December 2022 version

Environmental Assessment Worksheet

This most recent Environmental Assessment Worksheet (EAW) form and guidance documents are available at the Environmental Quality Board's website at**:** https://www.eqb.state.mn.us**/** The EAW form provides information about a project that may have the potential for significant environmental effects. Guidance documents provide additional detail and links to resources for completing the EAW form.

Cumulative potential effects can either be addressed under each applicable EAW Item or can be addressed collectively under EAW Item 21.

Note to reviewers: Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for an EIS.

1. Project title: South Shores on Lake Pulaski

2. Proposer: Hokanson Construction and Development

Contact person: Roger Hokanson
Title: President
Address: 1550 91st Ave NE Suite 110
City, State, ZIP: Blaine, MN 55449
Phone: 763-784-4792
Email: roger@hokph.com

3. RGU: City of Buffalo

Contact person: David Kelly
Title: Community Development Director
Address: 212 Central Ave
City, State, ZIP: Buffalo, MN 55313
Phone: 763-682-1181
Email: david.kelly@ci.buffalo.mn.us

4. Reason for EAW Preparation: (check one)

Required:
☐ EIS Scoping
Ξ Mandatory EAW

Discretionary:
☐ Citizen petition
☐ RGU discretion
☐ Proposer initiated

If EAW or EIS is mandatory give EQB rule category subpart number(s) and name(s):

M.R. 4410.4300 Subpart 19. Residential Development

5. Project Location:

- County: Wright
- City/Township: City of Buffalo
- PLS Location (¼, ¼, Section, Township, Range): Section 20, T120N, R25W
- Watershed (81 major watershed scale): North Fork Crow River #18
- GPS Coordinates: 45.184210, -93.854030
- Tax Parcels-202000203400, 202000204400, 202000204100, 202000204201

Figures

Appendices

6. Project Description:

a. *Provide the brief project summary to be published in the EQB Monitor, (approximately 50 words).*

This 210.1-acre housing project features a phased development plan, commencing in 2025 with a total of 303 single family housing units and 608 attached housing units. The project also includes a 10.2-acre natural park, new infrastructure, storm ponds, wetlands, and recreational enhancements, transforming farmland and grassland into a diverse residential community over a five-year period.

b. *Give a complete description of the proposed project and related new construction, including infrastructure needs. If the project is an expansion include a description of the existing facility. Emphasize: 1) construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes, 2) modifications to existing equipment or industrial processes, 3) significant demolition, removal or remodeling of existing structures, and 4) timing and duration of construction activities.*

The project includes the construction of single family, twin homes, townhomes, apartments and senior living units as part of a new development in Buffalo, Minnesota. The project aims to incorporate family living in one development. Whether a person is owning their first home, having their second child, or living their active lives in their senior years, they are welcome. The goal is to have families living and thriving in the same development. The proposed project would construct the following housing units:

61 single family villas - unattached
72 single family standard lots - unattached
118 single family wide lots - unattached
52 single family large lots - unattached
62 twin homes - attached
126 town homes - attached
380 apartments - attached
40 senior living units - attached

The four property parcels are 210.1 acres of land for the housing units, stormwater treatment ponds, wetlands, and open space. A shoreland zone is located 1,000 feet off Lake Pulaski on the north in the single family home area. A natural area park of 10.2 acres within the parcel will be maintained as a preserve. Figure 1 is a USGS Site Location Map, and Figure 2 is a Wright County Location Map.

New public and private roadways will be constructed to provide access to the development from 20th Street NE and Calder Avenue. Trails will be built throughout the development for mobility and recreation. The land is currently used as farmland since the 1930's for row crop agriculture and wetlands, as well as some grassland. Most of the trees on the development will be preserved in the 10.2 acre park. Many additional trees will be planted on most unattached lots. A hay storage barn is present that will be removed. All of the proposed work will require grading and earthwork, which can be accomplished with standard construction equipment. The site will be mass graded to provide the lots and roadway alignments, and the site will be leveled to provide buildable conditions. Infrastructure for water, sewer, electrical and natural gas as well as stormwater management will be constructed in conjunction with the grading to provide

a site suitable for building the multiple living styles listed previously.

The construction will be initiated in 2025 to complete the mass grading and to prepare the site for development. The duration of mass grading and installation of the roadways will take approximately 6 months. Individual lots are expected to be developed over a five-year period. Figure 3 is the Pre-Construction Site Plan and Figure 4 is the Post-Construction Site Plan.

c. *Project magnitude*:

Description	**Number**
Total Project Acreage	210.1 acres
Linear project length	23,850 feet of streets
Number and type of unattached units	303
Single family villas	61
Single family standard	72
Single family wide	118
Single family large	52
Number and type of attached units	608
Twin homes	62
Townhomes	126
Apartments	380
Senior Living	40
Residential building area (in square feet)	7,832,088
Commercial building area (in square feet)	0
Industrial building area (in square feet)	0
Institutional building area (in square feet)	0
Park	10.2 acres
Maximum Apartment Structure height	45 feet

d. *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 construct 303 single family homes and 608 attached units of varying sizes and price ranges in the City of Buffalo. The need of the project is to expand the number of affordable residential housing opportunities within the City of Buffalo and the Twin Cities Metropolitan Area. This is a private project and it is not being completed by a governmental unit.

e. *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.

There are no further stages to the project.

f. *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.

The Pulaski Shores Development is not a subsequent stage of an earlier project.

7. Climate Adaptation and Resilience:

a. *Describe the climate trends in the general location of the project (see guidance: Climate Adaptation and Resilience) and how climate change is anticipated to affect that location duringthe life of the project.*

According to MN DNR website on Climate Change Information and Climate Trends (http://www.dnr.state.mn.us/climate/climate_change_info/climate-trends.html), the following excerpt is on the Climate Trends in Minnesota.

"Minnesota's climate already is changing rapidly and will continue to do so for the foreseeable future. Temperatures are increasing – especially in winter – and larger, more frequent extreme precipitation events are occurring."

"Substantial warming during winter and at night, increased precipitation, and heavier downpours already have affected our natural resources, and how we interact with and use them. The decades ahead will bring even warmer winters and nights, and even larger rainfalls, along with the likelihood of increased summer heat and the potential for longer dry spells."

Included in Appendix A is data from 1895-2024 in Wright County, displaying average temperature and precipitation, as well as the Palmer Drought Severity Index, which indicates that drought conditions have been more severe in recent years.

Climate trends in Wright County seem to parallel those in Minnesota as suggested in the above statements. Exhibit 1 below illustrates the modeled DNR average annual temperature for Wright County from 1980 to 2099. During this period, Wright County experienced an average temperature increase of 9.83 degrees F for overall and an average temperature increase of 0.82 degrees F per decade.

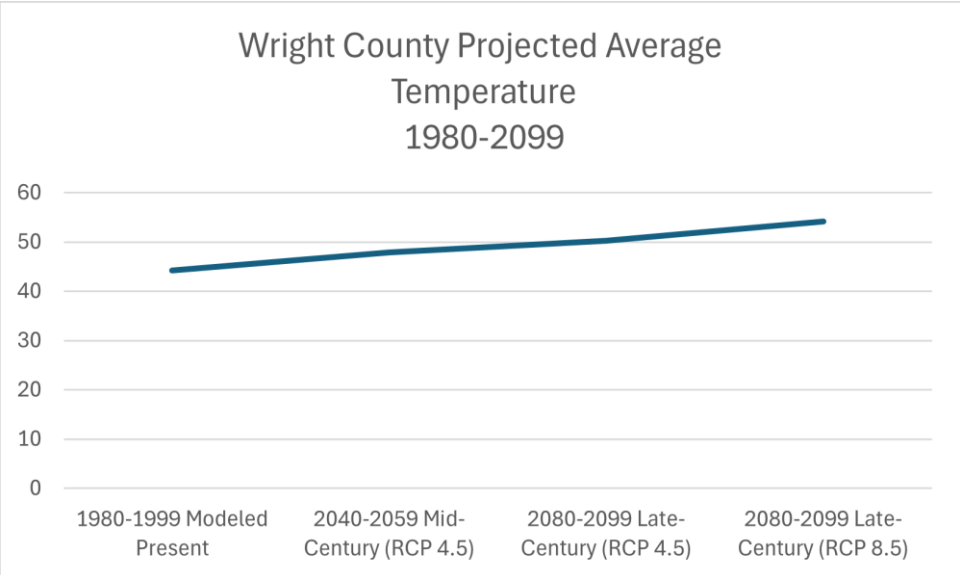
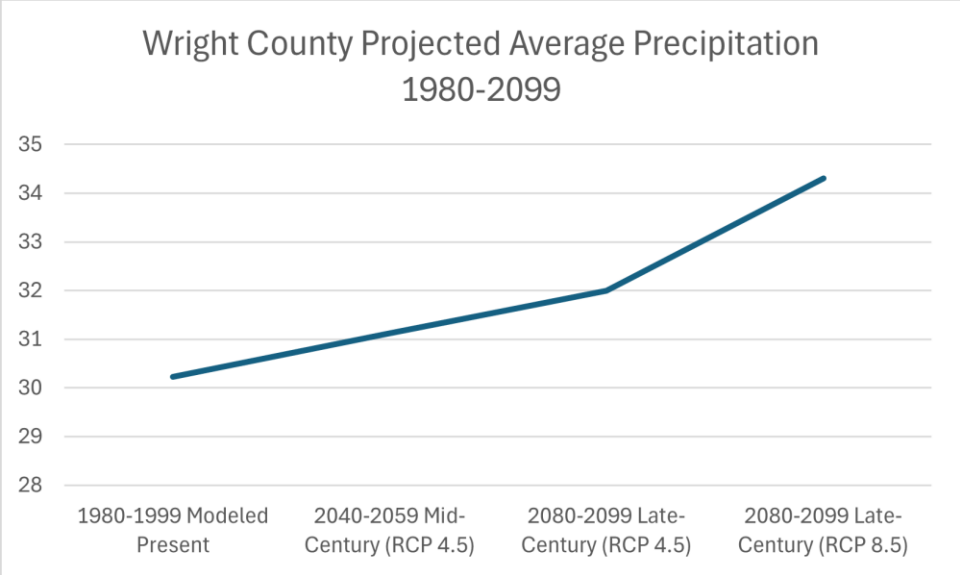


Exhibit 2 below illustrates the modeled DNR average annual precipitation for Wright County from 1980 to 2099. During this period, Wright County experienced an average precipitation increase of 4.07 inches overall and an average precipitation increase of 0.34 inches per decade.



b. *For each Resource Category in the table below: Describe how the project's proposed activities and how the project's design will interact with those climate trends. Describe proposed adaptations to address the project effects identified.*

The table below summarizes considerations for the project and suggestions for adaptations. See item 18 for greenhouse gas (GHG) emissions and carbon footprint information.

Resource Category	**Climate Considerations** **(example text provided below is to be replaced with project-specific information)**	**Project Information**	**Adaptations**
Project Design	Increase in heat island affect from increased asphalt from public roadways, driveways, and rooftops.	The Project will result in increased asphalt for public roads and trails as well as driveways and asphalt shingle roofs.	Builders will be encouraged to use lighter colored asphalt shingles. Roads, trails and driveways will be asphalt. To mitigate increased heat island temperatures, trees will be planted in accordance with Buffalo's requirements. Additionally, lot designs will incorporate grasses to replace

			agricultural fields which are often bare and dark throughout the year.
Land Use	Temperature increases and minor increased rainfall effects on wetlands and habitat.	The site includes four wetlands which total 7.2 acres.	The project will follow NPDES stormwater management requirements and WCA Wetland Protection standards to ensure preservation and buffers are part of the project. This will include the installation of permanent monuments to protect wetlands and habitats for the future.
Water Resources	Address in item 12	Address in item 12	Address in item 12
Contamination/ Hazardous Materials/Wastes	Protection of water resources from soil and water contamination.	The project design will follow best practices to protect both wetland and lake water bodies.	Best Management Practices for protection of wetlands and water bodies, along with NDPES requirements, will be designed and followed to protect vulnerable resources.
Fish, wildlife, plant communities, and sensitive ecological resources (rare features)	Address in item 14.	Address in item 14.	Address in item 14.

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

Cover Types	Before (acres)	After (acres)
Wetlands and shallow lakes (<2 meters deep)	7.2	7.2
Deep lakes (>2 meters deep)	0	0
Wooded/forest	2	2
Rivers/streams	0	0
Brush/Grassland/Buffers	33.7	14
Cropland	161.7	0
Livestock rangeland/pastureland	0	0
Lawn/landscaping	0	100
Green infrastructure TOTAL (from table below*)	0	5
Impervious surface	0	56.9
Stormwater Pond (wet sedimentation basin)	0	9.3
Pipeline Easements	5.5	5.5
Park	0	10.2
TOTAL	**210.1**	**210.1**

Green Infrastructure*	Before (acreage)	After (acreage)
Constructed infiltration systems (infiltration basins/infiltration trenches/**vegetated swales**/bioretention areas)	0	2
Constructed tree trenches and tree boxes	0	0
Constructed wetlands	0	0
Constructed green roofs	0	0
Constructed permeable pavements	0	0
Other (describe) native grass buffers	0	3
TOTAL*	0	5

Trees	**Percent**	**Number**
Percent tree canopy removed or number of mature trees removed during development	25	20
Number of new trees planted	0	400

9. 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.*

Unit of Government	Type of Application	Status
Minnesota Pollution Control Agency	NPDES Construction Wastewater Permit /Storm Water Pollution Prevention Plan) Sanitary Sewer Collection System Permit	To be obtained To be obtained
Minnesota Department of Health	Water Main Permit	To be obtained
Minnesota Department of Natural Resources	Water Appropriations Permit – Dewatering (if needed) NHIS Review	To be obtained No impact letter
City of Buffalo	Stormwater Permit Preliminary and Final Plat Land Use/Conditional Use Zoning Change/Building Permits WCA Replacement Plan	To be obtained To be obtained To be obtained To be obtained To be obtained

Wright County	Highway Permits	To be obtained
State Historic Preservation Office	Archeological Review	Phase 1 Archeological Report Completed
U.S. Fish and Wildlife Service	Threatened and Endangered Species List	No Impact letter

Cumulative potential effects may be considered and addressed in response to individual EAW Item Nos. 10-20, or the RGU can address all cumulative potential effects in response to EAW Item No.22. If addressing cumulative effect under individual items, make sure to include information requested in EAW Item No. 21.

10. Land use:

a. Describe:

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

The site has been used for row crop agriculture purposes, with a small portion of the site in the south portion that is wetland, brush and grassland with a few trees. No parks are present on the subject property, but the applicant is proposing a 10.2-acre park on the southwest corner of the site.

The nearest park is Buffalo Hills Park which is 0.5 miles to the west. The NRCS Web Soil Survey was referenced to identify prime and unique farmland, and farmland of statewide importance within the project area. All soils mapped on the site are designated by the NRCS as prime farmland, prime farmland if drained, or farmland of statewide importance as shown on Figure 5.

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*.

The City of Buffalo 2040 Comprehensive Development Plan outlines a strategic framework for the city's development of the next few decades. One of the primary goals of this housing initiative is to address the need for affordable housing options. The City recognizes the importance of accommodating various housing styles and densities to cater to the changing demographics of households.

Given the anticipation of regional growth and the city's responsibility to accommodate its share of this growth, additional residential development is expected up to the year 2040. To ensure successful integration of these developments, the city aims to establish zoning regulations to offer a diverse range of housing options.

The proposed project aims to diversify the housing options within the subject property. This diversification includes the creation of various housing types such as apartments, twin homes, townhomes, single family homes, and senior homes. While Buffalo development traditionally has predominately consisted of single family homes, recent years have witnessed the introduction of more diverse housing options. This diversification has been welcomed as it offers additional choices for the city's residents.

The proposed project aligns with the 2040 Comprehensive Development Plan and its goals.

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

The property has been zoned A-1 agricultural in earlier plans. Re-zoning will be required. Neighboring properties are currently zoned as R-1 residential and R-2 residential. The proposed project is consistent with the adjacent land zoning classifications. The zoning will have to be changed to the proposed use. The project site is located outside of the 100-year and 500-year flood plain areas. The northern single-family homes are within the 1,000 foot shoreland zone of Lake Pulaski (a classified General Development Lake), however, a row of

single family homes already exists along the lakeshore. The proposed homes located in the shoreland overlay district will adhere to the City's shoreland regulations. These regulations include a 10,000 square foot minimum lot area and 85-foot minimum lot width for non-riparian single family lots. Structures must be setback a minimum 50 feet from the ordinary high water mark of Lake Pulaski. Designed as a Planned Unit Development (PUD) the project parcel is divided into shoreland tiers (200 feet first tier and 267 second through fourth tiers) to evaluate suitable site density and impervious surfaces regulations. A minimum 50 percent open space requirement must also be met with the proposed residential project in the overlay zone. There are no wild and scenic rivers nearby. There are no critical areas or agricultural preserves in the area. Appendix B is the City of Buffalo Zoning Map. Appendix C contains Beacon Property Information.

iv. *If any critical facilities (i.e., facilities necessary for public health and safety, those storing hazardous materials, or those with housing occupants who may be insufficiently mobile) are proposed in floodplain areas and other areas identified as at risk for localized flooding, describe the risk potential considering changing precipitation and event intensity*.

No work is proposed within a 100-year or 500-year floodplain.

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

The project site is located adjacent to similar housing zoned areas. The proposed project is compatible with nearby land uses and zoning. The site is zoned as A-1 agricultural by Buffalo Township and will be annexed into the City of Buffalo.
Similar potential environmental effects are associated with existing and future uses. Non-significant increases in sanitary sewer use, air emissions, and traffic may result from the proposed project, which are discussed below.

c. *Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 10b above and any risk potential.*

The property will require rezoning due to its current classification as A-1 agricultural.

11. Geology, soils and topography/landforms:

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.*

According to the Wright County Geologic Atlas, the Eau Claire formation is the bedrock underneath the site which consists of gray sandstone, shale, and dolomitic siltstone. The bedrock is from 180 feet to 225 feet below the ground surface. Below the upper 5 feet of soil there is loamy calcareous glacier till above the bedrock. There are no karst conditions, sinkholes, or susceptible geological features in the project area.

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, or highlypermeable 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 12.b.ii.

Soil #	Soil Name	% of Soil	Erosion Rating	Hydric Soil?
106C2	Lester loam, 6 to 10% slopes	24.7%	moderate	No
109	Cordova clay loam, 0-2% slopes	32.2%	low	Yes
114	Glencoe clay loam, 0-1% slopes	2.5%	low	Yes
414	Hamel loam, 0-2% slopes	0.0%	low	Yes
539	Klossner muck, 0-1%slopes	1.5%	low	Yes
1080	Klossner Okoboji and Glencoe soils, ponded, 0-1% slopes	0.8%	low	Yes
1362B	Angus loam, 2-6% slopes	35.0%	low	No
1901B	Angus-LeSueur complex, 1-6% slopes	3.3%	low	No

Based on the project area soils, we estimate that 24.7% of the lot soils would be affected by erosion limitations. Figure 6 is the soils map of the site. We intend to improve these erosion conditions through proper landscaping, best management practices such as silt fencing, hydro seeding, biomats, and vegetated swales in areas which could be prone to erosion. Engineering plans will be provided at a later date that will detail how the soil will be graded, moved and stabilized.

Since the project will disturb more than 1.0 acres of land, we will apply for coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit which will be submitted to the MPCA prior to any earth moving activities on the site. Best Management Practices (BMP's) will be designed and implemented in the project specifications and construction details.

A Stormwater Pollution Prevention Plan (SWPPP) will be provided and adhered to and will describe strategies and construction steps to be taken to prevent nonpoint source pollution discharging from the construction site. Further erosion and sedimentation control facilities will be addressed in item 12.b.ii below.

- *NOTE: For silica sand projects, the EAW must include a hydrogeologic investigation assessing the potential groundwater and surface water effects and geologic conditions that could create an increased risk of potentially significant effects on groundwater and surface water. Descriptions of water resources and potential effects from the project in EAW Item 12 must be consistent with the geology, soils and topography/landforms and potential effects described in EAW Item 11.*

12. Water resources:

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, shoreland classification and floodway/floodplain, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include the presence of aquatic invasive species and the water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any:

Within Lake Pulaski, DOW 86005300, and Lake Buffalo, DOW 86009000, there exists populations of Eurasian water milfoil (*Myriophyllum spicatum*), curly leaf pondweed (*Potamogeton crispus*) and zebra mussels (*Dreissena polymorpha*). These are the significant aquatic invasive species found within one mile of the site.

A wetland delineation report was prepared by Kjolhaug Environmental Services Company in 2024. The result of the field delineation is shown in the table below and includes four natural wetlands (#1-4), and five farmed wetlands (#5-9) which were identified by historical aerial analysis. The boundaries were reviewed by the Wetland Conservation Act technical evaluation panel (TEP). Figure 7 shows the wetland delineation results.

Wetland ID	**Cowardin Classification**	**Circ. 39 Type/s**	**Eggers & Reed Plant Community Type**	**Acres**
Wetland 1	PABG, PEM1C/A	4/3/1	Deep Marsh Shallow Marsh/Seasonally Flooded Basin	6.06
Wetland 2	PEM1C/A	3/1	Shallow Marsh/ Seasonally Flooded Basin	0.31
Wetland 3	PEM1C/A	3/3	Shallow Marsh/ Seasonally Flooded Basin	0.40
Wetland 4	PABF, PEM1C/A	4/3/1	Deep Marsh/ Shallow Marsh/ Seasonally Flooded Basin	0.46
Wetland 5	PEM1A	1	Seasonally Flooded Basin	0.12
Wetland 6a	PEM1A	1	Seasonally Flooded Basin	0.06
Wetland 6b	PEM1A	1	Seasonally Flooded Basin	0.15
Wetland 7	PEM1A	1	Seasonally Flooded Basin	0.15
Wetland 8	PEM1A	1	Seasonally Flooded Basin	0.01

Wetland ID	Cowardin Classification	Circ. 39 Type/s	Eggers & Reed Plant Community Type	Acres
Wetland 9	PEM1A	1	Seasonally Flooded Basin	0.01

The five farmed wetlands will be replaced by bank credit purchase in the same bank service area as the impacts at a 2:1 ratio per WCA state wetland guidelines. A pre-application TEP meeting was held where the wetland replacement plan was discussed with general agreement.

As defined by the Minnesota DNR, the project area is located within the North Fork Crow River (#18) Major Watershed.

The Minnesota DNR Public Waters Dataset was used to identify public waters nearby the project. The review identified Lake Pulaski as a public water near the project area 0.1 miles to the north (DOW #86005300). This project will not affect Lake Pulaski in any negative way.

Name	DOW Lake ID/Kittle Num	Shoreland Classification	Impairments
Lake Buffalo	86009000	General Development	Mercury Fish Bioassessment Nutrients Aquatic Recreation
Lake Pulaski	86005300	General Development	Mercury Fish Bioassessment
Rice	86006000	NA	NA

Name	Kittle Number	Location	Impairments
Unnamed Creek	M-064-010-002	Buffalo, MN	NA

Lake Pulaski is impaired for Aquatic Life and Aquatic Consumption uses. A TMDL has been approved for mercury in fish tissue. Buffalo Lake (DOW#86009000-within 1 mile) also has the same impairments as well as being impaired for Aquatic Recreation and a TMDL for Nutrients.

There are no floodways or floodplains identified on the site by the Federal Emergency Management Agency (FEMA).

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 on site or nearby, explain the methodology used to determine this.*

According to the Minnesota Source Water Protection Web Map Viewer, the project does not lie within a wellhead protection area. The proposed development would connect to the City of Buffalo water supply, and no new water wells are proposed for the project.

According to the Minnesota Well Index the following four wells were on or near the site:

Figure 8 is the Minnesota Well Index Map of the site.

Unique Well Number	Static Water Level (feet)	Well Depth (feet)
451409*	35	148
434931*	56	82
100280	68	384
236021	47	132

*Wells on-site which will be abandoned with MDH protocol.

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.*

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 from the project would be discharged to the Buffalo Wastewater Treatment Facility (WWTF). Wastewater would consist of domestic wastewater typical for residential developments. No pretreatment measures would be necessary.

Based on typical wastewater loading of 100 gallons per person per day, the proposed project is expected to have an average flow of 214,000 gallons per day and a peak flow of 766,370 gallons per day.

The existing Buffalo WWTF has an average wet weather design capacity of 4.32 million gallons per day (MGD) and an average dry weather design capacity of 2.34 MGD. The existing wastewater flows, in addition to the proposed project, are expected to have an average flow of approximately 1,300,000 gallons per day or 1.3 MGD. The Buffalo WWTF will have the required capacity to treat the proposed project.

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. If septic systems are part of the project, describe the availability of septage disposal options within the region to handle the ongoing amounts generated as a result of the project. Consider the effects of current Minnesota climate trends and anticipated changes in rainfall frequency, intensity and amount with this discussion.*

Not applicable

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, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects.*

Not applicable

ii. *Stormwater - Describe changes in surface hydrology resulting from change of land cover. Describe the routes and receiving water bodies for runoff from the project site (major downstream water bodies as well as the immediate receiving waters). Discuss environmental effects from stormwater discharges on receiving waters post construction including how the project will affect runoff volume, discharge rate and change in pollutants. Consider the effects of current Minnesota climate trends and anticipated changes in rainfall frequency, intensity and amount with this discussion. For projects requiring NPDES/SDS Construction Stormwater permit coverage, state the total number of acres that will be disturbed by the project and describe the stormwater pollution prevention plan (SWPPP), including specific best management practices to address soil erosion and sedimentation during and after project construction. Discuss permanent stormwater management plans, including methods of achieving volume reduction to restore or maintain the natural hydrology of the site using green infrastructure practices or other stormwater management practices. Identify any receiving waters that have construction-related water impairments or are classified as special as defined in the Construction Stormwater permit. Describe additional requirements for special and/or impaired waters.*

The project would result in the conversion of approximately 161.7 acres of cropland to impervious surface and lawn. Curvilinear plat design was selected, which results in less lineal feet of public roads.

The project will be designed to manage runoff and discharge and thereby avoid soil erosion and sedimentation. Four (4) stormwater ponds are planned for the project, which would provide catchment to stormwater runoff. Ponds will be designed based on City Ordinance standards and MPCA standards during preliminary plat design.

The project will require a National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit from the MPCA. Construction of the project will require the utilization of best management practices (BMPs) to prevent erosion and sedimentation. BMPs proposed for the project will be described in the Stormwater Pollution Prevention Plan (SWPPP), which will be submitted to the MPCA for review. The grading and erosion control plans for the project will be reviewed as part of the City of Buffalo's building permit process.

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 DNR 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. Discuss how the proposed water use is resilient in the event of changes in total precipitation, large precipitation events, drought, increased temperatures, variable surface water flows and elevations, and longer growing seasons. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation. Describe contingency plans should the appropriation volume increase beyond infrastructure capacity or water supply for the*

project diminish in quantity or quality, such as reuse of water, connections with another water source, or emergency connections.

No surface or groundwater resources will be appropriated by the project. No dewatering of the site will be required. The groundwater flow direction is to the SSE per the EDR Figure 10 as attached.

iv. Surface Waters

a) *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, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. 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.*

The four natural wetlands which total 7.2 acres will be avoided and protected with native grass buffers. The five farmed wetlands (filled at 0.5 acres) will be replaced at a 2:1 ratio through bank credit replacement of 1.0 acres within the same bank service area per M.R. Chapter 8420 which outlines the State Wetland Rules.

Farmed wetlands typically have less functions and quality than natural wetlands; they have less biodiversity in plant species and are often cropped.

The site layout as proposed has minimized and avoided wetland impacts where possible by utilizing upland areas and farmed wetland areas for development. By discharging treated stormwater to wetlands, this will allow the wetlands to retain some pre-construction hydrology and continue to function.

BMPs are expected to be standard BMPs such as double barriers around wetlands, which may include silt fence and/or biologs.

Avoiding all wetlands on-site would be difficult due to the nature of the wetland locations and the surrounding development grading. Directly avoiding wetlands would likely still result in indirect impacts, so by directly impacting the wetlands it ensures they will be replaced at a 2:1 ratio, rather than indirectly impacting them over time to the point that they are so degraded they provide no ecological functional benefits on the site.

Limited and isolated wetland impacts are anticipated with the development due to the collector street extension of Griffing Park Road being a critical piece of the city transportation plan identified early on. Development density and affordable housing goals would be severely impacted if two isolated pockets of wetland were avoided.

b) *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, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. 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

No other surface water impacts are expected. Treated stormwater discharged into public waters is expected to provide continued hydrology to those waters and is not anticipated to degrade them. The stormwater pond adjacent to the PWI is a wet/NURP pond with a filtration shelf to meet city storm water requirements. The filtration shelf is planned to be located at the southern end of the basin and will not undercut the adjacent wetland. Also, the site is predominately clay, and it is not anticipated that construction of the ponding will cause any drawdown or other indirect impacts to the wetland.

13. 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.*

According to an environmental data resources (EDR) Radius report dated 12/12/2024, there were no contaminated sites on or upgradient of the project site. Figure 9 shows the EDR detail map on and around the site. The ground water appears to flow toward the south-southeast according to the EDR Groundwater Flow Map as shown in Figure 10.

The project does not expect to encounter contamination during construction. If contaminated soil is encountered, the state duty officer would be contacted immediately. There is an existing Northern Natural Gas facility on the southeast end of the site. This site is operated by Northern Natural Gas (NNG) and the area is fenced off from the public. NNG has their own safety and contingency plans in place. Two NNG subsurface pipeline routes run under the site as shown on Figure 9 and they will not be disturbed by the project.

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.*

Construction wastes are anticipated to be typical of residential developments and would be managed as municipal solid waste (MSW) or construction demolition debris. Regulated solid

waste generated by construction would be handled and disposed of in a permitted licensed solid waste facility or a similarly regulated facility following applicable local, state, and federal regulations. The contractor would be required to manage and dispose of all construction generated waste in accordance with MPCA requirements and all other applicable regulatory requirements. Construction waste would either be recycled or stored in approved containers and disposed of in the proper facilities. Any excess soil material that is not suitable for use onsite would become the property of the contractor and would be disposed of properly. All solid waste would be managed according to MPCA and other regulatory requirements.

The EPA estimates the total generation of municipal solid waste (MSW) in the United States in 2018 was 4.9 lbs/person/day. The 4.9 lbs/person/day was used as a waste generation rate, for the purposes of estimating waste generation related to the project. The total number of residents for the 911 housing units is 1,822 people. An estimated 1,629 tons of municipal solid waste will be generated on an annual basis by residents of the project. The collection of MSW would be managed by licensed waste hauler. The project would adhere to all MPCA requirements and other regulations pertaining to the use, handling, and disposal of solid waste. Recycling areas would be provided in compliance with the Minnesota State Building code.

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 new above or below ground tanks to store petroleum or other materials. Indicate the number, location, size and age of existing tanks on the property that the project will use. Discuss potential environmental effects from accidental spills or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverseeffects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.*

   Fuel and lubricants necessary for construction equipment during construction would be present in the proposed Project area. These materials would be used during active construction only, and the contractor would be required to abide by the Pollution Prevention management Measures (Part IV.F.2) of the NPDES Construction Stormwater Permit. No other toxic or hazardous materials would be present. All toxic or hazardous materials would be removed from the project corridor upon completion of construction. If a spill occurs, appropriate action to remediate would be taken immediately in accordance with the MPCA guidelines and regulations.

   No permanent above or below ground fuel storage tanks are planned for use in conjunction with this project. Temporary fuel storage tanks would be positioned in the project corridor for construction equipment during construction. Appropriate measures would be taken to avoid leaks and/or spills. If a leak or spill occurs, appropriate action to remediate the leak or spill would be taken immediately in accordance with MPCA guidelines and regulations.

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.*

The Project is not anticipated to generate or require the storage of hazardous waste during construction. During operations, the Project may generate or require storage of hazardous water, typical for residential developments.

14. 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*.

Fish

DNR public water, Lake Pulaski, is found 0.1 miles to the north of the site. According to a 2020 DNR Fisheries Lake Survey, the lake was managed primarily for Walleye and Northern Pike. The lake is secondarily managed for largemouth bass, black crappie and bluegill sunfish. The lake has a Secchi disk transparency of 10.7 feet. The lake is 813.26 acres in size and has a maximum depth of 87 feet. The managed game fish populations are healthy in the lake and walleye fingerlings are stocked during even numbered years to supplement natural reproduction. One of the goals of the project is to protect Lake Pulaski from any water quality challenges through stormwater treatment of the single family home runoff which will be routed toward the lake. The other areas of the development will have their stormwater routed to the storm ponds on the south portion of the development, and that water will not enter Lake Pulaski.

Wildlife

The DNR Ecological subsection of the project area is the Big Woods according to DNR. Prior to settlement, the ecological subsection was comprised of maple-basswood forest, tall grass prairie, and oak savannah. Presently, most of this ecological subsection has been converted to farmland. The project area is primarily comprised of old farmland, with a section of wetland, brush, and grassland in the southern portion with very few trees. The vegetative species are listed based on site reconnaissance and the wildlife species are representative of species living in old farmland and wetlands in the area.

Upland Forest Species

Red Oak	Bur Oak
Green Ash	Box Elder

Grass Species

Canada Goldenrod	Curly Dock	Crown Vetch
Smooth Brome	Red Clover	Canada Thistle
Kentucky Bluegrass	Quackgrass	Yellow Foxtail
Orchard Grass	Pigweed	Reed Canary Grass
Narrowleaf Cattail	Velvetleaf	Common Ragweed
Alfalfa	Ground Ivy	Bull Thistle

The Wildlife in the area is limited by available cover. Possible wildlife species based on the site location and habitat condition in the area are as follows:

Mammals	Waterfowl	Big Game
Weasels	Canada Goose	White-tailed Deer
Mice	Trumpeter Swan	Coyote
Raccoon	Mallard	
Squirrels	Blue Wing Teal	Game Birds
Rabbits	Wood Duck	Ring-necked Pheasant
Woodchuck		Wild Turkey
Chipmunk	Raptors	Mourning Dove
	Owls	
Furbearers	Falcons	Amphibians & Reptiles
Skunk	Hawks	Turtles
Red Fox	Bald Eagle	Snakes
Muskrat		Salamanders
	Birds	Frogs
	Blue Jay	Toads
	Bluebird	
	Finches	
	Songbirds	
	Crows	
	Cardinal	

b. *Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota Biological Survey Sites of Biodiversity Significance, andother sensitive ecological resources on or within close proximity to the site. Provide the DNR correspondence number (MCE 2024-0134) from which the data were obtained and attach the Natural Heritage Review letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.*

Appendix D contains the DNR NHIS letter.

The DNR letter indicated that the proposed project will not negatively affect any known occurrences of rare features. However, they did mention the Federally Endangered Northern Long-Eared Bat (Myotis Septentrionalis) which can be found throughout Minnesota. To minimize impacts to bats, the DNR recommends that tree removal be avoided from June 1 to August 15.

There are no known occurrences of Northern Long-Eared Bat roosts or hibernacula within or adjacent to the project, so it is unlikely that these bats are present in the area.

According to a US Fish and Wildlife Service Information Planning and Consultation System (IPac) the project area is within the distribution range of the following federally listed species.

Species	Status	Habitat
Whooping Crane (*Grus americana*)	Experimental Population, Non-Essential	The Whooping Crane breeds, migrates, winters and forages in a variety of wetland habitats.
Monarch Butterfly (*Danaus plexippus*)	Proposed Threatened	Grassland/Prairie habitat where milkweeds and other forbs are present.
Western Regal Fritillary (*Argynnis idalia occidentalis*)	Proposed Threatened	Grassland/Prairie habitat where milkweeds and other forbs are present.

There are no critical habitats for the above three species on the project area.

c. *Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project including how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. 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.*

The project will convert agricultural cropland as well as brush and grassland to residential homes. This could displace some migratory bird populations as well as small animals and deer. However, the project will be preserving a natural area park and a large wetland complex on the south portion of the project. This project will see an increase in density of general groundcover as well as significant growth with new trees planted in the development. This increased growth will help to mitigate the negative effects of the brush and grassland removal for climate change considerations. The natural wetlands are planned to be protected so any wetland habitat should be maintained without disruption.

To reduce the possibility of an introduction of invasive species from project construction, the project developer will coordinate with the contractors to visually inspect equipment before working on the site for any invasive species.

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

Proposed measures taken to avoid, minimize, or mitigate any adverse effects may include using effective erosion prevention and sediment control, and proper stormwater handling. Because of the potential for northern long-eared bat, no tree removals will occur between June 1 and August 15.

15. 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.

MN Office of the State Archeologist Portal Review

A review of publicly available data from the Office of the State Archeologist (OSA) Portal identified no archaeology sites within the same section as the project area. This EAW will be filed with the Minnesota Environmental Quality Board (MEQB) and circulated to the required MEQB distribution list, which includes the OSA, for review and comment. Any comments received from the OSA would be disclosed in the project's Findings of Fact and Conclusions document.

MN State Historic Preservation Office

As part of the early coordination efforts for the Project, the MN State Historic Preservation (SHPO) was consulted (SHPO Number 2025-0341). We anticipated SHPO recommending a Phase 1 archaeological assessment which did not find significant items. The SHPO correspondence attached in Appendix E indicates no further archeological investigation is necessary.

National Register of Historic Places

A query of the property listed no sites in the National Register of Historic Places. No adverse effects to historic properties will result from the proposed project.

16. 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.

No scenic views or vistas are located on or near the project. The project will not create plumes or glare from intense lights. The project is a proposed residential development and would be consistent with the surrounding residential area. Landscaping will be included with the project and will contribute to the overall visual aesthetics. Plans for the installation of street lighting will be reviewed as part of the building permit review process. Appendix F contains site photos.

17. 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. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used 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.*

The project would not construct or introduce stationary emission sources.
Typical air emissions for residential developments could include natural gas fired equipment, construction equipment and electric powered equipment which are generally considered Conditionally Insignificant Activities and/or Conditionally Exempt Stationary Sources according to Minnesota regulations and statutes.

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*.

The project is not located in an area where conformity requirements apply. Traffic generated by the project is not anticipated to result in air quality impacts. There will be an increase in vehicle trips associated with the project (as addressed in item 20), however, this is not anticipated to lead to a high concentration of air pollutants.

Construction related vehicle emissions may arise from the use of equipment. These emissions are anticipated to be minor and temporary in nature. Therefore, no further air quality analysis is necessary.

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 17a). 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.*

The project would generate odors during construction. These include exhaust from diesel and gasoline engines and fuel storage. Odor generation during construction would be temporary and sporadic in location and duration.

Dust generated during construction would be minimized through standard dust control measures such as applying water to exposed soils and limiting the extent and duration of exposed soil conditions. Construction contractors would be required to control dust and other airborne particulates in accordance with applicable governmental specifications. Dust would be visually monitored and recorded with NPDES Construction Stormwater Permit inspections. The post-construction dust levels are anticipated to be minimal as all exposed soil surfaces would be paved or re-vegetated.

18. Greenhouse Gas (GHG) Emissions/Carbon Footprint

a. *GHG Quantification: For all proposed projects, provide quantification and discussion of project GHG emissions. Include additional rows in the tables as necessary to provide project-specific emission sources. Describe the methods used to quantify emissions. If calculation methods are not readily available to quantify GHG emissions for a source, describe the process used to come to that conclusion and any GHG emission sources not included in the total calculation.*

The GHG emissions for the Project are calculated using the Greenhouse Gas Equivalencies Calculator - Calculations and References information from the US EPA. The Simplified Greenhouse Gas Emissions Calculator (SGEC) tool was also referenced. The methodologies for developing a carbon footprint are described in Minnesota Environmental Quality Board's (EQB's) Revised EAW Guidance (July 2023). The table below shows the emission categories for project carbon footprint calculations, as provided in the EQB Guidance.

Category	Scope	Project Phase	Type of Emission

Direct Emissions	Scope 1 - Emissions	Operations	Combustion (Stationary, Area, Mobile Sources)
	Scope 1 - Emissions	Operations	Non-Combustion Process
	Scope 1 - Emissions	Construction	Combustion (Mobile Sources)
	Scope 1 - Emissions	Construction	Land-Use
Indirect Emissions	Scope 2	Operations	Off-site Electricity/Steam Production (Market-Based and Location-Based)
	Scope 3	Operations	Off-site Waste Management
Atmospheric Removal of GHGs	Scope 1 (Sinks)	Construction/Operations	Land -Use (CO_2 removals to terrestrial storage)

Global climate change results from the total accumulation of GHGs in the Earth's atmosphere, as well as other human-caused and natural factors. The GHG composition in the Earth's atmosphere is changing and causing the planet's climate to change. The proposed project's incremental contribution to global GHGs cannot be translated into effects on climate change globally or regionally.

In general, regional impacts from climate change may include the following effects: increased mean annual air temperature (summer and winter warming); increased surface water temperatures; later onset of winter and earlier onset of spring; precipitation may fall in fewer, but more intense, storms; species adapted to cold climates may shift out of the Great Lakes basin into Canada; and aspen and birch forests may be replaced by hardwood forests of oak and hickory. Moderate climate change may increase agricultural yields and food production, with some regional and annual variability.

Construction activities for this project are anticipated to include the use of excavators, material handlers, skid steers, cranes, bulldozers, and haul trucks. These types of vehicles primarily rely on diesel as a fuel source, which results in the emission of CO_2 and, to a lesser extent, CH_4 and N_2O. The table below provides an estimate for the emissions generated by this equipment assuming that activities will last for six construction seasons (approx. working 720 days) and utilize approximately 10 diesel-powered pieces of heavy equipment and 10 gasoline-powered passenger vehicles. The total emissions from these activities are considered one-time emissions, however, the industry standard for determining long-term impacts of construction-related GHG output is to annualize the total emissions over a project's lifetime, which is defined as a 30-year period.

Construction Emissions

GHG emissions from construction are associated with fuel combustion in the mobile construction equipment and on-road vehicles. The assumed construction schedule is six construction seasons (720 days). For on-road vehicles (commuting construction workers, dump trucks and semi-trucks, emissions are calculated by estimating the number of vehicles, miles

traveled, gallons of fuel used (using default mileage rates from the FHWA https://www.fhwa.dot.gov/policyinformation/statistics/2022/pdf/vm1.pdf), and emission factors from the U.S. EPA's Emission Factors Hub (https://www.epa.gov/climateleadership/ghg-emission-factors-hub, updated January 2025).

10 diesel vehicles are estimated to travel 60 miles per day at 7.3 mpg (FHWA, 2022). The average vehicle miles traveled (VMT) for single-unit 2-axle 6-tire or more combination trucks in 2022 was 23,111 miles per year, which equates to about 60 miles per day, additionally these trucks run at 7.3 mpg (FHWA 2024). This equates to 59,178 gallons of diesel. According to the EPA's GHG Emission Factors Hub, 10,180 grams of CO2/gallon of diesel = 10.180 × 10-3 metric tons CO2/gallon of diesel (EPA, 2025). This equates to 602.43 MTCO2e from the diesel trucks.

10 Passenger vehicles are estimated to travel 30 miles per day at 22.8 mpg (FHWA, 2022). The average vehicle miles traveled (VMT) by light duty vehicles in 2022 was 10,917 miles per year, which equates to about 30 miles per day, additionally these vehicles run at 22.8 mpg (FHWA 2024). This equates to 9,473.7 gallons of gas. According to the EPA's GHG Emission Factors Hub, 8,887 grams of CO2/gallon of gasoline = 8.887 × 10-3 metric tons CO2/gallon of gasoline (EPA, 2025). This equates to 84.193 MTCO2e from the construction worker passenger vehicles.

The total construction vehicle emissions are 686.63 MTCO2e. Per EQB's Revised EAW Guidance, total construction emissions to construct the Project are divided by the lifetime of the project, estimated to be 30 years. Annualized over the project lifetime of 30 years, the total construction vehicle emissions are 22.89 MTCO2e.

Carbon Sink

20 trees are to be removed, while 400 trees are to be planted. According to the EPA's GHG Emission Factors Hub, 36.4 lbs C/tree/year × (44 units CO2/12 units C) × 1 metric ton/2,204.6 lbs = 0.060 metric ton CO2 sequestered per urban tree planted per year (EPA, 2025). Removing 20 trees equates to 1.2 MTCO2e no longer being sequestered while planting 400 equates to 24 MTCO2e being sequestered. Thus, the total carbon being sequestered is 22.8 MTCO2e.

Operational Emissions – Mobile Sources

There are three types of housing in the proposed project, each with a different predicted vehicle count. 303 single family detached homes – 2 vehicles per unit, 188 attached single-family homes – 1.5 vehicles per unit, 420 attached apartments/senior living – 1 vehicle per unit (National Multifamily Housing Council, 2024 https://www.nmhc.org/research-insight/quick-facts-figures/quick-facts-resident-demographics/household-characteristics/). The estimated total number of passenger vehicles is 1308.

1308 Passenger vehicles are estimated to travel 30 miles per day at 22.8 mpg (FHWA, 2022). The average vehicle miles traveled (VMT) by light duty vehicles in 2022 was 10,917 miles per year, which equates to about 30 miles per day, additionally these vehicles run at 22.8 mpg (FHWA 2024). This equates to 628,184 gallons of gas. According to the EPA's GHG Emission Factors Hub, 8,887 grams of CO2/gallon of gasoline = 8.887 × 10-3 metric tons CO2/gallon of gasoline (EPA, 2025). This equates to 5,582.67 MTCO2e from the residential passenger vehicles.

Operational Emissions – Stationary Combustion, Home Energy Use

According to the EPA's GHG Emission Factors Hub, the Total CO2 emissions for energy use per home: 4.798 metric tons CO2 for electricity + 2.16 metric tons CO2 for natural gas + 0.24 metric tons CO2 for propane + 0.25 metric tons CO2 for fuel oil = 7.45 metric tons CO2 per home per year (EPA, 2025).

According to the Energy Information Agency's Residential Energy Consumption Survey 2020 single family attached homes use about 2/3 of the energy of a detached home. Per household BTU of 67.1 (attached) vs 94.6 (detached) (https://www.eia.gov/consumption/residential/data/2020/c&e/pdf/ce1.1.pdf). According to the U.S. Energy Information Administration, Residential Energy Consumption Survey. June 18, 2013, households living in apartment buildings with five or more units use about half as much energy as other types of homes. (https://www.eia.gov/todayinenergy/detail.php?id=117310). There are 303 single family detached homes, 188 attached single-family homes, and 420 attached apartments/senior living. A single family detached home has 7.45 MTCO2e of emissions per unit, a detached single-family home has 4.97 MTCO2e of emissions per unit, and an attached apartment/senior living apartments have 3.73 MTCO2e of emissions per unit. In total for all 3 types of units, there are 4755.6 MTCO2e of emissions per year.

Summary

A summary of GHG emissions is provided below. Emissions are presented in tons per year of carbon dioxide equivalent, which considers each GHG's global warming potential (GWP).

GHG Emissions						
Scope	**Emission Type**	**Emission Sub-type**	**Existing Conditions (MTCO2e)**	**Project-related Conditions (MTCO2e)**	**Total Emissions (MTCO2e)**	**Calculation method(s)**
Scope 1	Combustion	Construction Mobile Equipment (annualized)	N/A	22.89	22.89	6 construction seasons, 120 days per season. 10 diesel vehicles, 60 miles per day, 7.3 mpg (FHWA, 2022), 10,180 grams of CO2/gallon of diesel = 10.180 × 10-3 metric tons CO2/gallon of diesel (EPA, 2025). 10 Passenger vehicles, 30 miles per day, 22.8 mpg (FHWA, 2022), 8,887 grams of CO2/gallon of gasoline = 8.887 × 10-3 metric tons CO2/gallon of gasoline (EPA, 2025). Annualized over the project lifetime of 30 years.

Scope 1	Land Use (Conversion)	Carbon Sink	-1.2 (trees removed)	-24	-22.8	20 trees removed; 400 trees planted. 36.4 lbs C/tree/year × (44 units CO2/12 units C) × 1 metric ton/2,204.6 lbs = 0.060 metric ton CO2 sequestered per urban tree planted per year (EPA, 2025).
Scope 1	Motor Vehicle Emissions	Personal Vehicles	0	5582.67	5582.67	303 single family detached homes – 2 vehicles per unit, 188 attached single-family homes – 1.5 vehicles per unit, 420 attached apartments/senior living – 1 vehicle per unit (National Multifamily Housing Council, 2024). 1308 vehicles, 30 miles per day, 22.8 mpg (FHWA, 2022). 8,887 grams of CO2/gallon of gasoline = 8.887 × 10-3 metric tons CO2/gallon of gasoline (EPA, 2025).
Scope 2	Off-Site Energy	Home Energy Use	0	4755.58	4755.58	Total CO2 emissions for energy use per home: 4.798 metric tons CO2 for electricity + 2.16 metric tons CO2 for natural gas + 0.24 metric tons CO2 for propane + 0.25 metric tons CO2 for fuel oil = 7.45 metric tons CO2 per home per year (EPA, 2025). 303 single family detached homes, 188 attached single-family homes, 420 attached apartments/senior living. Attached single family homes use 2/3 energy as a detached home (Energy Information Agency, 2020) while apartments use half as much energy (Energy Information Agency, 2013).
TOTAL*					**10,338.35**	

b. *GHG Assessment*

i. *Describe any mitigation considered to reduce the project's GHG emissions.*

Over the project's assumed 30-year lifespan, there will be an estimated 10,338.35 MTCO2e emitted without mitigations. This is equivalent to 2,411 gasoline-powered passenger vehicles being driven for one year, per the EPA Greenhouse Gas Equivalencies Calculator. At least some of these emissions may be mitigated or offset by practices that can remove carbon from the atmosphere and sequester it. Other mitigation measures can reduce indirect GHG emissions due to energy usage and other activities. These mitigation efforts may include planting native grasses to facilitate carbon uptake, establishing sustainability operations such as encouraging the use of high-efficiency natural gas water heaters to reduce electric and natural gas usage, and encouraging efficient heating, ventilation, and air conditioning systems. The majority of these mitigation efforts will depend on municipal policy and end-user efforts and are therefore not a part of the current project proposal. However, during construction, contract laborers will be encouraged to carpool and BMPs such as engine anti-idling will be implemented to minimize additional GHG output.

ii. *Describe and quantify reductions from selected mitigation, if proposed to reduce the project's GHG emissions. Explain why the selected mitigation was preferred.*

No additional on-site mitigation is planned as part of the proposed project.

iii. *Quantify the proposed projects predicted net lifetime GHG emissions (total tons/#of years) and how those predicted emissions may affect achievement of the Minnesota Next Generation Energy Act goals and/or other more stringent state or local GHG reduction goals*.

As current MN Statutes require greenhouse gas (GHG) emissions control plans for large energy facilities, the state has implemented a climate action plan to address GHG emissions. Current goals are to reduce GHG emissions statewide to 30% below 2005 levels by 2025, and 80% below 2005 levels by 2050.

Minnesota's Climate Action Framework has a priority action to Establish a standard to achieve 100% carbon-free electricity and 55% renewable electricity by 2040. Minnesota's current updated 20203, Climate Action Framework goals are to reduce greenhouse gas emissions 50% by 2030 from a 2005 baseline and achieve net-zero emissions by 2050. The proposed project does not involve any large energy facilities but includes residential properties. BMPs will be utilized in the planning and construction phases of the project to remain in keeping with state and local GHG reduction goals. Again, over the project's assumed 30-year lifespan, there will be an estimated 10,338.35 MTCO2e emitted annually without any mitigations.

19. 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.

Existing noise sources include vehicle traffic within the City of Buffalo. The proposed project corridor spans undeveloped land including brush, grassland, and agricultural land. The nearest

sensitive receptors include residential neighborhoods located directly north, south, west and east of the project.

Project construction would increase noise levels relative to existing conditions. Increases would be associated with construction equipment and therefore temporary and short in duration over the course of the construction. Construction is not planned to occur outside of standard daylight working hours. The contractor would be required to comply with local ordinance requirements regarding noise.

Advanced notice would be provided to affected communities of any planned abnormally loud construction activities. High-impact equipment noise such as pavement sawing or jackhammering would likely be required. No pile-driving would be required.

The project would conform with all applicable MnDOT and Federal Highway Administration (FHWA) noise standards.

20. 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*.

The project includes 303 unattached single-family homes and 608 attached housing units with their own parking. The estimated total daily trips are 6,876. During the evening traffic peak hour period 595 trips are projected. The source of the trip generation rates are from a measured traffic impact study conducted in January 2025 and by reviewing existing city and county data. Other transit options are not available in the City of Buffalo. Appendix H includes the traffic impact study that was performed for this project.

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,*

Access to the project is planned via existing neighborhood street connections and new location roadway locations. A north/south collector road (Road A) through the site is considered with 8th St NE realigned to intersect Road A and with Road A intersecting CSAH 35 for a primary access point.

Results of the existing conditions operational and safety analysis show all study area intersections operate acceptably, but there are queuing concerns at the CSAH 35/Ryan's Way intersection with the existing side-street stop-control. The City is ultimately proposing a roundabout at this intersection to mitigate these issues.

Results of the 2029 and 2045 No-Build conditions analysis show all study area intersections operate acceptably and there are no recommendations due to growth in background traffic.

Results of the 2029 Build conditions analysis show enhanced traffic control is needed at the CSAH 35/Road A intersection with the inclusion of project site generated traffic and a roundabout (2 lanes on CSAH 35, 1 lane on Road A) is recommended. All other studied intersections and access locations operate acceptably.

Results of the 2045 Build conditions analysis show all studied intersections and access locations operate acceptably (assuming the recommended CSAH 35/Road A roundabout). Additionally, the recommended CSAH 35/Road A roundabout will have available capacity to accommodate a south leg for development potential south of CSAH 35.

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

Two measures taken to mitigate traffic congestion include the addition of two roundabouts at CSAH 35/Ryan's Way and CSAH 35/Road A. With these two improvements, the results of the 2029 and 2045 traffic analysis is projecting that no additional traffic control measures would be needed.

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

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.*

Construction and development of the proposed project is anticipated to begin in 2025. During the timeline of the project, the City will promote sustainable practices to reduce impacts from other local and regional development.

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.*

The City will coordinate with the county and area townships to determine any potential constraints or opportunities with regard to additional road or other improvements, or developments, in this area that may compound impacts identified within this EAW—especially during active construction.

Zoning and all permit and approval requirements will be secured prior to construction.

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.*

Cumulative effects associated with the Proposed Project are essentially the effects of continued growth and development. This can have both positive and negative effects on the human and natural environment. The largest impact to this parcel is the loss of wildlife areas and an increase in impervious surfaces. Through responsible development and using best management practices, negative impacts can be minimized.

Through the increase in traffic and impervious surfaces, and adding facilities with heating and cooling systems, there may be a minimal increase in greenhouse gas (GHG) emissions. It is unlikely this will greatly increase the regional impacts from climate change. Best management practices during the construction process, use of energy-efficient building materials and appliances, and the addition of native landscape vegetation and tree species may help offset impacts from increased GHG emissions.

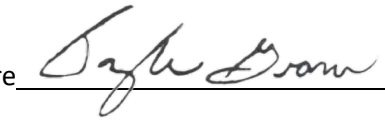
22. **Other potential environmental effects:** *If the project may cause any additional environmental effects not addressed by items 1 to 19, describe the effects here, discuss how the environmentwill be affected, and identify measures that will be taken to minimize and mitigate these effects.*

    Other potential environmental effects are not anticipated.

RGU CERTIFICATION. *(The Environmental Quality Board will only accept **SIGNED** Environmental Assessment Worksheets for public notice in the EQB Monitor.)*

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9c and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Signature  Date 6/2/25

Title City Administrator

FIGURES

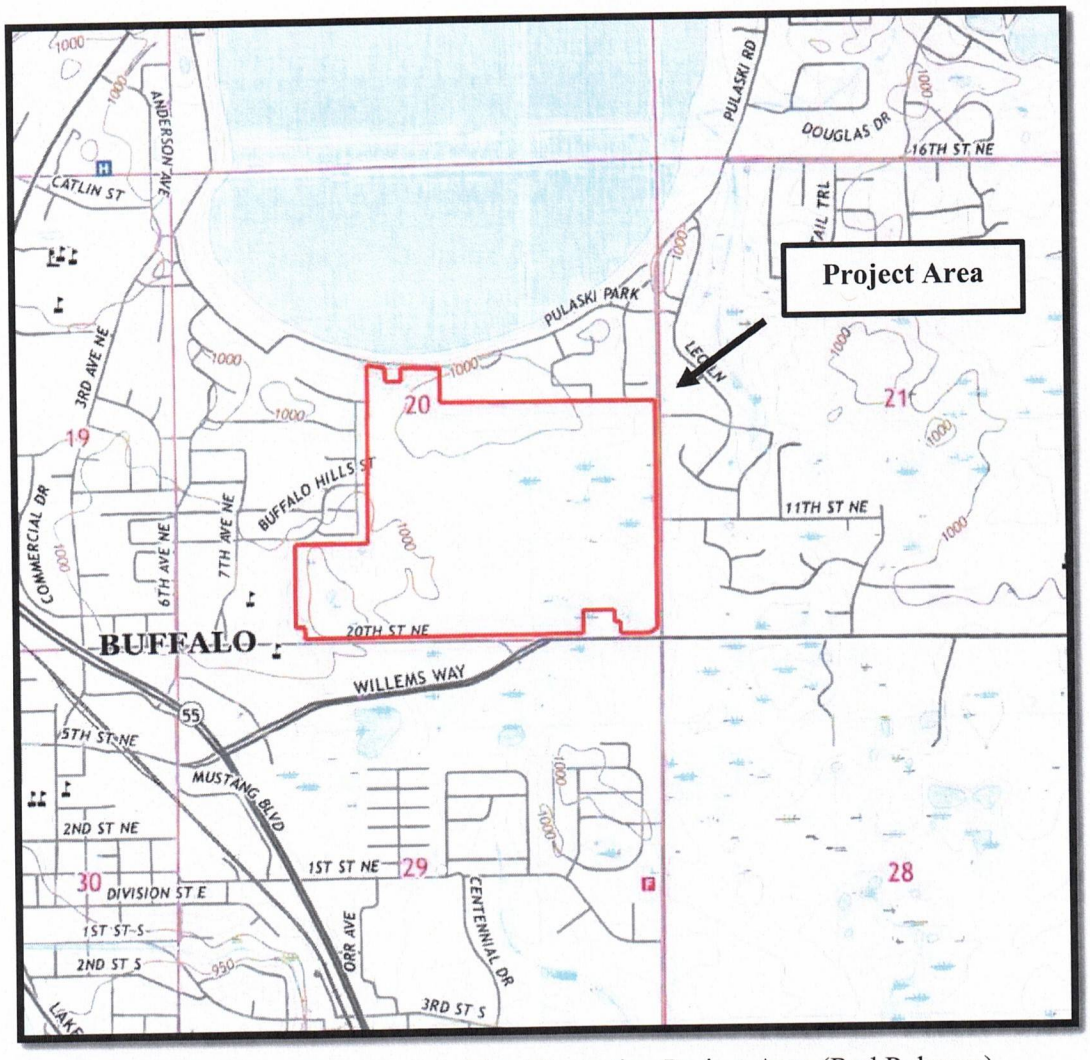
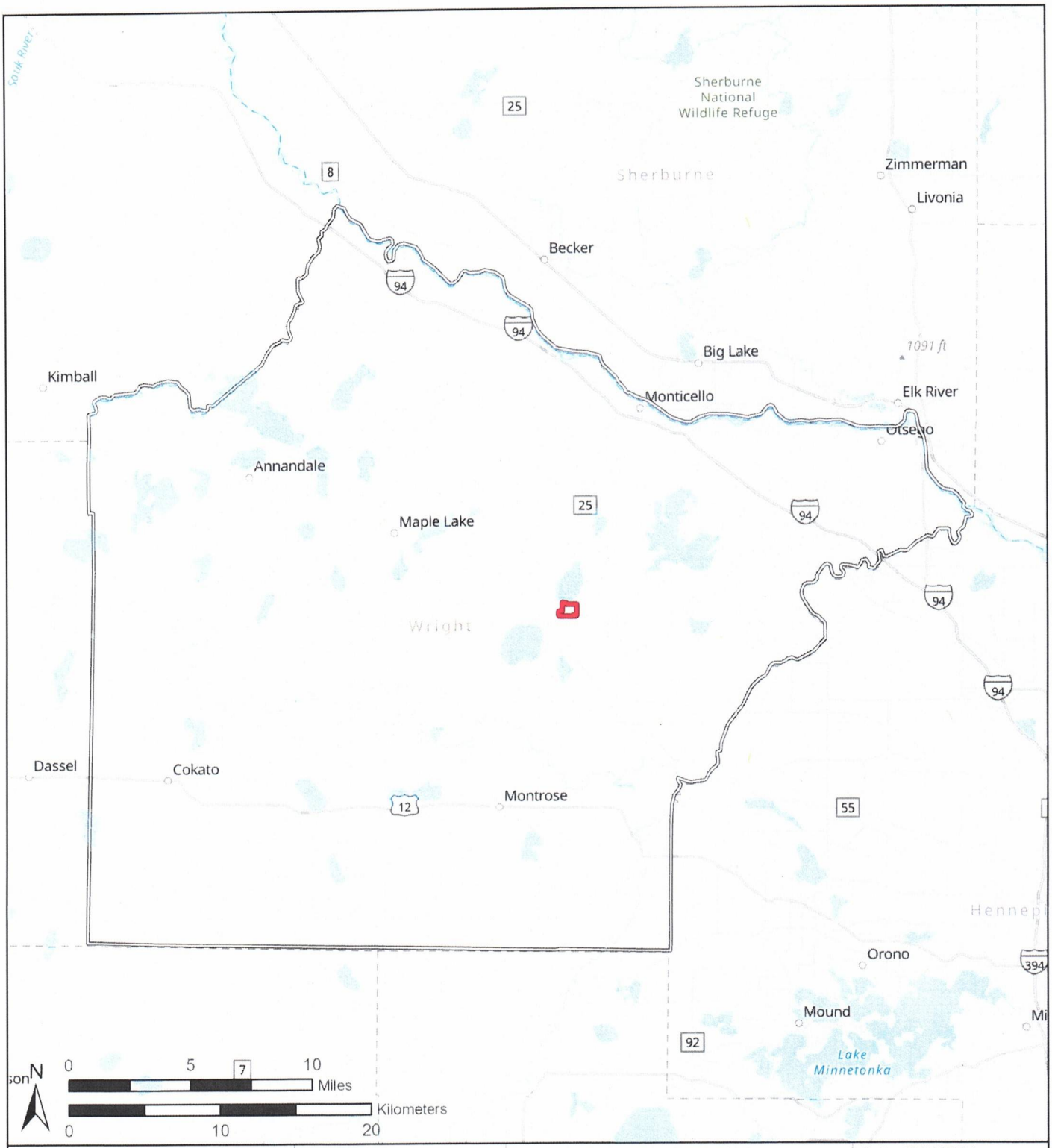


Figure 1: USGS Topographic Map Illustrating Project Area (Red Polygon).
(USGS 7.5' Topographic Map, Buffalo East Quadrangle, 2022, 1:24,000).



Legend

Scale: 1:350,000

- Project Site
- Wright County, MN

Project Name: Pulaski Shores EAW	Date: 12/13/2024
MDX Name: 2025-02 Pulaski Shores EAW	Project Number: 2025-02

Figure 2

General Project Location

Jacobson Environmental, PLLC.
Phone: (612)-802-6619
E-mail: jacobsonenv@msn.com

Jacobson Environmental

Figure 3 Pre-Construction Site Plan

Concept Sketch Plan

Figure 4 Post-Construction Site Plan

CONCEPT DATA:

Gross Site Area:	~210.1 ac
Delineated Wetlands:	~24.8 ac
Pipeline Easements: (net wetlands)	~5.5 ac
Net Developable Area:	~179.8 ac
Park: (net wetlands)	~10.2 ac
Project Open Space: (includes parks, wetlands, esmts, ponding, buffers, etc)	~ 58.5 ac
Proposed Single Fam Lots:	303 lots
45' wide x 130' deep Villa Lots	61 lots
55' wide x 130' deep typical	72 lots
65' wide x 130' deep typical	118 lots
85' wide x 130' deep (Shoreland)	52 lots
Proposed Attached Resid:	~ 608 un.
Twinhomes	62 un.
Row Townhomes	126 un.
Apartments	~380 un.
Senior Living	~40 un.
Overall Gross Density: (911 un / 210.1 ac gross site area)	4.3 un/ac
Net Density: (911 un / 179.8 ac net developable	5.0 un/ac
Local Streets:	23,850 lf

Aerial photography from State of Minnesota;
Topography from State LIDAR

Pulaski Shores, LLC

A Partnership Between

Hokanson Construction And Development, Inc
1550 91st. Ave. N. E. Suite #110
Blaine, Mn 55449
Roger Hokanson, Pres.
Email: roger@hokph.com
Office 763-784-4792
Cell 763-286-7995
&

Buffalo Lakes Partners, Llc
9705 45th Ave N. Unit 421176
Plymouth, Mn 55442
Donald Krause, Pres.
Email: dwkrsn@yahoo.com
612-242-5257

Westwood

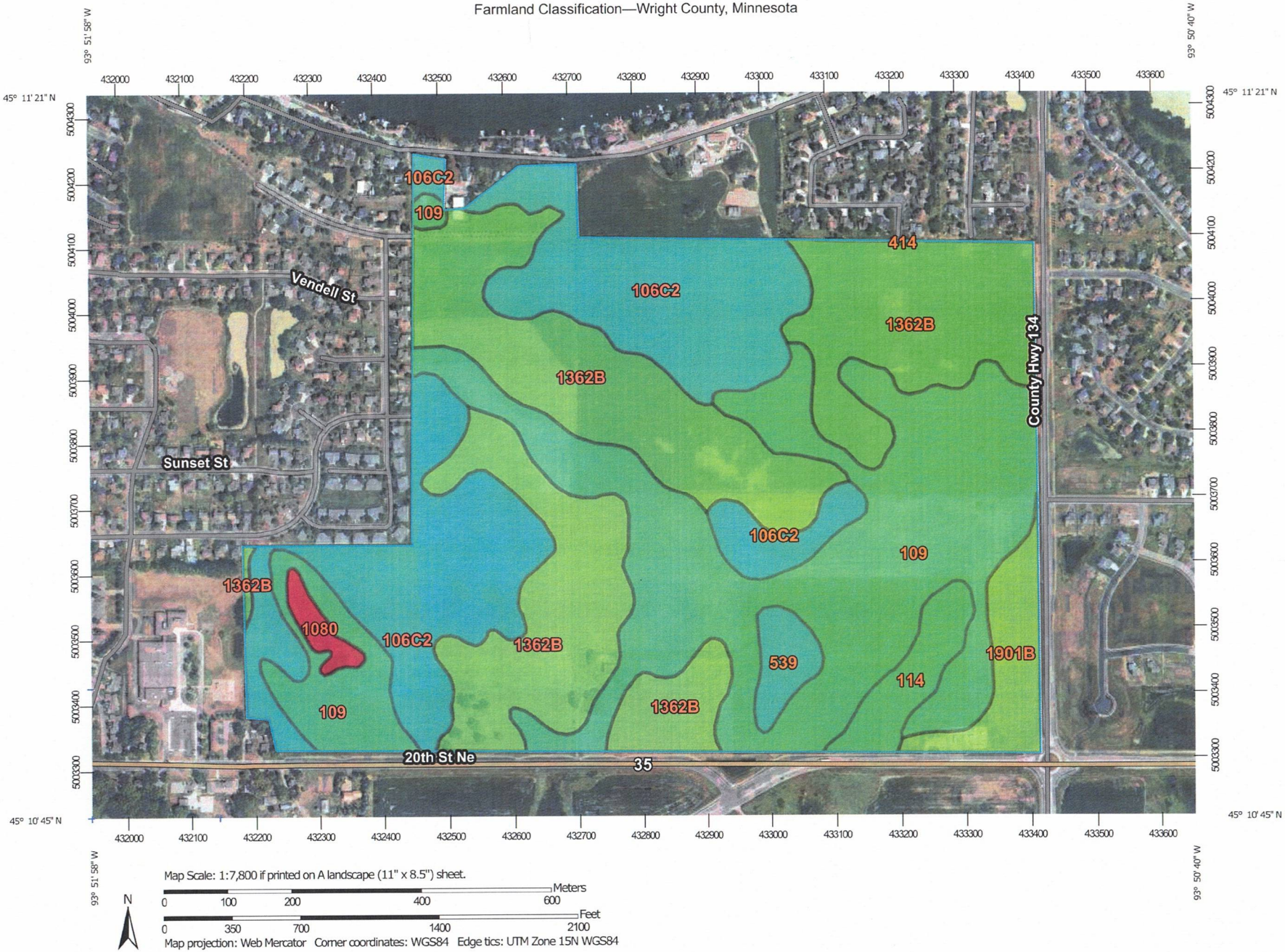
0057163
11-08-2024

Pulaski Shores
Buffalo, MN

0' 200' 400' 600'

Figure 5 Farmland Classification Map

Farmland Classification—Wright County, Minnesota



Farmland Classification

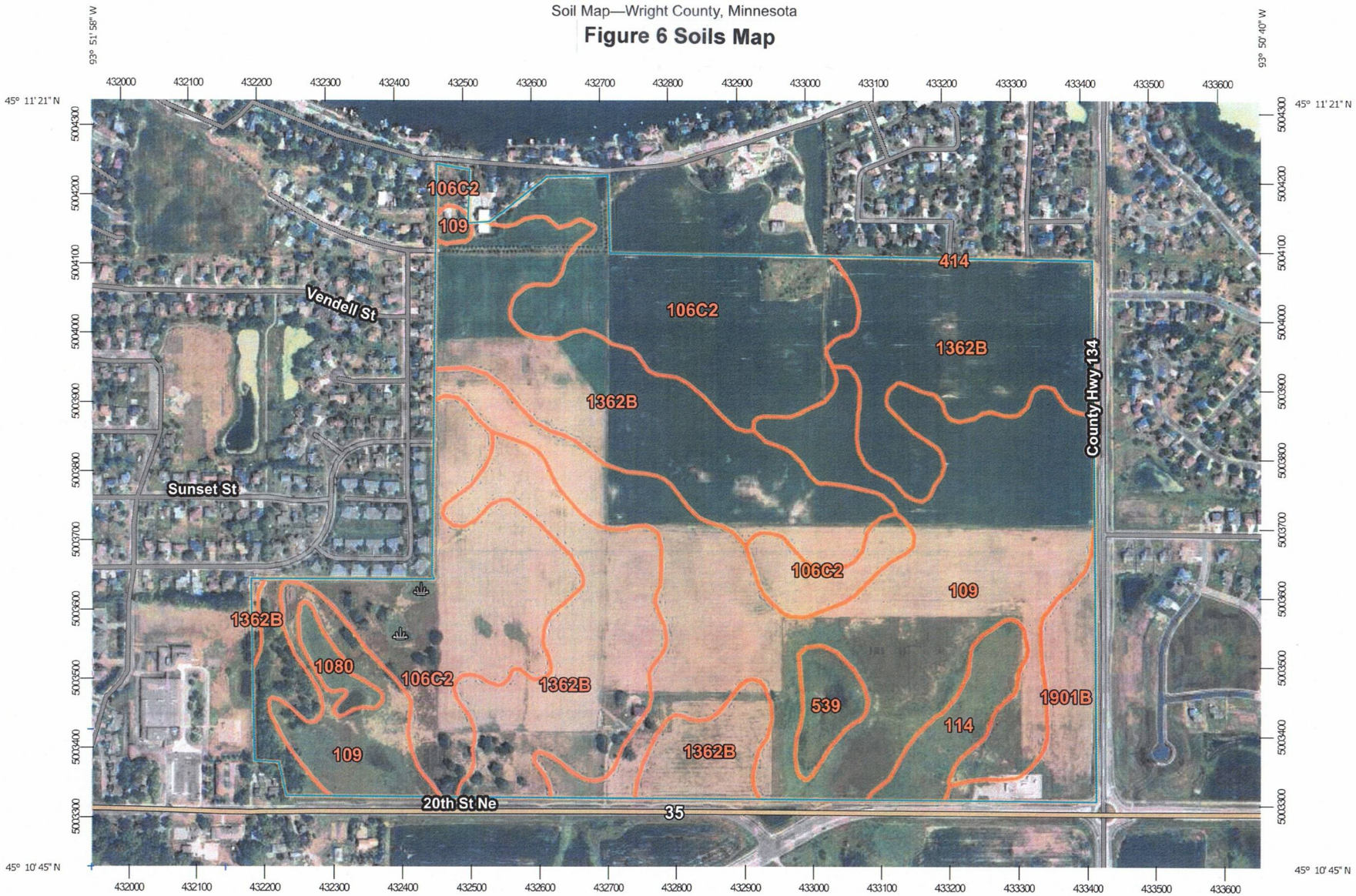
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
106C2	Lester loam, 6 to 10 percent slopes, moderately eroded	Farmland of statewide importance	52.8	24.7%
109	Cordova clay loam, 0 to 2 percent slopes	Prime farmland if drained	68.8	32.2%
114	Glencoe clay loam, 0 to 1 percent slopes	Prime farmland if drained	5.3	2.5%
414	Hamel loam, 0 to 2 percent slopes	Prime farmland if drained	0.0	0.0%
539	Klossner muck, 0 to 1 percent slopes	Farmland of statewide importance	3.2	1.5%
1080	Klossner, Okoboji and Glencoe soils, ponded, 0 to 1 percent slopes	Not prime farmland	1.8	0.8%
1362B	Angus loam, 2 to 6 percent slopes	All areas are prime farmland	74.8	35.0%
1901B	Angus-Le Sueur complex, 1 to 6 percent slopes	All areas are prime farmland	7.2	3.4%
Totals for Area of Interest			**213.9**	**100.0%**

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

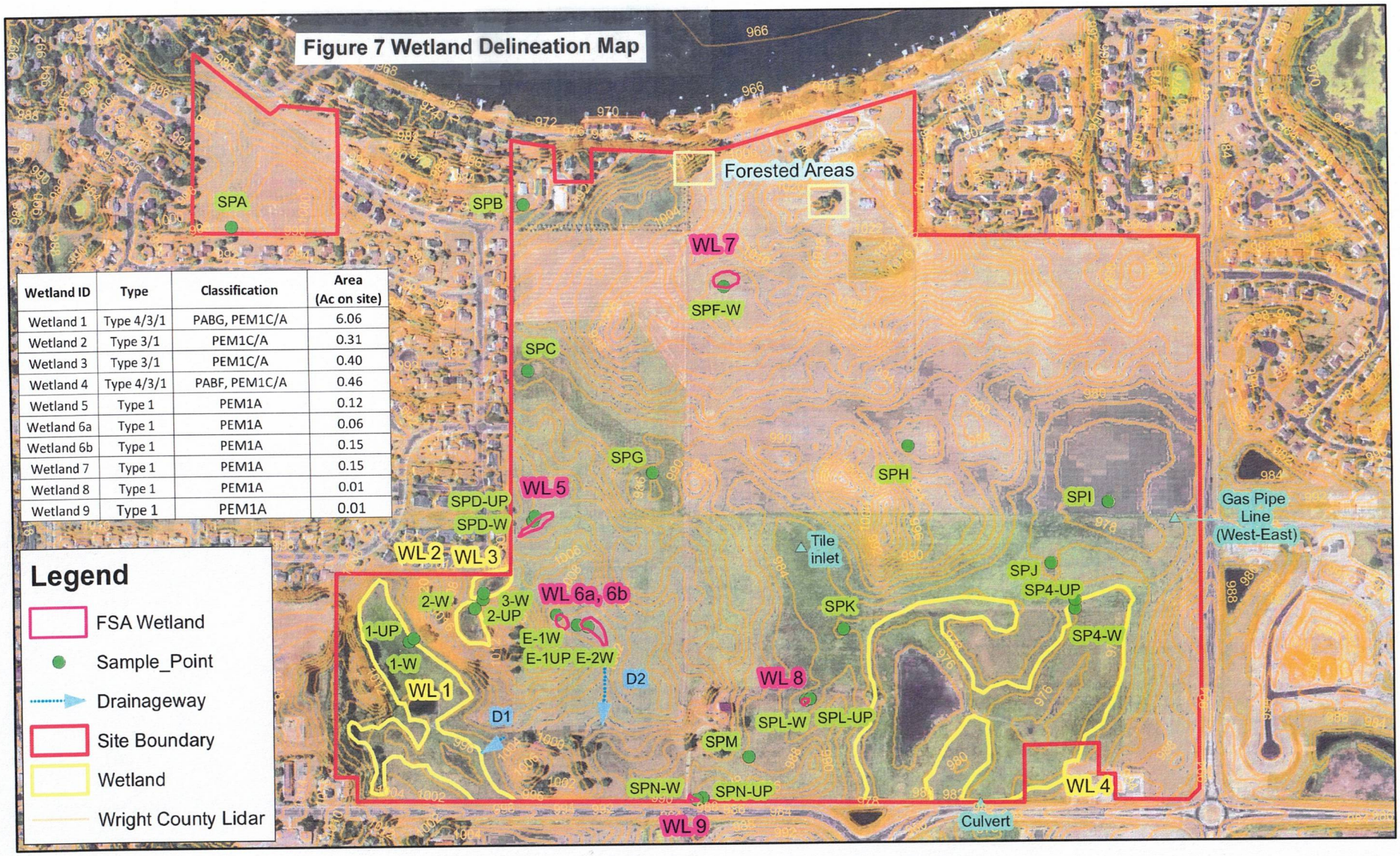
Figure 6 Soils Map



Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
106C2	Lester loam, 6 to 10 percent slopes, moderately eroded	52.8	24.7%
109	Cordova clay loam, 0 to 2 percent slopes	68.8	32.2%
114	Glencoe clay loam, 0 to 1 percent slopes	5.3	2.5%
414	Hamel loam, 0 to 2 percent slopes	0.0	0.0%
539	Klossner muck, 0 to 1 percent slopes	3.2	1.5%
1080	Klossner, Okoboji and Glencoe soils, ponded, 0 to 1 percent slopes	1.8	0.8%
1362B	Angus loam, 2 to 6 percent slopes	74.8	35.0%
1901B	Angus-Le Sueur complex, 1 to 6 percent slopes	7.2	3.4%
Totals for Area of Interest		**213.9**	**100.0%**

Figure 7 Wetland Delineation Map



Wetland ID	Type	Classification	Area (Ac on site)
Wetland 1	Type 4/3/1	PABG, PEM1C/A	6.06
Wetland 2	Type 3/1	PEM1C/A	0.31
Wetland 3	Type 3/1	PEM1C/A	0.40
Wetland 4	Type 4/3/1	PABF, PEM1C/A	0.46
Wetland 5	Type 1	PEM1A	0.12
Wetland 6a	Type 1	PEM1A	0.06
Wetland 6b	Type 1	PEM1A	0.15
Wetland 7	Type 1	PEM1A	0.15
Wetland 8	Type 1	PEM1A	0.01
Wetland 9	Type 1	PEM1A	0.01

Legend

- FSA Wetland
- Sample_Point
- Drainageway
- Site Boundary
- Wetland
- Wright County Lidar

Existing Conditions (2021 FSA)

N

0 2,000 Feet

KJOLHAUG ENVIRONMENTAL SERVICES COMPANY

Source: MNGEO Spatial Commons

Buffalo Lake Partners, Pulaski Road (KES 2024-128)
Buffalo, Minnesota

Note: Boundaries indicated on this figure are approximate and do not constitute an official survey product.

Minnesota Department of Health

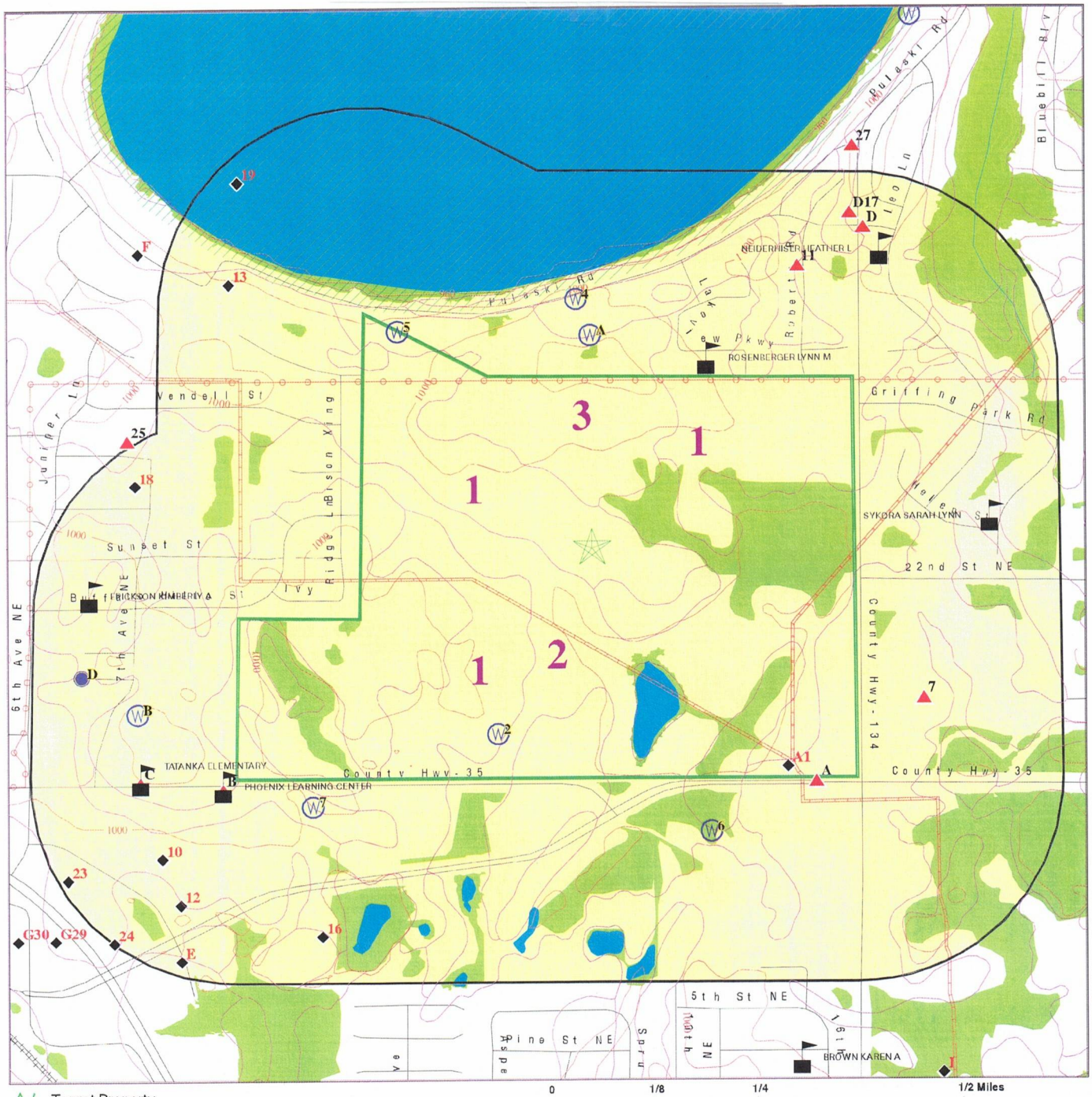
Minnesota Well Index

Version: 2.2.2, Timestamp: 2024-09-26 15:45

Figure 8 Minnesota Well Index Map

Base Maps | Other Links | Help

Figure 9 EDR Radius Map around the Site



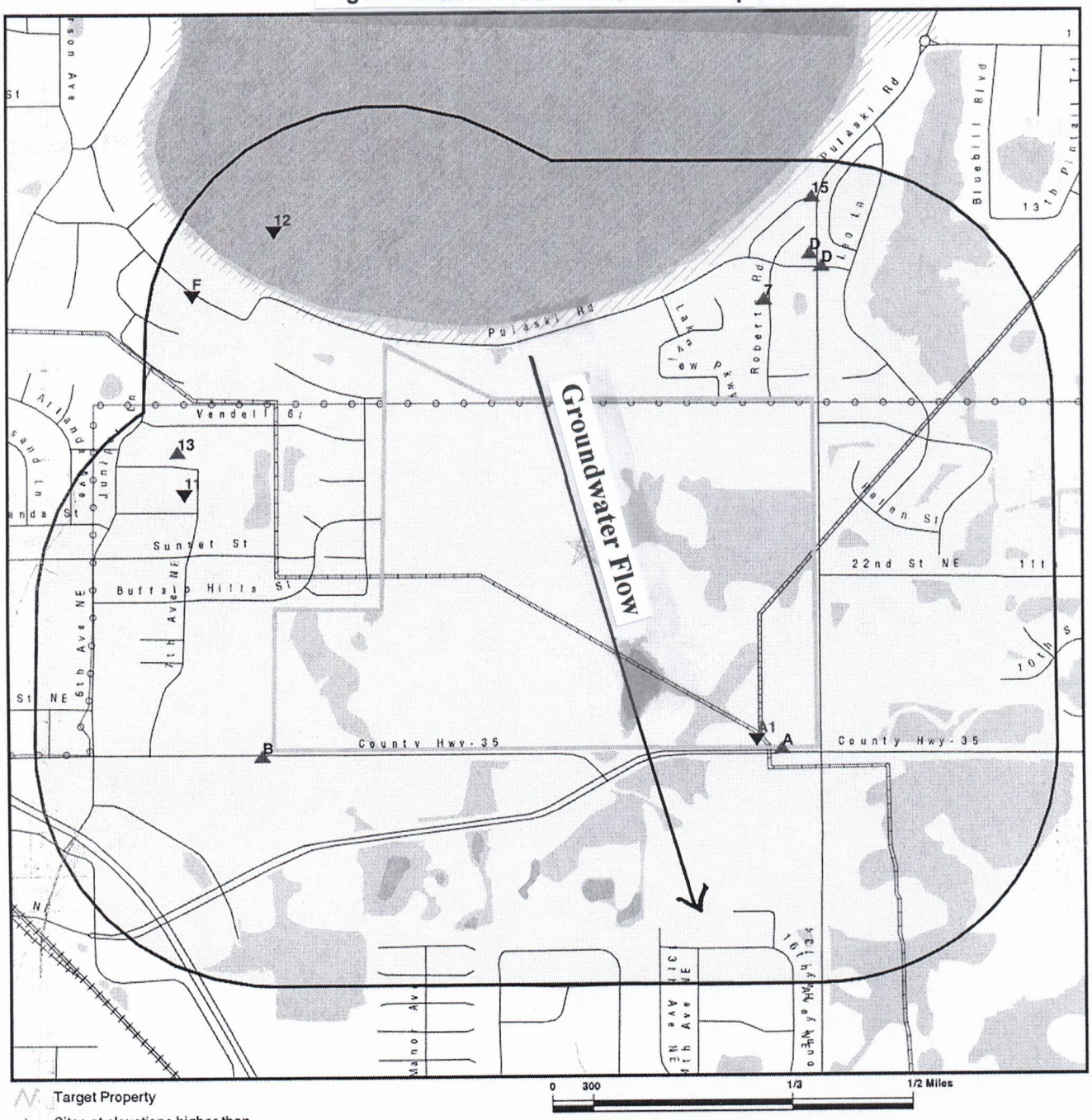
0 1/8 1/4 1/2 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Pipelines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Pulaski Shores EAW	CLIENT:	Jacobson Environmental, PLLC
ADDRESS:	1552 20th Street NE Buffalo MN 55313	CONTACT:	Wayne Jacobson
LAT/LONG:	45.18421 / 93.85403	INQUIRY #:	7846789.2s
		DATE:	December 12, 2024 8:08 am

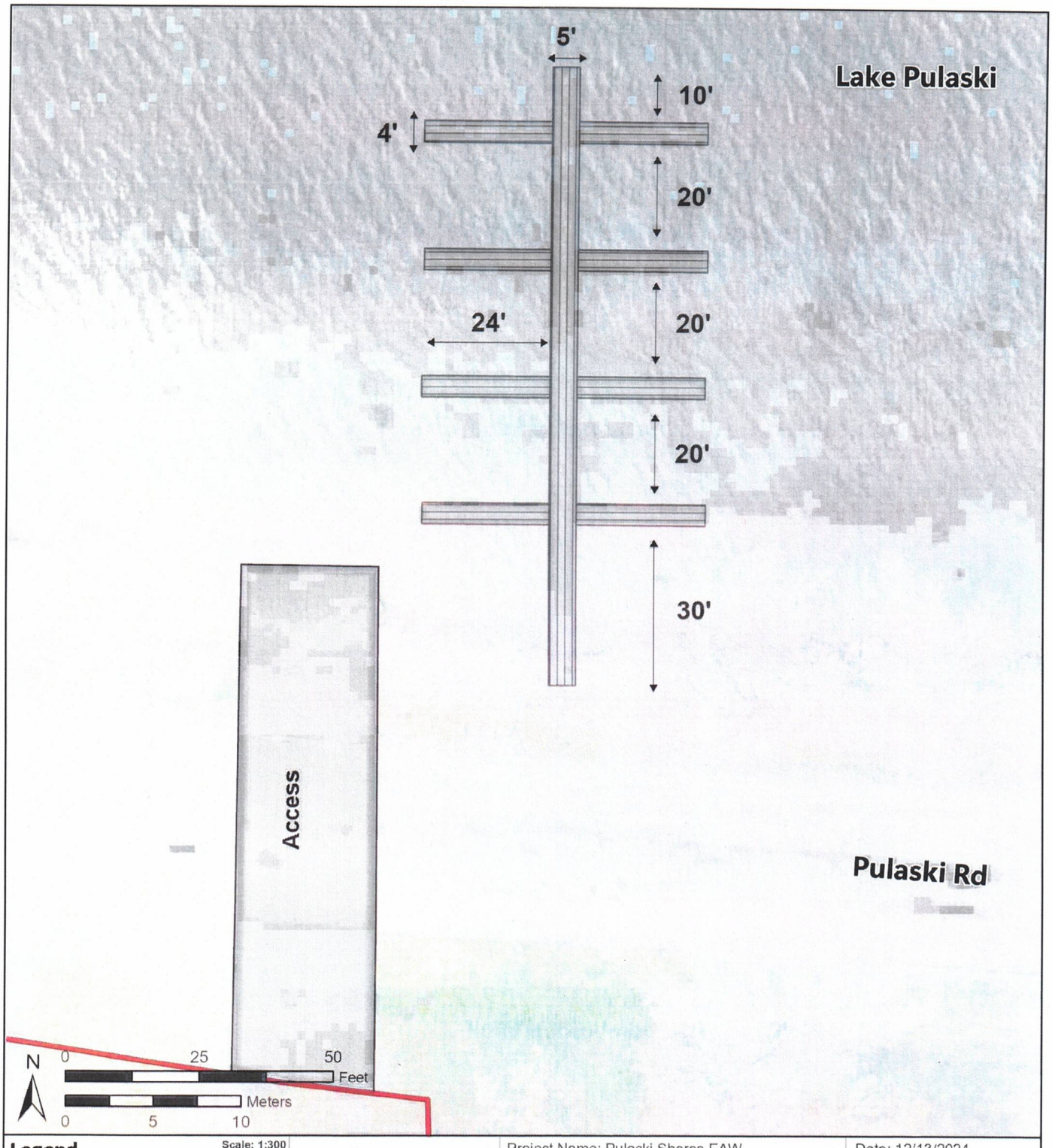
Figure 10 EDR Groundwater Flow Map



This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Pulaski Shores EAW ADDRESS: 1552 20th Street NE Buffalo MN 55313 LAT/LONG: 45.18421 / 93.85403	CLIENT: Jacobson Environmental, PLLC CONTACT: Wayne Jacobson INQUIRY #: 7846789.2s DATE: December 12, 2024 8:08 am

Figure 11 Dock Plan



Legend

Scale: 1:300

- Lake Access
- Dock
- Project Site

Project Name: Pulaski Shores EAW	Date: 12/13/2024
MDX Name: 2025-02 Pulaski Shores EAW	Project Number: 2025-02

Shores on Lake Pulaski: Dock Plan

Jacobson Environmental, PLLC.

Phone: (612)-802-6619

E-mail: jacobsonenv@msn.com

Jacobson Environmental

APPENDIX A

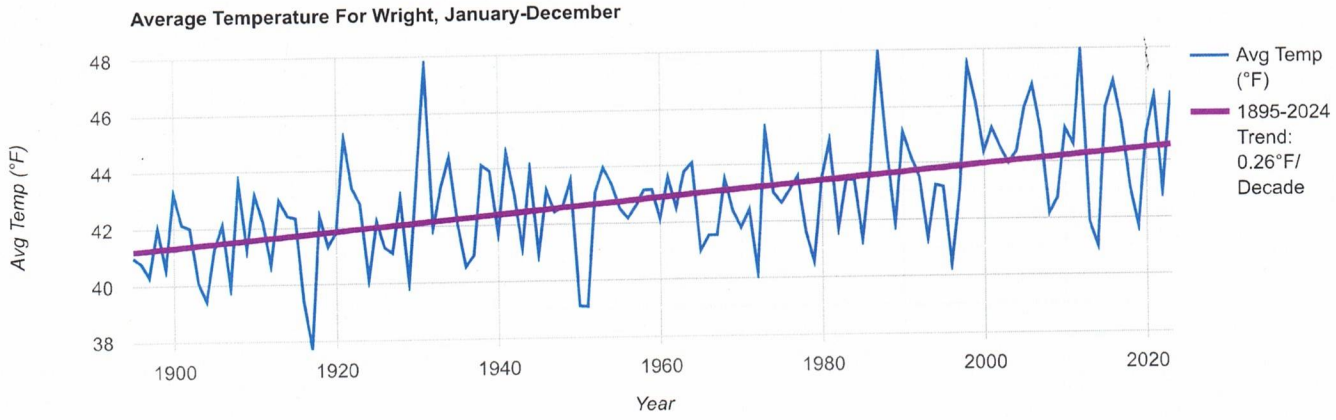
Mean Temperature and Precipitation and Palmer Drought Index 1895-2024

☑ Show trend for these years:

Start: 1895

End: 2024

☐ Show smoothed time series



Download:

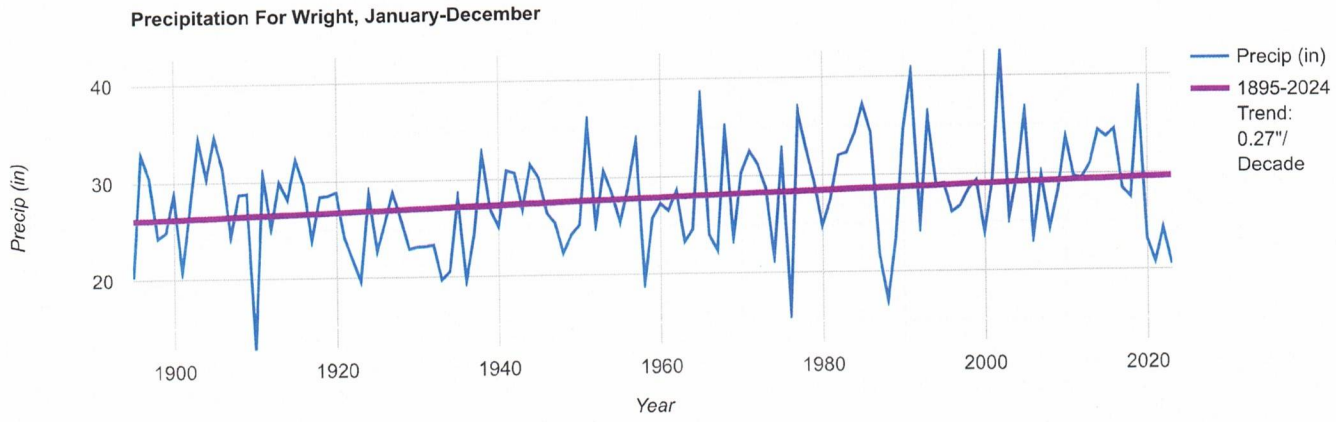
Year	Avg Temp (°F)	1895-2024 Trend: 0.26°F/Decade
1895	41	41.2
1896	40.8	41.23
1897	40.32	41.25
1898	42.06	41.28
1899	40.58	41.31
1900	43.24	41.33
1901	42.14	41.36
1902	42.03	41.39
1903	40.12	41.41
1904	39.46	41.44
1905	41.3	41.46
1906	42.13	41.49

☑ Show trend for these years:

Start: 1895

End: 2024

☐ Show smoothed time series



Download:

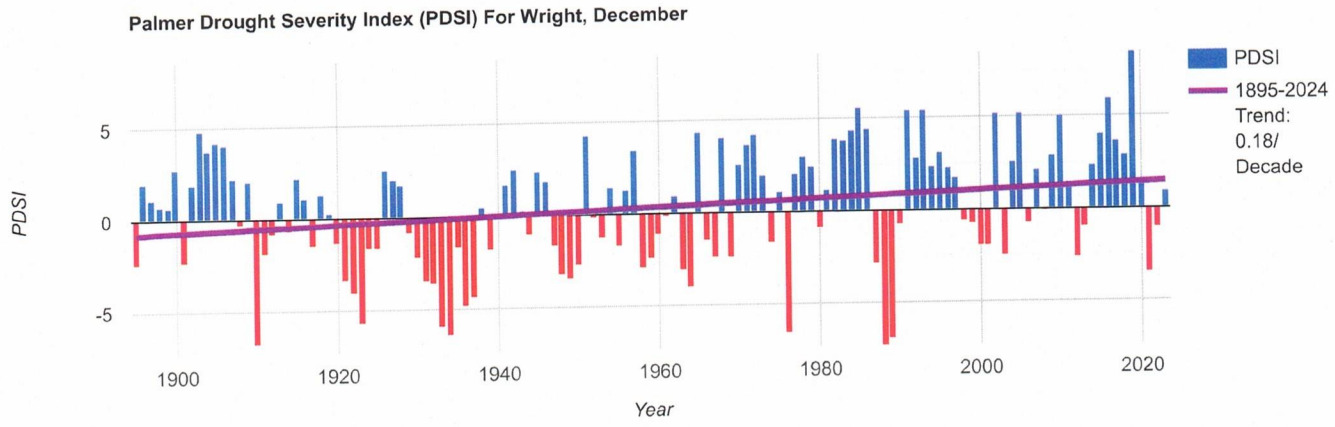
Year	Precip (in)	1895-2024 Trend: 0.27"/Decade
1895	20.34	26.17
1896	32.89	26.2
1897	30.53	26.22
1898	24.4	26.25
1899	25.02	26.28
1900	28.82	26.3
1901	20.94	26.33
1902	27.42	26.36
1903	34.46	26.39
1904	30.38	26.41
1905	34.59	26.44
1906	31.42	26.47

☑ Show trend for these years:

Start: 1895

End: 2024

☐ Show smoothed time series

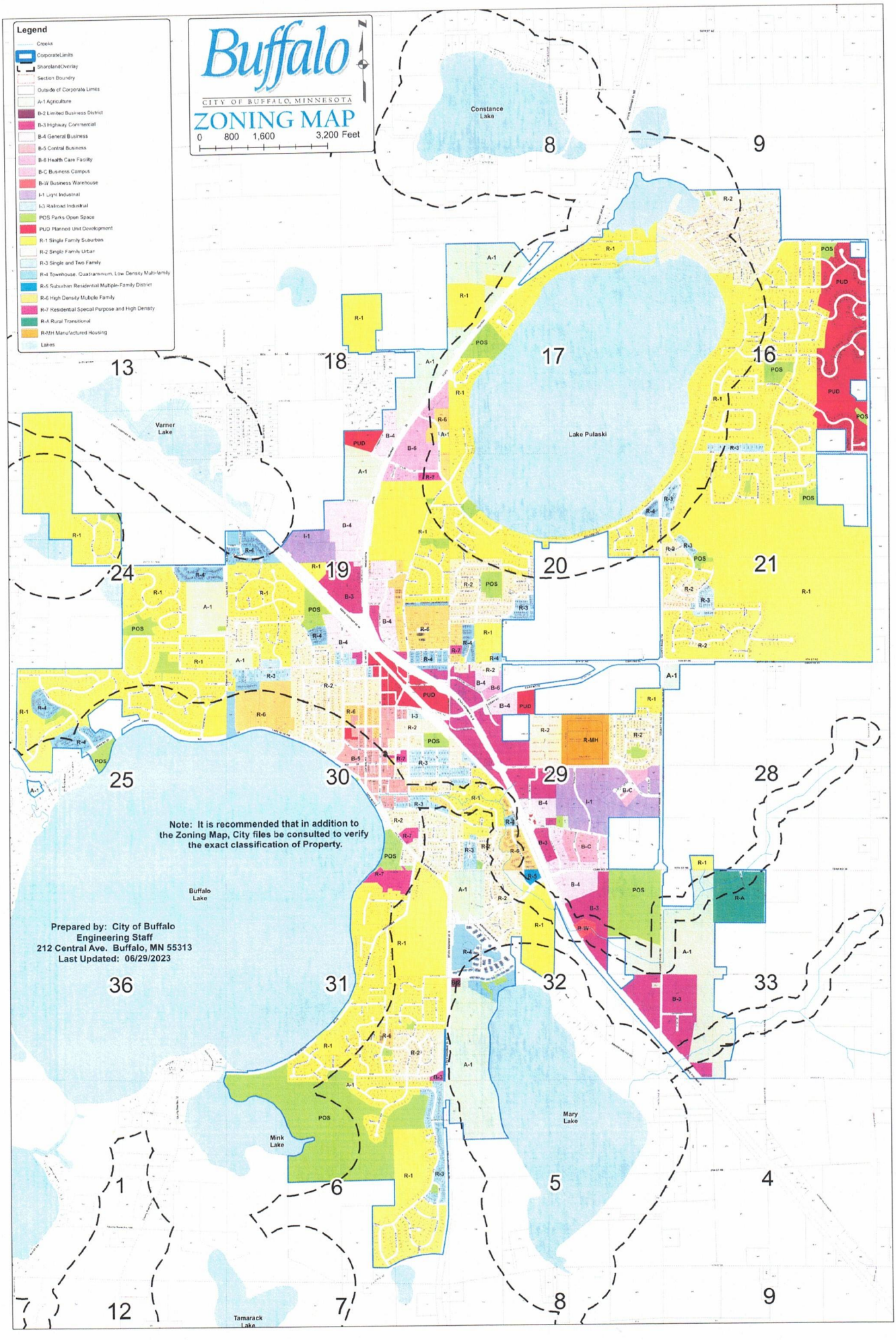


Download:

Year	PDSI		1895-2024 Trend: 0.18/Decade
1895	-2.47	red	-0.85
1896	1.95	blue	-0.84
1897	1.08	blue	-0.82
1898	0.69	blue	-0.8
1899	0.63	blue	-0.78
1900	2.7	blue	-0.76
1901	-2.39	red	-0.74
1902	1.87	blue	-0.73
1903	4.76	blue	-0.71
1904	3.72	blue	-0.69
1905	4.18	blue	-0.67
1906	4.04	blue	-0.65

APPENDIX B

City of Buffalo Zoning Map


Legend
Creeks
CorporateLimits
ShorelandOverlay
Section Boundry
Outside of Corporate Limits
A-1 Agriculture
B-2 Limited Business District
B-3 Highway Commercial
B-4 General Business
B-5 Central Business
B-6 Health Care Facility
B-C Business Campus
B-W Business Warehouse
I-1 Light Industrial
I-3 Railroad Industrial
POS Parks-Open Space
PUD Planned Unit Development
R-1 Single Family Suburban
R-2 Single Family Urban
R-3 Single and Two Family
R-4 Townhouse, Quadraminium, Low Density Multi-family
R-5 Suburban Residential Multiple-Family District
R-6 High Density Multiple Family
R-7 Residential Special Purpose and High Density
R-A Rural Transitional
R-MH Manufactured Housing
Lakes
Buffalo
CITY OF BUFFALO, MINNESOTA
ZONING MAP
0 800 1,600 3,200 Feet
Constance Lake
Lake Pulaski
Varner Lake
Buffalo Lake
Mary Lake
Mink Lake
Tamarack Lake
Note: It is recommended that in addition to the Zoning Map, City files be consulted to verify the exact classification of Property.
Prepared by: City of Buffalo
Engineering Staff
212 Central Ave. Buffalo, MN 55313
Last Updated: 06/29/2023

APPENDIX C

Beacon Property Information

Wright County, MN

Summary

Parcel ID	202000204400
Property Address	1552 20TH ST NE BUFFALO MN 55313
Sec/Twp/Rng	20-120-025
Brief Tax Description	SECT-20 TWP-120 RANGE-025 UNPLATTED LAND BUFFALO TWP 68.72 AC S82.62RDS OF GOV LT5 < D EX TR IN UNCONT 202000-204403 EX TR DES ON DOC756669(204402) EX ELY 33FT OF SE OF SE EX ALL EXISTING CSAH 35(20TH ST NE)R/W WH LIES WLY OF LN 590.55FT WLY OF&PAR/W E LN OF SE1/4(103500-204402) EX HWY R/W SHWN ON CTY HWY R/W PLAT NO.37(ADD TO 204402) (Note: Not to be used on legal documents)
Class	101 - 2A/1B/4BB AGRICULTURAL
District	(1801) TOWN OF BUFFALO-0877
School District	0877 (Note: Class refers to Assessor's Classification Used For Property Tax Purposes)

This parcel has Green Acres and/or Rural Preserve

Sales

Multi Parcel	Instr Type	Qualified Sale	Sale Date	Book	Page	Sale Type	Buyer	Seller	Sale Price	Adjusted Sale Price	eCRV #	eCRV	Sale Type	S.S. Rcmd.	S.S. Rjt. Rsn.	Transact Num
Y	WD	U	3/2/2012			I-Improved	MARGARET RANDEL	RANDEL DAVID	$300,000	$300,000	117558		I		02-RELATIVES	117558

⊞ There are other parcels involved in one or more of the above sales:

Valuation

		2024 Assessment	2023 Assessment	2022 Assessment	2021 Assessment	2020 Assessment
+	Estimated Land Value	$912,400	$912,400	$910,700	$751,900	$749,100
+	Estimated Building Value	$9,600	$9,600	$9,000	$9,200	$9,200
+	Estimated Machinery Value	$0	$0	$0	$0	$0
=	**Total Estimated Market Value**	**$922,000**	**$922,000**	**$919,700**	**$761,100**	**$758,300**
%	Change	0.00%	0.25%	20.84%	0.37%	5.85%

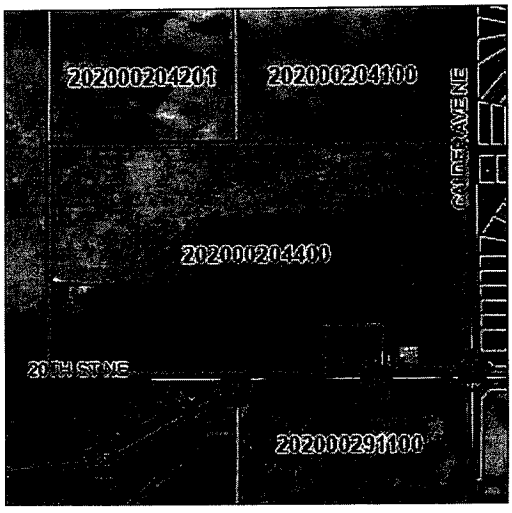
Taxation

		2024 Payable	2023 Payable	2022 Payable	2021 Payable
	Estimated Market Value	$922,000	$919,700	$761,100	$758,300
-	Excluded Value	$0	$0	$0	$0
-	Homestead Exclusion	$0	$0	$0	$0
=	**Taxable Market Value**	**$427,200**	**$324,300**	**$308,500**	**$306,500**
	Net Taxes Due	$1,246.00	$1,068.00	$1,230.00	$1,252.00
+	Special Assessments	$0.00	$0.00	$0.00	$0.00
=	**Total Taxes Due**	**$1,246.00**	**$1,068.00**	**$1,230.00**	**$1,252.00**
%	Change	16.67%	-13.17%	-1.76%	-4.57%

Taxes Paid

Payment #	Receipt #	Receipt Print Date	Amt Write Off	Amt Charge	Amt Payment
1126176		10/29/2024	$0.00	$49.84	($1,295.84)
998832		11/17/2023	$0.00	$10.68	($544.68)
854609		4/18/2023	$0.00	$0.00	($534.00)
805871	1795256	10/6/2022	$0.00	$0.00	($615.00)
739891	1753414	5/2/2022	$0.00	$0.00	($615.00)
719804	1739201	11/8/2021	$0.00	$0.00	($626.00)
608018	1679369	4/13/2021	$0.00	$0.00	$626.00
608018	1679369	4/12/2021	$0.00	$0.00	($626.00)
608375	1679618	4/12/2021	$0.00	$0.00	($626.00)
583493	1651417	10/13/2020	$0.00	$0.00	($656.00)
486854	1605372	4/29/2020	$0.00	$0.00	($656.00)
445408	1576558	10/14/2019	$0.00	$0.00	$0.00
363946	1524130	4/22/2019	$0.00	$0.00	$0.00

Map



No data available for the following modules: Sketches.

Wright County, MN

Summary

Parcel ID	202000203400
Property Address	
Sec/Twp/Rng	20-120-025
Brief Tax Description	SECT-20 TWP-120 RANGE-025 UNPLATTED LAND BUFFALO TWP 72.98 AC LT C &S65.95RDS OF LTS A&B EX PRT TO MILLER PETERSON, GUSTAFSON, KARG & SCHLTER EX916,A,B EX PRT TO VILL EX TR ANNEXED 103500-202418 EX S1/2 OF PULASKI RD ANNEXED ON 103500-202420 EX ALL EXISTING CSAH35(20TH ST NE)R/W NOT CURRENTLY ANNEXED (103500-203402) (Note: Not to be used on legal documents)
Class	101 - 2A/1B/4BB AGRICULTURAL;101 - 2A/1B/4BB AGRICULTURAL
District	(1801) TOWN OF BUFFALO-0877
School District	0877 (Note: Class refers to Assessor's Classification Used For Property Tax Purposes)

This parcel has Green Acres and/or Rural Preserve

Valuation

		2024 Assessment	2023 Assessment	2022 Assessment	2021 Assessment	2020 Assessment
+	Estimated Land Value	$1,181,700	$1,161,700	$1,089,500	$931,900	$1,032,300
+	Estimated Building Value	$138,800	$133,000	$123,100	$95,900	$91,000
+	Estimated Machinery Value	$0	$0	$0	$0	$0
=	**Total Estimated Market Value**	**$1,320,500**	**$1,294,700**	**$1,212,600**	**$1,027,800**	**$1,123,300**
%	Change	1.99%	6.77%	17.98%	-8.50%	3.64%

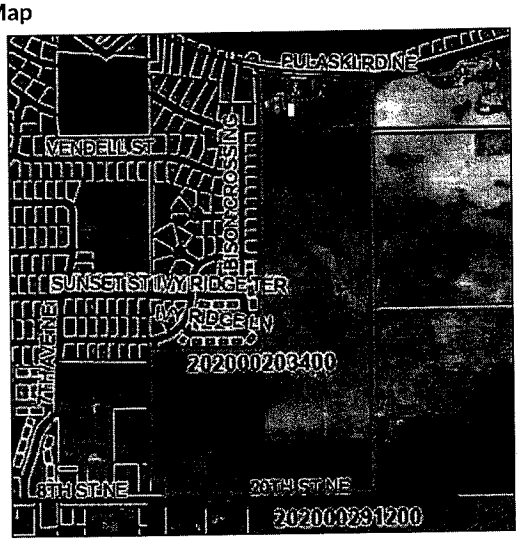
Taxation

		2024 Payable	2023 Payable	2022 Payable	2021 Payable
	Estimated Market Value	$1,294,700	$1,212,600	$1,027,800	$1,123,300
-	Excluded Value	$0	$0	$0	$0
-	Homestead Exclusion	$0	$0	$0	$0
=	**Taxable Market Value**	**$680,800**	**$590,700**	**$485,800**	**$447,800**
	Net Taxes Due	$2,218.00	$2,182.00	$1,658.00	$1,338.00
+	Special Assessments	$0.00	$0.00	$0.00	$0.00
=	**Total Taxes Due**	**$2,218.00**	**$2,182.00**	**$1,658.00**	**$1,338.00**
%	Change	1.65%	31.60%	23.92%	-5.11%

Taxes Paid

Payment #	Receipt #	Receipt Print Date	Amt Write Off	Amt Charge	Amt Payment
1126175		10/29/2024	$0.00	$88.72	($2,306.72)
998831		11/17/2023	$0.00	$21.82	($1,112.82)
854608		4/18/2023	$0.00	$0.00	($1,091.00)
805869	1795255	10/6/2022	$0.00	$0.00	($829.00)
739890	1753413	5/2/2022	$0.00	$0.00	($829.00)
719803	1739200	11/8/2021	$0.00	$0.00	($669.00)
608017	1679368	4/13/2021	$0.00	$0.00	$669.00
608017	1679368	4/12/2021	$0.00	$0.00	($669.00)
608374	1679617	4/12/2021	$0.00	$0.00	($669.00)
583490	1651416	10/13/2020	$0.00	$0.00	($705.00)
486853	1605376	4/29/2020	$0.00	$0.00	($705.00)
445407	1576556	10/14/2019	$0.00	$0.00	$0.00
363945	1524129	4/22/2019	$0.00	$0.00	$0.00

Map



No data available for the following modules: Sales, Sketches.

Wright County, MN

Summary

Parcel ID	202000204100
Property Address	
Sec/Twp/Rng	20-120-025
Brief Tax Description	SECT-20 TWP-120 RANGE-025 UNPLATTED LAND BUFFALO TWP 37.56 AC GOV LOT 5 EX S 82.62RDS EX TH PRT OF CALDER AVE ANNEX ON 103500-204101 (Note: Not to be used on legal documents)
Class	101 - 2A/1B/4BB AGRICULTURAL
District	(1801) TOWN OF BUFFALO-0877
School District	0877

(Note: Class refers to Assessor's Classification Used For Property Tax Purposes)

This parcel has Green Acres and/or Rural Preserve

Valuation

	2024 Assessment	2023 Assessment	2022 Assessment	2021 Assessment	2020 Assessment
+ Estimated Land Value	$601,000	$601,000	$601,000	$488,300	$488,300
+ Estimated Building Value	$0	$0	$0	$0	$0
+ Estimated Machinery Value	$0	$0	$0	$0	$0
= **Total Estimated Market Value**	**$601,000**	**$601,000**	**$601,000**	**$488,300**	**$488,300**
% Change	0.00%	0.00%	23.08%	0.00%	0.00%

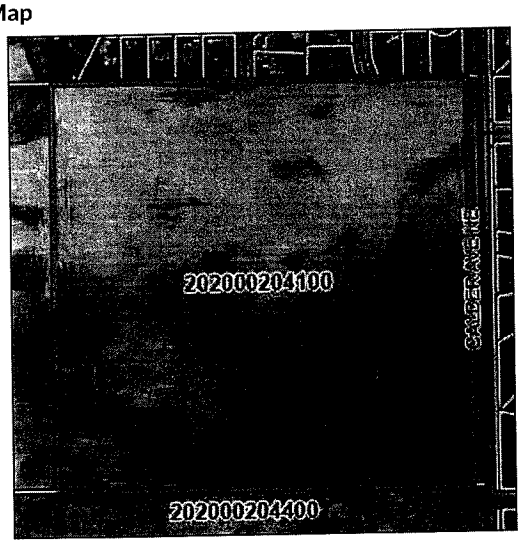
Taxation

	2024 Payable	2023 Payable	2022 Payable	2021 Payable
Estimated Market Value	$601,000	$601,000	$488,300	$488,300
- Excluded Value	$0	$0	$0	$0
- Homestead Exclusion	$0	$0	$0	$0
= **Taxable Market Value**	**$281,700**	**$225,400**	**$225,400**	**$225,400**
Net Taxes Due	$822.00	$742.00	$898.00	$920.00
+ Special Assessments	$0.00	$0.00	$0.00	$0.00
= **Total Taxes Due**	**$822.00**	**$742.00**	**$898.00**	**$920.00**
% Change	10.78%	-17.37%	-2.39%	-4.76%

Taxes Paid

Payment #	Receipt #	Receipt Print Date	Amt Write Off	Amt Charge	Amt Payment
1083779		10/7/2024	$0.00	$0.00	($411.00)
1052353		5/13/2024	$0.00	$0.00	($411.00)
958150		10/11/2023	$0.00	$0.00	($371.00)
870522		5/8/2023	$0.00	$0.00	($371.00)
827221	1797276	10/11/2022	$0.00	$0.00	($449.00)
768341	1758385	5/9/2022	$0.00	$0.00	($449.00)
685275	1723953	10/11/2021	$0.00	$0.00	($460.00)
618371	1695900	5/12/2021	$0.00	$0.00	($460.00)
583491	1651542	10/13/2020	$0.00	$0.00	($483.00)
523499	1616185	5/12/2020	$0.00	$0.00	($483.00)
442732	1573671	10/10/2019	$0.00	$0.00	$0.00
401977	1535977	5/10/2019	$0.00	$0.00	$0.00

Map



No data available for the following modules: Sales, Sketches.

Wright County, MN

Summary

Parcel ID	202000204201
Property Address	
Sec/Twp/Rng	20-120-025
Brief Tax Description	SECT-20 TWP-120 RANGE-025 UNPLATTED LAND BUFFALO TWP 29.00 AC TH PRT OF NW1/4 OF SE1/4 DES COM SW COR OF E1/2 OF SW1/4 TH S89D39'29"E ALG S LN&S LN OF SD SE1/4 1604.46FT TH N0D53' 54"E PAR/W W LN OF SW1/4 1363.23FT TO POB TH S89D39'29" E PAR/W S LN 1057.94FT TO E LN TH N0D14'31"E ALG SD E LN 1267.79FT TO NE COR OF SD NW1/4 OF SE1/4 TH N89D37'17"W ALG N LN OF SD NW1/4 OF SE (Note: Not to be used on legal documents)
Class	101 - 2A/1B/4BB AGRICULTURAL
District	(1801) TOWN OF BUFFALO-0877
School District	0877 (Note: Class refers to Assessor's Classification Used For Property Tax Purposes)

Sales

Multi Parcel	Instr Type	Qualified Sale	Sale Date	Book	Page	Sale Type	Buyer	Seller	Sale Price	Adjusted Sale Price	eCRV #	eCRV	Sale Type	S.S. Rcmd.	S.S. Rjt. Rsn.	Transact Num
N	WD	U	8/10/2005			V-Vacant	HOKANSON DEV CO INC	ORDORFF RALPH	$183,524	$183,524	96791		V		14-CFD/INT PA	96791

Valuation

		2024 Assessment	2023 Assessment	2022 Assessment	2021 Assessment	2020 Assessment
+	Estimated Land Value	$616,600	$616,600	$554,900	$308,300	$277,500
+	Estimated Building Value	$0	$0	$0	$0	$0
+	Estimated Machinery Value	$0	$0	$0	$0	$0
=	**Total Estimated Market Value**	**$616,600**	**$616,600**	**$554,900**	**$308,300**	**$277,500**
%	Change	0.00%	11.12%	79.99%	11.10%	0.00%

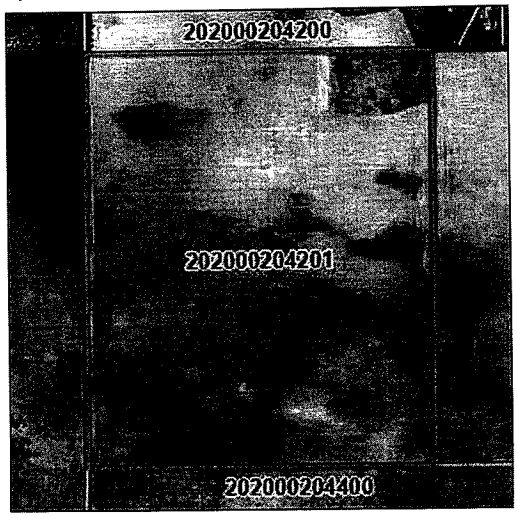
Taxation

		2024 Payable	2023 Payable	2022 Payable	2021 Payable
	Estimated Market Value	$616,600	$554,900	$308,300	$277,500
-	Excluded Value	$0	$0	$0	$0
-	Homestead Exclusion	$0	$0	$0	$0
=	**Taxable Market Value**	**$616,600**	**$554,900**	**$308,300**	**$277,500**
	Net Taxes Due	$3,594.00	$3,656.00	$2,458.00	$2,266.00
+	Special Assessments	$0.00	$0.00	$0.00	$0.00
=	**Total Taxes Due**	**$3,594.00**	**$3,656.00**	**$2,458.00**	**$2,266.00**
%	Change	-1.70%	48.74%	8.47%	-4.79%

Taxes Paid

Payment #	Receipt #	Receipt Print Date	Amt Write Off	Amt Charge	Amt Payment
1062015		5/17/2024	$0.00	$0.00	$0.00
1062536		5/17/2024	$0.00	$71.88	($3,665.88)
988966		10/17/2023	$0.00	$0.00	($1,828.00)
930515		5/16/2023	$0.00	$0.00	($1,828.00)
772841	1766247	5/11/2022	$0.00	$0.00	($2,458.00)
667070	1712183	7/9/2021	$0.00	$101.97	($2,367.97)
600921	1671333	12/17/2020	$0.00	$95.20	($1,285.20)
479904	1597715	3/23/2020	$0.00	$0.00	($1,190.00)
438302	1570192	10/8/2019	$0.00	$0.00	$0.00
358978	1518574	3/28/2019	$0.00	$0.00	$0.00

Map



No data available for the following modules: Sketches.

APPENDIX D

DNR NHIS Letter

DEPARTMENT OF NATURAL RESOURCES

Formal Natural Heritage Review - Cover Page

See next page for results of review. A draft watermark means the project details have not been finalized and the results are not official.

Project Name: Pulaski Shores

Project Proposer: Hokanson Construction and Development

Project Type: Development, Mixed Use

Project Type Activities: Tree Removal;Waterbody or watercourse impacts (e.g., dewatering, discharge, excavation, fill, runoff, sedimentation, changes in hydrology))

TRS: T120 R25 S20

County(s): Wright

DNR Admin Region(s): Central

Reason Requested: State EAW

Project Description: Pulaski Shores involves single family and apartment construction on 210.1 acres with wetland preservation and storm ponds with open space and a park.

Existing Land Uses: The area is 151.6 acres of cropland, 33.7 acres of brush and grassland, and 24.8 acres of wetlands.

Landcover / Habitat Impacted: The cropland will be changed into housing and streets, the wetlands will be preserved, and the brush and grassland will be converted to parks, buffer areas, ...

Waterbodies Affected: No wetlands or waterbodies will be affected as stormwater will be routed away from Lake Pulaski, and the wetlands will be preserved with buffers.

Groundwater Resources Affected: No groundwater impacts are anticipated.

Previous Natural Heritage Review: No

Previous Habitat Assessments / Surveys: No

SUMMARY OF AUTOMATED RESULTS

Category	Results	Response By Category
Project Details	Comments	Tree Removal - Recommendations
Ecologically Significant Area	No Comments	No Further Review Required
State-Listed Endangered or Threatened Species	No Comments	No Further Review Required
State-Listed Species of Special Concern	No Comments	No Further Review Required
Federally Listed Species	No Records	Visit IPaC For Federal Review

DEPARTMENT OF NATURAL RESOURCES

Minnesota Department of Natural Resources
Division of Ecological & Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155-4025

December 10, 2024

Project ID: MCE #2024-01034

Wayne Jacobson
Jacobson Environmental, PLLC
5821 Humboldt Ave N
Brooklyn Center, MN 55430-2637

RE: Automated Natural Heritage Review of the proposed Pulaski Shores
See Cover Page for location and project details.

Dear Wayne Jacobson,

As requested, the above project has been reviewed for potential effects to rare features. Given the project details provided on the cover page, I do not believe the proposed project will negatively affect any known occurrences of rare features. To ensure compliance with federal law, conduct a federal regulatory review using the U.S. Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) tool.

Project Type and/or Project Type Activity Comments

- The Natural Heritage Information System (NHIS) tracks bat roost trees and hibernacula plus some acoustic data, but this information is not exhaustive. Even if there are no bat records listed below, all of Minnesota's bats, including the federally endangered northern long-eared bat (*Myotis septentrionalis*), can be found throughout Minnesota. During the active season (approximately April-November) bats roost underneath bark, in cavities, or in crevices of both live and dead trees. Tree removal can negatively impact bats by destroying roosting habitat, especially during the pup rearing season when females are forming maternity roosting colonies and the pups cannot yet fly. To minimize these impacts, the DNR recommends that tree removal be avoided from June 1 through August 15.

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 and the project description provided on the cover page. If project details change or construction has not occurred within one year, please resubmit the project for review before initiating project activities.

The Natural Heritage Review does not constitute project approval by the Department of Natural Resources. Instead, it identifies issues regarding known occurrences of rare features and potential impacts to these rare features. For information on the environmental review process or other natural resource concerns, you may contact your DNR Regional Environmental Assessment Ecologist.

Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources.

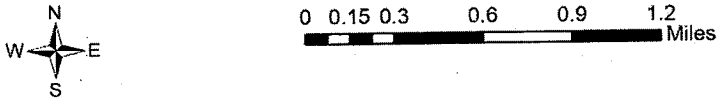
Sincerely,

Jim Drake Jim Drake
Natural Heritage Review Specialist
James.F.Drake@state.mn.us

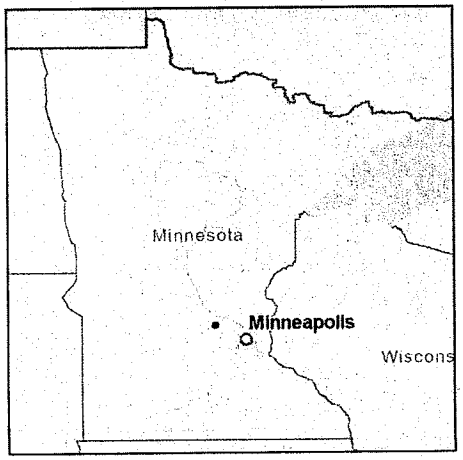
Links: USFWS Information for Planning and Consultation (IPaC) tool
Information for Planning and Consultation (IPaC) tool
DNR Regional Environmental Assessment Ecologist Contact Info
https://www.dnr.state.mn.us/eco/ereview/erp_regioncontacts.html

Pulaski Shores

Aerial Imagery With Locator Map



Project_Boundary



Project Type: Development, Mixed Use

Project Size (acres): 216.19

County(s): Wright

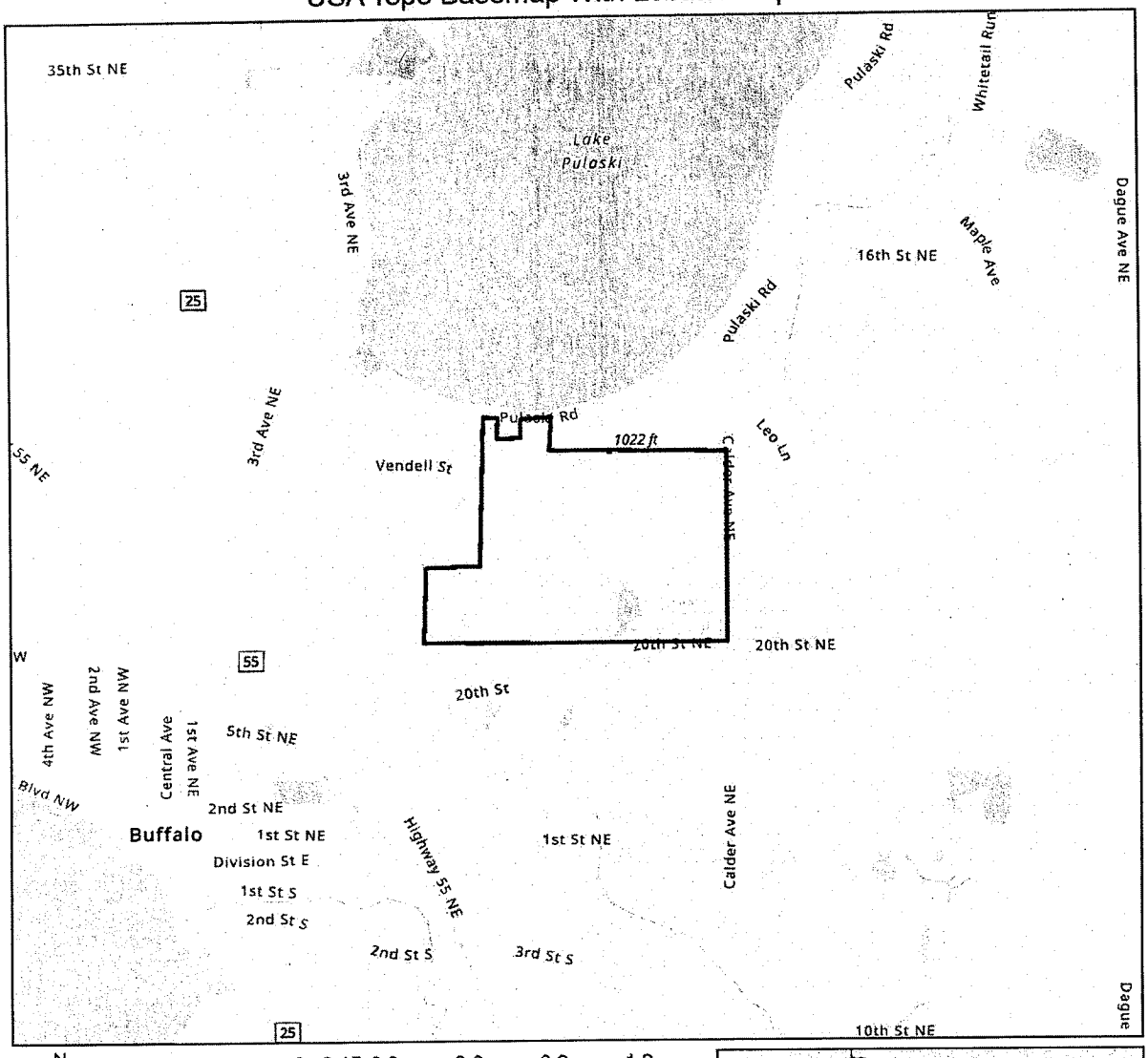
TRS: T120 R25 S20

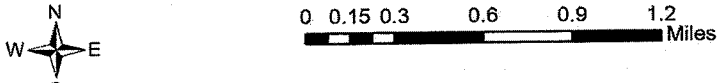
Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
Metropolitan Council, MetroGIS, Three Rivers Park District, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US

12/10/2024 07:25 PM

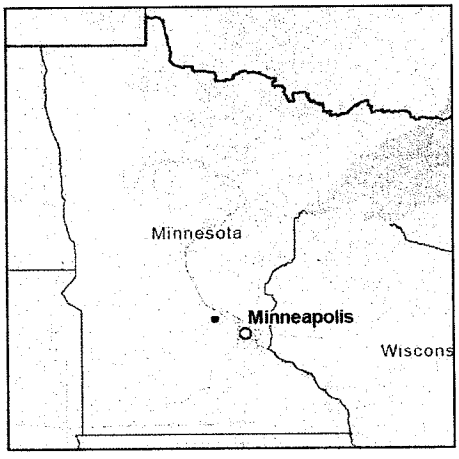
Pulaski Shores

USA Topo Basemap With Locator Map





Project_Boundary



Project Type: Development, Mixed Use

Project Size (acres): 216.19

County(s): Wright

TRS: T120 R25 S20

Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
Metropolitan Council, MetroGIS, Three Rivers Park District, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US

APPENDIX E

State Historic Preservation Office Letter

DEPARTMENT OF ADMINISTRATION
STATE HISTORIC PRESERVATION OFFICE

February 19, 2025

Wayne Jacobson
Jacobson Environmental
2109 Joplin St
Mora, MN 55051

RE: Pulaski Shores Development
T120 R25 S20, Buffalo, Wright County
SHPO Number: 2025-0341

Dear Wayne Jacobson:

Thank you for continuing consultation on the above referenced project. Based on the information provided in the February 11, 2025, SHPO response letter prepared by Nienow Cultural Consultants, we agree that archaeological sites **21WR0236, 21WR0237,** and **21WR0238** are **not eligible** for listing in the National Register of Historic Places. We appreciated receiving the additional maps, figures, and photographs that clarified the observed field conditions and landforms within the project area.

Based on the documentation provided, we have determined that no significant archaeological sites will be affected by this project and that there are **no properties** listed in the National or State Registers of Historic Places, or within the Historic Sites Network, that will be affected by this project.

Please note that this comment letter does not address the requirements of Section 106 of the National Historic Preservation Act of 1966 and 36 CFR § 800. If this project is considered for federal financial assistance, or requires a federal permit or license, then review and consultation with our office will need to be initiated by the lead federal agency. Be advised that comments and recommendations provided by our office for this state-level review may differ from findings and determinations made by the federal agency as part of review and consultation under Section 106.

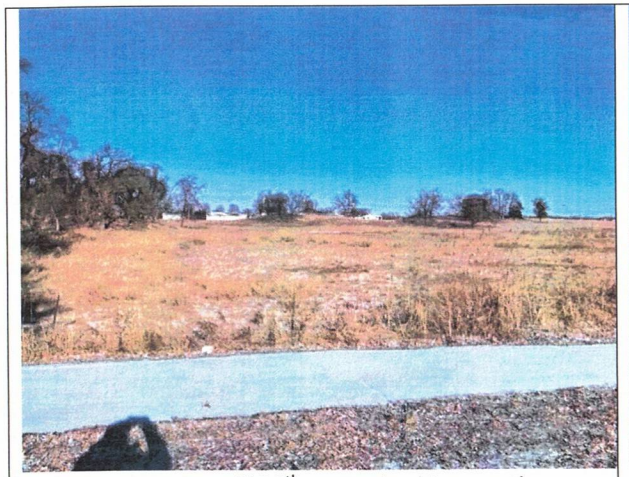
Please contact Kelly Gragg-Johnson, Environmental Review Specialist, at (651) 201-3285 or kelly.graggjohnson@state.mn.us if you have any questions regarding our review of this project.

Sincerely,

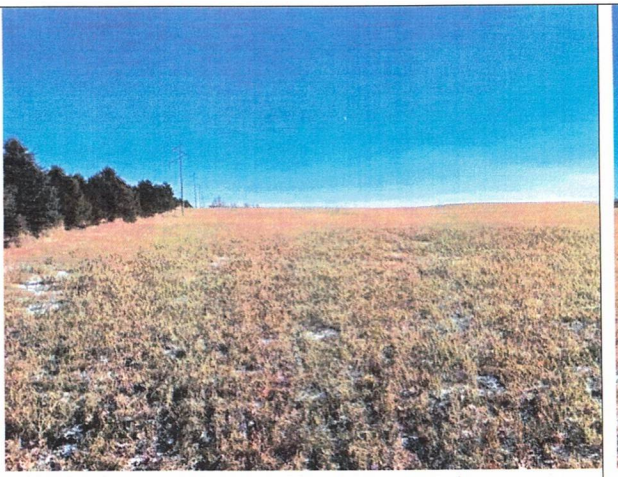
Amy Spong
Deputy State Historic Preservation Officer

APPENDIX F

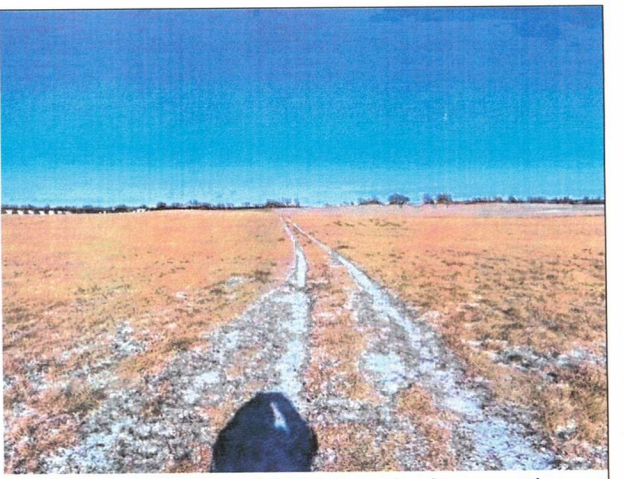
Site Photos



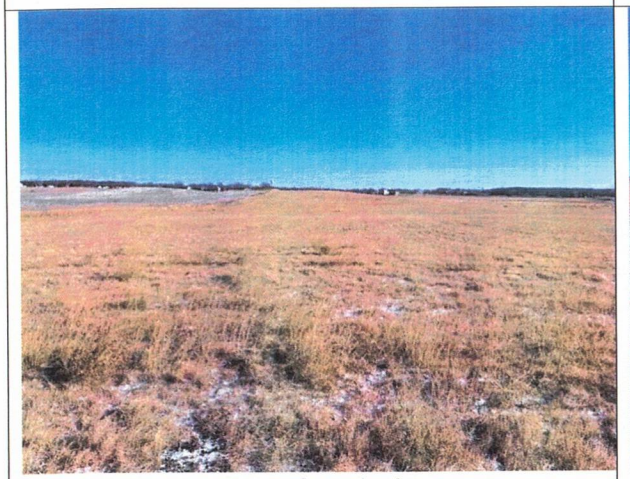
SW corner off 20th street looking north



NW corner off Griffing Park Road looking east

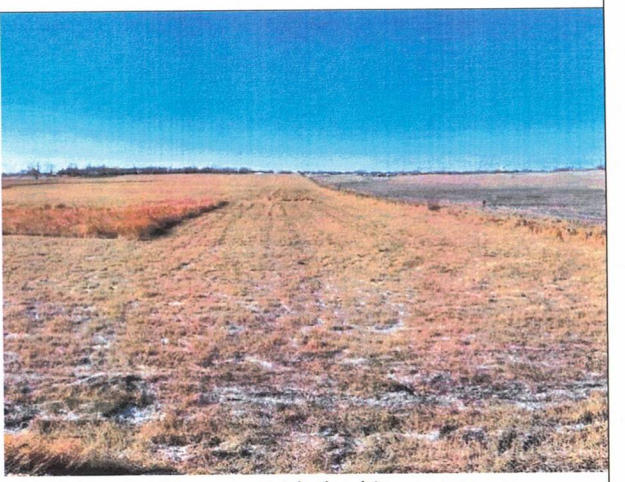


Lot center south side by barn looking north

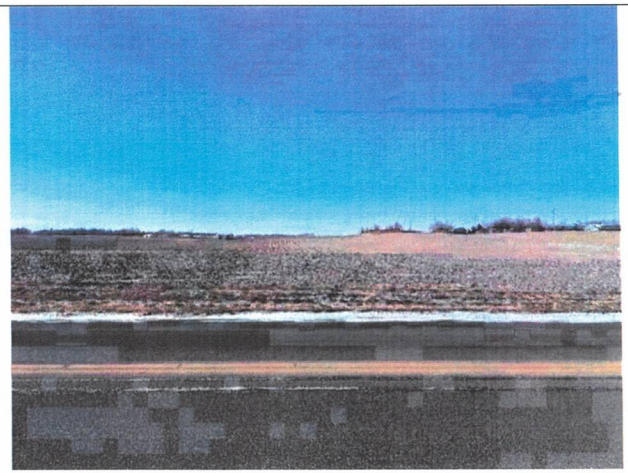


South center of site looking east

North center of site looking east



Center east side looking west



NE corner looking west

APPENDIX G

Traffic Impact Study

PULASKI SHORES

Buffalo, MN

April 21st, 2025

SSTS LLC
8112 W 16th St, St Louis Park, MN
www.s2traffic.com

PULASKI SHORES
TRAFFIC IMPACT STUDY
BUFFALO, MN
APRIL 21ST, 2025

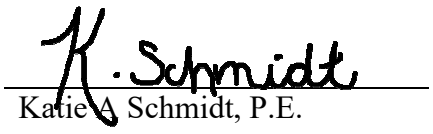
Prepared For:

PULASKI SHORES, LLC

Prepared By:

SSTS, LLC
PROJECT NO. 2025_003

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



Katie A Schmidt, P.E.

Date: 04/21/2025 Lic. No.: 47147

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List of Tables

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Executive Summary

This traffic study has evaluated the potential traffic impacts on the operations and safety of the adjacent roadway network and proposed access locations for the 210-acre project in the City of Buffalo, Wright County, MN.

Full development of the Proposed Project includes 303 single family homes and 608 attached housing units. The project is estimated to generate 462 trips (116 entering and 346 exiting) during the morning traffic peak hour, 595 trips (372 entering and 223 exiting) during the evening traffic peak hour and 6,876 daily trips.

Access to the project is planned via is existing neighborhood street connections and new location roadway locations. A north/south collector road (Road A) through the site is considered with 8th St NE realigned to intersect Road A and with Road A intersecting CSAH 35 for a primary access point.

Existing conditions, year 2029 conditions (assumed project completion) and year 2045 conditions (for future planning) were analyzed without and with the project.

Growth in background traffic was considered with roadway specific annual growth rates estimated by reviewing City and County Data. The extension of Griffing Park Rd through the project with dead ending of Pulaski Rd is assumed with build conditions. The City has studied the CSAH 35/Ryan's Way intersection as a separate project and a roundabout is recommended. The City has analyzed the recommended roundabout with the addition of site generated traffic from the project and acceptable operations are shown.

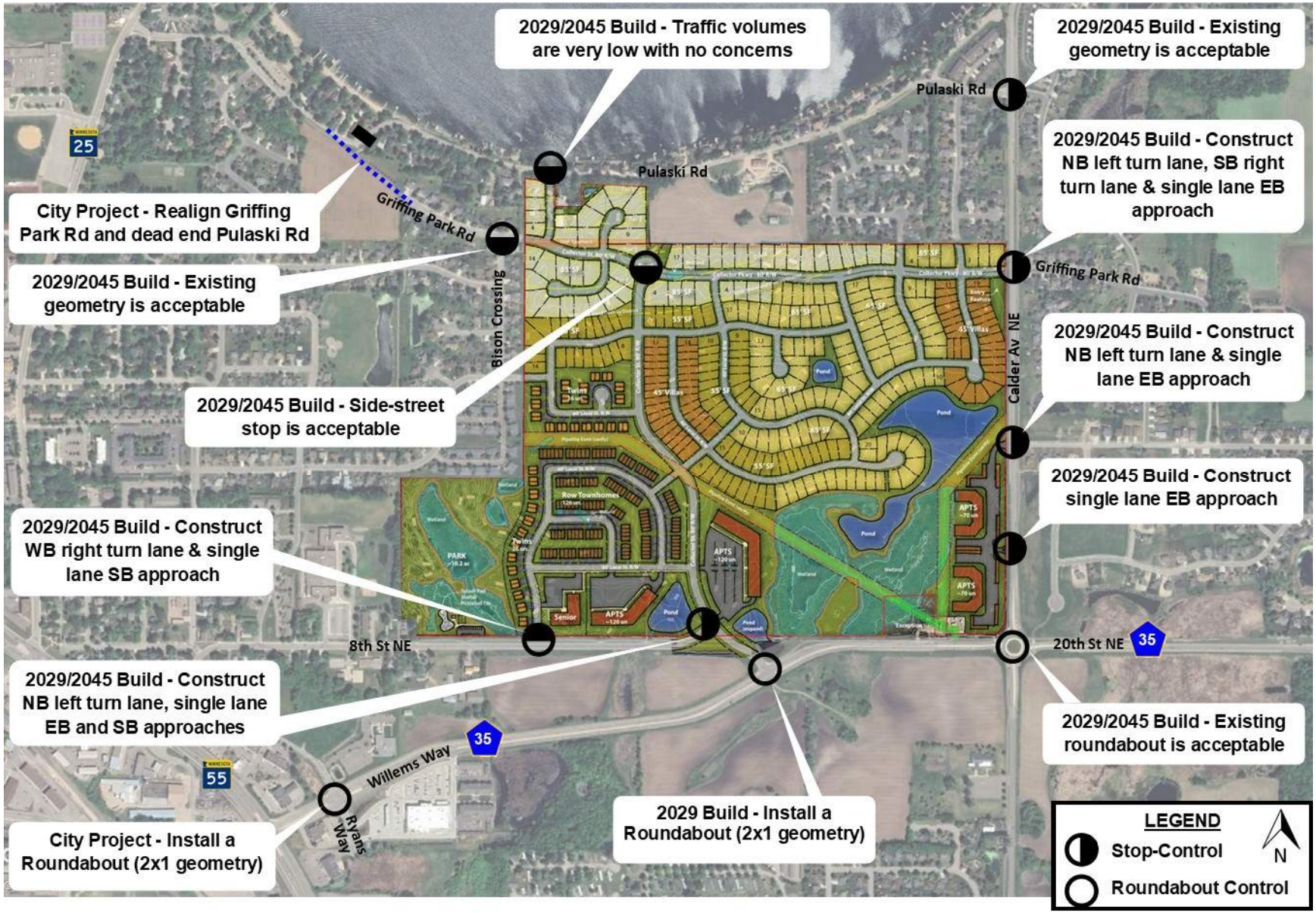
A turn lane review was conducted for access intersections and recommendations are shown on the following **Summary of Recommendations Exhibit**.

Results of the existing conditions operational and safety analysis show all study area intersections operate acceptably, but there are queuing concerns at the CSAH 35/Ryan's Way intersection with the existing side-street stop-control. The City is ultimately proposing a roundabout at this intersection to mitigate these issues.

Results of the 2029 and 2045 No-Build conditions analysis show all study area intersections operate acceptably and there are no recommendations due to growth in background traffic.

Results of the 2029 Build conditions analysis show enhanced traffic control is needed at the CSAH 35/Road A intersection with the inclusion of project site generated traffic and a roundabout (2 lanes on CSAH 35, 1 lane on Road A) is recommended. All other studied intersections and access locations operate acceptably.

Results of the 2045 Build conditions analysis show all studied intersections and access locations operate acceptably (assuming the recommended CSAH 35/Road A roundabout). Additionally, the recommended CSAH 35/Road A roundabout will have available capacity to accommodate a south leg for development potential south of CSAH 35. The following **Summary of Recommendations Exhibit** provides an overview of the recommendations for the study area.



Summary of Recommendations

1. Introduction

A 210-acre area is proposed to be redeveloped from agricultural to residential uses in the City of Buffalo, Wright County, MN. The Proposed Project is located west of Calder Ave NE, north of 8th St NE and south of Lake Pulaski. The site location is illustrated on **Figure 1 - Vicinity Map**. Full development of the Proposed Project includes 303 single family homes and 608 attached housing units (62 twin homes, 126 townhomes, 380 apartments and 40 senior living units).

Access to the Proposed Project is planned via is existing neighborhood street connections and new location roadway locations as follows:

- Access 1 - 8th St NE and Proposed Road A (collector street)
- Access 2 - 8th St NE and Proposed Road B (local street)
- Access 3 - Extension of Buffalo Hills St (local street)
- Access 4 - Extension of Griffing Park Rd (collector street) on the west side of the site
- Access 5 - Pulaski Rd and Proposed Road C (local street)
- Access 6 - Extension of Lakeview Parkway (local street)
- Access 7 - Extension of Roberts Rd (local street)
- Access 8 - Extension of Griffing Park Rd (collector street) on the east side of the site
- Access 9 - Calder Ave NE and Proposed Apartment Driveway (private street)
- Access 10 - Calder Ave NE and Proposed Right-In/Right-Out Apartment Driveway (private street)

The site layout, land uses and access locations are illustrated on **Figure 2 - Conceptual Site Plan**.

The study considers the following three analysis years:

- Year 2025 - Provides a review of existing conditions.
- Year 2029 - Corresponds to the year after completion of the Proposed Project.
- Year 2045 - Aligns with future planning efforts.

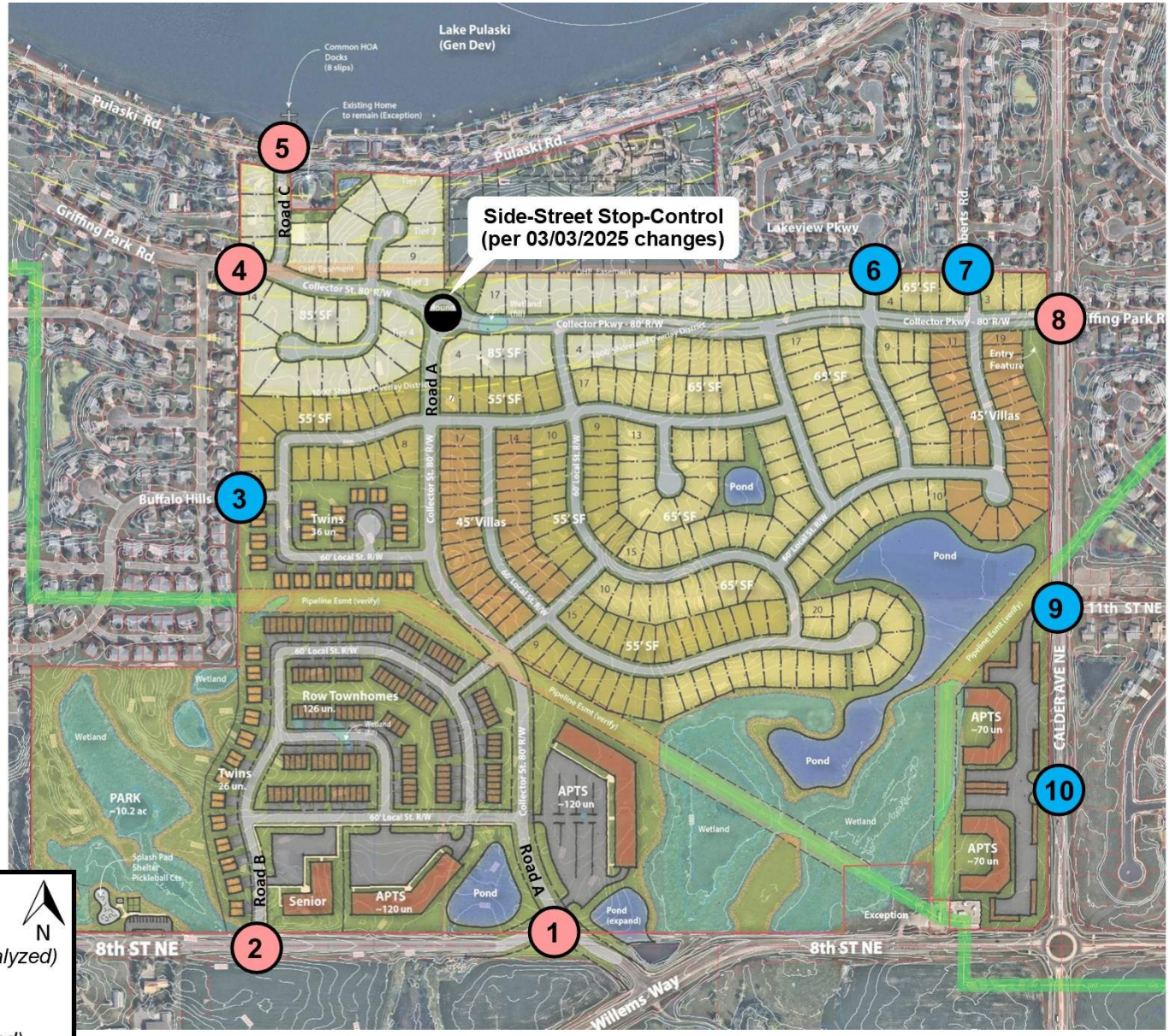
The purpose of this study is to evaluate the impact of traffic generated by the Proposed Project on the operations and safety of the adjacent roadway network and proposed access locations. Existing and future roadway conditions (traffic volumes, lane geometrics, safety and traffic operational analysis results) at studied intersections and access points are detailed. Recommendations regarding roadway improvements to accommodate site-generated traffic, as well as anticipated growth in background traffic are included.

Figure 1 - Vicinity Map

CONCEPT DATA:

Gross Site Area:	**~210.1 ac**
Delineated Wetlands:	**~24.8 ac**
Pipeline Easements:	**~5.5 ac**
(net wetlands)	
Net Developable Area:	**~179.8 ac**
Park:	**~10.2 ac**
(net wetlands)	
Project Open Space:	**~ 58.5 ac**
(includes parks, wetlands, esmts; ponding, buffers, etc)	
Proposed Single Fam Lots:	**303 lots**
45' wide x 130' deep Villa Lots	*61 lots*
55' wide x 130' deep typical	*72 lots*
65' wide x 130' deep typical	*118 lots*
85' wide x 130' deep (Shoreland)	*52 lots*
Proposed Attached Resid:	**~ 608 un.**
Twinhomes	*62 un.*
Row Townhomes	*126 un.*
Apartments	*~380 un.*
Senior Living	*~40 un.*
Overall Gross Density:	**4.3 un/ac**
(911 un / 210.1 ac gross site area)	
Net Density:	**5.0 un/ac**
(911 un / 179.8 ac net developable	
Local Streets:	**23,850 lf**

Aerial photography from State of Minnesota;
Topography from State LIDAR



LEGEND

N

1 **Minor Access Location**
(traffic operations not analyzed)

1 **Major Access Location**
(traffic operations analyzed)

Figure 2 - Conceptual Site Plan

2. Existing Conditions

2.1 Study Area Intersections

Existing study area intersections were defined with input from the City of Buffalo and Wright County. Table 1 lists the intersections, associated existing traffic control and turning movement count details (described in section 2.3). It is noted that the CSAH 35/Ryan's Way intersection is currently being studied by the City of Buffalo for traffic control updates to address existing operations and safety concerns and data and results from the City's analysis are documented in this study.

Table 1. Study Area Intersections

Study Intersection and Control	Date of Count	Peak Hours
CSAH 35 (Willems Way) & Ryan's Way Side-Street Stop	July 2024 City Provided Data	AM: 7:30-8:30 PM: 3:15-4:15
CSAH 35 (Willems Way) & 8th St NE Side-Street Stop	January 7th, 2025	AM: 8:00-9:00 PM: 3:15-4:15
CSAH 35 (20th St NE) & Calder Ave NE Roundabout	January 7th, 2025	AM: 8:00-9:00 PM: 3:15-4:15
Calder Ave NE & Griffing Park Rd Side-Street Stop	January 7th, 2025	AM: 7:15-8:15 PM: 3:30-4:30
Calder Ave NE & Pulaski Rd Side-Street Stop	January 7th, 2025	AM: 7:15-8:15 PM: 3:30-4:30
Griffing Park Rd & Bison Crossing Side-Street Stop	January 9th, 2025	AM: 7:30-8:30 PM: 3:45-4:45

* The CSAH 35/Ryan's Way intersection is being studied by the City.

2.2 Roadway Descriptions

The existing conditions of the study area roadways are noted in Table 2. **Figure 3** displays the existing lane geometry, speed limits and traffic control at the study area intersections.

Table 2. Roadway Descriptions

Roadway *[Ownership]*	Functional Class	Typical Section	Posted Speed	AADT (Year)[1]
Willems Way (CSAH 35) *[Wright County]*	Minor Arterial	4-Lane Divided Urban (W of 8th St) 2-Lane Undivided Rural (E of 8th St)	45 mph	9,697 (2023-MnDOT)
Calder Av NE *[City of Buffalo]*	Major Collector	2-Lane Undivided Rural	45 mph	4,878 (2023-MnDOT)
8th St NE *[City of Buffalo]*	Minor Collector	2-Lane Undivided Rural	30 mph	1,840 (2024-MnDOT Draft)
Griffing Park Rd *[City of Buffalo]*	Local	2-Lane Undivided Urban	30 mph	NA
Pulaski Rd *[City of Buffalo]*	Major Collector	2-Lane Undivided Urban/Rural	30 mph	3,065 (2024-MnDOT Draft)
Bison Crossing *[City of Buffalo]*	Local	2-Lane Undivided Urban	30 mph	NA

[1] AADT Sources: (MnDOT) from MnDOT's Traffic Mapping Application.

2.3 Data Collection and Existing Traffic Volumes

AM and PM peak hour turning movement counts were conducted at the study area intersections in January, 2025. The timing of the AM and PM peak traffic hours are noted on Table 1. **Figure 4 - Existing Traffic Volumes** displays the existing traffic volumes. CSAH 35 volumes have peaking 15-minute characteristics due to Buffalo High School arrival and dismissal traffic. The eastbound CSAH 35 volumes peak from 8:30-8:45AM and the westbound CSAH 35 volumes peak from 3:30-3:45 PM.

2.4 Crash Analysis

A review of intersection crash records was conducted to evaluate the safety of the study area and to determine if the addition of future traffic growth could exacerbate existing safety issues. Historical crash data for the study area intersections from the most recent 5 years of data (2019 to 2023) was obtain from MnDOT's Crash Mapping Analysis Tool (MnCMAT2) and the following factors were considered in the crash analysis:

1) **Crash and Severity Rate** - Crashes are a function of exposure. Roadways with higher traffic volumes experience more crashes than similar roadways with lower volumes and a crash rate must be considered to normalize the locations. Intersection crash rates are defined by the number of crashes occurring per million entering vehicles (MEV). The intersection crash severity rate is the total number of fatal and suspected serious injury crashes (types K and A) per 100 MEV.

2) **Critical Crash and Severity Rate** - Critical rate comparison identifies locations that have a rate higher than similar facilities by a statistically significant amount. The critical rate is calculated by adjusting the system wide average crash rate based on the amount of exposure and a statistical constant indicating level of confidence. The 99.5 percentile confidence interval was selected for all safety calculations for this study. At locations where the actual rate exceeds the critical rate, it is 99.5 percent certain that the crashes are a result of deficiencies in the intersection design or other factors and further engineering investigation is needed.

Table 3 summarizes the intersection crash data for the study area and provides a comparison of crash rates to critical crash rates.

Table 3. Intersection Crash Summary

Study Intersection and Control	Total Crashes	Entering ADT	Crash Rate	Critical Crash Rate	Severity Rate	Critical Severity Rate
CSAH 35 (Willems Way) & Ryan's Way Side-Street Stop	6	11,400	0.29	0.38	0.00	4.62
CSAH 35 (Willems Way) & 8th St NE Side-Street Stop	4	10,700	0.20	0.39	0.00	4.84
CSAH 35 (20th St NE) & Calder Ave NE Roundabout	4	14,600	0.15	1.48	0.00	4.02
Calder Ave NE & Griffing Park Rd Side-Street Stop	1	5,300	0.10	0.51	0.00	8.23
Calder Ave NE & Pulaski Rd Side-Street Stop	4	6,600	0.33	0.47	0.00	6.94
Griffing Park Rd & Bison Crossing Side-Street Stop	No crashes reported at this intersection					

* System wide average crash rates for critical crash rate calculations were found in MnDOT's Intersection Tool Kit (Green Sheets)

All existing study area intersections have a crash rate lower than the critical crash rate and a crash severity rate lower than the critical severity rate indicating existing conditions and intersection design are not currently contributing to a safety problem and future traffic growth is not likely to exacerbate existing safety issues.

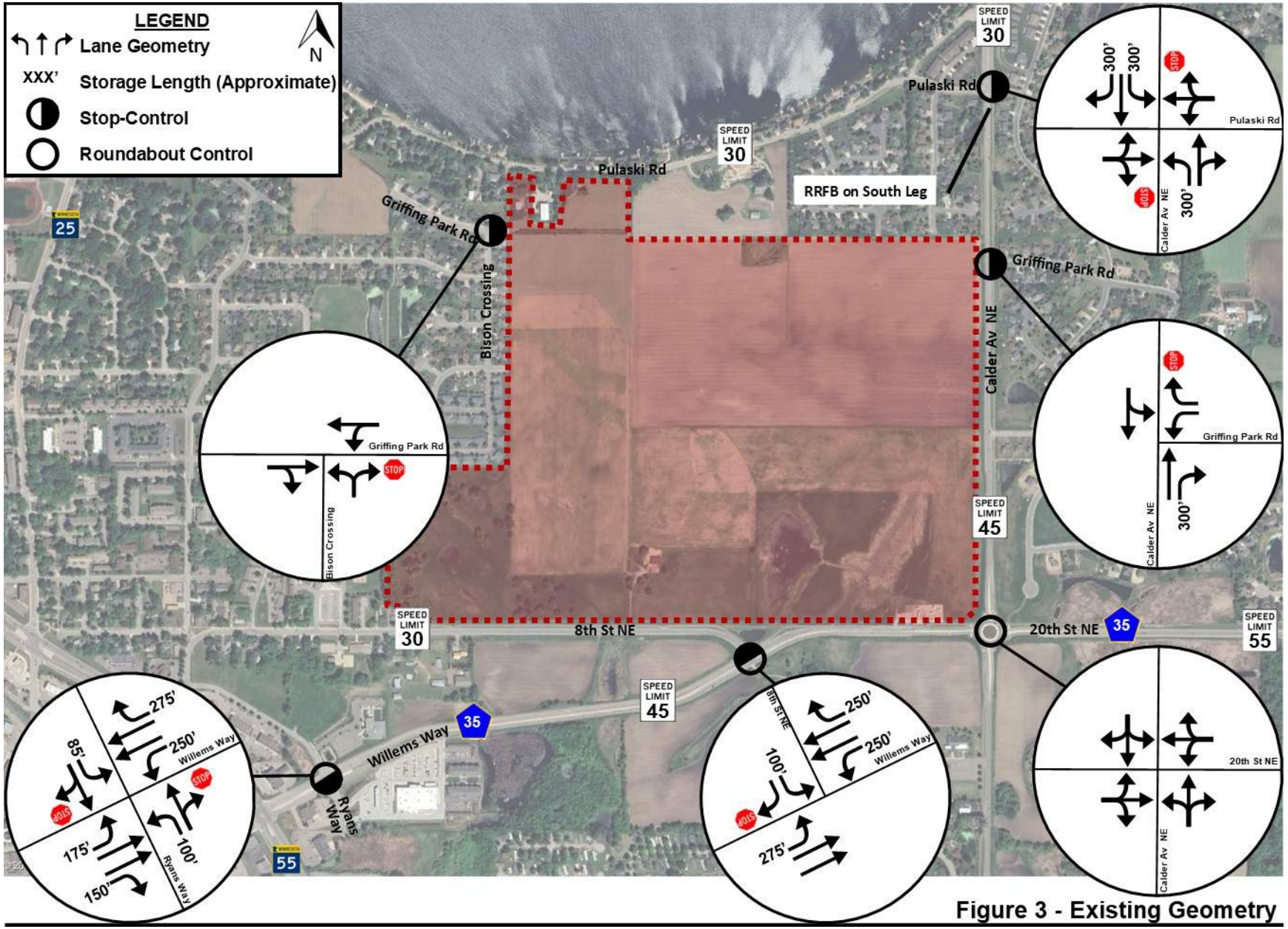


Figure 3 - Existing Geometry

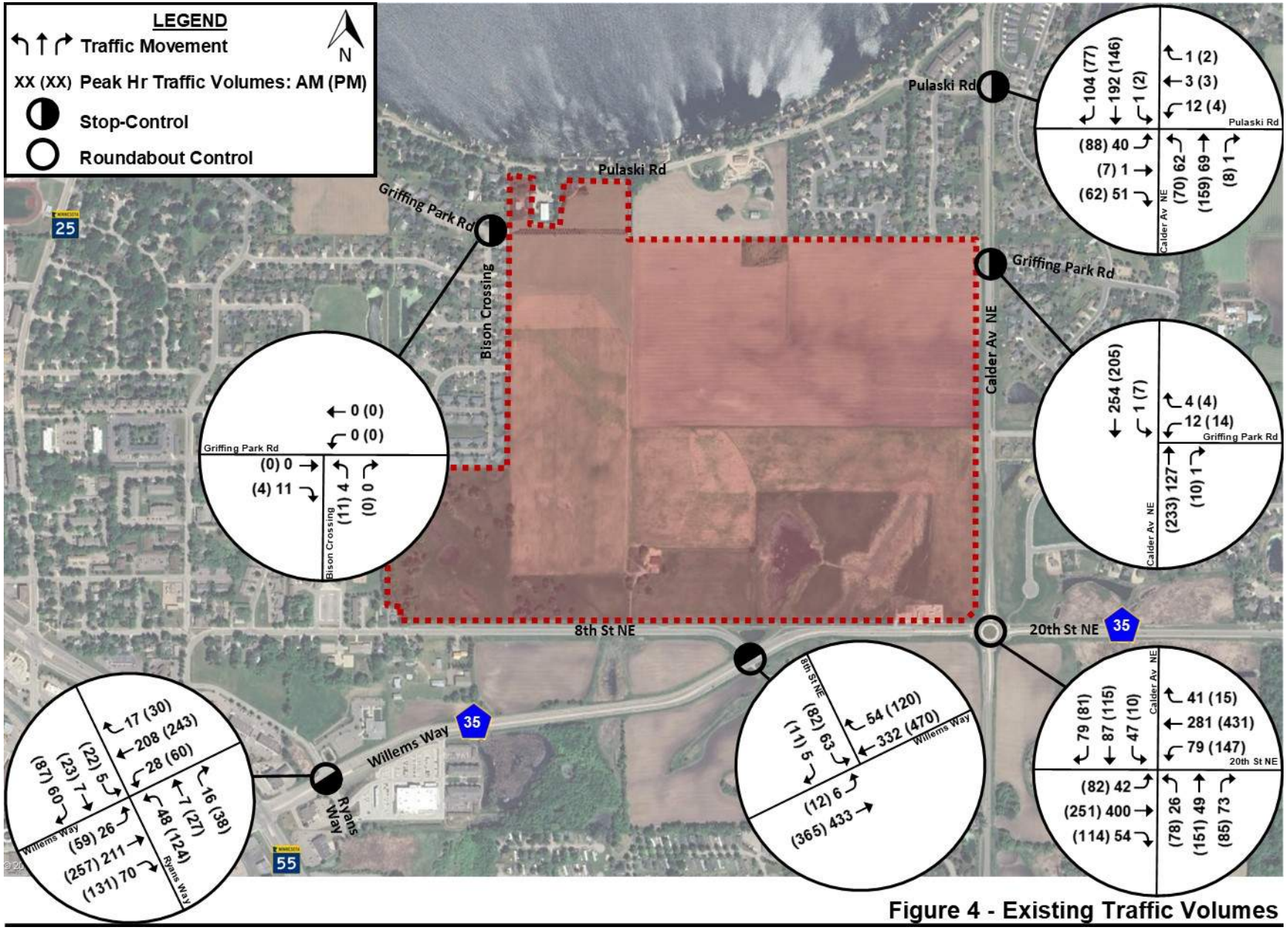


Figure 4 - Existing Traffic Volumes

3. No-Build Alternative

To address the impacts of a development on the surrounding roadway system, it is necessary to predict the traffic that would be present at the time of completion of the Proposed Project, without the inclusion of the Proposed Project. This is considered the No-Build scenario, and serves as a basis with which to compare Build scenarios.

3.1 Background Growth

To determine the future traffic conditions a review of historical AADT traffic counts from MnDOT's Traffic Mapping Application was completed, year 2040 AADT Traffic Forecasts from ***Wright County's Long Range Transportation Plan***[1] were investigated and the overall City population projection from the ***City of Buffalo's 2040 Community Plan***[2] was considered. Taking into account that the Proposed Project was included in the future growth projections the following annual growth rates (AGR) for each roadway are assumed:

- CSAH 35 - 1.5% AGR
- All other study area roadway - 1.0% AGR

The 2029 and 2045 No-Build volumes were computed by applying the roadway specific annual growth rates to existing volumes to grow them to the appropriate design year. **Figures 5 and 6** illustrate the anticipated 2029 and 2045 No-Build peak hour traffic volumes, respectively.

3.2 Anticipated Improvements for Study Area

The City of Buffalo is currently studying potential traffic control changes for the CSAH 35/Ryan's Way intersection due to existing operations and safety concerns. Site generated traffic from the Proposed Project will be considered in the City's analysis and results and recommendations from the City's study are noted in this study.

The Proposed Project is located in the "South Pulaski Sub-Area" as noted in the ***2040 Community Plan***. Key transportation components for this sub area are a future east/west connection of Griffing Park Rd and the realignment of the CSAH 35 and 8th St intersection with a future north/south collector road.

Based on discussions with the City, Griffing Park Rd will be extended to the west to match into Pulaski Rd and Pulaski Rd will be dead ended as shown on Exhibit 1. This will be completed with construction of Griffing Park Rd through the Proposed Project and assumed with the Build scenarios.

Exhibit 1 - Griffing Park Rd Extension

A north/south collector road (Road A) will be constructed as part of the site. 8th St NE is planned to be realigned to intersect Road A and Road A will intersect CSAH 35 as shown on the site plan. The Build analyses review these planned intersections and provides traffic control recommendations.

3.3 Results of Analysis

The study area intersections were analyzed for Existing Conditions, 2029 No-Build conditions and 2045 No-Build conditions. Complete discussion of the results of these analyses is provided in associated operation analyses results sections later in this study.

[1] ***Wright County Long Range Transportation Plan***, November 2020, Link

[2] ***City of Buffalo 2040 Community Plan***, July 2023, Link

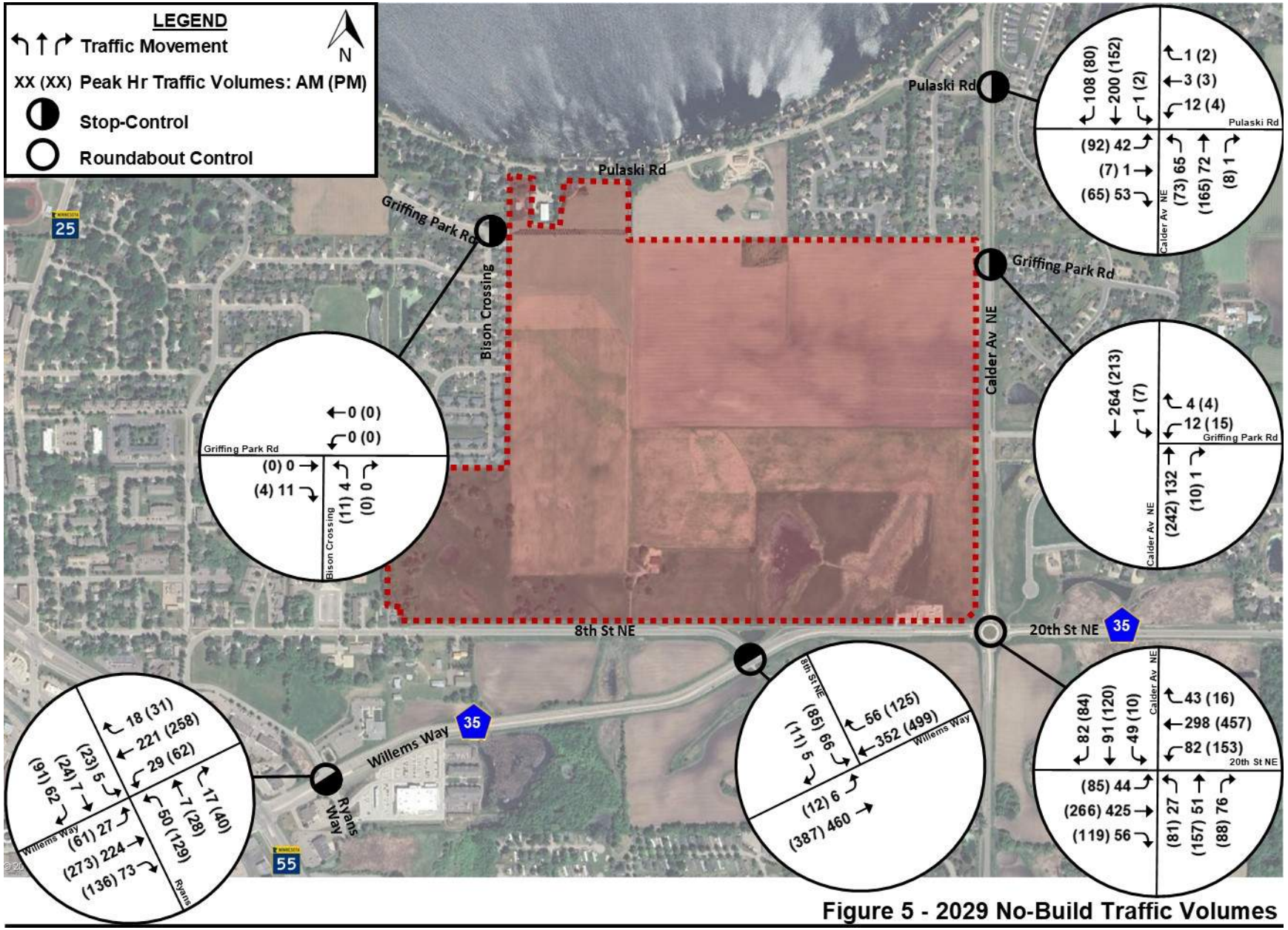


Figure 5 - 2029 No-Build Traffic Volumes

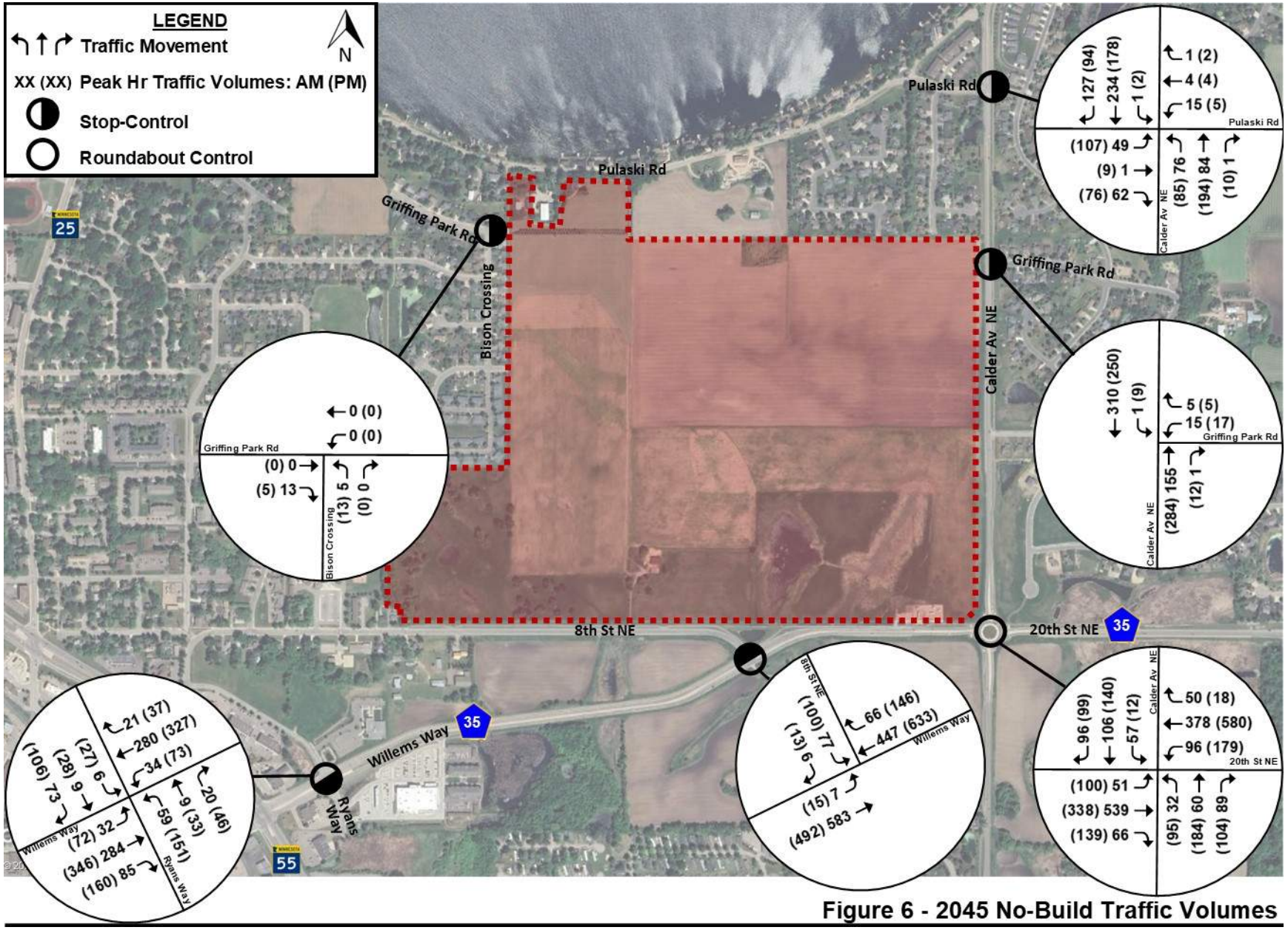


Figure 6 - 2045 No-Build Traffic Volumes

4. Build Alternative

4.1 Site-Generated Traffic

The volume of vehicle trips generated by the Proposed Project has been estimated for the weekday AM and PM peak hours and on a daily basis using the data and methodology described in the Institute of Transportation Engineers' ***Trip Generation Manual*** [3]. Table 4 summarizes the trip generation estimate for the Proposed Project.

Table 4. Trip Generation

Land Use	ITE Land Use Code	Size	Trips Generated:				
			AM Peak		PM Peak		Weekday
			Enter	Exit	Enter	Exit	ADT
Single Family Housing	210	303 units	53	159	179	105	2,857
Single-Family Attached Housing	215	188 units	23	68	63	44	1,354
Multifamily Housing (Low-Rise)	220	380 units	36	116	126	68	2,561
Assisted Living	254	40 beds	4	3	4	6	104
Totals			**116**	**346**	**372**	**223**	**6,876**
			462		**595**		

The Proposed Project is estimated to generate 462 trips (116 entering and 346 exiting) during the morning traffic peak hour, 595 trips (372 entering and 223 exiting) during the evening traffic peak hour and 6,876 daily trips.

4.2 Trip Distribution and Assignment

The distribution of the residential site-generated traffic to/from the adjacent street system and proposed access points was based on review of existing traffic patterns, location of employment generators and school/commerce locations. **Figure 7** depicts the distribution and assignment of the estimated site-generated traffic entering and exiting the study area roadway network and proposed site access points.

4.3 Build Traffic Volumes

When combined, the site-generated traffic volumes and No-Build scenario traffic volumes result in the Build scenario traffic volumes shown on **Figures 8 and 9** for the 2029 and 2045 design years. Considering the Griffing Park Rd East/West connection and the dead ending of Pulaski Rd, approximately 50% of the Pulaski Rd traffic volumes are considered east/west thoroughfare traffic and have been diverted to Griffing Park Rd for the Build Scenarios.

4.4 Access Turn Lane Review

The mainline left and right turn lane needs at proposed site access points were investigated per ***MnDOT's Access Management Manual***[4] and ***NCHRP Report 745***. Minor road approach geometry was determined per ***NCHRP Report 457***. Turn lane length and taper shall be designed per City standards. Turn lane recommendations are noted on Table 5 and were assumed in the geometry for the Build Scenarios operational analyses.

[3] ***Trip Generation Manual***, Institute of Transportation Engineers (ITE), 11th Edition

[4] ***MnDOT's Access Management Manual, Chapter 3***, Link

Table 5. Turn Lane Recommendations

Access Intersection	Mainline Section and AADT	Cross Street ADT	Recommendation
Calder Ave NE & Griffing Park Rd	2-Lane 5,200 veh/day (Year 2029)	2,300 veh/day	• Construct NB Left Turn Lane • Construct SB Right Turn Lane • Construct Single Lane EB Approach
Calder Ave NE & 11th St (Access 9 for Apartments)	2-Lane 5,200 veh/day (Year 2029)	540 veh/day	• Construct NB Left Turn Lane • Construct Single Lane EB Approach • No SB Right Turn Lane, Volume is Low
Calder Ave NE & Access 10 for Apartments	2-Lane 5,200 veh/day (Year 2029)	160 veh/day	• No Turn Lanes • Construct Single Lane EB Approach
8th St NE & Access Road B (Access 2)	2-Lane 1,900 veh/day (Year 2029)	830 veh/day	• Construct WB Right Turn Lane
8th St NE & Access Road A (Access 1)	2-Lane 4,300 veh/day (Year 2029)	1,900 veh/day	• Construct NB Left Turn Lane • Construct Single Lane SB Approach • Construct Single Lane EB Approach
Griffing Park Rd & Bison Crossing	2-Lane 1,560 veh/day (Year 2029)	130 veh/day	• No Turn Lanes • Low Turning Volumes

4.5 Multimodal Review

There will be multimodal connectivity with the Proposed Project. Internal sidewalks will be designed per City Standards and a future trail on Griffing Park Rd is planned and consistent with the City's Future Trail Map.

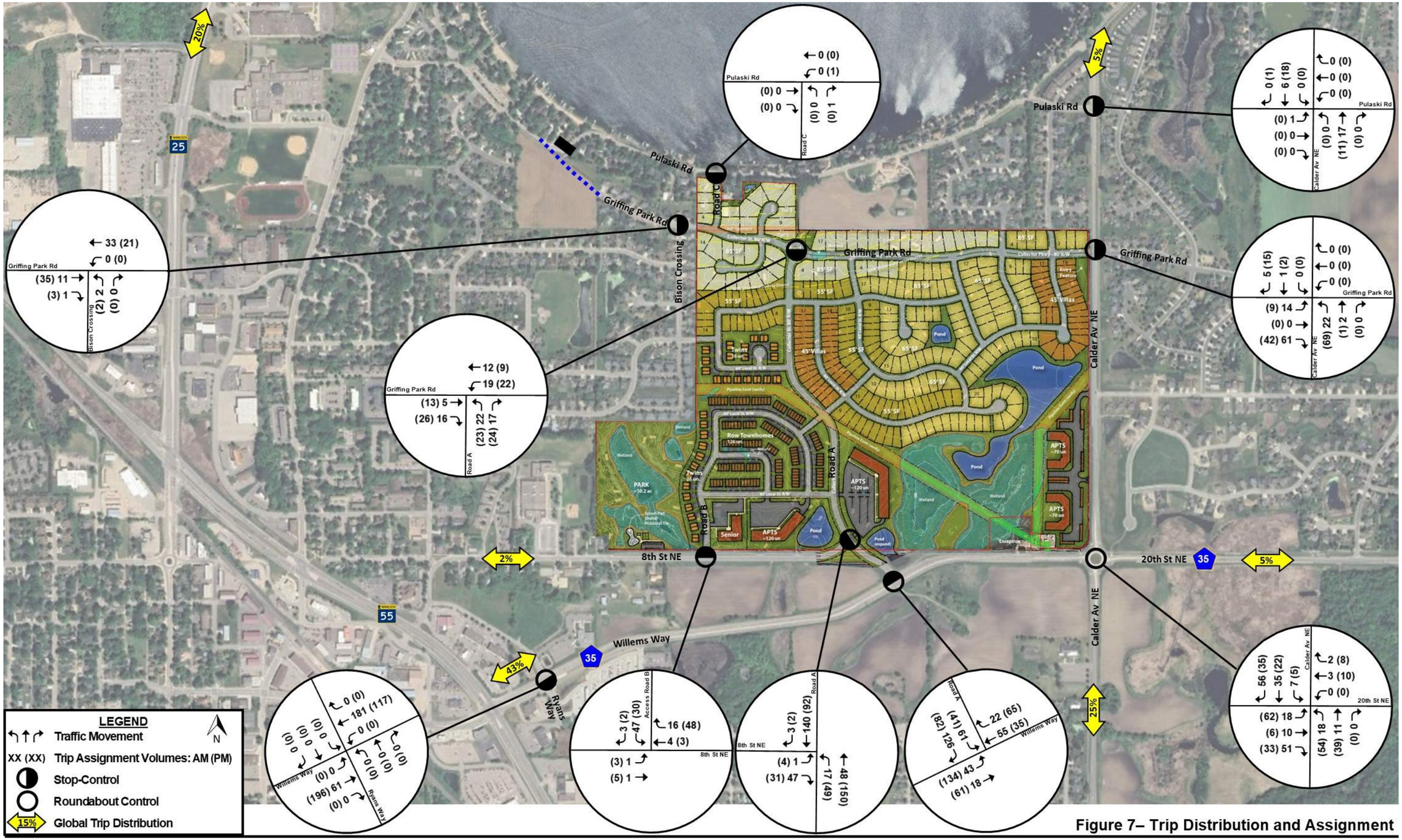


Figure 7– Trip Distribution and Assignment

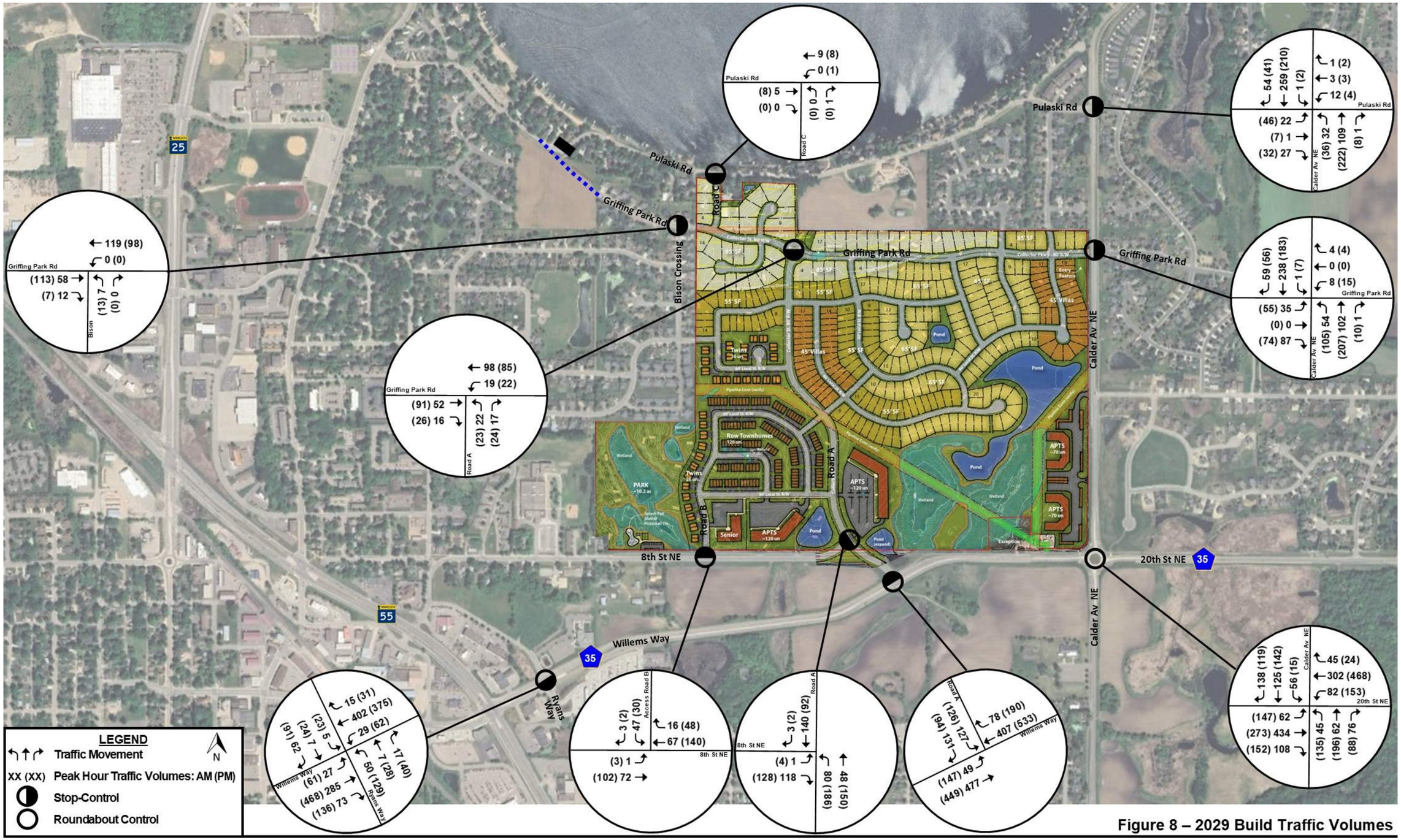


Figure 8 – 2029 Build Traffic Volumes

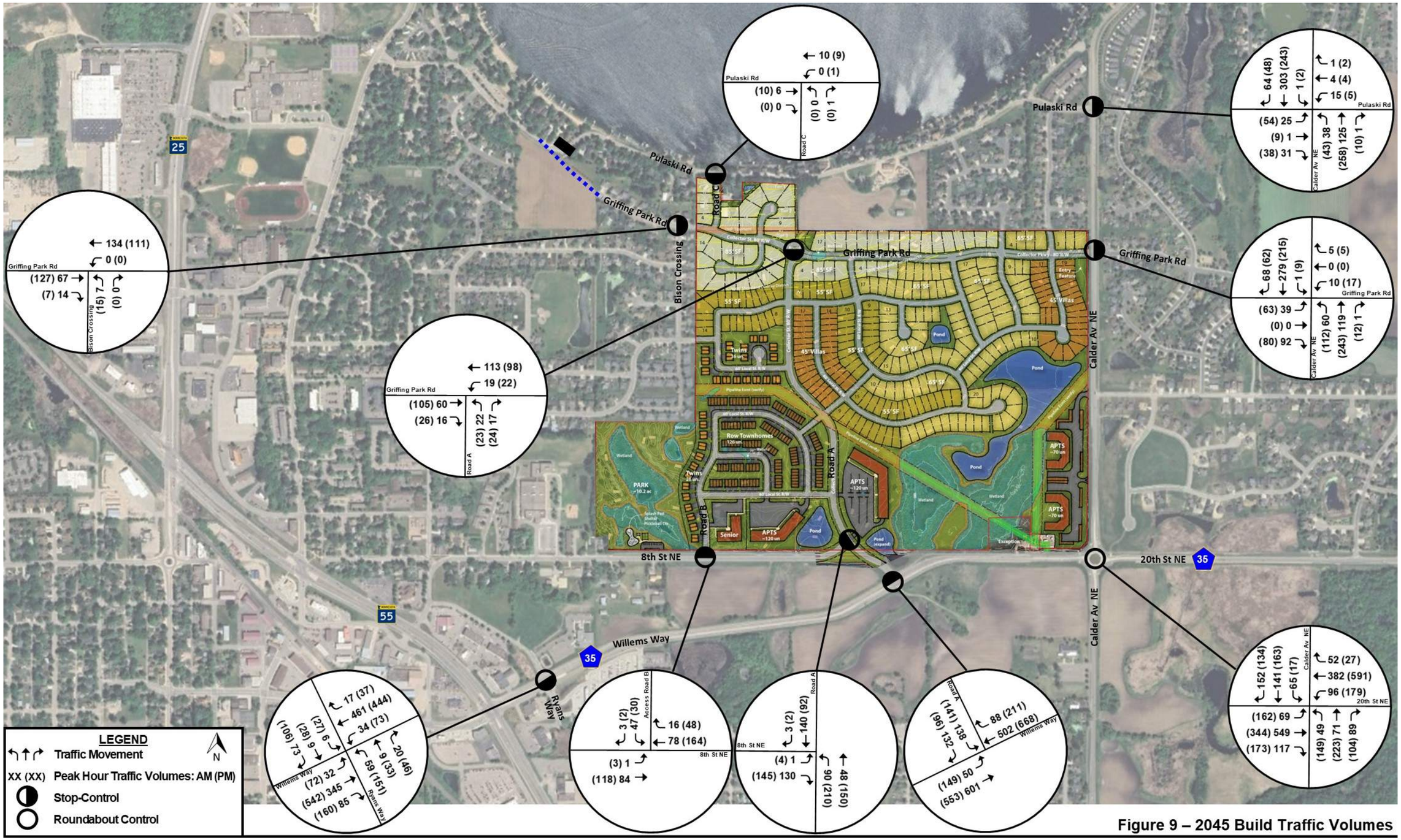


Figure 9 – 2045 Build Traffic Volumes

5. Operational Analysis Overview

5.1 Intersection Operational Description

The operating conditions of roadways and intersections are evaluated based on the relationship of the capacity to the actual traffic volume on that facility. Various factors affect capacity including speed, geometry, grade, number of travel lanes and intersection control. The current industry standards for evaluating capacity and operating conditions are contained in the ***Highway Capacity Manual*** [5]. Operating conditions are described in terms of driver delay represented as a Level of Service (LOS) grade with "A" as the best conditions and "F" as the worst. Per Chapter 5 of ***MnDOT's Access Management Manual*** [6], LOS "D" represents the threshold for acceptable overall intersection and individual movement operating conditions during a peak hour. The adjacent chart summarizes the LOS and delay criteria for signalized and unsignalized intersections.

Level of Service		Delay (sec)	
		Signalized	Unsignalized/ Roundabout
A	*Free-flow operation*	0-10	0-10
B	*Unimpeded operation*	>10-20	>10-15
C	*Stable operation*	>20-35	>15-25
D	*Less stable operation & more delay*	>35-55	>25-35
E	*Unstable operation, high delay*	>55-80	>35-50
F	*Congested operation, high delay & back-ups*	>80	>50

Another component of operational analyses is a study of vehicular queuing. An intersection can operate with an acceptable LOS, but if queues from the intersection extend back to block entrances to turn lanes or accesses to adjacent land uses, unsafe operating conditions could result. In this study, the industry design standard 95th Percentile Queue Length is considered and reported.

This study utilized the Synchro/SimTraffic software package (12th Edition) for the operational analyses for stop-controlled intersections. LOS, delay and queuing are reported for overall intersection operations and worst individual movement. Results are from an aggregate of 5 SimTraffic simulations. Roundabout operations were analyzed with RODEL software and LOS, delay and queuing are reported for overall intersection operations and worst individual approach.

6. Existing Conditions Operational Analysis

This section contains the results of the Existing Conditions intersection operational analyses and provides recommendations to improve unacceptable operations, as needed. It is noted that the intersection specific peak hour factors were used in the analysis to capture the High School traffic peaking characteristics.

Table 6. Existing Operations

Intersection		CSAH 35 & Ryan's Way* *Side-Street Stop*	CSAH 35 & 8th St NE *Side-Street Stop*	CSAH 35 & Calder Ave *Roundabout*	Calder Ave & Griffing Pk Rd *Side-Street Stop*	Calder Ave & Pulaski Rd *Side-Street Stop*	Griffing Pk Rd & Bison Xing *Side-Street Stop*
AM Peak	*Overall LOS/Delay*	A 2.0	A 1.9	A 5.1	A 0.6	A 1.8	A 1.2
	Worst LOS/Delay	B 13.0 (SBL)	C 15.5 (SBL)	A 5.9 (EB)	A 6.4 (WBL)	B 10.4 (WBT)	A 4 (NBL)
	95th % Queue	75' (SBT)	58' (SBL)	65' (EB)	30' (WBLTR)	55' (EBLTR)	19' (NBLR)
PM Peak	*Overall LOS/Delay*	A 6.0	A 1.2	A 6.4	A 0.6	A 2.6	A 2.8
	Worst LOS/Delay	D 30.0 (NBL)	B 10.9 (SBL)	A 8.4 (WB)	A 5.6 (WBL)	A 8.5 (EBT)	A 4.1 (NBL)
	95th % Queue	200' (NBT)	49' (SBL)	131' (WB)	30' (WBLTR)	70' (EBLTR)	32' (NBLR)
Notes		• Acceptable operations and queueing for all intersections except CSAH 35/Ryan's Way. • CSAH 35/Ryan's Way PM queues extend past adjacent accesses and past storage lanes.					

- LOS below "D" is unacceptable. Unacceptable operations are highlighted in red.
- Intersection specific peak hour factors and truck percentages were used in the analysis.
* CSAH 35/Ryan's Way results are from the City's ***CSAH 35 & Ryan's Way Traffic Impact Study*** with max queues noted.

[5] ***Highway Capacity Manual (HCM),*** Transportation Research Board, 7th Edition

[6] ***MnDOT's Access Management Manual, Chapter 5,*** January 2008, Link

All study area intersections operate acceptably for Existing Conditions, but there are queuing concerns at the CSAH 35/Ryan's Way intersection during the PM peak hour per the City's analysis. Westbound CSAH 35 queues could back-up past access driveways and the northbound queue extends past available storage length. The City is ultimately proposing a roundabout at this intersection to mitigate predicted future concerns and the noted existing queuing issues are improved.

Existing Conditions Recommendation Summary - All study area intersections operate acceptably for Existing Conditions, but there are queuing concerns at the CSAH 35/Ryan's Way intersection. The City is ultimately proposing a roundabout at this intersection to mitigate predicted future concerns and the noted queuing issues are mitigated. There are no recommendations to improve operations for other study area intersections.

7. No-Build Conditions Operational Analysis

7.1 2029 No-Build Conditions Operational Analysis

This section contains the results of the 2029 No-Build Conditions intersection operational analyses and provides recommendations to improve unacceptable operations due to growth in background traffic, as needed. The City provided analysis results for the CSAH 35/Ryan's Way intersection with existing side-street stop-control and geometry.

Table 7. 2029 No-Build Operations

Intersection		CSAH 35 & Ryan's Way* *Side-Street Stop*	CSAH 35 & 8th St NE *Side-Street Stop*	CSAH 35 & Calder Ave *Roundabout*	Calder Ave & Griffing Pk Rd *Side-Street Stop*	Calder Ave & Pulaski Rd *Side-Street Stop*	Griffing Pk Rd & Bison Xing *Side-Street Stop*
AM Peak	*Overall LOS/Delay*	A 2.0	A 1.4	A 5.3	A 0.6	A 1.7	A 1.0
	Worst LOS/Delay	B 12.0 (SBT)	B 10.4 (SBL)	A 6.3 (EB)	A 5.9 (WBL)	A 8.8 (EBT)	A 3.5 (NBL)
	95th % Queue	75' (NBL,SBTR)	56' (SBL)	74' (EB)	25' (WBLTR)	51' (EBLTR)	17' (NBLR)
PM Peak	*Overall LOS/Delay*	B 13.0	A 1.6	A 7.1	A 0.7	A 2.6	A 2.9
	Worst LOS/Delay	F 82.0 (NBL)	B 12.6 (SBL)	A 9.4 (WB)	A 6.2 (WBL)	A 9.5 (EBT)	A 4.1 (NBL)
	95th % Queue	325' (NBT)	66' (SBL)	163' (WB)	29' (WBLTR)	77' (EBLTR)	30' (NBLR)
Notes		• Acceptable operations and queueing for all intersections except CSAH 35/Ryan's Way. • CSAH 35/Ryan's Way PM queues extend past adjacent accesses and past storage lanes with NB approach LOS F.					

- LOS below "D" is unacceptable. Unacceptable operations are highlighted in red.
- Intersection specific peak hour factors and truck percentages were used in the analysis.
* CSAH 35/Ryan's Way results provided by the City with max queues noted.

2029 No-Build Conditions Recommendation Summary - All study area intersections operate acceptably for 2029 No-Build Conditions except the CSAH 35/Ryan's Way intersection. The City is proposing a roundabout at this intersection to mitigate unacceptable operations. For the other study area intersections, LOS and queuing are within acceptable ranges and there are no recommendations to improve operations due to growth in background traffic.

7.2 2045 No-Build Conditions Operational Analysis

This section contains the results of the 2045 No-Build Conditions intersection operational analyses and provides recommendations to improve unacceptable operations due to growth in background traffic, as needed. The CSAH 35/Ryan's Way intersection is assumed to be a roundabout (2x1) and results from the City's study are included.

Table 8. 2045 No-Build Operations

Intersection		CSAH 35 & Ryan's Way* *2x1 Roundabout*	CSAH 35 & 8th St NE *Side-Street Stop*	CSAH 35 & Calder Ave *Roundabout*	Calder Ave & Griffing Pk Rd *Side-Street Stop*	Calder Ave & Pulaski Rd *Side-Street Stop*	Griffing Pk Rd & Bison Xing *Side-Street Stop*
AM Peak	*Overall LOS/Delay*	A 4.0	A 1.9	A 6.5	A 0.6	A 1.9	A 1.2
	Worst LOS/Delay	A 4.0 (EB,NB,SB)	C 16 (SBL)	A 8.8 (EB)	A 5.2 (WBL)	A 9.6 (WBT)	A 4.2 (NBL)
	95th % Queue	50' (EB,WB,SB)	64' (SBL)	95' (EB)	26' (WBLTR)	54' (EBLTR)	22' (NBLR)
PM Peak	*Overall LOS/Delay*	A 4.0	A 2.7	A 9.8	A 0.7	A 2.8	A 2.7
	Worst LOS/Delay	A 5.0 (NB,SB)	C 24.6 (SBL)	B 14.3 (WB)	A 5.8 (WBL)	B 11.1 (WBT)	A 4 (NBL)
	95th % Queue	75' (EB)	94' (SBL)	215' (WB)	35' (WBLTR)	84' (EBLTR)	32' (NBLR)
Notes		• Acceptable operations and queueing for all intersections.					

- LOS below "D" is unacceptable. Unacceptable operations are highlighted in red.
- For future planning efforts a default study area peak hour factor of 0.92 and a 3% truck percentage were used in the analysis.
* CSAH 35/Ryan's Way results are from the City's ***CSAH 35 & Ryan's Way Traffic Impact Study*** with the recommended roundabout with max queues noted.

2045 No-Build Conditions Recommendation Summary - All study area intersections operate acceptably for 2045 No-Build Conditions. LOS and queuing are within acceptable ranges and there are no recommendations to improve operations due to growth in background traffic.

8. Build Conditions Operational Analysis

8.1 2029 Build Conditions Operational Analysis

This section contains the results of the 2029 Build Conditions intersection operational analyses and provides recommendations to improve unacceptable operations due to Proposed Project site generated traffic. The noted turn lane recommendations at site access points were included in the analysis. The City's recommended roundabout at the CSAH 35/Ryan's Way intersection is assumed with City provided analysis results.

Table 9. 2029 Build Operations

Intersection		CSAH 35 & Ryan's Way* *2x1 Roundabout*	CSAH 35 & Road A *Side-Street Stop*	CSAH 35 & Calder Ave *Roundabout*	Calder Ave & Griffing Pk Rd *Side-Street Stop*	Calder Ave & Pulaski Rd *Side-Street Stop*	Griffing Pk Rd & Bison Xing *Side-Street Stop*	8th St NE & Access 1 (Rd *Side-Street Stop*	8th St NE & Access 2 (Rd B) *Side-Street Stop*	Pulaski Rd & Access 5 (Rd C) *Side-Street Stop*	Griffing Pk Rd & Road A *Side-Street Stop*
AM Peak	*Overall LOS/Delay*	A 3.0	A 3.9	A 6.2	A 1.8	A 1.2	A 0.4	A 1.8	A 1.3	A 0.3	A 1.6
	Worst LOS/Delay	A 4.0 (NB,SB)	D 26.6 (SBL)	A 7.8 (EB)	A 7.1 (EBL)	A 7 (WBT)	A 4.6 (NBL)	A 3.7 (EBR)	A 4.5 (SBL)	A 1.9 (NBR)	A 5.1 (NBL)
	95th % Queue	50' (EB,WB)	113' (SBL)	115' (EB)	62' (EBLTR)	39' (EBLTR)	26' (NBLR)	59' (EBLR)	37' (SBLR)	12' (NBLR)	52' (NBLR)
PM Peak	*Overall LOS/Delay*	A 4.0	D 32.9	A 9.6	A 2.0	A 1.7	A 0.7	F 89.0	B 10.3	A 0.1	A 1.6
	Worst LOS/Delay	A 5.0 (NB,SB)	F 394.7 (SBL)	B 14.5 (WB)	A 8.7 (EBL)	A 8.7 (EBT)	A 4.9 (NBL)	F 503.9 (EBL)	F 93.9 (SBR)	A 1.9 (WBL)	A 5.3 (NBL)
	95th % Queue	100' (EB)	488' (SBL)	306' (WB)	67' (EBLTR)	49' (EBLTR)	35' (NBLR)	995' (EBLR)	126' (EBLT)	0'	53' (NBLR)
Notes		• PM operations fail at CSAH 35/8th St with existing control and SB queues back up to Access 1 & 2 creating unacceptable operations. • All other intersections operate acceptably.									

- LOS below "D" is unacceptable. Unacceptable operations are highlighted in red.
- Access intersections are shaded blue.
- Intersection specific peak hour factors and truck percentages were used in the analysis.
*CSAH 35/Ryan's Way results provided by the City with max queues noted.

Operations at the CSAH 35/Road A intersection fail in the PM peak hour with side-street stop control geometry. Southbound queues back-up past Access 1 and Access 2 on 8th St NE. Enhanced traffic control is needed. It is noted that the MnMUTCD's peak hour warrant for a traffic signal is satisfied with the anticipated volumes (see Appendix A for peak hour warrant details). Installation of a roundabout (2x1) is recommended over a traffic signal due to increased safety, available right-of-way, reduced maintenance costs and community familiarity. Table 10 shows the resulting acceptable 2029 Build Operations with the recommended roundabout at the CSAH 35/Road A intersection.

Table 10. 2029 Build Operations w/Improvements

	Intersection	CSAH 35 & Ryan's Way* *2x1 Roundabout*	CSAH 35 & Road A *2x1 Roundabout*	CSAH 35 & Calder Ave *Roundabout*	Calder Ave & Griffing Pk Rd *Side-Street Stop*	Calder Ave & Pulaski Rd *Side-Street Stop*	Griffing Pk Rd & Bison Xing *Side-Street Stop*	8th St NE & Access 1 (Rd *Side-Street Stop*	8th St NE & Access 2 (Rd B) *Side-Street Stop*	Pulaski Rd & Access 5 (Rd C) *Side-Street Stop*	Griffing Pk Rd & Road A *Side-Street Stop*
AM Peak	*Overall LOS/Delay*	A 3.0	A 2.7	A 6.2	A 1.9	A 1.3	A 0.4	A 1.7	A 1.2	A 0.2	A 1.6
	Worst LOS/Delay	A 4.0 (NB,SB)	A 4.6 (SB)	A 7.8 (EB)	A 7.6 (WBL)	B 11.4 (WBT)	A 4.8 (NBL)	A 5.1 (EBL)	A 4.7 (SBL)	A 2.9 (NBR)	A 5.1 (NBL)
	95th % Queue	50' (EB,WB)	21' (EB)	115' (EB)	58' (EBLTR)	43' (EBLTR)	23' (NBLR)	56' (EBLR)	37' (SBLR)	10' (NBLR)	52' (NBLR)
PM Peak	*Overall LOS/Delay*	A 4.0	A 3.3	A 9.6	A 2.1	A 1.8	A 0.6	A 1.9	A 0.8	A 0.1	A 1.6
	Worst LOS/Delay	A 5.0 (NB,SB)	A 4.8 (SB)	B 14.5 (WB)	A 8.6 (EBL)	B 11.8 (WBT)	A 4.8 (NBL)	A 6.9 (EBL)	A 5.4 (SBL)	A 0.1 (WBT)	A 5.3 (NBL)
	95th % Queue	100' (EB)	40' (WB)	306' (WB)	63' (EBLTR)	45' (EBLTR)	29' (NBLR)	59' (EBLR)	39' (SBLR)	0'	53' (NBLR)
	Notes	• All intersections operate acceptably with the noted improvements.									

- LOS below "D" is unacceptable. Unacceptable operations are highlighted in red.
- Access intersections are shaded blued.
- Intersection specific peak hour factors and truck percentages were used in the analysis.

*CSAH 35/Ryan's Way results provided by the City with max queues noted.

2029 Build Conditions Recommendation Summary – Installation of a roundabout is recommended at the CSAH 35/Road A intersection to accommodate Proposed Project site generated traffic. With this improvement all study area intersections operate acceptably for 2029 Build Conditions. LOS and queuing are within acceptable ranges.

8.2 2045 Build Conditions Operational Analysis

This section contains the results of the 2045 Build Conditions intersection operational analyses and provides recommendations to improve unacceptable operations due to Proposed Project site generated traffic, if needed. The recommended improvement of a roundabout at the CSAH 35/Road A intersection from 2029 Build conditions are included in this analysis.

Table 11. 2045 Build Operations

	Intersection	CSAH 35 & Ryan's Way* *2x1 Roundabout*	CSAH 35 & Road A *2x1 Roundabout*	CSAH 35 & Calder Ave *Roundabout*	Calder Ave & Griffing Pk Rd *Side-Street Stop*	Calder Ave & Pulaski Rd *Side-Street Stop*	Griffing Pk Rd & Bison Xing *Side-Street Stop*	8th St NE & Access 1 (Rd *Side-Street Stop*	8th St NE & Access 2 (Rd B) *Side-Street Stop*	Pulaski Rd & Access 5 (Rd C) *Side-Street Stop*	Griffing Pk Rd & Road A *Side-Street Stop*
AM Peak	*Overall LOS/Delay*	A 4.0	A 2.9	A 7.8	A 2.0	A 1.5	A 0.4	A 1.9	A 1.2	A 0.2	A 1.5
	Worst LOS/Delay	A 5.0 (SB)	A 4.9 (SB)	B 10.7 (EB)	A 7.9 (EBL)	C 17.7 (EBT)	A 5.2 (NBL)	A 7.4 (EBL)	A 4.8 (SBL)	A 1.8 (NBR)	A 5.2 (NBL)
	95th % Queue	75' (EB)	28' (EB)	145' (EB)	62' (EBLTR)	46' (EBLTR)	26' (NBLR)	63' (EBLR)	42' (SBLR)	12' (NBLR)	52' (NBLR)
PM Peak	*Overall LOS/Delay*	A 5.0	A 3.6	B 14.2	A 2.2	A 1.9	A 0.7	A 2.0	A 0.7	A 0.1	A 1.6
	Worst LOS/Delay	A 7.0 (NB)	A 5.3 (SB)	C 24.2 (WB)	A 10 (EBL)	A 9.8 (EBT)	A 5.3 (NBL)	A 8 (EBL)	A 4.8 (SBL)	A 1.2 (WBL)	A 5.4 (NBL)
	95th % Queue	75' (EB,NB,SB)	54' (WB)	415' (WB)	71' (EBLTR)	53' (EBLTR)	35' (NBLR)	62' (EBLR)	36' (SBLR)	0'	54' (NBLR)
	Notes	• All intersections operate acceptably.									

- LOS below "D" is unacceptable. operations are highlighted in red.
- Access intersections are shaded blued.
- For future planning efforts a default study area peak hour factor of 0.92 and 3% truck percentage were used in the analysis.

* CSAH 35/Ryan's Way results provided by the City with max queues noted.

2045 Build Conditions Recommendation Summary - All study area intersections operate acceptably for 2045 Build Conditions. LOS and queuing are within acceptable ranges and there are no recommendations to accommodate Proposed Project site generated traffic. It is noted the proposed CSAH 35/Road A roundabout has available capacity to accommodate a south leg for potential development south of CSAH 35.

Appendix A – CSAH 35/8th St NE Peak Hour Warrant Analysis, 2029 Build Volumes

Traffic Signal Warrant Analysis

Warrants 3, Peak Hour Vehicular Volume

Project Name	Pulaski Shores
Project/File #	Pulaski Shores Traffic Impact Study
Scenario	2029 Build

Intersection Information			
Major Street (E/W Road)	CSAH 35 (Willem's Way)	Minor Street (N/S Road)	8th St NE
Analyzed with	2 or more approach lanes	Analyzed with	1 Approach Lane
Total Approach Volume	2330 vehicles	Total Approach Volume	478 vehicles
Total Ped/Bike Volume	0 crossings	Total Ped/Bike Volume	0 crossings
Right Turn Criteria	No right turns included	No right turns included	No right turns included

70% factor used due to 45 mph mainline speeds. Right turn volumes not used and 8th St NE considered 1 lane with the right turns removed.

Warrant 3, Peak Hour Vehicular Volume		
	Condition A	**Condition B**
Condition Satisfied?	**Not Examined**	**Satisfied**
Required values reached for		2 hours
Criteria - Total Approach Volume (veh in one hour)		See Figure Below
Criteria - Minor Street High Side Volume (veh in one hour)		
Criteria - Minor Street High Side Delay (veh-hrs)		

Figure 4C-4 (Warrant 3 - 70% Factor)