Environmental Assessment Worksheet

Fox Meadows Development

Prepared For

Schrom Construction

July 8, 2022

Project B2203087
Braun Intertec Corporation

BRAUN INTERTEC
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Environmental Assessment Worksheet

September 2021 version

1. **Project Title**
   Fox Meadows Development

2. **Proposer**
   Company: Schrom Construction
   Contact Person: Troy Schrom
   Title: Owner
   Address: 704 Parkway Avenue
   City, State, ZIP: Eagle Lake, MN 56024
   Phone: 507.257.5101
   Fax: N/A
   Email: troymschrom@gmail.com

3. **RGU**
   RGU Agency: City of Eagle Lake
   Contact person: Jennifer Bromeland
   Title: City Administrator
   Address: 705 Parkway Avenue
   City, State, ZIP: Eagle Lake, MN 56024
   Phone: 507.257.3218
   Fax: N/A
   Email: jbromeland@eaglelakemn.com

4. **Reason for EAW Preparation:**
   Check one:

   Required:
   ☐EIS Scoping
   ☒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):
   Residential Development 4410.4300, subpart 19.B.

5. **Project Location:**
   County: Blue Earth
   City/Township: City of Eagle Lake and Le Ray Township
   PLS Location (1/4, 1/4, Section, Township, Range): N 1/2, SE 1/4, Section 18, T 108N, R 25W
   Watershed (81 major watershed scale): Le Sueur River (32)
   GPS Coordinates: 44.157607 latitude, -93.873738 longitude
   Tax Parcel Numbers: R121018400013 and R391018400005

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

      The Fox Meadows Development (project) consists of constructing 228 new residential units in Eagle Lake, Minnesota. The development site is located in the southeast portion of Eagle Lake on two parcels currently used as cultivated cropland along the east side of South Agency Street. The project would include a mix of multi-family housing units, twin homes, and single family lots with associated roads, utilities, and a stormwater management system. A park would also be created surrounding an existing wetland in the northeast corner of the project area.

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 consists of a new residential development in Eagle Lake, Blue Earth County, Minnesota (Figures 1 and 2). The project area is currently cultivated cropland with a portion of a large wetland in the northeast corner. Small, farmed wetlands are also present along the southern parcel boundary, southeast corner, and northwest corner of the site (Figure 3).

The project would include constructing approximately 228 housing units with associated roads (public and private) and utilities. A stormwater management system with four basins and park land (Figure 4) would also be located in the project area. A playground would be included within a portion of the park land. The housing units would be a mix including approximately 104 multi-family units with 8-plexes, 24 twin homes and 100 single family units (approximately 17 community, 83 detached).

The project is proposed to be built in a minimum of three stages:

1. Stage 1 would include construction of three accesses from South Agency Street, three stormwater basins and 82 housing units divided between three twin homes, eight 8-plexes and 11 community single family homes. One lot would also be prepared for future single family home construction.

2. Stage 2 would include continued construction of roads, a corner lot park and 63 units divided between five 8-plexes, five twin homes and seven community single family homes. Additionally, seven lots would be prepared for single family homes to be built as driven by market demand.

3. Stage 3 would include completion of roads, a fourth stormwater basin, and 8 units within four twin homes. Thirty Six single family lots for future market demand home building would also be prepared during stage 3.

Physical manipulation of the environment would be necessary for construction of the new housing units, associated utilities, streets, and stormwater management system. Construction techniques would include soil excavation & grading, installation of sub-surface utility lines followed by vertical construction.

The project would not involve demolition/removal or remodeling of existing structures and does not involve new or expanded permanent equipment or industrial processes.

Project construction is anticipated to begin in fall 2022 and stage 2 is expected to be completed by 2025. Stage 3 and a potential stage 4 would be completed by 2028 and 2031, respectively (depending on market conditions).

c. Project magnitude:

Table 6-1 Project Magnitude

Total Project Acreage	60.15 acres of the 78.70 acre Project Site
Linear project length	Not applicable
Number and type of residential units	104 multifamily units (8-plexes), 24 twin home units (12 homes), 17 single family community and 83 single family detached lots
Residential building area (in square feet)	259,780 total square feet*
Commercial building area (in square feet)	Not applicable
Industrial building area (in square feet)	Not applicable
Institutional building area (in square feet)	Not applicable
Other uses – (in square feet)	Not applicable
Structure height(s)	Approximately 25 feet.

*This is based on the combined square footage of each building type (8-plex, twin home & single family) for the buildings shown on the conceptual plan. Values used were provided square footages for each building type and are subject to change, based on local planning & zoning requirements.

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 project would consist of constructing approximately 228 mixed housing units in Eagle Lake, Minnesota. Eagle Lake has experienced significant growth over the last two decades including a 36% population increase from 2000 to 2010. Housing stock both within the city and in the greater Mankato area has not kept up with demand and the project would add needed housing units to the community. In addition, construction of new housing units would occur next to a residential area of Eagle Lake and complement the existing neighborhoods while developing a section of underutilized cropland within the city limits.

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.

Not applicable.

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.

Not applicable.

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 during the life of the project.**

The proposed project area is located within the Le Sueur River watershed. The Minnesota Climate Explorer (c) was used to evaluate the climate trends based on this watershed. The 1895 to 2021 profile shows a wide variability of temperature and precipitation data from year to year. The overall trends are described below:

- Average daily mean temperature of 44.52 °F and an increase of 0.13 °F per decade.
- Average daily maximum temperature of 54.89°F and an increase of 0.02 °F per decade.
- Average daily minimum temperature of 34.15 °F and an increase of 0.25 °F per decade.
- Average annual precipitation of 29.87 inches and an increase 0.51 inches per decade.

The future projected data from the Minnesota Climate Explorer was also used to evaluate the anticipated climate conditions within the Le Sueur River watershed during the life of the project. Thus, the mid-century (2040-2059) projections were used in this evaluation, as summarized below. This range of years is assumed at a representative concentration pathway (RCP) of 4.5 which is an intermediate scenario where emissions decline after peaking around year 2040. The values presented below are the model mean, with the upper and lower ranges from the eight general circulation global climate models obtained from CMIP5 (Coupled Model Intercomparison Project, Phase 5 (https://pcmdi.llnl.gov/mips/cmip5/):

- Average daily mean temperature of 48.59 °F with an upper range of 52.42 °F and a lower range of 45.21 °F.

- Average daily maximum temperature of 55.36 °F with an upper range of 58.97 °F and a lower range of 52.40 °F.

- Average daily minimum temperature of 42.05 °F with an upper range of 46.30 °F and a lower range of 37.74 °F.

- Average annual precipitation of 32.07 inches with an upper range of 64.93 inches and a lower range of 16.02 inches.

If future climate conditions follow the projected values, the average daily mean, maximum, and minimum temperatures are each expected to rise over the life of the project. The climate models also project an increase in the average annual precipitation of approximately 2.2 inches (roughly a 7% increase) over the life of the project.

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.

Table 7-1 Climate Considerations by Resource Category

Resource Category	Climate Considerations	Project Information	Adaptations
Project Design	The proposed residential units would include energy efficient building materials and new appliances that would comply with all local codes and ordinances.	Climate change risks and vulnerabilities identified include: ▪ Increased greenhouse gas emissions	Minnesota state building code will define future materials used in construction, which may include the owner's choice of sustainably produced products and energy efficient systems available at the time of design.
Land Use	Project would convert land from agricultural to residential with increased impervious surface area.	Climate change risks and vulnerabilities identified include: ▪ Increased stormwater runoff from climate related increase in precipitation.	Stormwater management system will include a water reuse system used for irrigation and increased capacity to manage anticipated additional runoff from the projected precipitation increase.
Water Resources	Addressed in item 12	Addressed in item 12	Addressed in item 12
Contamination/ Hazardous Materials/Wastes	Projected climate change is not expected to affect the anticipated minimal volume of hazardous waste generated at the project area.	It is expected minimal amounts of typical household hazardous wastes would be generated from the project once construction is completed and the units are occupied.	Not applicable. Climate change is not expected to affect how hazardous waste is managed/disposed of by future residents of the project area.
Fish, wildlife, plant communities, and sensitive ecological resources (rare features)	Addressed in item 14.	Addressed in item 14.	Addressed in item14.

8. Cover Types:

Estimate the acreage of the site with each of the following cover types before and after development:

Table 8-1 Cover Types

Cover types	Before (Acres)	After (Acres)
Wetlands and shallow lakes (<2 meters deep)	4.87	4.65
Deep lakes (>2 meters deep)	0	0
Rivers/streams	0	0
Wooded/forest	0	0
Brush/Grassland	0	13.97
Cropland	73.83	0
Lawn/landscaping	0	31.47
Green infrastructure (from table 8-2 below)	0	0
Impervious surface	0	25.39*
Stormwater Ponds	0	3.22
Other (describe)	0	0
TOTAL	**78.7**	**78.7**

**Includes assumed square footages of single homes up to 3,000 square feet each.*

Table 8-2 Green Infrastructure

Green Infrastructure	Before (Acres)	After (Acres)
Constructed infiltration systems (infiltration basins, infiltration trenches, rainwater gardens, bioretention areas without underdrains, swales with impermeable check dams)	0	3.22*
Constructed tree trenches and tree boxes	0	0
Constructed wetlands	0	0
Constructed green roofs	0	0
Constructed permeable pavements	0	0
Solar panels	0	0
TOTAL (add to table 8-1 above)	0	**3.22**

**Feasibility of stormwater basin design to be determined.*

Table 8-3 Trees

Trees	Percent	Number
Percent tree canopy removed or number of mature trees removed during development	0	0
Number of new trees planted	800	8*

**Assumed to meet any City of Eagle Lake landscaping requirements. Additional tree plantings may be required at the time of plan approval per phase.*

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.*

Table 9-1 Permits and Approvals

Unit of Government	Type of Application	Status
Blue Earth County	Wetland Boundary & Type Determination	Pending
Blue Earth County	Wetland Permit (Exemption, No-Loss or Replacement Plan)	To be submitted
U.S. Army Corps of Engineers	Wetland Jurisdictional Determination	To be submitted
City of Eagle Lake and Le Ray Township	Annexation Agreement	To be determined
City of Eagle Lake	Final Plat Approval	To be submitted
City of Eagle Lake	Property and Zoning	To be submitted
City of Eagle Lake	Utilities (Water and Stormwater)	To be submitted
City of Mankato	Sanitary Sewer Extension Permit Application	To be submitted
City of Eagle Lake	Mechanical and Heating Permit	To be submitted
City of Eagle Lake	Electrical Permit	To be submitted
City of Eagle Lake	Building Permit	To be submitted
City of Eagle Lake	After hours work permit	To be determined if necessary
Minnesota Department of Natural Resources	Water Appropriations Permit (Temporary Construction Dewatering)	To be obtained, if necessary
Minnesota Pollution Control Agency	NPDES construction stormwater permit	To be submitted

Table 9-2. Financial Assistance

Funding Source	Structure	Status
Tax Increment Financing (TIF)	TBD	Pending

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 existing site consists of cultivated cropland with a large wetland in the northeast portion of the site. Land use in the surrounding area is primarily agricultural, residential, and undeveloped with wetlands. Single family homes are present to the west across South Agency Street and multi-family housing is located directly south of the project area. The remainder of the surrounding area consists of cropland with wetlands present to the north beyond a small crop field. An unnamed stream is located east of the site beyond the immediately adjacent crop field. Trees at the site are primarily located along the northern and southern boundaries with a few individuals scattered near the northeast wetland.

No parks, trails or recreation areas are located in the project area. Parks, trails, and open spaces within 1 mile of the site include Eagle Lake Park approximately 0.40 miles west of the project area. Additional public lands, trails and parks in the greater surrounding area include the Sakatah Singing Hills state trail (1.85 miles north), the Gilfillan Lake Wildlife

Management Area (2.35 miles northeast), Wildwood County Park (2.25 miles south), Bray Park and Campground (3.90 miles northeast) and state forest land on the island in Eagle Lake (2.70 miles northwest).

According to Eagle Lake's December 2019 Zoning Map (most recent), the western parcel of the project area (within the city limits) is zoned for agricultural use. The eastern parcel of the project area is currently located within LeRay Township and is also zoned for agricultural use according to the most recent township zoning map. Annexation of the eastern parcel into the City of Eagle Lake is planned for the near future.

According to the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) web soil survey, the majority of the site is classified as prime farmland.

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 proposed project is not specifically discussed in the current Blue Earth County Land Use Plan (adopted December 2018) since cities within the county, including Eagle Lake were designated to create their own land use or comprehensive plans.

Eagle Lake's comprehensive plan is dated November 1991 and primarily discusses development related to the relocation of US Highway 14 through the city, which has since been completed, leaving the plan out of date. Additionally, land use for the project area is not identified in the 1991 comprehensive plan.

A 2006 Land Use Plan for Eagle Lake identified the project's parcels as an area for "Limited High Density Residential Development", defined as buildings with no more than eight units.

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

According to Federal Emergency Management Agency (FEMA) flood maps, a flood hazard study has not been completed for the project area.

The project area is not located within a shoreland, wild and scenic river, critical area, agricultural preserve, or special district.

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 floodplain is known to exist within or adjacent to the project area.

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

Both parcels within the project area designated for agricultural use under current City of Eagle Lake and Le Ray township zoning. However, the project is compatible with the surrounding residential areas and rezoning the parcels would allow for the construction of needed additional housing units within Eagle Lake. Rezoning of the project area's parcels is consistent with both the City's goal to provide additional housing units and the 2018 Blue Earth County land use plan directive to balance development and the preservation of cropland within existing municipalities.

Additionally, the project meets the goals of "Limited High Density Residential Development" as defined (no more than 8 units per building, provides adequate low, medium, and high density affordable housing for all income levels/age groups and would enhance the surrounding similar density residential development) in the 2006 Land Use Plan for Eagle Lake.

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

When construction permits for Stage 1 of the project are issued, the project areas' western parcel (within the City of Eagle Lake), would be rezoned from agricultural to residential under the appropriate classification (multi vs single family). It is anticipated the project area's eastern parcel (currently within Le Ray Township) would be rezoned for residential during future annexation of the parcel into the City of Eagle Lake. The timing for annexation of the eastern parcel is currently unknown and would be dependent on market demand for single family home construction on the parcel. Rezoning of the two parcels would ensure the proposed project is compatible with city zoning and land use goals.

11. Geology, Soils, and Topography/Land Forms:

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

The unconsolidated sediments within the project area vicinity are diamicton, a group of Pleistocene age glacial sediments, which consist of loam to clay loam with clasts of gravel, scattered cobbles, and rare boulders. Diamicton deposits may also contain till, and varying amounts of gray siliceous shale fragments. These sediments are associated with melting of stagnant ice from glaciers and may be sorted from resedimentation by moving or still waters (Jennings et. al, 2012). The surficial geology is shown on Figure 7A.
The depth to bedrock within the Site is estimated to be between 200-300 feet below ground surface (Steenberg et. al, 2012). The uppermost bedrock units within the vicinity of the Project Area are the Lower Ordovician, Shakopee Formation and Oneota Dolomite. The Shakopee Formation is described as a yellow-gray to grayish-orange thin to thickly bedded, sandy oolitic dolostone with two facies: the Willow River Member is a light brown to grayish-orange, thin to medium bedded, sandy oolitic, intraclastic dolostone and the New Richmond Member is a yellow-gray, fine to coarse grained quartz sandstone and sandy dolostone. The Oneta Dolomite

is described mostly as a very thick to thick bedded light brown to grayish-orange finely crystalline, microbial dolostone that is divided into several formal and informal members (Steenberg et. al, 2012).

No sinkholes or karst conditions are known to be present within the Project area. A shallow water table is present in the project area within wetlands and ranges from the ground surface to depths of approximately 10 feet. This shallow water table is representative of the regional water table aquifer within the project area, which is not a significant source of groundwater within Blue Earth County (Berg 2016).

Since the proposed project involves new construction on parcels historically disturbed from crop cultivation, construction of the new buildings and associated infrastructure is not anticipated to adversely affect the geologic conditions within 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, highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 12.b.ii.

According to the USDA-NRCS Web Soil Survey, the soils within the proposed project area consist of the following classifications:

Table 11-1 USDS-NRCS Soil Types

Map Unit Symbol	Map Unit Name	% of Project Area	Drainage	Farmland Classification
286	Shorewood silty clay loam, 1-6 % slopes	66.91%	Moderately well drained	Prime farmland
238B	Kilkenny clay loam, 2-6 % slopes	1.00	Moderately well drained	Prime farmland
238C	Kilkenny clay loam, 6-10 % slopes, moderately eroded	11.56	Moderately well drained	Farmland of statewide importance
211	Lura silty clay, 0-1 % slopes	7.56	Very poorly drained	Prime farmland if drained
287	Minnetonka silty clay loam	11.78	Poorly drained	Prime farmland if drained
539	Klossner muck, lake plain, depressional, 0-1 % slopes	1.19	Very poorly drained	Farmland of statewide importance

A map of the soil unit locations is provided as Figure 8. As indicated in Table 11-1 above, soils in the project area consist primarily of moderately well drained, clay loams. Areas of poorly drained silty clay/silty clay loam soils are mapped in the northwest, southeast and southwest portions of the project area in addition to the wetland in the northeast portion of the project area. Very poorly drained muck is also mapped within the wetland.

Braun Intertec is currently in the process of completing a Geotechnical Evaluation of the project area. If any soils within the project area are of limited use for construction purposes, implementation of additional engineering practices may be necessary to achieve the proposed project's goals. Any soils deemed to be unsuitable for the proposed project's construction, would be excavated and replaced with suitable imported fill material. The earthwork contractor would be responsible for the reuse or export of any excess soil generated during construction.

The topography of the project area is relatively level with the exception of the northeast corner, where steep slopes drop into the wetland present. Elevations range from approximately 990 to 1,020 feet above mean sea level, as illustrated on Figure 9.

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/flood fringe location, 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.

The preliminary wetland delineation report identifies six wetlands that are present within the project area. The largest wetland is located in the northeast portion of the project area and is part of a larger wetland complex that extends north off-site of the project area. The remaining five wetlands are farmed isolated wetlands. No other surface waters or aquatic resources are present within the project area. The wetland delineation report is pending review by the Local Government Unit, with an anticipated approval in July-August 2022.

The nearest surface waters are an unnamed intermittent stream located approximate 0.10 miles east of the project area and Eagle Lake, located approximately 0.80 miles to the north. Eagle Lake is identified as a Minnesota Department of Natural Resources (MnDNR) Public Water- inventory number 07006002. One large wetland located approximately 285 feet offsite and north of the project area is also identified as a MnDNR Public Water- inventory number 07003700. Numerous other wetlands and a few unnamed streams are present within 1-mile of the project area as shown on Figure 10.

The intermittent stream closest to the project area (to the east) is also identified as an Impaired Water for aquatic life according to the Minnesota Pollution Control Agency (MPCA) 2022 Impaired Waters list (07020011-606). A second unnamed stream located approximately 0.75 miles south of the project area is also on the MPCA 2022 Impaired Waters list (07020011-510) for aquatic life (Figure 10). No impacts from the proposed project are anticipated to either of these impaired streams.

Eagle Lake (0.80 miles north of the Site) is also classified as a lake of Moderate Biological Significance by the MnDNR.

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.

The depth to ground water ranges from 920-940 feet above mean sea level or approximately 70-100 feet below ground surface (Berg 2016). Based on this mapped depth, groundwater is not anticipated to be encountered during excavation for basement levels of the new residential buildings or for the installation of utilities. The Minnesota Department of Health (MDH) Minnesota Well Index was reviewed and there are no wells mapped within the project area boundaries or within a quarter mile of the project area as shown in Figure 11. The western edge of the site is located within the MDH Eagle Lake wellhead protection area.

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.

The full build out of the project is estimated to generate approximately 62,500 gallons per day of domestic strength wastewater. There is no industrial process wastewater generated at the site and pretreatment would not be required.

Eagle Lake is served by the City of Mankato wastewater collection system. The collection system discharges to Mankato's Water Resource Reclamation Facility (WRRF) in Mankato, Minnesota. According to the WRRF, 3 percent (or 0.34 million gallons per day (MGD)) of their average wet weather flows are from the City of Eagle Lake. The WRRF would not need additions or improvements to treat the estimated increased discharge anticipated from 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.**

   No wastewater from the proposed project would be discharged to surface water.

ii. **Stormwater – Describe changes in surface hydrology resulting from change of land cover. Describe the routes and receiving water bodies for runoff from the 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 (BMPs) to address 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.**

   Currently, stormwater runoff flows overland across the agricultural fields on site and follows topography draining into the large wetland in the northeast portion of the project area. After construction, stormwater runoff from the project area would be directed into three stormwater retention basins/ponds and one additional basin located throughout the development. The proposed stormwater basin design would reduce stormwater flow rates and pollutant loads leaving the site. Infiltration and filtration measures are also under consideration for the project's stormwater management system design and will vary based on the geotechnical evaluation results. The final stormwater management plan will meet NPDES Construction Stormwater Permit requirements and City of Eagle Lake Stormwater management plan standards.

   Temporary erosion and sediment control best management practices (BMPs) would initially be installed (per the Project's SWPPP), maintained/repaired, and amended throughout the construction phases as required to remain compliant with the NPDES construction stormwater permit. Temporary BMPs may include (but are not limited to) silt fence, bio-rolls/filter logs, rock construction entrances, mulch/hydro mulch, temporary seeding, and permanent seeding (native and turf, where appropriate) or sod for final vegetation establishment.

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.**

Temporary short-term construction dewatering of groundwater may be required at the time of construction (depending on current field conditions) to facilitate construction activities of phased grading, placement of structural footings, and utility trenches/pits. If dewatering is anticipated to exceed 10,000 gallons per day or 1,000,000 gallons per year, the contractor performing the applicable work would be required to obtain a Temporary Construction Dewatering Water Appropriations Permit from the Minnesota Department of Natural Resources (MDNR) prior to initiating dewatering activities. Measures to avoid, minimize, or mitigate the environmental effects from construction related to dewatering are unknown at this time, and therefore would be determined when developing the dewatering plan as required by a future Stormwater Pollution Prevention Plan (SWPPP) amendment of the NPDES Construction Stormwater Permit.

There are no identified wells within the project boundary that would require sealing (Figure 11). If wells are discovered during construction, appropriate MDH well sealing measures would be followed by a licensed well contractor.

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. 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.**

Five small, farmed wetlands would be filled for construction of the proposed project area. The large wetland in the northeast corner of the site will be avoided (Figure 5). To offset for impacts to these wetlands, a compensatory mitigation plan would be provided that proposes the purchase of wetland mitigation credits within Bank Service Area 9. No other impacts to surface waters or wetlands are anticipated from the proposed project (Figure 10).

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. 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 physical alterations or indirect effects to existing surface waters are anticipated from the proposed project. The project would not change the type or number of watercrafts used on any nearby surface waters.

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.

The Minnesota Pollution Control Agency (MPCA) "What's in My Neighborhood" (WIMN) online database was reviewed to determine if any existing contamination or potential environmental hazards exist on or near the project area. No facilities or sites enrolled within MPCA programs were identified by the database within the project area. Several sites with construction stormwater permits were identified in the WIMN database, in addition to one industrial stormwater permit for Eagle Lake Public Works Maintenance and one hazardous waste generator permit for Bauer's Special Outboard Motor Repair were identified within a half mile of the project area. All stormwater permits identified within a half mile are listed as active and the hazardous waste generator permit for Bauer's Special Outboard Motor Repair is listed as inactive according to the WIMN database.

Based on the results of reviewing the MPCA WIMN database and historical use as cropland, no contaminated environmental media (soil, groundwater etc.) or environmental hazards are expected to be present within the project area. If contamination or any environmental hazards are encountered during proposed project construction, the contaminated media would be managed and disposed of by the project contractor(s) in accordance with local and state regulations.

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.

Typical construction wastes from the project, such as concrete, bituminous, drywall, wood, metal, and plastic sheeting, etc. would result from construction of the buildings and associated facilities. The construction contractor would minimize, store, and dispose of all solid waste in accordance with local and state regulations and in compliance with the NPDES construction stormwater permit. Waste produced during construction would be disposed of by a licensed waste hauler at an appropriate facility.

Mixed municipal waste and recyclable waste would be generated by the proposed project once construction is complete. The waste would be managed by an appropriately licensed waste hauler and would be disposed of in accordance with applicable regulations. It is anticipated that the mixed municipal waste would be hauled to the landfill in Mankato operated by LJP Waste Solutions who provides solid waste management services to the City of Eagle Lake.

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 will be utilized in the project. Discuss potential environmental effects from accidental spill or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.

Hazardous materials are not currently generated within the project area. Hazardous materials would not be present at the construction site, except for fuel and lubricants as necessary for the construction. Cleaning solutions and synthetic oils/lubricants may be used during project construction and as part of operations and would be stored in marked containers in accordance with applicable regulations. Required spill kits and containment materials would be present during work activities and easily accessible if needed. Any hazardous materials generated by the contractor during construction would be disposed of by the contractor at facilities licensed to dispose of such wastes. If a spill were to occur during construction, the Minnesota Duty Officer would be contacted and appropriate action to remediate would be taken immediately in accordance with MPCA guidelines and regulations in place at the time of project construction.

Following construction, the use of chemicals/hazardous materials is expected to be limited. Types, quantities, and composition of chemicals/hazardous materials would be typical of residential activities. In multi-family buildings, these chemicals and materials would be labeled, stored, and disposed of in accordance with applicable regulations.

No above or below ground fuel storage tanks would be present once the project is complete.

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

Hazardous waste is not currently generated in the project area. Any hazardous materials generated by the contractor during construction would be disposed of by the contractor at facilities licensed to dispose of such wastes. Following construction, the proposed project is not anticipated to generate hazardous wastes but may generate minimal quantities of universal wastes such as spent fluorescent lamps and bulbs. Residents would be expected to store and disposed of any universal wastes in accordance with applicable regulations.

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.

The project area is located in the southeast portion of Eagle Lake and extends east outside the city limits into LeRay Township. The majority of the project area consists of cultivated cropland except for a wetland in the northeast portion of the site. Minimal natural vegetation cover exists within the project area and tree cover is limited to wind breaks planted along the northern and southern boundaries. The surrounding area is primarily a mix of cultivated cropland and residential neighborhoods with wetlands and streams also present. Given the majority of the surrounding area has been disturbed for agricultural use or residential development, limited habitat is present to support fish and wildlife.

b. Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota County Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-997) and/or correspondence number (ERDB _____) from which the data were obtained and attach the Natural Heritage letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.

Braun Intertec holds a license agreement from the Minnesota Department of Natural Resources (MnDNR) for a local copy of the Natural Heritage Information System (NHIS) geodatabase (License #997). A query of the database was made for Element Occurrences (EO) within 1 mile of the project area. No Element Occurrences were found in the NHIS database within 1 mile of the project area.

An online query was submitted to the US Fish & Wildlife (USFWS) database Information for Planning and Conservation (IPaC; https://ecos.fws.gov/ipac/). The IPaC results (Appendix B) indicated that the project area is within the range of two federally listed species: the threatened Northern Long-eared Bat and the candidate Monarch Butterfly. The IPaC results do not indicate observations of these species near or within the project area. IPaC results identified species that may occur within the project area based on the broad geographic ranges of the species (such as occurrence within the county). In contrast, the NHIS results report actual observations within a set distance (one mile was used for this report).

Table 14-1: State and Federal Species Status within 1 mile of the Project Area

Scientific Name	Common Name	State Status	Federal Status	Type
Myotis septentrionalis	Northern Long-eared Bat	Special Concern	Threatened	Bat
Danaus plexippus	Monarch Butterfly	N/A	Candidate	Insect

With limited tree cover and wooded or forested areas greater than 1,000 feet from the project area, suitable habitat for the Northern Long-eared bat is not present. Additionally, due to the lack of floral resources for pollinators within the project area, suitable habitat for the Monarch Butterfly is also not present. As a result, neither species is anticipated to be present within the project area.

The project area does not occur in or near designated Critical Habitat and no portion of the project area is located within or adjacent to a Minnesota Biological Survey site.

The IPaC results also noted that no bald eagles or migratory birds of concern have been documented within the vicinity of the project area. Since eagles and migratory birds are protected by federal statutes administered by the US Fish & Wildlife Service, if migratory birds or bald eagles are found occupying the project area during construction, any potential impacts would be permitted in accordance with all applicable state and federal laws.

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

Since the project area is primarily cultivated cropland, it provides little value as habitat for fish and wildlife, native ecosystems, or plant communities. Development of the project area is not anticipated to adversely affect any rare and/or protected species identified in federal and state databases. The treatment of stormwater within the project area and implementation of a SWPPP during construction would eliminate any indirect impacts from sedimentation to aquatic species in the surrounding water bodies.

The project area is not within a township containing known hibernacula or roosting sites of Northern long-eared bats, and suitable habitat is absent from the project area. As a result, no adverse effects to the Northern Long-eared bat are anticipated to occur from the proposed project.

The Monarch butterfly is listed as candidate species by USFWS and is not currently protected under the Endangered Species Act (ESA). Voluntary conservation measures for the Monarch butterfly are encouraged for development projects that occur within its range. Conservation measures would include planting native flowering vegetation species in landscaping that bloom spring through fall and remove/control invasive plant species present.

There is minor risk for the introduction and spread of invasive species from the proposed project. Project plans are for construction of buildings, impervious surfaces, and landscaped areas.

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

During construction all disturbed soils would be temporarily protected by sediment and erosion control measures that would be installed and maintained for the duration of the proposed project.

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.

A request was made to the Minnesota SHPO regarding historic structures, archeological sites and/or traditional cultural properties that may exist on or near the project site. The SHPO response indicated that due to the nature and location of the proposed project, completion of a Phase I archaeological survey is recommended (Appendix B). The Phase I Cultural Resource Investigation was conducted, and report provided on July 6, 2022. Preliminary results found no cultural resources of significance on the project site. The report is pending review by the Minnesota SHPO office.

No properties within Eagle Lake or LeRay Township (including the project area) are listed on the National Register of Historic Places.

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.

There would be an increase in visual imprint within the project area since the proposed project would construct approximately 125 new residential buildings once all three stages are complete. However, there are no scenic views or vistas on or near the project area. The new residential structures would be of comparable size to existing residential buildings in the surrounding area and no taller than the surrounding buildings. There would be no unusual plumes, lighting, or glares from the proposed project. All exterior lighting would be provided in pedestrian walking paths and vehicle access points for safety and security purposes in a manner consistent with other residential structures in the area.

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, and any greenhouse gases. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used 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 residential buildings in the project area will use natural gas for building heating. The twin homes and single-family homes are expected to use natural gas for water heating and the 8-plex buildings are expected to use electric water heating systems. Natural gas may be used to provide heat for other appliances such as clothes dryers. The space heating and water heating systems for the buildings are currently under design but are not anticipated to significantly impact air quality.

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.

As described further under item 20, there would be some increase in traffic as a result of the project which would result in an increase in the type of air pollution generated by vehicle exhaust. These air pollutants include carbon monoxide, nitrogen oxides, volatile organic compounds, particulate matter, greenhouse gases, and air toxics; however, the project would not substantially worsen traffic conditions and therefore a significant decrease in air quality is not expected.

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

Construction of the proposed project would generate temporary dust and odors during construction. Construction equipment would have gasoline and diesel engine emissions and would create temporary fugitive dust emissions, especially in the areas where soil would be excavated, transported, and placed. The fugitive dust emissions would be controlled by watering, sprinkling, and/or application of calcium products as necessary and appropriate.

Odors may be generated from operation of construction equipment engines and construction truck traffic. Odor mitigation measures would include minimizing equipment used on-site, minimizing idling, maintaining engines in good repair, and minimizing idling truck traffic through scheduling.

After the proposed development site buildings and roadways are constructed, the project is not anticipated to produce any ongoing substantial odors or dust.

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.

Table 18-1 includes a summary of the potential GHG emissions for this project. The supporting calculations are included in Appendix D. Emission calculations are based on conservative assumptions, and therefore likely overestimates of actual emissions that may be generated from the proposed project.

The primary greenhouse gases emitted from the buildings include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) from the combustion of fossil fuels. A common way to report emissions of these gases is to multiply the emissions of each gas (in tons) by its global warming potential (GWP) and to report the total GHG emissions as total carbon dioxide equivalents (CO_2e).

The following assumptions were made in estimating the greenhouse gas emissions from the project site buildings:

- Natural gas will be used for building heating in all buildings, as well as for water heating in twin homes and single-family homes. The estimated annual natural gas usage for all residential buildings at the proposed project site is approximately 7.8 million cubic feet (mmcf) per year.

- Electricity will be used for water heating in 8-plex buildings. Other electricity uses at all buildings will include air conditioning, refrigeration, and other uses.

The GHG emissions from the residential buildings are estimated to be approximately 466 tons per year (tpy) of CO_2e.

Other direct sources of emissions added under Scope 1 include:

- Land Use Change
- Mobile Sources (vehicle tailpipe emissions) from for onsite operations
- Mobile Sources for construction

Mobile source emissions associated with onsite building operations (deliveries, building maintenance, etc.) are expected to be minimal and infrequent, and have not been quantified.

With emissions from these sources included, the total Scope 1 GHG emissions are approximately 555 tpy of CO_2e.

Indirect Emissions include Scope 2 emissions from offsite electricity generation for electricity consumed at the residential buildings (approximately 478 tons per year of CO_2e) and Scope 3 emissions from offsite waste management (approximately 145 tons per year of CO_2e). Actual electricity consumption would be dependent on the efficiency of the water heating systems, electrical fixtures, and appliances installed in the buildings. Actual types and quantities of wastes generated at the residential buildings would depend on the types of wastes generated and waste diversion programs implemented by the municipality (e.g., diversion of compostable organic materials and/or diversion of recyclable materials).

Table 18-1. Greenhouse Gas Emissions

Direct Emissions (Scope 1)

Emission Source		**CO_2e TPY**
Residential Building Natural Gas Use		466
Total Residential Building GHG Emissions		**466**
Other Scope 1 Emission Sources	Mobile Sources (Onsite Operations) [1]	**-**
	Mobile Sources (Construction)	**87.5**
	Land-Use (Construction)	**2.4**
All Scope 1 Emissions	**Total Direct Emissions**	**555**

[1] Following the completion of the construction phase, mobile source emissions associated with onsite operations (deliveries, maintenance, etc.) are expected to be minimal and infrequent, and have not been quantified.

Indirect Emissions (Scope 2 and 3)

Scope	**Emission Source**	**CO_2e TPY**
Scope 2	Off-Site Electricity Production	**478**
Scope 3	Off-Site Waste Management	**145**

Atmospheric Removal of GHGs

Scope	**Emission Source**	**CO_2e TPY**
Other	Land-Use (Sinks) [2]	-

[2] Proposed land-use changes are not expected to produce greenhouse gas reductions (sinks).

Total Emissions including Sinks = Direct Emissions + Indirect Emissions + Sinks

Scope	**Emission Source**	**CO_2e TPY**
Scope 1, 2, and 3	**Total**	**1,179**

b. GHG Assessment

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

The greenhouse gas emissions mitigation strategies considered for this project include the construction of medium-density housing units, installation of high-efficiency appliances, and installation of LED lighting fixtures.

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

In a white paper prepared by Jonathan Rose Companies titled "Location Efficiency and Housing Type - Boiling it Down to BTUs," March 2011 (https://www.epa.gov/sites/default/files/2014-03/documents/location_efficiency_btu.pdf), Jonathan Rose Companies presents data from the Energy Information Administration's 2005 Household Residential Energy Consumption Survey (RECS) that demonstrates that single-family attached housing units consume an average of 18% less energy annually than similarly sized single-family detached housing units. The author of this white paper attributes this difference primarily "due to the inherent efficiencies from more compact size and shared walls among units." Whether building heating utilizes point-of-use natural gas combustion or electricity generated at a fossil-fuel powered power plant, this increase in energy efficiency per housing unit as compared to single-family detached housing units results in direct reductions of greenhouse gas emissions.

The installation of high-efficiency appliances and LED lighting fixtures are currently under consideration.

iii. Quantify the proposed project's predicted new 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.

It is conservatively assumed that the project lifetime is 30 years. Over this 30-year period, the estimated greenhouse gas emissions associated with this project are approximately 35,400 tons of CO_2e. As discussed earlier, this estimate includes emissions from onsite natural gas combustion, construction-phase mobile source emissions, and electricity usage. This estimate does not include mobile source emissions associated with vehicle trips to and from the site.

The estimated electricity usage from the project structure is included in the overall greenhouse gas emissions from offsite energy generation provided in Table 18-1 above. As Minnesota's power generation portfolio shifts toward using more renewable power generation sources such as wind and solar, the greenhouse gas emissions from offsite power generation would continue to be reduced over the lifetime of the project.

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.

During Construction

There would be temporary noise impacts as a result of construction of the new residential units, park space and associated infrastructure. Construction would include the use of heavy equipment consisting of but not limited to cranes, lifts, scrapers, dump trucks, backhoes, bulldozers, and rollers. Construction noise is expected to occur only during typical daytime working hours. Use of loud equipment is expected to occur in short durations. The nearby residences are the closest receptors but are separated from the project site by South Agency Street or a line of trees and should not be affected by the temporary increase in noise during construction.

Operations

The proposed project is not expected to generate significant noise. Noise generated from the project area after construction would be negligible compared to the noise from surrounding roadways including Highway 14. Additional traffic volume on South Agency Street due to the project is not expected to greatly increase roadway noise experienced at the site. Therefore, the proposed project is not expected to contribute to excessive noise or nonconformance with the noise standards on or off-site.

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 proposed project would increase passenger vehicle traffic in the surrounding vicinity and provide parking for vehicles with each housing unit. However, on a regional scale the increase in vehicle traffic is expected to be minimal and based on projections by Jones, Haugh & Smith, Inc. traffic from the proposed project would not exceed the mandatory traffic study thresholds of peak hour traffic exceeding 250 vehicles or 2,500 daily trips.

Based the project's 228 total units (100 single family and 128 multi-family), and the Institute of Transportation Engineers (ITE) Trip Generation Report 10th Edition rates of 10 trips per day and 1 per peak hour for single family units, and 7 trips per day and 0.7 trips per peak hour for multi-family units, the project would result in 1,896 trips per day and 190 trips per peak hour. Peak hours for residential areas are usually defined as 7-9 am and 4-6 pm.

Public transportation within Eagle Lake is currently provided by the City of Mankato through a pilot program called Kato Flex, with bus service to Mankato. Participants currently register and are picked up at their home address with drop off available anywhere bus service is provided within Mankato. Bus service is available through Kato Flex Monday through Friday from 6 am to 6 pm. The use of public transportation would not be disrupted by the construction of the 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.

Since the proposed project is residential and would generate a minimal increase in vehicle traffic, no major disruptions to existing traffic conditions or regional transportation operations are anticipated from the project. The proposed project would not impact the safety or level of service of local roads.

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

The project would provide three new entrances/exits from the development onto South Agency Street. Each entrance would be from the three proposed extensions of public roads within the new development: Blace Avenue, Connie Lane, and Thomas Drive. The entrance/exit from each street would also be aligned with the existing portions of the streets to the west and provide connections to the adjacent residential neighborhoods. The road extensions and new entrances/exits would direct traffic from the development and provide safe connections to South Agency Street. No other measures are anticipated to be necessary for management of traffic generated from the project.

21. Cumulative Potential Effects:

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

The geographic area of the proposed project is 78.70 acres primarily within the city limits of Eagle Lake where the land use is primarily cropland or existing residential development. The timeframe for this project review focuses on present and future projects since effects from past projects are reflected in the description of the existing conditions and resources of the project area and surrounding vicinity.

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 of Eagle Lake is currently experiencing rapid growth and new residential development has recently been proposed for the west and southwest portions of the city. Additionally, the townhomes and mobile home park adjacent to the south of the site were completed in 2015 and 2017 to provide needed additional housing units within the city.

The reasonably foreseeable future projects include a northern extension of township road T-721 along the eastern boundary of the project area. The extension of the township road would affect traffic and noise in the area in combination with the proposed project. While the proposed T-721 road extension may have minor natural resource impacts for a stream crossing, additional future projects are unlikely to contribute to cumulative impacts on natural resources.

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.**

Given the identified future projects, cumulative effects when combined with anticipated project effects are not expected for the following resources: geology, soils, topography, water resources, contamination, hazardous and solid waste, fish, wildlife, plant communities, sensitive ecological resources and historic properties.

Development of the project area would alter land use from agricultural to residential, increase traffic in the immediate vicinity and increase demands for water supply and wastewater treatment. However, the existing water distribution and wastewater treatment collection systems already have capacity for to accommodate the new development. No potential cumulative effects are anticipated from the proposed Fox Meadows Development.

The future extension of township road T-721 east of the project area, could result in additional residential development on current agricultural land south of the project area. Currently, no specific projects are known for this location and potential effects cannot be projected at this time. However, the plans for additional residential development within the City of Eagle Lake would balance farmland preservation with the need for additional housing units and maintain natural resources while minimizing impacts from new development.

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 the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

No additional impacts from this project other than those discussed above are 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:

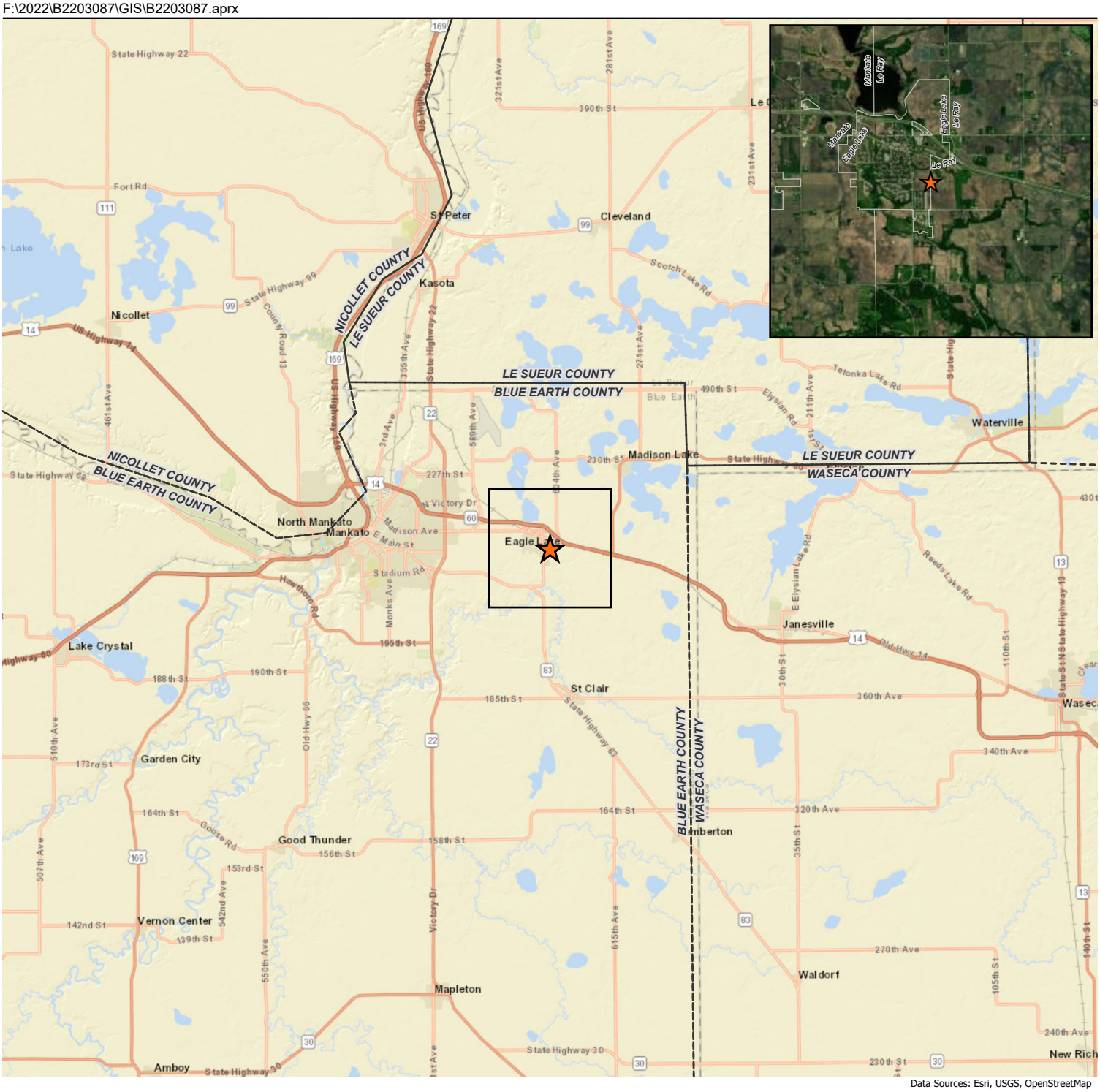
- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, 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 Jennifer S. Bromeland Date 7/13/22

Title City Administrator

Figures

F:\2022\B2203087\GIS\B2203087.aprx



Data Sources: Esri, USGS, OpenStreetMap

Project Site

N

0 2.5 5 Miles

Scale 1" = 5 mi

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The Science You Build On.

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Minneapolis, MN 55438
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Project No: B2203087

Drawing No: Fig1_ProjSiteLocMap

Drawn By:	SL
Date Drawn:	4/18/2022
Checked By:	BR
Last Modified:	4/18/2022

Fox Meadows Development

Unassigned Address

Eagle Lake, Minnesota

Project Site Location Map

Figure 1

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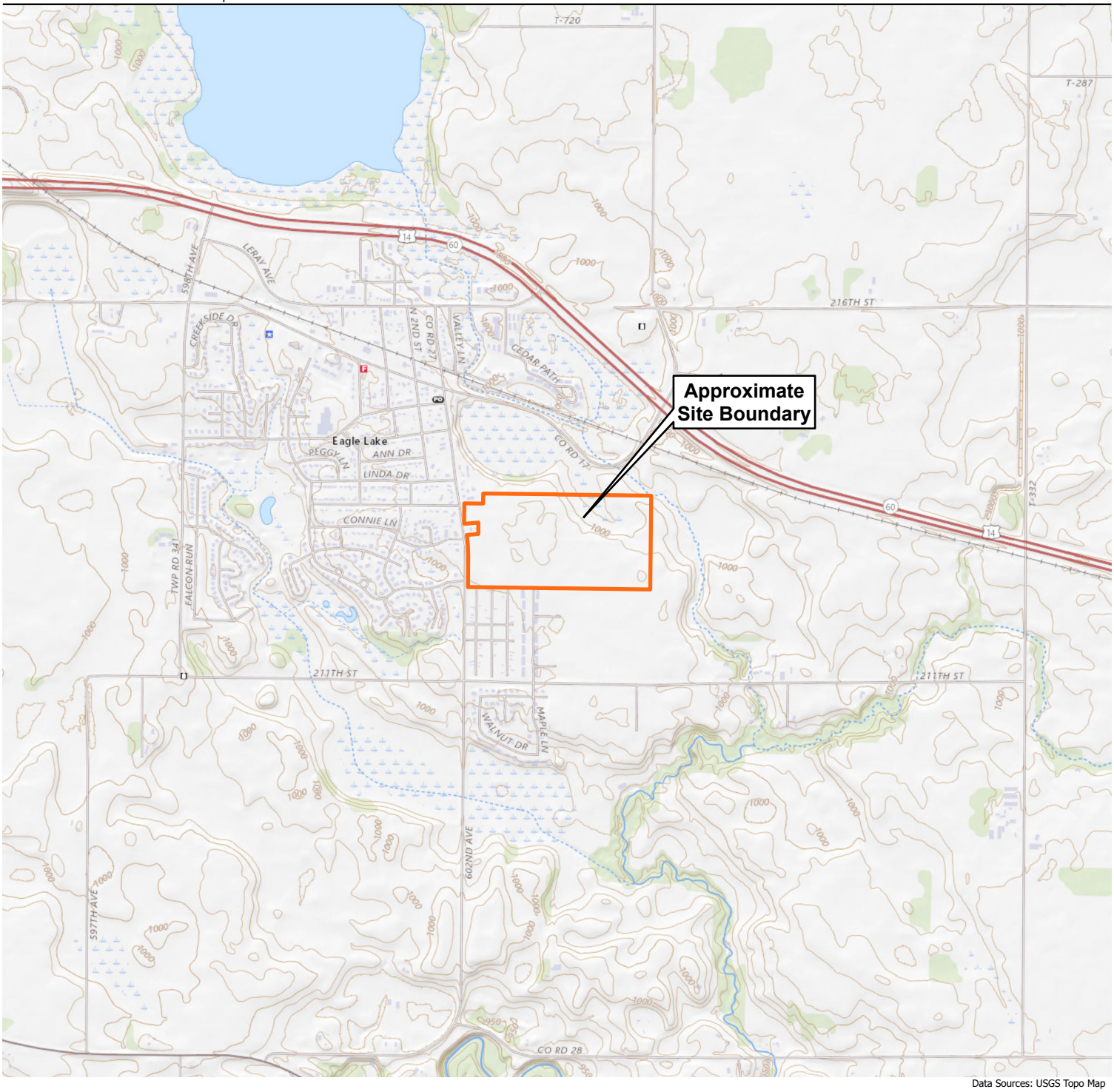

Data Sources: USGS Topo Map

Approximate Site Boundary

N

0 1,000 2,000 Feet

Scale 1" = 2,000'

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Project No: B2203087

Drawing No: Fig2_ProjectLocMap

Drawn By:	SL
Date Drawn:	4/18/2022
Checked By:	BR
Last Modified:	4/20/2022

Fox Meadows Development

Unassigned Address

Eagle Lake, Minnesota

Project Location Map

Figure 2

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Data Sources: Blue Earth County GIS, MNDOT

Approximate Site Boundary
County Parcels

N

0 200 400
Feet

Scale 1" = 400'

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Project No:
B2203087

Drawing No:
Fig3_ExistingConditions

Drawn By:	SL
Date Drawn:	4/20/2022
Checked By:	BR
Last Modified:	4/20/2022

Fox Meadows Development

Unassigned Address

Eagle Lake, Minnesota

Existing Conditions

Figure 3

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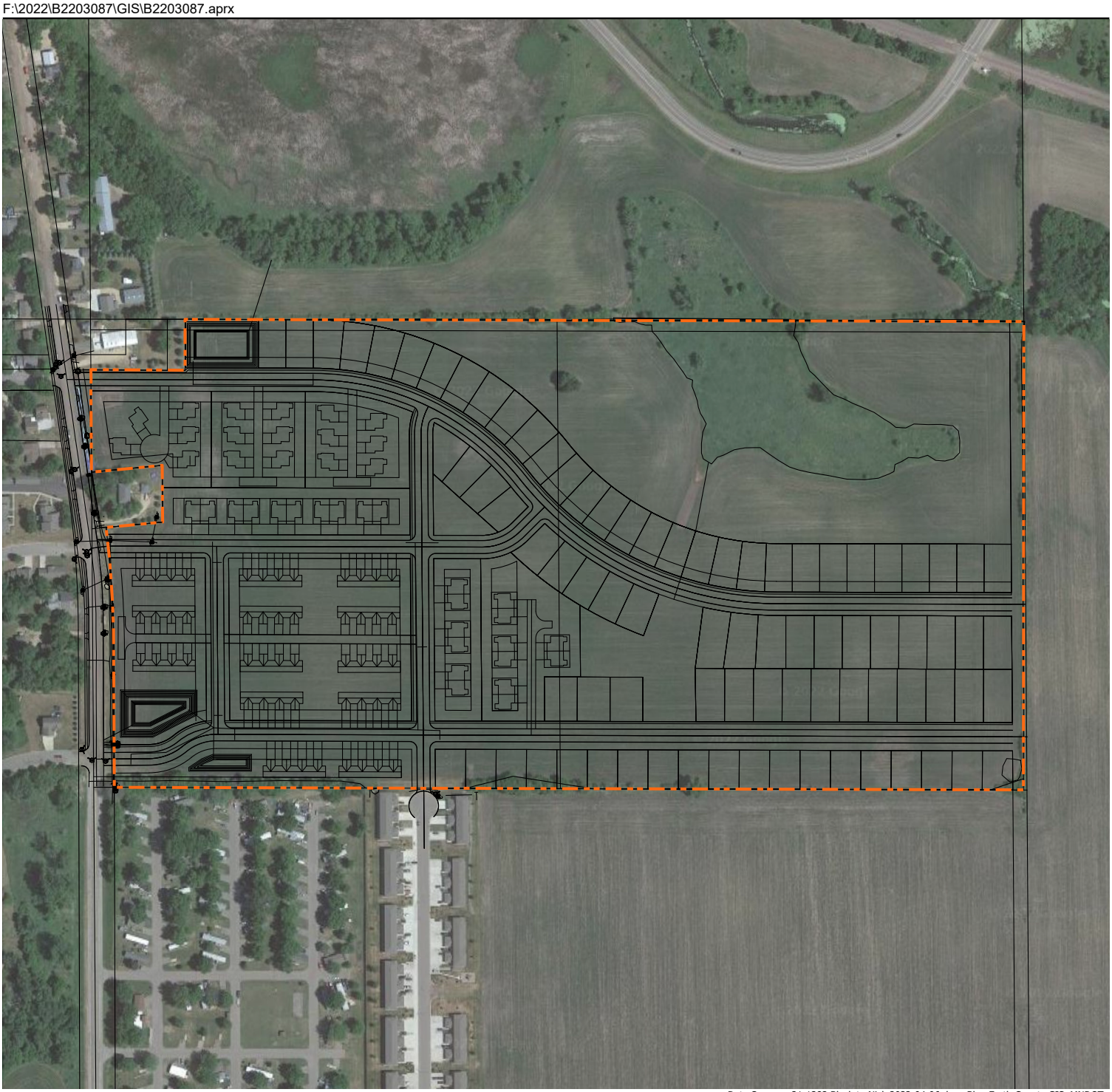

Data Sources: 21-1282 Block to Nick 2022-04-06.dwg, Blue Earth County GIS, MNDOT

Approximate Site Boundary

Proposed Development

N

0 200 400

Feet

1 inch = 400 feet

BRAUN INTERTEC

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Project No:
B2203087

Drawing No:
Fig4_ProposedDevelopment

Drawn By:	SL
Date Drawn:	4/18/2022
Checked By:	BR
Last Modified:	4/20/2022

Fox Meadows Development

Unassigned Address

Eagle Lake, Minnesota

Proposed Project Development

Figure 4

F:\2022\B2203087\GIS\B2203087.aprx

Data Sources:Blue Earth County GIS, MNDOT

Approximate Site Boundary
Cropland (apprx. 73.83 acres)
Wetland (apprx. 4.87 acres)

N

0 200 400 Feet

1 inch = 400 feet

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Minneapolis, MN 55438
952.995.2000
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Project No:
B2203087

Drawing No:
Fig5_LandCover

Drawn By:	SL
Date Drawn:	4/18/2022
Checked By:	BR
Last Modified:	7/6/2022

Fox Meadows Development

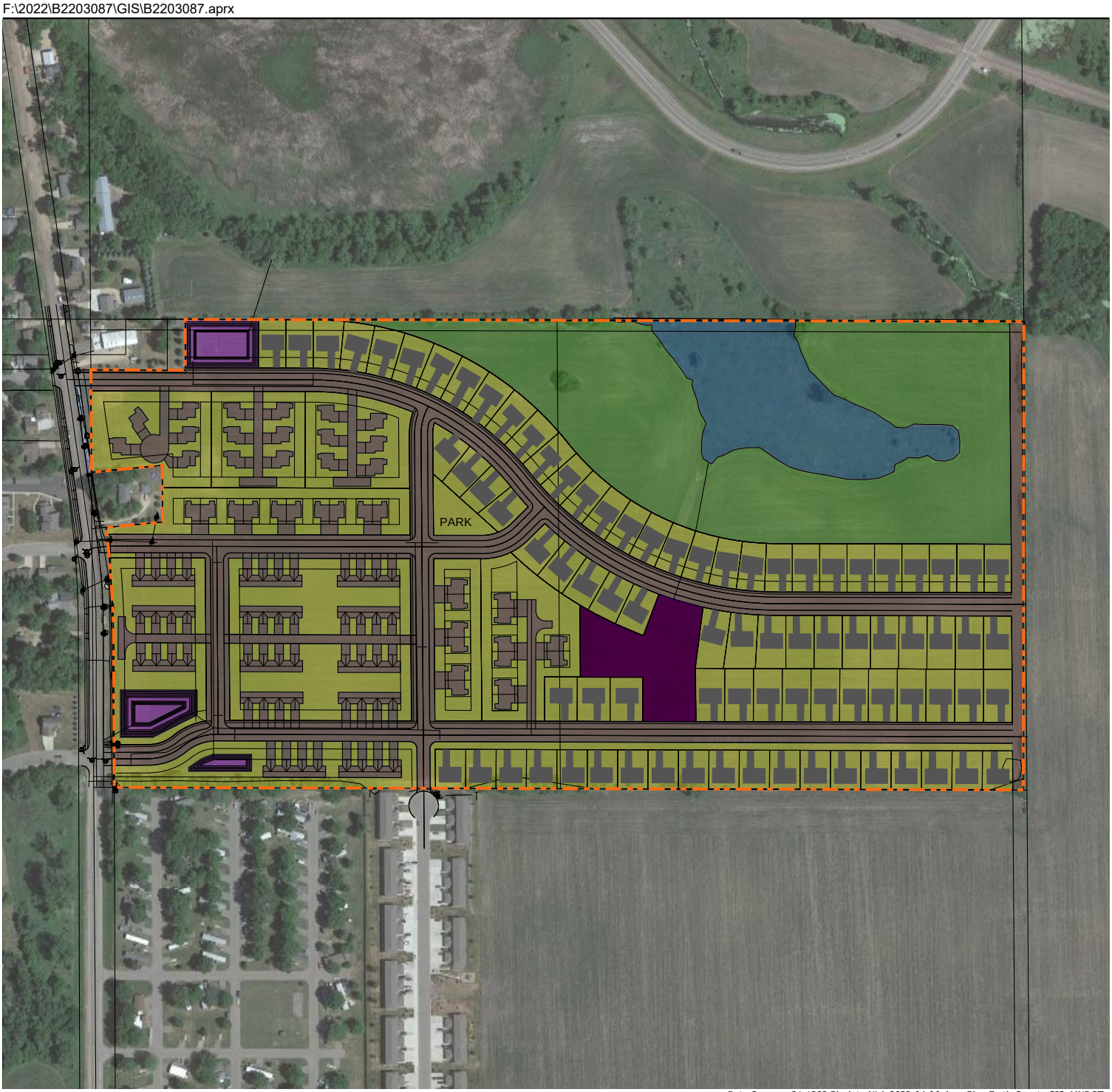
Unassigned Address

Eagle Lake, Minnesota

Land Cover: Existing Conditions

Figure 5

F:\2022\B2203087\GIS\B2203087.aprx



Data Sources: 21-1282 Block to Nick 2022-04-06.dwg, Blue Earth County GIS, MNDOT

- Approximate Site Boundary
- Proposed Development
- Lawn/Landscaping (apprx. 31.47 acres)
- Impervious (Buildings & Roads) (apprx. 25.39 acres)
- Grass/Brushland (apprx. 13.97 acres)
- Wetland (apprx. 4.65 acres)
- Stormwater Pond (apprx. 3.22 acres)

N

0 200 400 Feet

1 inch = 400 feet

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Project No: B2203087

Drawing No: Fig6_PropLandCover

Drawn By:	SL
Date Drawn:	4/18/2022
Checked By:	BR
Last Modified:	4/22/2022

Fox Meadows Development

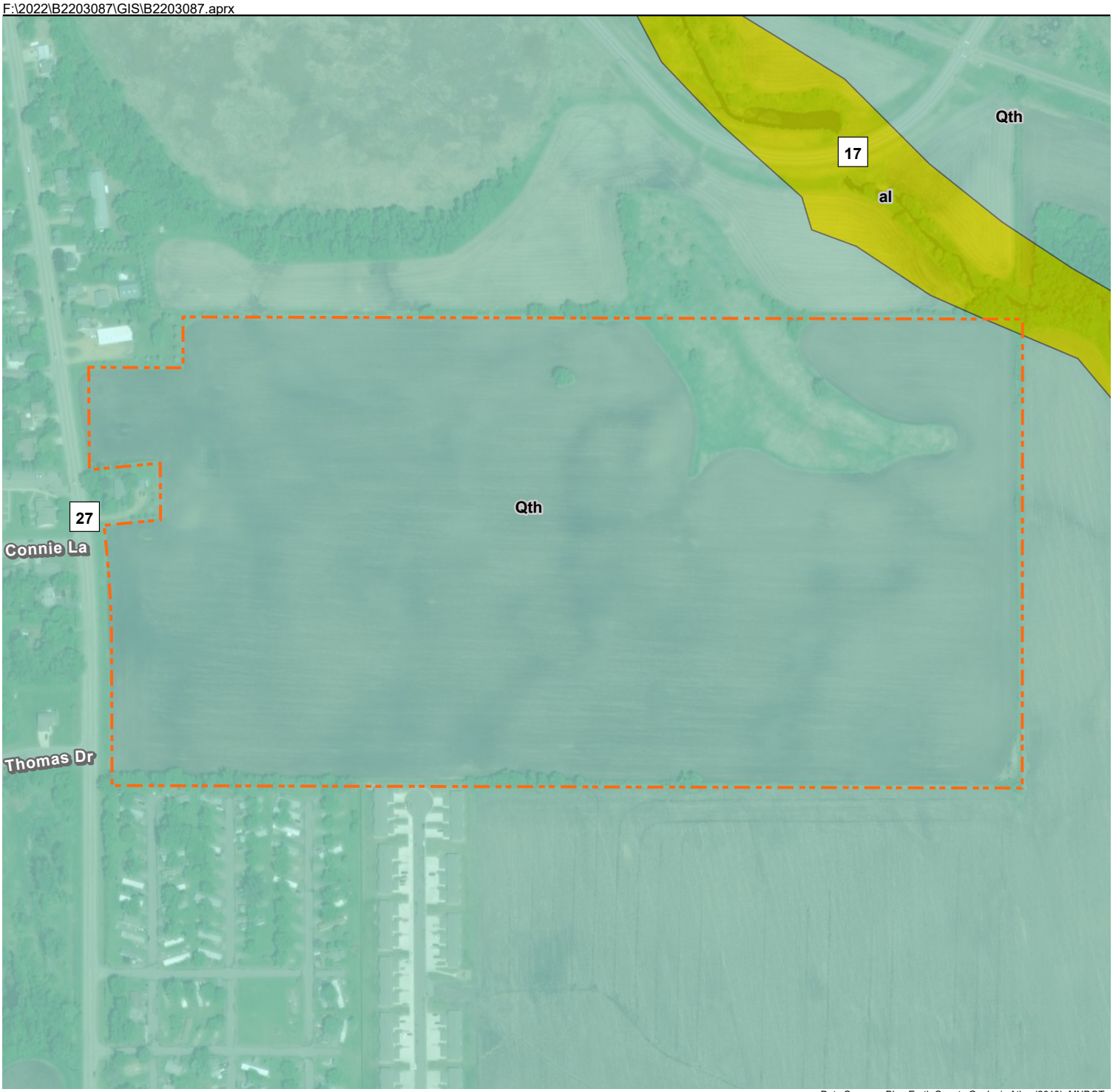
Unassigned Address

Eagle Lake, Minnesota

Land Cover: Proposed Conditions

Figure 6

F:\2022\B2203087\GIS\B2203087.aprx



Data Sources: Blue Earth County Geologic Atlas (2018), MNDOT

Approximate Site Boundary

Surficial Geology (MN Geological Survey)

Diamicton

Sand

N

0 200 400

Feet

Scale 1" = 400'

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Project No: B2203087

Drawing No: Fig7a_SurficialGeol

Drawn By:	SL
Date Drawn:	4/20/2022
Checked By:	BR
Last Modified:	4/20/2022

Fox Meadows Development

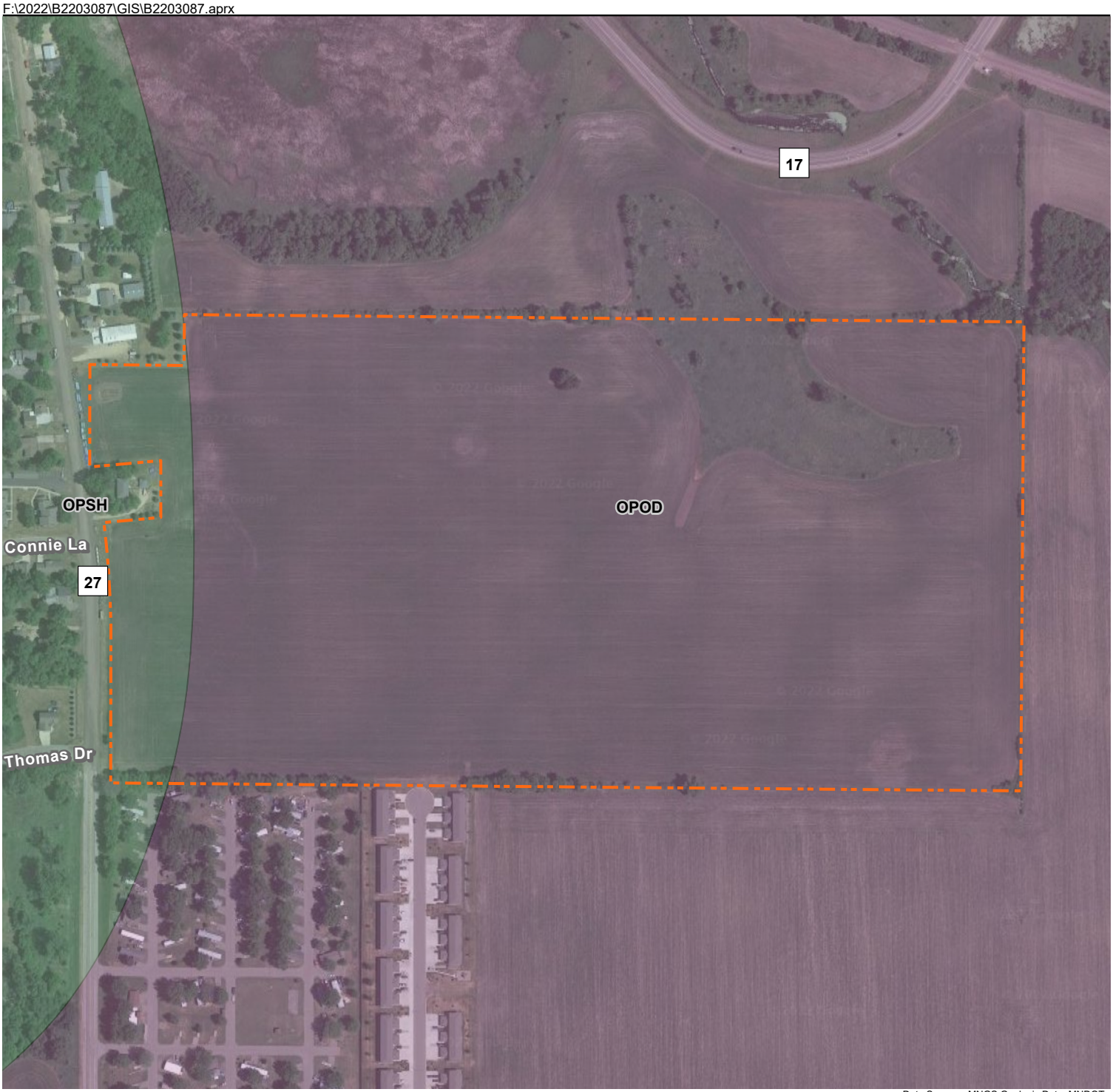
Unassigned Address

Eagle Lake, Minnesota

Surficial Geology

Figure 7a

F:\2022\B2203087\GIS\B2203087.aprx



Data Sources: MNGS Geologic Data, MNDOT

Approximate Site Boundary

Bedrock Unit

Oneota Dolomite

Shakopee Formation

N

0 200 400

Feet

Scale 1" = 400'

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Project No:
B2203087

Drawing No:
Fig7b_BedrockGeol

Drawn By:	SL
Date Drawn:	4/20/2022
Checked By:	BR
Last Modified:	6/2/2022

Fox Meadows Development

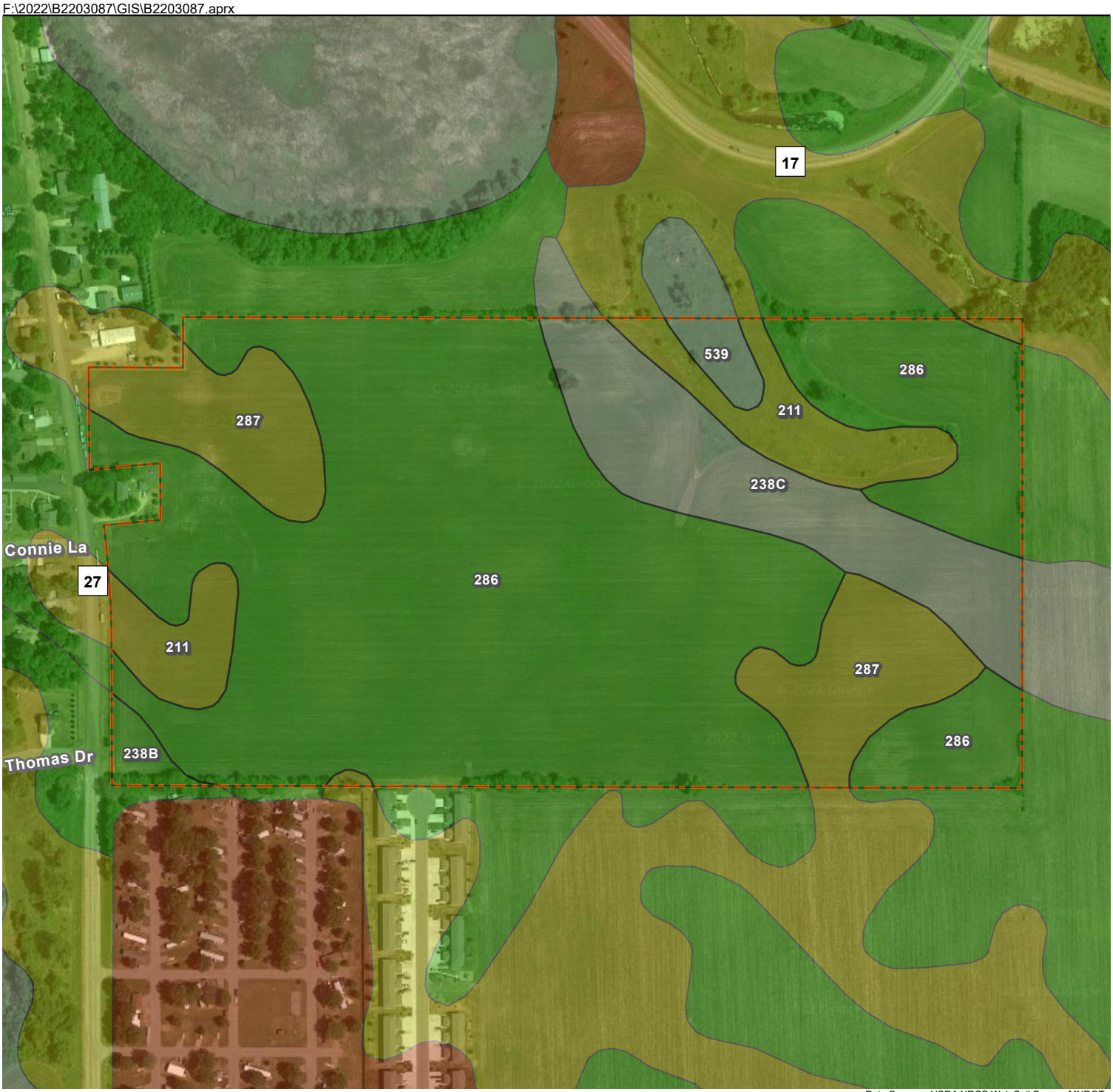
Unassigned Address

Eagle Lake, Minnesota

Bedrock Geology

Figure 7b

F:\2022\B2203087\GIS\B2203087.aprx



Data Sources: USDA NRCS Web Soil Survey, MNDOT

Approximate Site Boundary

Farmland Classification

- All areas are prime farmland
- Farmland of statewide importance
- Not prime farmland
- Prime farmland if drained

Unit Symbol	Unit Name	Percent of Site Area
286	Shorewood silty clay loam, 1 to 6 percent slopes	66.91
238B	Kilkenny clay loam, 2 to 6 percent slopes	1.00
238C	Kilkenny clay loam, 6 to 10 percent slopes, moderately eroded	11.56
211	Lura silty clay, 0 to 1 percent slopes	7.56
287	Minnetonka silty clay loam	11.78
539	Klossner muck, lake plain, depressional, 0 to 1 percent slopes	1.19

N

0 200 400 Feet

Scale 1" = 400'

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Project No: B2203087

Drawing No: Fig8_CountySoilSurvey

Drawn By:	SL
Date Drawn:	4/20/2022
Checked By:	BR
Last Modified:	6/2/2022

Fox Meadows Development

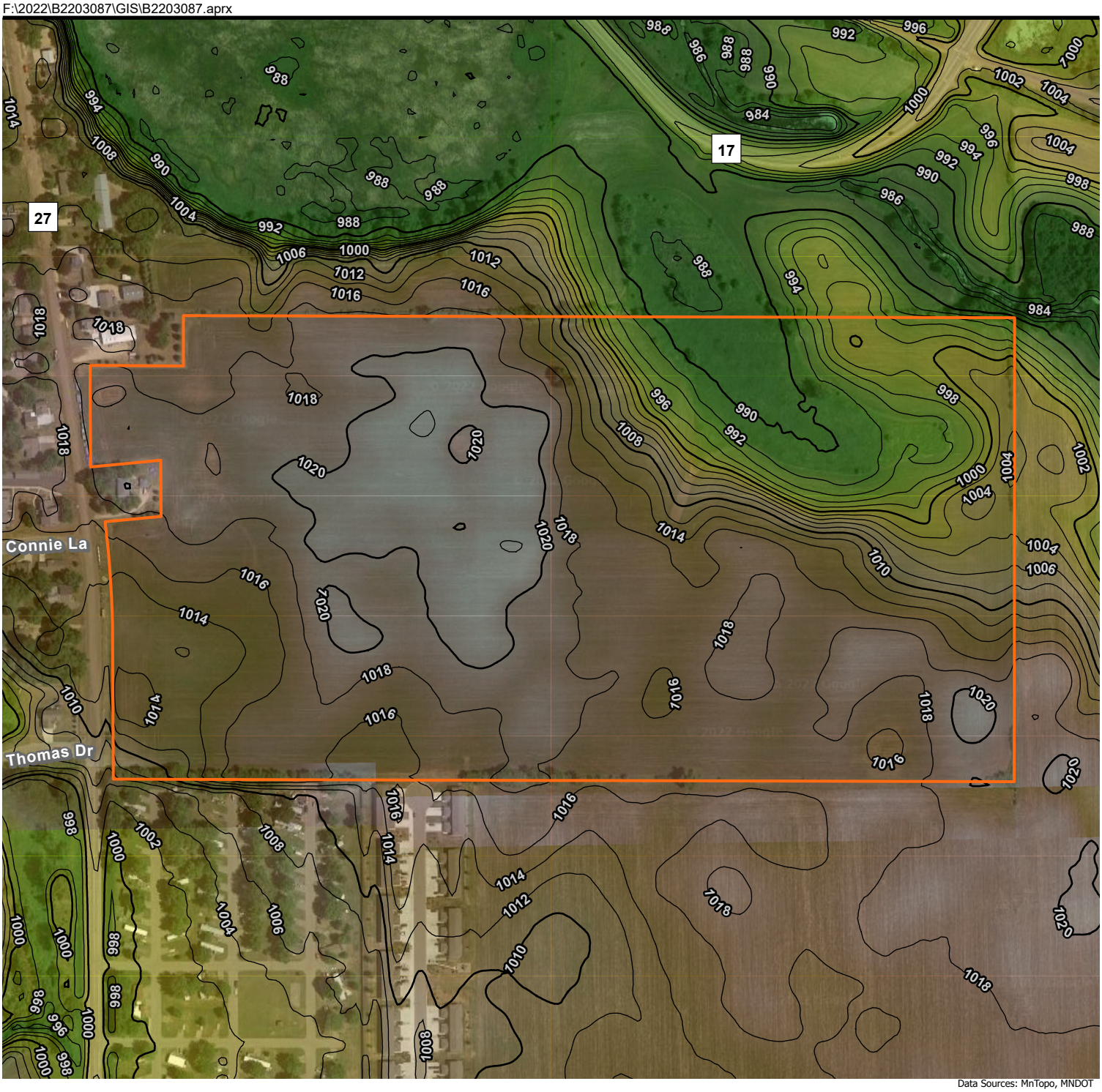
Unassigned Address

Eagle Lake, Minnesota

County Soil Survey

Figure 8

F:\2022\B2203087\GIS\B2203087.aprx



Data Sources: MnTopo, MNDOT

Approximate Site Boundary

Contour Type

Index Contour (10 ft)

Intermediate Contour (2 ft)

N

0 200 400

Feet

Scale 1" = 400'

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Project No:
B2203087

Drawing No:
Fig9_TopoMap

Drawn By:	SL
Date Drawn:	4/20/2022
Checked By:	BR
Last Modified:	4/20/2022

Fox Meadows Development

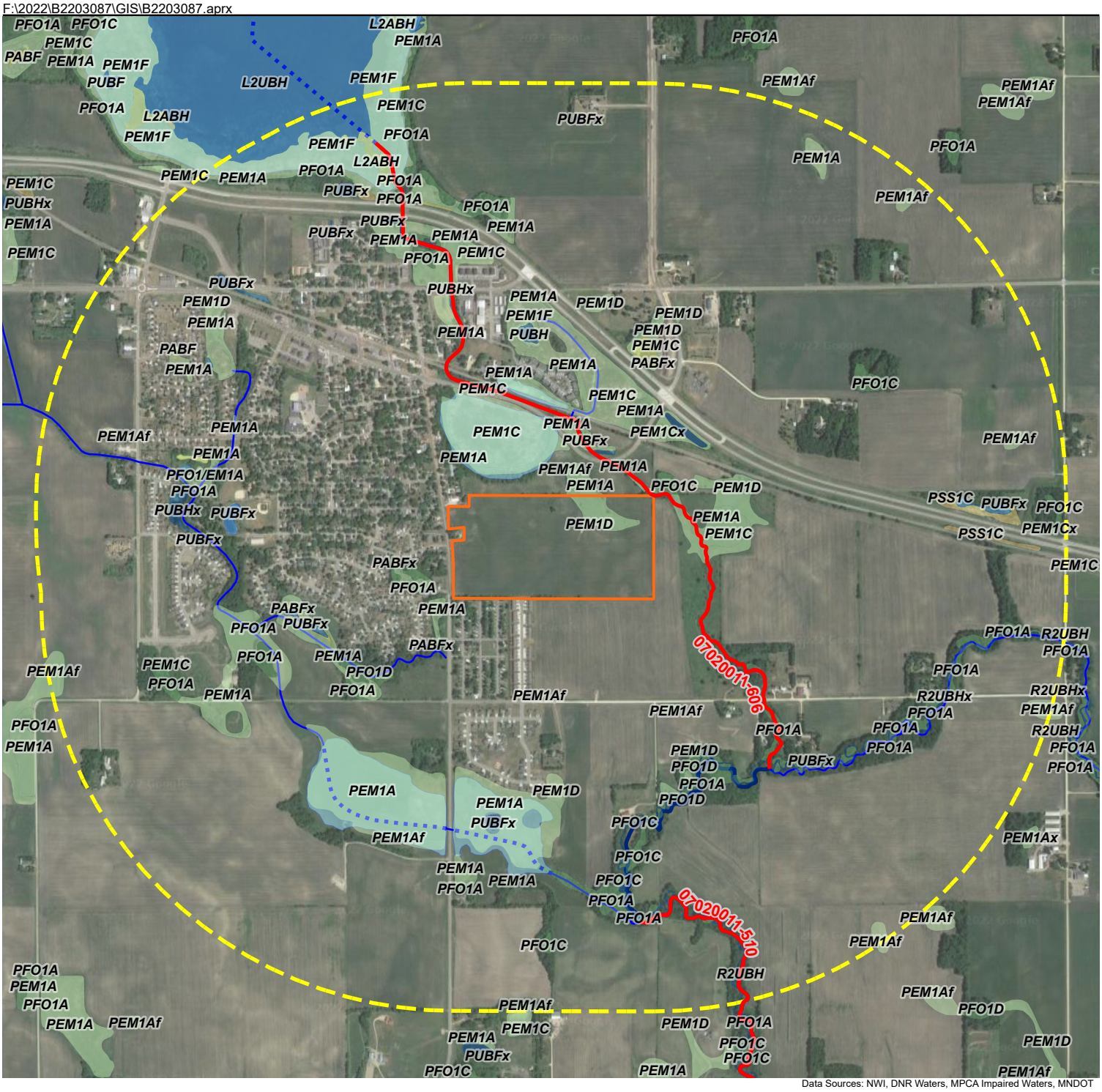
Unassigned Address

Eagle Lake, Minnesota

Topographic Map

Figure 9

F:\2022\B2203087\GIS\B2203087.aprx



Data Sources: NWI, DNR Waters, MPCA Impaired Waters, MNDOT

- Approximate Site Boundary
- 1 Mile Radius

Stream Type Description
- Connector
- Stream (Intermittent)
- Stream (Perennial)
- MPCA Impaired Stream

Water Body Class
- Lake or Pond
- P. Drained Wetland
- Aquatic Bed/ Nonpersistent Emergent
- Emergent
- Forested
- Scrub-Shrub
- Unconsolidated Bottom (Open Water)

N

0 900 1,800 Feet

Scale 1" = 1,800'

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Project No: B2203087

Drawing No: Fig10_SurfaceWaters

Drawn By:	SL
Date Drawn:	4/20/2022
Checked By:	BR
Last Modified:	4/22/2022

Fox Meadows Development

Unassigned Address

Eagle Lake, Minnesota

Surface Waters Map

Figure 10

F:\2022\B2203087\GIS\B2203087.aprx

Data Sources: Blue Earth County GIS, Minnesota Well Index, MNDOT

Approximate Site Boundary
0.25-Mile Radius
Wellhead Protection Areas

Minnesota Well Index
- Domestic
- Community Supply (municipal)
- Public Suppply/Non-Comm.-Transient

N

0 400 800
Feet

Scale 1" = 800'

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Project No: B2203087

Drawing No: Fig11_Wells&WellheadAreas

Drawn By:	SL
Date Drawn:	4/20/2022
Checked By:	BR
Last Modified:	4/22/2022

Fox Meadows Development

Unassigned Address

Eagle Lake, Minnesota

Wells and Wellhead Protection Areas

Figure 11

Appendix A

USFWS IPaC Trust Resources Report

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Minnesota-Wisconsin Ecological Services Field Office
4101 American Blvd E
Bloomington, MN 55425-1665
Phone: (952) 252-0092 Fax: (952) 646-2873
http://www.fws.gov/midwest/Endangered/section7/s7process/step1.html

In Reply Refer To: May 05, 2022
Project Code: 2022-0039645
Project Name: Fox Meadows Development

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

This response has been generated by the Information, Planning, and Conservation (IPaC) system to provide information on natural resources that could be affected by your project. The U.S. Fish and Wildlife Service (Service) provides this response under the authority of the Endangered Species Act of 1973 (16 U.S.C. 1531-1543), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d), the Migratory Bird Treaty Act (16 U.S.C. 703-712), and the Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*).

Threatened and Endangered Species
The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and may be affected by your proposed project. The species list fulfills the requirement for obtaining a Technical Assistance Letter from the U.S. Fish and Wildlife Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS IPaC system by completing the same process used to receive the enclosed list.

Consultation Technical Assistance
Please refer to refer to our Section 7 website for guidance and technical assistance, including step-by-step instructions for making effects determinations for each species that might be present and for specific guidance on the following types of projects: projects in developed areas, HUD, CDBG, EDA, pipelines, buried utilities, telecommunications, and requests for a Conditional Letter of Map Revision (CLOMR) from FEMA.

Using the IPaC Official Species List to Make No Effect and May Affect Determinations for Listed Species

1. If IPaC returns a result of "There are no listed species found within the vicinity of the project," then project proponents can conclude the proposed activities will have **no effect** on any federally listed species under Service jurisdiction. Concurrence from the Service is not required for **no effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records.
2. If IPaC returns one or more federally listed, proposed, or candidate species as potentially present in the action area of the proposed project – other than bats (see below) – then project proponents must determine if proposed activities will have **no effect** on or **may affect** those species. For assistance in determining if suitable habitat for listed, candidate, or proposed species occurs within your project area or if species may be affected by project activities, you can obtain Life History Information for Listed and Candidate Species on our office website. If no impacts will occur to a species on the IPaC species list (e.g., there is no habitat present in the project area), the appropriate determination is **no effect**. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records.
3. Should you determine that project activities **may affect** any federally listed, please contact our office for further coordination. Letters with requests for consultation or correspondence about your project should include the Consultation Tracking Number in the header. Electronic submission is preferred.

Northern Long-Eared Bats
Northern long-eared bats occur throughout Minnesota and Wisconsin and the information below may help in determining if your project may affect these species.

This species hibernates in caves or mines only during the winter. In Minnesota and Wisconsin, the hibernation season is considered to be November 1 to March 31. During the active season (April 1 to October 31) they roost in forest and woodland habitats. Suitable summer habitat for northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥3 inches dbh for northern long-eared bat that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat and evaluated for use by bats. If your project will impact caves or mines or will involve clearing forest or woodland habitat containing suitable roosting habitat, northern long-eared bats could be affected.

Examples of unsuitable habitat include:

- Individual trees that are greater than 1,000 feet from forested or wooded areas,
- Trees found in highly developed urban areas (e.g., street trees, downtown areas),

- A pure stand of less than 3-inch dbh trees that are not mixed with larger trees, and
- A stand of eastern red cedar shrubby vegetation with no potential roost trees.

If IPaC returns a result that northern long-eared bats are potentially present in the action area of the proposed project, project proponents can conclude the proposed activities **may affect** this species **IF** one or more of the following activities are proposed:

- Clearing or disturbing suitable roosting habitat, as defined above, at any time of year,
- Any activity in or near the entrance to a cave or mine,
- Mining, deep excavation, or underground work within 0.25 miles of a cave or mine,
- Construction of one or more wind turbines, or
- Demolition or reconstruction of human-made structures that are known to be used by bats based on observations of roosting bats, bats emerging at dusk, or guano deposits or stains.

If none of the above activities are proposed, project proponents can conclude the proposed activities will have **no effect** on the northern long-eared bat. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records.

If any of the above activities are proposed, please use the northern long-eared bat determination key in IPaC. This tool streamlines consultation under the 2016 rangewide programmatic biological opinion for the 4(d) rule. The key helps to determine if prohibited take might occur and, if not, will generate an automated verification letter. No further review by us is necessary.

Please note that on March 23, 2022, the Service published a proposal to reclassify the northern long-eared bat as endangered under the Endangered Species Act. The U.S. District Court for the District of Columbia has ordered the Service to complete a new final listing determination for the bat by November 2022 (Case 1:15-cv-00477, March 1, 2021). The bat, currently listed as threatened, faces extinction due to the range-wide impacts of white-nose syndrome (WNS), a deadly fungal disease affecting cave-dwelling bats across the continent. The proposed reclassification, if finalized, would remove the current 4(d) rule for the NLEB, as these rules may be applied only to threatened species. Depending on the type of effects a project has on NLEB, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective (anticipated to occur by December 30, 2022). If your project may result in incidental take of northern long-eared bats after the new listing goes into effect this will first need to addressed in an updated consultation that includes an Incidental Take Statement. If your project may require re-initiation of consultation, please contact our office for additional guidance.

Whooping Crane

Whooping crane is designated as a non-essential experimental population in Wisconsin and consultation under Section 7(a)(2) of the Endangered Species Act is only required if project activities will occur within a National Wildlife Refuge or National Park. If project activities are proposed on lands outside of a National Wildlife Refuge or National Park, then you are not required to consult. For additional information on this designation and consultation requirements, please review "Establishment of a Nonessential Experimental Population of

Whooping Cranes in the Eastern United States."

Other Trust Resources and Activities
Bald and Golden Eagles - Although the bald eagle has been removed from the endangered species list, this species and the golden eagle are protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. Should bald or golden eagles occur within or near the project area please contact our office for further coordination. For communication and wind energy projects, please refer to additional guidelines below.

Migratory Birds - The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Service. The Service has the responsibility under the MBTA to proactively prevent the mortality of migratory birds whenever possible and we encourage implementation of recommendations that minimize potential impacts to migratory birds. Such measures include clearing forested habitat outside the nesting season (generally March 1 to August 31) or conducting nest surveys prior to clearing to avoid injury to eggs or nestlings.

Communication Towers - Construction of new communications towers (including radio, television, cellular, and microwave) creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. However, the Service has developed voluntary guidelines for minimizing impacts.

Transmission Lines - Migratory birds, especially large species with long wingspans, heavy bodies, and poor maneuverability can also collide with power lines. In addition, mortality can occur when birds, particularly hawks, eagles, kites, falcons, and owls, attempt to perch on uninsulated or unguarded power poles. To minimize these risks, please refer to guidelines developed by the Avian Power Line Interaction Committee and the Service. Implementation of these measures is especially important along sections of lines adjacent to wetlands or other areas that support large numbers of raptors and migratory birds.

Wind Energy - To minimize impacts to migratory birds and bats, wind energy projects should follow the Service's Wind Energy Guidelines. In addition, please refer to the Service's Eagle Conservation Plan Guidance, which provides guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities.

State Department of Natural Resources Coordination
While it is not required for your Federal section 7 consultation, please note that additional state endangered or threatened species may also have the potential to be impacted. Please contact the Minnesota or Wisconsin Department of Natural Resources for information on state listed species that may be present in your proposed project area.

Minnesota
Minnesota Department of Natural Resources - Endangered Resources Review Homepage
Email: Review.NHIS@state.mn.us

Wisconsin
Wisconsin Department of Natural Resources - Endangered Resources Review Homepage
Email: DNRERReview@wi.gov

We appreciate your concern for threatened and endangered species. Please feel free to contact our office with questions or for additional information.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Minnesota-Wisconsin Ecological Services Field Office
4101 American Blvd E
Bloomington, MN 55425-1665
(952) 252-0092

Project Summary

Project Code: 2022-0039645
Event Code: None
Project Name: Fox Meadows Development
Project Type: Residential Construction
Project Description: The proposed project will consist of construction of a new residential development with a mix of multi-family, twin homes and single family units for an approximate total of 228 units. Construction is expected to begin in fall 2022.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.156927800000005,-93.8734719289008,14z

Counties: Blue Earth County, Minnesota

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

THERE ARE NO FWS MIGRATORY BIRDS OF CONCERN WITHIN THE VICINITY OF YOUR PROJECT AREA.

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical

Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED. PLEASE VISIT HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

IPaC User Contact Information

Agency: Braun Intertec
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City: Minneapolis
State: MN
Zip: 55438
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Phone: 6125082770

Appendix B

SHPO Correspondence

BRAUN INTERTEC

DEPARTMENT OF ADMINISTRATION
STATE HISTORIC PRESERVATION OFFICE

May 18, 2022

Ben Ruhme
Project Scientist
Braun Intertec
11001 Hampshire Avenue S
Minneapolis, MN 55438

RE: Fox Meadows – Proposed Residential Development
T108 R25 S18, Eagle Lake, Blue Earth County
SHPO Number: 2022-1446

Dear Ben Ruhme:

Thank you for consulting with our office during the preparation of an Environmental Assessment Worksheet for the above-referenced project.

Due to the nature and location of the proposed project, we recommend that a Phase I archaeological survey be completed. The survey must meet the requirements of the Secretary of the Interior's Standards for Identification and Evaluation and should include an evaluation of National Register eligibility for any properties that are identified. For a list of consultants who have expressed an interest in undertaking such surveys, please visit the website **preservationdirectory.mnhs.org**, and select "Archaeologists" in the "Search by Specialties" box.

We will reconsider the need for survey if the project area can be documented as previously surveyed or disturbed. Any previous survey work must meet contemporary standards. **Note:** plowed areas and right-of-way are not automatically considered disturbed. Archaeological sites can remain intact beneath the plow zone and in undisturbed portions of the right-of-way.

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.

If you have any questions regarding our review of this project, please contact Kelly Gragg-Johnson, Environmental Review Program Specialist, at kelly.graggjohnson@state.mn.us.

Sincerely,

Sarah J. Beimers
Environmental Review Program Manager

Appendix C

Greenhouse Gas Calculations

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Fox Meadows Residential Development
Project: B2203087
Greenhouse Gas Emissions Summary

Direct Emissions

Operations - Facility Fuel Combustion Sources	CO_2	CH_4	N_2O	Mass Sum	CO_2e
	TPY	TPY	TPY	TPY	TPY
Building Natural Gas Use	465	8.77E-03	8.77E-04	465	466
Residential Building Total	**465**	**8.77E-03**	**8.77E-04**	**465**	**466**

Operations - Mobile Source Combustion	CO_2e
	TPY
Mobile Sources (Onsite Operations) [1]	0.0

Construction - Mobile Source Combustion	CO_2	CH_4	N_2O	Mass Sum	CO_2e
	TPY	TPY	TPY	TPY	TPY
Mobile Sources (Construction)	86.2	1.69E-03	3.97E-03	86.2	87.5

Construction - Land-Use	CO_2e
	TPY
Land-Use (Construction)	2.4

	CO_2	CH_4	N_2O	Mass Sum	CO_2e
	TPY	TPY	TPY	TPY	TPY
Total Direct Emissions	551	0.010	0.0048	551	555

Indirect Emissions

Operations - Off-Site Electricity Production	CO_2	CH_4	N_2O	Mass Sum	CO_2e
	TPY	TPY	TPY	TPY	TPY
Off-Site Electricity Production	475	0.0514	7.35E-03	475	478

Operations - Off-Site Waste Management	CO_2e
	TPY
Off-Site Waste Management	145

	CO_2	CH_4	N_2O	Mass Sum	CO_2e
	TPY	TPY	TPY	TPY	TPY
Total Indirect Emissions	475	0.051	0.0073	475	623

Atmospheric Removals of GHGs

Construction/Operations - Land-Use	CO_2e
	TPY
Land-Use (Sinks) [2]	0.0

	CO_2	CH_4	N_2O	Mass Sum	CO_2e
	TPY	TPY	TPY	TPY	TPY
Total Sinks	0	0	0	0	0

Total Emissions including Sinks = Direct Emissions + Indirect Emissions + Sinks

	CO_2	CH_4	N_2O	Mass Sum	CO_2e
	TPY	TPY	TPY	TPY	TPY
Total	1,026	0.062	0.0122	1,026	1,179

[1] Following the completion of the construction phase, emissions from vehicle traffic associated with onsite operations (deliveries, maintenance, etc.) are expected to be minimal and infrequent, and have not been quantified.

[2] Proposed land-use changes are not expected to produce greenhouse gas reductions (sinks).

Conversion Factors:	
CO_2 to CO_2e	1
CH_4 to CO_2e	25
N_2O to CO_2e	298

Fox Meadows Residential Development
Project: B2203087
Source: Natural Gas Use

Natural Gas Use	
Assumptions:	
Total Project	
Estimated total annual natural gas use, MMcf/year	7.80
Heating Value of Natural Gas [1], Btu/scf	1,020
Conversion Factors:	
lb/ton	2,000
lb/kg	2.204
cf/Therm	73.0
CO_2 to CO_2e	1
CH_4 to CO_2e	25
N_2O to CO_2e	298

Housing Unit Type	Approximate Number of Buildings	Approximate Square Footage per Building (ft^2)	Total Square Footage (ft^2)	Building Heating Heat Source	Typical Annual Natural Gas Usage for Space Heating per Square Foot of Building Floorspace [5], cf/(year*ft^2)	Water Heating Heat Source	Typical Annual Natural Gas Usage for Water Heating per Square Foot of Building Floorspace [5], cf/(year*ft^2)	Cooking Appliances Heat Source	Typical Annual Natural Gas Usage for Cooking per Square Foot of Building Floorspace [5], cf/(year*ft^2)	Estimated Total Natural Gas Use, MMcf/year
8-Plex	13	12,233	159,029	Natural gas	24.7	Electric	N/A (electric)	Electric	N/A (electric)	3.93
Twin Home	12	3,100	37,200	Natural gas	36.0	Natural gas	24.9	Electric	N/A (electric)	2.27
Single-Family Home	17	1,550	26,350	Natural gas	36.0	Natural gas	24.9	Electric	N/A (electric)	1.60
									Total	**7.80**

Pollutant	EPA Pollutant Type	40 CFR Part 98 [2,3] (lb/MMBtu)	Estimated Annual Emissions From Natural Gas Combustion (TPY)
CO_2e [4]	GHG	117.07	466
CO_2 [2]	GHG	116.94	465
CH_4 [3]	GHG	0.0022	8.77E-03
N_2O [3]	GHG	0.0002	8.77E-04

[1] Heating value of natural gas taken from AP-42 Appendix A. Typical Parameters of Various Fuels.
[2] CO_2 emission factor from 40 CFR 98 Subpart C, Table C-1 (natural gas 53.06 kg CO_2/MMBtu), November 29, 2013.
[3] CH_4 and N_2O emission factors from 40 CFR 98 Subpart C, Table C-2 (natural gas CH_4 = 0.001 kg CH_4/MMBtu and N_2O = 0.0001 kg N_2O/MMBtu), November 29, 2013.
[4] CO_2e emissions are based on global warming potential from 40 CFR 98 Subpart A, Table A-1 (CO_2=1, CH_4=25, and N_2O=298), November 29, 2013.
[5] U.S. Energy Information Administration (US EIA), "Natural gas consumption and conditional energy intensities (cubic feet) by end use, 2012," May 2016 https://www.eia.gov/consumption/commercial/data/2012/c&e/cfm/e8.php. Natural gas usage data for buildings with a building floorspace of 10,001 to 25,000 square feet was used for 8-plex buildings. Natural gas usage data for buildings with a building floorspace of 1,001 to 5,000 square feet was used for twin homes and single-family homes.

Fox Meadows Residential Development
Project: B2203087
Source: Mobile Sources - Construction Activities

Estimated Project Life 30 years
Project Residential Floorspace: 259,780 ft^2

Vehicle Types	Fuel type	Estimated Fuel Usage Per Square Foot of Building Floorspace (gal/sq. ft) [1]	Estimated Total Fuel Usage During Construction Period (gallons)	CO_2 Emission Factor (kg/gal) [2]	CO_2 Emissions During Construction Period (ton)	CH_4 Emission Factor (g/gal) [2]	CH_4 Emissions During Construction Period (ton)	N_2O Emission Factor (g/gal) [2]	N_2O Emissions During Construction Period (ton)	CO_2e Emissions During Construction Period (ton)
Crawler tractors/dozers	Diesel	0.0555	14,410	10.21	162	0.2	3.18E-03	0.47	7.47E-03	164
Excavators	Diesel	0.650	168,860	10.21	1,900	0.2	3.72E-02	0.47	8.75E-02	1,927
Graders	Diesel	0.0363	9,418	10.21	106	0.2	2.08E-03	0.47	4.88E-03	108
Pavers	Diesel	2.03E-03	528	10.21	6	0.2	1.16E-04	0.47	2.74E-04	6
Rollers	Diesel	0.0354	9,206	10.21	104	0.2	2.03E-03	0.47	4.77E-03	105
Rough terrain forklifts	Diesel	0.104	27,133	10.21	305	0.2	5.98E-03	0.47	1.41E-02	310
Rubber tire loaders	Diesel	1.03E-04	27	10.21	0	0.2	5.88E-06	0.47	1.38E-05	0
Skid steer loaders	Diesel	1.19E-03	309	10.21	3	0.2	6.80E-05	0.47	1.60E-04	4
Total (tons)					**2,587**		**0.0507**		**0.119**	**2,624**
Total (tons/year, annualized over project life)					**86.2**		**1.69E-03**		**3.97E-03**	**87.5**

[1] A rough estimate of vehicle types and fuel consumption was made using data from "Oregon Nonroad Diesel Equipment Survey and Emissions Inventory," August 26, 2020 (https://www.oregon.gov/deq/aq/Documents/orNonroadDieselRep.pdf). An estimate of gallons of diesel per square footage of floorspace (gal/ft^2) was estimated by dividing the Table 4-18 annual fuel use estimates for each vehicle type by the survey total building square footage of 3,700,000 ft^2.
[2] CO_2, CH_4, and N_2O emission factors taken from Table 2 and Table 5 of EPA's "Emission Factors for Greenhouse Gas Inventories", April 2021 (https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf), vehicle type: Construction/Mining Equipment.

Fox Meadows Residential Development
Project: B2203087
Source: Land Use Changes - Construction Activities

Estimated Project Life 30 years

Land-use category prior to project: Cropland (1a)
Land-use category after project: Settlement (1b)

2019 Net CO2 Flux from Cropland Converted to Settlements	5,900,000	Ton CO_2e	Source: Reference 1, Table 6-99
2019 Land Converted to Settlements	2,452,000	hectares	Source: Reference 1, Table 6-5
	6,056,440	acres	

Emission Factor Based on Land Type Carbon Flux (tons CO2e/area) = net CO2 flux from land conversion / total area of land use change in US

Emission Factor (tons CO2e/area) = 0.97

Total Fox Meadows Development Project Acreage	74	acres
CO_2e Emissions from Land-Use Changes	**72**	**tons**
Annual CO_2e Emissions from Land-Use Changes (tons/year, annualized over project life)	**2.4**	**tpy**

[1] US EPA "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2019", Chapter 6: Land Use, Land-Use Change, and Forestry (https://www.epa.gov/sites/default/files/2021-04/documents/us-ghg-inventory-2021-chapter-6-land-use-land-use-change-and-forestry.pdf)

[1a] Cropland: A land-use category that includes areas used for the production of adapted crops for harvest; this category includes both cultivated and non-cultivated lands. Cultivated crops include row crops or close-grown crops and also pasture in rotation with cultivated crops. Non-cultivated cropland includes continuous hay, perennial crops (e.g., orchards) and horticultural cropland. Cropland also includes land with agroforestry, such as alley cropping and windbreaks, 17 if the dominant use is crop production, assuming the stand or woodlot does not meet the criteria for Forest Land. Lands in temporary fallow or enrolled in conservation reserve programs (i.e., set-asides18) are also classified as Cropland, as long as these areas do not meet the Forest Land criteria. Roads through Cropland, including interstate highways,mstate highways, other paved roads, gravel roads, dirt roads, and railroads are excluded from Cropland area estimates and are, instead, classified as Settlements.

[1b] Settlements: A land-use category representing developed areas consisting of units equal to or greater than 0.25 acres (0.1 ha) that includes residential, industrial, commercial, and institutional land; construction sites; public administrative sites; railroad yards; cemeteries; airports; golf courses; sanitary landfills; sewage treatment plants; water control structures and spillways; parks within urban and built-up areas; and highways, railroads, and other transportation facilities. Also included are all tracts that may meet the definition of Forest Land, and tracts of less than 10 acres (4.05 ha) that may meet the definitions for Cropland, Grassland, or Other Land but are completely surrounded by urban or built-up land, and so are included in the Settlements category. Rural transportation corridors located within other land uses (e.g., Forest Land, Cropland, and Grassland) are also included in Settlements. (reference 1, page 6-15)

Fox Meadows Residential Development
Project: B2203087
Source: Off-Site Emissions from Electricity Generation

Off-Site Electricity	
Assumptions:	
Total Project	
Estimated total project site annual electricity use, MWh/year	864
Conversion Factors:	
lb/ton	2,000
lb/kg	2.204
CO_2 to CO_2e	1
CH_4 to CO_2e	25
N_2O to CO_2e	298

Housing Unit Type	Approximate Number of Housing Units	Building Heating Heat Source	Typical Annual Electricity Usage for Space Heating per Housing Unit [5], kWh/(year*unit)	Water Heating Heat Source	Typical Annual Electricity Usage for Water Heating per Housing Unit [5], kWh/(year*unit)	Typical Annual Electricity Usage for Air Conditioning, Refrigeration, and Other Electricity Usage per Housing Unit [5], kWh/(year*unit)	Estimated Total Electricity Use, MWh/year
8-Plex	104	Natural gas	N/A (Natural Gas)	Electric	2,228	3,341	579
Twin Home	24	Natural gas	N/A (Natural Gas)	Natural gas	N/A (Natural Gas)	5,976	143
Single-Family Home	17	Natural gas	N/A (Natural Gas)	Natural gas	N/A (Natural Gas)	8,335	142
						Total	**864**

Pollutant	EPA Pollutant Type	Emission Factor [1] (lb/MWh)	Off-Site Emissions From Electricity Generation (TPY)
CO_2e [2]	GHG	1,106.4	478
CO_2	GHG	1,098.4	475
CH_4	GHG	0.119	0.051
N_2O	GHG	0.017	7.35E-03

[1] CO_2, CH_4, and N_2O emission factors taken from Table 6 of EPA's "Emission Factors for Greenhouse Gas Inventories", April 2021 (https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf). "Total Output" emission factors were used as directed in the Table 6 footnote.

[2] CO_2e emissions are based on global warming potential from 40 CFR 98 Subpart A, Table A-1 (CO_2=1, CH_4=25, and N_2O=298), November 29, 2013.

[3] U.S. Energy Information Administration (US EIA), "Annual household site end-use consumption by fuel in the Midwest—averages, 2015," May 2018 (https://www.eia.gov/consumption/residential/data/2015/c&e/pdf/ce4.8.pdf). Electricity usage data for apartments in buildings with 5 or more units was used for 8-plex buildings. Electricity usage data for single-family attached was used for twin homes. Electricity usage data for single-family detached was used for single-family homes.

Fox Meadows Residential Development
Project: B2203087
Source: Off-Site Waste Management Emissions

Total Number of Housing Units:	145	
Estimated Residential Occupants [19]:	360	
Total waste generated per person per day [1]:	4.9	pounds
Estimated Total Annual Waste Generated:	322	tons

Waste Material	Percentage of Total MSW [1]	Estimated Annual Residential Waste Generated (tons per year)	CO_2e Emission Factor (metric tons CO_2e/ short ton material) [2]	Annual CO_2e Emissions (TPY) [3]
Paper and Paperboard - landfilled [4,5]	15.7%	50.5	1.25	69.5
Paper and Paperboard - recycled [4,6]	7.4%	23.7	0.02	0.5
Food [7]	21.6%	69.5	0.58	44.4
Plastics - landfilled [4,8]	8.3%	26.7	0.02	0.6
Plastics - recycled [4,9]	3.9%	12.6	0.22	3.0
Yard Trimmings [10]	12.1%	39.0	0.33	14.2
Metals - landfilled [4,11]	6.0%	19.2	0.02	0.4
Metals - recycled [4,12]	2.8%	9.0	0.23	2.3
Wood [13]	6.2%	19.9	0.17	3.7
Textiles [14]	5.8%	18.8	0.02	0.4
Glass - landfilled [4,15]	2.8%	9.2	0.02	0.2
Glass - recycled [4,16]	1.3%	4.3	0.05	0.2
Rubber and Leather [17]	3.1%	10.1	0.02	0.2
Other [18]	1.6%	5.0	0.52	2.9
Misc. Inorganic Wastes [18]	1.4%	4.5	0.52	2.6
Total	**100.0%**	**321.9**		**145**

[1] 2018 national MSW Data obtained from US EPA National Overview: Facts and Figures on Materials, Wastes and Recycling (https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/national-overview-facts-and-figures-materials#:~:text=Per%20capita%20MSW%20generation%20increased,additional%20wasted%20food%20management%20pathways.)
[2] CO_2e emission factors taken from Table 6 of EPA's "Emission Factors for Greenhouse Gas Inventories", April 2021 (https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf).
[3] Metric tons of CO_2e multiplied by 1.102 to convert to US tons of CO_2e
[4] Based on 2018 recycling rate of 32.1% (from source 1: US EPA National Overview: Facts and Figures on Materials, Wastes and Recycling).
[5] CO_2e emission factor for office paper, landfilled.
[6] CO_2e emission factor for office paper, recycled.
[7] CO_2e emission factor for food waste, landfilled.
[8] CO_2e emission factor for mixed plastics, landfilled.
[9] CO_2e emission factor for mixed plastics, recycled.
[10] CO_2e emission factor for yard trimmings, landfilled.
[11] CO_2e emission factor for mixed metals, landfilled.
[12] CO_2e emission factor for mixed metals, recycled.
[13] CO_2e emission factor for dimensional lumber, landfilled.
[14] CO_2e emission factor for carpet, landfilled.
[15] CO_2e emission factor for glass, landfilled.
[16] CO_2e emission factor for glass, recycled.
[17] CO_2e emission factor for tires, landfilled.
[18] CO_2e emission factor for mixed MSW, landfilled.
[19] Based on an assumed 2.48 persons per household (Minnesota Cost of Living Study Annual Report 2020, https://www.lrl.mn.gov/docs/2020/mandated/200329.pdf)

Appendix D

References

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