.)	BLOWS/12" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE, %	DRY DENSITY PCF	ADDITIONAL DATA/ REMARKS
TOPSOIL, organic lean clay, black to dark brown, moist (TOPSOIL)		TOPSOIL		AS	1	AUGER	12			
				AS	2	AUGER	12			
2.0	1113.8									
LEAN CLAY, with lenses of waterbearing sand and silt, brown to gray, iron oxide staining, moist to wet, very soft to soft (CL)		FINE ALLUVIUM		6	3	SS	18	18		
∇				3	4	SS	18			
			5							
				7	5	SS	18			
				5	6	SS	18			
			10							
12.0	1103.8									
SANDY LEAN CLAY, with a little gravel, brown to gray mottled, moist to wet, soft to firm (CL)		GLACIAL TILL		7	7	SS	18			
				14	8	SS	18			
			15							
				12	9	SS	18			
20.5	1095.3		20							
End of Boring										

WATER LEVEL OBSERVATIONS	
WL	∇ 5.0

element™ materials technology
662 Cromwell Ave.
St. Paul, MN 55114
Telephone: 651-645-3601

STARTED	9/15/17	FINISHED	9/15/17
DRILL CO.	Element	DRILL RIG	ATV
DRILLER	KK	ASS'T DRILLER	WG
LOGGED BY	WG	APPROVED	MAS

ELEMENT LOG ESP026601P - ADELMAN NEW MARKET DEVELOPMENT - APPRO.GPJ LOG A GNNN08.GDT 11/29/17

Project No. ESP026601P

LOG OF BORING NO. B3

CLIENT: APPRO Development

ARCHITECT/ENGINEER: ISG

SITE: 260th Street East and Interstate 35, Elko New Market, Minnesota

PROJECT: Adelman Elko New Market Property Development

Northing 136718.120189,
Easting 503701.499774

Surface Elev.: **1117.5** ft. Datum: **MSL**

Depth (ft.)	Description	Elev.	Geology	Blows/12" N-Value RQD	Number	Type	In. Recovered In. Driven	Moisture, %	Dry Density PCF	Additional Data/ Remarks
0.7	FILL, sand with silt and gravel aggregate base course, brown, moist (FILL)	1116.8	FILL	AS	1	SS	12			
	SILTY SAND, with a little gravel, fine to medium grained, brown, moist, loose (SM)		COARSE ALLUVIUM	AS	2	SS	12			
				8	3	SS	18	9		p200=20.8%
4.0	SAND with SILT, with a little gravel, fine to medium grained, brown, moist to waterbearing at 9', medium dense (SP-SM)	1113.5		13	4	SS	18			
5				23	5	SS	18			
	∇			21	6	SS	18			
10										
12.0	SILTY SAND, with gravel and cobbles, fine to medium grained, brown, wet, medium dense to dense (SM)	1105.5		25	7	SS	18			
15				32*	8	SS	18			*N-values influenced by gravel and cobbles.
19.0	SAND with SILT, with gravel and cobbles, fine to medium grained, brown, wet, dense (SP-SM)	1098.5		40*	9	SS	18			
20										
20.5	End of Boring	1097.0								

WATER LEVEL OBSERVATIONS	
WL	∇ 9.0

element materials technology
662 Cromwell Ave.
St. Paul, MN 55114
Telephone: 651-645-3601

STARTED	9/15/17	FINISHED	9/15/17
DRILL CO.	Element	DRILL RIG	ATV
DRILLER	KK	ASS'T DRILLER	WG
LOGGED BY	WG	APPROVED	MAS

ELEMENT LOG ESP026601P - ADELMAN NEW MARKET DEVELOPMENT - APPRO.GPJ LOG A GNNN08.GDT 11/27/17

Project No. ESP026601P

LOG OF BORING NO. B4

CLIENT: APPRO Development	ARCHITECT/ENGINEER: ISG
SITE: 260th Street East and Interstate 35, Elko New Market, Minnesota	PROJECT: Adelman Elko New Market Property Development

Northing 137223.843915, Easting 503629.756480

Surface Elev.: **1118.6** ft. Datum: **MSL**

Depth (ft.)	Elev.	Description	Geology	Blows/12" N-Value RQD	Number	Type	In. Recovered In. Driven	Moisture, %	Dry Density PCF	Additional Data/ Remarks
		TOPSOIL, organic sandy silt, black, moist (TOPSOIL)	TOPSOIL	AS	1	AUGER	12			
1.5	1117.1			AS	2	AUGER	12			
		SILTY SAND, with a little gravel, lenses of clayey sand, fine to medium grained, brown, moist, loose to medium dense (SM)	COARSE ALLUVIUM	10	3	SS	18			
5				10	4	SS	18	13		p200=23.5%
7.0	1111.6									
		SILTY SAND, with gravel, lenses of clayey sand and silt from 9' to 10.5', fine to medium grained, brown to gray, moist to wet, loose to medium dense (SM) ∇		24	5	SS	18	9		p200=21.1%
10				12	6	SS	18	12		p200=28.8%
12.0	1106.6									
		LEAN CLAY, with sand, gray, moist, firm (CL)	GLACIAL TILL	9	7	SS	18	22		p200=72.1%
13.5	1105.1									
		CLAYEY SAND, with gravel, fine to medium grained, brown and gray, moist to wet, medium dense (SC)	GLACIAL OUTWASH	21	8	SS	18			
15.5	1103.1									
		LEAN CLAY, with a little gravel, lenses of sand, gray to brown, iron oxide staining, moist, hard (CL)	GLACIAL TILL							
20				18	9	SS	18			Pq=2.5tsf
25				18	10	SS	18			
25.5	1093.1	End of Boring								

WATER LEVEL OBSERVATIONS	
WL	∇ 9.5

element™ materials technology
662 Cromwell Ave.
St. Paul, MN 55114
Telephone: 651-645-3601

STARTED	9/18/17	FINISHED	9/18/17
DRILL CO.	Element	DRILL RIG	ATV
DRILLER	KK	ASS'T DRILLER	DB
LOGGED BY	DB	APPROVED	MAS

ELEMENT LOG ESP026601P - ADELMAN NEW MARKET DEVELOPMENT - APPRO.GPJ LOG A GNNN08.GDT 11/27/17

Project No. ESP026601P

LOG OF BORING NO. B5

CLIENT: APPRO Development

ARCHITECT/ENGINEER: ISG

SITE: 260th Street East and Interstate 35, Elko New Market, Minnesota

PROJECT: Adelman Elko New Market Property Development

Northing 137699.215340
Easting 504466.324688

Surface Elev.: 1111.2 ft. Datum: MSL

Depth	Elev.	Description	Geology	Blows/12" N-Value RQD	Number	Type	In. Recovered In. Driven	Moisture, %	Dry Density PCF	Additional Data/ Remarks
1.0	1110.2	TOPSOIL, organic sandy silt, black, moist (TOPSOIL)	TOPSOIL	AS	1	AUGER	12			
		SILTY SAND, with a little gravel, fine to medium grained, brown, moist, medium dense to dense (SM)	COARSE ALLUVIUM	AS	2	AUGER	12			
				16	3	SS	18			
				18	4	SS	18	9		p200=23.0%
5										
				32*	5	SS	18			
				35*	6	SS	18			*N-values influenced by gravel and cobbles.
10										
10.5	1100.7	SAND with SILT, with gravel and cobbles, fine to medium grained, brown, wet to waterbearing, dense (SP-SM)								
				43*	7	SS	18			
				31*	8	SS	18			
15										
19.3	1092.0	End of Boring		50*	9	SS	3			*Boring terminated at 19.5' due to obstruction, cobbles or boulders.

WATER LEVEL OBSERVATIONS

WL	∇ 11.0

element™ materials technology
662 Cromwell Ave.
St. Paul, MN 55114
Telephone: 651-645-3601

STARTED	9/15/17	FINISHED	9/15/17
DRILL CO.	Element	DRILL RIG	ATV
DRILLER	KK	ASS'T DRILLER	WG
LOGGED BY	WG	APPROVED	MAS

Project No. ESP026601P

LOG OF BORING NO. B6

CLIENT: APPRO Development

ARCHITECT/ENGINEER: ISG

SITE: 260th Street East and Interstate 35, Elko New Market, Minnesota

PROJECT: Adelman Elko New Market Property Development

Northing 138416.415677
Easting 503723.427552

Surface Elev.: **1087.5** ft. Datum: **MSL**

Description	Elev.	Depth (ft.)	Geology	Blows/12" N-Value RQD	Number	Type	In. Recovered / In. Driven	Moisture, %	Dry Density PCF	Additional Data/ Remarks
TOPSOIL, organic sandy silt, roots, black, moist (TOPSOIL)			TOPSOIL	AS	1	AUGER	12			
				AS	2	AUGER	12			
2.0	1085.5									
SILTY SAND, with gravel, lenses of clayey sand, fine to medium grained, brown, iron oxide staining, wet to waterbearing, very loose to medium dense (SM)			COARSE ALLUVIUM	4	3	SS	18			
		5		18	4	SS	18			
				13	5	SS	18	8		p200=22.6%
9.0	1078.5									
SILTY SAND, with gravel, cobbles, fine to medium grained, brown, wet, medium dense to dense (SM)		10		24	6	SS	18			
				23	7	SS	18			
		15		31*	8	SS	18			*N-value influenced by gravel and cobbles.
19.5	1068.0									
20.5 SAND, with a little gravel, fine to medium grained, brown, wet, medium dense (SP)	1067.0	20		17	9	SS	18			
End of Boring										

WATER LEVEL OBSERVATIONS		
WL	▽	9.0
WL	▼	4.0

element™ materials technology
662 Cromwell Ave.
St. Paul, MN 55114
Telephone: 651-645-3601

STARTED	9/22/17	FINISHED	9/22/17
DRILL CO.	Element	DRILL RIG	ATV
DRILLER	KK	ASS'T DRILLER	DB
LOGGED BY	DB	APPROVED	MAS

ELEMENT LOG ESP026601P - ADELMAN NEW MARKET DEVELOPMENT - APPRO.GPJ LOG A GNNN08.GDT 11/27/17

Project No. ESP026601P

LOG OF BORING NO. B7

CLIENT: APPRO Development	ARCHITECT/ENGINEER: ISG
SITE: 260th Street East and Interstate 35, Elko New Market, Minnesota	PROJECT: Adelman Elko New Market Property Development

Northing 139015.340332
Easting 504522.969260

Surface Elev.: **1113.3** ft. Datum: **MSL**

Depth	Elev.	Description	Geology	Depth (ft.)	Blows/12" N-Value RQD	Number	Type	In. Recovered In. Driven	Moisture, %	Dry Density PCF	Additional Data/ Remarks
1.0	1112.3	TOPSOIL, organic silty sand with a little gravel, black, moist (TOPSOIL)	TOPSOIL		AS	1	AUGER	12			
		SILTY SAND, with a little gravel, lenses of clayey sand, fine to medium grained, brown, moist, loose to medium dense (SM)	COARSE ALLUVIUM		AS	2	AUGER	12			
					16	3	SS	18	11		p200=30.6%
				5	9	4	SS	18			
5.5	1107.8	LEAN CLAY, with a little sand, brown and gray mottled, moist, soft (CL)	FINE ALLUVIUM								
					6	5	SS	18			
8.5	1104.8	SILTY SAND, with gravel and cobbles, fine to medium grained, brown, moist, medium dense to dense (SM)	COARSE ALLUVIUM								
				10	24	6	SS	18			
					33	7	SS	18			
				15	25	8	SS	18			Boring terminated at 18' due to obstruction, cobbles or boulders.
18.0	1095.3	End of Boring									

WATER LEVEL OBSERVATIONS	
	None

element™ materials technology
662 Cromwell Ave.
St. Paul, MN 55114
Telephone: 651-645-3601

STARTED	9/15/17	FINISHED	9/15/17
DRILL CO.	Element	DRILL RIG	ATV
DRILLER	KK	ASS'T DRILLER	WG
LOGGED BY	WG	APPROVED	MAS

Project No. ESP026601P

LOG OF BORING NO. B8

CLIENT: APPRO Development

ARCHITECT/ENGINEER: ISG

SITE: 260th Street East and Interstate 35, Elko New Market, Minnesota

PROJECT: Adelman Elko New Market Property Development

Northing 139212.174912
Easting 503663.441452

Surface Elev.: 1072.0 ft. Datum: MSL

Description	Elev.	Geology	Depth (ft.)	Blows/12" N-Value RQD	Number	Type	In. Recovered In. Driven	Moisture, %	Dry Density PCF	Additional Data/ Remarks
TOPSOIL, organic sandy lean clay, black, moist (TOPSOIL)		TOPSOIL		AS	1	AUGER	12			
				AS	2	AUGER	12			
2.5	1069.5			5	3	SS	18			Pq=1.25tsf
LEAN CLAY, with lenses of silt and waterbearing sand, gray, moist to wet, soft (CL)		FINE ALLUVIUM		8	4	SS	18			Pq=2.0tsf
			5							
7.0	1065.0									
SAND, with gravel, cobbles, fine to medium grained, brown, waterbearing, medium dense to loose (SP)		COARSE ALLUVIUM		52*	5	SS	18			*N-value influenced by cobbles.
			10	13	6	SS	18			
				5	7	SS	18			
13.5	1058.5									
SILTY CLAY, lenses of sand, with a little gravel, gray, moist, soft to firm (CL-ML)		GLACIAL TILL	15	10	8	SS	18	14		Pq=4.0tsf LL = 16 PL = 4
				14	9	SS	18			
20.5	1051.5		20							
End of boring										

WATER LEVEL OBSERVATIONS		
WL	▽	7.0
WL	▼	3.0

element materials technology
662 Cromwell Ave.
St. Paul, MN 55114
Telephone: 651-645-3601

STARTED	9/21/17	FINISHED	9/21/17
DRILL CO.	Element	DRILL RIG	ATV
DRILLER	KK	ASS'T DRILLER	DB
LOGGED BY	DB	APPROVED	MAS

Project No. ESP026601P

LOG OF BORING NO. B9

CLIENT: APPRO Development	ARCHITECT/ENGINEER: ISG
SITE: 260th Street East and Interstate 35, Elko New Market, Minnesota	PROJECT: Adelman Elko New Market Property Development

Northing 138411.939308
Easting 503409.407511

Surface Elev.: **1085.1** ft. Datum: **MSL**

Elev.	Description	Geology	Depth (ft.)	Blows/12" N-Value RQD	Number	Type	In. Recovered / In. Driven	Moisture, %	Dry Density PCF	Additional Data/ Remarks
	TOPSOIL, sandy silt, with a little gravel, organic matter, black to dark brown, moist (TOPSOIL)	TOPSOIL		AS	1	AUGER	12			
				AS	2	AUGER	12			
2.0 / 1083.1	CLAYEY SAND, with gravel, cobbles, fine to medium grained, brown, moist, medium dense (SC)	COARSE ALLUVIUM		27	3	SS	18			
			5	50*	4	SS	18			*N-value influenced by cobbles.
5.5 / 1079.6	LEAN CLAY, with a little sand, brown, moist, firm to hard (CL)	FINE ALLUVIUM		9	5	SS	18	16		Pq=1.75tsf LL = 26 PL = 11
9.5 / 1075.6	SILTY SAND, with gravel, cobbles, mostly fine grained, brown, wet to waterbearing, medium dense to dense (SM)	COARSE ALLUVIUM	10	20	6	SS	18			
	∇			36*	7	SS	18			*N-value influenced by cobbles.
			15	30	8	SS	18			
19.0 / 1066.1	LEAN CLAY, with a little sand and gravel, brown, moist, hard (CL)	GLACIAL TILL	20	23	9	SS	18			
20.5 / 1064.6	End of Boring									

WATER LEVEL OBSERVATIONS	
WL	∇ 13.5

element™ materials technology
662 Cromwell Ave.
St. Paul, MN 55114
Telephone: 651-645-3601

STARTED	9/19/17	FINISHED	9/19/17
DRILL CO.	Element	DRILL RIG	ATV
DRILLER	KK	ASS'T DRILLER	DB
LOGGED BY	DB	APPROVED	MAS

ELEMENT LOG ESP026601P - ADELMAN NEW MARKET DEVELOPMENT - APPRO.GPJ LOG A GNNN08.GDT 11/27/17

Project No. ESP026601P

LOG OF BORING NO. B10

CLIENT: APPRO Development

ARCHITECT/ENGINEER: ISG

SITE: 260th Street East and Interstate 35, Elko New Market, Minnesota

PROJECT: Adelman Elko New Market Property Development

Northing 137802.892626
Easting 503183.106454

Surface Elev.: 1108.6 ft. Datum: MSL

Description	Elev.	Depth	Geology	Blows/12" N-Value RQD	Number	Type	In. Recovered / In. Driven	Moisture, %	Dry Density PCF	Additional Data/ Remarks
FILL, a mixture of sandy silt and clayey sand, dark brown to brown, moist (FILL)	1106.6	2.0	FILL	AS	1	AUGER	12			
				AS	2	AUGER	12			
TOPSOIL, sandy silt, black to dark brown, moist (TOPSOIL)	1105.1	3.5	TOPSOIL	13	3	SS	18			
LEAN CLAY, with sand, brown, moist, firm (CL)	1100.1	8.5	FINE ALLUVIUM	9	4	SS	18			
		5		10	5	SS	18			
SILTY SAND, with gravel, fine to medium grained, brown, wet to waterbearing, medium dense to dense (SM)	1088.1	20.5	COARSE ALLUVIUM	17	6	SS	18			
		10		33*	7	SS	18			*N-values influenced by cobbles.
		15		26*	8	SS	18			
		20		11	9	SS	18			
LEAN CLAY, with a little sand and gravel, brown, moist, firm (CL)	1082.6	26.0	GLACIAL TILL							
		25		10	10	SS	18			
End of Boring										

WATER LEVEL OBSERVATIONS

WL	∇ 15.0

element materials technology
662 Cromwell Ave.
St. Paul, MN 55114
Telephone: 651-645-3601

STARTED	9/19/17	FINISHED	9/19/17
DRILL CO.	Element	DRILL RIG	ATV
DRILLER	KK	ASS'T DRILLER	DB
LOGGED BY	DB	APPROVED	MAS

ELEMENT LOG ESP026601P - ADELMAN NEW MARKET DEVELOPMENT - APPRO.GPJ LOG A GNNN08.GDT 11/27/17

Project No. ESP026601P

LOG OF BORING NO. B11

CLIENT: APPRO Development	ARCHITECT/ENGINEER: ISG
SITE: 260th Street East and Interstate 35, Elko New Market, Minnesota	PROJECT: Adelman Elko New Market Property Development

Northing 137266.395668
Easting 503098.723093

Surface Elev.: **1113.9** ft. Datum: **MSL**

Depth	Elev.	Description	Geology	Blows/12" N-value RQD	Number	Type	In. Recovered / In. Driven	Moisture, %	Dry Density PCF	Additional Data/ Remarks
1.0	1112.9	TOPSOIL, sandy silt, black to dark brown, moist (TOPSOIL)	TOPSOIL	AS	1	AUGER	12			Boulders present at/near the surface.
		SILTY SAND, with gravel and cobbles, fine to medium grained, brown, moist, medium dense to dense (SM)	COARSE ALLUVIUM	AS	2	AUGER	12			
				14	3	SS	18			
5				>50*	4	SS	18			*N-value influenced by cobbles.
				18	5	SS	18			
10				>25*	6	SS	12			*Boring terminated at 10' due to obstruction, cobbles or boulder.
10.0	1103.9	End of Boring								

WATER LEVEL OBSERVATIONS	
	None

element™ materials technology
662 Cromwell Ave.
St. Paul, MN 55114
Telephone: 651-645-3601

STARTED	9/18/17	FINISHED	9/18/17
DRILL CO.	Element	DRILL RIG	ATV
DRILLER	KK	ASS'T DRILLER	DB
LOGGED BY	DB	APPROVED	MAS

Project No. ESP026601P

LOG OF BORING NO. B12

CLIENT: APPRO Development	ARCHITECT/ENGINEER: ISG
SITE: 260th Street East and Interstate 35, Elko New Market, Minnesota	PROJECT: Adelman Elko New Market Property Development

Northing 137402.308125
Easting 502152.982858

Surface Elev.: **1103.4** ft. Datum: **MSL**

Depth	Description	Elev.	Geology	Blows/12" N-Value RQD	Number	Type	In. Recovered / In. Driven	Moisture, %	Dry Density PCF	Additional Data/ Remarks
1.0	TOPSOIL, clayey sand, dark brown, moist (TOPSOIL)	1102.4	TOPSOIL	AS	1	AUGER	12			
	SILTY SAND, with a little gravel, fine to medium grained, dark brown to brown, moist to wet, medium dense (SM)		COARSE ALLUVIUM	AS	2	AUGER	12			
				19	3	SS	18			
5				16	4	SS	18	8		p200=28.8%
				37*	5	SS	18			*N-value influenced by cobbles.
9.5	∇	1093.9		5	6	SS	18			Pq=0.25tsf
10	LEAN CLAY, brown to gray, moist, soft (CL)		FINE ALLUVIUM							
12.0		1091.4								
	SANDY LEAN CLAY, with gravel and cobbles, brown to gray, moist, firm to hard (CL)		GLACIAL TILL	15	7	SS	18			
15				18	8	SS	18			
20				38*	9	SS	18			*N-value influenced by cobbles, Pq=4.5tsf
20.5	End of Boring	1082.9								

WATER LEVEL OBSERVATIONS	
WL	∇ 9.0

element™ materials technology
662 Cromwell Ave.
St. Paul, MN 55114
Telephone: 651-645-3601

STARTED	9/20/17	FINISHED	9/20/17
DRILL CO.	Element	DRILL RIG	ATV
DRILLER	KK	ASS'T DRILLER	DB
LOGGED BY	DB	APPROVED	MAS

ELEMENT LOG ESP026601P - ADELMAN NEW MARKET DEVELOPMENT - APPRO.GPJ LOG A GNNN08.GDT 11/27/17

Project No. ESP026601P

LOG OF BORING NO. B13

CLIENT: APPRO Development	ARCHITECT/ENGINEER: ISG
SITE: 260th Street East and Interstate 35, Elko New Market, Minnesota	PROJECT: Adelman Elko New Market Property Development

Northing 137716.362615
Easting 502302.149883

Surface Elev.: **1095.8** ft. Datum: **MSL**

Depth	Description	Elev.	Geology	Blows/12" N-Value RQD	Number	Type	In. Recovered In. Driven	Moisture, %	Dry Density PCF	Additional Data/ Remarks
	TOPSOIL, a mixture of organic silty sand and sandy silt, black, moist (TOPSOIL)		TOPSOIL	AS	1	AUGER	12			
				AS	2	AUGER	12			
2.0	SILTY SAND, with a little gravel, lenses of clayey sand, fine to medium grained, brown to gray, moist to wet, loose (SM)	1093.8	COARSE ALLUVIUM	6	3	SS	18			
				5	4	SS	18	15		p200=26.5%
6.0	SAND, with a little gravel, medium to coarse grained, brown, wet to waterbearing, medium dense (SP) ∇	1089.8		22	5	SS	18			
8.5	LEAN CLAY, with sand and a little gravel, brown to gray mottled, moist, firm to hard (CL)	1087.3	GLACIAL TILL	19	6	SS	18			Pq=3.0tsf
				14	7	SS	18			
				22	8	SS	18			
				9	9	SS	18			
20.5	End of Boring	1075.3								

Depth (FT.): 5, 10, 15, 20

WATER LEVEL OBSERVATIONS	
WL	∇ 7.0

element™ materials technology
662 Cromwell Ave.
St. Paul, MN 55114
Telephone: 651-645-3601

STARTED	9/20/17	FINISHED	9/20/17
DRILL CO.	Element	DRILL RIG	ATV
DRILLER	KK	ASS'T DRILLER	DB
LOGGED BY	DB	APPROVED	MAS

ELEMENT LOG ESP026601P - ADELMAN NEW MARKET DEVELOPMENT - APPRO.GPJ LOG A GNNN08.GDT 11/27/17

Project No. ESP026601P

LOG OF BORING NO. B14

CLIENT: APPRO Development	ARCHITECT/ENGINEER: ISG
SITE: 260th Street East and Interstate 35, Elko New Market, Minnesota	PROJECT: Adelman Elko New Market Property Development

Northing 138098.364476
Easting 502237.148700

Surface Elev.: **1096.1** ft. Datum: **MSL**

Depth	Elev.	Geology	Samples: BLOWS/12" N - VALUE RQD	Number	Type	IN. RECOVERED IN. DRIVEN	Tests: MOISTURE, %	DRY DENSITY PCF	ADDITIONAL DATA/ REMARKS
1.0	1095.1	TOPSOIL: TOPSOIL, organic silty sand, dark brown some black, moist (TOPSOIL)	AS	1	AUGER	12			
		COARSE ALLUVIUM: SAND, mostly fine grained, brown, moist to wet, very loose to loose (SP)	AS	2	AUGER	12			
			4	3	SS	18			
5			4	4	SS	18	9		p200=4.0%
7.0	1089.1	SAND with SILT, mostly fine grained, lenses of silt from 12' to 13.5', brown, wet to waterbearing, loose to very loose (SP-SM) ∇	6	5	SS	18	18		p200=6.3%
10			6	6	SS	18	20		p200=5.4%
			3	7	SS	18			
14.5	1081.6	FINE ALLUVIUM: SILT, gray, wet, loose (ML)	6	8	SS	18			
15									
16.0	1080.1	GLACIAL TILL: SANDY LEAN CLAY, with a little gravel, gray, moist, soft (CL)							
20			8	9	SS	18			Pq=3.5tsf
20.5	1075.6	End of Boring							

WATER LEVEL OBSERVATIONS	
WL	∇ 9.5

element materials technology
662 Cromwell Ave.
St. Paul, MN 55114
Telephone: 651-645-3601

STARTED	9/20/17	FINISHED	9/20/17
DRILL CO.	Element	DRILL RIG	ATV
DRILLER	KK	ASS'T DRILLER	DB
LOGGED BY	DB	APPROVED	MAS

ELEMENT LOG ESP026601P - ADELMAN NEW MARKET DEVELOPMENT - APPRO.GPJ LOG A GNNN08.GDT 11/29/17

Project No. ESP026601P

LOG OF BORING NO. B15

CLIENT: APPRO Development	ARCHITECT/ENGINEER: ISG
SITE: 260th Street East and Interstate 35, Elko New Market, Minnesota	PROJECT: Adelman Elko New Market Property Development

Northing 138635.299098
Easting 502556.661513

Surface Elev.: **1085.9** ft. Datum: **MSL**

Depth (ft.)	Elev.	Description	Geology	Blows/12" N-Value RQD	Number	Type	In. Recovered In. Driven	Moisture, %	Dry Density PCF	Additional Data/ Remarks
		TOPSOIL, organic sandy silt, black, moist (TOPSOIL)	TOPSOIL	AS	1	AUGER	12			
1.5	1084.4			AS	2	AUGER	12			
		LEAN CLAY, with a little sand, dark brown, moist, soft (CL)	FINE ALLUVIUM	7	3	SS	18			Pq=2.0tsf
4.5	1081.4			7	4	SS	18			
		SAND with SILT, with a little gravel, brown, wet to waterbearing, loose to medium dense (SP-SM)	COARSE ALLUVIUM							
		∇		19	5	SS	18			
8.5	1077.4									
		SILTY SAND, with gravel, fine to medium grained, brown, wet, medium dense to dense (SM)		11	6	SS	18			
				25	7	SS	18	10		p200=17.2%
				19	8	SS	18			
				29	9	SS	18			
20.5	1065.4	End of Boring								

WATER LEVEL OBSERVATIONS	
WL	∇ 7.5

element™ materials technology
662 Cromwell Ave.
St. Paul, MN 55114
Telephone: 651-645-3601

STARTED	9/21/17	FINISHED	9/21/17
DRILL CO.	Element	DRILL RIG	ATV
DRILLER	KK	ASS'T DRILLER	DB
LOGGED BY	DB	APPROVED	MAS

ELEMENT LOG ESP026601P - ADELMAN NEW MARKET DEVELOPMENT - APPRO.GPJ LOG A GNNN08.GDT 11/27/17

Project No. ESP026601P

LOG OF BORING NO. B16

CLIENT: APPRO Development	ARCHITECT/ENGINEER: ISG
SITE: 260th Street East and Interstate 35, Elko New Market, Minnesota	PROJECT: Adelman Elko New Market Property Development

Northing 139029.943650
Easting 503184.393853

Surface Elev.: **1079.6** ft. Datum: **MSL**

Description	Elev.	GEOLOGY	DEPTH (FT.)	BLOWS/12" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE, %	DRY DENSITY PCF	ADDITIONAL DATA/ REMARKS
TOPSOIL, organic sandy silt, black to dark brown, moist (TOPSOIL)		TOPSOIL		AS	1	AUGER	12			
				AS	2	AUGER	12			
2.0	1077.6									
SILTY SAND, with gravel, cobbles, fine to medium grained, brown, moist, medium dense (SM)		COARSE ALLUVIUM		25	3	SS	18			
			5	46*	4	SS	18			*N-value influenced by cobbles.
5.5	1074.1									
SAND, with a little gravel, mostly medium grained, brown, moist, medium dense (SP)				12	5	SS	18	4		p200=4.5%
9.0	1070.6									
SILTY SAND, with a little gravel, fine to medium grained, brown, moist, medium dense (SM)			10	17	6	SS	18	9		p200=21.5%
				28	7	SS	18			
			15	20	8	SS	18			
15.5	1064.1									
LEAN CLAY, with a little sand and gravel, brown, moist, hard (CL)		GLACIAL TILL								
			20	18	9	SS	18			
20.5	1059.1									
End of Boring										

WATER LEVEL OBSERVATIONS	
	None

element™ materials technology
662 Cromwell Ave.
St. Paul, MN 55114
Telephone: 651-645-3601

STARTED	9/19/17	FINISHED	9/19/17
DRILL CO.	Element	DRILL RIG	ATV
DRILLER	KK	ASS'T DRILLER	DB
LOGGED BY	DB	APPROVED	MAS

ELEMENT LOG ESP026601P - ADELMAN NEW MARKET DEVELOPMENT - APPRO.GPJ LOG A GNNN08.GDT 11/27/17

Project No. ESP026601P

LOG OF BORING NO. B17

CLIENT: APPRO Development	ARCHITECT/ENGINEER: ISG
SITE: 260th Street East and Interstate 35, Elko New Market, Minnesota	PROJECT: Adelman Elko New Market Property Development

Northing 138503.937812
Easting 502013.565486

Surface Elev.: **1080.6** ft. Datum: **MSL**

Description	Elev.	GEOLOGY	DEPTH (FT.)	BLOWS/12" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE, %	DRY DENSITY PCF	ADDITIONAL DATA/ REMARKS
TOPSOIL, organic sandy clay, black, moist (TOPSOIL)		TOPSOIL		AS	1	AUGER	12			
				AS	2	AUGER	12			
2.0	1078.6									
LEAN CLAY, dark brown to brown, wet, very soft to soft (CL) ∇		FINE ALLUVIUM		1	3	SS	18			
4.5	1076.1									
SAND WITH SILT, a little gravel, fine to medium grained, brown, waterbearing, loose to medium dense (SP-SM)		COARSE ALLUVIUM	5	5	4	SS	18			
				13	5	SS	18			
			10	9	6	SS	18	18		p200=6.0%
				12	7	SS	18			Boring terminated at 14' due to obstruction. Possible cobble or boulder.
14.0	1066.6									
End of Boring										

WATER LEVEL OBSERVATIONS	
WL	∇ 3.0

element™ materials technology
662 Cromwell Ave.
St. Paul, MN 55114
Telephone: 651-645-3601

STARTED	9/20/17	FINISHED	9/20/17
DRILL CO.	Element	DRILL RIG	ATV
DRILLER	KK	ASS'T DRILLER	DB
LOGGED BY	DB	APPROVED	MAS

Project No. ESP026601P

LOG OF BORING NO. B18

CLIENT: APPRO Development

ARCHITECT/ENGINEER: ISG

SITE: 260th Street East and Interstate 35, Elko New Market, Minnesota

PROJECT: Adelman Elko New Market Property Development

Northing 138894.729681
Easting 502409.365876

Surface Elev.: 1076.6 ft. Datum: MSL

Description	Elev.	Depth	Geology	Blows/12" N-Value RQD	Number	Type	In. Recovered / In. Driven	Moisture, %	Dry Density PCF	Additional Data/ Remarks
TOPSOIL, organic lean clay, with a little sand, black, moist (CL-OL)			TOPSOIL	AS	1	AUGER	12			
				AS	2	AUGER	12			
				2	3	SS	18			
	1072.1	4.5		2	4	SS	18			
CLAYEY SAND with a little gravel, fine grained, dark brown to brown, wet, very loose (SC)	1070.6	6.0	COARSE ALLUVIUM							
SAND, with gravel, fine to medium grained, brown, waterbearing, loose to medium dense (SP)		5		9	5	SS	18			
		10		10	6	SS	18			
				11	7	SS	18			
	1061.1	15.5		15	8	SS	18			Hydrostatic pressure at 10' affected drilling and sample recovery below 15'. Boring terminated at 15.5'.
End of Boring		15								

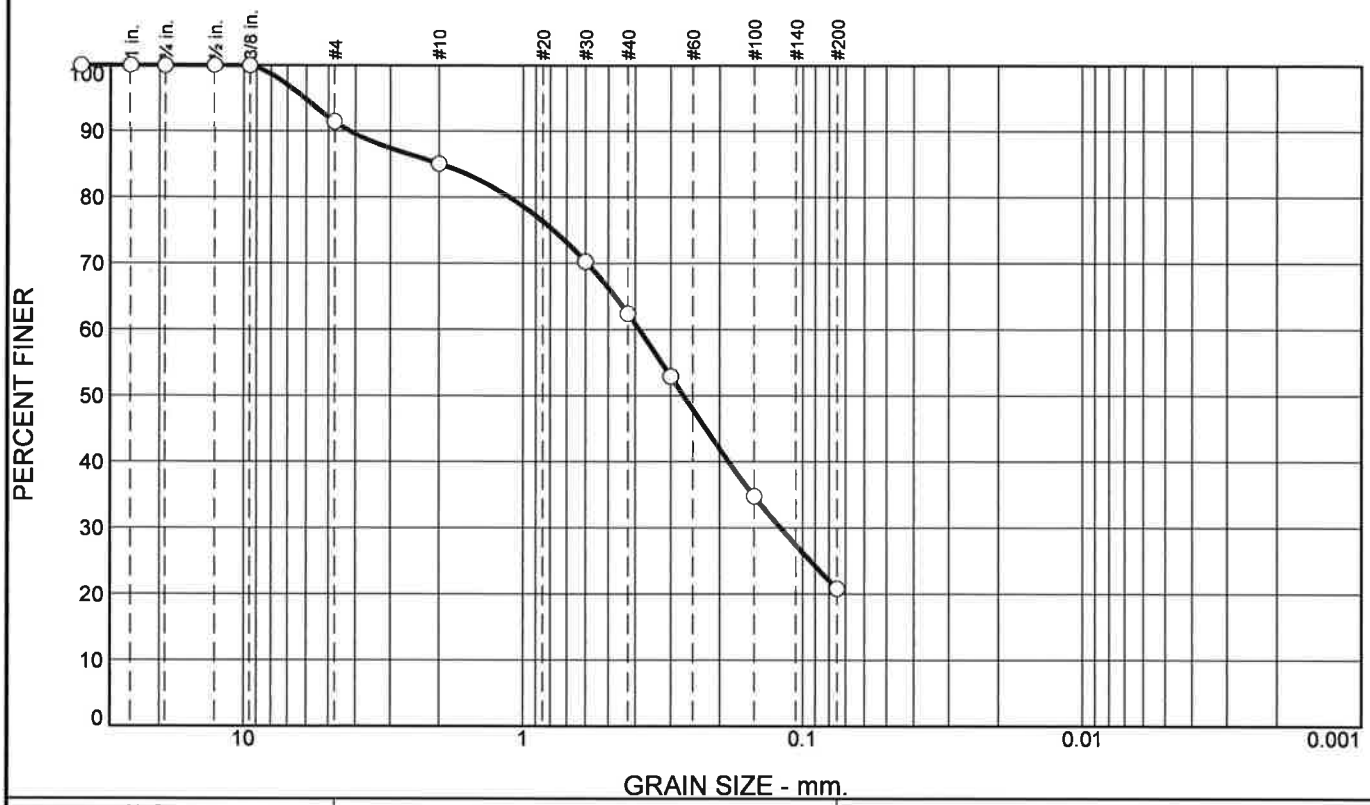
WATER LEVEL OBSERVATIONS

WL	∇ 2.0

element™ materials technology
662 Cromwell Ave.
St. Paul, MN 55114
Telephone: 651-645-3601

STARTED	9/20/17	FINISHED	9/20/17
DRILL CO.	Element	DRILL RIG	ATV
DRILLER	KK	ASS'T DRILLER	DB
LOGGED BY	DB	APPROVED	MAS

Particle Size Distribution Report



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	8.6	6.3	22.7	41.6	20.8	

Test Results (ASTM C136 & ASTM C117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1-1/2"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	91.4		
#10	85.1		
#30	70.2		
#40	62.4		
#50	52.9		
#100	34.8		
#200	20.8		

* (no specification provided)

Material Description

SILTY SAND with a little gravel, fine to medium grained, brown (SM)

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)=

Coefficients

D_{90}= 4.1800 D_{85}= 1.9753 D_{60}= 0.3878
D_{50}= 0.2701 D_{30}= 0.1203 D_{15}=
D_{10}= C_u= C_c=

Remarks

Sample was returned to the container after completion of test.
Moisture Content: 8.9%

Date Received: 10-3-17 **Date Tested:** 10-5-17
Tested By: L.Tran
Checked By: J. Starke, P.E.
Title: Sr. Geotechnical Engineer

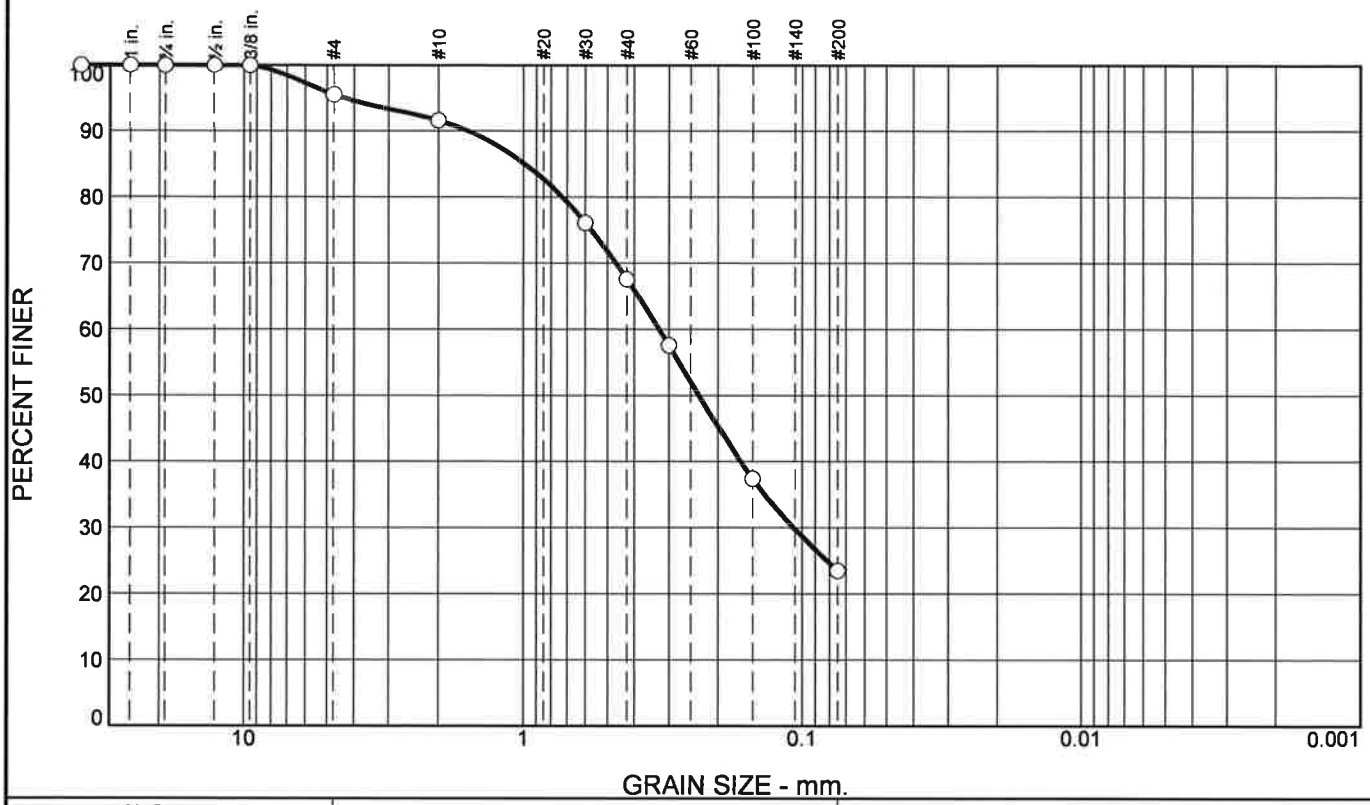
Location: Soil Boring 3
Sample Number: 03 **Depth:** 2'-3.5'
Date Sampled: 9-15-17

Element Materials Technology St. Paul, MN

Client: APPRO Development
Project: Adelman Elko New Market Property
Scott County, Minnesota
Project No: ESP026601P **Figure**

EAR-CONTROLLED DATA

Particle Size Distribution Report



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	4.5	3.9	24.1	44.0	23.5	

Test Results (ASTM C136 & ASTM C117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1-1/2"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	95.5		
#10	91.6		
#30	76.1		
#40	67.5		
#50	57.6		
#100	37.4		
#200	23.5		

* (no specification provided)

Material Description

SILTY SAND, with a little gravel, fine to medium grained, brown (SM)

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)=

Coefficients

D_{90}= 1.5730 D_{85}= 0.9906 D_{60}= 0.3256
D_{50}= 0.2340 D_{30}= 0.1071 D_{15}=
D_{10}= C_u= C_c=

Remarks

Sample was returned to the container after completion of test.
Moisture Content: 12.8%

Date Received: 10-3-17 **Date Tested:** 10-5-17
Tested By: L.Tran
Checked By: J. Starke, P.E.
Title: Sr. Geotechnical Engineer

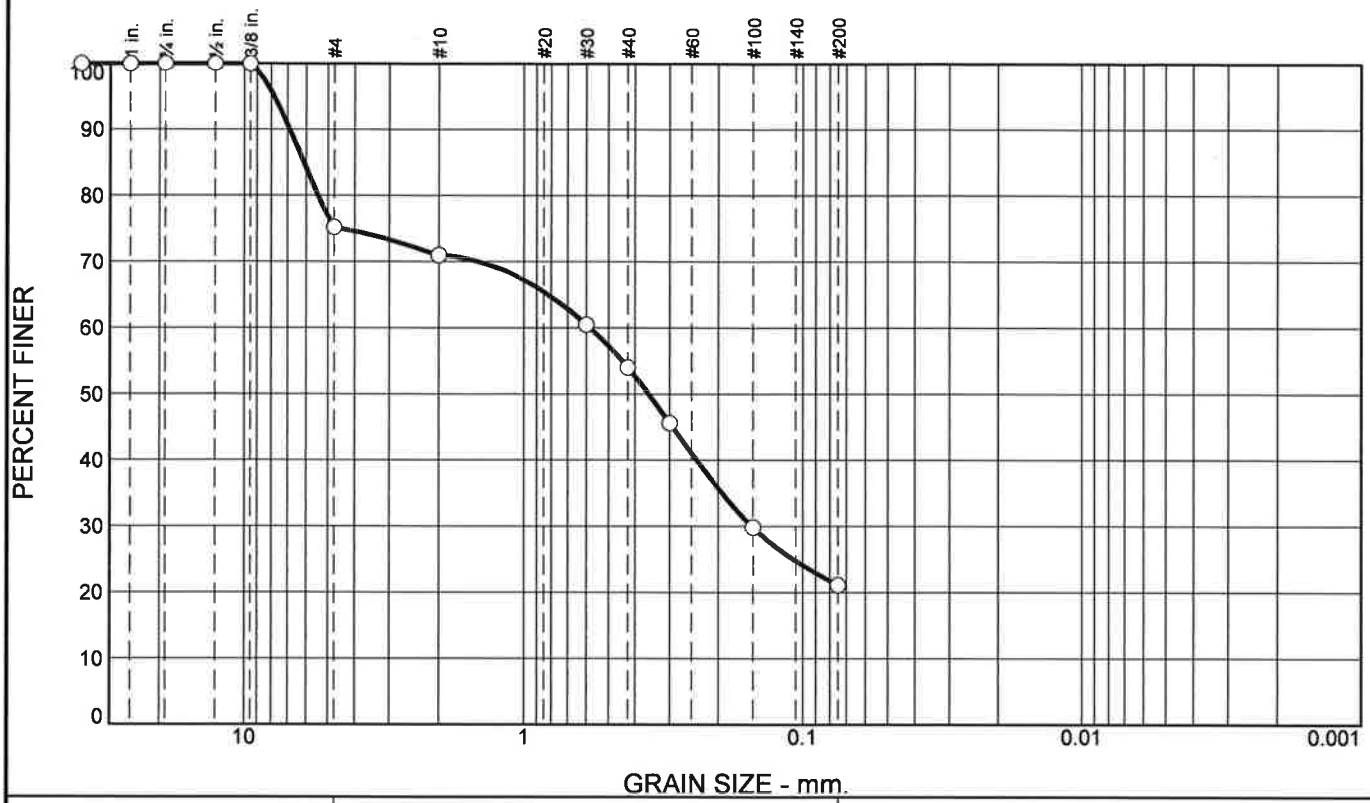
Location: Soil Boring 4
Sample Number: 04 **Depth:** 4'-5.5'
Date Sampled: 9-18-17

Element Materials Technology St. Paul, MN

Client: APPRO Development
Project: Adelman Elko New Market Property
Scott County, Minnesota
Project No: ESP026601P **Figure**

EAR-CONTROLLED DATA

Particle Size Distribution Report



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	24.8	4.2	17.0	32.9	21.1	

Test Results (ASTM C136 & ASTM C117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1-1/2"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	75.2		
#10	71.0		
#30	60.5		
#40	54.0		
#50	45.6		
#100	29.9		
#200	21.1		

* (no specification provided)

Material Description

SILTY SAND, with gravel, fine to medium grained, brown (SM)

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)=

Coefficients

D_{90}= 6.8686 D_{85}= 6.1192 D_{60}= 0.5836
D_{50}= 0.3575 D_{30}= 0.1512 D_{15}=
D_{10}= C_u= C_c=

Remarks

Sample was returned to the container after completion of test.
Moisture Content: 8.5%

Date Received: 10-3-17 **Date Tested:** 10-5-17

Tested By: L.Tran

Checked By: J. Starke, P.E.

Title: Sr. Geotechnical Engineer

Location: Soil Boring 4
Sample Number: 05 **Depth:** 7'-8.5'

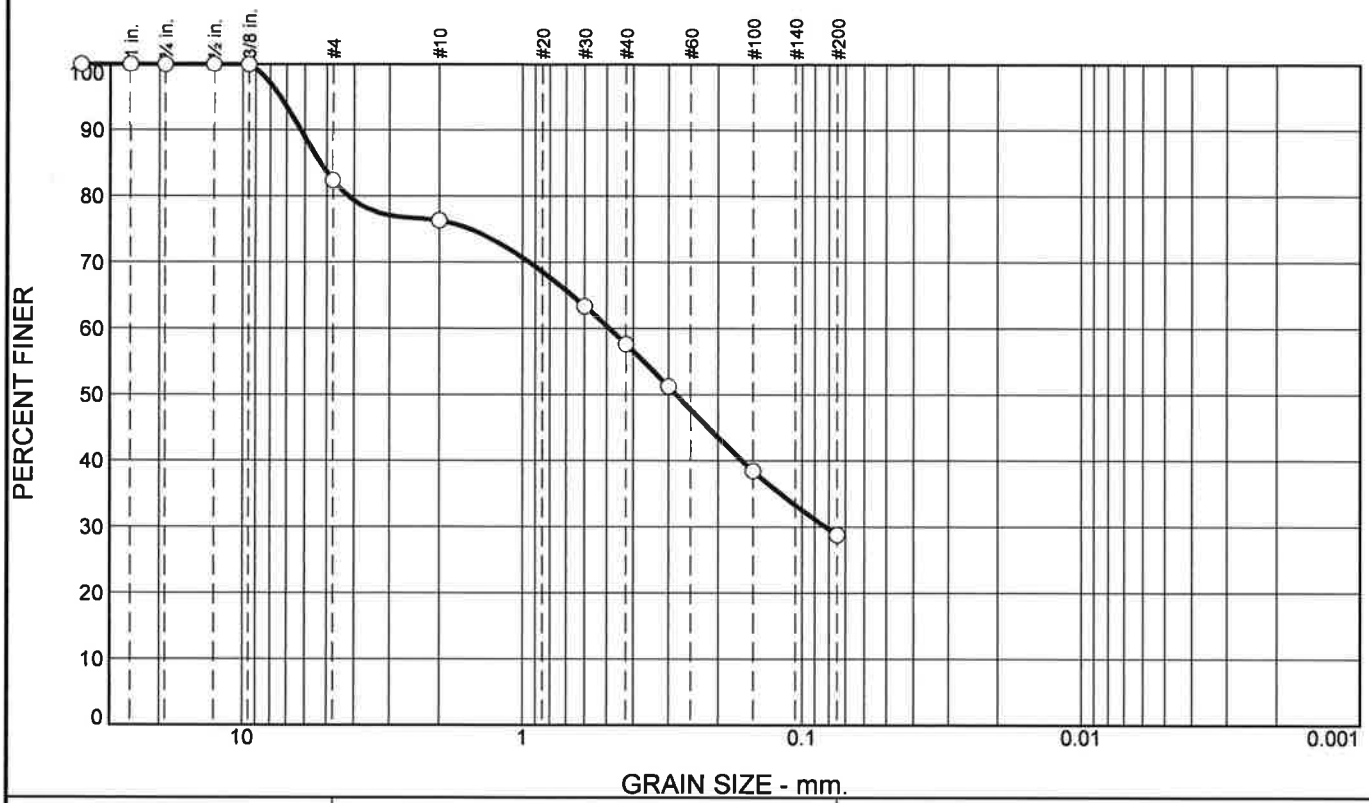
Date Sampled: 9-18-17

Element Materials Technology St. Paul, MN

Client: APPRO Development
Project: Adelman Elko New Market Property
Scott County, Minnesota
Project No: ESP026601P **Figure**

EAR-CONTROLLED DATA

Particle Size Distribution Report



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	17.6	6.1	18.7	28.8	28.8	

Test Results (ASTM C136 & ASTM C117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1-1/2"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	82.4		
#10	76.3		
#30	63.3		
#40	57.6		
#50	51.2		
#100	38.5		
#200	28.8		

* (no specification provided)

Material Description

SILTY SAND, with gravel, fine to medium grained, brown (SM)

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)=

Coefficients

D_{90}= 6.2233 D_{85}= 5.2687 D_{60}= 0.4891
D_{50}= 0.2813 D_{30}= 0.0823 D_{15}=
D_{10}= C_u= C_c=

Remarks

Sample was returned to the container after completion of test.
Moisture Content: 11.8%

Date Received: 10-3-17 **Date Tested:** 10-5-17

Tested By: L.Tran

Checked By: J. Starke, P.E.

Title: Sr. Geotechnical Engineer

Location: Soil Boring 4
Sample Number: 06 **Depth:** 9'-10.5'

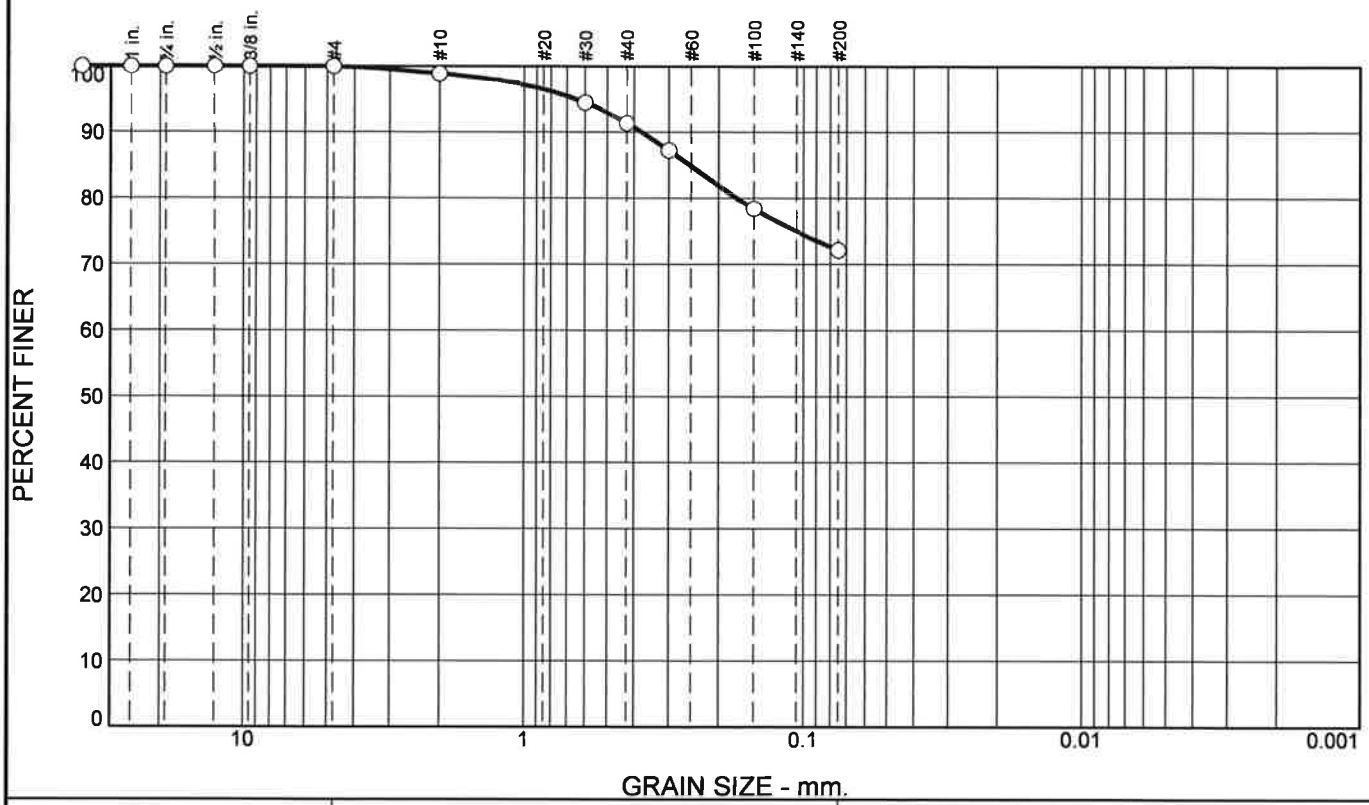
Date Sampled: 9-18-17

Element Materials Technology St. Paul, MN

Client: APPRO Development
Project: Adelman Elko New Market Property
Scott County, Minnesota
Project No: ESP026601P **Figure**

EAR-CONTROLLED DATA

Particle Size Distribution Report



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.1	7.5	19.3	72.1	

Test Results (ASTM C136 & ASTM C117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1-1/2"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#10	98.9		
#30	94.5		
#40	91.4		
#50	87.2		
#100	78.4		
#200	72.1		

* (no specification provided)

Material Description

LEAN CLAY, with SAND, gray (CL)

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= CL AASHTO (M 145)=

Coefficients

D_{90}= 0.3751 D_{85}= 0.2532 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Sample was returned to the container after completion of test.
Moisture Content: 22.3%

Date Received: 10-3-17 **Date Tested:** 10-5-17

Tested By: L.Tran

Checked By: J. Starke, P.E.

Title: Sr. Geotechnical Engineer

Location: Soil Boring 4
Sample Number: 07 **Depth:** 12'-13.5'

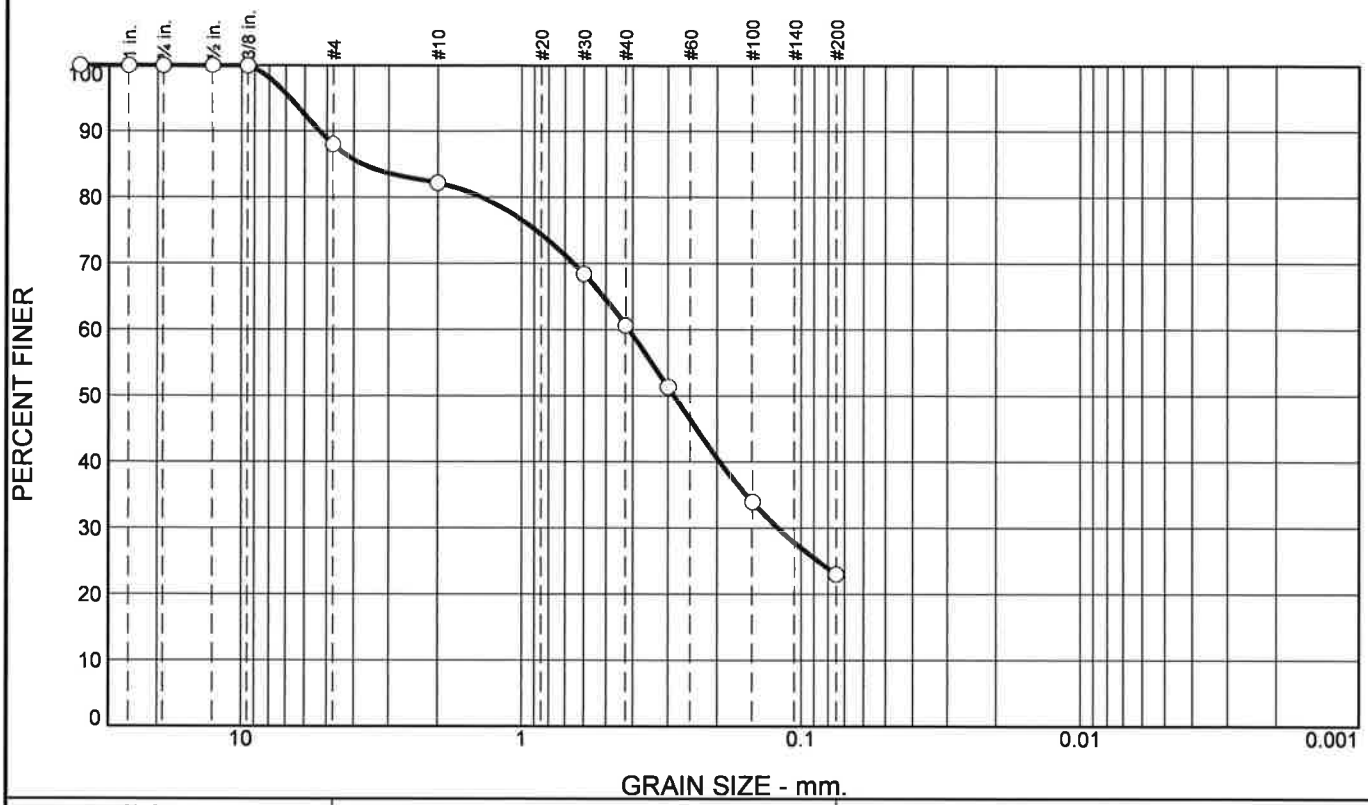
Date Sampled: 9-18-17

Element Materials Technology St. Paul, MN

Client: APPRO Development
Project: Adelman Elko New Market Property
Scott County, Minnesota
Project No: ESP026601P **Figure**

EAR-CONTROLLED DATA

Particle Size Distribution Report



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	12.0	5.8	21.6	37.6	23.0	

Test Results (ASTM C136 & ASTM C117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1-1/2"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	88.0		
#10	82.2		
#30	68.4		
#40	60.6		
#50	51.4		
#100	34.0		
#200	23.0		

* (no specification provided)

Material Description

SILTY SAND, with a little gravel, fine to medium grained, brown (SM)

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)=

Coefficients

D_{90}= 5.3143 D_{85}= 3.7218 D_{60}= 0.4142
D_{50}= 0.2856 D_{30}= 0.1210 D_{15}=
D_{10}= C_u= C_c=

Remarks

Sample was returned to the container after completion of test.
Moisture Content: 8.8%

Date Received: 10-3-17 **Date Tested:** 10-5-17
Tested By: L.Tran
Checked By: J. Starke, P.E.
Title: Sr. Geotechnical Engineer

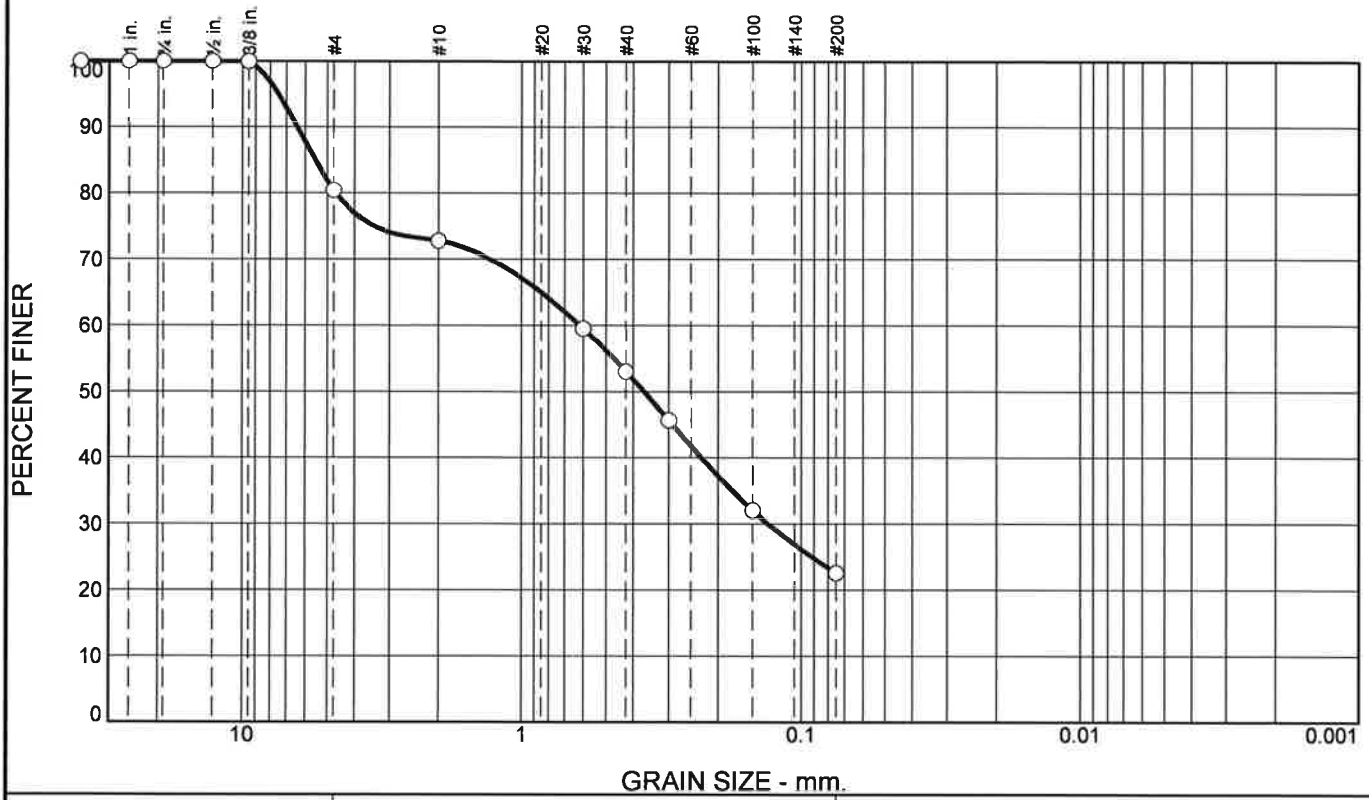
Location: Soil Boring 5
Sample Number: 04 **Depth:** 4'-5.5'
Date Sampled: 9-15-17

Element Materials Technology St. Paul, MN

Client: APPRO Development
Project: Adelman Elko New Market Property
Scott County, Minnesota
Project No: ESP026601P **Figure**

EAR-CONTROLLED DATA

Particle Size Distribution Report



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	19.6	7.6	19.7	30.5	22.6	

Test Results (ASTM C136 & ASTM C117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1-1/2"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	80.4		
#10	72.8		
#30	59.5		
#40	53.1		
#50	45.7		
#100	32.0		
#200	22.6		

* (no specification provided)

Material Description

SILTY SAND with gravel, fine to medium grained, brown (SM)

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)=

Coefficients

D_{90}= 6.4094 D_{85}= 5.5334 D_{60}= 0.6178
D_{50}= 0.3669 D_{30}= 0.1321 D_{15}=
D_{10}= C_u= C_c=

Remarks

Sample was returned to the container after completion of test.
Moisture Content: 7.8%

Date Received: 10-3-17 **Date Tested:** 10-5-17
Tested By: L.Tran
Checked By: J. Starke, P.E.
Title: Sr. Geotechnical Engineer

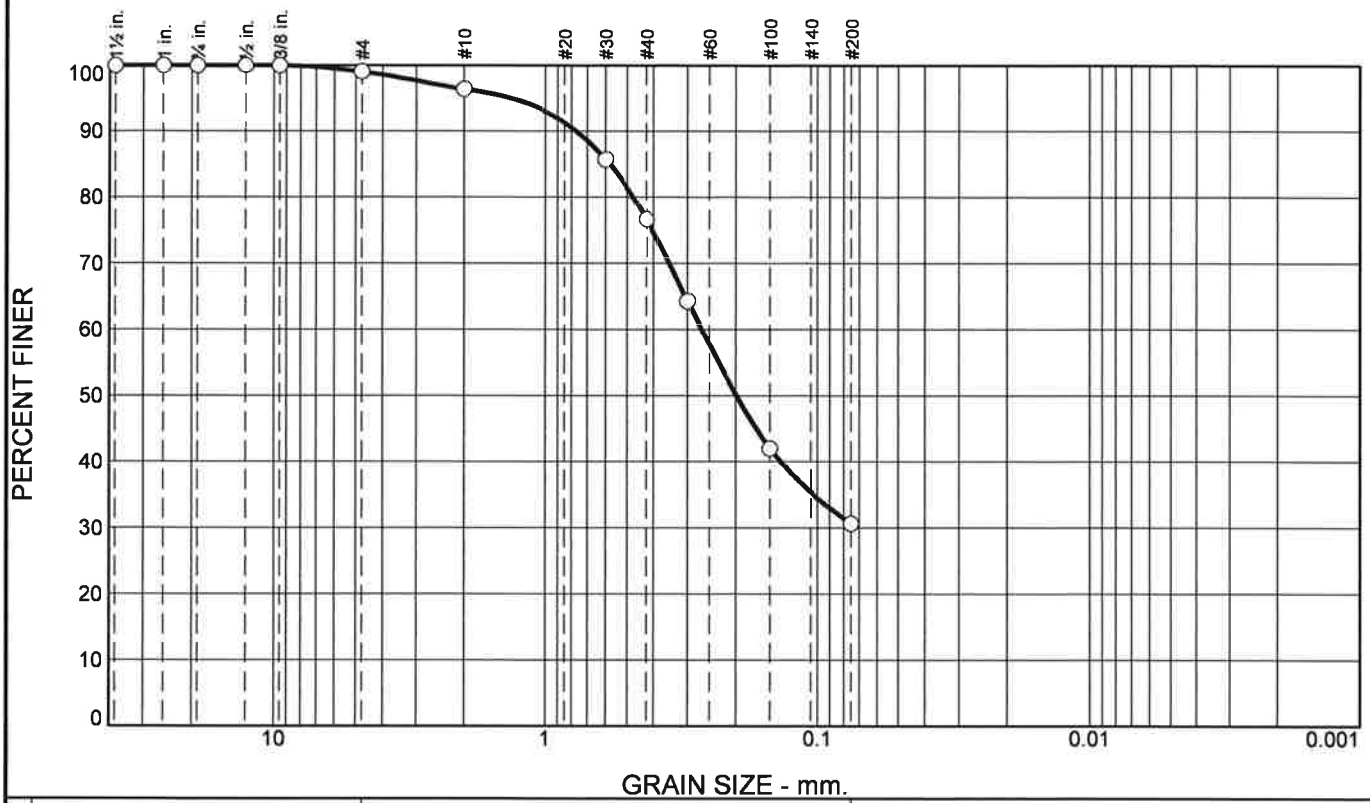
Location: Soil Boring 6
Sample Number: 05 **Depth:** 7'-8.5'
Date Sampled: 9-22-17

Element Materials Technology St. Paul, MN

Client: APPRO Development
Project: Adelman Elko New Market Property
Scott County, Minnesota
Project No: ESP026601P **Figure**

EAR-CONTROLLED DATA

Particle Size Distribution Report



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	1.0	2.6	19.8	46.0	30.6	

Test Results (ASTM C136 & ASTM C117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1-1/2"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	99.0		
#10	96.4		
#30	85.7		
#40	76.6		
#50	64.3		
#100	42.0		
#200	30.6		

* (no specification provided)

Material Description

SILTY SAND, with a little gravel, fine to medium grained, brown (SM)

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)=

Coefficients

D_{90}= 0.7686 D_{85}= 0.5812 D_{60}= 0.2669
D_{50}= 0.1992 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Sample was returned to the container after completion of test.
Moisture content: 11.3%

Date Received: 10-3-17 **Date Tested:** 10-5-17
Tested By: L.Tran
Checked By: J. Starke, P.E.
Title: Sr. Geotechnical Engineer

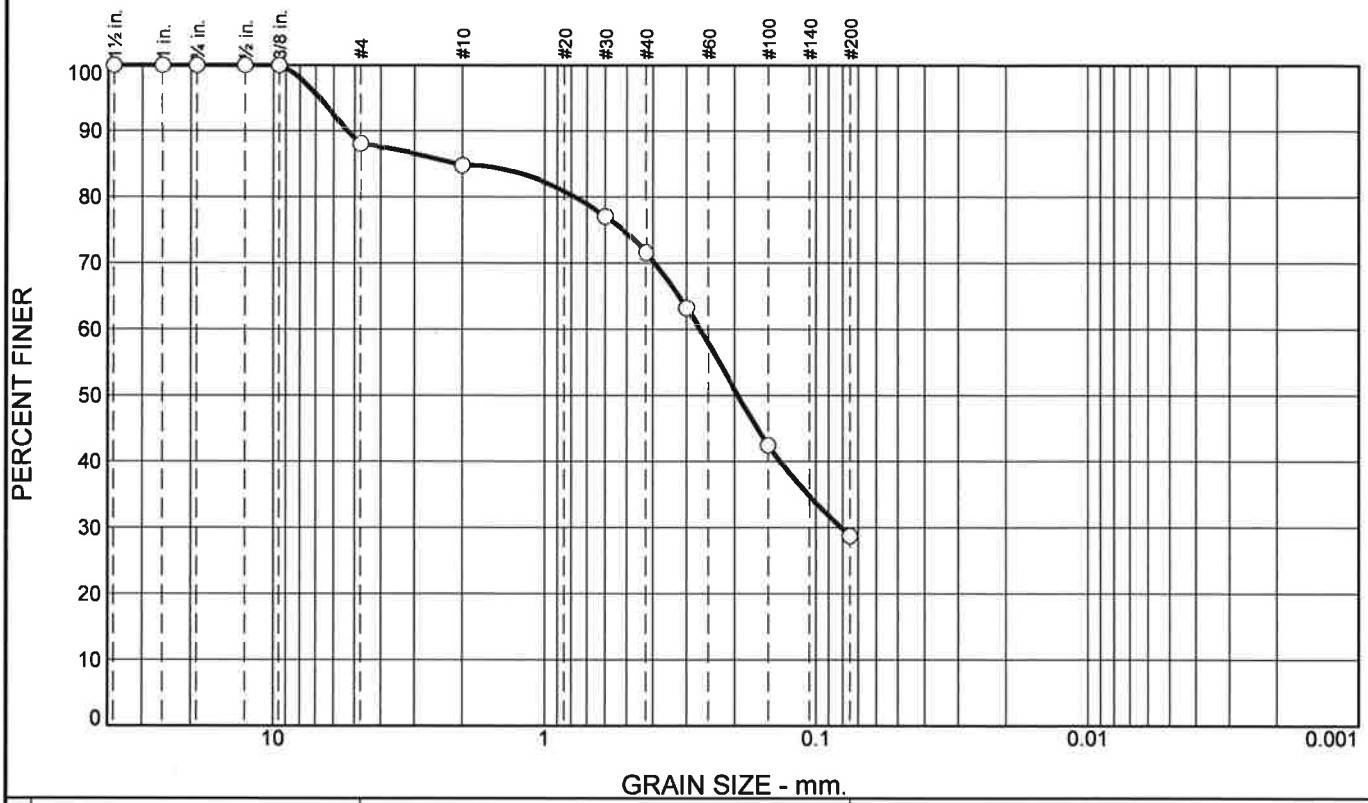
Location: Soil Boring 7
Sample Number: 03 **Depth:** 2'-3.5'
Date Sampled: 9-15-17

Element Materials Technology St. Paul, MN

Client: APPRO Development
Project: Adelman Elko New Market Property
Scott County, Minnesota
Project No: ESP026601P **Figure**

EAR-CONTROLLED DATA

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	12.0	3.2	13.3	42.7	28.8	

Test Results (ASTM C136 & ASTM C117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1-1/2"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	88.0		
#10	84.8		
#30	77.0		
#40	71.5		
#50	63.2		
#100	42.4		
#200	28.8		

* (no specification provided)

Material Description

SILTY SAND, with a little gravel, fine to medium grained, brown (SM)

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)=

Coefficients

D_{90}= 5.3203 D_{85}= 2.0857 D_{60}= 0.2686
D_{50}= 0.1948 D_{30}= 0.0808 D_{15}=
D_{10}= C_u= C_c=

Remarks

Sample was returned to the container after completion of test.
Moisture Content: 8.4%

Date Received: 10-3-17 **Date Tested:** 10-5-17

Tested By: L.Tran

Checked By: J. Starke, P.E.

Title: Sr. Geotechnical Engineer

Location: Soil Boring 12
Sample Number: 04 **Depth:** 4'-5.5'

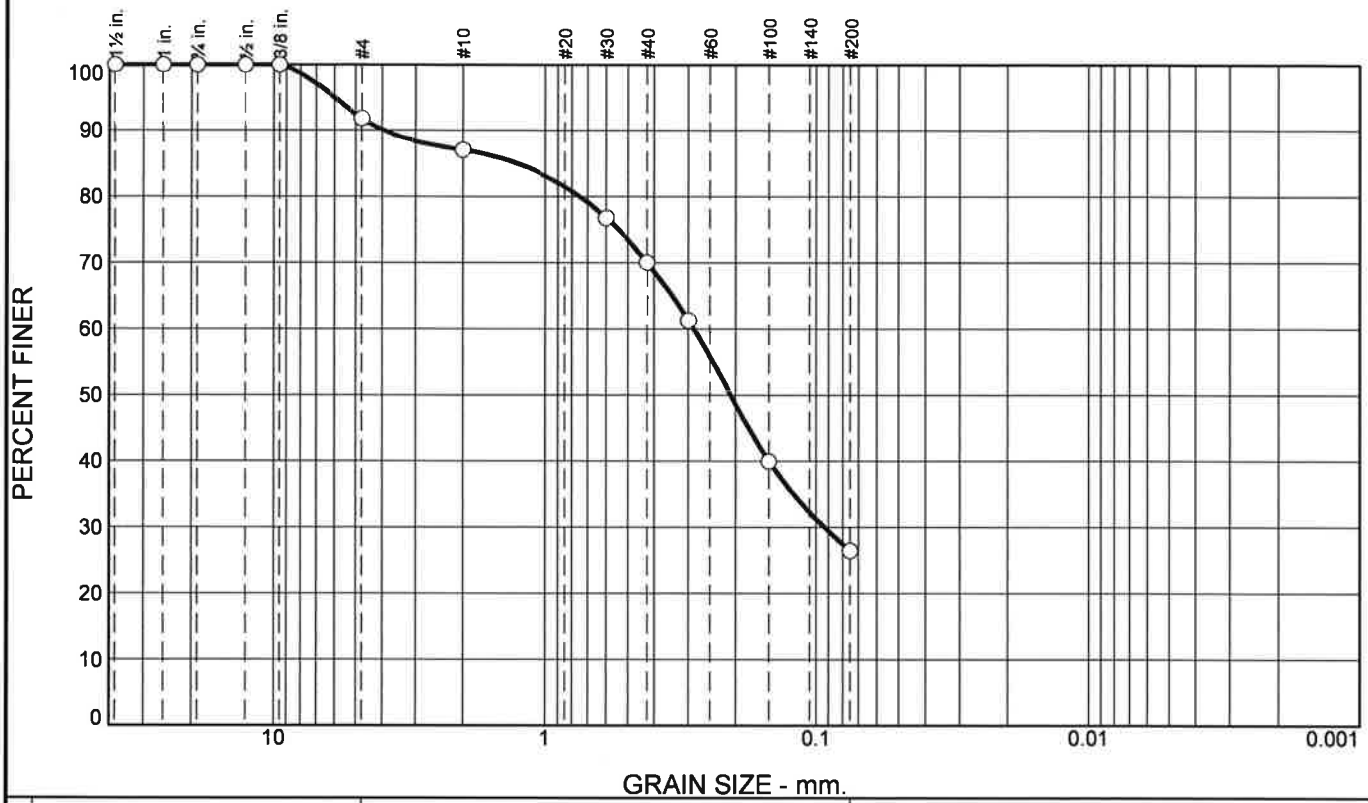
Date Sampled: 9-20-17

Element Materials Technology St. Paul, MN

Client: APPRO Development
Project: Adelman Elko New Market Property
Scott County, Minnesota
Project No: ESP026601P **Figure**

EAR-CONTROLLED DATA

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	8.2	4.7	17.1	43.5	26.5	

Test Results (ASTM C136 & ASTM C117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1-1/2"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	91.8		
#10	87.1		
#30	76.8		
#40	70.0		
#50	61.3		
#100	40.0		
#200	26.5		

* (no specification provided)

Material Description

SILTY SAND, with a little gravel, fine to medium grained, brown (SM)

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)=

Coefficients

D_{90}= 3.9394 D_{85}= 1.2706 D_{60}= 0.2872
D_{50}= 0.2093 D_{30}= 0.0931 D_{15}=
D_{10}= C_u= C_c=

Remarks

Sample was returned to the container after completion of test.
Moisture Content: 15.3%

Date Received: 10-3-17 **Date Tested:** 10-5-17
Tested By: L.Tran
Checked By: J. Starke, P.E.
Title: Sr. Geotechnical Engineer

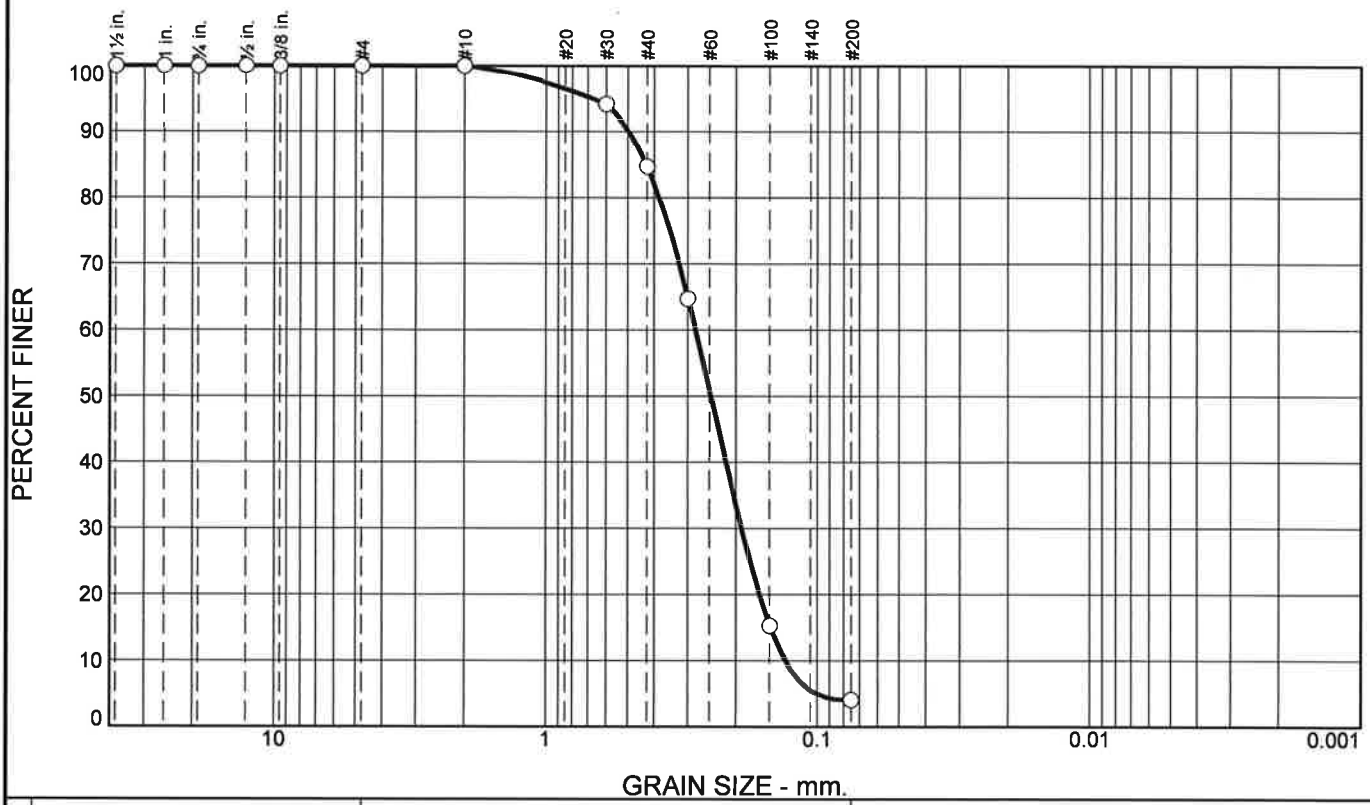
Location: Soil Boring 13
Sample Number: 04 **Depth:** 4'-5.5'
Date Sampled: 9-20-17

Element Materials Technology St. Paul, MN

Client: APPRO Development
Project: Adelman Elko New Market Property
Scott County, Minnesota
Project No: ESP026601P **Figure**

EAR-CONTROLLED DATA

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	15.3	80.7	4.0	

Test Results (ASTM C136 & ASTM C117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1-1/2"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#10	100.0		
#30	94.2		
#40	84.7		
#50	64.7		
#100	15.3		
#200	4.0		

* (no specification provided)

Material Description

SAND, mostly fine grained, brown (SP)

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SP AASHTO (M 145)=

Coefficients

D_{90}= 0.4964 D_{85}= 0.4281 D_{60}= 0.2813
D_{50}= 0.2473 D_{30}= 0.1908 D_{15}= 0.1492
D_{10}= 0.1312 C_u= 2.14 C_c= 0.99

Remarks

Sample was returned to the container after completion of test.
Moisture Content: 8.6%

Date Received: 10-3-17 **Date Tested:** 10-5-17

Tested By: L.Tran

Checked By: J. Starke, P.E.

Title: Sr. Geotechnical Engineer

Location: Soil Boring 14
Sample Number: 04 **Depth:** 4'-5.5'

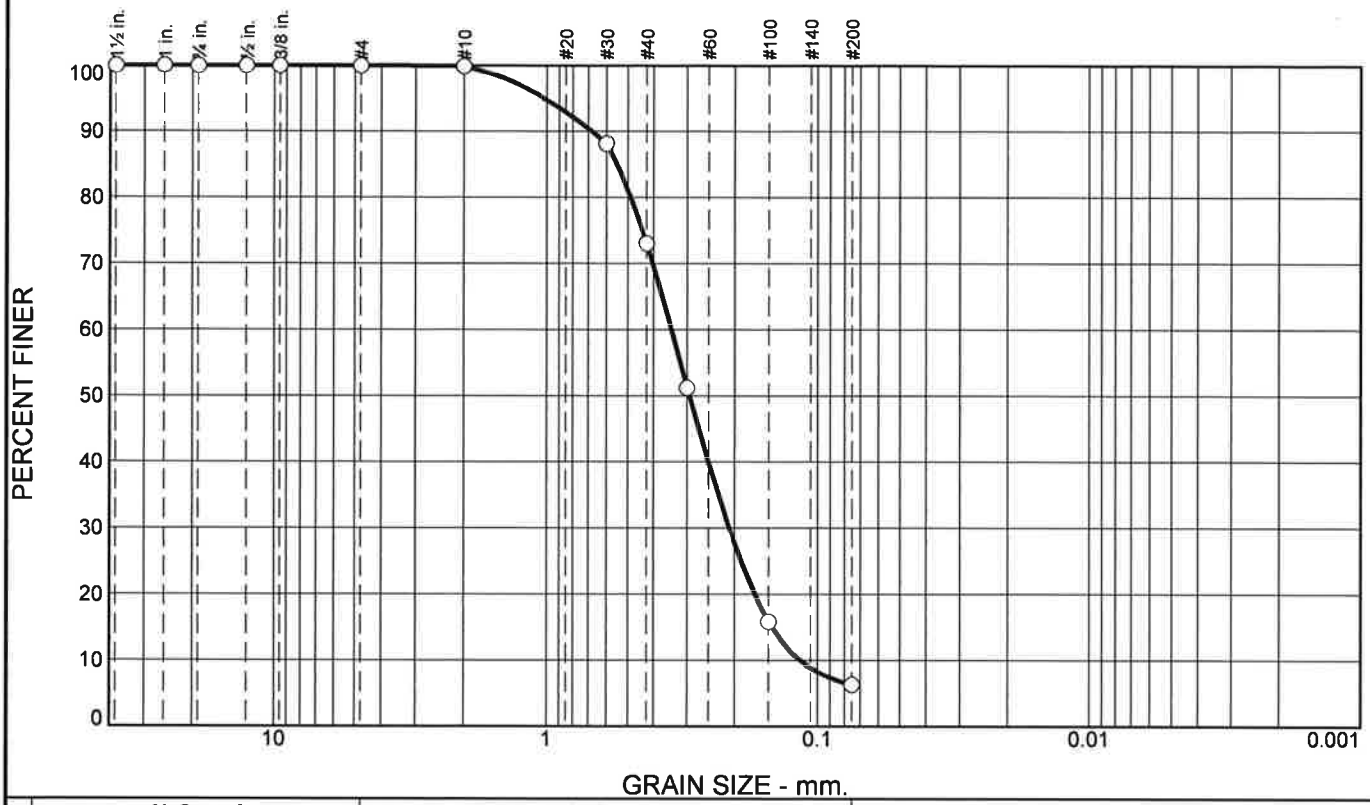
Date Sampled: 9-20-17

Element Materials Technology St. Paul, MN

Client: APPRO Development
Project: Adelman Elko New Market Property
Scott County, Minnesota
Project No: ESP026601P **Figure**

EAR-CONTROLLED DATA

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	26.9	66.7	6.3	

Test Results (ASTM C136 & ASTM C117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1-1/2"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#10	99.9		
#30	88.1		
#40	73.0		
#50	51.2		
#100	15.9		
#200	6.3		

* (no specification provided)

Material Description

SAND WITH SILT, mostly fine grained, brown (SP-SM)

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SP-SM AASHTO (M 145)=

Coefficients

D_{90}= 0.6804 D_{85}= 0.5494 D_{60}= 0.3436
D_{50}= 0.2945 D_{30}= 0.2094 D_{15}= 0.1454
D_{10}= 0.1153 C_u= 2.98 C_c= 1.11

Remarks

Sample was returned to the container after completion of test.
Moisture Content: 17.9%

Date Received: 10-3-17 **Date Tested:** 10-5-17

Tested By: L.Tran

Checked By: J. Starke, P.E.

Title: Sr. Geotechnical Engineer

Location: Soil Boring 14
Sample Number: 05 **Depth:** 7'-8.5'

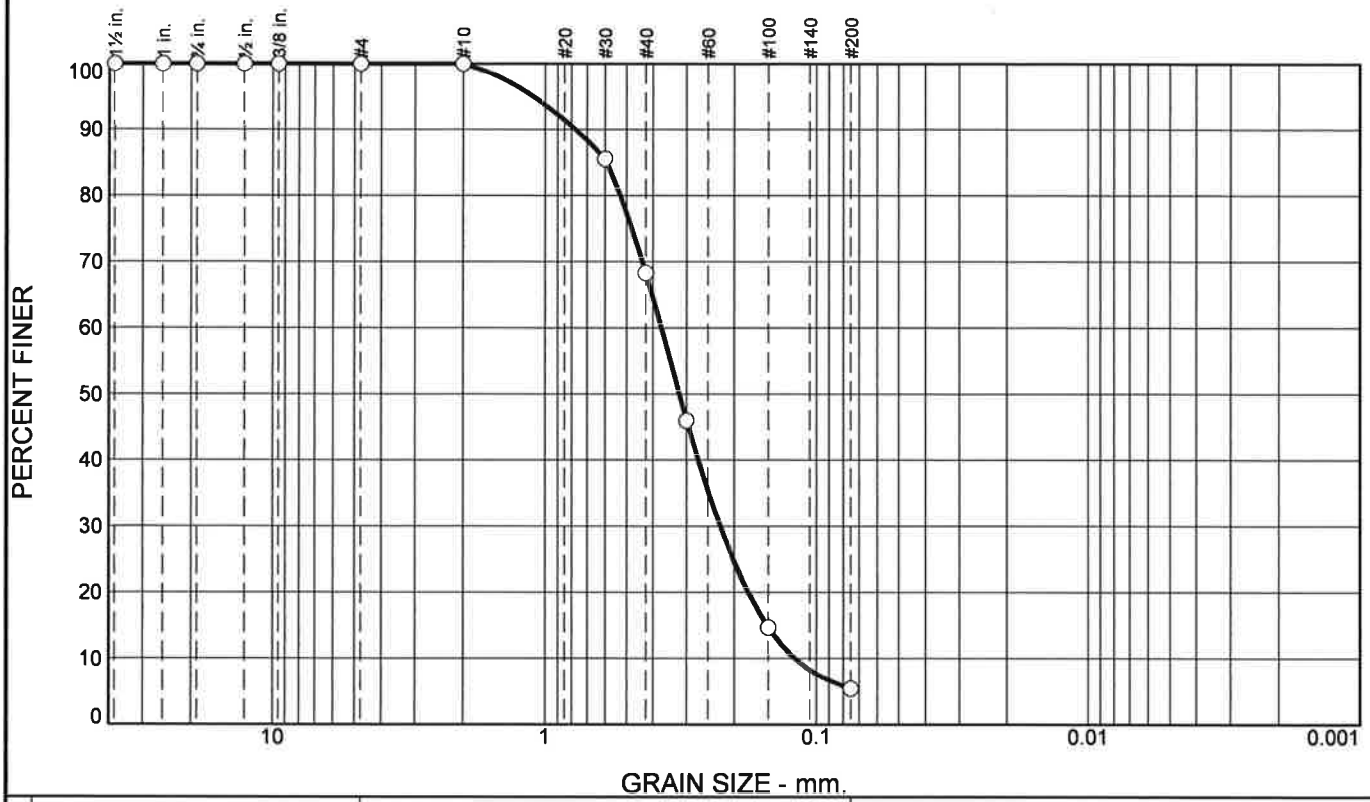
Date Sampled: 9-20-17

Element Materials Technology St. Paul, MN

Client: APPRO Development
Project: Adelman Elko New Market Property
Scott County, Minnesota
Project No: ESP026601P **Figure**

EAR-CONTROLLED DATA

Particle Size Distribution Report



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	31.7	62.9	5.4	

Test Results (ASTM C136 & ASTM C117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1-1/2"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#10	100.0		
#30	85.6		
#40	68.3		
#50	46.0		
#100	14.6		
#200	5.4		

* (no specification provided)

Material Description

SAND WITH SILT, mostly fine grained, brown (SP-SM)

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SP-SM AASHTO (M 145)=

Coefficients

D_{90}= 0.7728 D_{85}= 0.5914 D_{60}= 0.3727
D_{50}= 0.3197 D_{30}= 0.2251 D_{15}= 0.1522
D_{10}= 0.1204 C_u= 3.09 C_c= 1.13

Remarks

Sample was returned to the container after completion of test.
Moisture Content: 19.6%

Date Received: 10-3-17 **Date Tested:** 10-5-17

Tested By: L.Tran

Checked By: J. Starke, P.E.

Title: Sr. Geotechnical Engineer

Location: Soil Boring 14
Sample Number: 06 **Depth:** 9.5'-11'

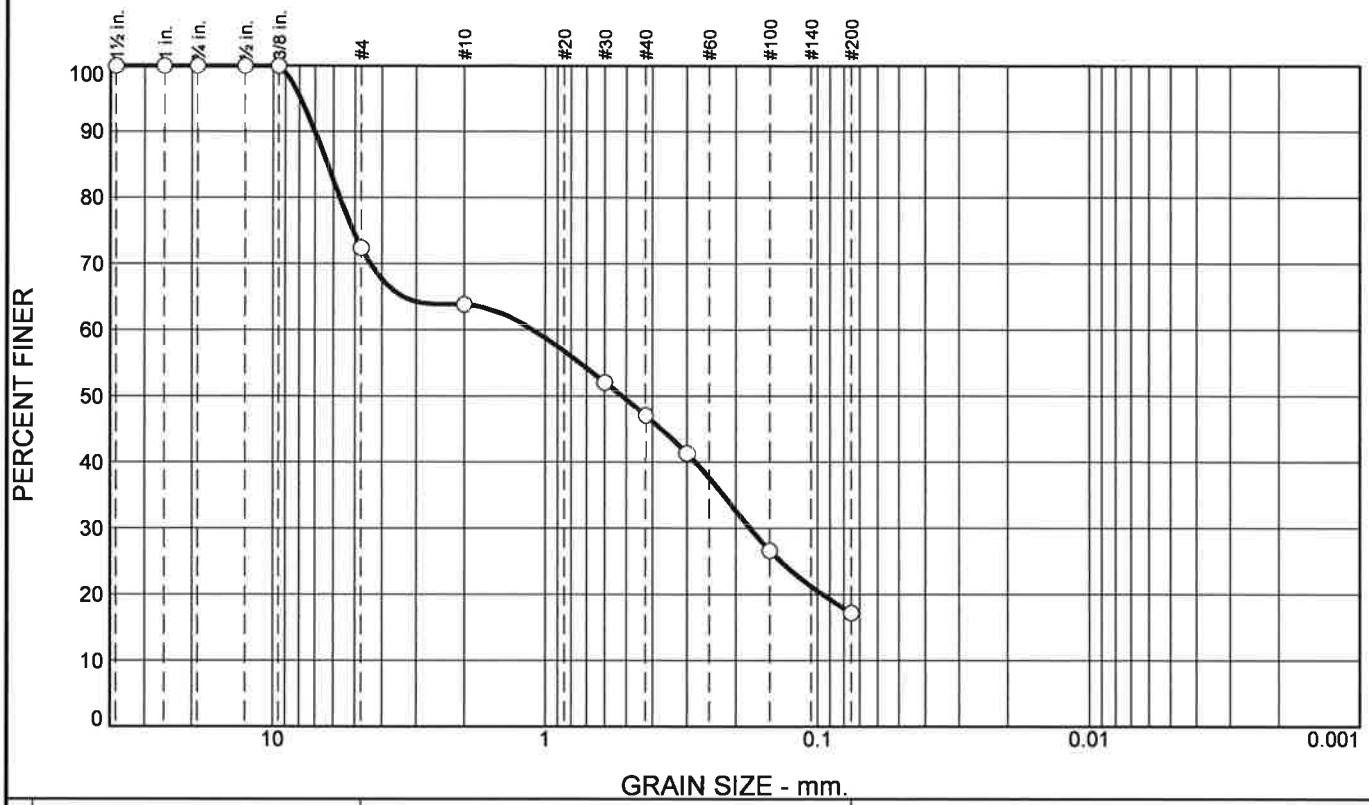
Date Sampled: 9-20-17

Element Materials Technology St. Paul, MN

Client: APPRO Development
Project: Adelman Elko New Market Property
Scott County, Minnesota
Project No: ESP026601P **Figure**

EAR-CONTROLLED DATA

Particle Size Distribution Report



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	27.6	8.6	16.7	29.9	17.2	

Test Results (ASTM C136 & ASTM C117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1-1/2"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	72.4		
#10	63.8		
#30	52.0		
#40	47.1		
#50	41.3		
#100	26.6		
#200	17.2		

* (no specification provided)

Material Description

SILTY SAND with gravel, fine to medium grained, brown (SM)

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)=

Coefficients

D_{90}= 7.0092 D_{85}= 6.3074 D_{60}= 1.1140
D_{50}= 0.5194 D_{30}= 0.1776 D_{15}=
D_{10}= C_u= C_c=

Remarks

Sample was returned to the container after completion of test.
Moisture Content: 9.6%

Date Received: 10-3-17 **Date Tested:** 10-5-17
Tested By: L.Tran
Checked By: J. Starke, P.E.
Title: Sr. Geotechnical Engineer

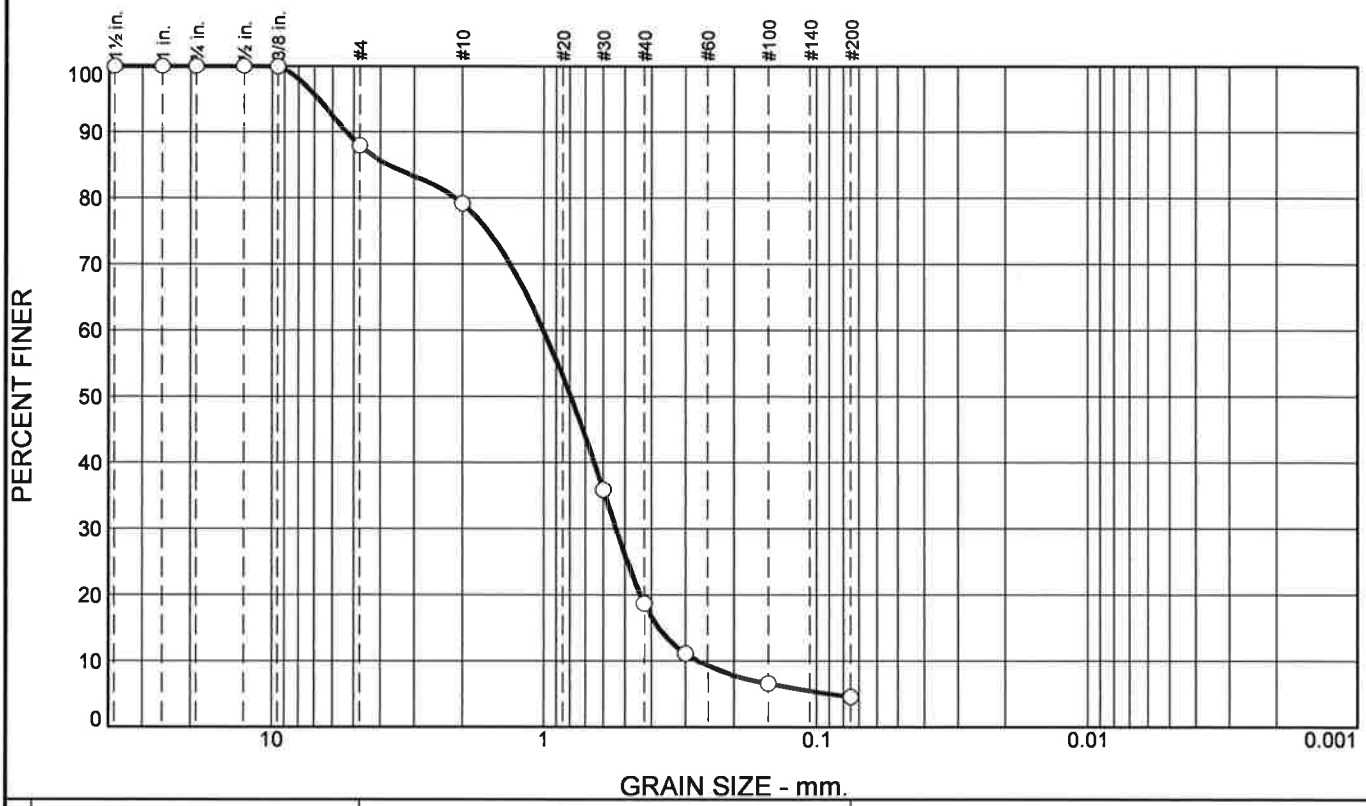
Location: Soil Boring 15
Sample Number: 07 **Depth:** 12'-13.5'
Date Sampled: 9-21-17

Element Materials Technology St. Paul, MN

Client: APPRO Development
Project: Adelman Elko New Market Property
Scott County, Minnesota
Project No: ESP026601P **Figure**

EAR-CONTROLLED DATA

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	12.1	8.7	60.5	14.2	4.5	

Test Results (ASTM C136 & ASTM C117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1-1/2"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	87.9		
#10	79.2		
#30	35.9		
#40	18.7		
#50	11.1		
#100	6.6		
#200	4.5		

* (no specification provided)

Material Description

SAND, with a little gravel, mostly medium grained, brown (SP)

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SP AASHTO (M 145)=

Coefficients

D_{90}= 5.3358 D_{85}= 3.7511 D_{60}= 1.0026
D_{50}= 0.7942 D_{30}= 0.5384 D_{15}= 0.3767
D_{10}= 0.2707 C_u= 3.70 C_c= 1.07

Remarks

Sample was returned to the container after completion of test.
Moisture Content: 4.1%

Date Received: 10-3-17 **Date Tested:** 10-5-17
Tested By: L.Tran
Checked By: J. Starke, P.E.
Title: Sr. Geotechnical Engineer

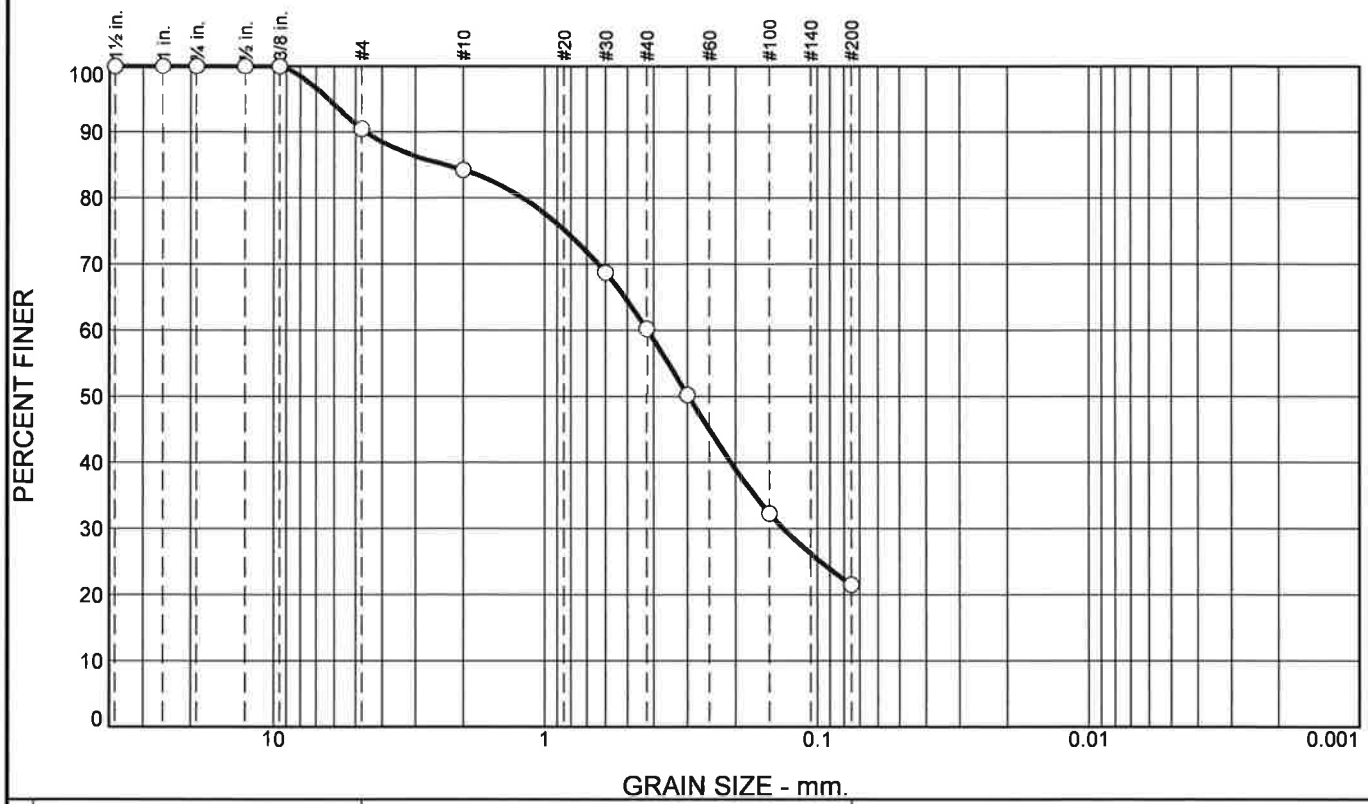
Location: Soil Boring 16
Sample Number: 05 **Depth:** 7'-8.5'
Date Sampled: 9-19-17

Element Materials Technology St. Paul, MN

Client: APPRO Development
Project: Adelman Elko New Market Property
Scott County, Minnesota
Project No: ESP026601P **Figure**

EAR-CONTROLLED DATA

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	9.5	6.3	24.0	38.7	21.5	

Test Results (ASTM C136 & ASTM C117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1-1/2"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	90.5		
#10	84.2		
#30	68.7		
#40	60.2		
#50	50.2		
#100	32.2		
#200	21.5		

* (no specification provided)

Material Description

SILTY SAND, with a little gravel, fine to medium grained, brown (SM)

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)=

Coefficients

D_{90}= 4.5894 D_{85}= 2.3081 D_{60}= 0.4217
D_{50}= 0.2978 D_{30}= 0.1337 D_{15}=
D_{10}= C_u= C_c=

Remarks

Sample was returned to the container after completion of test.
Moisture Content: 9.1%

Date Received: 10-3-17 **Date Tested:** 10-5-17
Tested By: L.Tran
Checked By: J. Starke, P.E.
Title: Sr. Geotechnical Engineer

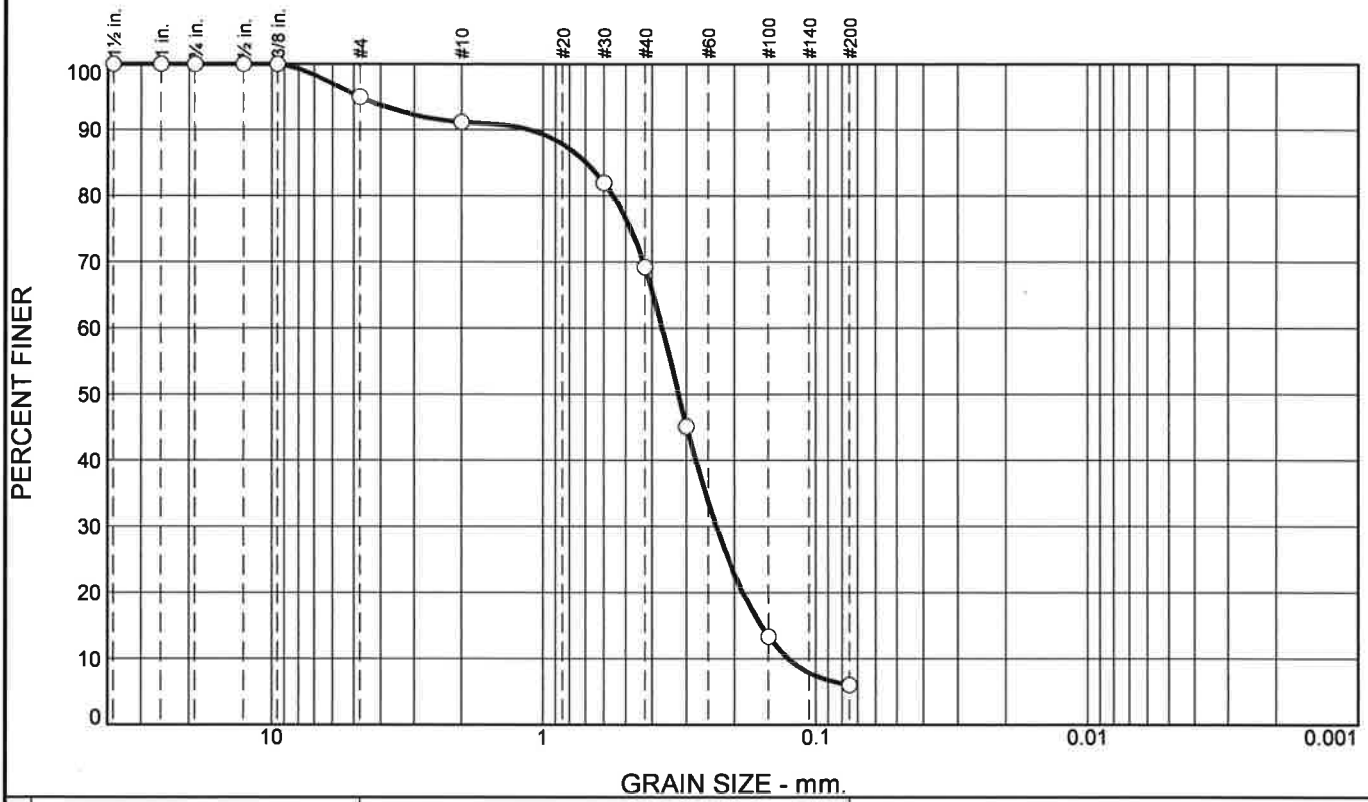
Location: Soil Boring 16
Sample Number: 06 **Depth:** 9'-10.5'
Date Sampled: 9-19-17

Element Materials Technology St. Paul, MN

Client: APPRO Development
Project: Adelman Elko New Market Property
Scott County, Minnesota
Project No: ESP026601P **Figure**

EAR-CONTROLLED DATA

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	5.0	3.8	22.0	63.2	6.0	

Test Results (ASTM C136 & ASTM C117)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1-1/2"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	95.0		
#10	91.2		
#30	81.9		
#40	69.2		
#50	45.1		
#100	13.3		
#200	6.0		

* (no specification provided)

Material Description

SAND WITH SILT, with a little gravel, fine to medium grained, brown (SP-SM)

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SP-SM AASHTO (M 145)=

Coefficients

D_{90}= 1.1132 D_{85}= 0.6959 D_{60}= 0.3686
D_{50}= 0.3213 D_{30}= 0.2337 D_{15}= 0.1601
D_{10}= 0.1265 C_u= 2.91 C_c= 1.17

Remarks

Sample was returned to the container after completion of test.
Moisture Content: 18.0%

Date Received: 10-3-17 **Date Tested:** 10-5-17

Tested By: L.Tran

Checked By: J. Starke, P.E.

Title: Sr. Geotechnical Engineer

Location: Soil Boring 17
Sample Number: 06 **Depth:** 9'-10.5'

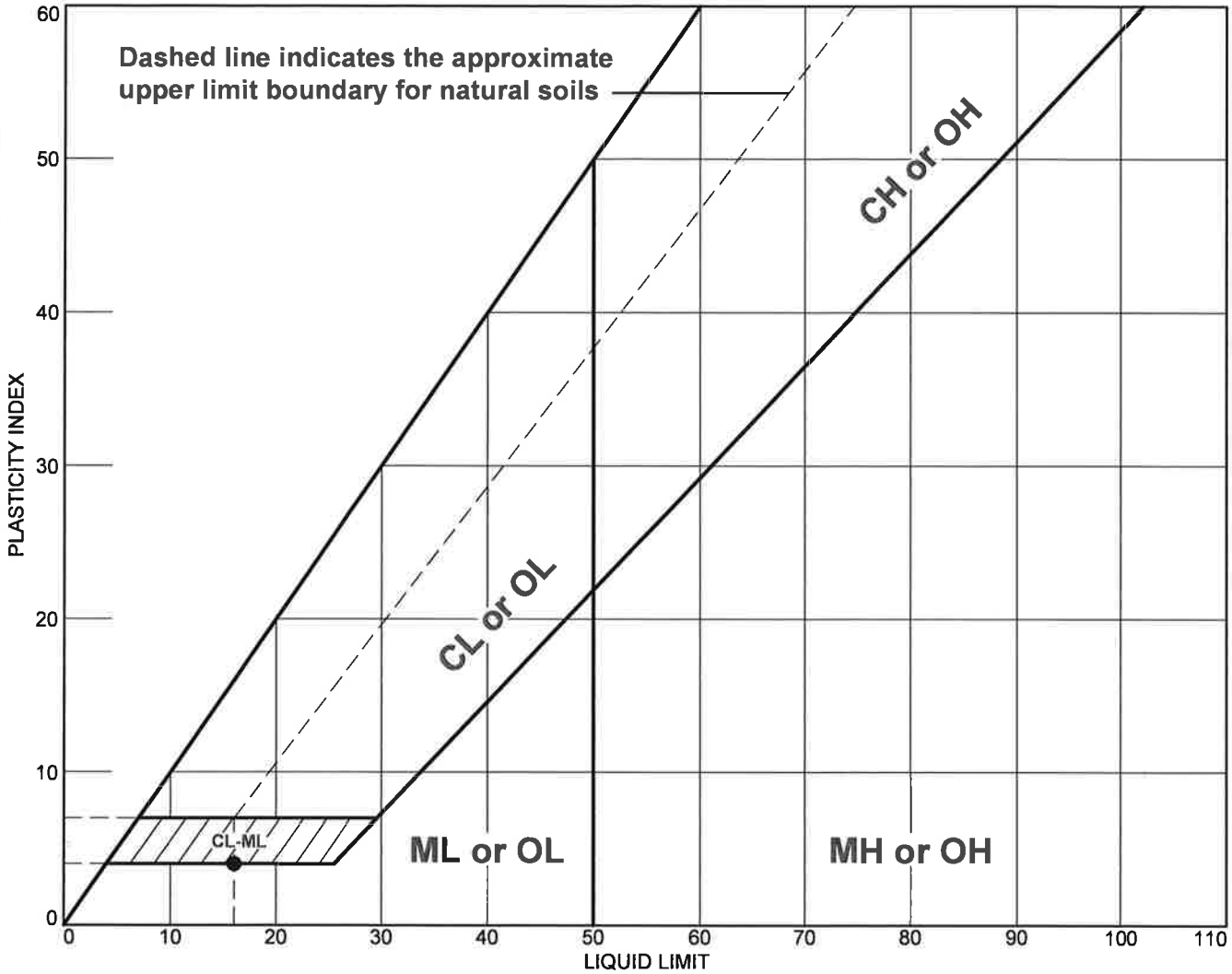
Date Sampled: 9-20-17

Element Materials Technology St. Paul, MN

Client: APPRO Development
Project: Adelman Elko New Market Property
Scott County, Minnesota
Project No: ESP026601P **Figure**

EAR-CONTROLLED DATA

LIQUID AND PLASTIC LIMITS TEST REPORT



	Material Description	Sampled	Tested	Technician	LL	PL	PI	%<#40	USCS
○	SILTY CLAY, gray	9/21/2017	10/5/2017	L. Tran	16	12	4		CL-ML

Project No. ESP026601P **Client:** APPRO Development

Project: Adelman Elko New Market Property

Scott County, Minnesota

○ **Location:** Soil Boring 8 **Depth:** 14'-15.5' **Sample Number:** 08

○ Sample was returned to container after testing.

Element Materials Technology

St. Paul, MN

Checked by: J. Starke

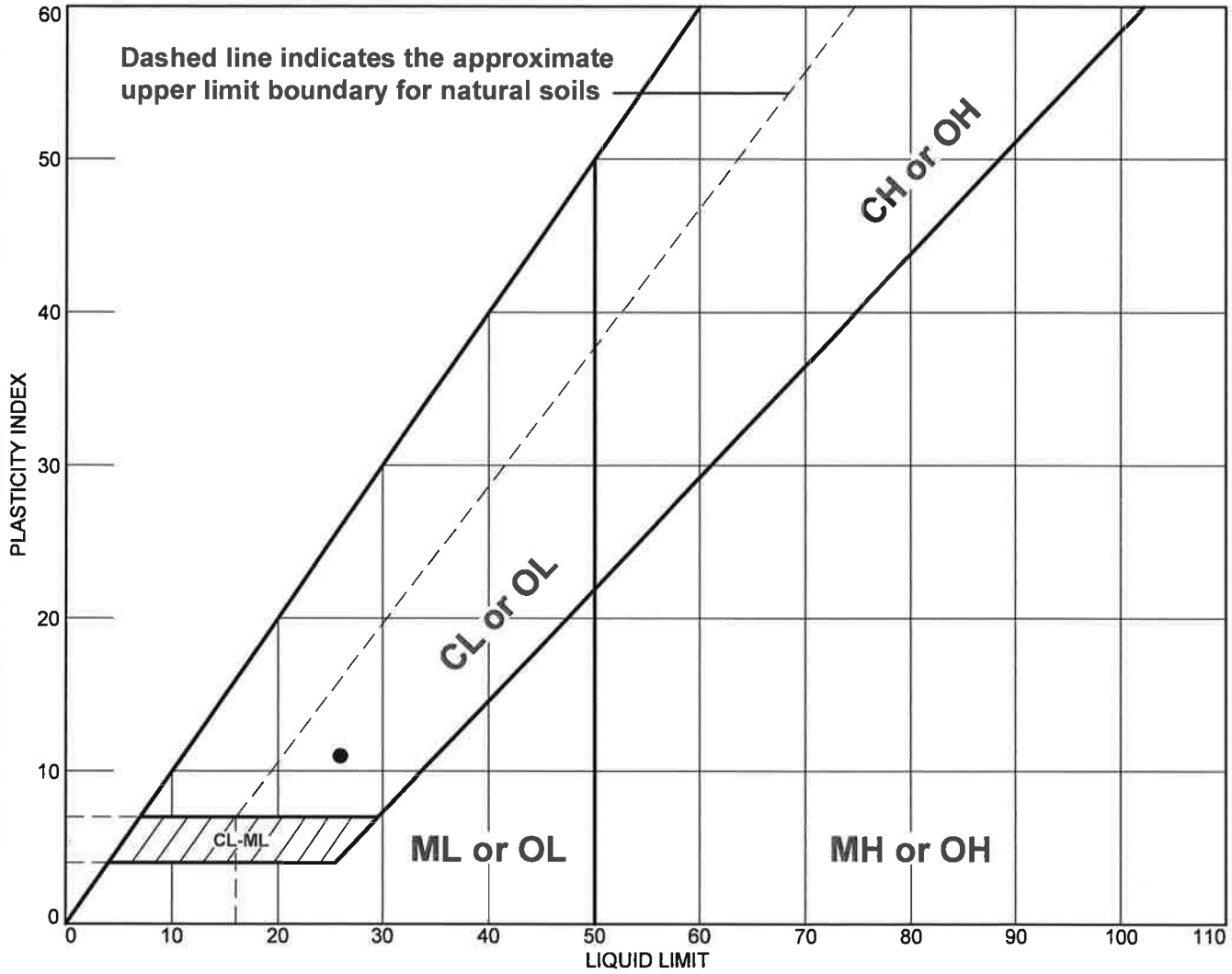
Title: Sr. Geotechnical Engineer

Figure

EAR-CONTROLLED DATA

Tested By: L. Tran **Checked By:** J. Starke, P.E.

LIQUID AND PLASTIC LIMITS TEST REPORT



	Material Description	Sampled	Tested	Technician	LL	PL	PI	%<#40	USCS
○	LEAN CLAY, brown (CL)	9/19/2017	10/5/2017	L.Tran	26	15	11		CL

Project No. ESP026601P **Client:** APPRO Development

Project: Adelman Elko New Market Property

Scott County, Minnesota

○ **Location:** Soil Boring 9 **Depth:** 7'-8.5' **Sample Number:** 05

○ Sample was returned to container after testing.

Element Materials Technology

St. Paul, MN

Checked by: J.Starke

Title: Sr. Geotechnical Engineer

Figure

EAR-CONTROLLED DATA

Tested By: L. Tran **Checked By:** J. Starke, P.E.

SYMBOLS AND TERMINOLOGY ON TEST BORING LOGS

SYMBOLS

Drilling and Sampling

Symbol	Description
HSA	3-1/4" I.D. hollow stem auger
_FA	4", 6" or 10" diameter flight auger
_HA	2", 4" or 6" hand auger
_DC	2-1/2", 4", 5" or 6" steel drive casing
_RC	Size A, B or N rotary casing
PD	Pipe drill or cleanout tube
CS	Continuous split barrel sampling
DM	Drilling mud
JW	Jetting water
SB	2" O.D. split barrel sampling
_L	2-1/2" or 3-1/2" O.D. SB liner sample
_T	2" or 3" thin walled tube sample
3TP	3" thin walled tube using pitcher sampler
_TO	2" or 3" thin walled tube suing Osterberg sampler
W	Wash sample
B	Bag sample
P	Test pit sample
_Q	BQ, NQ, or PQ wireline system
_X	AX, BX, or NX double tube barrel
N	Standard penetration test, blows per foot
CR	Core recovery, percent
WL	Water level
▼	Water level
NMR	No measurement recorded, primarily due to the presence of drilling or coring fluid

Laboratory Testing

Symbol	Description
W	Water content, % (ASTM:D2216)**
D	Dry density, pcf
LL	Liquid limit (ASTM:D4318)
PL	Plastic limit (ASTM:D4318)
	--- Inserts in Last Column (Qu or RQD) ---
Qu	Unconfined compressive strength, psf (ASTM:D2166)
Pq	Penetrometer reading, tsf (ASTM:D1558)
Ts	Torvane reading, tsf
G	Specific gravity (ASTM:D854)
SL	Shrinkage limits (ASTM:D427)
OC	Organic content – Combustion method (ASTM:D2974)
SP	Swell pressure, tsf (ASTM:D4546)
PS	Percent swell under pressure (ASTM:D4546)
FS	Free swell, % (ASTM:D4546)
SS	Shrink swell, % (ASTM:D4546)
pH	Hydrogen ion content – Meter Method (ASTM:D4972)
SC	Sulfate content, parts/million or mg/l
CC	Chloride content, parts/million, or mg/l
C*	One dimensional consolidation (ASTM:D2435)
Qc*	Triaxial compression (ASTM:D2850 and D4767)
D.S.*	Direct shear (ASTM:D3080)
K*	Coefficient of permeability, cm/sec (ASTM:D2434)
P*	Pinhole test (ASTM:D4647)
DH*	Double hydrometer (ASTM:D4221)
MA*	Particle size analysis (ASTM:D422)
R	Laboratory electrical resistivity, ohm-cm (ASTM:G57)
E*	Pressuremeter deformation modulus, tsf (ASTM:D4719)
PM*	Pressuremeter test (ASTM:D4719)
VS*	Field vane shear (ASTM:D2573)
IR*	Infiltrometer test (ASTM:D3385)
RQD	Rock quality designation, percent

* Results shown on attached data sheet or graph
** ASTM designates American Society for Testing and Materials

TERMINOLOGY

Particle Sizes

Type	Size Range
Boulders	> 12"
Cobbles	3" – 12"
Coarse gravel	3/4" – 3"
Fine gravel	#4 sieve – 3/4"
Coarse sand	#4 - #10 sieve
Medium sand	#10 - #40 sieve
Fine sand	#40 - #200 sieve
Silt	100% passing #200 sieve and > 0.005 mm
Clay	100% passing #200 sieve and < 0.005 mm

Soil Layering and Moisture

Term	Visual Observation
Lamination	Up to 1/4" thick stratum
Varved	Alternating laminations of any combination of clay, silt, fine sand, or colors
Lenses	Small pockets of different soils in a soil mass
Stratified	Alternating layers of varying materials or colors
Layer	1/4" to 12" thick stratum
Dry	Powdery, no noticeable water
Moist	Damp, below saturation
Waterbearing	Pervious soil below water
Wet	Saturated, above liquid limit

Gravel Content

Coarse-Grained Soils		Fine-Grained Soils	
% Gravel	Description	% Gravel	Description
2 – 15	A little gravel	< 5	Trace of gravel
16 – 49	With gravel	5 – 15	A little gravel
		16 – 30	With gravel
		31 – 49	Gravelly

Standard Penetration Resistance

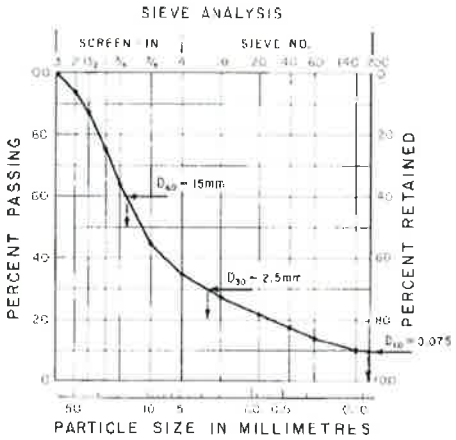
Cohesionless Soils		Cohesive Soils	
N-Value	Relative Density	N-Value	Consistency
0 – 4	Very loose	0 – 4	Very soft
5 – 10	Loose	5 – 8	Soft
11 – 30	Medium dense	9 – 15	Firm
31 – 50	Dense	16 – 30	Hard
> 50	Very dense	> 30	Very hard

CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES

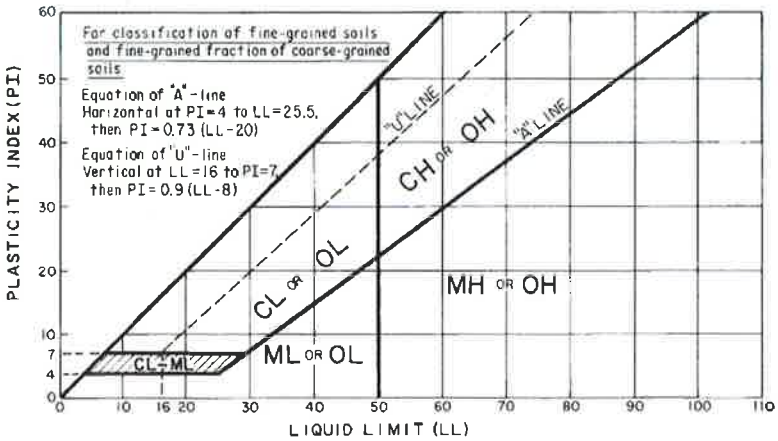
ASTM D2487 (Unified Soil Classification System)

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests[A]				Soil Classification	
				Group Symbol	Group Name[B]
COARSE-GRAINED SOILS	Gravels (More than 50 % of coarse fraction retained on No. 4 sieve)	Clean Gravels (Less than 5 % fines[C])	Cu ≥ 4 and 1 ≤ Cc ≤ 3[D]	GW	Well-graded gravel[E]
			Cu < 4 and/or [Cc < 1 or Cc > 3][D]	GP	Poorly graded gravel[E]
		Gravels with Fines (More than 12 % fines[C])	Fines classify as ML or MH	GM	Silty gravel[E,F,G]
More than 50 % retained on No. 200 sieve			Fines classify as CL or CH	GC	Clayey gravel[E,F,G]
	Sands (50 % or more of coarse fraction passes No. 4 sieve)	Clean Sands (Less than 5 % fines[H])	Cu ≥ 6 and 1 ≤ Cc ≤ 3[D]	SW	Well-graded sand[I]
			Cu < 6 and/or [Cc < 1 or Cc > 3][D]	SP	Poorly graded sand[I]
		Sands with Fines (More than 12 % fines[H])	Fines classify as ML or MH	SM	Silty sand[F,G,I]
			Fines classify as CL or CH	SC	Clayey sand[F,G,I]
FINE-GRAINED SOILS	Silts and Clays Liquid limit less than 50	inorganic	PI > 7 and plots on or above "A" line[J]	CL	Lean clay[K,L,M]
			PI < 4 or plots below "A" line[J]	ML	Silt[K,L,M]
		organic	$\frac{\text{Liquid limit – oven dried}}{\text{Liquid limit – not dried}} < 0.75$	OL	Organic clay[K,L,M,N] / Organic silt[K,L,M,O]
50 % or more passes the No. 200 sieve	Silts and Clays Liquid limit 50 or more	inorganic	PI plots on or above "A" line	CH	Fat clay[K,L,M]
			PI plots below "A" line	MH	Elastic silt[K,L,M]
		organic	$\frac{\text{Liquid limit – oven dried}}{\text{Liquid limit – not dried}} < 0.75$	OH	Organic clay[K,L,M,P] / Organic silt[K,L,M,Q]
HIGHLY ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor			PT	Peat

[A] Based on the material passing the 3-in. (75-mm) sieve.
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12 % fines require dual symbols:
GW-GM well-graded gravel with silt
GW-GC well-graded gravel with clay
GP-GM poorly graded gravel with silt
GP-GC poorly graded gravel with clay
[D] $Cu = D_{60}/D_{10}$ $Cc = (D_{30})^2 / D_{10} \times D_{60}$
[E] If soil contains ≥15 % sand, add "with sand" to group name.
[F] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[G] If fines are organic, add "with organic fines" to group name.
[H] Sands with 5 to 12 % fines require dual symbols:
SW-SM well-graded sand with silt
SW-SC well-graded sand with clay
SP-SM poorly graded sand with silt
SP-SC poorly graded sand with clay
[I] If soil contains ≥15 % gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in hatched area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to <30 % plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥30 % plus No. 200, predominantly sand, add "sand" to group name.
[M] If soil contains ≥30 % plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.



$Cu = \frac{D_{60}}{D_{10}} = \frac{15}{0.075} = 200$ $Cc = \frac{(D_{30})^2}{D_{60} \times D_{10}} = \frac{(2.5)^2}{0.075 \times 15} = 5.6$



FIELD EXPLORATION PROCEDURES

Soil Sampling

Soil sampling was performed in accordance with ASTM D 1586. Using this procedure, a 2" O.D. split barrel sampler is driven into the soil by a 140 pound weight falling 30". After an initial set of 6", the number of blows required to drive the sampler an additional 12" is known as the penetration resistance, or N value. The N value is an index of the relative density of cohesionless soils and the consistency of cohesive soils. Thin wall tube samples were obtained according to ASTM D 1587 where indicated by the appropriate symbol on the boring logs. Rock core samples, if taken, were obtained by rotary drilling in accordance with ASTM D 2113. Power auger borings, if performed, were done in general accordance with ASTM D 1452.

Soil Classification

As the samples were obtained in the field, they were visually and manually classified by the crew chief in accordance with ASTM D 2488. Representative portions of the samples were then returned to the laboratory for further examination and for verification of the field classification. Logs of the borings indicating the depth and identification of the various strata, the N value, the laboratory test data, water level information and pertinent information regarding the method of maintaining and advancing the drill holes are attached. The descriptive terminology and symbols used on the boring logs are also attached.

PREREQUISITES FOR SOUND ENGINEERING PRACTICE

In order to properly evaluate the foundation soils at a building site, it is imperative for our firm to know exactly where the building will be placed, its size, and the elevation of the foundation elements. Without this information, a judgment regarding the adequacy of the preparatory foundation earthwork is not possible.

This project data is especially critical in situations when the excavation extends below the footing grade and compacted fill is required to attain building elevations. In these situations, the excavation would require lateral oversizing to provide suitable lateral distribution of the footing loads.

Offset batter boards of the building lines stakes provide the best on-site verification of the building location and size. It must be recognized that Element St. Paul does not practice in the field of surveying. Therefore, we must rely on staking by others. If Element St. Paul is required to perform the survey, we will retain a licensed surveyor and invoice our client for the amount per our current fee schedule. Provision of the building foundation plans is also important so that we may properly perform our engineering judgments.

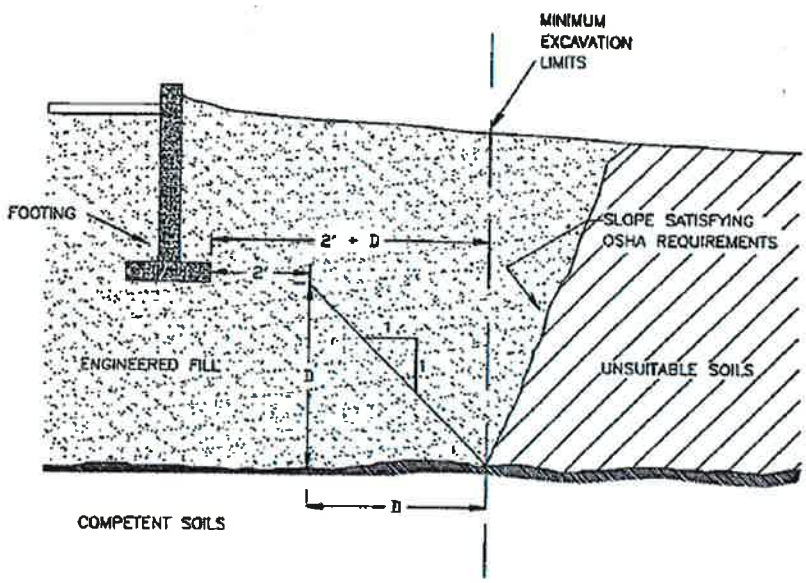
If the construction is redesigned or otherwise moved subsequent to our work, we should be informed so our firm can assess if additional engineering observation is required or suggest sound engineering alternatives. We cannot be responsible for any soil foundation system if the structure has been relocated with respect to the excavation subsequent to our observations.

GENERAL OVERSIZE REQUIREMENTS

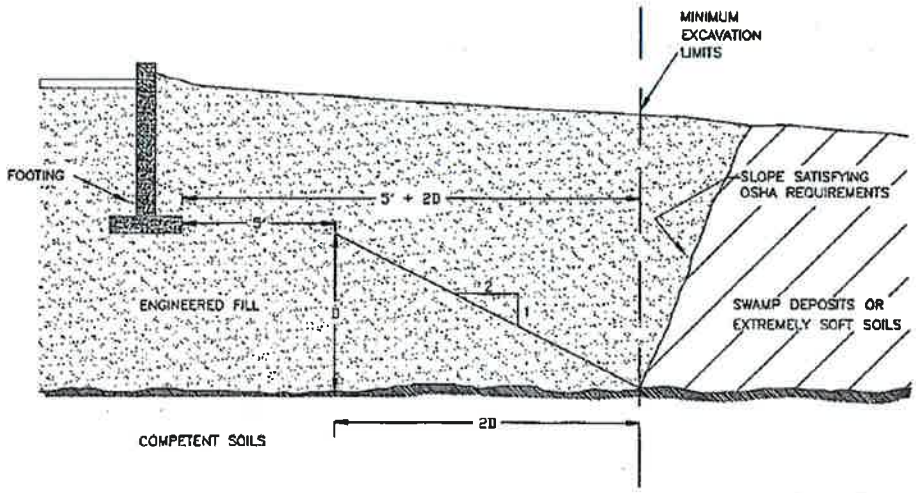
Because of the lateral distribution of foundation pressures with depth, lateral oversizing is required in an excavation where unsuitable soils extend below planned footing grade. The lateral oversize scheme provides compacted fill materials beyond the exterior footing limits where fill is required below footing elevation. The degree of lateral oversizing is dependent upon the surrounding soil's ability to resist lateral movement. Although we generally recommend the lateral oversize be at least 2' plus the depth of fill below bottom of footing elevation, each project must be evaluated separately. For example, in extremely compressible swamp or organic soils, the oversize should be increased to 5' plus twice the depth of excavation below footing grade. Due to the variations in the required oversize, an engineering judgment must be made to establish the necessary extent of the oversizing. Diagrams illustrating typical oversizing dimensions are included in this report.

EXCAVATION OVERSIZING

NORMAL EXCAVATION

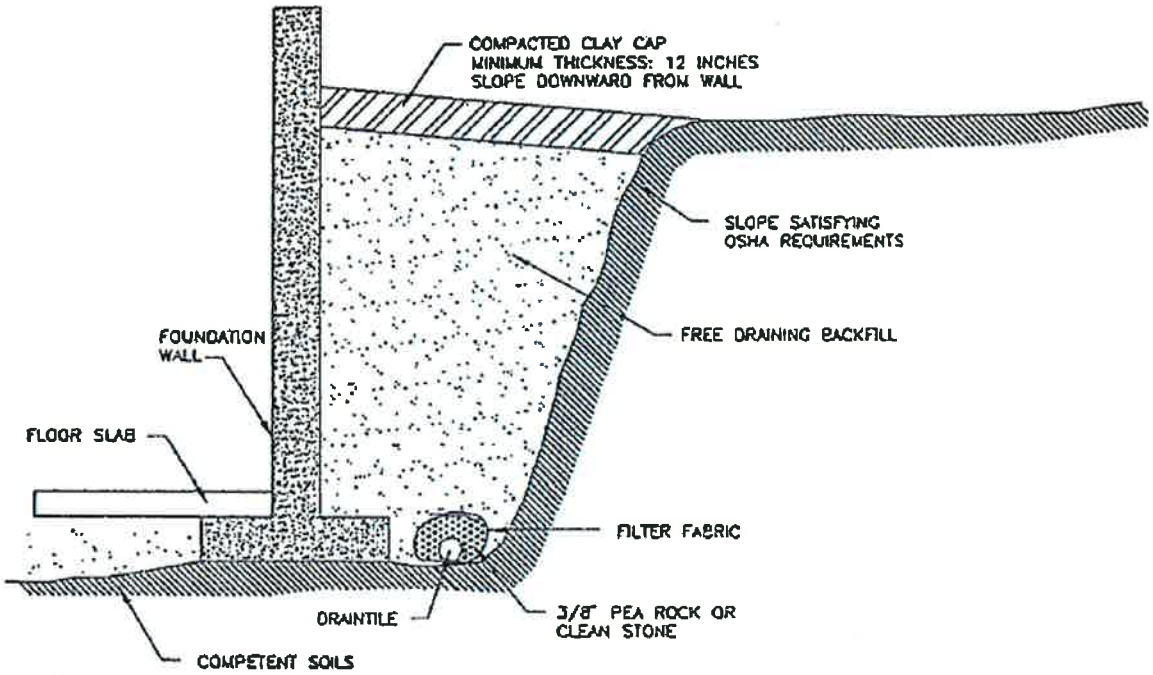


SWAMP OR EXTREMELY SOFT SOIL EXCAVATION



NOT TO SCALE

TYPICAL EXTERIOR DRAINTILE SYSTEM



NOT TO SCALE

CONSTRUCTION OBSERVATIONS AND TESTING

The recommendations made in this report have been made based on the subsurface conditions found in the borings. It is possible that there are soil and water conditions on site that were not represented by the borings. Consequently, on-site observation during construction is considered integral to the successful implementation of the recommendations. We believe that qualified field personnel need to be on site at the times outlined below to observe the site conditions and effectiveness of the construction.

We recommend that the completed excavation and prepared subgrade be observed and tested by a soils engineer/technician prior to fill placement or construction of any foundation elements. These observations would be necessary to judge if all unsuitable materials have been removed from within the planned construction area and that an appropriate degree of lateral oversize has been provided for in those areas where fill will be placed below the bottom of foundation grade.

We recommend a representative number of field density tests be taken in all engineered fill placed to aid in judging its suitability. We suggest that at least one density test be performed for at least every 2,500 square feet of engineered fill placed for every 2' of fill depth. Additional tests should be taken where confined areas are compacted. Any proposed fill material should be submitted to the laboratory for tests to check compliance with our recommendations and project specifications.

PRECAUTIONS FOR EXCAVATING AND REFILLING DURING COLD WEATHER

The winter season in this area presents specific problems for foundation construction. Soils that are allowed to freeze undergo a moisture volume expansion, resulting in loss of density. These frost-expanded soils will consolidate upon thawing, causing settlement of any structure supported on them. To prevent this settlement, frost should not be allowed to penetrate into the soils below any proposed structure.

Ideally, winter excavation should be limited to areas small enough to be refilled to grade higher than footing grade on the same day. Typically, these areas should be filled to floor grade. Trenching back down to unfrozen soils for foundation construction can then be performed just prior to footing placement. The excavated trenches should be protected from freezing by means of insulating or heating during foundation construction. Backfilling of the foundation trenches should be performed immediately after the below-grade foundation construction is finished. In addition, any interior footings or footings designed without frost protection should be extended below frost depth, unless adequate precautions are taken to prevent frost intrusion until the building can be enclosed and heated.

In many cases, final grade cannot be attained in one day's time, even though small areas are worked. In the event final grade cannot be attained in one day's time, frost can be expected to develop overnight. Leaving a layer of loose soil on top of the compacted material overnight can minimize the depth of frost penetration. However, any frost that forms in this loose layer, or snow that accumulates, should be completely removed from the fill area prior to compaction and additional soil placement. Frozen soils or soils containing frozen material or snow should never be used as fill material.

After the structure has been enclosed, all floor slab areas should be subjected to ample periods of heating to allow thawing of the soil system. Alternatively, the frozen soil can be completely removed and be replaced with an engineered fill. The floor slab areas should be checked at random and representative locations for remnant areas of frost and density tests should be performed to document fill compaction to slab placement.

Due to the potential problems associated with fill placement during cold weather, a full-time, on-site soils technician should monitor any filling operations. Full-time monitoring aids in detecting areas of frozen material, or potential problems with frozen material within the fill, so the appropriate measures can be taken. The choice of fill material is particularly important during cold weather, since clean granular fill material can be placed and compacted more efficiently than silty and clayey soils. In addition, greater magnitudes of heaving can be expected with freezing of the more frost susceptible silts and clays.

If more specific frost information or cold weather data concerning other construction materials is required, please contact us.

REQUIREMENTS FOR FHA EARTHWORK TESTING

When the Federal Housing Administration (FHA) becomes involved in the financing of a residential structure, it imposes certain requirements on the owner/developer/ constructor for observation and testing which must be performed during earthwork operations. These requirements are detailed in FHA Data Sheet 79G, "Land Development with Controlled Earthwork." Full compliance is mandatory if FHA approval is to be obtained.

The primary areas for compliance with Data Sheet 79G are as follows:

1. No construction of any type (footings or floor slabs) is permitted on old fill.

2. A soils engineer must observe the excavation to competent natural soils prior to the placement of any fill material or footing construction.

3. Soil compaction tests must be performed in the compacted fill during placement, not afterwards, at 1' to 2' vertical intervals from the bottom of the excavation to proposed final floor slab grades.

4. Proper staking must be provided in the field to allow the soils engineer to judge the suitability of the lateral excavation oversize.

5. The elevations of foundations, slabs and bottoms of excavations are to be included in the soils engineer's report. These elevations must be referenced to mean sea level elevations.

6. A soils engineer must verify the basement slab and groundwater level are separated by a minimum of four (4) feet.

Prior to our approval on an excavation, information regarding the desired building pad dimensions (or the maximum possible house size), lot set-back information and final slab and footing grades must be provided to us. This information is needed to judge if adequate oversizing is provided for the expected foundations, and to establish the necessary sequence of compaction testing within the subsequent fill.

It has been our experience that FHA will deny financing if the above requirements are not completely satisfied. Therefore, it is important the contractor/developer provide our firm with adequate information regarding the proposed construction before and during our involvement.

RISKS ASSOCIATED WITH EXCAVATION UNDER WATER

For many projects, an excavate/refill program is used to prepare building areas prior to the start of construction. As variations in soil conditions often occur in very short distances, the bottom of any excavation should be observed by an engineer to judge the competency of the natural soils for fill and footing support. In some cases, the required excavation may extend below the groundwater level. If the excavation extends below groundwater level, a temporary dewatering system is necessary to lower the water level to an elevation below the required excavation bottom. In some situations, the quantity of water is such that a temporary dewatering system cannot economically control the groundwater. In these situations, the excavations are sometimes performed below the water level using a dragline or backhoe to remove the inferior soils, and the initial lifts of fill are placed into standing water. This procedure is not recommended because of the risk involved.

Excavating and refilling below water involves risks of trapping compressible or otherwise unsuitable materials within or below the new fill system. Dislodged excavated materials can be covered by the advancing fill soils, or the excavating equipment can miss localized deeper pockets of compressible soils. For this reason, approaching the earthwork without dewatering requires that the owner accept the risk of some future building settlement. This risk results from the engineer's ability to observe the excavation bottom during the excavation and initial filling operations. In areas where the excavation terminates below the water table, observations are strictly limited to observing the soils recovered in the bucket of the backhoe or dragline, and possibly probing the excavation bottom if the depth of water is not too great. If the excavation operations are to proceed in this manner, it is necessary that the owner fully understands and accepts the risks involved.

While these risks cannot be eliminated, there are a number of procedures that can be used to reduce the risk of future settlement if the excavation proceeds without the aid of dewatering. We strongly recommend the following procedures are employed during the excavation and refilling operations:

1. A thorough soil boring program should be performed prior to any excavation. This program would establish approximate required bottom of excavation elevations and provide information regarding the classification of acceptable soils anticipated at the bottom of the excavation.

2. A backhoe or dragline operator experienced with this type of excavation procedure should perform the excavation work.

3. An experienced soil engineer should be retained to provide full-time observations during all excavation and refilling operations below the water level.

4. A suitable amount of lateral oversize should be provided in the excavation bottom. Reference should be made to the preliminary soil boring report, the job specifications, or the soil engineer's recommendations for information regarding the extent of oversize required for the particular project.

5. Any fill placed below water, and to an elevation of at least 2' above the water level, should consist of a clean, free-draining sand containing less that 40% passing the #40 sieve and less than 5% passing the #200 sieve.

6. The fill should be stockpiled at the water's edge and should be advanced into the excavation by a bulldozer imparting a strong, downward "scouring" action to advance the fill along the excavation bottom. This scouring action would tend to force remnant pieces of unsuitable material ahead of the filling process where they could be periodically removed by the excavation equipment. Excessive amounts of unsuitable material collecting in front of the fill could impede the ability of the fill to scour the excavation bottom.

7. A number of standard penetration borings should be put down through the fill after it has been brought to a level above the groundwater table. These borings are instrumental in documenting the effectiveness of the removal of the unsuitable materials as well as judging the density of the newly placed fill at depth.

Exhibit C:

Minnesota Wetland Conservation Act and U.S. Army Corps of Engineers Approvals

Minnesota Wetland Conservation Act
Notice of Decision

Local Government Unit (LGU)	Address
City of Elko New Market	**601 Main Street** **Elko New Market, MN 55054**

1. PROJECT INFORMATION

Applicant Name	Project Name	Date of Application	Application Number
Adelmann Farms New Market, LLC – Dave Adelmann	**Aldemann Family Property**	**10/15/18**	**ELNM3-18**
☒ **Attach site locator map.**			

Type of Decision:

☒ **Wetland Boundary or Type** ☐ No-Loss ☐ Exemption ☐ Sequencing
☐ Replacement Plan ☐ Banking Plan

Technical Evaluation Panel Findings and Recommendation (if any):

☐ Approve ☐ Approve with conditions ☐ Deny

Summary (or attach):

2. LOCAL GOVERNMENT UNIT DECISION

Date of Decision: **11/26/18**

☒ **Approved** ☐ Approved with conditions (include below) ☐ Denied

LGU Findings and Conclusions (attach additional sheets as necessary):

ISG, Inc. has submitted a Type and Boundary Application on behalf of Adelmann Farms New Market, LCC. for properties on the north and south side of CR 2 on the west side of the I-35 intersection. The report identifies 22 wetlands. The applicant has requested a type and boundary concurrence.

A TEP meeting was held on November 7, 2018 with representatives from the SWCD, BWSR, LGU and applicant present. The site visit concluded that the following changes needed to be made:

- **Expand the northeast side of wetland A**
- **Expand northwest side and straighten the south end of wetland B**
- **Connect wetland N and V**
- **Extend the southeast finger of wetland N**
- **Bump out the western side of wetland T**
- **Remove fringe wetland area along northern portion of the tributary in the northwest section of the study area**
- **Add drainage feature between wetlands s and T, this feature is not a wetland**

ISG has submitted an accurate update to these requests, which is attached. This decision does not reflect any decisions made through section 404 of the CWA.

For Replacement Plans using credits from the State Wetland Bank:

Bank Account #	Bank Service Area	County	Credits Approved for Withdrawal (sq. ft. or nearest .01 acre)

Replacement Plan Approval Conditions. In addition to any conditions specified by the LGU, the approval of a Wetland Replacement Plan is conditional upon the following:

☐ **Financial Assurance:** For project-specific replacement that is not in-advance, a financial assurance specified by the LGU must be submitted to the LGU in accordance with MN Rule 8420.0522, Subp. 9 (List amount and type in LGU Findings).

☐ **Deed Recording:** For project-specific replacement, evidence must be provided to the LGU that the BWSR "Declaration of Restrictions and Covenants" and "Consent to Replacement Wetland" forms have been filed with the county recorder's office in which the replacement wetland is located.

☐ **Credit Withdrawal:** For replacement consisting of wetland bank credits, confirmation that BWSR has withdrawn the credits from the state wetland bank as specified in the approved replacement plan.

Wetlands may not be impacted until all applicable conditions have been met!

LGU Authorized Signature:

Signing and mailing of this completed form to the appropriate recipients in accordance with 8420.0255, Subp. 5 provides notice that a decision was made by the LGU under the Wetland Conservation Act as specified above. If additional details on the decision exist, they have been provided to the landowner and are available from the LGU upon request.		
Name **Dan Donayre**	Title **Wetland Specialist**	
Signature	Date **11/26/18**	Phone Number and E-mail **507-625-4171 ext 2646** **dando@bolton-menk.com**

THIS DECISION ONLY APPLIES TO THE MINNESOTA WETLAND CONSERVATION ACT. Additional approvals or permits from local, state, and federal agencies may be required. Check with all appropriate authorities before commencing work in or near wetlands.

Applicants proceed at their own risk if work authorized by this decision is started before the time period for appeal (30 days) has expired. If this decision is reversed or revised under appeal, the applicant may be responsible for restoring or replacing all wetland impacts.

This decision is valid for three years from the date of decision unless a longer period is advised by the TEP and specified in this notice of decision.

3. APPEAL OF THIS DECISION

Pursuant to MN Rule 8420.0905, any appeal of this decision can only be commenced by mailing a petition for appeal, including applicable fee, within thirty (30) calendar days of the date of the mailing of this Notice to the following as indicated:

Check one:

☐ Appeal of an LGU staff decision. Send petition and $_____ fee (if applicable) to:	☐ Appeal of LGU governing body decision. Send petition and $500 filing fee to: Executive Director Minnesota Board of Water and Soil Resources 520 Lafayette Road North St. Paul, MN 55155

4. LIST OF ADDRESSEES

- ☒ **SWCD TEP member: Troy Kuphal**
- ☒ **BWSR TEP member: Ben Carlson**
- ☒ **LGU TEP member (if different than LGU Contact): Renee Christianson**
- ☒ **DNR TEP member: Becky Horton**
- ☐ DNR Regional Office (if different than DNR TEP member)
- ☐ WD or WMO (if applicable):
- ☒ **Applicant (notice only) and Landowner (if different)**
- ☐ Members of the public who requested notice:

- ☒ **Corps of Engineers Project Manager (notice only): TBD**
- ☐ BWSR Wetland Bank Coordinator (wetland bank plan decisions only)

5. MAILING INFORMATION

- For a list of BWSR TEP representatives: www.bwsr.state.mn.us/aboutbwsr/workareas/WCA_areas.pdf
- For a list of DNR TEP representatives: www.bwsr.state.mn.us/wetlands/wca/DNR_TEP_contacts.pdf
- Department of Natural Resources Regional Offices:

NW Region:	NE Region:	Central Region:	Southern Region:
Reg. Env. Assess. Ecol. Div. Ecol. Resources 2115 Birchmont Beach Rd. NE Bemidji, MN 56601	Reg. Env. Assess. Ecol. Div. Ecol. Resources 1201 E. Hwy. 2 Grand Rapids, MN 55744	Reg. Env. Assess. Ecol. Div. Ecol. Resources 1200 Warner Road St. Paul, MN 55106	Reg. Env. Assess. Ecol. Div. Ecol. Resources 261 Hwy. 15 South New Ulm, MN 56073

For a map of DNR Administrative Regions, see: http://files.dnr.state.mn.us/aboutdnr/dnr_regions.pdf

- For a list of Corps of Project Managers: www.mvp.usace.army.mil/regulatory/default.asp?pageid=687 or send to:

  US Army Corps of Engineers
  St. Paul District, ATTN: OP-R
  180 Fifth St. East, Suite 700
  St. Paul, MN 55101-1678

- For Wetland Bank Plan applications, also send a copy of the application to:

  Minnesota Board of Water and Soil Resources
  Wetland Bank Coordinator
  520 Lafayette Road North
  St. Paul, MN 55155

6. ATTACHMENTS

In addition to the site locator map, list any other attachments:

- ☒ **Location Map**
- ☒ **Final Delineation Figures**
- ☐
- ☐
- ☐

DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
180 FIFTH STREET EAST, SUITE 700
ST. PAUL, MN 55101-1678

February 8, 2019

REPLY TO ATTENTION OF
REGULATORY BRANCH

Regulatory File No. 2018-03159-JTB

Adelmann Farms New Market, LLC
c\o Dave Adelmann
8640 Harriet Avenue
Bloomington, Minnesota 55420

Dear Mr. Adelmann:

This letter is in response to correspondence submitted by ISG on your behalf, requesting Corps of Engineers (Corps) concurrence with the delineation of aquatic resources completed on the 242.5-acre parcel in New Market Township. The project site is in Sections 23 and 26, Township 113 North, Range 21 West, Scott County, Minnesota.

We have reviewed the wetland delineation report dated September 11, 2018, and determined that the limits of the aquatic resources have been accurately identified in accordance with current agency guidance including the *Corps of Engineers Wetland Delineation Manual* (1987 Manual) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region. This concurrence is only valid for the review area shown on the enclosed figures labeled MVP-2018-03159-JTB Page 1 of 7 through 7 of 7. The boundaries shown on the enclosed figures accurately reflect the limits of the aquatic resources in the review area.

This concurrence may generally be relied upon for five years from the date of this letter. However, we reserve the right to review and revise our concurrence in response to changing site conditions, information that was not considered during our initial review, or off-site activities that could indirectly alter the extent of wetlands and other resources on-site. Our concurrence may be renewed at the end of this period provided you submit a written request and our staff are able to verify that the determination is still valid.

No jurisdictional determination was prepared for this project. While not required, you may request a jurisdictional determination from the Corps contact indicated below.

Please note that the discharge of dredged or fill material into waters of the United States without a Department of the Army permit could subject you to an enforcement action. Receipt of a permit from a state or local agency does not obviate the requirement for obtaining a Department of the Army permit.

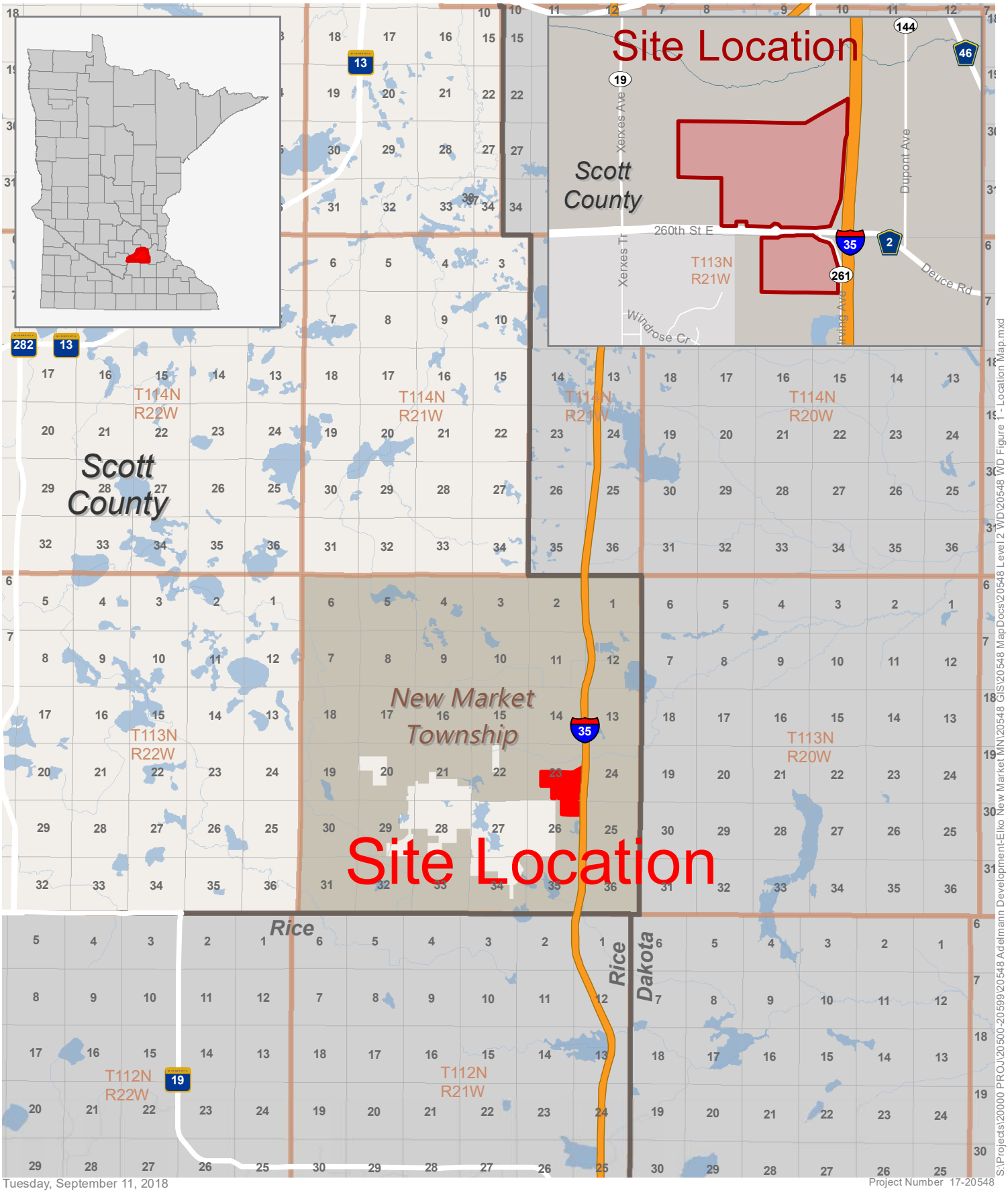
If you have any questions, please contact me in our St. Paul office at (651) 290-5446 or Justin.T.Berndt@usace.army.mil. In any correspondence or inquiries, please refer to the Regulatory file number shown above.

Sincerely,

Justin Berndt
Project Manager

Enclosure

cc:
Lucas Mueller, ISG
Travis Fristed, ISG
Dan Donayre, LGU
Ben Carlson, BWSR



Tuesday, September 11, 2018

Project Number 17-20548

0 6,000 12,000 Feet

1 in = 12,000 ft

N

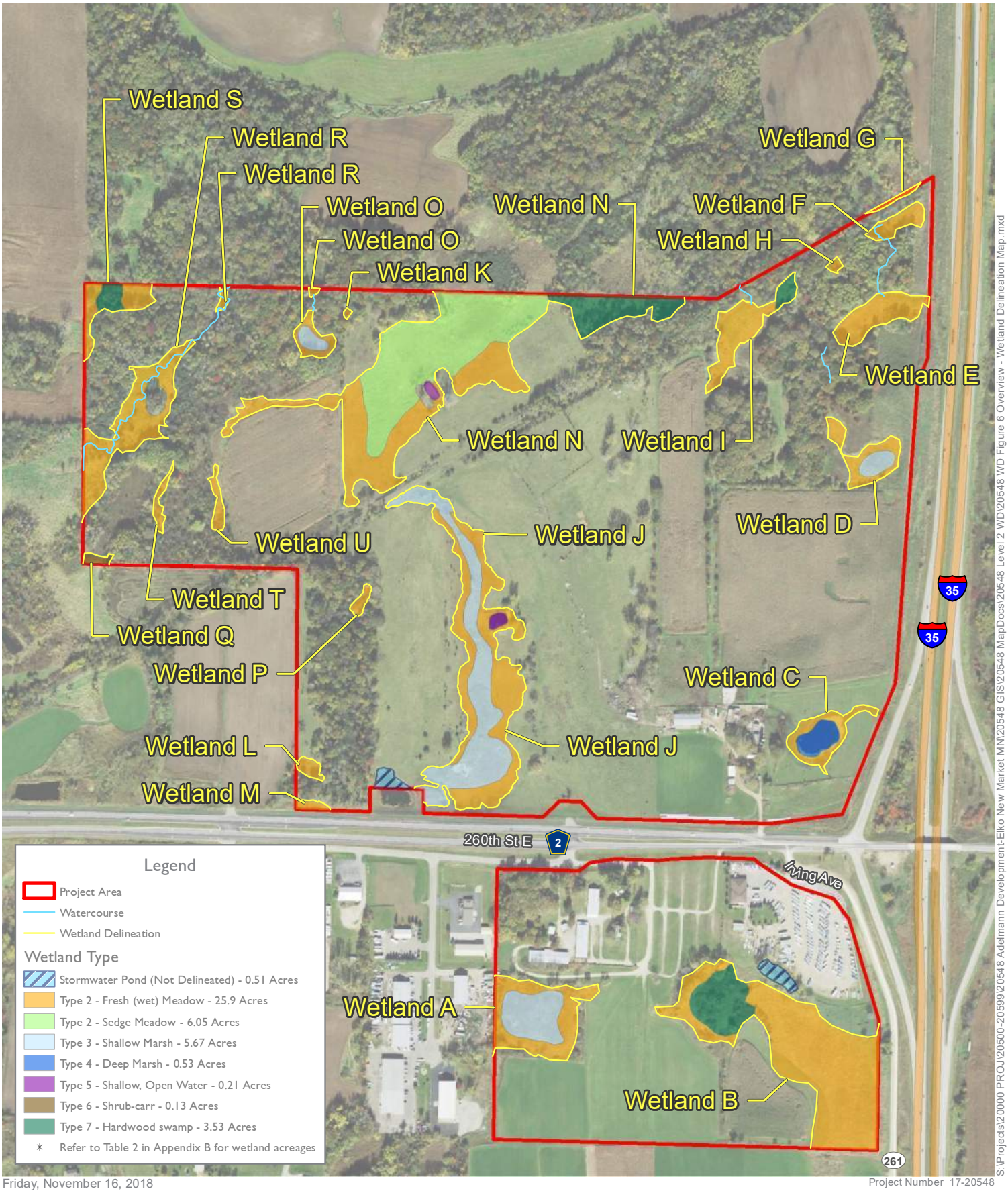
Project Location Map

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Municipalities (MN DOT, 6/24/2016)
Lakes (MN DNR, July, 2008)
Counties (MN DNR, July 2013)
PLSS (MnGeo/USGS)

ISG



Friday, November 16, 2018

Project Number 17-20548

0 300 600 Feet

1 in = 601 ft

N

Figure 6

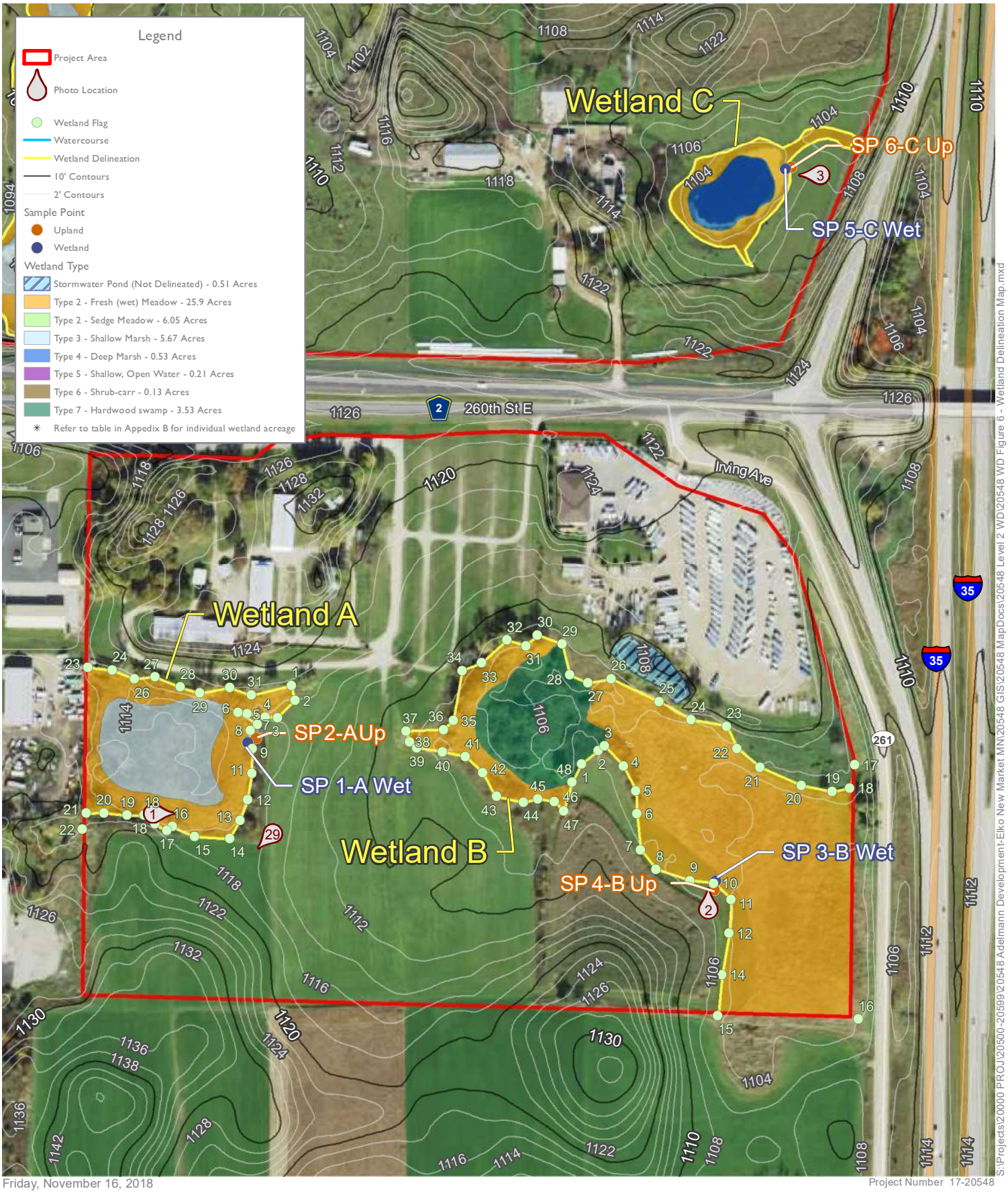
Wetland Delineation Overview Map

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Orthophoto (MnGeo WMS, 2017)
Wetland Delineation (ISG, 2018)

ISG



Friday, November 16, 2018

Project Number 17-20548

S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 Level 2 WD\20548 WD Figure 6 - Wetland Delineation Map.mxd

0 150 300 Feet

1 in = 300 ft

N

Figure 6a

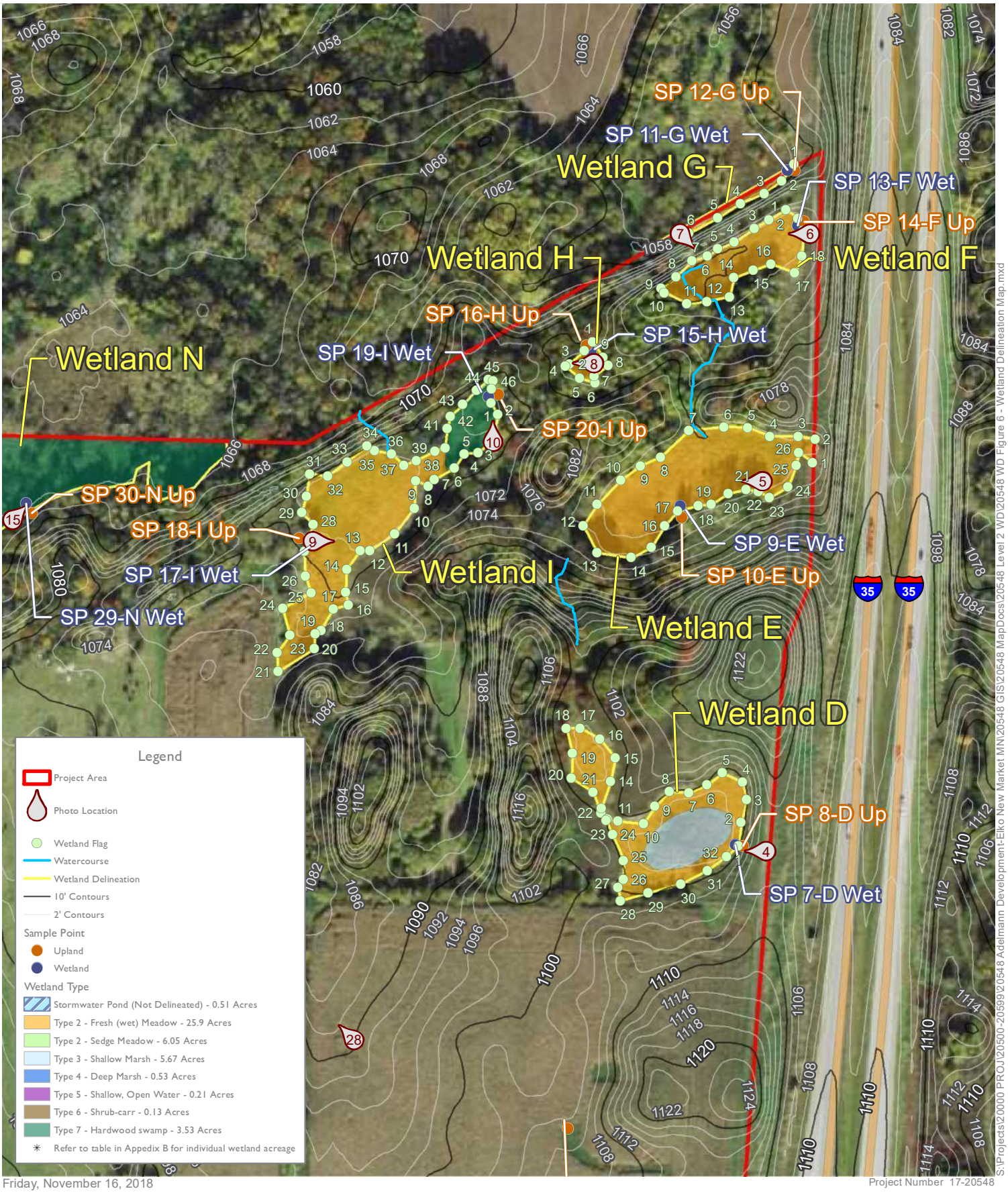
Wetland Delineation Map

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Orthophoto (MnGeo WMS, 2017)
Contours (MnGeo LiDAR, 2011)
Wetland Delineation (ISG, 2018)

ISG



Friday, November 16, 2018

Project Number 17-20548

0 125 250 Feet

1 in = 250 ft

N

Figure 6b

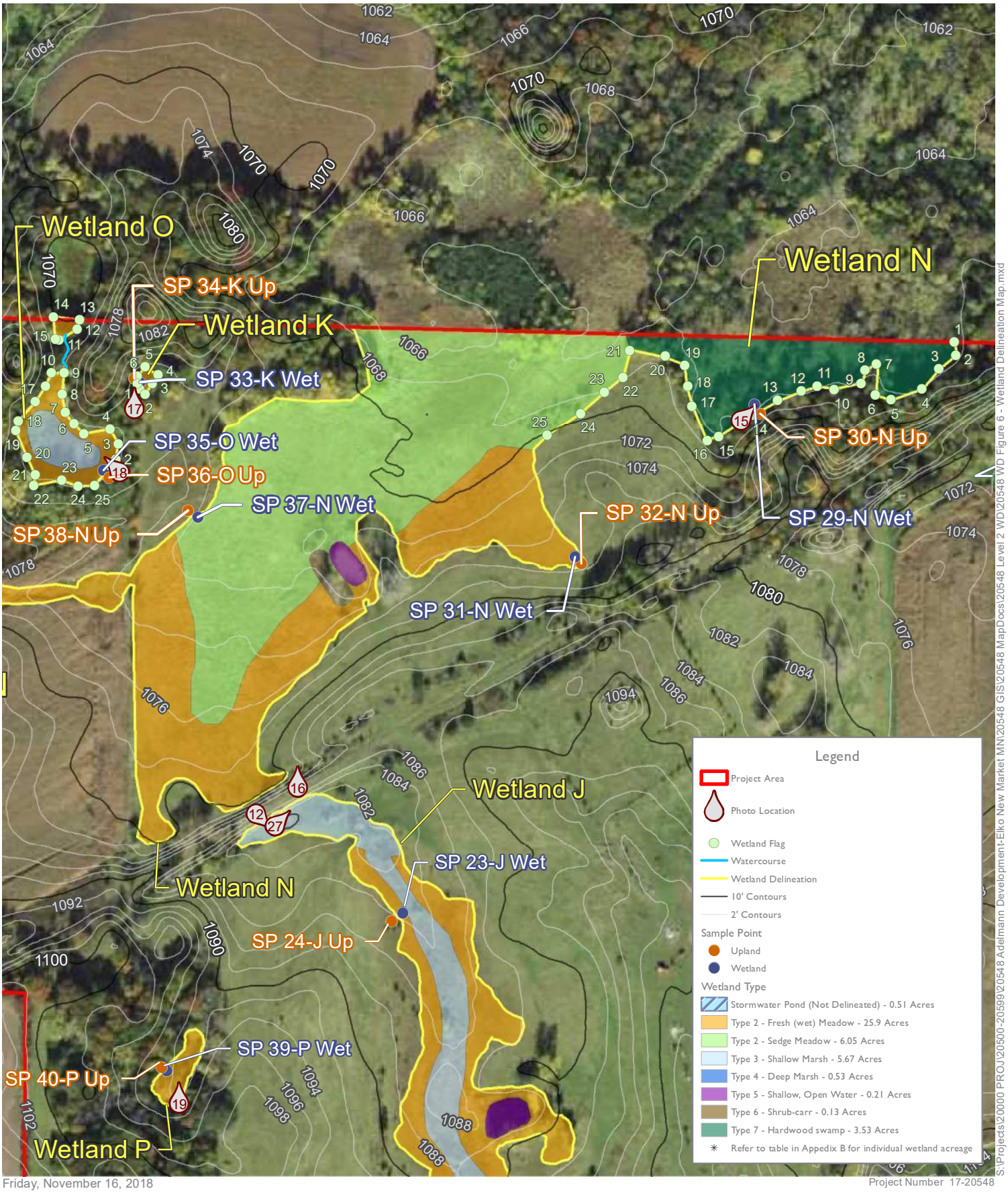
Wetland Delineation Map

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Orthophoto (MnGeo WMS, 2017)
Contours (MnGeo LiDAR, 2011)
Wetland Delineation (ISG, 2018)

ISG



Friday, November 16, 2018

Project Number 17-20548

S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 Level 2 WD\20548 WD Figure 6 - Wetland Delineation Map.mxd

0 125 250 Feet

1 in = 250 ft

N

Figure 6c

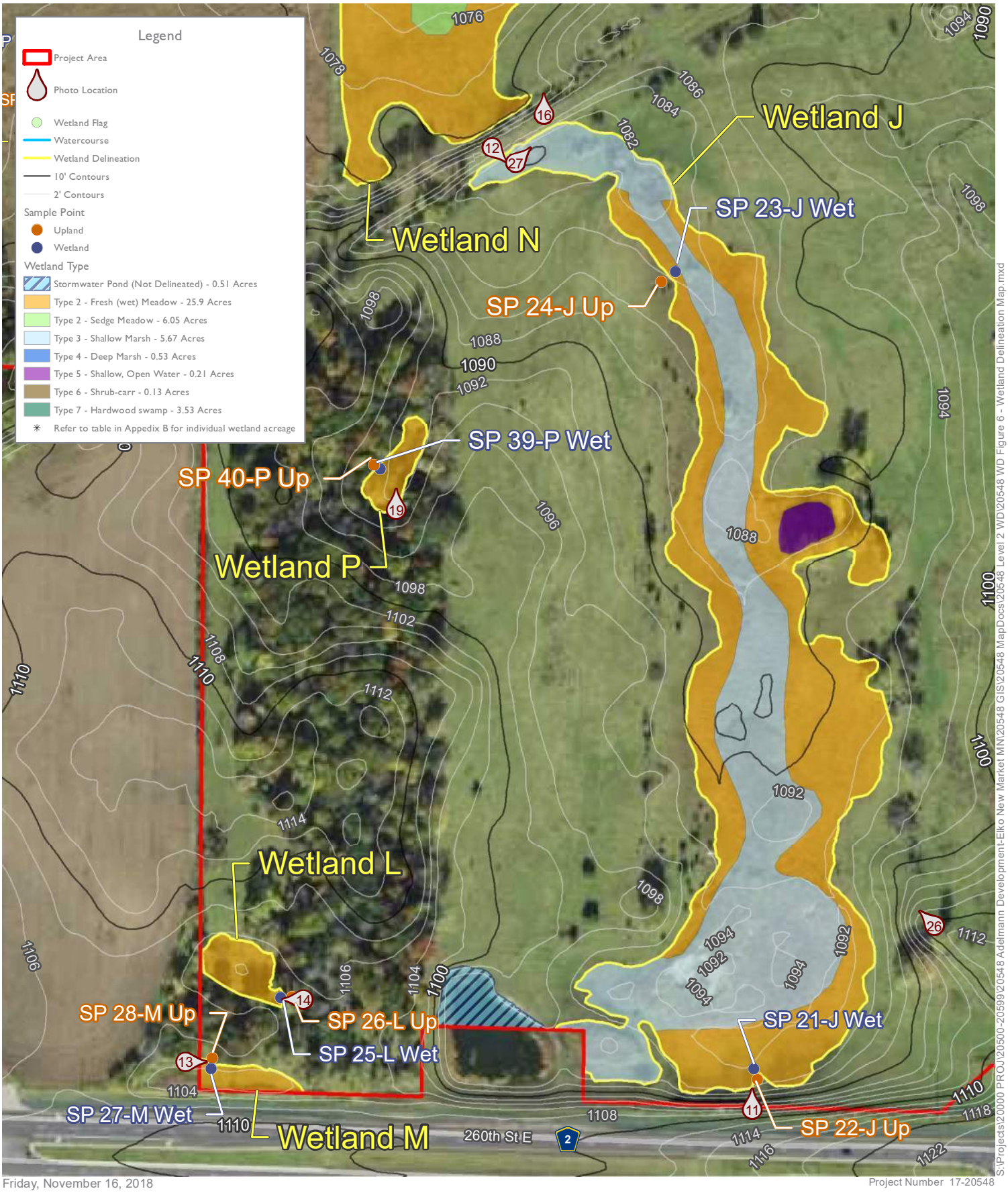
Wetland Delineation Map

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Orthophoto (MnGeo WMS, 2017)
Contours (MnGeo LiDAR, 2011)
Wetland Delineation (ISG, 2018)

ISG



Friday, November 16, 2018

Project Number 17-20548

0 100 200 Feet

1 in = 200 ft

N

Figure 6d

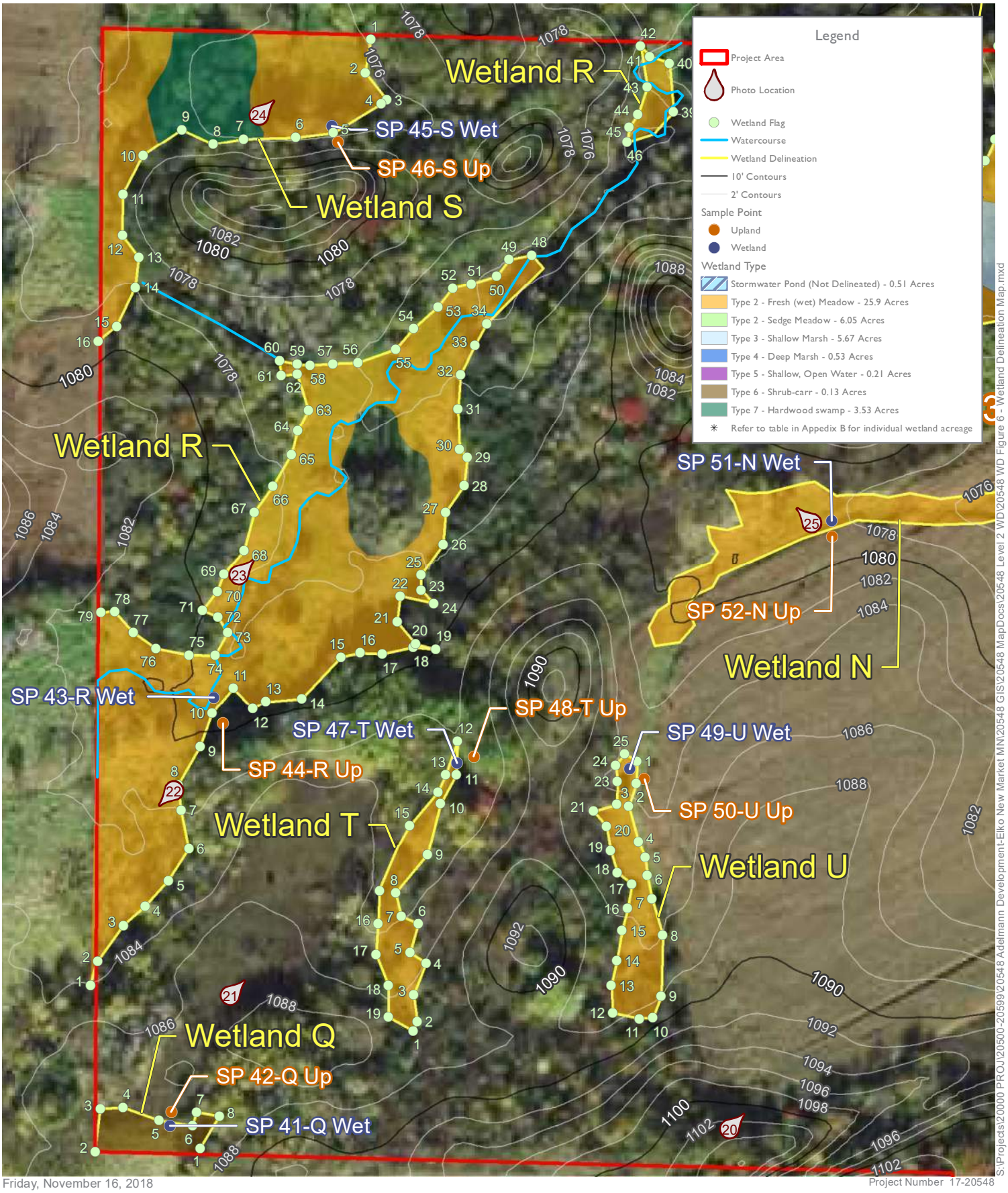
Wetland Delineation Map

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Orthophoto (MnGeo WMS, 2017)
Contours (MnGeo LiDAR, 2011)
Wetland Delineation (ISG, 2018)

ISG



Friday, November 16, 2018

Project Number 17-20548

S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 Level 2 WD\20548 WD Figure 6 - Wetland Delineation Map.mxd

0 75 150 Feet

1 in = 150 ft

N

Figure 6e

Wetland Delineation Map

Adelmann Family Property

New Market Twp, Scott County, Minnesota

Source(s):
Orthophoto (MnGeo WMS, 2017)
Contours (MnGeo LiDAR, 2011)
Wetland Delineation (ISG, 2018)

ISG

Table 2. Delineated Wetlands Summary – Post TEP (November 7, 2018)

Wetland No.	Dominant Wetland Type(s)		Dominant Plant Community	Delineated Wetland Area	Soil Classification (Hydric Rating)	Mapped NWI	DNR Protected Waters Inventory
	Circ. 39	Cowardin Classification	Eggers & Reed				
A	Type 2/3	PEM1A/PEM1C	Fresh (wet) Meadow, Shallow Marsh	Type 2=1.72 Ac. (74,779 Sq. Ft) Type 3=1.35 Ac. (58,895 Sq. Ft) Total = 3.07 Ac.	HaE2 (Hydric)/HaD (Partially Hydric)/HaC2 (Partially Hydric)	PEM1C/PEM1A/PSS1A	No
B	Type 2/7	PEM1B/PFOB	Fresh (wet) Meadow, Hardwood Wetland	Type 2=6.86 Ac. (298,809 Sq. Ft) Type 7=1.50 Ac. (65,335 Sq. Ft) Total = 8.36 Ac.	PbA (Hydric)/Bc (Hydric)/Wb (Hydric)	PEM1A/PSS1A	Yes
C	Type 2/4	PEM1A/PUBG	Fresh (wet) Meadow, Deep Marsh	Type 2=0.71 Ac. (31,045 Sq.Ft) Type 4=0.53 Ac. (22,932 Sq.Ft) Total = 1.24 Ac.	HaB(Predominantly Non-Hydric)/Wb (Hydric)	PEM1C/PEM1A	Yes
D	Type 2/3	PEM1A/PEM1C	Fresh (wet) Meadow,Shallow Marsh	Type 2=0.76 Ac. (33,054Sq.Ft) Type 3=0.33 Ac. (14,315 Sq.Ft) Total = 1.09 Ac.	HaB(Predominantly Non-Hydric)/ Wb (Hydric)/HaC2(Predominantly Non-Hydric)	PEM1C/PEM1A	No
E	Type 2	PEM1B	Fresh (wet) Meadow	1.24 Ac. (54,107 Sq.Ft)	Ga (Hydric)/LbD (Predominantly Non-Hydric)	PEM1C	No
F	Type 2	PEM1B	Fresh (wet) Meadow	0.50 Ac. (21,897 Sq.Ft)	Ga (Hydric)	PEM1C	No
G	Type 2	PEM1B	Fresh (wet) Meadow	0.10 Ac. (4,243 Sq.Ft)	Ga (Hydric)	PEM1C	Yes
H	Type 2	PEM1B	Fresh (wet) Meadow	0.08 Ac. (3,274 Sq.Ft)	Ga (Hydric)	PFO1A	No
I	Type 2/7	PEM1B/PFOB	Fresh (wet) Meadow, Hardwood Wetland	Type 2=1.21 Ac. (52,905 Sq.Ft) Type 7=0.24 Ac. (10,402 Sq. Ft.) Total = 1.45 Ac.	Ga (Hydric)/Wb (Hydric)	PEM1C/PEM1A	No
J	Type 2/3/5	PEM1B/PEMC/ PUBF	Fresh (wet) Meadow, Sedge Meadow/Shallow March, Shallow Open Water	Type 2=3.82 Ac. (166,299 Sq.Ft) Type 3=3.76 Ac. (163,980 Sq.Ft) Type 5=0.12 Ac. (5,145 Sq.Ft) Total = 7.70 Ac.	Ga (Hydric)/Wb (Hydric)/ HaC2 (Predominantly Non-Hydric)/ HaC (Predominantly Non-Hydric)/ HaB (Predominantly Non-Hydric)	PEM1A/PEM1Ad/PUBG/	No
K	Type 2	PEM1B	Fresh (wet) Meadow	0.16 Ac. (6,842 Sq.Ft)	Ga (Hydric)/ Wb (Hydric)/ HaC (Predominantly Non-Hydric)	PEM1A	No
L	Type 2	PEM1A	Fresh (wet) Meadow	0.20 Ac. (8,544 Sq.Ft)	Ga (Hydric)/ HaB (Predominantly Non-Hydric)	PUBGx	No
M	Type 2	PEM1B	Fresh (wet) Meadow	0.13 Ac. (5,663 Sq. Ft)	Ga (Hydric)	PEM1A	No
				Total = 25.32 Ac.			

Wetland No.	Dominant Wetland Type(s)		Dominant Plant Community	Delineated Wetland Area	Soil Classification (Hydric Rating)	Mapped NWI	DNR Protected Waters Inventory
	Circ. 39	Cowardin Classification	Eggers & Reed				
N	Type 2/5/7	PEM1B/PUBG/ PFOC	Sedge Meadow, Shallow Open Water, Hardwood Wetland	Type 2=10.20 Ac. (444,353 Sq.Ft) Type 5=0.09 Ac. (3,937 Sq.Ft) Type 7=1.48 Ac. (64,273 Sq.Ft) Total = 11.77 Ac.	Ga (Hydric)/PbA (Hydric)/Wb (Hydric)/ HaC (Predominantly Non-Hydric)/ HaB (Predominantly Non-Hydric)/LbD (Predominantly Non-Hydric)	PEM1A/PEM1/ PUBGx/PFO1 A	No
O	Type 2/3	PEM1B/PEM1E	Fresh (wet) Meadow,Shallow Marsh	Type 2=0.35 Ac. (15,210 Sq.Ft) Type 3=0.23 Ac. (10,207 Sq.Ft) Total = 0.58 Ac.	Wb (Hydric)/ LbD (Predominantly Non-Hydric)	PEM1C/PFO1 A	No
P	Type 2	PEM1A	Fresh (wet) Meadow	Type 2=0.16 Ac. (6,793 Sq.Ft)	Ga (Hydric)/ HaC (Predominantly Non-Hydric)/ HaC2 (Predominantly Non-Hydric)	N/A	No
Q	Type 6	PSS1C	Shrub-carr	Type 2=0.13 Ac. (5,654 Sq.Ft)	Ga (Hydric)/ HaB (Predominantly Non-Hydric)	PEM1A	No
R	Type 2	PEM1B	Fresh (wet) Meadow	Type 2=2.64 Ac. (115,009 Sq.Ft)	Ga (Hydric)/HaC (Predominantly Non-Hydric)	PEM1A/PFO1 A/PEM1Ad	No
S	Type 2/7	PEM1B/PFOB	Fresh (wet) Meadow, Hardwood Wetland	Type 2=0.74 Ac. (32,022 Sq.Ft) Type 7=0.32 Ac. (13,910 Sq.Ft) Total = 1.06 Ac.	Ga (Hydric)/HaC (Predominantly Non-Hydric)	PEM1A	No
T	Type 2	PEM1B	Fresh (wet) Meadow	Type 2=0.21 Ac. (9,217 Sq.Ft)	HaB (Predominantly Non-Hydric)	N/A	No
U	Type 2	PEM1B	Fresh (wet) Meadow	Type 2=0.26 Ac. (11,314 Sq.Ft)	Wb (Hydric)/ HaB (Predominantly Non-Hydric)	N/A	No
V	Type 2	PEM1B	Fresh (wet) Meadow	Type 2=0.33 Ac. (14,376 Sq.Ft)	Wb (Hydric)/ HaB (Predominantly Non-Hydric)	PEM1A	No

Total = 17.14 Ac.

Exhibit D:

Adelmann Phase I Environmental Site Assessment Report

Phase I Environmental Site Assessment

APPRO Development

Adelmann Family Property

New Market Township, MN 55020

Date: September 14, 2018

Project No.: 17-20548

ISG

ARCHITECTURE + ENGINEERING + ENVIRONMENTAL + PLANNING

TABLE OF CONTENTS

Executive Summary **1**
Introduction **2**
Purpose 2
Scope of Services 2
Non-Scope Considerations 3
Assessment Limitations 3
User Reliance 4
Site Description **4**
Location and Legal Description 4
Current Site Land Use 4
Current Vicinity Land Use 4
User Provided Information **5**
Records Review **5**
Regulatory Records Review 5
Physical Setting Sources 7
Property Land Use Review 7
Vicinity Land Use Review 8
Site Reconnaissance and Interviews **8**
Observations 8
Exterior Observations 9
Interior Observations 10
General Site Setting 10
Interviews 10
Conclusion **11**
Opinion and Additional Information 11
References **12**

APPENDICES

Appendix A – Maps ..... A
Appendix B – Photo Log ..... B
Appendix C – Historical Research Documentation C
Appendix D – Regulatory Records Documentation ..... D
Appendix E – User Provided Information ..... E
Appendix F – Property Tax Information ..... F

PHASE I ENVIRONMENTAL SITE ASSESSMENT

of

Adelmann Family Property
Elko New Market, MN 55020

for

Dave Adelmann
8640 Harriet Avenue
Bloomington, MN 55420

CERTIFICATION & SIGNATURES

This Phase I Environmental Site Assessment was performed by ISG in conformance with the scope and limitations of ASTM Practice E 1527-13. I, Nick McCabe, declare to the best of my professional knowledge and belief, I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed all the appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Nick McCabe
Senior Environmental Scientist

Date: September 14, 2018

EXECUTIVE SUMMARY

ISG was authorized by Dave Adelmann to conduct a Phase I Environmental Site Assessment (ESA) for the subject property located at 10946-10998 260th Street East Elko New Market, Minnesota. The purpose of this Phase I ESA was to identify any Recognized Environmental Conditions (RECs) associated with the subject property. This Phase I ESA was performed in conformance with the scope and limitations of ASTM Practice E 1527-13. Any exceptions to, or deletions from this practice are described in the introduction of this report.

According to historical aerial photographs, there have been three (3) rural residences within the project area and the remainder of the subject property appeared to be used as pasture land and/or cultivated for agriculture since prior to 1937. The homestead, which still stands today, has changed very little since 1951 other than the addition of multiple outbuildings on the property. The land use has remained relatively unchanged except for the removal of the former railroad tracks running through the north portion of the property. In some areas, what was formerly used for agricultural production is now more woodland. On the south half of the project area, a trailer dealership was built in 1998 and a flea market area was converted from an agricultural field in 1995.

It appears that the liability, or potential liability, associated with the database results on nearby properties represent an environmental risk for the subject property based on their proximity to the subject property and history of petroleum contamination at nearby sites.

Based on the review of geographic/geologic information, aerial photography, historical data, governmental records, information provided by the user, interviews conducted, and the site evaluation, this assessment has revealed the following Historical REC (HREC) associated with the subject property:

- Former LUAST at the subject property with a documented release of gasoline. This was remediated to the satisfaction of the regulatory agencies and the site was issued a regulatory site closure.

A full walk through was completed around the interior and exterior of the subject property with several environmental hazards observed (refer to Figure 5 in Appendix A). Based on the site evaluation, this assessment has revealed no RECs in connection with the property other than the following:

- Several areas of solid waste, hazardous materials, and 55 gallon drums throughout the subject property.
- Unregistered UST, ASTs, and other petroleum and hazardous liquid containers in several areas of the site.

ISG is not able to represent that the site or adjoining land contains no hazardous waste, oil, or other latent conditions beyond that detected or observed by this company during this assessment. If future development or land disturbing activities are planned, further investigation may be warranted in order to document the presence or absence of contamination at the subject property and/or whether contamination levels could be above thresholds that might require reporting to the applicable agencies or regulated handling and/or disposal.

INTRODUCTION

Purpose

The purpose of this Phase I Environmental Site Assessment is to identify, within limits, the environmental liability, or potential environmental liability, of the property under assessment. The site was evaluated for indications of recognized environmental conditions, historic recognized environmental conditions, and controlled recognized environmental conditions as defined by ASTM Practice E 1527-13:

Recognized Environmental Conditions - the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions.

Historical Recognized Environmental Conditions - a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls.

Controlled Recognized Environmental Conditions - a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls.

Recognized environmental conditions will be assessed and reported herein. Included in this report is geographic/geologic information, aerial photography, historical data and an analysis of the use and improvements to the site, findings reported for potential environmental hazards through governmental regulatory records, and interviews with people who have knowledge of the history of the property.

When an assessment is completed without adequate subsurface exploration or chemical screening of soil and groundwater beneath the site, as in this study, no statement of scientific certainty can be made regarding latent subsurface conditions which may be the result of on-site or off-site sources.

ISG is not able to represent that the site or adjoining land contains no hazardous waste, oil or other latent conditions beyond that detected or observed during this assessment. The possibility always exists for contaminants to migrate through surface water, air or groundwater. The ability to accurately address the environmental risk associated with transport in these media is beyond the scope of this investigation.

Scope of Services

The scope of this Phase I ESA as further outlined in this section is consistent with ASTM Standard E 1527-13.

The following services are provided for this project:

- Develop a property overview by collecting basic physical information about the property including: location, size, prominent features, and geologic, physiographic and environmental setting.

- Establish historical information for subject property and adjacent properties including:
  - Review user ownership history
  - Identify past and present operations and processes

  - Determine products and wastes handled at the property
  - Locate product/waste storage and disposal areas
  - Research regulatory history
  - Interview relevant/knowledgeable persons
  - Review past environmental investigations and cleanups
- Perform a physical reconnaissance of the property and inspect the property to verify and further supplement information obtained through the record reviews.
- Determine environmental liability or potential liability of the property under assessment.
- Document all research and field information, prepare maps illustrating physical and historical information, and prepare the assessment report.

Any other additional services contracted between the user and ISG, including a broader scope of assessment, more detailed conclusions, liability/risk evaluations, and extent for further investigation are beyond the scope of services.

Non-Scope Considerations

There may be environmental issues or conditions at the property that should be assessed which are outside of the scope of services. The following list includes, but is not limited to, several non-scope considerations that may need further investigation such as:

- Asbestos containing material
- Radon
- Mercury
- Lead-based paint
- Wetlands
- Regulatory compliance
- Cultural and historic resources
- Health and safety
- Ecological resources
- Endangered species
- High voltage power lines
- Site flooding
- Physical properties of the soils and bedrock for site grading or foundation considerations

Testing and/or sampling of material(s) was not completed (for example: soil, water, air, PCBs, lead, radon). There was no comprehensive investigation completed to study local geologic or hydrogeological conditions which influence the distance hazardous substances or petroleum products are likely to migrate.

Assessment Limitations

No environmental site assessment can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with a property. Performance of this practice is

intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with a property, and this practice recognizes reasonable limits of time and cost.

This report is based on the procedures described in the ASTM Practice E 1527-13, available literature cited in this report, conditions present at the time of our investigation, and our interpretation of the information obtained as part of this investigation. Information provided in this report is limited to the accuracy and completeness of the information obtained from others. ISG used the degree of care, diligence, and skill ordinarily exercised under similar circumstances by reputable members of its profession practicing in the same locality. No other warranty is made or intended. No intentional deviations from the ASTM Practice E 1527-13 were made in the completion of this Phase I ESA.

This Phase I ESA was limited by the following:

- Sanborn fire insurance maps were not available for the subject property.
- There was no on-site investigation to test and/or sample material(s) (e.g. soil, water, air, PCBs, lead, radon).
- There was no comprehensive investigation completed to study local geologic or hydrogeological conditions which influence the distance hazardous substances or petroleum products are likely to migrate.

None of these limitations appear to present data gaps as there is sufficient other data from overlapping time periods to adequately characterize the land use of the subject property. The level of inquiry and the appropriate level of environmental site assessment is guided by the type of property subject to assessment, the expertise and risk tolerance of the user, and the information developed in the course of the inquiry.

User Reliance

This Phase I Environmental Site Assessment has been prepared for the exclusive use of the following:

APPRO Development
2147 Grenada Avenue
Lakeville, MN 55044

SITE DESCRIPTION

Location and Legal Description

The site is approximately 245 acres in size and is located at 10946-10998 260th Street East in New Market Township. The property is located in Sections 23 and 26, Township 113 North, Range 21 West and is legally described as parts of the southeast ¼ of section 23 and the north half of the northwest ¼ of section 26 in New Market Township, Scott County, State of Minnesota.

Current Site Land Use

The site currently consists of a rural residence, agricultural fields, wooded areas, pastures, a flea market, and a trailer dealership. The topography of the property is rolling with hills and the site elevation ranges from approximately 1,134 to 1,058 feet above sea level. Surface water appears to generally flow to the north edge of the property.

Current Vicinity Land Use

Land use directly surrounding the subject property is residential, commercial/industrial, and farmed agriculture. Bordering the subject property to the east is Interstate Highway 35, to the south are

agricultural fields, to the west are agricultural fields and industrial buildings, and to the north are wooded areas and agricultural fields.

USER PROVIDED INFORMATION

If the user of the property is aware of any specialized knowledge or experience that is material to recognized environmental conditions in connection with the property, it is the user's responsibility to communicate any information based on such specialized knowledge or experience to the environmental professional.

David Adelmann (user) indicated in a user questionnaire that he was aware that there was previously a gas station on-site, which had tank removal and cleanup. He was unaware of any other environmental cleanup liens, land use limitations, chemical releases or spills, contamination on-site, or any other possible environmental concerns in connection with the subject property. A copy of the user questionnaire is attached in Appendix E.

RECORDS REVIEW

The site records review of the property was assembled through a search of federal regulatory information, research of government records and a review of area maps. This information was obtained from Historical Information Gatherers, Inc. (HIG). A description of records searched and results are attached in Appendix D. A summary of the results is provided below.

Regulatory Records Review

HIG's radius database search identified 8 notable sites within a ½ mile radius of the subject property.

Table 1. Sites listed within the regulatory radius search

Site Name	Address	Database
Twin Cities Featherlite Trailer Sales/Countryside Auto/Maynards Auto Service/Richfield Plumbing	10881 E 260th St	ECHOR05[2], FRSMN[4], HWGS[5], LUAST[6], PCASPILLS[8], RCRANGR05[10], UAST[13], WIMN[14]
Robert Adelmann Farm	10880 E 260th St	CAFO[1], FEEDLOT[3], FRSMN[4], WIMN[14]
ShopSabre	26151 Newton Cir	HWGS[5], WIMN[14]
Dakota Blacktopping	26105 Newton Cir	HWGS[5], RCRAGR05[9], WIMN[14]
Bodywerks/ Eagle Creek Auto Repair	26106 Newton Cir	RCRAGR05[9], WIMN[14]
Niemeyers Trailer Sales	10405 E 260th St	WIMN[9]
Elko Dump		REMSITES[11], SAS[12], WIMN[14]
Ray Deutsch Farm	25421 Xerxes Ave	CAFO[1], WIMN[14]

[1]CAFO: Concentrated Animal Feeding Operations
[2]ECHOR05: Enforcement and Compliance History Information
[3]FEEDLOT: Feedlots
[4]FRSMN: Facility Registry System
[5]HWGS: Hazardous Waste Generator Sites
[6]LUAST: Registered Leaking Storage Tanks
[7]LUAST2016: Registered Leaking Storage Tanks Prior to April 2016
[8]PCASPILLS: Spills Listing
[9]RCRAGR05: Resource Conservation & Recovery Act- Generator Facilities
[10]RCRANGR05: Resource Conservation & Recovery Act- Non-Generator Facilities
[11]REMSITES: MPCA Remediation Sites
[12]SAS: State Assessment Sites
[13]UAST: Registered Storage Tanks
[14]WIMN: What's In My Neighborhood

Two (2) of the eight (8) notable sites were located within the project area. The first site was identified as Twin Cities Featherlite Trailer Sales (formerly Countryside Auto, Maynards Auto Service, and Richfield Plumbing). The current Twin Cities Featherlite Trailer Sales was listed in the Facility Registry System (FRSMN), Hazardous Waste Generator Sites (HWGS), and Spills (PCASPILLS) database. The FRSMN listing was for automobiles and other motor vehicles. The site was listed on the MPCAs website for having an Active Hazardous Waste-Minimal quantity generator license for automobile and other motor vehicle merchant wholesalers and general automotive repair. The site was also listed for a PCASPILLS which was reported on May 29, 2015 with a status of closed or completed. In addition, former records located on this site included Enforcement and Compliance History Information (ECHOR05), FRSMN, Registered Leaking Storage Tanks (LUAST), PCASPILLS, Resource Conservation & Recovery Act-Non-Generator Facilities (RCRANGR05), and Registered Storage Tanks (UAST). The ECHOR05 listing showed the site to be in compliance. The LUAST was a release of gasoline, which was reported on October 20, 1989, with a site closure date of February 16, 1990. The PCASPILLS was reported on January 1, 1996, with a status of closed or completed. The RCRANGR05 listed at the site was for the following Hazardous Wastes: ignitable and corrosive waste, mercury, and multiple spent halogenated solvents. Four (4) UASTs containing gasoline, fuel oil, used or waste oil have been reported as removed from the site on June 1, 1989.

The next site within the project area was located at the Robert Adelmann Farm. The site is listed for Concentrated Animal Feeding Operations (CAFO), Feedlots (FEEDLOT), and FRSMN. The CAFO and FEEDLOT databases reported the primary type of animal at this Active Feedlot to be beef cattle.

The next nearest site was located at ShopSabre, 0.045 miles west of the subject property with a higher elevation. The site was listed an Active HWGS for general automotive repair. Considering the site had no spills, leaks or violations reported, it seems unlikely to cause an environmental concern for the subject property.

The next nearest site was located at Dakota Blacktopping, 0.055 miles west of the subject property with a higher elevation. The site was listed as having an Active Hazardous Waste-Very small quantity generator license and a Resource Conservation & Recovery Act- Generator Facilities (RCRAGR05) database listing for ignitable and corrosive waste, mercury, and multiple spent nonhalogenated solvents. Considering the site had no spills, leaks or incidences reported, it seems unlikely to cause an environmental concern for the subject property.

The next site was located at BodyWerks/Eagle Creek Auto Repair, 0.103 miles west of the subject property with a higher elevation. The site was listed as a RCRAGR05 for lead, mercury, and multiple spent nonhalogenated solvents. Considering the site had no spills, leaks or violations reported, it seems unlikely to cause an environmental concern for the subject property.

The next site was located at Niemeyers Trailer Sales, 0.167 miles south of the subject property, with a higher elevation. The site was listed as having an Active Hazardous Waste-Very small quantity generator license for motorcycle, ATV, and all other motor vehicle dealers and general automotive repair. Considering the site had no spills, leaks or violations reported, it seems unlikely to cause an environmental concern for the subject property.

The next site was located at the Elko Dump, 0.191 miles south southwest of the subject property, with a higher elevation. The site was listed in MPCA Remediation Sites (REMSITES) and State Assessment Sites (SAS) database for being an unpermitted dump site with a status of closed. The SAS was received on January 1, 1987 and given a site closure date of April 20, 1998. Considering the distance from the subject property and the REMSITES and the SAS have been given regulatory site closures, they seem unlikely to cause an environmental concern for the subject property.

The final site was located at the Ray Deutsch Farm, 0.196 miles west northwest of the subject property with a higher elevation. The site was listed as a CAFO site with a primary animal type of dairy cattle >1,000 lbs.

Physical Setting Sources

A current USGS 7.5 minute topographic map showing the area where the property is located was reviewed for information of above or below ground utilities, information about geologic, hydrogeologic, hydrologic and general topographic physical settings. A topographic map is attached in Appendix A. Multiple structures were observed on the property, which is in concurrence with the aerial photographs. The property elevation ranged from approximately 1,058 to 1,134 feet above sea level. Surface water appears to generally flow to the north edge of the property. The subject property is located within the Vermillion River minor watershed and the Mississippi River and Lake Pepin major watershed.

The soils on the property are mapped as Blue Earth mucky silt loam, Estherville-Burnsville complex, Glencoe silty clay loam, Hayden loam, Houghton muck, Klossner muck, and Webster-Glencoe silty clay loams. Blue Earth mucky silt loam, Glencoe silty clay loam, Houghton muck, and Klossner muck are very poorly drained soils. Webster-Glencoe silty clay loams are poorly drained soils. Estherville-Burnsville complex are somewhat excessively drained soils. Hayden loam soils are well drained.

Property Land Use Review

Legal documents and historical resources were examined to determine if past land use has created an impact on the environment which may lead to a REC. Aerial photographs, topographic maps, city directories, and title records were reviewed (see Appendix C). Historical information helps to understand the past land use and identify recognized environmental conditions in connection with the property. Sanborn fire insurance maps were not available for the subject property.

Historical aerial photographs of the property and surrounding area were reviewed to identify visual changes and past uses of the property. Aerial photographs were available through HIG for the years 1937, 1940, 1951, 1957, 1964, 1970, 1980, 1991, 1997, 2000, 2002, 2008, 2013, and 2015. The project site was evident in all of the photographs. From at least 1937 through 1964 the subject property appeared to be used as pasture land and/or cultivated for agriculture, with two (2) rural residences north of and one (1) rural residence south of 260th Street East. In 1970 the aerial showed the addition of a new site south of 260th Street East. In 1991 the aerial showed the addition of new and larger structures at the site of the southern rural residence. In 2000 the aerial showed the expansion of the lot south of 260th Street East. In 2002 the aerial showed the removal of the rural residence to the northwest of 260th Street East. There was also a site north of 260th Street East and west of the rural residences that was visible in the 1970 through 2002 aerials. No major changes to the subject property were apparent from 2002 through the 2015 aerial photographs.

Historical topographic maps of the property and surrounding area from 1957, 1974, 2013, and 2016 were also reviewed to identify visual changes and past uses of the property. The subject property was evident on all maps. The topographic maps from 1957 and 1974 appeared consistent with what was shown in the historical aerial photographs and city directories. Although the 2013 and 2016 topographic maps do not show individual structures, these were assumed to be present based on current and historical photographs as well as the city directory listings.

City directories for 1982-83, 1987-88, 1992-93, 1997-98, 2002, 2007, and 2012 were reviewed for past uses of the property. Listings for Robert R. Adelmann and Traders Market at the subject property address were found in the 1987-88 through 2012 directories. Twin Cities Featherlite Trailer Sale was found in the 2002-2012 directories as well.

An environmental lien search was completed to identify environmental liens and/or activity and use limitations in connection with the subject property. According to the Scott County Recorder, the title to

the property was vested in Adelmann Farms New Market LLC. Environmental liens or other activity and use limitations were not found in connection with the subject property. A copy of the deed associated with the subject property is included in Appendix C.

Vicinity Land Use Review

The historical information gathered from historical aerial photographs, city directory listings, and topographic maps suggests the area directly surrounding the subject property has been used primarily for agricultural purposes since 1937 with many naturally vegetated areas. I-35, to the east of the subject property, was first visible in the 1964 aerial photograph. Development to the west of the subject property and south of 260th Street East was first visible in the 1991 aerial and continued to slowly increase through 2008. No major changes to the surrounding area were visible from 2008 through 2015.

Topographic maps appeared consistent with the aerial photographs, showing undeveloped areas and rural residences in 1957 and 1974. Although the 2013 and 2016 topographic maps do not show individual structures, these were assumed to be present based on current and historical photographs as well as the city directory listings.

The city directory supports what was visible in the historical aerial photographs and topographic maps, listing Neimeyer Trailer Sales, End Zone Bar & Grill and other related listings in the vicinity of the subject property.

SITE RECONNAISSANCE AND INTERVIEWS

The site reconnaissance of the subject property was assembled through observations and an interview with the site manager and a city official. The objective was to obtain information identifying recognized environmental conditions in connection with the property.

Observations

A thorough observation was conducted for evidence of environmental concerns on the subject property. The site visit was conducted on June 13, 2017 and was re-visited and assessed on April 27, 2018. Pictures from both site visits can be found in Appendix B of this report.

The table below indicates if any of the following potential recognized environmental conditions were observed during the site reconnaissance. Refer to Figure 5 in Appendix A for a map of the site with corresponding observations.

Table 2. Site Reconnaissance Observations

Interior & Exterior Investigation	Observed	Not Observed	Note/Comment
Hazardous Substances or Containers		✓	
Petroleum Products	✓		
Aboveground Storage Tank(s)	✓		
Underground Storage Tank(s) (vent/fill pipes or access ways)	✓		
Odors	✓		
Solid Waste Disposal	✓		
Pools of Liquid		✓	
Stained Soil or Pavement	✓		
Stressed Vegetation		✓	
Pits, Ponds or Lagoons	✓		

Interior & Exterior Investigation	Observed	Not Observed	Note/Comment
Wells	✓		
Septic System		✓	
Waste Water or Storm Water		✓	
Drums (5 to 55 gallon)	✓		
Unidentified Substance Containers		✓	
PCBs (electrical or hydraulic)		✓	
Drains and waste traps/sumps		✓	
Stains/Corrosion	✓		
Heating/Cooling	✓		

Exterior Observations

The project area is separated into two areas by 260th Street East. The first area is on the north side of 260th Street East. The area is a farmstead with surrounding agricultural fields, pasture, wetlands, and forest. Site observations were conducted around the entire site. The farmstead area contained one home, 12 outbuildings, and numerous piles of solid waste around the outbuildings. To the west of the western most outbuilding, a recently filled in pit was observed with solid waste protruding from the fresh soil. Continuing northwest, numerous piles of solid waste were observed along a field road throughout the pasture. The solid waste included, but was not limited to, old drums, scrap metal, porcelain toilets/sinks, concrete, old farm machinery, tires, and batteries.

A ravine near the northeast corner of the site was discovered with solid waste such as old appliances, drums, paint cans, pails of unidentified liquids, steel, and plastic. The ravine appeared to have been used as an unregistered dump for disposing of solid waste. This area has the potential to be an environmental concern considering the amount of unidentified substances.

Drums and inactive above ground gas and diesel storage tanks were observed around the exterior of numerous buildings. A majority of the containers were empty, but not every drum, tank, and pail was opened to view its contents. It is possible that some of the containers contain petroleum or hazardous products. Aside from the containers, solid waste such as tires, batteries, oil filters, scrap metal, and garbage was observed around the buildings.

One underground tank was observed near the southeast corner of the western outbuilding. It was unknown if the underground tank was still being used, or if it was empty and inactive.

The second area was located south of 260th Street East. This area consists of nine buildings, manicured lawn, parking lots, pasture, wetlands, and forested areas. The building to the east is currently a Featherlite Trailer sales dealership. Surrounding the exterior of the dealership building are one above ground 500 gallon diesel tank, numerous closed 55 gallon drums, scrap metal, and some other non-hazardous solid waste. A number of semi-trailers containing solid waste were noted south of the dealership building. No stains, odors, or stressed vegetation were observed around the waste.

The area to the west side of the Featherlite Trailer sales dealership was used as a seasonal farmers market. A majority of the buildings were empty at the time of the site review. Solid waste was identified within some forested areas. The solid waste consisted of old wagons, scrap metal, cement, and other miscellaneous solid waste.

Interior Observations

Interior observations on the north side of 260th Street East were made in the 12 exterior outbuildings, but the home was locked at the time of the site review, and access was not made. All of the exterior buildings contained some type of materials, solid waste, tools, vehicles, etc. The largest building located in the northwest corner of the farmstead contained numerous petroleum products throughout the building. Some had been spilt or tipped over and caused staining and odors. Pails, cans, and small drums were observed, some of which were not properly sealed. The outbuildings located west of the house also contained petroleum products. During the time of the site review, floor staining and odors were observed within the garage/shop areas. All of these observations appear to be environmental concerns for the subject property.

The remainder of the outbuildings contained solid waste, vehicles, hay bales, metals, wood, and other non-hazardous materials.

Interior observations south of 260th Street East were made in the Featherlite office building. The building contained office space, a showroom, bathrooms, and a utility room. No environmental concerns were observed within the building.

The buildings west of the office were locked, making interior observations unable to be completed. The interiors of the outbuildings were viewed through windows, and appeared to be empty. The buildings are used for weekend farmer's market space. An old house exists near the outbuildings, but was locked and unable to be accessed. The house was abandoned and appeared to be mostly empty from what could be observed through the windows.

General Site Setting

The subject property was located in an agricultural and commercial setting west of Highway I-35 and north/south of 260th Street East. The properties had multiple uses such as pasture for cattle, agricultural row crops, hay fields, natural grassland, wetlands, forests, and commercial/public uses closer to the public roads.

Limited observations were also made of the surrounding properties without gaining access to the properties or interior structures. No environmental concerns were observed on adjacent properties from the view of the subject property and right-of-way during the site visit. There was no evidence of any pools of liquids, spills, stains, or odors on the neighboring properties.

ISG is not able to represent that the site or adjoining land contains no hazardous waste, oil, or other latent conditions beyond that detected or observed by this company during this assessment. The possibility always exists for contaminants to migrate through surface water, air and/or groundwater. The ability to accurately address the environmental risk associated with transport in these media is beyond the scope of this investigation.

Interviews

Renne Christianson, Community Development Specialist, City of Elko New Market
Renne Christianson was interviewed on May 14, 2018 and stated that the first site, to the north of County Road 2, was used for agricultural production. The second site, to the south of County Road 2, was used for trailer sales, agricultural use, and as an occasional Flea Market. She was aware of a possible concern regarding a non-compliant septic system at the trailer sales facility and referred ISG to the Scott County Environmental Health Department for any additional information. She was unaware of any above or underground storage tanks with petroleum or any other hazardous material on the subject property. In addition, Ms. Christianson had no knowledge of environmental concerns in the surrounding area and again referred ISG to the Scott County Environmental Health Department for possible concerns regarding the industrial properties located to the west of the site (Newton Circle area).

Peter Schmitt, Environmental Services, Scott County
Peter Schmitt was interview on May 16, 2018 and stated that the first site, to the north of County Road 2, appeared to be used for agricultural purposes as a family farmstead. The second site, to the south of County Road 2, is a trailer sales lot and a Flea Market. He was aware of a petroleum tank release with a site closure date of August 7, 1990, a recommendation from Scott County Environmental Services to remove soils contaminated with Diesel Range Organics (DRO) on July 15, 2015, a notice of violation from the Scott County Community Services Division Environmental Health & Inspections Department for sewage discharge from a sewage treatment system and from a holding tank, and soil sample results from April 27, 2015 (See Appendix D). The aforementioned issues from 2015 were resolved to the county's satisfaction, including work on the septic system. He was unaware of any above or underground storage tanks with petroleum or any other hazardous material on the subject property. In addition, Mr. Schmitt had no knowledge of environmental concerns in the surrounding area.

CONCLUSION

ISG performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-13 for the Adelmann Family Farms site located in New Market Township, Minnesota. Any exceptions to, or deletions from this practice are described in the introduction of this report. The purpose of this Phase I ESA was to identify any RECs associated with the subject property.

Opinion and Additional Investigation

It appears that the liability, or potential liability, associated with the database results on nearby properties represent an environmental risk for the subject property based on their proximity to the subject property and history of petroleum contamination at nearby sites.

Based on the review of geographic/geologic information, aerial photography, historical data, governmental records, information provided by the user, interviews conducted, and the site evaluation, this assessment has revealed the following Historical REC (HREC) associated with the subject property:

- Former LUAST at the subject property with a release of gasoline. This was remediated to the satisfaction of the regulatory agencies and the site was issued a regulatory site closure.

A full walk through was completed around the interior and exterior of the subject property with several environmental hazards observed (refer to Figure 5 in Appendix A). Based on the site evaluation, this assessment has revealed no RECs in connection with the property other than the following:

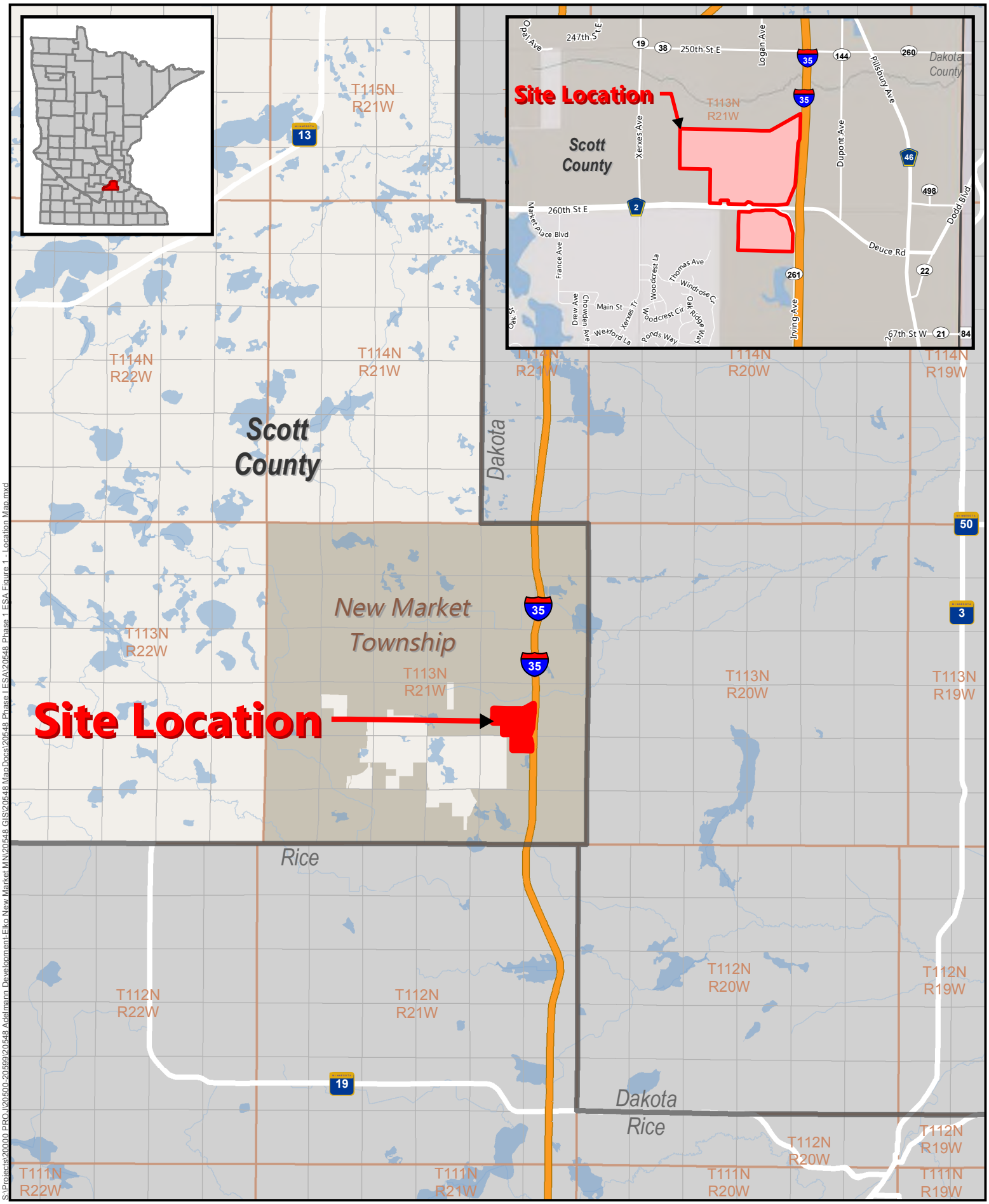
- Several areas of solid waste, hazardous materials, and 55 gallon drums throughout the subject property.
- Unregistered UST, ASTs, and other petroleum and hazardous liquid containers in several areas of the site.

ISG is not able to represent that the site or adjoining land contains no hazardous waste, oil, or other latent conditions beyond that detected or observed by this company during this assessment. If future development or land disturbing activities are planned, further investigation may be warranted in order to document the presence or absence of contamination at the subject property and/or whether contamination levels could be above thresholds that might require reporting to the applicable agencies or regulated handling and/or disposal.

REFERENCES

American Standards and Testing Material Practice 1527-13: Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

Appendix A: Maps



S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 Phase I ESA\20548 Phase 1 ESA Figure 1 - Location Map.mxd

ISG

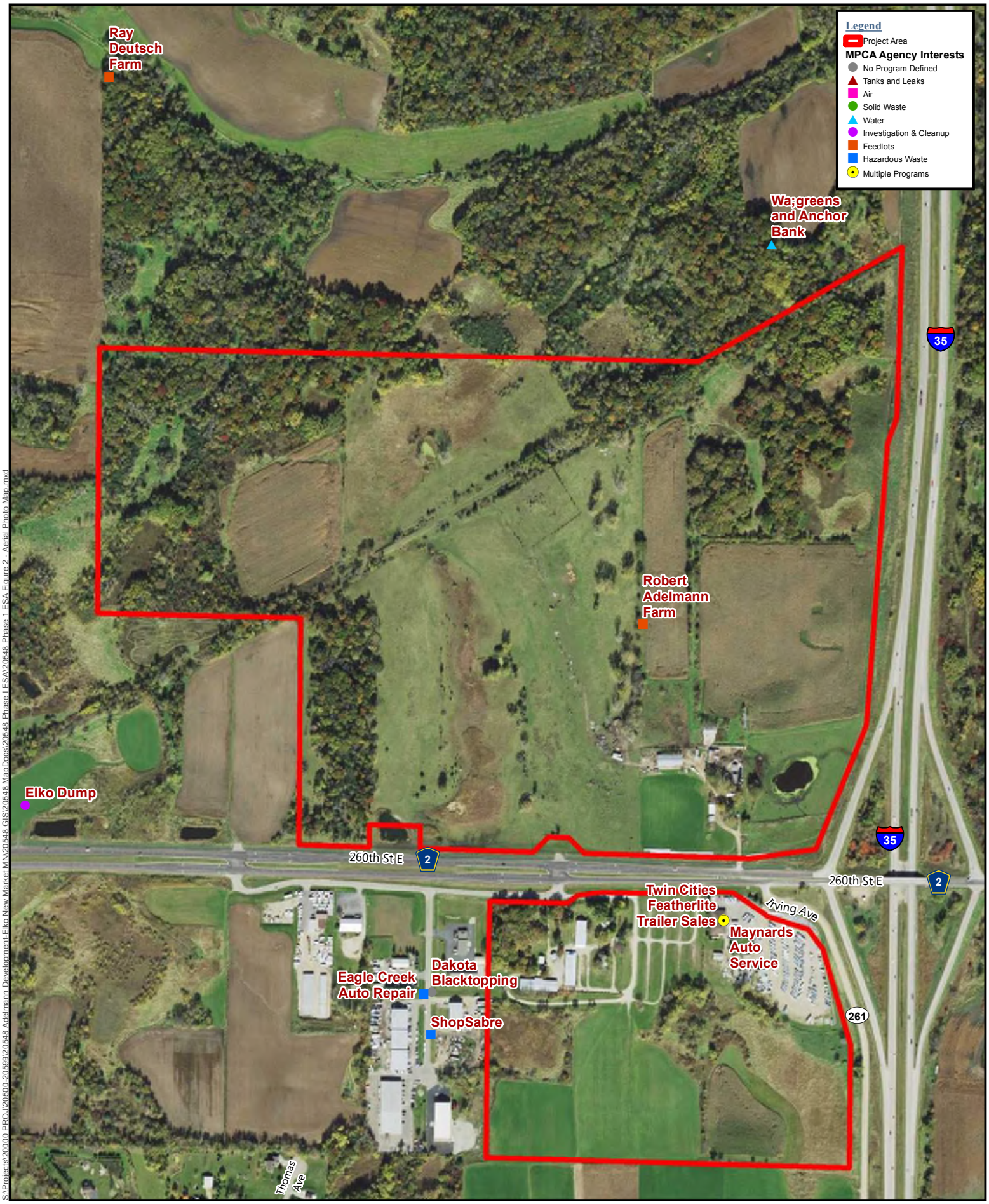
PN: 17-20548 **Source(s):**
Municipalities (MN DOT, 6/24/2016)
Lakes (MN DNR, July, 2008)
Counties (MN DNR, July 2013)
PLSS (MnGeo/USGS)

N

0 3,000 6,000 12,000 Feet
1 inch = 12,000 feet

Wednesday, March 07, 2018

Figure 1
Project Location Map
Adelmann Family Properties
New Market Twp, Scott County, Minnesota



S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 Phase 1 ESA\20548 Phase 1 ESA Figure 2 - Aerial Photo Map.mxd

ISG

PN: 17-20548
Source(s): Orthophoto (USDA, NAIP, 2017))
Agency Interests (MPCA, 9/6/2016)

N

0 150 300 600 Feet
1 inch = 600 feet

Wednesday, March 07, 2018

Figure 2
Aerial Photograph Map
Addelman Family Properties
New Market Twp, Scott County, Minnesota

S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 Phase 1 ESA Figure 3 - Soil Survey Map.mxd

ISG

PN: 17-20548

Source(s): Orthophoto (USDA, NAIP, 2017)
Soil Survey (USDA NRCS,2016)

N

0 137.5 275 550 Feet
1 inch = 550 feet

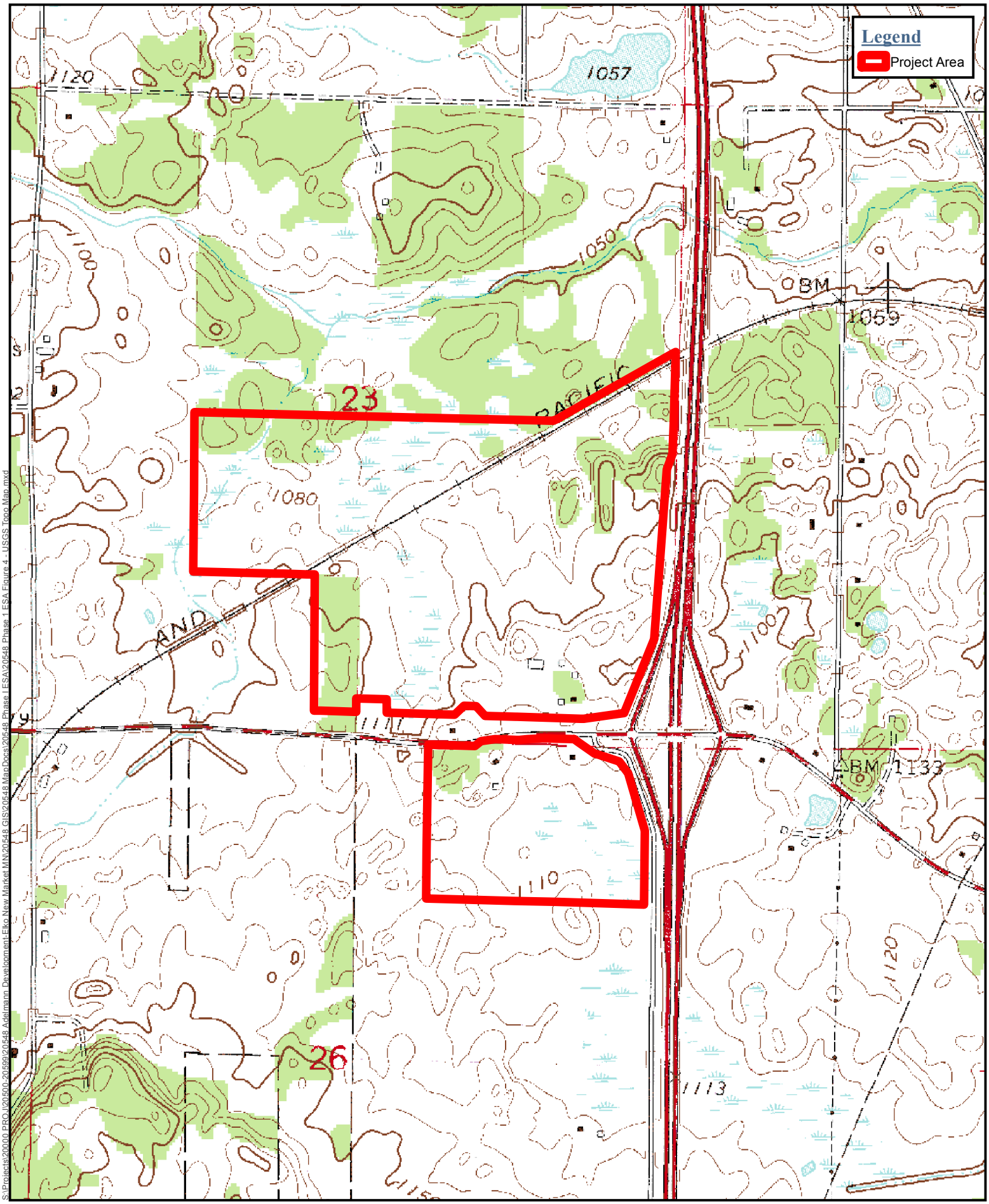
Monday, March 26, 2018

Figure 3

Scott County Soil Survey

Adelmann Family Properties

New Market Twp, Scott County, Minnesota



S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 Phase 1 ESA\20548 Phase 1 ESA Figure 4 - USGS Topo Map.mxd

ISG

PN: 17-20548
Source(s): 24k USGS Topo (MN State)

N

0 250 500 1,000 Feet
1 inch = 1,000 feet

Wednesday, March 07, 2018

Figure 4
USGS Topographic Map
Adelmann Family Properties
New Market Twp, Scott County, Minnesota

S:\Projects\20000 PROJ\20500-20599\20548 Adelmann Development-Elko New Market MN\20548 GIS\20548 MapDocs\20548 Phase 1 ESA\20548 Phase 1 ESA Figure 5 - Site Observations Map.mxd

ISG

PN: 17-20548
Source(s): Orthophoto (USDA, NAIP, 2017))

N

0 150 300 600 Feet
1 inch = 600 feet

Thursday, May 03, 2018

Figure 5
Site Observation Map
Addelman Family Properties
New Market Twp, Scott County, Minnesota

Appendix B: Photo Log

Photo 2- 2 old 55 gallon drums, that potentially contained hazardous waste.

Photo 3- old PVC piping and concrete piping, all solid waste.

Photo 4- Old grain bin tank and unidentified piece of scrap metal, solid waste.

Photo 5- Inactive combine with no signs of hazardous potential (oil leaks, gas leaks, etc.).

Photo 8-multiple old gas tanks in truck bed, potential hazard waste issues, surrounded by solid waste including scrap metal and other miscellaneous items.

Photo 9- scattered solid waste including tires and cinder blocks.

Photo 10- old 55 gallon drum surrounded by old farm equipment.

Photo 11-empty metal tank.

Photo 13-Wood pile with solid waste. Potential for items to be buried.

Photo 14- Recently filled pit with buried waste.

Photo 15- *Easy way cattle saver* in which tanks contain/contained insecticides. Possible hazardous waste due to ponding and possible leaking from tanks.

Photo 16- Machinery and miscellaneous farm equipment.

Photo 17- A 5 gallon bucket with engine oil located inside a small shed.

Photo 18- Pile of solid waste, no hazards identified.

Photo 20- Old diesel tank and 55 gallon drum with unidentifiable substances.

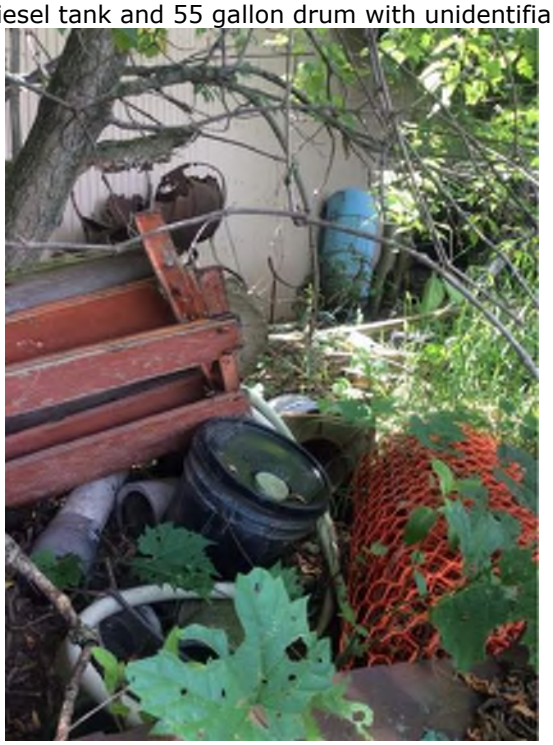


Photo 21- bucket of oil in a solid waste pile.

Photo 22-tubs containing miscellaneous items with a silvery surface on top of rain water in the tubs indicating presence of some type of contamination.

Photo 23-diesel tank, unknown if active.

Photo 24- above ground meter indicating an underground tank.

Photo 25- Area with multiple hazardous liquids. Some well contained others not secured.

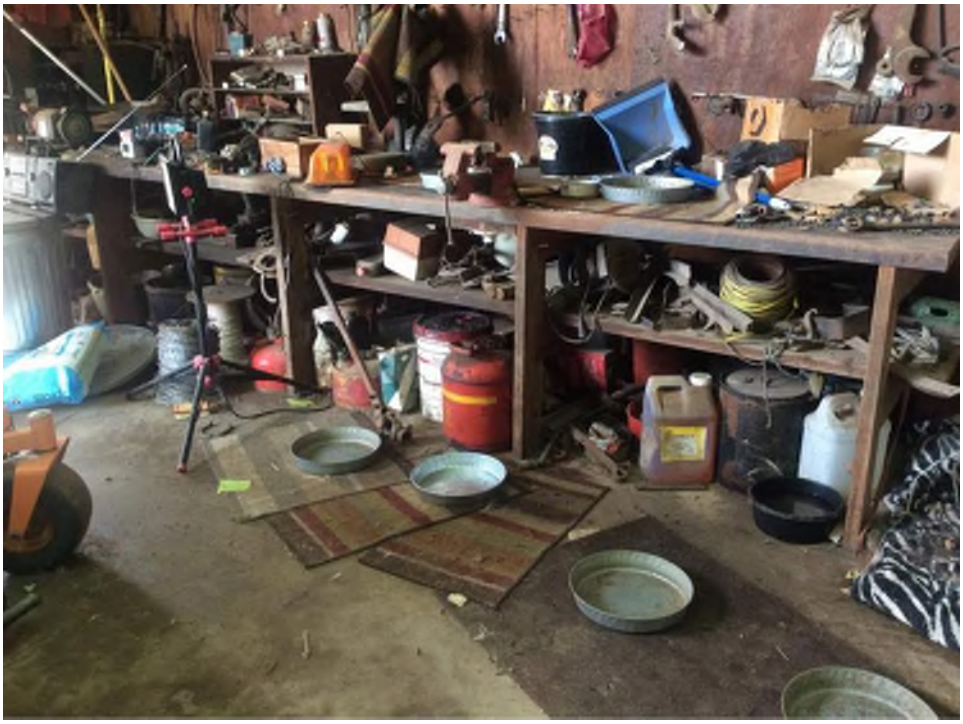


Photo 26- gas cans, oil jugs, and other types of miscellaneous possible hazardous liquids.

Photo 27- five gallon buckets containing grease for machinery lined up along the south shed.

Photo 28- photo of the floor showing multiple spills.

Photo 29- 40 gallon oil drums stored in shed, improper sealing.

Photo 32- Photo of old building in which used to be a livestock building, now used for storage.

Photo 34- one diesel (right) and one gas (left) inactive tanks.

Photo 36- Oil, gas, and grease containers in corner of garage. Spill indicators and improper storage are present on floor by 55 gallon drum of oil.

Photo 37- View of garage door with battery and solid waste sitting outside on concrete slab.

Photo 38- Image of house showing gas meter indicating the house uses gas utility.

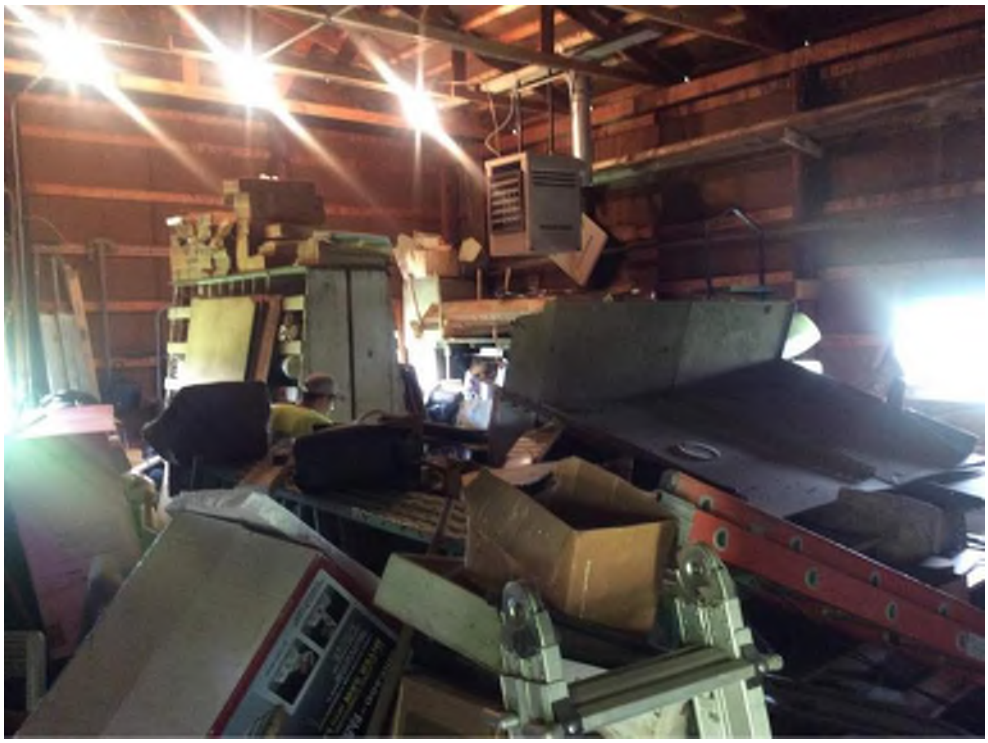


Photo 41- View of south shed and materials/solid waste.

Photo 42- facing north from the south side of the north half of the project area.

Photo 43- View of outbuildings south of 260th facing south.

Photo 44- Solid waste in forested area on west side of project area.

Photo 45- Wetland/hay field on south ag land, south of 260th.

Photo 46- Active 500 gal diesel tank adjacent to Featherlite building.

Photo 47- Semi-trailers with solid waste parked south of Featherlite parking area.

Photo 48- Old appliances on north side of property, north of 260th.

Photo 49- Solid and hazardous waste (drums, petroleum products, paints) in bottom of ravine.

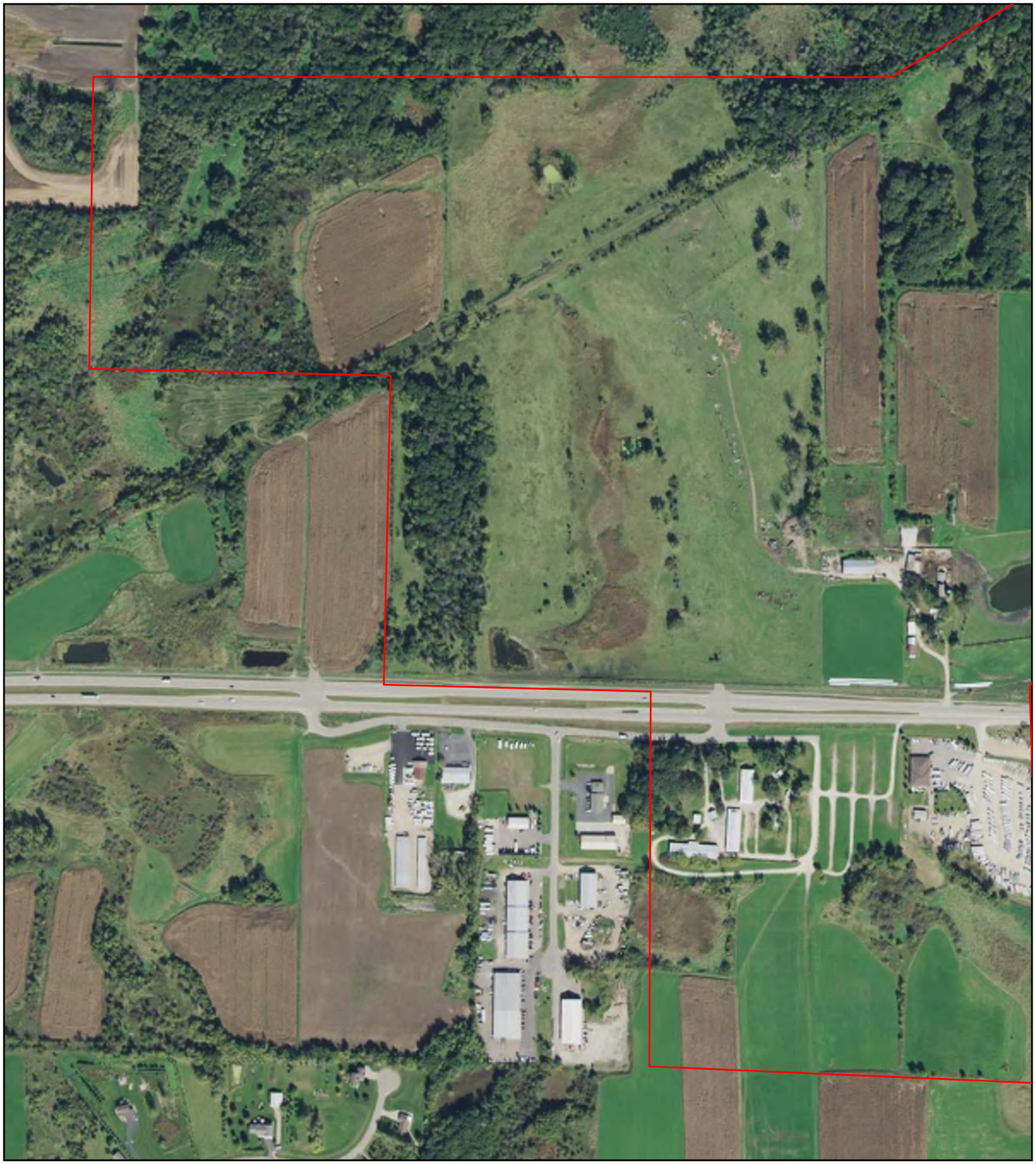
Photo 62- Freshly buried/graded area where waste pile was in June 2017 (pic 14).

Photo 65- Buried/graded area with trash sticking out facing south.

Photo 68- North side of northwest shed facing east.

Photo 70- Staining in northwest shed. Strong odors of petroleum products within building.

Appendix C: Historical Research Documentation



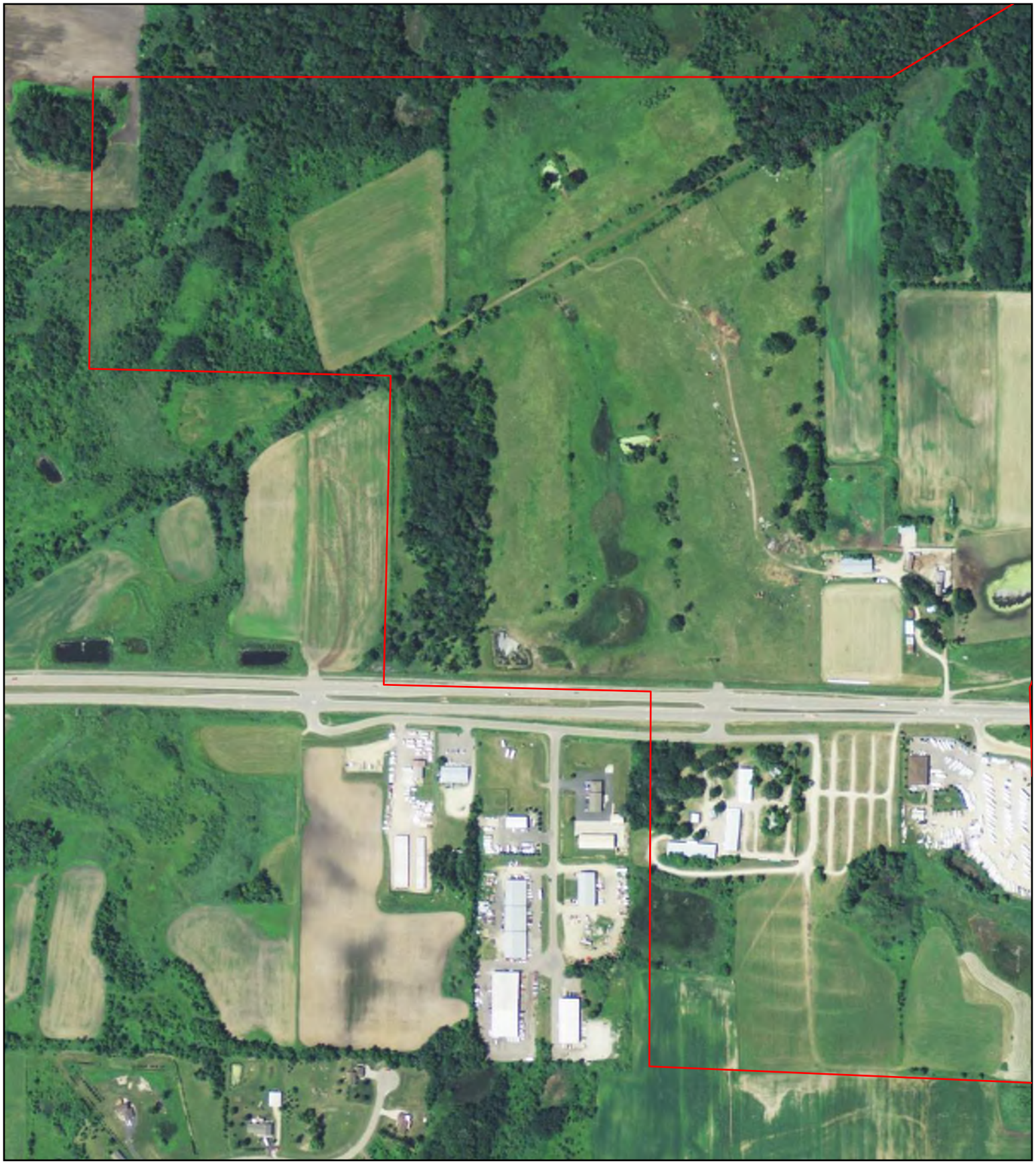
Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2015

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com



Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2013

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

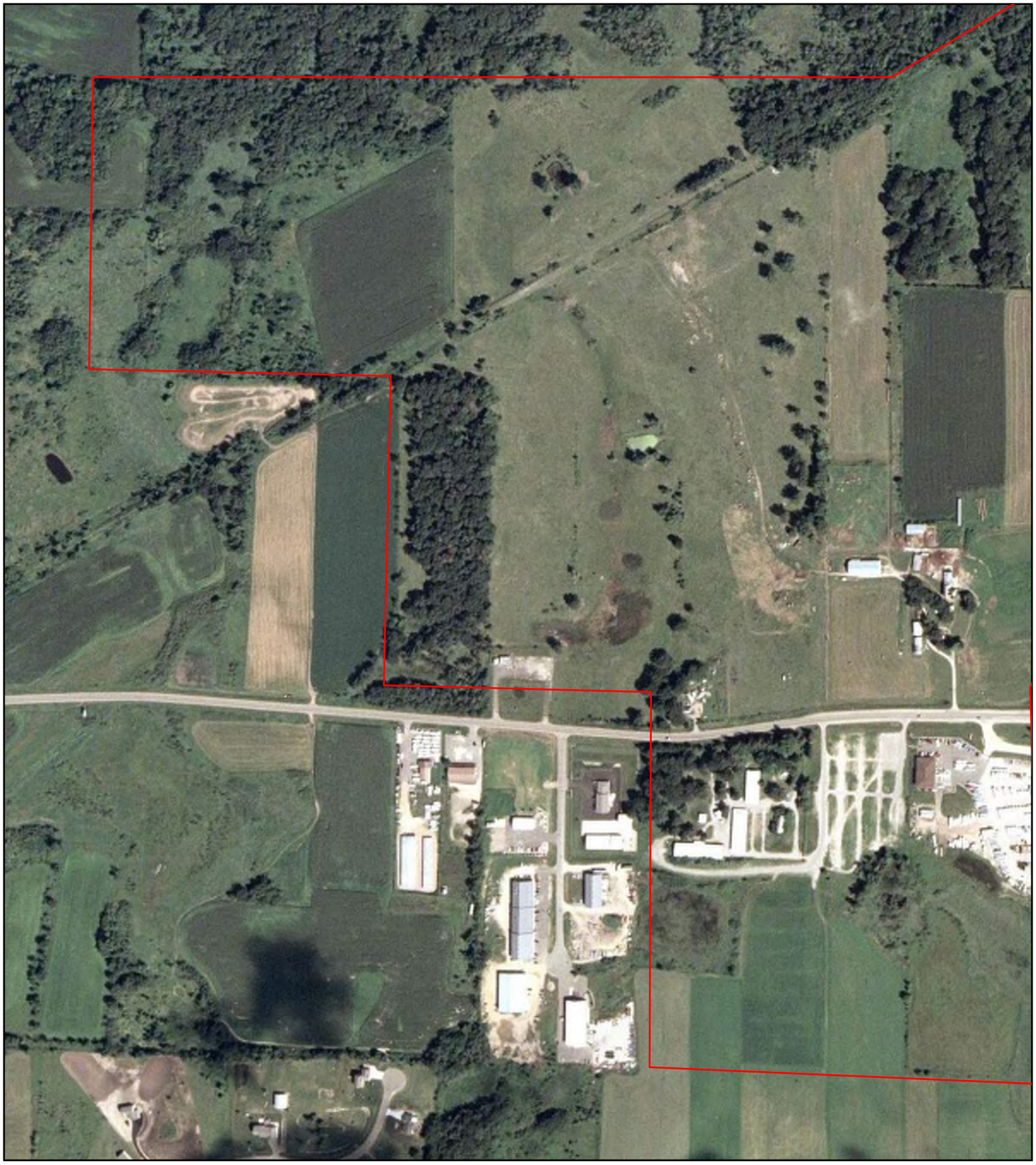
Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2008

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com



Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2002

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2000

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

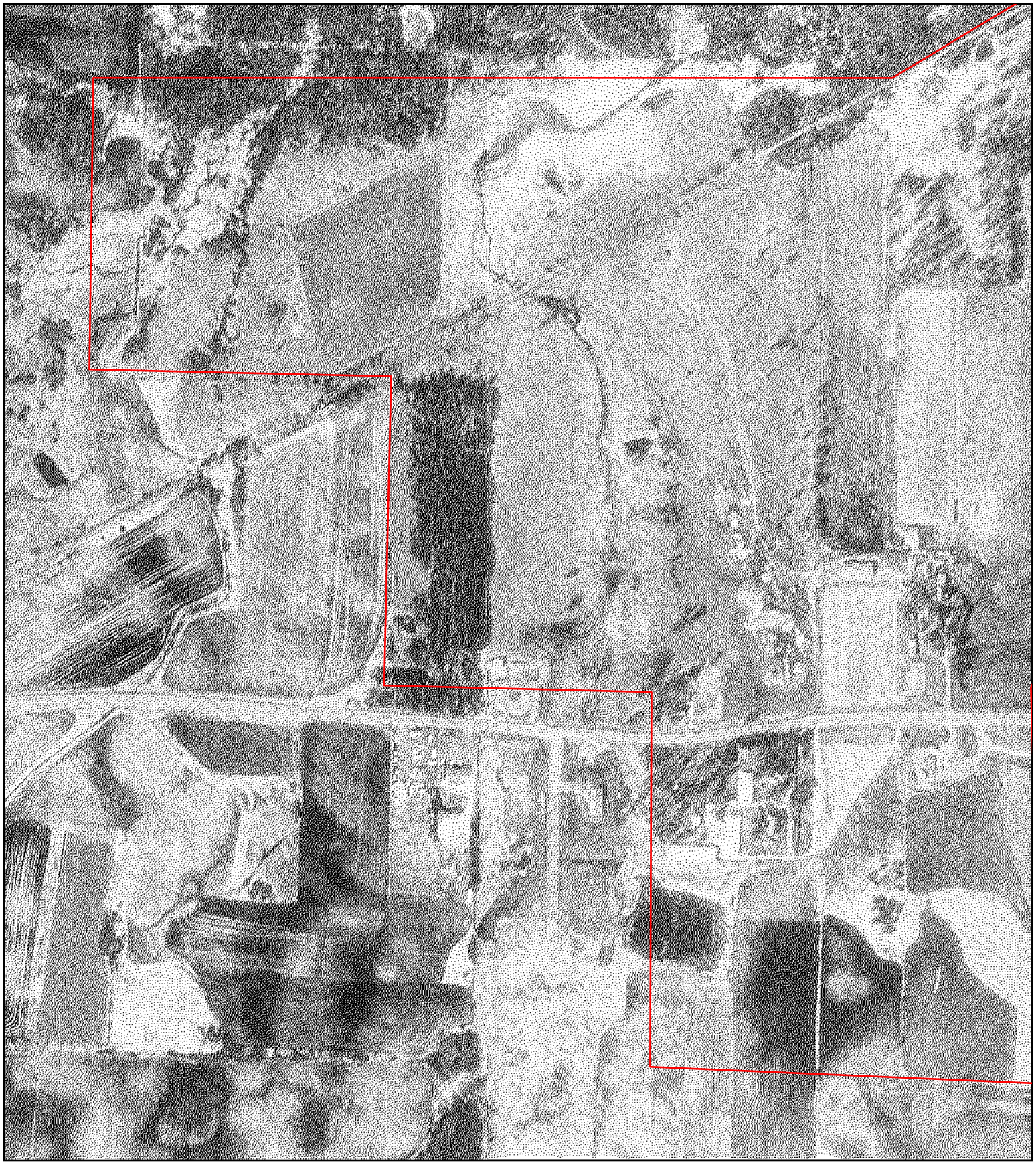
Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1997

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com



Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1991

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1980

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1970

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1964

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1957

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1951

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1940

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2015

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2013

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2008

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2002

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2000

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1997

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1991

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1980

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

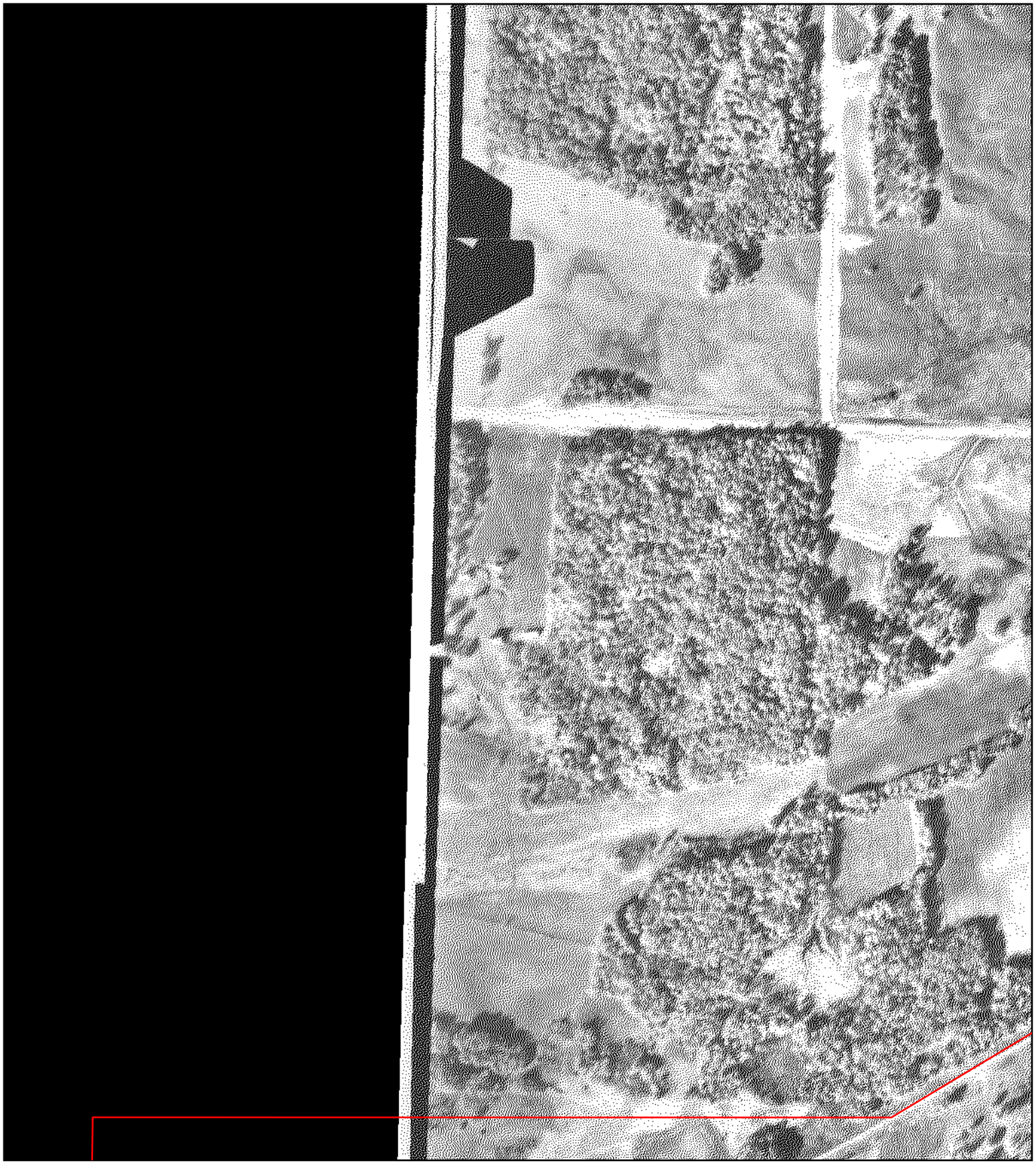
Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1970

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com



Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1964

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

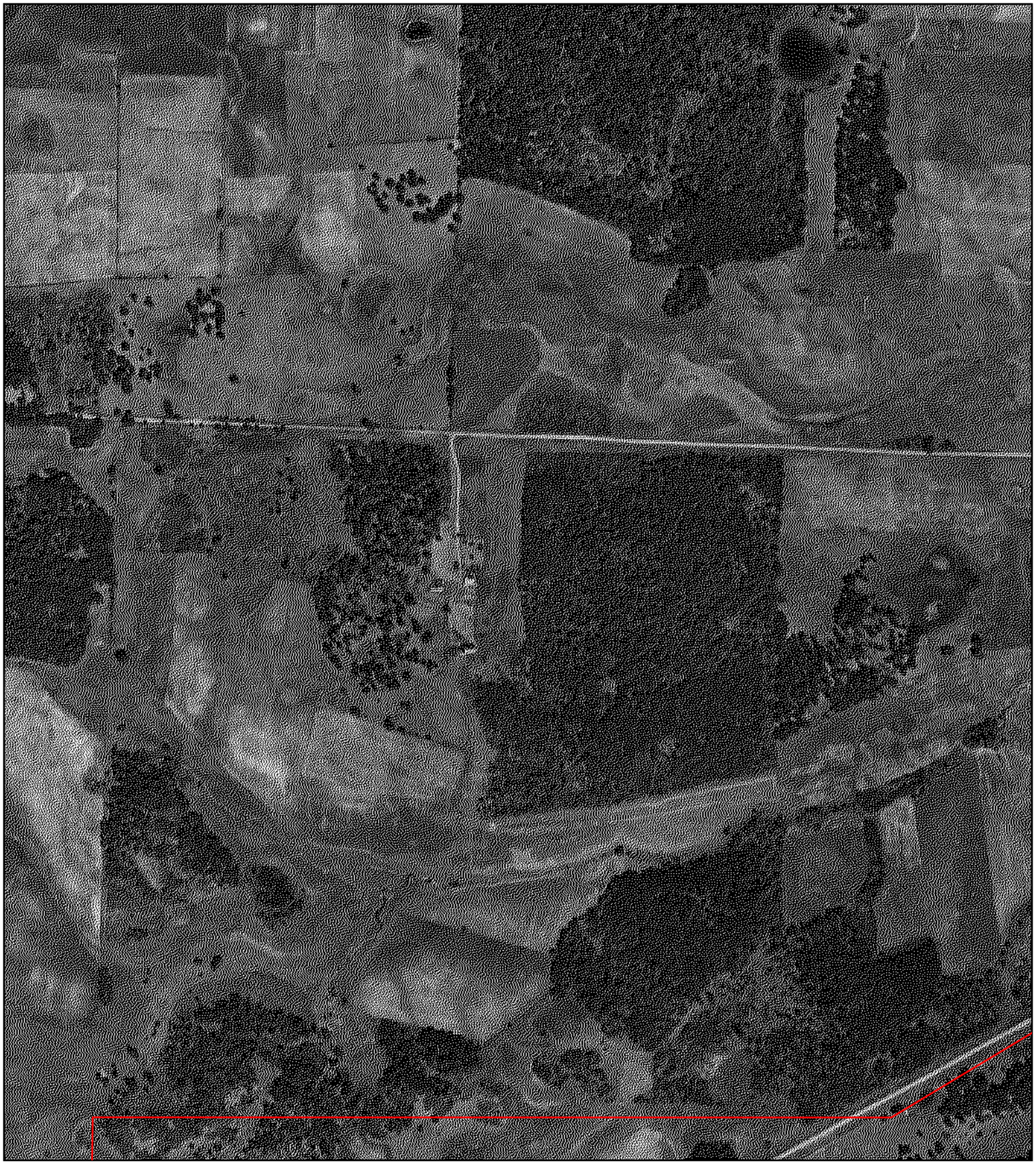
Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1957

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com



Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1951

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1940

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1937

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2015

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2013

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2008

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2002

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2000

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1997

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1991

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1980

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1970

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1964

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1957

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1951

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1940

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1937

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1937

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2015

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2013

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2008

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

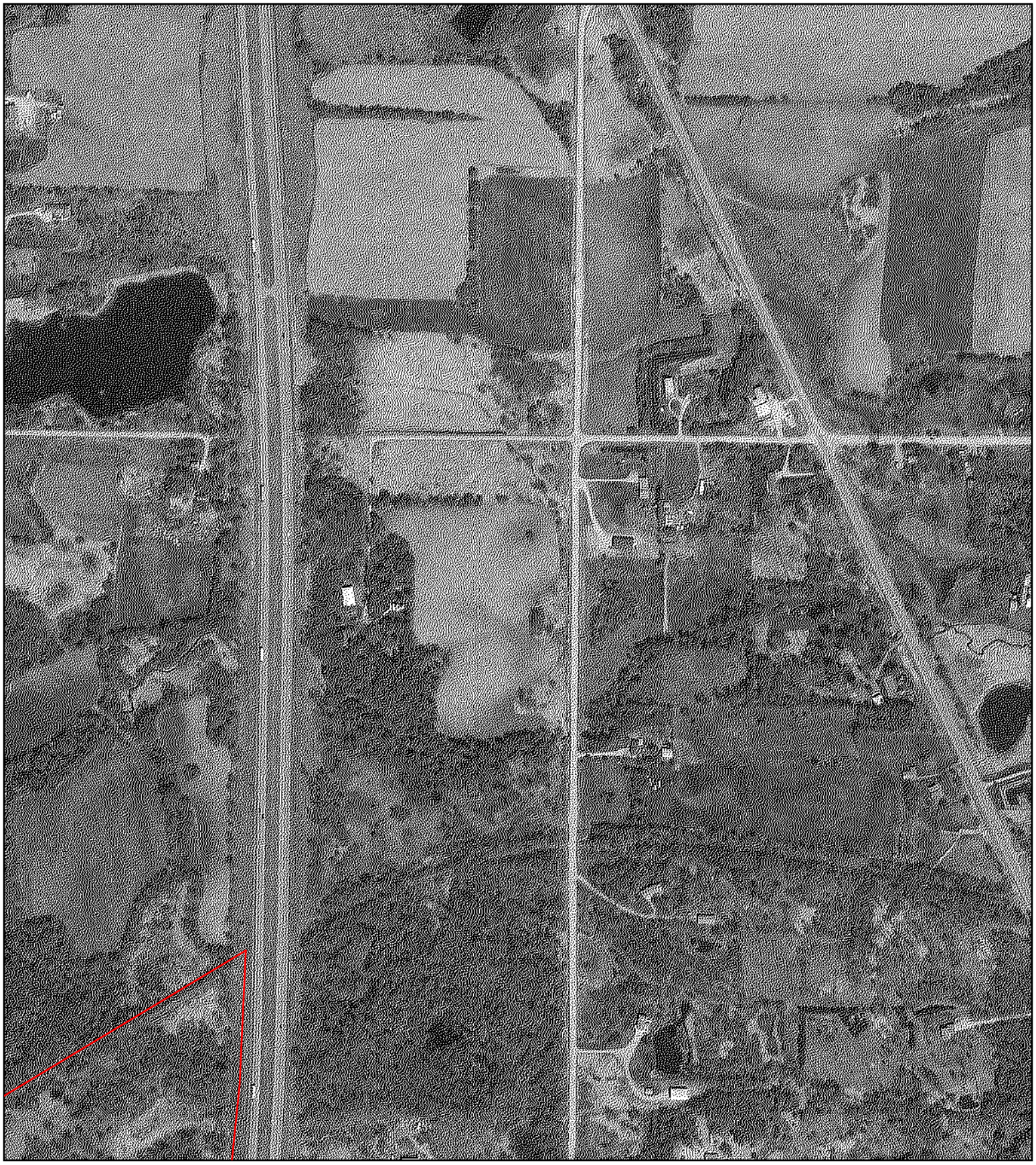
Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2002

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com



Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

2000

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1997

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1991

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1980

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1970

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1964

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1957

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1951

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1940

HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com

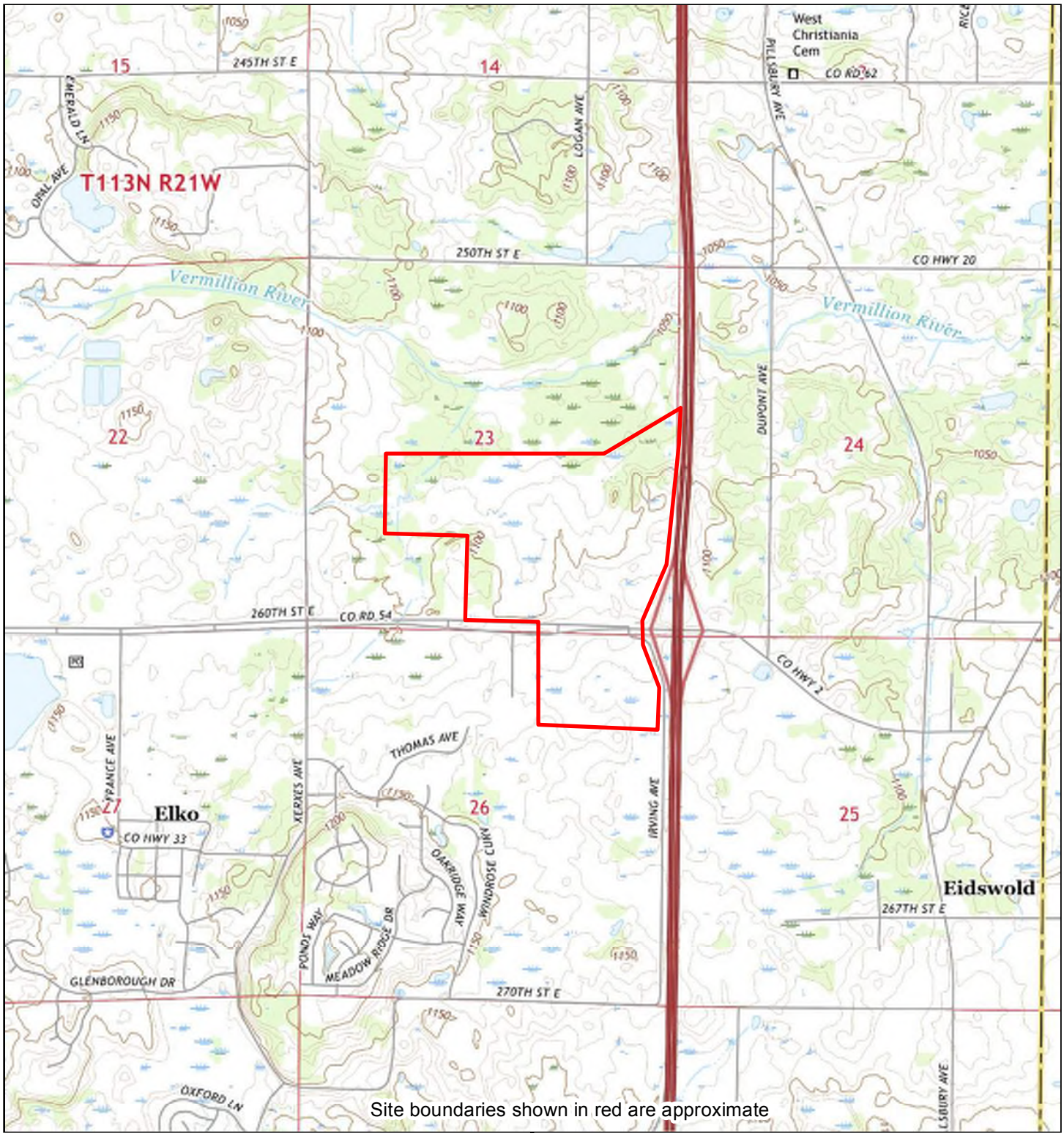
Site boundaries shown in red are approximate

Adelmann Family Farms
10946-10998 260th St East
New Market Township, MN

N

1937

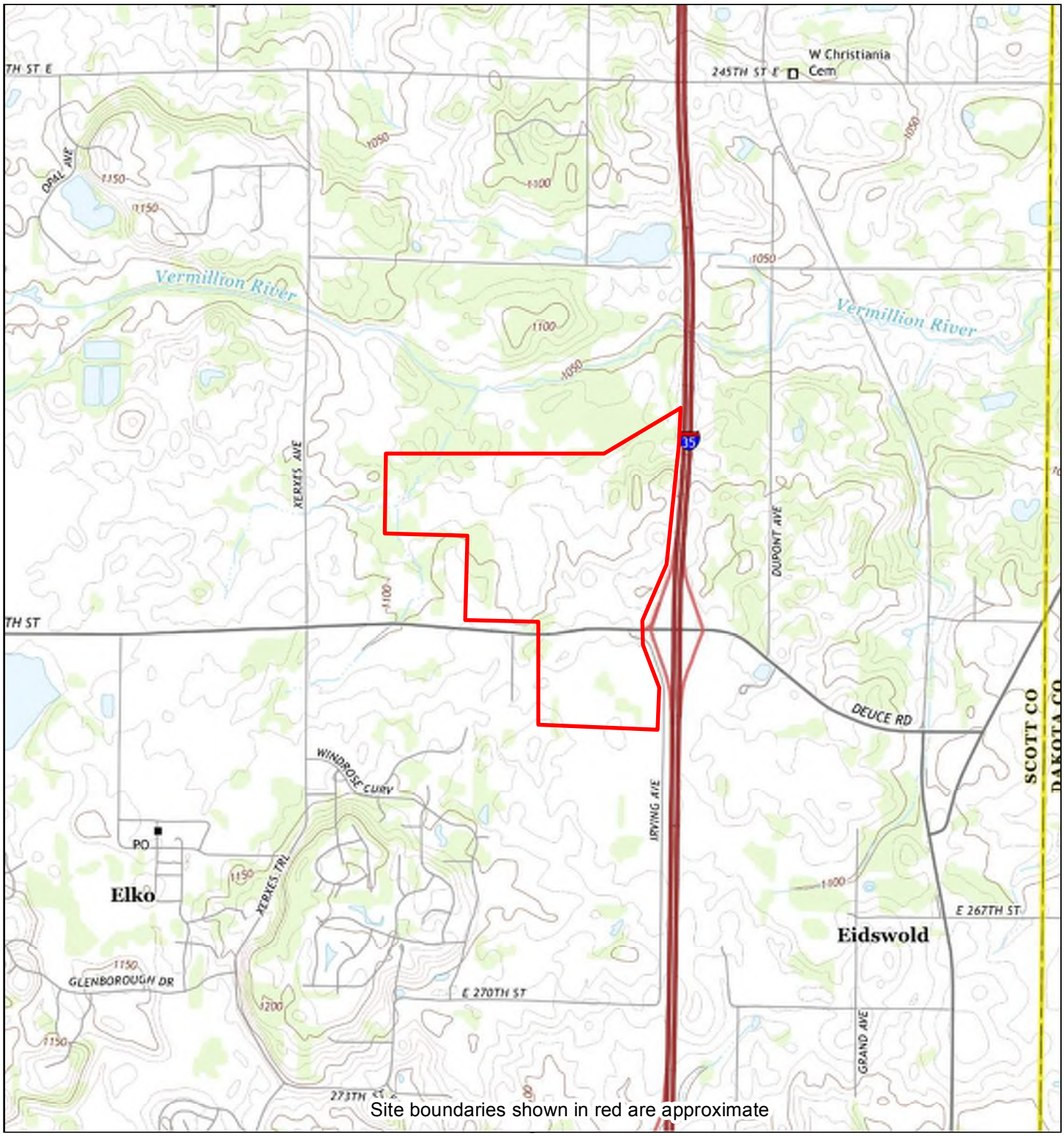
HIG Project # 2014835
Client Project # 17-20548
Approximate Scale 1: 6,000 (1"=500')
www.historicalinfo.com



Site boundaries shown in red are approximate

2016	0 Distance in Miles 1 1: 24,000 (1"=2,000') NAD 1983 UTM Zone 15N	Site information: Adelmann Family Farms 10946-10998 260th St East New Market Township, MN 55020	HIG
Unified maps show subdued modern topo features where corresponding maps of the same year were not published.	ISG project #17-20548 HIG #2014835 completed: 03/27/2018		

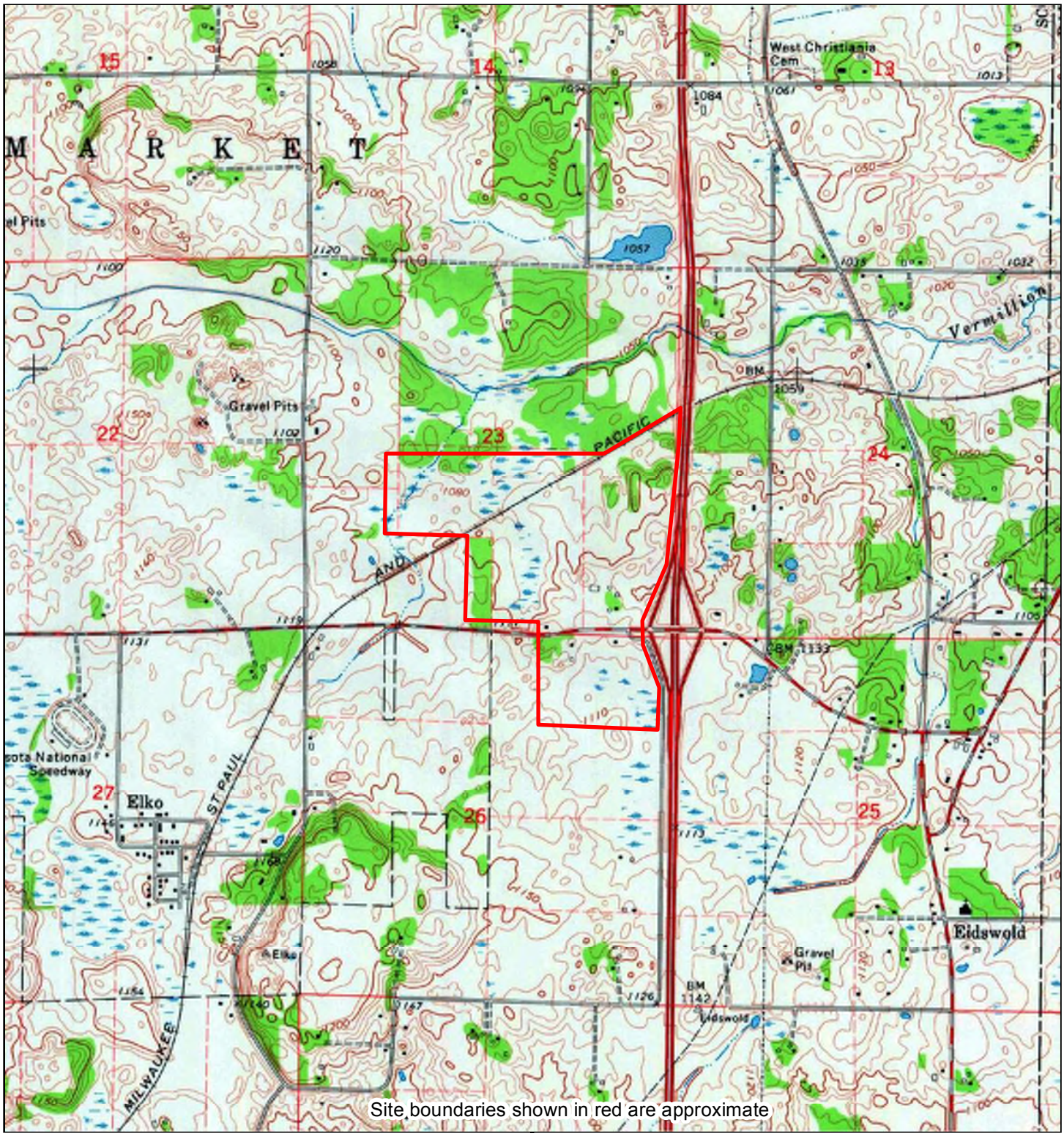
Zone	Topographic Map Name	Publisher	Map Size	Base Map	Aerial Photo Topo Updates Photo Year	Inspected	Revised
All	New Market, MN	USGS	7½' x 7½'	2016	--	--	--



Site boundaries shown in red are approximate

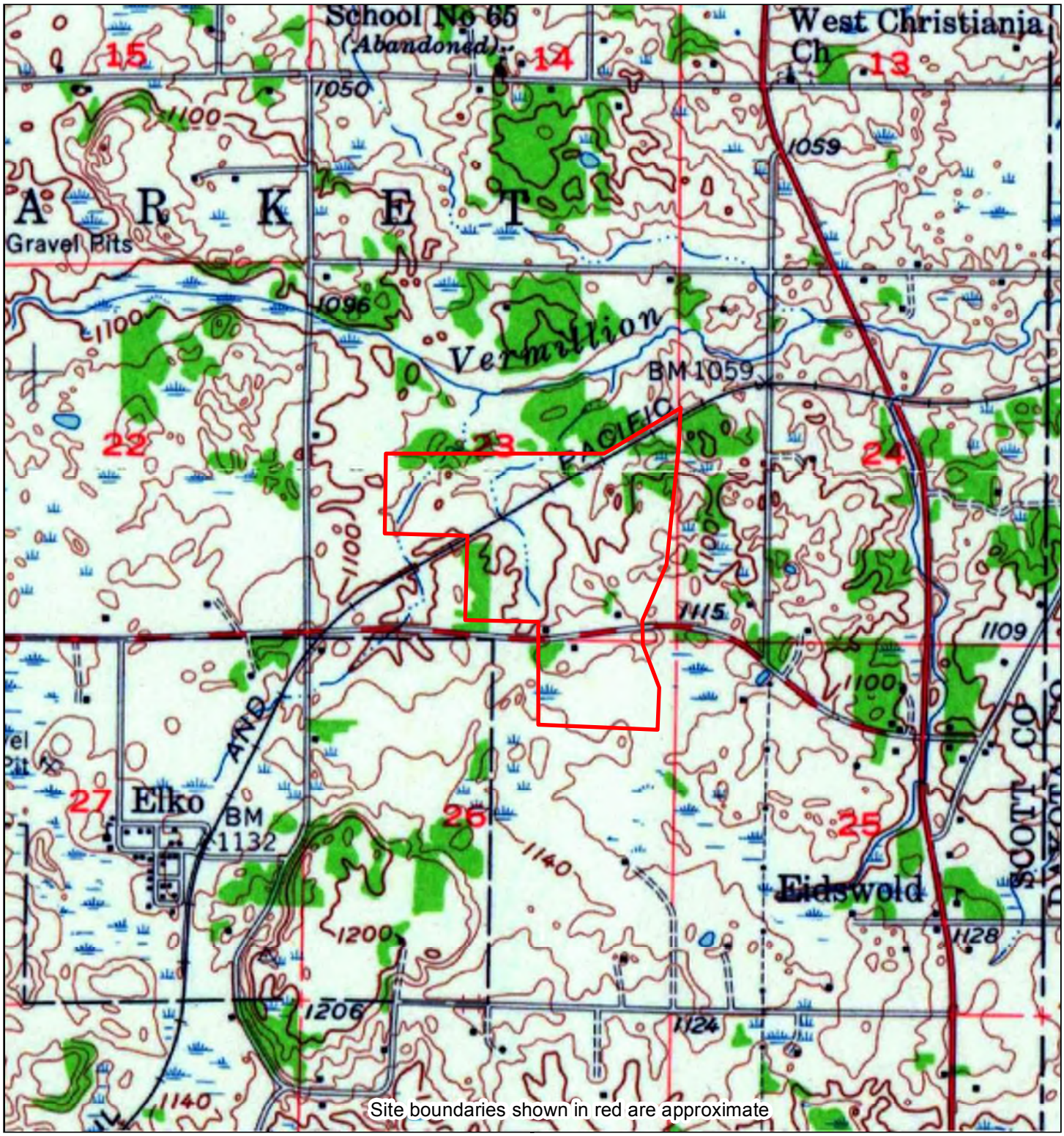
2013	0 Distance in Miles 1 1: 24,000 (1"=2,000') NAD 1983 UTM Zone 15N	Site information: Adelmann Family Farms 10946-10998 260th St East New Market Township, MN 55020
Unified maps show subdued modern topo features where corresponding maps of the same year were not published.	ISG project #17-20548 HIG #2014835 completed: 03/27/2018	

Zone	Topographic Map Name	Publisher	Map Size	Base Map	Aerial Photo Topo Updates Photo Year	Inspected	Revised
All	New Market, MN	USGS	7½' x 7½'	2013	--	--	--



1974	0 Distance in Miles 1 1: 24,000 (1"=2,000') NAD 1983 UTM Zone 15N	Site information: Adelmann Family Farms 10946-10998 260th St East New Market Township, MN 55020	HIG
Unified maps show subdued modern topo features where corresponding maps of the same year were not published.	ISG project #17-20548 HIG #2014835 completed: 03/27/2018		

Zone	Topographic Map Name	Publisher	Map Size	Base Map	Aerial Photo Topo Updates Photo Year	Inspected	Revised
All	New Market, MN	USGS	7½' x 7½'	1974	1973	--	--



1957	0 Distance in Miles 1 1: 24,000 (1"=2,000') NAD 1983 UTM Zone 15N	Site information: Adelmann Family Farms 10946-10998 260th St East New Market Township, MN 55020	HIG
Unified maps show subdued modern topo features where corresponding maps of the same year were not published.	ISG project #17-20548 HIG #2014835 completed: 03/27/2018		

Zone	Topographic Map Name	Publisher	Map Size	Base Map	Aerial Photo Topo Updates Photo Year	Inspected	Revised
All	Prior Lake, MN	USGS	15' x 15'	1957	1953	--	--

E 260TH ST

Elko New Market
CT 811.00 4766 - 10880 $A
4766 - 10881 55020

4736 Amy Lyn Schumacher .... 94 NP
Calvin L Schumacher ...... 94 NP
5780 .... NP
5800 Jessica Scarlett McMillan ... 03•952.461.6466
Andrew Richard McMillan .. 03•952.461.6466
5846 Delores Kay McMillan (8/03) .. 73• NP
George Edward McMillan (8/03) 73• NP
5880★A1 Landscapes .... + 952.240.0895
Jeff A Schaiwiq (8/02) ...... 03•952.461.4727
6400 Jackie Lori Devine .... 01•952.461.6400
Rick John Devine .... 01•952.461.6400
6406 .... NP
6845 Dale Francis Pexa Jr ..... 93•952.461.4205
Fran Elizabeth Pexa .... 93•952.461.2881
7560♣ Karen Fuller .... 05• NP
7595 Helene Rose Friedges ... 89•952.461.2437
7685 Bridget Lynn Deer (9/92) ... 92•952.461.2080
Thomas Harold Deer (9/92) 92•952.461.2080
7745 Debra Kay Fischer (11/92) ... 90•952.461.2272
Gregory Alan Fischer (11/92) . 90•952.461.2272
7770 Christopher John Fritz (3/96) . 91•952.461.3079
7796 Pat Louise Page (11/95) ... 88•952.461.2532
Thomas Percy Page (11/95) . 88•952.461.2532
7805 7820.7837 .... NP
9476 Carol Ann Jones .... 83•952.461.3383
Lane A Jones II .... 83•952.461.3383
9840 Martin Mark Deutsch (10/10) 73• NP
William Henry Deutsch (10/10) 73• NP
10405★Niemeyer Trailer Sales ... 10 952.461.2525
10491★End Zone Bar & Grill 10 952.461.4441
10675★Traders Market Inc 10 952.461.2400
10896♣ Lorraine Adelman .... 99•952.461.7226
♣ Robert F Adelmann .... 99•952.461.7226
10881★Twin Cities Featherlite Trailer Sale
10 952.461.6548
31 RESIDENCE 5 BUSINESS

E 260TH ST

New Prague
CT 811.00 301 - 1951 $A
301 - 1951 56071

301 Jackie Marie Pomije ..... 88•952.758.6784
Roger Michael Pomije .. 88•952.758.6784
655 Chad Paul Anderson ..... 04•952.758.6844
Laura Jo Anderson .... 04•952.758.6844
691 Marge Ellen Malz (4/96) ..... 89•952.758.2741
Randy E Malz (4/96) .... 89•952.758.2741
895 Kent Suelker 10 952.758.6638
1060 Dave Lynn Jenkins (7/01) .... 00•952.758.3691
1090 Chris Mark Sampson (5/00) .. 00• NP
Julie Kay Sampson (5/00) .. 00• NP
1096 Delroy Joseph Sand Jr (6/06) . 05• NP
1405 .... NP
1581 Catharina Clementa Vossen (6/89) 90•952.758.5017
Gary Lee Vossen (6/89) ... 90•952.758.5017
1655 John Thomas Hertzog Jr (6/04) 04•952.758.6845
Nancy Jean Hertzog (6/04) ... 04•952.758.6845
1721 .... NP
1730♢ James Lester Nordwall (4/94) . 88•952.758.4105
♢ Michael Allen Nordwall (4/94) . 88•952.758.4105
1771★Eaglecrest K9 Resort Llc.. 10 952.758.5757
♢ Teresa Lee Reese (11/93) .... 95• NP
♢ Tracy Reese (11/93) .... 95• NP
1890 Brian Kelly Logue (6/01) ..... 00•952.758.9597
Kelly Ann Logue (6/01) ...... 00•952.758.9597
1910 Francis Joseph Tupy .... 04•952.758.3591
Karen Ann Tupy ...... 84•952.758.3591
1951 Allen Joseph Tupy .. 92• NP
26 RESIDENCE 1 BUSINESS

E 260TH ST

Webster
CT 811.00 2116 - 4451 $A
2116 - 4451 55088

2116 Dave Alex Zweber (6/96) 96•952.758.5864
Sandie Lee Zweber (6/96) 96•952.758.5864
★Zweber Construction & Drywall 09 952.758.4022
2140 Owen Oneal Maynard (12/02) 02•952.758.5055
Ruth Marilyn Maynard (12/02). 02•952.758.5055
2230 Janet Joy Dyslin (10/93) .... 93•952.758.5477
Jim Dennis Dyslin (10/93) .... 93•952.758.5477
2460 Dean Renald Benson ...... 95•952.758.2838
Teresa Rae Benson ...... 95•952.758.2838
2590 Jami Lynne Stocker (10/95) . 95• NP
Sylvester Alois Stocker (10/95) 95• NP
2591 Diane Mary Sirek 84 952.758.3844
Math Thomas Sirek Jr 84 952.758.3844
2646 Cyril Allen Simon (3/96) .. 95•952.758.3072
Natalie Ann Simon (3/96) .... 95•952.758.3072
3275 Richard Allen Hennes ...... 88•952.461.2289
Susan Doris Hennes ...... 88•952.461.2289
3565 Carol Duckett Hass (5/06) .... 04•952.461.0330
Scott Jon Hass (5/06) ...... 04•952.461.0330
3595★One Hour Heating & Air Conditioning
+ 952.461.4328
3660 Kayland E Call .... 83•952.461.2557
Neil Michaels Call .... 83•952.461.2557
3675 Ginny Marie Cooper ..... 90•952.461.2258
Roger Eugene Cooper .... 90•952.461.2258
3725 Cary Grant Boettcher (12/00) ... 00•952.461.4876
Diane V Boettcher (12/00) ..... 00•952.461.4876
4291 4295 .... NP
4359 Ronda Lee King .... + NP
Warren Willard King ...... + NP
4451 Patrick Joseph Flier (10/99) .. 96•952.461.4235
Sandra Lynn Flier (10/99) ... 96•952.461.4235
30 RESIDENCE 2 BUSINESS

W 260TH ST

Belle Plaine
CT 813.00 7475 - 11295 $C
7475 - 11295 56011

7475 Paul Herbert Franzen ... 89• NP
Rosemary Vossen Franzen .. 69• NP
10181 Janet Ann Larson .... 73•952.873.6866
Robert Dean Larson ..... 73•952.873.6866
10398 Koren Kay Eliason (10/03) ... 05•952.873.6673
Michael Alan Eliason (10/03) . 05•952.873.6673
10450 .... NP
10960 Ingrid Ann Bey (11/98) .... 87•952.873.6952
David John Plunkett (1/98) .. 87•952.873.6952
11005 .... NP
11203 Jeffrey Ernest Brooks (3/02) .. 02•952.873.0450
11211 Lisa Jane Schatz (11/93) ... 97•952.873.4264
Patrick John Schatz (11/93) .. 97•952.873.4264
11295 Wayne D Ingram (12/05) .. 05•952.873.8896
Carol J Laurent (12/05) .. 05•952.873.6696
15 RESIDENCE

W 260TH ST

New Prague
CT 812.00 750 - 5710 $C
750 - 5710 56071

750 Greg John Pavek .... 05•952.758.4867
Tara Ann Pavek ...... 05•952.758.4867
825 Al Mark Novotny ...... 81•952.758.4109
George Richard Novotny ... 81•952.758.4708
8800♢ Jon Carl Hendricks (12/98) .. 89•952.758.2573
♢ Mary Ruth Hendricks (12/98) . 89•952.758.2573

-260TH ST W INTS
1215 Pam Ann Klehr (3/90) .... 90•952.758.4812
Rick Joseph Klehr (3/90) .... 90•952.758.4812
1250 Anthony Tony Sirek (12/09) ... 08• NP
1350 Michelle Ann Novotny ..... 94 NP
1376 Alfred W Novotny ... 82•952.758.2150
Janet Marie Novotny .... 82•952.758.2150
1495 Elizabeth Marie Tisdel .... 02•952.758.9479
John Allan Tisdel ..... 02•952.758.9479
2355★Advanced Seeding & Erosion Control I
05 952.758.7741
Katie Odell Degross ...... 04•952.758.7001
Mike Clarence Degross ... 04•952.758.7001
2375 Joe Thomas Rademacher (2/01) 02•952.758.9736
Lori Lynn Rademacher (2/01) 02•952.758.9736
2380 Mark Christian Lund (12/97) .. 97•952.758.5664
Tara Lynn Lund (12/97) ..... 97•952.758.5664
2395 Barbara Ann Moudry (11/02) .. 02•952.758.4327
Troy Ernest Skluzacek (11/02) . 02•952.758.4327
2501 Kevin Michael Hartmann (6/00) 93•952.758.4126
Nancy Ann Hartmann (6/00) . 93•952.758.4126
2521 Arlene Joyce Hoffman ... 93•952.758.4267
Joe Ralph Hoffman ...... 93•952.758.4267
2626 Victoria Morgan .... + NP
3051 Diane Marie Weckman (4/05) . 89•952.758.3864
Larry Harold Weckman (4/05) . 89•952.758.3864
3071 Jean Rae Dolezal .... 87• NP
Mark David Dolezal ...... 87• NP
3201 Cathy Groneveld (2/05) .... 96•952.758.9177
Ryan Andrew Groneveld Jr (2/05) 96•952.758.9177
3206 Joan Rokusan Wagner .... 86•952.758.3970
Ken Anthony Wagner ..... 86•952.758.3970
3480 Traci Marie Kochevar .... 99•952.758.8875
Jeff Thomas Schoenbauer IV 99•952.758.8875
3891 Ed Gerard Nytes 87 952.758.2337
Shari Jean Nytes 87 952.758.2337
4450 Jamie S Schoenbauer 98 952.758.6698
Robert Scott Schoenbauer .. 98 952.758.6698
4591 Stacy Lynn Schmitz (7/07) .. 00•952.758.4561
Steve R Schmitz (7/07) ..... 00•952.758.4561
4849 Ann Marie Schmitz ...... 00•952.758.6573
George Robert Schmitz .... 80•952.758.6573
5331 Richard John Eischens .... 82•952.758.3241
5350 Anna Albina Eischens ..... 81•952.758.3592
Myron John Eischens ..... 81•952.758.3592
5718 Alice B Nytes (3/94) .... 84•952.758.4390
Bob J Nytes (3/94) .... 84•952.758.4390
58 RESIDENCE 3 BUSINESS

261ST AVE

Belle Plaine
CT 9701.98 19701 - 20740 $E
19701 - 20740 56011

19701 Kristine D Lippman .... 97• NP
Tom Gaylen Lippman .. 97• NP
19785 .... NP
19912 Patty S Hron .... 96•952.873.4517
Paul Jeffrey Hron .... 96•952.873.4517
20235 Brian Mark Schultz ... 02•952.873.6599
Noreen Ann Schultz .... 02•952.873.6599
20280 Audra Ann Kerkow .... 98•952.873.6188
Loren H Kerkow Jr ..... 98•952.873.6188
20472 James Mathias Witt ...... 96•952.873.4481
Marilyn Margaret Witt ..... 96•952.873.4481
20740 Jeff David Bromley .... 96•952.873.2206
Tara Marie Bromley ...... 96•952.873.2206
13 RESIDENCE

261ST AVE NE

Isanti
CT 1305.00 350 - 2445 $D
350 - 2445 55040

350 Barb Denise Haak .... 81•763.444.5716
Thomas F Williams .... 81•763.444.5716
366 Karen Marie Lach .... 97•763.444.7817
Tracy John Lach .... 97•763.444.7817
425 Erik B Draxten .... 82•763.444.5338
Jenna Marie Draxten ...... 82•763.444.5338
475 Alan Robert Oberg ...... 76•763.444.4860
Margaret L Oberg .... 76•763.444.4860
575 Crystal Pearl Schultz ..... 03•763.444.7866
639 Debra Jane Abersold (5/02). 02•763.444.9099
Mark Alan Abersold (5/02) .. 02•763.444.9099
663 Lorraine Marie Schummer .. 88•763.444.5836
865 Doyle Alan Peck (4/66) ..... 88•763.444.9874
Karen Jane Peck (4/66) .... 00•763.444.9528
883★♣ Athens Township Hall .. 09 763.444.8097
1000 Barbara A Johnson .... 90•763.444.8364
Leroy Anthony Johnson Jr .. 96•763.444.8364
1001♢ Tim Robert Paulino (3/09) .... 03•763.434.4301
♢ Robert E Paulino Jr (3/09) .. 03•763.434.4301
1376 .... NP
1435 Amy Jo Lyzhoft (5/98) .... 96•763.444.5208
Kevin Kelly Lyzhoft (5/98) .... 96•763.444.5208
1471♢ Darryl Virgil Fry (2/98) ...... 96•763.444.8078
♢ Sally Ann Fry (2/98) .... 96•763.444.8078
1506 Bernice Ann Smith .... 82•763.444.5979
Thomas Kent Smith ...... 82•763.444.5979
1521 Hedda Ann Miller (6/93) .... 93•763.444.9912
1554 Alden Johnson .... 82•763.444.5300
James Eugene Johnson .... 82•763.444.5300
1776 Louise M Blair ...... 95• NP

-HASTINGS ST NE INTS
1675 Tracey Arthur Bostrom (4/05) 03• NP
1955 Kayla A Obrien (12/92) ... 95•763.444.8383
Nicholas Obrien (12/92) ... 95•763.444.8383
2051★Above All Rooftops To Remodeling Inc
+ 763.444.7824
♢ Daniel Gerald Majwid (1/99) .. 99•763.444.7435
♢ Tammi Sue Majwid (1/99) ... 99•763.444.7435
2151 Emmett Lawrence Doherty 98• NP
Lydia Ann Doherty .... 98• NP
2245 .... NP
2319♣ Ann Ann Walker 05 763.444.9318
♣ Anthony Dewane Walker 05 763.444.9318
2351 Betty Kay Thompson (1/04) .. 04•763.444.5463
Dean Kevin Thompson (1/04). 04•763.444.5463
2445 Lorna Clarence Eschappat 90•763.444.6663
42 RESIDENCE 2 BUSINESS

261ST AVE NW

Isanti
CT 1305.00 74 - 3700 $D
CT 1306.00 4101 - 4839 $C
74 - 5050 55040

74 Clarice A Spike .... 89•763.444.5962
Myron M Spike .... 89•763.444.5962
145 Curt Philip Carpenter ...... 81•763.444.5734
Diane M Carpenter ...... 81•763.444.5734
250 Nancy D Kiesk .... 83•763.444.6305
Richard W Kiesk .... 83•763.444.6305
311 Elizabeth Marie Lockwood (6/07) 98• NP
Terry Lee Lockwood (6/07) ... 98• NP
318 Mark Eller 98 763.444.8006
350 Craig Martin Hamilton (10/94) 94•763.444.8068
411 Eric Edward Fischer (4/99) .. 96•763.444.9140
Kerri Kay Fischer (4/99) ... 96•763.444.9140
490 Jean Louise Stauffer .... 84•763.444.9809
Joseph Lloyd Stauffer Jr .... 84•763.444.9809
1771 Cherlyn Mercedes Stewart .. 87•763.444.6552
Daniel James Stewart .... 87•763.444.6552
1914 Raymond Joseph Bonte (6/06) 06•763.444.7133
Amber D Smith (6/06) ..... 06•763.444.7133
2051 Kari Cherlyn Schumann (6/02) 03•763.444.0379
Wade Micheal Schumann (6/02) 03•763.444.0379
2056 Paul Brian Chergosky (6/02).. 02• NP

-PARTRIDGE ST NW INTS
2129 Carrie Marie Olson (6/03) .... 03•763.444.0036
Eric Floyd Olson (6/03) ..... 03•763.444.0036
2217 Diane Sorenson ...... 90•763.444.6773
Mark William Sorenson .. 90•763.444.6773
2319 .... NP
2593 Ryan Vale Carpenter ...... 01•763.444.6142
2772 Richard Carl Frank .... 96•763.754.2730
3120 Linda Sue Bottema (1/96) .. 77•763.444.4329
William Edward Bottema (1/96) 77•763.444.4329
3197 Brian Jerome Wendt ...... + 763.444.6138
Catherine Lynn Wendt .... + 763.444.6138
3203 Bruce Blake Selvig (10/03) ... 93•763.444.3683
Paula Yvonne Selvig (10/03) 93•763.444.3683
3560 John Joseph Lang (8/96) .. 95•763.444.9117
Paulette Lynn Lang (8/96) .. 95•763.444.9117
3591 Jelica E Tabaka (6/05) .... 90•763.444.0283
Michael Eugene Tabaka (6/05) 98•763.444.0283
3620 Lois Kleever (2/06) .... 06• NP
3780 Lou A Bell .... 88•763.444.6345
Steven Lynn Bell ...... 88•763.444.6345

-BLACKFOOT ST NW INTS
4101 Dale Earl Karpe (4/98) .... 94• NP
Sherry Sniegowski Karpe (4/98) 94• NP
4195 John Howard Blumer ... 90 763.444.4701
Polly Jo Blumer 90 763.444.4701
4401 Elard Duane Blumer ..... 75•763.444.5693
Jason David Torgerson ..... 75•763.444.5693
4459 Pam D Plocher 94 763.444.5312
William G Plocher 94 763.444.5312
4463 .... NP
4525 June A Moore (12/04) ...... 04•763.444.0469
4540 Beverly Ann Blumer .... 06•763.444.5997
Ralph W Blumer ...... 06•763.444.5997
4544 Joyce Ardell Lilienoe 00 763.444.7172
4585 David Ralph Swanson (12/92). 95• NP
Wanda Lorraine Swanson (12/92) 95• NP
4588 .... NP
4694♢ Darlene Sharon Lindelof .... 05•763.444.6666
♢ Robert W Lindelof .... 05•763.444.6666
4819 Barbara Lund .... 82•763.444.4368
Dennis Allen Lund .... 82•763.444.4368
4792 Cynthia R Lambert 09 763.444.7845
Robert R Lambert 09 763.444.7845

-ROANOKE ST NW INTS
4809 Lacey Lynn Sundeen (7/04) .. 03•763.444.6361
Nan Joseph Sundeen (7/04) .. 03•763.444.6361
5050★Stanford Township 08 763.444.8307
65 RESIDENCE 1 BUSINESS

261ST AVE NW

Saint Francis
CT 1306.00 5790 - 7295 $C
CT 501.08 E 5796 - 5796 $D
5790 - 7295 55070

5790 Betty A Grotte (1/07) .... 96•763.444.5689
Donald C Grotte (1/07) 96•763.444.5689
5796♣ Christopher D Baumgardt (9/04) 04• NP
♣ Wendy J Baumgardt (9/04) . 04• NP
5856 .... NP
5951 Joann Geri Barthold (11/00) .. 92•763.444.0456
Peter Joseph Barthold (11/00) 92•763.444.0456
★Barthold Inc 03 763.444.7447
5962 Angela Mae Bauer (2/04) . 04•763.444.7086
Troy Leslie Bauer (2/04) .. 04•763.444.7086
6019 .... NP
6065 Donald L Ryman .... 82•763.444.0439
Janet Sue Ryman .... 82•763.444.0439
6151 .... NP
6171 Terry G Overacker Jr ...... + NP
6251 Linda Jane Harris (9/02) .... 02•763.444.9390
Scott Kevin Lenz (9/02) ..... 02•763.444.9390
6277 Theresa A Tollaro (5/08) .... 08•763.444.6385
6346 Delton Ray Whittlet .... 82•763.444.5388
Joann Ann Whittlet .... 82•763.444.5388
6463 Joe J Lynch (6/09) ..... 09• NP
6495 Kathryn Fay Ferguson ..... 01•763.444.4613
Troy Douglas Ferguson ... 01•763.444.4613
6525★Affordable Container Service + 763.753.5964
6599 Kristina Kim Brutoco (2/01) .. 98• NP
★Manahan Stables Llc 02 763.444.6722

-CROWN CIR NW INTS
6634 Audrey Delores Grams. 82•763.444.5707
6997 Steven Mark Roles .... 96•763.444.6414

-NACRE ST NW INTS
7295 Kenneth Ryan Springer 94•763.856.2005
Kimberly Joy Springer 94•763.856.2005
27 RESIDENCE 1 BUSINESS

261ST AVE NW

Zimmerman
CT 1306.00 7790 - 9416 $C
CT 301.00 9686 - 14476 $C
CT 302.00 14822 - 14835 $C
7790 - 14835 55398

-VARIOLITE ST NW INTS
7790 Gene Dale Gifford (10/03) .. 93•763.856.5068
Stephanie Renee Gifford (10/03) 93•763.856.5068
7900 Brent Marlow Aasu (3/98) ... 94• NP

-DOLPHIN ST NW INTS
8015 Daniel Douglas Grams ..... 79•763.856.2640
Sheila Rae Grams .... 79•763.856.5915
8296 Daryl Arthur Grams .... 97•763.856.1009
Tammy Jean Grams .... 97•763.856.1009
8375 Andy Lee .... 10 NP
Sharon Kay Lee .... 10 NP

-LLAMA ST NW INTS
8435 .... NP
8437 Barbara Jean Johnson ... 96•763.856.4344
Kenneth Orville Johnson ... 96•763.856.4344
8448 Connie Lee Bjork ..... 94•763.856.2892
Jason Matthew Bjork .... 94•763.856.2892
8551 April Susan Pinyan ..... 94•763.856.4906
Ron Howard Pinyan ...... 94•763.856.4906
8597 Ann Carol Connors (8/97) .. 93•763.856.3393
8600 Brian Duane Golden ... 01• NP
8628 Larry Benges (8/97) ...... 90• NP
Robert Raymond Benges (8/97) 90• NP
8647 Paul Wayne Smith .... 96•763.856.4437
Rexan Kline Smith ...... 96•763.856.4437
8650 Gene Ronald Grams ...... 74•763.856.2852
Judith Ann Grams .... 74•763.856.2852

-UNICORN ST NW INTS
8670 Marvin H Stallcop ...... 07 NP
Ryan K Stallcop ..... 07 NP
8879 Lisa Renee Zwack (1/96) ... 93•763.856.4214
Scott Robert Zwack (1/96) .. 93•763.856.4214
8959 Dave Arthur Tilly (7/02) ..... 02•763.856.5168
Terrill L Tilly (7/02) ..... 02•763.856.5168
8970 Ben Richard Bullock (1/98) 94•763.856.0958
Donna Marie Bullock (1/98) .. 94•763.856.0958
8995 Marty X Tacs (12/06) ..... 07• NP
Sally Mary Tacs (12/06) .... 07• NP
9004 Justin J Drum (4/06) ..... 01•763.856.5727
9064 Jason Micheal Bolzek (5/03) . 03•763.856.3438
Kristi Bolzek (5/03) ...... 03•763.856.3438
9170 ..... NP
9200 Chris Marie Dequaine (10/02) 02•763.856.2386
Kenneth John Dequaine (10/02) 02•763.856.2386
9279 Lori Catherine Olson ..... 85•763.856.2478
Wayne Robert Olson ...... 85•763.856.2478
9340 Joyce Adele Newman (5/96) . 96•763.856.4523
Ted Floyd Newman (5/96) ... 96•763.856.4523
9350♣ Taylor Ferguson .... + 763.856.9023
9416 Joshua M Long (6/09) ..... 09•763.856.0137
9686 Deanna Margaret Johnson .. 06•763.856.4140
Leslie Ernest Johnson .... 06•763.856.4140
9697 Peggy Sue Maciej ...... 72•763.856.4141
Troy Robert Maciej .... 72•763.856.4452
9765 Karen Ann Hodge (1/99) ... 94•763.856.1069
Michael Scott Hodge (1/99) .. 94•763.856.1069
9810 Dan A Wudtke (4/96) ...... 96•763.856.0473
Jennifer L Wudtke (4/96) . 96•763.856.0473
9887 Alquin Steve Marty Sr (6/06) . 06•763.856.6178
Beverly Jean Marty (6/06) ... 06•763.856.6178
9925 Dianna Marie Herrmann ... 94• NP
9990 Patty Ann Lundgren (1/90) .. 88•763.856.2611
Robert Stan Lundgren (1/90) . 88•763.856.2611
10015 Daniel S Fletcher (11/03) ... 03• NP
10060 Mark Patrick Moriarty .... 92•763.856.3421
Tammy Verna Moriarty ..... 92•763.856.3421
10080 Colleen Marie Hempel ..... 84•763.856.2624
Keith J Hempel .... 84•763.856.2624
10230 Lorine Eva Bardwell (5/94). 93• NP
Mark Allen Bardwell (5/94) . 93• NP
10240 Darla Marie Rodriguez (8/08) . 06•763.856.5857
David A Rodriguez (8/08) .... 06•763.856.5857
10320 Barbara A Riggs (12/99) .... 99•763.856.0279
Dexter Riggs (12/99) .. 99•763.856.0279
10332 .... NP
10430 Craig Allan Hinrichs (1/95) .. 95•763.856.3833
Kim Lynn Hinrichs (1/95) ... 95•763.856.3833
10480 10555 .... NP
10627 Barb Ann Settambrino (7/01) 01•763.856.6736
Gregory Raymond Settambrino (7/01) 01•763.856.6736
10635 Kathy Xiong Vang (12/09) .. 09• NP
Tong Moua Vang (12/09) .... 09• NP
10725♣ Mary H Ball .... 96•763.856.3447

© Copyright information on this page may not be reproduced or entered into any computer system in any manner whatsoever except with the prior written authorized consent of the publisher.

2007 Minneapolis, MN & Vicinity - Cole Information Services

Paul A Stengrein ... 05•651.408.8994
6465 ★♣ Wendi World Enterprises L 05
-GUSTAVUS CT INTS
7014 Cindy Ann Bloney ... 96 651.462.3224
Lee Lee Bloney ... 96 651.462.3224
★Ridgetop Construction Co. 01 651.462.3224
7015 Craig Stuart Fickman ... 00•651.462.4583
Lisa Dorothy Fickman ... 00•651.462.4583
7025 Colleen Andel ... + NP
7028 Lee Ann Shogren ... 96•651.462.1233
William Richard Shogren ... 96•651.462.1233
7030 Rebecca L Espersen ... 94•651.462.4539
Steven John Espersen ... 94•651.462.4539
7067 ♣ Kim Phillips ... 98 651.462.0029
♣ Michael Joseph Phillips ... 98 651.462.0029
79 RESIDENCE 3 BUSINESS

● 259TH AVE NE

Isanti
CT 1304.00 3823 - 3930 $D
RR2 3823 - 3930 55040
-VICKERS ST NE INTS
3823 Dean A Larson ... 76 763.444.5081
Joan D Larson ... 76 763.444.5081
3896 James Koosman ... 00 763.444.4671
Tim J Koosman ... 00 763.444.4671
3930 Jack Joseph Leuenberger ... 90 763.444.9293
Marie Jean Leuenberger ... 90 763.444.9293
6 RESIDENCE

● 259TH AVE NW

Zimmerman
CT 301.00 10015 - 10091 $C
CT 302.00 14615 - 14796 $C
RR3 10015 - 10091 55398
10015 Cory L Schimmelman ... 01• NP
Rebecca Jean Schimmelman 01• NP
10030 Steve John Filer ... 00• NP
10045 Amy Lynn Holbrook ... 92 763.856.5502
10050 David Ray Bardwell ... 94•763.856.3844
10090 Cindy L Schram ... 93• NP
James Arthur Schram 93• NP
10091 ★Minak Inc ... + 763.856.8916
RR6 14615 - 14796 55398
14615 Tammie Marie Eichmann ... 04• NP
Todd Anthony Eichmann ... 04• NP
14622 ... NP
14701 Douglas J Mathison ... 03• NP
Stacey Mathison ... 03• NP
14796 Kelly Moriarty ... + NP
William Moriarty ... + NP
14 RESIDENCE 1 BUSINESS

● 259TH ST

Lindstrom
CT 1105.00 14275 - 14686 $D
CT 1106.00 14381 - 14470 $B
RR1 14275 - 14686 55045
-OLINDA TRL INTS
14275 Reed V Julien ... 03•651.257.4335
Theresa Jean Julien ... 03•651.257.4335
14278 Debbra Diane Pojanowski ... 85•651.257.1696
Richard J Pojanowski ... 85•651.257.1696
14381 Colleen Ann Hueners ... 97•651.257.0609
Ethan David Hueners ... 97•651.257.0609
14401 Fred Strandquist ... 05 NP
14443 Deborah Ann Gervais ... 94•651.257.3953
Glenn Patrick Gervais ... 94•651.257.3953
14470 Brian D Froberg ... 86•651.257.2770
Debra F Froberg ... 86•651.257.2770
14526 Gary Norton ... 98• NP
Timothy Norton ... 98• NP
14596 Diane Lamae Schneider ... 86•651.257.1808
Joel Thomas Schneider ... 86•651.257.1808
14633 John Edward Bruno ... 91•651.257.2958
14686 ★Hair Station ... 89 651.738.3484
Leonard F Sanchez ... 99•651.257.9055
Patricia Rose Sanchez ... 99•651.257.9055
16 RESIDENCE 1 BUSINESS

● 259TH ST

Wyoming
CT 1104.00 5620 - 6278 $C
RR7 5620 - 6278 55092
-FINCH CT INTS
5620 Sharon K Watson ... 02• NP
5640◊ Michael S Murzyn ... 00•651.408.1110
◊ Sharon J Murzyn ... 00•651.408.1110
5660 Apartment
143 M Hjulberg ... 91• NP
143 Marvin W Hjulberg ... 91• NP
5680 Judith A Weihra ... 92•651.462.2179
5685 Delwin L White ... 91•651.462.3678
Linda Lee White ... 91•651.462.3678
5700 Chris Fink ... 04 NP
5705 Doora L Keast ... 04• NP
5720 Jean Jean Olds ... 03•651.462.3194
Ronald Wilfred Olds ... 03•651.462.3194
★RW Olds Engineering ... 05 651.462.3194
5725 Luverne J Weaver ... 02• NP
5755 Suzanne Knaup ... 04• NP
5760 Carrie E Pepin ... 92•651.462.1306
Wayne Joseph Pepin ... 92•651.462.1306
5780 Jacqueline Lee Kaufman ... 03• NP
Evelyn Ann Kaufmann ... 03• NP
-FREEPORT AVE INTS
5800 Amy Jo Dickenson ... 92•651.462.8478
John Michael Dickenson ... 92•651.462.8478
5802 ♣ Cindy Pikala ... 93• NP
♣ Daniel J Pikala ... 93• NP
5805 Jennifer M Roatch ... 99•651.462.6642
Lory A Roatch ... 99•651.462.6642
5820 ♣ Charles W Yetter ... 01 651.462.8247
♣ Dona L Yetter ... 01 651.462.8247
5840 Sharon Lynn Knauff ... 89•651.462.2903
Thomas James Knauff ... 89•651.462.2903
5845 Randy Richard Johnson ... 94•651.462.8213
5860◊ Jason Ralph Hopkins ... 01•651.462.2739
◊ Sandra Elizabeth Hopkins ... 01•651.462.2739
5865 Beverly Ann Jensen ... 93•651.462.4029
Todd Henry Jensen ... 93•651.462.4029
5880◊ Kristi Marian Streff ... 92 651.462.8552
◊ Robert Ward Streff ... 92 651.462.8552
5885 Gerald Dale Wavrin ... 91•651.462.1898
Sylvia I Wavrin ... 91•651.462.1898
5900 Jerome L Phillips ... 94•651.462.4657
Ted Charles Phillips ... 94•651.462.3460
5905 Barbara J Mollet ... 98• NP

Bart G Mollet ... 98• NP
5920 Jackie L Wilson ... 89•651.462.1702
Steve Jack Wilson ... 89•651.462.1702
5925 Kelley Fay Meyers ... 92•651.462.4720
Kenneth Eugene Meyers ... 92•651.462.4720
5940◊ Nancy Gertrude Savage ... 98•651.462.2139
◊ William Charles Savage ... 98•651.462.2139
5945 Deborah Lorraine Kunz ... 91•651.462.4503
Steve Jeffrey Kunz ... 91•651.462.4503
5960 Joseph Paul Kann ... 92•651.462.2786
Mary Jo Kann ... 92•651.462.2786
5984 ... NP
5985 ♣ Vin Truax ... 99 NP
5987 Angel Luis Soto ... 03• NP
Maria Esther Soto ... 03• NP
6001 Kim Ann Hekele ... 04• NP
Robert James Hekele ... 04• NP
6004 Kevin Byl ... 01•651.462.2642
Michele L Byl ... 01•651.462.2642
6027 Olga A Anderson ... 03• NP
Sheldon H Anderson ... 03• NP
6028◊ Jodi Wardall Goodnow ... 99•651.408.9111
◊ Paul Steven Goodnow ... 99•651.408.9111
6037 Steve Carl Ulrich ... 99•651.408.8111
Susan Lynn Ulrich ... 99•651.408.8111
6038 Jane Marie Olson ... 93•218.753.2127
Stephen Ralph Olson ... 93•651.462.8165
6061 Chris Thomas Roche ... 00•651.408.1812
Dawn Roche ... 00•651.408.1812
6066 Chato C Lorentsen ... 05• NP
6080 Briana Marie Hughes ... 05•651.408.8138
Richard Aron Hughes ... 05•651.408.8138
6083 Michael S Borene ... 04• NP
6096 ... NP
-GLEN OAK DR INTS
6103 Penny M Walters ... 97•651.408.1508
Timothy C Walters ... 97•651.408.1508
6113 James Thomas Dowling ... 99• NP
Renee Kim Dowling ... 99• NP
6116 Andrew Ray Kottshut ... 99•651.408.8712
6136 ... NP
6141 Charles Richard Dufour Jr ... 00•651.462.4545
Sarah A Dufour ... 00•651.462.4545
6160 Bridget Suzanne Kutz ... 99• NP
Frank Ernst Kutz ... 99• NP
6173 Laura J Bier ... 99•651.408.0109
6194 Sherri Eggebrecht ... 02• NP
Jeff D Kangas ... 02• NP
6197 Carrie D Reed ... + 651.462.4855
Craig Matthew Reed ... + 651.462.4855
-GOLDFINCH AVE INTS
6206 Debra R Borene ... 99• NP
Michael Sean Borene ... 99• NP
6211 Julynn V Schumacher ... 99•651.462.2239
Wade Michael Schumacher ... 99•651.462.2239
6249 Corrine A Calhoun ... 96•651.462.1300
David W Calhoun ... 96•651.462.1300
★Corrine Care For Tots ... 05 651.462.1300
6263 Laurie Lee Hawthorne ... 05• NP
Sean Michael Hawthorne ... 05• NP
6275 ... NP
6278 Margaret Rogers ... 02•651.462.4765
Willis H Rogers ... 02•651.462.4765
100 RESIDENCE 2 BUSINESS

● 259TH ST E

Lakeville
CT 811.00 0 11965 - 11965 $A
RR1 0 11965 - 11965 55044
11965 Gary Kenneth Fredrickson ... 88•952.461.3581
Joanne Marie Fredrickson ... 88•952.461.3581
2 RESIDENCE

● E 259TH ST

Elko
CT 811.00 11745 - 11860 $A
RR2 11745 - 11860 55020
-PILLSBURY AVE INTS
11745◊ Teresa Moberg ... + 952.461.6629
◊ Timothy Russ Moberg ... + 952.461.6630
11825 Scott Donald ... 05 NP
11851 Jeremy Paul Storlie ... 02•952.461.3934
Jodi M Storlie ... 02•952.461.3934
11860 ... NP
6 RESIDENCE

● 260TH AVE NW

Zimmerman
CT 301.00 10004 - 11190 $C
RR3 10004 - 10372 55398
10004 ... NP
10023 Robert Mark Rimer ... 03 NP
10079 Kathleen Barker ... 03 NP
Timothy Barker ... 03 NP
10225 Todd Darrel Johnson ... 03 763.856.8131
★Todd Johnson Sourcing Inc +
10249 ♣ Craig Eggert ... 04 NP
10295 Brenda Felt ... 03• NP
10332 Correna Spitzmueller ... 03 763.856.6132
Jacob Spitzmueller ... 03 763.856.6132
10372 Colin Harding ... 05 NP
RR1 10870 - 11190 55398
10870 A Ende ... 99• NP
Brooke Diane Ende ... 99• NP
10877◊ Greg Charles Bye ... 87 763.856.2209
◊ Julie Lynn Bye ... 87 763.856.2209
10948 Dana L Thompson ... 95•763.856.3650
Robert Alan Thompson ... 95•763.856.3650
11190 ♣ Sherry Willis ... 04 NP
17 RESIDENCE 1 BUSINESS

● 260TH ST

Lindstrom
CT 1106.00 14854 - 17242 $B
RR1 14854 - 17242 55045
14854 ★CSD Custom Woodworks Inc +
Christopher S Darbec ... 05• NP
Molly M Darbec ... 05• NP
14857 ... NP
14912 Owen Mark Kuhnly ... 80•651.257.5516
Nena Lynn Kuhnly ... 80•651.257.5516
14950 ♣ Nena Kuhnly ... 99• NP
♣ Owen Kuhnly ... 99• NP
15033 Roger Edward Neafus ... 86•651.257.2516
Susan G Neafus ... 86•651.257.2516
15036 Jennifer Lee Bielecki ... 00•651.257.9676
Todd Michael Bielecki ... 00•651.257.9676
15115 Michael Joseph Schwartz ... 02•651.213.6700
15144 Beth Anne Novack ... 02•651.257.8222
Kenneth William Novack Jr ... 02•651.257.8222
15237◊ Erica L Huffman ... 00•651.257.3791
◊ Steven Anthony Huffman Jr ... 00•651.257.3791
15298 Rebecca Ann Biederman ... 94•651.257.4304
Gregory Paul Biedermann ... 94•651.257.4304
-PHEASANT RUN INTS
15323 Audrey Holm ... 95•651.257.6213
15330 Josh Wayne Langness ... 03•651.257.8399
Katy L Langness ... 03•651.257.8399
15470 Nicole A Dietrich ... 04• NP
Gerald Warren Leach ... 04• NP
15548 Catherine Ann Michel ... 01• NP
Tim John Michel ... 01• NP
15573 Darlene M Ganley ... 92•651.257.4694
James F Ganley ... 92•651.257.4694
15709 Allan J Schmidt ... 95•651.257.9004
Connie Sue Schmidt ... 95•651.257.9004
15722 Dennis R Gadbois ... 89•651.257.8147
Michele M Gadbois ... 89•651.257.8147
★St Croix Fence ... 91 651.257.8270
15822 Barbara Ann Fredrickson ... 95•651.257.9286
Tom Vernon Fredrickson ... 95•651.257.9286
15855 ... NP
15895◊ Stephen P Herrick ... 96•651.257.3708
◊ Susan P Herrick ... 96•651.257.3708
16091 Carol D Hoefer ... 01• NP
Michael R Hoefer ... 01• NP
16205 Linda Kampa ... 96•651.257.4839
Robert John Kampa ... 96•651.257.4839
16359 ... NP
16487 James Robert Myhr ... 88•651.257.5391
Teresa Ellen Myhr ... 88•651.257.5391
-QUAIL RIDGE TRL INTS
16550 Larry Richard Bertrand ... 99•651.257.5429
Patricia Ann Bertrand ... 99•651.257.5429
16667 Florence H Myhr ... 73•651.257.2165
John R Myhr ... 73•651.257.2165
16680 ... NP
16809 Todd G Kapsner ... 03• NP
Tracey L Kapsner ... 03• NP
16854◊ Kristi I Anderson ... 01•651.257.6256
◊ Thomas James Anderson ... 01•651.257.6256
16900 Doug Quarnick ... 99•651.257.9562
16987◊ Joseph E Arnold ... 86•651.257.2656
◊ Terry M Arnold ... 86•651.257.2656
16997 Allen Norman Gieske ... 93•651.257.6898
Heidi Lynn Gieske ... 93•651.257.6898
17002 ... NP
17014 Larisa V Ulyanko ... 03• NP
Yuriy Aleksandrovich Ulyanov 03• NP
17168 Sarah Lynn Clarin ... 03•651.257.3913
Wade L Clarin ... 03•651.257.3913
17242 ... NP
63 RESIDENCE 2 BUSINESS

● 260TH ST

Wyoming
CT 1104.00 5181 - 7571 $C
RR1 5181 - 5201 55092
5181 ★General Safety Equipment Corp 92 651.462.1000
★Rosenbauer Holdings Inc 02⊙651.462.1000
5190 ★♣ Century Fixtures&Millwork 00 651.462.5660
5201 ★♣ MVP Group ... 98 651.462.4389
RR7 5376 - 5471 55092
5376 ★Truax Inc ... 89 651.408.9515
5390 Building
★♣ Adams Custom Liners Inc 04 651.462.8100
★Guy Clean Up ... 02
★♣ Katy Spring ... + 651.462.8968
★♣ King Kong Hobbies Inc 05 651.408.8408
★♣ Norway Electric Co ... 01 651.408.8593
★♣ Plastic Composites ... + 651.462.3338
5426 ★♣ Action Advertising&Promol 01 651.462.2300
5428 ★Breitbachs Auto Repair Inc 93 651.462.1946
5465 ★♣ All Towing & Recovery ... + 651.462.0686
★♣ Leroys Collision Center I 94 651.462.1600
5469 ★Buck Machine Tool Inc ... 01 651.462.0033
★Plastic Recovery Technologies +
5471 ★Gillespie Construction Inc 85 651.462.2828
RR6 6326 - 7571 55092
-GRAFTON AVE INTS
6326 Jeffrey J Stmartin ... 05• NP
6327 ♣ Douglas John Miller ... 01 651.462.4315
♣ Heidi Marie Miller ... 01 651.462.4315
6351 ... NP
6403 Silvia Gonzalez ... +• NP
6431 Joan M Pickard ... 94• NP
Steven Lee Pickard ... 94• NP
6463 Jacqueline S Birdsall ... 96• NP
6464 Dulcie Rebecca Ashworth ... 05• NP
Paul Edward Ashworth ... 05• NP
6496 Kim M Voelk ... 02• NP
William John Voelk ... 02• NP
6534 Joanne M Johnson ... 02•651.462.2746
6578 Tracy Raway ... 05• NP
-GRANADA AVE INTS
6600 ... NP
6603 Diane Marie Schneider ... 91•651.462.1354
Mark A Schneider ... 91•651.462.1354
6642 Debra A Rose ... 93•651.462.1478
Troy Anthony Rose ... 93•651.462.1478
6674 Julie Lynn Thalhuber ... 97•651.462.4965
Mark Allen Thalhuber ... 97•651.462.4965
6712 Chris Stanton Isaacson ... 93•651.462.2534
Lyn Ellen Isaacson ... 93•651.462.2534
6770 6840 ... NP
6896◊ Amy Suzanne Husel ... 93•651.462.2835
◊ Bruce W Husel ... 93•651.462.2835
-W COMFORT DR INTS
7065 Keri Jean Sevcik ... 95•651.462.1469
Victoria Sevcik ... 95•651.462.1469
7070 James R Ambrose ... 96• NP
Tammy Lee Ambrose ... 96• NP
7139 Edmund Olson ... 98• NP
Norma Olson ... 98• NP
7146 Cynthia L Loeffler ... 82• NP
Jake Loeffler ... 82• NP
7185 ♣ Edmund D Olson ... 79•651.462.5464
♣ Norma Irene Olson ... 79•651.462.5464
-GREENE AVE INTS
7261 Eric J Anton ... 03• NP
7280 7309 ... NP
7317 Joy M Peck ... 04• NP
Robert A Peck ... 04• NP
7327 ♣ James M Hoffman ... 01 651.462.2608
7337 ♣ Mary E Kelly ... 92 651.462.5358
♣ William Dalton Kelly ... 92 651.462.5358
7390 ♣ Debra J Sorensen-Boeh ... 03• NP
7413 ... NP
7451 Mary Kaliher Thoele ... 05•651.462.1045
7456 7463 ... NP
7471 David A Haskins ... 01•651.408.8918
Gail P Haskins ... 01•651.408.8918
7486 ♣ John Swanstrom ... 92 NP
7493 ★Lake Sports Lettering ... 83 651.462.1475
Gordon Jerome Pietruszewski 91•651.462.1475
Rita Mae Pietruszewski ... 91•651.462.1497
7529 Deborah Ann Michaud ... 92•651.462.2050
Michael Joseph Michaud ... 92•651.462.2050
7537 Sherrie Ann Kautz ... 04 NP
7559 George Fredrick Osgood ... 97• NP
7571 ... NP
60 RESIDENCE 19 BUSINESS

● 260TH ST E

Farmington
CT 615.01 0 1043 - 1605 $A
RR1 0 1043 - 1605 55024
-BLAINE AVE INTS
1043◊ Glen Edward Dubbels ... 76•651.463.8201
◊ Joann M Dubbels ... 76•651.463.8201
1279 Becky Renee Pearson ... 03•651.463.2161
Troy B Pearson ... 03•651.463.2161
1605 Paul Francis Irthum ... 70•651.463.8241
Sara P Irthum ... 70•651.463.8241
6 RESIDENCE

● 260TH ST E

Randolph
CT 814.02 4044 - 8465 $B
RR1 4044 - 8465 55065
4044 John J Hupf ... +• NP
4386 John Joseph Hupf ... 94•507.263.2705
Lynda Kay Hupf ... 94•507.263.2705
★Hupf Farms ... 02 507.263.2705
-EMERY AVE INTS
5026 Jason Timothy Dohmen ... 02•507.263.7206
5075 Gerald A Liotta ... 99•507.263.5324
Sandra C Liotta ... 99•507.263.5324
7700 Dean Charles Weber ... 97•507.263.5804
Kim Susan Weber ... 97•507.263.5804
7919 ★Bill Tix Farm ... 01 507.263.2310
Donna M Tix ... 94• NP
Wilfred A Tix ... 94• NP
7954 7969 ... NP
7990 Allan C Hoel ... 96•507.263.4929
Victoria Lynn Hoel ... 96•507.263.4929
8126 ... NP
8325◊ Marlyne Myrtle Loomis ... 91• NP
◊ William Charles Loomis ... 91• NP
Duane F Schneider ... 01• NP
Sara J Schneider ... 01• NP
8465 Rick John Reinardy ... 97•507.263.0204
20 RESIDENCE 2 BUSINESS

● 260TH ST W

Farmington
CT 615.01 1161 - 2375 $A
RR1 1161 - 2375 55024
1161 Richard Paul Harris ... 94•651.463.8577
Toni Dale Harris ... 94•651.463.8577
★Iola G Harris Family Limited Partner +
★Iola G Harris Fmly Lmtd Prtnr +
-ALVERNO AVE INTS
1094◊ Delphine Marie Odette ... 76• NP
◊ Virgil F Odette ... 76• NP
-BISCAYNE AVE W INTS
1910 Germaine Lynn Beyl ... 89•651.460.6092
Grant Irvin Beyl ... 89•651.460.6004
1946 Bob J Marthaler ... 90• NP
Candy Kay Marthaler ... 90• NP
★Robert Marthaler ... 01 651.460.6702
1999 Alan F Olson ... 90•651.463.7065
Carolyn Louise Olson ... 90•651.463.7065
2033 Allen Jeffery Swenson ... 96• NP
Laura Lee Swenson ... 96• NP
2111 Paul Robert Christiansen ... 99• NP
★Paul Christiansen Construction 01 651.460.4165
2225 Dennis Allen Freiermuth ... 95•651.463.2143
Karen J Freiermuth ... 95•651.463.2143
2265 Leona E Tussing ... 98•651.463.3695
2301 Sharon Ann Kinard ... 93• NP
2345 Hugh Ceylon Swift Jr ... 83•651.463.8212
Sharlene Marie Swift ... 83•651.463.8212
2375◊ Darryl Lee Oistad ... 81•651.463.2779
◊ Janet Elizabeth Oistad ... 81•651.463.2779
21 RESIDENCE 4 BUSINESS

● E 260TH ST

Elko
CT 811.00 4766 - 10881 $A
RR3 4766 - 7837 55020
4766 Amy Lyn Schumacher ... 94 NP
Cal L Schumacher ... 94 NP
5780 ★Roland Peterson Farm ... 03 952.461.2871
5800 Andrew R McMillan ... 03•952.461.6468
Jessica S McMillan ... 03•952.461.6468
5848 ★Automotive Fleet Maintenance 03
Delores Kay McMillan ... 73•952.461.3398
George Edward McMillan ... 73•952.461.3398
5880 Jeff A Schalwig ... 03•952.461.4273
Nancy A Schalwig ... 03•952.461.4727
6400 Jackie Lori Devine ... 01•952.461.6400
Rick John Devine ... 01•952.461.6400
6406 ★Bob Devine ... 03 952.461.2888
Bernice Elizabeth Devine ... 73•952.461.2888
6645 ★Pexa Dale Concrete Contr 92 952.461.2881
7560 ♣ Karen Fuller ... 05• NP
7595 Helene Rose Friedges ... 89•952.461.2437
7665 Jill Bradburn ... 03 952.461.2099
7745 Debra Kay Fischer ... 90•952.461.2272
Gregroy Alan Fischer ... 90•952.461.2272
7770 Christopher John Fritz ... 91•952.461.3379
7795 Pat Louise Page ... 88•952.461.2532
Thomas Percy Page ... 88•952.461.2532
7805 Linda Ann Belter ... 87•952.461.2081
Toney Lee Belter ... 87•952.461.2081
7820 ★New Market Floral ... 05 952.461.3361
Lee V Wagner ... 75•952.461.3361
Patty Mary Wagner ... 75•952.461.2661
7837 ... NP
RR2 9476 - 10881 55020
9476 Apartment
6 Carol Ann Jones ... 83•952.461.3387
6 Lane A Jones Jr ... 83•952.461.3383
9840 Martin M Deutsch ... 73•952.461.3345
William Henry Deutsch ... 73•952.461.3345
10675 Arnold G Silverness ... 95 952.461.3431

© Copyright information on this page may not be reproduced or entered into any computer system in any manner whatsoever except with the prior written authorized consent of the publisher.

2007 Minneapolis, MN & Vicinity - Cole Information Services

★Traders Market Inc 88 952.461.2400
10880 Robert F Adelmann ..... 99•952.461.2726
10881★Fiberglass Concepts Llc .. + . .
★Gary T Raak & Associates Inc 04 952.461.6548
★Trailer Financial Co 00 952.461.6666
★US Fiberglass Windows Of Mn + . .
30 RESIDENCE 10 BUSINESS

E 260TH ST

New Prague
CT 811.00 120 - 1951 $A
RR5 120 - 1951 56071
120 Milo Frank Pomije ..... 87•952.758.2278
★Pomije Land Co .... 02 . .
301 Jackie Marie Pomije .... 88•952.758.6784
Roger Michael Pomije ...... 88•952.758.6784
★Roger Pomije 85 952.758.6784
655 Chad P Anderson .... 04•952.758.6844
Laura Jo Anderson .... 04•952.758.6844
691 Marge F Malz .... 89•952.758.2741
Randy F Malz .... 89•952.758.2741
★Margaret Malz 01 952.758.2741
895 Mindy Pauline Stier .... 05•952.758.5658
Scott Eldon Stier .... 05•952.758.5658
1086 Dave L Jenkins .... 00•952.758.3591
1090 Chris M Sampson .... 00•952.758.9226
Julie Kay Sampson .... 00•952.758.9226
1098★Hecla Inc 05 952.934.1091
1405★Paul Polson 94 952.448.2405
1581 Catharina C Vossen ...... 90•952.758.5017
Gary Lee Vossen .... 90•952.758.5017
1655 John Thomas Hertzog ...... 04•952.758.6845
Nancy Jean Hertzog .... 04•952.758.6845
1721 Luann M Parrish .... 89•952.758.8600
Mark Parrish .... 89•952.758.8600
1730 .... NP
1771★Eaglecrest K 9 Resort 03 952.758.5767
★Mr Pro Care Inc 97 952.758.5766
◇ Mike P Reese .... 95•952.758.5766
◇ Teresa Lee Reese .... 95•952.758.5766
—VERGUS AVE INTS
1600★Bryan S Hydroseeding 05 952.758.9597
Brian Kelly Logue .... 00•952.758.9597
Kelly Logue .... 00•952.758.9597
1910◇ Francis J Tupy .... 84•952.758.3501
◇ Karen Ann Tupy .... 84•952.758.3501
1951 Allen Joseph Tupy .... 92•952.758.2744
26 RESIDENCE 8 BUSINESS

E 260TH ST

Webster
CT 811.00 2116 - 4451
RR1 2116 - 4451 55088
2116★Zweber Construction & Drywall 01 952.758.4022
2140 Owen Oneal Maynard .... 02• NP
Ruth Marilyn Maynard ...... 02• NP
2230★D And M Enterprises ..... 97 . .
◇ Janet J Dyslin .... 93•952.758.5477
◇ Jim D Dyslin .... 93•952.758.5477
2291 Karen Jean Karssebcom .... 96•952.758.5222
Robert Allen Karssebcom ... 96•952.758.5222
2466 Dean Renald Benson .... 95•952.758.2039
Teresa Ree Benson .... 95•952.758.2039
2590 Jami Lynne Stocker .... 95•952.758.6524
Sylvester Alois Stocker ..... 95•952.758.6524
2591 Diane Mary Sirek 84 952.758.3844
Mark Thomas Sirek Jr 84 952.758.3844
2646 Cyril Allen Simon .... 95•952.758.3072
Natalie Ann Simon .... 95•952.758.3072
3275 Richard Allen Hennes ...... 88•952.461.2269
Susan Doris Hennes ...... 88•952.461.2269
★Lakers Disposal 80 952.461.2276
★Richard Hennes .... 95 . .
3565★C & S Prprty Of New Prg Llc + . .
3595★H & H Environmental Solutions 05 . .
★Heating & Plumbing Consultants Inc
80 952.758.4727
3600 Kayland F Call .... 95•952.461.2557
Neil Michaele Call .... 95•952.461.2557
3675◇ Ginny M Cooper .... 98•952.461.2258
◇ Roger Eugene Cooper ...... 98•952.461.2258
3725 Gary Grant Boelter .... 00•952.461.4676
Diane V Boelter .... 00•952.461.4676
4291 4295 .... NP
4360 Clara Ann Pexa .... 95•952.461.2873
Robert Raymond Pexa ..... 95•952.461.2873
4451◇ Patrick Joseph Hier .... 98•952.461.4235
◇ Sandra Lynn Hier .... 98•952.461.4235
★Patrick 02 952.461.4235
26 RESIDENCE 8 BUSINESS

W 260TH ST

Belle Plaine
CT 813.00 7475 - 11295 $C
RR1 7475 - 11295 56011
—CHURCH AVE INTS
7475 Paul Herbert Franzen .... 69•952.873.6695
Rosemary Vossen Franzen .. 69•952.873.6695
★Franzen Electric Machine . 97 952.873.6695
10161 Janet Ann Larson .... 73•952.873.6666
Robert Dean Larson .... 73•952.873.6666
10398 Keren Kay Eliason .... 05•952.873.6676
Michael Alan Eliason .... 05•952.873.6676
10450 .... NP
10960 Ingrid A Bey .... 87•952.873.6952
David John Plunkett ...... 97•952.873.6952
11005★Ericksons Snowplowing .. 00 952.873.6746
11203◇ Annette Katherine Brooks ... 02•952.873.5422
◇ Jeffrey Ernest Brooks ..... 02•952.873.5422
★Timbertrails Game Farm .. + 952.873.5422
11211 Lisa J Schatz .... 97•952.873.4264
Patrick John Schatz .... 97•952.873.4264
11295 Wayne D Ingram .... 05•952.873.6696
Carol J Laurent .... 05•952.873.6696
15 RESIDENCE 3 BUSINESS

W 260TH ST

New Prague
CT 812.00 750 - 5710 $C
RR5 750 - 1495 56071
750 Greg John Pavek .... 05•952.758.3814
Tina A Pavek .... 05•952.758.3914
825 Al Mark Novotny .... 81•952.758.4109
George Richard Novotny .... 81•952.758.4708
880◇ Jon Carl Hendricks .... 89•952.758.2573
◇ Mary Ruth Hendricks ...... 89•952.758.2573
1215 Pam Ann Klatz .... 90•952.758.4812
Rick Joseph Klatz .... 90•952.758.4812
★Rick Klehr .... 05 . .

1250 Ross Clement Macdrave ..... 96•952.758.6561
1350 Michelle Ann Novotny ...... 96 NP
1376 Alfred W Novotny .... 87•952.758.2150
Janet Marie Novotny .... 82•952.758.2150
1495 Elizabeth Marie Tisdel ..... 02• NP
John Alan Tisdel .... 02• NP
RR3 2355 - 4849 56071
2355★Advanced Seeding Control Inc 05 952.758.7741
Kelley A Degross .... 04•952.758.7001
Mike Clarence Degross ..... 04•952.758.7001
2375 Jon Thomas Racermacher .. 02•952.759.9736
Lori Lynn Radermacher .... 02•952.758.9736
2380 Mark Christian Lund .... 97•952.758.5654
Tara Lynn Lund .... 97•952.758.5654
2395 Barb A Sklucacek .... 02•952.758.4327
Troy Ernest Skluzacek ..... 02•952.758.4327
2501◇ Kevin Michael Hartmann ... 93•952.758.4126
◇ Nancy Ann Hartmann ...... 93•952.758.4126
2521 Arlene Joyce Hoffman ..... 93•952.758.4267
Joe Ralph Hoffman .... 93•952.758.4267
2626 Chris Alan Kubes 82 952.758.3300
Jr Kubes 82 952.758.3300
★Kubes Realty Inc .... 03 . .
—NAYLOR AVE INTS
3051 Diane Marie Wackman ..... 89•952.758.3654
Larry Harold Wackman ..... 89•952.758.3854
3071 Jean Rae Dolezal .... 87•952.758.2546
Mark David Dolezal ...... 87•952.758.2546
3201 Cathy Groenevelt .... 96•952.758.9177
Ryan Andrew Groenevelt .... 96•952.758.9177
★New Life Canvas .... + . .
3266 Jean Rokutani Wagner .... 86•952.758.3970
Ken Anthony Wagner ..... 86•952.758.3970
3480 Jeff Thomas Schoenbauer IV 99•952.758.8875
Traci Marie Schoenbauer ... 99•952.758.8875
3655 Carol Ann Zelenka .... 85•952.758.4202
Roy John Zelenka .... 85•952.758.4202
3891 Ed C Nytes 87 952.758.2337
Shan Jean Nytes 87 952.758.2337
4450◇ Dave J Schoenbauer 98 952.758.6888
◇ Jamie S Schoenbauer 98 952.758.6888
—SAINT BENEDICT RD INTS
4591 Stacy Schmitz .... 00•952.758.4561
Steve R Schmitz .... 00•952.758.4561
4849 Cordie Robert Schmitz .... 00•952.758.6573
RR1 5331 - 5710 56071
5331◇ John S Fischens .... 82•952.758.3241
◇ Leslie S Fischens .... 82•952.758.3241
5350 Anna Albina Fischens ..... 81•952.758.3502
Myron John Fischens ..... 81•952.758.3502
5710★Bob Nytes 01 952.758.4390
Alice R Nytes .... 84•952.758.4390
Bob F Nytes .... 84•952.758.4390
53 RESIDENCE 5 BUSINESS

261ST AVE

Belle Plaine
CT 9701.98 19701 - 20740 $E
RR2 19701 - 20740 56011
19701 Kristine D Uppman 97 952.873.0943
Tom S Uppman 97 952.873.2332
★Uppman Technical Services Inc 99 952.873.2332
19705 .... NP
19912 Patty S Kron 96 952.873.4517
Paul J Kron 96 952.873.4517
20235 Brian Mark Schultz 02 952.873.6599
Noreen Schultz 02 952.873.6599
20263 Loren H Kerkow Jr .... 98•952.873.6188
20472 James Mathias Witt .... 96•952.873.4481
Marilyn Margaret Witt ..... 96•952.873.4481
20740 Jeff David Bromley ...... 96•952.873.2206
Tina Marie Bromley ...... 96•952.873.2206
12 RESIDENCE 1 BUSINESS

261ST AVE NE

Isanti
CT 1305.00 350 - 2445 $0
RR6 350 - 1376 55040
—MONROE ST NE INTS
350◇ Barb Denise Haak 81 763.444.5716
◇ Thomas E Williams 81 763.444.5716
366 Karen Marie Lach 97 763.444.7017
Tracy John Lach 97 763.444.7017
425 Erik B Draxten 82 763.444.5338
Sara Noel Draxten 82 763.444.5338
475◇ Alan Robert Oberg 76 763.444.4860
◇ Margaret L Oberg 76 763.444.4860
575 .... NP
613 Gerald Reid .... 02 NP
639 Debra June Abersold 02 763.444.9099
Mark Alan Abersold 02 763.444.9099
663 Lorraine M Schummer ..... 88•763.444.5830
665 Doyle A Peck 00 763.444.9874
Karen Jane Peck 00 763.444.9528
1000★♣ Country View Golf Drvng R + 763.444.7339
1001★Beaver Plumbing Co 05 763.434.4100
Vaughn Treumer Norquist .. 98 763.444.5716
1376 Allan E Johnson 94 763.444.8384
Barbara Johnson 94 763.444.8384
RR2 1435 - 2445 55040
1435 Amy Jo Lyznoft .... 96•763.444.5208
Kevin Kelly Lyznoft ...... 96•763.444.5208
1471 Darryl Virgil Fly .... 96•763.444.8076
Sally Ann Fly .... 96•763.444.8076
1500 .... NP
1521 Heida Ann Miller .... 93•763.444.9912
1554 Alden Johnson 82 763.444.5300
James Eugene Johnson 82 763.444.5300
1770 Alonzo Blair .... 95 NP
Louise Blair .... 95 NP
1875 Tracey Bostrom 03 763.444.9483
1914♣ R Bonte .... + 763.444.7133
1955 Michael R Obrien .... 95• NP
Nicholas Obrien .... 95• NP
2061◇ Daniel Gerald Mujwid 99 763.444.7435
2191 .... NP
2245★All Terrain Excavating 99 763.413.2407
Kim Korpela Benolken ..... 02•763.434.3646
Steven James Benolken .... 02•763.413.2407
2319♣ Ann Walker 05 763.444.9318
♣ Anthony Walker 05 763.444.9318
2351 Betty K Thompson 04 763.444.5463
Dean K Thompson 04 763.444.5463
2445 Lonn Tschappat 03 763.444.6663
41 RESIDENCE 3 BUSINESS

261ST AVE NW

Isanti
CT 1306.00 74 - 3700 $D
CT 1306.00 4101 - 5050 $C
RR4 74 - 490 55040
74 Myron M Spike 89 763.444.5962
145◇ Curt Philip Carpenter ..... 81•763.444.5734
◇ Diane M Carpenter ...... 81•763.444.5734
250 Richard W Klesk .... 83• NP
311 Elizabeth Marie Lockwood .. 98 763.444.0359
Terry Lee Lockwood 98 763.444.0359
318★Bath Care .... 94 . .
Marx Iller 98 763.444.8006
350 Craig Martin Hamilton ..... 94•763.444.8068
★Hamilton Painting 93 763.444.8068
411 Eric E Fischer .... 96•763.444.9140
Kerri Kay Fischer .... 96•763.444.9140
490 Jean Louise Stauffer ...... 84•763.444.9809
Joseph Lloyd Stauffer Jr .... 84•763.444.9809
RR1 1690 - 5050 55040
1690 .... NP
1771 Cherlyn Mercedes Stewart .. 87•763.444.6552
Daniel J Stewart .... 87•763.444.6552
2051 Kari Schumann 03 763.444.0379
Wade Micheal Schumann ... 03 763.444.0379
2056 Cathy G Newcomb .... 94 NP
Dave J Newcomb .... 94 NP
—PARTRIDGE ST NW INTS
2129 Carma Marie Olson 03 763.444.0036
Eric Floyd Olson 03 763.444.0036
2217 Mark William Sorenson 90 763.444.6773
2281 Greg Roy Ibister 96 763.444.7806
2319 Gladys Dockham .... 05 NP
2591 Ryan Carpenter 01 763.444.6142
2772 Bridget Wanchena .... 01 NP
3120 Linda Sue Bottema .... 77•763.444.4329
William E Bottema .... 77•763.444.4329
3200 Bruce B Selvig .... 93•763.444.3683
Paula Y Selvig .... 93•763.444.3683
3255▲ Lonnie Tschappat .... 05 NP
3515 Darlene M Duerr .... 88•763.444.6070
Gary James Duerr .... 88•763.444.6070
3560 Apartment
N John Joseph Lang .... 95•763.444.9112
N Paulette Lynn Lang ...... 95•763.444.9112
3591★All Construction Design .. 04 763.444.0283
Jolee L Taboka .... 98•763.444.0283
Michael Eugene Taboka .... 98•763.444.0283
3700 Lou A Bell .... 88•763.444.6345
Steven Lynn Bell .... 88•763.444.6345
4105 Dale Earl Karpe .... 94• NP
Sherry Sniegowski Karpe ... 94• NP
★Sherry Karpe 05 763.444.7896
4195 John Howard Blumer 90 763.444.4701
Polly Jo Blumer 90 763.444.4701
★Blumers Auto Wrecking .. 05 763.444.5693
—ROANOKE ST NW INTS
4405 Ellard Duane Blumer 75 763.444.5693
Jason David Torgerson 75 763.444.5693
4459★Moms Salvage & Services 04 763.444.5312
Pam D Plocher 94 763.444.5312
William G Plocher 94 763.444.5312
★Rap Properties Llc 05 763.444.8404
4463 Donna P Shockley .... 97•763.444.8208
4500▲ Joyce A Lillebue 97 763.444.7172
4525 Jane M Moore .... 04•763.444.0469
4540 Ralph Blumer .... + 763.444.5997
4544 .... NP
4565 David Ralph Swanson ..... 95 NP
Wanda Lorraine Swanson .. 95 NP
4588 .... NP
4604 Darlene Sharon Lindelof 05 763.444.6666
Robert W Lindelof 05 763.444.6666
4619 Barbara Lund 82 763.444.4358
Dennis A Lund 82 763.444.4358
4792 Charles Lawrence Bowman . 92•763.444.9419
Dr Ellen Louise Bowman DVM 92•763.444.9419
4839★Ronald Sundeen .... 03 . .
Ron Joseph Sundeen 83 763.444.6361
5050★Stanford Township 95 763.444.5789
62 RESIDENCE 9 BUSINESS

261ST AVE NW

Saint Francis
CT 1306.00 5790 - 7295 $C
RR1 5790 - 7295 55070
5790 Chris Thomas Baumgardt ... 96•763.444.8050
Wendy Dawn Baumgardt ... 96•763.444.8050
★Chriss Ornamental Concrete + . .
5866◇ Larry D King .... 82•763.444.5978
◇ Pat A King .... 82•763.444.5978
5951 Joann Geri Barthold 92 763.444.9014
Peter Joseph Barthold 92 763.444.0455
★Peter J Barthold 05 763.444.7447
5962 .... NP
6019 Harry Hjermstad .... 05 NP
6065 Donald L Ryman .... 82•763.444.0439
Janet S Ryman .... 82•763.444.0439
6151 Betty A Grotte .... 87•763.444.5589
Donald C Grotte .... 87•763.444.5589
6171 Connie Marie Stevens ..... 94•763.444.5238
Eric David Stevens ...... 94•763.444.5238
6251◇ Linda Jane Harris 02 763.444.9390
◇ Scott Kevin Lenz 02 763.444.9390
6277 Chuck Chesler .... 02•763.444.7941
Karen Marie Chesler ...... 02•763.444.7941
★Chuck Chesler And Associates 02 . .
6340 Delton Ray Whittlef 82 763.444.5386
Joann Ann Whittlef 82 763.444.5386
6403 Angela Antczak .... 05•763.444.9087
Mark E Antczak .... 05•763.444.9087
6495 Kathryn F Ferguson 01 763.444.4013
Troy Douglas Ferguson 01 763.444.4013
6525 Lizbeth Martinez 02 763.444.3826
6599 Ray M Manahan .... 01 NP
★Manahan Stables Llc 02 763.444.6722
★Securities America 05 763.444.8401
—CROWN CIR NW INTS
6634★C & G Lehman Properties . + 763.444.5787
Audrey Delores Grams ..... 82•763.444.5787
6997◇ Steven Mark Roles 96 763.444.6414
7295 Kenneth Ryan Springer 94 763.856.2005
Kimberly Joy Springer 94 763.856.2005
30 RESIDENCE 6 BUSINESS

261ST AVE NW

Zimmerman
CT 1306.00 7790 - 9416 $C
CT 301.00 9088 - 14835 $C
RR1 7790 - 11975 55398
—DOLPHIN ST NW INTS
7790 Gene Dale Gifford .... 93•763.856.5068
Stephanie Gifford .... 93•763.856.5068
7900 Brent Marlow Aase .... 94• NP
—LLAMA ST NW INTS
8015 Daniel Douglas Grams 79 763.856.2640
Eddie Grams 79 763.856.5915
8296 Daryl Arthur Grams 97 763.856.1009
Tammy Jean Grams 97 763.856.1009
8435 Teresa Bertha Whittlef 82 763.856.4169
8437 Barbara Jean Johnson 96 763.856.4344
Kenneth O Johnson 96 763.856.4344
8446 Glenice Elaine Sommers ... 04• NP
8551 April Susan Pinyan .... 94•763.856.4906
Ron Howard Pinyan .... 94•763.856.4906
8597 Ann Carol Connors .... 93•763.856.3393
8600 Mark Alan Struthers .... 01 NP
Teri Lynn Struthers .... 01 NP
8625 Robert Raymond Hentges ... 90•763.856.1008
8647 Paul Wayne Smith 96 763.856.4437
Sadie Smith 96 763.856.3307
8650 Gene Ronald Grams 74 763.856.2852
Judith Ann Grams 74 763.856.2852
8802 Richard P Walbridge 02 763.856.3154
8870 Marvin H Stalcop 96 763.856.2317
Ryan Stalcop 96 763.856.0127
8878 Lisa Renee Zwack .... 93•763.856.4214
Scott R Zwack .... 93•763.856.4214
8959 Dave Arthur Tilly .... 02 NP
Terrill L Tilly .... 02 NP
8970 Ben Oxnard Bullock ...... 94•763.856.0958
Donna Marie Bullock ..... 94•763.856.0958
8995 David C Embree .... 96•763.856.3210
Kris Mae Embree .... 96•763.856.3274
★Timberidge Construction Service
03 763.856.3210
—ANDRIE ST NW INTS
9004 Justin Drurr 01 763.856.5727
9064 Jolene M Bell .... 03•763.856.4364
Thomas E Bell .... 03•763.856.4364
9170 Lorelei L Olson .... 75•763.856.4164
Paul Robert Olson .... 75•763.856.4164
—JARVIS ST NW INTS
9200 Chris Marie Dequaine 02 763.856.2366
Kenneth John Dequaine 02 763.856.2366
★Edina Realty Inc .... 03 . .
9270★Gopher Gulch Saddle Club 01 . .
★Minuteman Press ...... + . .
Lori Catherine Olson ...... 85•763.856.3240
Wayne Robert Olson ...... 85•763.856.3240
9340 Joyce A Newman .... 96•763.856.4523
Ted C Newman .... 96•763.856.4523
9390 .... NP
9416 Darwin D Sunderland .... + NP
Denise R Sunderland ..... + NP
—102ND ST NW INTS
9696 .... NP
9697 Peggy Sue Maciej .... 72•763.856.4452
9755 Karen Ann Hodge .... 94•763.856.1089
Michael S Hodge .... 94•763.856.1089
9810 Dan A Wudtke .... 96•763.856.0473
Jennifer L Wudtke .... 96•763.856.0473
9839◇ Andri Herrmann .... 93•763.856.4148
◇ Andreina Johanna Herrmann 93•763.856.4148
9925 Dianna Marie Herrmann .... 94• NP
9990 Patty Ann Lundgren .... 88•763.856.2611
Robert S Lundgren .... 88•763.856.2611
10015 Daniel S Fletcher .... 03• NP
10060 Mark Patrick Moriarty ..... 92•763.856.3421
Tammy Verna Moriarty .... 92•763.856.3421
10080 Colleen Marie Hempel ..... 84•763.856.2824
Keith J Hempel II .... 84•763.856.2824
10223♣ Chad S Nasby 02 763.856.5158
♣ Kristina K Nasby 02 763.856.5158
10230 Louise Eva Bardwell ...... 93• NP
Mark Allen Bardwell .... 93• NP
10240◇ Darla Marie Rodriguez .... + •763.856.5857
◇ David A Rodriguez ...... + •763.856.5857
10320 Barbara Riggs .... 99•763.856.4047
Dexter Riggs .... 99•763.856.3700
10332 .... NP
10430 Craig Allan Hinrichs .... 95•763.856.3833
Kim Lynn Hinrichs .... 95•763.856.3833
10485 Danny Warren 88 763.856.3811
Joann Arlene Warren 88 763.856.3811
—110TH ST INTS
10555 Claudette Miriam Aubart ... 96•763.856.0902
Thomas James Aubart ..... 96•763.856.0902
10627 Barb Ann Settambrino ..... 01•763.856.6736
Gregory Raymond Settambrino 01•763.856.6736
10635◇ Hugh Delvin Irwin .... 90•763.856.2129
◇ Monika Waltraut Irwin ..... 90•763.856.2129
★Irwin Exteriors Inc 01 763.856.0440
10725 Apartment
/ ♣ Jeremy James Taft ...... 96•763.856.3447
/ ♣ Mary H Taft .... 96•763.856.3447
10785 Kevin R Hiller .... 94•763.856.2453
Nancy Lynn Hiller .... 94•763.856.2453
★Hiller Auction Service Inc 94 763.856.2453
10815 Linda L Davis .... 92•763.856.2967
10820 Barb J Baltnagen .... 02•763.856.3758
Ken Floyd Baltnagen ...... 02•763.856.0438
★Emerald Evergreen 91 763.856.2469
10855 Carol Lynn Laberge .... 97•763.856.5685
Leon Mathew Laberge ..... 97•763.856.5685
11049★Double Trouble Inc 05 763.856.3372
Doris Rita Gruis .... 93•763.856.3372
Mickey Lee Gruis .... 93•763.856.3372
★Gruis Trucking .... 05◎763.856.3372
★Jags Pro Truck Shop Inc . +◎763.856.3372
11129 Karen Ilene Frederick ...... 95•763.856.3970
Thomas David Frederick ... 95•763.856.3970
★Self Funded Services Co . + 763.856.8772
11190 Bruce Charles Grandahl ... 93•763.856.3390
—112TH ST INTS
11360◇ Lyle Otto Petersen .... 92•763.856.2110
◇ Rebecca Omundson Petersen 92•763.856.2110
11520 .... NP
11605 Kelly Ringgaard .... 92• NP
Shirley Irene Ringgaard .... 92• NP
11610 .... NP
11815 James David Julik .... 91•763.856.3161
Yvonne Hope Julik .... 91•763.856.3161
11840 Eric Roger Johnson .... 95•763.856.0829
Laureen M Johnson ...... 95•763.856.5981
11975 Elizabeth J Hagland .... 94• NP

ADDRESS

© Copyright information on this page may not be reproduced or entered into any computer system in any manner whatsoever except with the prior written authorized consent of the publisher.

2002 Minneapolis, MN - Cole Information Services

RR 8 55092
6440 Susan K Lee . . .93 • 651-462-5710
6461 S J Schulze . . .93 • 651-482-8322
8464 Todd G Houle . .89 • 651-462-1915
Wendi L Houle . .89 • 651-482-1915
8986 Alan W Gay . . .94 • 651-462-2689
Cheryl L Gay. . . .94 • 651-462-2889
— GUSTAVUS CT INTS
7014 Cynthia A Bidney .99 • 651-462-3224
Norman L Bidney .96 651-462-3224
7015 Eickman Craig . .00 • NP
7025 Michael J Phillips .88 851-462-0028
7028 Lee A Shogren . .81 • 851-462-1233
William R Shogren 91 • 851-462-1233
7036 Rebecca L Espersen 84 • 851-462-4630
Steven J Espersen 64 • 651-462-4530
7067 . . . . NP
76 RESIDENCE

259TH AVE NE
Isanti
3800- 3999 CT1304 $E..

RR 2 55040
— VICKERS ST NE INTS
3823 Dean A Larson . .79 763-444-5081
Joan D Larson . .76 763-444-5081
3896 Tim J Koosman . .00 763-444-4671
3930 Jack J Leuenberger 90 763-444-9293
M J Leuenberger .90 763-444-8293
5 RESIDENCE

259TH ST
Wyoming
5500- 6299 CT1104 $D..

RR 7 55092
— FINCH CT INTS
5600 David L Sampel . .90 • 851-462-2158
Lonnie J Sampel .90 • 651-462-2156
5620 Douglas Aamanson + • NP ◊
5640 Sharon J Marzyn .00 • NP
5655 5660 . . . . NP
5880 Judith A Weihrauch 92 • 851-462-2178
5685 Durwin L White . .81 • 851-462-3679
Linda L White . .81 • 851-462-3679
— FLORAL CT INTS
5700 John H Sathre . .93 • 651-462-2756
5705 Robyn S Sampel .83 • 651-482-2282
Todd A Sampel . .93 • 851-482-2282
5720 Jane E Molitor . .96 • NP
5725 . . . . NP
5740 Ronald J Stace . .91 • 651-482-2428
5755 David N Durfee . .95 • NP
5760 Carrie E Pepin . .92 • 851-462-1306
Wayne J Pepin . .82 • 651-462-1306
5780 . . . . NP
5800 Amy J Dickenson .82 • 651-462-6478
John M Dickenson 82 • 651-462-6476
5801 . . . . NP
5802 Cindy Pikala . . .93 • NP
5805 Jeanene M Roetch 88 • NP
5812 Charles W Yetter .68 • 651-462-6247
Dona L Yetter . .89 • 851-482-8247
6820 . . . . NP
5840 Sharon L Knauff .88 • 651-462-2803
Thomas J Knauff .69 • 851-462-2603
5845 Bonita M Johnson 84 • 651-462-6213
Randy R Johnson .34 • 651-462-8213
5860 . . . . NP
5665 Beverly A Jensen .93 • 651-462-4023
Todd R Jensen . .93 • 651-462-4029
5880 Kristi M Streff . .92 • 651-462 ◊8552
Robert W Streff .92 • 651-462 ◊8552
5885 Gerald D Wavrin .91 • 851-462-1696
Sylvia I Wavrin . .91 • 851-482-1696
5600 Jerome D Phillips .84 • 651-462-3480
Ted C Phillips . .94 • 651-462-3460
5805 Bart G Mollet . .96 • NP
5620 Jackie L Willson .66 • NP
5925 Kelley F Meyers .92 • 651-462-4720
Kenneth E Meyers 92 • 651-482-4720
5940 Nancy G Savage .98 • 851-462 ◊2138
William C Savage .98 • 651-462 ◊2138
5945 Deborah L Kunz .91 • 651-462-4503
Steve J Kunz . . .91 • 651-462-4503
5860 . . . . NP
5664 John D Iaffaldano 00 NP
5885 Vicki Truax 69 651-462-2023
5867 Cheryl A Whynaucht 88 651-462-3028
Mark A Whynaucht 99 651-462-3028
6001 Vicki M Moyer . .99 NP
8004 Kevin J Byl . . .99 NP
Sandra F Byl . . .88 NP
6027 Keith C Anderson . + NP
Sheldon H Anderson + NP
8028 Jodi W Goodnow .94 851-408 ◊8111
Paul S Goodnow .64 851-408 ◊6111
6037 Steve C Ulrich . .99 651-408-8111
Susan L Ulrich . .99 651-408-8111
6039 . . . . NP
6061 Chris T Rocha . .00 NP
6066 Stephen L Dnell .97 NP ◊
6060 . . . . NP
8103 Penny M Walters .97 651-408-1509
Timothy C Walters 67 651-406-1506
6113 James T Dowling .99 651-738-8853
Renee K Dowling .88 651-462-7805
6118 Andrew R Kettelhut 00 NP
K A Kettelhut . .00 NP
6136 P S Boudewyns . . + NP
Rhonda A Boudewyns + NP
6141 Sarah A Dufour . .89 NP
Stevan M Dufour .99 NP
6153 Bridget S Kutz . .89 NP
Frank E Kutz . . .99 NP
6173 John K Bier . . .94 NP
Keith A Bier . . .94 NP
6194 Debra L Tate . . .00 NP ◊
Timothy B Tate . .00 NP ◊
6197 Rhonda J Stork . .88 NP
Robert J Stork . .99 NP
8208 Debra R Borene .89 NP
Micheal S Borene .99 NP
6211 C A Schumacher .94 • NP
6263 Jennifer Hagstad .00 651-406-1416
6275 Jonathan E Watkins 89 851-462-1782
Virginia E Watkins 99 651-462-1782
6276 . . . . NP
91 RESIDENCE

E 259TH ST
Elko
11700-11899 CT 811 $B..

RR 2 55020
— SKYLINE CIR INTS
11745 Richard S Hartmann 73 652-461-3546
11625 Colleen M Kocks .96 NP
Scott D Kocks . .98 NP
11655 Charles P Decker .96 NP
11850 . . . . NP
5 RESIDENCE

259TH ST E
Lakeville
11900-11999 CT 811 $B..

RR 1 55044
11985 Dale E Fredrickson 88 952-461-3581
Y J Fredrickson .88 952-461-3581
2 RESIDENCE

260TH ST
Wyoming
5000- 7699 CT1104 $D..

RR 1 55092
5161 Kevin M Kirvida .00 NP

RR 7 55092
5455 Ted Haines . . . . + NP
5485 **Apartments**
8 Leah A Lemmerman 00 NP

RR 6 55092
6351 Douglas J Miller .98 • 861-462-4315
Heidi M Miller . .96 • 651-462-4315
6375 6383 6389 . . . . NP
— GRAFTON AVE INTS
6403 Leslie J Clapp . .63 651-462-6258
6431 Joan M Pickard .94 NP
Steven L Pickard .84 NP
6463 J S Birdsall . . .92 • NP
8483 6486 8504 6526 . NP
6540 6553 6556 . . . . NP
6578 Julie K Henry . .00 851-462-3818
G S Zimmerman .00 651-462-3816
8588 . . . . NP
— GRANADA AVE INTS
6600 Robert J Nelson .92 • NP
6603 Diane M Schneider 00 651-462-1354
Mark A Schneider 00 651-462-1354
6842 Debra A Rose . .93 651-462-1478
Troy A Rose . . .93 851-482-1478
6674 Julie L Thalhuber .87 • NP
6712 Chris S Isaacson .98 651-462-2534
Lyn E Isaacson . .88 651-462-7534
6748 Amy Huset . . . .02 • NP ◊
Bruce Huset . . .02 NP ◊
6770 6775 6777 6840 . NP
8866 Amy Huset . . . .02 NP ◊
Bruce Huset . . .02 NP ◊
7003 James R Ambrose 96 • NP
7065 Keri J Seviola . .95 • NP
7070 Jeffrey L Cottrell . + NP ◊
Lisa N Cottrell . . + NP ◊
7148 Cynthia L Loeffler 82 • NP
7185 Edmund D Olson .76 • 651-462-5464
Norma I Olson . .79 • 651-482-5464
— PIONEER RD INTS
7306 James M Hoffman 78 • 851-462-2608
7313 Mary L Kelly . . .86 • NP
7327 7337 . . . . NP
7345 Emilie S May . . .00 • NP ◊
Marie T May . . .00 NP ◊
7393 . . . . NP
7413 Debra J Bosh . .00 651-462-1186
Stephen P Bosh .00 651-462-1199
7452 . . . . NP
7496 **Apartments**
186 Mary K Thoele . .84 651-462-1045
7483 . . . . NP
7471 David A Haskins . + 651-408-8916
Gail P Haskins . . + 651-408-8918
7492 . . . . NP
7483 G J Pietruszewski .91 • 851-462-1476
R M Pietruszewski 91 • 651-462-1497
7506 . . . . NP
7529 Deborah A Michaud 80 • NP
7537 Jamie L Thompson 79 • NP
7558 7606 7612 7618 . NP
7629 ★ Rolltex Computers 612-805-9111
69 RESIDENCE 1 BUSINESS

E 260TH ST
Elko
4700-10899 CT 811 $B..

RR 1 55020
— ZACHARY AVE INTS
4766 Amy L Schumacher 84 NP
C L Schumacher .84 NP
5780 Roland J Peterson 95 852-461 ◊2871
Rosalie A Peterson 86 852-461 ◊2871
— TEXAS AVE INTS
5646 Andrew McMillan . + NP
5880 Nancy A Schalwig 87 852-461-3653
Tom Schalwig . .67 652-461-3853
6400 Jackie L Devine .84 • NP
6406 Bernice E Devine .73 • 652-461-2866
8845 Dale F Pexa . . .85 652-461-4205
Frances E Pexa . .65 852-481-4205
★ Pexa Dale Concrt 952-461-2881

RR 2 55020
7595 Helena R Friedges 89 • 852-461-2437
7665 Bridget L Deer . .62 • 952-461-2080
Thomas R Deer . .92 • 952-461-2080
7745 Gregory A Fischer 60 • 852-481-2272
7770 Kari L Bruder . . .83 • NP
Kevin L Bruder . .99 NP
7798 Patricia L Page . .88 • NP
7805 Linda A Belter . .67 952-461-2081
Tonay L Belter . .87 952-461-2081
7620 Jerrod L Wegner .75 952-461-3361
Patty M Wegner .75 952-461-3361
7637 Layne S Johnson .96 • NP

RR 3 55020
— XERXES AVE INTS
8476 Carol A Jones . .83 952-461 ♦3383
Lana A Jones . .83 952-461 ♦3383

RR 2 55020
8840 Dolores S Deutsch 73 852-481-3345
Roman M Deutsch 73 952-461-3345
10405 Jeffrey J Niemeyer 98 NP
★ Niemeyer Trlr Sls 952-461-2525
10491 ★ Glasses Pizza&Lst 952-461-2632
★ Last Lap Saloon ⊙ 952-461-2632
★ Sybrandt Glenn W ⊙ 952-461-2632
— NEWTON CIR INTS
10675 A G Silverness . .65 952-481-3431
★ Trailers Market Inc 952-481-2400
10680 Clyde T Weierke .98 952-461-3778
Dana L Weierke .86 962-461-3776
10680 Robert F Adelmann 88 952-461-2226
10881 ★ Trailer Facl Co 952-461-6666
★ Trailer Traders . . ⊙ 952-461-6666
★ Twin CTS Fdrth 952-461-6546
32 RESIDENCE 9 BUSINESS

260TH ST E
Farmington
1001- 1705 CT 615 $C..

RR 1 55024
— 260TH ST W INTS
1043 Glen E Dubbels . .65 651-463-6201
1605 Paul F Imthum . .70 • 651-463 ♦ 6241
Sara B Imthum . .70 651-463 ♦ 6241
3 RESIDENCE

E 260TH ST
New Prague
100- 199 CT 812 $E..
300- 1999 CT 811 $B..

RR 6 56071
120 Carol A Vonbank .00 852-758-1640
Jeffrey M Vonbank 00 952-758-1640
— BASELINE AVE INTS
301 Jackie M Pomije .88 NP
Roger M Pomije .88 NP
655 Connie R Hendricks 91 • 952-758 ◊3735
Paul C Hendricks .91 • 952-756 ◊3765
691 Marge E Malz . .89 • 952-758-2741
Randy E Malz . .89 • 952-758-2741

RR 5 56071
— DREXEL AVE INTS
1088 . . . . NP
1090 Chris M Sampson .00 952-758-8226
Julie K Sampson .00 952-758-8226
1098 Jerry Smith 02 952-758-9339
1405 Bruce C Polson . .98 • NP
1581 Catherine C Vossen 90 952-758-5017
Gary L Vossen . .90 952-758-5017
1655 Dawn M Boutch .89 • 952-758 ♦ 3873
Ron Boutch . . . .89 • 952-758 ♦ 3873
1721 Mark A Parrish . .89 • 952-756-8600
1730 James L Nordwall 88 • 952-758-4105
Lonna R Nordwall 88 • 952-756-4105
1771 Terese L Reese . .95 952-758 ◊5787
Tracy Reese . . .95 952-758 ◊5767
1800 Kelly Logue . . . .00 • 952-758-9524
— VERGUS AVE INTS
1910 Francis J Tapy . . + NP ◊
Karen A Tapy . . + NP ◊
1951 . . . . NP
26 RESIDENCE

W 260TH ST
Belle Plaine
7400-11399 CT 813 $E..

RR 1 56011
— DELAWARE AVE INTS
7475 Paul H Franzen . .66 • NP
10191 Janet A Larson . .73 952-873-8889
Robert D Larson .73 652-873-6666
— HICKORY BLVD INTS
10960 David J Plunkett .67 • 952-673-6952
11203 Annette K Brooks 02 NP ◊
Jeffrey E Brooks .02 NP ◊
11211 Lisa J Schatz . . .97 952-873-4264
Patrick J Schatz .97 652-873-4264
8 RESIDENCE

260TH ST W
Farmington
1601- 2488 CT 615 $C..

RR 1 55024
1161 Iola G Harris . . .84 • NP
— BISCAYNE AVE W INTS
1394 Delphine M Odette 76 • 651-463 ◊8232
Virgil F Odette . .76 • 651-463 ◊6232
1409 D Martin 98 951-463-2480
— ALVERNO AVE INTS
1810 Grant I Beyl . . .89 • 851-460-6004
Grant M Beyl . . .86 • 651-460-6004
1940 Annie K Marthaler 90 • 651-460-6702
Bob Marthaler . .90 • 651-480-6702
1999 Alan F Olson . . .90 • 651-463-7065
Carolyn L Olson .90 • 651-463-7085
2033 Judy A Neitzel . .85 • NP
2075 Dean Hughes . . .85 • 651-460-4361
Kerrie J Hughes .95 • 651-460-4361
2111 Paul Christianson .00 • 851-460-4165
2225 D A Freiermuth . .85 • 651-483-2143
Karen J Freiermuth 95 • 651-460-2346
2265 Leona E Tussing .88 • NP
2301 Sharon A Kinard .83 • NP
2345 Hugh C Swift . . .83 • 651-463-6212
Sharlene M Swift .83 • 851-463-8212
2375 Darryl L Olstad . .81 • 952-483 ◊2779
Janet E Olstad . .81 • 952-463 ◊2779
22 RESIDENCE

W 260TH ST
New Prague
400- 5799 CT 812 $E..

RR 5 56071
490 ★ Cedar Lake Farm 952-758-5253
825 Al M Novotny . .81 • 952-758-4106
George R Novotny 61 • 652-756-4708
880 Jon C Handricks .89 652-758 ♦ 2573
Mary R Handricks .66 652-758 ♦ 2573
1215 Pamela A Klehr . .90 • 952-758-4812
Richard J Klehr . .80 • 852-758-4812
1250 Ross C MacIlravie 96 952-758-6561
1350 Michelle A Novotny 96 NP
1376 Alfred W Novotny .82 • 952-758-2150
1376 Janet M Novotny .82 • 852-758-2150
2116 ♣ ★ Zweber Cnst&Drywl 852-758-4822
2281 ♣ Robt A Kerssaboom 98 852-758-5222
♣ ★ Kraabe Entprs Inc 98 952-758-6661

RR 2 56071
2375 Joe Radermacher .02 952-758-9736
Lori Radermacher .02 952-758-9738
2390 David A Johnson .92 • 352-758-2714
2501 K Michaelhartmann + NP ◊
2521 Arlene J Hoffman .66 • 952-758-4267
Joe R Hoffman . .66 • 852-758-4267
2628 Chris A Kubes . .82 852-758-3300
Wencel J Kubes .62 952-758-3300
— NAYLOR AVE INTS
3051 Diane M Weckman 88 • 952-756-3854
Larry H Weckman .69 • 962-756-3854
3071 Jean R Dolezal . .67 652-758-2548
Mark D Dolezal . .87 952-758-2548
3201 Cathy Gronevalt . .66 • 652-758-8177
Ryan A Gronevalt .88 • 952-758-6177
3206 Jennifer L Wagner 62 652-758-3970
Sam J Wagner . .82 952-756-3970
3480 Jeff T Schoenbauer 63 952-758 ♦ 8875
T M Schoenbauer .99 952-758 ♦ 8875
3855 Carol A Zelenka .65 • 952-758-4282
Roy J Zelenka . .65 • 952-758-4282
3661 Ed G Nytes . . . .67 852-758 ♦ 2337
Shari Nytes . . . .87 952-758 ♦ 2337
— SAINT BENEDICT RD INTS
4561 Steve Schmitz . .00 852-758-4561
4849 Gordie R Schmitz .95 • 852-758-6579

RR 1 56071
5331 Annette G Eischens 82 852-758 ◊3241
Richard J Eischens 82 952-758 ◊3241
5350 Anna A Eischens .61 952-758-3592
Myron J Eischens .61 852-756-3592
★ Eschns Hrld&Myrn 952-758-3592
5710 Alice R Nytes . .84 • 652-756-4390
Bob F Nytes . . .64 • 352-758-4390
41 RESIDENCE 4 BUSINESS

261ST AVE
Belle Plaine
19700-20799 CT 813 $E..

RR 2 56011
19701 Kristine D Uppman 87 952-873-6948
Tom G Uppman . .87 952-673-2382
18705 Mark A Olson . .96 952-873-8999
18812 Paul J Hron . . .86 852-873-4517
20283 Loran H Karkow .99 • 952-673-8160
20472 James M Witt . .86 • 952-673-4491
Marilyn M Witt . .86 • 952-873-4491
20740 Jeff D Bromley . .96 852-873-2206
Tina M Bromley .86 952-873-2206
8 RESIDENCE

261ST AVE NE
Isanti
300- 3398 CT1305 $E..

RR 6 55040
— MONROE ST NE INTS
350 Barb D Haak . . .81 763-444-5718
Thomas E Williams 81 763-444-5719
425 Doris I Draxten . .02 NP
Sara N Draxten . .02 NP
475 Alan R Oberg . . .76 783-444 ◊4960
Dan R Oberg . . .76 763-444 ◊4960
— LARCH ST NW INTS
575 Philip J Schultz . .63 763-444-5882
Philip J Schultz . .83 783-444-6959
813 Gerald Reid 02 763-444-8262
639 Shirley M Conant .97 • NP
663 L M Schummer . .66 • 763-444-5830
865 Doyle A Peck . . .00 763-444-9874
Karen J Peck . . .00 763-444-9528
6834 ★ Athens Twp Hall 00 763-444-6897
1600 ★ Stratton Farm 763-444-4282
1001 Kenneth W Norquist 67 763-444-4712
1376 Barbara Johnson .94 763-444-6364
Leroy A Johnson .64 763-444-6389

RR 2 55040
1435 Amy J Lyzhoft . .68 763-444-5208
Kevin K Lyzhoft .96 763-444-5208
1471 Darryl V Hygera .96 783-444-8076
Sally A Hygera . .96 763-444-8076
1500 Bernice A Smith .82 763-444-5978
Thomas K Smith .82 763-444-5979
1521 Heidi A Miller . .93 • 763-444-9912
H Miller-Holmstro 93 • 763-444-9912
1554 Edith J Johnson .82 765-444-5308
James E Johnson .82 763-444-5300
1770 Alonzo Blair . . .85 NP
Louise Blair . . .85 NP
1675 Amy C Bostrom . .97 763-444-9483
Tracey A Bostrom 87 763-444-9483
— 261ST AVE NW INTS
1855 **Apartments**
E3 Michael R OBrien .95 • NP
2051 Daniel G Mulwid .89 • 763-444 ◊7435
2151 Emmett L Doherty 96 NP
Lydia A Doherty .96 NP
3255 Lonnie C Tschoppat 90 763-444-6863
35 RESIDENCE 2 BUSINESS

261ST AVE NW
Isanti
1- 3799 CT1305 $E..
4100- 4899 CT1306 $E..

RR 4 55040
74 Myron M Spike . .69 763-444-5982
145 Curt P Carpenter .81 763-444 ◊5734
Diane M Carpenter 81 763-444 ◊5734
— UNIVERSITY AVE NE INTS
250 Nanci D Klesk . .63 • 763-444-6305
Richard W Klesk .63 • 763-444-6305
— LARCH ST NW INTS
318 Mark Eller 39 783-444-8006
350 Craig M Hamilton .94 • 763-444-8066
411 Eric E Fischer . .96 763-767-1579
Karil K Fischer . .66 763-444-9140
490 Jean L Stauffer . .84 • 763-444-9809
Joseph L Stauffer 64 • 763-444-9809

RR 1 55040
1771 Cherlyn M Stewart 87 • 763-444-6552
Dan J Stewart . .87 • 763-444-6552
2051 Cheryl F Wolfitz .88 • 763-444-5621
2056 Cathy G Newcomb 94 763-444-5901
Dave Newcomb . .94 763-444-5901

© Copyright information on this page may not be reproduced or entered into any computer system in any manner whatsoever except with the prior written authorized consent of the publisher.

CT — Census Tract AB,Etc — Census Tract Wealth Rating ★ — Business Listing ⊙ — Duplicate Phone Number At This Business Address ♦ — No Phone Solicitation ◊ — No Phone/Mail Solicitation

1997-98 Minneapolis, MN - Cole Publications

RR 1 55020
6565 Terry Stenelrum .91 461-3306
6696 L Seurer .84 461-2160
— TEXAS AVE INTS
9896 Ben Zwaber 461-2366
7716 Conrad E Wagner .94 461-3480
— DAKOTA AVE INTS
8190 Arnold Smisek .66 461•2353
8281★ Bomjen Trckng Inc .85 461-2335
8265 D Johnson Merrima .90 461-3354
8308 Dennis L Swenson .85 461-2843
8351 John Johnson ¤ 461-3038
8360 Stephen Muscato 461-2218
8425 Paul E Kaled .80 461-3135
8445 NP
8494 Steven A Anker .66 461-3556
8500 Gerald Badeaux ¤ 461-2483
Darrell R Breider .93 461-3157
Jean Deighton .63 461-3158
8800 Paul R Johnson .94 461-3401
Doug R Oster ¤ 461-3071
8696 M B Schema .95 461-2710
8758 Harvey L Lovejoy .63 461-2838
8808 Jeffrey B Goodell .66 461-2794
8920 Albert G Bergen .62 461-2537
42 RESIDENCE 6 BUSINESS

250TH ST E
Farmington
2500- 3498 CT 615 $C..H 6
HUDSONS MAP LOC 2C-164

RR 1 55024
2676 William May Jr .75 463-6541
2761 Ter Ahr .96• 463-4806
2795 Lance Westad .78 463-2202
2655 Thomas H Stahoke .79 463-6794
3105 Don Drewry .93 463-6576
5 RESIDENCE

250TH ST E
Lakeville
10100-11899 CT 811 $B..G 4
HUDSONS MAP LOC 2C-163

RR 2 55044
10198 Lana M Orris .87 469-4633
10380 Harry Deer .94 469-1853
10502 Kenneth Wold -• 985-5764
10800 Thomas Montgomery -• 466-2496
10641 Milton Elvestad .74 469-2759

RR 1 55044
11151 Merle F Hirdler Sr .83 469-2457
— DUPONT AVE INTS
11248 D Bohn .83 469-3794
11380★ Hero Auto Inc .88 469-4297
— PILLSBURY AVE INTS
— 250TH ST W INTS
11491 Patrick Condra .88• 469-2017
11801 NP
11678 Edwin Elvestad .84 469-2255
11770 John Piper .88 466-1307
11771 11805 NP
11828★ Elites Decorating .95 466-6595
11841 NP
19771 David Elvestad .98 469-5104
15 RESIDENCE 2 BUSINESS

E 250TH ST
New Prague
1900- 2699 CT 812 $E..G 3

RR 2 56071
1946 A Keinhofer .95 461-3389
Andrea L Keinhofer .65 461-3380
Guy J Keinhofer .62 461○3322
— VERGUS AVE INTS
2046 Tim Sonnek .88 461-2729
2381 B A Christopherson .88 461-2514
2615 Theodore Simon 461-2830
2830 Mat Scheffler 461-2832
7 RESIDENCE

250TH ST W 56011
Belle Plaine
8100-17599 CT 813 $E..G 2
HUDSONS MAP LOC 2C-150,3C-159
8101 Alvin J Svoboda ¤ 873-8285
8201 John Betchwars .94 873-5626
8375 Thomas Ingles 873-8939
8400 Larry Hoffman .94 873-4262
8562 Joel Quaintance 873-5570
8801 David L Nelson 873-6850
8299 Robert Jacobson ¤ 985-5580
9191 Donald Anderley - 873-6921
9455 Michael Carpenter ¤• 873-3049
10411 Lester Otto .95 873-6102
10421 Wm J McDougald 873•6616
15100 Brian Dols .95 873-2294
Lynn L Gerold .95 873-2284
15525 Myron Cermak 873-4537
15726 David Carter .96 873-6856
16185 Ralph Meitz ¤ 873-2527
Ralph Maiz 873-6996
16298 O Meierbachtol .96• 873-4313
16311 Dale Meierbachtol .95 873-7884
16370 16405 NP
16450 R Meierbachtol 873-2370
16501 Raymond Tinge 873-8177
16505 Frank Hilgers 873-6887
16626 Fred W Schmidt 873-6412
17190 Rick Halverson .95 873-4242
17501 Lynn Albrecht 873-4270
27 RESIDENCE

250TH ST W
Farmington
1000- 8299 CT 615 $C..H 6
HUDSONS MAP LOC 1C-164

RR 1 55024
1206 Charles Rechtzigel .81 463-2387
1812 Howard Zellmer .95 463-4103
R Zellmer .94 463-4064
Roy Zellmer III .82 463-8049
2134 Jeffrey E Smith .80 463-2469
2137 Jeffrey E Smith .92 463-4216
— ALVERNO AVE INTS
— CHIPPENDALE AVE W INTS
3671 Steve Gilbertson .93• 463-2145
★ Castle Rock Knols .95 463-7387
3729 Jerome Scheaf .94• 480-8532
3787 NP
3815 Marvin Bengen .72 463○8264
3831 Richd G Siebenaler .74 463-8815
3871 Dennis Moe .85 463○7317
3950 Michael Widstrom .85 463-4438
3953 Donald Haan .88 463-8247

RR 2 55024
— CEDAR AVE INTS
8150 Michale Mahoney .84 469-3221
8297 Henry Larson .74 469○2476
— HIGHVIEW AVE INTS
8299 Norman S Jacobson .78 466-2820
17 RESIDENCE 1 BUSINESS

250TH ST W
Lakeville

RR 1 55044
9800-11399 CT 615 $C..H 6
HUDSONS MAP LOC 3C-163
Paul L Anderson - 466-2356
8684 NP
8865 Peter Johnson .66 469-4854
Robert M Johnson .74 469-2305
9034 Keith Clubb .86 469-4127
9125 Patrick Patl Ploog .89 469-5766
9203 Michael Andreas .95 469-1680
9367 Michael G Khoury .86 469-1595
9849 Mark Amunson .95 469-4284
9850 Johnny Lemke .82• 469-2242
9885 Patrick L Riley .78 466•5163
9737 William Emond II .95 466-5272
9763 David Hetchler .69 469-1242
9774 Richard L Martin .75 466-2351
9794 Michael Kalblell .96• 985-5150
9800 Brad Fossand .90• 466-4535
Jean Turner .90 469-4535
9805 John Daimerly .86• 469-4675
8612 Steve Lavan .94• 466-2412
9840 Lonnie D Malwitz .82 469-3031
9915 Michelle Severeon .95 469-1497
Michael Wolfe .85• 469-1497
9956 Tom Gergen .78 469-3984
9990 NP
9995 M Miller .94• 469-1872
— DODD BLVD INTS
10270 Gary Eenam .74 469-4769
10391 Dean Monson .61 469-1835
27 RESIDENCE

W 250TH ST
New Prague
2000- 5599 CT 813 $E..G 2
HUDSONS MAP LOC 4C-159

RR 2 56071
2000 Ray F Schoenbauer 758-4520

RR 1 56071
4588 Pat Tagtow .93 492-2882
5141 Paul Hedstrom .94 492-5878
5175 Ricky Schmitz .89 492-8891
5250 Ralph Pulkrabek .66 492-8793
5 RESIDENCE

251ST LN NE
Isanti
3800- 4099 CT1305 $ ..

RR 2 55040
3976 Frank D Lunak .70 444-6008
1 RESIDENCE

252ND AVE NE
Isanti
3000- 3799 CT1305 $ ..

RR 2 55040
3678 L J Reichenbach - 444-4348
3686 Steve Larson .91 444-6723
3779 Alan Asmus .90 444-9647
3 RESIDENCE

W 252ND ST
New Prague
2200- 2799 CT 812 $E..G 3
HUDSONS MAP LOC 3D-140

RR 2 56071
2250 Deborah L Slechta 758-2423
2780 Edward R Borns 758-3337
2 RESIDENCE

253RD AVE NE
Isanti
1500- 1599 CT1305 $ ..
1600- 1699 CT1303 $ ..
3400- 4599 CT1305 $ ..

RR 4 55040
1539 Wayne Ebeling .87 444-4763
1945 Grant P Wagner 444-4827
1649 Robert Hanson ¤ 444-5221

RR 2 55040
3401 Philip J Masse .66 444-4591
3679 Dale Kreager .94 444•5325
Elaine K Krueger .95 444•5356
3776 Rick Zins .96 444-9013
3962 Bruce Beggs .94 444-9381
3980 Otis Beggs .73 444-4230
4075 Marion Hedin .56 444-5736
4516 Michael Leibel .95 444-8454
11 RESIDENCE

253RD AVE NW
Isanti
2500- 5399 CT1305 $ ..

RR 1 55040
2985 Harold Ehne .90 444-4475
Ruth Ehne ¤ 444-6572
3095 B Browning ¤ 444-9816
Joseph Jonathan ¤ 444-4635
3548 C J Sharp .96 444-5452
3873 A Deschenes .79 444-9418
3720 Dale K Parson .64 444-6174
4249 Kathryn Merrifield ¤ 444-0063
Steven Merrifield .66 444-9739
4480 Bruce Zimmer ¤ 444-0461
4490 Mary R Artz .91 444-6146
4493 Douglas Hedman .94 444-7150
4551 Steve Zabinski .92 444-6638
4690 Nevin Nelder .91 444-4518
4825 B Ahlechleger .88 444-6190
4950 Floyd Stroman ¤ 444-5204
5250 George J Sparrow .78 444-5858
5399 Robert S Johnson ¤ 444-3754
16 RESIDENCE

253RD AVE NW
St Francis
5800- 7199 CT 501.03 $D..A 4

RR 1 55070
5828 Jon C Fender - 444-4798
6075 Donald Eden .63 444-5944
6445 Dorothy C Bialke .85 444-7830
6865 George Kramer .69 444-9032
7011 K Stoeckel .83 444-9318
7147 Gaylen Raze - 444-0152
6 RESIDENCE

E 253RD ST
New Prague
400- 699 CT 812 $E..G 3

RR 2 56071
406 Howard Breith .86 758-5736
491 Leonard Slicha 758-4973
650 Randy D Knish 758-4187
666 NP
4 RESIDENCE

E 255TH ST
Elko
4500- 8299 CT 811 $B..G 4
HUDSONS MAP LOC 4D-161

RR 1 55020
4551 Debra K Odette .74 461-3117
4701 Don Odette .66 461-2878
4714 Jerold Dahmer ¤ 461-3828
4750 Kirk Rochelord .96 461-3802
Kirk Rochelord .86 461-3803
Kirk Rochelord .66 461-3801
4785 Gordon W Giles .80 461-2555
— ZACHARY AVE INTS
4820 Mark S Swedland ¤ 461-3106
— DAKOTA AVE INTS
8180 Rodney J Mielke .86 461-2615
8245 Dale O Whipple .84 461-2974
10 RESIDENCE

255TH ST W 56011
Belle Plaine
7000- 7899 CT 813 $E..G 2
HUDSONS MAP LOC 1D-158
7880 Roger Bauer 873-6769
1 RESIDENCE

255TH ST W
Farmington
2500- 6199 CT 615 $C..H 6
HUDSONS MAP LOC 4D-164

RR 1 55024
2981 Harry F Hajdek .67 463-4652
2982 NP
3142 John Beeney .81 463-3402
3184 3188 NP
3826 Michelle Donner ¤ 480-2004
3755 Gertrude Sieg .61 463-2570
4004 Dale Gehring .96 463-8865

RR 2 55024
4412 John Intewold .82 463-4364
— ESSEX AVE INTS
4975 Lee Scheudel .96 463-7050
Richard S Stevens .98 463-4609
5276 Garrick Mallery .75 489-6161
— GAMBIER BLVD INTS
6286 Ken Schumann .94 463-2624
6565 Douglas B McLain .95 463-2905
6905 Jody Arman-Jones .81• 463-2878
Evers Jones .81• 463-2876
8987 A Storlie .78 463-7003
7095 Ralph Mohn .89 463-4205
16 RESIDENCE

W 255TH ST
New Prague
3100- 3299 CT 812 $E..G 3
HUDSONS MAP LOC 5D-169,1D-160

RR 1 56071
3140 John J Bestyr 758-2242
3266 C Grounds ¤ 758-2525
John L Snyder .95 758•2525
3 RESIDENCE

256TH AVE NW
Isanti
2800- 3199 CT1305 $ ..

RR 1 55040
2875 Walter J Schulz .98 444-5780
2898 Janet L Anderson ¤ 444-4695
2825 Vernon J Waldoch .96 444-9019
3010 Jerry Sabinash .98 444-6371
3025★ M Gk of Isanti Inc .94 444-5647
3125 Dean E Aleckson .80 444-9721
3175 John Pierce .85 444-5038
6 RESIDENCE 1 BUSINESS

257TH AVE NE
New Street-1995.
Isanti
3100- 3199 CT1303 $ ..

RR 2 55040
3157 Ray Cronin .95 444-8800
1 RESIDENCE

257TH ST W
Farmington
7800- 8299 CT 615 $C..H 8
HUDSONS MAP LOC 5D-163

RR 2 55024
7919 David Larson .94 469-4562
7980 Michael Olson .92 469-5618
7984★ Mount Olivet Rtrt .83 469-2175
7985 Paul D Hecker .95 468-2904
John Strunk .86• 469-4589
7985 John E Strunk .80• 466-5347
8000 Gary Turpening .94 469-5294
8094 Tim Prose .88 469-2493
8199 Chad Rasmussen .94• 469-3653
8258 M Zachmeier Ruh .95 469-2362
Rob Ruh .95 466-2362
10 RESIDENCE 1 BUSINESS

257TH ST W 55044
New Street-1995.
Lakeville
9900-10499 CT 815 $C..H 6
HUDSONS MAP LOC 3D-163
9999★ Turpening Gary P ¤ 985-5072
9800 Gordon W Strom .91 469-5156

RR 1 55044
9898 David Schweck .94 466-1201
2 RESIDENCE 1 BUSINESS

259TH AVE NE
Isanti
3800- 3999 CT1305 $ ..

RR 2 55040
3898 Tim Koosman .86 444-4871
5835 Lee Setter .96 444-9431
7200 David C Nelson .96 444-4172
3 RESIDENCE

E 259TH ST
Elko
11700-11899 CT 811 $B..G 4
HUDSONS MAP LOC 2D-163

RR 2 55020
11745 Richard Hartmann .89 461-3540
11855 Charles P Decker .79 461-3648
11680 James Rud .93 461-3197
3 RESIDENCE

259TH ST E
Lakeville
11900-11999 CT 811 $B..G 4
HUDSONS MAP LOC 2D-163

RR 1 55044
11985 Dale E Fredrickson .74 461-3561
1 RESIDENCE

E 260TH ST
Elko
4700-10899 CT 811 $B..G 4
HUDSONS MAP LOC 1D-163

RR 1 55020
5780 Roland Paterson .75 461○2671
5846 George McMillan .74 461-3368
5880 Caroline Schalwig .76 461-3514
8408 Robert Devine .87 461-2669
8845★ Pexa Dale 461-2981
— E 270TH ST INTS
— TEXAS AVE INTS
7560 NP
7595 Elmer Friedges .89 461-2437
7865 Thomas H Deer .93 461-2080
7745 Gregroy A Fischer .94 461-2272
7760 7770 NP
7796 Thomas P Page .96• 461-2532
7805 A R Belter ¤ 461-3572
Toney L Belter .86 461-2081
7820 Patty Wagner .87 461-3361
— IDAHO AVE INTS
— MAIN ST INTS
9478 Lane Jones .86 461-3383

RR 2 55020
9840 Martin Deutsch .74 461-3345
9855 Frank Degroas .95 461-2507
— XERXES TRL INTS
10405★ Meyer RV Sales&Svc .86 461-2525
10491 Glenn W Sybrandt .65 461-2632
★ Glennas Pizza&Lnt .89 461-2632
★ Last La Saloon ⊙ 461-2632
★ Sybrandt Glenn W .91 ⊙ 461-2632
10875 A G Silverness .81 461-3431
★ Ngbhrks Interiors .95 461-8060
★ Tradere Market Inc ¤ 461-2460
10880 NP
10880 Robert F Adelmann .77 461-2226
21 RESIDENCE 7 BUSINESS

260TH ST E
Farmington
1000- 2499 CT 615 $C..H 6
HUDSONS MAP LOC 1D-163

RR 1 55024
1805 Paul Frtham .72 463-6241
1 RESIDENCE

E 260TH ST
New Prague
300- 1099 CT 811 $B..G 4

RR 2 56071
301 Milo Pomija 758-2276
855 Gene Denler 758-5081
Paul Hendricks 758-3735
891 Randy Malz 758-2741
— LANGFORD AVE INTS
1086 George Kes 758-3385
1405 Hilbert Hogel 758-3889
1581 Gary Vessen 758-5017
1655 Dawn Bontch 758-3873
1721 NP
1730 James L Nordwall .95 758-4105
1771 Mike Reese .95 758-5767
— VERGUS AVE INTS
1910 Francis Tupy .95 758-3601
1951 Allen Tupy 758-2744
2489 Dean Benson 758-2476
★ Wood Mere Farm Inc .96 758-2838
14 RESIDENCE 1 BUSINESS

260TH ST W 56011
Belle Plaine
7400-11069 CT 813 $E..G 2
HUDSONS MAP LOC 3D-158,2D-159
7475 Paul H Franzen 873-6895
10980 Brian Bragie 873-8532
2 RESIDENCE

© COPYRIGHT INFORMATION ON THIS PAGE MAY NOT BE KEY PUNCHED ENTERED INTO A COMPUTER OR PHOTOGRAPHED IN ANY MANNER WHATSOEVER EXCEPT AS AUTHORIZED BY THE PUBLISHER.

RR 1 55024
2855 Thomas H Stahnke .76 463-6764
2831 .... NP
2935 Colin Garvey .85 463-4625
3105 J Kana .86 463-4255
6 RESIDENCE

250TH ST E 55352
Jordan
1410 Steve Neigen .82 497-6784
1 RESIDENCE

250TH ST E
Lakeville
RR 2 55044
11100-11899 CT 606.10 $C..G 5
HUDSONS MAP LOC 2C-95
10198 Elmer J Orris .86 469-4633
10380 Jim G Anthony .84 469-3602
10941 Milton Elvestad .73 469-2759
RR 1 55044
11151 Merle F Hirdler Sr .82 469-2457
11240 D Bohn .87 469-3794
11366 Steve Hein .89 469-4297
11651 Julie Dylan ¤ 469-2012
11676 Edwin Elvestad .83 469-2255
11770 John Piper .85 469-1307
11771 David Elvestad .83 469-5104
11866 **Apartments**
58 Kenneth Anderson .86 469-3087
11841 Marvin Barsness .89 469-3749
17 RESIDENCE

250TH ST W
Farmington
RR 1 55024
1000- 8299 CT 615 $C..H 6
HUDSONS MAP LOC 1C-96
1209 Charles Rachtzigel .80 469-2387
1612 Roy Zellmer III .81 463-8049
Russell Zellmer .82 463-4064
2134 Jeffrey E Smith .86 463-2489
2137 Jeffrey E Smith ¤ 463-4216
3729 Marvin C Erickson .88 463-7024
3787 .... NP
3815 Marvin Bengen .71 463-8264
3831 Richd G Siebenaler .73 463-6615
3871 Dennis Moe .84 463-7317
3952 Gerald Haan .87 463-8247
RR 2 55024
8150 Michale Mahoney .83 469-3221
8297 Henry Larson .73 469-2476
8299 Norman S Jacobson .77 469-2820
14 RESIDENCE

250TH ST W 55044
Lakeville
8600-10399 CT 608.10 $C..G 5
HUDSONS MAP LOC 3C-95
RR 1 55044
8684 Peter C Johnson .80 469-4854
8686 Robert M Johnson .73 469-2365
9034 Keith Clubb .85 469-4127
8125 Patrick Ploog .87 469-5786
9367 **Apartments**
250 Michael G Khoury .85 469-1595
9649 Mark Antonsen .90 469-4264
8650 Johnny Lemke .81 469-2242
9665 Patrick L Riley .77 469-5163
8737 Glen Osinnal .88 469-2622
6763 David Hatchler .86 469-1242
6774 Richard L Martin .74 469-2351
6784 Frederick T Kroll .75 469-4237
9800 Brad Eggsard .89 • 469-4535
Jean Turner .89 469-4535
9805 **Apartments**
D John Deimerly .88 • 469-4875
9812 Ruben C Foley .76 469-3907
9840 Lonnie D Malwitz .81 469-3031
9915 .... NP
8965 Tom Gergen .77 469-3884
9960 .... NP
9995 Sue Dircks .88 469-5166
10129 Orville Genzler .80 469-4533
10165 Livio Fragiacomo .73 469-5388
10276 Gary Estrem .73 469-4759
10391 Dean Monson .96 469-1635
NO # Paul L Anderson .79 469-2358
26 RESIDENCE

252ND AVE NE 55040
New Street-1990.
Isanti
3889 Steve Larson .90 444-6723
1 RESIDENCE

253RD AVE NW 55040
New Street-1990.
Isanti
4490 Mary R Artz .96 444-6149
4551 S Zabinski ¤ 444-6836
2 RESIDENCE

255TH ST E
Elko
RR 1 55020
4600- 8299 CT 811 $B..B 4
HUDSONS MAP LOC 4D-93
4551 Randal Odelle .73 461-3117
4761 Don Odette .73 461-2676
4785 **Apartments**
301 Gordon W Giles .89 461-2555
8189 **Apartments**
255 Rodney J Mielke .85 461-2815
8245 Dale O Whipple .83 461-2374
5 RESIDENCE

255TH ST W
Farmington
RR 1 55024
2900- 7499 CT 615 $C..H 6
HUDSONS MAP LOC 4D-96
2981 Harry E Hajdak .86 469-4852
2982 Troy Corrigan .96 460-6039
3142 John Beaney .90 463-3402
3184 3188 .... NP

3755 Gertrude Sieg .90 463-2570
RR 2 55024
4412 John Talawohl .81 463-4384
5276 Garrick Mallery .74 463-6161
6565 Douglas B McLain .88 463-2805
6965 Jody Arman-Jones .80 463-2878
Evers Jones .80 463-2878
6987 Alan Storlie .76 463-7003
7095 Ralph Mohn .86 463-4205
13 RESIDENCE

257TH ST W
Farmington
RR 2 55024
7980- 8199 CT 616 $C..H 6
HUDSONS MAP LOC 5D-95
7980 Michael Olson ¤ 469-6616
7984 ★ Mt Olivet Retreat .82 469-2175
7985 John Strunk .85 • 469-4569
John E Strunk .89 • 469-5347
8000 Gary Turpening .86 469-2519
8094 Tim Prose .87 469-2493
8199 John T Anderson .83 469-3326
6 RESIDENCE 1 BUSINESS

257TH ST W 55044
New Street-1989.
Lakeville
HUDSONS MAP LOC 3D-95
9800 Gordon W Strom .90 469-5158
RR 1 55044
9996 Roy Overstreet .89 469-1452
2 RESIDENCE

259TH ST E
Elko
RR 1 55020
11700-11088 CT 811 $B..G 4
HUDSONS MAP LOC 2D-95
11745 Richard Hartmann .87 461-3548
11855 Charles P Decker .78 461-3548
11860 Donald N Miller .83 461-3543
3 RESIDENCE

259TH ST E
Lakeville
RR 1 55044
11900-11999 CT 608.10 $C..G 5
HUDSONS MAP LOC 2D-95
11965 Gale E Fredrickson .73 461-3581
Gary Fredrickson ¤ 461-3087
2 RESIDENCE

260TH ST E
Elko
RR 1 55020
4700-10899 CT 811 $B..G 4
HUDSONS MAP LOC 1D-95
5760 Roland Peterson .74 461-2871
5846 George McMillan .73 461-3398
5880 Caroline Schalwig .78 461-3514
6408 Robert Devine .86 461-2888
6645 ★ Dale Pexa Concrete 461-2881
7566 .... NP
7586 Elmer Friedges .88 461-2437
7745 Benny Vancleve – 461-2031
7760 .... NP
7776 Kenneth Horejsi .88 461-2982
7796 Joe Wagner .83 461-2482
7885 Toney L Belter .86 461-2081
7820 Patty Wagner .86 461-3361
8476 **Apartments**
6 Lana A Jones .85 461-3383
9840 Roman Deutsch .73 461-3345
9855 Frank Degross .73 461-2507
10405 ★ Niemeyer RV Sl&Sv .87 461-2525
10461 ★ Glennes Eatery&Pza .88 461-2632
★ G W Sybrandt .90 ⊙ 461-2632
10676 Tim C Doughty .87 461-2669
A G Silverness .80 461-3431
★ Traders Market .82 461-2480
10680 .... NP
10880 Robert F Adelmann .76 461-2226
10881 ★ Maynards Auto Srvc .88 461-3118
★ Prairie Auto Sales .85 ⊙ 461-3118
16 RESIDENCE 7 BUSINESS

260TH ST E
Farmington
RR 1 55024
1900- 1099 CT 608 $D..G 5
HUDSONS MAP LOC 1B-95
1409 Tom Martin ¤ 463-4735
1605 Paul Irrthum .71 463-6241
2033 Richard Neitzel .85 463-3906
3 RESIDENCE

260TH ST W
Farmington
RR 1 55024
1304- 2399 CT 609 $D..G 5
HUDSONS MAP LOC 1B-97
1043 Glen Dubbels .84 463-6201
1394 Virgil Odette .64 463-6232
1610 Grant Beyl .89 460-6004
7340 Bob Marthaler .90 460-6702
1999 Alan E Olson .89 463-7085
2033 .... NP
2076 Fred D Alexander .78 463-2285
2131 John Vandenheuvel ¤ 463-4994
2225 Milton Boodhus .88 463-2153
2285 .... NP
2345 Hughes Swift .73 463-6212
2375 Darryld Olstad .81 463-2779
12 RESIDENCE

261ST AVE NW 55040
New Street-1991.
Isanti
3649 Gerald Rinehart – 444-5355
J R Sherwood – 444-5355
J R Sherwood – 444-5515
3 RESIDENCE

263RD ST E
New Street-1983.
Lakeville
RR 1 55044
11700-11799 CT 890.10 $C..G 5
HUDSONS MAP LOC 2A-109
11710 ★ Metro Auto Salvage .83 461-2186
1 BUSINESS

265TH ST E 55020
New Street-1982.
Elko
HUDSONS MAP LOC 3A-108
9551 Edward Zahratka .73 461-3427
9580 Sheila Wierson .86 461-2055
9571 Mark O Gibson .87 461-2033
9574 .... NP
9586 Dan Elicek .89 461-3141
9606 Terry Fredrickson .76 461-2604
9665 ★ Barkers Auto Serv ¤ 461-2849
★ The Repair Shop .96 461-3060
★ TJS Automotive .90 461-3323
9691 .... NP
9695 David Thalhuber .73 461-2092
9700 D C Fredrickson .82 461-7999
9 RESIDENCE 3 BUSINESS

265TH ST W 55024
Farmington
4500- 6899 CT 615 $C..H 6
HUDSONS MAP LOC 2A-116
RR 2 55024
5379 Earl Kilber .71 463-7481
5580 Kenneth W Bateman .81 463-4898
Kenneth W Bateman .88 463-4462
Susan M Poirot .81 463-4886
5845 Steve Mahan – • 463-2042
6429 Patrick J Mahowald .87 • 463-4456
6484 Harold Mallery .76 463-2598
6488 .... NP
6775 Kenneth Schoening .88 463-7978
6835 Howard C Sterlie .79 463-2693
10 RESIDENCE

266TH ST E 55020
New Street-1988.
Elko
HUDSONS MAP LOC 5A-100
9635 .... NP
9651 Vickie A Smith .89 461-3266
2 RESIDENCE

267TH AVE NW 55040
Isanti
911 Raymond Robbins .90 444-6761
985 Marguerite Harbinson .82 444-9335
2 RESIDENCE

267TH ST E 55020
Elko
11400-11699 CT 811 $B..G 4
HUDSONS MAP LOC 5A-100
9641 Jeffrey Maxa .81 461-2028
9651 .... NP
RR 1 55020
11494 Harvey W Henry .86 461-2798
11520 Larry Kinder .85 461-2299
11600 Leo G Glunz .73 461-2872
5 RESIDENCE

267TH ST W
New Street-1977.
Farmington
RR 2 55024
8800- 8899 CT 616 $C..H 6
HUDSONS MAP LOC 5A-109
8011 Eugene Dietz .84 469-4382
8021 Gregory J Harper .88 469-1823
8109 Duane R Fossum .80 469-4772
8171 Robert A Glass .77 468-3746
8176 Niles Aastvold .84 469-1528
8636 ★ Celerity Mntr Hmes .90 469-3981
5 RESIDENCE 1 BUSINESS

267TH ST W
Lakeville
RR 1 55044
9900-10199 CT 608.10 $C..G 5
HUDSONS MAP LOC 3A-109
8805 G P Williams .87 • 469-2489
8822 Rev Mark Ostgarden .80 469-3329
8999 Wesley Best 469-2479
9020 David Ingemansen .79 469-3677
9035 Marion Mattson .71 469-2280
9085 Robert K Holien .84 469-5178
9166 L E Mohn .77 469-2826
9198 Walton F Spillman .73 469-2728
9250 V Jet .86 468-5617
Loren Michels .86 469-1930
9265 Dennis Melechn .85 469-2143
9326 Arthur Lehmann .79 469-2230
9390 Thomas Zwiers .76 469-3260
9405 Kenneth Miller .74 469-4603
8490 Gary Malott .90 468-4828
9483 Michael O Kelley ¤ • 468-1283
9631 Thomas Ostlie .81 469-3026
9724 Joe Simon .77 469-3901
9781 .... NP
16111 G A Larson .76 469-3700
20 RESIDENCE

270TH ST E
Elko
RR 1 55020
5100-11899 CT 811 $B..G 4
HUDSONS MAP LOC 1A-109
5100 Kee S Wagner ¤ 461-3042
5150 Charles J Breuer .64 461-2463
5260 Jonathan A Hodapp – 461-3340
Mary Sue Palazzari ¤ 461-3340
5306 John A Geyen .86 461-2546
5358 Lawrence C Johnson .82 461-2671
5398 Keith A Glanzer .76 461-3385
5400 Brian Peterson .83 461-2207
5778 George W Shimota .73 461-2201

7436 ★ B&S Dry Wall Inc .84 461-3216
★ Rodney Bartelds .73 ⊙ 461-3216
★ Lakeville Crane .87 ⊙ 461-3216
7720 Robert J Seykora .73 461-3435
10250 Jayson Hauton .90 461-2988
Pam Hauton ¤ 461-2862
10254 .... NP
10551 Harlan Stevens .84 461-2642
10555 A G Peterson .80 461-3743
10845 Leonard Bergstrom .79 461-3246
10878 Ruth C Miller .87 461-2175
10927 Milton Miller .87 461-2693
11150 Roy Elvestad .73 461-2891
11325 James Miller .83 461-2898
11476 Albert V Swedin .86 461-2135
11530 Ray M Neubauer .85 461-2686
11600 Russell E Martin .73 461-3352
23 RESIDENCE 3 BUSINESS

270TH ST E 55372
New Street-1981.
Prior Lake
4400 Louis E Appel – 440-8432
1 RESIDENCE

272ND ST W
New Street-1985.
Farmington
RR 2 55024
7800- 7899 CT 615 $C..H 6
7861 Glen Shirley .86 469-3610
1 RESIDENCE

273RD AVE NW 55040
New Street-1990.
Isanti
750 ★ Country Camping RV .08 444-9826
★ Lee Mielke ¤ ⊙ 444-9826
2 BUSINESS

273RD ST E
Elko
RR 1 55020
10100-10499 CT 811 $B..G 4
HUDSONS MAP LOC 5B-158
10160 Don Buerke .87 461-3225
10175 Thomas H Schaffler .86 461-2476
10221 Tim G Lindgren .89 461-2940
10376 Alan K Payne – 461-3507
10441 Wendell G Burch .83 461-3372
5 RESIDENCE

275TH ST E
Elko
RR 1 55020
8500- 9599 CT 811 $B..G 4
HUDSONS MAP LOC 4B-108
8585 David Lythjohan .89 461-2372
9260 Lewis W Roberts .88 461-2313
8278 Wallace C Berg .73 461-3165
Wallace C Berg .96 461-2165
9450 Keith Chelleen .88 461-3213
9580 Ellen Anfinson .73 461-3112
6 RESIDENCE

275TH ST E
Lakeville
RR 1 55044
11400-11888 CT 608.10 $C..G 5
11450 Ronald P McHale .86 461-2085
11646 William Otting .82 461-3265
William Otting .73 461-3262
3 RESIDENCE

277TH LN NW 55040
New Street-1991.
Isanti
1384 M C Bennett ¤ 444-4162
1 RESIDENCE

278TH LN NW 55040
New Street-1990.
Isanti
1309 **Apartments**
278 David L Richard .90 444-4899
1 RESIDENCE

278TH ST E
Elko
RR 1 55020
8300- 8599 CT 811 $B..G 4
HUDSONS MAP LOC 3B-166
8300 George Radermacher .84 461-3317
8351 D J Sparti .86 461-2809
2 RESIDENCE

280TH LN NW 55040
New Street-1991.
Isanti
1341 David Earley – 444-4921
1 RESIDENCE

280TH ST E
Elko
RR 1 55020
4700- 5799 CT 811 $B..G 4
HUDSONS MAP LOC 2B-108
5798 Marvin Erickson .76 461-2806
.... 55020
1 RESIDENCE

280TH ST W
New Street-1989.
Farmington
RR 2 55024
7429- 9999 CT 615 $C..H 5
HUDSONS MAP LOC 3B-116
8590 Glen Steinhoff .89 469-4798
1 RESIDENCE

© COPYRIGHT INFORMATION ON THIS PAGE MAY NOT BE KEY PUNCHED ENTERED INTO A COMPUTER OR PHOTOGRAPHED IN ANY MANNER WHATSOEVER EXCEPT AS AUTHORIZED BY THE PUBLISHER.
CT — Census Tract $A&B,Etc — Census Tract Wealth Rating   ★ — Business Listing   ⊙ — Duplicate Phone Number At This Business Address

RR 1 55024
3270 Patrick N Tinsley 85 460-6288
★Ventron Mktng&Sls . . ¤ 469-6162
3384 Robert Hanson . . . . . — 463-2142
3385 M Hodge 84 463-2488
3610 Larry Dimmen 72 463-3946
3661 Art Alanson 65 460-6645
3900 A G Schmidtke 83 463-3826
Dale Schmidtke 84 463-3828
4197 John V Rother 61 463-8461
4202 Winfield R Nelson . . .73 463-8234
4225 Clayton Nielsen 78 463-2619
Clayton W Nielsen . . .76 463-2230
23 RESIDENCE 1 BUSINESS

240TH ST W
Lakeville

RR 1 55044
8000- 9299 CT 615 4C..H 6
8001 Gerald H Troutman . . .73 489-5313
8016 M A Smith 79 486-3940
8185 Linda L Asher 74 489-3689
8215 Thomas G Bies . . . . ¤ 486-5013
8874 Michael Gasper 83 489-1774
8785 Donald C Davis 78 489-4543
8830 Russell L Meelman . . .75 489-3830
4535 John V Scholtz 73 483-4583
8885 Curt Rogers 84 489-1372
8830 B Sauther 62 469-5223
8936 Frank J Beissel Jr . . .73 486-5383
8938 . . . . NP
8985 Gregory Tacheny . . . . ¤ 469-1357
9050 John Haglund 77 469-2049
9100 Thelma Larson 61 486-3859
9230 Carl C Henrikson 78 469-4379
9235 Clark W Smith 76 469-3352
17 RESIDENCE

241ST AVE NE
New Street-1977.
East Bethel

RR 1 55005
1000- 2099 CT 501.01 4D..A 6
1041 Michael D Bornus . . .84 434-5851
1112 T M Schutz 82 434-9227
1122 T L Gazak 80 434-4177
1132 David W Behm 60 434-3473
2080 George Wyatt 80 434-9367
5 RESIDENCE

241ST AVE NW
St Francis

RR 1 55070
2100- 4799 CT 501.02 4C..A 4
2148 Ernest Isum 753-1776
2945 Richd A Torkelson . . .80 759-1093
3007 N Butler 83 753-3670
3020 S L Krzyzaniak 83 753-4568
3117 Gerald C Samuelson . .80 753-3436
3220 Walter Reimann 80 753-2665
4520 D M Pihaly 62 753-3191
Vera Thorson 62 753-3191
4539 Carl J Haglund 82 753-1248
4554 Ronald L Domino 78 753-2781
4559 Lester H Solberg 76 753-1292
4637 Wm L Bruggeman 81 753-1299
4745 Lowell Murray 76 753-3333
13 RESIDENCE

242ND ST E 55020
New Street-1982.
Elko

3400- 5099 CT 811 4B..G 4
3825 Gary Schwieder 83 461-2237
3878 . . . . NP

RR 1 55020
5001 Richard A Mushitz . . .74 461-2215
3 RESIDENCE

243RD AVE NW
St Francis

RR 1 55070
2100- 2399 CT 501.02 4C..A 4
2215 Michael D Wyatt . . . . — 759-2308
2295 James L Michaelson . . — 753-1773
2314 S Isum 84 753-4596
2315 Gloria Miller 85 753-2699
½ Richard Asleson . . . . ¤ 753-5491
5 RESIDENCE

243RD ST W
New Street-1980.
Lakeville

RR 1 55044
9100- 9299 CT 615 4C..H 6
9150 Steve Nusser 80 469-5102
9200 Kevin W Custer 84 463-4538
2 RESIDENCE

245TH AVE NE 55005
New Street-1981.
East Bethel

400- 599 CT 501.01 4D..A 6
1500- 1699 CT 501.02 4C..A 4
538 Franklin Judeitsch . . .85 434-6367
St Francis

RR 1 55005
1610 Leigh Wyatt 85 434-5116
2 RESIDENCE

245TH AVE NW
New Street-1985.
St Francis

RR 1 55070
7000- 7099 CT 501.02 4C..A 4
7040 Clayton Bengtson . . . . — 444-4963
1 RESIDENCE

245TH ST E
Farmington

RR 1 55024
1000- 2499 CT 616 4C..H 6
1087 Gerald Wagenknecht . .78 463-6334
1067 Fred Erickson 84 463-2872
1305 Lester Stapf 73 463-8114
1840 Dennis Stene 85 460-8394
1802 Melvin Lively 76 463-8218
2100 Mark Becker 77 460-6009
2412 Clem Becker 82 460-6542
7 RESIDENCE

245TH ST E
Lakeville

RR 2 55044
9200-11899 CT 811 4B..G 4
9205 George O Hanson . . .73 461-2631
9240 . . . . NP
9395 Lawrence A Hamre . . .73 469-2250
9404 Martin Tonsager 84 469-2941
9520 Jerry M Henry 73 469-2348
9885 Floyd Tonsager 73 460-2657
9950 Paul Tonsager . . . . . ¤ 463-1998
10448 Leonard Duban 83 469-2508
10450 Gordon A Thompson . .73 469-2698
10471 M K Thompson 78 469-2467
10475 Alice Wenzel 84 469-1320
10771 Kenneth B Demaster . .73 469-2241
10825 Sandy Hanninen 84 463-1224
11075 Arnold Johnson . . . . ¤ 469-3584
11126 Leslie R Hall 83 469-5113

RR 1 55044
11426 V J Kohlnhofer 73 469-2280
11526 Rosanne Kleikamp . . . ¤ 469-5740
11633 Gerald E Storlie . . . . — 469-2675
11850 P R Peterson . . . . . ¤ 469-5094
16 RESIDENCE

245TH ST W
Farmington

RR 1 55024
1000- 1899 CT 615 4C..H 6
5500- 5799 CT 615 4C..H 6
1391 David Dubbels 77 463-2978

. . . . 55024
1662 James Perry 78 469-4136

RR 2 55024
5590 Bruce A Brekke 84 460-6625
5886 William Darrow Jr . . .73 463-3177
6265 Jack Danner . . . . . ¤ 469-6607
6615 Craig Henry 78 463-3998
6605 Mark Kadlec 83 469-3297
6811 Gholam A Sanei 83 469-1036
6655 M E Reinke 76 469-5162
6875 David G Moe 83 469-4590
6775 Warren King 84 463-1358
NO # David J Gruis 76 469-3970
NO # Charles L Klima 79 463-3805
13 RESIDENCE

245TH ST W
New Street-1983.
Jordan

RR 1 55352
4600- 4899 CT 812 4E..G 3
4820 Duane Deutsch 83 492-2392
1 RESIDENCE

247TH ST E
New Street-1982.
Lakeville

RR 2 55044
9700- 9899 CT 811 4B..G 4
9750 Randal Thompson . . . ¤ 469-4693
9801 Larry Trebelhorn 82 469-4875
2 RESIDENCE

247TH ST W
Farmington

RR 2 55024
6400- 6999 CT 615 4C..H 6
6405 Michael F Grossman . .78 469-3742
6889 M Fortier 78 469-4582
6045 Ray M Kadlec 73 469-4169
3 RESIDENCE

250TH ST E 55020
New Street-1982.
Elko

3200- 8999 CT 811 4B..G 4
3261 Edward J Carvenka . . .73 461-2798

RR 1 55020
3386 Eddie R Sticha 73 461-3277
4126 James W Wasbotten . .81 461-2573
4880 David R White 79 461-2209
4941 Thomas E Tindel 73 461-2887
5176 Raymond L Dietz 81 461-2886
5320 Emil Pexa 73 461-2961
5720 Leonard Monson 74 461-2988
5775 Leon Zweber 73 461-2988
6016 Philip Tenney 73 461-2235
6185 K J Stillwell 78 461-2524
6271 Robert P Pedersen . . .83 461-3260
6365 D Deichelbohrer 82 461-2362
6866 Art Seurer 83 461-2180
6896 Ben Zweber 461-2356
Thomas G Zweber . . .83 461-2154
7420 Alfred Wagner 83 461-2987
7718 Conrad E Wagner 83 461-3480
8308 Dennis L Swenson . . .84 461-2643
8380 Stephen Muscato 461-2218
8445 Charles Lehman 85 461-2933
8406 Steven A Aaker 85 461-3555
8469 Curtis R Mott 74 481-2833
8880 Paul R Johnson 73 461-3401
8896 M K Green 83 461-2438
8756 Harvey L Lovejoy 82 461-2838
8808 Jeffrey G Goodell . . .85 461-2784
6620 Albert G Borgen 81 461-2537
28 RESIDENCE

250TH ST E 55024
Farmington

1000- 4499 CT 615 4C..H 6
1000 James M Flor 79 463-2628

RR 1 55024
2676 William May Jr 74 463-8541
2761 Craig Peterson 83 463-4021
2795 Lance Westad 77 463-2202
2855 Thomas H Stehnke . . .78 463-8784
2931 Herbert Freitag 83 463-7644
2835 Colin Garvey 85 463-4625
Paul J Gross 75 463-2541
6 RESIDENCE

260TH ST E 55352
Jordan

800- 1499 CT 811 4B..G 4
938 F C Bateman 492-6357
1321 Jerome Hafermann . . .76 492-6288
1410 Steve Nelsen 82 492-6284
3 RESIDENCE

250TH ST E
Lakeville

RR 2 55044
10100-11799 CT 811 4B..G 4
10198 Elmer J Ovis . . . . . ¤ 469-4693
10380 Jim G Anthony 84 469-3802
10941 Milton Elvestad 73 469-2759

RR 1 55044
11151 Merle F Hindler Sr . . .82 469-2457
11246 D Bohn 82 469-3794
11380 Warren K Giles 73 469-5690
★Lakevl Excavating . . . ¤ 469-4175
11851 David Elvestad 83 469-5104
11676 Edwin Elvestad 83 469-2265
11770 John Piper 85 469-1307
8 RESIDENCE 1 BUSINESS

250TH ST W
Farmington

RR 1 55024
1200- 3999 CT 615 4C..H 6
8200- 8299 CT 615 4C..H 6
1209 Charles Rechtzigel . . .80 463-2387
1329 Mervin C Erickson . . .74 463-7024
1612 Roy Zellmer III 81 463-8046
Russell Zellmer 83 463-4064
1827 Lloyd Stevens 83 463-8225
2137 Don Errico . . . . ¤ 460-6701
3871 Clifford S Koski 73 460-6788
3815 Marvin Bengen 71 463-8264
3831 Richd G Siebenaler . . .73 463-8815
3871 Dennis Moe 94 463-7317
3652 Donald Haan 73 463-6247

RR 2 55024
8297 Henry Larson 73 463-2478
8299 Norman S Jacobson . . .77 469-2620
13 RESIDENCE

250TH ST W 55044
Lakeville

8100-11499 CT 615 4C..H 6
8150 Michale Mahoney 83 469-3221

RR 1 55044
8684 Peter C Johnson 80 469-4854
8686 Robert M Johnson . . .73 469-2385
9034 Keith Clubb 85 469-4127
9387 Michael G Khoury . . .85 469-1595
9650 Johnny Lemke 81 466-2242
Johnny Lemke 81 469-3386
9685 Patrick L Riley 77 469-5163
9737★G&J Insulating 82 466-2622
Glenn Quinnell 73 469-2622
9763 David Hetchler 84 469-1242
9774 Richard L Martin 74 469-2351
9794 Frederick T Kroll . . .75 469-4297
9800 Martin D Hrabe 85 469-1736
9805 Rick Lemke . . . . . . — 469-1592
9812 Ruben C Foley 78 463-3907
9840 Leonie D Malwitz 81 469-3031
9915 Deryl R Jenson 85 469-1740
Gary Valek 77 466-9180
9955 Tom Gergen 77 469-3984
9990 . . . . NP
9995 Donald Doerfler 81 469-5166
10129 Orville Genzler 80 469-4533
10185 Livio Fragiacomo 73 469-5886
10270 Gary Extrom 73 469-4759
10391 D M Rollins 73 466-3301

. . . . 55044
NO # Paul L Anderson 79 469-2358
28 RESIDENCE 1 BUSINESS

255TH ST E
Elko

RR 7 55020
4000- 8299 CT 811 4B..G 4
4551 Randal Odette 73 461-3117
4701 Don Odette 73 461-2876
8180 Rodney J Mielke 65 461-2615
8245 Dale D Whipple 83 461-2374
4 RESIDENCE

255TH ST W
Farmington

RR 1 55024
2900- 8999 CT 615 4C..H 6
2981 Harry F Hajduk . . . . ¤ 463-4052
3142 Bernard Bongard 85 463-6838
3184 Michael Parker 61 463-8307
3188 . . . . NP
4412 John Tuttewohl 81 463-4364

RR 2 55024
5276 Garrick Mallery 74 463-6181
5805 Bardell Doob 80 463-2976
Thelma Doob 80 463-2676
8585 Ernest A Turner 62 469-3606
6905 Jody Arman-Jones . . .80 463-2678
Evers Jones 80 463-2876
8887 Alan Storlie 78 463-7003
12 RESIDENCE

257TH ST W
Farmington

RR 2 55024
7900- 8169 CT 615 4C..H 6
7880 Steve Halkenk 78 466-4808
7984★Mt Olivet Retreat . . .82 469-2175
7965 Loren C Schrapel 83 469-2365
John Struck 65 469-4569
8000 Gary Terpening . . . . ¤ 469-3526
8199 John T Anderson 83 469-3328
5 RESIDENCE 1 BUSINESS

259TH ST E
Elko

RR 1 55020
11700-11899 CT 811 4B..G 4
11745 Richard Hartman 73 461-3546
11855 Charles P Decker 78 461-3548
11860 Donald N Miller 83 461-3543
3 RESIDENCE

259TH ST E
Lakeville

RR 1 55044
11800-11899 CT 811 4B..G 4
11985 Dale E Fredrickson . . .73 461-3581
1 RESIDENCE

260TH ST E
Elko

RR 1 55020
5700-10899 CT 811 4B..G 4
5780 Roland Peterson 74 461-2871
5848 George McMillan 73 461-3396
5880 Harry M Schulwig . . .78 461-3514
6406 Robert Devine . . . . . ¤ 461-2888
6645★Dale Pexa Concrete . . 461-2881
7580 M Douglas Mizener . . .82 461-2410
7595 Henry Friedges 73 461-2297
7756 Bruce Friedges 79 461-2962
Elmer Friedges 73 461-2437
★Friedges Trucking . . .88 461-2962
7780 . . . . NP
7770 Kenneth Horejsi . . . . ¤ 461-2982
7766 Jon Wagner 83 461-2462
7820★NW Markt-Elko Flrl . .00 461-3361
Patty Wagner . . . . . ¤ 461-3361
8685 Bruce E Carlson 73 461-2423
8610 Carl Lotze 74 461-3564
8911 Gary A Nerbat 85 461-2044
9476 Lane A Jones 83 461-3983
9840 Roman Deutsch 73 461-3345
8665 Frank Degross 73 461-2507
10486★New Market Sales . . . ¤ 461-9575
10491 Glenn W Sybrandt . . .84 461-2832
10875 A G Silverness 60 461-3431
★Traders Market 82 461-2400
10880 Robert J Adelmann . . .77 461-2388
10880 Robert F Adelmann . . .76 461-2226
10881★Prairie Auto Sales . . .85 461-3119
★Tri-County Auto 83 461-8198
22 RESIDENCE 7 BUSINESS

260TH ST E
Farmington

RR 1 55024
1600- 2099 CT 615 4C..H 6
1880 Paul Irthum 71 463-6241
2033 Richard Heitzel 85 463-3905
2 RESIDENCE

260TH ST W
Farmington

RR 1 55024
1000- 2399 CT 615 4C..H 6
1043 Glen Dubbels 84 463-8201
1384 Virgil Odette 84 463-6232
1409 Gerard Simon . . . . . ¤ 460-8915
1910 James Mackey 85 463-4513
2033 . . . . NP
2075 Fred G Alexander 78 463-2285
2225 Milton Bondhus . . . . ¤ 463-2153
2265 . . . . NP
2345 Hughes Swift 73 463-8212
2375 Darryld Distad 81 463-2779
10 RESIDENCE

263RD ST E
New Street-1983.
Lakeville

RR 1 55044
11700-11799 CT 811 4B..G 4
11710★Metro Auto Salvage . .83 461-2186
1 BUSINESS

265TH ST E 55020
New Street-1982.
Elko

9500- 9799 CT 811 4B..G 4
9551 Edward Zahratka 73 461-3427
9560 Sheila Wierson . . . . . ¤ 461-2055
9571 Daniel L Frasson 84 461-2684
9574 Scott A Clark 84 461-2076
9586 . . . . NP
9606 Terry Fredrickson 78 461-2804
9661 Randy Froehlich 85 461-2840
9695 David Thalhuber 73 461-2092
9700 D C Fredrickson 82 461-2989
8 RESIDENCE

265TH ST W 55024
Farmington

4400- 6999 CT 616 4C..H 6
4460 Kenneth W Bateman . .81 463-4896
Susan M Poirot 81 463-4866

RR 2 55024
5379 Earl Kilber 71 463-7461
5560 Kenneth W Bateman . . ¤ 463-4462
6429 Richard Almquist 83 463-7723
6484 E Mallery 78 463-7964
Harold Mallery 78 463-2598
6889 Eddie Alwine 83 463-4985
6935 Howard C Storlie 79 463-2893
9 RESIDENCE

207TH ST E 55020
Elko

6400-11699 CT 811 4B..G 4
9841 Jeffrey Maxa 81 461-2028

RR 1 55020
11494 Harvey W Henry . . . . ¤ 461-2789
11520 Larry Kinder 65 461-2299
11600 Leo G Glunz 73 461-2672
4 RESIDENCE

267TH ST W
New Street-1977.
Farmington

RR 2 55024
8000- 8899 CT 615 4C..H 6
@ HUDSONS MAP LOC 1A-1E
8011 Eugene Dietz 84 469-4382
8021 Gregory J Harper . . . — 466-1923
8108 Duane R Fossum 80 469-4772
8171 Robert A Gloss 77 469-3746
8178 Niles Austvold 84 469-1528
8806 Benny N Svien 83 466-3636
8822 Paul G Magnus 61 466-2296
7 RESIDENCE

© COPYRIGHT INFORMATION ON THIS PAGE MAY NOT BE KEY PUNCHED ENTERED INTO A COMPUTER OR PHOTOGRAPHED IN ANY MANNER WHATSOEVER EXCEPT AS AUTHORIZED BY THE PUBLISHER.

1982-83 Minneapolis, MN - Cole Publications

.... 55005
710 William W Fish 78 434-7460
721 Gregory E Yeager 79 434-3051
727 Kent P Swanson 77 434-3923
760 Jack D Bednarski 434-9096
780 Richard L Walstrom 77 434-3249
781 D B Taylor 78 434-7479
1509 Arnold E Ede 78 434-6363
1510 Lucian L Oliver 72 434-5633
1532 S Hokanson 80 434-9429
1552 Roy R Laine 72 434-5612
2349 G L Wilamson 76 434-9483
16 Residence

230TH ST E 55024
Farmington
020620
1440 Richard Bohm 79 463-3990
1731 Mark Majerus 463-7084
1911 Otto Harstad 463-8226
1971 Raymond Harstad 463-3248
4 Residence

230TH ST W
Farmington
R R 1 55024
1000- 1399 TZ 816 $C..H 6
020630
1055★Automatd Hlth Care 463-4030
Richard D Hauslen 77 463-2329
1385 Steven Empey 76 463-3544
2 Residence 1 Business

233RD AVE NE 55005
Bethel
1200- 2199 TZ 50101 $D..A 6
020640
1250 Ervin Herbst 78 434-3712
1310 Robert Sylvester 434-5156
★Sylvesters Garage 434-6708
1315 Otis D Smith 72 434-5886
2124 Glen A Thies 80 434-6757
4 Residence 1 Business

234TH LN NE 55005
New Street-1981.
Bethel
1400- 1599 TZ 50101 $D..A 6
020650
1435 Thomas J Ueltschi 434-5435
1533★El Rehbein&Son Inc 434-7170
1 Residence 1 Business

235TH ST W
Farmington
R R 2 55024
4800- 6899 TZ 815 $C..H 6
020660
4628 R L Smith 463-8045
4990 Gary Smith 71 463-8214
5525 Larry G Jensen 77 463-2604
5575 Larry Gergen 78 463-4158
5711 Gregory B Lindwall 463-4399
5795 Larry D Bell 78 463-3821
5853 Stephen A Erickson ...75 463-2568
5905 Paul M Ekness 76 463-4450
5965 Eugene K Ekness 78 463-3851
6145 James D Wangen 78 463-2182
6215 Dolores A Hehir 78 463-3140
Dolores A Hehir 78 463-2379
6220 Harvey C Hansen 80 463-8069
6865 Brian L Miller 463-3181
Tom Powers 71 463-8032
No # Richard J Lee 77 463-4427
16 Residence

235TH ST W 55044
Lakeville
8500-10499 TZ 815 $C..H 6
020670
8530 Julius A Devos 77 469-5395
8600 Ronald R Sirek 73 469-5330
8640 Donald Pahl 469-4748
8680 William R Sbcha 74 469-4845
8722 Richard M Johnson 74 469-4806
8735 William Curry 71 469-2910
Mrs William Curry 71 469-2910
8760 Donald Sjoquist 74 469-4558
8800 Gerald Swedin 71 469-4884
8840 Michael J Ryan ....- 469-3673
8920 Charles Rogalsky 78 469-2659
8960 Dennis R Edmundson 79 469-4579
9000 Glenn E Wedin 469-4280
9020 Scott Patterson 79 469-3870
8960 Wayne Shaff 77 469-3875
9130 Douglas J Houser 77 469-2201
9180 James G Pepera 80 469-2475
9220 Dave L Cook 76 469-4782
9235 Henry C Anderson 469-2429
9320 Peter W Jensen 80 469-4288
10132 Marjorie Hulbert .....- 469-3917
10210 Donald W Storlie 71 469-2643
10255 S Finley ....- 469-4395
10265 Richard Hermann 77 469-5297
10280 Bruce J Jasper 78 469-3265
10355 Larry Goerger 78 469-4818
10416 Robert V Johnson 73 469-5252
10420 Annar Karlsen 73 469-5111
10445 John Barr 469-3900
★Countryside Kennls 469-3900
No # Al Gerdesmeier 469-3778
No # Robert Nielsen 80 469-5208
31 Residence 1 Business

236TH AVE NW 55005
New Street-1976.
Bethel
5700- 5799 TZ 50102 $C..A 4
020680
5712 Leroy T Smith 78 753-3382
1 Residence

237TH AVE NE 55005
Bethel
100- 2199 TZ 50101 $D..A 6
020690
120 Earl Beauchamp 434-9427
125 Chuck J Watson 78 434-9798
127 Lawrence Watson 434-5102
128 Davis B Lange 434-9615
154 Omar Nettleberg 434-5669
204 Floyd Kennen 80 434-6671
218 Michael Franchino 79 434-4754
230 ....NP
231 Mike Watson 80 434-5286
253 Roger D Jones 80 434-3956
323 Dwight Jones 434-6260
1045 Richard C Lindberg 71 434-5148
1203 Guy Cooper 434-5116
1230 Robert C Peterson 74 434-5118
1247 Donald Donat 78 434-6468
1252 William Cooper 434-5115
1253 Vern W Schwartz 72 434-6847
1282 Douglas E Johnson 76 434-3104
1263 Ron Miller 79 434-7713
1812 C Heckenlaible 434-5668
2114 Daniel J Watson 75 434-3297
21 Residence

237TH AVE NW 55005
New Street-1976.
Bethel
000- 1799 TZ 50102 $C..A 4
020700
376 Stan Swedeen 434-5841
440 Raymond H Buck 78 434-5178
452 ....NP
506 Wayne D Buck 434-6737
524 John J Lind 434-9121
611 Karl Damann 80 434-6347
632 H L Beach 76 434-9270
633 Glen C Welsh 78 434-7145
655 Robert E Hirsch 434-6496
901 James L Isle 78 753-2201
1116 L R Lindberg 753-4707
1229 Wallace Wallin 79 753-1785
1421 Evelyn Lapham 79 753-2692
1524 Curtis Stone 78 753-2683
1721 Warren V Windt 78 753-1780
15 Residence

238TH AVE NW 55005
New Street-1978.
Bethel
5100- 5299 TZ 50102 $C..A 4
020710
5202 Larry R Hammill 78 753-2254
5234 Kort A Vanderveen 79 753-3387
5261 John Sellers 78 753-3550
3 Residence

240TH AVE NW 55005
New Street-1980.
Bethel
5400- 5499 TZ 50102 $C..A 4
020720
5441 Edwin C Brummund 80 753-1666
1 Residence

240TH ST E
New Street-1981.
020730
No # Richard E Dubbels .....- 463-2677
1 Residence

240TH ST W 55024
Farmington
1400- 4299 TZ 616 $C..H 6
020740
1481 Orren Lucht 79 463-4540

R R 1 55024
1946 Thomas Palach 463-8330
2002 Alfred Heintz 71 463-7001
2079 James R Ozmun 80 463-3623
2086 Dave Lund 80 463-2512
E E Wachter 75 463-4384
2278 Roger G Randall 74 463-7549
3196 Mrs Howard Pflaum 76 463-8352
James Pflaum 76 463-8352
3270 Robert A Michael .....- 463-7545
3384 Bernard Bongard 77 463-8838
3447 Mrs B C McGovern 463-7559
3810 Larry Dimmen 463-3948
3861 Garry Toavs 80 463-2845
4225 Clayton Nielsen 78 463-2919
Clayton W Nielsen 78 463-2230
No # Adolph Ruud 463-7021
No # A B Schmidtke 463-3828
18 Residence

240TH ST W 55044
Lakeville
8000- 9299 TZ 815 $C..H 6
020750
8001 Gerald H Troutman 469-5313
8018 M A Smith 79 469-3940
8165 David L Asher 74 469-3669
8215 Michael R Malone 73 469-3210
8674 Timothy J Mahowald 77 469-4814
8795 Donald C Davis 78 469-4543
8830 Russell L Mealman 75 469-3630
8835 John V Schultz 73 469-4583
8885 Gary Pedersen 77 469-4317
8935 Frank J Beissel Jr 73 469-5363
8938 ....NP
8985 James K Slinger 469-4146
9050 John Haglund 77 469-2046
9100 Thelma Larson 469-3859
9230 Carl C Henrikson 78 469-4379
9235 Clark W Smith 76 469-3352
16 Residence

241ST AVE NE 55005
New Street-1977.
Bethel
1000- 2099 TZ 50101 $D..A 6
020760
1041 Ronald Kleinkopf 434-9361
1112 Anthony J Johnson 80 434-5352
1122 T L Guzek 80 434-4177
1132 David W Behm 80 434-3473
2060 George Wyatt 80 434-9367
5 Residence

241ST AVE NW 55005
Bethel
4500- 4799 TZ 50102 $C..A 4
020770
4520 ....NP
4654 Ronald L Domino 79 753-2761
4559 Lester H Solberg 753-1292
4637 Wm L Bruggeman ....- 753-1299
4745 Lowell Murrey 79 753-3333
5 Residence

241ST LN NW 55005
Bethel
2100- 2199 TZ 50102 $C..A 4
020780
2148 Ernest Isum 753-1776
1 Residence

243RD AVE NE 55005
New Street-1978.
Bethel
1500- 1599 TZ 50101 $D..A 6
020780
1509 Leigh Wyatt 78 434-5116
1 Residence

243RD AVE NW 55005
Bethel
2100- 2399 TZ 50102 $C..A 4
020800
2127 Michael D Wyatt 753-2308
2314 Michael Isum 80 753-3313
2315 James L Michaelson 753-1773
3 Residence

243RD ST W 55044
New Street-1980.
Lakeville
9100- 9299 TZ 816 $C..H 6
020810
9150 Steve Nusser 80 469-5102
9200 V Kay Custer ....- 469-4539
2 Residence

245TH AVE NE 55005
New Street-1981.
Bethel
400- 499 TZ 50101 $D..A 6
020820
432 Thomas L Ripka 434-6299
1 Residence

245TH ST 55420
New Street-1981.
Lakeville
11526 Raymond Green 469-3843
1 Residence

245TH ST E
Farmington
R R 1 55024
1000- 2199 TZ 616 $C..H 6
020830
1087 Gerald Wagenknecht 463-8334
1097 ....NP
1982 Melvin Lively 463-6216
2130 Mark Becker 77 463-2797
4 Residence

246TH ST W
Farmington
R R 1 55024
1000- 1899 TZ 616 $C..H 6
6000- 6899 TZ 815 $C..H 6
020840
1097 David S Meid ....- 463-7023
1391 David Dubbels 463-2976

.... 55024
1662 James Perry 78 463-4136
1840 Steven Pfeiffer 77 463-2656

R R 2 55024
6515 Craig Henry 78 469-3888
6605 Earl Culver 469-2537
6611 Clayton J Morlavetz ...78 469-3233
6655 Mons Reinke 469-5162
6675 David G Moe 78 469-4590
No # David J Bruls 469-3970
No # Charles L Klima 79 463-3605
11 Residence

247TH ST W
Farmington
R R 2 55024
6500- 6899 TZ 616 $C..H 6
020860
6405 Michael F Grossman 78 469-3742
6869 M Fortier 469-4582
2 Residence

250TH ST E 55024
Farmington
1000- 2999 TZ 616 $C..H 6
020870
1000 James M Flor 79 463-2828
1827 Wayne Stevens 78 463-6225

R R 1 55024
2676 William May Jr 74 463-8541
2795 Lance Westad 77 463-2202
2855 Thomas H Stahnke 76 463-6764
2931 Paul A Stendahl 79 463-2178
2935 Paul J Gnos 75 463-2541
7 Residence

250TH ST W
Farmington
R R 1 55024
1200- 3899 TZ 616 $C..H 6
6200- 6299 TZ 816 $C..H 6
020880
1209 Charles Rechtzigel 80 463-2387
1612 Roy Zellmer III ......- 463-6046
3787 Patrick McElmury 80 463-3907
Kent Richardson 78 463-4108
David Sellner 469-4704
3815 Marvin Bengen 71 463-8264
3871★Dr R B Stark 463-7607

R R 2 55024
6267 Henry Larson 73 469-2476
6299 Norman S Jacobson 77 469-2820
8 Residence 1 Business

250TH ST W 55044
Lakeville
8600-10399 TZ 616 $C..H 6
020890
8684 Peter C Johnson 80 469-4854
Robert M Johnson 469-2385
9367 Robert T Laddusaw 469-2068
9650 Johnny Lemke ....- 469-2242
9685 Patrick L Riley 77 469-5163
8737 Glenn Ouimett 73 469-2622
8763 Warren Grossman 77 469-4819
8774 Richard L Martin 74 469-2351
8794 Frederick T Kroll 75 469-4237
9800 Harlan Ruzek 73 469-5281
9805 Joe Simon 79 469-3851
9812 Ruben C Foley 76 469-3907
9840 Lonnie D Malwitz .....- 469-3031
9915 Gary Valek 77 469-3180
9955 Tom Gergen 77 469-3984
9990 ....NP
9995 Donald Doerfler 469-5166
10129 Orville Genzler 80 469-4533
10185 Livio Fragiacomo 73 469-5386
10270 Gary Estrem 73 469-4759
10391 D M Rollins 73 469-3301
No # Paul L Anderson 79 469-2358
No # Verner Aronson 469-2557
No # Edwin Elvestad 469-2255
No # Jim Fahrenholtz 80 469-4026
25 Residence

255TH ST W
Farmington
R R 1 55024
2900- 6999 TZ 816 $C..H 6
020900
2981 Richard T Traynor 78 463-3561
3142 Rev Robert Crane 463-8638
3184 Fred Doehling 463-8466
Michael Parker 463-8307
3188 ....NP

R R 2 55024
4412 John Tutewohl ....- 463-4364
5276 Garrick Mallery 74 463-8161
5805 Berdell Doub 80 463-2978
Thelma Doub 80 463-2978
6805 J Arman-Jones 80 463-2876
Evers Jones 80 463-2876
6987 Alan Storlie 78 463-7003
No # Merlin Moller 78 463-2414
13 Residence

257TH ST
Farmington
R R 2 55024
7900- 8199 TZ 915 $C..H 6
020910
7980 Steve Helkenn 78 463-4866
7984★Mt Olive Retrt Ctr 469-2175
8199 Lawr J Adelmann 78 469-2291
2 Residence 1 Business

260TH ST 55020
New Street-1980.
Elko
1- END TZ 811 $B..G 4
020920
No # Gerald Robiecky 80 461-2459
1 Residence

260TH ST E
Farmington
R R 1 55024
1000- 1699 TZ 815 $C..H 6
020930
1605 Paul Inthum 71 463-8241
1 Residence

260TH ST W
Farmington
R R 1 55024
1400- 2399 TZ 616 $C..H 6
020940
1409 W F Weiland 79 463-2335
1910 Oak Mackey 73 463-3441
Robert J Mackey 77 463-3054
2033 Eldon Topp 78 463-7445
2075 Fred D Alexander 76 463-2285
2225 Donald Reinen 78 463-2002
2265 Richard Tuesing 77 463-3895
2375 Darryld Olstad 463-2779
8 Residence

263RD ST W 55024
New Street-1975.
Farmington
3200- 3499 TZ 815 $C..H 6
020950
3286 Fred J Bratsch 78 463-7459
3406 Richard Raimnitz 76 463-4340
3473 Howard Hamish 78 463-7393
3 Residence

265TH ST W
Farmington
R R 2 55024
4400- 6999 TZ 616 $C..H 6
020960
4460 Kenneth W Bateman ....- 463-4866
Susan M Poirot 463-4866
4576 David Hagen 80 463-3462
5379 Earl Kilber 71 463-7481
5560 ....NP
6429 James I Nielson 80 463-3814
6484 E Mallery 78 463-7964
Harold Mallery 78 463-2598
6935 Howard C Storlie 79 463-2693
9 Residence

267TH ST
New Street-1977.
Farmington
R R 2 55024
8100- 8899 TZ 815 $C..H 6
020970
8109 Duane R Fossum 80 469-4772
8171 Robert A Glass 77 469-3746
8805 Brent Matson 469-3239
8822 Paul G Magnus ....- 469-2296
4 Residence

267TH ST W 55005
Lakeville
9900-10199 TZ 815 $C..H 6
020980
8999 Wesley Best 469-2476
9020 David Ingemansen 79 469-3677
9035 Clayton Mattson 71 469-2280
9085 ....NP
9166 L E Mohn 77 469-2626
9198 Walton F Spillmen 469-2726
9250 Kenneth D Lange 75 469-3166

* COPYRIGHT INFORMATION ON THIS PAGE MAY NOT BE KEY PUNCHED ENTERED INTO A COMPUTER OR PHOTOGRAPHED IN ANY MANNER WHATSOEVER EXCEPT AS AUTHORIZED IN WRITING BY THE PUBLISHER.
- — New Listing in the Directory - — New Listing to that Street ★ — Business Listing TZ — Trading Zone 73 74 75 ETC — Year First Listed 1973,74,75 etc AB ETC — Census Tract Wealth Rating C1,10 — Map Location

ENVIRONMENTAL LIEN/AUL SEARCH

Prepared for: Historical Information Gatherers, Inc.
HIG Project No. 2017322

Prepared by: JSR Vetting Services, LLC

Subject: **ADELMANN FAMILY LIMITED PARTNERSHIP**
10881 260TH ST. E.
SCOTT, MINNESOTA

Public records on the subject property identified above revealed the following information effective to August 17, 2018:

Description of subject property:

Land/Description: Parcel of Land
Parcel No. 089260030

DEED INFORMATION

DEED 1/PARCEL NO. 089260030

Grantee(s): (Buyer) **Adelmann Family Limited Partnership, a limited partnership**

Grantor(s): (Seller) **Robert F. Adelmann and Lorraine M. Adelmann, husband and wife**

Conveys: Parcel of Land

Date Executed: December 30, 1994
Date Recorded: December 30, 1994
Instrument Number: 347467

NOTE: Copy attached as "Exhibit A".

EXAMINER'S NOTE

In accordance with your request to research one parcel back to December 30, 1994, public records of Scott County, Minnesota were searched from December 30, 1994 to August 17, 2018 and no other deeds vesting title in parcel number 089260030 of the subject property were found of record during said period.

ENVIRONMENTAL LIENS

In accordance with your request to research one parcel back to December 30, 1994, public records of Scott County, Minnesota were searched from December 30, 1994 to August 17, 2018 and no environmental liens on the parcel number 089260030 of the subject property were found of record during said period.

AUL'S

In accordance with your request to research one parcel back to December 30, 1994, public records of Scott County, Minnesota were searched from December 30, 1994 to August 17, 2018 and no activity or use limitations on the parcel number 089260030 of the subject property were found of record during said period.

LEGAL DESCRIPTION

Legal description included on "Exhibit A".

Subject: **ADELMANN FARMS (NEW MARKET), LLC**
10680 & 10880 260TH ST. E.
CALHOUN, IOWA

Public records on the subject property identified above revealed the following information effective to August 17, 2018:

Description of subject property:

Land/Description: Parcel of Land
Parcel No. 089230040, 089230081, & 089230090

DEED INFORMATION

DEED 1/PARCEL NO. 089230040, 089230081, & 089230090

Grantee(s): (Buyer) **Adelmanns Farms (New Market), LLC, a limited liability company organized under the laws of the State of Minnesota, … an undivided twenty-seven and twenty-nine one hundredths percentage interest (27.29%)**

Grantor(s): (Seller) **Lorraine M. Adelmann, Bernadette Chrismer, and David Adelmann as Trustee of the Robert F. Adelmann Family Trust created under the Robert F. Adelmann Revocable Trust dated September 27, 2001**

Conveys: Parcel of Land

Date Executed: November 9, 2012
Date Recorded: December 27, 2012
Instrument Number: 924521

NOTE: Copy attached as "Exhibit B".

DEED 2/PARCEL NO. 089230040, 089230081, & 089230090

Grantee(s): (Buyer)	**Adelmanns Farms (New Market), LLC, a limited liability company organized under the laws of the State of Minnesota, … an undivided fourteen and sixty-two one hundredths percentage interest (14.62%)**
Grantor(s): (Seller)	**The Adelmann Family New Market Limited Partnership, a limited partnership under the laws of Minnesota**
Conveys:	Parcel of Land

Date Executed: November 9, 2012
Date Recorded: December 27, 2012
Instrument Number: 924518

NOTE: Copy attached as "Exhibit C".

DEED 3/PARCEL NO. 089230040, 089230081, & 089230090

Grantee(s): (Buyer)	**Adelmanns Farms (New Market), LLC, a limited liability company organized under the laws of the State of Minnesota, … an undivided fifty-eight and nine one hundredths percentage interest (58.09%)**
Grantor(s): (Seller)	**Lorraine M. Adelmann, as Trustee (s) of the Lorraine M. Adelmann Revocable Trust dated September 27, 2001**
Conveys:	Parcel of Land

Date Executed: November 9, 2012
Date Recorded: December 27, 2012
Instrument Number: 924517

NOTE: Copy attached as "Exhibit D".

EXAMINER'S NOTE

In accordance with your request to research three parcels back to December 27, 2012, public records of Scott County, Minnesota were searched from December 27, 2012 to August 17, 2018 and no other deeds vesting title in parcel numbers 089230040, 089230081, and 089230090 of the subject properties were found of record during said period.

ENVIRONMENTAL LIENS

In accordance with your request to research three parcels back to December 27, 2012, public records of Scott County, Minnesota were searched from December 27, 2012 to August 17, 2018 and no environmental liens on the parcel numbers 089230040, 089230081, and 089230090 of the subject properties were found of record during said period.

AUL'S

In accordance with your request to research three parcels back to December 27, 2012, public records of Scott County, Minnesota were searched from December 27, 2012 to August 17, 2018 and no activity or use limitations on the parcel numbers 089230040, 089230081, and 089230090 of the subject properties were found of record during said period.

LEGAL DESCRIPTION

Legal description included on "Exhibit B", "Exhibit C", and "Exhibit D".

Subject: **EMPIRE II, LLC**
10675 260TH ST. E.
SCOTT, MINNESOTA

Public records on the subject property identified above revealed the following information effective to August 17, 2018:

Description of subject property:

Land/Description: Parcel of Land
Parcel No. 089260050 & 089260071

DEED INFORMATION

DEED 1/PARCEL NO. 089260050 & 089260071

Grantee(s): (Buyer) **Empire II, LLC, a Limited Liability Company under the laws of Minnesota**

Grantor(s): (Seller) **Traders Promotions Inc., a Corporation under the laws of Minnesota**

Conveys: Parcel of Land

Date Executed: January 12, 2015
Date Recorded: January 27, 2015
Instrument Number: A972751

NOTE: Copy attached as "Exhibit E".

EXAMINER'S NOTE

In accordance with your request to research two parcels back to January 27, 2015, public records of Scott County, Minnesota were searched from January 27, 2015 to August 17, 2018 and no other deeds vesting title in parcel numbers 089260050 and 089260071 of the subject properties were found of record during said period.

ENVIRONMENTAL LIENS

In accordance with your request to research two parcels back to January 27, 2015, public records of Scott County, Minnesota were searched from January 27, 2015 to August 17, 2018 and no environmental liens on the parcel numbers 089260050 and 089260071 of the subject properties were found of record during said period.

AUL'S

In accordance with your request to research two parcels back to January 27, 2015, public records of Scott County, Minnesota were searched from January 27, 2015 to August 17, 2018 and no activity or use limitations on the parcel numbers 089260050 and 089260071 of the subject properties were found of record during said period.

LEGAL DESCRIPTION

Legal description included on "Exhibit E".

DISCLAIMER

This report was prepared by JSR Vetting Services, LLC for Historical Information Gatherers, Inc. (HIG). JSR Vetting Services, LLC is a licensed and registered legal entity in the State of Louisiana. JSR Vetting Services, LLC follows all Federal and State regulations governing the research conducted. JSR Vetting Services, LLC reports contain public record information and the accuracy of this information cannot be guaranteed. Therefore, HIG's liability and the liability of JSR Vetting Services, LLC for this report extends only to the fee charged for this report.

This report should not be interpreted to qualify for any credit, insurance or employment decisions pertaining to the Fair Credit Reporting Act (15 USC 1681, et seq). This report should not be considered a certificate or guarantee of title. This report is intended only for HIG and their client for the specified project number named above. If you are not the intended recipient, be aware that any disclosure, copying, reproduction, or distribution of this document and its content is strictly prohibited without written permission from HIG.

EXHIBIT A

3

QUIT CLAIM DEED
Individual(s) to Individual(s)

No delinquent taxes and transfer entered; Certificate of Real Estate Value ( ) filed ( ) not required
Certificate of Real Estate Value No. W-L-30, 19 94

County Auditor
by Deputy

OFFICE OF THE COUNTY RECORDER
SCOTT COUNTY, MN.
Certified Filed and or Recorded on
DEC 30 1994 3:30 P.M.
Doc. 347467
Acting County Recorder
by Deputy

19.50

X WELL CERTIFICATE RECEIVED
WELL CERTIFICATE NOT REQUIRED

(reserved for recording data)

DEED TAX DUE HEREON: $ 1.65

Date: December 30, 1994

FOR VALUABLE CONSIDERATION, Robert F. Adelmann and Lorraine M. Adelmann, husband and wife, Grantors, hereby convey and quitclaim to the Adelmann Family Limited Partnership, a limited partnership, Grantee, the real property described on Exhibit A attached hereto.

Together with all hereditaments and appurtenance belonging thereto, subject to easements, restrictions, reservations of record, if any.

The total consideration for this transfer of property is $500.00 or less.

Affix Deed Stamp Here

COUNTY DEED TAX STAMP DEC 30 '94 $01.65 PB.10020 STATE OF Minnesota

CONSERVATION FEE PAID

Robert F. Adelmann
Robert F. Adelmann

Lorraine M. Adelmann
Lorraine M. Adelmann

STATE OF MINNESOTA)
) ss.
COUNTY OF DAKOTA)

The foregoing was acknowledged before me this 30th day of December, 1994, by Robert F. Adelmann and Lorraine M. Adelmann, husband and wife, Grantors.

NOTARIAL STAMP OR SEAL (OR OTHER TITLE OR RANK)

REID J. HANSEN
NOTARY PUBLIC—MINNESOTA
DAKOTA COUNTY
My Comm. Expires Sept. 28, 1995

Reid J. Hansen
Notary Public

Tax Statements for the real property described in this instrument should be sent to:

Robert F. Adelmann
Lorraine M. Adelmann
22553 Denmark Avenue West
Farmington, Minnesota 55024

THIS INSTRUMENT WAS DRAFTED BY:
Reid J. Hansen
MCMENOMY, HANSEN & MCCANN, P.A.
14450 South Robert Trail
Rosemount, MN 55068
(612) 423-1155

EXHIBIT B

STATE OF MINNESOTA)
)ss.
COUNTY OF DAKOTA)

The foregoing was acknowledged before me this 9th day of November, 2012. by Lorraine M. Adelmann. Bernadette Chrismer. and David Adelmann as Trustee(s) of the Robert F. Adelmann Family Trust created under the Robert F. Adelmann Revocable Trust dated September 27. 2001, Grantor(s).

NOTARIAL STAMP OR SEAL (OR OTHER TITLE OR RANK)

REID J HANSEN
NOTARY PUBLIC
MINNESOTA
My Commission Expires Jan. 31, 2015

Notary Public

Tax Statements for the real Property described in this Instrument should be sent to:

Adelmann Farms (New Market). LLC
e/o Riehfield Plumbing
8640 Harriet Avenue So.
Bloomington. MN 55420

THIS INSTRUMENT WAS DRAFTED BY:
Reid J. Hansen
Hansen, McCann & O'Connor, P.A.
14450 South Robert Trail
Rosemount, MN 55068
(651) 423-1155

Exhibit A

Legal Description

The East Half of the Southeast Quarter (E1/2 of SE1/4) of Section Twenty-three (23), Township One Hundred Thirteen (113), Range Twenty-one (21), except the Highway Right of Way, and except that part lying Southerly of County State Aid Road No.2 and Westerly of State Highway 35; (Tax Parcel No. 08-923-004-0)

AND

All that part of the East Half of the Northeast Quarter (E1/2 of NE1/4) of said Section Twenty-three (23), Township One Hundred Thirteen (113), Range Twenty-one (21), lying South of the South line of the Right of Way of the Chicago , Milwaukee, St. Paul and Pacific R.R. Company , except Highway Right of Way, all of the aforedescribed land lying and being in Scott County, Minnesota; (Tax Parcel No. 08-923-004-0)

AND

The East 345.69 feet of the Southeast Quarter of the Southwest Quarter (SE1/4 of SW1/4), Section Twenty-Three (23), Township One Hundred Thirteen (113), Range Twenty-One (21), as measured perpendicular to the East line thereof and lying North of Scott County State Aid Road No. 2, Scott County, Minnesota (Tax Parcel No. 08-923-008-1)

AND

The West Half of the Southeast Quarter (W1/2 of SE1/4) and the Northeast Quarter of the Southwest Quarter (NE1/4 of SW1/4), all in Section Twenty-three (23), Township One Hundred Thirteen (113), Range Twenty-one (21), except railroad right-of-way thereon, and excepting therefrom the following described tract:

> That part of the West 250 feet of the South 300 feet of the Southwest Quarter of the Southeast Quarter (SW1/4 of SE1/4) of Section Twenty-three (23), Township One Hundred Thirteen (113) North, Range Twenty-one (21) West;

(Tax Parcel No. 08-923-009-0)

AND

All that part of the abandoned right-of-way of the Chicago, Milwaukee, St. Paul and Pacific Railroad, the centerline of the railroad track as shown in Scott County Documents # 181948, 181949 and 181950 lying across the tracts described on Exhibit A-(a) attached hereto.

Exhibit A-(a)

The Southeast Quarter of the Northeast Quarter (SE1/4 of NE1/4), the Northeast Quarter of the Southeast Quarter (NE1/4 of SE1/4), the Northwest Quarter of the Southeast Quarter (NW1/4 of SE1/4), and the Northeast Quarter of the Southwest Quarter (NE1/4 of SW1/4), all in Section Twenty-three (23), Township One Hundred Thirteen North (113N), Range Twenty-one West (21W), Scott County, Minnesota.

The Southwest Quarter of the Northwest Quarter (SW1/4 of NW1/4) of Section Twenty-four (24), Township One Hundred Thirteen North (113N), Range Twenty-one West (21W), Scott County, Minnesota.

The Southeast Quarter of the Northwest Quarter (SE1/4 of NW1/4) and all that portion of the Southwest Quarter of the Northeast Quarter (SW1/4 of NE1/4) lying West of the centerline of State Aid Highway 46, all in Section Twenty-four (24), Township One Hundred Thirteen North (113N), Range Twenty-one West (21W), Scott County, Minnesota.

The East Half of the Northeast Quarter (E1/2 of NE1/4) of Section Twenty-seven (27), Township One Hundred Thirteen North (113N), Range Twenty-one West (21W) Scott County, Minnesota.

(Tax Parcel Nos. 08-924-033-0 and 23-927-016-1)

Exhibit B

Exceptions

1. Easements, reservations, and restrictions of record, if any.

EXHIBIT C

There are no delinquent taxes and transfer entered
Date: 12/27/12 County Auditor
Cindy Ellis
KMO

Doc. No. A 924518

OFFICE OF THE COUNTY RECORDER
SCOTT COUNTY, MINNESOTA

Certified Filed and/or Recorded on

12-27-2012 at 03:00 Recpt: 337881

James L. Hentges, County Recorder 01

Fee: $ 46.00

WARRANTY DEED

DEED TAX DUE HEREON: $ 1.65

Date: NOVEMBER 9, 2012

FOR VALUABLE CONSIDERATION, The Adelmann Family New Market Limited Partnership, a limited partnership under the laws of Minnesota, Grantor, hereby conveys and warrants to Adelmann Farms (New Market), LLC, a limited liability company organized under the laws of the state of Minnesota, Grantee, an undivided fourteen and sixty-two one hundreths percentage interest (14.62%) in real property in Scott County, Minnesota, described as follows:

See Exhibit A attached hereto.

___ WELL CERTIFICATE RECEIVED
X WELL CHECK CERTIFICATE NOT REQUIRED

Together with all hereditaments and appurtenance belonging thereto, subject to the following exceptions:

See Exhibit B attached hereto.

I am familiar with the property described in this instrument and I certify that the status and number of wells on the described real property have not changed since the last previously filed well disclosure certificate.

The consideration for this transfer is less than $500.00. By this deed Grantor intends to convey its entire interest in the property to Grantee.

1.65
+.37 881
12/27/12
KMO

The Adelmann Family New Market
Limited Partnership

By Bernadette M. Adelmann
Its: General Partner

By David Adelmann
Its: General Partner

Affix Deed Stamp Here

STATE OF MINNESOTA)
) ss.
COUNTY OF DAKOTA)

The foregoing was acknowledged before me this 9th day of November, 2012 by David Adelmann and Bernadette Chrismer, the General Partners of The Adelmann Family New Market Limited Partnership, a a limited partnership under the laws of Minnesota, on behalf of the limited partnership.

NOTARIAL STAMP OR SEAL (OR OTHER TITLE OR RANK)

REID J HANSEN
NOTARY PUBLIC
MINNESOTA
My Commission Expires Jan. 31, 2015

Notary Public

Tax Statements for the real Property described in this Instrument should be sent to:

Adelmann Farms (New Market), LLC
c/o Richfield Plumbing
8640 Harriet Ave So.
Bloomington, MN 55420

THIS INSTRUMENT WAS DRAFTED BY:
Reid J. Hansen
Hansen, McCann & O'Connor, P.A.
14450 South Robert Trail
Rosemount, MN 55068
(651) 423-1155

Exhibit A

Legal Description

The East Half of the Southeast Quarter (E1/2 of SE1/4) of Section Twenty-three (23), Township One Hundred Thirteen (113), Range Twenty-one (21), except the Highway Right of Way, and except that part lying Southerly of County State Aid Road No.2 and Westerly of State Highway 35; (Tax Parcel No. 08-923-004-0)

AND

All that part of the East Half of the Northeast Quarter (E1/2 of NE1/4) of said Section Twenty-three (23), Township One Hundred Thirteen (113), Range Twenty-one (21), lying South of the South line of the Right of Way of the Chicago , Milwaukee, St. Paul and Pacific R.R. Company , except Highway Right of Way, all of the aforedescribed land lying and being in Scott County, Minnesota; (Tax Parcel No. 08-923-004-0)

AND

The East 345.69 feet of the Southeast Quarter of the Southwest Quarter (SE1/4 of SW1/4), Section Twenty-Three (23), Township One Hundred Thirteen (113), Range Twenty-One (21), as measured perpendicular to the East line thereof and lying North of Scott County State Aid Road No. 2, Scott County, Minnesota (Tax Parcel No. 08-923-008-1)

AND

The West Half of the Southeast Quarter (W1/2 of SE1/4) and the Northeast Quarter of the Southwest Quarter (NE1/4 of SW1/4), all in Section Twenty-three (23), Township One Hundred Thirteen (113), Range Twenty-one (21), except railroad right-of-way thereon, and excepting therefrom the following described tract:

> That part of the West 250 feet of the South 300 feet of the Southwest Quarter of the Southeast Quarter (SW1/4 of SE1/4) of Section Twenty-three (23), Township One Hundred Thirteen (113) North, Range Twenty-one (21) West;

(Tax Parcel No. 08-923-009-0)

AND

All that part of the abandoned right-of-way of the Chicago, Milwaukee, St. Paul and Pacific Railroad, the centerline of the railroad track as shown in Scott County Documents # 181948, 181949 and 181950 lying across the tracts described on Exhibit A-(a) attached hereto.

Exhibit A-(a)

The Southeast Quarter of the Northeast Quarter (SE1/4 of NE1/4), the Northeast Quarter of the Southeast Quarter (NE1/4 of SE1/4), the Northwest Quarter of the Southeast Quarter (NW1/4 of SE1/4), and the Northeast Quarter of the Southwest Quarter (NE1/4 of SW1/4), all in Section Twenty-three (23), Township One Hundred Thirteen North (113N), Range Twenty-one West (21W), Scott County, Minnesota.

The Southwest Quarter of the Northwest Quarter (SW1/4 of NW1/4) of Section Twenty-four (24), Township One Hundred Thirteen North (113N), Range Twenty-one West (21W), Scott County, Minnesota.

The Southeast Quarter of the Northwest Quarter (SE1/4 of NW1/4) and all that portion of the Southwest Quarter of the Northeast Quarter (SW1/4 of NE1/4) lying West of the centerline of State Aid Highway 46, all in Section Twenty-four (24), Township One Hundred Thirteen North (113N), Range Twenty-one West (21W), Scott County, Minnesota.

The East Half of the Northeast Quarter (E1/2 of NE1/4) of Section Twenty-seven (27), Township One Hundred Thirteen North (113N), Range Twenty-one West (21W) Scott County, Minnesota.

(Tax Parcel Nos. 08-924-033-0 and 23-927-016-1)

Exhibit B

Exceptions

1. Easements, reservations, and restrictions of record, if any.

EXHIBIT D

There are no delinquent taxes and transfer entered
Date: 12/27/12
County Auditor
Deputy

Doc. No. A 924517

OFFICE OF THE COUNTY RECORDER
SCOTT COUNTY, MINNESOTA

Certified Filed and/or Recorded on

12-27-2012 at 03:00 Recpt: 337881

James L. Hentges, County Recorder 01

Fee: $ 46.00

TRUSTEES DEED
By Individual(s) as Trustee(s)

DEED TAX DUE HEREON: $ 1.65

Date: NOVEMBER 9, 2012

FOR VALUABLE CONSIDERATION, Lorraine M. Adelmann, as Trustee(s) of the Lorraine M. Adelmann Revocable Trust dated September 27, 2001, Grantor(s), hereby convey(s) and warrant(s) to Adelmann Farms (New Market), LLC, a limited liability company organized under the laws of the State of Minnesota, Grantee(s), an undivided fifty-eight and nine one hundreths percentage interest (58.09%) in property in Scott County, Minnesota described as follows:

See Exhibit A attached hereto.

___ WELL CERTIFICATE RECEIVED
X WELL CERTIFICATE NOT REQUIRED

Together with all hereditaments and appurtenance belonging thereto, subject to the following exceptions:

See Exhibit B attached hereto.

I am familiar with the property described in this instrument and I certify that the status and number of wells on the described real property have not changed since the last previously filed well disclosure certificate.

The consideration for this transfer is less than $500.00. By this deed Grantor intends to convey its entire interest in the property to Grantee.

165
4-37881
12/27/12

Trustee(s)

Lorraine M. Adelmann
Lorraine M. Adelmann

Affix Deed Stamp Here

STATE OF MINNESOTA)
)ss.
COUNTY OF DAKOTA)

The foregoing was acknowledged before me this 9th day of November, 2012, by Lorraine M. Adelmann, as Trustee(s) of the Lorraine M. Adelmann Revocable Trust dated September 27, 2001, Grantor(s).

NOTARIAL STAMP OR SEAL (OR OTHER TITLE OR RANK)

REID J HANSEN
NOTARY PUBLIC
MINNESOTA
My Commission Expires Jan. 31, 2015

Notary Public

Tax Statements for the real Property described in this Instrument should be sent to:

Adelmann Farms (New Market), LLC
e/o Richfield Plumbing
8640 Harriet Avenue So.
Bloomington, MN 55420

THIS INSTRUMENT WAS DRAFTED BY:
Reid J. Hansen
Hansen, McCann & O'Connor, P.A.
14450 South Robert Trail
Rosemount, MN 55068
(651) 423-1155

Exhibit A

Legal Description

The East Half of the Southeast Quarter (E1/2 of SE1/4) of Section Twenty-three (23), Township One Hundred Thirteen (113), Range Twenty-one (21), except the Highway Right of Way, and except that part lying Southerly of County State Aid Road No.2 and Westerly of State Highway 35; (Tax Parcel No. 08-923-004-0)

AND

All that part of thc East Half of thc Northeast Quarter (E1/2 of NE1/4) of said Section Twenty-three (23), Township One Hundred Thirteen (113), Range Twenty-one (21), lying South of the South line of the Right of Way of the Chicago , Milwaukee, St. Paul and Pacific R.R. Company , except Highway Right of Way, all of the aforedescribed land lying and being in Scott County, Minnesota; (Tax Parcel No. 08-923-004-0)

AND

The East 345.69 feet of the Southeast Quarter of the Southwest Quarter (SE1/4 of SW1/4), Section Twenty-Three (23), Township One Hundred Thirteen (113), Range Twenty-One (21), as measured perpendicular to the East line thereof and lying North of Scott County State Aid Road No. 2, Scott County, Minnesota (Tax Parcel No. 08-923-008-1)

AND

The West Half of the Southeast Quarter (W1/2 of SE1/4) and the Northeast Quarter of the Southwest Quarter (NE1/4 of SW1/4), all in Section Twenty-three (23), Township Onc Hundred Thirteen (113), Range Twenty-one (21), except railroad right-of-way thereon, and excepting therefrom the following described tract:

> That part of the West 250 fcet of the South 300 feet of the Southwest Quartcr of the Southeast Quarter (SW1/4 of SE1/4) of Section Twenty-three (23), Township One Hundred Thirteen (113) North, Range Twenty-one (21) West;

(Tax Parcel No. 08-923-009-0)

AND

All that part of the abandoned right-of-way of the Chicago, Milwaukee, St. Paul and Pacific Railroad, the centerline of the railroad track as shown in Scott County Documents # 181948, 181949 and 181950 lying across the tracts described on Exhibit A-(a) attached hereto.

Exhibit A-(a)

The Southeast Quarter of the Northeast Quarter (SE1/4 of NE1/4), the Northeast Quarter of the Southeast Quarter (NE1/4 of SE1/4), the Northwest Quarter of the Southeast Quarter (NW1/4 of SE1/4), and the Northeast Quarter of the Southwest Quarter (NE1/4 of SW1/4), all in Section Twenty-three (23), Township One Hundred Thirteen North (113N), Range Twenty-one West (21W), Scott County, Minnesota.

The Southwest Quarter of the Northwest Quarter (SW1/4 of NW1/4) of Section Twenty-four (24), Township One Hundred Thirteen North (113N), Range Twenty-one West (21W), Scott County, Minnesota.

The Southeast Quarter of the Northwest Quarter (SE1/4 of NW1/4) and all that portion of the Southwest Quarter of the Northeast Quarter (SW1/4 of NE1/4) lying West of the centerline of State Aid Highway 46, all in Section Twenty-four (24), Township One Hundred Thirteen North (113N), Range Twenty-one West (21W), Scott County, Minnesota.

The East Half of the Northeast Quarter (E1/2 of NE1/4) of Section Twenty-seven (27), Township One Hundred Thirteen North (113N), Range Twenty-one West (21W) Scott County, Minnesota.

(Tax Parcel Nos. 08-924-033-0 and 23-927-016-1)

1. Easements, reservations, and restrictions of record, if any.

EXHIBIT E

(Top 3 inches reserved for recording data)

WARRANTY DEED
Business Entity to Business Entity

Minnesota Uniform Conveyancing Blanks
Form 10.1.9 (2013)

eCRV Number: 306211

DEED TAX DUE $ 3,300.00

DATE: January 12, 2015

FOR VALUABLE CONSIDERATION, **Traders Promotions Inc.**, a Corporation under the laws of Minnesota, ("Grantor"), hereby conveys and warrants to **Empire II, LLC** a Limited Liability Company under the laws of Minnesota ("Grantee"), real property in **Scott** County, Minnesota, legally described as follows:

See Attached Exhibit "A"

Check here if all or part of the described real property is Registered (Torrens) ☐

Together with all hereditaments and appurtenances belonging thereto, subject to the following exceptions:

Subject to covenants, conditions, restrictions, reservations, and easements of record, if any.

Check applicable box:

☐ The Seller certifies that the Seller does not know of any wells on the described real property.

☒ A well disclosure certificate accompanies this document or has been electronically filed (If electronically filed, insert WDC Number:

☐ I am familiar with the property described in this instrument and I certify that the status and number of wells on the described Real property have not changed since the last previously filed well disclosure certificate.

Title Recording Services, Inc.
79 Western Ave N
St. Paul, MN 55102
SCOTT A

692706
14120096
DCA BASIC
WD

State of Minnesota, County of Dakota

This instrument was acknowledged before me on January 12, 2015, by **William K. Rosenbloom** as **Vice President of Traders Promotions Inc.**

KAREN K. JOHNSON
NOTARY PUBLIC - MINNESOTA
My Commission Expires Jan. 31, 2020

Signature of notarial officer

Title (and Rank)_____

My commission expires:_____

This instrument was drafted by:
DCA Title
7373 147th Street West, Ste 161
Apple Valley MN 55124
14-120096 RC

Tax Statements for the real property described in this instrument should be sent to:
Empire II, LLC
19492 Biscayne Ave.
Farmington, MN 55024

Appendix D: Regulatory Records Documentation

E RecSearch Report

Satellite view

Target Property:

Adelmann Family Farms
10946-10998 260th St East
New Market Township, Scott County, Minnesota 55020

Prepared For:

Historical Information Gatherers

Order #: 105804
Job #: 230377
Project #: 2014835
Date: 03/27/2018

Table of Contents

Target Property Summary 1

Database Summary 2

Database Radius Summary 7

Radius Map 12

Ortho Map 14

Topographic Map 15

Located Sites Summary 15

Elevation Summary 19

Unlocated Sites Summary 75

Environmental Records Definitions 77

Unlocatable Report . . . . . See Attachment

Zip Report . . . . . See Attachment

Disclaimer

This report was designed by GeoSearch to meet or exceed the records search requirements of the All Appropriate Inquiries Rule (40 CFR §312.26) and the current version of the ASTM International E1527, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process or, if applicable, the custom requirements requested by the entity that ordered this report. The records and databases of records used to compile this report were collected from various federal,state and local governmental entities. It is the goal of GeoSearch to meet or exceed the 40 CFR §312.26 and E1527 requirements for updating records by using the best available technology. GeoSearch contacts the appropriate governmental entities on a recurring basis. Depending on the frequency with which a record source or database of records is updated by the governmental entity, the data used to prepare this report may be updated monthly, quarterly, semi-annually, or annually.

The information provided in this report was obtained from a variety of public sources. GeoSearch cannot ensure and makes no warranty or representation as to the accuracy, reliability, quality, errors occurring from data conversion or the customer's interpretation of this report. This report was made by GeoSearch for exclusive use by its clients only. Therefore, this report may not contain sufficient information for other purposes or parties. GeoSearch and its partners, employees, officers And independent contractors cannot be held liable For actual, incidental, consequential, special or exemplary damages suffered by a customer resulting directly or indirectly from any information provided by GeoSearch.

Target Property Summary

Target Property Information

Adelmann Family Farms
10946-10998 260th St East
New Market Township, Minnesota 55020

Coordinates
Area centroid (-93.304829, 44.5759703)
1,103 feet above sea level

USGS Quadrangle
New Market, MN

Geographic Coverage Information

County/Parish: Scott (MN) , Dakota (MN)
ZipCode(s):
Elko New Market MN: 55020
Lakeville MN: 55044

Radon
* Target property is located in Radon Zone 1.
Zone 1 areas have a predicted average indoor radon screening level greater than 4 pCi/L (picocuries per liter).

Database Summary

FEDERAL LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
EMERGENCY RESPONSE NOTIFICATION SYSTEM	ERNSMN	0	0	TP/AP
FEDERAL ENGINEERING INSTITUTIONAL CONTROL SITES	EC	0	0	TP/AP
LAND USE CONTROL INFORMATION SYSTEM	LUCIS	0	0	TP/AP
RCRA SITES WITH CONTROLS	RCRASC	0	0	TP/AP
RESOURCE CONSERVATION & RECOVERY ACT - GENERATOR	RCRAGR05	2	0	0.1250
RESOURCE CONSERVATION & RECOVERY ACT - NON-GENERATOR	RCRANGR05	1	0	0.1250
FEMA OWNED STORAGE TANKS	FEMAUST	0	0	0.2500
BROWNFIELDS MANAGEMENT SYSTEM	BF	0	0	0.5000
DELISTED NATIONAL PRIORITIES LIST	DNPL	0	0	0.5000
NO LONGER REGULATED RCRA NON-CORRACTS TSD FACILITIES	NLRRCRAT	0	0	0.5000
RESOURCE CONSERVATION & RECOVERY ACT - NON-CORRACTS TREATMENT, STORAGE & DISPOSAL FACILITIES	RCRAT	0	0	0.5000
SUPERFUND ENTERPRISE MANAGEMENT SYSTEM	SEMS	0	0	0.5000
SUPERFUND ENTERPRISE MANAGEMENT SYSTEM ARCHIVED SITE INVENTORY	SEMSARCH	0	0	0.5000
NATIONAL PRIORITIES LIST	NPL	0	0	1.0000
NO LONGER REGULATED RCRA CORRECTIVE ACTION FACILITIES	NLRRCRAC	0	0	1.0000
PROPOSED NATIONAL PRIORITIES LIST	PNPL	0	0	1.0000
RESOURCE CONSERVATION & RECOVERY ACT - CORRECTIVE ACTION FACILITIES	RCRAC	0	0	1.0000
RESOURCE CONSERVATION & RECOVERY ACT - SUBJECT TO CORRECTIVE ACTION FACILITIES	RCRASUBC	0	0	1.0000

SUB-TOTAL		3	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
AEROMETRIC INFORMATION RETRIEVAL SYSTEM / AIR FACILITY SUBSYSTEM	AIRSAFS	0	0	TP/AP
BIENNIAL REPORTING SYSTEM	BRS	0	0	TP/AP
CERCLIS LIENS	SFLIENS	0	0	TP/AP
CLANDESTINE DRUG LABORATORY LOCATIONS	CDL	0	0	TP/AP
EPA DOCKET DATA	DOCKETS	0	0	TP/AP
ENFORCEMENT AND COMPLIANCE HISTORY INFORMATION	ECHOR05	1	0	TP/AP

Database Summary

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
FACILITY REGISTRY SYSTEM	FRSMN	4	0	TP/AP
HAZARDOUS MATERIALS INCIDENT REPORTING SYSTEM	HMIRSR05	0	0	TP/AP
INTEGRATED COMPLIANCE INFORMATION SYSTEM (FORMERLY DOCKETS)	ICIS	0	0	TP/AP
INTEGRATED COMPLIANCE INFORMATION SYSTEM NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM	ICISNPDES	0	0	TP/AP
MATERIAL LICENSING TRACKING SYSTEM	MLTS	0	0	TP/AP
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM	NPDESR05	0	0	TP/AP
PCB ACTIVITY DATABASE SYSTEM	PADS	0	0	TP/AP
PERMIT COMPLIANCE SYSTEM	PCSR05	0	0	TP/AP
SEMS LIEN ON PROPERTY	SEMSLIENS	0	0	TP/AP
SECTION SEVEN TRACKING SYSTEM	SSTS	0	0	TP/AP
TOXIC SUBSTANCE CONTROL ACT INVENTORY	TSCA	0	0	TP/AP
TOXICS RELEASE INVENTORY	TRI	0	0	TP/AP
ALTERNATIVE FUELING STATIONS	ALTFUELS	0	0	0.2500
HISTORICAL GAS STATIONS	HISTPST	0	0	0.2500
INTEGRATED COMPLIANCE INFORMATION SYSTEM DRYCLEANERS	ICISCLEANERS	0	0	0.2500
MINE SAFETY AND HEALTH ADMINISTRATION MASTER INDEX FILE	MSHA	0	0	0.2500
MINERAL RESOURCE DATA SYSTEM	MRDS	0	0	0.2500
OPEN DUMP INVENTORY	ODI	0	0	0.5000
SURFACE MINING CONTROL AND RECLAMATION ACT SITES	SMCRA	0	0	0.5000
URANIUM MILL TAILINGS RADIATION CONTROL ACT SITES	USUMTRCA	0	0	0.5000
DEPARTMENT OF DEFENSE SITES	DOD	0	0	1.0000
FORMER MILITARY NIKE MISSILE SITES	NMS	0	0	1.0000
FORMERLY USED DEFENSE SITES	FUDS	0	0	1.0000
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM	FUSRAP	0	0	1.0000
RECORD OF DECISION SYSTEM	RODS	0	0	1.0000

SUB-TOTAL		5	0	

Database Summary

STATE (MN) LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
SITES WITH INSTITUTIONAL CONTROLS	IC	0	0	TP/AP
HAZARDOUS WASTE GENERATOR SITES	HWGS	3	0	0.1250
WATER DISCHARGE PERMITS	WDP	0	0	0.1250
REGISTERED STORAGE TANKS	UAST	4	0	0.2500
CERCLIS SITES	CERCLIS	0	0	0.5000
CLOSED LANDFILLS	CLF	0	0	0.5000
HAZARDOUS WASTE TREATMENT STORAGE DISPOSAL SITES	HWSTSD	0	0	0.5000
OPEN SOLID WASTE FACILITIES	SWF	0	0	0.5000
PERMITTED BY RULE LANDFILLS	PBRLF	0	0	0.5000
PETROLEUM BROWNFIELDS PROGRAM SITES	PBF	0	0	0.5000
POTENTIAL VOLUNTARY INVESTIGATION AND CLEANUP PROGRAM SITES	PVICP	0	0	0.5000
REGISTERED LEAKING STORAGE TANKS	LUAST	3	0	0.5000
REGISTERED LEAKING STORAGE TANKS PRIOR TO APRIL 2016	LUAST2016	3	0	0.5000
SITE RESPONSE SECTION DATABASE	SRS	0	0	0.5000
UNPERMITTED DUMP SITES	UNPERMDUMPS	0	0	0.5000
VOLUNTARY INVESTIGATION AND CLEANUP PROGRAM SITES	VICP	0	0	0.5000
HAZARDOUS WASTE CLEANUP SITES	HWCS	0	0	1.0000
MPCA REMEDIATION SITES	REMSITES	1	0	1.0000
STATE ASSESSMENT SITES	SAS	1	0	1.0000
SUPERFUND SITE INFORMATION LISTING	SF	0	0	1.0000

SUB-TOTAL		15	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
CLANDESTINE DRUG LABORATORY LOCATIONS	CDL	0	0	TP/AP
PERMITTED AIR FACILITIES	AIRS	0	0	TP/AP
SOLID WASTE UTILIZATION PROJECTS	SWUP	0	0	TP/AP
SPILLS LISTING	PCASPILLS	2	0	TP/AP
TIER TWO FACILITY LISTING	TIERII	0	0	TP/AP
FEEDLOTS	FEEDLOT	1	0	0.1250
BULK STORAGE PERMITS	BULKSTORAGE	1	0	0.2500
REGISTERED DRYCLEANING FACILITIES	CLEANERS	0	0	0.2500

Database Summary

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
AGRICULTURAL CONTINGENCY SITES	CONTINGENCIES	0	0	0.5000
AGRICULTURAL SPILLS LISTING	AGSPILLS	0	0	0.5000
CONCENTRATED ANIMAL FEEDING OPERATIONS	CAFO	2	0	0.5000
RECYCLING MARKETS DIRECTORY	RECYCLERS	0	0	0.5000
WHAT'S IN MY NEIGHBORHOOD DATABASE	WIMN	13	0	0.5000
CONTAMINATED SOIL TREATMENT FACILITIES	CSTF	0	0	1.0000

SUB-TOTAL		19	0	

Database Summary

TRIBAL LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	USTR05	0	0	0.2500
LEAKING UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	LUSTR05	0	0	0.5000
OPEN DUMP INVENTORY ON TRIBAL LANDS	ODINDIAN	0	0	0.5000
SUB-TOTAL		0	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
INDIAN RESERVATIONS	INDIANRES	0	0	1.0000
SUB-TOTAL		0	0	

TOTAL		42	0	

Database Radius Summary

FEDERAL LISTING

*Standard environmental records are displayed in **bold**.*

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
AIRSAFS	0.0200	0	NS	NS	NS	NS	NS	0
BRS	0.0200	0	NS	NS	NS	NS	NS	0
CDL	0.0200	0	NS	NS	NS	NS	NS	0
DOCKETS	0.0200	0	NS	NS	NS	NS	NS	0
EC	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
ECHOR05	0.0200	1	NS	NS	NS	NS	NS	1
ERNSMN	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
FRSMN	0.0200	4	NS	NS	NS	NS	NS	4
HMIRSR05	0.0200	0	NS	NS	NS	NS	NS	0
ICIS	0.0200	0	NS	NS	NS	NS	NS	0
ICISNPDES	0.0200	0	NS	NS	NS	NS	NS	0
LUCIS	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
MLTS	0.0200	0	NS	NS	NS	NS	NS	0
NPDESR05	0.0200	0	NS	NS	NS	NS	NS	0
PADS	0.0200	0	NS	NS	NS	NS	NS	0
PCSR05	0.0200	0	NS	NS	NS	NS	NS	0
RCRASC	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
SEMSLIENS	0.0200	0	NS	NS	NS	NS	NS	0
SFLIENS	0.0200	0	NS	NS	NS	NS	NS	0
SSTS	0.0200	0	NS	NS	NS	NS	NS	0
TRI	0.0200	0	NS	NS	NS	NS	NS	0
TSCA	0.0200	0	NS	NS	NS	NS	NS	0
RCRAGR05	**0.1250**	**0**	**2**	**NS**	**NS**	**NS**	**NS**	**2**
RCRANGR05	**0.1250**	**1**	**0**	**NS**	**NS**	**NS**	**NS**	**1**
ALTFUELS	0.2500	0	0	0	NS	NS	NS	0
FEMAUST	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
HISTPST	0.2500	0	0	0	NS	NS	NS	0
ICISCLEANERS	0.2500	0	0	0	NS	NS	NS	0
MRDS	0.2500	0	0	0	NS	NS	NS	0
MSHA	0.2500	0	0	0	NS	NS	NS	0
BF	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
DNPL	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
NLRRCRAT	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
ODI	0.5000	0	0	0	0	NS	NS	0
RCRAT	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**

Database Radius Summary

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
SEMS	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
SEMSARCH	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
SMCRA	0.5000	0	0	0	0	NS	NS	0
USUMTRCA	0.5000	0	0	0	0	NS	NS	0
DOD	1.0000	0	0	0	0	0	NS	0
FUDS	1.0000	0	0	0	0	0	NS	0
FUSRAP	1.0000	0	0	0	0	0	NS	0
NLRRCRAC	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
NMS	1.0000	0	0	0	0	0	NS	0
NPL	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
PNPL	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
RCRAC	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
RCRASUBC	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
RODS	1.0000	0	0	0	0	0	NS	0
SUB-TOTAL		6	2	0	0	0	0	8

Database Radius Summary

STATE (MN) LISTING

*Standard environmental records are displayed in **bold**.*

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
AIRS	0.0200	0	NS	NS	NS	NS	NS	0
CDL	0.0200	0	NS	NS	NS	NS	NS	0
IC	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
PCASPILLS	0.0200	2	NS	NS	NS	NS	NS	2
SWUP	0.0200	0	NS	NS	NS	NS	NS	0
TIERII	0.0200	0	NS	NS	NS	NS	NS	0
FEEDLOT	0.1250	1	0	NS	NS	NS	NS	1
HWGS	**0.1250**	**1**	**2**	**NS**	**NS**	**NS**	**NS**	**3**
WDP	**0.1250**	**0**	**0**	**NS**	**NS**	**NS**	**NS**	**0**
BULKSTORAGE	0.2500	0	0	1	NS	NS	NS	1
CLEANERS	0.2500	0	0	0	NS	NS	NS	0
UAST	**0.2500**	**1**	**0**	**3**	**NS**	**NS**	**NS**	**4**
AGSPILLS	0.5000	0	0	0	0	NS	NS	0
CAFO	0.5000	1	0	1	0	NS	NS	2
CERCLIS	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
CLF	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
CONTINGENCIES	0.5000	0	0	0	0	NS	NS	0
HWSTSD	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
LUAST	**0.5000**	**1**	**0**	**1**	**1**	**NS**	**NS**	**3**
LUAST2016	**0.5000**	**1**	**0**	**2**	**0**	**NS**	**NS**	**3**
PBF	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
PBRLF	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
PVICP	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
RECYCLERS	0.5000	0	0	0	0	NS	NS	0
SRS	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
SWF	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
UNPERMDUMPS	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
VICP	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
WIMN	0.5000	3	3	6	1	NS	NS	13
CSTF	1.0000	0	0	0	0	0	NS	0
HWCS	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
REMSITES	**1.0000**	**0**	**0**	**1**	**0**	**0**	**NS**	**1**
SAS	**1.0000**	**0**	**0**	**1**	**0**	**0**	**NS**	**1**
SF	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**

Database Radius Summary

SUB-TOTAL		11	5	16	2	0	0	34

Database Radius Summary

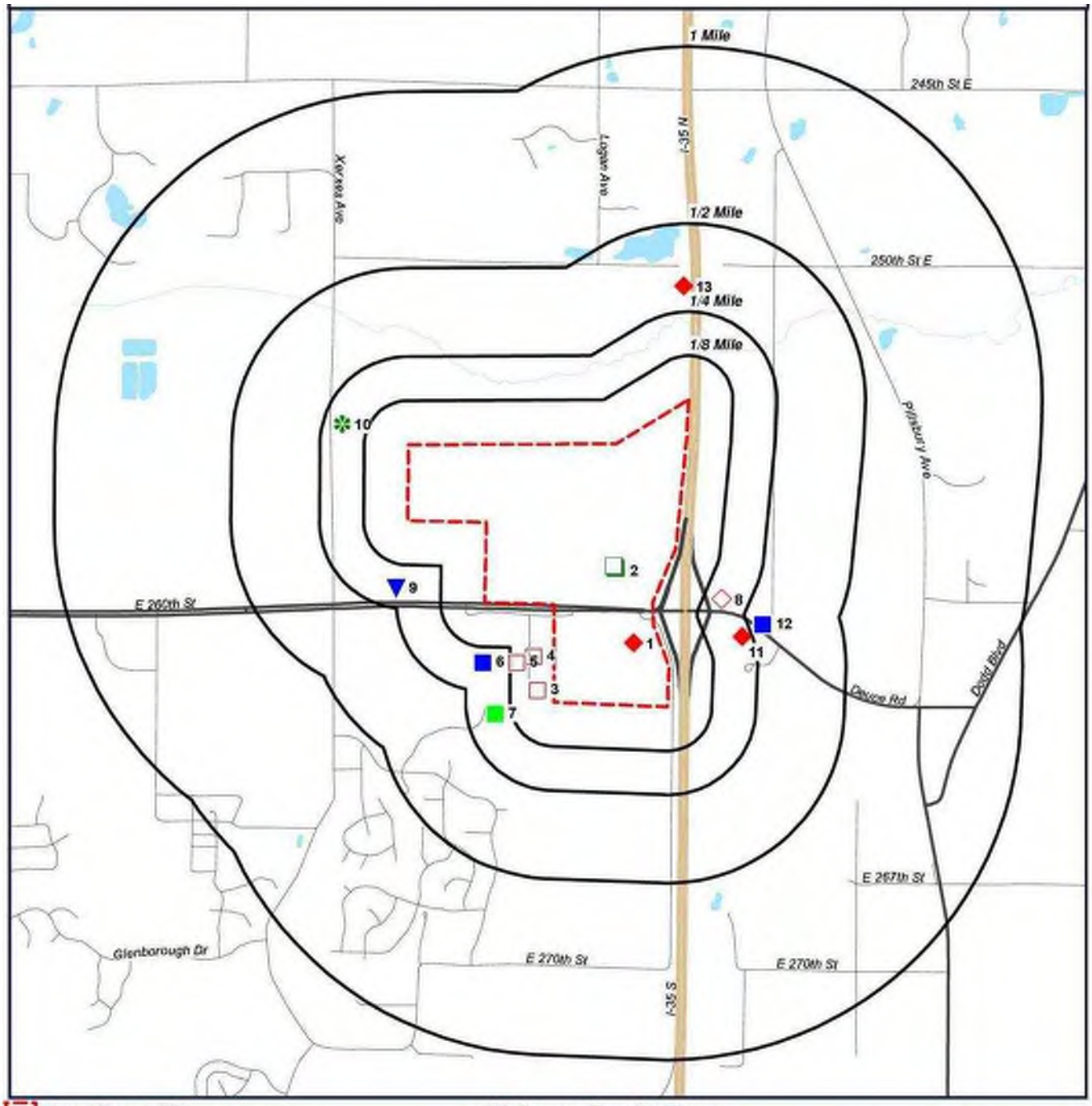
TRIBAL LISTING

*Standard environmental records are displayed in **bold**.*

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
USTR05	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
LUSTR05	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
ODINDIAN	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
INDIANRES	1.0000	0	0	0	0	0	NS	0
SUB-TOTAL		0	0	0	0	0	0	0
TOTAL		17	7	16	2	0	0	42

NOTES:
NS = NOT SEARCHED
TP/AP = TARGET PROPERTY/ADJACENT PROPERTY

Radius Map 1



Target Property (TP)
LUAST2016
FRSMN
HWGS
RCRAGR05
WIMN
BULKSTORAGE
UAST
SAS
CAFO
LUAST

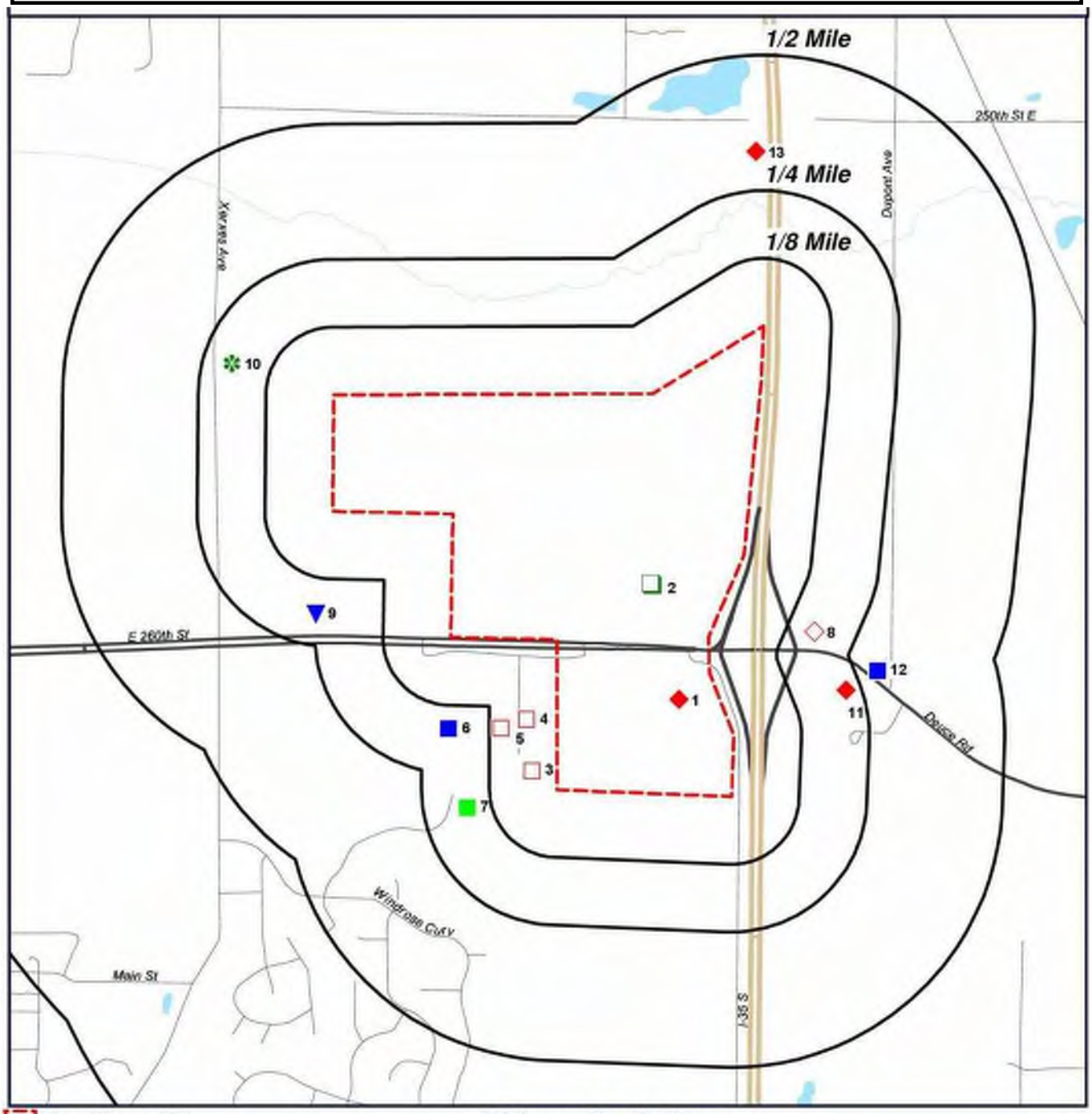
Adelmann Family Farms
10946-10998 260th St East
New Market Township, Minnesota
55020

N
W E
S

0' 1150' 2300' 3450'
SCALE: 1" = 2300'

Click here to access Satellite view

Radius Map 2



Adelmann Family Farms
10946-10998 260th St East
New Market Township, Minnesota
55020

Click here to access Satellite view

Ortho Map

Target Property (TP)
LUAST2016
FRSMN
HWGS
RCRAGR05
WIMN
BULKSTORAGE
UAST
SAS
CAFO
LUAST

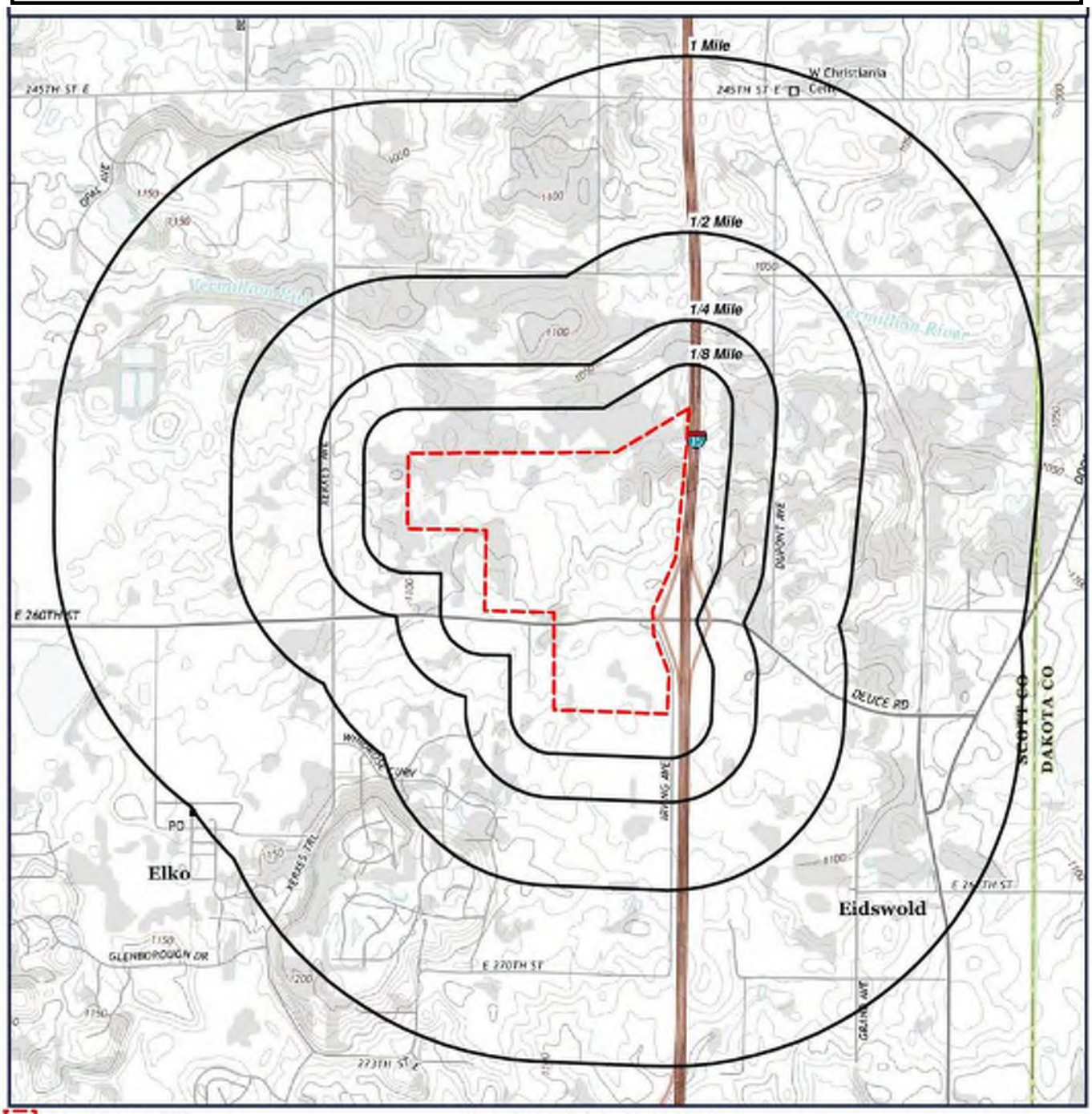
Quadrangle(s): New Market
Adelmann Family Farms
10946-10998 260th St East
New Market Township, Minnesota
55020

N
W E
S

0' 750' 1500' 2250'
SCALE: 1" = 1500'

Click here to access Satellite view

Topographic Map



Target Property (TP)

Quadrangle(s): New Market
Source: USGS, 08/30/2013
Adelmann Family Farms
10946-10998 260th St East
New Market Township, Minnesota
55020

N
W E
S

0' 1150' 2300' 3450'
SCALE: 1" = 2300'

Click here to access Satellite view

Located Sites Summary

*NOTE: Standard environmental records are displayed in **bold**.*

Map ID#	Database Name	Site ID#	Relative Elevation	Distance From Site	Site Name	Address	PAGE #
1	ECHOR05	110003902055	Higher (1,112 ft.)	TP	COUNTRYSIDE AUTO	10881 E 260TH ST, ELKO, MN 55020	20
1	FRSMN	110003902055	Higher (1,112 ft.)	TP	COUNTRYSIDE AUTO	10881 E 260TH ST, ELKO, MN 55020	21
1	FRSMN	110067849252	Higher (1,112 ft.)	TP	MAYNARDS AUTO SERVICE	10881 E 260TH ST, NEW MARKET TOWNSHIP, MN 55020	22
1	FRSMN	110068153697	Higher (1,112 ft.)	TP	TWIN CITIES FEATHERLITE TRAILER SALES	10881 E 260TH ST, NEW MARKET TOWNSHIP, MN 55020	23
1	***HWGS***	***23406HWGS***	***Higher (1,112 ft.)***	***TP***	***TWIN CITIES FEATHERLITE TRAILER SALES***	***10881 260 ST E, ELKO, MN 55020***	***24***
1	***LUAST***	***117511LUAST***	***Higher (1,112 ft.)***	***TP***	***MAYNARDS AUTO SERVICE***	***10881 E 260TH ST, ELKO NEW MARKET, MN 55020***	***25***
1	***LUAST2016***	***1796LUAST***	***Higher (1,112 ft.)***	***TP***	***MAYNARDS AUTO SERVICE***	***10881 E 260TH ST, ELKO (NEW MARKET), MN 55020***	***27***
1	PCASPILLS	12377	Higher (1,112 ft.)	TP	RICHFIELD PLUMBING	10881 260TH ST, ELKO, MN	28
1	PCASPILLS	93174_150494	Higher (1,112 ft.)	TP	TWIN CITY FEATHERLITE TRAILERS	10881 EAST 260TH ST, ELKO, MN	29
1	***RCRANGR05***	***MNR000021360***	***Higher (1,112 ft.)***	***TP***	***COUNTRYSIDE AUTO - ELKO***	***10881 E 260TH ST, ELKO, MN 55020***	***30***
1	***UAST***	***117511UAST***	***Higher (1,112 ft.)***	***TP***	***MAYNARDS AUTO SERVICE***	***10881 E 260TH ST, ELKO NEW MARKET, MN 55020***	***32***
1	WIMN	117511	Higher (1,112 ft.)	TP	MAYNARDS AUTO SERVICE	10881 E 260TH ST, ELKO NEW MARKET, MN 55020	34
1	WIMN	23406	Higher (1,112 ft.)	TP	TWIN CITIES FEATHERLITE TRAILER SALES	10881 260 ST E, ELKO, MN 55020	35
2	CAFO	54242-AREA00000001	Higher (1,117 ft.)	TP	ROBERT ADELMANN FARM	10880 E 260TH ST, ELKO NEW MARKET, MN 55020	36
2	FEEDLOT	54242FEED	Higher (1,117 ft.)	TP	ROBERT ADELMANN FARM	10880 E 260TH ST, ELKO NEW MARKET, MN 55020	38
2	FRSMN	110068955367	Higher (1,117 ft.)	TP	ROBERT ADELMANN FARM	10880 E 260TH ST, NEW MARKET TOWNSHIP, MN 55020	39
2	WIMN	54242	Higher (1,117 ft.)	TP	ROBERT ADELMANN FARM	10880 E 260TH ST, ELKO NEW MARKET, MN 55020	40
3	***HWGS***	***134728HWGS***	***Higher (1,124 ft.)***	***0.045 mi. W (238 ft.)***	***SHOPSABRE***	***26151 NEWTON CIR, ELKO NEW MARKET, MN 55020***	***41***
3	WIMN	134728	Higher (1,124 ft.)	0.045 mi. W (238 ft.)	SHOPSABRE	26151 NEWTON CIR, ELKO NEW MARKET, MN 55020	42
4	***HWGS***	***21458HWGS***	***Higher (1,118 ft.)***	***0.055 mi. W (290 ft.)***	***DAKOTA BLACKTOPPING***	***26105 NEWTON CIR, ELKO NEW MARKET, MN 55020***	***43***
4	***RCRAGR05***	***MNR000060673***	***Higher (1,118 ft.)***	***0.055 mi. W (290 ft.)***	***DAKOTA BLACKTOPPING***	***26105 NEWTON CIR, ELKO, MN 55020***	***44***
4	WIMN	21458	Higher (1,118 ft.)	0.055 mi. W (290 ft.)	DAKOTA BLACKTOPPING	26105 NEWTON CIR, ELKO NEW MARKET, MN 55020	46
5	***RCRAGR05***	***MNR000021915***	***Higher (1,118 ft.)***	***0.103 mi. W (544 ft.)***	***BODYWERKS***	***26106 NEWTON CIR, ELKO, MN 55020***	***47***
5	WIMN	30474	Higher (1,118 ft.)	0.103 mi. W (544 ft.)	EAGLE CREEK AUTO REPAIR	26106 NEWTON CIR, ELKO NEW MARKET, MN 55020	49

Located Sites Summary

*NOTE: Standard environmental records are displayed in **bold**.*

Map ID#	Database Name	Site ID#	Relative Elevation	Distance From Site	Site Name	Address	PAGE #
6	WIMN	30860	Higher (1,121 ft.)	0.167 mi. S (882 ft.)	NIEMEYERS TRAILER SALES	10405 260TH ST E, ELKO NEW MARKET, MN 55020	50
7	BULKSTORAGE	20025818	Higher (1,131 ft.)	0.167 mi. W (882 ft.)	LANGER HARVEY H	26257 THOMAS AVE, ELKO, MN 55020	51
8	***UAST***	***117770UAST***	***Higher (1,120 ft.)***	***0.177 mi. ESE (935 ft.)***	***ANDERSON ZWEERS***	***11110 DEUCE RD, ELKO NEW MARKET, MN 55020***	***52***
8	WIMN	117770	Higher (1,120 ft.)	0.177 mi. ESE (935 ft.)	ANDERSON ZWEERS	11110 DEUCE RD, ELKO NEW MARKET, MN 55020	53
9	***REMSITES***	***196168***	***Higher (1,106 ft.)***	***0.191 mi. SSW (1008 ft.)***	***ELKO DUMP***	***SEE LOCATION DESCRIPTION, ELKO NEW MARKET, MN 55020***	***54***
9	***SAS***	***196168SAS***	***Higher (1,106 ft.)***	***0.191 mi. SSW (1008 ft.)***	***ELKO DUMP***	***SEE LOCATION DESCRIPTION, ELKO NEW MARKET, MN 55020***	***56***
9	WIMN	196168	Higher (1,106 ft.)	0.191 mi. SSW (1008 ft.)	ELKO DUMP	SEE LOCATION DESCRIPTION, ELKO NEW MARKET, MN 55020	57
10	CAFO	60794-AREA00000001	Higher (1,109 ft.)	0.196 mi. WNW (1035 ft.)	RAY DEUTSCH FARM	25421 XERXES AVE, ELKO NEW MARKET, MN 55020	58
10	WIMN	60794	Higher (1,109 ft.)	0.196 mi. WNW (1035 ft.)	RAY DEUTSCH FARM	25421 XERXES AVE, ELKO NEW MARKET, MN 55020	60
11	***LUAST***	***47272LUAST***	***Higher (1,121 ft.)***	***0.222 mi. ENE (1172 ft.)***	***PARKS AUTO***	***11111 DEUCE RD STE 5, ELKO NEW MARKET, MN 55020***	***61***
11	***LUAST2016***	***15935LUAST***	***Higher (1,121 ft.)***	***0.222 mi. ENE (1172 ft.)***	***G & T TRUCKING***	***11111 DEUCE RD STE 5, ELKO, MN 55020***	***63***
11	***LUAST2016***	***16832LUAST***	***Higher (1,121 ft.)***	***0.222 mi. ENE (1172 ft.)***	***G AND T TRUCKING CO***	***11111 DEUCE RD STE 5, ELKO, MN 55020***	***64***
11	***UAST***	***150458UAST***	***Higher (1,121 ft.)***	***0.222 mi. ENE (1172 ft.)***	***TELCOM CONSTRUCTION INC***	***11111 DEUCE RD, ELKO NEW MARKET, MN 55020***	***65***
11	***UAST***	***47272UAST***	***Higher (1,121 ft.)***	***0.222 mi. ENE (1172 ft.)***	***PARKS AUTO***	***11111 DEUCE RD STE 5, ELKO NEW MARKET, MN 55020***	***66***
11	WIMN	150458	Higher (1,121 ft.)	0.222 mi. ENE (1172 ft.)	TELCOM CONSTRUCTION INC	11111 DEUCE RD, ELKO NEW MARKET, MN 55020	71
11	WIMN	47272	Higher (1,121 ft.)	0.222 mi. ENE (1172 ft.)	PARKS AUTO	11111 DEUCE RD STE 5, ELKO NEW MARKET, MN 55020	72
12	WIMN	129145	Higher (1,129 ft.)	0.292 mi. ENE (1542 ft.)	LAFAVRE RACING TEAM INC	11236 DEUCE RD, ELKO NEW MARKET, MN 55020	73
13	***LUAST***	***105900LUAST***	***Lower (1,061 ft.)***	***0.321 mi. N (1695 ft.)***	***MN DEPT OF TRANSPORTATION***	***I35 N OF ELKO, ELKO NEW MARKET, MN 55054***	***74***

Elevation Summary

Elevations are collected from the USGS 3D Elevation Program 1/3 arc-second (approximately 10 meters) layer hosted at the NGTOC. .

Target Property Elevation: 1103 ft.

*NOTE: Standard environmental records are displayed in **bold**.*

EQUAL/HIGHER ELEVATION

Map ID#	Database Name	Elevation	Site Name	Address	Page #
1	ECHOR05	1,112 ft.	COUNTRYSIDE AUTO	10881 E 260TH ST, ELKO, MN 55020	20
1	FRSMN	1,112 ft.	COUNTRYSIDE AUTO	10881 E 260TH ST, ELKO, MN 55020	21
1	FRSMN	1,112 ft.	MAYNARDS AUTO SERVICE	10881 E 260TH ST, NEW MARKET TOWNSHIP, MN 55020	22
1	FRSMN	1,112 ft.	TWIN CITIES FEATHERLITE TRAILER SALES	10881 E 260TH ST, NEW MARKET TOWNSHIP, MN 55020	23
1	***HWGS***	***1,112 ft.***	***TWIN CITIES FEATHERLITE TRAILER SALES***	***10881 260 ST E, ELKO, MN 55020***	***24***
1	***LUAST***	***1,112 ft.***	***MAYNARDS AUTO SERVICE***	***10881 E 260TH ST, ELKO NEW MARKET, MN 55020***	***25***
1	***LUAST2016***	***1,112 ft.***	***MAYNARDS AUTO SERVICE***	***10881 E 260TH ST, ELKO (NEW MARKET), MN 55020***	***27***
1	PCASPILLS	1,112 ft.	RICHFIELD PLUMBING	10881 260TH ST, ELKO, MN	28
1	PCASPILLS	1,112 ft.	TWIN CITY FEATHERLITE TRAILERS	10881 EAST 260TH ST, ELKO, MN	29
1	***RCRANGR05***	***1,112 ft.***	***COUNTRYSIDE AUTO - ELKO***	***10881 E 260TH ST, ELKO, MN 55020***	***30***
1	***UAST***	***1,112 ft.***	***MAYNARDS AUTO SERVICE***	***10881 E 260TH ST, ELKO NEW MARKET, MN 55020***	***32***
1	WIMN	1,112 ft.	MAYNARDS AUTO SERVICE	10881 E 260TH ST, ELKO NEW MARKET, MN 55020	34
1	WIMN	1,112 ft.	TWIN CITIES FEATHERLITE TRAILER SALES	10881 260 ST E, ELKO, MN 55020	35
2	CAFO	1,117 ft.	ROBERT ADELMANN FARM	10880 E 260TH ST, ELKO NEW MARKET, MN 55020	36
2	FEEDLOT	1,117 ft.	ROBERT ADELMANN FARM	10880 E 260TH ST, ELKO NEW MARKET, MN 55020	38
2	FRSMN	1,117 ft.	ROBERT ADELMANN FARM	10880 E 260TH ST, NEW MARKET TOWNSHIP, MN 55020	39
2	WIMN	1,117 ft.	ROBERT ADELMANN FARM	10880 E 260TH ST, ELKO NEW MARKET, MN 55020	40
3	***HWGS***	***1,124 ft.***	***SHOPSABRE***	***26151 NEWTON CIR, ELKO NEW MARKET, MN 55020***	***41***
3	WIMN	1,124 ft.	SHOPSABRE	26151 NEWTON CIR, ELKO NEW MARKET, MN 55020	42
4	***HWGS***	***1,118 ft.***	***DAKOTA BLACKTOPPING***	***26105 NEWTON CIR, ELKO NEW MARKET, MN 55020***	***43***
4	***RCRAGR05***	***1,118 ft.***	***DAKOTA BLACKTOPPING***	***26105 NEWTON CIR, ELKO, MN 55020***	***44***
4	WIMN	1,118 ft.	DAKOTA BLACKTOPPING	26105 NEWTON CIR, ELKO NEW MARKET, MN 55020	46
5	***RCRAGR05***	***1,118 ft.***	***BODYWERKS***	***26106 NEWTON CIR, ELKO, MN 55020***	***47***
5	WIMN	1,118 ft.	EAGLE CREEK AUTO REPAIR	26106 NEWTON CIR, ELKO NEW MARKET, MN 55020	49
6	WIMN	1,121 ft.	NIEMEYERS TRAILER SALES	10405 260TH ST E, ELKO NEW MARKET, MN 55020	50

Elevation Summary

Map ID#	Database Name	Elevation	Site Name	Address	Page #
7	BULKSTORAGE	1,131 ft.	LANGER HARVEY H	26257 THOMAS AVE, ELKO, MN 55020	51
8	***UAST***	***1,120 ft.***	***ANDERSON ZWEERS***	***11110 DEUCE RD, ELKO NEW MARKET, MN 55020***	***52***
8	WIMN	1,120 ft.	ANDERSON ZWEERS	11110 DEUCE RD, ELKO NEW MARKET, MN 55020	53
9	***REMSITES***	***1,106 ft.***	***ELKO DUMP***	***SEE LOCATION DESCRIPTION, ELKO NEW MARKET, MN 55020***	***54***
9	***SAS***	***1,106 ft.***	***ELKO DUMP***	***SEE LOCATION DESCRIPTION, ELKO NEW MARKET, MN 55020***	***56***
9	WIMN	1,106 ft.	ELKO DUMP	SEE LOCATION DESCRIPTION, ELKO NEW MARKET, MN 55020	57
10	CAFO	1,109 ft.	RAY DEUTSCH FARM	25421 XERXES AVE, ELKO NEW MARKET, MN 55020	58
10	WIMN	1,109 ft.	RAY DEUTSCH FARM	25421 XERXES AVE, ELKO NEW MARKET, MN 55020	60
11	***LUAST***	***1,121 ft.***	***PARKS AUTO***	***11111 DEUCE RD STE 5, ELKO NEW MARKET, MN 55020***	***61***
11	***LUAST2016***	***1,121 ft.***	***G & T TRUCKING***	***11111 DEUCE RD STE 5, ELKO, MN 55020***	***63***
11	***LUAST2016***	***1,121 ft.***	***G AND T TRUCKING CO***	***11111 DEUCE RD STE 5, ELKO, MN 55020***	***64***
11	***UAST***	***1,121 ft.***	***TELCOM CONSTRUCTION INC***	***11111 DEUCE RD, ELKO NEW MARKET, MN 55020***	***65***
11	***UAST***	***1,121 ft.***	***PARKS AUTO***	***11111 DEUCE RD STE 5, ELKO NEW MARKET, MN 55020***	***66***
11	WIMN	1,121 ft.	TELCOM CONSTRUCTION INC	11111 DEUCE RD, ELKO NEW MARKET, MN 55020	71
11	WIMN	1,121 ft.	PARKS AUTO	11111 DEUCE RD STE 5, ELKO NEW MARKET, MN 55020	72
12	WIMN	1,129 ft.	LAFAVRE RACING TEAM INC	11236 DEUCE RD, ELKO NEW MARKET, MN 55020	73

LOWER ELEVATION

Map ID#	Database Name	Elevation	Site Name	Address	Page #
13	***LUAST***	***1,061 ft.***	***MN DEPT OF TRANSPORTATION***	***I35 N OF ELKO, ELKO NEW MARKET, MN 55054***	***74***

Enforcement and Compliance History Information (ECHOR05)

MAP ID# 1

Distance from Property: 0 mi. (0 ft.) X
Elevation: 1,112 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **110003902055**
REGISTRY ID: **110003902055**
NAME: **COUNTRYSIDE AUTO**
ADDRESS: **10881 E 260TH ST**
ELKO, MN 55020
COUNTY: **SCOTT**
FACILITY LINK: *Facility Detail Report*

Back to Report Summary

Facility Registry System (FRSMN)

MAP ID# 1

Distance from Property: 0 mi. (0 ft.) X
Elevation: 1,112 ft. (Higher than TP)

FACILITY INFORMATION

REGISTRY ID: **110003902055**

NAME: **COUNTRYSIDE AUTO**

LOCATION ADDRESS: **10881 E 260TH ST**
ELKO, MN 55020-9443

COUNTY: **SCOTT**

EPA REGION: **05**

FEDERAL FACILITY: **NOT REPORTED**

TRIBAL LAND: **NOT REPORTED**

ALTERNATIVE NAME/S:

COUNTRYSIDE AUTO

PROGRAM/S LISTED FOR THIS FACILITY

RCRAINFO - RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM

STANDARD INDUSTRIAL CLASSIFICATION/S (SIC)

NO SIC DATA REPORTED

NORTH AMERICAN INDUSTRY CLASSIFICATION/S (NAICS)

NO NAICS DATA REPORTED

Back to Report Summary

Facility Registry System (FRSMN)

MAP ID# 1

Distance from Property: 0 mi. (0 ft.) X
Elevation: 1,112 ft. (Higher than TP)

FACILITY INFORMATION

REGISTRY ID: **110067849252**

NAME: **MAYNARDS AUTO SERVICE**

LOCATION ADDRESS: **10881 E 260TH ST**
NEW MARKET TOWNSHIP, MN 55020

COUNTY: **SCOTT**

EPA REGION: **05**

FEDERAL FACILITY: **NOT REPORTED**

TRIBAL LAND: **NOT REPORTED**

ALTERNATIVE NAME/S:

MAYNARDS AUTO SERVICE

PROGRAM/S LISTED FOR THIS FACILITY

MN-TEMPO - MN-TEMPO

STANDARD INDUSTRIAL CLASSIFICATION/S (SIC)

NO SIC DATA REPORTED

NORTH AMERICAN INDUSTRY CLASSIFICATION/S (NAICS)

NO NAICS DATA REPORTED

Back to Report Summary

Facility Registry System (FRSMN)

MAP ID# 1

Distance from Property: 0 mi. (0 ft.) X
Elevation: 1,112 ft. (Higher than TP)

FACILITY INFORMATION

REGISTRY ID: **110068153697**

NAME: **TWIN CITIES FEATHERLITE TRAILER SALES**

LOCATION ADDRESS: **10881 E 260TH ST**
NEW MARKET TOWNSHIP, MN 55020-9443

COUNTY: **SCOTT**

EPA REGION: **05**

FEDERAL FACILITY: **NOT REPORTED**

TRIBAL LAND: **NOT REPORTED**

ALTERNATIVE NAME/S:

COUNTRYSIDE AUTO - ELKO

PROGRAM/S LISTED FOR THIS FACILITY

MN-TEMPO - MN-TEMPO

STANDARD INDUSTRIAL CLASSIFICATION/S (SIC)

5012 - AUTOMOBILES AND OTHER MOTOR VEHICLES

NORTH AMERICAN INDUSTRY CLASSIFICATION/S (NAICS)

423110 - AUTOMOBILE AND OTHER MOTOR VEHICLE MERCHANT WHOLESALERS

Back to Report Summary

Hazardous Waste Generator Sites (HWGS)

MAP ID# 1

Distance from Property: 0 mi. (0 ft.) X
Elevation: 1,112 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **23406HWGS**
SITE ID: **23406**
SITE NAME: **TWIN CITIES FEATHERLITE TRAILER SALES**
ADDRESS: **10881 260 ST E**
ELKO, MN 55020 SCOTT
SITE URL: **https://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=23406**

FACILITY DETAILS

ID: **MNR000021360**
TYPE: **HAZARDOUS WASTE**
WATERSHED: **MISSISSIPPI RIVER - LAKE PEPIN**
ACTIVE?: **YES**
INDUSTRY CLASSIFICATION: **AUTOMOBILE AND OTHER MOTOR VEHICLE MERCHANT WHOLESALERS ; MOTORCYCLE, ATV, AND ALL OTHER MOTOR VEHICLE DEALERS ; GENERAL AUTOMOTIVE REPAIR**
INSTITUTIONAL CONTROLS: **NO**

Back to Report Summary

Registered Leaking Storage Tanks (LUAST)

MAP ID# 1

Distance from Property: 0 mi. (0 ft.) X
Elevation: 1,112 ft. (Higher than TP)

FACILITY INFORMATION

GEOSEARCH ID: **117511LUAST**
AGENCY INTEREST(AI) ID: **117511**
ITEM ID: **117511-AREA0000000001**
AGENCY INTEREST(AI) NAME: **MAYNARDS AUTO SERVICE**
ADDRESS: **10881 E 260TH ST**
ELKO NEW MARKET, MN 55020
COUNTY: **SCOTT**
LOCATION DESCRIPTION: **NOT REPORTED**
SITE URL: *LINK*

FACILITY DETAILS

TYPE OF REMEDIATION SITE: **LEAK SITE**
SITE ID: **LS0001796**
SITE NAME: **MAYNARDS AUTO SERVICE**
ACREAGE FOR THIS PROJECT: **NOT REPORTED**
MPCA HYDROGEOLOGIST OR HYDROLOGIST ASSIGNED TO THE SITE: **NOT REPORTED**
MPCA PROJECT MANAGER ASSIGNED TO THE SITE: **JANET BERRYHILL (NO LONGER AT MPCA)**
HAS THIS SITE EVER BEEN LISTED ON THE NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST)?: **NOT REPORTED**
HAS THIS SITE EVER BEEN LISTED ON THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST)?:
NOT REPORTED
FOR BROWNFIELDS, IS THIS A PETROLEUM BROWNFIELD?: **NOT REPORTED**
FOR BROWNFIELDS, IS THIS A NON-PETROLEUM BROWNFIELD AKA VOLUNTARY INVESTIGATION AND CLEANUP (VIC) SITE?:
NOT REPORTED
WAS THIS LISTED ON EPA'S CERCLIS/SEMS LIST?: **NOT REPORTED**
WAS THIS AN UNPERMITTED DUMP?: **NOT REPORTED**
TO OUR KNOWLEDGE, ARE THERE INSTITUTIONAL CONTROLS AT THIS SITE?: **NOT REPORTED**
SCORE FOR THIS SITE, USING THE US EPA'S HAZARD RANKING SYSTEM (HRS): **NOT REPORTED**
YEAR FOR THE HRS SCORE: **NOT REPORTED**
UNIQUE ID FOR AN INVESTIGATION PROJECT THAT INVOLVED THIS SITE: **SIW19890001**
DESCRIPTION FOR THE KIND OF INVESTIGATION PROJECT: **LEAK SITE INVESTIGATION**
RELEASE DISCOVERED: **NOT REPORTED**
RELEASE REPORTED: **10/20/1989**
DATE THE APPLICATION / NOTIFICATION RECEIVED: **NOT REPORTED**
DATE THIS SITE WAS LISTED ON THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST): **NOT REPORTED**
DATE THIS SITE WAS DELISTED FROM THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST): **NOT REPORTED**
DATE THIS SITE WAS LISTED ON THE NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST): **NOT REPORTED**
DATE THIS SITE WAS DELETED FROM NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST): **NOT REPORTED**
SITE CLOSURE DATE: **8/7/1990**
FUND FINANCE APPROVED: **NOT REPORTED**
FUND FINANCE CLOSED: **NOT REPORTED**
ASSESSMENT COMPLETED: **NOT REPORTED**
INVESTIGATION COMPLETED: **NOT REPORTED**
NO FURTHER ACTION DECISION: **NOT REPORTED**
REMEDY IMPLEMENTED: **NOT REPORTED**

REMEDY SELECTED: **NOT REPORTED**

STATUS OF THE SITE: **CLOSED**

Back to Report Summary

Registered Leaking Storage Tanks Prior to April 2016 (LUAST2016)

MAP ID# 1

Distance from Property: 0 mi. (0 ft.) X
Elevation: 1,112 ft. (Higher than TP)

SITE INFORMATION

GEOSEARCH ID: **1796LUAST**
LEAK ID: **1796**
NAME: **MAYNARDS AUTO SERVICE**
ADDRESS: **10881 E 260TH ST**
ELKO (NEW MARKET), MN 55020
RELEASE DISCOVERED: **NOT REPORTED**
RELEASE REPORT: **10/20/1989 00:00:00**
CONDITIONAL CLOSURE DATE: **NOT REPORTED**
COMPLETE SITE CLOSURE DATE: **08/07/1990 00:00:00**
COMTAMINATED SOILS REMAINING: **NO**
OFFSITE COMTAMINATION: **UNKNOWN**
PRODUCT RELEASED: **GASOLINE, TYPE UNKNOWN**

GROUND WATER

DRINKING WATER CONTAMINATION: **NOT REPORTED**
FREE PRODUCT OBSERVED: **NOT REPORTED**
FREE PRODUCT THICKNESS: **NOT REPORTED**
GROUNDWATER CONTAMINATION: **NO**

CLEANUP ACTIONS

- NO CLEANUP ACTIONS REPORTED

INTEREST TYPE:	LAST UPDATE:
LEAK SITE	**11/10/2014 08:17:05**
DELETED LEAK SITE	**11/09/2006 14:39:33**

Back to Report Summary

Spills Listing (PCASPILLS)

MAP ID# 1

Distance from Property: 0 mi. (0 ft.) X
Elevation: 1,112 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **12377**
INCIDENT ID: **12377**
SOURCE NAME: **RICHFIELD PLUMBING**
ADDRESS: **10881 260TH ST**
ELKO, MN
COUNTY: **SCOTT**

FACILITY DETAIL(S)

MPCA PROGRAM INVOLVED WITH THIS INCIDENT: **EMERGENCY MANAGEMENT**
INCIDENT TYPE(S): **SPILL OR RELEASE**
INCIDENT DATE: **1/1/1996**
INCIDENT STATUS: **CLOSED OR COMPLETED**
CLOSURE TYPE: **NOT REPORTED**
DUTY OFFICER NUMBER: **NOT REPORTED**
LEAD INVESTIGATOR: **JOHN MOEGER**
AGENCY INTEREST ID: **NOT REPORTED**
SOURCE ENTITY NAME: **RICHFIELD PLUMBING**
SOURCE ENTITY ADDRESS: **NOT REPORTED**
SOURCE ENTITY CITY: **NOT REPORTED**
SOURCE ENTITY STATE: **NOT REPORTED**
SOURCE ENTITY ZIP CODE: **NOT REPORTED**

Back to Report Summary

Spills Listing (PCASPILLS)

MAP ID# 1

Distance from Property: 0 mi. (0 ft.) X
Elevation: 1,112 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **93174_150494**
INCIDENT ID: **93174**
SOURCE NAME: **TWIN CITY FEATHERLITE TRAILERS**
ADDRESS: **10881 EAST 260TH ST**
ELKO, MN
COUNTY: **SCOTT**

FACILITY DETAIL(S)

MPCA PROGRAM INVOLVED WITH THIS INCIDENT: **EMERGENCY MANAGEMENT**
INCIDENT TYPE(S): **SPILL OR RELEASE**
INCIDENT DATE: **5/29/2015**
INCIDENT STATUS: **CLOSED OR COMPLETED**
CLOSURE TYPE: **RESPONSE/ACTION COMPLETED**
DUTY OFFICER NUMBER: **150494**
LEAD INVESTIGATOR: **JIM STOCKINGER**
AGENCY INTEREST ID: **NOT REPORTED**
SOURCE ENTITY NAME: **TWIN CITY FEATHERLITE TRAILERS**
SOURCE ENTITY ADDRESS: **10881 EAST 260TH ST**
SOURCE ENTITY CITY: **ELKO**
SOURCE ENTITY STATE: **MN**
SOURCE ENTITY ZIP CODE: **NOT REPORTED**

Back to Report Summary

Resource Conservation & Recovery Act - Non-Generator (RCRANGR05)

MAP ID# 1

Distance from Property: 0 mi. (0 ft.) X
Elevation: 1,112 ft. (Higher than TP)

FACILITY INFORMATION

EPA ID#: **MNR000021360**
NAME: **COUNTRYSIDE AUTO - ELKO**
ADDRESS: **10881 E 260TH ST**
ELKO, MN 55020-9443
CONTACT NAME: **DAN ELLINGSON**
CONTACT ADDRESS: **10881 E 260TH ST**
ELKO MN 55020-9443
CONTACT PHONE: **952-461-3688**
NON-NOTIFIER: **NOT A NON-NOTIFIER**
DATE RECEIVED BY AGENCY: **04/29/1996**

OWNER TYPE: **PRIVATE**
OWNER NAME: **COUNTRYSIDE AUTO**
OPERATOR TYPE: **NOT REPORTED**
OPERATOR NAME: **NOT REPORTED**

CERTIFICATION **- NO CERTIFICATION REPORTED -**
INDUSTRY CLASSIFICATION (NAICS) **- NO NAICS INFORMATION REPORTED -**

CURRENT ACTIVITY INFORMATION

GENERATOR STATUS: **NON-GENERATOR** LAST UPDATED DATE: **06/20/2007**
SUBJECT TO CORRECTIVE ACTION UNIVERSE: **NO**
TDSFs POTENTIALLY SUBJECT TO CORRECTIVE ACTION UNDER 3004 (u)/(v) UNIVERSE: **NO**
TDSFs ONLY SUBJECT TO CORRECTIVE ACTION UNDER DISCRETIONARY AUTHORITIES UNIVERSE: **NO**
NON TSDFs WHERE RCRA CORRECTIVE ACTION HAS BEEN IMPOSED UNIVERSE: **NO**
CORRECTIVE ACTION WORKLOAD UNIVERSE: **NO**

IMPORTER: **NO**
MIXED WASTE GENERATOR: **NO**
RECYCLER: **NO**
TRANSPORTER: **NO**
ONSITE BURNER EXEMPTION: **NO**
FURNACE EXEMPTION: **NO**
USED OIL REFINER: **NO**
USED OIL TRANSFER FACILITY: **NO**

UNDERGROUND INJECTION: **NO**
UNIVERSAL WASTE DESTINATION FACILITY: **NO**
TRANSFER FACILITY: **NO**
USED OIL FUEL BURNER: **NO**
USED OIL PROCESSOR: **NO**
USED OIL FUEL MARKETER TO BURNER: **NO**
SPECIFICATION USED OIL MARKETER: **NO**
USED OIL TRANSPORTER: **NO**

COMPLIANCE, MONITORING AND ENFORCEMENT INFORMATION

EVALUATIONS **- NO EVALUATIONS REPORTED -**
VIOLATIONS **- NO VIOLATIONS REPORTED -**
ENFORCEMENTS **- NO ENFORCEMENTS REPORTED -**

HAZARDOUS WASTE

D000
D001 **IGNITABLE WASTE**
D002 **CORROSIVE WASTE**
D009 **MERCURY**

F002 **THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE,TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE,CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001,F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.**

X001

UNIVERSAL WASTE **- NO UNIVERSAL WASTE REPORTED -**

CORRECTIVE ACTION AREA **- NO CORRECTIVE ACTION AREA INFORMATION REPORTED -**

CORRECTIVE ACTION EVENT

NO CORRECTIVE ACTION EVENT(S) REPORTED

Back to Report Summary

MAP ID# 1

Distance from Property: 0 mi. (0 ft.) X
Elevation: 1,112 ft. (Higher than TP)

FACILITY INFORMATION

Note: Data is current as of February 09th, 2018

GEOSEARCH ID: **117511UAST**

AGENCY INTEREST(AI) ID: **117511**

AGENCY INTEREST(AI) NAME: **MAYNARDS AUTO SERVICE**

ADDRESS: **10881 E 260TH ST**
ELKO NEW MARKET, MN 55020

OWNER: **ROBERT F ADELMANN**

OWNER ADDRESS: **NOT REPORTED**
NOT REPORTED, NOT REPORTED NOT REPORTED

FACILITY DETAILS

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **117511-EQUI0000000001**

ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **117511-EQUI0000000001-1**

TANK SITE ID: **TS0012883**

COMPARTMENT NUMBER WITHIN THE TANK: **1**

CAPACITY OF THIS COMPARTMENT IN GALLONS: **500**

SUBSTANCE IN THE TANK: **FUEL OIL**

TANK WALL TYPE: **SINGLE**

TANK MATERIAL: **BARE/PAINT/ASPH COAT STEEL**

TANK INSTALL DATE: **1/1/1968**

STATUS CHANGE DATE: **6/1/1989**

TANK STATUS: **REMOVED**

TANKS CONTRACTOR: **NOT REPORTED**

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **117511-EQUI0000000002**

ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **117511-EQUI0000000002-1**

TANK SITE ID: **TS0012883**

COMPARTMENT NUMBER WITHIN THE TANK: **1**

CAPACITY OF THIS COMPARTMENT IN GALLONS: **8000**

SUBSTANCE IN THE TANK: **GASOLINE**

TANK WALL TYPE: **SINGLE**

TANK MATERIAL: **BARE/PAINT/ASPH COAT STEEL**

TANK INSTALL DATE: **1/1/1968**

STATUS CHANGE DATE: **6/1/1989**

TANK STATUS: **REMOVED**

TANKS CONTRACTOR: **NOT REPORTED**

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **117511-EQUI0000000003**

ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **117511-EQUI0000000003-1**

TANK SITE ID: **TS0012883**

COMPARTMENT NUMBER WITHIN THE TANK: **1**

CAPACITY OF THIS COMPARTMENT IN GALLONS: **6000**

SUBSTANCE IN THE TANK: **GASOLINE**
TANK WALL TYPE: **SINGLE**
TANK MATERIAL: **BARE/PAINT/ASPH COAT STEEL**
TANK INSTALL DATE: **1/1/1968**
STATUS CHANGE DATE: **6/1/1989**
TANK STATUS: **REMOVED**
TANKS CONTRACTOR: **NOT REPORTED**

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **117511-EQUI0000000004**
ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **117511-EQUI0000000004-1**
TANK SITE ID: **TS0012883**
COMPARTMENT NUMBER WITHIN THE TANK: **1**
CAPACITY OF THIS COMPARTMENT IN GALLONS: **500**
SUBSTANCE IN THE TANK: **USED OR WASTE OIL**
TANK WALL TYPE: **SINGLE**
TANK MATERIAL: **BARE/PAINT/ASPH COAT STEEL**
TANK INSTALL DATE: **1/1/1968**
STATUS CHANGE DATE: **6/1/1989**
TANK STATUS: **REMOVED**
TANKS CONTRACTOR: **NOT REPORTED**

Back to Report Summary

MAP ID# 1

Distance from Property: 0 mi. (0 ft.) X
Elevation: 1,112 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **117511**

SITE ID: **117511**

SITE NAME: **MAYNARDS AUTO SERVICE**

ADDRESS: **10881 E 260TH ST**
ELKO NEW MARKET, MN 55020 SCOTT

SITE URL: **https://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=117511**

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **MULTIPLE ACTIVITIES**

COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **PETROLEUM REMEDIATION, LEAK SITE; UNDERGROUND TANKS**

MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **MULTIPLE IDS**

COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **LS0001796; TS0012883**

COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **SR; TL**

NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **MULTIPLE PROGRAMS**

COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **INVESTIGATION AND CLEANUP; TANKS**

PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**

INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

Back to Report Summary

MAP ID# 1

Distance from Property: 0 mi. (0 ft.) X
Elevation: 1,112 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **23406**

SITE ID: **23406**

SITE NAME: **TWIN CITIES FEATHERLITE TRAILER SALES**

ADDRESS: **10881 260 ST E**
ELKO, MN 55020 SCOTT

SITE URL: **https://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=23406**

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **HAZARDOUS WASTE, MINIMAL QUANTITY GENERATOR**

COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **HAZARDOUS WASTE, MINIMAL QUANTITY GENERATOR**

MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **MNR000021360**

COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **MNR000021360**

COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HW**

NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**

COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**

PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **AUTOMOBILE AND OTHER MOTOR VEHICLE MERCHANT WHOLESALERS ; MOTORCYCLE, ATV, AND ALL OTHER MOTOR VEHICLE DEALERS ; GENERAL AUTOMOTIVE REPAIR**

INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

Back to Report Summary

Concentrated Animal Feeding Operations (CAFO)

MAP ID# 2

Distance from Property: 0 mi. (0 ft.) X
Elevation: 1,117 ft. (Higher than TP)

FACILITY INFORMATION

GEOSEARCH ID: **54242-AREA00000001**
AGENCY INTEREST ID: **54242**
FEEDLOT NAME: **ROBERT ADELMANN FARM**
ADDRESS: **10880 E 260TH ST**
ELKO NEW MARKET, MN 55020
COUNTY: **SCOTT**

OWNER NAME: **ROBERT ADELMANN FARM**
OWNER MAILING ADDRESS: **22553 DENMARK AVE**
CITY NOT REPORTED, STATE NOT REPORTED
OWNER PHONE: **NOT REPORTED**

FACILITY DETAILS

FEEDLOT PERMIT NUMBER: **NOT REPORTED**
PERMIT STATUS: **NOT REPORTED**
START DATE FOR THE MOST RECENT PERMIT: **NOT REPORTED**
END DATE FOR THE MOST RECENT PERMIT: **NOT REPORTED**
CONTACT PERSON: **ROBERT ADELMANN**
CONTACT ADDRESS: **22553 DENMARK AVE**
FARMINGTON, MN 550241686
CONTACT PHONE: **651-463-2499**
A 'Y' OR 'N' VALUE TO IDENTIFY WHETHER THIS FACILITY IS CONSIDERED A CONCENTRATED ANIMAL FEEDING OPERATION (CAFO): **NOT REPORTED**
ARE THERE CONFINEMENT BUILDINGS?: **Y**
IS THERE A PASTURE?: **Y**
A 'Y' OR 'N' VALUE TO INDICATE WHETHER THE FACILITY CONTAINS A LIQUID MANURE STORAGE AREA?: **N**
IS THERE A MANURE STOCKPILE?: **N**
SURFACE WATER TYPES THAT ARE WITHIN 1,000 FEET OF THE FACILITY: **UNKW**
IS IT WITHIN SHORELAND?: **N**
DISTANCE FROM ANIMAL HOLDING AREA TO A WELL (IN FEET): **500**
DISTANCE FROM MANURE STORAGE AREA TO A WELL (IN FEET): **500**
NUMBER OF TOTAL ANIMALS UNITS ON THE PREMISE/FEEDLOT: **NOT REPORTED**
TOTAL ANIMAL COUNT (SUM OF ALL OF THE ANIMAL COUNT FIELDS): **NOT REPORTED**
THE PRIMARY TYPE OF ANIMAL AT THIS FEEDLOT: **BEEF CATTLE - COW & CALF PAIR**

SUBJECT ITEM CATEGORY CODE: **AREA**
SUBJECT ITEM ID: **1**
A LIST OF PROGRAMS WITH ACTIVITIES AT THE FEEDLOT: **FE**
THE ACTIVITY ID FOR THE MOST RECENT REGISTRATION: **REG20060001**
THE MPCA REGISTRATION NUMBER: **139-63150**
REGISTRATION START DATE: **6/30/2006 0:00**
REGISTRATION END DATE: **6/30/2010 0:00**

Back to Report Summary

Feedlots (FEEDLOT)

MAP ID# 2

Distance from Property: 0 mi. (0 ft.) X
Elevation: 1,117 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **54242FEED**
SITE ID: **54242**
SITE NAME: **ROBERT ADELMANN FARM**
ADDRESS: **10880 E 260TH ST**
ELKO NEW MARKET, MN 55020 SCOTT
SITE URL: **https://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=54242**

FACILITY DETAILS

ID: **139-63150**
TYPE: **FEEDLOTS**
WATERSHED: **MISSISSIPPI RIVER - LAKE PEPIN**
ACTIVE?: **YES**
INDUSTRY CLASSIFICATION: **NOT REPORTED**
INSTITUTIONAL CONTROLS: **NO**

Back to Report Summary

Facility Registry System (FRSMN)

MAP ID# 2

Distance from Property: 0 mi. (0 ft.) X
Elevation: 1,117 ft. (Higher than TP)

FACILITY INFORMATION

REGISTRY ID: **110068955367**

NAME: **ROBERT ADELMANN FARM**

LOCATION ADDRESS: **10880 E 260TH ST**
NEW MARKET TOWNSHIP, MN 55020

COUNTY: **SCOTT**

EPA REGION: **05**

FEDERAL FACILITY: **NOT REPORTED**

TRIBAL LAND: **NOT REPORTED**

ALTERNATIVE NAME/S:

ROBERT ADELMANN FARM

PROGRAM/S LISTED FOR THIS FACILITY

MN-TEMPO - MN-TEMPO

STANDARD INDUSTRIAL CLASSIFICATION/S (SIC)

NO SIC DATA REPORTED

NORTH AMERICAN INDUSTRY CLASSIFICATION/S (NAICS)

NO NAICS DATA REPORTED

Back to Report Summary

What's In My Neighborhood Database (WIMN)

MAP ID# 2

Distance from Property: 0 mi. (0 ft.) X
Elevation: 1,117 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **54242**
SITE ID: **54242**
SITE NAME: **ROBERT ADELMANN FARM**
ADDRESS: **10880 E 260TH ST**
ELKO NEW MARKET, MN 55020 SCOTT
SITE URL: **https://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=54242**

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **FEEDLOTS**
COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **FEEDLOTS**
MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **139-63150**
COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **139-63150**
COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **FE**
NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **FEEDLOTS**
COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **FEEDLOTS**
PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**
INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

Back to Report Summary

Hazardous Waste Generator Sites (HWGS)

MAP ID# 3

Distance from Property: 0.045 mi. (238 ft.) W
Elevation: 1,124 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **134728HWGS**
SITE ID: **134728**
SITE NAME: **SHOPSABRE**
ADDRESS: **26151 NEWTON CIR**
ELKO NEW MARKET, MN 55020 SCOTT
SITE URL: **https://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=134728**

FACILITY DETAILS

ID: **MNS000153072**
TYPE: **HAZARDOUS WASTE**
WATERSHED: **MISSISSIPPI RIVER - LAKE PEPIN**
ACTIVE?: **YES**
INDUSTRY CLASSIFICATION: **GENERAL AUTOMOTIVE REPAIR**
INSTITUTIONAL CONTROLS: **NO**

Back to Report Summary

What's In My Neighborhood Database (WIMN)

MAP ID# 3

Distance from Property: 0.045 mi. (238 ft.) W
Elevation: 1,124 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **134728**
SITE ID: **134728**
SITE NAME: **SHOPSABRE**
ADDRESS: **26151 NEWTON CIR**
ELKO NEW MARKET, MN 55020 SCOTT
SITE URL: **https://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=134728**

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **HAZARDOUS WASTE, VERY SMALL QUANTITY GENERATOR**
COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **HAZARDOUS WASTE, VERY SMALL QUANTITY GENERATOR**
MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **MNS000153072**
COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **MNS000153072**
COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HW**
NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**
COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**
PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **GENERAL AUTOMOTIVE REPAIR**
INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

Back to Report Summary

Hazardous Waste Generator Sites (HWGS)

MAP ID# 4

Distance from Property: 0.055 mi. (290 ft.) W
Elevation: 1,118 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **21458HWGS**
SITE ID: **21458**
SITE NAME: **DAKOTA BLACKTOPPING**
ADDRESS: **26105 NEWTON CIR**
ELKO NEW MARKET, MN 55020-9435 SCOTT
SITE URL: **https://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=21458**

FACILITY DETAILS

ID: **MNR000060673**
TYPE: **HAZARDOUS WASTE**
WATERSHED: **MISSISSIPPI RIVER - LAKE PEPIN**
ACTIVE?: **YES**
INDUSTRY CLASSIFICATION: **NOT REPORTED**
INSTITUTIONAL CONTROLS: **NO**

Back to Report Summary

Resource Conservation & Recovery Act - Generator (RCRAGR05)

MAP ID# 4

Distance from Property: 0.055 mi. (290 ft.) W
Elevation: 1,118 ft. (Higher than TP)

FACILITY INFORMATION

EPA ID#: **MNR000060673**
NAME: **DAKOTA BLACKTOPPING**
ADDRESS: **26105 NEWTON CIR**
ELKO, MN 55020-9435
CONTACT NAME: **NOT REPORTED**
CONTACT ADDRESS: **26105 NEWTON CIR**
ELKO MN 55020-9435
CONTACT PHONE: **NOT REPORTED**
NON-NOTIFIER: **NOT A NON-NOTIFIER**
DATE RECEIVED BY AGENCY: **08/07/1998**

OWNER TYPE: **PRIVATE**
OWNER NAME: **DAKOTA BLACKTOPPING**
OPERATOR TYPE: **NOT REPORTED**
OPERATOR NAME: **NOT REPORTED**

CERTIFICATION **- NO CERTIFICATION REPORTED -**

INDUSTRY CLASSIFICATION (NAICS) **- NO NAICS INFORMATION REPORTED -**

CURRENT ACTIVITY INFORMATION

GENERATOR STATUS: **CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR** LAST UPDATED DATE: **06/20/2007**
SUBJECT TO CORRECTIVE ACTION UNIVERSE: **NO**
TDSFs POTENTIALLY SUBJECT TO CORRECTIVE ACTION UNDER 3004 (u)/(v) UNIVERSE: **NO**
TDSFs ONLY SUBJECT TO CORRECTIVE ACTION UNDER DISCRETIONARY AUTHORITIES UNIVERSE: **NO**
NON TSDFs WHERE RCRA CORRECTIVE ACTION HAS BEEN IMPOSED UNIVERSE: **NO**
CORRECTIVE ACTION WORKLOAD UNIVERSE: **NO**

IMPORTER: **NO**
MIXED WASTE GENERATOR: **NO**
RECYCLER: **NO**
TRANSPORTER: **NO**
ONSITE BURNER EXEMPTION: **NO**
FURNACE EXEMPTION: **NO**
USED OIL REFINER: **NO**
USED OIL TRANSFER FACILITY: **NO**

UNDERGROUND INJECTION: **NO**
UNIVERSAL WASTE DESTINATION FACILITY: **NO**
TRANSFER FACILITY: **NO**
USED OIL FUEL BURNER: **NO**
USED OIL PROCESSOR: **NO**
USED OIL FUEL MARKETER TO BURNER: **NO**
SPECIFICATION USED OIL MARKETER: **NO**
USED OIL TRANSPORTER: **NO**

COMPLIANCE, MONITORING AND ENFORCEMENT INFORMATION

EVALUATIONS **- NO EVALUATIONS REPORTED -**

VIOLATIONS **- NO VIOLATIONS REPORTED -**

ENFORCEMENTS **- NO ENFORCEMENTS REPORTED -**

HAZARDOUS WASTE

D000

D001 **IGNITABLE WASTE**

D002 **CORROSIVE WASTE**

D009 **MERCURY**

F005 **THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE,CARBON DISULFIDE, ISOBUTANOL, PYRIDINE,BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001,F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.**

X001

UNIVERSAL WASTE **- NO UNIVERSAL WASTE REPORTED -**

CORRECTIVE ACTION AREA **- NO CORRECTIVE ACTION AREA INFORMATION REPORTED -**

CORRECTIVE ACTION EVENT

NO CORRECTIVE ACTION EVENT(S) REPORTED

Back to Report Summary

MAP ID# 4

Distance from Property: 0.055 mi. (290 ft.) W
Elevation: 1,118 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **21458**
SITE ID: **21458**
SITE NAME: **DAKOTA BLACKTOPPING**
ADDRESS: **26105 NEWTON CIR**
ELKO NEW MARKET, MN 55020-9435 SCOTT
SITE URL: **https://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=21458**

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **HAZARDOUS WASTE, VERY SMALL QUANTITY GENERATOR**
COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **HAZARDOUS WASTE, VERY SMALL QUANTITY GENERATOR**
MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **MNR000060673**
COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **MNR000060673**
COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HW**
NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**
COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**
PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**
INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

Back to Report Summary

Resource Conservation & Recovery Act - Generator (RCRAGR05)

MAP ID# 5

Distance from Property: 0.103 mi. (544 ft.) W
Elevation: 1,118 ft. (Higher than TP)

FACILITY INFORMATION

EPA ID#: **MNR000021915**
NAME: **BODYWERKS**
ADDRESS: **26106 NEWTON CIR**
ELKO, MN 55020-9469
CONTACT NAME: **JAMES WEINTZE**
CONTACT ADDRESS: **26106 NEWTON CIR**
ELKO MN 55020-9469
CONTACT PHONE: **952-461-5070**
NON-NOTIFIER: **NOT A NON-NOTIFIER**
DATE RECEIVED BY AGENCY: **05/13/1996**

OWNER TYPE: **PRIVATE**
OWNER NAME: **BODYWERKS**
OPERATOR TYPE: **NOT REPORTED**
OPERATOR NAME: **NOT REPORTED**

CERTIFICATION **- NO CERTIFICATION REPORTED -**

INDUSTRY CLASSIFICATION (NAICS) **- NO NAICS INFORMATION REPORTED -**

CURRENT ACTIVITY INFORMATION

GENERATOR STATUS: **CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR** LAST UPDATED DATE: **06/20/2007**
SUBJECT TO CORRECTIVE ACTION UNIVERSE: **NO**
TDSFs POTENTIALLY SUBJECT TO CORRECTIVE ACTION UNDER 3004 (u)/(v) UNIVERSE: **NO**
TDSFs ONLY SUBJECT TO CORRECTIVE ACTION UNDER DISCRETIONARY AUTHORITIES UNIVERSE: **NO**
NON TSDFs WHERE RCRA CORRECTIVE ACTION HAS BEEN IMPOSED UNIVERSE: **NO**
CORRECTIVE ACTION WORKLOAD UNIVERSE: **NO**

IMPORTER: **NO**
MIXED WASTE GENERATOR: **NO**
RECYCLER: **NO**
TRANSPORTER: **NO**
ONSITE BURNER EXEMPTION: **NO**
FURNACE EXEMPTION: **NO**
USED OIL REFINER: **NO**
USED OIL TRANSFER FACILITY: **NO**

UNDERGROUND INJECTION: **NO**
UNIVERSAL WASTE DESTINATION FACILITY: **NO**
TRANSFER FACILITY: **NO**
USED OIL FUEL BURNER: **NO**
USED OIL PROCESSOR: **NO**
USED OIL FUEL MARKETER TO BURNER: **NO**
SPECIFICATION USED OIL MARKETER: **NO**
USED OIL TRANSPORTER: **NO**

COMPLIANCE, MONITORING AND ENFORCEMENT INFORMATION

EVALUATIONS **- NO EVALUATIONS REPORTED -**

VIOLATIONS **- NO VIOLATIONS REPORTED -**

ENFORCEMENTS **- NO ENFORCEMENTS REPORTED -**

HAZARDOUS WASTE

D000

D008 **LEAD**

D009 **MERCURY**

F005 **THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE,CARBON DISULFIDE, ISOBUTANOL, PYRIDINE,BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001,F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.**

UNIVERSAL WASTE **- NO UNIVERSAL WASTE REPORTED -**

CORRECTIVE ACTION AREA **- NO CORRECTIVE ACTION AREA INFORMATION REPORTED -**

CORRECTIVE ACTION EVENT

NO CORRECTIVE ACTION EVENT(S) REPORTED

Back to Report Summary

MAP ID# 5

Distance from Property: 0.103 mi. (544 ft.) W
Elevation: 1,118 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **30474**
SITE ID: **30474**
SITE NAME: **EAGLE CREEK AUTO REPAIR**
ADDRESS: **26106 NEWTON CIR**
ELKO NEW MARKET, MN 55020 SCOTT
SITE URL: **https://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=30474**

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **HAZARDOUS WASTE**
COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **HAZARDOUS WASTE**
MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **MNR000021915**
COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **MNR000021915**
COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HW**
NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**
COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**
PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **GENERAL AUTOMOTIVE REPAIR ; AUTOMOTIVE BODY, PAINT, AND INTERIOR REPAIR AND MAINTENANCE**
INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

Back to Report Summary

MAP ID# 6

Distance from Property: 0.167 mi. (882 ft.) S
Elevation: 1,121 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **30860**
SITE ID: **30860**
SITE NAME: **NIEMEYERS TRAILER SALES**
ADDRESS: **10405 260TH ST E**
ELKO NEW MARKET, MN 55020 SCOTT
SITE URL: **https://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=30860**

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **HAZARDOUS WASTE, VERY SMALL QUANTITY GENERATOR**
COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **HAZARDOUS WASTE, VERY SMALL QUANTITY GENERATOR**
MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **MND985708098**
COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **MND985708098**
COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HW**
NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**
COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**
PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **MOTORCYCLE, ATV, AND ALL OTHER MOTOR VEHICLE DEALERS ; GENERAL AUTOMOTIVE REPAIR**
INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

Back to Report Summary

Bulk Storage Permits (BULKSTORAGE)

MAP ID# 7

Distance from Property: 0.167 mi. (882 ft.) W
Elevation: 1,131 ft. (Higher than TP)

PERMIT INFORMATION

PERMIT #: **20025818**
NAME: **LANGER HARVEY H**
ADDRESS: **26257 THOMAS AVE**
ELKO, MN 55020
PERMIT TYPE: **FERTILIZER LICENSE**
PERMIT STATUS: **OUT OF BUSINESS**

Back to Report Summary

Registered Storage Tanks (UAST)

MAP ID# 8

Distance from Property: 0.177 mi. (935 ft.) ESE
Elevation: 1,120 ft. (Higher than TP)

FACILITY INFORMATION

Note: Data is current as of February 09th, 2018

GEOSEARCH ID: **117770UAST**

AGENCY INTEREST(AI) ID: **117770**

AGENCY INTEREST(AI) NAME: **ANDERSON ZWEERS**

ADDRESS: **11110 DEUCE RD**
ELKO NEW MARKET, MN 55020

OWNER: **ANDERSON ZWEERS**

OWNER ADDRESS: **NOT REPORTED**
NOT REPORTED, NOT REPORTED NOT REPORTED

FACILITY DETAILS

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **117770-EQUI0000000001**

ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **117770-EQUI0000000001-1**

TANK SITE ID: **TS0012096**

COMPARTMENT NUMBER WITHIN THE TANK: **1**

CAPACITY OF THIS COMPARTMENT IN GALLONS: **8000**

SUBSTANCE IN THE TANK: **FUEL OIL**

TANK WALL TYPE: **SINGLE**

TANK MATERIAL: **BARE/PAINT/ASPH COAT STEEL**

TANK INSTALL DATE: **12/31/1899**

STATUS CHANGE DATE: **12/31/1899**

TANK STATUS: **REMOVED**

TANKS CONTRACTOR: **NOT REPORTED**

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **117770-EQUI0000000002**

ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **117770-EQUI0000000002-1**

TANK SITE ID: **TS0012096**

COMPARTMENT NUMBER WITHIN THE TANK: **1**

CAPACITY OF THIS COMPARTMENT IN GALLONS: **8000**

SUBSTANCE IN THE TANK: **FUEL OIL**

TANK WALL TYPE: **SINGLE**

TANK MATERIAL: **BARE/PAINT/ASPH COAT STEEL**

TANK INSTALL DATE: **12/31/1899**

STATUS CHANGE DATE: **12/31/1899**

TANK STATUS: **REMOVED**

TANKS CONTRACTOR: **NOT REPORTED**

Back to Report Summary

What's In My Neighborhood Database (WIMN)

MAP ID# 8

Distance from Property: 0.177 mi. (935 ft.) ESE
Elevation: 1,120 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **117770**
SITE ID: **117770**
SITE NAME: **ANDERSON ZWEERS**
ADDRESS: **11110 DEUCE RD**
ELKO NEW MARKET, MN 55020 SCOTT
SITE URL: **https://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=117770**

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **UNDERGROUND TANKS**
COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **UNDERGROUND TANKS**
MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **TS0012096**
COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **TS0012096**
COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **TL**
NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **TANKS**
COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **TANKS**
PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**
INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

Back to Report Summary

MPCA Remediation Sites (REMSITES)

MAP ID# 9

Distance from Property: 0.191 mi. (1,008 ft.) SSW
Elevation: 1,106 ft. (Higher than TP)

FACILITY INFORMATION

GEOSEARCH ID: **196168**
AGENCY INTEREST(AI) ID: **196168**
ITEM ID: **196168-AREA0000000001**
AGENCY INTEREST(AI) NAME: **ELKO DUMP**
ADDRESS: **SEE LOCATION DESCRIPTION**
ELKO NEW MARKET, MN 55020
COUNTY: **SCOTT**
LOCATION DESCRIPTION: **APPROXIMATELY .8 MILES W ON HWY #2 FROM THE HWY #2 & I-35 INTERSECTION**
APPROX. .8 MILE WEST ON HWY. 2 FROM HWY. 2 AND I-35 INTERSECTION. SOUTH FROM RR CROSSING.
SITE URL: *LINK*

FACILITY DETAILS

TYPE OF REMEDIATION SITE: **SITE ASSESSMENT SITE**
SITE ID: **SA0008744**
SITE NAME: **ELKO DUMP**
ACREAGE FOR THIS PROJECT: **NOT REPORTED**
MPCA HYDROGEOLOGIST OR HYDROLOGIST ASSIGNED TO THE SITE: **NOT REPORTED**
MPCA PROJECT MANAGER ASSIGNED TO THE SITE: **NOT REPORTED**
HAS THIS SITE EVER BEEN LISTED ON THE NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST)?: **NOT REPORTED**
HAS THIS SITE EVER BEEN LISTED ON THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST)?:
NOT REPORTED
FOR BROWNFIELDS, IS THIS A PETROLEUM BROWNFIELD?: **NOT REPORTED**
FOR BROWNFIELDS, IS THIS A NON-PETROLEUM BROWNFIELD AKA VOLUNTARY INVESTIGATION AND CLEANUP (VIC) SITE?:
NOT REPORTED
WAS THIS LISTED ON EPA'S CERCLIS/SEMS LIST?: **NOT REPORTED**
WAS THIS AN UNPERMITTED DUMP?: **YES**
TO OUR KNOWLEDGE, ARE THERE INSTITUTIONAL CONTROLS AT THIS SITE?: **NOT REPORTED**
SCORE FOR THIS SITE, USING THE US EPA'S HAZARD RANKING SYSTEM (HRS): **NOT REPORTED**
YEAR FOR THE HRS SCORE: **NOT REPORTED**
UNIQUE ID FOR AN INVESTIGATION PROJECT THAT INVOLVED THIS SITE: **SIW19980001**
DESCRIPTION FOR THE KIND OF INVESTIGATION PROJECT: **SITE ASSESSMENT INVESTIGATION**
RELEASE DISCOVERED: **NOT REPORTED**
RELEASE REPORTED: **NOT REPORTED**
DATE THE APPLICATION / NOTIFICATION RECEIVED: **1/1/1987**
DATE THIS SITE WAS LISTED ON THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST): **NOT REPORTED**
DATE THIS SITE WAS DELISTED FROM THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST): **NOT REPORTED**
DATE THIS SITE WAS LISTED ON THE NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST): **NOT REPORTED**
DATE THIS SITE WAS DELETED FROM NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST): **NOT REPORTED**
SITE CLOSURE DATE: **4/20/1998**
FUND FINANCE APPROVED: **NOT REPORTED**
FUND FINANCE CLOSED: **NOT REPORTED**
ASSESSMENT COMPLETED: **NOT REPORTED**
INVESTIGATION COMPLETED: **NOT REPORTED**
NO FURTHER ACTION DECISION: **NOT REPORTED**

REMEDY IMPLEMENTED: **NOT REPORTED**
REMEDY SELECTED: **NOT REPORTED**
STATUS OF THE SITE: **CLOSED**

Back to Report Summary

State Assessment Sites (SAS)

MAP ID# 9

Distance from Property: 0.191 mi. (1,008 ft.) SSW
Elevation: 1,106 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **196168SAS**
SITE ID: **196168**
SITE NAME: **ELKO DUMP**
ADDRESS: **SEE LOCATION DESCRIPTION**
ELKO NEW MARKET, MN 55020 SCOTT
SITE URL: **https://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=196168**

FACILITY DETAILS

ID: **SA0008744**
TYPE: **SITE ASSESSMENT**
WATERSHED: **MISSISSIPPI RIVER - LAKE PEPIN**
ACTIVE?: **NO**
INDUSTRY CLASSIFICATION: **NOT REPORTED**
INSTITUTIONAL CONTROLS: **NO**

Back to Report Summary

MAP ID# 9

Distance from Property: 0.191 mi. (1,008 ft.) SSW
Elevation: 1,106 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **196168**
SITE ID: **196168**
SITE NAME: **ELKO DUMP**
ADDRESS: **SEE LOCATION DESCRIPTION**
ELKO NEW MARKET, MN 55020 SCOTT
SITE URL: **https://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=196168**

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **SITE ASSESSMENT**
COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **SITE ASSESSMENT**
MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **SA0008744**
COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **SA0008744**
COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **SR**
NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **INVESTIGATION AND CLEANUP**
COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **INVESTIGATION AND CLEANUP**
PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**
INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

Back to Report Summary

Concentrated Animal Feeding Operations (CAFO)

MAP ID# 10

Distance from Property: 0.196 mi. (1,035 ft.) WNW
Elevation: 1,109 ft. (Higher than TP)

FACILITY INFORMATION

GEOSEARCH ID: **60794-AREA00000001**
AGENCY INTEREST ID: **60794**
FEEDLOT NAME: **RAY DEUTSCH FARM**
ADDRESS: **25421 XERXES AVE**
ELKO NEW MARKET, MN 55020
COUNTY: **SCOTT**

OWNER NAME: **RAY DEUTSCH FARM**
OWNER MAILING ADDRESS: **25421 XERXES AVE**
CITY NOT REPORTED, STATE NOT REPORTED
OWNER PHONE: **NOT REPORTED**

FACILITY DETAILS

FEEDLOT PERMIT NUMBER: **NOT REPORTED**
PERMIT STATUS: **NOT REPORTED**
START DATE FOR THE MOST RECENT PERMIT: **NOT REPORTED**
END DATE FOR THE MOST RECENT PERMIT: **NOT REPORTED**
CONTACT PERSON: **RAY DEUTSCH**
CONTACT ADDRESS: **25421 XERXES AVE**
ELKO NEW MARKET, MN 55020
CONTACT PHONE: **952-461-2506**
A 'Y' OR 'N' VALUE TO IDENTIFY WHETHER THIS FACILITY IS CONSIDERED A CONCENTRATED ANIMAL FEEDING OPERATION (CAFO): **NOT REPORTED**
ARE THERE CONFINEMENT BUILDINGS?: **Y**
IS THERE A PASTURE?: **Y**
A 'Y' OR 'N' VALUE TO INDICATE WHETHER THE FACILITY CONTAINS A LIQUID MANURE STORAGE AREA?: **N**
IS THERE A MANURE STOCKPILE?: **Y**
SURFACE WATER TYPES THAT ARE WITHIN 1,000 FEET OF THE FACILITY: **UNKW**
IS IT WITHIN SHORELAND?: **N**
DISTANCE FROM ANIMAL HOLDING AREA TO A WELL (IN FEET): **400**
DISTANCE FROM MANURE STORAGE AREA TO A WELL (IN FEET): **500**
NUMBER OF TOTAL ANIMALS UNITS ON THE PREMISE/FEEDLOT: **119**
TOTAL ANIMAL COUNT (SUM OF ALL OF THE ANIMAL COUNT FIELDS): **85**
THE PRIMARY TYPE OF ANIMAL AT THIS FEEDLOT: **DAIRY CATTLE >1000 LB**

SUBJECT ITEM CATEGORY CODE: **AREA**
SUBJECT ITEM ID: **1**
A LIST OF PROGRAMS WITH ACTIVITIES AT THE FEEDLOT: **FE**
THE ACTIVITY ID FOR THE MOST RECENT REGISTRATION: **REG20140001**
THE MPCA REGISTRATION NUMBER: **139-60884**
REGISTRATION START DATE: **6/30/2014 0:00**
REGISTRATION END DATE: **6/30/2018 0:00**

Concentrated Animal Feeding Operations (CAFO)

Back to Report Summary

What's In My Neighborhood Database (WIMN)

MAP ID# 10

Distance from Property: 0.196 mi. (1,035 ft.) WNW
Elevation: 1,109 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **60794**
SITE ID: **60794**
SITE NAME: **RAY DEUTSCH FARM**
ADDRESS: **25421 XERXES AVE**
ELKO NEW MARKET, MN 55020 SCOTT
SITE URL: **https://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=60794**

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **FEEDLOTS**
COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **FEEDLOTS**
MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **139-60884**
COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **139-60884**
COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **FE**
NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **FEEDLOTS**
COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **FEEDLOTS**
PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**
INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

Back to Report Summary

Registered Leaking Storage Tanks (LUAST)

MAP ID# 11

Distance from Property: 0.222 mi. (1,172 ft.) ENE
Elevation: 1,121 ft. (Higher than TP)

FACILITY INFORMATION

GEOSEARCH ID: **47272LUAST**
AGENCY INTEREST(AI) ID: **47272**
ITEM ID: **47272-AREA0000000001**
AGENCY INTEREST(AI) NAME: **PARKS AUTO**
ADDRESS: **11111 DEUCE RD STE 5**
ELKO NEW MARKET, MN 55020
COUNTY: **SCOTT**
LOCATION DESCRIPTION: **SITE CENTER**
SITE URL: *LINK*

FACILITY DETAILS

TYPE OF REMEDIATION SITE: **LEAK SITE**
SITE ID: **LS0015935**
SITE NAME: **G & T TRUCKING**
ACREAGE FOR THIS PROJECT: **NOT REPORTED**
MPCA HYDROGEOLOGIST OR HYDROLOGIST ASSIGNED TO THE SITE: **NOT REPORTED**
MPCA PROJECT MANAGER ASSIGNED TO THE SITE: **JESSICA EBERTZ (FORMER)**
HAS THIS SITE EVER BEEN LISTED ON THE NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST)?: **NOT REPORTED**
HAS THIS SITE EVER BEEN LISTED ON THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST)?:
NOT REPORTED
FOR BROWNFIELDS, IS THIS A PETROLEUM BROWNFIELD?: **NOT REPORTED**
FOR BROWNFIELDS, IS THIS A NON-PETROLEUM BROWNFIELD AKA VOLUNTARY INVESTIGATION AND CLEANUP (VIC) SITE?:
NOT REPORTED
WAS THIS LISTED ON EPA'S CERCLIS/SEMS LIST?: **NOT REPORTED**
WAS THIS AN UNPERMITTED DUMP?: **NOT REPORTED**
TO OUR KNOWLEDGE, ARE THERE INSTITUTIONAL CONTROLS AT THIS SITE?: **NOT REPORTED**
SCORE FOR THIS SITE, USING THE US EPA'S HAZARD RANKING SYSTEM (HRS): **NOT REPORTED**
YEAR FOR THE HRS SCORE: **NOT REPORTED**
UNIQUE ID FOR AN INVESTIGATION PROJECT THAT INVOLVED THIS SITE: **SIW20040001**
DESCRIPTION FOR THE KIND OF INVESTIGATION PROJECT: **LEAK SITE INVESTIGATION**
RELEASE DISCOVERED: **11/19/2004**
RELEASE REPORTED: **11/22/2004**
DATE THE APPLICATION / NOTIFICATION RECEIVED: **NOT REPORTED**
DATE THIS SITE WAS LISTED ON THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST): **NOT REPORTED**
DATE THIS SITE WAS DELISTED FROM THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST): **NOT REPORTED**
DATE THIS SITE WAS LISTED ON THE NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST): **NOT REPORTED**
DATE THIS SITE WAS DELETED FROM NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST): **NOT REPORTED**
SITE CLOSURE DATE: **6/27/2005**
FUND FINANCE APPROVED: **NOT REPORTED**
FUND FINANCE CLOSED: **NOT REPORTED**
ASSESSMENT COMPLETED: **NOT REPORTED**
INVESTIGATION COMPLETED: **NOT REPORTED**
NO FURTHER ACTION DECISION: **NOT REPORTED**
REMEDY IMPLEMENTED: **NOT REPORTED**

REMEDY SELECTED: **NOT REPORTED**
STATUS OF THE SITE: **CLOSED**

TYPE OF REMEDIATION SITE: **LEAK SITE**
SITE ID: **LS0016832**
SITE NAME: **G AND T TRUCKING CO**
ACREAGE FOR THIS PROJECT: **NOT REPORTED**
MPCA HYDROGEOLOGIST OR HYDROLOGIST ASSIGNED TO THE SITE: **JIM PENNINO (FORMER)**
MPCA PROJECT MANAGER ASSIGNED TO THE SITE: **KATHERINE LEWISON (FORMER)**
HAS THIS SITE EVER BEEN LISTED ON THE NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST)?: **NOT REPORTED**
HAS THIS SITE EVER BEEN LISTED ON THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST)?:
NOT REPORTED
FOR BROWNFIELDS, IS THIS A PETROLEUM BROWNFIELD?: **NOT REPORTED**
FOR BROWNFIELDS, IS THIS A NON-PETROLEUM BROWNFIELD AKA VOLUNTARY INVESTIGATION AND CLEANUP (VIC) SITE?:
NOT REPORTED
WAS THIS LISTED ON EPA'S CERCLIS/SEMS LIST?: **NOT REPORTED**
WAS THIS AN UNPERMITTED DUMP?: **NOT REPORTED**
TO OUR KNOWLEDGE, ARE THERE INSTITUTIONAL CONTROLS AT THIS SITE?: **NOT REPORTED**
SCORE FOR THIS SITE, USING THE US EPA'S HAZARD RANKING SYSTEM (HRS): **NOT REPORTED**
YEAR FOR THE HRS SCORE: **NOT REPORTED**
UNIQUE ID FOR AN INVESTIGATION PROJECT THAT INVOLVED THIS SITE: **SIW20070001**
DESCRIPTION FOR THE KIND OF INVESTIGATION PROJECT: **LEAK SITE INVESTIGATION**
RELEASE DISCOVERED: **5/17/2007**
RELEASE REPORTED: **5/17/2007**
DATE THE APPLICATION / NOTIFICATION RECEIVED: **NOT REPORTED**
DATE THIS SITE WAS LISTED ON THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST): **NOT REPORTED**
DATE THIS SITE WAS DELISTED FROM THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST): **NOT REPORTED**
DATE THIS SITE WAS LISTED ON THE NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST): **NOT REPORTED**
DATE THIS SITE WAS DELETED FROM NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST): **NOT REPORTED**
SITE CLOSURE DATE: **12/22/2009**
FUND FINANCE APPROVED: **NOT REPORTED**
FUND FINANCE CLOSED: **NOT REPORTED**
ASSESSMENT COMPLETED: **NOT REPORTED**
INVESTIGATION COMPLETED: **NOT REPORTED**
NO FURTHER ACTION DECISION: **NOT REPORTED**
REMEDY IMPLEMENTED: **NOT REPORTED**
REMEDY SELECTED: **NOT REPORTED**
STATUS OF THE SITE: **CLOSED**

Back to Report Summary

Registered Leaking Storage Tanks Prior to April 2016 (LUAST2016)

MAP ID# 11

Distance from Property: 0.222 mi. (1,172 ft.) ENE
Elevation: 1,121 ft. (Higher than TP)

SITE INFORMATION

GEOSEARCH ID: **15935LUAST**
LEAK ID: **15935**
NAME: **G & T TRUCKING**
ADDRESS: **11111 DEUCE RD STE 5**
ELKO, MN 55020
RELEASE DISCOVERED: **11/19/2004 00:00:00**
RELEASE REPORT: **11/22/2004 00:00:00**
CONDITIONAL CLOSURE DATE: **NOT REPORTED**
COMPLETE SITE CLOSURE DATE: **06/27/2005 00:00:00**
COMTAMINATED SOILS REMAINING: **YES**
OFFSITE COMTAMINATION: **NO**
PRODUCT RELEASED: **USED OIL**

GROUND WATER

DRINKING WATER CONTAMINATION: **NO**
FREE PRODUCT OBSERVED: **NOT REPORTED**
FREE PRODUCT THICKNESS: **NOT REPORTED**
GROUNDWATER CONTAMINATION: **YES**

CLEANUP ACTIONS

- NO CLEANUP ACTIONS REPORTED

INTEREST TYPE:	LAST UPDATE:
LEAK SITE	**11/10/2014 08:17:05**
DELETED LEAK SITE	**03/24/2006 13:06:30**

Back to Report Summary

Registered Leaking Storage Tanks Prior to April 2016 (LUAST2016)

MAP ID# 11

Distance from Property: 0.222 mi. (1,172 ft.) ENE
Elevation: 1,121 ft. (Higher than TP)

SITE INFORMATION

GEOSEARCH ID: **16832LUAST**
LEAK ID: **16832**
NAME: **G AND T TRUCKING CO**
ADDRESS: **11111 DEUCE RD STE 5**
ELKO, MN 55020
RELEASE DISCOVERED: **05/17/2007 00:00:00**
RELEASE REPORT: **05/17/2007 00:00:00**
CONDITIONAL CLOSURE DATE: **NOT REPORTED**
COMPLETE SITE CLOSURE DATE: **12/22/2009 00:00:00**
COMTAMINATED SOILS REMAINING: **UNKNOWN**
OFFSITE COMTAMINATION: **UNKNOWN**
PRODUCT RELEASED: **DIESEL**

GROUND WATER

DRINKING WATER CONTAMINATION: **NOT REPORTED**
FREE PRODUCT OBSERVED: **NOT REPORTED**
FREE PRODUCT THICKNESS: **NOT REPORTED**
GROUNDWATER CONTAMINATION: **YES**

CLEANUP ACTIONS

- NO CLEANUP ACTIONS REPORTED

INTEREST TYPE:
LEAK SITE

LAST UPDATE:
01/21/2015 08:13:17

Back to Report Summary

Registered Storage Tanks (UAST)

MAP ID# 11

Distance from Property: 0.222 mi. (1,172 ft.) ENE
Elevation: 1,121 ft. (Higher than TP)

FACILITY INFORMATION

Note: Data is current as of February 09th, 2018

GEOSEARCH ID: **150458UAST**

AGENCY INTEREST(AI) ID: **150458**

AGENCY INTEREST(AI) NAME: **TELCOM CONSTRUCTION INC**

ADDRESS: **11111 DEUCE RD**
ELKO NEW MARKET, MN 55020

OWNER: **TELCOM CONSTRUCTION, INC.**

OWNER ADDRESS: **2218 200TH STREET EAST**
CLEARWATER, MN 55320

FACILITY DETAILS

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **150458-EQUI0000000001**

ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **150458-EQUI0000000001-1**

TANK SITE ID: **TS0126357**

COMPARTMENT NUMBER WITHIN THE TANK: **1**

CAPACITY OF THIS COMPARTMENT IN GALLONS: **2000**

SUBSTANCE IN THE TANK: **DIESEL FUEL**

TANK WALL TYPE: **DOUBLE**

TANK MATERIAL: **CARBON STEEL**

TANK INSTALL DATE: **5/14/2012**

STATUS CHANGE DATE: **5/14/2012**

TANK STATUS: **ACTIVE**

TANKS CONTRACTOR: **NOT REPORTED**

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **150458-EQUI0000000002**

ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **150458-EQUI0000000002-1**

TANK SITE ID: **TS0126357**

COMPARTMENT NUMBER WITHIN THE TANK: **1**

CAPACITY OF THIS COMPARTMENT IN GALLONS: **2000**

SUBSTANCE IN THE TANK: **DIESEL FUEL**

TANK WALL TYPE: **DOUBLE**

TANK MATERIAL: **CARBON STEEL**

TANK INSTALL DATE: **5/14/2012**

STATUS CHANGE DATE: **5/14/2012**

TANK STATUS: **ACTIVE**

TANKS CONTRACTOR: **NOT REPORTED**

Back to Report Summary

MAP ID# 11

Distance from Property: 0.222 mi. (1,172 ft.) ENE
Elevation: 1,121 ft. (Higher than TP)

FACILITY INFORMATION

Note: Data is current as of February 09th, 2018

GEOSEARCH ID: **47272UAST**
AGENCY INTEREST(AI) ID: **47272**
AGENCY INTEREST(AI) NAME: **PARKS AUTO**
ADDRESS: **11111 DEUCE RD STE 5**
ELKO NEW MARKET, MN 55020
OWNER: **PARKS AUTO**
OWNER ADDRESS: **11111 DEUCE RD**
ELKO NEW MARKET, MN 55020-8001

FACILITY DETAILS

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **47272-EQUI0000000001**
ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **47272-EQUI0000000001-1**
TANK SITE ID: **TS0004389**
COMPARTMENT NUMBER WITHIN THE TANK: **1**
CAPACITY OF THIS COMPARTMENT IN GALLONS: **10000**
SUBSTANCE IN THE TANK: **GASOLINE**
TANK WALL TYPE: **SINGLE**
TANK MATERIAL: **BARE/PAINT/ASPH COAT STEEL**
TANK INSTALL DATE: **12/31/1899**
STATUS CHANGE DATE: **6/1/2007**
TANK STATUS: **REMOVED**
TANKS CONTRACTOR: **NOT REPORTED**

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **47272-EQUI0000000002**
ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **47272-EQUI0000000002-1**
TANK SITE ID: **TS0004389**
COMPARTMENT NUMBER WITHIN THE TANK: **1**
CAPACITY OF THIS COMPARTMENT IN GALLONS: **8000**
SUBSTANCE IN THE TANK: **GASOLINE**
TANK WALL TYPE: **SINGLE**
TANK MATERIAL: **BARE/PAINT/ASPH COAT STEEL**
TANK INSTALL DATE: **12/31/1899**
STATUS CHANGE DATE: **6/1/2007**
TANK STATUS: **REMOVED**
TANKS CONTRACTOR: **NOT REPORTED**

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **47272-EQUI0000000003**
ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **47272-EQUI0000000003-1**
TANK SITE ID: **TS0004389**
COMPARTMENT NUMBER WITHIN THE TANK: **1**
CAPACITY OF THIS COMPARTMENT IN GALLONS: **1000**

SUBSTANCE IN THE TANK: **FUEL OIL**
TANK WALL TYPE: **SINGLE**
TANK MATERIAL: **BARE/PAINT/ASPH COAT STEEL**
TANK INSTALL DATE: **12/31/1899**
STATUS CHANGE DATE: **12/31/1899**
TANK STATUS: **ACTIVE**
TANKS CONTRACTOR: **NOT REPORTED**

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **47272-EQUI0000000004**
ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **47272-EQUI0000000004-1**
TANK SITE ID: **TS0004389**
COMPARTMENT NUMBER WITHIN THE TANK: **1**
CAPACITY OF THIS COMPARTMENT IN GALLONS: **20000**
SUBSTANCE IN THE TANK: **DIESEL**
TANK WALL TYPE: **SINGLE**
TANK MATERIAL: **BARE/PAINT/ASPH COAT STEEL**
TANK INSTALL DATE: **12/31/1899**
STATUS CHANGE DATE: **12/31/1899**
TANK STATUS: **REMOVED**
TANKS CONTRACTOR: **NOT REPORTED**

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **47272-EQUI0000000005**
ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **47272-EQUI0000000005-1**
TANK SITE ID: **TS0004389**
COMPARTMENT NUMBER WITHIN THE TANK: **1**
CAPACITY OF THIS COMPARTMENT IN GALLONS: **4000**
SUBSTANCE IN THE TANK: **FUEL OIL**
TANK WALL TYPE: **SINGLE**
TANK MATERIAL: **BARE/PAINT/ASPH COAT STEEL**
TANK INSTALL DATE: **12/31/1899**
STATUS CHANGE DATE: **12/31/1899**
TANK STATUS: **ACTIVE**
TANKS CONTRACTOR: **NOT REPORTED**

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **47272-EQUI0000000006**
ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **47272-EQUI0000000006-1**
TANK SITE ID: **TS0004389**
COMPARTMENT NUMBER WITHIN THE TANK: **1**
CAPACITY OF THIS COMPARTMENT IN GALLONS: **400**
SUBSTANCE IN THE TANK: **USED OIL**
TANK WALL TYPE: **SINGLE**
TANK MATERIAL: **CARBON STEEL**
TANK INSTALL DATE: **1/1/1990**
STATUS CHANGE DATE: **1/1/1990**
TANK STATUS: **ACTIVE**
TANKS CONTRACTOR: **NOT REPORTED**

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **47272-EQUI0000000007**
ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **47272-EQUI0000000007-1**
TANK SITE ID: **TS0004389**
COMPARTMENT NUMBER WITHIN THE TANK: **1**
CAPACITY OF THIS COMPARTMENT IN GALLONS: **400**
SUBSTANCE IN THE TANK: **USED OIL**
TANK WALL TYPE: **SINGLE**
TANK MATERIAL: **CARBON STEEL**
TANK INSTALL DATE: **1/1/1994**
STATUS CHANGE DATE: **1/1/1994**
TANK STATUS: **REMOVED**
TANKS CONTRACTOR: **NOT REPORTED**

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **47272-EQUI0000000008**
ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **47272-EQUI0000000008-1**
TANK SITE ID: **TS0004389**
COMPARTMENT NUMBER WITHIN THE TANK: **1**
CAPACITY OF THIS COMPARTMENT IN GALLONS: **220**
SUBSTANCE IN THE TANK: **ANTIFREEZE**
TANK WALL TYPE: **SINGLE**
TANK MATERIAL: **CARBON STEEL**
TANK INSTALL DATE: **1/1/1992**
STATUS CHANGE DATE: **1/1/1992**
TANK STATUS: **REMOVED**
TANKS CONTRACTOR: **NOT REPORTED**

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **47272-EQUI0000000009**
ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **47272-EQUI0000000009-1**
TANK SITE ID: **TS0004389**
COMPARTMENT NUMBER WITHIN THE TANK: **1**
CAPACITY OF THIS COMPARTMENT IN GALLONS: **220**
SUBSTANCE IN THE TANK: **ANTIFREEZE**
TANK WALL TYPE: **SINGLE**
TANK MATERIAL: **CARBON STEEL**
TANK INSTALL DATE: **1/1/1992**
STATUS CHANGE DATE: **1/1/1992**
TANK STATUS: **REMOVED**
TANKS CONTRACTOR: **NOT REPORTED**

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **47272-EQUI0000000010**
ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **47272-EQUI0000000010-1**
TANK SITE ID: **TS0004389**
COMPARTMENT NUMBER WITHIN THE TANK: **1**
CAPACITY OF THIS COMPARTMENT IN GALLONS: **550**
SUBSTANCE IN THE TANK: **MOTOR OIL**

TANK WALL TYPE: **SINGLE**
TANK MATERIAL: **CARBON STEEL**
TANK INSTALL DATE: **1/1/1985**
STATUS CHANGE DATE: **1/1/1985**
TANK STATUS: **REMOVED**
TANKS CONTRACTOR: **NOT REPORTED**

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **47272-EQUI0000000011**
ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **47272-EQUI0000000011-1**
TANK SITE ID: **TS0004389**
COMPARTMENT NUMBER WITHIN THE TANK: **1**
CAPACITY OF THIS COMPARTMENT IN GALLONS: **550**
SUBSTANCE IN THE TANK: **MOTOR OIL**
TANK WALL TYPE: **SINGLE**
TANK MATERIAL: **CARBON STEEL**
TANK INSTALL DATE: **1/1/1985**
STATUS CHANGE DATE: **1/1/1985**
TANK STATUS: **REMOVED**
TANKS CONTRACTOR: **NOT REPORTED**

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **47272-EQUI0000000012**
ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **47272-EQUI0000000012**
TANK SITE ID: **TS4389**
COMPARTMENT NUMBER WITHIN THE TANK: **NOT REPORTED**
CAPACITY OF THIS COMPARTMENT IN GALLONS: **NOT REPORTED**
SUBSTANCE IN THE TANK: **NOT REPORTED**
TANK WALL TYPE: **NOT REPORTED**
TANK MATERIAL: **NOT REPORTED**
TANK INSTALL DATE: **NOT REPORTED**
STATUS CHANGE DATE: **NOT REPORTED**
TANK STATUS: **NOT REPORTED**
TANKS CONTRACTOR: **NOT REPORTED**

ITEM ID(ID for an individual tank. One individual tank can have zero to many compartments.): **47272-EQUI0000000012**
ITEM COMPARTMENT(Represents a specific compartment of a specific tank.): **47272-EQUI0000000012-**
TANK SITE ID: **TS0004389**
COMPARTMENT NUMBER WITHIN THE TANK: **NOT REPORTED**
CAPACITY OF THIS COMPARTMENT IN GALLONS: **NOT REPORTED**
SUBSTANCE IN THE TANK: **NOT REPORTED**
TANK WALL TYPE: **NOT REPORTED**
TANK MATERIAL: **NOT REPORTED**
TANK INSTALL DATE: **NOT REPORTED**
STATUS CHANGE DATE: **NOT REPORTED**
TANK STATUS: **NOT REPORTED**
TANKS CONTRACTOR: **NOT REPORTED**

Registered Storage Tanks (UAST)

Back to Report Summary

What's In My Neighborhood Database (WIMN)

MAP ID# 11

Distance from Property: 0.222 mi. (1,172 ft.) ENE
Elevation: 1,121 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **150458**
SITE ID: **150458**
SITE NAME: **TELCOM CONSTRUCTION INC**
ADDRESS: **11111 DEUCE RD**
ELKO NEW MARKET, MN 55020 SCOTT
SITE URL: **https://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=150458**

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **ABOVEGROUND TANKS**
COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **ABOVEGROUND TANKS**
MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **TS0126357**
COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **TS0126357**
COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **TL**
NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **TANKS**
COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **TANKS**
PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**
INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

Back to Report Summary

MAP ID# 11

Distance from Property: 0.222 mi. (1,172 ft.) ENE
Elevation: 1,121 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **47272**
SITE ID: **47272**
SITE NAME: **PARKS AUTO**
ADDRESS: **11111 DEUCE RD STE 5**
ELKO NEW MARKET, MN 55020 SCOTT
SITE URL: **https://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=47272**

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **MULTIPLE ACTIVITIES**
COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **ABOVEGROUND TANKS; HAZARDOUS WASTE, VERY SMALL QUANTITY GENERATOR; PETROLEUM REMEDIATION, LEAK SITE; UNDERGROUND TANKS**
MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **MULTIPLE IDS**
COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **LS0015935; LS0016832; MND064770266; TS0004389**
COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HW; SR; TL**
NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **MULTIPLE PROGRAMS**
COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE; INVESTIGATION AND CLEANUP; TANKS**
PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **GENERAL AUTOMOTIVE REPAIR ; OTHER AUTOMOTIVE MECHANICAL AND ELECTRICAL REPAIR AND MAINTENANCE**
INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

Back to Report Summary

What's In My Neighborhood Database (WIMN)

MAP ID# 12

Distance from Property: 0.292 mi. (1,542 ft.) ENE
Elevation: 1,129 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **129145**
SITE ID: **129145**
SITE NAME: **LAFAVRE RACING TEAM INC**
ADDRESS: **11236 DEUCE RD**
ELKO NEW MARKET, MN 55020-9587 SCOTT
SITE URL: **https://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=129145**

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **HAZARDOUS WASTE**
COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **HAZARDOUS WASTE**
MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **MND985763937**
COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **MND985763937**
COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HW**
NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**
COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**
PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**
INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

Back to Report Summary

Registered Leaking Storage Tanks (LUAST)

MAP ID# 13

Distance from Property: 0.321 mi. (1,695 ft.) N
Elevation: 1,061 ft. (Lower than TP)

FACILITY INFORMATION

GEOSEARCH ID: **105900LUAST**
AGENCY INTEREST(AI) ID: **105900**
ITEM ID: **105900-AREA0000000001**
AGENCY INTEREST(AI) NAME: **MN DEPT OF TRANSPORTATION**
ADDRESS: **I35 N OF ELKO**
ELKO NEW MARKET, MN 55054
COUNTY: **SCOTT**
LOCATION DESCRIPTION: **NOT REPORTED**
SITE URL: *LINK*

FACILITY DETAILS

TYPE OF REMEDIATION SITE: **LEAK SITE**
SITE ID: **LS0004929**
SITE NAME: **MN DEPARTMENT OF TRANSPORTATION**
ACREAGE FOR THIS PROJECT: **NOT REPORTED**
MPCA HYDROGEOLOGIST OR HYDROLOGIST ASSIGNED TO THE SITE: **NOT REPORTED**
MPCA PROJECT MANAGER ASSIGNED TO THE SITE: **MARK KOPLITZ (FORMER)**
HAS THIS SITE EVER BEEN LISTED ON THE NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST)?: **NOT REPORTED**
HAS THIS SITE EVER BEEN LISTED ON THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST)?:
NOT REPORTED
FOR BROWNFIELDS, IS THIS A PETROLEUM BROWNFIELD?: **NOT REPORTED**
FOR BROWNFIELDS, IS THIS A NON-PETROLEUM BROWNFIELD AKA VOLUNTARY INVESTIGATION AND CLEANUP (VIC) SITE?:
NOT REPORTED
WAS THIS LISTED ON EPA'S CERCLIS/SEMS LIST?: **NOT REPORTED**
WAS THIS AN UNPERMITTED DUMP?: **NOT REPORTED**
TO OUR KNOWLEDGE, ARE THERE INSTITUTIONAL CONTROLS AT THIS SITE?: **NOT REPORTED**
SCORE FOR THIS SITE, USING THE US EPA'S HAZARD RANKING SYSTEM (HRS): **NOT REPORTED**
YEAR FOR THE HRS SCORE: **NOT REPORTED**
UNIQUE ID FOR AN INVESTIGATION PROJECT THAT INVOLVED THIS SITE: **SIW19910001**
DESCRIPTION FOR THE KIND OF INVESTIGATION PROJECT: **LEAK SITE INVESTIGATION**
RELEASE DISCOVERED: **12/23/1991**
RELEASE REPORTED: **12/24/1991**
DATE THE APPLICATION / NOTIFICATION RECEIVED: **NOT REPORTED**
DATE THIS SITE WAS LISTED ON THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST): **NOT REPORTED**
DATE THIS SITE WAS DELISTED FROM THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST): **NOT REPORTED**
DATE THIS SITE WAS LISTED ON THE NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST): **NOT REPORTED**
DATE THIS SITE WAS DELETED FROM NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST): **NOT REPORTED**
SITE CLOSURE DATE: **5/21/1992**
FUND FINANCE APPROVED: **NOT REPORTED**
FUND FINANCE CLOSED: **NOT REPORTED**
ASSESSMENT COMPLETED: **NOT REPORTED**
INVESTIGATION COMPLETED: **NOT REPORTED**
NO FURTHER ACTION DECISION: **NOT REPORTED**
REMEDY IMPLEMENTED: **NOT REPORTED**

REMEDY SELECTED: **NOT REPORTED**

STATUS OF THE SITE: **CLOSED**

Back to Report Summary

Unlocated Sites Summary

This list contains sites that could not be mapped due to limited or incomplete address information.

No Records Found

AIRSAFS Aerometric Information Retrieval System / Air Facility Subsystem

VERSION DATE: 10/20/14

The United States Environmental Protection Agency (EPA) modified the Aerometric Information Retrieval System (AIRS) to a database that exclusively tracks the compliance of stationary sources of air pollution with EPA regulations: the Air Facility Subsystem (AFS). Since this change in 2001, the management of the AIRS/AFS database was assigned to EPA's Office of Enforcement and Compliance Assurance.

BRS Biennial Reporting System

VERSION DATE: 12/31/11

The United States Environmental Protection Agency (EPA), in cooperation with the States, biennially collects information regarding the generation, management, and final disposition of hazardous wastes regulated under the Resource Conservation and Recovery Act of 1976 (RCRA), as amended. The Biennial Report captures detailed data on the generation of hazardous waste from large quantity generators and data on waste management practices from treatment, storage and disposal facilities. Currently, the EPA states that data collected between 1991 and 1997 was originally a part of the defunct Biennial Reporting System and is now incorporated into the RCRAInfo data system.

CDL Clandestine Drug Laboratory Locations

VERSION DATE: 07/01/16

The U.S. Department of Justice ("the Department") provides this information as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments. The Department does not establish, implement, enforce, or certify compliance with clean-up or remediation standards for contaminated sites; the public should contact a state or local health department or environmental protection agency for that information.

DOCKETS EPA Docket Data

VERSION DATE: 12/22/05

The United States Environmental Protection Agency Docket data lists Civil Case Defendants, filing dates as far back as 1971, laws broken including section, violations that occurred, pollutants involved, penalties assessed and superfund awards by facility and location. Please refer to ICIS database as source of current data.

EC Federal Engineering Institutional Control Sites

VERSION DATE: 08/03/15

This database includes site locations where Engineering and/or Institutional Controls have been identified as part

of a selected remedy for the site as defined by United States Environmental Protection Agency official remedy decision documents. A site listing does not indicate that the institutional and engineering controls are currently in place nor will be in place once the remedy is complete; it only indicates that the decision to include either of them in the remedy is documented as of the completed date of the document. Institutional controls are actions, such as legal controls, that help minimize the potential for human exposure to contamination by ensuring appropriate land or resource use. Engineering controls include caps, barriers, or other device engineering to prevent access, exposure, or continued migration of contamination.

ECHOR05 Enforcement and Compliance History Information

VERSION DATE: 08/26/17

The EPA's Enforcement and Compliance History Online (ECHO) database, provides compliance and enforcement information for facilities nationwide. This database includes facilities regulated as Clean Air Act stationary sources, Clean Water Act direct dischargers, Resource Conservation and Recovery Act hazardous waste handlers, Safe Drinking Water Act public water systems along with other data, such as Toxics Release Inventory releases.

ERNSMN Emergency Response Notification System

VERSION DATE: 10/15/17

This National Response Center database contains data on reported releases of oil, chemical, radiological, biological, and/or etiological discharges into the environment anywhere in the United States and its territories. The data comes from spill reports made to the U.S. Environmental Protection Agency, U.S. Coast Guard, the National Response Center and/or the U.S. Department of Transportation.

FRSMN Facility Registry System

VERSION DATE: 09/06/17

The United States Environmental Protection Agency's Office of Environmental Information (OEI) developed the Facility Registry System (FRS) as the centrally managed database that identifies facilities, sites or places subject to environmental regulations or of environmental interest. The Facility Registry System replaced the Facility Index System or FINDS database.

HMIRSR05 Hazardous Materials Incident Reporting System

VERSION DATE: 08/30/17

The HMIRS database contains unintentional hazardous materials release information reported to the U.S. Department of Transportation located in EPA Region 5. Region 5 includes the following states: Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

ICIS Integrated Compliance Information System (formerly DOCKETS)

VERSION DATE: 09/23/17

ICIS is a case activity tracking and management system for civil, judicial, and administrative federal Environmental Protection Agency enforcement cases. ICIS contains information on federal administrative and federal judicial cases under the following environmental statutes: the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, the Emergency Planning and Community Right-to-Know Act - Section 313, the Toxic Substances Control Act, the Federal Insecticide, Fungicide, and Rodenticide Act, the Comprehensive Environmental Response, Compensation, and Liability Act, the Safe Drinking Water Act, and the Marine Protection, Research, and Sanctuaries Act.

ICISNPDES Integrated Compliance Information System National Pollutant Discharge Elimination System

VERSION DATE: 07/09/17

Authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

LUCIS Land Use Control Information System

VERSION DATE: 09/01/06

The LUCIS database is maintained by the U.S. Department of the Navy and contains information for former Base Realignment and Closure (BRAC) properties across the United States.

MLTS Material Licensing Tracking System

VERSION DATE: 06/29/17

MLTS is a list of approximately 8,100 sites which have or use radioactive materials subject to the United States Nuclear Regulatory Commission (NRC) licensing requirements.

NPDESR05 National Pollutant Discharge Elimination System

VERSION DATE: 04/01/07

Authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. The NPDES database was collected from December 2002 until April 2007. Refer to the PCS and/or ICIS-NPDES database as source of current data. This database includes permitted facilities located in EPA Region 5. This region includes the following states: Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

PADS PCB Activity Database System

VERSION DATE: 07/18/17

PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

PCSR05 Permit Compliance System

VERSION DATE: 08/01/12

The Permit Compliance System is used in tracking enforcement status and permit compliance of facilities controlled by the National Pollutant Discharge Elimination System (NPDES) under the Clean Water Act and is maintained by the United States Environmental Protection Agency's Office of Compliance. PCS is designed to support the NPDES program at the state, regional, and national levels. This database includes permitted facilities located in EPA Region 5. This region includes the following states: Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. PCS has been modernized, and no longer exists. National Pollutant Discharge Elimination System (ICIS-NPDES) data can now be found in Integrated Compliance Information System (ICIS).

RCRASC RCRA Sites with Controls

VERSION DATE: 11/21/17

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities with institutional controls in place.

SEMSLIENS SEMS Lien on Property

VERSION DATE: 12/11/17

The U.S. Environmental Protections Agency's (EPA) Office of Solid Waste and Emergency Response, Office of Superfund Remediation and Technology Innovation (OSRTI), has implemented The Superfund Enterprise Management System (SEMS), formerly known as CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) to track and report on clean-up and enforcement activities taking place at Superfund sites. SEMS represents a joint development and ongoing collaboration between Superfund's Remedial, Removal, Federal Facilities, Enforcement and Emergency Response programs. This is a listing of SEMS sites with a lien on the property.

SFLIENS CERCLIS Liens

VERSION DATE: 06/08/12

A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which United States Environmental Protection Agency has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties. This database contains those CERCLIS sites where the Lien on Property action is complete.

SSTS Section Seven Tracking System

VERSION DATE: 02/01/17

The United States Environmental Protection Agency tracks information on pesticide establishments through the Section Seven Tracking System (SSTS). SSTS records the registration of new establishments and records pesticide production at each establishment. The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) requires that production of pesticides or devices be conducted in a registered pesticide-producing or device-producing establishment. ("Production" includes formulation, packaging, repackaging, and relabeling.)

TRI Toxics Release Inventory

VERSION DATE: 12/31/16

The Toxics Release Inventory, provided by the United States Environmental Protection Agency, includes data on toxic chemical releases and waste management activities from certain industries as well as federal and tribal facilities. This inventory contains information about the types and amounts of toxic chemicals that are released each year to the air, water, and land as well as information on the quantities of toxic chemicals sent to other facilities for further waste management.

TSCA Toxic Substance Control Act Inventory

VERSION DATE: 12/31/12

The Toxic Substances Control Act (TSCA) was enacted in 1976 to ensure that chemicals manufactured, imported, processed, or distributed in commerce, or used or disposed of in the United States do not pose any unreasonable risks to human health or the environment. TSCA section 8(b) provides the United States Environmental Protection Agency authority to "compile, keep current, and publish a list of each chemical substance that is manufactured or processed in the United States." This TSCA Chemical Substance Inventory contains non-confidential information on the production amount of toxic chemicals from each manufacturer and importer site.

RCRAGR05 Resource Conservation & Recovery Act - Generator

VERSION DATE: 10/17/17

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities currently generating hazardous waste. EPA Region 5 includes the following states: Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

RCRANGR05 Resource Conservation & Recovery Act - Non-Generator

VERSION DATE: 10/17/17

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities classified as non-generators. Non-Generators do not presently generate hazardous waste. EPA Region 5 includes the following states: Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

ALTFUELS Alternative Fueling Stations

VERSION DATE: 01/22/18

Nationwide list of alternative fueling stations made available by the US Department of Energy's Office of Energy Efficiency & Renewable Energy. Includes Biodiesel stations, Ethanol (E85) stations, Liquefied Petroleum Gas (Propane) stations, Ethanol (E85) stations, Natural Gas stations, Hydrogen stations, and Electric Vehicle Supply Equipment (EVSE).

FEMAUST FEMA Owned Storage Tanks

VERSION DATE: 12/01/16

This is a listing of FEMA owned underground and aboveground storage tank sites. For security reasons, address information is not released to the public according to the U.S. Department of Homeland Security.

HISTPST Historical Gas Stations

VERSION DATE: NR

This historic directory of service stations is provided by the Cities Service Company. The directory includes Cities Service filling stations that were located throughout the United States in 1930.

ICISCLEANERS Integrated Compliance Information System Drycleaners

VERSION DATE: 09/23/17

This is a listing of drycleaner facilities from the Integrated Compliance Information System (ICIS). The Environmental Protection Agency (EPA) tracks facilities that possess NAIC and SIC codes that classify businesses as drycleaner establishments.

MRDS Mineral Resource Data System

VERSION DATE: 03/15/16

MRDS (Mineral Resource Data System) is a collection of reports describing metallic and nonmetallic mineral resources throughout the world. Included are deposit name, location, commodity, deposit description, geologic characteristics, production, reserves, resources, and references. This database contains the records previously provided in the Mineral Resource Data System (MRDS) of USGS and the Mineral Availability System/Mineral Industry Locator System (MAS/MILS) originated in the U.S. Bureau of Mines, which is now part of USGS.

MSHA Mine Safety and Health Administration Master Index File

VERSION DATE: 09/01/17

The Mine dataset lists all Coal and Metal/Non-Metal mines under MSHA's jurisdiction since 1/1/1970. It includes such information as the current status of each mine (Active, Abandoned, NonProducing, etc.), the current owner and operating company, commodity codes and physical attributes of the mine. Mine ID is the unique key for this data. This information is provided by the United States Department of Labor - Mine Safety and Health Administration (MSHA).

BF Brownfields Management System

VERSION DATE: 11/21/17

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. The United States Environmental Protection Agency maintains this database to track activities in the various brown field grant programs including grantee assessment, site cleanup and site redevelopment. This database included tribal brownfield sites.

DNPL Delisted National Priorities List

VERSION DATE: 12/11/17

This database includes sites from the United States Environmental Protection Agency's Final National Priorities List (NPL) where remedies have proven to be satisfactory or sites where the original analyses were inaccurate, and the site is no longer appropriate for inclusion on the NPL, and final publication in the Federal Register has occurred.

NLRRCRAT No Longer Regulated RCRA Non-CORRACTS TSD Facilities

VERSION DATE: 10/17/17

This database includes RCRA Non-Corrective Action TSD facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements. This listing includes facilities that formerly treated, stored or disposed of hazardous waste.

ODI Open Dump Inventory

VERSION DATE: 06/01/85

The open dump inventory was published by the United States Environmental Protection Agency. An “open dump” is defined as a facility or site where solid waste is disposed of which is not a sanitary landfill which meets the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944) and which is not a facility for disposal of hazardous waste. This inventory has not been updated since June 1985.

RCRAT Resource Conservation & Recovery Act - Non-CORRACTS Treatment, Storage & Disposal Facilities

VERSION DATE: 10/17/17

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities recognized as hazardous waste treatment, storage, and disposal sites (TSD).

SEMS Superfund Enterprise Management System

VERSION DATE: 12/11/17

The U.S. Environmental Protections Agency's (EPA) Office of Solid Waste and Emergency Response, Office of Superfund Remediation and Technology Innovation (OSRTI), has implemented The Superfund Enterprise Management System (SEMS), formerly known as CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) to track and report on clean-up and enforcement activities taking place at Superfund sites. SEMS represents a joint development and ongoing collaboration between Superfund's Remedial, Removal, Federal Facilities, Enforcement and Emergency Response programs.

SEMSARCH Superfund Enterprise Management System Archived Site Inventory

VERSION DATE: 12/11/17

The Superfund Enterprise Management System Archive listing (SEMS-ARCHIVE) has replaced the CERCLIS NFRAP reporting system in 2015. This listing reflect sites that have been assessed and no further remediation is planned and is of no further interest under the Superfund program.

SMCRA Surface Mining Control and Reclamation Act Sites

VERSION DATE: 08/25/17

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

USUMTRCA Uranium Mill Tailings Radiation Control Act Sites

VERSION DATE: 03/04/17

The Legacy Management Office of the Department of Energy (DOE) manages radioactive and chemical waste, environmental contamination, and hazardous material at over 100 sites across the U.S. The L.M. Office manages this database of sites registered under the Uranium Mill Tailings Control Act (UMTRCA).

DOD Department of Defense Sites

VERSION DATE: 12/01/14

This information originates from the National Atlas of the United States Federal Lands data, which includes lands owned or administered by the Federal government. Army DOD, Army Corps of Engineers DOD, Air Force DOD, Navy DOD and Marine DOD areas of 640 acres or more are included.

FUDS Formerly Used Defense Sites

VERSION DATE: 06/01/15

The Formerly Used Defense Sites (FUDS) inventory includes properties previously owned by or leased to the United States and under Secretary of Defense Jurisdiction, as well as Munitions Response Areas (MRAs). The remediation of these properties is the responsibility of the Department of Defense. This data is provided by the U.S. Army Corps of Engineers (USACE), the boundaries/polygon data are based on preliminary findings and not all properties currently have polygon data available. DISCLAIMER: This data represents the results of data collection/processing for a specific USACE activity and is in no way to be considered comprehensive or to be used in any legal or official capacity as presented on this site. While the USACE has made a reasonable effort to insure the accuracy of the maps and associated data, it should be explicitly noted that USACE makes no warranty, representation or guaranty, either expressed or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. For additional information on Formerly Used Defense Sites please contact the USACE Public Affairs Office at (202) 528-4285.

FUSRAP Formerly Utilized Sites Remedial Action Program

VERSION DATE: 03/04/17

The U.S. DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from the Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations. The DOE Office of Legacy Management (LM) established long-term surveillance and maintenance (LTS&M) requirements for remediated FUSRAP sites. DOE evaluates the final site conditions of a remediated site on the basis of risk for different future uses. DOE then confirms that LTS&M requirements will maintain protectiveness.

NLRRCRAC No Longer Regulated RCRA Corrective Action Facilities

VERSION DATE: 10/17/17

This database includes RCRA Corrective Action facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements.

NMS Former Military Nike Missile Sites

VERSION DATE: 12/01/84

This information was taken from report DRXTH-AS-IA-83A016 (Historical Overview of the Nike Missile System, 12/1984) which was performed by Environmental Science and Engineering, Inc. for the U.S. Army Toxic and Hazardous Materials Agency Assessment Division. The Nike system was deployed between 1954 and the mid-1970's. Among the substances used or stored on Nike sites were liquid missile fuel (JP-4); starter fluids (UDKH, aniline, and furfuryl alcohol); oxidizer (IRFNA); hydrocarbons (motor oil, hydraulic fluid, diesel fuel, gasoline, heating oil); solvents (carbon tetrachloride, trichloroethylene, trichloroethane, stoddard solvent); and battery electrolyte. The quantities of material a disposed of and procedures for disposal are not documented in published reports. Virtually all information concerning the potential for contamination at Nike sites is confined to personnel who were assigned to Nike sites.
During deactivation most hardware was shipped to depot-level supply points. There were reportedly instances where excess materials were disposed of on or near the site itself at closure. There was reportedly no routine site decontamination.

NPL National Priorities List

VERSION DATE: 12/11/17

This database includes United States Environmental Protection Agency (EPA) National Priorities List sites that fall under the EPA's Superfund program, established to fund the cleanup of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action.

PNPL Proposed National Priorities List

VERSION DATE: 12/11/17

This database contains sites proposed to be included on the National Priorities List (NPL) in the Federal Register. The United States Environmental Protection Agency investigates these sites to determine if they may present long-term threats to public health or the environment.

RCRAC Resource Conservation & Recovery Act - Corrective Action Facilities

VERSION DATE: 10/17/17

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities with corrective action activity.

RCRASUBC Resource Conservation & Recovery Act - Subject to Corrective Action Facilities

VERSION DATE: 10/17/17

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities subject to corrective actions.

RODS Record of Decision System

VERSION DATE: 12/11/17

These decision documents maintained by the United States Environmental Protection Agency describe the chosen remedy for NPL (Superfund) site remediation. They also include site history, site description, site characteristics, community participation, enforcement activities, past and present activities, contaminated media, the contaminants present, and scope and role of response action.

Environmental Records Definitions - STATE (MN)

AIRS Permitted Air Facilities

VERSION DATE: 01/28/18

This database contains facilities with air permits issued by the by the Minnesota Pollution Control Agency. These permits identify the units at each facility that generate air pollutants and, where applicable, the limits on those emissions. In some cases a permit may also authorize construction or modification of a facility.

CDL Clandestine Drug Laboratory Locations

VERSION DATE: 01/28/18

This listing of clandestine methamphetamine laboratories is provided by the Minnesota Department of Health. Each meth lab, spill or dump is a potential hazardous waste site, requiring assessment and remediation by experienced and qualified personnel. Former meth lab sites are being cleaned (or remediated) in many Minnesota communities. In these communities, the cleanups are being guided by city and county ordinances, local housing laws, and Minnesota Statute 145A, the Public Health Nuisance Statute.

IC Sites with Institutional Controls

VERSION DATE: 11/26/17

Institutional controls are defined by Minnesota Statute, Section 115B.02, subdivision 9a, as legally enforceable restrictions, conditions, or controls on the use of real property, ground water, or surface water located at or adjacent to a facility where response actions are taken that are reasonably required to assure that the response actions are protective of public health or welfare or the environment. Institutional controls include restrictions, conditions, or controls enforceable by contract, easement, restrictive covenant, statute, ordinance, or rule, including official controls such as zoning, building codes, and official maps. An affidavit required under section 115B.16, subdivision 2, or similar notice of a release recorded with real property records is also an institutional control.

PCASPILLS Spills Listing

VERSION DATE: 11/17/17

The Minnesota Pollution Control Agency's Emergency Response Team maintains this listing of reported petroleum product, hazardous substance, and/or other spills.

SWUP Solid Waste Utilization Projects

VERSION DATE: 02/26/18

According to the Minnesota Pollution Control Agency, a solid waste utilization project uses certain wastes in a new way to recycle the material instead of putting it into a landfill. An example is using tires to create furniture. The beneficial use of waste products saves landfill capacity for materials that do not have alternative uses. By using solid waste, individuals and organizations can reduce disposal costs, or even generate profit through the sale of materials that have a beneficial use.

TIERII Tier Two Facility Listing

VERSION DATE: 04/19/17

The Minnesota Department of Public Safety's Emergency Planning and Community Right-to-Know Act Program (EPCRA) maintains this listing of Tier Two facilities which store hazardous chemicals on-site. These facilities subject to EPCRA reporting submit Tier II forms which provide information such as the Material Safety Data Sheet (MSDS) chemical or common name, emergency contact information, approximate amount of chemical stored, along with the location of the chemical at the facility.

FEEDLOT Feedlots

VERSION DATE: 01/28/18

Feedlots may be small farms or large-scale commercial livestock operations. They are places where animals are confined for feeding, breeding or holding. The Minnesota Pollution Control Agency (MPCA) and its county partners place requirements on how manure is managed at feedlots, so that it does not contaminate nearby surface water and groundwater.

HWGS Hazardous Waste Generator Sites

VERSION DATE: 11/30/17

The Minnesota Pollution Control Agency (MPCA) provides this list of active and inactive Hazardous Waste Generator Sites, including large quantity and small to minimal quantity generators. A large quantity generator (LQG) is a facility that generates at least 1,000 kilograms (2,200 pounds) of hazardous waste or 1 kilogram (2.2 pounds) of acutely hazardous waste per calendar month. An MPCA permit is not required for a large quantity generator, but the facility must have a current hazardous waste license. A small to minimal quantity generator is a facility that generates less than 1,000 kilograms (2,200 pounds) of hazardous waste or 1 kilogram (2.2 pounds) of acutely hazardous waste per calendar month. These facilities have less stringent rules than large quantity generators. This group includes Small Quantity Generators (SQGs), which produce 100 - 1000 kg of hazardous waste per month; Very Small Quantity Generators (VSQGs), which produce less than 100 kg of hazardous waste per month; and Conditionally Exempt Generators, which produce less than 100 kg or 10 gallons of hazardous waste per year. Like large quantity generators, SQGs and VSQGs must have current hazardous waste licenses.

WDP Water Discharge Permits

VERSION DATE: 01/18/18

This Minnesota Pollution Control Agency (MPCA) database includes the following types of water permits: Construction Stormwater Permits, Construction Stormwater Site Subdivisions, Industrial Stormwater Permits, MS4 Projects, and Wastewater Dischargers. A construction stormwater permit is designed to limit pollution during and after construction by controlling the erosion associated with construction activities. A construction stormwater site subdivision is a site where a construction project with an existing stormwater permit has been sub-divided into smaller parcels. Industrial stormwater permits are designed to limit the amount of harmful contaminants that reach surface water and groundwater, by requiring good practices for storing and handling

materials. A Municipal Separate Storm Sewer System (MS4) is a system of conveyances - such as gutters, ditches, city streets and storm drains - which is used as a path for stormwater. Regulated MS4s cover large areas, and are owned or operated by a public entity such as a city, county, township, watershed district or university. A wastewater discharger is a facility that generates or treats wastewater for discharge onto land or into water.

BULKSTORAGE Bulk Storage Permits

VERSION DATE: 01/25/18

The Minnesota Department of Agriculture's Licensing Information System (LIS) lists individuals or companies who hold licenses, certificates and/or permits required by state law and regulated by the Department. This database only contains those LIS licenses related to anhydrous ammonia storage facilities and bulk pesticide/ fertilizer storage facilities. Please note the data is real time and therefore constantly changing.

CLEANERS Registered Drycleaning Facilities

VERSION DATE: 02/27/17

The Minnesota Pollution Control Agency maintains this listing of registered dry cleaning facilities.

UAST Registered Storage Tanks

VERSION DATE: 02/09/18

The Registered Storage Tanks Database provides information on aboveground and underground storage tanks registered with the Minnesota Pollution Control Agency. Owners of USTs and ASTs with a capacity of 500 gallons or more which contain petroleum or hazardous substances must notify the MPCA of the existence of these tanks. Tanks not subject to notification include farm and residential motor fuel tanks less than 1,100 gallons; heating oil tanks less than 1,100 gallons; flow-through process tanks; septic tanks; and agricultural chemical tanks. Some of the data included reflects storage tanks reported in the old "TALES" database. New data reported here is from the MPCA's new "TEMPO" database.

AGSPILLS Agricultural Spills Listing

VERSION DATE: 01/18/18

This list of reported spill incidents is provided by the Minnesota Department of Agriculture (MDA). The MDA is the lead agency for response to, and cleanup of, agricultural chemical contamination (pesticides and fertilizers) in Minnesota. The MDA has grouped these spills into three categories: Old Emergencies, Small Spills and Investigations, and Investigations Boundaries. Old Emergencies represent emergencies which were closed prior to March 1, 2004. These files and the locations plotted have not been reviewed for accuracy and completeness. Smalls Spills and Investigations represent the location of small spills and investigations, which were closed after March 1, 2004. Investigation Boundaries represent the approximate extent of large spills and other types of facility investigations. Facility Investigations are further subdivided into the following program areas: Awaiting Prioritization Investigation files of known or potential agricultural chemical contamination that are waiting to be prioritized; Prioritized Investigation files of known or potential agricultural chemical contamination that have been

prioritized and are awaiting activation; Comprehensive Facility Investigation/MERLA Investigation files of known or potential agricultural chemical contamination that have been activated in MDA's Comprehensive Facility Investigation Program or are active Superfund sites under MDA's oversite; AgVIC Investigation files of known or potential agricultural chemical contamination that have enrolled in the MDA's Agricultural Voluntary Investigation and Cleanup (AgVIC) Program; and Agricultural Chemical Emergency Response Investigation files that were reported as emergency spills of agricultural chemicals and are large enough in size to be represented by a polygon.

CAFO Concentrated Animal Feeding Operations

VERSION DATE: 01/18/18

A Concentrated Animal Feeding Operation (CAFO) is any feeding operation with a capacity of 1,000 or more animal units according to federal animal unit calculations. The Minnesota Pollution Control Agency can also define a facility with less than 1,000 animal units as a CAFO on a case-by-case basis, depending on site conditions, and if manure or process wastewater is directly discharged to waters of the state. Facilities that are CAFOs must comply with both federal regulations and state rules. Two or more feedlots under common ownership are considered a single facility if they adjoin each other or use the same manure storage or disposal system.

CERCLIS CERCLIS Sites

VERSION DATE: 01/17/18

CERCLIS sites are places that are listed in the federal Comprehensive Environmental Response, Compensation and Liability Information System. This means that they are or were suspected of being contaminated. The CERCLIS database contains information on preliminary assessments, site inspections, and cleanup activities for these sites. After CERCLIS sites are investigated, they may be elevated to state or federal Superfund lists, or it may be determined that no action is necessary. This database is provided by the Minnesota Pollution Control Agency.

CLF Closed Landfills

VERSION DATE: 11/25/17

This database includes closed solid waste facilities and sites that have been entered into the PCA's Closed Landfill Program (CLP). The CLP is a voluntary program established by the legislature in 1994 to properly close, monitor, and maintain Minnesota's closed municipal sanitary landfills. Any MPCA-permitted mixed-municipal solid waste landfill that stopped accepting mixed municipal solid waste (MMSW) by April 9, 1994, and demolition debris before May 1, 1995, can qualify for application to this program.

CONTINGENCIES Agricultural Contingency Sites

VERSION DATE: 01/18/18

The Minnesota Department of Agriculture (MDA) Incident Response Unit (IRU) is the state lead agency for the investigation and remediation of incidents involving agricultural chemicals (pesticides and fertilizer). This MDA

IRU database includes sites with a soil or ground water contingency, deed restriction, local ordinance, restrictive covenant or deed affidavit in place. The accuracy of these sites can be variable. In most cases, the site boundaries should be considered as only representing the vicinity of the soil or ground water contingency area or plume.

HWSTSD Hazardous Waste Treatment Storage Disposal Sites

VERSION DATE: 11/30/17

A hazardous waste Treatment Storage and /or Disposal facility (TSD) is any business designed to treat, store and / or dispose of hazardous waste.These facilities typically collect hazardous wastes for other businesses and treat it or dispose of it properly. TSD facilities must have valid operating permits issued by the Minnesota Pollution Control Agency (MPCA). This means that they are required to develop detailed plans to train and protect their workers and the environment. This database contains active and inactive TSD facilities.

LUAST Registered Leaking Storage Tanks

VERSION DATE: 03/09/18

The Minnesota Pollution Control Agency maintains this listing of leaking aboveground and underground storage tanks. Tank owners are required to immediately report a leak or spill of more than five gallons of petroleum, or any amount of a hazardous substance, from any tank or piping. All leaks and spills from USTs and ASTs and associated piping must be cleaned up to protect the environment and public health. In April of 2016, the MPCA Remediation Programs began utilizing a new data management system and completed this transition in 2018. Please note that select data may be incomplete for sites migrated from the prior data management system, refer to LUAST2016 as an additional leaking storage tank data source.

LUAST2016 Registered Leaking Storage Tanks Prior to April 2016

VERSION DATE: 04/01/16

The Minnesota Pollution Control Agency maintains this listing of leaking aboveground and underground storage tanks registered with the MPCA through April of 2016. Tank owners are required to immediately report a leak or spill of more than five gallons of petroleum, or any amount of a hazardous substance, from any tank or piping. All leaks and spills from USTs and ASTs and associated piping must be cleaned up to protect the environment and public health. In April of 2016, the MPCA Remediation Programs began utilizing a new data management system and completed this transition in 2018. Please refer to LUAST database as source of current data.

PBF Petroleum Brownfields Program Sites

VERSION DATE: 01/01/18

This listing of Petroleum Brownfield sites, including those with Development Response Action Plans dated between 2008 and 2012, is provided by the Minnesota Pollution Control Agency (MPCA). The Petroleum Brownfields Program (formerly VPIC) provides the technical assistance and liability assurance needed to facilitate and expedite the development, transfer, investigation and/or cleanup of property that is contaminated with petroleum. Even after cleanup or MPCA file closure most properties will have contamination remaining.

State law requires that persons properly manage contaminated soil and water they uncover or disturb - even if they are not the party responsible for the contamination. Property owners, purchasers or developers of property where contaminated soil or water might be encountered may include provisions - called "response actions" - in development plans describing how petroleum contaminated soil and water will be managed if encountered. For some properties, special construction might be needed to prevent the further spreading of the contamination and/or to prevent petroleum vapors from entering buildings or utility access shafts.

PBRLF Permitted By Rule Landfills

VERSION DATE: 01/01/18

According to the Minnesota Pollution Control Agency, a landfill that is permitted by rule is not required to obtain an individual solid waste permit if it meets certain eligibility criteria. However, it must comply with waste management rules and regulations. Landfills may be permitted by rule if they have a small capacity and/or operate for a short period of time.

PVICP Potential Voluntary Investigation and Cleanup Program Sites

VERSION DATE: 04/22/16

This listing of Potential Voluntary Investigation and Cleanup Program sites is provided by the Minnesota Pollution Control Agency. These potential sites have not yet entered into the VIC Program until an application has been received at the MPCA.

RECYCLERS Recycling Markets Directory

VERSION DATE: 07/21/17

The Recycling Markets Directory is provided by the Minnesota Pollution Control Agency. The markets in this database accept large (commercial) quantities of materials.

SRS Site Response Section Database

VERSION DATE: 04/22/16

The Minnesota Pollution Control Agency (MPCA) is involved in remediation activities through various programs. Remediation is the process of cleaning up pollution in the soil, water or air. The pollution can result from an accidental spill or from activities that occur over a long time. This MPCA database includes remediation sites from the Superfund, Voluntary Investigation and Cleanup, Brownfields, Resource Conservation and Recovery Act, Tanks, Landfills, and Emergency Response Programs.

SWF Open Solid Waste Facilities

VERSION DATE: 11/25/17

Open landfills are regulated by Minnesota Rules 7001 and 7035. They actively accept, under the terms and conditions of a Minnesota Pollution Control Agency permit, certain types of wastes for disposal. They are part of

a larger and integrated collection of open solid waste management facilities that process, transfer and receive waste for disposal in Minnesota. Open landfills fall into several categories, which include: demolition, industrial, mixed municipal and municipal waste combustor ash.

UNPERMDUMPS Unpermitted Dump Sites

VERSION DATE: 12/27/17

Unpermitted dump sites are landfills that never held a valid permit from the Minnesota Pollution Control Agency (MPCA). Generally, these dumps existed prior to the permitting program established with the creation of the MPCA in 1967. These dumps are not restricted to any type of waste, but were often old farm or municipal disposal sites that accepted household waste. State assessment staff have investigated many of these dump sites.

VICP Voluntary Investigation and Cleanup Program Sites

VERSION DATE: 02/26/18

The Voluntary Investigation and Cleanup (VIC) Program site listing is provided by the Minnesota Pollution Control Agency. This program encourages timely property transactions by reducing potential health or environmental risks from contamination and promoting the redevelopment of these properties.

WIMN What's In My Neighborhood Database

VERSION DATE: 11/25/17

This online application offers you a way to access a wide variety of environmental information about your community. You can search for: A.) Potentially contaminated sites: Since the early 1980s when major federal and state cleanup programs were created, the MPCA has been aggressively searching for and helping to clean up contaminated properties, from very small to large. This website contains a searchable inventory of those properties, as well as sites that have already been cleaned up and those currently being investigated or cleaned up. B.) Environmental permits and registrations: This Web application also contains a searchable inventory of businesses that have applied for and received different types of environmental permits and registrations from the MPCA.

CSTF Contaminated Soil Treatment Facilities

VERSION DATE: 01/29/18

Contaminated soil treatment facilities are places that the Minnesota Pollution Control Agency (MPCA) has approved or permitted to take petroleum-contaminated soils from leak sites and provide treatment through a number of different processes. The processes include thermal treatment (usually by roasting soils at high temperatures), composting, or thin-spreading soils and allowing natural microorganisms to biodegrade the petroleum.

HWCS Hazardous Waste Cleanup Sites

VERSION DATE: 11/25/17

Soil and or groundwater cleanup under RCRA Corrective Action is conducted by the Site Remediation Division of the Minnesota Pollution Control Agency. The Hazardous Waste Treatment, Storage, or Disposal Facilities enter the RCRA corrective action program through the permitting process. Interim Status Facilities enter the RCRA Correction Action Program through a negotiated process initiated by the MPCA (these facilities at one time applied for a RCRA treatment, storage and or disposal permit, but did not complete the permitting process). Hazardous Waste Generators usually enter the RCRA remediation program through evidence of suspected releases to soil and or ground water from improper management of hazardous wastes or hazardous constituents uncovered during hazardous waste inspections conducted by state, county or city inspectors.

REMSITES MPCA Remediation Sites

VERSION DATE: 03/09/18

This list of Remediation Sites is provided by the Minnesota Pollution Control Agency. In April of 2016, the MPCA Remediation Programs began utilizing a new data management system and completed this transition in 2018. The environmental site types included in this database are Brownfield, Integrated Remediation, Leaking Storage Tank, RCRA Remediation, Superfund, Superfund sub-area, and Site Assessment Sites. Please note that select data may be incomplete for sites migrated from the prior data management system.

SAS State Assessment Sites

VERSION DATE: 01/08/18

State Assessment sites are places that Minnesota Pollution Control Agency (MPCA) Site Assessment staff have investigated because of suspected contamination. The sites investigated include abandoned industrial properties, small commercial businesses and publicly-owned land. (Note that petroleum-contaminated sites are investigated by MPCA Tanks and Leaks staff.) These sites may be referred to the Site Assessment program by the Voluntary Investigation and Cleanup (VIC) program, the Petroleum Remediation program, Minnesota Duty Officer reports or citizen complaints. Site Assessment staff do an initial assessment, and then determine if further action is needed. If a site poses a threat to human health or the environment, it is referred to CERCLIS, Superfund, RCRA Cleanup or VIC.

SF Superfund Site Information Listing

VERSION DATE: 01/01/18

The Minnesota Pollution Control Agency's Superfund Program identifies, investigates and determines appropriate cleanup plans for abandoned or uncontrolled hazardous waste sites where a release or potential release of a hazardous substance poses a risk to human health or the environment. Superfund does not deal with Resource Conservation and Recovery Act (RCRA) sites or petroleum storage tank releases.

USTR05 Underground Storage Tanks On Tribal Lands

VERSION DATE: 10/16/17

This database, provided by the United States Environmental Protection Agency (EPA), contains underground storage tanks on Tribal lands located in EPA Region 5. Region 5 includes the following states: Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

LUSTR05 Leaking Underground Storage Tanks On Tribal Lands

VERSION DATE: 10/16/17

This database, provided by the United States Environmental Protection Agency (EPA), contains leaking underground storage tanks on Tribal lands located in EPA Region 5. Region 5 includes the following states: Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

ODINDIAN Open Dump Inventory on Tribal Lands

VERSION DATE: 11/08/06

This Indian Health Service database contains information about facilities and sites on tribal lands where solid waste is disposed of, which are not sanitary landfills or hazardous waste disposal facilities, and which meet the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944).

INDIANRES Indian Reservations

VERSION DATE: 01/01/00

The Department of Interior and Bureau of Indian Affairs maintains this database that includes American Indian Reservations, off-reservation trust lands, public domain allotments, Alaska Native Regional Corporations and Recognized State Reservations.

Appendix E: User Provided Information

User Questionnaire

In order to qualify for one of the Landowner Liability Protections (LLPs) offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001, the user must provide the following information (if available) to I+S Group, Inc. (ISG). Failure to provide this information could result in a determination that "all appropriate inquiry" is not complete. This information is needed to provide you with the completed Phase I Environmental Site Assessment and will be attached to your report. **The Phase I Environmental Site Assessment Report cannot be distributed until we have received this document.**

1) Environmental cleanup liens that are filed or recorded against the site
Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local laws?

NO

2) Activity and land use limitations that are in place on the site or that have been filed or recorded in a registry
Are you aware of any activity and land use limitations, such as engineering controls, land use restrictions or institutional controls in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local laws? **It is the user's responsibility to provide a land title record, any restrictions of record on the title, list of known institutional or engineering controls, or evidence of clean title, unless otherwise specified in the proposal.**

NO

3) Specialized knowledge or experience of the user
As the user of this Phase I Environmental Assessment, do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?

NO

4) Relationship of the purchase price to the fair market value of the property if it were not contaminated
Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property?

?

5) Commonly known or reasonably ascertainable information about the property
Are you aware of commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example, as user,

a.) Do you know the past uses of the property?

FARM + GAS STATION

b.) Do you know of specific chemicals that are present or once were present at the property?

NO

c.) Do you know of spills or other chemical releases that have taken place at the property?

NO

d.) Do you know of any environmental cleanups that have taken place at the property?

GAS STATION TANK REMOVAL + CLEAN UP

e.) Do you know of any aboveground and/or underground storage tanks on the property? Please provide registrations, if applicable.

NO

6) The degree of obviousness of the presence or likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation

As the user of this Phase I, based on your knowledge and experience related to the property, are there any obvious indicators indicating the presence or likely presence of contamination on the property?

NO

7) Specific Project Questions:

a) Why is the Phase I Environmental Assessment required?

- ☐ To qualify for a Landowner Liability Protections to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)
- ☐ Requirement for Small Business Administration (SBA) financing
- ☐ Other, please explain:

b) What is the **type of property** and the type of property **transaction** (i.e. sale, purchase, exchange, etc)?

FUTURE SALE

c) Has a title search for environmental liens been completed within the past 60 days? If so, please provide proof of a clean title. NO

d) Please provide the complete and correct **physical address for the property** (including **legal description and parcel identification number)** and a boundary survey, map, or plat showing the **location and boundary** of the property.

e) Identify all parties (**name and address**) who will rely on the Phase I Report.

f) What is the name and phone number of the site contact/manager?

g) What are the names and contact information for the current and previous land owners?

DAVID ADELMANN - 612-919-1379 DAVE@RICHFIELDPLUMBING.COM

h) Do you have any additional knowledge or experience with the property that may be pertinent to ISG?

NO

i) If applicable, please provide copies of the following documents:

- Prior environmental assessments, cleanups, or other environmental documentation concerning the property, such as: storage tanks, hazardous waste generators license, site closure letters, geotechnical evaluations, or other environmental permits/records
- Material safety data sheet and/or hazardous waste generator notices or reports
- Correspondence from any government agency relating to past or existing environmental issues
- Information concerning any pending, threatened, or past litigation or administrative proceedings relevant to hazardous substances or petroleum products
- Disclosure of wells, sumps, tanks, pots, drainage systems-existence and location
- Description of current site operations, including layout drawings or sketches
- Recorded land title records

I have reviewed the above list and provided copies of all known documents and information that exists in association with this property.

David A. Adelmann	DAVID ADELMANN	6/21/18
Signature	**Print Name**	**Date**

Minnesota Pollution Control Agency
520 Lafayette Road, Saint Paul, Minnesota 55155
Telephone (612) 296-6300

Celebrate MINNESOTA 1990

..ugust 7, 1990

Mr. Bob Adelman
805 West 77 1/2 Street
Richfield, Minnesota 55423

Dear Mr. Adelman:

RE: Petroleum Tank Release Site Closure
Site: Maynard's Service Station, New Market
Site ID#: LEAK00001796

10881 260th St E

Thank you for your actions to protect Minnesota's environment. The Minnesota Pollution Control Agency (MPCA) staff has determined that the cleanup performed in response to the petroleum tank release at Maynard's Service Station has adequately addressed the petroleum contamination, and therefore the file regarding this release will be closed.

On October 10, 1989, a petroleum tank release was reported to the MPCA. Since then you have taken the following corrective actions in response to the release:

1. Four underground tanks were removed.

2. Most of the petroleum contaminated soil was removed. The native soil type is sandy clay. There were two excavations at the site:

   - Soil samples taken from the bottom of the gasoline tank excavation had readings ranging from 7 to 55 parts per million (ppm) as measured by HNu. A sample taken from the bottom of the excavation for lab analysis contained 0.34 ppm total petroleum hydrocarbons. Soil was excavated to a depth of 22 feet. A small amount of ground water seeped in the excavation at 22 feet. An oil sheen was not observed on the water that seeped into the excavation.

   - A soil sample taken from the bottom of the fuel oil tank excavation had a reading of 1 ppm on the HNu, and a lab analysis result of 9.4 ppm total hydrocarbons as fuel oil. Soil was excavated to a depth of 9 feet. No ground water was encountered in the excavation.

3. A total of 300 cubic yards of contaminated soil was excavated and treated at Midwest Asphalt Corporation in Eden Prairie.

4. A potential receptor survey was completed for the site. The results indicate the possible receptors have not been impacted by the release.

5. The Maynard's Service Station well, located 150 feet from the tanks, was sampled for volatile organic hydrocarbons. No contaminates were detected in the sample.

Because MPCA staff believes these actions have adequately addressed the petroleum tank release, we will not require any more investigative or cleanup work at this time. However, the MPCA reserves the right to reopen this file and require additional work if it becomes necessary. This letter does not release any party from liability for this contamination.

Because you performed the requested work, the state may reimburse you for a major portion of your costs. The Petroleum Tank Release Cleanup Act establishes a fund which in certain circumstances provides partial reimbursement for petroleum tank release cleanup costs. This fund is administered by the Petroleum Tank Release Compensation Board (Petro Board). More specific eligibility rules are available from the Petro Board (612/297-4017).

Thank you for your cooperation with the MPCA in responding to this petroleum tank release. If you have any questions regarding this correspondence, please call me at 612/643-3427.

Sincerely,

Janet Berryhill
Pollution Control Specialist
Tanks and Spills Section
Hazardous Waste Division

JB:jr

cc: Jan Seykora, City Clerk, New Market
Al Frechette, Scott County Solid Waste Officer, Shakopee
Bill Breitzman, Terracon Environmental, Inc., White Bear Lake

BRAUN INTERTEC
The Science You Build On.

Braun Intertec Corporation
11001 Hampshire Avenue S
Minneapolis, MN 55438

Phone: 952.995.2000
Fax: 952.995.2020
Web: braunintertec.com

May 21, 2015 Project B1503251

Mr. Mark Maneval
Twin Cities Featherlite
10881 East 260th Street
Elko, MN 55020

Re: Soil Sampling Report
Twin Cities Featherlite
10881 East 260th Street
Elko, Minnesota

Dear Mr. Maneval:

On behalf of Twin Cities Featherlite, Braun Intertec Corporation collected soil samples at the Twin Cities Featherlite Site located in Ramsey, Minnesota (Site). A site location map and site sketch is attached as Figure 1 and Figure 2 respectively. We understand that Scott County requested that soil samples be collected from the southwestern portion of the Site. The objective of the sampling was to evaluate the soil for potential impacts.

Environmental Screening

On April 27, 2015, eight soil samples were collected across the southwestern portion of the Site at depths between 12 inches and 18 inches (labeled SS-1 through SS-8) below ground surface (bgs). SS-1 through SS-4 were collected along the northern slope south of the facility's wash holding tank. SS-5 was collected near several empty oil drums. SS-6 was collected near the storage area of empty chemical wash drums. SS-7 was collected in an area where oil staining was previously observed and SS-8 was collected in the vicinity of observed oil staining in the grass. A sample location map with sample locations is attached as Figure 3. During sampling activities, a field technician who was a licensed asbestos inspector, monitored and screened soil for unusual staining, odors, and other apparent signs of contamination. The soil samples were screened for the presence of organic vapors using a photoionization detector (PID). The PID was equipped with a 10.6-electron-volt lamp and calibrated to an isobutylene standard. The PID was used to perform a headspace method of field-analyses, as recommended by the Minnesota Pollution Control Agency (MPCA) in Petroleum Remediation Program Guidance Document 4-04 (September 2008).

Staining was observed in the areas of SS-5 in the upper 3 inches of the soil and in the area of SS-8 located in the grass. An elevated PID reading of 11.1 parts per million (ppm) was recorded from soil sample SS-8(14"). No other elevated PID readings or indications of contamination were observed.

Soil Sampling and Analytical Testing

A total of eight soil samples were collected by hand using a shovel to excavate to depths between 12 and 18 inches bgs. The soil samples were chemically analyzed for the presence and concentrations of the following parameters:

- Volatile organic compounds (VOCs) using Environmental Protection Agency (EPA) Method 8260
- Gasoline range organics (GRO) using the Wisconsin Department of Natural Resources (WDNR) Method
- Diesel range organics (DRO) using WDRN Method
- Eight Resource Conservation and Recovery Act (RCRA) metals using EPA methods 6010 and 7471
- pH using EPA method SM4500H+B

Analytical testing results are summarized in Table 1, and the laboratory analytical report and chain-of-custody form are attached. For comparison purposes, the table also includes MPCA Residential and Industrial Soil Reference Values (SRVs) and Soil Leaching Values (SLVs). The SRVs and SLVs are allowable risk-based contaminant concentrations established by the MPCA to guide Site investigation and cleanup actions.

The results of the laboratory analysis indicated:

- No VOCs or GRO was detected at or above the laboratory mandatory reporting limits (MRLs).
- DRO was detected in five of the eight soil samples at concentrations between 13.5 milligrams per kilograms (mg/kg) in Soil Sample SS-2 (14”) and 2,050 mg/kg in Soil Sample SS-5 (14”). There currently are no MPCA established SRVs or SLVs for DRO.
- Several RCRA metals were detected in each sample at concentrations exceeded the laboratory MRLs; however, no concentrations exceeded the Residential or Industrial SRVs or SLVs.
- Soil pH was determined to be neutral with pH levels between 6.6 and 7.0 in five samples; however, pH levels were moderately acidic in soil samples SS-5 (14”) and SS-7 (14”) with levels of 5.7 and 5.9.

Based on the results of the soil sampling, impacted soil is present at the Site. According to Minnesota Stature 115.061, the property owners or responsible parties associated with this release may have the duty to notify the MPCA via the Minnesota Department of Public Safety, Division of Emergency Management (DEM) Duty officer. The MPCA may require that a Limited Site Investigation be completed to evaluate the extent and magnitude of the petroleum impacts detected.

[redacted]

If there are any questions regarding this letter, please call Jake Friederichs at 952.995.2474 or Tim Lenway at 952.995.2488.

Sincerely,

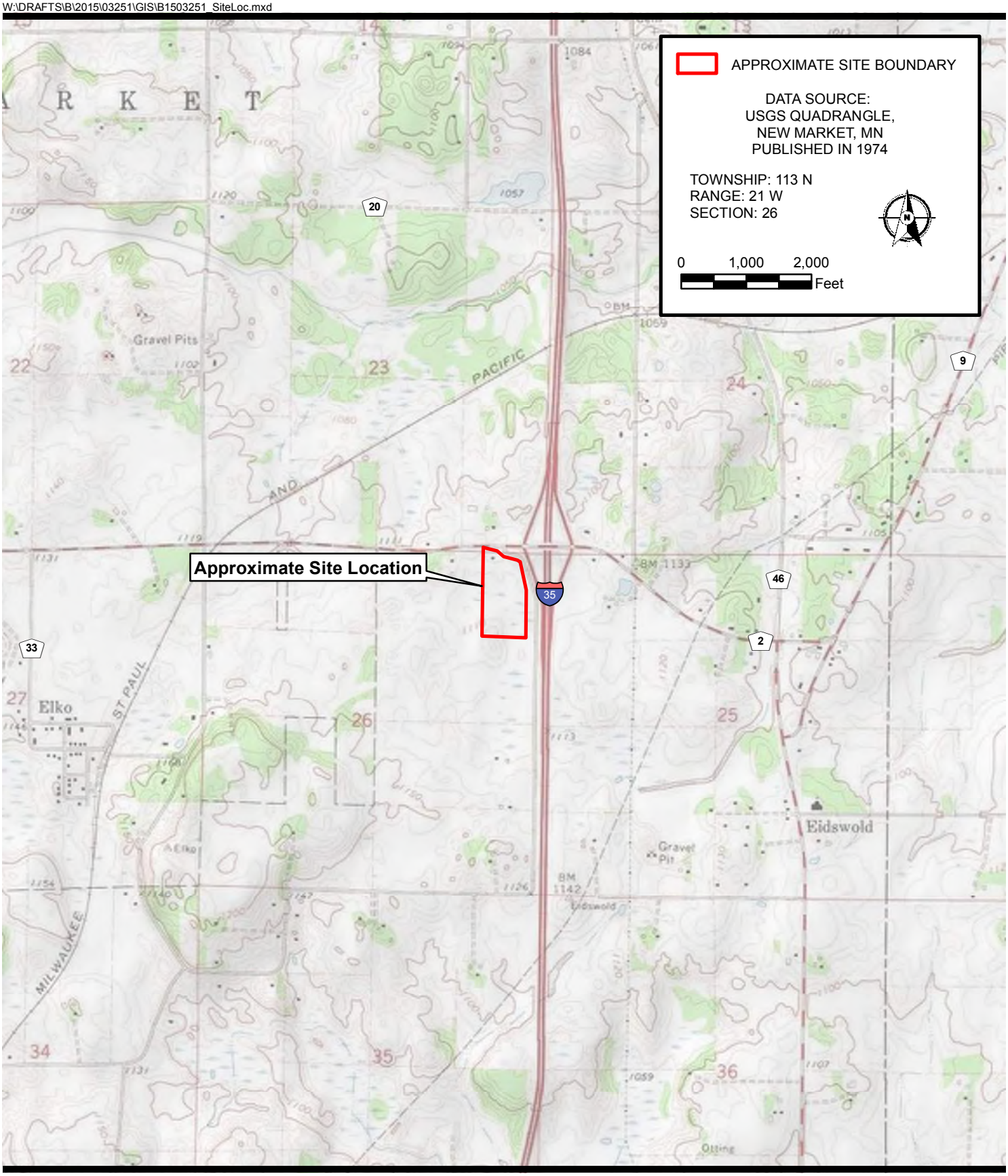
BRAUN INTERTEC CORPORATION

for: Jacob D. Friederichs
Staff Scientist

for: Timothy S. Lenway, MPH
Principal – Senior Scientist

Attachments:
Figure 1: Site Location Map
Figure 2: Site Sketch
Figure 3: Soil Sample Location Map
Table 1: Summary of Soil Analytical Results
Analytical Laboratory Report

W:\DRAFTS\B\2015\03251\GIS\B1503251_SiteLoc.mxd



Sheet: 1 of 1

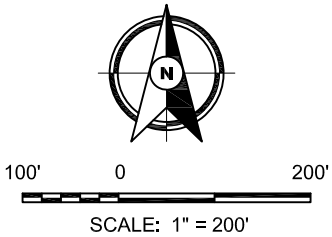
Fig. 1

Project No:	B1503251
Drawing No.	B1503251_SiteLoc
Scale:	1 in = 2,000 ft
Drawn By:	FER
Date Drawn:	5/15/15
Checked By:	JDF
Last Modified:	5/15/15

SITE LOCATION MAP
SOIL SAMPLING REPORT
TWIN CITIES FEATHERLITE
10881 EAST 260TH STREET
ELKO, MINNESOTA

BRAUN INTERTEC
11001 Hampshire Avenue So.
Minneapolis, MN 55438
PH. (952) 995-2000
FAX (952) 995-2020

F:\2015\B1503251.dwg,Site Sketch,5/19/2015 3:43:30 PM



Project No:	B1503251
Drawing No:	B1503251
Scale:	1" = 200'
Drawn By:	REJ
Date Drawn:	5/19/15
Checked By:	JF
Last Modified:	5/19/15

Sheet: of

Fig: 2

SITE SKETCH
SOIL SAMPLING REPORT
TWIN CITIES FEATHERLITE
10881 EAST 260TH STREET
ELKO, MINNESOTA

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
PH. (952) 995-2000
FAX (952) 995-2020

F:\2015\B1503251.dwg,Sample Loc Map,5/19/2015 3:43:14 PM

SOIL SAMPLE LOCATION

N

20' 0 40'

SCALE: 1" = 40'

Sheet: of	
Fig:	3
Project No:	B1503251
Drawing No:	B1503251
Scale:	1" = 40'
Drawn By:	REJ
Date Drawn:	5/19/15
Checked By:	JF
Last Modified:	5/19/15

SOIL SAMPLE LOCATION MAP
SOIL SAMPLING REPORT
TWIN CITIES FEATHERLITE
10881 EAST 260TH STREET
ELKO, MINNESOTA

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
PH. (952) 995-2000
FAX (952) 995-2020

Table 1
Summary of Soil Analytical Results
Twin Cities Featherlite
Elko, Minnesota
Project B1503251

Compound/Parameter	CAS No.	Sample Identifier								Residential Soil Reference Value (mg/kg)	Industrial Soil Reference Value (mg/kg)	Tier 1 Soil Leaching Value (mg/kg)
		SS-1 (14")	**SS-2 (14")**	**SS-3 (14")**	**SS-4 (14")**	**SS-5 (14")**	**SS-6 (14")**	**SS-7 (14")**	**SS-8 (14")**			
		4/27/15	**4/27/15**	**4/27/15**	**4/27/15**	**4/27/15**	**4/27/15**	**4/27/15**	**4/27/15**			
		10304096001	**10304096002**	**10304096003**	**10304096004**	**10304096005**	**10304096006**	**10304096007**	**10304096008**			
Volatile Organic Compounds (mg/kg)												
All reported VOCs	NE	ND	ND	ND	ND	ND	ND	ND	ND	NE	NE	NE
Total Petroleum Hydrocarbons (mg/kg)												
Gasoline Range Organics	NA	<12.0	<12.1	<12.1	<11.7	<10.9	<12.2	<12.4	<11.6	NE	NE	NE
WDRO C10-C28	NA	**34.6** [2]	**13.5** [2]	<9.2	<9.7	**2,050**	<9.2	**29.0**	**170** [2]	NE	NE	NE
Metals (mg/kg)												
Arsenic	7440-38-2	**4.9**	**4.5**	**3.8**	**3.5**	**3.2**	**4.4**	**4.0**	**4.5**	9	20	5.8
Barium	7440-39-3	**80.9**	**72.3**	**83.3**	**73.1**	**47.8**	**82.5**	**112**	**79.9**	1,100	18,000	1,700
Cadmium	7440-43-9	**1.2**	**0.61**	**0.23**	<0.16	**0.60**	<0.18	**0.44**	**0.31**	25	200	8.8
Chromium	7440-47-3	**16.1**	**14.2**	**15.9**	**11.8**	**11.4**	**14.5**	**13.3**	**13.9**	87 [c]	650 [c]	36 [c]
Lead	7439-92-1	**6.9**	**7.3**	**6.9**	**7.0**	**3.8**	**5.2**	**7.4**	**6.2**	300	700	2,700
Mercury	7439-97-6	**0.024**	<0.024	<0.024	<0.020	<0.021	**0.026**	<0.023	**0.025**	0.5	1.5	3.3
Selenium	7782-49-2	<1.1	<1.0	<0.86	<1.1	<0.87	<1.2	<1.1	<0.99	160	1,300	2.6
Silver	7440-22-4	<0.53	<0.50	<0.43	<0.53	<0.43	<0.60	<0.56	<0.50	160	1,300	7.9
Other Parameters												
pH at 25 Degrees C (Std. Units)	NA	**7.0**	**6.6**	**6.7**	**6.6**	**5.7**	**7.0**	**5.9**	**7.0**	NE	NE	NE

Notes:

[2] [T6] High boiling point hydrocarbons are present in the sample.

mg/kg = Milligrams per kilogram.

< = Less than the reporting limit

---- = Not analyzed or calculated for this parameter

NE = Not Established

ND = Not Detected Above the Reporting Limit

SRV - Soil Reference Value Established by the Minnesota Pollution Control Agency; 1999, revised 2009

SLV - Soil Leaching Value Established by the Minnesota Pollution Control Agency; 1999, revised 2005

[c] = Criteria for hexavalent chromium.

BRAUN INTERTEC

Appendix F: Property Tax Information

Property Card	Parcel ID Number	089230090

Taxpayer Information

Taxpayer Name

ADELMANN FARMS NEW MARKET LLC

Mailing Address

8640 HARRIET AVE S

BLOOMINGTON, MN 55420

Property Address

Address

10680 260TH ST E

City

ELKO, MN 55020

Parcel Information

Uses	200 Agricultural	Calculated Acres	112.41
		Deeded Acres	114.19
		Plat	
		Lot	
		Block	
Legal Description	Section 23 Township 113 Range 021		
Legal Description2	S1/4 OF W1/2 SE1/4 & NE1/4 SW1/4 & N3/4 OF W1/2 SE1/4 EX 1.54A HWY EX PARCEL 2 OF SC ROW PLAT #28.		

Building Information

Building Style	1 1/2 STRY	AGLA (Sq Ft)	1,116	Bedrooms	0
Year Built	1900	Garage Size (Sq Ft)	360	Bathrooms	0.00
Model Desc	RES	Basement Size (Sq Ft)	504	Basement Finish (Sq Ft)	0

Miscellaneous Information

School District	Taxing District Code	Homestead Status	Green Acres	Ag Preserve
ISD 0194 LAKEVILLE	1001	N	Y	N

Assessor Information

Estimated Market Value		2016 Values (Payable 2017)		Last Sale
Land		$1,189,200.00	Date of Sale	01/01/1900
Improvement		$0.00	Sale Value	$0.00
Total		$1,189,200.00		

Disclaimer: This information is to be used for reference purposes only. Scott County does not guarantee accuracy of the material contained herein and is not responsible for misuse or misinterpretation. The preceding disclaimer is provided pursuant to Minnesota Statutes 466.03, Subd. 21 (2000), and the user of this service acknowledges that the County shall not be liable for any damages, and expressly waives all claims, and agrees to defend, indemnify, and hold harmless the County from any and all claims brought by User, its employees or agents, or third parties which arise out of the user's access or use of data provided.

Property Card	Parcel ID Number	089230040

Taxpayer Information

Taxpayer Name
ADELMANN FARMS NEW MARKET LLC
Mailing Address
8640 HARRIET AVE S BLOOMINGTON, MN 55420

Property Address

Address
10880 260TH ST E
City
ELKO, MN 55020

Parcel Information

Uses	200 Agricultural	Calculated Acres	70.62
		Deeded Acres	72.11
		Plat	
		Lot	
		Block	
Legal Description	Section 23 Township 113 Range 021		
Legal Description2	E1/2 OF NE1/4 S OF RR & E1/2 SE1/4 EX HWY ROW & EX S OF CO RD 2 EX PARCEL 3 OF SC ROW PLAT #28		

Building Information

Building Style	1 1/2 STRY	AGLA (Sq Ft)	1,588	Bedrooms	0
Year Built	1900	Garage Size (Sq Ft)	0	Bathrooms	0.00
Model Desc	SF RES	Basement Size (Sq Ft)	896	Basement Finish (Sq Ft)	0

Miscellaneous Information

School District	Taxing District Code	Homestead Status	Green Acres	Ag Preserve
ISD 0194 LAKEVILLE	1001	N	Y	N

Assessor Information

Estimated Market Value		2016 Values (Payable 2017)	Last Sale	
Land		$785,900.00	Date of Sale	06/11/2010
Improvement		$132,300.00	Sale Value	$1,140,000.00
Total		$918,200.00		

Disclaimer: This information is to be used for reference purposes only. Scott County does not guarantee accuracy of the material contained herein and is not responsible for misuse or misinterpretation. The preceding disclaimer is provided pursuant to Minnesota Statutes 466.03, Subd. 21 (2000), and the user of this service acknowledges that the County shall not be liable for any damages, and expressly waives all claims, and agrees to defend, indemnify, and hold harmless the County from any and all claims brought by User, its employees or agents, or third parties which arise out of the user's access or use of data provided.

Property Card	Parcel ID Number 089230081

Taxpayer Information

Taxpayer Name

ADELMANN FARMS NEW MARKET LLC

Mailing Address

8640 HARRIET AVE S

BLOOMINGTON, MN 55420

Property Address

Address

City

Parcel Information

Uses	200 Agricultural	Calculated Acres	8.86
		Deeded Acres	8.83
		Plat	
		Lot	
		Block	
Legal Description	Section 23 Township 113 Range 021		
Legal Description2	E 345.69' SE1/4 SW1/4 NORTH OF CO RD 2 EX PARCEL 3 OF SC ROW PLAT #27.		

Building Information

Building Style		AGLA (Sq Ft)	0	Bedrooms	0
Year Built	0	Garage Size (Sq Ft)	0	Bathrooms	0.00
Model Desc		Basement Size (Sq Ft)	0	Basement Finish (Sq Ft)	0

Miscellaneous Information

School District	Taxing District Code	Homestead Status	Green Acres	Ag Preserve
ISD 0194 LAKEVILLE	1001	N	Y	N

Assessor Information

Estimated Market Value		2016 Values (Payable 2017)		Last Sale
Land		$93,600.00	Date of Sale	01/01/1900
Improvement		$0.00	Sale Value	$0.00
Total		$93,600.00		

Disclaimer: This information is to be used for reference purposes only. Scott County does not guarantee accuracy of the material contained herein and is not responsible for misuse or misinterpretation. The preceding disclaimer is provided pursuant to Minnesota Statutes 466.03, Subd. 21 (2000), and the user of this service acknowledges that the County shall not be liable for any damages, and expressly waives all claims, and agrees to defend, indemnify, and hold harmless the County from any and all claims brought by User, its employees or agents, or third parties which arise out of the user's access or use of data provided.

Property Card	Parcel ID Number	089260071

Taxpayer Information

Taxpayer Name
EMPIRE II LLC
Mailing Address
19492 BISCAYNE AVE FARMINGTON, MN 55024

Property Address

Address
10675 260TH ST E
City
ELKO, MN 55020

Parcel Information

Uses	300 Commercial	Calculated Acres	21.27
		Deeded Acres	22.00
		Plat	
		Lot	
		Block	
Legal Description	Section 26 Township 113 Range 021		
Legal Description2	NW1/4 NE1/4 EX W 18A		

Building Information

Building Style	1 1/2 STRY	AGLA (Sq Ft)	1,134	Bedrooms	0
Year Built	1900	Garage Size (Sq Ft)	0	Bathrooms	0.00
Model Desc	SF RES	Basement Size (Sq Ft)	756	Basement Finish (Sq Ft)	0

Miscellaneous Information

School District	Taxing District Code	Homestead Status	Green Acres	Ag Preserve
ISD 0194 LAKEVILLE	1001	N	N	N

Assessor Information

Estimated Market Value		2016 Values (Payable 2017)		Last Sale
Land		$388,600.00	Date of Sale	01/12/2015
Improvement		$243,600.00	Sale Value	$1,000,000.00
Total		$632,200.00		

Disclaimer: This information is to be used for reference purposes only. Scott County does not guarantee accuracy of the material contained herein and is not responsible for misuse or misinterpretation. The preceding disclaimer is provided pursuant to Minnesota Statutes 466.03, Subd. 21 (2000), and the user of this service acknowledges that the County shall not be liable for any damages, and expressly waives all claims, and agrees to defend, indemnify, and hold harmless the County from any and all claims brought by User, its employees or agents, or third parties which arise out of the user's access or use of data provided.

Property Card	Parcel ID Number 089260050

Taxpayer Information

Taxpayer Name
EMPIRE II LLC

Mailing Address
19492 BISCAYNE AVE
FARMINGTON, MN 55024

Property Address

Address

City

Parcel Information

Uses	300 Commercial	Calculated Acres	9.97
		Deeded Acres	10.00
		Plat	
		Lot	
		Block	
Legal Description	Section 26 Township 113 Range 021		
Legal Description2	W1/4 NE1/4 NE1/4		

Building Information

Building Style		AGLA (Sq Ft)	0	Bedrooms	0
Year Built	0	Garage Size (Sq Ft)	0	Bathrooms	0.00
Model Desc		Basement Size (Sq Ft)	0	Basement Finish (Sq Ft)	0

Miscellaneous Information

School District	Taxing District Code	Homestead Status	Green Acres	Ag Preserve
ISD 0194 LAKEVILLE	1001	N	N	N

Assessor Information

Estimated Market Value		2016 Values (Payable 2017)		Last Sale
Land		$172,500.00	Date of Sale	01/01/1900
Improvement		$0.00	Sale Value	$0.00
Total		$172,500.00		

Disclaimer: This information is to be used for reference purposes only. Scott County does not guarantee accuracy of the material contained herein and is not responsible for misuse or misinterpretation. The preceding disclaimer is provided pursuant to Minnesota Statutes 466.03, Subd. 21 (2000), and the user of this service acknowledges that the County shall not be liable for any damages, and expressly waives all claims, and agrees to defend, indemnify, and hold harmless the County from any and all claims brought by User, its employees or agents, or third parties which arise out of the user's access or use of data provided.

Property Card	Parcel ID Number	089260030

Taxpayer Information

Taxpayer Name
ADELMANN FAMILY PARTNERSHIP
Mailing Address
8640 HARRIET AVE S # 100 MINNEAPOLIS, MN 55420

Property Address

Address
10881 260TH ST E
City
ELKO, MN 55020

Parcel Information

Uses	200 Agricultural	Calculated Acres	19.67
		Deeded Acres	19.02
		Plat	
		Lot	
		Block	
Legal Description	Section 26 Township 113 Range 021		
Legal Description2	NE1/4 NE1/4 EX 9.84A EX W1/4 NE1/4 NE1/4 & EX 1.14 A		

Building Information

Building Style	N/A	AGLA (Sq Ft)	0	Bedrooms	0
Year Built	1997	Garage Size (Sq Ft)	0	Bathrooms	2.00
Model Desc	IND/WRHSE	Basement Size (Sq Ft)	0	Basement Finish (Sq Ft)	0

Miscellaneous Information

School District	Taxing District Code	Homestead Status	Green Acres	Ag Preserve
ISD 0194 LAKEVILLE	1001	N	N	N

Assessor Information

Estimated Market Value		2016 Values (Payable 2017)		Last Sale
Land		$575,400.00	Date of Sale	01/01/1900
Improvement		$357,900.00	Sale Value	$0.00
Total		$933,300.00		

Disclaimer: This information is to be used for reference purposes only. Scott County does not guarantee accuracy of the material contained herein and is not responsible for misuse or misinterpretation. The preceding disclaimer is provided pursuant to Minnesota Statutes 466.03, Subd. 21 (2000), and the user of this service acknowledges that the County shall not be liable for any damages, and expressly waives all claims, and agrees to defend, indemnify, and hold harmless the County from any and all claims brought by User, its employees or agents, or third parties which arise out of the user's access or use of data provided.

ISG

Mankato, MN
Minneapolis/St. Paul, MN
Des Moines, IA
Storm Lake, IA
Waterloo, IA
Green Bay, WI
La Crosse, WI
Sioux Falls, SD

www.is-grp.com

Exhibit E:

Minnesota Department of Natural Resources NHIS Letter and Correspondence

From:	Bump, Samantha (DNR)
To:	Travis Fristed
Subject:	RE: NHIS Request- Adelmann Properties
Date:	Thursday, October 18, 2018 1:00:10 PM
Attachments:	image001.png 20548 NHIS Response_081417.pdf 20548 NHIS Request_083118.pdf

---

Hi Travis,

I have reviewed the NHIS regarding the above project. There are no new records in the vicinity of the project. As such, the Natural Heritage letter dated August 14, 2017 is valid until October 18, 2019.

Thank you for consulting us on this matter. If you have any further questions, please feel free to contact me.

Have a great day,

Samantha Bump
NHIS Review Specialist | Ecological & Water Resources
Minnesota Department of Natural Resources
500 Lafayette Road
St. Paul, MN 55155
Phone: 651-259-5091
Email: Samantha.Bump@state.mn.us
mndnr.gov

DEPARTMENT OF NATURAL RESOURCES

From: Travis Fristed <Travis.Fristed@is-grp.com>
Sent: Friday, August 31, 2018 10:11 AM
To: MN_NHIS, Review (DNR) <Review.NHIS@state.mn.us>
Subject: RE: NHIS Request- Adelmann Properties

Hello,

Please see attached NHIS request for renewal of expired ERDB# 20180074. The purpose of this request is for the preparation of an AUAR.

Thanks,

Travis Fristed PWS
Associate Principal, Practice Group Leader

7900 International Drive, Suite 550
Minneapolis, MN 55425
P: 952.426.0699
C: 952.500.1180
travis.fristed@is-grp.com

Architecture | Engineering | Environmental | Planning

From: Travis Fristed
Sent: Monday, June 12, 2017 1:02 PM
To: 'Review.NHIS@state.mn.us' <Review.NHIS@state.mn.us>
Subject: NHIS Request- Adelmann Properties

Hello Lisa,

Attached is an NHIS request form for the Adelmann Properties in Scott County. This request for planning purposes of conceptual mixed use development scenarios on the parcels. We understand that an updated NHIS request will be submitted when the project is defined and the appropriate environmental review (anticipated EAW or AUAR) is known in the future.

Thanks

Minnesota Department of Natural Resources
Division of Ecological & Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155-4025

August 14, 2017
Correspondence # ERDB 20180074

Mr. Travis Fristed
I+S Group
7900 International Drive, Suite 300
Minneapolis, MN 55425

RE: Natural Heritage Review of the proposed Adelmann Family Property,
T113N R21W Sections 23 & 26; Scott County

Dear Mr. Fristed,

As requested, the Minnesota Natural Heritage Information System has been queried to determine if any rare species or other significant natural features are known to occur within an approximate one-mile radius of the proposed project. Based on this query, rare features have been documented within the search area (for details, please visit the Rare Species Guide at http://www.dnr.state.mn.us/rsg/index.html for more information on the biology, habitat use, and conservation measures of these rare species). Please note that the following rare features may be adversely affected by the proposed project:

- A portion of the property is within a Central Region Regionally Significant Ecological Area (RSEA) that is ranked *High*. The DNR Central Region (in partnership with the Metropolitan Council for the 7-county metro area), identified these ecologically significant terrestrial and wetland areas by conducting a landscape-scale assessment based on the size and shape of the ecological area, land cover within the ecological area, adjacent land cover/use, and connectivity to other ecological areas. The purpose of the data is to inform regional scale land use decisions, especially as it relates to balancing development and natural resource protection. A GIS shapefile of this data layer can be downloaded from the MN Geospatial Commons at https://gisdata.mn.gov/. Additional information, including pdf versions of the RSEA maps, is available at http://www.dnr.state.mn.us/rsea/index.html.

- Please include a copy of this letter in any state or local license or permit application. Please note that measures to avoid or minimize disturbance to the above rare features may be included as restrictions or conditions in any required permits or licenses.

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the

occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area. If additional information becomes available regarding rare features in the vicinity of the project, further review may be necessary.

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location (noted above) and the project description provided on the NHIS Data Request Form. Please contact me if project details change or for an updated review if construction has not occurred within one year.

The Natural Heritage Review does not constitute review or approval by the Department of Natural Resources as a whole. Instead, it identifies issues regarding known occurrences of rare features and potential effects to these rare features. If you have not done so already, please contact your DNR Regional Environmental Assessment Ecologist to determine whether there are other natural resource concerns associated with the proposed project (contact information available at http://www.dnr.state.mn.us/eco/ereview/erp_regioncontacts.html). Please be aware that additional site assessments or review may be required.

Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources. An invoice will be mailed to you under separate cover.

Sincerely,

Samantha Bump
Natural Heritage Review Specialist
Samantha.Bump@state.mn.us

Exhibit F:

State Historic Preservation Office Correspondence

From: MN_MNIT_Data Request SHPO
To: Travis Fristed
Subject: RE: SHO Data Review Request- Adelmann Properties, Elko New Market
Date: Wednesday, October 17, 2018 12:21:57 PM
Attachments: image001.png
ScottHistoric.xls

Hello Travis,

Attached is the historic site report you requested. There are no archaeologic sites in our database for the given area.

Jim

DEPARTMENT OF ADMINISTRATION
STATE HISTORIC PRESERVATION OFFICE

SHPO Data Requests
Minnesota State Historic Preservation Office
50 Sherburne Avenue, Suite 203
Saint Paul, MN 55155
(651) 201-3295
datarequestshpo@state.mn.us

Notice: This email message simply reports the results of the cultural resources database search you requested. The database search is only for previously known archaeological sites and historic properties. **IN NO CASE DOES THIS DATABASE SEARCH OR EMAIL MESSAGE CONSTITUTE A PROJECT REVIEW UNDER STATE OR FEDERAL PRESERVATION LAWS –** please see our website at https://mn.gov/admin/shpo/protection/ for further information regarding our Environmental Review Process.

Because the majority of archaeological sites in the state and many historic/architectural properties have not been recorded, important sites or properties may exist within the search area and may be affected by development projects within that area. Additional research, including field surveys, may be necessary to adequately assess the area's potential to contain historic properties or archaeological sites.

Properties that are listed in the National Register of Historic Places (NRHP) or have been determined eligible for listing in the NRHP are indicated on the reports you have received, if any. The following codes may be on those reports:

NR – National Register listed. The properties may be individually listed or may be within the boundaries of a National Register District.

CEF – Considered Eligible Findings are made when a federal agency has recommended that a property is eligible for listing in the National Register and MN SHPO has accepted the recommendation for the purposes of the Environmental Review Process. These properties need to be further assessed before they are officially listed in the National Register.

SEF – Staff eligible Findings are those properties the MN SHPO staff considers eligible for listing in the National Register, in circumstances other than the Environmental Review Process.

DOE – Determination of Eligibility is made by the National Park Service and are those properties that are eligible for listing in the National Register, but have not been officially listed.

CNEF – Considered Not Eligible Findings are made during the course of the Environmental Review Process. For the purposes of the review a property is considered not eligible for listing in the National Register. These properties may need to be reassessed for eligibility under additional or alternate contexts.

Properties without NR, CEF, SEF, DOE, or CNEF designations in the reports may not have been evaluated and therefore no assumption to their eligibility can be made. Integrity and contexts change over time, therefore any eligibility determination made ten (10) or more years from the date of the current survey are considered out of date and the property will need to be reassessed.

If you require a comprehensive assessment of a project's potential to impact archaeological sites or historic/architectural properties, you may need to hire a qualified archaeologist and/or historian. If you need assistance with a project review, please contact Kelly Gragg-Johnson, Environmental Review Specialist @ 651-201-3285 or by email at kelly.graggjohnson@state.mn.us.

The Minnesota SHPO Archaeology and Historic/Architectural Survey Manuals can be found at https://mn.gov/admin/shpo/identification-evaluation/.

MN SHPO research hours are **8:30 AM – 4:00 PM Tuesday-Friday**. Please call ahead at 651-201-3295 to ensure staff is available to assist you, if necessary. Thank you.

Notice: This email message simply reports the results of the cultural resources database search you requested. The database search is only for previously known archaeological sites and historic properties. **IN NO CASE DOES THIS DATABASE SEARCH OR EMAIL MESSAGE CONSTITUTE A PROJECT REVIEW UNDER STATE OR FEDERAL PRESERVATION LAWS –** please see our website at https://mn.gov/admin/shpo/protection/ for further information regarding our Environmental Review Process.

Because the majority of archaeological sites in the state and many historic/architectural properties have not been recorded, important sites or properties may exist within the search area and may be affected by development projects within that area. Additional research, including field surveys, may be necessary to adequately assess the area's potential to contain historic properties or archaeological sites.

Properties that are listed in the National Register of Historic Places (NRHP) or have been determined eligible for listing in the NRHP are indicated on the reports you have received, if any. The following codes may be on those reports:

NR – National Register listed. The properties may be individually listed or may be within the boundaries of a National Register District.

CEF – Considered Eligible Findings are made when a federal agency has recommended that a property is eligible for listing in the National Register and MN SHPO has accepted the recommendation for the purposes of the Environmental Review Process. These properties need to be further assessed before they are officially listed in the National Register.

SEF – Staff eligible Findings are those properties the MN SHPO staff considers eligible for listing in the National Register, in circumstances other than the Environmental Review Process.

DOE – Determination of Eligibility is made by the National Park Service and are those properties that are eligible for listing in the National Register, but have not been officially listed.

CNEF – Considered Not Eligible Findings are made during the course of the Environmental Review Process. For the purposes of the review a property is considered not eligible for listing in the National Register. These properties may need to be reassessed for eligibility under additional or alternate contexts.

Properties without NR, CEF, SEF, DOE, or CNEF designations in the reports may not have been evaluated and therefore no assumption to their eligibility can be made. Integrity and contexts change over time, therefore any eligibility determination made ten (10) or more years from the date of the current survey are considered out of date and the property will need to be reassessed.

If you require a comprehensive assessment of a project's potential to impact archaeological sites or historic/architectural properties, you may need to hire a qualified archaeologist and/or historian. If you need assistance with a project review, please contact Kelly Gragg-Johnson, Environmental Review Specialist @ 651-201-3285 or by email at kelly.graggjohnson@state.mn.us.

The Minnesota SHPO Archaeology and Historic/Architectural Survey Manuals can be found at https://mn.gov/admin/shpo/identification-evaluation/.

MN SHPO research hours are **8:30 AM – 4:00 PM Tuesday-Friday**. Please call ahead at 651-201-3295 to ensure staff is available to assist you, if necessary. Thank you.

From: Travis Fristed <Travis.Fristed@is-grp.com>
Sent: Monday, October 15, 2018 4:07 PM
To: MN_MNIT_Data Request SHPO <DataRequestSHPO@state.mn.us>
Subject: SHO Data Review Request- Adelmann Properties, Elko New Market

To Whom it May Concern,

ISG is conducting an environmental review for the Adelmann Family Property in Elko New Market Township, Scott County, Minnesota. Figures 1 and 2 are attached for project location reference. Could you please provide any SHPO records of known historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the site? Including: 1) historic designations, 2) known artifact areas, and 3) architectural features.

Thank you for your assistance.

Travis Fristed PWS
Associate Principal, Practice Group Leader

7900 International Drive, Suite 550
Minneapolis, MN 55425
P: 952.426.0699
C: 952.500.1180
travis.fristed@is-grp.com

Architecture | Engineering | Environmental | Planning

COUNTY	CITYTWP	PROPNAME	ADDRESS	TOWNSHIP	RANGE	SECTION	QUARTERS	USGS	REPORTNUM	NRHP	CEF	DOE	INVENTNUM
Scott													
	New Market Twp.												
		Mendota-Big Sioux River Rd.: Dodd Rd. Section		113	21	24	SE-SE-SE	New Market					SC-NMT-007
		Mendota-Big Sioux River Rd.: Dodd Rd. Section		113	21	25	W-NE, NE-NW SE	New Market					SC-NMT-007

Exhibit G:

Traffic Study

TRAFFIC IMPACT STUDY

ADELMANN DEVELOPMENT
ELKO NEW MARKET, MINNESOTA

Prepared May 2, 2018

Revised December 11, 2019

Project No. 17-20548

ISG

Signature Sheet

I HEREBY CERTIFY THAT THESE CALCULATIONS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

William A. Kratt, PE
Project Engineer
License # 51210

I+S Group, Inc.
201 Main Street, Suite 1020
La Crosse, WI 54601

Adelmann Development
Elko New Market, Minnesota

Engineer's Project Number: 17-20548

Dated this 11th day of December, 2019.

Table of Contents

Table of Contents i
List of Exhibits ii
List of Tables ii
Executive Summary 1
Studied Intersection Description and Location 1
Findings 1
Recommendations 3
Conclusions 4
Introduction 5
Purpose of Report 5
Study Objectives 5
Area Conditions 5
City Data, Land Use, and Zoning 5
Area Roadway System 6
Existing Traffic Volumes and Conditions 7
Anticipated Future Development 14
Projected Traffic 15
Site Traffic 15
Other Traffic 21
Total Future Traffic 22
Traffic Analysis 23
Site Access, Circulation, and Parking 23
Capacity and Level of Service at Studied Intersections 24
Crash Analysis 59
Traffic Signal Warrant Analysis 61
All-Way-Stop Control Warrant Analysis 62
Improvements to Accommodate Development Traffic 62
Conclusions 75
Summary of Roadway Link Analysis 75
Summary of Intersection Analysis 75
Summary of Needed Improvements 75
Appendices
Appendix A: Proposed Development Overview ..... A
Appendix B: Location Map ..... B
Appendix C: Existing Zoning Map C
Appendix D: Future Land Use Map ..... D
Appendix E: Intersection Diagram ..... E

Appendix F: Existing Traffic Counts ..... F
Appendix G: Synchro Reports – Existing (2018) ..... G
Appendix H: Trip Distribution ..... H
Appendix I: Baseline (2031) Traffic Counts – Diagram I
Appendix J: Phase 1 (2031) Traffic Counts – Diagram ..... J
Appendix K: Baseline (2038) Traffic Counts – Diagram ..... K
Appendix L: Phase 2 (2038) Traffic Counts – Diagram L
Appendix M: Synchro Reports – Baseline (2031) ..... M
Appendix N: Synchro Reports – Phase 1 (2031) ..... N
Appendix O: Synchro Reports – Phase 1 (2031) Recommendations ..... O
Appendix P: Synchro Reports – Baseline (2038) ..... P
Appendix Q: Synchro Reports – Baseline (2038) with Improvements from Phase 1 ..... Q
Appendix R: Synchro Reports – Phase 2 (2038) ..... R
Appendix S: Synchro Reports – Phase 2 (2038) Recommendations ..... S

List of Exhibits

Exhibit 1: Area Traffic 7
Exhibit 2: AM Internal Capture 17
Exhibit 3: PM Internal Capture 18
Exhibit 4: Historical Area Traffic Growth 21
Exhibit 5: Typical Section – North-South Roads Accessing CSAH 2 – Major Collector 23
Exhibit 6: Typical Section – East-West Roads Accessing Xerxes Avenue – Minor Collector 23
Exhibit 7: Intersection 2 - CSAH 2 and Future Access Road (W) 24
Exhibit 8: Intersection 3 - CSAH 2 and Future Access Road (E) 24
Exhibit 9: Crash Locations 59

List of Tables

Table 1: Existing LOS – Intersection 1 8
Table 2: Existing LOS – Intersection 2 9
Table 3: Existing LOS – Intersection 3 10
Table 4: Existing LOS – Intersection 4 11
Table 5: Existing LOS – Intersection 5 12
Table 6: Existing LOS – Intersection 6 13
Table 7: Unadjusted Generated Traffic by Land Use 16
Table 8: Unadjusted Generated Traffic Summary – Entering and Exiting 17
Table 9: Externally Generated Trips – Entering and Exiting 19
Table 10: Pass-By Trip Analysis 20
Table 11: Historical CSAH 2 Growth 21
Table 12: Baseline 2031 LOS – Intersection 1 25
Table 13: Baseline 2031 LOS – Intersection 2 26
Table 14: Baseline 2031 LOS – Intersection 3 27
Table 15: Baseline 2031 LOS – Intersection 4 28
Table 16: Baseline 2031 LOS – Intersection 5 29

Table 17: Baseline 2031 LOS – Intersection 6 30
Table 18: Phase 1 LOS – Intersection 1 31
Table 19: Phase 1 LOS – Intersection 2 32
Table 20: Phase 1 LOS – Intersection 3 33
Table 21: Phase 1 LOS – Intersection 4 34
Table 22: Phase 1 LOS – Intersection 5 35
Table 23: Phase 1 LOS – Intersection 6 36
Table 24: Baseline 2038 LOS – Intersection 1 37
Table 25: Baseline 2038 LOS – Intersection 2 38
Table 26: Baseline 2038 LOS – Intersection 3 39
Table 27: Baseline 2038 LOS – Intersection 4 40
Table 28: Baseline 2038 LOS – Intersection 5 41
Table 29: Baseline 2038 LOS – Intersection 6 42
Table 30: 2038 with Phase 1 Recommendations LOS – Intersection 1 43
Table 31: 2038 with Phase 1 Recommendations LOS – Intersection 2 44
Table 32: 2038 with Phase 1 Recommendations LOS – Intersection 3 45
Table 33: 2038 with Phase 1 Recommendations LOS – Intersection 5 46
Table 34: 2038 with Phase 1 Recommendations LOS – Intersection 6 47
Table 35: Phase 2 LOS – Intersection 1 48
Table 36: Phase 2 LOS – Intersection 2 49
Table 37: Phase 2 LOS – Intersection 3 50
Table 38: Phase 2 LOS – Intersection 5 51
Table 39: Phase 2 LOS – Intersection 6 52
Table 40: LOS and Delay Comparison – Intersection 1 53
Table 41: LOS and Delay Comparison – Intersection 2 54
Table 42: LOS and Delay Comparison – Intersection 3 55
Table 43: LOS and Delay Comparison – Intersection 4 56
Table 44: LOS and Delay Comparison – Intersection 5 57
Table 45: LOS and Delay Comparison – Intersection 6 58
Table 46: Recorded Crashes and Severity Summary 60
Table 47: KAB Crash Details 60
Table 48: Traffic Signal Warrant Analysis Summary 61
Table 49: Phase 1 Recommendations – Intersection 1 65
Table 50: Phase 1 Recommendations – Intersection 2 66
Table 51: Phase 1 Recommendations – Intersection 3 67
Table 52: Phase 1 Recommendations – Intersection 5 68
Table 53: Phase 1 Recommendations – Intersection 6 69
Table 54: Phase 2 Recommendations – Intersection 1 70
Table 55: Phase 2 Recommendations – Intersection 2 71
Table 56: Phase 2 Recommendations – Intersection 3 72
Table 57: Phase 2 Recommendations – Intersection 5 73
Table 58: Phase 2 Recommendations – Intersection 6 74

Executive Summary

Studied Intersection Description and Location

This Traffic Impact Study (TIS) studied current, projected, and future traffic conditions at six locations in the City of Elko New Market, Scott County, Minnesota. These locations included:

- Intersection 1 – The intersection of County State Aid Highway (CSAH) 2, also known as 260th Street E, and Xerxes Avenue.
- Intersection 2 – The intersection of CSAH 2 and Newton Circle's west access point.
- Intersection 3 – The intersection of CSAH 2 and Newton Circle's east access point.
- Intersection 4 – The intersection of CSAH 2 and Irving Avenue.
- Intersection 5 – The intersection of CSAH 2 and the southbound ramp of Interstate Highway 35 (I-35).
- Intersection 6 – The intersection of CSAH 2 and the northbound ramp of I-35.

This study focuses on the traffic impacts of a 160-acre residential, commercial, and industrial development north and south of CSAH 2 between Xerxes Avenue and I-35. The land, located on the outskirts of Elko New Market, is largely undeveloped. The properties are currently privately owned by Adelmann Farms New Market LLC, zoned by Scott County as Urban Business Reserve (UBR). At the time of this writing, an annexation agreement between the City of Elko New Market and Scott County is currently in place but has yet to be executed.

An existing asphalt paved trail runs along the north side of CSAH 2 from Intersection 1 to Intersection 5 within the county highway right-of-way. This trail is used by pedestrians and cyclists. Highway crossings are not provided. As the area develops, sidewalks will be constructed providing pedestrian access to the future businesses. There are no established transit routes or bus stops in the area.

Currently, Intersections 2 and 3 operate as 3-legged intersections, but they have been constructed, with radii and turn lanes on CSAH 2, to accommodate a side street to the north. When area development commences in 2019, users can expect to use Intersection 3 to access the proposed development, and this will be the only access available until property can be acquired to construct the side road north of Intersection 2. As the area continues to develop in the next 20 years, the development's road network will expand, reaching west to connect with Xerxes Avenue at two locations. Property has yet to be acquired to accommodate this expansion. An overview of the proposed development is provided in **Appendix A: Proposed Development Overview**.

Findings

Level of Service

The analysis shows that the proposed development impacts the studied intersections from a level of service (LOS) standpoint.

Existing (2018)

Overall
Currently, Intersections 1-6 are operating at an overall LOS A in all periods, with the exception of LOS B during the AM peak for Intersection 6.
CSAH 2
Along CSAH 2 at every intersection for both AM and PM, Eastbound (EB) and Westbound (WB) approaches operate at a LOS A.

Minor Streets
All minor street approaches operate at LOS A-D for both AM and PM peak periods, with the exception of the Intersection 6 NB approach (LOS F) during the AM peak.

Baseline (2031) – Without Development

There has been a historic increase in traffic growth within this corridor. The following summaries assume this trend will continue for the next 20 years.

Overall
Intersections 1-6 are expected to operate at an overall LOS A in all periods, with the exception of Intersection 6 during the AM peak (LOS F).
CSAH 2
EB and WB approaches operate at a LOS A-B during peak hours at all intersections.
Minor Streets
The minor street approaches operate at varying levels of service ranging from LOS A to LOS E at Intersections 1-4. At Intersections 5 and 6, the minor street approaches operate at LOS E-F.

Phase 1 (2031) – With Development

Overall
In the full build-out scenario, Intersections 1-6 see a general decrease in level of service, compared to the Baseline (2031) scenario, largely due to the failing of side street turning movements.
CSAH 2
Along CSAH 2 at most intersections for both AM and PM, EB and WB approaches operate at a LOS A. In the Phase 1 (2031) scenario, the exception is that the EB approach of Intersection 6 operates at LOS C during the AM peak.
Minor Streets
Most minor street approaches operate at LOS F. The exceptions include the NB approach of Intersection 2 in the PM peak and the NB approaches of Intersection 4 of both studied peak periods.

Baseline (2038) – Without Development

Overall
Intersections 1-4 are expected to operate at an overall LOS A in all periods. The LOS at Intersections 5 and 6 range from A-D.
CSAH 2
Along CSAH 2 at most intersections for both AM and PM, EB and WB approaches operate at a LOS A. In the Baseline (2038) scenario, the exception is that the EB approach of Intersection 6 operates at LOS C during the AM peak.
Minor Streets
The minor street approaches operate at varying levels of service ranging from LOS A to LOS F at the studied intersections. In particular, the interchange off-ramps perform the poorest.

Phase 2 (2038) – With Development

Phase 2 modeling was completed assuming that improvements for Phase 1 are implemented as recommended.
Overall
In the full build-out scenario, Intersections 1-6 see a general decrease in level of service, compared to the Baseline (2038) scenario, largely due to the failing of side street turning movements.
CSAH 2

Along CSAH 2 at Intersections 1-6, EB and WB approaches operate at LOS A-E, with the exception of the EB approach at Intersection 5 during the PM peak.

Minor Streets

At Intersections 1-3, the minor street approaches operate at LOS C-F, largely due to failing turning movements. At Intersections 5 and 6, the interchange off-ramps operate at LOS C during the AM peak and LOS B during the PM peak.

Connectivity

Study of the greater area road network shows that Elko New Market residents and visitors have few options to access I-35. Without CSAH 2's access to I-35, drivers must travel either north to Lakeville (5 miles) or south to Little Chicago (7 miles) in order to access I-35. Therefore drivers may accept long queues and low level of service before seeking alternate, more desirable routes. At the project level, Intersections 2 and 3 are connected by Newton Circle in addition to CSAH 2. While users exiting the south side of the proposed development looking to travel west may prefer Intersection 3 (because it's closer than Intersection 2), Intersection 2 is easily accessible in the proposed development plan, reducing congestion at Intersection 3.

Recommendations

By 2031, improvements to the interstate overpass bridge and Intersections 5 and 6 will be needed regardless of proposed development construction. Interim and long term options for I-35 interchange improvements have been detailed in the "CH 2 / I-35 Interchange Area Management Plan" (IAMP) developed in 2010.

To accommodate Phase 1 development, improvements to the studied intersections are needed. As the project moves into Phase 2, additional improvements will be needed. As businesses move into to the development, traffic impact studies should be conducted as needed in order to track interim improvement needs. Additionally, the study area should be re-evaluated if growth projections change.

Based on the modeled Phase 1 (2031) conditions described in this report, to accommodate both major and minor street traffic, improvements are recommended at Intersections 1-6 and some road links. The following are minimum recommendations:

- Implement roundabouts or traffic signal control at Intersections 1, 3, 5, and 6.
- Two travel lanes should be maintained both eastbound and westbound through the studied area.
- Close access to Intersection 4 and route to new access road to the west.
- At the I-35 overpass, widen the bridge to accommodate 4 travel lanes.
- Proposed business driveways should be placed in locations as to avoid impacts to future intersection turn lanes.

Based on the modeled Phase 2 (2038) conditions described in this report, to accommodate both major and minor street traffic, additional improvements are recommended at Intersections 1-6 and some road links. The following are minimum recommendations, assuming improvements to accommodate Phase 1 development are implemented as recommended:

- Implement roundabouts or traffic signal control at Intersection 2.
- Add turn lanes at Intersections 3 and 5.
- Proposed business driveways should be placed in locations as to avoid impacts to future intersection turn lanes.

Conclusions

Currently, the studied intersections are operating at LOS A-B. The area has seen in increase in traffic, and local and regional authorities expect that trend to continue. By 2031, improvements to the interstate overpass bridge and Intersections 5 and 6 will be needed regardless of proposed development construction. The proposed development is expected to impact the studied intersections in the future, and most minor street approaches are expected to operate at LOS F if the traffic control is to remain the same.

Improvements needed as a result of the proposed development, including the installation of traffic signals, may be needed to accommodate Phase 1 development. Additional improvements, including the installation of additional traffic signals, may be needed to accommodate Phase 2 development. As businesses move into the development, traffic studies should be conducted as needed to determine interim improvement needs. The types of business that move into the development, and the development rate, will largely determine when changes in intersection control are needed. Once traffic impact studies conclude that traffic signals are warranted in the near future, further study will be required to design the new traffic signals.

Once the recommended improvements are implemented, the area should be monitored as regular drivers adjust to the new traffic patterns. The study area corridors should be reevaluated on a regular basis as the area develops or as growth projections change.

Introduction

Purpose of Report

The purpose of this report is to document the methodologies, findings, recommendations, and conclusions of the subject study, including the basis for all assumptions, traffic parameters utilized, and conclusions. This report presents data in a logical format including tables and figures in order to accurately and clearly convey the data and its meaning.

Study Objectives

The objectives of this study include the following:

1. Identify the impacts to the transportation system and immediate area as a result of the proposed development.
2. Recommend necessary improvements to the adjacent transportation system to maintain a safe, efficient system.
3. Protect the safety and functionality of the transportation system while providing sufficient access for the proposed development.

Area Conditions

City Data, Land Use, and Zoning

This report studies the impacts of a proposed development near the City of Elko New Market in Scott County. An overview for the development in provided as **Appendix A: Proposed Development**, and a location map is provided as **Appendix B: Location Map**. More details regarding site traffic and trip generation are provided in a later section of this report.

The City of Elko New Market has an estimated population of 4,625 (year 2016), and the population has steadily grown since 2010. City and regional authorities expect the area's population to grow approximately 2.1% each year into the future. Community planning documents indicate that development will likely continue along the City's outer limits as Elko New Market continues to attract new businesses and residents. Land use in the study area vicinity includes commercial (south), light industrial (south), agricultural (west and east), and rural residences (west, north, and east). While the land uses vary, many of the properties are zoned Urban Reserve, Urban Expansion Reserve, and Urban Business Reserve. Those properties that are not reserved for further development are zoned Rural Residential or Rural Industrial. The City of Elko New Market's existing zoning map is provided as **Appendix C: Existing Zoning Map**. The City of Elko New Market Land Use Plan Map is provided as **Appendix D: Future Land Use Map** for reference.

Intersections 1 (CSAH 2 and Xerxes Avenue), 2 (CSAH 2 and Newton Circle), 3 (CSAH 2 and Newton Circle), 4 (CSAH 2 and Irving Avenue), 5 (CSAH 2 and SB I-35), 6 (CSAH 2 and NB I-35), the subject of this study, are located along CSAH 2 northeast of Elko New Market. The figure in **Appendix E: Intersection Diagram** identifies these six intersections on the development overview.

Area Roadway System

Through and adjacent to the study area:

- CSAH 2 (260th Street E) is an east-west Minor Arterial Collector.
- CSAH 2 (Deuce Rd) is an east-west Minor Arterial Reliever.
- I-35 is a north-south Principal Arterial.

CSAH 2 is a four lane divided (depressed grass center median) highway with a posted speed limit of 55 MPH that currently serves as a north border for the City of Elko New Market in the project vicinity. Intersections 1, 2, and 3 are stop controlled on the side streets, and both left and right turn lanes are provided on CSAH 2. At Intersection 4, Irving Avenue is stop controlled and no turn lanes are provided on CSAH 2. The median is painted through this intersection and while the pavement markings indicate that Intersection 4 has right-in, right-out type access, traffic count data show vehicles treating the intersection as fully accessible. Intersection 5 is stop controlled on the ramp and a channelized free right turn lane is provided to aid drivers turning onto CSAH 2. Intersection 6 is stop controlled on the ramp, and no turn lanes are provided.

At Intersections 1-4, the side streets are 2-lane undivided local roads. Xerxes Avenue, south of CSAH 2, serves as the primary access from CSAH 2 to existing residential neighborhoods. Newton Circle and Irving Avenue both serve as primary accesses from CSAH 2 to existing commercial and industrial properties. Between Intersections 3 and 4, there are two driveways. The first driveway is a full access driveway on the north side of the road. The second is a right-in, right-out on the south side of the road. There are no other driveways located in the study area.

The study area lies on a section of CSAH 2 that serves commuters traveling between their Elko New Market residences and their places of work to the North. Because of CSAH 2's classification and connection to I-35, there is some truck traffic on CSAH 2. According to the traffic count data collected for this study, approximately 2% of the vehicles traveling the corridor during peak time periods are classified as trucks.

An asphalt pedestrian path is provided along CSAH 2 on the north side of the road. The path was originally paved by the Metropolitan Council in conjunction with the construction of the Municipal Utility Service Area (MUSA) to Elko New Market and intended as a maintenance / access road. It has been used for pedestrian purposes and may need to be relocated further to the north, within the county road right-of-way, as development occurs. Currently, there are no bicycle accommodations provided along CSAH 2; however, cyclists are permitted on this roadway. There are no established transit routes or bus stops in the area.

Existing Traffic Volumes and Conditions

Existing traffic counts were collected for Intersections 1-6. A summary of the dates/times these counts were performed is provided below:

- AM peak hour counts were performed on Wednesday, January 10, 2017, from 7:00 AM to 11:00 AM.
- PM peak hour counts were performed on the previous day, Tuesday, January 9, 2017, from 3:00 PM to 6:00 PM.

Summary diagrams of the traffic counts are provided in **Appendix F: Existing Traffic Counts**. The Synchro (v9.2) Studio Suite was utilized to analyze the traffic conditions within the study area, which included modeling the six subject intersections along CSAH 2. The Synchro Analysis worksheets for the existing conditions are provided in **Appendix G: Synchro Reports – Existing (2018)**.

Tables 1-6 show the existing LOS and delay for Intersections 1-6 for both of the peak hour periods.

CSAH 2 has shown to have an AADT of 11,200 vehicles per day (vpd) through the study area (draft 2017 AADT) according to MnDOT traffic data as presented in **Exhibit 1** below.

Exhibit 1: Area Traffic

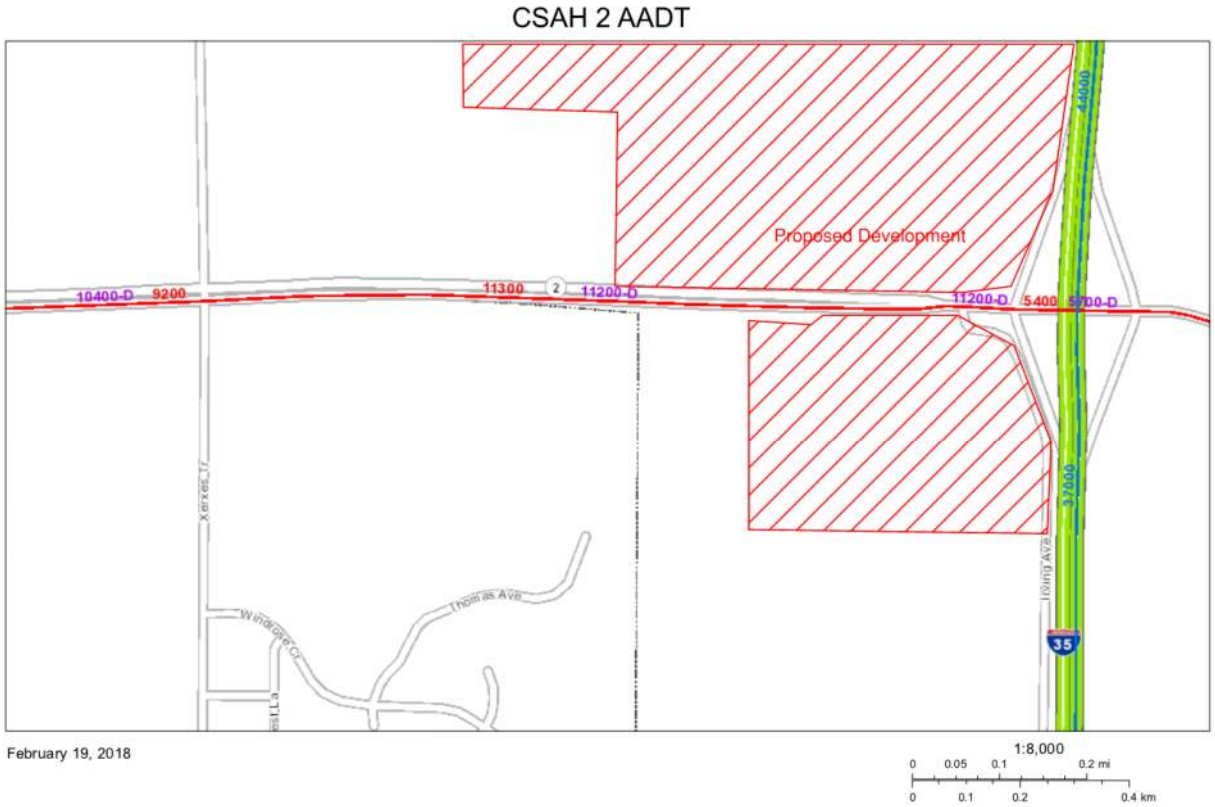


Table 1: Existing LOS – Intersection 1

INTERSECTION 1	AM PEAK												
	2018 EXISTING												
CSAH 2 & Xerxes Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		5	566	4	19	140	0	25	2	210	0	2	3
Queue (ft)		0	0	0	26	0	0	37		88	19		
Mvmt Delay (sec)		7.6	0.0	0.0	9.0	0.0	0.0	16.1		13.3			
Mvmt LOS		A	A	A	A	A	A	C		B			
Delay (sec)	3.6	0.1			1.1			13.6			13.1		
LOS	A	A			A			B			B		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 1	PM PEAK												
	2018 EXISTING												
CSAH 2 & Xerxes Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		2	315	20	185	709	3	16	1	59	1	0	0
Queue (ft)		8	0	0	66	0	0	30		0	38		
Mvmt Delay (sec)		9.3	0.0	0.0	8.6	0.0	0.0	22.2		9.6			
Mvmt LOS		A	A	A	A	A	A	C		A			
Delay (sec)	2.0	0.1			1.8			12.4			27.1		
LOS	A	A			A			B			D		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 2: Existing LOS – Intersection 2

INTERSECTION 2	AM PEAK												
	2018 EXISTING												
CSAH 2 & Newton Circle W	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			867	8	0	173		2		0			
Queue (ft)			0	0	0	0		11					
Mvmt Delay (sec)					0.0	0.0							
Mvmt LOS					A	A							
Delay (sec)	0.0	0.0			0.0			20.9					
LOS	A	A			A			C					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 2	PM PEAK												
	2018 EXISTING												
CSAH 2 & Newton Circle W	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			338	14	1	830		11		2			
Queue (ft)			0	0	0	0		32					
Mvmt Delay (sec)					8.0	0.0							
Mvmt LOS					A	A							
Delay (sec)	0.2	0.0			0.0			13.8					
LOS	A	A			A			B					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 3: Existing LOS – Intersection 3

INTERSECTION 3	AM PEAK												
	2018 EXISTING												
CSAH 2 & Newton Circle E	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			853	0	10	170		0		6			
Queue (ft)			4	0	26	0		23					
Mvmt Delay (sec)					10.2	0.0							
Mvmt LOS					B	A							
Delay (sec)	0.2	0.0			0.6			12.0					
LOS	A	A			A			B					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 3	PM PEAK												
	2018 EXISTING												
CSAH 2 & Newton Circle E	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			340	0	9	840		0		17			
Queue (ft)			0	0	18	0		28					
Mvmt Delay (sec)					8.1	0.0							
Mvmt LOS					A	A							
Delay (sec)	0.2	0.0			0.1			9.5					
LOS	A	A			A			A					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 4: Existing LOS – Intersection 4

INTERSECTION 4	AM PEAK												
	2018 EXISTING												
CSAH 2 & Irving Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			947	2	2	196		1		9			
Queue (ft)			0		6			29					
Mvmt Delay (sec)					10.6	0							
Mvmt LOS					B	A							
Delay (sec)	**0.2**	0.0			0.1			19.8					
LOS	**A**	A			A			C					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 4	PM PEAK												
	2018 EXISTING												
CSAH 2 & Irving Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			360	3	11	879		4		5			
Queue (ft)			0		17			25					
Mvmt Delay (sec)					8.1	0.1							
Mvmt LOS					A	A							
Delay (sec)	**0.2**	0.0			0.2			13.8					
LOS	**A**	A			A			B					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 5: Existing LOS – Intersection 5

INTERSECTION 5	AM PEAK												
	2018 EXISTING												
CSAH 2 & SB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			831	54	53	87					36	1	100
Queue (ft)			0	7	65						55		0
Mvmt Delay (sec)					10.4	0							
Mvmt LOS					B	A							
Delay (sec)	1.5	0.0			3.9						28.3		
LOS	A	A			A						D		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 5	PM PEAK												
	2018 EXISTING												
CSAH 2 & SB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			286	39	67	251					112	0	571
Queue (ft)			0	0	57						74		169
Mvmt Delay (sec)					8.1	0.0							
Mvmt LOS					A	A							
Delay (sec)	3.7	0.0			1.7						19.8		
LOS	A	A			A						C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 6: Existing LOS – Intersection 6

INTERSECTION 6	AM PEAK												
	2018 EXISTING												
CSAH 2 & NB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		662	227			98	114	15	0	48			
Queue (ft)		257				16		87					
Mvmt Delay (sec)		11.2	0										
Mvmt LOS		B	A										
Delay (sec)	12.9	8.3			0.0			122.0					
LOS	B	A			A			F					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 6	PM PEAK												
	2018 EXISTING												
CSAH 2 & NB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		224	179			263	56	49	2	38			
Queue (ft)		74				4		54					
Mvmt Delay (sec)		8.7	0.0										
Mvmt LOS		A	A										
Delay (sec)	4.9	4.9			0.0			22.2					
LOS	A	A			A			C					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

See the Conclusions section for discussion on level of service and delay.

Anticipated Future Development

The 2030 Elko New Market Comprehensive Plan was adopted in 2010. The Comprehensive Plan outlines the City's goals for guiding:

- area growth and land use,
- housing development,
- transportation network improvements,
- natural resource management,
- park and trail system development,
- water facility expansion,
- sanitary sewer improvements,
- stormwater management, and
- intergovernmental cooperation.

The proposed development area is currently outside of the City of Elko New Market limit. However, the area has been identified within the City's Comprehensive Plan, and Scott County has reserved the land for future urban development. Areas to the east and west of the proposed development have also been reserved for proposed development. In the City's Water, Sanitary Sewer, and Stormwater Management plans, the City plans to extend water and sanitary sewer service to these development areas. The City has completed the sanitary sewer service extension but has yet to complete the water service extension. Parks and trails will be incorporated as a part of area development, and roads will need to be constructed in order to accommodate area connectivity. The Transportation Plan recognizes the growth potential of both Elko New Market and the surrounding area. As a result of this growth, I-35 north of CSAH 2 and sections along CSAH 2 are anticipated to be congested (Volume to Capacity Ratio > 1.00). To manage this congestion, the Plan discusses the need for improvements to the CSAH 2 / I-35 interchange.

The "CH 2 / I-35 Interchange Area Management Plan" (IAMP) completed in 2010 was developed to address this need for improvements to the subject interchange. While the guide does not identify specific improvements, the IAMP discusses the benefits and cost of a number of improvement types. The plan identifies a long-range vision and includes an implementation plan. After considering the multiple options discussed in the IAMP, Scott County has elected to proceed with a preliminary layout for a diverging diamond design. A preliminary layout was approved in 2016. The interchange project is not planned for construction within the next eight years, and funding has not been identified.

This preliminary layout shows that Intersection 4, Irving Ave's access to CSAH would close if the plan moves forward. Because the timing of the interchange reconstruction is uncertain and funding has not yet been identified, this report assumes access, access control, and the geometry of Intersections 1-6 will remain unchanged into 2038

Projected Traffic

Traffic was projected for 13-year (2031) Baseline and 20-year (2038) Baseline conditions for the weekday AM and PM peak hours. The method for determining these traffic projections included trip generation, internal capture, pass-by, and distribution analyses based on estimates from the ITE Trip Generation Manual 9th Edition and the ITE Trip Generation Handbook 2nd Edition.

Site Traffic

Trip Generation

The new development will generate both employee and customer trips. For this study, a trip is defined as a one-way movement between an origin and a destination. The expected numbers of trips the proposed development will generate was estimated using the ITE Trip Generation Manual 9th Edition and conceptual plans of the proposed development. The summarized results are provided in **Table 7**.

Table 7: Unadjusted Generated Traffic by Land Use

Phase	ITE Code	Use	AM	PM
1	110	General Light Industrial (A)	49	51
2	110	General Light Industrial (B)	30	31
2	110	General Light Industrial (B)	30	31
2	110	General Light Industrial (C)	65	69
2	110	General Light Industrial (D)	125	132
2	110	General Light Industrial (E)	147	155
1	140	Manufacturing	29	29
2	151	Mini-Warehouse	6	10
2	230	Residential Condominium/Townhouse	6	7
1	310	Hotel	72	81
1	715	Single Tenant Office Building (A)	63	61
2	720	Medical-Dental Office Building	74	111
1	810	Tractor Supply Store	0	28
1	890	Furniture Store	5	14
1	820	Shopping Center (A)	145	554
2	820	Shopping Center (B)	100	366
1	826	Specialty Retail Center	8	27
1	834	Automobile Parts Sales	22	63
1	841	Automobile Sales	188	257
2	842	Recreational Vehicle Sales	0	79
1	850	Supermarket	76	212
1	890	Furniture Store	5	14
1	932	High Turnover (Sit-Down) Restaurant (A)	119	108
1	932	High Turnover (Sit-Down) Restaurant (B)	43	39
2	932	High Turnover (Sit-Down) Restaurant (C)	43	39
1	934	Fast-Food Restaurants with Drive-Through Windows	818	588
1	937	Coffee/Donut Shop with Drive-Through Window	362	154
1	945	Gasoline/Service Station with Convenience Market (A)	163	216
1	945	Gasoline/Service Station with Convenience Market (B)	163	216

In **Table 8**, the detailed land uses were combined into categories – Industrial, Residential, Office/Business, Commercial-Products, and Commercial-Services – and the weighted averages of the entering and exiting percentages were calculated. These values were then applied in the next step: calculating an internal capture ratio.

Table 8: Unadjusted Generated Traffic Summary – Entering and Exiting

	AM					PM				
Phase 1: 2018-2031	#	Enter		Exit		#	Enter		Exit	
100 Industrial	78	86%	**67**	14%	**11**	80	14%	**11**	86%	**69**
200/300 Residential and Lodging	72	19%	**14**	81%	**58**	81	64%	**52**	36%	**29**
700 Office/Business	63	75%	**47**	25%	**16**	61	25%	**15**	75%	**46**
800 Commercial - Products	449	60%	**269**	40%	**180**	1169	45%	**526**	55%	**643**
900 Commercial - Services	1668	50%	**834**	50%	**834**	1322	50%	**661**	50%	**661**
			1231		**1099**			**1265**		**1448**

	AM					PM				
Phase 2: 2031-2038	#	Enter		Exit		#	Enter		Exit	
100 Industrial	403	86%	**347**	14%	**56**	428	14%	**60**	86%	**368**
200/300 Residential and Lodging	6	19%	**1**	81%	**5**	7	64%	**4**	36%	**3**
700 Office/Business	75	75%	**56**	25%	**19**	111	25%	**28**	75%	**83**
800 Commercial - Products	100	60%	**60**	40%	**40**	445	45%	**200**	55%	**245**
900 Commercial - Services	44	50%	**22**	50%	**22**	40	50%	**20**	50%	**20**
			486		**142**			**312**		**719**

Internal Capture

Because the proposed development will contain multiple land uses, an internal capture analysis was performed. The internal capture rate is the percentage reduction that can be applied to the trip generation estimates for individual land uses to account for trips internally absorbed. The ITE Trip Generation Handbook, 3rd Edition provides the method, and the internal capture rates for the AM and PM peak periods can be found in **Exhibit 2** and **Exhibit 3** respectively.

Exhibit 2: AM Internal Capture

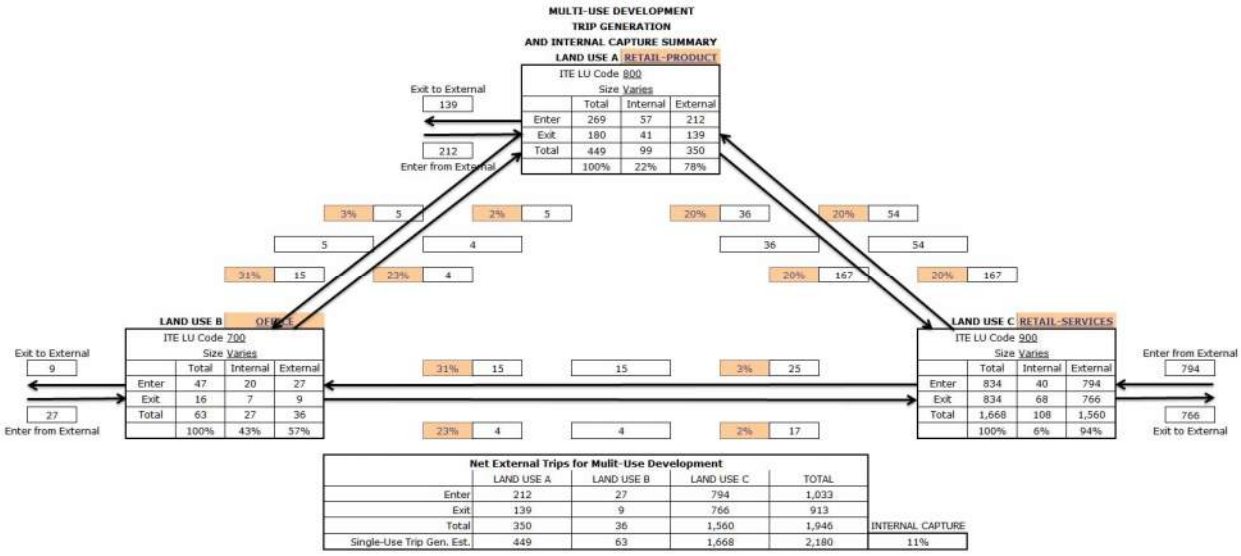
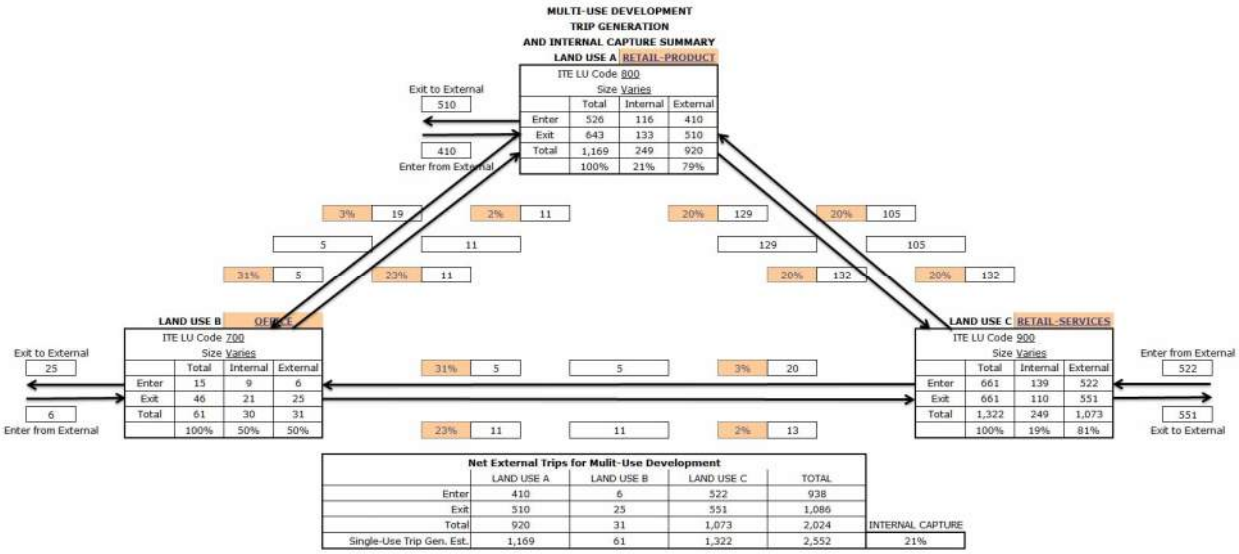


Exhibit 3: PM Internal Capture



Net External Trips for Mulit-Use Development	LAND USE A	LAND USE B	LAND USE C	TOTAL	
Enter	410	6	522	938	
Exit	510	25	551	1,086	
Total	920	31	1,073	2,024	INTERNAL CAPTURE
Single-Use Trip Gen. Est.	1,169	61	1,322	2,552	21%

The internal capture analysis was performed on the Office/Business, Commercial-Products, and Commercial-Services categories. Because the Residential trip generation is low and the ITE Trip Generation Handbook does not include internal capture rates for industrial sites, internal capture involving the proposed development's residential and industrial land uses is expected to be negligible. The internal capture ratios were applied to the values in **Table 8** in order to create **Table 9**. The values shown in **Table 9** were then applied to the 13-Year (2031) Baseline and 20-Year (2038) Baseline conditions traffic volumes to create the 13-Year (2031) Phase 1 and 20-Year (2038) Phase 2 conditions traffic volumes.

Table 9: Externally Generated Trips – Entering and Exiting

Adjusting for Internal Capture	2031			
	AM		PM	
	Enter	Exit	Enter	Exit
100 Industrial	67	11	11	69
200/300 Residential and Lodging	14	58	52	29
700 Office/Business	27	9	6	25
800 Commercial - Products	212	139	410	510
900 Commercial - Services	794	766	522	551
Total External Trips	**1114**	**983**	**1001**	**1184**
Internal Capture Ratio	*10%*	*11%*	*21%*	*18%*

Adjusting for Internal Capture	2038			
	AM		PM	
	Enter	Exit	Enter	Exit
100 Industrial	414	67	71	437
200/300 Residential and Lodging	15	63	56	32
700 Office/Business	83	28	34	108
800 Commercial - Products	272	179	610	755
900 Commercial - Services	816	788	542	571
Total External Trips	**1600**	**1125**	**1313**	**1903**

Pass-By Trip Analysis

Pass-by trips are made as intermediate stop on the way from an origin to a primary trip destination without a route diversion. Pass-by trips are attracted from traffic passing the site on an adjacent street or road. Therefore they are trips that may not add new traffic to the adjacent street system because they attract motorists already on the street. However, it is important to note that although pass-by trips do not add new traffic, they do affect traffic distribution and turning movements at entrances. They must be accounted for when distributing traffic. Because the proposed development is expected to divert traffic from I-35, provide goods and services to local residents, and provide jobs closer to home, the percentage of pass-by trips is expected to be dependent on the individual land uses within the proposed development. **Table 9** and the pass-by rates in the ITE Trip Generation Handbook were used to create **Table 10**. **Table 10** shows how many non-pass-by trips are added to the CSAH 2 road network as a result of the proposed development.

Table 10: Pass-By Trip Analysis

Adjusting for Pass-By	2031			
	AM		PM	
	Enter	Exit	Enter	Exit
100 Industrial	67	11	11	69
200/300 Residential and Lodging	14	58	52	29
700 Office/Business	27	9	6	25
800 Commercial - Products	212	139	324	404
900 Commercial - Services	400	386	250	264
Total Non-Pass-By Trips	**720**	**603**	**643**	**791**
Pass-By Trips	394	380	358	393
Average (Entering/Exiting)	*387*		*376*	
Total Pass-By Trips	774		751	
% of External Trips	36.9%		34.4%	

Adjusting for Pass-By	2038			
	AM		PM	
	Enter	Exit	Enter	Exit
100 Industrial	414	67	71	437
200/300 Residential and Lodging	15	63	56	32
700 Office/Business	83	28	34	108
800 Commercial - Products	272	179	483	597
900 Commercial - Services	400	386	259	273
Total Non-Pass-By Trips	**1184**	**723**	**903**	**1447**
Pass-By Trips	416	402	410	456
Average (Entering/Exiting)	*409*		*433*	
Total Pass-By Trips	818		866	
% of External Trips	30.0%		26.9%	

Trip Distribution and Assignment

Synchro Traffic Impact Analysis was used to distribute trips between the various inbound and outbound routes drivers are expected to take. It is assumed that drivers will generally choose the shortest distance when selecting a route and driveway. Eight origins, two driveways, and 16 routes were identified for Phase 1. An additionally driveway was identified for Phase 2, creating 24 possible routes. Trips were assigned to these routes, and routes were weighted based on the existing roadway network traffic distribution and the roadway functional classifications.

A diagram of the Synchro model, including labeled nodes are provided in **Appendix H: Trip Distribution**. Trips assigned using the Traffic Impact Analysis tool are assigned to the intersections within Synchro and can be seen in the analysis reports as "Future Vol". These trips are included in the LOS analysis.

Other Traffic

Roadway Historical Growth Rate

A historical annual growth of 2.1% was used to project the February 2018 traffic volumes to 2038. This value was back-calculated using the historical traffic counts along CSAH 2 in the study area using the following equation:

$$F = C(1+i)^n$$

$$where: C = the\ current\ AADT$$

$$F = the\ future\ AADT$$

$$i = percent\ growth\ in\ decimal\ form$$

$$n = number\ of\ years\ between\ C\ and\ F$$

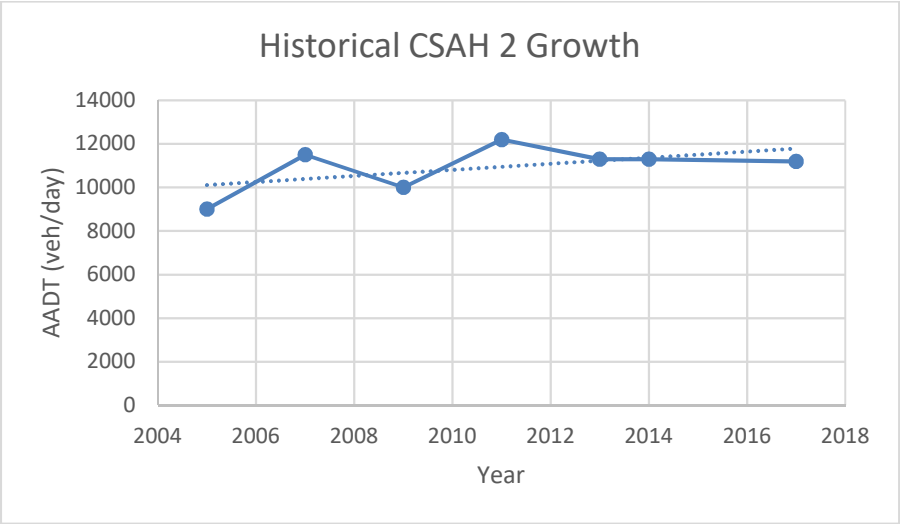
The results are shown in **Table 11** and **Exhibit 4**. In the past 10-15 years, growth has been inconsistent, but it should be noted that the traffic growth on CSAH 2 closely matches the projected future population growth. Additionally, the estimate was compared against multiple other resources, including other area traffic studies and the IAMP, and was determined to be reasonable. Therefore, this study assumes that the traffic within the study area will continue its current 2.1% average annual growth into the future.

Table 11: Historical CSAH 2 Growth

Historical CSAH 2 Growth

Year	AADT	Annualized Growth
2017	11200	-0.3%
2014	11300	0.0%
2013	11300	-3.8%
2011	12200	10.5%
2009	10000	-6.7%
2007	11500	13.0%
2005	9000	-
Average Growth		2.1%

Exhibit 4: Historical Area Traffic Growth



Expected Traffic Growth

For this traffic impact study, traffic projections were simply taken to be 2.1% annual growth. The Baseline 2031 and Baseline 2038 condition traffic volumes were projected to be the existing traffic volumes with an increase of 2.1% per year for 13 and 20 years, respectively. It is anticipated that business will move into the proposed development gradually over the next 20 years. The Phase 1 and Phase 2 traffic volumes were determined to be the computed Baseline 2031 and Baseline 2038 conditions in addition to the trips provided in **Table 9**. No growth factor was applied to the trips generated by the development.

Trip Distribution and Assignment

Phase 1 involves development on both the North and South sides of CSAH 2. Both halves of the development are expected to utilize Intersection 3 to access CSAH 2. Phase 2 development will occur on the north side of CSAH 2, west of the Phase 1 area. Once the project transitions into Phase 2, it is expected that Intersection 2 will be available to access CSAH 2. Both distribution diagrams are provided in **Appendix H: Trip Distribution**.

Modal Split

The traffic counters were instructed to note pedestrian and bicycle movements at the time of data collection. No pedestrians or cyclists were observed during the study times. Introducing the development may generate pedestrian and bicycle traffic. The proposed development plan shows sidewalks throughout the development. No bicycle accommodations are shown. If into the future, cyclists use the roadways more frequently, bicycle accommodations should be considered.

Total Future Traffic

The trip generation, trip distribution, and traffic assignment analysis and calculations result in peak hour volumes for each study period.

Appendix I: Baseline (2031) Traffic Counts – Diagram shows the 13-year (2031) Baseline peak volumes, and **Appendix J: Phase 1 (2031) Traffic Counts – Diagram** shows the 13-year (2031) Phase 1 peak volumes. Refer to **Appendices M and N** for the complete Synchro analysis worksheets.

Appendix K: Baseline (2038) Traffic Counts – Diagram shows the 20-year (2038) Baseline peak volumes, and **Appendix L: Phase 2 (2038) Traffic Counts – Diagram** shows the 20-year (2038) Phase 2 peak volumes. Refer to **Appendices P and R** for the complete Synchro analysis worksheets. Additionally, **Appendix Q: Synchro Reports – Baseline (2038) with Improvements from Phase 1** is provided which details the "Baseline (2038)" volumes with the geometrics implemented as recommended for Phase 1.

Site Access, Circulation, and Parking

The proposed development will be constructed north of CSAH 2, between Xerxes Avenue and I-35. At full build, the development will contain three major access points, a road intersecting with Xerxes Avenue and two roads intersecting CSAH 2. An overview of the development and road locations are shown within **Appendix A: Proposed Development**. The roads will be classified as Collectors with 40' roadway widths. The CSAH 2 access points have been paved-in within the CSAH 2 right-of-way. **Exhibits 5-8** show the proposed typical sections and aerials of the CSAH 2 access points. The typical sections shown below are consistent with the 2030 City Comprehensive Plan for Major and Minor Collector streets. Business driveways will access this internal road network. Off street parking will be provided as businesses move into the development. Site plans for these business will be developed and submitted to the City of Elko New Market for review and approval.

Exhibit 5: Typical Section – North-South Roads Accessing CSAH 2 – Major Collector

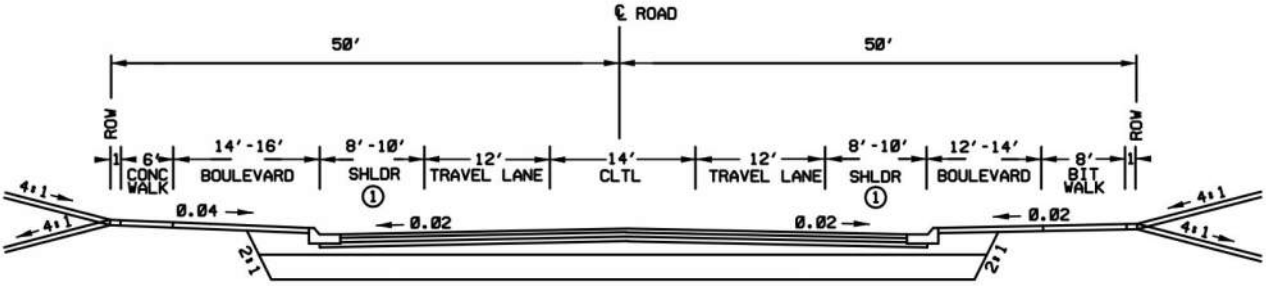


Exhibit 6: Typical Section – East-West Roads Accessing Xerxes Avenue – Minor Collector

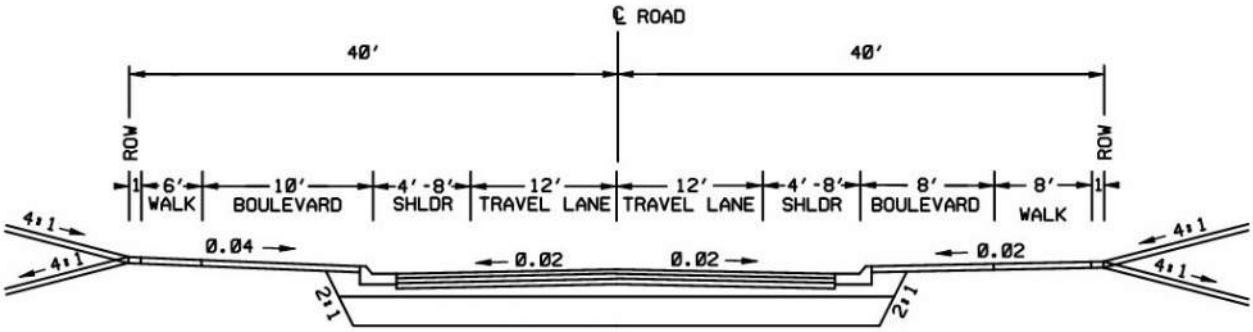


Exhibit 7: Intersection 2 - CSAH 2 and Future Access Road (W)

Exhibit 8: Intersection 3 - CSAH 2 and Future Access Road (E)

Capacity and Level of Service at Studied Intersections

The peak hour volumes for each study period were analyzed within Synchro for capacity and LOS at the study roadways and intersections. The Synchro analysis worksheets are provided within the Appendices.

Tables 12-17 show the 13-year (2031) Baseline LOS and delay and **Tables 18-23** show the 13-year (2031) Phase 1 LOS and delay.

Tables 24-29 show the 20-year (2038) Baseline LOS and delay. These tables do not include Phase 1 traffic or recommendations. **Tables 30-35** show the 20-year LOS and delay at the studied intersections as if Phase 1 was implemented. **Tables 36-41** show the 20-year (2038) Phase 2 LOS and delay.

Notes:

*: the delay is greater than 300 seconds.

**: the volume exceeds capacity, and LOS F is assigned to both the overcapacity movement and the respective approach. HCM 2010 LOS and delay values shown in Synchro reports for overcapacity movements and approaches may not reflect conditions.

13-Year (2031) Baseline Condition

Table 12: Baseline 2031 LOS – Intersection 1

INTERSECTION 1	AM PEAK												
	2031 BASELINE												
CSAH 2 & Xerxes Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		6	742	4	26	183	0	33	3	275	3	2	3
Queue (ft)		6	0	0	32	0	0	49		90	21		
Mvmt Delay (sec)		7.7	0.0	0.0	9.7	0.0	0.0	20.5		17.8			
Mvmt LOS		A	A	A	A	A	A	C		C			
Delay (sec)	4.8	0.1			1.2			18.1			16.5		
LOS	A	A			A			C			C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 1	PM PEAK												
	2031 BASELINE												
CSAH 2 & Xerxes Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		2	413	27	242	928	4	20	1	77	1	0	0
Queue (ft)		12	0	9	76	0	0	42		46	0		
Mvmt Delay (sec)		10.2	0.0	0.0	9.2	0.0	0.0	33.0		10.1			
Mvmt LOS		B	A	A	A	A	A	D		B			
Delay (sec)	2.2	0.0			1.9			15.0			41.4		
LOS	A	A			A			C			E		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 13: Baseline 2031 LOS – Intersection 2

INTERSECTION 2	AM PEAK												
	2031 BASELINE												
CSAH 2 & Newton Circle W	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			1136	10	0	227		2		0			
Queue (ft)			0	0	0	0		13					
Mvmt Delay (sec)					0.0	0.0							
Mvmt LOS					A	A							
Delay (sec)	0.0	0.0			0.0			28.7					
LOS	A	A			A			D					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 2	PM PEAK												
	2031 BASELINE												
CSAH 2 & Newton Circle W	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			443	18	1	1088		14		3			
Queue (ft)			0	0	0	0		32					
Mvmt Delay (sec)					8.3	0.0							
Mvmt LOS					A	A							
Delay (sec)	0.2	0.0			0.0			15.9					
LOS	A	A			A			A					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 14: Baseline 2031 LOS – Intersection 3

INTERSECTION 3	AM PEAK												
	2031 BASELINE												
CSAH 2 & Newton Circle E	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			1118	0	14	224		0		8			
Queue (ft)			5	0	33	0		26					
Mvmt Delay (sec)					11.7	0.0							
Mvmt LOS					B	A							
Delay (sec)	0.2	0.0			0.7			13.6					
LOS	A	A			A			B					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 3	PM PEAK												
	2031 BASELINE												
CSAH 2 & Newton Circle E	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			446	0	12	1100		0		22			
Queue (ft)			0	0	20	0		32					
Mvmt Delay (sec)					8.4	0.0							
Mvmt LOS					A	A							
Delay (sec)	0.2	0.0			0.1			9.9					
LOS	A	A			A			A					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 15: Baseline 2031 LOS – Intersection 4

INTERSECTION 4	AM PEAK												
	2031 BASELINE												
CSAH 2 & Irving Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			1240	2	2	257		1		12			
Queue (ft)			22		33			31					
Mvmt Delay (sec)					12.4	0.0							
Mvmt LOS					B	A							
Delay (sec)	**0.3**	0.0			0.1			28.6					
LOS	**A**	A			A			D					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 4	PM PEAK												
	2031 BASELINE												
CSAH 2 & Irving Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			472	4	14	1152		6		6			
Queue (ft)			0		39			29					
Mvmt Delay (sec)					8.5	0.2							
Mvmt LOS					A	A							
Delay (sec)	**0.3**	0.0			0.3			18.1					
LOS	**A**	A			A			C					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 16: Baseline 2031 LOS – Intersection 5

INTERSECTION 5	AM PEAK												
	2031 BASELINE												
CSAH 2 & SB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			1088	70	69	114					47	1	130
Queue (ft)			156	0	132						145		21
Mvmt Delay (sec)					12.3	0.0							
Mvmt LOS					B	A							
Delay (sec)	2.8	0.0			4.6						63		
LOS	A	A			A						F		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 5	PM PEAK												
	2031 BASELINE												
CSAH 2 & SB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			375	51	88	328					146	0	747
Queue (ft)			0	0	80						89		278
Mvmt Delay (sec)					8.4	0.0							
Mvmt LOS					A	A							
Delay (sec)	6.1	0.0			1.8						36.2		
LOS	A	A			A						E		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 17: Baseline 2031 LOS – Intersection 6

INTERSECTION 6	AM PEAK												
	2031 BASELINE												
CSAH 2 & NB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		867	297			128	148	20	0	62			
Queue (ft)		770				24		465					
Mvmt Delay (sec)		17.2	0.0										
Mvmt LOS		C	A										
Delay (sec)	**	12.8			0.0			**					
LOS	F	B			A			F					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 6	PM PEAK												
	2031 BASELINE												
CSAH 2 & NB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		294	234			345	72	64	2	49			
Queue (ft)		126				10		109					
Mvmt Delay (sec)		9.6	0.0										
Mvmt LOS		A	A										
Delay (sec)	8.9	5.3			0.0			57.5					
LOS	A	A			A			F					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

13-Year (2031) Phase 1 Condition

Table 18: Phase 1 LOS – Intersection 1

INTERSECTION 1	AM PEAK												
	2031 PHASE 1												
CSAH 2 & Xerxes Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		6	1032	4	26	421	0	33	3	384	40	2	3
Queue (ft)		7	5	0	45	0	0	254		288	48		
Mvmt Delay (sec)		8.3	0.0	0.0	12.7	0.0	0.0	39.5		59			
Mvmt LOS		A	A	A	B	A	A	E		F			
Delay (sec)	12.3	0.0			2.6			57.3			**		
LOS	B	A			A			F			F		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 1	PM PEAK												
	2031 PHASE 1												
CSAH 2 & Xerxes Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		2	663	27	363	1251	44	20	1	171	33	0	0
Queue (ft)		9	0	7	86	0	0	69		77	151		
Mvmt Delay (sec)		12.1	0.0	0.0	12.3	0.0	0.0	**		12.9			
Mvmt LOS		B	A	A	B	A	A	F		B			
Delay (sec)	*	0.0			2.7			**			**		
LOS	F	A			A			F			F		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 19: Phase 1 LOS – Intersection 2

INTERSECTION 2	AM PEAK												
	2031 PHASE 1												
CSAH 2 & Newton Circle W	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			1572	10	0	585		2		0			
Queue (ft)			0	0	0	0		10					
Mvmt Delay (sec)					0.0	0.0							
Mvmt LOS					A	A							
Delay (sec)	0.1	0.0			0.0			54.5					
LOS	A	A			A			F					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 2	PM PEAK												
	2031 PHASE 1												
CSAH 2 & Newton Circle W	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			819	18	1	1572		14		3			
Queue (ft)			0	0	4	0		35					
Mvmt Delay (sec)					9.7	0.0							
Mvmt LOS					A	A							
Delay (sec)	0.2	0.0			0.0			25.1					
LOS	A	A			A			D					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 20: Phase 1 LOS – Intersection 3

INTERSECTION 3	AM PEAK												
	2031 PHASE 1												
CSAH 2 & Newton Circle E	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		175	1118	261	188	224	117	215	0	152	96	0	143
Queue (ft)		49	0	26	415	264	6	24			123		
Mvmt Delay (sec)					15.6	0.0							
Mvmt LOS					C	A							
Delay (sec)	*	0.9			5.5			**			**		
LOS	F	A			A			F			F		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 3	PM PEAK												
	2031 PHASE 1												
CSAH 2 & Newton Circle E	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		151	446	225	162	1100	101	291	0	216	128	0	193
Queue (ft)		78	0	18	63	5	8	36			131		
Mvmt Delay (sec)					9.0	0.0							
Mvmt LOS					A	A							
Delay (sec)	*	2.5			1.1			**			**		
LOS	F	A			A			F			F		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 21: Phase 1 LOS – Intersection 4

INTERSECTION 4	AM PEAK												
	2031 PHASE 1												
CSAH 2 & Irving Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			1480	2	2	548		1		12			
Queue (ft)			108		19			29					
Mvmt Delay (sec)					14.4	0.1							
Mvmt LOS					B	A							
Delay (sec)	**0.3**	0.0			0.2			42.3					
LOS	**A**	A			A			E					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 4	PM PEAK												
	2031 PHASE 1												
CSAH 2 & Irving Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			794	4	14	1403		6		6			
Queue (ft)			0		24			31					
Mvmt Delay (sec)					9.7	0.6							
Mvmt LOS					A	A							
Delay (sec)	**0.6**	0.0			0.7			33.1					
LOS	**A**	A			A			D					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 22: Phase 1 LOS – Intersection 5

INTERSECTION 5	AM PEAK												
	2031 PHASE 1												
CSAH 2 & SB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			1238	160	69	296					47	1	239
Queue (ft)			214	10	195						169		68
Mvmt Delay (sec)					13.7	0.0							
Mvmt LOS					B	A							
Delay (sec)	5.3	0.0			2.6						182		
LOS	A	A			A						F		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 5	PM PEAK												
	2031 PHASE 1												
CSAH 2 & SB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			576	172	88	485					146	0	841
Queue (ft)			0	4	78						549		1131
Mvmt Delay (sec)					9.1	0.0							
Mvmt LOS					A	A							
Delay (sec)	*	0.0			1.4						**		
LOS	F	A			A						F		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 23: Phase 1 LOS – Intersection 6

INTERSECTION 6	AM PEAK												
	2031 PHASE 1												
CSAH 2 & NB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		957	357			201	148	129	0	62			
Queue (ft)		809				25		880					
Mvmt Delay (sec)		30.3	0.0										
Mvmt LOS		D	A										
Delay (sec)	17.0	22.1			0.0			**					
LOS	C	C			A			F					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 6	PM PEAK												
	2031 PHASE 1												
CSAH 2 & NB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		415	314			408	72	158	2	49			
Queue (ft)		114				7		367					
Mvmt Delay (sec)		11.0	0.0										
Mvmt LOS		B	A										
Delay (sec)	*	6.3			0.0			**					
LOS	F	A			A			F					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

20-Year (2038) Baseline Condition

Table 24: Baseline 2038 LOS – Intersection 1

INTERSECTION 1	AM PEAK												
	2038 BASELINE												
CSAH 2 & Xerxes Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		9	860	8	30	213	0	38	3	319	6	4	6
Queue (ft)		17	5	0	41	0	0	46		117	25		
Mvmt Delay (sec)		7.7	0	0	10.3	0	0	25.4		24.8			
Mvmt LOS		A	A	A	B	A	A	D		C			
Delay (sec)	6.5	0.1			1.3			24.9			23.5		
LOS	A	A			A			C			C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 1	PM PEAK												
	2038 BASELINE												
CSAH 2 & Xerxes Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		4	478	31	281	1078	5	24	2	90	2	0	0
Queue (ft)		15	0	14	94	0	0	36		49	14		
Mvmt Delay (sec)		11.1	0	0	9.8	0	0	49.6		10.6			
Mvmt LOS		B	A	A	A	A	A	E		B			
Delay (sec)	2.6	0.1			2.0			19.3			59.7		
LOS	A	A			A			C			F		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 25: Baseline 2038 LOS – Intersection 2

INTERSECTION 2	AM PEAK												
	2038 BASELINE												
CSAH 2 & Newton Circle W	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			1319	13	0	264		4		0			
Queue (ft)			0	0	0	0		15					
Mvmt Delay (sec)					0.0	0.0							
Mvmt LOS					A	A							
Delay (sec)	0.1	0.0			0.0			37.6					
LOS	A	A			A			E					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 2	PM PEAK												
	2038 BASELINE												
CSAH 2 & Newton Circle W	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			513	22	2	1261		18		3			
Queue (ft)			0	13	12	0		36					
Mvmt Delay (sec)					8.5	0.0							
Mvmt LOS					A	A							
Delay (sec)	0.2	0.0			0.0			18.4					
LOS	A	A			A			C					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 26: Baseline 2038 LOS – Intersection 3

INTERSECTION 3	AM PEAK												
	2038 BASELINE												
CSAH 2 & Newton Circle E	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			1297	0	15	258		0		10			
Queue (ft)			566	0	33	0		28					
Mvmt Delay (sec)					13.1	0.0							
Mvmt LOS					B	A							
Delay (sec)	**0.2**	0.0			0.7			15.2					
LOS	**A**	A			A			C					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 3	PM PEAK												
	2038 BASELINE												
CSAH 2 & Newton Circle E	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			517	0	15	1277		0		27			
Queue (ft)			0	0	23	0		33					
Mvmt Delay (sec)					8.6	0.0							
Mvmt LOS					A	A							
Delay (sec)	**0.2**	0.0			0.1			10.2					
LOS	**A**	A			A			B					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 27: Baseline 2038 LOS – Intersection 4

INTERSECTION 4	AM PEAK												
	2038 BASELINE												
CSAH 2 & Irving Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			1439	4	4	298		2		14			
Queue (ft)			683		26			68					
Mvmt Delay (sec)					14.1	0.1							
Mvmt LOS					B	A							
Delay (sec)	**0.4**	0.0			0.3			40.9					
LOS	**A**	A			A			E					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 4	PM PEAK												
	2038 BASELINE												
CSAH 2 & Irving Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			547	5	18	1336		6		9			
Queue (ft)			0		38			31					
Mvmt Delay (sec)					8.7	0.4							
Mvmt LOS					A	A							
Delay (sec)	**0.5**	0.0			0.5			20.7					
LOS	**A**	A			A			C					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 28: Baseline 2038 LOS – Intersection 5

INTERSECTION 5	AM PEAK												
	2038 BASELINE												
CSAH 2 & SB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			1263	81	81	132					55	2	152
Queue (ft)			373	7	142						254		113
Mvmt Delay (sec)					14.2	0							
Mvmt LOS					B	A							
Delay (sec)	6.4	0.0			5.4						160		
LOS	A	A			A						F		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 5	PM PEAK												
	2038 BASELINE												
CSAH 2 & SB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			435	60	102	381					170	0	868
Queue (ft)			0		100						614		1290
Mvmt Delay (sec)					8.6	0							
Mvmt LOS					A	A							
Delay (sec)	12.5	0.0			1.8						79.2		
LOS	B	A			A						F		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 29: Baseline 2038 LOS – Intersection 6

INTERSECTION 6	AM PEAK												
	2038 BASELINE												
CSAH 2 & NB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		1006	345			149	173	24	0	72			
Queue (ft)		862				21		643					
Mvmt Delay (sec)		33.4	0										
Mvmt LOS		D	A										
Delay (sec)	19.6	24.8			0.0			11.5					
LOS	C	C			A			B					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 6	PM PEAK												
	2038 BASELINE												
CSAH 2 & NB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		341	271			400	85	74	4	58			
Queue (ft)		177				10		117					
Mvmt Delay (sec)		10.4	0										
Mvmt LOS		B	A										
Delay (sec)	26.0	5.8			0.0			209					
LOS	D	A			A			F					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

20-Year (2038) with Phase 1 Recommendations

Table 30: 2038 with Phase 1 Recommendations LOS – Intersection 1

INTERSECTION 1	AM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & Xerxes Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		9	1150	8	120	451	30	38	3	428	43	4	6
Queue (ft)		30	322	14	112	98	20	41		228	61		9
Mvmt Delay (sec)		15.2	31.4	15.7	23.3	15.4	13.4	69.3		36.1			
Mvmt LOS		B	C	B	C	B	B	E		D			
Delay (sec)	29.9	31.2			16.9			39.0			69.6		
LOS	C	C			B			D			E		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 1	PM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & Xerxes Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		4	728	31	402	1401	45	24	2	184	34	0	0
Queue (ft)		19	242	29	260	281	22	41		81	41		0
Mvmt Delay (sec)		20.8	26.2	19.9	24.0	20.9	10.9	20.8		25.4			
Mvmt LOS		C	C	B	C	C	B	C		C			
Delay (sec)	22.8	25.9			21.4			24.8			22.0		
LOS	C	C			C			C			C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 31: 2038 with Phase 1 Recommendations LOS – Intersection 2

INTERSECTION 2	AM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & Newton Circle W	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			1755	13	0	622		4		0			
Queue (ft)			0	0	0	0		10					
Mvmt Delay (sec)					0.0	0.0							
Mvmt LOS					A	A							
Delay (sec)	0.1	0.0			0.0			74.8					
LOS	A	A			A			F					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 2	PM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & Newton Circle W	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			889	22	2	1745		18		3			
Queue (ft)			0	0	0	0		35					
Mvmt Delay (sec)					0.0	0.0							
Mvmt LOS					A	A							
Delay (sec)	0.2	0.0			0.0			30.0					
LOS	A	A			A			D					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 32: 2038 with Phase 1 Recommendations LOS – Intersection 3

INTERSECTION 3	AM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & Newton Circle E	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		175	1297	261	189	258	117	215	0	154	96	0	143
Queue (ft)		222	494	195	422	316	53	18	45		56	99	
Mvmt Delay (sec)		12.6	40.5	18.6	50.0	15.9	16.0	35.8	0.0	34.4	25.6	0.0	34.2
Mvmt LOS		B	D	B	D	B	B	D	A	C	C	A	C
Delay (sec)	32.8	34.3			27.4			35.2			30.7		
LOS	C	C			C			D			C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 3	PM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & Newton Circle E	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		151	517	225	165	1277	101	291	0	221	128	0	193
Queue (ft)		169	180	95	164	372	42	16	53		68	144	
Mvmt Delay (sec)		42.4	20	20	15.4	39.7	16.9	42.0	0.0	37.3	25.3	0.0	39.1
Mvmt LOS		D	B	C	B	D	B	D	A	D	C	A	D
Delay (sec)	32.8	23.7			35.6			40.0			33.6		
LOS	C	C			D			D			C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Recommendations for Phase 1 improvements include closing Intersection 4. Table for Intersection 4 is omitted.

Table 33: 2038 with Phase 1 Recommendations LOS – Intersection 5

INTERSECTION 5	AM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & SB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			1413	171	81	314					55	2	261
Queue (ft)			314	341	111	145					69		57
Mvmt Delay (sec)					20.3	0.1							
Mvmt LOS					C	A							
Delay (sec)	24	28.7			4.2						29.6		
LOS	C	C			A						C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 5	PM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & SB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			636	181	102	538					170	0	962
Queue (ft)			334		224	573					581		1196
Mvmt Delay (sec)					29.9	48.3							
Mvmt LOS					C	D							
Delay (sec)	65.5	92.8			45.3						10.3		
LOS	E	F			D						B		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 34: 2038 with Phase 1 Recommendations LOS – Intersection 6

INTERSECTION 6	AM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & NB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		1096	405			222	173	133	0	72			
Queue (ft)		312	167			200		132		44			
Mvmt Delay (sec)		27.9	23.8										
Mvmt LOS		C	C										
Delay (sec)	29.5	26.8			43.1			22.5					
LOS	C	C			D			C					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 6	PM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & NB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		462	351			463	85	168	4	58			
Queue (ft)		157	92			264		138		46			
Mvmt Delay (sec)		24.4	30.1										
Mvmt LOS		C	C										
Delay (sec)	27.9	26.9			35.3			13.6					
LOS	C	C			D			B					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

20-Year (2038) Phase 2 Condition

Table 35: Phase 2 LOS – Intersection 1

INTERSECTION 1	AM PEAK												
	2038 PHASE 2												
CSAH 2 & Xerxes Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		9	1337	8	137	499	36	38	3	498	66	4	6
Queue (ft)		20	332	17	106	112	27	389		342	77		10
Mvmt Delay (sec)		11.5	31	12	27.3	12	10.1	57.3		108.6			
Mvmt LOS		B	C	B	C	B	B	E		F			
Delay (sec)	43.5	30.5			14.8			104.7			95.1		
LOS	D	C			B			F			F		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 1	PM PEAK												
	2038 PHASE 2												
CSAH 2 & Xerxes Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		4	830	31	501	1666	78	24	2	222	46	0	0
Queue (ft)		10	219	29	272	237	27	47		124	61		0
Mvmt Delay (sec)		20.8	29.5	19.5	39.3	23.4	8.5	21.7		29.9			
Mvmt LOS		C	C	B	D	C	A	C		C			
Delay (sec)	27.3	29.1			26.4			29.1			23.5		
LOS	C	C			C			C			C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 36: Phase 2 LOS – Intersection 2

INTERSECTION 2	AM PEAK												
	2038 PHASE 2												
CSAH 2 & Newton Circle W	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		36	1999	13	0	638	58	4	0	0	14	0	55
Queue (ft)		69	0	0	0	369	0	20			732		
Mvmt Delay (sec)		9.3	0.0	0.0	0.0	0.0	0.0						
Mvmt LOS		A	A	A	A	A	A						
Delay (sec)	0.8	0.2			0.0			135.1			18.0		
LOS	A	A			A			F			C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 2	PM PEAK												
	2038 PHASE 2												
CSAH 2 & Newton Circle W	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		132	909	22	2	1769	241	18	0	3	147	0	373
Queue (ft)		161	0	0	0	0	26	62			650		
Mvmt Delay (sec)		25.3	0.0	0.0	10.1	0.0	0.0						
Mvmt LOS		D	A	A	B	A	A						
Delay (sec)	*	3.1			0.0			**			**		
LOS	F	A			A			F			F		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 37: Phase 2 LOS – Intersection 3

INTERSECTION 3	AM PEAK												
	2038 PHASE 2												
CSAH 2 & Newton Circle E	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		429	1311	251	183	282	285	151	0	111	171	0	257
Queue (ft)		209	396	85	398	339	83	18	45		56	106	
Mvmt Delay (sec)		17.1	39	17.9	47.8	23	29.2	40.2	0	32.2	29.7	0	54.1
Mvmt LOS		B	D	B	D	C	C	D	A	C	C	A	D
Delay (sec)	33.5	31.4			31.5			36.8			44.4		
LOS	C	C			C			D			D		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 3	PM PEAK												
	2038 PHASE 2												
CSAH 2 & Newton Circle E	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		184	664	212	156	1365	123	352	0	262	205	0	309
Queue (ft)		216	308	71	397	539	392	17	40		61	143	
Mvmt Delay (sec)		91.3	29.9	27.9	25.0	63.3	28.7	93.3	0	66.2	50.1	0	199.6
Mvmt LOS		F	C	C	C	E	C	F	A	E	D	A	F
Delay (sec)	67.5	40.2			57.1			81.7			140.0		
LOS	E	D			E			F			F		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Recommendations for Phase 1 improvements include closing Intersection 4. Table for Intersection 4 is omitted.

Table 38: Phase 2 LOS – Intersection 5

INTERSECTION 5	AM PEAK												
	2038 PHASE 2												
CSAH 2 & SB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			1442	188	81	430					55	2	331
Queue (ft)			319	336	92	172					75		123
Mvmt Delay (sec)					20.8	0.1							
Mvmt LOS					C	A							
Delay (sec)	23.8	29.9			3.4						29.5		
LOS	C	C			A						C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 5	PM PEAK												
	2038 PHASE 2												
CSAH 2 & SB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			802	280	102	601					170	0	1000
Queue (ft)			316	310	253	796					585		1267
Mvmt Delay (sec)					124.7	34.5							
Mvmt LOS					F	C							
Delay (sec)	86.4	123			47.6						16.2		
LOS	F	F			D						B		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 39: Phase 2 LOS – Intersection 6

INTERSECTION 6	AM PEAK												
	2038 PHASE 2												
CSAH 2 & NB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		1113	417			268	173	203	0	72			
Queue (ft)		244	310			191	231	178		89			
Mvmt Delay (sec)		28.6	23.2										
Mvmt LOS		C	C										
Delay (sec)	30.6	27.1			45.8			25.5					
LOS	C	C			D			C					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 6	PM PEAK												
	2038 PHASE 2												
CSAH 2 & NB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		561	418			488	85	206	4	58			
Queue (ft)		288	281			260	275	209		87			
Mvmt Delay (sec)		15.9	6.1										
Mvmt LOS		B	A										
Delay (sec)	19.0	11.7			33.1			15.4					
LOS	B	B			C			B					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Level of Service and Delay Comparison

The following tables provide a side-by-side comparison in the change in delay and level of service for the studied intersections' approaches. Values within the 2031 Phase 1 and 2038 Phase 2 rows show conditions using existing geometry and without any recommended improvements.

In the existing condition, Intersections 1-6 operate at an overall LOS A-B. Background traffic is expected to increase into the future, causing LOS F conditions at Intersections 5 and 6. Introducing the proposed development's trips, multiple turn movements on the minor approaches are expected to operate at LOS F, causing the overall level of service at the intersections to decrease. Because business are expected to move into the development gradually, the area will need to be closely monitored as the area develops and traffic conditions change over the next 20 years.

Table 40: LOS and Delay Comparison – Intersection 1

	INTERSECTION 1	AM PEAK												
	CSAH 2 & Xerxes Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
			L	T	R	L	T	R	L	T	R	L	T	R
Existing	Delay (sec)	3.6	0.1			1.1			13.6			13.1		
	LOS	A	A			A			B			B		
2031 Baseline	Delay (sec)	4.8	0.1			1.2			18.1			16.5		
	LOS	A	A			A			C			C		
2031 Phase 1	Delay (sec)	12.3	0.0			2.6			57.3			**		
	LOS	B	A			A			F			F		
2038 Baseline	Delay (sec)	6.5	0.1			1.3			24.9			23.5		
	LOS	A	A			A			C			C		
2038 Phase 2	Delay (sec)	43.5	30.5			14.8			104.7			95.1		
	LOS	D	C			B			F			F		

	INTERSECTION 1	PM PEAK												
	CSAH 2 & Xerxes Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
			L	T	R	L	T	R	L	T	R	L	T	R
Existing	Delay (sec)	2.0	0.1			1.8			12.4			27.1		
	LOS	A	A			A			B			D		
2031 Baseline	Delay (sec)	2.2	0.0			1.9			15.0			41.4		
	LOS	A	A			A			C			E		
2031 Phase 1	Delay (sec)	*	0.0			2.7			**			**		
	LOS	F	A			A			F			F		
2038 Baseline	Delay (sec)	2.6	0.1			2.0			19.3			59.7		
	LOS	A	A			A			C			F		
2038 Phase 2	Delay (sec)	27.3	29.1			26.4			29.1			23.5		
	LOS	C	C			C			C			C		

Table 41: LOS and Delay Comparison – Intersection 2

	INTERSECTION 2	AM PEAK												
	CSAH 2 & Newton Circle W	Overall	Eastbound			Westbound			Northbound			Southbound		
			L	T	R	L	T	R	L	T	R	L	T	R
Existing	Delay (sec)	0.0		0.0			0.0			20.9				
	LOS	A		A			A			C				
2031 Baseline	Delay (sec)	0.0		0.0			0.0			28.7				
	LOS	A		A			A			D				
2031 Phase 1	Delay (sec)	0.1		0.0			0.0			54.5				
	LOS	A		A			A			F				
2038 Baseline	Delay (sec)	0.1		0.0			0.0			37.6				
	LOS	A		A			A			E				
2038 Phase 2	Delay (sec)	0.8		0.2			0.0			135.1			18.0	
	LOS	A		A			A			F			C	

	INTERSECTION 2	PM PEAK												
	CSAH 2 & Newton Circle W	Overall	Eastbound			Westbound			Northbound			Southbound		
			L	T	R	L	T	R	L	T	R	L	T	R
Existing	Delay (sec)	0.2		0.0			0.0			13.8				
	LOS	A		A			A			B				
2031 Baseline	Delay (sec)	0.2		0.0			0.0			15.9				
	LOS	A		A			A			A				
2031 Phase 1	Delay (sec)	0.2		0.0			0.0			25.1				
	LOS	A		A			A			D				
2038 Baseline	Delay (sec)	0.2		0.0			0.0			18.4				
	LOS	A		A			A			C				
2038 Phase 2	Delay (sec)	*		3.1			0.0			**			**	
	LOS	F		A			A			F			F	

Table 42: LOS and Delay Comparison – Intersection 3

	CSAH 2 & Newton Circle E	Overall	Eastbound			Westbound			Northbound			Southbound		
			L	T	R	L	T	R	L	T	R	L	T	R
Existing	Delay (sec)	0.2		0.0			0.6			12.0				
	LOS	A		A			A			B				
2031 Baseline	Delay (sec)	0.2		0.0			0.7			13.6				
	LOS	A		A			A			B				
2031 Phase 1	Delay (sec)	*		0.9			5.5			**				
	LOS	F		A			A			F				
2038 Baseline	Delay (sec)	0.2		0.0			0.7			15.2				
	LOS	A		A			A			C				
2038 Phase 2	Delay (sec)	33.5		31.4			31.5			36.8			44.4	
	LOS	C		C			C			D			D	

	INTERSECTION 3	PM PEAK												
	CSAH 2 & Newton Circle E	Overall	Eastbound			Westbound			Northbound			Southbound		
			L	T	R	L	T	R	L	T	R	L	T	R
Existing	Delay (sec)	0.2		0.0			0.1			9.5				
	LOS	A		A			A			A				
2031 Baseline	Delay (sec)	0.2		0.0			0.1			9.9				
	LOS	A		A			A			A				
2031 Phase 1	Delay (sec)	*		2.5			1.1			**				
	LOS	F		A			A			F				
2038 Baseline	Delay (sec)	0.2		0.0			0.1			10.2				
	LOS	A		A			A			B				
2038 Phase 2	Delay (sec)	67.5		40.2			57.1			81.7			140.0	
	LOS	E		D			E			F			F	

Table 43: LOS and Delay Comparison – Intersection 4

	INTERSECTION 4	AM PEAK												
	CSAH 2 & Irving Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
			L	T	R	L	T	R	L	T	R	L	T	R
Existing	Delay (sec)	0.2		0.0			0.1			19.8				
	LOS	A		A			A			C				
2031 Baseline	Delay (sec)	0.3		0.0			0.1			28.6				
	LOS	A		A			A			D				
2031 Phase 1	Delay (sec)	0.3		0.0			0.2			42.3				
	LOS	A		A			A			E				
2038 Baseline	Delay (sec)	0.4		0.0			0.3			40.9				
	LOS	A		A			A			E				
2038 Phase 2	Delay (sec)													
	LOS													

	INTERSECTION 4	PM PEAK												
	CSAH 2 & Irving Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
			L	T	R	L	T	R	L	T	R	L	T	R
Existing	Delay (sec)	0.2		0.0			0.2			13.8				
	LOS	A		A			A			B				
2031 Baseline	Delay (sec)	0.3		0.0			0.3			18.1				
	LOS	A		A			A			C				
2031 Phase 1	Delay (sec)	0.6		0.0			0.7			33.1				
	LOS	A		A			A			D				
2038 Baseline	Delay (sec)	0.5		0.0			0.5			20.7				
	LOS	A		A			A			C				
2038 Phase 2	Delay (sec)													
	LOS													

Table 44: LOS and Delay Comparison – Intersection 5

	INTERSECTION 5	AM PEAK												
	CSAH 2 & SB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
			L	T	R	L	T	R	L	T	R	L	T	R
Existing	Delay (sec)	1.5	0.0			3.9						28.3		
	LOS	A	A			A						D		
2031 Baseline	Delay (sec)	2.8	0.0			4.6						0.0		
	LOS	A	A			A						F		
2031 Phase 1	Delay (sec)	5.3	0.0			2.6						181.6		
	LOS	A	A			A						F		
2038 Baseline	Delay (sec)	6.4	0.0			5.4						159.9		
	LOS	A	A			A						F		
2038 Phase 2	Delay (sec)	23.8	29.9			3.4						29.5		
	LOS	C	C			A						C		

	INTERSECTION 5	PM PEAK												
	CSAH 2 & SB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
			L	T	R	L	T	R	L	T	R	L	T	R
Existing	Delay (sec)	3.7	0.0			1.7						19.8		
	LOS	A	A			A						C		
2031 Baseline	Delay (sec)	6.1	0.0			1.8						36.2		
	LOS	A	A			A						E		
2031 Phase 1	Delay (sec)	*	0.0			1.4						**		
	LOS	F	A			A						F		
2038 Baseline	Delay (sec)	12.5	0.0			1.8						79.2		
	LOS	B	A			A						F		
2038 Phase 2	Delay (sec)	86.4	122.7			47.6						16.2		
	LOS	F	F			D						B		

Table 45: LOS and Delay Comparison – Intersection 6

	INTERSECTION 6	AM PEAK												
	CSAH 2 & NB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
			L	T	R	L	T	R	L	T	R	L	T	R
Existing	Delay (sec)	12.9	8.3			0.0			122.0					
	LOS	B	A			A			F					
2031 Baseline	Delay (sec)	**	12.8			0.0			**					
	LOS	F	B			A			F					
2031 Phase 1	Delay (sec)	17.0	22.1			0.0			**					
	LOS	C	C			A			F					
2038 Baseline	Delay (sec)	19.6	24.8			0.0			11.5					
	LOS	C	C			A			B					
2038 Phase 2	Delay (sec)	30.6	27.1			45.8			25.5					
	LOS	C	C			D			C					

	INTERSECTION 6	PM PEAK												
	CSAH 2 & NB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
			L	T	R	L	T	R	L	T	R	L	T	R
Existing	Delay (sec)	4.9	4.9			0.0			22.2					
	LOS	A	A			A			C					
2031 Baseline	Delay (sec)	8.9	5.3			0.0			57.5					
	LOS	A	A			A			F					
2031 Phase 1	Delay (sec)	*	6.3			0.0			**					
	LOS	F	A			A			F					
2038 Baseline	Delay (sec)	26.0	5.8			0.0			209.3					
	LOS	D	A			A			F					
2038 Phase 2	Delay (sec)	19.0	11.7			33.1			15.4					
	LOS	B	B			C			B					

Crash Analysis

Crash data for the study area was gathered using the Minnesota Crash Mapping Tool (MnCMAT). A diagram of crashes reported between 2011 and 2015 is provided as **Exhibit 9**. 26 crashes occurred between 2006 and 2015. **Table 46** and **Table 47** summarizes these crashes. There are no apparent patterns in the crash data warranting safety improvements to the existing roadway.

Exhibit 9: Crash Locations

Table 46: Recorded Crashes and Severity Summary

Crash Severity	Number of Crashes
K – Fatal Injury	1
A – Incapacitating Injury	0
B – Non-Incapacitating Injury	7
C – Possible Injury	17
Property Damage	28

Table 47: KAB Crash Details

Severity Type	Date	Time	Junction	Road Condition	Weather	Diagram	Notes
B	8/26/2006	11:20 PM	Xerxes Ave	Dry	Clear (Dark)	Sideswipe Passing	Wrong Way
B	8/9/2010	1:15 PM	Xerxes Ave	Dry	Clear	Head On	Failed to Yield to ROW, Distraction
K	1/17/11	7:49 AM	Xerxes Ave	Ice/Packed Snow	Cloudy	Right Angle	Fatal; Failed to Yield to ROW, Avoid Unit/Object in Road
B	3/3/11	7:29 PM	I-35	Dry	Clear	Right Angle	Failed to Yield to ROW; Vision Obscured
B	11/13/11	8:54 AM	Xerxes Ave	Wet	Rain	Sideswipe Passing	Both driving East
B	4/18/12	3:57 PM	Non-Junction	Dry	Clear	Other; 1 Vehicle	Motorcycle; Under the Influence
B	6/10/13	4:39 PM	I-35	Dry	Clear	Right Angle	Failed to Yield to ROW
B	12/5/14	3:39 PM	I-35	Dry	Cloudy	Rear End	Both driving South

Traffic Signal Warrant Analysis

The following table is a summary of the various traffic signal warrants as described in the Manual of Uniform Traffic Devices (MUTCD), and whether or not each warrant is satisfied for Intersections 1-3. Where Warrants 1 and 2 are satisfied, traffic signals are warranted.

Table 48: Traffic Signal Warrant Analysis Summary

Warrant #	Warrant Name	INT 1 Baseline (2031)	INT 1 Phase 1 (2031)	INT 2 Baseline (2038)	INT 2 Phase 2 (2038)	INT 3 Baseline (2031)	INT 3 Phase 1 (2031)
1	Eight-Hour Vehicular Volume	Yes	Yes	No	Yes	No	Yes
2	Four-Hour Vehicular Volume	Yes	Yes	No	Yes	No	Yes
3	Peak Hour	N/A	N/A	N/A	N/A	N/A	N/A
4	Pedestrian Four-Hour Volume	N/A	N/A	N/A	N/A	N/A	N/A
5	School Crossing	N/A	N/A	N/A	N/A	N/A	N/A
6	Coordinate Signal System	N/A	N/A	N/A	N/A	N/A	N/A
7	Crash Experience	N/A	N/A	N/A	N/A	N/A	N/A
8	Roadway Network	N/A	N/A	N/A	N/A	N/A	N/A
9	Intersection Near a Grade Crossing	N/A	N/A	N/A	N/A	N/A	N/A

Warrant #1

To estimate the average vehicular flow rates during the peak 8-hour period of an average day, a factor of 0.0625 was applied to the average daily traffic (ADT) values shown in **Appendix H: Trip Distribution**. This number was then divided by 2 to get the approach volume. Where an ADT value is not shown, the peak hour volume for the approach was divided by a K factor of 0.12 to get an estimated average daily traffic, and then a factor of 0.0625 was applied to get an average flow rate.

Once traffic impact studies conclude that traffic signals are warranted in the near future, a 12-hour traffic count should be conducted to confirm these conclusions and further study will be required to design the new traffic signals.

Warrant #2

The vehicular flow rates used in Warrant #1 were used in Warrant #2 to determine whether or not Warrant #2 is fulfilled.

All-Way-Stop Control Warrant Analysis

Per MUTCD guidance, all-way-stop control is warranted for Intersection 1 during the Baseline (2031) and Phase 1 conditions, for Intersection 2 during the Phase 2 condition, and Intersection 3 during the Phase 1 condition. The MUTCD describes when all-way-stop control may be appropriate for a particular intersection. The below text is taken from the MUTCD:

A. *Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.*

B. *Five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.*

C. *Minimum volumes:*

   1. *The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and*

   2. *The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour; but*

   3. *If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided in Items 1 and 2.*

D. *Where no single criterion is satisfied, but where Criteria B, C.1, and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.*

When traffic signals are warranted to accommodate traffic at Intersections 1-3, all-way-stop control may also be appropriate. All-way-stop control is an appropriate interim measure that can be installed immediately while arrangements can be made to install a traffic signal or other traffic control. Criteria A described above is satisfied. Because Criteria A is satisfied, all-way-stop control is warranted.

Improvements to Accommodate Development Traffic

Based on the modeled Phase 1 (2031) conditions described in this report, to accommodate both major and minor street traffic, improvements are recommended at Intersections 1-6. At the studied intersections the following are minimum recommendations:

- At Intersection 1,
    - Signalize intersection with permitted-protected EB and WB left turns and permitted NB and SB left turns;
    - Pave SB leg to accommodate a left-thru shared lane and a right turn lane; and
- At Intersection 2,
    - None.
- At Intersection 3,
    - Signalize intersection with permitted-protected EB and WB left turns; and
    - Include NB and 150’ SB left turn lanes (permitted-protected phasing) in the proposed development’s intersection reconfiguration plans.
- At Intersection 4,
    - Close access and route traffic to new access road to the west; and

    - Restripe CSAH 2 for two travel lanes in both EB and WB directions.
- At Intersection 5,
    - Signalize intersection with split phasing;
    - Add a 200’ WB left turn lane;
    - Maintain one dedicated EB thru lane and one shared EB thru/right lane.
- At the I-35 overpass, widen the bridge to accommodate four travel lanes.
- At Intersection 6,
    - Signalize intersection with split phasing;
    - Add two dedicated 300’ EB left turn lanes;
    - Add one dedicated 200’ WB right turn lane;
    - Add a 150’ NB right turn lane.

As the project moves into Phase 2, additional improvements are needed to accommodate both major and minor street traffic. At the studied intersections the following are minimum recommendations:

- At Intersection 1,
    - Ensure that traffic signal timing is current and update if necessary; and
    - Lengthen existing 200’ NB right turn lane to 300’.
- At Intersection 2,
    - Signalize intersection with permitted-protected EB and WB left turns and permitted NB and SB left turns;
    - Add a 150’ NB left turn lane; and
    - Add a 150’ SB right turn lane.
- At Intersection 3,
    - Ensure that traffic signal timing is current and update if necessary; and
    - Add a second NB left turn lane.
- At Intersection 4,
    - Closed per Phase 1 recommendations.
- At Intersection 5,
    - Ensure that traffic signal timing is current and update if necessary; and
    - Add a second 250’ SB right turn lane;
    - Add a 300’ EB right turn lane in order to maintain two EB thru lanes onto the I-35 overpass.
- At Intersection 6,
    - Ensure that traffic signal timing is current and update if necessary.

All turn lane tapers should be designed to appropriate lengths. Additionally, the above signal timing recommendations and described turn lane layouts are suggestions among many acceptable options. As the area develops, further study will be needed into order to appropriately design traffic signal timings for the area’s unique traffic patterns. Although the intersections seem to be planned for traffic signals, roundabouts were considered at Intersections 1-6. Into the future, turning movement volumes are expected to be low compared to CSAH 2’s thru

movements. Additionally, the intersections are closely spaced. Due to the high thru movement volumes and the close proximity of the intersections, roundabouts were not studied further.

Phasing of Improvements

Because businesses are expected to move into the development gradually, improvements to the subject intersection are not needed when the development is available for construction operations in 2019. Assuming linear development growth, Phase 1 development will be complete by 2031. If development occurs according to conceptual plans, the recommended improvements to accommodate Phase 1 traffic as described in this report may need to be implemented prior to 2031. The following recommendations should be used to determine when improvements are needed:

- As businesses move into the development, traffic impact studies should be conducted as the City's and County's thresholds require, to determine when improvements are warranted.
- This study should be updated if growth projections change.

Driveway Locations

Thoughtful placement of driveways is needed moving forward, and proposed business driveways should be placed in locations as to avoid impacts to future intersection turn lanes and tapers. No driveways should be allowed on CSAH 2. Two-way left turn lanes could also be considered to prevent future congestion along the development's access roadway links.

I-35 Interchange Improvements

Improvements will be needed to Intersection 5, Intersection 6, and the I-35 overpass regardless of proposed development construction. Interim and long term options for I-35 interchange improvements have been detailed in the "CH 2 / I-35 Interchange Area Management Plan" (IAMP) developed in 2010. If Scott County moves forward with the diverging diamond interchange plan, the recommended traffic signals and Intersections 1-4 should be actuated-coordinated, designed to complement the interchange signals. In the meantime, a LOS F condition was observed during traffic data collection for this report.

Modeling the Improvements

Modeling shows that the above recommendations improve the level of service at Intersections 1-6. **Tables 49-53** summarize the studied intersections' Phase 1 (2031) conditions with the recommended improvements. **Tables 54-58** summarize the studied intersections' Phase 2 (2038) conditions with the recommended improvements. Note that this report recommends closing Intersection 4 as a part of Phase 1. Therefore, the Intersection 4 table is purposely omitted. The Synchro analysis worksheets are provided in **Appendix O: Synchro Reports – Phase 1 (2031) Recommendations** and **Appendix S: Synchro Reports – Phase 2 (2038) Recommendations**.

This study anticipates other area development to match the recent rate of traffic growth, and these recommendations apply to the traffic conditions used in this study. However, re-analyzing the studied intersections is recommended during the design of major nearby developments, highway improvement projects, or interchange improvement projects.

Table 49: Phase 1 Recommendations – Intersection 1

INTERSECTION 1	AM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & Xerxes Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		9	1150	8	120	451	30	38	3	428	43	4	6
Queue (ft)		30	322	14	112	98	20	41		228	61		9
Mvmt Delay (sec)		15.2	31.4	15.7	23.3	15.4	13.4	69.3		36.1			
Mvmt LOS		B	C	B	C	B	B	E		D			
Delay (sec)	29.9	31.2			16.9			39.0			69.6		
LOS	C	C			B			D			E		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 1	PM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & Xerxes Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		4	728	31	402	1401	45	24	2	184	34	0	0
Queue (ft)		19	242	29	260	281	22	41		81	41		0
Mvmt Delay (sec)		20.8	26.2	19.9	24.0	20.9	10.9	20.8		25.4			
Mvmt LOS		C	C	B	C	C	B	C		C			
Delay (sec)	22.8	25.9			21.4			24.8			22.0		
LOS	C	C			C			C			C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 50: Phase 1 Recommendations – Intersection 2

INTERSECTION 2	AM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & Newton Circle W	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			1755	13	0	622		4		0			
Queue (ft)			0	0	0	0		10					
Mvmt Delay (sec)					0.0	0.0							
Mvmt LOS					A	A							
Delay (sec)	0.1	0.0			0.0			74.8					
LOS	A	A			A			F					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 2	PM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & Newton Circle W	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			889	22	2	1745		18		3			
Queue (ft)			0	0	0	0		35					
Mvmt Delay (sec)					0.0	0.0							
Mvmt LOS					A	A							
Delay (sec)	0.2	0.0			0.0			30.0					
LOS	A	A			A			D					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 51: Phase 1 Recommendations – Intersection 3

INTERSECTION 3	AM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & Newton Circle E	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		175	1297	261	189	258	117	215	0	154	96	0	143
Queue (ft)		222	494	195	422	316	53	18	45		56	99	
Mvmt Delay (sec)		12.6	40.5	18.6	50.0	15.9	16.0	35.8	0.0	34.4	25.6	0.0	34.2
Mvmt LOS		B	D	B	D	B	B	D	A	C	C	A	C
Delay (sec)	32.8	34.3			27.4			35.2			30.7		
LOS	C	C			C			D			C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 3	PM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & Newton Circle E	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		151	517	225	165	1277	101	291	0	221	128	0	193
Queue (ft)		169	180	95	164	372	42	16	53		68	144	
Mvmt Delay (sec)		42.4	20	20	15.4	39.7	16.9	42.0	0.0	37.3	25.3	0.0	39.1
Mvmt LOS		D	B	C	B	D	B	D	A	D	C	A	D
Delay (sec)	32.8	23.7			35.6			40.0			33.6		
LOS	C	C			D			D			C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 52: Phase 1 Recommendations – Intersection 5

INTERSECTION 5	AM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & SB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			1413	171	81	314					55	2	261
Queue (ft)			314	341	111	145					69		57
Mvmt Delay (sec)					20.3	0.1							
Mvmt LOS					C	A							
Delay (sec)	24	28.7			4.2						29.6		
LOS	C	C			A						C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 5	PM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & SB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			636	181	102	538					170	0	962
Queue (ft)			334		224	573					581		1196
Mvmt Delay (sec)					29.9	48.3							
Mvmt LOS					C	D							
Delay (sec)	65.5	92.8			45.3						10.3		
LOS	E	F			D						B		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 53: Phase 1 Recommendations – Intersection 6

INTERSECTION 6	AM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & NB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		1096	405			222	173	133	0	72			
Queue (ft)		312	167			200		132		44			
Mvmt Delay (sec)		27.9	23.8										
Mvmt LOS		C	C										
Delay (sec)	29.5	26.8			43.1			22.5					
LOS	C	C			D			C					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 6	PM PEAK												
	2038 WITH PHASE 1 IMPROVEMENTS												
CSAH 2 & NB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		462	351			463	85	168	4	58			
Queue (ft)		157	92			264		138		46			
Mvmt Delay (sec)		24.4	30.1										
Mvmt LOS		C	C										
Delay (sec)	27.9	26.9			35.3			13.6					
LOS	C	C			D			B					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 54: Phase 2 Recommendations – Intersection 1

INTERSECTION 1	AM PEAK												
	2038 PHASE 2 WITH IMPROVEMENTS												
CSAH 2 & Xerxes Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		9	1337	8	138	500	36	38	3	498	66	4	6
Queue (ft)		26	421	18	148	130	34	191		310	80		15
Mvmt Delay (sec)		13.6	39	14.2	33.2	0	0.3	20.4		75.5			
Mvmt LOS		B	D	B	C	A	A	C		F			
Delay (sec)	**37.1**	39.1			7.1			71.3			23.6		
LOS	**D**	D			A			E			C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 1	PM PEAK												
	2038 PHASE 2 WITH IMPROVEMENTS												
CSAH 2 & Xerxes Ave	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		4	830	31	501	1666	78	24	2	222	46	0	0
Queue (ft)		18	292	41	299	160	27	41		120	78		0
Mvmt Delay (sec)		22.4	34	22.1	27.5	13	5.4	23.5		31.1			
Mvmt LOS		C	C	C	C	B	A	C		C			
Delay (sec)	**21.6**	33.4			16.0			30.3			25.4		
LOS	**C**	C			B			C			C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 55: Phase 2 Recommendations – Intersection 2

INTERSECTION 2	AM PEAK												
	2038 PHASE 2 WITH IMPROVEMENTS												
CSAH 2 & Newton Circle W	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		179	1856	13	0	587	120	4	0	0	72	0	108
Queue (ft)		173	337	6	0	111	45	13	0		71		52
Mvmt Delay (sec)					17	0							
Mvmt LOS					C	A							
Delay (sec)	22.3	30.0			0.1			23.7			21.9		
LOS	C	C			A			C			C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 2	PM PEAK												
	2038 PHASE 2 WITH IMPROVEMENTS												
CSAH 2 & Newton Circle W	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		132	909	22	2	1922	88	18	0	3	147	0	220
Queue (ft)		546	1569	2	9	243	35	34	9		135		164
Mvmt Delay (sec)		22.0	6.3	4.6	0.9	0.6	0	36.5	27.7				
Mvmt LOS		C	A	A	A	A	A	D	C				
Delay (sec)	7.2	8.2			0.5			35.5			39.5		
LOS	A	A			A			D			D		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 56: Phase 2 Recommendations – Intersection 3

INTERSECTION 3	AM PEAK												
	2038 PHASE 2 WITH IMPROVEMENTS												
CSAH 2 & Newton Circle E	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		251	1369	286	205	378	168	172	0	125	101	0	151
Queue (ft)		452	565	398	276	142	58	48	43		55	110	
Mvmt Delay (sec)		10.7	17	3.5	49.3	17	17.5	26.6		34.9	26.9	0	37.2
Mvmt LOS		B	B	A	D	B	B	C		C	C	A	D
Delay (sec)	20	14.3			26.2			30.1			33.1		
LOS	C	B			C			C			C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 3	PM PEAK												
	2038 PHASE 2 WITH IMPROVEMENTS												
CSAH 2 & Newton Circle E	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		184	664	212	156	1365	123	352	0	262	205	0	309
Queue (ft)		182	191	67	284	429	164	50	54		56	157	
Mvmt Delay (sec)		45.3	3.7	3.6	12.8	42.6	16.1	51.8		55.2	56.3	0	84.5
Mvmt LOS		D	A	A	B	D	B	D		E	E	A	F
Delay (sec)	37.6	10.9			37.8			53.3			73.3		
LOS	D	B			D			D			E		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 57: Phase 2 Recommendations – Intersection 5

INTERSECTION 5	AM PEAK												
	2038 PHASE 2 WITH IMPROVEMENTS												
CSAH 2 & SB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			1443	189	81	431					55	2	331
Queue (ft)			346	100	125	179					79		131
Mvmt Delay (sec)					19.2	0							
Mvmt LOS					B	A							
Delay (sec)	17.8	22.1			3.1						27.8		
LOS	B	C			A						C		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 5	PM PEAK												
	2038 PHASE 2 WITH IMPROVEMENTS												
CSAH 2 & SB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)			802	280	102	601					170	0	1000
Queue (ft)			270	68	129	283					127		259
Mvmt Delay (sec)					22.2	38							
Mvmt LOS					C	D							
Delay (sec)	30.3	28.9			35.5						17.2		
LOS	C	C			D						B		

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Table 58: Phase 2 Recommendations – Intersection 6

INTERSECTION 6	AM PEAK												
	2038 PHASE 2 WITH IMPROVEMENTS												
CSAH 2 & NB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		1114	417			269	173	203	0	72			
Queue (ft)		292	112			184	229	178		89			
Mvmt Delay (sec)		29.6	23.3										
Mvmt LOS		C	C										
Delay (sec)	31.2	27.9			46.4			25.3					
LOS	C	C			D			C					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

INTERSECTION 6	PM PEAK												
	2038 PHASE 2 WITH IMPROVEMENTS												
CSAH 2 & NB I-35 Ramp	Overall	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh)		561	418			488	85	206	4	58			
Queue (ft)		179	153			399	416	175		78			
Mvmt Delay (sec)		24.8	30.3										
Mvmt LOS		C	C										
Delay (sec)	28.4	27.1			36.3			15.8					
LOS	C	C			D			B					

Source: Data collected by ISG January 2018. Data was analyzed using the 2010 Highway Capacity Manual and SimTraffic.

Conclusions

Summary of Roadway Link Analysis

The analysis shows that the existing roadway link network is sufficient for the existing traffic. In the design year between Intersections 1 and 4, the existing roadway link network is sufficient for the grown background traffic and the new traffic anticipated to be generated from the proposed development. Between Intersections 4 and 6, the existing roadway link network is not sufficient for both the grown background traffic and the new traffic anticipated to be generated from the proposed development. Between intersections 4 and 5, the roadway should be restriped and the I-35 overpass between intersections 5 and 6 should be widened to accommodate the increase in AADT. As area traffic grows and redistributes, the studied area should be reviewed periodically for alternate routes to achieve the City's goals for development as outlined in applicable comprehensive plans.

Summary of Intersection Analysis

Intersections 1-6 are expected to operate with an overall acceptable LOS (LOS A-D) and delay at opening and into the future based on current growth projections. However, several failing left turn movements create overall poor levels of service at studied intersections. Closing Intersection 4, changing the intersection control to traffic signal at the other studied intersections, and implementing the other recommended improvements would improve conditions at all intersections. The performance of the interchange ramp intersections will be dependent on interchange improvements that may occur between 2018 and 2038. While traffic signals would manage traffic appropriately in the interim, options discussed in other interchange management plans may serve as better long term solutions.

Summary of Needed Improvements

Based on the modeled Phase 1 (2031) and Phase 2 (2038) conditions described in this report, to accommodate both major and minor street traffic, improvements are recommended at Intersections 1-6 and some road links. The following are minimum recommendations:

- Implement roundabouts or traffic signal control at Intersections 1-3, 5, and 6.
- Two travel lanes should be maintained both eastbound and westbound through the studied area.
- Close access to Intersection 4 and route to new access road to the west.
- At the I-35 overpass, widen the bridge to accommodate four travel lanes.
- Proposed business driveways should be placed in locations as to avoid impacts to future intersection turn lanes.

Improvements will be needed to Intersection 5, Intersection 6 and the I-35 overpass in the future regardless of proposed development construction. Interim and long term options for I-35 interchange improvements have been detailed in a separate report. Because businesses are expected to move into the development gradually over the next 20 years, the development is broken into Phases 1 and 2. Based on current concepts, Phase 1 development is expected to last through 2031. Recommended improvements to the studied intersections should be applied by this time. Additional improvements to the studied intersection will be needed for Phase 2 development; however, as businesses move into to the development, traffic impact studies should be conducted as needed in order to track interim improvement needs. Additionally, the study area should be re-evaluated if growth projections change.

Appendices

Appendix A: Proposed Development Overview

AREAS INCLUDED IN PHASE 1

PHASE 2 INCLUDES ENTIRE CONCEPTUAL AREA

OVERALL SITE PLAN

0 300 600 900
SCALE IN FEET

N

ARCHITECTURE + ENGINEERING + ENVIRONMENTAL + PLANNING www.is-grp.com

ADELMANN PROPERTY

Elko New Market, MN
April 5, 2018
ISG Project No. 17-20548

ISG

CAD FILE NAME 20548 CONCEPT 1 PHASE 2

NORTHERN SITE PLAN

0 200 400 600
SCALE IN FEET

N

ARCHITECTURE + ENGINEERING + ENVIRONMENTAL + PLANNING www.is-grp.com

ADELMANN PROPERTY

Elko New Market, MN
April 5, 2018
ISG Project No. 17-20548

ISG

CAD FILE NAME 20548 CONCEPT 1 PHASE 2

SOUTHERN SITE PLAN

0 100 200 400
SCALE IN FEET

N

ARCHITECTURE + ENGINEERING + ENVIRONMENTAL + PLANNING www.is-grp.com

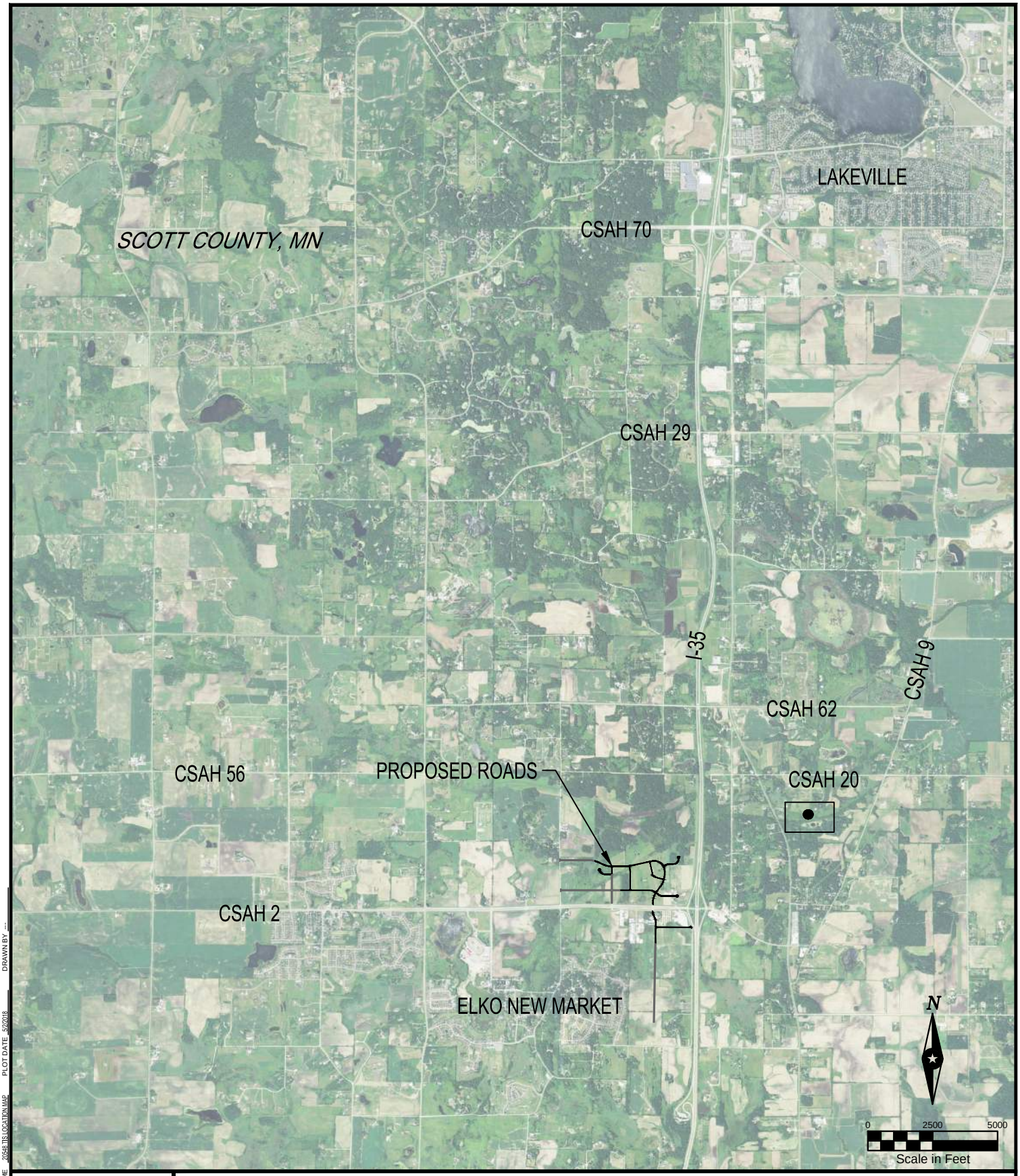
ADELMANN PROPERTY

Elko New Market, MN
April 5, 2018
ISG Project No. 17-20548

ISG

CAD FILE NAME 20548 CONCEPT 1 PHASE 2

Appendix B: Location Map



LOCATION MAP

ISG

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. THEY MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE_____ LIC. NO._____

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE_____ LIC. NO._____

PROJECT

APPRO

ADELMANN DEVELOPMENT

ELKO NEW MARKET MINNESOTA

SHEET B

PROJECT NO. 20456 CAD FILE NAME 20548 TIS LOCATION MAP PLOT DATE 5/2/2018 DRAWN BY ---

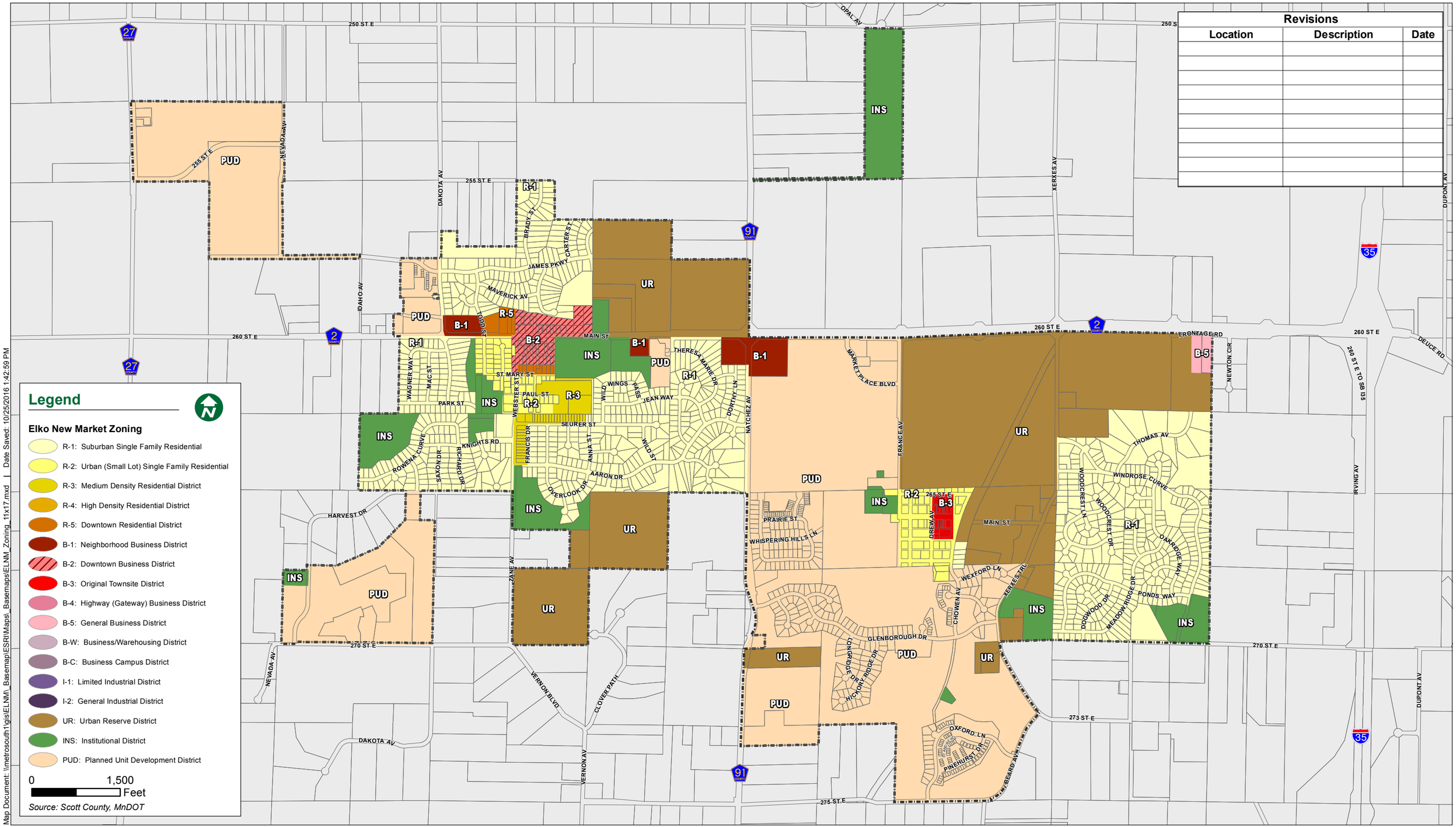
Appendix C: Existing Zoning Map

CITY OF ELKO NEW MARKET

Zoning Map

October 2016

BOLTON & MENK
Real People. Real Solutions.

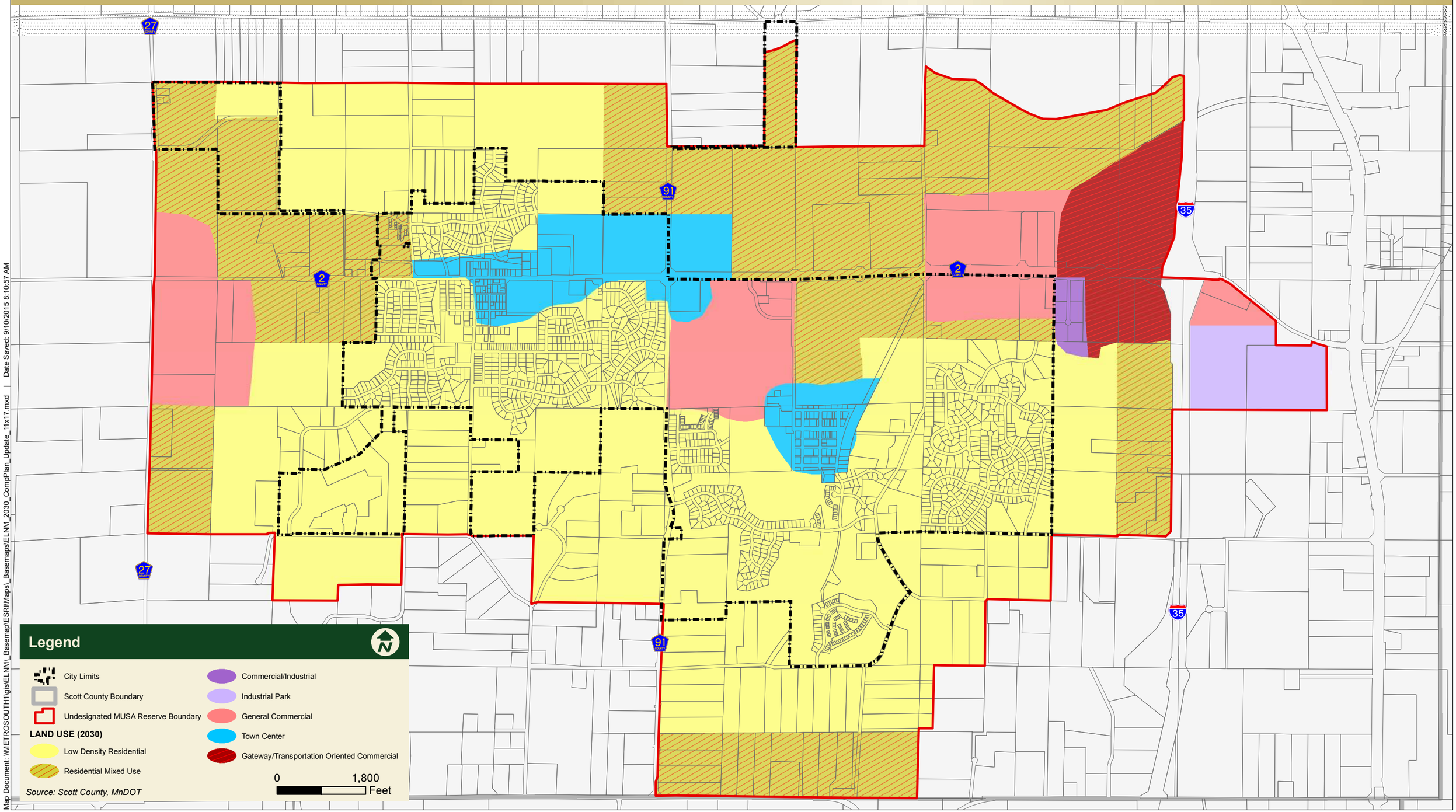


Map Document: \\metrosouth1\gis\ELNM_Basemap\ESRI\Maps_Basemaps\ELNM_Zoning_11x17.mxd | Date Saved: 10/25/2016 1:42:59 PM

Appendix D: Future Land Use Map

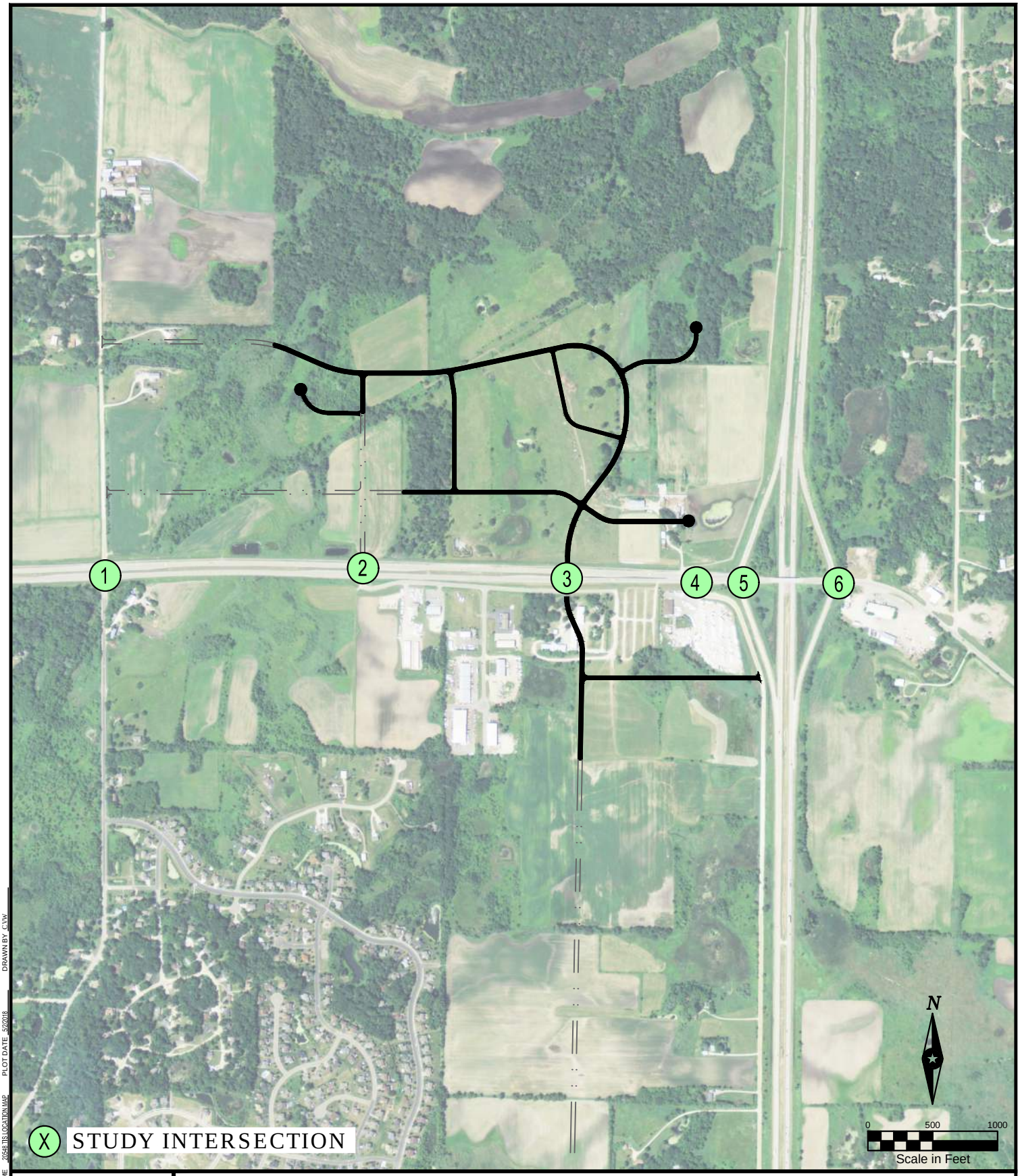
2030 Land Use Plan

August 2015



Map Document: \\METROSOUTH1\gis\ELNM_Basemap\ESRIMaps_Basemaps\ELNM_2030_CompPlan_Update_11x17.mxd | Date Saved: 9/10/2015 8:10:57 AM

Appendix E: Intersection Diagram



INTERSECTION DIAGRAM

ISG

THIS DOCUMENT IS THE PROPERTY OF I & S GROUP, INC. THEY MAY NOT BE USED, COPIED OR DUPLICATED WITHOUT PRIOR WRITTEN CONSENT.

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE_____ LIC. NO._____

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE_____ LIC. NO._____

PROJECT

APPRO

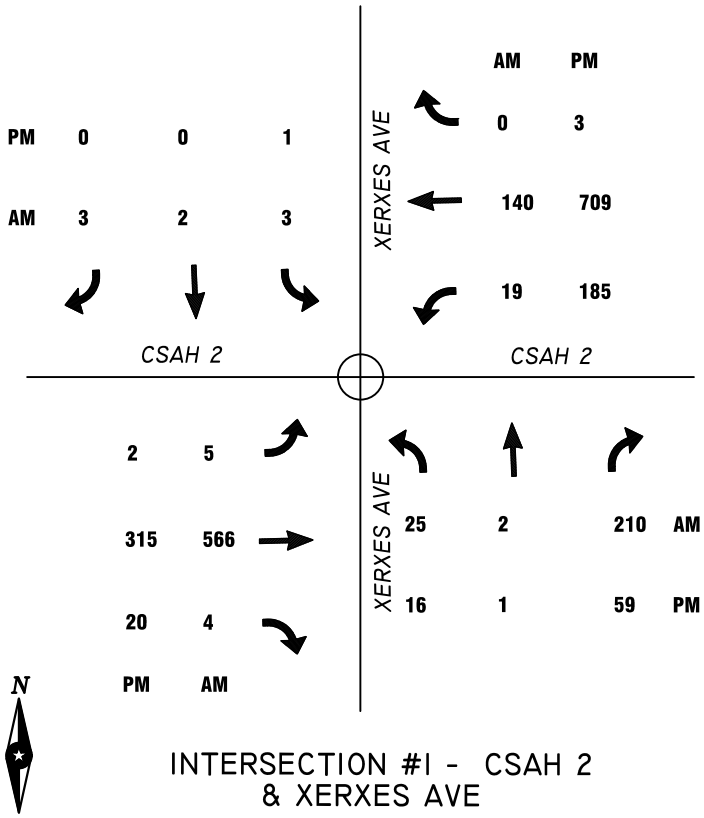
ADELMANN DEVELOPMENT

ELKO NEW MARKET MINNESOTA

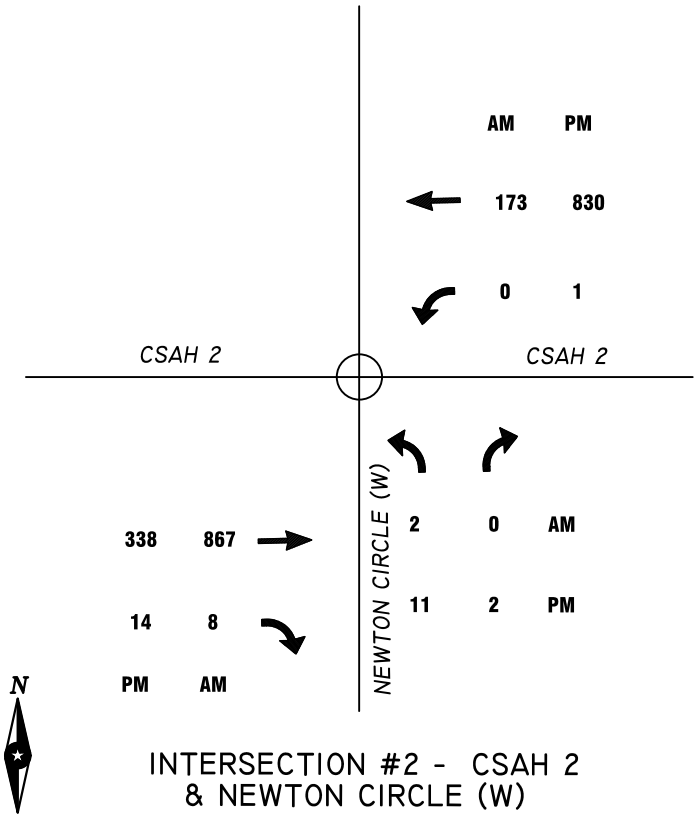
SHEET E

PROJECT NO. 20456 CAD FILE NAME 20548-TIS-LOCATION-MAP PLOT DATE 5/2/2018 DRAWN BY CVW

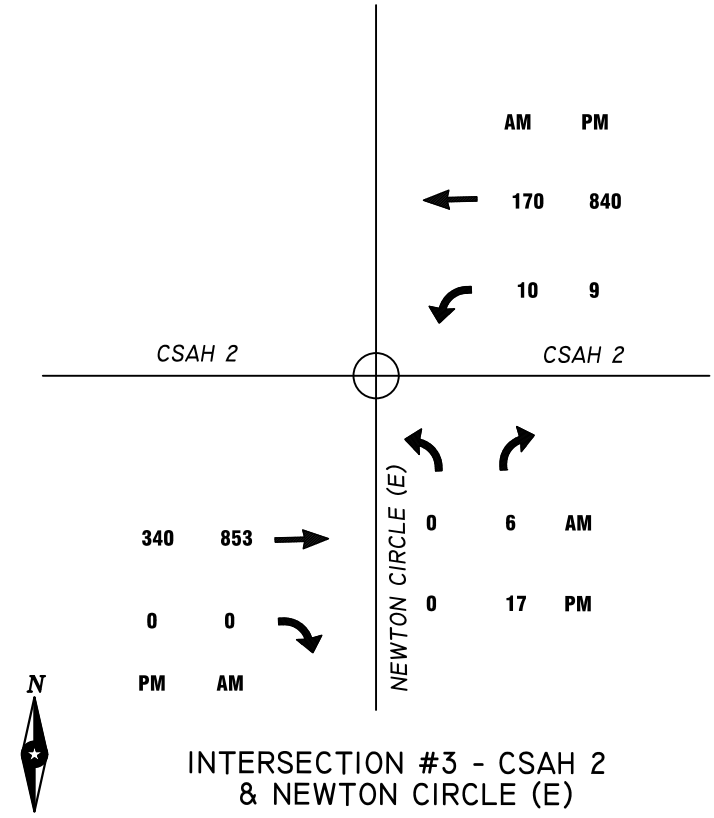
Appendix F: Existing Traffic Counts



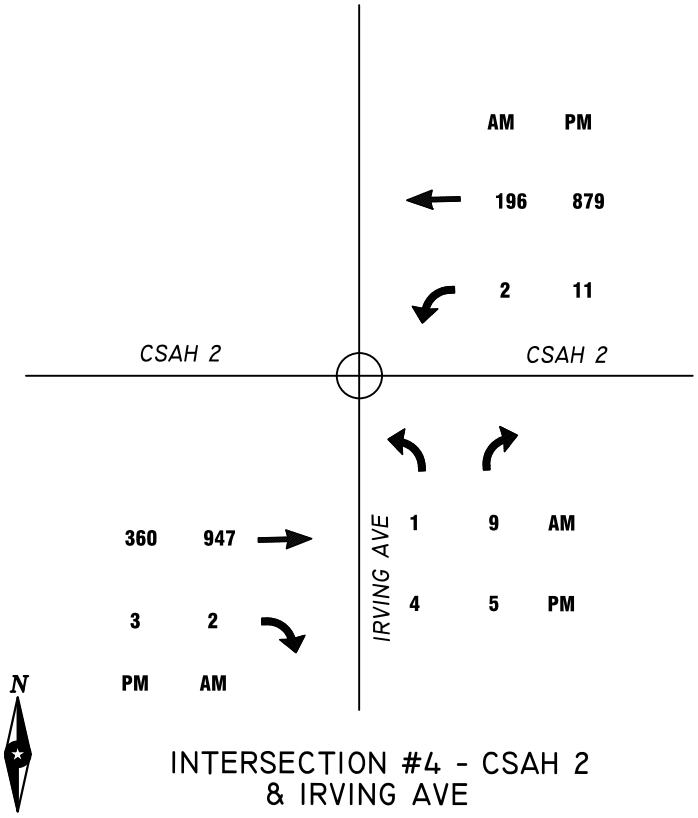
INTERSECTION #1 - CSAH 2
& XERXES AVE



INTERSECTION #2 - CSAH 2
& NEWTON CIRCLE (W)

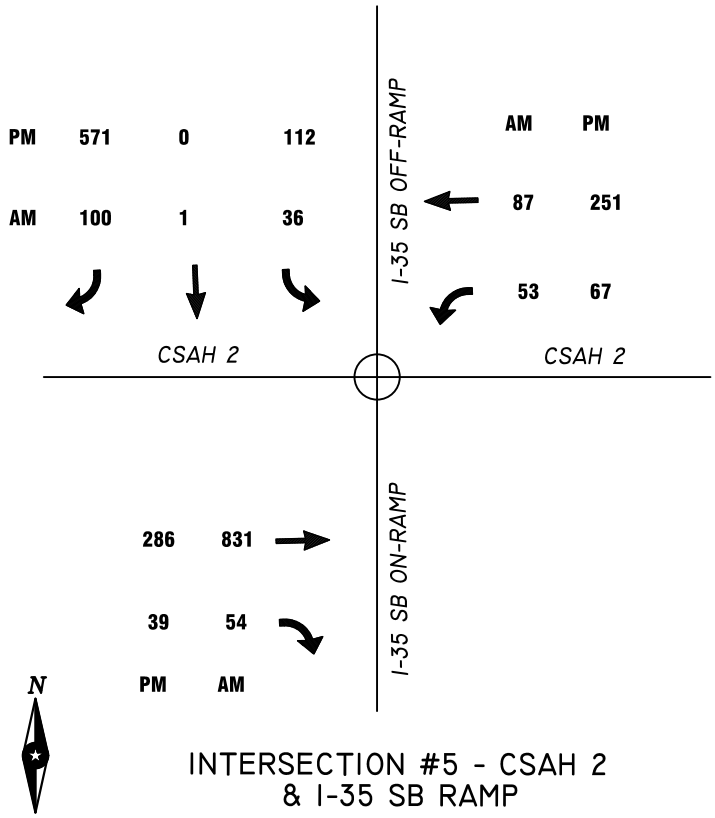


INTERSECTION #3 - CSAH 2
& NEWTON CIRCLE (E)

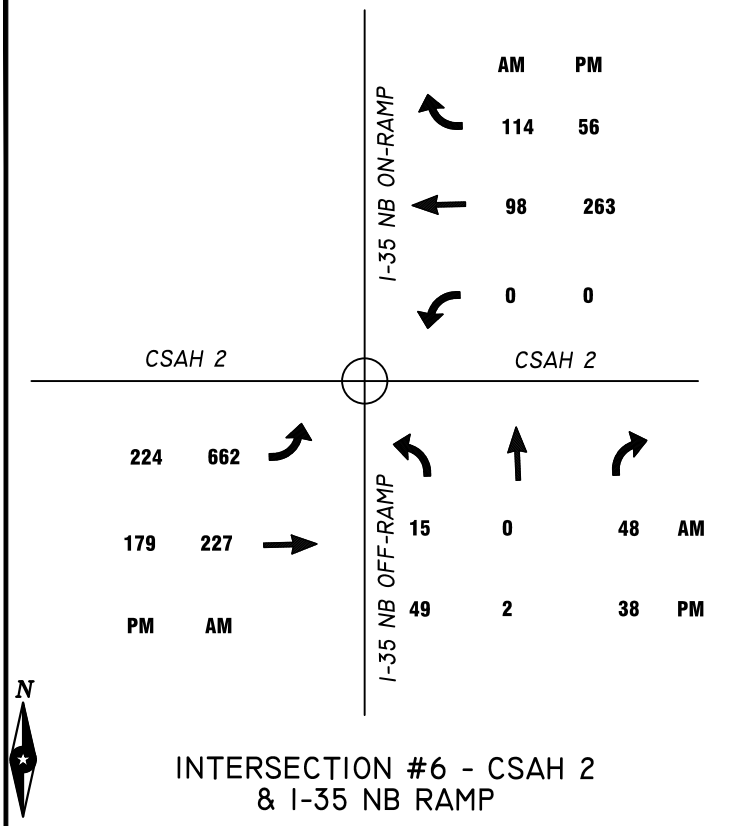


INTERSECTION #4 - CSAH 2
& IRVING AVE

EXISTING (2018) 1-4



INTERSECTION #5 - CSAH 2
& I-35 SB RAMP



INTERSECTION #6 - CSAH 2
& I-35 NB RAMP

EXISTING (2018) 5 AND 6

Appendix G: Synchro Reports – Existing (2018)

Intersection: 1: Xerxes Ave & CSAH 2

Movement	WB	NB	NB	SB
Directions Served	L	LT	R	LTR
Maximum Queue (ft)	31	36	105	21
Average Queue (ft)	6	15	49	5
95th Queue (ft)	26	37	88	19
Link Distance (ft)		1864		700
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	300		200	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Frontage Rd/Future Entrance 1 & CSAH 2

Movement	NB
Directions Served	LTR
Maximum Queue (ft)	16
Average Queue (ft)	1
95th Queue (ft)	11
Link Distance (ft)	650
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	EB	WB	NB
Directions Served	T	L	LTR
Maximum Queue (ft)	3	29	24
Average Queue (ft)	0	7	6
95th Queue (ft)	4	26	23
Link Distance (ft)	1519		12
Upstream Blk Time (%)			1
Queuing Penalty (veh)			0
Storage Bay Dist (ft)		300	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: CSAH 2

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	5	28
Average Queue (ft)	0	9
95th Queue (ft)	6	29
Link Distance (ft)	267	450
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: SB IH 35 On Ramp/SB IH 35 Off Ramp & CSAH 2

Movement	EB	WB	SB
Directions Served	R	LT	LT
Maximum Queue (ft)	7	68	55
Average Queue (ft)	1	30	23
95th Queue (ft)	7	65	55
Link Distance (ft)	267	710	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			300
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: NB IH 35 Off Ramp/NB IH 35 On Ramp & CSAH 2

Movement	EB	WB	NB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	306	27	97
Average Queue (ft)	124	3	38
95th Queue (ft)	257	16	87
Link Distance (ft)	710	3512	744
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Newton Cir & Frontage Rd

Movement	NB
Directions Served	LR
Maximum Queue (ft)	30
Average Queue (ft)	12
95th Queue (ft)	36
Link Distance (ft)	650
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Driveway & Frontage Rd

Movement	EB
Directions Served	LR
Maximum Queue (ft)	30
Average Queue (ft)	8
95th Queue (ft)	29
Link Distance (ft)	572
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9: Xerxes Ave & Future Entrance 2

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 10: Xerxes Ave & Future Entrance 3

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 0

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	566	4	19	140	0	25	2	210	3	2	3
Future Vol, veh/h	5	566	4	19	140	0	25	2	210	3	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	200	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	651	5	22	161	0	29	2	241	3	2	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	161	0	0	651	0	0	787	867	325	543	867	80
Stage 1	-	-	-	-	-	-	662	662	-	205	205	-
Stage 2	-	-	-	-	-	-	125	205	-	338	662	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1416	-	-	931	-	-	282	289	671	423	289	964
Stage 1	-	-	-	-	-	-	417	457	-	778	731	-
Stage 2	-	-	-	-	-	-	866	731	-	650	457	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1416	-	-	931	-	-	274	281	671	264	281	964
Mov Cap-2 Maneuver	-	-	-	-	-	-	353	369	-	333	359	-
Stage 1	-	-	-	-	-	-	415	455	-	775	714	-
Stage 2	-	-	-	-	-	-	840	714	-	412	455	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.1	13.6	13.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	354	671	1416	-	-	931	-	-	452
HCM Lane V/C Ratio	0.088	0.36	0.004	-	-	0.023	-	-	0.02
HCM Control Delay (s)	16.1	13.3	7.6	-	-	9	-	-	13.1
HCM Lane LOS	C	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	1.6	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	867	8	0	173	0	2	0	0	0	0	0
Future Vol, veh/h	0	867	8	0	173	0	2	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	997	9	0	199	0	2	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	199	0	0	997	0	0	1096	1196	498	697	1196	99
Stage 1	-	-	-	-	-	-	997	997	-	199	199	-
Stage 2	-	-	-	-	-	-	99	199	-	498	997	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1371	-	-	690	-	-	168	185	518	328	185	937
Stage 1	-	-	-	-	-	-	262	320	-	784	735	-
Stage 2	-	-	-	-	-	-	896	735	-	523	320	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1371	-	-	690	-	-	168	185	518	328	185	937
Mov Cap-2 Maneuver	-	-	-	-	-	-	229	268	-	424	268	-
Stage 1	-	-	-	-	-	-	262	320	-	784	735	-
Stage 2	-	-	-	-	-	-	896	735	-	523	320	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	20.9	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	229	1371	-	-	690	-	-	-
HCM Lane V/C Ratio	0.01	-	-	-	-	-	-	-
HCM Control Delay (s)	20.9	0	-	-	0	-	-	0
HCM Lane LOS	C	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	853	0	10	170	0	0	0	6	0	0	0
Future Vol, veh/h	0	853	0	10	170	0	0	0	6	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	980	0	11	195	0	0	0	7	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	195	0	0	980	0	0	1101	1198	490	708	1198	98
Stage 1	-	-	-	-	-	-	980	980	-	218	218	-
Stage 2	-	-	-	-	-	-	121	218	-	490	980	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1375	-	-	700	-	-	166	184	524	322	184	939
Stage 1	-	-	-	-	-	-	268	326	-	764	721	-
Stage 2	-	-	-	-	-	-	870	721	-	529	326	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1375	-	-	700	-	-	164	181	524	314	181	939
Mov Cap-2 Maneuver	-	-	-	-	-	-	232	269	-	412	263	-
Stage 1	-	-	-	-	-	-	268	326	-	764	710	-
Stage 2	-	-	-	-	-	-	856	710	-	522	326	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	12	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	524	1375	-	-	700	-	-	-
HCM Lane V/C Ratio	0.013	-	-	-	0.016	-	-	-
HCM Control Delay (s)	12	0	-	-	10.2	-	-	0
HCM Lane LOS	B	A	-	-	B	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	947	2	2	196	1	9
Future Vol, veh/h	947	2	2	196	1	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1076	2	2	223	1	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1078	0	1193	1077
Stage 1	-	-	-	-	1077	-
Stage 2	-	-	-	-	116	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	645	-	193	265
Stage 1	-	-	-	-	326	-
Stage 2	-	-	-	-	897	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	645	-	192	265
Mov Cap-2 Maneuver	-	-	-	-	192	-
Stage 1	-	-	-	-	326	-
Stage 2	-	-	-	-	893	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	19.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	255	-	-	645	-
HCM Lane V/C Ratio	0.045	-	-	0.004	-
HCM Control Delay (s)	19.8	-	-	10.6	0
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	831	54	53	87	0	0	0	0	36	1	100
Future Vol, veh/h	0	831	54	53	87	0	0	0	0	36	1	100
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	0	-	-	-	-	-	-	300	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	944	61	60	99	0	0	0	0	41	1	114

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	944	0	0	1163	1163	-
Stage 1	-	-	-	-	-	-	219	219	-
Stage 2	-	-	-	-	-	-	944	944	-
Critical Hdwy	-	-	-	4.12	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	0	-	-	727	-	0	215	195	0
Stage 1	0	-	-	-	-	0	817	722	0
Stage 2	0	-	-	-	-	0	378	341	0
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	727	-	-	196	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	196	0	-
Stage 1	-	-	-	-	-	-	746	0	-
Stage 2	-	-	-	-	-	-	378	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	3.9	28.3
HCM LOS			D

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	727	-	196	-
HCM Lane V/C Ratio	-	-	0.083	-	0.215	-
HCM Control Delay (s)	-	-	10.4	0	28.3	0
HCM Lane LOS	-	-	B	A	D	A
HCM 95th %tile Q(veh)	-	-	0.3	-	0.8	-

Intersection	
Int Delay, s/veh	12.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	662	227	0	0	98	114	15	0	48	0	0	0
Future Vol, veh/h	662	227	0	0	98	114	15	0	48	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	752	258	0	0	111	130	17	0	55	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	241	0	-	-	-	0	1939	2004	258
Stage 1	-	-	-	-	-	-	1763	1763	-
Stage 2	-	-	-	-	-	-	176	241	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1326	-	0	0	-	-	72	60	781
Stage 1	-	-	0	0	-	-	151	137	-
Stage 2	-	-	0	0	-	-	855	706	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1326	-	-	-	-	-	24	0	781
Mov Cap-2 Maneuver	-	-	-	-	-	-	24	0	-
Stage 1	-	-	-	-	-	-	51	0	-
Stage 2	-	-	-	-	-	-	855	0	-

Approach	EB	WB	NB
HCM Control Delay, s	8.3	0	121.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	92	1326	-	-	-
HCM Lane V/C Ratio	0.778	0.567	-	-	-
HCM Control Delay (s)	121.5	11.2	0	-	-
HCM Lane LOS	F	B	A	-	-
HCM 95th %tile Q(veh)	4.1	3.7	-	-	-

Intersection: 1: Xerxes Ave & CSAH 2

Movement	EB	WB	NB	NB
Directions Served	L	L	LT	R
Maximum Queue (ft)	10	74	28	46
Average Queue (ft)	1	32	10	19
95th Queue (ft)	8	66	30	38
Link Distance (ft)			1864	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	300	300		200
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Frontage Rd/Future Entrance 1 & CSAH 2

Movement	NB
Directions Served	LTR
Maximum Queue (ft)	29
Average Queue (ft)	12
95th Queue (ft)	32
Link Distance (ft)	650
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	WB	NB
Directions Served	L	LTR
Maximum Queue (ft)	28	24
Average Queue (ft)	3	9
95th Queue (ft)	18	28
Link Distance (ft)		12
Upstream Blk Time (%)		1
Queuing Penalty (veh)		0
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: CSAH 2

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	30	28
Average Queue (ft)	3	6
95th Queue (ft)	17	25
Link Distance (ft)	267	450
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: SB IH 35 On Ramp/SB IH 35 Off Ramp & CSAH 2

Movement	WB	SB	SB
Directions Served	LT	LT	R
Maximum Queue (ft)	67	86	192
Average Queue (ft)	19	41	76
95th Queue (ft)	57	74	169
Link Distance (ft)	710		1051
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		300	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: NB IH 35 Off Ramp/NB IH 35 On Ramp & CSAH 2

Movement	EB	WB	NB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	72	3	59
Average Queue (ft)	41	0	32
95th Queue (ft)	74	4	54
Link Distance (ft)	710	3512	744
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	315	20	185	709	3	16	1	59	1	0	0
Future Vol, veh/h	2	315	20	185	709	3	16	1	59	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	200	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	342	22	201	771	3	17	1	64	1	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	771	0	0	342	0	0	1135	1520	171	1349	1520	385
Stage 1	-	-	-	-	-	-	347	347	-	1173	1173	-
Stage 2	-	-	-	-	-	-	788	1173	-	176	347	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	840	-	-	1214	-	-	157	118	843	109	118	613
Stage 1	-	-	-	-	-	-	642	633	-	204	264	-
Stage 2	-	-	-	-	-	-	350	264	-	809	633	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	840	-	-	1214	-	-	137	98	843	87	98	613
Mov Cap-2 Maneuver	-	-	-	-	-	-	232	179	-	164	171	-
Stage 1	-	-	-	-	-	-	640	631	-	204	220	-
Stage 2	-	-	-	-	-	-	292	220	-	744	631	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.8	12.4	27.1
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	228	843	840	-	-	1214	-	-	164
HCM Lane V/C Ratio	0.081	0.076	0.003	-	-	0.166	-	-	0.007
HCM Control Delay (s)	22.2	9.6	9.3	-	-	8.6	-	-	27.1
HCM Lane LOS	C	A	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.3	0.2	0	-	-	0.6	-	-	0

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	338	14	1	830	0	11	0	2	0	0	0
Future Vol, veh/h	0	338	14	1	830	0	11	0	2	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	367	15	1	902	0	12	0	2	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	902	0	0	367	0	0	820	1271	184	1088	1271	451
Stage 1	-	-	-	-	-	-	367	367	-	904	904	-
Stage 2	-	-	-	-	-	-	453	904	-	184	367	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	749	-	-	1188	-	-	267	167	827	170	167	556
Stage 1	-	-	-	-	-	-	625	621	-	298	354	-
Stage 2	-	-	-	-	-	-	556	354	-	800	621	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	749	-	-	1188	-	-	267	167	827	169	167	556
Mov Cap-2 Maneuver	-	-	-	-	-	-	390	273	-	252	273	-
Stage 1	-	-	-	-	-	-	625	621	-	298	354	-
Stage 2	-	-	-	-	-	-	556	354	-	798	621	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	13.8	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	425	749	-	-	1188	-	-	-
HCM Lane V/C Ratio	0.033	-	-	-	0.001	-	-	-
HCM Control Delay (s)	13.8	0	-	-	8	-	-	0
HCM Lane LOS	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	340	0	9	840	0	0	0	17	0	0	0
Future Vol, veh/h	0	340	0	9	840	0	0	0	17	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	370	0	10	913	0	0	0	18	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	913	0	0	370	0	0	846	1303	185	1118	1303	457
Stage 1	-	-	-	-	-	-	370	370	-	933	933	-
Stage 2	-	-	-	-	-	-	476	933	-	185	370	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	742	-	-	1185	-	-	256	159	826	162	159	551
Stage 1	-	-	-	-	-	-	622	619	-	286	343	-
Stage 2	-	-	-	-	-	-	539	343	-	799	619	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	742	-	-	1185	-	-	254	158	826	157	158	551
Mov Cap-2 Maneuver	-	-	-	-	-	-	377	263	-	241	263	-
Stage 1	-	-	-	-	-	-	622	619	-	286	340	-
Stage 2	-	-	-	-	-	-	534	340	-	781	619	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	9.5	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	826	742	-	-	1185	-	-	-
HCM Lane V/C Ratio	0.022	-	-	-	0.008	-	-	-
HCM Control Delay (s)	9.5	0	-	-	8.1	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	360	3	11	879	4	5
Future Vol, veh/h	360	3	11	879	4	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	391	3	12	955	4	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	395	0	895	393
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	502	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1162	-	295	655
Stage 1	-	-	-	-	681	-
Stage 2	-	-	-	-	574	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1162	-	289	655
Mov Cap-2 Maneuver	-	-	-	-	289	-
Stage 1	-	-	-	-	681	-
Stage 2	-	-	-	-	561	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	13.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	419	-	-	1162	-
HCM Lane V/C Ratio	0.023	-	-	0.01	-
HCM Control Delay (s)	13.8	-	-	8.1	0.1
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	286	39	67	251	0	0	0	0	112	0	571
Future Vol, veh/h	0	286	39	67	251	0	0	0	0	112	0	571
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	0	-	-	-	-	-	-	300	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	311	42	73	273	0	0	0	0	122	0	621

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	311	0	0	729	729	-
Stage 1	-	-	-	-	-	-	418	418	-
Stage 2	-	-	-	-	-	-	311	311	-
Critical Hdwy	-	-	-	4.12	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	0	-	-	1249	-	0	390	350	0
Stage 1	0	-	-	-	-	0	664	591	0
Stage 2	0	-	-	-	-	0	743	658	0
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1249	-	-	363	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	363	0	-
Stage 1	-	-	-	-	-	-	618	0	-
Stage 2	-	-	-	-	-	-	743	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.7	19.8
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1249	-	363	-
HCM Lane V/C Ratio	-	-	0.058	-	0.335	-
HCM Control Delay (s)	-	-	8.1	0	19.8	0
HCM Lane LOS	-	-	A	A	C	A
HCM 95th %tile Q(veh)	-	-	0.2	-	1.4	-

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	224	179	0	0	263	56	49	2	38	0	0	0
Future Vol, veh/h	224	179	0	0	263	56	49	2	38	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	246	197	0	0	289	62	54	2	42	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	351	0	-	-	-	0	1009	1040	197
Stage 1	-	-	-	-	-	-	689	689	-
Stage 2	-	-	-	-	-	-	320	351	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1208	-	0	0	-	-	266	230	844
Stage 1	-	-	0	0	-	-	498	446	-
Stage 2	-	-	0	0	-	-	736	632	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1208	-	-	-	-	-	205	0	844
Mov Cap-2 Maneuver	-	-	-	-	-	-	205	0	-
Stage 1	-	-	-	-	-	-	384	0	-
Stage 2	-	-	-	-	-	-	736	0	-

Approach	EB	WB	NB
HCM Control Delay, s	4.9	0	22.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	306	1208	-	-	-
HCM Lane V/C Ratio	0.32	0.204	-	-	-
HCM Control Delay (s)	22.2	8.7	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	1.3	0.8	-	-	-

Appendix H: Trip Distribution

Map - Adelmann Development TIS
ISG

Node Numbers
03/20/2018

Map - Adelmann Development TIS
ISG

Node Numbers
03/20/2018

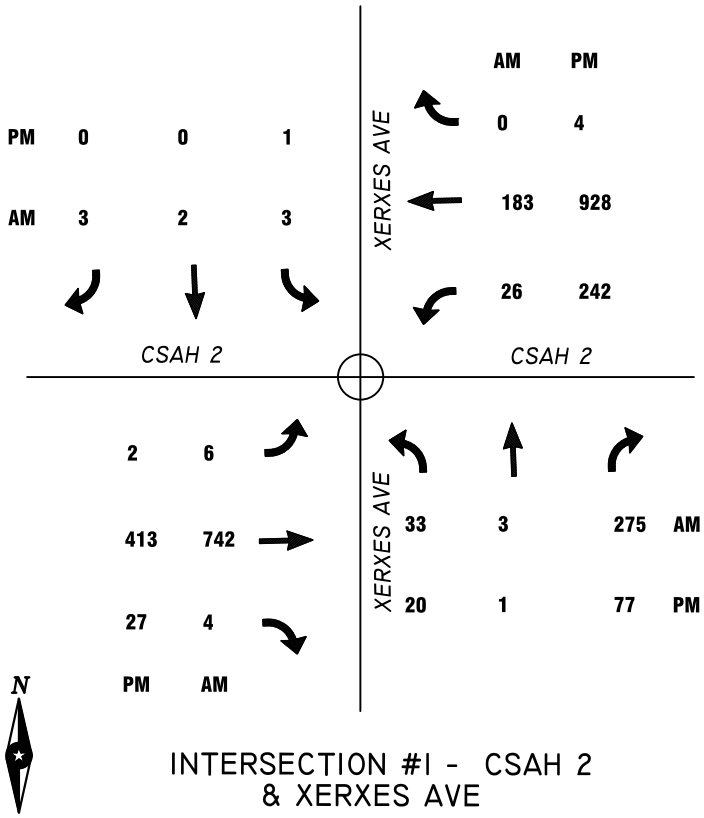
Map - Adelmann Development TIS
ISG

Node Numbers
03/20/2018

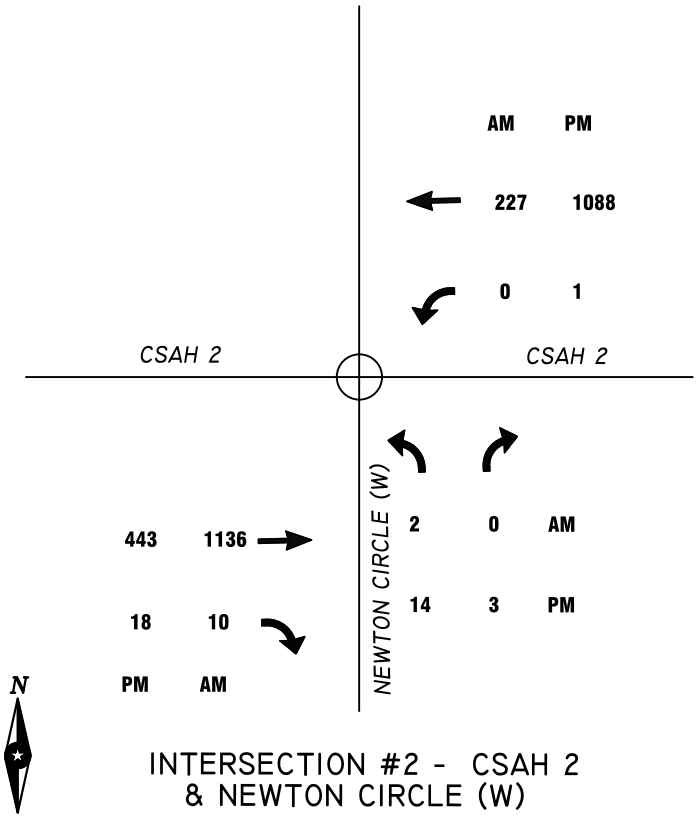
Map - Adelmann Development TIS
ISG

Node Numbers
03/20/2018

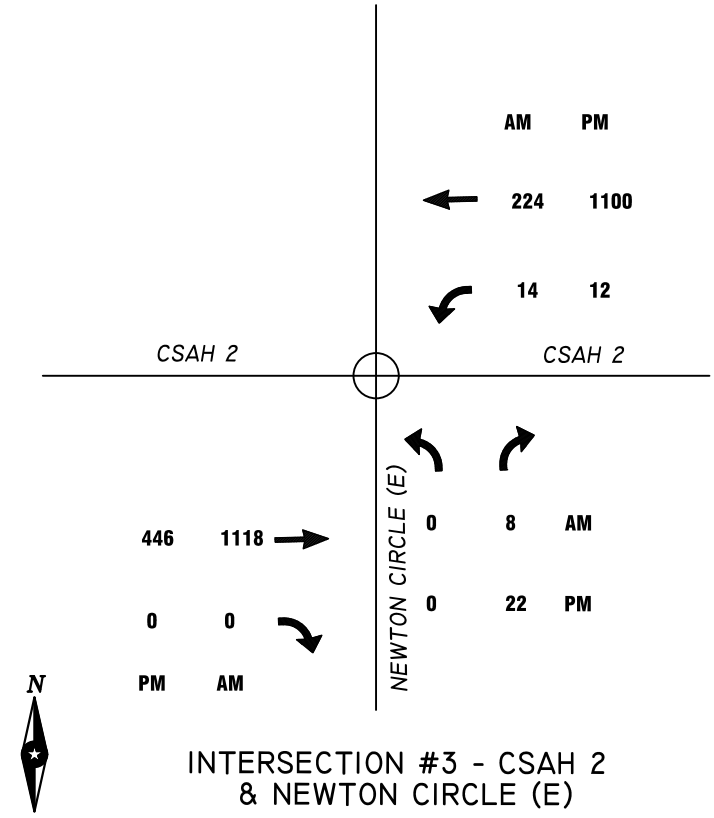
Appendix I: Baseline (2031) Traffic Counts – Diagram



INTERSECTION #1 - CSAH 2
& XERXES AVE

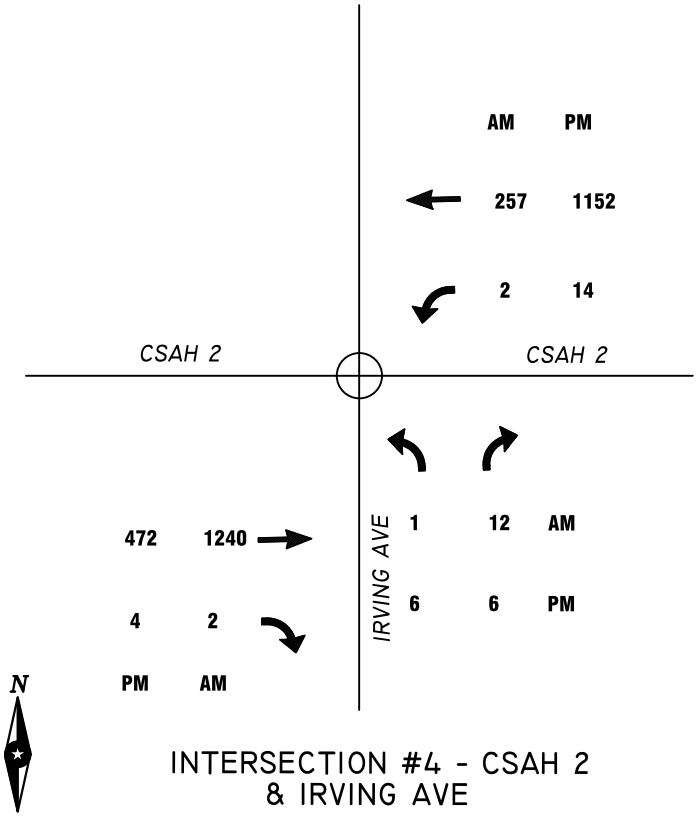


INTERSECTION #2 - CSAH 2
& NEWTON CIRCLE (W)



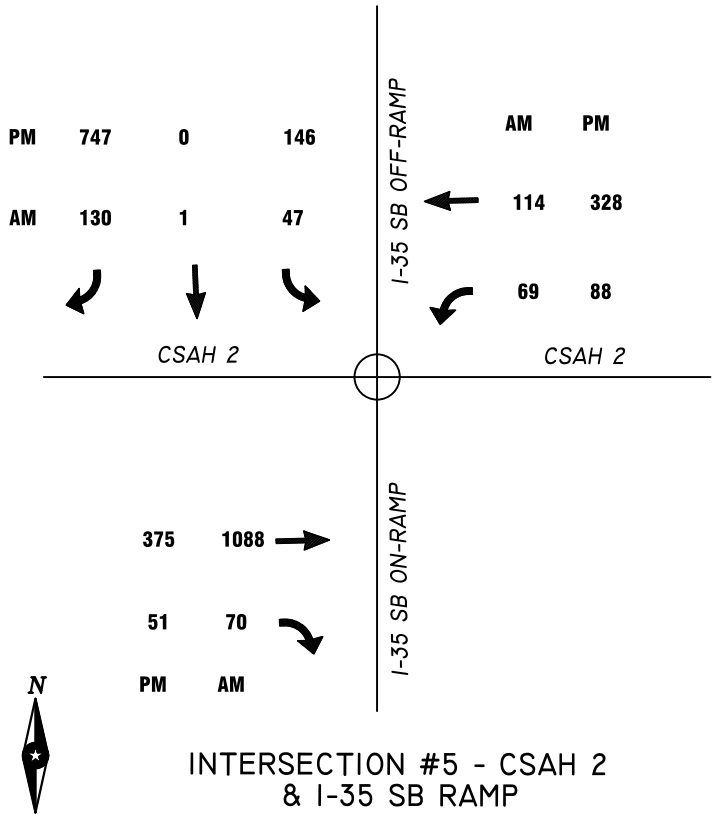
INTERSECTION #3 - CSAH 2
& NEWTON CIRCLE (E)

BASELINE (2031) 1-4

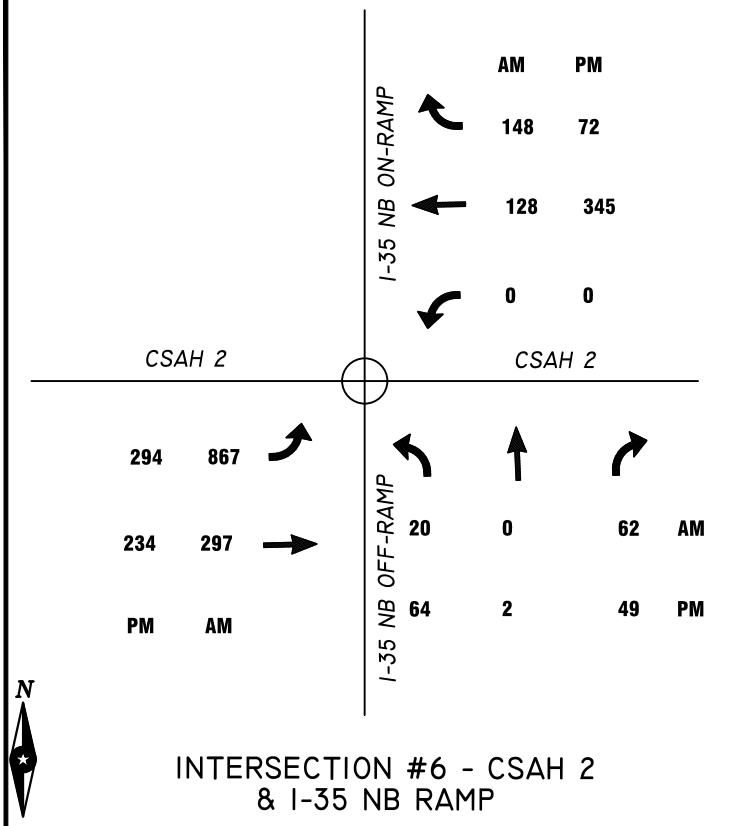


INTERSECTION #4 - CSAH 2
& IRVING AVE

ADELMANN DEVELOPMENT
ELKO NEW MARKET, MINNESOTA
5/2/18
ISG Project No. 20456



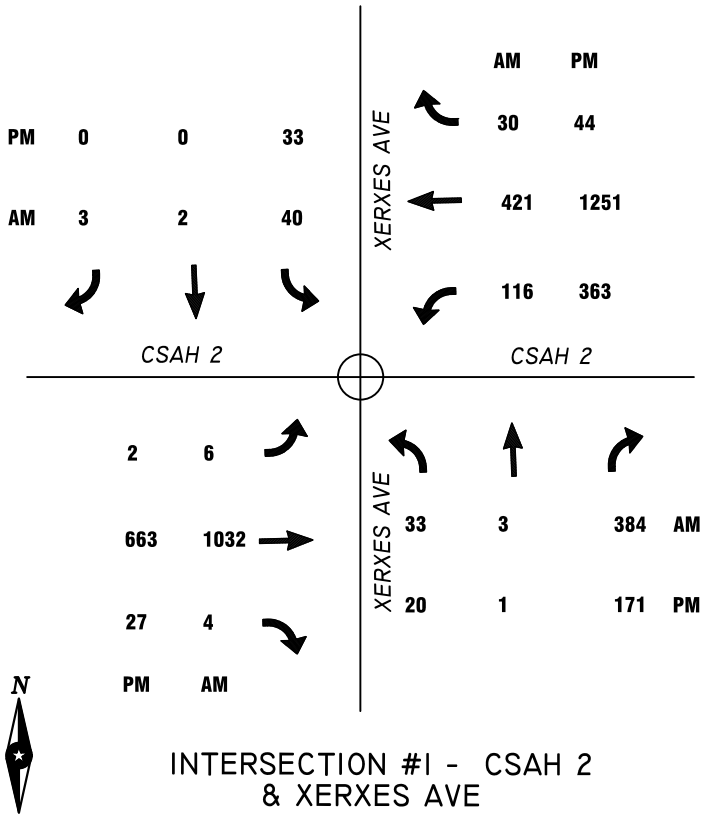
INTERSECTION #5 - CSAH 2
& I-35 SB RAMP



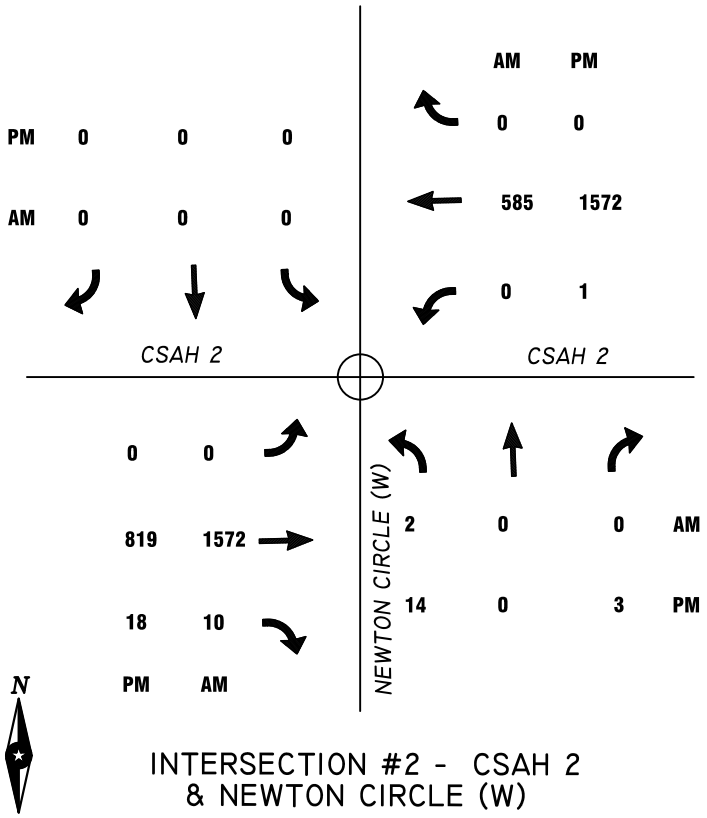
INTERSECTION #6 - CSAH 2
& I-35 NB RAMP

BASELINE (2031) 5 AND 6

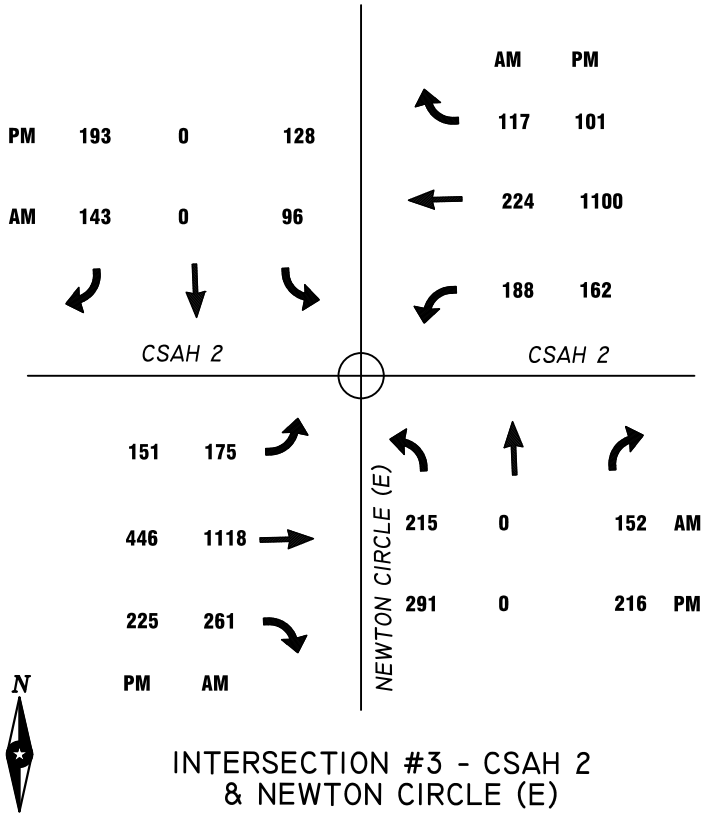
Appendix J: Phase 1 (2031) Traffic Counts – Diagram



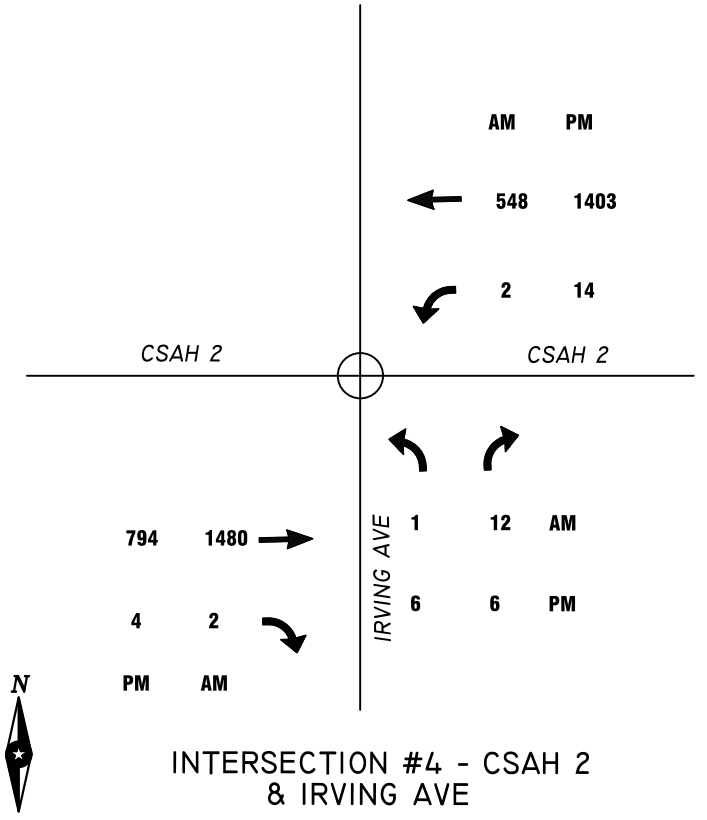
INTERSECTION #1 - CSAH 2
& XERXES AVE



INTERSECTION #2 - CSAH 2
& NEWTON CIRCLE (W)



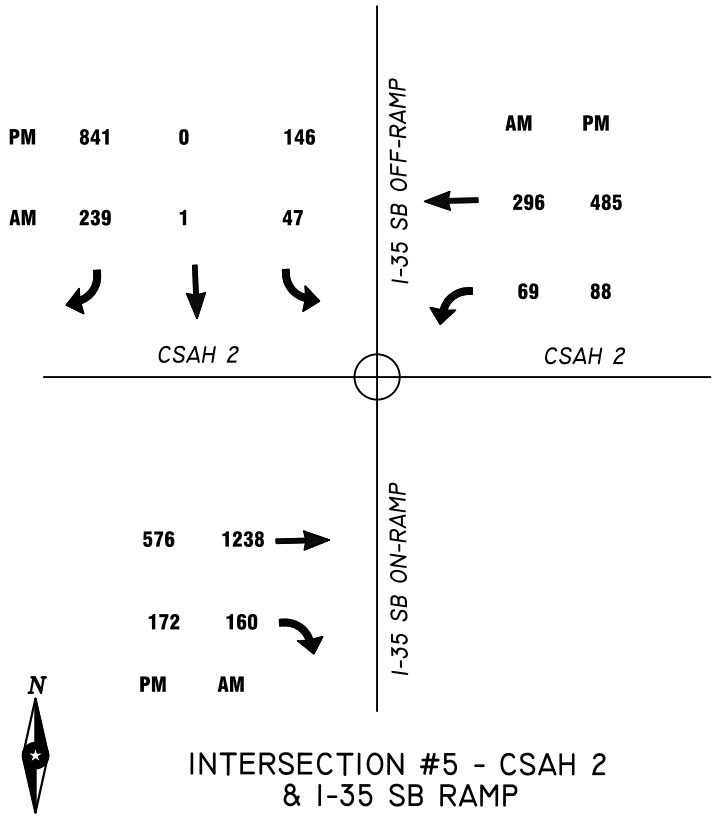
INTERSECTION #3 - CSAH 2
& NEWTON CIRCLE (E)



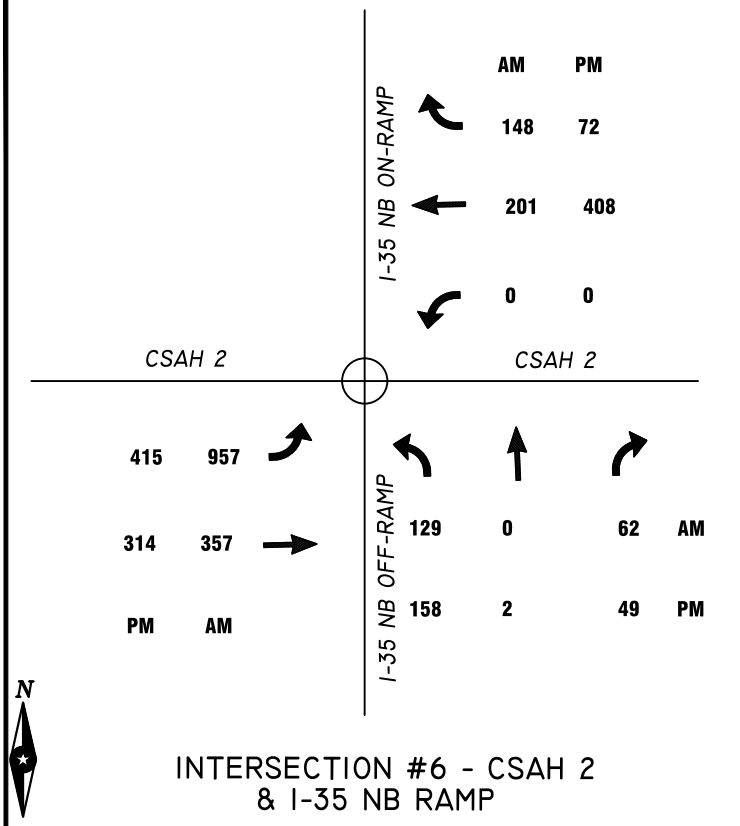
INTERSECTION #4 - CSAH 2
& IRVING AVE

PHASE 1 (2031) 1-4

ADELMANN DEVELOPMENT
ELKO NEW MARKET, MINNESOTA
5/2/18
ISG Project No. 20456



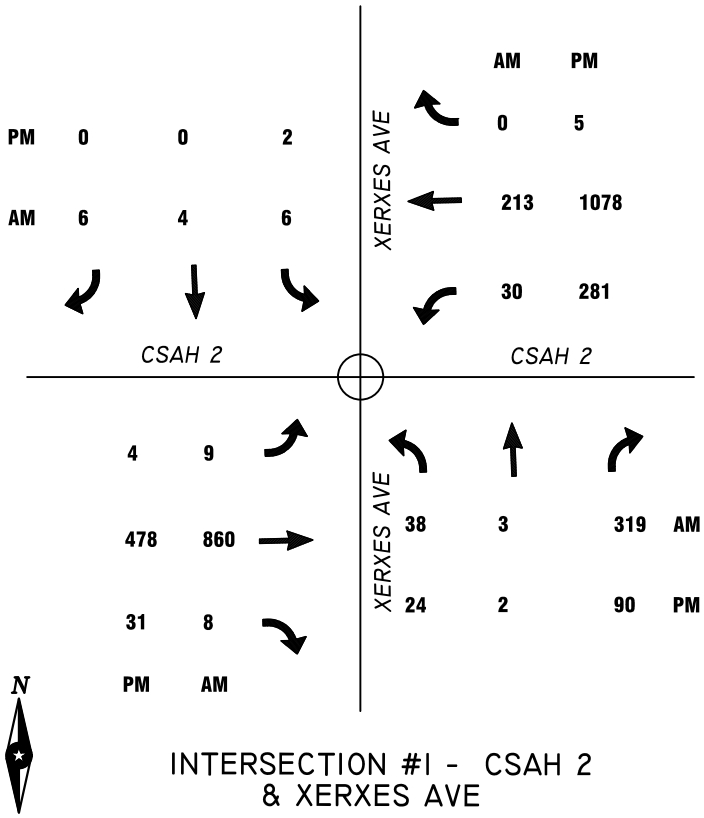
INTERSECTION #5 - CSAH 2
& I-35 SB RAMP



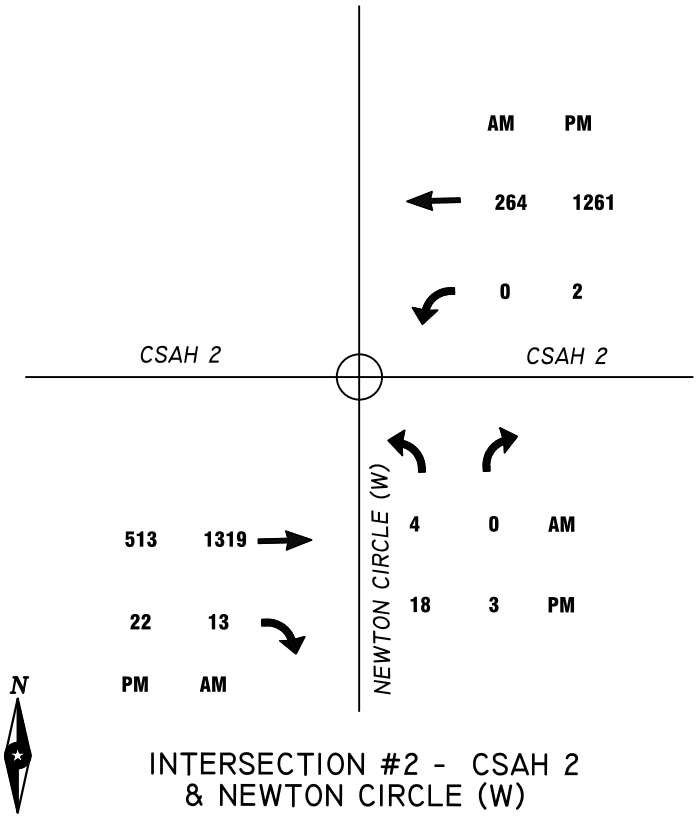
INTERSECTION #6 - CSAH 2
& I-35 NB RAMP

PHASE 1 (2031) 5 AND 6

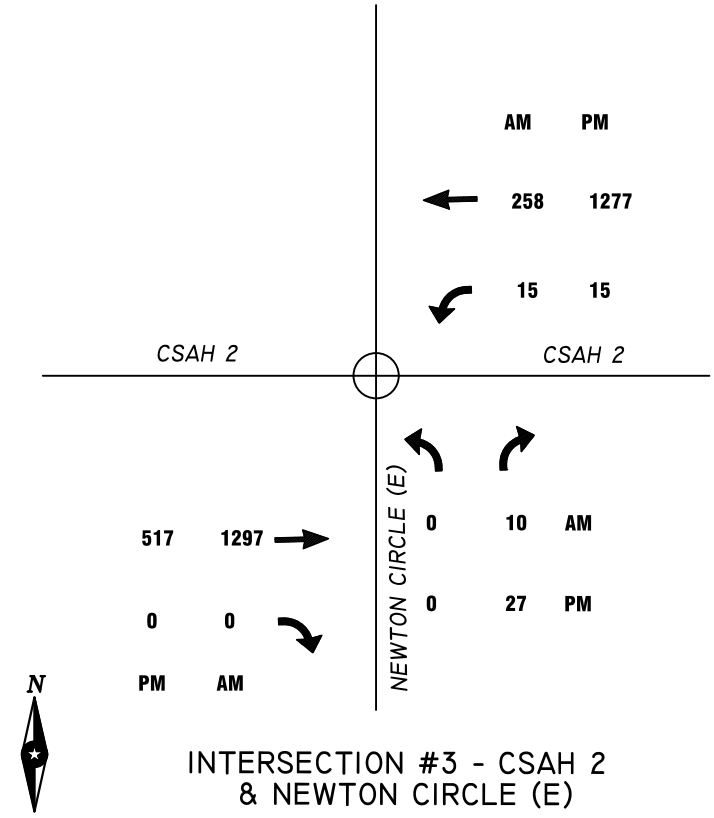
Appendix K: Baseline (2038) Traffic Counts – Diagram



INTERSECTION #1 - CSAH 2
& XERXES AVE

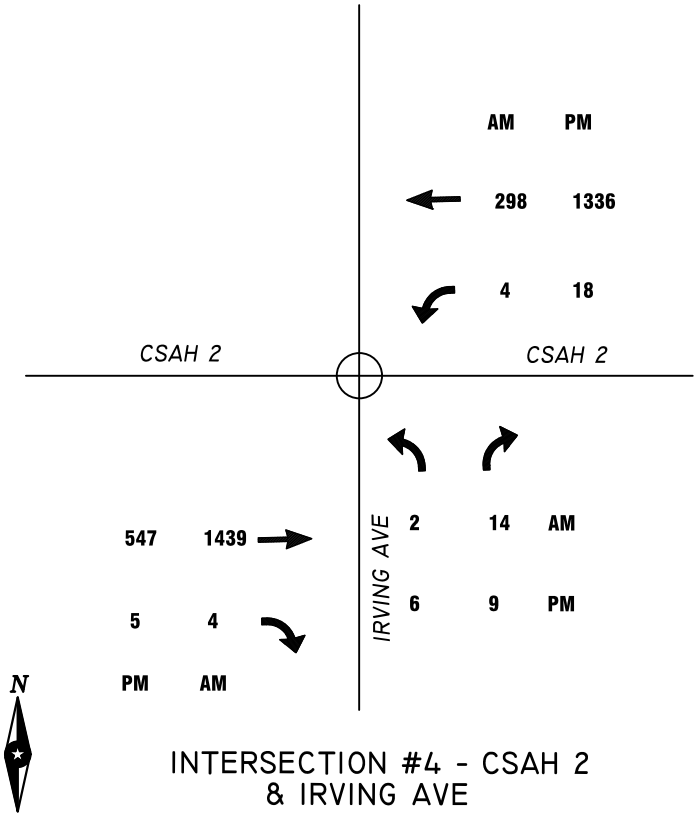


INTERSECTION #2 - CSAH 2
& NEWTON CIRCLE (W)

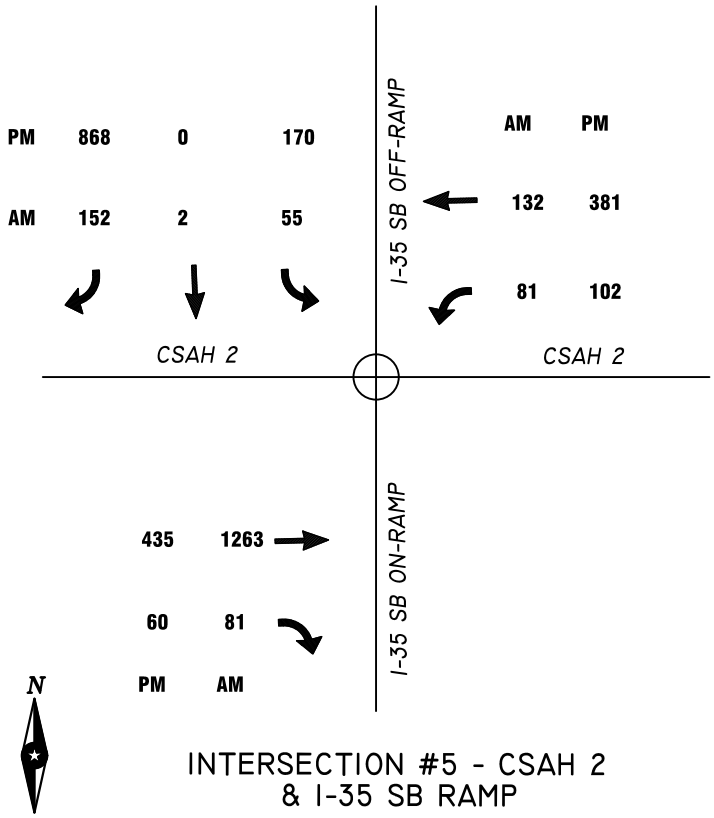


INTERSECTION #3 - CSAH 2
& NEWTON CIRCLE (E)

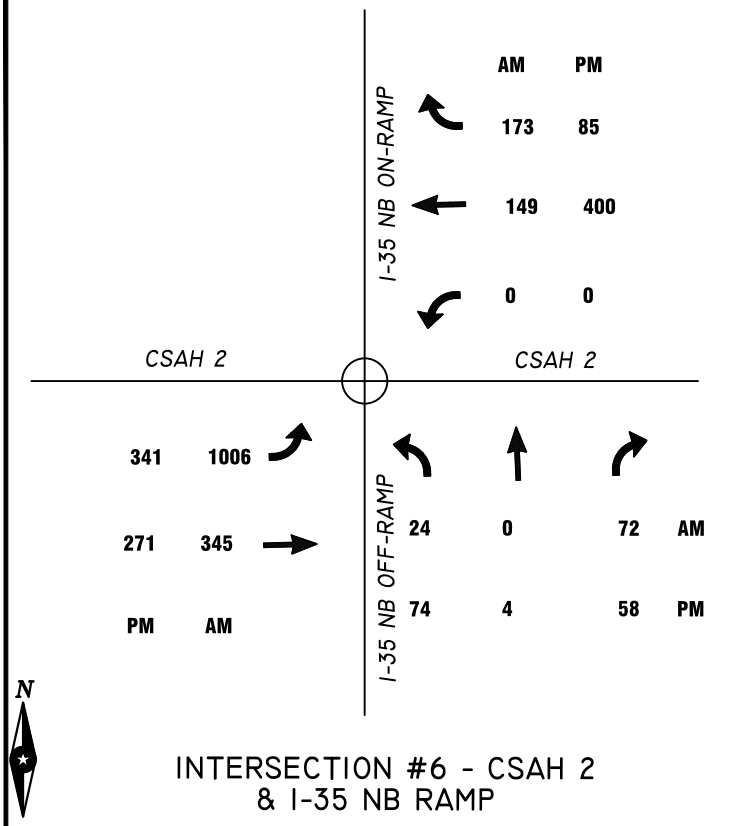
BASELINE (2038) 1-4



INTERSECTION #4 - CSAH 2
& IRVING AVE



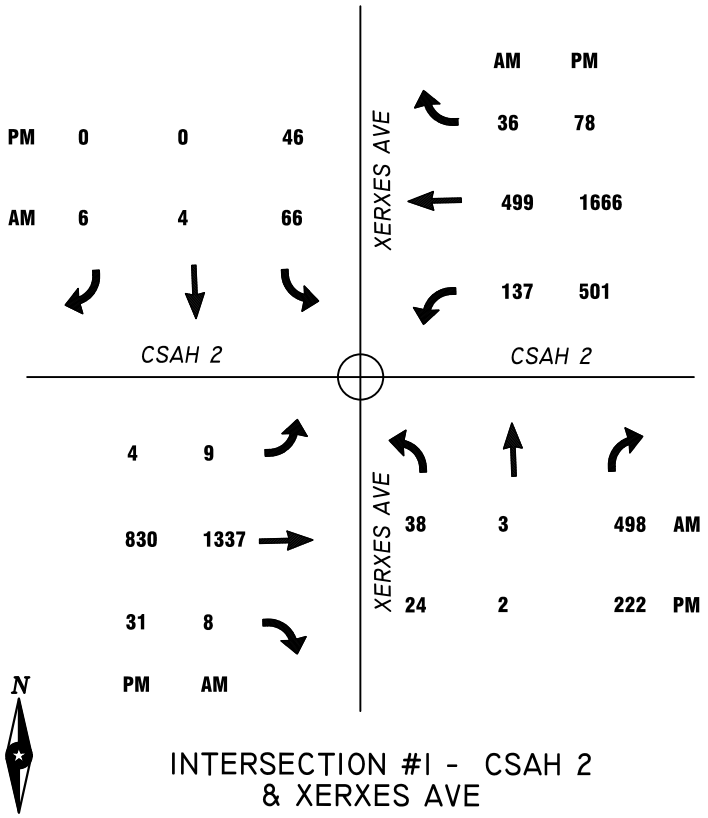
INTERSECTION #5 - CSAH 2
& I-35 SB RAMP



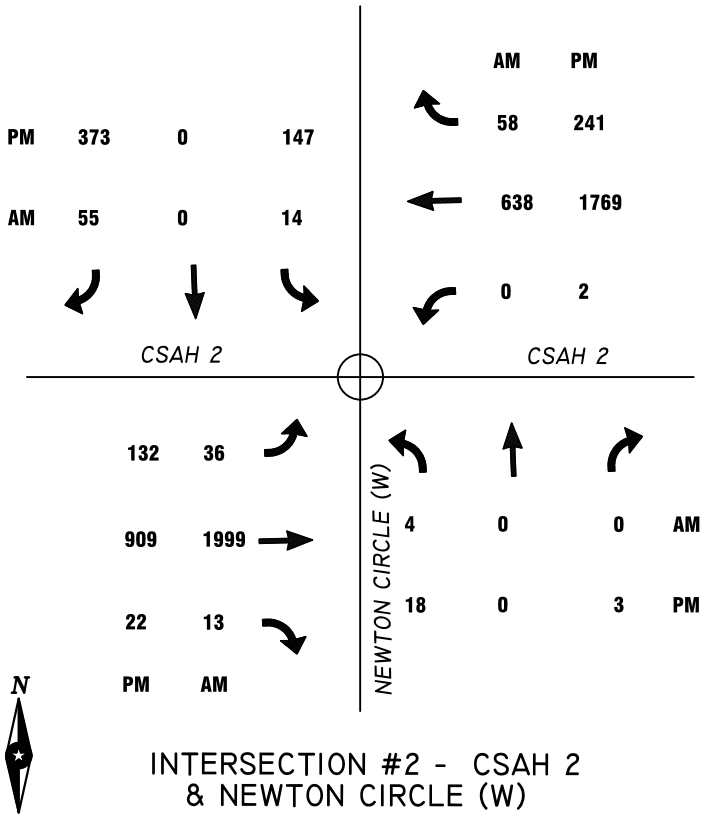
INTERSECTION #6 - CSAH 2
& I-35 NB RAMP

BASELINE (2038) 5 AND 6

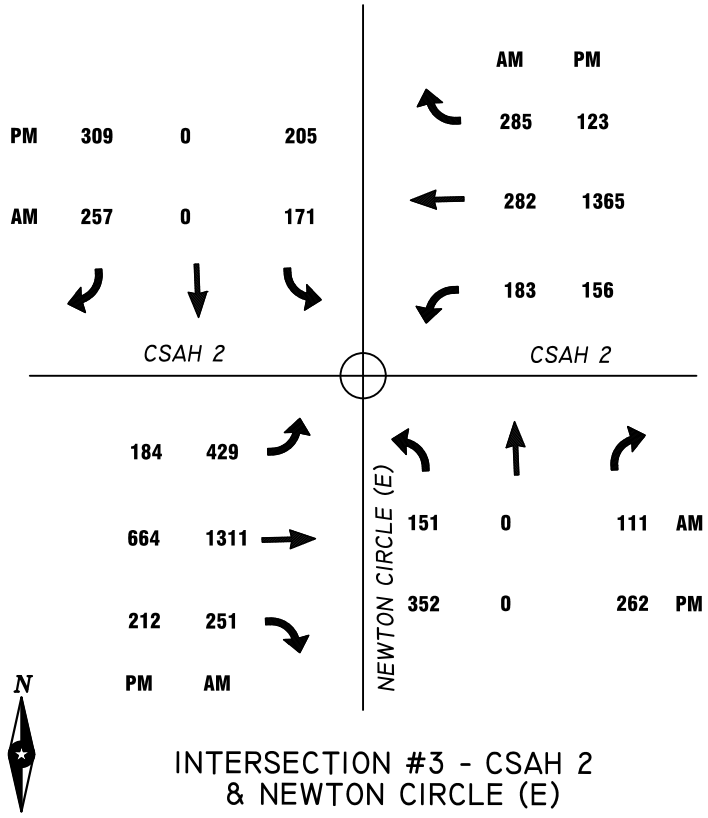
Appendix L: Phase 2 (2038) Traffic Counts – Diagram



INTERSECTION #1 - CSAH 2
& XERXES AVE

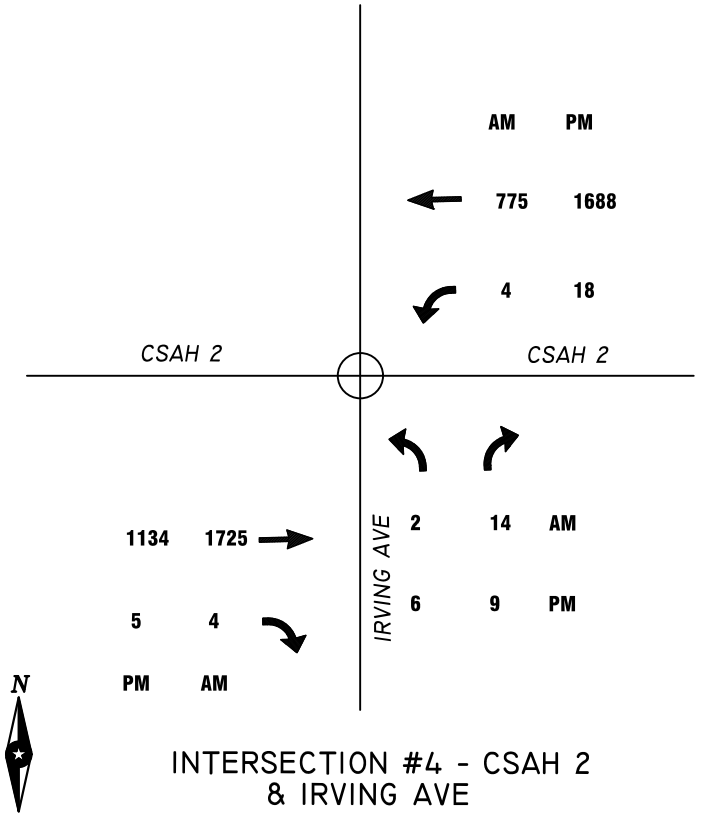


INTERSECTION #2 - CSAH 2
& NEWTON CIRCLE (W)

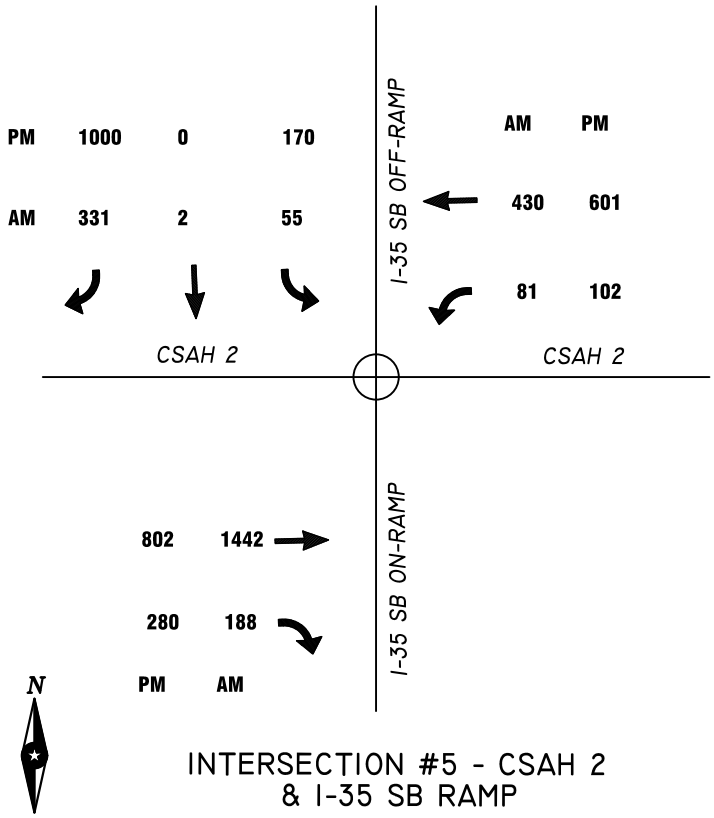


INTERSECTION #3 - CSAH 2
& NEWTON CIRCLE (E)

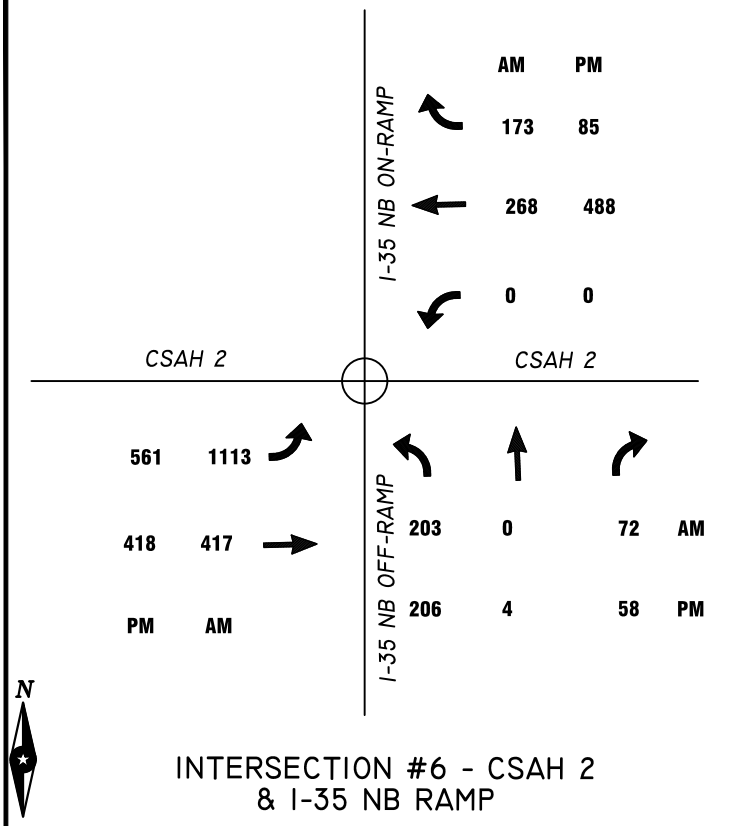
PHASE 2 (2038) 1-4



INTERSECTION #4 - CSAH 2
& IRVING AVE



INTERSECTION #5 - CSAH 2
& I-35 SB RAMP



INTERSECTION #6 - CSAH 2
& I-35 NB RAMP

PHASE 2 (2038) 5 AND 6

Appendix M: Synchro Reports – Baseline (2031)

Intersection: 1: Xerxes Ave & CSAH 2

Movement	EB	WB	NB	NB	SB
Directions Served	L	L	LT	R	LTR
Maximum Queue (ft)	5	28	57	99	21
Average Queue (ft)	0	11	23	54	5
95th Queue (ft)	6	32	49	90	21
Link Distance (ft)			1864		700
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	300	300		200	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 2: Frontage Rd/Future Entrance 1 & CSAH 2

Movement	NB
Directions Served	LTR
Maximum Queue (ft)	10
Average Queue (ft)	2
95th Queue (ft)	13
Link Distance (ft)	650
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	EB	WB	NB
Directions Served	T	L	LTR
Maximum Queue (ft)	3	33	24
Average Queue (ft)	0	9	8
95th Queue (ft)	5	33	26
Link Distance (ft)	1519		12
Upstream Blk Time (%)			1
Queuing Penalty (veh)			0
Storage Bay Dist (ft)		300	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: CSAH 2

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	18	21	28
Average Queue (ft)	3	5	10
95th Queue (ft)	22	33	31
Link Distance (ft)	428	267	450
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: SB IH 35 On Ramp/SB IH 35 Off Ramp & CSAH 2

Movement	EB	WB	SB	SB
Directions Served	T	LT	LT	R
Maximum Queue (ft)	119	133	109	26
Average Queue (ft)	33	55	63	3
95th Queue (ft)	156	132	145	21
Link Distance (ft)	267	710		1051
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	1			
Storage Bay Dist (ft)			300	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: NB IH 35 Off Ramp/NB IH 35 On Ramp & CSAH 2

Movement	EB	WB	NB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	650	24	406
Average Queue (ft)	430	6	197
95th Queue (ft)	770	24	465
Link Distance (ft)	710	3512	744
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	4		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	742	4	26	183	0	33	3	275	3	2	3
Future Vol, veh/h	6	742	4	26	183	0	33	3	275	3	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	200	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	834	4	29	206	0	37	3	309	3	2	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	206	0	0	834	0	0	1009	1111	417	696	1111	103
Stage 1	-	-	-	-	-	-	847	847	-	264	264	-
Stage 2	-	-	-	-	-	-	162	264	-	432	847	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1363	-	-	795	-	-	194	208	585	328	208	932
Stage 1	-	-	-	-	-	-	323	376	-	718	689	-
Stage 2	-	-	-	-	-	-	824	689	-	572	376	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1363	-	-	795	-	-	186	199	585	149	199	932
Mov Cap-2 Maneuver	-	-	-	-	-	-	270	297	-	206	283	-
Stage 1	-	-	-	-	-	-	321	374	-	714	664	-
Stage 2	-	-	-	-	-	-	788	664	-	266	374	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.2	18.1	16.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	272	585	1363	-	-	795	-	-	322
HCM Lane V/C Ratio	0.149	0.528	0.005	-	-	0.037	-	-	0.028
HCM Control Delay (s)	20.5	17.8	7.7	-	-	9.7	-	-	16.5
HCM Lane LOS	C	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	3.1	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1136	10	0	227	0	2	0	0	0	0	0
Future Vol, veh/h	0	1136	10	0	227	0	2	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1276	11	0	255	0	2	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	255	0	0	1276	0	0	1404	1531	638	893	1531	128
Stage 1	-	-	-	-	-	-	1276	1276	-	255	255	-
Stage 2	-	-	-	-	-	-	128	255	-	638	1276	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1307	-	-	540	-	-	99	116	419	236	116	898
Stage 1	-	-	-	-	-	-	176	236	-	727	695	-
Stage 2	-	-	-	-	-	-	862	695	-	431	236	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1307	-	-	540	-	-	99	116	419	236	116	898
Mov Cap-2 Maneuver	-	-	-	-	-	-	154	197	-	343	197	-
Stage 1	-	-	-	-	-	-	176	236	-	727	695	-
Stage 2	-	-	-	-	-	-	862	695	-	431	236	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	28.7	0
HCM LOS			D	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	154	1307	-	-	540	-	-	-
HCM Lane V/C Ratio	0.015	-	-	-	-	-	-	-
HCM Control Delay (s)	28.7	0	-	-	0	-	-	0
HCM Lane LOS	D	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1118	0	14	224	0	0	0	8	0	0	0
Future Vol, veh/h	0	1118	0	14	224	0	0	0	8	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1256	0	16	252	0	0	0	9	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	252	0	0	1256	0	0	1413	1539	628	911	1539	126
Stage 1	-	-	-	-	-	-	1256	1256	-	283	283	-
Stage 2	-	-	-	-	-	-	157	283	-	628	1256	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1310	-	-	550	-	-	98	115	426	229	115	901
Stage 1	-	-	-	-	-	-	181	241	-	700	676	-
Stage 2	-	-	-	-	-	-	829	676	-	437	241	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1310	-	-	550	-	-	96	112	426	219	112	901
Mov Cap-2 Maneuver	-	-	-	-	-	-	157	197	-	326	188	-
Stage 1	-	-	-	-	-	-	181	241	-	700	656	-
Stage 2	-	-	-	-	-	-	805	656	-	428	241	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.7	13.6	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	426	1310	-	-	550	-	-	-
HCM Lane V/C Ratio	0.021	-	-	-	0.029	-	-	-
HCM Control Delay (s)	13.6	0	-	-	11.7	-	-	0
HCM Lane LOS	B	A	-	-	B	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1240	2	2	257	1	12
Future Vol, veh/h	1240	2	2	257	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1393	2	2	289	1	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1396	0	1543	1394
Stage 1	-	-	-	-	1394	-
Stage 2	-	-	-	-	149	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	488	-	116	173
Stage 1	-	-	-	-	229	-
Stage 2	-	-	-	-	864	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	488	-	115	173
Mov Cap-2 Maneuver	-	-	-	-	115	-
Stage 1	-	-	-	-	229	-
Stage 2	-	-	-	-	860	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	28.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	167	-	-	488	-
HCM Lane V/C Ratio	0.087	-	-	0.005	-
HCM Control Delay (s)	28.6	-	-	12.4	0
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	1088	70	69	114	0	0	0	0	47	1	130
Future Vol, veh/h	0	1088	70	69	114	0	0	0	0	47	1	130
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	0	-	-	-	-	-	-	300	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1222	79	78	128	0	0	0	0	53	1	146

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	1222	0	0	1505	1505	-
Stage 1	-	-	-	-	-	-	283	283	-
Stage 2	-	-	-	-	-	-	1222	1222	-
Critical Hdwy	-	-	-	4.12	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	0	-	-	570	-	0	133	121	0
Stage 1	0	-	-	-	-	0	765	677	0
Stage 2	0	-	-	-	-	0	278	252	0
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	570	-	-	113	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	113	0	-
Stage 1	-	-	-	-	-	-	653	0	-
Stage 2	-	-	-	-	-	-	278	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.6	63
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	570	-	113	-
HCM Lane V/C Ratio	-	-	0.136	-	0.477	-
HCM Control Delay (s)	-	-	12.3	0	63	0
HCM Lane LOS	-	-	B	A	F	A
HCM 95th %tile Q(veh)	-	-	0.5	-	2.1	-

Intersection	
Int Delay, s/veh	639.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	867	297	0	0	128	148	20	0	62	0	0	0
Future Vol, veh/h	867	297	0	0	128	148	20	0	62	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	974	334	0	0	144	166	22	0	70	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	310	0	-	-	-	0	2509	2592	334
Stage 1	-	-	-	-	-	-	2282	2282	-
Stage 2	-	-	-	-	-	-	227	310	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1250	-	0	0	-	-	31	25	708
Stage 1	-	-	0	0	-	-	82	75	-
Stage 2	-	-	0	0	-	-	811	659	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1250	-	-	-	-	-	~ 1	0	708
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 1	0	-
Stage 1	-	-	-	-	-	-	~ 4	0	-
Stage 2	-	-	-	-	-	-	811	0	-

Approach	EB	WB	NB
HCM Control Delay, s	12.8	0	$ 11685.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	4	1250	-	-	-
HCM Lane V/C Ratio	23.034	0.779	-	-	-
HCM Control Delay (s)	$ 11685.5	17.2	0	-	-
HCM Lane LOS	F	C	A	-	-
HCM 95th %tile Q(veh)	13.6	8.5	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection: 1: Xerxes Ave & CSAH 2

Movement	EB	EB	WB	NB	NB
Directions Served	L	R	L	LT	R
Maximum Queue (ft)	14	7	72	39	48
Average Queue (ft)	1	1	41	16	23
95th Queue (ft)	12	9	76	42	46
Link Distance (ft)				1864	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	300	300	300		200
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 2: Frontage Rd/Future Entrance 1 & CSAH 2

Movement	NB
Directions Served	LTR
Maximum Queue (ft)	29
Average Queue (ft)	12
95th Queue (ft)	32
Link Distance (ft)	650
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	WB	NB
Directions Served	L	LTR
Maximum Queue (ft)	24	24
Average Queue (ft)	4	12
95th Queue (ft)	20	32
Link Distance (ft)		12
Upstream Blk Time (%)		1
Queuing Penalty (veh)		0
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: CSAH 2

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	49	23
Average Queue (ft)	8	8
95th Queue (ft)	39	29
Link Distance (ft)	267	450
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: SB IH 35 On Ramp/SB IH 35 Off Ramp & CSAH 2

Movement	WB	SB	SB
Directions Served	LT	LT	R
Maximum Queue (ft)	86	94	261
Average Queue (ft)	34	52	147
95th Queue (ft)	80	89	278
Link Distance (ft)	710		1051
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		300	
Storage Blk Time (%)			2
Queuing Penalty (veh)			2

Intersection: 6: NB IH 35 Off Ramp/NB IH 35 On Ramp & CSAH 2

Movement	EB	WB	NB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	127	14	111
Average Queue (ft)	71	1	52
95th Queue (ft)	126	10	109
Link Distance (ft)	710	3512	744
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	413	27	242	928	4	20	1	77	1	0	0
Future Vol, veh/h	2	413	27	242	928	4	20	1	77	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	200	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	444	29	260	998	4	22	1	83	1	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	998	0	0	444	0	0	1467	1966	222	1745	1966	499
Stage 1	-	-	-	-	-	-	448	448	-	1518	1518	-
Stage 2	-	-	-	-	-	-	1019	1518	-	227	448	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	689	-	-	1112	-	-	89	62	782	55	62	517
Stage 1	-	-	-	-	-	-	560	571	-	125	180	-
Stage 2	-	-	-	-	-	-	254	180	-	755	571	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	689	-	-	1112	-	-	73	47	782	40	47	517
Mov Cap-2 Maneuver	-	-	-	-	-	-	154	112	-	100	105	-
Stage 1	-	-	-	-	-	-	558	569	-	125	138	-
Stage 2	-	-	-	-	-	-	195	138	-	672	569	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.9	15	41.4
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	151	782	689	-	-	1112	-	-	100
HCM Lane V/C Ratio	0.15	0.106	0.003	-	-	0.234	-	-	0.011
HCM Control Delay (s)	33	10.1	10.2	-	-	9.2	-	-	41.4
HCM Lane LOS	D	B	B	-	-	A	-	-	E
HCM 95th %tile Q(veh)	0.5	0.4	0	-	-	0.9	-	-	0

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	443	18	1	1088	0	14	0	3	0	0	0
Future Vol, veh/h	0	443	18	1	1088	0	14	0	3	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	471	19	1	1157	0	15	0	3	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1157	0	0	471	0	0	1052	1631	236	1396	1631	579
Stage 1	-	-	-	-	-	-	471	471	-	1160	1160	-
Stage 2	-	-	-	-	-	-	581	1160	-	236	471	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	600	-	-	1087	-	-	181	101	766	101	101	458
Stage 1	-	-	-	-	-	-	542	558	-	208	268	-
Stage 2	-	-	-	-	-	-	467	268	-	746	558	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	600	-	-	1087	-	-	181	101	766	101	101	458
Mov Cap-2 Maneuver	-	-	-	-	-	-	311	204	-	176	204	-
Stage 1	-	-	-	-	-	-	542	558	-	208	268	-
Stage 2	-	-	-	-	-	-	467	268	-	743	558	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	15.9	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	347	600	-	-	1087	-	-	-
HCM Lane V/C Ratio	0.052	-	-	-	0.001	-	-	-
HCM Control Delay (s)	15.9	0	-	-	8.3	-	-	0
HCM Lane LOS	C	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	446	0	12	1100	0	0	0	22	0	0	0
Future Vol, veh/h	0	446	0	12	1100	0	0	0	22	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	480	0	13	1183	0	0	0	24	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1183	0	0	480	0	0	1097	1689	240	1449	1689	591
Stage 1	-	-	-	-	-	-	480	480	-	1209	1209	-
Stage 2	-	-	-	-	-	-	617	1209	-	240	480	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	586	-	-	1079	-	-	168	93	761	92	93	450
Stage 1	-	-	-	-	-	-	536	553	-	194	254	-
Stage 2	-	-	-	-	-	-	444	254	-	742	553	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	586	-	-	1079	-	-	166	92	761	88	92	450
Mov Cap-2 Maneuver	-	-	-	-	-	-	295	192	-	163	191	-
Stage 1	-	-	-	-	-	-	536	553	-	194	251	-
Stage 2	-	-	-	-	-	-	439	251	-	719	553	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	9.9	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	761	586	-	-	1079	-	-	-
HCM Lane V/C Ratio	0.031	-	-	-	0.012	-	-	-
HCM Control Delay (s)	9.9	0	-	-	8.4	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	472	4	14	1152	6	6
Future Vol, veh/h	472	4	14	1152	6	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	508	4	15	1239	6	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	512	0	1159	510
Stage 1	-	-	-	-	510	-
Stage 2	-	-	-	-	649	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1051	-	202	562
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	483	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1051	-	193	562
Mov Cap-2 Maneuver	-	-	-	-	193	-
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	461	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	18.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	287	-	-	1051	-
HCM Lane V/C Ratio	0.045	-	-	0.014	-
HCM Control Delay (s)	18.1	-	-	8.5	0.2
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	375	51	88	328	0	0	0	0	146	0	747
Future Vol, veh/h	0	375	51	88	328	0	0	0	0	146	0	747
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	0	-	-	-	-	-	-	300	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	399	54	94	349	0	0	0	0	155	0	795

Major/Minor	Major1			Major2				Minor2		
Conflicting Flow All	-	0	0	399	0	0		935	935	-
Stage 1	-	-	-	-	-	-		536	536	-
Stage 2	-	-	-	-	-	-		399	399	-
Critical Hdwy	-	-	-	4.12	-	-		6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-		5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-		5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-		3.518	4.018	-
Pot Cap-1 Maneuver	0	-	-	1160	-	0		295	265	0
Stage 1	0	-	-	-	-	0		587	523	0
Stage 2	0	-	-	-	-	0		678	602	0
Platoon blocked, %		-	-		-					
Mov Cap-1 Maneuver	-	-	-	1160	-	-		265	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-		265	0	-
Stage 1	-	-	-	-	-	-		528	0	-
Stage 2	-	-	-	-	-	-		678	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.8	36.2
HCM LOS			E

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1160	-	265	-
HCM Lane V/C Ratio	-	-	0.081	-	0.586	-
HCM Control Delay (s)	-	-	8.4	0	36.2	0
HCM Lane LOS	-	-	A	A	E	A
HCM 95th %tile Q(veh)	-	-	0.3	-	3.4	-

Intersection	
Int Delay, s/veh	8.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	294	234	0	0	345	72	64	2	49	0	0	0
Future Vol, veh/h	294	234	0	0	345	72	64	2	49	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	320	254	0	0	375	78	70	2	53	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	453	0	-	-	-	0	1307	1346	254
Stage 1	-	-	-	-	-	-	893	893	-
Stage 2	-	-	-	-	-	-	414	453	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1108	-	0	0	-	-	176	151	785
Stage 1	-	-	0	0	-	-	400	360	-
Stage 2	-	-	0	0	-	-	667	570	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1108	-	-	-	-	-	117	0	785
Mov Cap-2 Maneuver	-	-	-	-	-	-	117	0	-
Stage 1	-	-	-	-	-	-	266	0	-
Stage 2	-	-	-	-	-	-	667	0	-

Approach	EB	WB	NB
HCM Control Delay, s	5.3	0	57.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	185	1108	-	-	-
HCM Lane V/C Ratio	0.676	0.288	-	-	-
HCM Control Delay (s)	57.5	9.6	0	-	-
HCM Lane LOS	F	A	A	-	-
HCM 95th %tile Q(veh)	4.1	1.2	-	-	-

Appendix N: Synchro Reports – Phase 1 (2031)

Intersection: 1: Xerxes Ave & CSAH 2

Movement	EB	EB	WB	NB	NB	SB
Directions Served	L	T	L	LT	R	LTR
Maximum Queue (ft)	7	3	44	122	238	50
Average Queue (ft)	1	0	19	60	151	23
95th Queue (ft)	7	5	45	254	288	48
Link Distance (ft)		2640		1864		700
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	300		300		200	
Storage Blk Time (%)					14	
Queuing Penalty (veh)					5	

Intersection: 2: Frontage Rd/Future Entrance 1 & CSAH 2

Movement	NB
Directions Served	LTR
Maximum Queue (ft)	8
Average Queue (ft)	2
95th Queue (ft)	10
Link Distance (ft)	650
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	EB	EB	WB	WB	WB	WB	B26	NB	SB	B27
Directions Served	L	R	L	T	T	R	T	LTR	LTR	T
Maximum Queue (ft)	47	25	317	182	80	6	30	25	123	619
Average Queue (ft)	24	8	224	43	8	1	3	15	118	567
95th Queue (ft)	49	26	415	264	109	6	41	24	123	732
Link Distance (ft)				480	480		428	12	52	604
Upstream Blk Time (%)				2	0			98	100	74
Queuing Penalty (veh)				7	0			362	0	0
Storage Bay Dist (ft)	300	300	300			300				
Storage Blk Time (%)			20	0						
Queuing Penalty (veh)			23	0						

Intersection: 4: CSAH 2

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	101	12	26
Average Queue (ft)	18	2	10
95th Queue (ft)	108	19	29
Link Distance (ft)	428	267	450
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: SB IH 35 On Ramp/SB IH 35 Off Ramp & CSAH 2

Movement	EB	EB	WB	SB	SB
Directions Served	T	R	LT	LT	R
Maximum Queue (ft)	156	11	190	147	68
Average Queue (ft)	55	1	81	81	21
95th Queue (ft)	214	10	195	169	68
Link Distance (ft)	267	267	710		1051
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	4				
Storage Bay Dist (ft)				300	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: NB IH 35 Off Ramp/NB IH 35 On Ramp & CSAH 2

Movement	EB	WB	NB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	705	25	748
Average Queue (ft)	543	7	680
95th Queue (ft)	809	25	880
Link Distance (ft)	710	3512	744
Upstream Blk Time (%)	1		59
Queuing Penalty (veh)	9		0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection	
Int Delay, s/veh	12.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	742	4	26	183	0	33	3	275	3	2	3
Future Vol, veh/h	6	1032	4	116	421	30	33	3	384	40	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	200	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1160	4	130	473	34	37	3	431	45	2	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	473	0	0	1160	0	0	1671	1907	580	1329	1907	237
Stage 1	-	-	-	-	-	-	1173	1173	-	734	734	-
Stage 2	-	-	-	-	-	-	498	734	-	595	1173	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1085	-	-	598	-	-	63	68	458	113	68	764
Stage 1	-	-	-	-	-	-	204	264	-	378	424	-
Stage 2	-	-	-	-	-	-	523	424	-	458	264	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1085	-	-	598	-	-	51	53	458	~ 5	53	764
Mov Cap-2 Maneuver	-	-	-	-	-	-	143	156	-	~ -136	105	-
Stage 1	-	-	-	-	-	-	203	262	-	376	332	-
Stage 2	-	-	-	-	-	-	405	332	-	~ 26	262	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.6	57.3	
HCM LOS			F	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	144	458	1085	-	-	598	-	-	+
HCM Lane V/C Ratio	0.281	0.942	0.006	-	-	0.218	-	-	-
HCM Control Delay (s)	39.5	59	8.3	-	-	12.7	-	-	-
HCM Lane LOS	E	F	A	-	-	B	-	-	-
HCM 95th %tile Q(veh)	1.1	11.2	0	-	-	0.8	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1136	10	0	227	0	2	0	0	0	0	0
Future Vol, veh/h	0	1572	10	0	585	0	2	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1766	11	0	657	0	2	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	657	0	0	1766	0	0	2095	2423	883	1540	2423	329
Stage 1	-	-	-	-	-	-	1766	1766	-	657	657	-
Stage 2	-	-	-	-	-	-	329	657	-	883	1766	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	926	-	-	349	-	-	30	32	289	79	32	667
Stage 1	-	-	-	-	-	-	87	135	-	420	460	-
Stage 2	-	-	-	-	-	-	658	460	-	307	135	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	926	-	-	349	-	-	30	32	289	79	32	667
Mov Cap-2 Maneuver	-	-	-	-	-	-	75	105	-	197	105	-
Stage 1	-	-	-	-	-	-	87	135	-	420	460	-
Stage 2	-	-	-	-	-	-	658	460	-	307	135	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	54.5	0
HCM LOS			F	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	75	926	-	-	349	-	-	-
HCM Lane V/C Ratio	0.03	-	-	-	-	-	-	-
HCM Control Delay (s)	54.5	0	-	-	0	-	-	0
HCM Lane LOS	F	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	420.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1118	0	14	224	0	0	0	8	0	0	0
Future Vol, veh/h	175	1118	261	188	224	117	215	0	152	96	0	143
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	197	1256	293	211	252	131	242	0	171	108	0	161

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	252	0	0	1256	0	0	2197	2323	628	1695	2323	126
Stage 1	-	-	-	-	-	-	1649	1649	-	674	674	-
Stage 2	-	-	-	-	-	-	548	674	-	1021	1649	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1310	-	-	550	-	-	~ 25	37	426	~ 60	37	901
Stage 1	-	-	-	-	-	-	~ 103	155	-	410	452	-
Stage 2	-	-	-	-	-	-	488	452	-	253	155	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1310	-	-	550	-	-	~ 13	19	426	~ 23	19	901
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 34	54	-	~ -121	~ -126	-
Stage 1	-	-	-	-	-	-	~ 88	132	-	348	279	-
Stage 2	-	-	-	-	-	-	247	279	-	129	132	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	5.5	$ 3068	
HCM LOS			F	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	55	1310	-	-	550	-	-	+
HCM Lane V/C Ratio	7.497	0.15	-	-	0.384	-	-	-
HCM Control Delay (s)	$ 3068	8.2	-	-	15.6	-	-	-
HCM Lane LOS	F	A	-	-	C	-	-	-
HCM 95th %tile Q(veh)	47.9	0.5	-	-	1.8	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1240	2	2	257	1	12
Future Vol, veh/h	1480	2	2	548	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1663	2	2	616	1	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1665	0	1976	1664
Stage 1	-	-	-	-	1664	-
Stage 2	-	-	-	-	312	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	384	-	61	119
Stage 1	-	-	-	-	168	-
Stage 2	-	-	-	-	716	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	384	-	61	119
Mov Cap-2 Maneuver	-	-	-	-	61	-
Stage 1	-	-	-	-	168	-
Stage 2	-	-	-	-	710	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	42.3
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	111	-	-	384	-
HCM Lane V/C Ratio	0.132	-	-	0.006	-
HCM Control Delay (s)	42.3	-	-	14.4	0.1
HCM Lane LOS	E	-	-	B	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	1088	70	69	114	0	0	0	0	47	1	130
Future Vol, veh/h	0	1238	160	69	296	0	0	0	0	47	1	239
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	0	-	-	-	-	-	-	300	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1391	180	78	333	0	0	0	0	53	1	269

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	1391	0	0	1879	1879	-
Stage 1	-	-	-	-	-	-	488	488	-
Stage 2	-	-	-	-	-	-	1391	1391	-
Critical Hdwy	-	-	-	4.12	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	0	-	-	492	-	0	78	71	0
Stage 1	0	-	-	-	-	0	617	550	0
Stage 2	0	-	-	-	-	0	231	209	0
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	492	-	-	63	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	63	0	-
Stage 1	-	-	-	-	-	-	497	0	-
Stage 2	-	-	-	-	-	-	231	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.6	181.6
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	492	-	63	-
HCM Lane V/C Ratio	-	-	0.158	-	0.856	-
HCM Control Delay (s)	-	-	13.7	0	181.6	0
HCM Lane LOS	-	-	B	A	F	A
HCM 95th %tile Q(veh)	-	-	0.6	-	4	-

Intersection	
Int Delay, s/veh	17

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	867	297	0	0	128	148	20	0	62	0	0	0
Future Vol, veh/h	957	357	0	0	201	148	129	0	62	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1075	401	0	0	226	166	145	0	70	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	392	0	-	-	-	0	2861	2944	401
Stage 1	-	-	-	-	-	-	2552	2552	-
Stage 2	-	-	-	-	-	-	309	392	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1167	-	0	0	-	-	~ 19	15	649
Stage 1	-	-	0	0	-	-	~ 60	54	-
Stage 2	-	-	0	0	-	-	745	606	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1167	-	-	-	-	-	0	0	649
Mov Cap-2 Maneuver	-	-	-	-	-	-	0	0	-
Stage 1	-	-	-	-	-	-	0	0	-
Stage 2	-	-	-	-	-	-	745	0	-

Approach	EB	WB	NB
HCM Control Delay, s	22.1	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	649	1167	-	-	-
HCM Lane V/C Ratio	0.331	0.921	-	-	-
HCM Control Delay (s)	13.3	30.3	0	-	-
HCM Lane LOS	B	D	A	-	-
HCM 95th %tile Q(veh)	1.4	15.2	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection: 1: Xerxes Ave & CSAH 2

Movement	EB	EB	WB	NB	NB	SB
Directions Served	L	R	L	LT	R	LTR
Maximum Queue (ft)	12	11	89	71	89	146
Average Queue (ft)	1	1	53	28	43	61
95th Queue (ft)	9	7	86	69	77	151
Link Distance (ft)				1864		700
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	300	300	300		200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 2: Frontage Rd/Future Entrance 1 & CSAH 2

Movement	WB	NB
Directions Served	L	LTR
Maximum Queue (ft)	4	36
Average Queue (ft)	0	12
95th Queue (ft)	4	35
Link Distance (ft)		650
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	EB	EB	WB	WB	WB	NB	SB	B27
Directions Served	L	R	L	T	R	LTR	LTR	T
Maximum Queue (ft)	89	20	62	6	14	40	132	627
Average Queue (ft)	45	4	36	0	1	24	121	612
95th Queue (ft)	78	18	63	5	8	36	131	656
Link Distance (ft)				480		12	52	604
Upstream Blk Time (%)						85	100	94
Queuing Penalty (veh)						430	0	0
Storage Bay Dist (ft)	300	300	300		300			
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 4: CSAH 2

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	39	28
Average Queue (ft)	4	10
95th Queue (ft)	24	31
Link Distance (ft)	267	450
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: SB IH 35 On Ramp/SB IH 35 Off Ramp & CSAH 2

Movement	EB	WB	SB	SB
Directions Served	R	LT	LT	R
Maximum Queue (ft)	4	96	450	1098
Average Queue (ft)	0	32	439	1070
95th Queue (ft)	4	78	549	1131
Link Distance (ft)	267	710		1051
Upstream Blk Time (%)				91
Queuing Penalty (veh)				0
Storage Bay Dist (ft)			300	
Storage Blk Time (%)				95
Queuing Penalty (veh)				138

Intersection: 6: NB IH 35 Off Ramp/NB IH 35 On Ramp & CSAH 2

Movement	EB	WB	NB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	149	4	363
Average Queue (ft)	61	1	171
95th Queue (ft)	114	7	367
Link Distance (ft)	710	3512	744
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection	
Int Delay, s/veh	9.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	413	27	242	928	4	20	1	77	1	0	0
Future Vol, veh/h	2	663	27	363	1251	44	20	1	171	33	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	200	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	713	29	390	1345	47	22	1	184	35	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1345	0	0	713	0	0	2170	2843	356	2487	2843	673
Stage 1	-	-	-	-	-	-	717	717	-	2126	2126	-
Stage 2	-	-	-	-	-	-	1453	2126	-	361	717	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	508	-	-	883	-	-	26	17	640	~ 15	17	398
Stage 1	-	-	-	-	-	-	387	432	-	51	89	-
Stage 2	-	-	-	-	-	-	137	89	-	630	432	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	508	-	-	883	-	-	~ 17	9	640	~ 7	9	398
Mov Cap-2 Maneuver	-	-	-	-	-	-	61	41	-	~ 28	24	-
Stage 1	-	-	-	-	-	-	385	430	-	51	50	-
Stage 2	-	-	-	-	-	-	76	50	-	446	430	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.7	22.2	$ 471.1
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	60	640	508	-	-	883	-	-	28
HCM Lane V/C Ratio	0.376	0.287	0.004	-	-	0.442	-	-	1.267
HCM Control Delay (s)	97.5	12.9	12.1	-	-	12.3	-	-	$ 471.1
HCM Lane LOS	F	B	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	1.4	1.2	0	-	-	2.3	-	-	4.1

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	443	18	1	1088	0	14	0	3	0	0	0
Future Vol, veh/h	0	819	18	1	1572	0	14	0	3	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	871	19	1	1672	0	15	0	3	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1672	0	0	871	0	0	1709	2545	436	2110	2545	836
Stage 1	-	-	-	-	-	-	871	871	-	1674	1674	-
Stage 2	-	-	-	-	-	-	838	1674	-	436	871	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	380	-	-	770	-	-	59	27	568	29	27	310
Stage 1	-	-	-	-	-	-	312	367	-	99	151	-
Stage 2	-	-	-	-	-	-	327	151	-	569	367	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	380	-	-	770	-	-	59	27	568	29	27	310
Mov Cap-2 Maneuver	-	-	-	-	-	-	173	108	-	83	108	-
Stage 1	-	-	-	-	-	-	312	367	-	99	151	-
Stage 2	-	-	-	-	-	-	327	151	-	566	367	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	25.1	0
HCM LOS			D	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	197	380	-	-	770	-	-	-
HCM Lane V/C Ratio	0.092	-	-	-	0.001	-	-	-
HCM Control Delay (s)	25.1	0	-	-	9.7	-	-	0
HCM Lane LOS	D	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	147.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	446	0	12	1100	0	0	0	22	0	0	0
Future Vol, veh/h	151	446	225	162	1100	101	291	0	216	128	0	193
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	162	480	242	174	1183	109	313	0	232	138	0	208

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1183	0	0	480	0	0	1744	2335	240	2096	2335	591
Stage 1	-	-	-	-	-	-	804	804	-	1531	1531	-
Stage 2	-	-	-	-	-	-	940	1531	-	565	804	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	586	-	-	1079	-	-	~ 55	36	761	~ 30	36	450
Stage 1	-	-	-	-	-	-	343	394	-	~ 122	177	-
Stage 2	-	-	-	-	-	-	~ 283	177	-	477	394	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	586	-	-	1079	-	-	~ 21	22	761	~ 14	22	450
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ -47	~ -18	-	~ 41	68	-
Stage 1	-	-	-	-	-	-	~ 248	285	-	~ 88	148	-
Stage 2	-	-	-	-	-	-	~ 128	148	-	240	285	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.5	1.1		$ 1372.8
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	+	586	-	-	1079	-	-	90
HCM Lane V/C Ratio	-	0.277	-	-	0.161	-	-	3.835
HCM Control Delay (s)	-	13.5	-	-	9	-		$ 1372.8
HCM Lane LOS	-	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	-	1.1	-	-	0.6	-	-	35.5

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	472	4	14	1152	6	6
Future Vol, veh/h	794	4	14	1403	6	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	854	4	15	1509	6	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	858	0	1640	856
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	784	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	781	-	100	357
Stage 1	-	-	-	-	415	-
Stage 2	-	-	-	-	411	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	781	-	88	357
Mov Cap-2 Maneuver	-	-	-	-	88	-
Stage 1	-	-	-	-	415	-
Stage 2	-	-	-	-	362	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	33.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	141	-	-	781	-
HCM Lane V/C Ratio	0.092	-	-	0.019	-
HCM Control Delay (s)	33.1	-	-	9.7	0.6
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	14.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	375	51	88	328	0	0	0	0	146	0	747
Future Vol, veh/h	0	576	172	88	485	0	0	0	0	146	0	841
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	0	-	-	-	-	-	-	300	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	613	183	94	516	0	0	0	0	155	0	895

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	613	0	0	1316	1316	-
Stage 1	-	-	-	-	-	-	703	703	-
Stage 2	-	-	-	-	-	-	613	613	-
Critical Hdwy	-	-	-	4.12	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	0	-	-	966	-	0	174	158	0
Stage 1	0	-	-	-	-	0	491	440	0
Stage 2	0	-	-	-	-	0	541	483	0
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	966	-	-	~ 150	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 150	0	-
Stage 1	-	-	-	-	-	-	424	0	-
Stage 2	-	-	-	-	-	-	541	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.4	143
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	966	-	150	-
HCM Lane V/C Ratio	-	-	0.097	-	1.035	-
HCM Control Delay (s)	-	-	9.1	0	143	0
HCM Lane LOS	-	-	A	A	F	A
HCM 95th %tile Q(veh)	-	-	0.3	-	8	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	213.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	294	234	0	0	345	72	64	2	49	0	0	0
Future Vol, veh/h	415	314	0	0	408	72	158	2	49	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	451	341	0	0	443	78	172	2	53	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	522	0	-	-	-	0	1726	1765	341
Stage 1	-	-	-	-	-	-	1243	1243	-
Stage 2	-	-	-	-	-	-	483	522	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1044	-	0	0	-	-	~ 98	84	701
Stage 1	-	-	0	0	-	-	272	246	-
Stage 2	-	-	0	0	-	-	620	531	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1044	-	-	-	-	-	~ 46	0	701
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 46	0	-
Stage 1	-	-	-	-	-	-	~ 127	0	-
Stage 2	-	-	-	-	-	-	620	0	-

Approach	EB	WB	NB
HCM Control Delay, s	6.3	0	$ 1426.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	59	1044	-	-	-
HCM Lane V/C Ratio	3.85	0.432	-	-	-
HCM Control Delay (s)	$ 1426.4	11	0	-	-
HCM Lane LOS	F	B	A	-	-
HCM 95th %tile Q(veh)	24.5	2.2	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Appendix O: Synchro Reports – Phase 1 (2031) Recommendations

Intersection: 1: Xerxes Ave & CSAH 2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	LT	R
Maximum Queue (ft)	25	271	273	9	91	72	85	19	49	217	45	6
Average Queue (ft)	4	174	168	1	50	41	52	5	16	126	15	1
95th Queue (ft)	20	261	264	7	89	76	89	18	46	215	46	6
Link Distance (ft)		2632	2632			1905	1905		1864		701	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300			300	300			300		200		150
Storage Blk Time (%)		0	0							2		
Queuing Penalty (veh)		0	0							1		

Intersection: 2: Frontage Rd/Future Entrance 1 & CSAH 2

Movement	WB	NB
Directions Served	T	LTR
Maximum Queue (ft)	268	11
Average Queue (ft)	27	1
95th Queue (ft)	366	9
Link Distance (ft)	1513	650
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	199	405	374	161	313	82	94	59	12	49	49	93
Average Queue (ft)	99	305	286	65	207	47	60	33	12	28	34	47
95th Queue (ft)	244	448	414	155	397	80	101	58	16	43	52	85
Link Distance (ft)		1513	1513			474	474			13		53
Upstream Blk Time (%)									11	35	5	5
Queuing Penalty (veh)									0	130	0	0
Storage Bay Dist (ft)	300			300	300			300	150		150	
Storage Blk Time (%)		16	10		14				11	35	5	5
Queuing Penalty (veh)		29	26		16				16	76	7	5

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	B27
Directions Served	T
Maximum Queue (ft)	4
Average Queue (ft)	0
95th Queue (ft)	6
Link Distance (ft)	604
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: CSAH 2

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	LT	T	LR
Maximum Queue (ft)	199	203	47	17	33
Average Queue (ft)	51	41	7	2	9
95th Queue (ft)	212	199	49	23	32
Link Distance (ft)	429	429	268	268	451
Upstream Blk Time (%)	0	0			
Queuing Penalty (veh)	2	1			
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: SB IH 35 On Ramp/SB IH 35 Off Ramp & CSAH 2

Movement	EB	EB	WB	WB	SB	SB
Directions Served	T	TR	L	T	LT	R
Maximum Queue (ft)	289	290	72	120	66	74
Average Queue (ft)	229	207	43	33	26	24
95th Queue (ft)	329	309	75	109	63	71
Link Distance (ft)	268	268		711		1042
Upstream Blk Time (%)	10	5				
Queuing Penalty (veh)	75	40				
Storage Bay Dist (ft)			200		300	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: NB IH 35 Off Ramp/NB IH 35 On Ramp & CSAH 2

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	LT	R
Maximum Queue (ft)	199	189	99	114	148	130	50
Average Queue (ft)	114	119	47	75	91	56	21
95th Queue (ft)	187	192	94	121	152	114	48
Link Distance (ft)		711	711	3503	3503	741	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	350						150
Storage Blk Time (%)						0	
Queuing Penalty (veh)						0	

Intersection: 7: Newton Cir & Frontage Rd

Movement	NB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	13
95th Queue (ft)	37
Link Distance (ft)	650
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	742	4	26	183	0	33	3	275	3	2	3
Future Volume (veh/h)	6	1032	4	116	421	30	33	3	384	40	2	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	7	1160	4	130	473	34	37	3	431	45	2	3
Adj No. of Lanes	1	2	1	1	2	1	0	1	1	0	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	423	1348	603	249	1545	691	92	4	593	94	2	593
Arrive On Green	0.01	0.38	0.38	0.06	0.44	0.44	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	0	11	1583	0	6	1583
Grp Volume(v), veh/h	7	1160	4	130	473	34	40	0	431	47	0	3
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	11	0	1583	6	0	1583
Q Serve(g_s), s	0.2	22.6	0.1	3.2	6.5	0.9	0.0	0.0	17.5	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.2	22.6	0.1	3.2	6.5	0.9	28.1	0.0	17.5	28.1	0.0	0.1
Prop In Lane	1.00		1.00	1.00		1.00	0.92		1.00	0.96		1.00
Lane Grp Cap(c), veh/h	423	1348	603	249	1545	691	96	0	593	96	0	593
V/C Ratio(X)	0.02	0.86	0.01	0.52	0.31	0.05	0.41	0.00	0.73	0.49	0.00	0.01
Avail Cap(c_a), veh/h	525	1439	644	288	1545	691	96	0	593	96	0	593
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.0	21.4	14.4	16.7	13.7	12.2	34.7	0.0	20.2	36.2	0.0	14.7
Incr Delay (d2), s/veh	0.0	5.3	0.0	1.7	0.1	0.0	12.6	0.0	7.6	16.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	11.9	0.1	1.6	3.2	0.4	1.2	0.0	8.9	1.4	0.0	0.0
LnGrp Delay(d),s/veh	14.1	26.7	14.4	18.4	13.9	12.2	47.3	0.0	27.8	52.9	0.0	14.7
LnGrp LOS	B	C	B	B	B	B	D		C	D		B
Approach Vol, veh/h		1171			637			471			50	
Approach Delay, s/veh		26.5			14.7			29.4			50.6	
Approach LOS		C			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		32.6	9.3	33.1		32.6	5.2	37.2
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		24.5	6.5	30.5		24.5	5.0	32.0
Max Q Clear Time (g_c+I1), s		30.1	5.2	24.6		30.1	2.2	8.5
Green Ext Time (p_c), s		0.0	0.0	3.9		0.0	0.0	11.3

Intersection Summary	
HCM 2010 Ctrl Delay	24.4
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1118	0	14	224	0	0	0	8	0	0	0
Future Volume (veh/h)	175	1118	261	188	224	117	215	0	152	96	0	143
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	197	1256	293	211	252	131	242	0	171	108	0	161
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	567	1298	581	246	1249	559	410	0	393	399	0	386
Arrive On Green	0.10	0.37	0.37	0.08	0.35	0.35	0.07	0.00	0.25	0.06	0.00	0.24
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	0	1583	1774	0	1583
Grp Volume(v), veh/h	197	1256	293	211	252	131	242	0	171	108	0	161
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	0	1583	1774	0	1583
Q Serve(g_s), s	5.2	26.1	10.8	5.7	3.7	4.4	5.1	0.0	6.8	3.4	0.0	6.4
Cycle Q Clear(g_c), s	5.2	26.1	10.8	5.7	3.7	4.4	5.1	0.0	6.8	3.4	0.0	6.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	567	1298	581	246	1249	559	410	0	393	399	0	386
V/C Ratio(X)	0.35	0.97	0.50	0.86	0.20	0.23	0.59	0.00	0.44	0.27	0.00	0.42
Avail Cap(c_a), veh/h	604	1298	581	246	1249	559	410	0	393	404	0	386
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.0	23.3	18.5	18.3	16.9	17.1	23.2	0.0	23.8	19.4	0.0	23.9
Incr Delay (d2), s/veh	0.4	17.8	0.7	24.5	0.1	0.2	2.2	0.0	3.5	0.4	0.0	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	15.9	4.8	4.4	1.8	1.9	2.4	0.0	3.4	1.7	0.0	3.2
LnGrp Delay(d),s/veh	13.3	41.1	19.2	42.8	17.0	17.3	25.4	0.0	27.3	19.8	0.0	27.1
LnGrp LOS	B	D	B	D	B	B	C		C	B		C
Approach Vol, veh/h		1746			594			413			269	
Approach Delay, s/veh		34.3			26.2			26.2			24.2	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	23.1	10.6	32.0	9.6	22.8	11.6	31.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	18.4	6.1	27.5	5.1	18.3	8.7	24.9
Max Q Clear Time (g_c+I1), s	5.4	8.8	7.7	28.1	7.1	8.4	7.2	6.4
Green Ext Time (p_c), s	0.0	1.4	0.0	0.0	0.0	1.4	0.1	10.6

Intersection Summary	
HCM 2010 Ctrl Delay	30.7
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1088	70	69	114	0	0	0	0	47	1	130
Future Volume (veh/h)	0	1238	160	69	296	0	0	0	0	47	1	239
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	1391	180	78	333	0				53	1	0
Adj No. of Lanes	0	2	0	1	1	0				0	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1540	198	217	1121	0				437	8	397
Arrive On Green	0.00	0.49	0.49	0.11	1.00	0.00				0.25	0.25	0.00
Sat Flow, veh/h	0	3249	405	1774	1863	0				1743	33	1583
Grp Volume(v), veh/h	0	775	796	78	333	0				54	0	0
Grp Sat Flow(s),veh/h/ln	0	1770	1791	1774	1863	0				1776	0	1583
Q Serve(g_s), s	0.0	29.9	30.7	1.5	0.0	0.0				1.8	0.0	0.0
Cycle Q Clear(g_c), s	0.0	29.9	30.7	1.5	0.0	0.0				1.8	0.0	0.0
Prop In Lane	0.00		0.23	1.00		0.00				0.98		1.00
Lane Grp Cap(c), veh/h	0	864	874	217	1121	0				445	0	397
V/C Ratio(X)	0.00	0.90	0.91	0.36	0.30	0.00				0.12	0.00	0.00
Avail Cap(c_a), veh/h	0	887	898	242	1172	0				445	0	397
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.73	0.73	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	17.5	17.7	15.3	0.0	0.0				21.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	11.7	13.0	0.7	0.1	0.0				0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	17.2	18.2	0.8	0.0	0.0				0.9	0.0	0.0
LnGrp Delay(d),s/veh	0.0	29.2	30.7	16.0	0.1	0.0				22.3	0.0	0.0
LnGrp LOS		C	C	B	A					C		
Approach Vol, veh/h		1571			411						54	
Approach Delay, s/veh		29.9			3.1						22.3	
Approach LOS		C			A						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			8.5	41.1		23.3		49.6
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s			5.1	37.6		18.8		47.2
Max Q Clear Time (g_c+I1), s			3.5	32.7		3.8		2.0
Green Ext Time (p_c), s			0.0	3.9		0.1		17.4

Intersection Summary	
HCM 2010 Ctrl Delay	24.3
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	867	297	0	0	128	148	20	0	62	0	0	0
Future Volume (veh/h)	957	357	0	0	201	148	129	0	62	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900	1900	1863	1863			
Adj Flow Rate, veh/h	1075	401	0	0	226	166	145	0	70			
Adj No. of Lanes	2	1	0	0	2	0	0	1	1			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	1288	963	0	0	343	241	644	0	575			
Arrive On Green	0.09	0.17	0.00	0.00	0.17	0.17	0.36	0.00	0.36			
Sat Flow, veh/h	3442	1863	0	0	2080	1398	1774	0	1583			
Grp Volume(v), veh/h	1075	401	0	0	200	192	145	0	70			
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1770	1616	1774	0	1583			
Q Serve(g_s), s	17.1	14.4	0.0	0.0	7.9	8.4	4.3	0.0	2.2			
Cycle Q Clear(g_c), s	17.1	14.4	0.0	0.0	7.9	8.4	4.3	0.0	2.2			
Prop In Lane	1.00		0.00	0.00		0.87	1.00		1.00			
Lane Grp Cap(c), veh/h	1288	963	0	0	305	279	644	0	575			
V/C Ratio(X)	0.83	0.42	0.00	0.00	0.66	0.69	0.23	0.00	0.12			
Avail Cap(c_a), veh/h	1451	1180	0	0	427	390	644	0	575			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.30	0.30	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	19.9	21.0	0.0	0.0	29.0	29.1	16.6	0.0	15.9			
Incr Delay (d2), s/veh	1.2	0.1	0.0	0.0	2.4	3.0	0.8	0.0	0.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.2	7.5	0.0	0.0	4.0	4.0	2.2	0.0	1.0			
LnGrp Delay(d),s/veh	21.1	21.1	0.0	0.0	31.4	32.2	17.4	0.0	16.3			
LnGrp LOS	C	C			C	C	B		B			
Approach Vol, veh/h		1476			392			215				
Approach Delay, s/veh		21.1			31.8			17.0				
Approach LOS		C			C			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		31.7		43.3			25.8	17.4
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5
Max Green Setting (Gmax), s		18.5		47.5			24.9	18.1
Max Q Clear Time (g_c+I1), s		6.3		16.4			19.1	10.4
Green Ext Time (p_c), s		0.7		4.4			2.3	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	22.7
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1136	10	0	227	0	2	0	0	0	0	0
Future Vol, veh/h	0	1572	10	0	585	0	2	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1766	11	0	657	0	2	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	657	0	0	1766	0	0	2095	2423	883	1540	2423	329
Stage 1	-	-	-	-	-	-	1766	1766	-	657	657	-
Stage 2	-	-	-	-	-	-	329	657	-	883	1766	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	926	-	-	349	-	-	30	32	289	79	32	667
Stage 1	-	-	-	-	-	-	87	135	-	420	460	-
Stage 2	-	-	-	-	-	-	658	460	-	307	135	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	926	-	-	349	-	-	30	32	289	79	32	667
Mov Cap-2 Maneuver	-	-	-	-	-	-	75	105	-	197	105	-
Stage 1	-	-	-	-	-	-	87	135	-	420	460	-
Stage 2	-	-	-	-	-	-	658	460	-	307	135	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	54.5	0
HCM LOS			F	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	75	926	-	-	349	-	-	-
HCM Lane V/C Ratio	0.03	-	-	-	-	-	-	-
HCM Control Delay (s)	54.5	0	-	-	0	-	-	0
HCM Lane LOS	F	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1240	2	2	257	1	12
Future Vol, veh/h	1480	2	2	548	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1663	2	2	616	1	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1665	0	1976	833
Stage 1	-	-	-	-	1664	-
Stage 2	-	-	-	-	312	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	382	-	54	312
Stage 1	-	-	-	-	139	-
Stage 2	-	-	-	-	715	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	382	-	54	312
Mov Cap-2 Maneuver	-	-	-	-	54	-
Stage 1	-	-	-	-	139	-
Stage 2	-	-	-	-	709	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	21.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	228	-	-	382	-
HCM Lane V/C Ratio	0.064	-	-	0.006	-
HCM Control Delay (s)	21.9	-	-	14.5	0.1
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection: 1: Xerxes Ave & CSAH 2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	LT
Maximum Queue (ft)	15	201	195	31	207	225	250	30	38	97	45
Average Queue (ft)	2	138	128	10	140	147	166	11	14	49	15
95th Queue (ft)	13	197	202	29	206	216	241	31	39	90	45
Link Distance (ft)		2632	2632			1905	1905		1864		701
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	300			300	300			300		200	
Storage Blk Time (%)						0	0				
Queuing Penalty (veh)						0	0				

Intersection: 2: Frontage Rd/Future Entrance 1 & CSAH 2

Movement	WB	NB
Directions Served	L	LTR
Maximum Queue (ft)	3	28
Average Queue (ft)	0	13
95th Queue (ft)	5	33
Link Distance (ft)		650
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	B26	B26	NB	NB
Directions Served	L	T	T	R	L	T	T	R	T	T	L	TR
Maximum Queue (ft)	173	157	153	84	181	362	365	181	29	25	14	56
Average Queue (ft)	108	104	108	50	107	260	268	48	5	5	12	32
95th Queue (ft)	183	163	160	81	286	449	451	201	51	46	15	53
Link Distance (ft)		1513	1513			474	474		429	429		13
Upstream Blk Time (%)						3	3				18	38
Queuing Penalty (veh)						19	22				0	190
Storage Bay Dist (ft)	300			300	300			300			150	
Storage Blk Time (%)						11	11				18	38
Queuing Penalty (veh)						17	11				38	110

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	SB	SB	B27
Directions Served	L	TR	T
Maximum Queue (ft)	52	128	59
Average Queue (ft)	39	79	9
95th Queue (ft)	67	132	48
Link Distance (ft)		53	604
Upstream Blk Time (%)	8	14	
Queuing Penalty (veh)	0	0	
Storage Bay Dist (ft)	150		
Storage Blk Time (%)	8	14	
Queuing Penalty (veh)	15	18	

Intersection: 4: CSAH 2

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	LT	T	LR
Maximum Queue (ft)	12	29	93	68	41
Average Queue (ft)	1	5	20	8	12
95th Queue (ft)	16	36	86	70	41
Link Distance (ft)	429	429	268	268	451
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: SB IH 35 On Ramp/SB IH 35 Off Ramp & CSAH 2

Movement	EB	EB	WB	WB	SB	SB
Directions Served	T	TR	L	T	LT	R
Maximum Queue (ft)	243	268	159	269	149	456
Average Queue (ft)	135	173	56	153	58	238
95th Queue (ft)	238	281	133	254	186	481
Link Distance (ft)	268	268		711		1042
Upstream Blk Time (%)	0	2				
Queuing Penalty (veh)	1	7				
Storage Bay Dist (ft)			200		300	
Storage Blk Time (%)				2		5
Queuing Penalty (veh)				2		8

Intersection: 6: NB IH 35 Off Ramp/NB IH 35 On Ramp & CSAH 2

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	LT	R
Maximum Queue (ft)	99	110	98	161	176	126	36
Average Queue (ft)	58	71	44	105	112	66	14
95th Queue (ft)	99	112	96	160	174	121	37
Link Distance (ft)		711	711	3503	3503	741	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	350						150
Storage Blk Time (%)						0	
Queuing Penalty (veh)						0	

Intersection: 7: Newton Cir & Frontage Rd

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	10	38
Average Queue (ft)	1	22
95th Queue (ft)	11	47
Link Distance (ft)	566	650
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	413	27	242	928	4	20	1	77	1	0	0
Future Volume (veh/h)	2	663	27	363	1251	44	20	1	171	33	0	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	2	713	29	390	1345	47	22	1	184	35	0	0
Adj No. of Lanes	1	2	1	1	2	1	0	1	1	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	154	1027	459	491	1647	737	582	24	557	506	0	557
Arrive On Green	0.00	0.29	0.29	0.18	0.47	0.47	0.35	0.35	0.35	0.35	0.00	0.00
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1386	69	1583	1165	0	1583
Grp Volume(v), veh/h	2	713	29	390	1345	47	23	0	184	35	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1455	0	1583	1165	0	1583
Q Serve(g_s), s	0.1	13.4	1.0	10.7	24.6	1.2	0.0	0.0	6.4	1.5	0.0	0.0
Cycle Q Clear(g_c), s	0.1	13.4	1.0	10.7	24.6	1.2	0.6	0.0	6.4	2.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.96		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	154	1027	459	491	1647	737	606	0	557	506	0	557
V/C Ratio(X)	0.01	0.69	0.06	0.79	0.82	0.06	0.04	0.00	0.33	0.07	0.00	0.00
Avail Cap(c_a), veh/h	267	1085	486	637	1770	792	606	0	557	506	0	557
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.7	23.7	19.3	15.2	17.3	11.0	16.0	0.0	17.8	16.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.8	0.1	5.3	2.9	0.0	0.1	0.0	1.6	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.8	0.4	5.9	12.6	0.5	0.3	0.0	3.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	19.7	25.5	19.3	20.4	20.2	11.1	16.1	0.0	19.4	16.9	0.0	0.0
LnGrp LOS	B	C	B	C	C	B	B		B	B		
Approach Vol, veh/h		744			1782			207			35	
Approach Delay, s/veh		25.2			20.0			19.0			16.9	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		30.9	17.8	26.3		30.9	4.7	39.4
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		19.0	19.5	23.0		19.0	5.0	37.5
Max Q Clear Time (g_c+I1), s		8.4	12.7	15.4		4.1	2.1	26.6
Green Ext Time (p_c), s		0.6	0.7	6.1		0.8	0.0	8.3

Intersection Summary	
HCM 2010 Ctrl Delay	21.3
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	446	0	12	1100	0	0	0	22	0	0	0
Future Volume (veh/h)	151	446	225	162	1100	101	291	0	216	128	0	193
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	164	485	245	176	1196	110	316	0	235	139	0	210
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	224	1170	523	417	1251	559	412	0	413	387	0	401
Arrive On Green	0.07	0.33	0.33	0.09	0.35	0.35	0.09	0.00	0.26	0.08	0.00	0.25
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	0	1583	1774	0	1583
Grp Volume(v), veh/h	164	485	245	176	1196	110	316	0	235	139	0	210
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	0	1583	1774	0	1583
Q Serve(g_s), s	4.6	8.0	9.2	4.8	24.8	3.6	6.5	0.0	9.7	4.3	0.0	8.6
Cycle Q Clear(g_c), s	4.6	8.0	9.2	4.8	24.8	3.6	6.5	0.0	9.7	4.3	0.0	8.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	224	1170	523	417	1251	559	412	0	413	387	0	401
V/C Ratio(X)	0.73	0.41	0.47	0.42	0.96	0.20	0.77	0.00	0.57	0.36	0.00	0.52
Avail Cap(c_a), veh/h	224	1170	523	478	1251	559	412	0	413	396	0	401
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.1	19.5	19.9	14.6	23.7	16.9	24.0	0.0	24.0	18.8	0.0	24.1
Incr Delay (d2), s/veh	11.6	0.2	0.7	0.7	16.1	0.2	8.4	0.0	5.6	0.6	0.0	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	3.9	4.1	2.4	14.8	1.6	4.3	0.0	4.8	2.1	0.0	4.3
LnGrp Delay(d),s/veh	30.7	19.7	20.5	15.2	39.8	17.0	32.4	0.0	29.6	19.3	0.0	28.9
LnGrp LOS	C	B	C	B	D	B	C		C	B		C
Approach Vol, veh/h		894			1482			551			349	
Approach Delay, s/veh		22.0			35.2			31.2			25.1	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	24.1	11.2	29.3	11.0	23.5	9.5	31.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.3	19.2	9.3	22.2	6.5	19.0	5.0	26.5
Max Q Clear Time (g_c+I1), s	6.3	11.7	6.8	11.2	8.5	10.6	6.6	26.8
Green Ext Time (p_c), s	0.0	1.6	0.1	7.8	0.0	1.8	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	29.8
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	375	51	88	328	0	0	0	0	146	0	747
Future Volume (veh/h)	0	576	172	88	485	0	0	0	0	146	0	841
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	613	183	94	516	0				155	0	0
Adj No. of Lanes	0	2	0	1	1	0				0	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	653	195	210	670	0				904	0	806
Arrive On Green	0.00	0.24	0.24	0.02	0.12	0.00				0.51	0.00	0.00
Sat Flow, veh/h	0	2783	802	1774	1863	0				1774	0	1583
Grp Volume(v), veh/h	0	403	393	94	516	0				155	0	0
Grp Sat Flow(s),veh/h/ln	0	1770	1721	1774	1863	0				1774	0	1583
Q Serve(g_s), s	0.0	16.8	16.8	2.8	20.2	0.0				3.5	0.0	0.0
Cycle Q Clear(g_c), s	0.0	16.8	16.8	2.8	20.2	0.0				3.5	0.0	0.0
Prop In Lane	0.00		0.47	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	429	418	210	670	0				904	0	806
V/C Ratio(X)	0.00	0.94	0.94	0.45	0.77	0.00				0.17	0.00	0.00
Avail Cap(c_a), veh/h	0	429	418	229	690	0				904	0	806
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.68	0.68	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	27.9	27.9	21.4	30.0	0.0				9.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	28.5	29.5	1.0	3.6	0.0				0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	11.6	11.4	1.4	11.1	0.0				1.8	0.0	0.0
LnGrp Delay(d),s/veh	0.0	56.3	57.4	22.4	33.6	0.0				10.3	0.0	0.0
LnGrp LOS		E	E	C	C					B		
Approach Vol, veh/h		796			610						155	
Approach Delay, s/veh		56.8			31.9						10.3	
Approach LOS		E			C						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			8.8	22.7		42.7		31.5
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s			5.1	18.2		38.2		27.8
Max Q Clear Time (g_c+I1), s			4.8	18.8		5.5		22.2
Green Ext Time (p_c), s			0.0	0.0		0.9		3.3

Intersection Summary	
HCM 2010 Ctrl Delay	42.5
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	294	234	0	0	345	72	64	2	49	0	0	0
Future Volume (veh/h)	415	314	0	0	408	72	158	2	49	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900	1900	1863	1863			
Adj Flow Rate, veh/h	451	341	0	0	443	78	172	2	53			
Adj No. of Lanes	2	1	0	0	2	0	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	767	745	0	0	625	109	842	10	760			
Arrive On Green	0.04	0.13	0.00	0.00	0.21	0.21	0.48	0.48	0.48			
Sat Flow, veh/h	3442	1863	0	0	3105	527	1755	20	1583			
Grp Volume(v), veh/h	451	341	0	0	259	262	174	0	53			
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1770	1770	1775	0	1583			
Q Serve(g_s), s	7.2	12.7	0.0	0.0	10.2	10.3	4.2	0.0	1.4			
Cycle Q Clear(g_c), s	7.2	12.7	0.0	0.0	10.2	10.3	4.2	0.0	1.4			
Prop In Lane	1.00		0.00	0.00		0.30	0.99		1.00			
Lane Grp Cap(c), veh/h	767	745	0	0	367	367	852	0	760			
V/C Ratio(X)	0.59	0.46	0.00	0.00	0.71	0.71	0.20	0.00	0.07			
Avail Cap(c_a), veh/h	976	1031	0	0	531	531	852	0	760			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.27	0.27	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	20.7	25.0	0.0	0.0	27.6	27.6	11.2	0.0	10.5			
Incr Delay (d2), s/veh	0.2	0.1	0.0	0.0	2.5	2.6	0.5	0.0	0.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	3.4	6.6	0.0	0.0	5.2	5.3	2.2	0.0	0.6			
LnGrp Delay(d),s/veh	20.8	25.1	0.0	0.0	30.1	30.2	11.8	0.0	10.7			
LnGrp LOS	C	C			C	C	B		B			
Approach Vol, veh/h		792			521			227				
Approach Delay, s/veh		22.7			30.2			11.5				
Approach LOS		C			C			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		40.5		34.5			14.4	20.1
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5
Max Green Setting (Gmax), s		24.5		41.5			14.5	22.5
Max Q Clear Time (g_c+I1), s		6.2		14.7			9.2	12.3
Green Ext Time (p_c), s		1.0		4.7			0.8	3.2

Intersection Summary	
HCM 2010 Ctrl Delay	23.6
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	443	18	1	1088	0	14	0	3	0	0	0
Future Vol, veh/h	0	819	18	1	1572	0	14	0	3	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	871	19	1	1672	0	15	0	3	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1672	0	0	871	0	0	1709	2545	436	2110	2545	836
Stage 1	-	-	-	-	-	-	871	871	-	1674	1674	-
Stage 2	-	-	-	-	-	-	838	1674	-	436	871	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	380	-	-	770	-	-	59	27	568	29	27	310
Stage 1	-	-	-	-	-	-	312	367	-	99	151	-
Stage 2	-	-	-	-	-	-	327	151	-	569	367	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	380	-	-	770	-	-	59	27	568	29	27	310
Mov Cap-2 Maneuver	-	-	-	-	-	-	173	108	-	83	108	-
Stage 1	-	-	-	-	-	-	312	367	-	99	151	-
Stage 2	-	-	-	-	-	-	327	151	-	566	367	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	25.1	0
HCM LOS			D	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	197	380	-	-	770	-	-	-
HCM Lane V/C Ratio	0.092	-	-	-	0.001	-	-	-
HCM Control Delay (s)	25.1	0	-	-	9.7	-	-	0
HCM Lane LOS	D	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	472	4	14	1152	6	6
Future Vol, veh/h	794	4	14	1403	6	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	854	4	15	1509	6	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	858	0	1640	429
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	784	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	779	-	91	574
Stage 1	-	-	-	-	377	-
Stage 2	-	-	-	-	410	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	779	-	80	574
Mov Cap-2 Maneuver	-	-	-	-	80	-
Stage 1	-	-	-	-	377	-
Stage 2	-	-	-	-	361	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	33.3
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	140	-	-	779	-
HCM Lane V/C Ratio	0.092	-	-	0.019	-
HCM Control Delay (s)	33.3	-	-	9.7	0.6
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Appendix P: Synchro Reports – Baseline (2038)

Intersection: 1: Xerxes Ave & CSAH 2

Movement	EB	EB	WB	NB	NB	SB
Directions Served	L	T	L	LT	R	LTR
Maximum Queue (ft)	19	3	39	46	126	25
Average Queue (ft)	3	0	15	20	67	8
95th Queue (ft)	17	5	41	46	117	25
Link Distance (ft)		2640		1864		700
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	300		300		200	
Storage Blk Time (%)					0	
Queuing Penalty (veh)					0	

Intersection: 2: Frontage Rd/Future Entrance 1 & CSAH 2

Movement	NB
Directions Served	LTR
Maximum Queue (ft)	16
Average Queue (ft)	3
95th Queue (ft)	15
Link Distance (ft)	650
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	EB	EB	WB	NB
Directions Served	T	T	L	LTR
Maximum Queue (ft)	452	431	33	24
Average Queue (ft)	159	145	10	9
95th Queue (ft)	566	535	33	28
Link Distance (ft)	1519	1519		12
Upstream Blk Time (%)				2
Queuing Penalty (veh)				0
Storage Bay Dist (ft)			300	
Storage Blk Time (%)	17	6		
Queuing Penalty (veh)	0	0		

Intersection: 4: CSAH 2

Movement	EB	B26	B26	WB	NB
Directions Served	TR	T		LT	LR
Maximum Queue (ft)	516	491	438	28	53
Average Queue (ft)	296	221	171	5	20
95th Queue (ft)	683	611	572	26	68
Link Distance (ft)	428	480	480	267	450
Upstream Blk Time (%)	26	15	6		
Queuing Penalty (veh)	344	98	36		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: SB IH 35 On Ramp/SB IH 35 Off Ramp & CSAH 2

Movement	EB	EB	WB	SB	SB
Directions Served	T	R	LT	LT	R
Maximum Queue (ft)	281	7	156	214	82
Average Queue (ft)	191	1	66	128	18
95th Queue (ft)	373	7	142	254	113
Link Distance (ft)	267	267	710		1051
Upstream Blk Time (%)	5				
Queuing Penalty (veh)	35				
Storage Bay Dist (ft)				300	
Storage Blk Time (%)				4	0
Queuing Penalty (veh)				6	0

Intersection: 6: NB IH 35 Off Ramp/NB IH 35 On Ramp & CSAH 2

Movement	EB	WB	NB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	719	21	552
Average Queue (ft)	648	6	309
95th Queue (ft)	862	21	643
Link Distance (ft)	710	3512	744
Upstream Blk Time (%)	4		1
Queuing Penalty (veh)	47		0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	860	8	30	213	0	38	3	319	6	4	6
Future Vol, veh/h	9	860	8	30	213	0	38	3	319	6	4	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	200	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	966	9	34	239	0	43	3	358	7	4	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	239	0	0	966	0	0	1176	1294	483	812	1294	120
Stage 1	-	-	-	-	-	-	987	987	-	307	307	-
Stage 2	-	-	-	-	-	-	189	307	-	505	987	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1325	-	-	709	-	-	147	161	530	271	161	909
Stage 1	-	-	-	-	-	-	265	324	-	678	660	-
Stage 2	-	-	-	-	-	-	795	660	-	518	324	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1325	-	-	709	-	-	138	152	530	83	152	909
Mov Cap-2 Maneuver	-	-	-	-	-	-	220	252	-	116	235	-
Stage 1	-	-	-	-	-	-	263	322	-	673	628	-
Stage 2	-	-	-	-	-	-	746	628	-	165	322	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.3	24.9	23.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	222	530	1325	-	-	709	-	-	212
HCM Lane V/C Ratio	0.208	0.676	0.008	-	-	0.048	-	-	0.085
HCM Control Delay (s)	25.4	24.8	7.7	-	-	10.3	-	-	23.5
HCM Lane LOS	D	C	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.8	5.1	0	-	-	0.1	-	-	0.3

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1319	13	0	264	0	4	0	0	0	0	0
Future Vol, veh/h	0	1319	13	0	264	0	4	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1482	15	0	297	0	4	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	297	0	0	1482	0	0	1630	1779	741	1038	1779	148
Stage 1	-	-	-	-	-	-	1482	1482	-	297	297	-
Stage 2	-	-	-	-	-	-	148	297	-	741	1482	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1261	-	-	450	-	-	67	81	359	185	81	872
Stage 1	-	-	-	-	-	-	131	187	-	687	666	-
Stage 2	-	-	-	-	-	-	840	666	-	374	187	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1261	-	-	450	-	-	67	81	359	185	81	872
Mov Cap-2 Maneuver	-	-	-	-	-	-	115	156	-	294	156	-
Stage 1	-	-	-	-	-	-	131	187	-	687	666	-
Stage 2	-	-	-	-	-	-	840	666	-	374	187	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	37.6	0
HCM LOS			E	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	115	1261	-	-	450	-	-	-
HCM Lane V/C Ratio	0.039	-	-	-	-	-	-	-
HCM Control Delay (s)	37.6	0	-	-	0	-	-	0
HCM Lane LOS	E	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1297	0	15	258	0	0	0	10	0	0	0
Future Vol, veh/h	0	1297	0	15	258	0	0	0	10	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1457	0	17	290	0	0	0	11	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	290	0	0	1457	0	0	1636	1781	729	1053	1781	145
Stage 1	-	-	-	-	-	-	1457	1457	-	324	324	-
Stage 2	-	-	-	-	-	-	179	324	-	729	1457	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1269	-	-	460	-	-	67	81	365	181	81	876
Stage 1	-	-	-	-	-	-	136	193	-	662	648	-
Stage 2	-	-	-	-	-	-	805	648	-	380	193	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1269	-	-	460	-	-	65	78	365	170	78	876
Mov Cap-2 Maneuver	-	-	-	-	-	-	118	158	-	276	147	-
Stage 1	-	-	-	-	-	-	136	193	-	662	624	-
Stage 2	-	-	-	-	-	-	775	624	-	368	193	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.7	15.2	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	365	1269	-	-	460	-	-	-
HCM Lane V/C Ratio	0.031	-	-	-	0.037	-	-	-
HCM Control Delay (s)	15.2	0	-	-	13.1	-	-	0
HCM Lane LOS	C	A	-	-	B	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1439	4	4	298	2	14
Future Vol, veh/h	1439	4	4	298	2	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1617	4	4	335	2	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1621	0	1795	1619
Stage 1	-	-	-	-	1619	-
Stage 2	-	-	-	-	176	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	400	-	80	127
Stage 1	-	-	-	-	177	-
Stage 2	-	-	-	-	837	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	400	-	79	127
Mov Cap-2 Maneuver	-	-	-	-	79	-
Stage 1	-	-	-	-	177	-
Stage 2	-	-	-	-	827	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	40.9
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	118	-	-	400	-
HCM Lane V/C Ratio	0.152	-	-	0.011	-
HCM Control Delay (s)	40.9	-	-	14.1	0.1
HCM Lane LOS	E	-	-	B	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	1263	81	81	132	0	0	0	0	55	2	152
Future Vol, veh/h	0	1263	81	81	132	0	0	0	0	55	2	152
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	0	-	-	-	-	-	-	300	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1419	91	91	148	0	0	0	0	62	2	171

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	1419	0	0	1749	1749	-
Stage 1	-	-	-	-	-	-	330	330	-
Stage 2	-	-	-	-	-	-	1419	1419	-
Critical Hdwy	-	-	-	4.12	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	0	-	-	480	-	0	94	86	0
Stage 1	0	-	-	-	-	0	728	646	0
Stage 2	0	-	-	-	-	0	223	203	0
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	480	-	-	75	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	75	0	-
Stage 1	-	-	-	-	-	-	577	0	-
Stage 2	-	-	-	-	-	-	223	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.4	159.9
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	480	-	75	-
HCM Lane V/C Ratio	-	-	0.19	-	0.854	-
HCM Control Delay (s)	-	-	14.2	0	159.9	0
HCM Lane LOS	-	-	B	A	F	A
HCM 95th %tile Q(veh)	-	-	0.7	-	4.3	-

Intersection	
Int Delay, s/veh	19.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1006	345	0	0	149	173	24	0	72	0	0	0
Future Vol, veh/h	1006	345	0	0	149	173	24	0	72	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1130	388	0	0	167	194	27	0	81	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	362	0	-	-	-	0	2913	3010	388
Stage 1	-	-	-	-	-	-	2648	2648	-
Stage 2	-	-	-	-	-	-	265	362	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1197	-	0	0	-	-	~ 17	13	660
Stage 1	-	-	0	0	-	-	53	48	-
Stage 2	-	-	0	0	-	-	779	625	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1197	-	-	-	-	-	0	0	660
Mov Cap-2 Maneuver	-	-	-	-	-	-	0	0	-
Stage 1	-	-	-	-	-	-	0	0	-
Stage 2	-	-	-	-	-	-	779	0	-

Approach	EB	WB	NB
HCM Control Delay, s	24.8	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	660	1197	-	-	-
HCM Lane V/C Ratio	0.163	0.944	-	-	-
HCM Control Delay (s)	11.5	33.4	0	-	-
HCM Lane LOS	B	D	A	-	-
HCM 95th %tile Q(veh)	0.6	16.8	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection: 1: Xerxes Ave & CSAH 2

Movement	EB	EB	WB	NB	NB	SB
Directions Served	L	R	L	LT	R	LTR
Maximum Queue (ft)	19	17	93	35	52	14
Average Queue (ft)	2	2	54	13	27	3
95th Queue (ft)	15	14	94	36	49	14
Link Distance (ft)				1864		700
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	300	300	300		200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 2: Frontage Rd/Future Entrance 1 & CSAH 2

Movement	EB	WB	NB
Directions Served	R	L	LTR
Maximum Queue (ft)	9	14	28
Average Queue (ft)	1	1	14
95th Queue (ft)	13	12	36
Link Distance (ft)			650
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	300	300	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	WB	NB
Directions Served	L	LTR
Maximum Queue (ft)	29	28
Average Queue (ft)	5	13
95th Queue (ft)	23	33
Link Distance (ft)		12
Upstream Blk Time (%)		2
Queuing Penalty (veh)		0
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: CSAH 2

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	46	27
Average Queue (ft)	9	9
95th Queue (ft)	38	31
Link Distance (ft)	267	450
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: SB IH 35 On Ramp/SB IH 35 Off Ramp & CSAH 2

Movement	WB	SB	SB
Directions Served	LT	LT	R
Maximum Queue (ft)	97	450	1054
Average Queue (ft)	47	308	747
95th Queue (ft)	100	614	1290
Link Distance (ft)	710		1051
Upstream Blk Time (%)			21
Queuing Penalty (veh)			0
Storage Bay Dist (ft)		300	
Storage Blk Time (%)			65
Queuing Penalty (veh)			111

Intersection: 6: NB IH 35 Off Ramp/NB IH 35 On Ramp & CSAH 2

Movement	EB	WB	NB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	192	14	130
Average Queue (ft)	97	1	58
95th Queue (ft)	177	10	117
Link Distance (ft)	710	3512	744
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	478	31	281	1078	5	24	2	90	2	0	0
Future Vol, veh/h	4	478	31	281	1078	5	24	2	90	2	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	200	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	514	33	302	1159	5	26	2	97	2	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1159	0	0	514	0	0	1707	2286	257	2030	2286	580
Stage 1	-	-	-	-	-	-	523	523	-	1763	1763	-
Stage 2	-	-	-	-	-	-	1184	1763	-	267	523	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	599	-	-	1048	-	-	59	39	742	34	39	458
Stage 1	-	-	-	-	-	-	505	529	-	87	136	-
Stage 2	-	-	-	-	-	-	201	136	-	715	529	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	599	-	-	1048	-	-	46	28	742	22	28	458
Mov Cap-2 Maneuver	-	-	-	-	-	-	112	78	-	68	72	-
Stage 1	-	-	-	-	-	-	502	525	-	86	97	-
Stage 2	-	-	-	-	-	-	143	97	-	615	525	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2	19.3	59.7
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	108	742	599	-	-	1048	-	-	68
HCM Lane V/C Ratio	0.259	0.13	0.007	-	-	0.288	-	-	0.032
HCM Control Delay (s)	49.6	10.6	11.1	-	-	9.8	-	-	59.7
HCM Lane LOS	E	B	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1	0.4	0	-	-	1.2	-	-	0.1

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	513	22	2	1261	0	18	0	3	0	0	0
Future Vol, veh/h	0	513	22	2	1261	0	18	0	3	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	546	23	2	1341	0	19	0	3	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1341	0	0	546	0	0	1221	1892	273	1619	1892	671
Stage 1	-	-	-	-	-	-	546	546	-	1346	1346	-
Stage 2	-	-	-	-	-	-	675	1346	-	273	546	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	510	-	-	1019	-	-	136	69	725	69	69	399
Stage 1	-	-	-	-	-	-	490	516	-	159	218	-
Stage 2	-	-	-	-	-	-	410	218	-	710	516	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	510	-	-	1019	-	-	136	69	725	69	69	399
Mov Cap-2 Maneuver	-	-	-	-	-	-	265	165	-	135	165	-
Stage 1	-	-	-	-	-	-	490	516	-	159	218	-
Stage 2	-	-	-	-	-	-	409	218	-	707	516	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	18.4	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	291	510	-	-	1019	-	-	-
HCM Lane V/C Ratio	0.077	-	-	-	0.002	-	-	-
HCM Control Delay (s)	18.4	0	-	-	8.5	-	-	0
HCM Lane LOS	C	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	517	0	15	1277	0	0	0	27	0	0	0
Future Vol, veh/h	0	517	0	15	1277	0	0	0	27	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	556	0	16	1373	0	0	0	29	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1373	0	0	556	0	0	1275	1961	278	1683	1961	687
Stage 1	-	-	-	-	-	-	556	556	-	1405	1405	-
Stage 2	-	-	-	-	-	-	719	1405	-	278	556	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	496	-	-	1011	-	-	124	63	719	61	63	389
Stage 1	-	-	-	-	-	-	483	511	-	147	204	-
Stage 2	-	-	-	-	-	-	386	204	-	705	511	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	496	-	-	1011	-	-	123	62	719	58	62	389
Mov Cap-2 Maneuver	-	-	-	-	-	-	249	153	-	124	153	-
Stage 1	-	-	-	-	-	-	483	511	-	147	201	-
Stage 2	-	-	-	-	-	-	380	201	-	677	511	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	10.2	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	719	496	-	-	1011	-	-	-
HCM Lane V/C Ratio	0.04	-	-	-	0.016	-	-	-
HCM Control Delay (s)	10.2	0	-	-	8.6	-	-	0
HCM Lane LOS	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	547	5	18	1336	6	9
Future Vol, veh/h	547	5	18	1336	6	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	588	5	19	1437	6	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	594	0	1348	591
Stage 1	-	-	-	-	591	-
Stage 2	-	-	-	-	757	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	980	-	154	506
Stage 1	-	-	-	-	552	-
Stage 2	-	-	-	-	425	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	980	-	139	506
Mov Cap-2 Maneuver	-	-	-	-	139	-
Stage 1	-	-	-	-	552	-
Stage 2	-	-	-	-	384	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	20.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	246	-	-	980	-
HCM Lane V/C Ratio	0.066	-	-	0.02	-
HCM Control Delay (s)	20.7	-	-	8.7	0.4
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	12.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	435	60	102	381	0	0	0	0	170	0	868
Future Vol, veh/h	0	435	60	102	381	0	0	0	0	170	0	868
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	0	-	-	-	-	-	-	300	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	463	64	109	405	0	0	0	0	181	0	923

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	463	0	0	1085	1085	-
Stage 1	-	-	-	-	-	-	622	622	-
Stage 2	-	-	-	-	-	-	463	463	-
Critical Hdwy	-	-	-	4.12	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	0	-	-	1098	-	0	240	217	0
Stage 1	0	-	-	-	-	0	535	479	0
Stage 2	0	-	-	-	-	0	634	564	0
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1098	-	-	209	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	209	0	-
Stage 1	-	-	-	-	-	-	467	0	-
Stage 2	-	-	-	-	-	-	634	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.8	79.2
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1098	-	209	-
HCM Lane V/C Ratio	-	-	0.099	-	0.865	-
HCM Control Delay (s)	-	-	8.6	0	79.2	0
HCM Lane LOS	-	-	A	A	F	A
HCM 95th %tile Q(veh)	-	-	0.3	-	6.7	-

Intersection	
Int Delay, s/veh	26

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	341	271	0	0	400	85	74	4	58	0	0	0
Future Vol, veh/h	341	271	0	0	400	85	74	4	58	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	371	295	0	0	435	92	80	4	63	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	527	0	-	-	-	0	1517	1563	295
Stage 1	-	-	-	-	-	-	1036	1036	-
Stage 2	-	-	-	-	-	-	481	527	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1040	-	0	0	-	-	131	112	744
Stage 1	-	-	0	0	-	-	342	309	-
Stage 2	-	-	0	0	-	-	622	528	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1040	-	-	-	-	-	~ 75	0	744
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 75	0	-
Stage 1	-	-	-	-	-	-	196	0	-
Stage 2	-	-	-	-	-	-	622	0	-

Approach	EB	WB	NB
HCM Control Delay, s	5.8	0	209.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	124	1040	-	-	-
HCM Lane V/C Ratio	1.192	0.356	-	-	-
HCM Control Delay (s)	209.3	10.4	0	-	-
HCM Lane LOS	F	B	A	-	-
HCM 95th %tile Q(veh)	9.1	1.6	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Appendix Q: Synchro Reports – Baseline (2038) with Improvements from Phase 1

Intersection: 1: Xerxes Ave & CSAH 2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	LT	R
Maximum Queue (ft)	37	328	294	14	109	79	96	23	45	221	64	11
Average Queue (ft)	7	219	208	3	60	38	57	6	15	147	27	1
95th Queue (ft)	30	322	299	14	112	79	98	20	41	228	61	9
Link Distance (ft)		2632	2632			1905	1905		1864		701	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300			300	300			300		200		150
Storage Blk Time (%)		2	1							2		
Queuing Penalty (veh)		0	0							1		

Intersection: 2: Frontage Rd/Future Entrance 1 & CSAH 2

Movement	WB	NB
Directions Served	T	LTR
Maximum Queue (ft)	268	12
Average Queue (ft)	27	1
95th Queue (ft)	366	10
Link Distance (ft)	1513	650
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	245	469	469	157	350	296	178	50	18	51	51	103
Average Queue (ft)	97	341	324	73	222	99	74	31	12	29	35	50
95th Queue (ft)	222	494	494	195	422	316	174	53	18	45	56	99
Link Distance (ft)		1513	1513			474	474			13		53
Upstream Blk Time (%)						1	0		18	42	7	5
Queuing Penalty (veh)						4	0		0	155	0	0
Storage Bay Dist (ft)	300			300	300			300	150		150	
Storage Blk Time (%)	0	21	14		24				18	42	7	5
Queuing Penalty (veh)	0	36	38		31				27	91	10	5

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	B27
Directions Served	T
Maximum Queue (ft)	14
Average Queue (ft)	1
95th Queue (ft)	11
Link Distance (ft)	604
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: CSAH 2

Movement	EB	EB	B26	B26	WB	NB
Directions Served	T	TR	T	T	LT	LR
Maximum Queue (ft)	481	448	35	28	14	37
Average Queue (ft)	209	182	5	3	2	15
95th Queue (ft)	468	452	35	32	19	41
Link Distance (ft)	429	429	474	474	268	451
Upstream Blk Time (%)	2	1				
Queuing Penalty (veh)	15	6				
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: SB IH 35 On Ramp/SB IH 35 Off Ramp & CSAH 2

Movement	EB	EB	WB	WB	SB	SB
Directions Served	T	TR	L	T	LT	R
Maximum Queue (ft)	300	296	111	153	66	70
Average Queue (ft)	276	251	57	40	31	17
95th Queue (ft)	314	341	111	145	69	57
Link Distance (ft)	268	268		711		1042
Upstream Blk Time (%)	25	16				
Queuing Penalty (veh)	213	133				
Storage Bay Dist (ft)			200		300	
Storage Blk Time (%)				0		
Queuing Penalty (veh)				0		

Intersection: 6: NB IH 35 Off Ramp/NB IH 35 On Ramp & CSAH 2

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	LT	R
Maximum Queue (ft)	272	303	172	164	203	124	46
Average Queue (ft)	151	158	61	93	120	71	20
95th Queue (ft)	281	312	160	167	200	132	44
Link Distance (ft)		711	711	3503	3503	741	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	350						150
Storage Blk Time (%)	0	1				0	
Queuing Penalty (veh)	0	7				0	

Intersection: 7: Newton Cir & Frontage Rd

Movement	NB
Directions Served	LR
Maximum Queue (ft)	30
Average Queue (ft)	13
95th Queue (ft)	37
Link Distance (ft)	650
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	860	8	30	213	0	38	3	319	6	4	6
Future Volume (veh/h)	9	1150	8	120	451	30	38	3	428	43	4	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	10	1292	9	135	507	34	43	3	481	48	4	7
Adj No. of Lanes	1	2	1	1	2	1	0	1	1	0	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	421	1453	650	220	1629	729	77	3	598	77	3	598
Arrive On Green	0.01	0.41	0.41	0.06	0.46	0.46	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	0	8	1583	0	9	1583
Grp Volume(v), veh/h	10	1292	9	135	507	34	46	0	481	52	0	7
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	8	0	1583	9	0	1583
Q Serve(g_s), s	0.3	30.5	0.3	3.7	8.1	1.1	0.0	0.0	24.5	0.0	0.0	0.2
Cycle Q Clear(g_c), s	0.3	30.5	0.3	3.7	8.1	1.1	34.0	0.0	24.5	34.0	0.0	0.2
Prop In Lane	1.00		1.00	1.00		1.00	0.93		1.00	0.92		1.00
Lane Grp Cap(c), veh/h	421	1453	650	220	1629	729	80	0	598	80	0	598
V/C Ratio(X)	0.02	0.89	0.01	0.61	0.31	0.05	0.57	0.00	0.81	0.65	0.00	0.01
Avail Cap(c_a), veh/h	497	1514	677	258	1629	729	80	0	598	80	0	598
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.2	24.6	15.7	20.1	15.3	13.4	42.9	0.0	25.1	42.8	0.0	17.5
Incr Delay (d2), s/veh	0.0	6.8	0.0	3.2	0.1	0.0	26.4	0.0	11.0	33.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	16.3	0.1	2.0	4.0	0.5	1.7	0.0	12.5	2.0	0.0	0.1
LnGrp Delay(d),s/veh	15.2	31.4	15.7	23.3	15.4	13.4	69.3	0.0	36.1	76.6	0.0	17.6
LnGrp LOS	B	C	B	C	B	B	E		D	E		B
Approach Vol, veh/h		1311			676			527			59	
Approach Delay, s/veh		31.2			16.9			39.0			69.6	
Approach LOS		C			B			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		38.5	10.1	41.4		38.5	5.6	45.9
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		30.5	7.5	38.5		30.5	5.0	41.0
Max Q Clear Time (g_c+I1), s		36.0	5.7	32.5		36.0	2.3	10.1
Green Ext Time (p_c), s		0.0	0.0	4.4		0.0	0.0	14.6

Intersection Summary	
HCM 2010 Ctrl Delay	29.9
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1297	0	15	258	0	0	0	10	0	0	0
Future Volume (veh/h)	175	1297	261	189	258	117	215	0	154	96	0	143
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	197	1457	293	212	290	131	242	0	173	108	0	161
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	593	1512	676	241	1525	682	356	0	363	344	0	356
Arrive On Green	0.08	0.43	0.43	0.09	0.43	0.43	0.06	0.00	0.23	0.06	0.00	0.23
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	0	1583	1774	0	1583
Grp Volume(v), veh/h	197	1457	293	212	290	131	242	0	173	108	0	161
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	0	1583	1774	0	1583
Q Serve(g_s), s	5.5	36.1	11.7	6.1	4.6	4.6	5.5	0.0	8.5	4.2	0.0	7.9
Cycle Q Clear(g_c), s	5.5	36.1	11.7	6.1	4.6	4.6	5.5	0.0	8.5	4.2	0.0	7.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	593	1512	676	241	1525	682	356	0	363	344	0	356
V/C Ratio(X)	0.33	0.96	0.43	0.88	0.19	0.19	0.68	0.00	0.48	0.31	0.00	0.45
Avail Cap(c_a), veh/h	595	1514	677	241	1525	682	356	0	363	344	0	356
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.3	25.1	18.1	21.0	15.9	15.9	30.6	0.0	30.0	25.1	0.0	30.1
Incr Delay (d2), s/veh	0.3	15.4	0.4	28.9	0.1	0.1	5.2	0.0	4.4	0.5	0.0	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	20.8	5.2	7.1	2.2	2.0	3.6	0.0	4.1	2.1	0.0	3.8
LnGrp Delay(d),s/veh	12.6	40.5	18.6	50.0	15.9	16.0	35.8	0.0	34.4	25.6	0.0	34.2
LnGrp LOS	B	D	B	D	B	B	D		C	C		C
Approach Vol, veh/h		1947			633			415			269	
Approach Delay, s/veh		34.3			27.4			35.2			30.7	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	25.2	12.3	42.9	10.0	24.8	12.0	43.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.1	20.6	7.8	38.5	5.5	20.2	7.6	38.7
Max Q Clear Time (g_c+I1), s	6.2	10.5	8.1	38.1	7.5	9.9	7.5	6.6
Green Ext Time (p_c), s	0.0	1.4	0.0	0.4	0.0	1.4	0.0	17.0

Intersection Summary	
HCM 2010 Ctrl Delay	32.8
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1263	81	81	132	0	0	0	0	55	2	152
Future Volume (veh/h)	0	1413	171	81	314	0	0	0	0	55	2	261
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	1588	192	91	353	0				62	2	0
Adj No. of Lanes	0	2	0	1	1	0				0	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1764	210	194	1218	0				373	12	343
Arrive On Green	0.00	0.55	0.55	0.10	1.00	0.00				0.22	0.22	0.00
Sat Flow, veh/h	0	3279	380	1774	1863	0				1721	56	1583
Grp Volume(v), veh/h	0	872	908	91	353	0				64	0	0
Grp Sat Flow(s),veh/h/ln	0	1770	1796	1774	1863	0				1777	0	1583
Q Serve(g_s), s	0.0	39.0	41.0	1.8	0.0	0.0				2.6	0.0	0.0
Cycle Q Clear(g_c), s	0.0	39.0	41.0	1.8	0.0	0.0				2.6	0.0	0.0
Prop In Lane	0.00		0.21	1.00		0.00				0.97		1.00
Lane Grp Cap(c), veh/h	0	980	995	194	1218	0				385	0	343
V/C Ratio(X)	0.00	0.89	0.91	0.47	0.29	0.00				0.17	0.00	0.00
Avail Cap(c_a), veh/h	0	1013	1028	214	1273	0				385	0	343
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.65	0.65	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	17.7	18.1	19.2	0.0	0.0				28.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	9.7	11.9	1.1	0.1	0.0				0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	21.5	23.4	1.3	0.0	0.0				1.4	0.0	0.0
LnGrp Delay(d),s/veh	0.0	27.4	30.0	20.3	0.1	0.0				29.6	0.0	0.0
LnGrp LOS		C	C	C	A					C		
Approach Vol, veh/h		1780			444						64	
Approach Delay, s/veh		28.7			4.2						29.6	
Approach LOS		C			A						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			9.0	54.3		24.0		63.3
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s			5.5	51.5		19.5		61.5
Max Q Clear Time (g_c+I1), s			3.8	43.0		4.6		2.0
Green Ext Time (p_c), s			0.0	6.8		0.2		24.2

Intersection Summary	
HCM 2010 Ctrl Delay	24.0
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1006	345	0	0	149	173	24	0	72	0	0	0
Future Volume (veh/h)	1096	405	0	0	222	173	133	0	72	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900	1900	1863	1863			
Adj Flow Rate, veh/h	1231	455	0	0	249	194	149	0	81			
Adj No. of Lanes	2	1	0	0	2	0	0	1	1			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	1425	1056	0	0	335	252	591	0	527			
Arrive On Green	0.11	0.19	0.00	0.00	0.17	0.17	0.33	0.00	0.33			
Sat Flow, veh/h	3442	1863	0	0	2023	1447	1774	0	1583			
Grp Volume(v), veh/h	1231	455	0	0	228	215	149	0	81			
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1770	1607	1774	0	1583			
Q Serve(g_s), s	25.1	19.4	0.0	0.0	11.0	11.5	5.5	0.0	3.2			
Cycle Q Clear(g_c), s	25.1	19.4	0.0	0.0	11.0	11.5	5.5	0.0	3.2			
Prop In Lane	1.00		0.00	0.00		0.90	1.00		1.00			
Lane Grp Cap(c), veh/h	1425	1056	0	0	308	279	591	0	527			
V/C Ratio(X)	0.86	0.43	0.00	0.00	0.74	0.77	0.25	0.00	0.15			
Avail Cap(c_a), veh/h	1678	1252	0	0	364	330	591	0	527			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.31	0.31	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	26.5	23.7	0.0	0.0	35.2	35.5	21.8	0.0	21.1			
Incr Delay (d2), s/veh	1.4	0.1	0.0	0.0	6.5	9.1	1.0	0.0	0.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	15.3	10.1	0.0	0.0	5.9	5.8	2.9	0.0	1.5			
LnGrp Delay(d),s/veh	27.9	23.8	0.0	0.0	41.8	44.5	22.9	0.0	21.7			
LnGrp LOS	C	C			D	D	C		C			
Approach Vol, veh/h		1686			443			230				
Approach Delay, s/veh		26.8			43.1			22.5				
Approach LOS		C			D			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		34.5		55.5			35.4	20.1
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5
Max Green Setting (Gmax), s		20.5		60.5			37.5	18.5
Max Q Clear Time (g_c+I1), s		7.5		21.4			27.1	13.5
Green Ext Time (p_c), s		0.8		5.3			3.7	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	29.5
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1319	13	0	264	0	4	0	0	0	0	0
Future Vol, veh/h	0	1755	13	0	622	0	4	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1972	15	0	699	0	4	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	699	0	0	1972	0	0	2321	2671	986	1685	2671	349
Stage 1	-	-	-	-	-	-	1972	1972	-	699	699	-
Stage 2	-	-	-	-	-	-	349	699	-	986	1972	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	893	-	-	290	-	-	20	22	247	61	22	647
Stage 1	-	-	-	-	-	-	64	107	-	397	440	-
Stage 2	-	-	-	-	-	-	640	440	-	266	107	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	893	-	-	290	-	-	20	22	247	61	22	647
Mov Cap-2 Maneuver	-	-	-	-	-	-	56	85	-	172	85	-
Stage 1	-	-	-	-	-	-	64	107	-	397	440	-
Stage 2	-	-	-	-	-	-	640	440	-	266	107	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	74.8	0
HCM LOS			F	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	56	893	-	-	290	-	-	-
HCM Lane V/C Ratio	0.08	-	-	-	-	-	-	-
HCM Control Delay (s)	74.8	0	-	-	0	-	-	0
HCM Lane LOS	F	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1439	4	4	298	2	14
Future Vol, veh/h	1679	4	4	589	2	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1887	4	4	662	2	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1891	0	2229	946
Stage 1	-	-	-	-	1889	-
Stage 2	-	-	-	-	340	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	312	-	36	262
Stage 1	-	-	-	-	105	-
Stage 2	-	-	-	-	692	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	312	-	35	262
Mov Cap-2 Maneuver	-	-	-	-	35	-
Stage 1	-	-	-	-	105	-
Stage 2	-	-	-	-	678	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	33.3
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	145	-	-	312	-
HCM Lane V/C Ratio	0.124	-	-	0.014	-
HCM Control Delay (s)	33.3	-	-	16.7	0.2
HCM Lane LOS	D	-	-	C	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection: 1: Xerxes Ave & CSAH 2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	LT
Maximum Queue (ft)	24	228	238	31	243	263	288	20	48	82	41
Average Queue (ft)	4	147	142	10	165	151	175	7	13	44	15
95th Queue (ft)	19	236	242	29	260	249	281	22	41	81	41
Link Distance (ft)		2632	2632			1905	1905		1864		701
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	300			300	300			300		200	
Storage Blk Time (%)			0		0	0	1				
Queuing Penalty (veh)			0		0	1	0				

Intersection: 2: Frontage Rd/Future Entrance 1 & CSAH 2

Movement	WB	NB
Directions Served	T	LTR
Maximum Queue (ft)	268	37
Average Queue (ft)	27	12
95th Queue (ft)	366	35
Link Distance (ft)	1513	650
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	162	164	178	91	171	342	350	44	16	57	53	131
Average Queue (ft)	100	91	98	48	89	252	263	22	13	32	41	95
95th Queue (ft)	169	165	180	95	164	355	372	42	16	53	68	144
Link Distance (ft)		1513	1513			474	474			13		53
Upstream Blk Time (%)							0		24	41	8	21
Queuing Penalty (veh)							1		0	210	0	0
Storage Bay Dist (ft)	300			300	300			300	150		150	
Storage Blk Time (%)						3	5		24	41	8	21
Queuing Penalty (veh)						5	5		53	120	16	27

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	B27
Directions Served	T
Maximum Queue (ft)	66
Average Queue (ft)	14
95th Queue (ft)	56
Link Distance (ft)	604
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: CSAH 2

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	LT	T	LR
Maximum Queue (ft)	201	184	140	30	28
Average Queue (ft)	53	74	30	3	11
95th Queue (ft)	219	237	118	32	35
Link Distance (ft)	429	429	268	268	451
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: SB IH 35 On Ramp/SB IH 35 Off Ramp & CSAH 2

Movement	EB	EB	WB	WB	SB	SB
Directions Served	T	TR	L	T	LT	R
Maximum Queue (ft)	288	295	224	598	449	961
Average Queue (ft)	203	231	98	320	248	676
95th Queue (ft)	320	334	224	573	581	1196
Link Distance (ft)	268	268		711		1042
Upstream Blk Time (%)	7	20		0		14
Queuing Penalty (veh)	32	87		0		0
Storage Bay Dist (ft)			200		300	
Storage Blk Time (%)				19		34
Queuing Penalty (veh)				20		58

Intersection: 6: NB IH 35 Off Ramp/NB IH 35 On Ramp & CSAH 2

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	LT	R
Maximum Queue (ft)	134	172	97	245	251	143	49
Average Queue (ft)	66	87	40	156	165	78	17
95th Queue (ft)	122	157	92	255	264	138	46
Link Distance (ft)		711	711	3503	3503	741	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	350						150
Storage Blk Time (%)						1	
Queuing Penalty (veh)						1	

Intersection: 7: Newton Cir & Frontage Rd

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	16	38
Average Queue (ft)	2	24
95th Queue (ft)	13	47
Link Distance (ft)	566	650
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	478	31	281	1078	5	24	2	90	2	0	0
Future Volume (veh/h)	4	728	31	402	1401	45	24	2	184	34	0	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	4	783	33	432	1506	48	26	2	198	37	0	0
Adj No. of Lanes	1	2	1	1	2	1	0	1	1	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	142	1211	542	503	1830	819	522	37	519	453	0	519
Arrive On Green	0.01	0.34	0.34	0.18	0.52	0.52	0.33	0.33	0.33	0.33	0.00	0.00
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1357	114	1583	1139	0	1583
Grp Volume(v), veh/h	4	783	33	432	1506	48	28	0	198	37	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1471	0	1583	1139	0	1583
Q Serve(g_s), s	0.1	16.8	1.3	13.2	32.2	1.4	0.0	0.0	8.6	2.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	16.8	1.3	13.2	32.2	1.4	1.0	0.0	8.6	3.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.93		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	142	1211	542	503	1830	819	559	0	519	453	0	519
V/C Ratio(X)	0.03	0.65	0.06	0.86	0.82	0.06	0.05	0.00	0.38	0.08	0.00	0.00
Avail Cap(c_a), veh/h	231	1211	542	714	2021	904	559	0	519	453	0	519
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.7	25.0	19.9	16.6	18.3	10.8	20.7	0.0	23.3	21.7	0.0	0.0
Incr Delay (d2), s/veh	0.1	1.2	0.0	7.4	2.7	0.0	0.2	0.0	2.1	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	8.4	0.6	7.4	16.2	0.6	0.5	0.0	4.1	0.7	0.0	0.0
LnGrp Delay(d),s/veh	20.8	26.2	19.9	24.0	20.9	10.9	20.8	0.0	25.4	22.0	0.0	0.0
LnGrp LOS	C	C	B	C	C	B	C		C	C		
Approach Vol, veh/h		820			1986			226			37	
Approach Delay, s/veh		25.9			21.4			24.8			22.0	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		34.0	20.7	35.3		34.0	5.0	51.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		20.1	26.9	29.5		20.1	5.0	51.4
Max Q Clear Time (g_c+I1), s		10.6	15.2	18.8		5.0	2.1	34.2
Green Ext Time (p_c), s		0.7	1.0	8.7		0.9	0.0	12.3

Intersection Summary	
HCM 2010 Ctrl Delay	22.8
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	517	0	15	1277	0	0	0	27	0	0	0
Future Volume (veh/h)	151	517	225	165	1277	101	291	0	221	128	0	193
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	164	562	245	179	1388	110	316	0	240	139	0	210
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	203	1391	622	411	1454	651	385	0	389	348	0	349
Arrive On Green	0.06	0.39	0.39	0.08	0.41	0.41	0.11	0.00	0.25	0.08	0.00	0.22
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	0	1583	1774	0	1583
Grp Volume(v), veh/h	164	562	245	179	1388	110	316	0	240	139	0	210
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	0	1583	1774	0	1583
Q Serve(g_s), s	5.0	10.3	10.0	5.3	34.2	4.0	9.5	0.0	12.1	5.4	0.0	10.7
Cycle Q Clear(g_c), s	5.0	10.3	10.0	5.3	34.2	4.0	9.5	0.0	12.1	5.4	0.0	10.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	203	1391	622	411	1454	651	385	0	389	348	0	349
V/C Ratio(X)	0.81	0.40	0.39	0.44	0.95	0.17	0.82	0.00	0.62	0.40	0.00	0.60
Avail Cap(c_a), veh/h	203	1391	622	454	1475	660	385	0	389	386	0	349
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.5	19.7	19.6	14.6	25.7	16.8	28.8	0.0	30.2	24.5	0.0	31.6
Incr Delay (d2), s/veh	20.9	0.2	0.4	0.7	14.0	0.1	13.2	0.0	7.1	0.7	0.0	7.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	5.0	4.4	2.6	19.4	1.7	4.6	0.0	6.0	2.7	0.0	5.4
LnGrp Delay(d),s/veh	42.4	19.9	20.0	15.4	39.7	16.9	42.0	0.0	37.3	25.3	0.0	39.1
LnGrp LOS	D	B	C	B	D	B	D		D	C		D
Approach Vol, veh/h		971			1677			556			349	
Approach Delay, s/veh		23.7			35.6			40.0			33.6	
Approach LOS		C			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.7	26.6	11.8	39.9	14.0	24.3	10.2	41.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	9.1	19.7	9.5	33.7	9.5	19.3	5.7	37.5
Max Q Clear Time (g_c+I1), s	7.4	14.1	7.3	12.3	11.5	12.7	7.0	36.2
Green Ext Time (p_c), s	0.1	1.3	0.1	14.2	0.0	1.5	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	32.8
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	435	60	102	381	0	0	0	0	170	0	868
Future Volume (veh/h)	0	636	181	102	538	0	0	0	0	170	0	962
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	677	193	109	572	0				181	0	0
Adj No. of Lanes	0	2	0	1	1	0				0	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	644	183	181	640	0				988	0	881
Arrive On Green	0.00	0.24	0.24	0.02	0.11	0.00				0.56	0.00	0.00
Sat Flow, veh/h	0	2814	775	1774	1863	0				1774	0	1583
Grp Volume(v), veh/h	0	440	430	109	572	0				181	0	0
Grp Sat Flow(s),veh/h/ln	0	1770	1726	1774	1863	0				1774	0	1583
Q Serve(g_s), s	0.0	21.3	21.3	4.0	27.3	0.0				4.5	0.0	0.0
Cycle Q Clear(g_c), s	0.0	21.3	21.3	4.0	27.3	0.0				4.5	0.0	0.0
Prop In Lane	0.00		0.45	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	419	408	181	640	0				988	0	881
V/C Ratio(X)	0.00	1.05	1.05	0.60	0.89	0.00				0.18	0.00	0.00
Avail Cap(c_a), veh/h	0	419	408	181	640	0				988	0	881
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.61	0.61	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	34.3	34.4	26.5	38.3	0.0				9.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	58.1	58.9	3.4	10.0	0.0				0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	17.1	16.8	2.1	15.9	0.0				2.3	0.0	0.0
LnGrp Delay(d),s/veh	0.0	92.4	93.2	29.9	48.3	0.0				10.3	0.0	0.0
LnGrp LOS		F	F	C	D					B		
Approach Vol, veh/h		870			681						181	
Approach Delay, s/veh		92.8			45.3						10.3	
Approach LOS		F			D						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			9.6	25.8		54.6		35.4
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s			5.1	21.3		50.1		30.9
Max Q Clear Time (g_c+I1), s			6.0	23.3		6.5		29.3
Green Ext Time (p_c), s			0.0	0.0		1.1		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	65.5
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	341	271	0	0	400	85	74	4	58	0	0	0
Future Volume (veh/h)	462	351	0	0	463	85	168	4	58	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900	1900	1863	1863			
Adj Flow Rate, veh/h	502	382	0	0	503	92	183	4	63			
Adj No. of Lanes	2	1	0	0	2	0	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	749	775	0	0	679	124	841	18	766			
Arrive On Green	0.05	0.14	0.00	0.00	0.23	0.23	0.48	0.48	0.48			
Sat Flow, veh/h	3442	1863	0	0	3085	545	1738	38	1583			
Grp Volume(v), veh/h	502	382	0	0	297	298	187	0	63			
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1770	1767	1776	0	1583			
Q Serve(g_s), s	9.4	17.1	0.0	0.0	14.0	14.1	5.5	0.0	1.9			
Cycle Q Clear(g_c), s	9.4	17.1	0.0	0.0	14.0	14.1	5.5	0.0	1.9			
Prop In Lane	1.00		0.00	0.00		0.31	0.98		1.00			
Lane Grp Cap(c), veh/h	749	775	0	0	402	401	860	0	766			
V/C Ratio(X)	0.67	0.49	0.00	0.00	0.74	0.74	0.22	0.00	0.08			
Avail Cap(c_a), veh/h	1017	1107	0	0	580	579	860	0	766			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.19	0.19	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	24.2	30.0	0.0	0.0	32.3	32.4	13.4	0.0	12.5			
Incr Delay (d2), s/veh	0.2	0.1	0.0	0.0	2.9	3.1	0.6	0.0	0.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.4	8.8	0.0	0.0	7.2	7.2	2.8	0.0	0.9			
LnGrp Delay(d),s/veh	24.4	30.1	0.0	0.0	35.2	35.4	14.0	0.0	12.7			
LnGrp LOS	C	C			D	D	B		B			
Approach Vol, veh/h		884			595			250				
Approach Delay, s/veh		26.9			35.3			13.6				
Approach LOS		C			D			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		48.1		41.9			17.0	24.9
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5
Max Green Setting (Gmax), s		27.5		53.5			19.5	29.5
Max Q Clear Time (g_c+I1), s		7.5		19.1			11.4	16.1
Green Ext Time (p_c), s		1.1		5.7			1.2	4.3

Intersection Summary	
HCM 2010 Ctrl Delay	27.9
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	513	22	2	1261	0	18	0	3	0	0	0
Future Vol, veh/h	0	889	22	2	1745	0	18	0	3	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	946	23	2	1856	0	19	0	3	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1856	0	0	946	0	0	1878	2807	473	2334	2807	928
Stage 1	-	-	-	-	-	-	946	946	-	1861	1861	-
Stage 2	-	-	-	-	-	-	932	1861	-	473	946	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	322	-	-	721	-	-	44	18	538	20	18	270
Stage 1	-	-	-	-	-	-	281	338	-	76	121	-
Stage 2	-	-	-	-	-	-	287	121	-	541	338	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	322	-	-	721	-	-	44	18	538	20	18	270
Mov Cap-2 Maneuver	-	-	-	-	-	-	149	88	-	64	87	-
Stage 1	-	-	-	-	-	-	281	338	-	76	121	-
Stage 2	-	-	-	-	-	-	286	121	-	538	338	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	30	0
HCM LOS			D	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	166	322	-	-	721	-	-	-
HCM Lane V/C Ratio	0.135	-	-	-	0.003	-	-	-
HCM Control Delay (s)	30	0	-	-	10	-	-	0
HCM Lane LOS	D	A	-	-	B	-	-	A
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	547	5	18	1336	6	9
Future Vol, veh/h	869	5	18	1587	6	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	934	5	19	1706	6	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	940	0	1829	470
Stage 1	-	-	-	-	937	-
Stage 2	-	-	-	-	892	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	725	-	68	540
Stage 1	-	-	-	-	342	-
Stage 2	-	-	-	-	361	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	725	-	34	540
Mov Cap-2 Maneuver	-	-	-	-	34	-
Stage 1	-	-	-	-	342	-
Stage 2	-	-	-	-	179	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	62.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	78	-	-	725	-
HCM Lane V/C Ratio	0.207	-	-	0.027	-
HCM Control Delay (s)	62.8	-	-	10.1	2.5
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-

Appendix R: Synchro Reports – Phase 2 (2038)

Intersection: 1: Xerxes Ave & CSAH 2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	LT	R
Maximum Queue (ft)	18	336	337	16	108	95	109	29	366	309	84	12
Average Queue (ft)	4	218	209	3	57	41	54	8	114	233	34	2
95th Queue (ft)	20	328	332	14	106	94	112	27	389	342	77	10
Link Distance (ft)		2632	2632			1905	1905		1864		701	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300			300	300			300		200		150
Storage Blk Time (%)		2	1						0	23	0	
Queuing Penalty (veh)		0	0						0	9	0	

Intersection: 2: Frontage Rd/Future Entrance 1 & CSAH 2

Movement	EB	WB	WB	NB	SB
Directions Served	L	T	R	LTR	LTR
Maximum Queue (ft)	64	270	8	15	630
Average Queue (ft)	41	27	2	3	561
95th Queue (ft)	69	369	9	20	732
Link Distance (ft)		1513		650	602
Upstream Blk Time (%)					67
Queuing Penalty (veh)					0
Storage Bay Dist (ft)	300		300		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	B26	B26	NB	NB
Directions Served	L	T	T	R	L	T	T	R	T	T	L	TR
Maximum Queue (ft)	224	392	350	83	316	223	176	90	21	14	18	50
Average Queue (ft)	102	281	255	52	223	123	104	45	4	1	12	29
95th Queue (ft)	209	396	363	85	398	339	169	83	38	20	18	45
Link Distance (ft)		1513	1513			474	474		429	429		13
Upstream Blk Time (%)						5					15	39
Queuing Penalty (veh)						18					0	117
Storage Bay Dist (ft)	300			300	300			300			150	
Storage Blk Time (%)		7	3		14	0					15	39
Queuing Penalty (veh)		18	10		27	0					19	68

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	SB	SB	B27
Directions Served	L	TR	T
Maximum Queue (ft)	49	110	45
Average Queue (ft)	34	56	6
95th Queue (ft)	56	106	59
Link Distance (ft)		53	604
Upstream Blk Time (%)	10	9	
Queuing Penalty (veh)	0	0	
Storage Bay Dist (ft)	150		
Storage Blk Time (%)	10	9	
Queuing Penalty (veh)	15	9	

Intersection: 4: CSAH 2

Movement	EB	EB	B26	WB	NB
Directions Served	T	TR	T	LT	LR
Maximum Queue (ft)	332	319	7	39	44
Average Queue (ft)	130	103	1	5	17
95th Queue (ft)	343	311	11	43	44
Link Distance (ft)	429	429	474	268	451
Upstream Blk Time (%)	0	0			
Queuing Penalty (veh)	2	3			
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: SB IH 35 On Ramp/SB IH 35 Off Ramp & CSAH 2

Movement	EB	EB	WB	WB	SB	SB
Directions Served	T	TR	L	T	LT	R
Maximum Queue (ft)	289	288	89	191	77	115
Average Queue (ft)	250	223	51	44	31	50
95th Queue (ft)	319	336	92	172	75	123
Link Distance (ft)	268	268		711		1042
Upstream Blk Time (%)	17	12				
Queuing Penalty (veh)	150	101				
Storage Bay Dist (ft)			200		300	
Storage Blk Time (%)				1		
Queuing Penalty (veh)				1		

Intersection: 6: NB IH 35 Off Ramp/NB IH 35 On Ramp & CSAH 2

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	LT	R
Maximum Queue (ft)	274	341	173	184	225	182	94
Average Queue (ft)	140	150	60	115	142	106	35
95th Queue (ft)	244	310	177	191	231	178	89
Link Distance (ft)		711	711	3503	3503	741	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	350						150
Storage Blk Time (%)	0	1				2	
Queuing Penalty (veh)	1	4				2	

Intersection: 7: Newton Cir & Frontage Rd

Movement	NB
Directions Served	LR
Maximum Queue (ft)	30
Average Queue (ft)	12
95th Queue (ft)	35
Link Distance (ft)	650
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	860	8	30	213	0	38	3	319	6	4	6
Future Volume (veh/h)	9	1337	8	137	499	36	38	3	498	66	4	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	10	1502	9	154	561	40	43	3	560	74	4	7
Adj No. of Lanes	1	2	1	1	2	1	0	1	1	0	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	448	1608	719	221	1790	801	87	3	496	88	3	496
Arrive On Green	0.01	0.45	0.45	0.06	0.51	0.51	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	0	10	1583	0	8	1583
Grp Volume(v), veh/h	10	1502	9	154	561	40	46	0	560	78	0	7
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	10	0	1583	8	0	1583
Q Serve(g_s), s	0.2	32.2	0.2	3.5	7.4	1.0	0.0	0.0	25.0	0.0	0.0	0.2
Cycle Q Clear(g_c), s	0.2	32.2	0.2	3.5	7.4	1.0	25.0	0.0	25.0	25.0	0.0	0.2
Prop In Lane	1.00		1.00	1.00		1.00	0.93		1.00	0.95		1.00
Lane Grp Cap(c), veh/h	448	1608	719	221	1790	801	90	0	496	90	0	496
V/C Ratio(X)	0.02	0.93	0.01	0.70	0.31	0.05	0.51	0.00	1.13	0.86	0.00	0.01
Avail Cap(c_a), veh/h	537	1663	744	221	1790	801	90	0	496	90	0	496
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.5	20.7	12.0	18.1	11.6	10.0	38.2	0.0	27.5	39.2	0.0	19.0
Incr Delay (d2), s/veh	0.0	10.0	0.0	9.2	0.1	0.0	19.0	0.0	81.1	62.8	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	17.9	0.1	2.2	3.6	0.5	1.5	0.0	22.0	3.3	0.0	0.1
LnGrp Delay(d),s/veh	11.5	30.7	12.0	27.3	11.7	10.1	57.3	0.0	108.6	102.0	0.0	19.0
LnGrp LOS	B	C	B	C	B	B	E		F	F		B
Approach Vol, veh/h		1521			755			606			85	
Approach Delay, s/veh		30.5			14.8			104.7			95.1	
Approach LOS		C			B			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		29.5	9.6	40.9		29.5	5.5	45.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		24.3	5.1	37.6		24.3	5.0	37.7
Max Q Clear Time (g_c+I1), s		27.0	5.5	34.2		27.0	2.2	9.4
Green Ext Time (p_c), s		0.0	0.0	2.2		0.0	0.0	16.7

Intersection Summary	
HCM 2010 Ctrl Delay	43.5
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1297	0	15	258	0	0	0	10	0	0	0
Future Volume (veh/h)	429	1311	251	183	282	285	151	0	111	171	0	257
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	482	1473	282	206	317	320	170	0	125	192	0	289
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	638	1538	688	240	1117	500	237	0	353	378	0	346
Arrive On Green	0.20	0.43	0.43	0.09	0.32	0.32	0.06	0.00	0.22	0.06	0.00	0.22
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	0	1583	1774	0	1583
Grp Volume(v), veh/h	482	1473	282	206	317	320	170	0	125	192	0	289
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	0	1583	1774	0	1583
Q Serve(g_s), s	15.4	36.3	11.0	7.1	6.1	15.6	5.5	0.0	6.0	5.1	0.0	15.7
Cycle Q Clear(g_c), s	15.4	36.3	11.0	7.1	6.1	15.6	5.5	0.0	6.0	5.1	0.0	15.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	638	1538	688	240	1117	500	237	0	353	378	0	346
V/C Ratio(X)	0.76	0.96	0.41	0.86	0.28	0.64	0.72	0.00	0.35	0.51	0.00	0.83
Avail Cap(c_a), veh/h	792	1553	695	240	1117	500	237	0	353	378	0	346
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.9	24.6	17.5	22.7	23.1	26.4	30.1	0.0	29.5	28.6	0.0	33.6
Incr Delay (d2), s/veh	3.3	14.0	0.4	25.1	0.1	2.7	10.1	0.0	2.8	1.1	0.0	20.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.9	20.6	4.8	5.1	3.0	7.2	2.2	0.0	2.9	1.9	0.0	8.8
LnGrp Delay(d),s/veh	17.1	38.7	17.9	47.8	23.3	29.2	40.2	0.0	32.2	29.7	0.0	54.1
LnGrp LOS	B	D	B	D	C	C	D		C	C		D
Approach Vol, veh/h		2237			843			295			481	
Approach Delay, s/veh		31.4			31.5			36.8			44.4	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	24.6	12.2	43.6	10.0	24.2	22.9	32.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.1	19.7	7.7	39.5	5.5	19.3	26.2	21.0
Max Q Clear Time (g_c+I1), s	7.1	8.0	9.1	38.3	7.5	17.7	17.4	17.6
Green Ext Time (p_c), s	0.0	2.0	0.0	0.8	0.0	0.4	1.0	3.0

Intersection Summary	
HCM 2010 Ctrl Delay	33.5
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1263	81	81	132	0	0	0	0	55	2	152
Future Volume (veh/h)	0	1442	188	81	430	0	0	0	0	55	2	331
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	1620	211	91	483	0				62	2	0
Adj No. of Lanes	0	2	0	1	1	0				0	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1777	228	190	1235	0				375	12	345
Arrive On Green	0.00	0.56	0.56	0.10	1.00	0.00				0.22	0.22	0.00
Sat Flow, veh/h	0	3250	404	1774	1863	0				1721	56	1583
Grp Volume(v), veh/h	0	896	935	91	483	0				64	0	0
Grp Sat Flow(s),veh/h/ln	0	1770	1791	1774	1863	0				1777	0	1583
Q Serve(g_s), s	0.0	40.3	42.9	1.8	0.0	0.0				2.6	0.0	0.0
Cycle Q Clear(g_c), s	0.0	40.3	42.9	1.8	0.0	0.0				2.6	0.0	0.0
Prop In Lane	0.00		0.23	1.00		0.00				0.97		1.00
Lane Grp Cap(c), veh/h	0	996	1009	190	1235	0				387	0	345
V/C Ratio(X)	0.00	0.90	0.93	0.48	0.39	0.00				0.17	0.00	0.00
Avail Cap(c_a), veh/h	0	1015	1027	206	1271	0				387	0	345
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.59	0.59	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	17.4	18.0	19.7	0.0	0.0				28.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	10.7	13.7	1.1	0.1	0.0				0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	22.4	24.9	1.3	0.0	0.0				1.4	0.0	0.0
LnGrp Delay(d),s/veh	0.0	28.1	31.7	20.8	0.1	0.0				29.5	0.0	0.0
LnGrp LOS		C	C	C	A					C		
Approach Vol, veh/h		1831			574						64	
Approach Delay, s/veh		29.9			3.4						29.5	
Approach LOS		C			A						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			9.0	55.2		24.1		64.2
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s			5.3	51.6		19.6		61.4
Max Q Clear Time (g_c+I1), s			3.8	44.9		4.6		2.0
Green Ext Time (p_c), s			0.0	5.7		0.2		27.9

Intersection Summary	
HCM 2010 Ctrl Delay	23.8
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1006	345	0	0	149	173	24	0	72	0	0	0
Future Volume (veh/h)	1113	417	0	0	268	173	203	0	72	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900	1900	1863	1863			
Adj Flow Rate, veh/h	1251	469	0	0	301	194	228	0	81			
Adj No. of Lanes	2	1	0	0	2	0	0	1	1			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	1441	1089	0	0	384	241	559	0	499			
Arrive On Green	0.12	0.19	0.00	0.00	0.18	0.18	0.32	0.00	0.32			
Sat Flow, veh/h	3442	1863	0	0	2182	1312	1774	0	1583			
Grp Volume(v), veh/h	1251	469	0	0	254	241	228	0	81			
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1770	1631	1774	0	1583			
Q Serve(g_s), s	25.9	19.9	0.0	0.0	12.3	12.7	9.1	0.0	3.3			
Cycle Q Clear(g_c), s	25.9	19.9	0.0	0.0	12.3	12.7	9.1	0.0	3.3			
Prop In Lane	1.00		0.00	0.00		0.80	1.00		1.00			
Lane Grp Cap(c), veh/h	1441	1089	0	0	326	300	559	0	499			
V/C Ratio(X)	0.87	0.43	0.00	0.00	0.78	0.80	0.41	0.00	0.16			
Avail Cap(c_a), veh/h	1668	1252	0	0	364	335	559	0	499			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.27	0.27	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	27.3	23.1	0.0	0.0	35.0	35.2	24.2	0.0	22.2			
Incr Delay (d2), s/veh	1.3	0.1	0.0	0.0	9.4	12.1	2.2	0.0	0.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	15.6	10.3	0.0	0.0	6.8	6.8	4.8	0.0	1.5			
LnGrp Delay(d),s/veh	28.6	23.2	0.0	0.0	44.4	47.2	26.4	0.0	22.9			
LnGrp LOS	C	C			D	D	C		C			
Approach Vol, veh/h		1720			495			309				
Approach Delay, s/veh		27.1			45.8			25.5				
Approach LOS		C			D			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		32.9		57.1			36.1	21.1
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5
Max Green Setting (Gmax), s		20.5		60.5			37.5	18.5
Max Q Clear Time (g_c+I1), s		11.1		21.9			27.9	14.7
Green Ext Time (p_c), s		1.0		5.8			3.6	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	30.6
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1319	13	0	264	0	4	0	0	0	0	0
Future Vol, veh/h	36	1999	13	0	638	58	4	0	0	14	0	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	2246	15	0	717	65	4	0	0	16	0	62

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	717	0	0	2246	0	0	2685	3044	1123	1921	3044	358
Stage 1	-	-	-	-	-	-	2327	2327	-	717	717	-
Stage 2	-	-	-	-	-	-	358	717	-	1204	2327	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	880	-	-	226	-	-	10	12	200	41	12	638
Stage 1	-	-	-	-	-	-	38	70	-	387	432	-
Stage 2	-	-	-	-	-	-	633	432	-	195	70	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	880	-	-	226	-	-	9	11	200	40	11	638
Mov Cap-2 Maneuver	-	-	-	-	-	-	32	55	-	129	55	-
Stage 1	-	-	-	-	-	-	36	67	-	369	432	-
Stage 2	-	-	-	-	-	-	572	432	-	186	67	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	135.1	18
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	32	880	-	-	226	-	-	354
HCM Lane V/C Ratio	0.14	0.046	-	-	-	-	-	0.219
HCM Control Delay (s)	135.1	9.3	-	-	0	-	-	18
HCM Lane LOS	F	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0	-	-	0.8

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1439	4	4	298	2	14
Future Vol, veh/h	1725	4	4	775	2	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1938	4	4	871	2	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1943	0	2384	971
Stage 1	-	-	-	-	1940	-
Stage 2	-	-	-	-	444	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	298	-	28	252
Stage 1	-	-	-	-	98	-
Stage 2	-	-	-	-	614	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	298	-	27	252
Mov Cap-2 Maneuver	-	-	-	-	27	-
Stage 1	-	-	-	-	98	-
Stage 2	-	-	-	-	598	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	39.2
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	123	-	-	298	-
HCM Lane V/C Ratio	0.146	-	-	0.015	-
HCM Control Delay (s)	39.2	-	-	17.3	0.2
HCM Lane LOS	E	-	-	C	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection: 1: Xerxes Ave & CSAH 2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	LT
Maximum Queue (ft)	4	227	211	29	272	209	239	27	54	134	61
Average Queue (ft)	1	145	132	9	162	118	143	9	17	61	23
95th Queue (ft)	10	219	208	29	272	201	237	27	47	124	61
Link Distance (ft)		2632	2632			1905	1905		1864		701
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	300			300	300			300		200	
Storage Blk Time (%)		0			1					0	
Queuing Penalty (veh)		0			4					0	

Intersection: 2: Frontage Rd/Future Entrance 1 & CSAH 2

Movement	EB	WB	NB	SB
Directions Served	L	R	LTR	LTR
Maximum Queue (ft)	162	32	52	636
Average Queue (ft)	87	7	23	614
95th Queue (ft)	161	26	62	650
Link Distance (ft)			650	602
Upstream Blk Time (%)				92
Queuing Penalty (veh)				0
Storage Bay Dist (ft)	300	300		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	B26	B26	NB	NB
Directions Served	L	T	T	R	L	T	T	R	T	T	L	TR
Maximum Queue (ft)	208	333	340	74	430	510	515	384	50	52	15	46
Average Queue (ft)	118	183	188	39	169	383	400	120	5	6	12	27
95th Queue (ft)	216	303	308	71	397	514	539	392	44	46	17	40
Link Distance (ft)		1513	1513			474	474		429	429		13
Upstream Blk Time (%)						3	4				26	50
Queuing Penalty (veh)						27	38				0	303
Storage Bay Dist (ft)	300			300	300			300			150	
Storage Blk Time (%)	0	1	1		1	20	22				26	50
Queuing Penalty (veh)	0	1	2		7	31	27				68	175

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	SB	SB	B27
Directions Served	L	TR	T
Maximum Queue (ft)	52	137	355
Average Queue (ft)	48	122	175
95th Queue (ft)	61	143	374
Link Distance (ft)		53	604
Upstream Blk Time (%)	26	49	
Queuing Penalty (veh)	0	0	
Storage Bay Dist (ft)	150		
Storage Blk Time (%)	26	49	
Queuing Penalty (veh)	79	100	

Intersection: 4: CSAH 2

Movement	EB	EB	B26	B26	WB	WB	NB
Directions Served	T	TR	T	T	LT	T	LR
Maximum Queue (ft)	506	506	226	235	118	41	48
Average Queue (ft)	350	387	62	74	22	4	15
95th Queue (ft)	619	638	253	275	106	41	45
Link Distance (ft)	429	429	474	474	268	268	451
Upstream Blk Time (%)	14	24	0	0			
Queuing Penalty (veh)	79	136	1	1			
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 5: SB IH 35 On Ramp/SB IH 35 Off Ramp & CSAH 2

Movement	EB	EB	WB	WB	SB	SB
Directions Served	T	TR	L	T	LT	R
Maximum Queue (ft)	299	295	224	684	450	1073
Average Queue (ft)	267	269	136	566	259	887
95th Queue (ft)	316	310	253	796	585	1267
Link Distance (ft)	268	268		711		1042
Upstream Blk Time (%)	42	56		4		23
Queuing Penalty (veh)	240	321		28		0
Storage Bay Dist (ft)			200		300	
Storage Blk Time (%)				46		40
Queuing Penalty (veh)				47		68

Intersection: 6: NB IH 35 Off Ramp/NB IH 35 On Ramp & CSAH 2

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	LT	R
Maximum Queue (ft)	253	281	259	255	267	179	107
Average Queue (ft)	156	185	134	155	167	112	29
95th Queue (ft)	258	288	281	260	275	209	87
Link Distance (ft)		711	711	3503	3503	741	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	350						150
Storage Blk Time (%)						4	
Queuing Penalty (veh)						3	

Intersection: 7: Newton Cir & Frontage Rd

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	15	38
Average Queue (ft)	2	24
95th Queue (ft)	13	47
Link Distance (ft)	566	650
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	478	31	281	1078	5	24	2	90	2	0	0
Future Volume (veh/h)	4	830	31	501	1666	78	24	2	222	46	0	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	4	892	33	539	1791	84	26	2	239	49	0	0
Adj No. of Lanes	1	2	1	1	2	1	0	1	1	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	122	1100	492	577	1957	876	462	32	432	387	0	432
Arrive On Green	0.01	0.31	0.31	0.25	0.55	0.55	0.27	0.27	0.27	0.27	0.00	0.00
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1375	119	1583	1086	0	1583
Grp Volume(v), veh/h	4	892	33	539	1791	84	28	0	239	49	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1494	0	1583	1086	0	1583
Q Serve(g_s), s	0.1	18.6	1.2	17.4	36.6	2.0	0.0	0.0	10.3	2.7	0.0	0.0
Cycle Q Clear(g_c), s	0.1	18.6	1.2	17.4	36.6	2.0	0.9	0.0	10.3	3.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.93		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	122	1100	492	577	1957	876	494	0	432	387	0	432
V/C Ratio(X)	0.03	0.81	0.07	0.93	0.92	0.10	0.06	0.00	0.55	0.13	0.00	0.00
Avail Cap(c_a), veh/h	224	1194	534	614	1957	876	494	0	432	387	0	432
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.6	25.4	19.4	18.2	16.2	8.4	21.5	0.0	24.9	22.8	0.0	0.0
Incr Delay (d2), s/veh	0.1	4.0	0.1	21.1	7.2	0.0	0.2	0.0	5.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	9.7	0.5	14.9	19.6	0.9	0.5	0.0	5.1	0.9	0.0	0.0
LnGrp Delay(d),s/veh	20.8	29.5	19.5	39.3	23.4	8.5	21.7	0.0	29.9	23.5	0.0	0.0
LnGrp LOS	C	C	B	D	C	A	C		C	C		
Approach Vol, veh/h		929			2414			267			49	
Approach Delay, s/veh		29.1			26.4			29.1			23.5	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		26.3	24.3	29.4		26.3	4.9	48.7
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.0	21.5	27.0		18.0	5.0	43.5
Max Q Clear Time (g_c+I1), s		12.3	19.4	20.6		5.6	2.1	38.6
Green Ext Time (p_c), s		0.6	0.4	4.3		1.0	0.0	4.5

Intersection Summary	
HCM 2010 Ctrl Delay	27.3
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	517	0	15	1277	0	0	0	27	0	0	0
Future Volume (veh/h)	184	664	212	156	1365	123	352	0	262	205	0	309
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	200	722	230	170	1484	134	383	0	285	223	0	336
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	217	1614	722	349	1515	678	388	0	393	343	0	272
Arrive On Green	0.09	0.46	0.46	0.07	0.43	0.43	0.19	0.00	0.25	0.12	0.00	0.17
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	0	1583	1774	0	1583
Grp Volume(v), veh/h	200	722	230	170	1484	134	383	0	285	223	0	336
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	0	1583	1774	0	1583
Q Serve(g_s), s	13.4	22.3	14.8	8.6	66.1	8.5	30.4	0.0	26.4	16.4	0.0	27.5
Cycle Q Clear(g_c), s	13.4	22.3	14.8	8.6	66.1	8.5	30.4	0.0	26.4	16.4	0.0	27.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	217	1614	722	349	1515	678	388	0	393	343	0	272
V/C Ratio(X)	0.92	0.45	0.32	0.49	0.98	0.20	0.99	0.00	0.72	0.65	0.00	1.24
Avail Cap(c_a), veh/h	217	1614	722	369	1522	681	388	0	393	396	0	272
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.5	29.7	27.7	24.0	45.0	28.6	50.8	0.0	55.1	47.1	0.0	66.3
Incr Delay (d2), s/veh	39.9	0.2	0.3	1.1	18.2	0.1	42.4	0.0	11.1	3.0	0.0	133.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.2	11.0	6.5	4.3	36.0	3.7	21.5	0.0	12.8	8.3	0.0	22.1
LnGrp Delay(d),s/veh	91.3	29.9	27.9	25.0	63.3	28.7	93.3	0.0	66.2	50.1	0.0	199.6
LnGrp LOS	F	C	C	C	E	C	F		E	D		F
Approach Vol, veh/h		1152			1788			668			559	
Approach Delay, s/veh		40.2			57.1			81.7			140.0	
Approach LOS		D			E			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.1	44.2	15.1	77.5	35.4	32.0	19.6	73.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	23.5	34.6	12.5	71.4	30.9	27.2	15.1	68.8
Max Q Clear Time (g_c+I1), s	18.4	28.4	10.6	24.3	32.4	29.5	15.4	68.1
Green Ext Time (p_c), s	0.3	2.1	0.1	26.3	0.0	0.0	0.0	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	67.5
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	435	60	102	381	0	0	0	0	170	0	868
Future Volume (veh/h)	0	802	280	102	601	0	0	0	0	170	0	1000
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	853	298	109	639	0				181	0	0
Adj No. of Lanes	0	2	0	1	1	0				0	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	781	272	106	681	0				1026	0	915
Arrive On Green	0.00	0.30	0.30	0.07	0.73	0.00				0.58	0.00	0.00
Sat Flow, veh/h	0	2669	898	1774	1863	0				1774	0	1583
Grp Volume(v), veh/h	0	586	565	109	639	0				181	0	0
Grp Sat Flow(s),veh/h/ln	0	1770	1704	1774	1863	0				1774	0	1583
Q Serve(g_s), s	0.0	48.5	48.5	5.5	47.0	0.0				7.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	48.5	48.5	5.5	47.0	0.0				7.7	0.0	0.0
Prop In Lane	0.00		0.53	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	536	517	106	681	0				1026	0	915
V/C Ratio(X)	0.00	1.09	1.09	1.03	0.94	0.00				0.18	0.00	0.00
Avail Cap(c_a), veh/h	0	536	517	106	681	0				1026	0	915
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.61	0.61	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	55.7	55.8	48.4	20.0	0.0				15.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	66.1	67.9	75.9	14.5	0.0				0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.4	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	33.5	32.6	4.2	26.2	0.0				3.9	0.0	0.0
LnGrp Delay(d),s/veh	0.0	121.9	123.6	124.7	34.5	0.0				16.2	0.0	0.0
LnGrp LOS		F	F	F	C					B		
Approach Vol, veh/h		1151			748						181	
Approach Delay, s/veh		122.7			47.6						16.2	
Approach LOS		F			D						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			10.0	53.0		97.0		63.0
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s			5.5	48.5		92.5		58.5
Max Q Clear Time (g_c+I1), s			7.5	50.5		9.7		49.0
Green Ext Time (p_c), s			0.0	0.0		1.1		6.4

Intersection Summary	
HCM 2010 Ctrl Delay	86.4
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	341	271	0	0	400	85	74	4	58	0	0	0
Future Volume (veh/h)	561	418	0	0	488	85	206	4	58	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900	1900	1863	1863			
Adj Flow Rate, veh/h	610	454	0	0	530	92	224	4	63			
Adj No. of Lanes	2	1	0	0	2	0	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	861	851	0	0	707	122	751	13	682			
Arrive On Green	0.28	0.76	0.00	0.00	0.23	0.23	0.43	0.43	0.43			
Sat Flow, veh/h	3442	1863	0	0	3111	522	1744	31	1583			
Grp Volume(v), veh/h	610	454	0	0	310	312	228	0	63			
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1770	1771	1776	0	1583			
Q Serve(g_s), s	10.0	7.8	0.0	0.0	13.0	13.1	6.7	0.0	1.9			
Cycle Q Clear(g_c), s	10.0	7.8	0.0	0.0	13.0	13.1	6.7	0.0	1.9			
Prop In Lane	1.00		0.00	0.00		0.29	0.98		1.00			
Lane Grp Cap(c), veh/h	861	851	0	0	415	415	765	0	682			
V/C Ratio(X)	0.71	0.53	0.00	0.00	0.75	0.75	0.30	0.00	0.09			
Avail Cap(c_a), veh/h	1085	1083	0	0	520	520	765	0	682			
HCM Platoon Ratio	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.09	0.09	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	15.8	6.1	0.0	0.0	28.4	28.5	14.9	0.0	13.5			
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	4.5	4.7	1.0	0.0	0.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.7	3.8	0.0	0.0	6.9	7.0	3.5	0.0	0.9			
LnGrp Delay(d),s/veh	15.9	6.1	0.0	0.0	33.0	33.2	15.9	0.0	13.8			
LnGrp LOS	B	A			C	C	B		B			
Approach Vol, veh/h		1064			622			291				
Approach Delay, s/veh		11.7			33.1			15.4				
Approach LOS		B			C			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		39.0		41.0			17.8	23.2
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5
Max Green Setting (Gmax), s		24.5		46.5			18.5	23.5
Max Q Clear Time (g_c+I1), s		8.7		9.8			12.0	15.1
Green Ext Time (p_c), s		1.3		6.5			1.3	3.6

Intersection Summary	
HCM 2010 Ctrl Delay	19.0
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	351.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	513	22	2	1261	0	18	0	3	0	0	0
Future Vol, veh/h	132	909	22	2	1769	241	18	0	3	147	0	373
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	140	967	23	2	1882	256	19	0	3	156	0	397

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1882	0	0	967	0	0	2193	3134	484	2650	3134	941
Stage 1	-	-	-	-	-	-	1248	1248	-	1886	1886	-
Stage 2	-	-	-	-	-	-	945	1886	-	764	1248	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	315	-	-	708	-	-	25	11	529	~ 11	11	~ 264
Stage 1	-	-	-	-	-	-	183	243	-	~ 73	118	-
Stage 2	-	-	-	-	-	-	282	118	-	362	243	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	315	-	-	708	-	-	-	6	529	~ 7	6	~ 264
Mov Cap-2 Maneuver	-	-	-	-	-	-	355	~ -27	-	~ 33	60	-
Stage 1	-	-	-	-	-	-	102	135	-	~ 41	118	-
Stage 2	-	-	-	-	-	-	-	118	-	200	135	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.1	0		$ 2439.7
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	315	-	-	708	-	-	89
HCM Lane V/C Ratio	-	0.446	-	-	0.003	-	-	6.216
HCM Control Delay (s)	-	25.3	-	-	10.1	-		$ 2439.7
HCM Lane LOS	-	D	-	-	B	-	-	F
HCM 95th %tile Q(veh)	-	2.2	-	-	0	-	-	61.4

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	547	5	18	1336	6	9
Future Vol, veh/h	1134	5	18	1688	6	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1219	5	19	1815	6	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1225	0	2168	612
Stage 1	-	-	-	-	1222	-
Stage 2	-	-	-	-	946	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	565	-	40	436
Stage 1	-	-	-	-	241	-
Stage 2	-	-	-	-	338	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	565	-	40	436
Mov Cap-2 Maneuver	-	-	-	-	40	-
Stage 1	-	-	-	-	241	-
Stage 2	-	-	-	-	338	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	54.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	88	-	-	565	-
HCM Lane V/C Ratio	0.183	-	-	0.034	-
HCM Control Delay (s)	54.9	-	-	11.6	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Appendix S: Synchro Reports – Phase 2 (2038) Recommendations

Intersection: 1: Xerxes Ave & CSAH 2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	L	TR
Maximum Queue (ft)	27	412	391	18	154	104	124	35	215	296	84	18
Average Queue (ft)	7	280	275	4	86	65	82	12	45	194	37	4
95th Queue (ft)	26	421	401	18	148	114	130	34	191	310	80	15
Link Distance (ft)		2634	2634			1881	1881		1865		702	702
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300			300	300			300		200		
Storage Blk Time (%)		8	7						0	10		
Queuing Penalty (veh)		1	1						0	4		

Intersection: 2: Frontage Rd/Future Entrance 1 & CSAH 2

Movement	EB	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	T	R	T	T	R	L	LT	R
Maximum Queue (ft)	177	326	312	7	118	120	48	13	74	52
Average Queue (ft)	71	172	165	1	42	44	17	2	34	27
95th Queue (ft)	173	337	318	6	103	111	45	13	71	52
Link Distance (ft)		1881	1881		1502	1502			603	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	300			300			300	150		150
Storage Blk Time (%)		3	3							
Queuing Penalty (veh)		5	0							

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	L	TR	L
Maximum Queue (ft)	448	538	530	330	245	148	150	61	31	40	37	50
Average Queue (ft)	198	393	376	139	140	74	85	31	28	24	28	37
95th Queue (ft)	452	565	550	398	276	136	142	58	41	48	43	55
Link Distance (ft)		1502	1502			463	463		12	12	12	
Upstream Blk Time (%)									48	22	28	3
Queuing Penalty (veh)									48	22	28	0
Storage Bay Dist (ft)	300			300	300			300				150
Storage Blk Time (%)		29	21		2							3
Queuing Penalty (veh)		73	61		4							4

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	SB	B27
Directions Served	TR	T
Maximum Queue (ft)	115	59
Average Queue (ft)	58	9
95th Queue (ft)	110	49
Link Distance (ft)	54	604
Upstream Blk Time (%)	8	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)	8	
Queuing Penalty (veh)	8	

Intersection: 4: CSAH 2

Movement	EB	EB	B26	B26	WB	WB	NB
Directions Served	T	TR	T	T	LT	T	LR
Maximum Queue (ft)	392	393	57	50	126	112	41
Average Queue (ft)	220	195	14	9	24	16	12
95th Queue (ft)	461	465	101	87	107	125	36
Link Distance (ft)	429	429	463	463	268	268	437
Upstream Blk Time (%)	3	2				1	
Queuing Penalty (veh)	23	14				3	
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 5: SB IH 35 On Ramp/SB IH 35 Off Ramp & CSAH 2

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	T	T	R	L	T	LT	R
Maximum Queue (ft)	297	302	104	132	233	79	132
Average Queue (ft)	278	253	41	59	48	31	56
95th Queue (ft)	312	346	100	125	179	79	131
Link Distance (ft)	268	268	268		711		1042
Upstream Blk Time (%)	27	12	0				
Queuing Penalty (veh)	158	72	0				
Storage Bay Dist (ft)				200		300	
Storage Blk Time (%)					1		
Queuing Penalty (veh)					1		

Intersection: 6: NB IH 35 Off Ramp/NB IH 35 On Ramp & CSAH 2

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	LT	R
Maximum Queue (ft)	187	300	105	175	222	179	89
Average Queue (ft)	130	149	48	109	133	105	29
95th Queue (ft)	189	292	112	184	229	178	89
Link Distance (ft)		711	711	3503	3503	741	
Upstream Blk Time (%)		0					
Queuing Penalty (veh)		1					
Storage Bay Dist (ft)	350						150
Storage Blk Time (%)						3	
Queuing Penalty (veh)						2	

Intersection: 7: Newton Cir & Frontage Rd

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	5	31
Average Queue (ft)	1	13
95th Queue (ft)	7	37
Link Distance (ft)	567	650
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	860	8	30	213	0	38	3	319	6	4	6
Future Volume (veh/h)	9	1337	8	138	500	36	38	3	498	66	4	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	10	1502	9	155	562	40	43	3	560	74	4	7
Adj No. of Lanes	1	2	1	1	2	1	0	1	1	1	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	460	1559	697	206	1747	782	529	34	545	350	209	367
Arrive On Green	0.01	0.44	0.44	0.13	0.99	0.99	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1312	100	1583	844	609	1066
Grp Volume(v), veh/h	10	1502	9	155	562	40	46	0	560	74	0	11
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1411	0	1583	844	0	1675
Q Serve(g_s), s	0.3	37.1	0.3	4.2	0.3	0.0	1.8	0.0	31.0	5.9	0.0	0.4
Cycle Q Clear(g_c), s	0.3	37.1	0.3	4.2	0.3	0.0	2.2	0.0	31.0	8.1	0.0	0.4
Prop In Lane	1.00		1.00	1.00		1.00	0.93		1.00	1.00		0.64
Lane Grp Cap(c), veh/h	460	1559	697	206	1747	782	563	0	545	350	0	576
V/C Ratio(X)	0.02	0.96	0.01	0.75	0.32	0.05	0.08	0.00	1.03	0.21	0.00	0.02
Avail Cap(c_a), veh/h	537	1569	702	206	1747	782	563	0	545	350	0	576
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.97	0.97	0.97	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.6	24.5	14.2	19.1	0.3	0.3	20.1	0.0	29.5	22.8	0.0	19.5
Incr Delay (d2), s/veh	0.0	14.9	0.0	14.1	0.1	0.0	0.3	0.0	46.0	1.4	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	21.2	0.1	2.8	0.1	0.0	0.8	0.0	20.4	1.5	0.0	0.2
LnGrp Delay(d),s/veh	13.6	39.4	14.2	33.2	0.4	0.3	20.4	0.0	75.5	24.2	0.0	19.6
LnGrp LOS	B	D	B	C	A	A	C		F	C		B
Approach Vol, veh/h		1521			757			606			85	
Approach Delay, s/veh		39.1			7.1			71.3			23.6	
Approach LOS		D			A			E			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		35.5	10.4	44.1		35.5	5.6	48.9
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		30.7	5.9	39.9		30.7	5.0	40.8
Max Q Clear Time (g_c+I1), s		33.0	6.2	39.1		10.1	2.3	2.3
Green Ext Time (p_c), s		0.0	0.0	0.5		2.9	0.0	19.8

Intersection Summary	
HCM 2010 Ctrl Delay	37.1
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1319	13	0	264	0	4	0	0	0	0	0
Future Volume (veh/h)	179	1856	13	0	587	120	4	0	0	72	0	108
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	201	2085	15	0	660	135	4	0	0	81	0	121
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	0	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	455	1954	874	80	1954	874	429	648	0	539	0	551
Arrive On Green	1.00	1.00	1.00	0.00	1.00	1.00	0.35	0.00	0.00	0.35	0.00	0.35
Sat Flow, veh/h	680	3539	1583	194	3539	1583	1265	1863	0	1319	0	1583
Grp Volume(v), veh/h	201	2085	15	0	660	135	4	0	0	81	0	121
Grp Sat Flow(s),veh/h/ln	680	1770	1583	194	1770	1583	1265	1863	0	1319	0	1583
Q Serve(g_s), s	0.0	49.7	0.0	0.0	0.0	0.0	0.2	0.0	0.0	3.7	0.0	4.9
Cycle Q Clear(g_c), s	0.0	49.7	0.0	0.0	0.0	0.0	6.7	0.0	0.0	5.7	0.0	4.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	455	1954	874	80	1954	874	429	648	0	539	0	551
V/C Ratio(X)	0.44	1.07	0.02	0.00	0.34	0.15	0.01	0.00	0.00	0.15	0.00	0.22
Avail Cap(c_a), veh/h	552	2458	1100	108	2458	1100	429	648	0	539	0	551
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.29	0.29	0.29	0.00	0.96	0.96	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	23.7	0.0	0.0	21.7	0.0	20.7
Incr Delay (d2), s/veh	0.2	33.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.6	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	9.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	1.5	0.0	2.3
LnGrp Delay(d),s/veh	0.2	33.1	0.0	0.0	0.1	0.1	23.7	0.0	0.0	22.3	0.0	21.6
LnGrp LOS	A	F	A		A	A	C			C		C
Approach Vol, veh/h		2301			795			4			202	
Approach Delay, s/veh		30.0			0.1			23.7			21.9	
Approach LOS		C			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		29.8		60.2		29.8		60.2
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		18.5		62.5		18.5		62.5
Max Q Clear Time (g_c+I1), s		8.7		51.7		7.7		2.0
Green Ext Time (p_c), s		0.5		10.1		0.5		44.6

Intersection Summary	
HCM 2010 Ctrl Delay	22.3
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1297	0	15	258	0	0	0	10	0	0	0
Future Volume (veh/h)	251	1369	286	205	378	168	172	0	125	101	0	151
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	282	1538	321	230	425	189	193	0	140	113	0	170
Adj No. of Lanes	1	2	1	1	2	1	2	1	0	1	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	562	1555	696	261	1479	662	617	0	330	342	0	330
Arrive On Green	0.24	0.88	0.88	0.10	0.42	0.42	0.06	0.00	0.21	0.06	0.00	0.21
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	3442	0	1583	1774	0	1583
Grp Volume(v), veh/h	282	1538	321	230	425	189	193	0	140	113	0	170
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1721	0	1583	1774	0	1583
Q Serve(g_s), s	8.4	36.2	3.7	6.9	7.1	7.1	3.9	0.0	6.9	4.5	0.0	8.6
Cycle Q Clear(g_c), s	8.4	36.2	3.7	6.9	7.1	7.1	3.9	0.0	6.9	4.5	0.0	8.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	562	1555	696	261	1479	662	617	0	330	342	0	330
V/C Ratio(X)	0.50	0.99	0.46	0.88	0.29	0.29	0.31	0.00	0.42	0.33	0.00	0.52
Avail Cap(c_a), veh/h	611	1577	705	261	1479	662	617	0	330	342	0	330
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.41	0.41	0.41	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.4	5.3	3.3	21.5	17.3	17.3	26.3	0.0	30.9	26.3	0.0	31.6
Incr Delay (d2), s/veh	0.3	12.0	0.2	27.8	0.1	0.2	0.3	0.0	4.0	0.6	0.0	5.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	17.5	1.5	7.6	3.5	3.1	1.9	0.0	3.4	2.3	0.0	4.2
LnGrp Delay(d),s/veh	10.7	17.2	3.5	49.3	17.4	17.5	26.6	0.0	34.9	26.9	0.0	37.2
LnGrp LOS	B	B	A	D	B	B	C		C	C		D
Approach Vol, veh/h		2141			844			333			283	
Approach Delay, s/veh		14.3			26.2			30.1			33.1	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	23.3	13.2	44.0	9.5	23.3	15.1	42.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	18.2	8.7	40.1	5.0	18.2	13.1	35.7
Max Q Clear Time (g_c+I1), s	6.5	8.9	8.9	38.2	5.9	10.6	10.4	9.1
Green Ext Time (p_c), s	0.0	1.2	0.0	1.3	0.0	1.1	0.2	17.5

Intersection Summary	
HCM 2010 Ctrl Delay	20.0
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1263	81	81	132	0	0	0	0	55	2	152
Future Volume (veh/h)	0	1443	189	81	431	0	0	0	0	55	2	331
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	1621	212	91	484	0				62	2	0
Adj No. of Lanes	0	2	1	1	1	0				0	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1855	830	199	1162	0				411	13	378
Arrive On Green	0.00	0.52	0.52	0.10	1.00	0.00				0.24	0.24	0.00
Sat Flow, veh/h	0	3632	1583	1774	1863	0				1721	56	1583
Grp Volume(v), veh/h	0	1621	212	91	484	0				64	0	0
Grp Sat Flow(s),veh/h/ln	0	1770	1583	1774	1863	0				1777	0	1583
Q Serve(g_s), s	0.0	36.2	6.6	2.0	0.0	0.0				2.6	0.0	0.0
Cycle Q Clear(g_c), s	0.0	36.2	6.6	2.0	0.0	0.0				2.6	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				0.97		1.00
Lane Grp Cap(c), veh/h	0	1855	830	199	1162	0				424	0	378
V/C Ratio(X)	0.00	0.87	0.26	0.46	0.42	0.00				0.15	0.00	0.00
Avail Cap(c_a), veh/h	0	1947	871	219	1231	0				424	0	378
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.59	0.59	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	18.8	11.8	18.2	0.0	0.0				27.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	4.6	0.2	1.0	0.1	0.0				0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	18.7	2.9	1.2	0.0	0.0				1.4	0.0	0.0
LnGrp Delay(d),s/veh	0.0	23.4	11.9	19.2	0.1	0.0				27.8	0.0	0.0
LnGrp LOS		C	B	B	A					C		
Approach Vol, veh/h		1833			575						64	
Approach Delay, s/veh		22.1			3.1						27.8	
Approach LOS		C			A						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			9.0	51.7		26.0		60.7
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s			5.5	49.5		21.5		59.5
Max Q Clear Time (g_c+I1), s			4.0	38.2		4.6		2.0
Green Ext Time (p_c), s			0.0	9.0		0.2		25.9

Intersection Summary	
HCM 2010 Ctrl Delay	17.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1006	345	0	0	149	173	24	0	72	0	0	0
Future Volume (veh/h)	1114	417	0	0	269	173	203	0	72	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900	1900	1863	1863			
Adj Flow Rate, veh/h	1252	469	0	0	302	194	228	0	81			
Adj No. of Lanes	2	1	0	0	2	0	0	1	1			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	1434	1085	0	0	384	240	563	0	503			
Arrive On Green	0.12	0.19	0.00	0.00	0.18	0.18	0.32	0.00	0.32			
Sat Flow, veh/h	3442	1863	0	0	2185	1310	1774	0	1583			
Grp Volume(v), veh/h	1252	469	0	0	254	242	228	0	81			
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1770	1632	1774	0	1583			
Q Serve(g_s), s	26.0	20.0	0.0	0.0	12.3	12.8	9.1	0.0	3.3			
Cycle Q Clear(g_c), s	26.0	20.0	0.0	0.0	12.3	12.8	9.1	0.0	3.3			
Prop In Lane	1.00		0.00	0.00		0.80	1.00		1.00			
Lane Grp Cap(c), veh/h	1434	1085	0	0	324	299	563	0	503			
V/C Ratio(X)	0.87	0.43	0.00	0.00	0.78	0.81	0.40	0.00	0.16			
Avail Cap(c_a), veh/h	1628	1227	0	0	360	332	563	0	503			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.40	0.40	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	27.5	23.2	0.0	0.0	35.0	35.2	24.1	0.0	22.1			
Incr Delay (d2), s/veh	2.1	0.1	0.0	0.0	9.9	12.7	2.2	0.0	0.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	15.7	10.3	0.0	0.0	6.9	6.8	4.8	0.0	1.5			
LnGrp Delay(d),s/veh	29.6	23.3	0.0	0.0	44.9	47.9	26.2	0.0	22.8			
LnGrp LOS	C	C			D	D	C		C			
Approach Vol, veh/h		1721			496			309				
Approach Delay, s/veh		27.9			46.4			25.3				
Approach LOS		C			D			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		33.1		56.9			35.9	21.0
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5
Max Green Setting (Gmax), s		21.7		59.3			36.5	18.3
Max Q Clear Time (g_c+I1), s		11.1		22.0			28.0	14.8
Green Ext Time (p_c), s		1.1		5.8			3.4	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	31.2
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1439	4	4	298	2	14
Future Vol, veh/h	1727	4	4	776	2	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1940	4	4	872	2	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1945	0	2388	972
Stage 1	-	-	-	-	1943	-
Stage 2	-	-	-	-	445	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	297	-	28	252
Stage 1	-	-	-	-	98	-
Stage 2	-	-	-	-	613	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	297	-	27	252
Mov Cap-2 Maneuver	-	-	-	-	27	-
Stage 1	-	-	-	-	98	-
Stage 2	-	-	-	-	597	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	39.2
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	123	-	-	297	-
HCM Lane V/C Ratio	0.146	-	-	0.015	-
HCM Control Delay (s)	39.2	-	-	17.3	0.2
HCM Lane LOS	E	-	-	C	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection: 1: Xerxes Ave & CSAH 2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	L
Maximum Queue (ft)	21	266	267	42	310	143	161	28	36	121	76
Average Queue (ft)	3	188	183	14	210	87	100	9	13	62	35
95th Queue (ft)	18	293	292	41	299	154	160	27	41	120	78
Link Distance (ft)		2634	2634			1881	1881		1865		702
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	300			300	300			300		200	
Storage Blk Time (%)		2	2		1						
Queuing Penalty (veh)		0	1		8						

Intersection: 2: Frontage Rd/Future Entrance 1 & CSAH 2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	LT	R
Maximum Queue (ft)	437	1349	1303	1	9	226	248	29	34	10	146	159
Average Queue (ft)	355	618	444	0	1	146	151	16	11	1	73	99
95th Queue (ft)	546	1569	1445	2	9	226	243	35	34	9	135	164
Link Distance (ft)		1881	1881			1502	1502			651	603	
Upstream Blk Time (%)		1	0									
Queuing Penalty (veh)		3	3									
Storage Bay Dist (ft)	300			300	300			300	150			150
Storage Blk Time (%)	64	0				0	0				0	2
Queuing Penalty (veh)	288	0				0	0				1	3

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	B26	B26	NB	NB
Directions Served	L	T	T	R	L	T	T	R	T	T	L	L
Maximum Queue (ft)	180	167	174	66	258	372	377	110	21	16	57	40
Average Queue (ft)	87	111	121	37	112	275	276	35	5	4	35	26
95th Queue (ft)	182	177	191	67	284	428	429	164	38	30	50	47
Link Distance (ft)		1502	1502			463	463		429	429	12	12
Upstream Blk Time (%)					0	2	2	0			59	35
Queuing Penalty (veh)					0	17	17	0			120	71
Storage Bay Dist (ft)	300			300	300			300				
Storage Blk Time (%)					0	6	7					
Queuing Penalty (veh)					0	10	9					

Intersection: 3: Frontage Rd/Proposed Entrance & CSAH 2

Movement	NB	SB	SB	B27
Directions Served	TR	L	TR	T
Maximum Queue (ft)	56	54	148	537
Average Queue (ft)	36	52	123	327
95th Queue (ft)	54	56	157	694
Link Distance (ft)	12		54	604
Upstream Blk Time (%)	37	9	64	16
Queuing Penalty (veh)	75	0	0	0
Storage Bay Dist (ft)		150		
Storage Blk Time (%)		9	64	
Queuing Penalty (veh)		27	132	

Intersection: 4: CSAH 2

Movement	EB	WB	WB	NB
Directions Served	T	LT	T	LR
Maximum Queue (ft)	5	127	86	52
Average Queue (ft)	1	32	10	20
95th Queue (ft)	7	111	69	61
Link Distance (ft)	429	268	268	437
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: SB IH 35 On Ramp/SB IH 35 Off Ramp & CSAH 2

Movement	EB	EB	EB	WB	WB	SB	SB	SB
Directions Served	T	T	R	L	T	LT	R	R
Maximum Queue (ft)	252	238	70	144	336	120	237	204
Average Queue (ft)	170	135	42	64	139	66	159	124
95th Queue (ft)	270	237	68	129	283	127	259	225
Link Distance (ft)	268	268	268		711		1041	1041
Upstream Blk Time (%)	0	0						
Queuing Penalty (veh)	1	0						
Storage Bay Dist (ft)				200		300		
Storage Blk Time (%)					2		0	
Queuing Penalty (veh)					2		0	

Intersection: 6: NB IH 35 Off Ramp/NB IH 35 On Ramp & CSAH 2

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	LT	R
Maximum Queue (ft)	160	192	153	282	304	170	92
Average Queue (ft)	77	102	64	234	246	103	26
95th Queue (ft)	155	179	153	399	416	175	78
Link Distance (ft)		711	711	3503	3503	741	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	350						150
Storage Blk Time (%)						2	
Queuing Penalty (veh)						1	

Intersection: 7: Newton Cir & Frontage Rd

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	5	31
Average Queue (ft)	1	19
95th Queue (ft)	7	43
Link Distance (ft)	567	650
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	478	31	281	1078	5	24	2	90	2	0	0
Future Volume (veh/h)	4	830	31	501	1666	78	24	2	222	46	0	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	4	892	33	539	1791	84	26	2	239	49	0	0
Adj No. of Lanes	1	2	1	1	2	1	0	1	1	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	127	1090	488	576	1970	881	459	33	456	391	537	0
Arrive On Green	0.01	0.31	0.31	0.34	0.74	0.74	0.29	0.29	0.29	0.29	0.00	0.00
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1326	113	1583	1134	1863	0
Grp Volume(v), veh/h	4	892	33	539	1791	84	28	0	239	49	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1439	0	1583	1134	1863	0
Q Serve(g_s), s	0.1	21.0	1.3	19.7	36.2	1.3	1.1	0.0	11.4	2.9	0.0	0.0
Cycle Q Clear(g_c), s	0.1	21.0	1.3	19.7	36.2	1.3	1.2	0.0	11.4	4.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.93		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	127	1090	488	576	1970	881	492	0	456	391	537	0
V/C Ratio(X)	0.03	0.82	0.07	0.94	0.91	0.10	0.06	0.00	0.52	0.13	0.00	0.00
Avail Cap(c_a), veh/h	216	1090	488	706	2045	915	492	0	456	391	537	0
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.47	0.47	0.47	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	22.3	28.8	22.0	17.5	9.9	5.4	23.2	0.0	26.9	24.8	0.0	0.0
Incr Delay (d2), s/veh	0.1	5.0	0.1	10.0	3.2	0.0	0.2	0.0	4.3	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	10.9	0.6	14.3	17.9	0.6	0.5	0.0	5.5	1.0	0.0	0.0
LnGrp Delay(d),s/veh	22.4	33.8	22.1	27.5	13.1	5.4	23.5	0.0	31.1	25.4	0.0	0.0
LnGrp LOS	C	C	C	C	B	A	C		C	C		
Approach Vol, veh/h		929			2414			267			49	
Approach Delay, s/veh		33.4			16.0			30.3			25.4	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		30.4	27.4	32.2		30.4	5.0	54.6
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		19.5	29.5	27.5		19.5	5.0	52.0
Max Q Clear Time (g_c+I1), s		13.4	21.7	23.0		6.2	2.1	38.2
Green Ext Time (p_c), s		0.6	1.1	4.2		0.9	0.0	11.9

Intersection Summary	
HCM 2010 Ctrl Delay	21.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	513	22	2	1261	0	18	0	3	0	0	0
Future Volume (veh/h)	132	909	22	2	1922	88	18	0	3	147	0	220
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	140	967	23	2	2045	94	19	0	3	156	0	234
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	0	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	208	2418	1082	400	2418	1082	214	0	343	383	0	343
Arrive On Green	0.68	0.68	0.68	1.00	1.00	1.00	0.22	0.00	0.22	0.22	0.00	0.22
Sat Flow, veh/h	187	3539	1583	566	3539	1583	1142	0	1583	1398	0	1583
Grp Volume(v), veh/h	140	967	23	2	2045	94	19	0	3	156	0	234
Grp Sat Flow(s),veh/h/ln	187	1770	1583	566	1770	1583	1142	0	1583	1398	0	1583
Q Serve(g_s), s	61.5	10.7	0.4	0.1	0.0	0.0	1.3	0.0	0.1	8.8	0.0	12.2
Cycle Q Clear(g_c), s	61.5	10.7	0.4	10.8	0.0	0.0	10.3	0.0	0.1	8.9	0.0	12.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	208	2418	1082	400	2418	1082	214	0	343	383	0	343
V/C Ratio(X)	0.67	0.40	0.02	0.01	0.85	0.09	0.09	0.00	0.01	0.41	0.00	0.68
Avail Cap(c_a), veh/h	208	2418	1082	400	2418	1082	214	0	343	383	0	343
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.60	0.60	0.60	0.19	0.19	0.19	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.9	6.2	4.6	0.9	0.0	0.0	35.6	0.0	27.7	31.2	0.0	32.4
Incr Delay (d2), s/veh	5.1	0.1	0.0	0.0	0.6	0.0	0.8	0.0	0.0	3.2	0.0	10.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	5.1	0.2	0.0	0.2	0.0	0.5	0.0	0.1	3.8	0.0	6.3
LnGrp Delay(d),s/veh	22.0	6.3	4.6	0.9	0.6	0.0	36.5	0.0	27.7	34.4	0.0	42.9
LnGrp LOS	C	A	A	A	A	A	D		C	C		D
Approach Vol, veh/h		1130			2141			22			390	
Approach Delay, s/veh		8.2			0.5			35.3			39.5	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		24.0		66.0		24.0		66.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		19.5		61.5		19.5		61.5
Max Q Clear Time (g_c+I1), s		12.3		63.5		14.2		12.8
Green Ext Time (p_c), s		1.0		0.0		0.8		43.1

Intersection Summary	
HCM 2010 Ctrl Delay	7.2
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	517	0	15	1277	0	0	0	27	0	0	0
Future Volume (veh/h)	184	664	212	156	1365	123	352	0	262	205	0	309
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	200	722	230	170	1484	134	383	0	285	223	0	336
Adj No. of Lanes	1	2	1	1	2	1	2	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	230	1544	691	443	1522	681	424	0	340	258	0	336
Arrive On Green	0.16	0.87	0.87	0.07	0.43	0.43	0.08	0.00	0.21	0.07	0.00	0.21
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	3442	0	1583	1774	0	1583
Grp Volume(v), veh/h	200	722	230	170	1484	134	383	0	285	223	0	336
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1721	0	1583	1774	0	1583
Q Serve(g_s), s	5.8	4.0	2.3	4.7	37.0	4.7	6.9	0.0	15.5	6.7	0.0	19.1
Cycle Q Clear(g_c), s	5.8	4.0	2.3	4.7	37.0	4.7	6.9	0.0	15.5	6.7	0.0	19.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	230	1544	691	443	1522	681	424	0	340	258	0	336
V/C Ratio(X)	0.87	0.47	0.33	0.38	0.98	0.20	0.90	0.00	0.84	0.86	0.00	1.00
Avail Cap(c_a), veh/h	230	1544	691	501	1522	681	424	0	340	258	0	336
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.7	3.5	3.4	12.3	25.2	16.0	29.5	0.0	33.9	31.3	0.0	35.4
Incr Delay (d2), s/veh	26.7	0.2	0.3	0.5	17.4	0.1	22.3	0.0	21.4	25.0	0.0	49.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	1.8	0.9	2.3	21.6	2.1	2.8	0.0	8.7	6.1	0.0	12.9
LnGrp Delay(d),s/veh	45.3	3.7	3.6	12.8	42.6	16.1	51.8	0.0	55.2	56.3	0.0	84.5
LnGrp LOS	D	A	A	B	D	B	D		E	E		F
Approach Vol, veh/h		1152			1788			668			559	
Approach Delay, s/veh		10.9			37.8			53.3			73.3	
Approach LOS		B			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.2	23.8	11.2	43.8	11.4	23.6	11.8	43.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.7	19.3	9.7	36.3	6.9	19.1	7.3	38.7
Max Q Clear Time (g_c+I1), s	8.7	17.5	6.7	6.0	8.9	21.1	7.8	39.0
Green Ext Time (p_c), s	0.0	0.7	0.1	20.2	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	37.6
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	435	60	102	381	0	0	0	0	170	0	868
Future Volume (veh/h)	0	802	280	102	601	0	0	0	0	170	0	1000
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1900	1863	1863
Adj Flow Rate, veh/h	0	853	298	109	639	0				181	0	0
Adj No. of Lanes	0	2	1	1	1	0				0	1	2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1139	510	234	800	0				759	0	1192
Arrive On Green	0.00	0.32	0.32	0.02	0.14	0.00				0.43	0.00	0.00
Sat Flow, veh/h	0	3632	1583	1774	1863	0				1774	0	2787
Grp Volume(v), veh/h	0	853	298	109	639	0				181	0	0
Grp Sat Flow(s),veh/h/ln	0	1770	1583	1774	1863	0				1774	0	1393
Q Serve(g_s), s	0.0	19.4	14.2	3.5	29.9	0.0				5.9	0.0	0.0
Cycle Q Clear(g_c), s	0.0	19.4	14.2	3.5	29.9	0.0				5.9	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1139	510	234	800	0				759	0	1192
V/C Ratio(X)	0.00	0.75	0.58	0.47	0.80	0.00				0.24	0.00	0.00
Avail Cap(c_a), veh/h	0	1239	554	260	880	0				759	0	1192
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.60	0.60	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	27.3	25.5	21.3	34.9	0.0				16.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	2.4	1.4	0.9	2.9	0.0				0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	9.9	6.4	1.8	16.1	0.0				3.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	29.6	26.9	22.2	37.8	0.0				17.2	0.0	0.0
LnGrp LOS		C	C	C	D					B		
Approach Vol, veh/h		1151			748						181	
Approach Delay, s/veh		28.9			35.5						17.2	
Approach LOS		C			D						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			9.7	33.5		43.0		43.1
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s			6.5	31.5		38.5		42.5
Max Q Clear Time (g_c+I1), s			5.5	21.4		7.9		31.9
Green Ext Time (p_c), s			0.0	6.5		1.0		6.8

Intersection Summary	
HCM 2010 Ctrl Delay	30.3
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	341	271	0	0	400	85	74	4	58	0	0	0
Future Volume (veh/h)	561	418	0	0	488	85	206	4	58	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900	1900	1863	1863			
Adj Flow Rate, veh/h	610	454	0	0	530	92	224	4	63			
Adj No. of Lanes	2	1	0	0	2	0	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	827	831	0	0	704	122	792	14	719			
Arrive On Green	0.05	0.15	0.00	0.00	0.23	0.23	0.45	0.45	0.45			
Sat Flow, veh/h	3442	1863	0	0	3111	522	1744	31	1583			
Grp Volume(v), veh/h	610	454	0	0	310	312	228	0	63			
Grp Sat Flow(s),veh/h/ln	1721	1863	0	0	1770	1771	1776	0	1583			
Q Serve(g_s), s	11.1	20.3	0.0	0.0	14.6	14.8	7.2	0.0	2.0			
Cycle Q Clear(g_c), s	11.1	20.3	0.0	0.0	14.6	14.8	7.2	0.0	2.0			
Prop In Lane	1.00		0.00	0.00		0.29	0.98		1.00			
Lane Grp Cap(c), veh/h	827	831	0	0	413	413	806	0	719			
V/C Ratio(X)	0.74	0.55	0.00	0.00	0.75	0.76	0.28	0.00	0.09			
Avail Cap(c_a), veh/h	1090	1107	0	0	541	541	806	0	719			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.60	0.60	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	23.7	29.9	0.0	0.0	32.1	32.1	15.4	0.0	14.0			
Incr Delay (d2), s/veh	1.1	0.3	0.0	0.0	4.2	4.4	0.9	0.0	0.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	5.3	10.6	0.0	0.0	7.6	7.7	3.7	0.0	0.9			
LnGrp Delay(d),s/veh	24.8	30.3	0.0	0.0	36.2	36.5	16.3	0.0	14.2			
LnGrp LOS	C	C			D	D	B		B			
Approach Vol, veh/h		1064			622			291				
Approach Delay, s/veh		27.1			36.3			15.8				
Approach LOS		C			D			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		45.4		44.6			19.1	25.5
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5
Max Green Setting (Gmax), s		27.5		53.5			21.5	27.5
Max Q Clear Time (g_c+I1), s		9.2		22.3			13.1	16.8
Green Ext Time (p_c), s		1.4		6.3			1.5	4.2

Intersection Summary	
HCM 2010 Ctrl Delay	28.4
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	547	5	18	1336	6	9
Future Vol, veh/h	1134	5	18	1688	6	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1219	5	19	1815	6	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1225	0	2168	612
Stage 1	-	-	-	-	1222	-
Stage 2	-	-	-	-	946	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	565	-	40	436
Stage 1	-	-	-	-	241	-
Stage 2	-	-	-	-	338	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	565	-	40	436
Mov Cap-2 Maneuver	-	-	-	-	40	-
Stage 1	-	-	-	-	241	-
Stage 2	-	-	-	-	338	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	54.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	88	-	-	565	-
HCM Lane V/C Ratio	0.183	-	-	0.034	-
HCM Control Delay (s)	54.9	-	-	11.6	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-