

July 19, 2018

Mark Noble
Senior Planner
City of Shakopee
485 Gorman St.
Shakopee MN 55379

Re: Update of the Bluffs at Marystown EAW for the Windermere South Development, City of Shakopee, Minnesota

Dear Mr. Noble:

On behalf of D.R. Horton, Westwood Professional Services (Westwood) has prepared the following letter report to provide substantive updates to the 2006 Bluffs at Marystown Environmental Assessment Worksheet (EAW). D.R. Horton is currently in the process of developing the Windermere South residential portion of the project, and has received preliminary plat approval from the city. Multi-family and commercial portions of the project are being developed by other parties. The residential, multi-family, and commercial portions of the project are all within the project area formerly known as Bluffs at Marystown, and involve a similar development design. The city of Shakopee Council passed Resolution Number 6555 making a negative finding on the need for an Environmental Impact Statement (EIS) for the project on January 2, 2007. The 2006 EAW and resulting resolution are provided in **Appendix A**.

This update has been prepared in response to a request from the Metropolitan Council (Met Council) to have the 2006 EAW reflect current development densities and assumptions, as some minor changes have occurred to the development design. Most notably, the school use that was contemplated and analyzed in Scenario 1 of the 2006 EAW is no longer proposed. Jackson Elementary School opened in 2012 approximately ¼ mile east of the EAW boundary. Consequently, the EAW update compares the proposed 2018 uses against previously analyzed Scenario 2, which did not contain a school component.

On June 25, 2018, D.R. Horton met with staff members from the Met Council to discuss the scope of needed updates. Staff indicated that a letter-style update focusing on items that have changed is appropriate. Primary areas of interest are net change in development densities and types, and how those potentially drive changes in traffic and wastewater generation.

The purpose of this letter is to demonstrate that the changes made to the site plan since the 2006 EAW are not substantial, and [the changes] *“do not affect the potential for significant adverse environmental effects that were not previously addressed in the existing EAW (4410.1000, Subp. 5).”*

Through meetings and discussions with city of Shakopee and Met Council staff, specific items were identified in the 2006 EAW that warrant updating to make a determination regarding the potential for significant adverse environmental effects. Those sections were prepared and provided below, and the original EAW application has been attached to this document for reference. As demonstrated in this letter report, the proposed project results in less impact to natural resources than the approved 2006 EAW, and changes to public infrastructure are negligible.

Please feel free to contact me with questions.

Sincerely,

WESTWOOD PROFESSIONAL SERVICES

A handwritten signature in black ink, appearing to read 'D.M. Weetman', with a stylized, cursive script.

David M. Weetman, PWS, WDC
Environmental Project Manager

Cc: Mike Suel, D.R. Horton
Deb Ridgeway, D.R. Horton
Fran Hagen, Westwood Professional Services
Steve Manhart, Westwood Professional Services

Updates from 2006 EAW Design

Project Title and Proposer (Questions 1, 2, and 3)

1. Project Title:	The Bluffs of Marystown		
2. Proposer:	D.R. Horton	3.RGU	City of Shakopee
Contact person:	Mike Suel	Contact person:	Mark Noble
Title:	Land Development Manager	Title:	Senior Planner
Address:	20860 Kenbridge Ct, #100	Address:	485 Gorman Street
	Lakeville, MN 55044		Shakopee, MN 55379
Phone:	(952) 985-7823	Phone:	(952) 233-9348
E-mail	msuel@drhorton.com	E mail	mnoble@ShakopeeMN.gov

Project Location (Question 5)

County: Scott County

City/Township: Shakopee, Minnesota

PLS Location (Section, Township, Range): E ½ and SW ¼ of Section 14, T115N, R23W

The project is generally located west of Marystown Road, north of 130th Street West, east of Old Brick Yard Road, and south of U.S. Highway 169 in western Shakopee (**Exhibit 1**).

Project Description (Question 6)

- a. *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.*

D.R. Horton, Inc., and other separate entities, are proposing construction of a mixed-use residential and neighborhood commercial development in western Shakopee.

This EAW update addresses one development scenario and compares it to previously evaluated Scenario 2 from the 2006 EAW (**Exhibit 2**). Table 6.1 demonstrates the changes proposed in the EAW update. The 2018 proposed scenario would include development of

590 single-family lots, 38 townhomes, 312 condominiums and 63,220 square feet of office condominiums / neighborhood commercial (**Exhibit 3**).

Net change from 2006 Scenario 2:

The 2018 EAW update proposes 9 additional residential units and 35,009 additional square feet of condominiums / neighborhood commercial.

Table 6.1
Development Scenarios

	2006 Scenario 2		2018 Proposed	
	units	square feet	units	square feet
Single-family	426	--	590	--
Single-family (school site)	41	--	--	--
Multi-family (Townhomes)	284	--	38	--
Multi-family (Condominiums)	180	--	312	--
Office Condo / Neighborhood Commercial	--	28,211	--	63,220
School	--	--	--	--
Total	931	28,211	940	63,220

Project development will convert approximately 323 acres of agricultural fields and three farmsteads to streets, homes, lawns, landscaping, parkland, trails, and stormwater ponding. Land use within the site will include construction of up to 590 single -family lots, and up to 350 multi-family units including townhomes and condominiums. Potential adverse effects on the environment will be mitigated by preservation and creation of approximately 50 acres of open space (wetlands, woodlands, parkland and stormwater ponding). Open space and parkland on the site will provide natural areas to promote wildlife movement and connections to other open areas and parkland. The amount of provided open space is within the range anticipated in the 2006 EAW.

Development density was calculated and compared for the original Scenario 2 presented in the 2006 EAW against the density currently planned. Removed from the potential developable areas were existing utility easements, commercial development areas, major right-of-ways and green space. In addition, a small, future development outlot was removed from the 2018 proposed layout. The comparison demonstrated that the development density of the project went up from 3.51 units per acre in 2006 to 4.03 units per acre in 2018. Maps showing development data and density calculations are provided in **Appendix B**.

Construction and operation methods will be typical of residential and commercial development practices, and will produce typical wastes. Wastes generated during construction will be handled according to industry-standard Best Management Practices (BMPs), and disposed of in accordance with local, state and federal regulations. Modifications to existing equipment or industrial processes is not anticipated. Based on current design plans, one home and a farmstead will require demolition. Demolition work will be performed by a licensed contractor and in accordance with state laws.

Project construction will occur in phases, with the first phase of construction having started in 2017. Full build out is anticipated in 2025; however, construction timing will ultimately depend upon market conditions. Construction dewatering may be conducted on an as-needed and permitted basis to install sanitary sewer, municipal water, and storm sewer. Best Management Practices will be implemented during and after construction to protect water quality and reduce the potential for soil erosion and sedimentation.

Cover Types (Question 7)

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

Existing cover types were estimated using recent aerial photography as summarized in Table 7.1. Current land cover and surrounding land uses are shown on **Exhibit 4**. Table 7.1 also compares estimated cover types between the 2006 Scenario 2, and the 2018 Proposed. As noted below, the updated site plan will provide more overall open space, stormwater management and less impervious surface, reducing the potential for significant environmental effects.

Table 7.1. Estimated Before and After Cover Types

Land Cover	Before (acres)	2006 Scenario 2 (acres)	2018 Proposed (acres)
Agricultural Fields ¹	277.25	0	0
Wetlands	0.03	0.03	0.03
Woodland	34.60	21.00	20.75
Impervious Surface (Pavement, Buildings, Roadway)	8.70	129.30	113.3
Lawn and Landscaping	2.40	123.00	143.9
Parkland/Open Space (private and public)	0	14.20	33.9
Stormwater Ponding	0	10.10	11.1
School Site (Impervious – school and parking)	N/A ¹	7.00	0

Land Cover	Before (acres)	2006 Scenario 2 (acres)	2018 Proposed (acres)
School Site (Lawn and Landscaping)	N/A ¹	12.30	0
School Site (park, and ponding)	N/A ¹	6.05	0
Total	322.98	322.98	322.98

¹ The pre-development cover type for the school site is agricultural and is accounted for under "Agricultural Fields".

*If **Before** and **After** totals are not equal, explain why:*

Totals are equal and estimated from available land cover mapping and the development plan.

Net change from 2006 Scenario 2:

- 1) Increase in retained woodlands by 0.25-acre.
- 2) Reduction in impervious surfaces by 16 acres.
- 3) Increase in lawn and landscaping by 20.9 acres.
- 4) Increase in Parkland/Open Space by 19.7 acres.
- 5) Increase in stormwater ponding by 1 acre.

Wastewater (Question 11)

- 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.*

Only normal domestic wastewater production is expected. The types of wastewater produced will be typical of new mixed-use developments. No on-site municipal or industrial wastewater treatment is anticipated.

The Metropolitan Council Environmental Services (MCES) has compiled and documented extensive data that relates wastewater flow generation to population and land use. Sanitary wastewater production for the proposed development was estimated based on the methods outlined in the Service Availability Charge (SAC) Procedures (<https://metro council.org/Wastewater-Water/Funding-Finance/Rates-Charges.aspx>). The MCES has established 274 gallons per day (gpd) to be the average daily wastewater production from a typical residential connection. One SAC unit is defined as 274 gallons of wastewater flow volume. The SAC calculation for commercial is 3,000 sf/SAC unit.

Wastewater Comparison

As described above, single and multi-family units are assigned one SAC unit per dwelling unit, and the commercial land use is assigned SAC units based on the area of the building. The estimated maximum potential daily wastewater production for the entire development under the 2006 Scenario 2 was 257,834 gpd. Wastewater production predicted under the proposed 2018 site plan is 263,314. The following tables provide the detailed calculations on wastewater production based on specific land uses.

Table 11.1
Wastewater Production Predicted under 2006 Scenario 2

Proposed Use	SAC Rate ¹	Units/S.F.	SAC Units	Wastewater (gallons/day)
Single-family units	1/Unit	467	467	127,958
Multi-family units (townhomes)	1/Unit	284	284	77,816
Multi-family units (condominiums)	1/Unit	180	180	49,320
Neighborhood Commercial	1:3,000 s.f.	28,211	10	2,740
Total			921	257,834

¹ One SAC Unit = 274 Gallons.

Table 11.2
Wastewater Production Predicted under 2018 Proposed

Proposed Use	SAC Rate ¹	Units/S.F.	SAC Units	Wastewater (gallons/day)
Single-family units	1/Unit	590	590	161,660
Multi-family units (townhomes)	1/Unit	38	38	10,412
Multi-family units (condominiums)	1/Unit	312	312	85,488
Neighborhood Commercial	1:3,000 s.f.	63,220	21	5,754
Total			940	263,314

¹ One SAC Unit = 274 Gallons.

Net change from 2006 Scenario 2:

The estimated Total Residential Sanitary Wastewater Generation for 2006 Scenario 2 = 257,834 gal/day or 94.1 MGY.

The estimated Total Residential Sanitary Wastewater Generation for the 2018 Scenario = 263,314 gal/day or 96.1 MGY.

The net increase is 5,480 gal/day or approximately 2.0 MGY.

Sewer System Connection and Capacity

The city of Shakopee wastewater system outlets through the Metropolitan Council Environmental Services (MCES) Chaska interceptor force main and ultimately reaches the Blue Lake Wastewater Treatment Plant in Shakopee, Minnesota. Per information from the Metropolitan Council's website, the Blue Lake WWTP has a design capacity to treat 32 million gallons of wastewater per day. The average daily flow is reported to be 27 million gallons per day. No wastewater facility or treatment capacity issues are anticipated, or have been expressed by the city of Shakopee or Met Council staff. The proposed increase in wastewater generation is considered negligible when compared to the previously approved volumes and the treatment capacity of the Blue Lake WWTP.

Transportation (Question 18)

- 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.*

1. Existing and Proposed Additional Parking Spaces –

The existing land use is primarily agricultural except for a few single family residential units. There are no existing parking spaces on the parcel, except those for the single family homes.

The proposed land uses and corresponding parking supply proposed for this site include:

- a. 590 single family housing units – approximately 1,180 stalls (2.0/unit)
- b. 350 multi-family housing units – approximately 525 stalls (1.5/unit)
- c. 16-fueling position gasoline/service station w/convenience market – approximately 19 stalls (1.2/fueling position)
- d. 10,000 sq. ft. pharmacy/drug store – approximately 54 stalls (5.4/1,000 sq. ft.)
- e. 185 unit senior adult housing – approximately 185 stalls (1.0/dwelling unit)
- f. 68 bed assisted living center – approximately 41 stalls (0.6/dwelling unit)
- g. Nursing home with 24 employees – approximately 31 stalls (1.3/employee)
- h. 78,000 sq. ft. neighborhood retail center – approximately 367 stalls (4.7/1,000 sq. ft.)

TOTAL NUMBER OF STALLS = Approximately 2,400 stalls

2. Estimated Total Average Daily Traffic Generated –

The table below shows the total average trip generation for the site as being approximately 18,000 trips per day.

Table 18.1. Trip Generation Summary

Gross Trips								
Land Use	ITE Code	Size	Weekday		AM peak		PM Peak	
			Enter	Exit	Enter	Exit	Enter	Exit
Single Family Housing	210	590 units	2,661	2,661	106	318	352	207
Multifamily Housing (Low-Rise)	220	38 units	123	123	4	15	16	9
Multifamily Housing (Low-Rise)	220	312 units	1,159	1,159	32	108	102	60
Gasoline/Service Station w/ Convenience Market	945	16 fuel pos.	1,567	1,567	106	102	114	110
Pharmacy/Drugstore w/o Drive-Thru	880	10 k.s.f.	444	444	17	9	42	43
Senior Adult Housing - Attached	252	185 units	359	359	13	24	26	21
Assisted Living	254	68 beds	88	88	8	5	7	11
Nursing Home	620	24 employees	63	63	9	2	4	8
Shopping Center	820	78 k.s.f.	2,539	2,539	118	72	217	235
			9,003	9,003	413	655	880	704
			18,006		1,068		1,584	
Internal Trip Reduction								
Land Use	ITE Code	Size	Weekday		AM peak		PM Peak	
			Enter	Exit	Enter	Exit	Enter	Exit
Single Family Housing	210	590 units	269	269	6	18	80	47
Multifamily Housing (Low-Rise)	220	38 units	12	12	-	1	4	2
Multifamily Housing (Low-Rise)	220	312 units	117	117	2	6	23	14
Gasoline/Service Station w/ Convenience Market	945	16 fuel pos.	159	159	6	6	26	25
Pharmacy/Drugstore w/o Drive-Thru	880	10 k.s.f.	45	45	1	1		
Senior Adult Housing - Attached	252	185 units	36	36	1	1		
Assisted Living	254	68 beds	9	9	-	-	2	2
Nursing Home	620	24 employees	6	6	1	-	1	2
Shopping Center	820	78 k.s.f.	257	257	7	4	49	53
			910	910	24	37	185	145
			1,820		61		330	
			10%		6%		21%	
Driveway Trips (Gross Trips less Internal Trips)								
Land Use	ITE Code	Size	Weekday		AM peak		PM Peak	
			Enter	Exit	Enter	Exit	Enter	Exit
Single Family Housing	210	590 units	2,392	2,392	100	300	272	160
Multifamily Housing (Low-Rise)	220	38 units	111	111	4	14	12	7
Multifamily Housing (Low-Rise)	220	312 units	1,042	1,042	30	102	79	46
Gasoline/Service Station w/ Convenience Market	945	16 fuel pos.	1,408	1,408	100	96	88	85
Pharmacy/Drugstore w/o Drive-Thru	880	10 k.s.f.	399	399	16	8	42	43
Senior Adult Housing - Attached	252	185 units	323	323	12	23	26	21
Assisted Living	254	68 beds	79	79	8	5	5	9
Nursing Home	620	24 employees	57	57	8	2	3	6
Shopping Center	820	78 k.s.f.	2,282	2,282	111	68	168	182
			8,093	8,093	389	618	695	559
			16,186		1,007		1,254	
Pass-By Trip Reduction								
Land Use	ITE Code	Size	Weekday		AM peak		PM Peak	
			Enter	Exit	Enter	Exit	Enter	Exit
Single Family Housing	210	590 units	1,124	1,124	-	-	-	-
Multifamily Housing (Low-Rise)	220	38 units	-	-	-	-	-	-
Multifamily Housing (Low-Rise)	220	312 units	-	-	-	-	-	-
Gasoline/Service Station w/ Convenience Market	945	16 fuel pos.	-	-	62	60	49	48
Pharmacy/Drugstore w/o Drive-Thru	880	10 k.s.f.	-	-	-	-	-	-
Senior Adult Housing - Attached	252	185 units	116	116	-	-	-	-
Assisted Living	254	68 beds	45	45	-	-	-	-
Nursing Home	620	24 employees	19	19	-	-	-	-
Shopping Center	820	78 k.s.f.	1,164	1,164	-	-	-	-
			2,468	2,468	62	60	49	48
			4,936		122		97	
			30%		12%		8%	
Net New Trips								
Land Use	ITE Code	Size	Weekday		AM peak		PM Peak	
			Enter	Exit	Enter	Exit	Enter	Exit
Single Family Housing	210	590 units	1,268	1,268	100	300	272	160
Multifamily Housing (Low-Rise)	220	38 units	111	111	4	14	12	7
Multifamily Housing (Low-Rise)	220	312 units	1,042	1,042	30	102	79	46
Gasoline/Service Station w/ Convenience Market	945	16 fuel pos.	1,408	1,408	38	36	39	37
Pharmacy/Drugstore w/o Drive-Thru	880	10 k.s.f.	399	399	16	8	42	43
Senior Adult Housing - Attached	252	185 units	207	207	12	23	26	21
Assisted Living	254	68 beds	34	34	8	5	5	9
Nursing Home	620	24 employees	38	38	8	2	3	6
Shopping Center	820	78 k.s.f.	1,118	1,118	111	68	168	182
			5,625	5,625	327	558	646	511
			11,250		885		1,157	

3. Estimated Maximum Peak Hour Traffic Generated and Time of Occurrence –

The table above shows the trip generation for AM and PM Peak Hours. The estimated maximum peak hour traffic will be generated in the PM Peak Hour (1,584 trips/hour).

4. Indicate source of trip generation rates used in the estimates –

Source: Trip Generation Manual, Tenth Edition, Institute of Transportation Engineers, Washington, DC, 2017.

5. Availability of Transit and/or Other Alternative Transportation Modes –

Currently, no transit is available adjacent to this site.

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

A traffic study update is found in Appendix C of this report.

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

Possible mitigation measures are identified in the traffic study update found in Appendix C.

Cumulative Impacts (Question 19)

- 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 Bluffs at Marystown project will be developed in phases, with the first phase of construction having started in 2017. Full build out is anticipated in 2025. Changes in the land uses in Shakopee from open space or agricultural land to more urbanized uses is expected to have a cumulative impact on the area in general. Cumulative effects of this and future projects on natural resources and infrastructure are expected to be roughly proportional to the impacts discussed in the 2006 EAW and this EAW update.

The city of Shakopee has planned for future growth and development as part of its 2030 Comprehensive Plan (2008). Based on the US Census Bureau fact sheet statistics for the city of Shakopee, the current population is approximately 40,893, while populations in 2000 and

2010 were 20,568 and 37,076, respectively. Shakopee is a community that has grown quickly over the past 25 years. The city has approximately 13,090 households according to the American Community Survey 2011-15, and the average household has 2.92 persons.

In April 2015, the City Council hired Hoisington Koegler Group Inc. (HKGI) and SRF Consulting Group to conduct the West End Land Use Study. The study area incorporated 323 acres bounded on the north by Vierling Drive, on the west by County Highway 69, on the south by County Highway 78 and on the east largely by County Highway 15 and the interchange at Highway 169 and County Highway 15. The Bluffs at Marystown project area was included in this study area. The master land use study evaluated the city's land use, transportation and infrastructure plans along Highway 169 and County Highway 15.

In addition, as mandated by state law, the city is in the midst of updating its comprehensive plan, which is due to the Met Council by December 13, 2018. The Met Council will review the plan for alignment to the regional plan, known as Thrive MSP 2040.

Significant time and energy has been invested both publicly and privately into studying the current and future planning and environmental impacts of the project area and region. These efforts will ensure that the cumulative impacts of future growth and development to the environment, and to the city's service capacities, are anticipated and mitigated.

- 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 project proposer does not currently own or have options on adjacent lands.

- 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.*

Because the proposed project area largely consists of agricultural lands, cumulative impacts to natural resources are anticipated to be minimal.

Development of surrounding parcels will also result in cumulative impacts to city infrastructure such as roads, sewer, and water. However, these cumulative impacts have been thoughtfully contemplated and addressed in the city's 2030 Comprehensive Plan (2008), the West End study, and will be further evaluated in the city's 2040 Comprehensive Plan Update (to be completed in 2018). In addition, as surrounding properties develop, they will be evaluated under Minnesota Environmental Policy Act (MEPA) rules, as necessary, and will need to adhere to guidelines presented in the city's approved zoning and comprehensive plans.

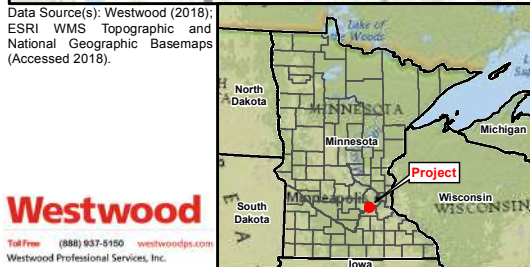
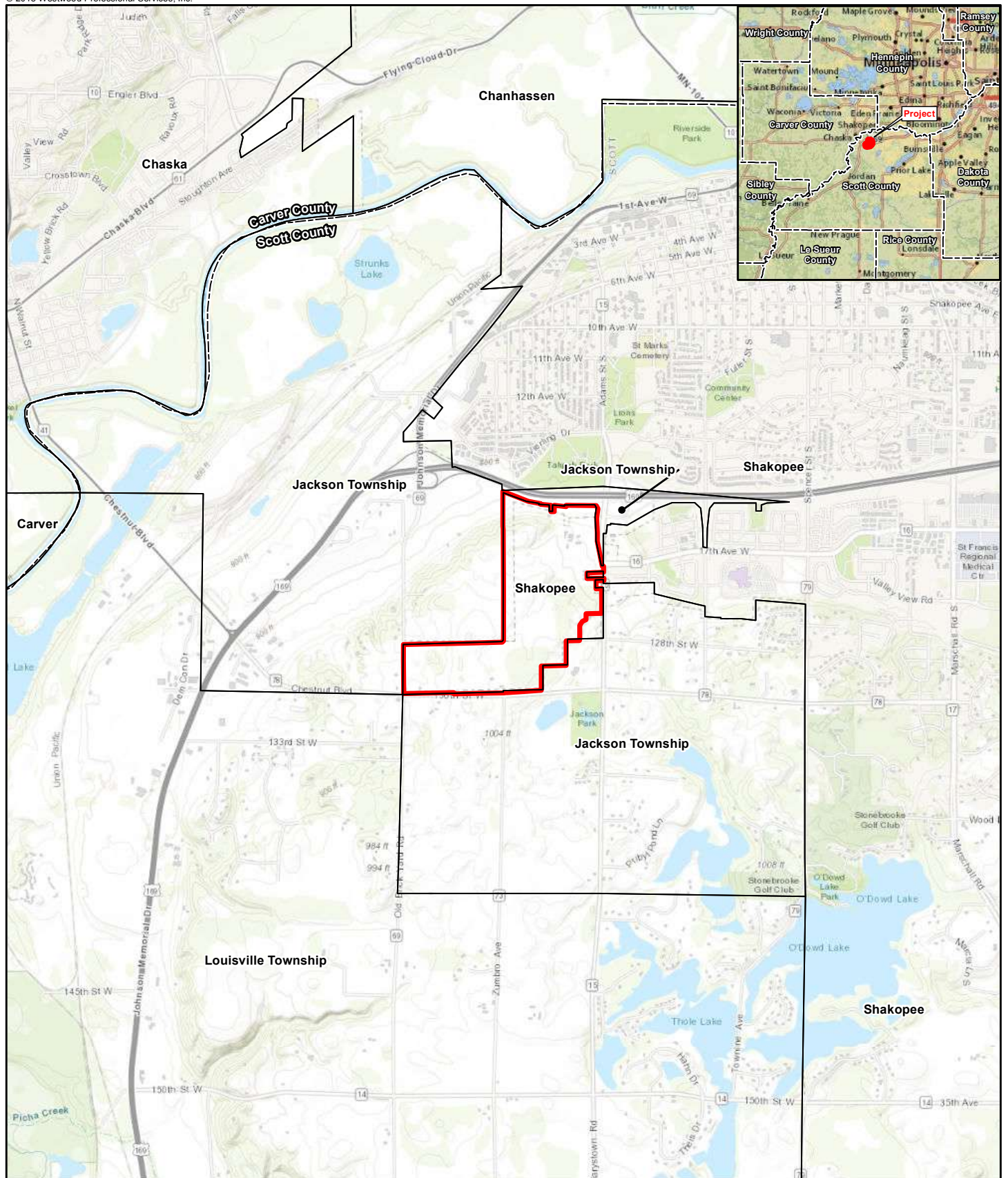
Mitigation for anticipated minor cumulative impacts in the area will include pretreating storm water and controlling storm water rates, providing adequate municipal facilities, such as

potable water and wastewater treatment, and providing open space and appropriate traffic-related improvements. These provisions will help minimize potential cumulative effects of past developments and future developments within the region. Given the nature of potential cumulative effects, the evaluation of available and relevant information, and mitigation efforts proposed, it is unlikely these cumulative effects will result in significant environmental effects.

Exhibits 1 - 4

The Bluffs at Marystown, Shakopee
Scott County, Minnesota

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The Bluffs at Marystown EAW

Shakopee, Scott County, Minnesota

Legend

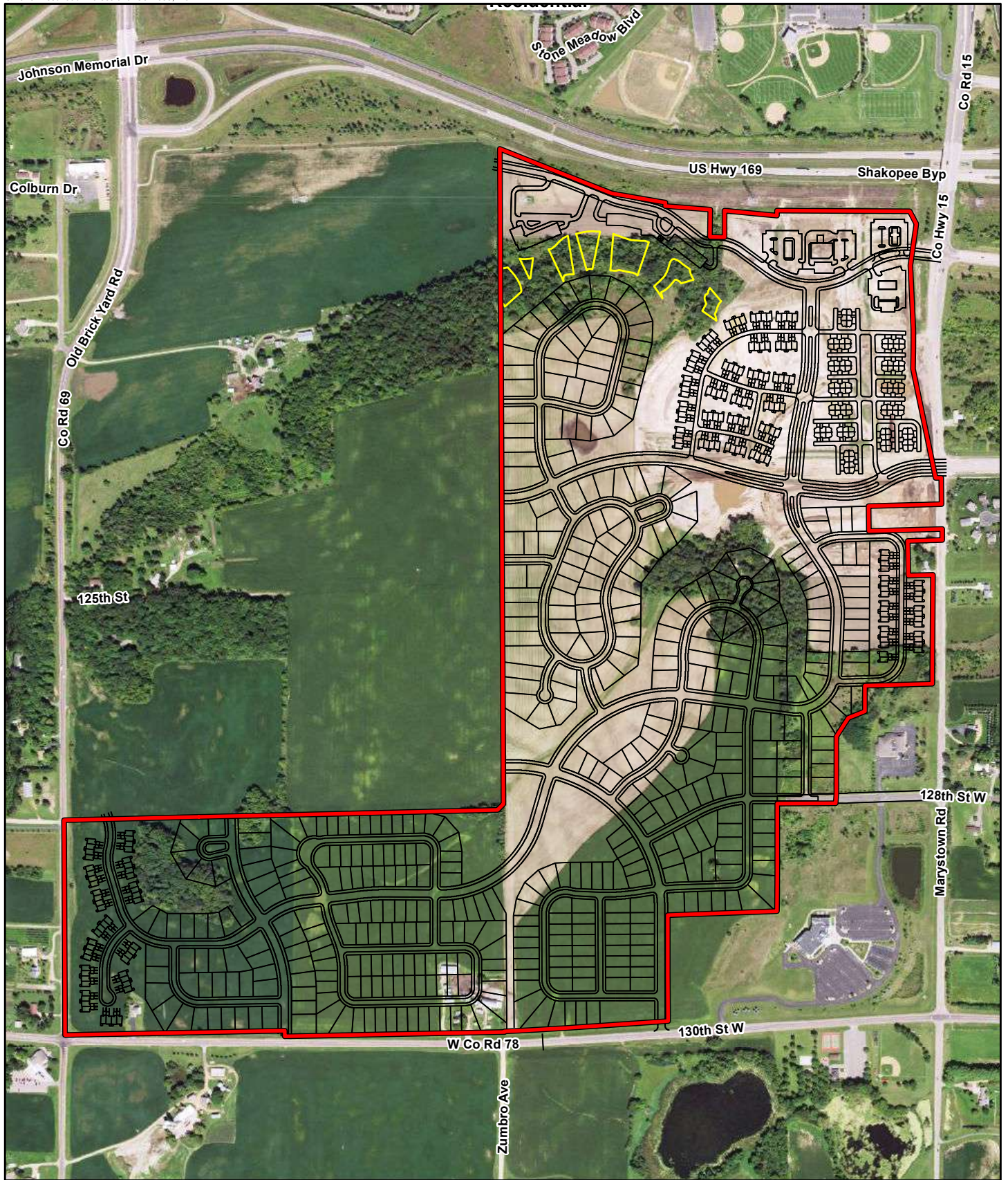
- Project Boundary
- County Boundary
- City/Township Boundary



0 3,500 Feet

Site Location

EXHIBIT 1



Data Source(s): Westwood (2018);
Minnesota NAIP Imagery (2017);
U.S. Census Bureau (2015/2017);
Google Maps (accessed 2018);
ESRI (2013).

Legend

- Project Boundary
- Bluff Line
- Preliminary Site Plan



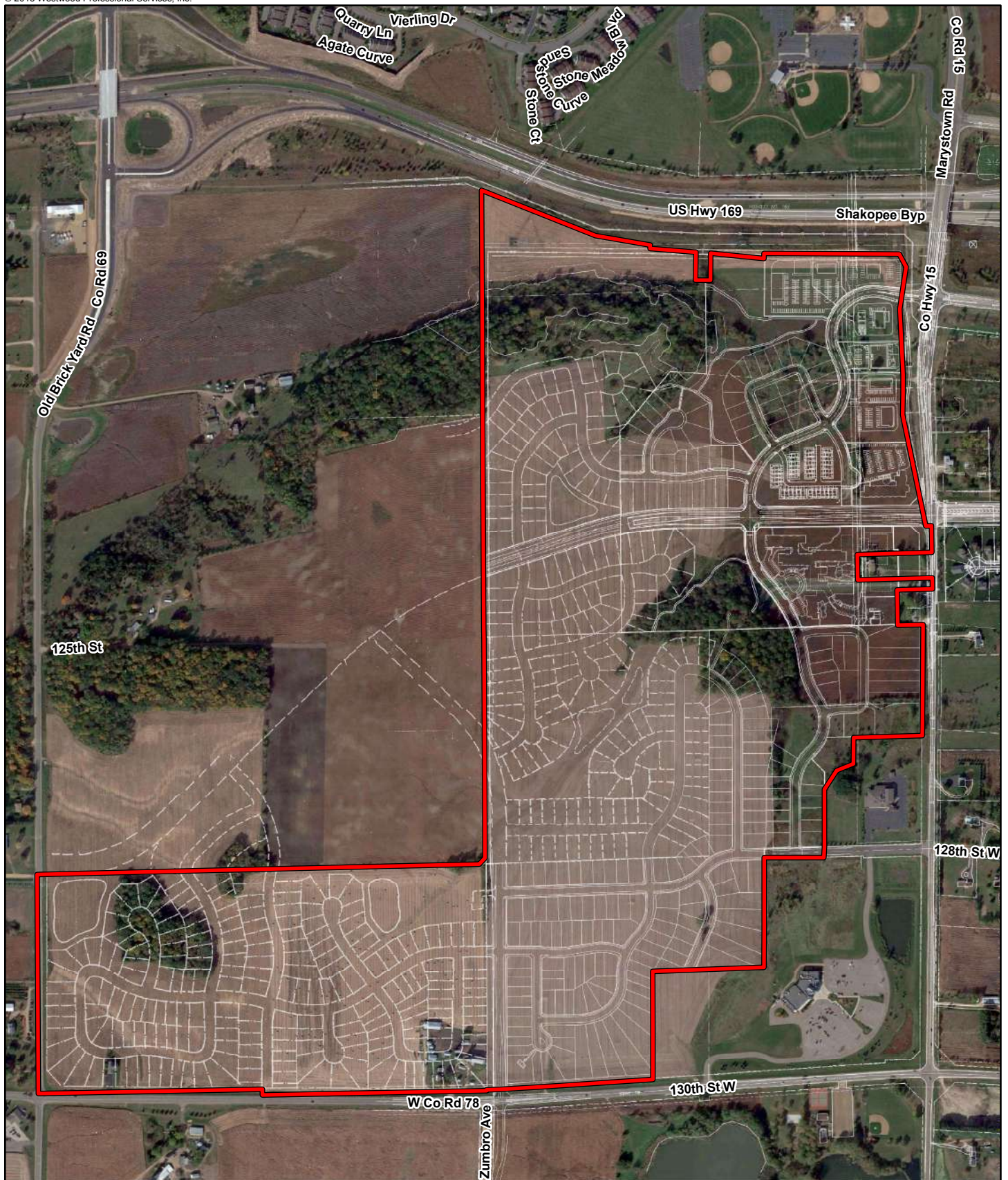
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The Bluffs at Marystown EAW

Shakopee, Scott County, Minnesota

Scenario 2 Preliminary
Site Plan

EXHIBIT 2



Data Source(s): Westwood (2018);
Minnesota NAIP Imagery (2017);
U.S. Census Bureau (2015/2017);
Google Maps (accessed 2018);
ESRI (2013).

Legend

 Project Boundary

The Bluffs at Marystown EAW

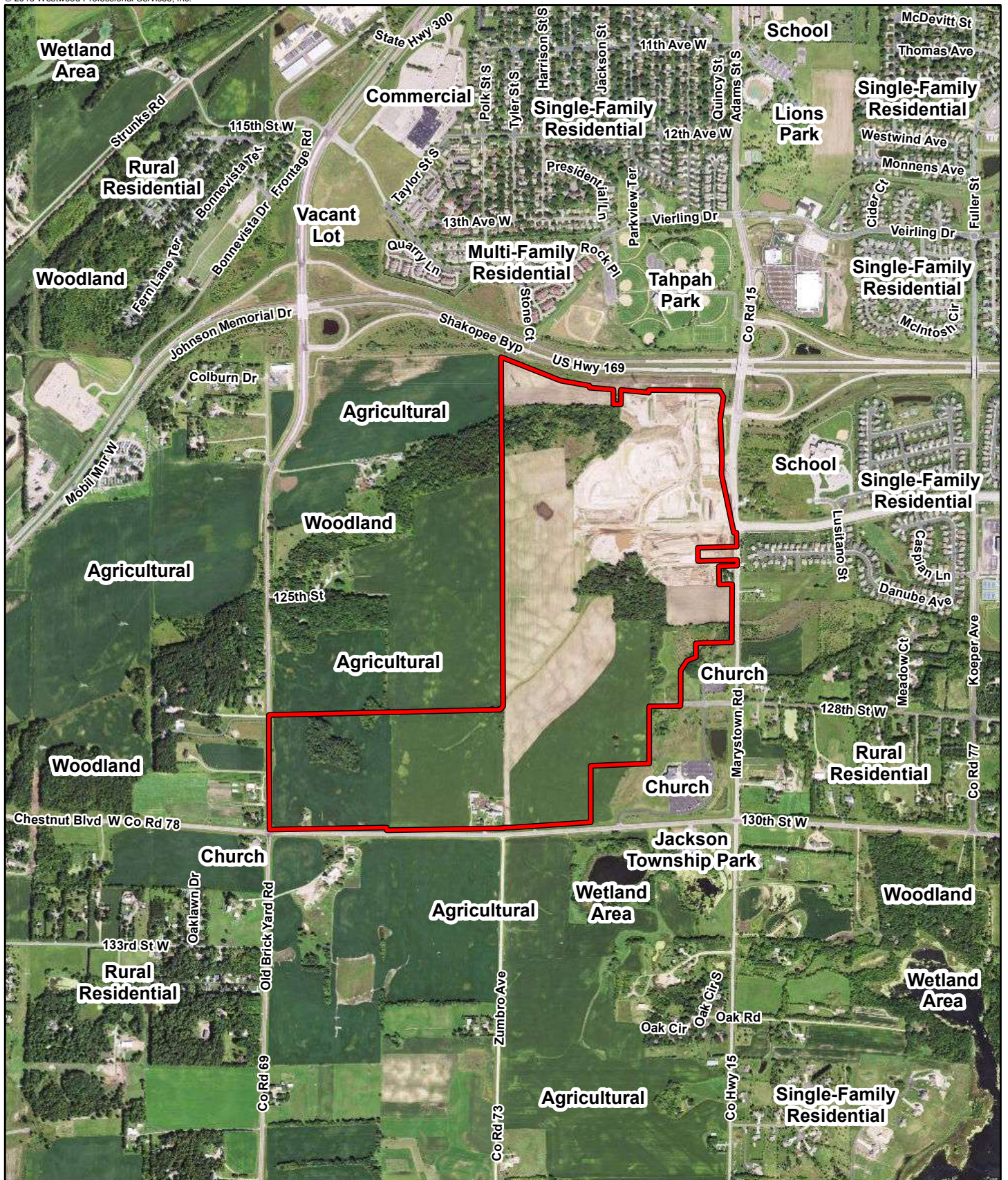
Shakopee, Scott County, Minnesota



0 800 Feet

2018 Proposed Site Plan

EXHIBIT 3



Data Source(s): Westwood (2018);
Minnesota NAIP Imagery (2017);
U.S. Census Bureau (2015/2017);
Google Maps (accessed 2018);
ESRI (2013).

Legend

Project Boundary



0 Feet
1,500

The Bluffs at Marystown EAW

Shakopee, Scott County, Minnesota

2018 Aerial Photography
& Land Use

EXHIBIT 4

Appendix A

2006 Approved EAW

The Bluffs at Marystown, Shakopee
Scott County, Minnesota

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Publication Date: January 29, 2007
Vol. 31, No. 3

Next Publication: February 12, 2007
Submittal Deadline: February 5, 2007

EQB MONITOR

ENVIRONMENTAL ASSESSMENT WORKSHEETS

EAW Comment Deadline: February 28, 2007

Project Title: Pete's Retreat

Description: Pete's Retreat is an existing 49-site campground located just north of Malmo, MN. The proposer plans to expand the campground by an additional 49 campsites (98 total). The entire site is located on 29 acres of previously agricultural/open land. Onsite sewer and water systems will service the expansion.

RGU: County of Aitkin

Contact Person:

Terry Neff, Environmental Services Director
209 Second St. NW
Aitkin, MN 56431
Phone: 218-927-7342
Fax: 218-927-4372
aitkinpz@co.aitkin.mn.us

The *EQB Monitor* is a biweekly publication of the Environmental Quality Board that lists descriptions and deadlines for Environmental Assessment Worksheets, Environmental Impact Statements, and other notices. The *EQB Monitor* is posted on the Environmental Quality board home page at <http://www.eqb.state.mn.us/>.

Upon request, the *EQB Monitor* will be made available in an alternative format, such as Braille, large print, or audio tape. For TTY, contact Minnesota Relay Service at 800-627-3529 and ask for Department of Administration. For information on the *EQB Monitor*, contact:

Minnesota Environmental Quality Board
658 Cedar St., 300 Centennial Office Building
St. Paul, MN 55155-1388
Phone: 651-201-2480
Fax: 651-296-3698
<http://www.eqb.state.mn.us>

Project Title: Drahos Northwoods Development

Description: The 149-acre Drahos Northwoods Development residential development is proposed in First Assessment Township and will include 50 single family units, including 20 1.5-acre riparian lots, 10 2-acre non-riparian lots, and 20 2.5-acre non-riparian lots. All proposed lots will be serviced by individual water wells and septic systems. Lots will be accessed by a public road system running north to south through the property with two public cul-de-sacs. Anyone wishing to submit comments on the EAW can request a copy of the document from Crow Wing County and send written comments to Ms. Bonnie Finnerty at the address below. Written comments on the EAW must be received by Crow Wing County by 4:30 p.m. on February 28, 2007.

RGU: Crow Wing County

Contact Person:

Bonnie Finnerty, County Planner
326 Laurel St.
Brainerd, MN 56401-3565
Phone: 218-824-1125
Fax: 218-824-1126

Project Title: Lowell Franzen Feedlot

Description: Lowell Franzen is proposing the construction of a new swine gestation and farrowing facility in Section 30 of Lyle Township in Mower County. The total confinement, mechanically ventilated facility will consist of a gestation barn with a maximum physical capacity of 4,064 sows (1,626 animal units), and a farrowing barn with a maximum physical capacity of 768 sows (307 animal units) and 1,280 nursery pigs (64 animal units). Manure will be collected in reinforced concrete pits located beneath the barns. Each spring and fall, the manure will be pumped from the facility and injected at agronomic rates into designated cropland as fertilizer.

RGU: Minnesota Pollution Control Agency

Contact Person:

Joel Fischer, Project Manager
Environmental Review and Operations Section
Regional Division
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155
Phone: 651-296-8643

Project Title: St. Michael/Albertville High School

Description: ISD 885 proposes to build a high school in St. Michael located on agricultural property southeast of County Road 18 and 60th St. NE. The proposed school will be constructed to accommodate 2000 students, and includes adjacent parking and athletic fields. The school is projected to open in fall 2009.

RGU: City of St. Michael

Contact Person:

Marc Weigle, Community Development Director
3150 Lander Ave. NE
PO Box 337
St. Michael, MN 55376
Phone: 763-497-2041 (x102)
Fax: 763-497-5306
mweigle@ci.st-michael.mn.us

Project Title: Hennepin Village Roadway Alternatives

Description: The city of Eden Prairie is considering closing or rerouting the intersection of Eden Prairie Road and Flying Cloud Drive. Six roadway alternates are being considered to provide for traffic flow and adequate emergency access. One of the alternates is a new crossing of Riley Creek upstream of Miller Spring.

RGU: City of Eden Prairie

Contact Person: Scott Neal, City Manager

8080 Mitchell Road
Eden Prairie, MN 5344
Phone: 952-949-8300
Fax: 952-949-8326
communications@edenprairie.org

PETITIONS FILED

The following petitions have been filed with the EQB requesting preparation of an EAW. The EQB has assigned the indicated unit of government to review the petition and decide on the need for an EAW.

- City of Mahtomedi, Municipal Storm Sewer & Drainage project, south shore of Lost Lake
- St. Louis County, Big Lake Wilderness Lodge project
- Minnesota Pollution Control Agency, Home Farms Technology Gasification System & Renville County Landfill Expansion

EAW NEED DECISIONS

The noted responsible governmental unit has made a decision regarding the need for an EAW in response to a citizen petition.

- Cannon Falls City Council, Minnesota Malting property, January 11, 2007 (Denied)
- Red Wing City Council, Harbor View, January 10, 2007 (Ordered)

EIS ORDERED

Decision on Environmental Assessment Worksheet for Ryan Contracting Company Mining and Excavation Project

On January 16, 2007, the Prior Lake City Council reviewed the Environmental Assessment Worksheet 9EAW) for the Ryan Contracting proposal located in Prior Lake. Based on the criteria listed in Minnesota Rules 4410.1700, Subd. 7, the Council determined there is a need for additional environmental review on this project. The city council ordered the preparation of an Environmental Impact Statement (EIS) to address the following issues:

- a) Effects from additional traffic and number and size of the trucks on the adjacent roadway;
- b) Effect on the safety of people traveling in the vicinity with those trucks;
- c) Effects of higher noise decibels;
- d) Health effects of dust and diesel for a continuous four-year period on the church and the elderly who will be living there;
- e) Effect on surface water and groundwater in the vicinity;
- f) Effect on the SMSC drinking water supply that is within 100 yards of this area;
- g) Effects of stacking of trucks and accessing CSAH 42 from McKenna Road without traffic light;
- h) Potential enforcement issues as it relates to traffic generated by the mining operation on the other users in the area.

If you have any questions about this matter, please feel free to contact Jane Kansier, AICP, Planning Director at 952-447-9812.

EIS NEED DECISIONS

The responsible governmental unit has determined the following projects do not require preparation of an EIS. The dates given are, respectively, the date of the determination and the date the EAW notice was published in the *EQB Monitor*.

- Waseca County Board, Clear Lake Trail with CSAH 13 & 4 Reconstruction, January 16, 2007, (November 20, 2006)
- Douglas County, Improvements to County State Aid Highways 42, 11, 34, Douglas County, January 9, 2007 (September 25, 2006)
- Minnetonka City Council, Data Park Expansion, November 20, 2006 (September 25, 2006)
- Lino Lakes City Council, Nature's Refuge, January 8, 2007 (October 23, 2006)
- City of Shakopee, The Bluff at Marystown, January 2, 2007 (April 24, 2006)

DRAFT AUAR AVAILABLE

Project Title: Sartell Section 34 & 35 Development Area AUAR

Description: The AUAAR describes multiple scenarios for developing a 186-acrs parcel that includes up to 824 residential housing units, up to 580,000 sq. ft. of commercial development, and appropriate open spaces.

RGU: City of Sartell

Contact:

Anita Rasmussen, Community Development Director
125 Pine Cone Road No.
PO Box 140
Sartell, MN 56377
Phone: 320-258-7306
Fax: 320-253-3337
anita@sartellmn.com

AUAR ADOPTED

Project Title: Creekside Development Final AUAR—City of Sauk Rapids, MN

Description: The Sauk Rapids City Council approved the Final Alternative Urban Areawide Review (AUAR) for Creekside Development at their City Council meeting on Monday, January 22, 2007.

The Creekside AUAR study area consists of approximately 692 acres of land located north of County Road 3 and east of County Road 1 in the City of Sauk Rapids and Minden Township, Benton County, MN.

Contact Person:

Ross Olson, City Administrator
115 2nd Ave. No.
Sauk Rapids, MN 56379
Phone: 320-258-5302
rolson@ci.sauk-rapids.mn.us

FINAL EIS ADEQUACY DECISION

Project Title: 3 Bays on Vermilion

St. Louis County prepared an Environmental Impact Statement (EIS) for 3 Bays on Vermilion, a residential subdivision proposed by U.S. Steel Corporation (USS). USS proposes a subdivision of up to 170 single-family residential lots on approximately 1,400 acres of property on the south shore of Lake Vermilion in the town of Breitung, approximately two miles east of the city of Tower.

A Scoping Environmental Assessment Worksheet and a draft Scoping Decision were prepared to identify the issues and alternatives that would be addressed in the EIS. A notice of the availability of the scoping documents was published in the *EQB Monitor* on February 14, 2005. A public scoping meeting was held on Thursday, March 17, 2005 in the council chambers of the Biwabik city hall. A final Scoping Decision was issued and the EIS preparation notice was published in the *EQB Monitor* on August 1, 2005.

The Draft EIS was prepared to address the issues and alternatives raised in scoping and identify reasonable mitigation measures for identified adverse effects. Public meetings were held in Tower on December 6, 2005 and March 30, 2006 to solicit input during preparation of the Draft EIS. The Draft EIS notice of availability was published in the *EQB Monitor* on May 22, 2006. A public information meeting was held on June 22, 2006, and comments were accepted on the Draft EIS through July 7, 2006.

St. Louis County prepared a Final EIS, which included responses to all comments received during the Draft EIS review period. The Final EIS notice of availability was published in the *EQB Monitor* on December 18, 2006. St. Louis County accepted comments on the adequacy of the Final EIS through January 23, 2007. St. Louis County received five comments during the Final EIS review period.

On January 23, 2007, pursuant to the criteria prescribed in Minnesota Rules part 4410.2800, subpart 4, the St. Louis County Board determined the EIS is adequate. St. Louis County prepared a record of its decision and distributed it to all parties receiving copies of the Final EIS.

The contact person at St. Louis County is: Scott Smith, Physical Planning Manager, St. Louis County Planning Department, 100 Missabe Building, 227 West First St., Duluth, MN 55802; 218-725-5005.

DRAFT EIS AVAILABLE

Project Title: The Minnesota Urban Ballpark

Description: Hennepin County has prepared a state Draft Environmental Impact Statement (EIS) for the proposed construction of the Minnesota Urban Ballpark, a new 42,000 seat (maximum), open-air baseball stadium for use by the Minnesota Twins. The Project includes the Ballpark structure and associated infrastructure improvements surrounding the Ballpark Site. The Project Area is located one block northwest of the Target Center in Downtown Minneapolis, Hennepin County, Minnesota.

Hennepin County will accept comments on the Draft EIS during the public review and comment period that concludes March 6, 2007. Written comments should be submitted to Chuck Ballentine, Deputy Coordinator, Hennepin County, Hennepin County Ballpark Project Office, 390 Grain Exchange Building, 400 South Fourth Street, Minneapolis, Minnesota 55415. Comments may also be submitted via the Hennepin County website (<http://www.co.hennepin.mn.us>). Please click on the "On Deck" section of the Hennepin County website to submit comment.

Hennepin County will hold a public informational meeting for the purpose of considering public comments on the Draft EIS. The public meeting will be held on Tuesday, February 20, 2007 beginning at 2:30 pm in the Hennepin County Board Room, 24th Floor, Hennepin County Government Center, 300 South Sixth Street, Minneapolis, Minnesota 55487. Verbal and written comments on the Draft EIS will be accepted at the meeting.

Public review copies of the documents are available at all City of Minneapolis Public Libraries. The Central Library, located at 300 Nicollet Mall, Minneapolis, will have both a hardcopy version and an electronic version of the Draft EIS available. The other 14 Minneapolis Public Libraries will have electronic copies of the document available.

Public review copies of the Draft EIS will also be available at the Hennepin County Ballpark Project Office, 390 Grain Exchange Building, 400 South Fourth Street, Minneapolis; Hennepin County Environmental Services Building, 417 N. 5th Street, Suite 320, Minneapolis; and Minneapolis City Hall, 350 South Fifth Street, Minneapolis.

The document is also posted on the “On Deck” section of Hennepin County’s website at <http://www.co.hennepin.mn.us>

There are limited hardcopy versions of the Draft EIS available; however a CD-version of the full Draft EIS is available upon request by calling the Hennepin County Ballpark Project Office at 612-543-7275.

RGU Contact Info:

Chuck Ballentine
Deputy Coordinator
Hennepin County Ballpark Project Office
390 Grain Exchange Building
400 South Fourth Street
Minneapolis, MN 55415

612-543-7275

chuck.ballentine@co.hennepin.mn.us

NOTICES

Minnesota Department of Agriculture

Notifications of Release of Genetically Engineered Organisms

File Number	Company	Crop	Project	County
07-NO-002	Sygenta	Sugarbeet	Virus Resistance	Polk, Clay
07-NO-003	Monsanto	Canola	Herbicide Tolerance	Polk

For more information contact Mary Hanks, Minnesota Department of Agriculture, 625 Robert St N., St. Paul, MN 55155, 651/201-6277, mary.hanks@state.mn.us.

EQB Monitor Publication Calendar for 2007

Volume Number	Deadline for Submission	Publication Date	EAW Comment Deadline
31-1	December 22, 2006	January 1, 2007	January 31, 2007
31-2	January 8, 2007	January 15	February 14
31-3	January 22	January 29	February 28
31-4	February 5	February 12	March 14
31-5	February 16 (Friday)	February 26	March 28
31-6	March 6	March 12	April 11
31-7	March 19	March 26	April 25
31-8	April 2	April 9	May 9
31-9	April 16	April 23	May 23
31-10	April 30	May 7	June 6
31-11	May 14	May 21	June 20
31-12	May 25 (Friday)	June 4	July 4
31-13	June 11	June 18	July 18
31-14	June 25	July 2	August 1
31-15	July 9	July 16	August 15
31-16	July 23	July 30	August 29
31-17	August 6	August 18	September 12
31-18	August 20	August 27	September 26
31-19	August 31 (Friday)	September 10	October 10
31-20	September 17	September 24	October 24
31-21	October 1	October 8	November 7
31-22	October 15	October 22	November 21
31-23	October 29	November 5	December 5
31-24	November 9 (Friday)	November 19	December 19
31-25	November 26	December 3	January 2, 2008
31-26	December 10	December 17	January 16, 2008
31-27	December 24	December 31	January 30, 2008

Memorandum

To: *Honorable Mayor and City Council, City of Shakopee*

From: *Andrea Moffatt, WSB*

Date: *December 26, 2006*

Re: *The Bluffs at Marystown
Environmental Assessment Worksheet
WSB Project No. 1281-93*

The public comment period for The Bluffs at Marystown Environmental Assessment Worksheet (EAW) ended May 24, 2006. The purpose of the EAW is to identify potential environmental impacts and determine whether or not an Environmental Impact Statement (EIS) is required. An EIS is a more extensive environmental review process. Determining whether or not an EIS is needed does not relate to providing approval or denial for the project.

Based on the information in the EAW and review agency comments regarding the EAW, the project does not have the potential for significant environmental impacts that cannot be addressed as part of the permitting process. Therefore, it is our recommendation that an EIS is not required.

Enclosed, please find the following items for your review relating to this EAW:

- Draft memo dated December 26, 2006 to the review agencies responding to comments received on the EAW (hereby referred to as the comment/response memo). This memo restates the agencies' comments and then responds to each issue.
- The Findings of Fact on the need for an Environmental Impact Statement (EIS).
- A copy of the agencies' comment letters.
- Draft resolution relating to a Negative Declaration of Need.

Summary of Major Comments

As part of the public comment period, comments were received from the US Corps of Engineers, Scott County Public Works, Shakopee Environmental Advisory Council, and the Department of Natural Resources. Outlined below is a brief summary of only the major issues provided in the review agency comments:

1. Scott County had additional questions and concerns regarding traffic impacts in the area. These comments were addressed with some additional analysis. Further, coordination

with the County and City will be needed to obtain right-of-way as the project moves forward in the area.

2. The EAC requested additional background information that has been provided in comment/response memo. Additionally, some of their questions will need to be addressed during the platting process.
3. The DNR noted that the Shakopee Public Utility Commission may need to obtain a DNR water appropriation permit to supply water to this development. The EAW notes this permit requirement as well.

City Council Decision Action

Action on the need for an EIS for this project has been delayed to complete the annexation process and obtain Metropolitan Council approval of the City's Comprehensive Plan for the study area. Since these activities have been completed, the City is officially the Regulatory Government Unit (RGU) for the study area and can move forward with an action on the EAW.

The decision before the City Council regarding the EAW is to decide whether or not the project has the potential for significant environmental impacts that cannot be addressed through the permitting processes. If the Council determines that the project does not have the potential for these significant environmental impacts, the Council should issue a Negative Declaration of Need for an EIS. If the Council determines that the project does have the potential for significant environmental impact that cannot be addressed through the permitting and approval process, the Council should require an EIS. Based on our review, it is our recommendation that an EIS is not needed for this project.

If you have any questions, please feel free to call me at (763)287-7196.

Attachments

cc. Michael Leek, City of Shakopee
Mike Suel, DR Horton
David Weetman, Westwood Professional Services

RESOLUTION NO. 6555

A RESOLUTION OF THE CITY OF SHAKOPEE, MINNESOTA, MAKING A NEGATIVE FINDING ON THE NEED FOR AN ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR THE PROJECT GENERALLY KNOWN AS "THE BLUFFS"

WHEREAS, the preparation of The Bluffs at Marystown EAW and comments received on the EAW have generated information adequate to determine whether the proposed project has the potential for significant environmental impacts; and

WHEREAS, the EAW has identified areas where the potential for significant environmental effects exist, but appropriate measures have or will be incorporated into the project plan and/or permits to reasonably mitigate these impacts; and

WHEREAS, The Bluffs at Marystown development is expected to comply with all the City of Shakopee and review agency standards; and

WHEREAS, based on the criteria established in Minnesota R. 4410.1700, the project does not have the potential for significant environmental effects; and

WHEREAS, based on the Findings of Fact and Conclusions, the project does not have the potential for significant environmental impacts.

NOW, THEREFORE, BE IT RESOLVED, the City of Shakopee has determined that an Environmental Impact Statement is not required.

Adopted by the Shakopee City Council this ____ day of _____, 2007.

Mayor

ATTEST:

City Clerk

Memorandum

To: Judi Kolb, US Corps of Engineers
Craig Jenson, Scott County Public Works
Ryan Hughes, Shakopee Environmental Advisory Committee
Joseph Kurcinka, Department of Natural Resources

From: Michael Leek, City of Shakopee
Andrea Moffatt, WSB & Associates

Date: December 26, 2006

Re: The Bluffs at Marystown EAW
Responses to Comments
WSB Project No. 1281-93

The public comment period for the Bluffs at Marystown Development residential development Environmental Assessment Worksheet (EAW) ended May 24, 2006. Comments were received from the US Corps of Engineers, Scott County Public Works, and the Shakopee Environmental Advisory Committee. Comments were received from the Department of Natural Resources after the comment period on June 7, 2006. The Shakopee City Council delayed final action on the EAW until the annexation of the site occurred. Outlined below, please find the comments from each agency followed by responses to these comments. The comment letters are also attached for your information.

Comments from US Corps of Engineers

Comment #1: [See specific letter for background information.] If the proposal involves deposition of dredged or fill material into water of the United States, including discharges associated with mechanical land clearing, it may be subject to COE jurisdiction under Section 404 of the Clean Water Act. CWA prohibits discharges of dredged or fill material into waters of the United States, unless the work has been authorized by a Department of the Army permit under Section 404.....

Response: There is one wetland on the site and it is not anticipated to be impacted. However, the project proposed will be required to obtain all necessary permits from the regulatory agencies, including the US Corps of Engineers, if wetland impact will occur.

Comments from the Scott County Public Works Department

Comment #1: The traffic study assumes that an interchange will be constructed at TH 169 and CR 69 by 2015. We are not aware of any funding for the construction of an interchange at this location. An analysis should be conducted for the build and no build scenarios that do not assume an interchange at TH 169 and CR 69.

Response: The additional analysis requested has been completed. Please reference the memorandum named *Traffic Study for the Proposed Bluffs at Marystown Residential Development – Update*, prepared by SRF Consulting Group, dated August 8th, 2006.

Comment #2: The traffic study reveals that three intersections (CSAH 15/TH 169 north ramp, south ramp, and CSAH 15/17th Avenue) operate at poor level of service. A recommendation of the EAW traffic study is for installation of traffic signals in order to maintain the desired level of service. We recommend that an analysis be completed to determine if installation of single or dual lane roundabouts at these locations could maintain the same desired level of service.

Response: The additional analysis requested has been completed. Please reference the memorandum named *Traffic Study for the Proposed Bluffs at Marystown Residential Development – Update*, prepared by SRF Consulting Group, dated August 8th, 2006.

Comment #3: As property in Jackson and Louisville Township is developed with urban densities the traffic along CSAH 15, CSAH 78, and CR 69 will steadily increase. We recommend right-of-way be preserved for the future to accommodate a minimum a four-lane divided design on all County roads (75 feet from centerline).

Response: The City has an established and utilized policy and practice for preserving right-of-way for future use as new areas are annexed into the City and new development is approved. Until properties in Jackson Township are annexed, however, it will be important that the County and Township take steps to preserve right-of-way for the desired design for County roads.

Comment #4: Zumbro Avenue/CR 73 is a 5 mile road with a connection to TH 282, and will likely serve as a major collector for the City in the future. We recommend a direct connection is made between Zumbro and 17th Avenue.

Response: While the City of Shakopee and Jackson Township have an orderly annexation agreement, the Jackson Township Board has indicated to the City that it has no present interest in properties south of CSAH 78 (including the area described in the comment) brought within the City's jurisdiction. Unless and until the area is in the City's jurisdiction, it will be incumbent on the County to work with Jackson Township to make sure that such a connection is made.

Comment #5: CSAH 78 is currently an A Minor Arterial, and it likely will become a Principal Arterial with ½ mile full access spacing in the future. The accesses as shown in the EAW will not meet long term access spacing. The current Friendship Church access is approximately ¼ mile from CSAH 15 and would likely be made a right in/out when CSAH 78 is upgraded to a divided roadway. We recommend a road is provided to the church from the ½ mile long term full access location at Zumbro Avenue.

Response: The City will continue to work with Scott County and developers of the subject property to make sure that a future project is approvable under the County's access spacing guidelines.

Comment #6: The County is opposed to having another school site adjacent to CSAH 78. As mentioned previously, CSAH 78 will likely be a future Principal Arterial carrying a high amount of regional traffic. This will create significant pedestrian issues depending on how the property south of CSAH 78 develops in the future. The school site location should be located within the development as a neighborhood focal point and not adjacent to high speed county roadways. Moving the school location away from county roads will also allow greater local control of speed limits and pedestrian patterns.

Response: Because of the number of County roads and collector streets that criss-cross Shakopee and Jackson Township, and because of the limited number of parcels available in the marketplace for school purposes, it is extremely difficult to locate a school that is not adjacent to County roads or other higher speed roads. Moreover, simply moving school sites to a site not adjacent to County roads does nothing to solve the underlying high-speed and pedestrian issues. Pedestrians trying to access a relocated school site from the south and east would still have to cross CSAH's 78 and 15 respectively. Schools may indeed serve an important purpose as a focal point for neighborhoods, but that does not necessarily dictate a location in the center of a residential neighborhood, as that poses its own traffic issues.

Comment #7: Noise issues will increase in the area as traffic levels increase. The EAW does not mention noise generated from the surrounding roadways and their impact on the proposed land uses or how to mitigate these issues. We recommend a noise study is completed that considers state and federal noise standards. Noise attenuation is the responsibility of the City and developer.

Response: A specific noise study is required as a part of the City's Planned Unit Development (PUD) and platting process.

Comment #8: The EAW traffic study mentions that 17th Avenue could fit the criteria for a County road between CSAH 15 and CSAH 69. The County feels that the jurisdiction of this road segment should be under the County jurisdiction in the long term. County jurisdiction of 17th Avenue would come with greater/restrictive standards which will result in changes to the site plan. County jurisdiction standards that would need to be met are as follows:

- 1/4 mile full access spacing and 1/8 mile right in/out.
- Minimum 45 MPH design from CSAH 15 to CSAH 69
- Preservation of 150' total corridor width

The County is willing to discuss the ultimate design of the road and how these standards can be accomplished provided the long-term needs are being preserved. A design of 17th Avenue will need to be created for the entire length between CSAH 15 and CR 69.

Response: Whether the stretch of 17th Avenue between CSAH 15 and CSAH 69 needs to be under the County's jurisdiction is an issue that must be worked out between the City and the County. The City of Shakopee has thus far been of the opinion, in part because it would not connect directly to TH 169 that the specific segment would serve more of a local collector than arterial function. Without a specific development proposal to move forward,

and unless the County is willing to move forward with a public improvement project for that roadway segment, the opportunity to arrive at a final design is somewhat limited.

Comments from City of Shakopee Environmental Advisory Committee:

Comment #1: Question 6.a. and Questions 6.b.

The EAC requested more detailed information related to the proposed land use, development, and impact. This included the following requested exhibits:

- Phasing plan for the development, specifically a map showing the proposed phases of the project and a statement related to the maximum amount of exposed land for each phase of the development.
- Development plan overlaid on existing zoning/land use guiding map.
- Development plan overlaid on Natural Resource Corridor map.
- Development plan overlaid on existing high-pressure gas line and high voltage transmission line easements.
- Development plan with all parks, open space, and storm water ponding areas color-coded for better visibility.

Response: A concept phasing map has been developed and it attached. Phase 1 is the largest phase of the development and would expose a maximum of 90 acres of land. As stated in Item 16 of the EAW, application for coverage under the NPDES General Permit will be submitted to the MPCA prior to initiating grading on the site.

The following maps have also been developed and are attached for your information:

- Land use guide map showing the concept plan development
- Natural Resource Corridor map with concept plan development. It should be noted that based on field review and information from the City, the "DNR Stream" that is shown on the figure is inaccurate – there is no DNR stream in this location.
- Easement mapping with concept plan development.
- Concept level plan with parks, open space and ponding

Comment #2: Questions 6.c., Question 9 and Question 27. In question 6 c. the area is determined to be guided for low, medium, and high density residential and commercial uses. In question 9 and 27, the area is determined to be guided for low- and medium- density residential and commercial uses. Please clarify in the text and provide a guided land use map. Additionally, what type of commercial is the site guided.

Response: The City's Comprehensive Plan guides the area for commercial, low, medium, and high density residential development. The land use map is attached. There are two possible scenarios evaluated as part of this EAW, depending on whether the school is constructed. The proposed development plan includes low density development throughout most of the site with some areas of medium density and high density (likely senior housing). The commercial area is proposed near TH169. The proposed commercial has been guided as Neighborhood Commercial. Proposed uses may include businesses such as a gas station

convenience store, a bank, a fast food restaurant, and a drug store. The gas station would require a Conditional Use Permit in a Neighborhood Commercial area.

Comment #3: Question 7, Question 25, and Question 26. According to the building height information the site may contain four story condominiums. This event was not addressed in *Item 25: Scenic Views and Vistas* or *Item 26: Visual Impacts*. Please clarify the impacts of the proposed four story condominiums. In addition, please identify the proposed location of the four story condominium units and their compliance with the planned land use for that area.

Downtown Shakopee and the Minnesota River bluffs can be viewed from various locations within the proposed Bluffs at Marystown development. The view from the proposed project should be noted and the question should be checked yes. The conversion of this area to residential/commercial will change the current view from downtown Shakopee. Additionally, how will this view be compromised with the potential construction of four story condominiums (See Question 7 – Building Height), and lighting from the proposed commercial area? Please address these concerns and question.

Response: The condominiums have the potential to be four stories. Based on the item-by-item guidance for the EAW, a scenic view would be a spectacular viewing point along a lake, river, bluff, waterfalls, etc. These areas could include state designated viewing areas, but can also include areas of local interest. The analysis of this item is highly subjective in nature. If the EAC believes that this area provides a spectacular view of the area, a four-story building could have impact on that viewshed. The condominiums would be located closer to TH169 and Marystown Road, with single-family homes throughout the remaining areas.

Comment #4: Questions 10 and Question 16. According to Table 10.1 the site currently contains 34.6 acres of woodlands and the developer proposes to preserve 21.0 acres of woodlands for Scenario 1 and Scenario 2. In question 16, Scenario 2 proposes to grade approximately 304 acres of the 322.98 acres, which preserves only 18.98 acres of land. The number in Table 10.1 and calculations in Question 16 are not consistent. Please clarify.

Response: Calculations of woodland impacts are approximate and are consistent between Scenarios 1 and 2. The Concept Site Plan shows removal of approximately 55% of the existing trees; however, efforts will be made by the City and developer to minimize woodland impacts and preserve those areas with high quality species. A tree survey will be conducted prior to submitting the preliminary plat, which will aid in identifying areas where impacts should be minimized.

The City requires tree replacement based on the quality of the trees proposed to be removed as a result of development activities. The developer will comply with the City's Woodland and Tree Management Ordinance and Guidelines for Builders. In addition, the builder has indicated that they will plant trees along streets, open spaces, ponding areas, buffer areas along major roadways, and on lots within the development.

Comment #5: Question 11.a. This section does not discuss the quality of trees and woodlands, which is how the current Tree and Woodland Ordinance determines the replacement requirements for trees or woodlands removed. Please discuss the quality of the trees and woodlands on site and provide a map showing these areas and where tree removals are anticipated to occur.

Response: The developer has submitted additional information related to responding to this question. A map identifying the different wooded areas on the site is included along with a description of the field review of the site. This can be further reviewed as part of the platting process.

Comment #6: Question 11.b. The last two sentences of this section should not be included in the EAW unless evidence to support them is also included. The statement that the open space and parkland "will" provide a natural connection through the site and promote wildlife movement and access to other open space areas and parks can not be definitively determined nor is supporting evidence included. Additionally, to state that these measures are expected to "mitigate adverse effects" on some wildlife does not have supporting evidence. Please discuss the evidence to support these statements.

Response: The site is predominantly agricultural. There are approximately 34 acres of existing wooded area within the site. While there is one wetland on site, it does not provide significant habitat for the area. The type of wildlife that could exist here would include species that have adapted to agricultural settings. As the EAW states, it is anticipated the development will lead to a decline in the wildlife that use the site. Any development would be required to meet the City's standards for park dedication and greenway preservation. By dedicating parks and open space, this can assist in mitigating for impacts of development on wildlife. Due to the highly disturbed nature of most of the site, this impact on wildlife is not anticipated to be regionally significant. However, the cumulative impact of this development and other development within the City does have an impact on wildlife by displacing species that cannot adapt or by leading to species decline.

Comment #7: Question 12 and Question 17. Please provide minor watershed figure detailing the current and proposed watershed and drainage directions for water entering the site and leaving the site. The proposed storm pond locations are to be included on the proposed conditions figure.

Response: A watershed map for the area based on the existing conditions is attached for your information. A map of the proposed conditions is not currently available. This information will be required as part of the platting process. Any development in the area will be required to meet ponding and infiltration requirements of the City.

Comment #8: Question 16. Please provide a figure showing the proposed areas to be graded with the soils identified on Table 16.1 also shown on the figure. The Environmental Advisory Committee would like to evaluate whether PHEL and HEL will be disturbed on site.

Response: A figure showing the soils and the PHEL and HEL classifications is attached for your information.

Question #9: Question 17.a. – Water Quantity. Please provide more detail pertaining to stormwater leaving the site and how the existing conditions provide treatment prior to discharge in to the Minnesota River.

Response: The information provided in the EAW is the most detailed information currently available. More detailed stormwater analysis will be required with preliminary plat. The existing conditions do not provide treatment prior to discharge to the river. The area flows overland directly to the Minnesota River. More detail will be required with plat submittal. Also, the development will be required to conform to the requirements of the City for treatment, rate, control and infiltration.

Question #10: Question 19.c. – Potential for Groundwater Contamination. Please provide a copy of the portion of the *Geologic Atlas of Scott County, Minnesota (1989)* or evidence supporting the statements “The high sensitivity category indicates that the estimated vertical travel time for water-borne surface contaminants to reach groundwater 50 feet below the land surface is weeks to years.”

Response: The pollution sensitivity map of the *Geologic Atlas of Scott County, Minnesota (1989)* indicates that the sensitivity of groundwater to pollution is high. According to *Groundwater Pollution Sensitivity* (MnDNR, 2006), the High sensitivity category indicates that the estimated vertical travel time for water at or near the surface to the water table or other groundwater of interest is weeks to years..

Question #11: Question 19.c. – Groundwater Protection and Mitigation Measures. The statement “The Bluffs of Marystown project will offer a higher level of groundwater protection than exist under current conditions” is speculative and can not be guaranteed. Please provide scientific evidence to support this conclusion or consider revising.

Response: The City agrees that this is speculative; however, it is based on information from other development and agricultural activities in the state. Chemicals used in farming practices are either taken up by plants, run off the land, or are infiltrated into the land. In many areas of the state, groundwater is contaminated by nitrates in agricultural areas. The conversion of the land use will eliminate the agricultural chemicals. Storm water will be treated prior to infiltrating into the ground. While there is no quantitative analysis available for this development, it is anticipated that the potential for groundwater contamination will not be a significant environmental issue.

Question #12: Question 24 – Noise. Will a Noise Study be completed for the proposed project, and specifically, what mitigation measures are anticipated to address noise in the multi-family and commercial sections, if any?

Response: A specific noise study is required as a part of the City’s Planned Unit Development (PUD) and platting process.

Comment #13: The Environmental Advisory Committee requested that the economic impacts and what entity will be impacted or responsible from this development be detailed in a table. For example impacts to the school system, fire department, police department, department responsible

for utilities, City Services, etc. Please provide detailed information on these impacts, estimated costs, and who is responsible for paying for the improvement in a table format.

Response: A detailed economic analysis is beyond the scope of an EAW.

Comment from the Department of Natural Resources

Comment #1: Physical Impacts to Water Resources (Item No. 12). This item describes a very small (1,484 square foot) seepage wetland on the site at the base of the bluff. It is not a public waters wetland. The EAW indicates that the wetland will not be affected by the proposed development. If the wetland is indeed associated with a groundwater discharge, the affects of developing the upland (grading, increasing impervious surfaces, turf establishment) may result in the reduction of groundwater recharge to a point at which the seepage is affected.

Response: It is recognized that upstream land cover changes can have impacts on groundwater discharge wetlands. Any development in this area is required to infiltrate a portion of the treated storm water runoff in conformance with the Scott WMO rules. Indirect impacts to the on-site wetland will be evaluated as part of the preliminary plat process.

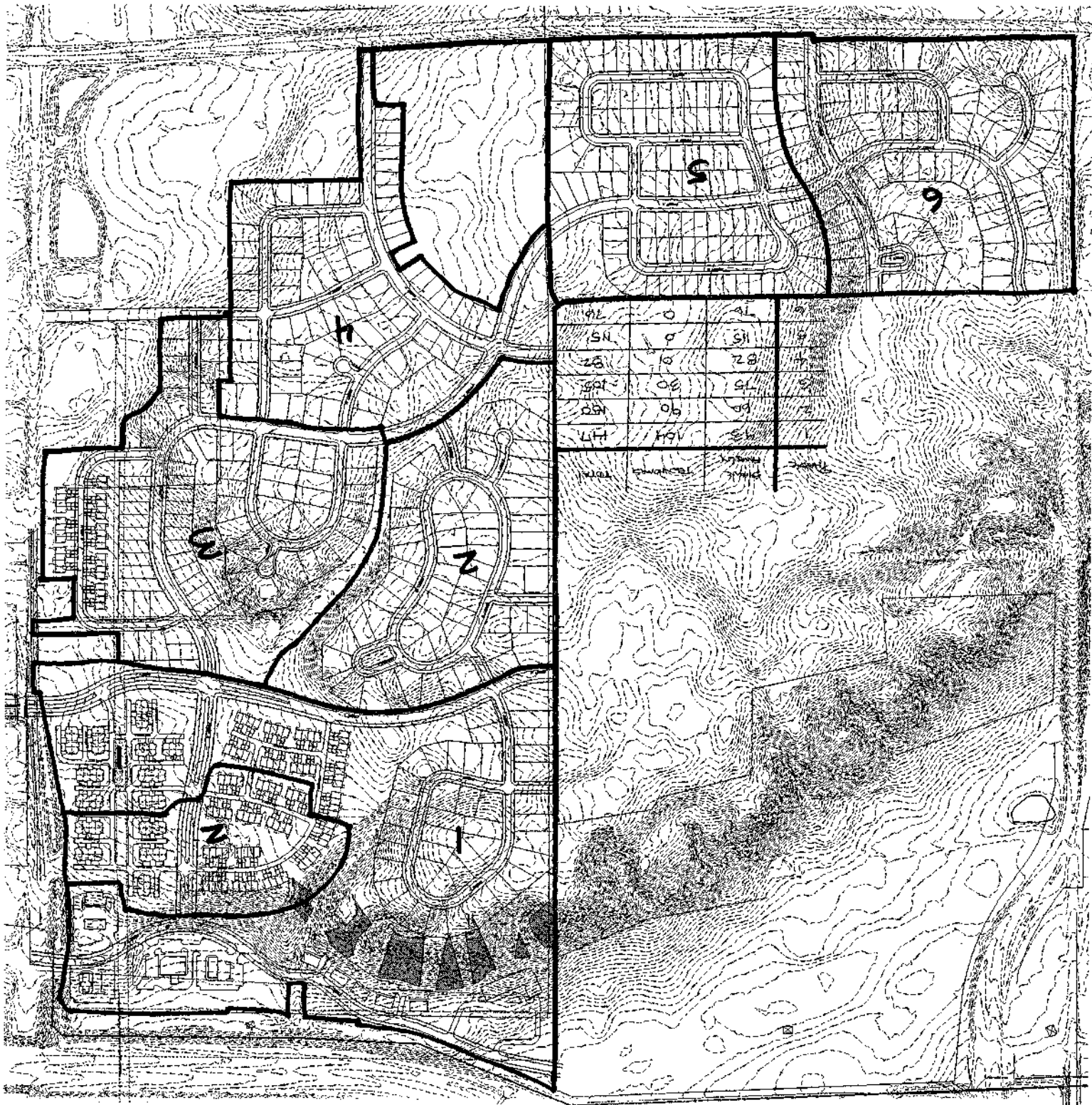
Comment #2: Water Use (Item 13). The EAW states that the combined permitted pumping capacity of Shakopee's 12 wells is 25,908 million gallons per year. It should be noted, however, that the maximum permitted annual groundwater appropriate authorized under DNR permit No. 80-6205 is 2,159 million gallons per year.

Response: The EAW notes that any new wells or a water tower to serve the area will require an additional DNR Water Appropriation Permit or an amendment to the City's existing permit. The City and the Shakopee Public Utility Commission will obtain any needed approvals and authorizations associated with water appropriations for municipal water service improvements.

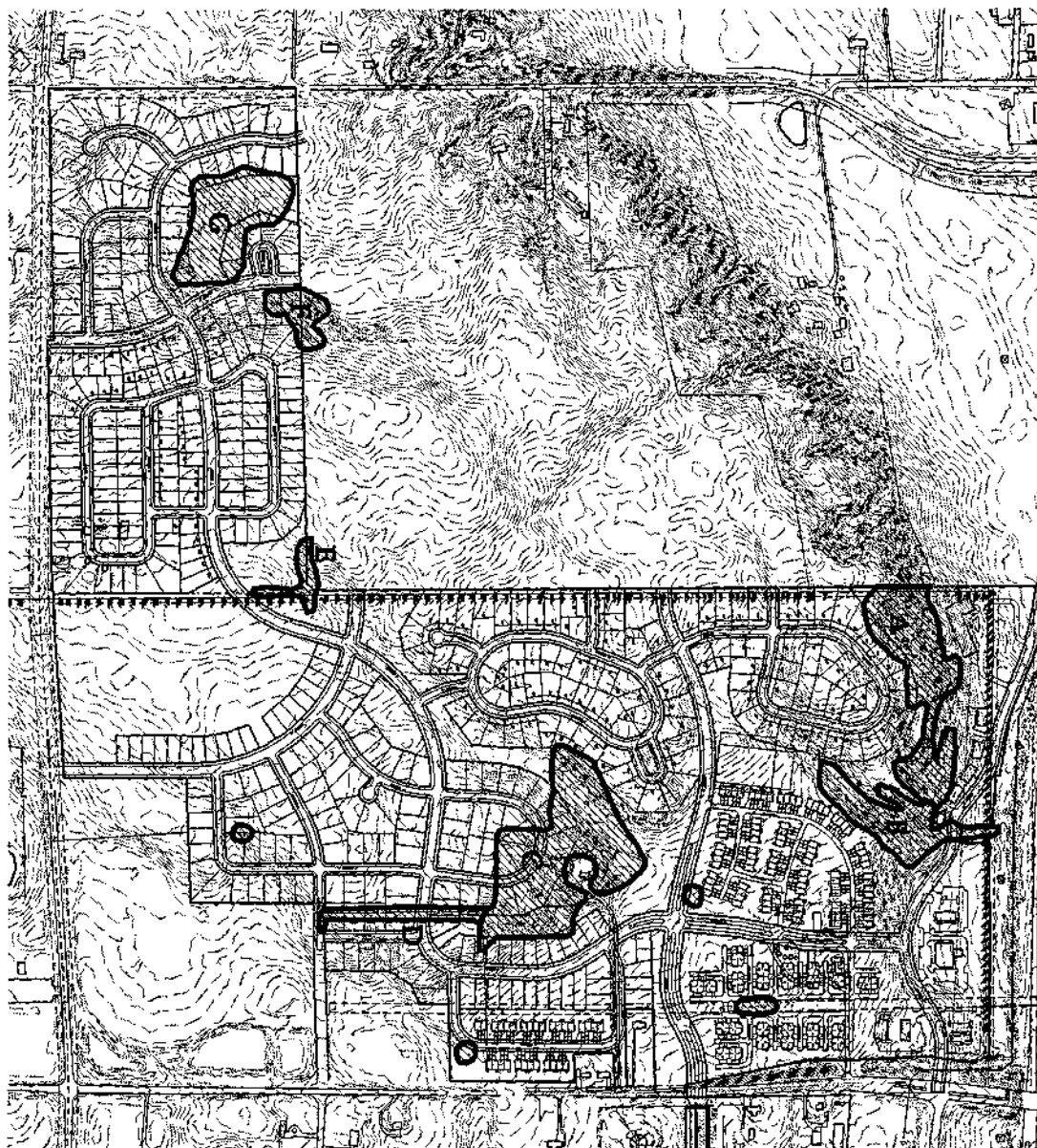
This concludes the City's responses to the comments generated as part of the EAW process. If you have any questions, please feel free to contact Andrea Moffatt at (763)287-7196.

- c. Michael Leek, City of Shakopee
Mike Suel, DR Horton
Jennifer McLoughlin, Westwood Professional Services
Renae Cornelius, SRF

mjl/am



Region	Area	Perimeter	Volume
1	1.5	1.5	1.5
2	1.5	1.5	1.5
3	1.5	1.5	1.5
4	1.5	1.5	1.5
5	1.5	1.5	1.5
6	1.5	1.5	1.5
7	1.5	1.5	1.5
8	1.5	1.5	1.5
9	1.5	1.5	1.5



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The Bluffs At Marystown

Preserved Trees and Woodlands

Date: 06/07/2006 Page: 1 of 1



Preserved Trees and Woodlands at The Bluffs at Marystown

7 June 2006

The quality of woodlands at The Bluffs at Marystown was determined from information obtained through the Minnesota Land Cover Classification System and through field reviews. Several areas of woodlands exist, with descriptions and impacts as characterized in the following table:

Preserved Trees and Woodlands at The Bluffs at Marystown

Tree/Woodland Area	Location	Size (acres)	Quality assessment		Impacts
			MLCCS data	Field review	
A	Northwest corner of the site along west property boundary, along north facing bluff	1.01	Maple-basswood forest	High quality forest dominated by bur oak; dense ground layer in places, otherwise open savanna	This area is minimally impacted by project development.
B	Northerly portion of the property, along a north facing bluff	11.02	Grassland with sparse deciduous trees – altered/non-native dominated vegetation	Disturbed forest with mixed species including willow, cottonwood, ash, ironwood, cedar, and oak	Approximately one-third of this area is impacted by project development.
C	Central portion of the site, surrounding existing home; along generally north facing slopes and a slight ravine	9.87	Maple-basswood forest	Mixed quality forest dominated by cottonwood, ash, ironwood, young maple, hackberry; ground layer dense at edges with buckthorn dominant	Approximately two-thirds of this area is impacted by project development.
D	Southeast portion of the property, along the east edge of an existing field	2.07	Not identified	Volunteer vegetation in fence row, dominated by cottonwood, buckthorn, and sumac	Trees in this area will be removed as a result of project development.
E	Central portion of the property, along existing fencelines	0.80	Not identified	Volunteer vegetation in fence row, dominated by cottonwood, buckthorn, and sumac	Approximately 80 percent of this area is impacted by project development.
F	Southwest portion of the property and straddling the north property line, on a generally northwest facing slope	0.93	Altered/non-native deciduous forest	Mixed species including boxelder, cottonwood, few maples; very dense ground layer including buckthorn at edges	Trees in this area will be removed as a result of project development.

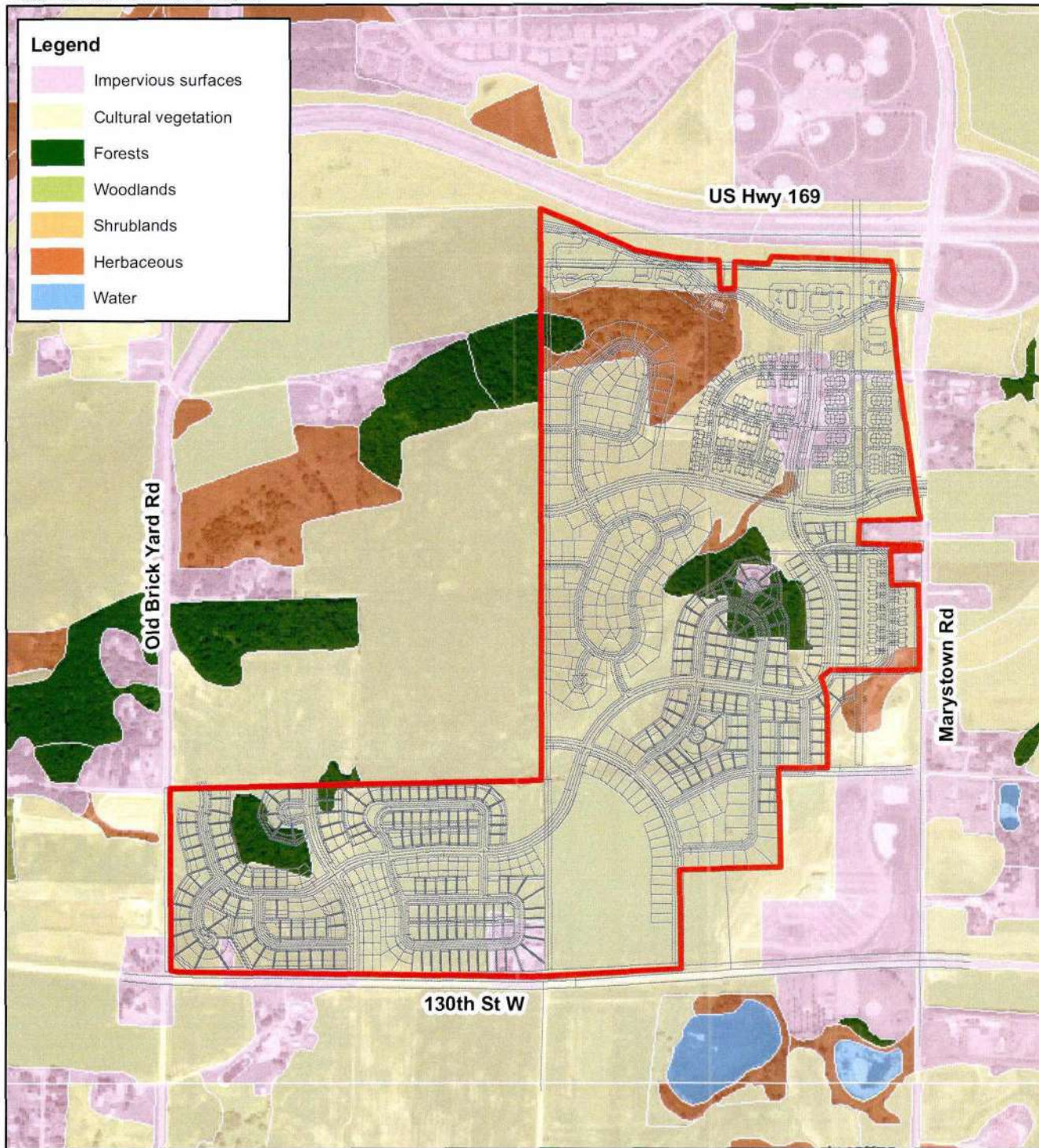
G	Southwest portion of the property	5.65	Maple-basswood forest	High quality species including maple, basswood, oak, cherry; little ground layer vegetation in center of woodland, dense growth at edges; a few large cottonwoods and silver maples exist toward the north end where the topography flattens and soils were wet	Approximately two-thirds of this area is impacted by project development.
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Notes:

- Locations were identified from topographic mapping and Minnesota Land Cover Classification System mapping; three small areas of volunteer vegetation (shown on topographic mapping but not identified on MLCCS mapping) were not included in this table as a result of their small size (less than 1/2 acre).
- Sizes were determined from topographic mapping and areas delineated on the Minnesota Land Cover Classification System mapping. Variation in sizes of woodland areas when comparing this analysis to an analysis of woodlands removed may result from differences in mapped areas on the two sources.
- Impacts were based on concept level grading plans prepared by Westwood Professional Services, Inc.

Legend

-  Impervious surfaces
-  Cultural vegetation
-  Forests
-  Woodlands
-  Shrublands
-  Herbaceous
-  Water



Data Source(s): USDA FSA APFO DOQ (2003), Minnesota Land Cover Classification System



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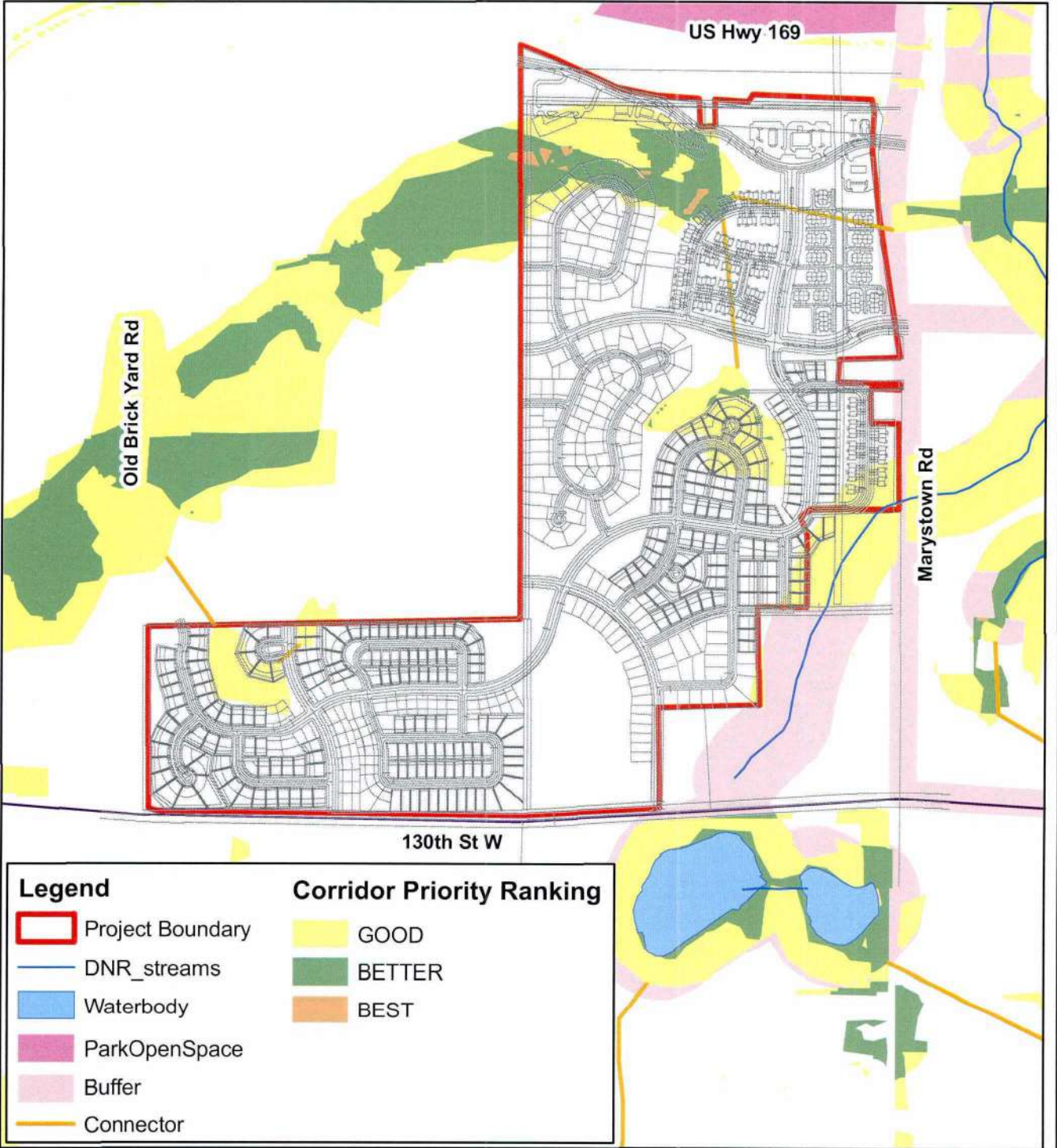
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TOLL FREE 1-888-937-5150

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The Bluffs at Marystown

Shakopee, Minnesota

MLCCS Mapping



Data Source(s): WPS (2006), City of Shakopee (2006).



0 1,000 2,000 Feet

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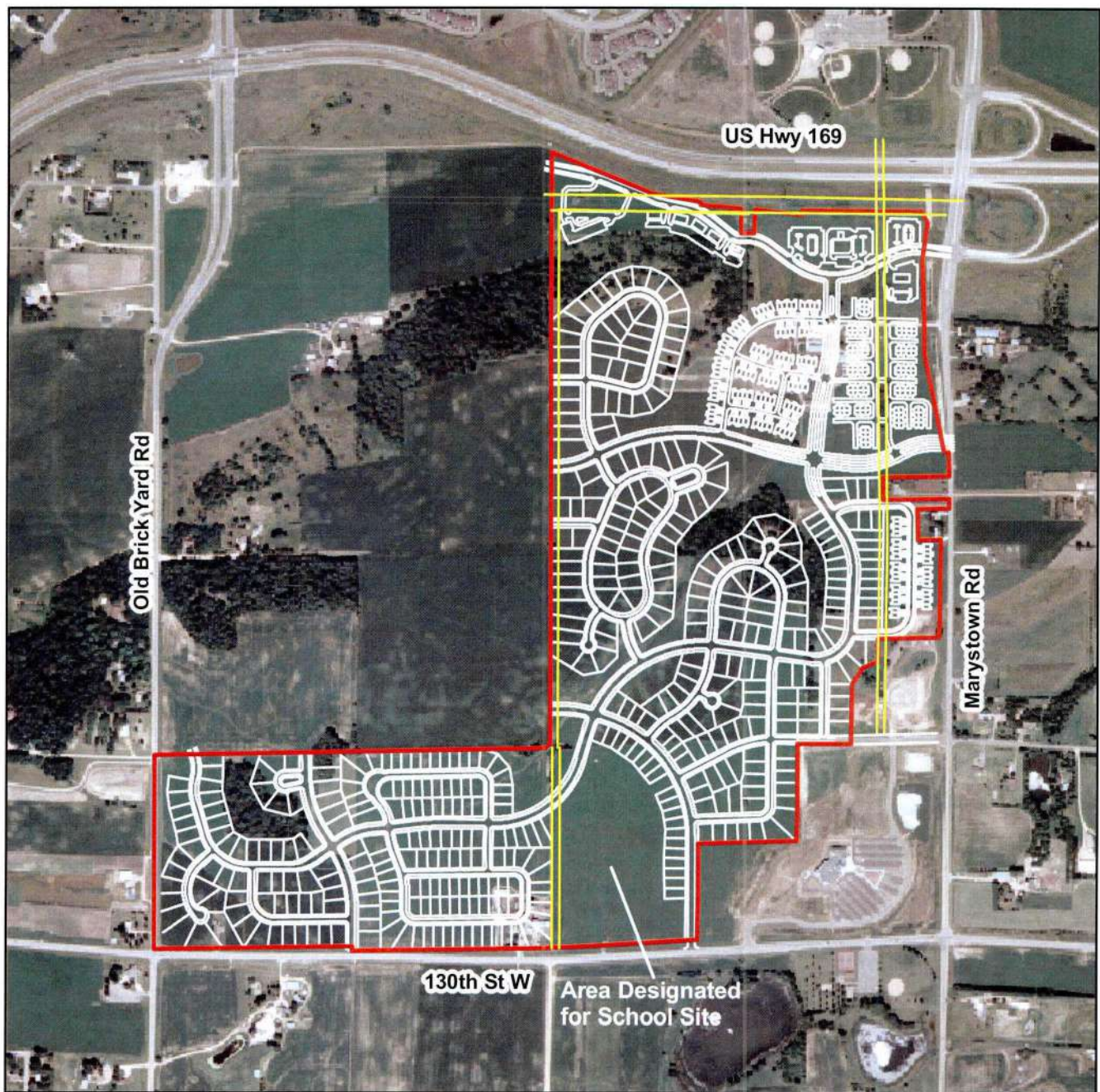
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The Bluffs at Marystown

Shakopee, Minnesota

Natural Resource
Corridor Mapping



Data Source(s): USDA FSA APFO DOQ (2003), WPS (2006).

Legend

-  EAW Boundary
-  Transmission Line and Pipeline Easements

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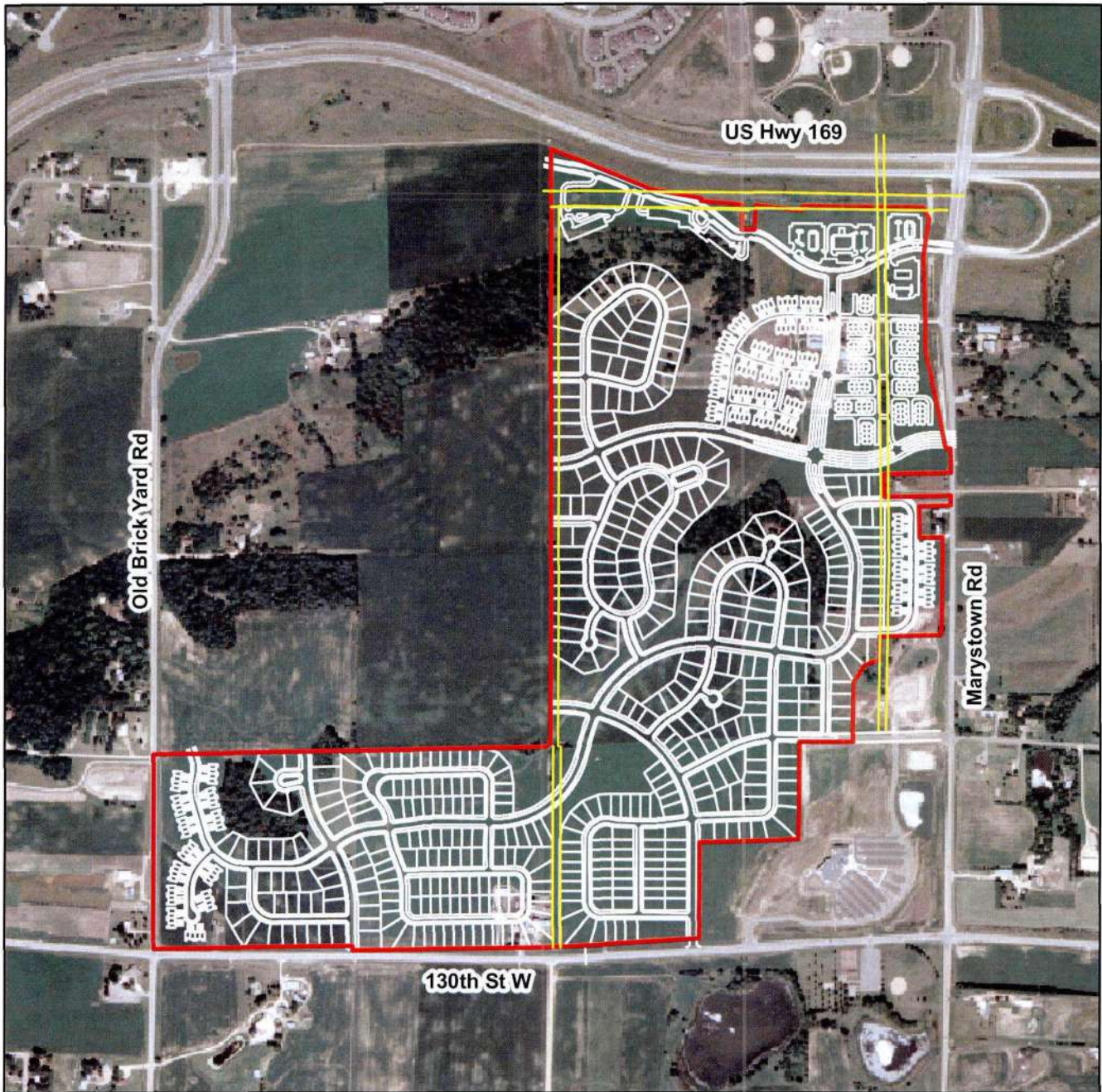
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The Bluffs at Marystown

Shakopee, Minnesota

Existing Easements
and Scenario 1



Data Source(s): USDA FSA APFO DOQ (2003), WPS (2006).

Legend

-  EAW Boundary
-  Transmission Line and Pipeline Easements

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The Bluffs at Marystown

Shakopee, Minnesota

Existing Easements
and Scenario 2

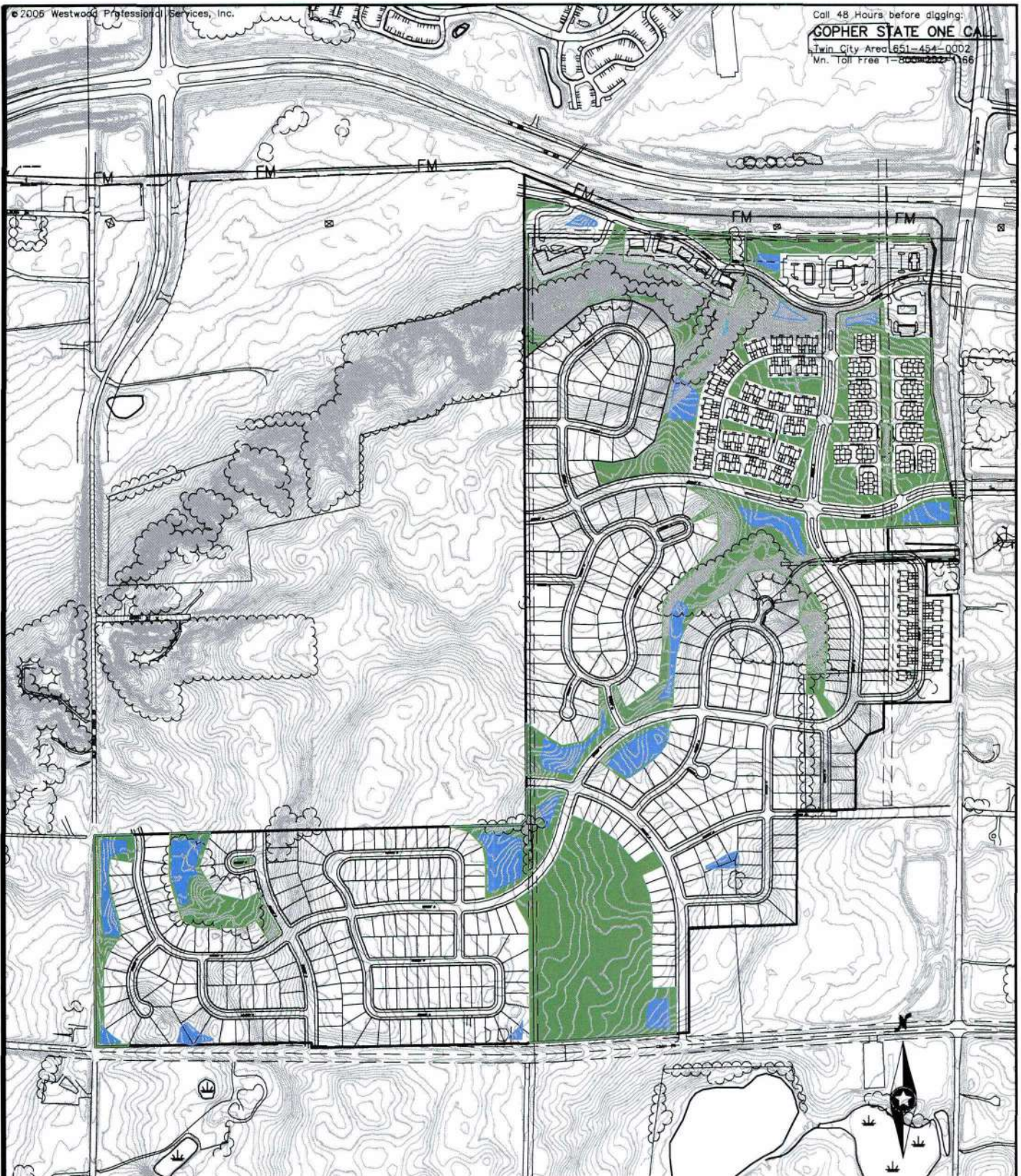


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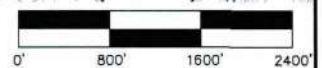
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Legend

- Open Space
- Wetland
- Ponds



20041087.025KP08.DWG

Date: 06/14/06 Sheet: 1 OF 1

The Bluffs At Marystown

Shakopee, Minnesota

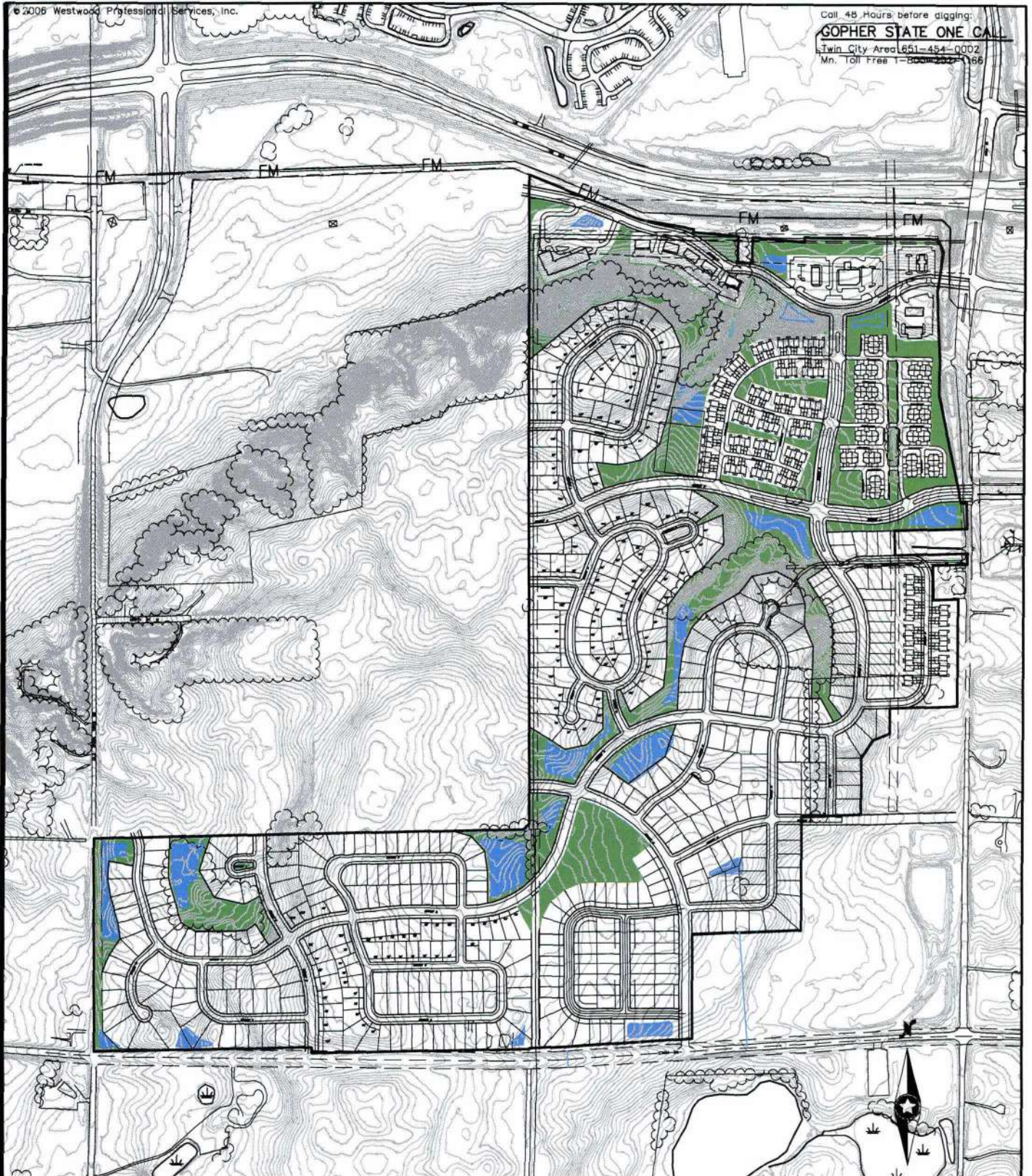
Scenario 1
Open Space
Site Plan



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7688 Annapolis Drive
Eden Prairie, MN 55344

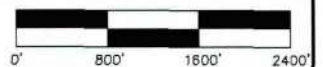
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Legend

- Open Space
- Wetland
- Ponds



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Date: 06/14/06 Sheet: 1 OF 1

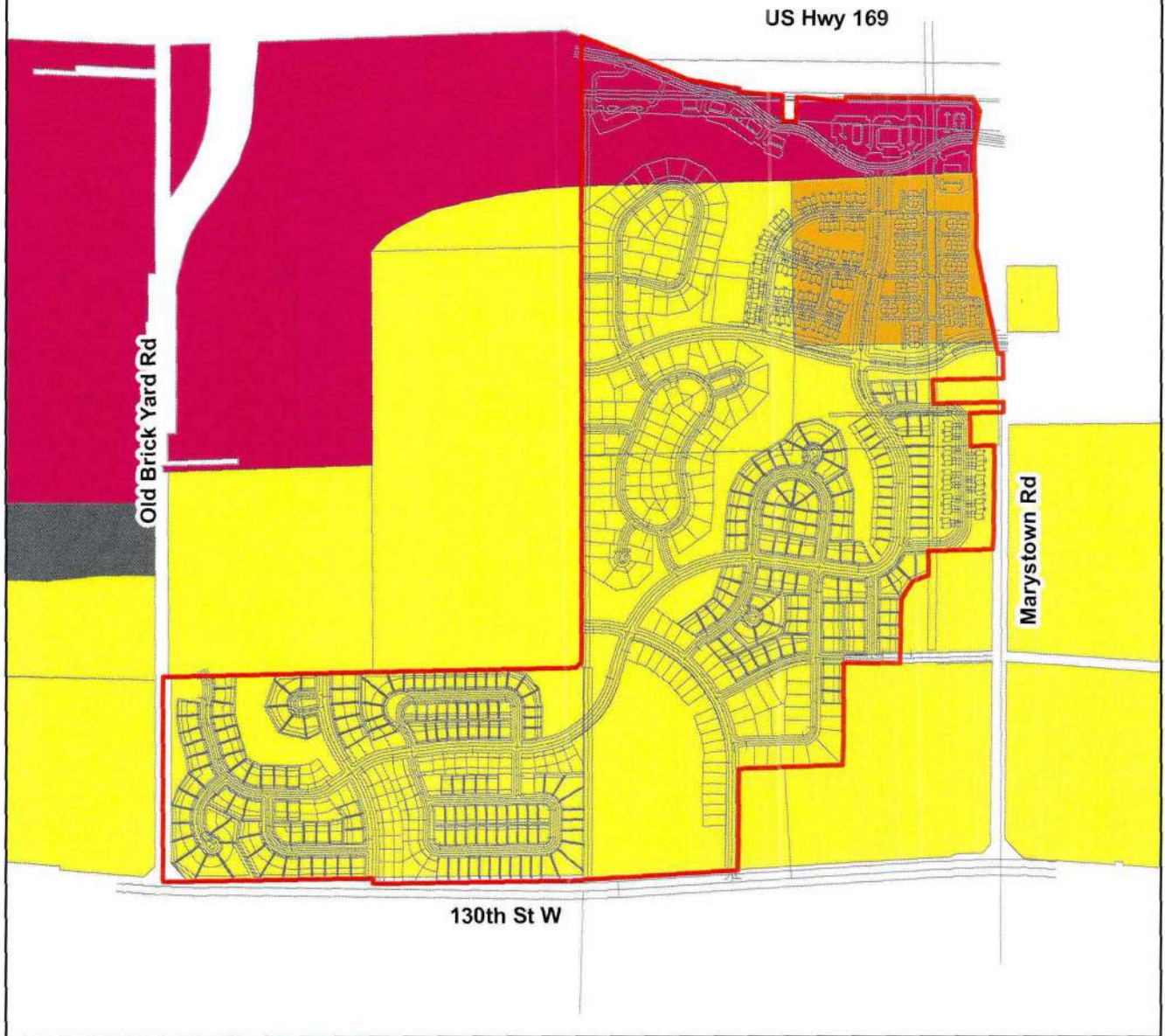
The Bluffs At Marystown

Shakopee, Minnesota

Scenario 2
 Open Space
 Site Plan



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 FAX 953-637-5822
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Legend

-  Approximate Property Boundary
-  Commercial
-  Industrial
-  Medium Density
-  Single-Family



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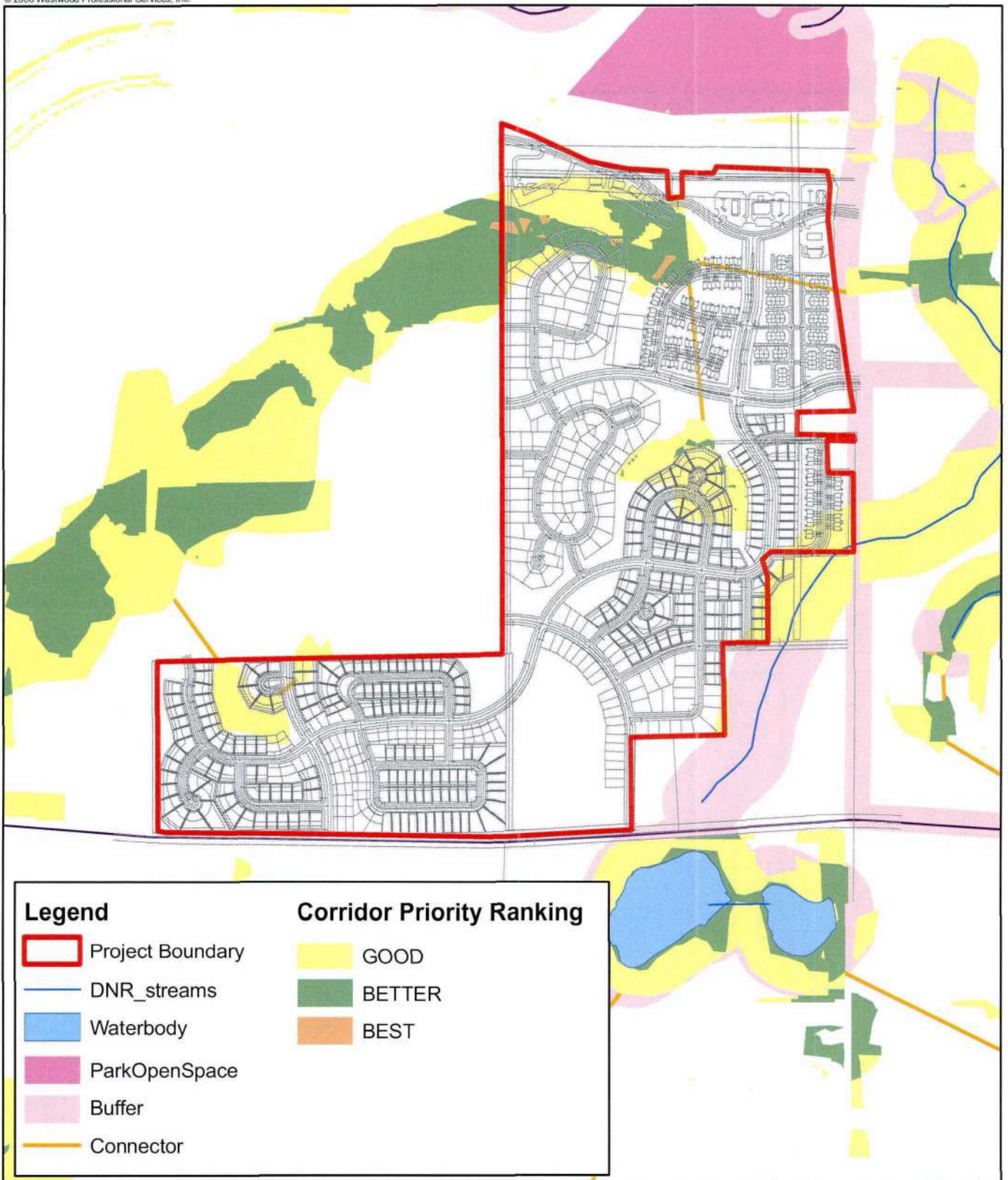
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The Bluffs at Marystown

Shakopee, Minnesota

Jackson Township
Land Use Map



Legend

- Project Boundary
- DNR_streams
- Waterbody
- ParkOpenSpace
- Buffer
- Connector

Corridor Priority Ranking

- GOOD
- BETTER
- BEST

Data Source(s): WPS (2006), City of Shakopee (2006).

The Bluffs at Marystown

Shakopee, Minnesota

Natural Resource Corridor Mapping



Westwood

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1,000



Bluffs at Marystown - Subwatershed Map

WSB Project No. 01281-93

Date: July, 2006

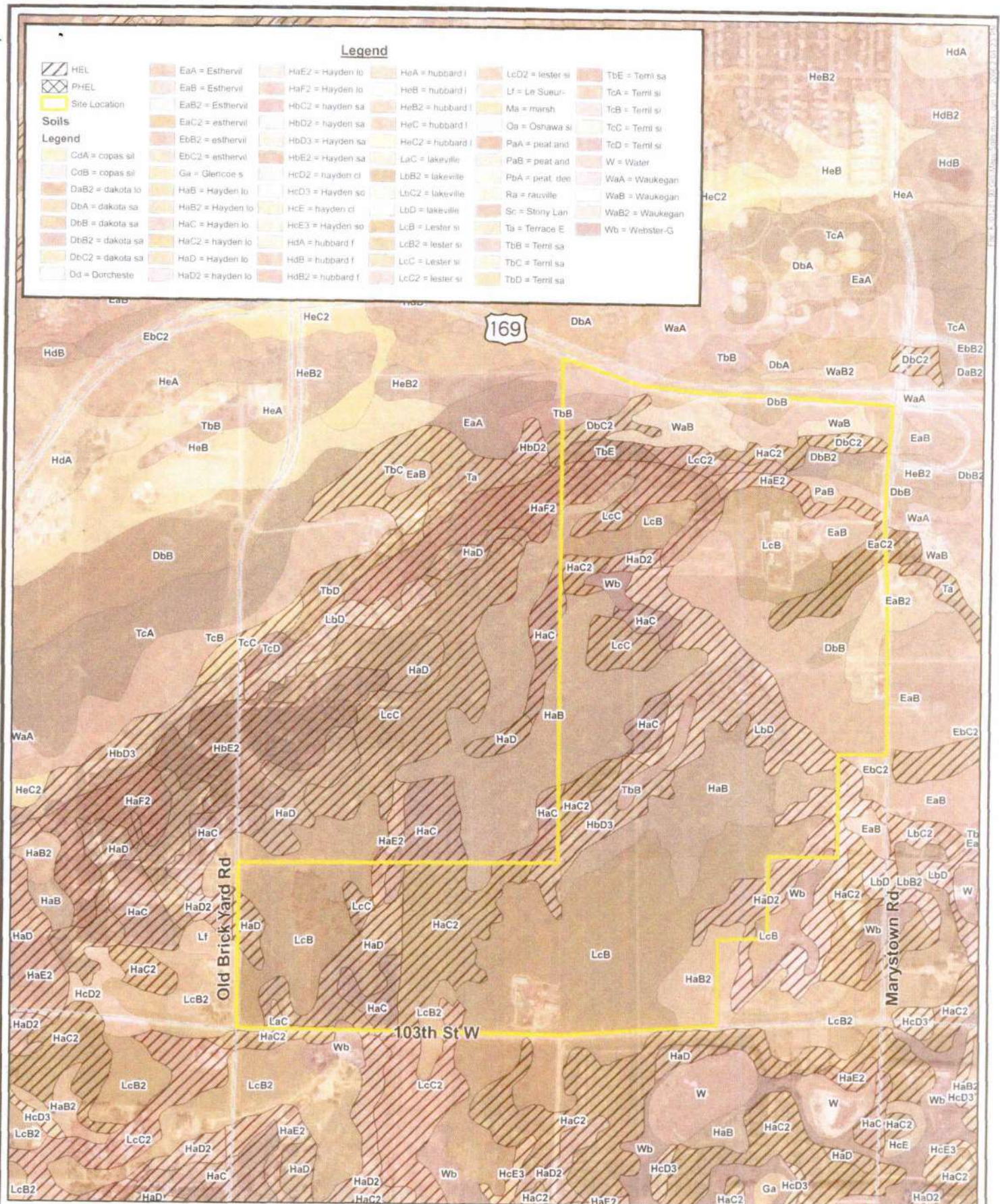


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Figure

Shakopee, Minnesota



Erodible Soils Map
The Bluffs at Marystown
Shakopee, MN



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ST. PAUL DISTRICT, CORPS OF ENGINEERS
ARMY CORPS OF ENGINEERS CENTRE
190 FIFTH STREET EAST
ST. PAUL MN 55101-1638

1281-93
5/16/06
Ltn

MAY 16 2006

REPLY TO
ATTENTION

Operations
Regulatory (2006-2411-JMK)

Mr. Michael Leek
City of Shakopee
129 Holmes Street
Shakopee, Minnesota 55379

Dear Mr. Leek:

We have received the document entitled The Bluffs at Marystown EAW dated April 24, 2006. Due to limited staff and resources, it is unlikely that U.S. Army Corps of Engineers Regulatory staff will review or comment on this document until we receive a jurisdictional determination request and/or a permit application. In lieu of a specific response, please consider the following general information concerning our regulatory program that may apply to the proposed project.

If the proposal involves deposition of dredged or fill material into waters of the United States, including discharges associated with mechanical land clearing, it may be subject to the Corps of Engineers' jurisdiction under Section 404 of the Clean Water Act (CWA Section 404). Waters of the United States include navigable waters, their tributaries, and adjacent wetlands (33 CFR § 328.3). CWA Section 301(a) prohibits discharges of dredged or fill material into waters of the United States, unless the work has been authorized by a Department of the Army permit under Section 404. Information about the Corps permitting process can be obtained online at <http://www.mvp.usace.army.mil/regulatory>.

The Corps' evaluation of a Section 10 and/or a Section 404 permit application involves multiple analyses, including (1) evaluating the proposal's impacts in accordance with the National Environmental Policy Act (NEPA) (33 CFR part 325), (2) determining whether the proposal is contrary to the public interest (33 CFR § 320.4), and (3) in the case of a Section 404 permit, determining whether the proposal complies with the Section 404(b)(1) Guidelines (Guidelines) (40 CFR part 230).

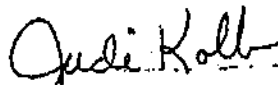
If the proposal requires a Section 404 permit application, the Guidelines specifically require that "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences" (40 CFR § 230.10(a)). Time and money spent on the proposal prior to applying for a Section 404 permit cannot be factored into the Corps' decision whether there is a less damaging practicable alternative to the proposal.

(MVP-2006-2411-JMK)
Page 2 of 2

If an application for a Corps permit has not yet been submitted, the project proposer may request a pre-application consultation meeting with the Corps to obtain information regarding the data, studies or other information that will be necessary for the permit evaluation process. A pre-application consultation meeting is strongly recommended if the proposal has substantial impacts to waters of the United States, or if it is a large or controversial project.

For further information or to request a pre-application consultation meeting, please contact Judi Kolb at (651) 290-5361, the Corps' project manager for the County in which this proposal is located.

Sincerely,



for Robert J. Whiting
Chief, Regulatory Branch

Copy furnished:

Mr. Mike Suel
Ryan Development, Inc.
20860 Kenbridge Court, Suite 100
Lakeville

CITY OF SHAKOPEE
Memorandum

To: Michael Leek, Community Development Director

From: Ryan Hughes, On Behalf of the Shakopee Environmental Advisory Committee

Date: June 7, 2006

Subject: Comments on Bluffs at Marystown EAW

The Environmental Advisory Committee (EAC) discussed and reviewed the Bluffs at Marystown Environmental Assessment Worksheet (EAW) at the May 10, 2006 meeting. Based on this review the EAC has the following comments:

1. Question 6.a. and Questions 6.b.

The EAC requested more detailed information related to the proposed land use, development, and impact. This included the following requested exhibits:

- Phasing plan for the development, specifically a map showing the proposed phases of the project and a statement related to the maximum amount of exposed land for each phase of the development.
- Development plan overlayed on existing zoning/land use guiding map.
- Development plan overlayed on Natural Resource Corridor map.
- Development plan overlayed on existing high-pressure gas line and high voltage transmission line easements.
- Development plan with all parks, open space, and storm water ponding areas color-coded for better visibility.

2. Question 6.c., Question 9, and Question 27

In question 6.c. the area is determined to be guided for low, medium, and high density residential and commercial uses. In question 9 and 27, the area is determined to be guided for low- and medium- density residential and commercial uses. Please clarify in the text and provide a guided land use map. Additionally, what type of commercial is the site guided.

3. Question 7, Question 25, and Question 26

According to the building height information the site may contain four story condominiums. This event was not addressed in *Item 25: Scenic Views and Vistas* or *Item 26: Visual Impacts*. Please clarify the impacts of the proposed four story condominiums. In addition, please identify the proposed location of the four story condominium units and their compliance with the planned land use for that area.

4. Question 10 and Question 16

According to Table 10.1 the site currently contains 34.6 acres of woodlands and the developer proposes to preserve 21.0 acres of woodlands for Scenario 1 and Scenario 2. In Question 16, Scenario 2 proposes to grade approximately 304 acres of the 322.98 acres, which preserves only 18.98 acres of woodland. The numbers in Table 10.1 and calculations in Question 16 are not consistent. Please clarify.

5. Question 11.a.

This section does not discuss the quality of the trees and woodlands, which is how the current Tree and Woodland Ordinance determines the replacement requirements for trees or woodlands removed. Please discuss the quality of the trees and woodlands on site and provide a map showing these areas and where tree removals are anticipated to occur.

6. Question 11.b.

The last two sentences should not be included in the EAW unless evidence to support them is also included. The statement that the open space and parkland "will" provide a natural connection through the site and promote wildlife movement and access to other open space areas and parks can not be definitively determined nor is supporting evidence included. Additionally, to state that these measures are expected to "mitigate adverse effects" on some wildlife does not have supporting evidence. Please discuss the evidence to support these statements.

7. Question 12 and Question 17

Please provide minor watershed figure detailing the current and proposed watershed and drainage directions for water entering the site and leaving the site. The proposed storm pond locations are to be included on the proposed conditions figure.

8. Question 16

Please provide a figure showing the proposed areas to be graded with the soils identified on Table 16.1 also shown on the figure. The Environmental Advisory Committee would like to evaluate whether PHEL and HEL will be disturbed on site.

9. Question 17.a. – Water Quantity

Please provide more detail pertaining to stormwater leaving the site and how the existing conditions provide treatment prior to discharge into the Minnesota River.

10. Question 19.c. – Potential for Groundwater Contamination

Please provide a copy of the portion of the *Geologic Atlas of Scott County, Minnesota* (1989) or evidence supporting the statements "The high sensitivity category indicates that the estimated vertical travel time for water-borne surface contaminants to reach groundwater 50 feet below the land surface is weeks to years."

11. Question 19.c. – Groundwater Protection and Mitigation Measures

The statement "The Bluffs of Marystown project will offer a higher level of groundwater protection than exist under current conditions" is speculative and can not be guaranteed. Please provide scientific evidence to support this conclusion or consider revising.

12. Question 24 – Noise

Will a Noise Study be completed for the proposed project, and specifically, what mitigation measures are anticipated to address noise in the multi-family and commercial sections, if any?

13. Question 25 – Scenic Views and Vistas

Downtown Shakopee and the Minnesota River bluffs can be viewed from various locations within the proposed Bluffs at Marystown development. The view from the proposed project should be noted and the question should be checked yes. The conversion of this area to residential/commercial will change the current view from downtown Shakopee.. Additionally, how will this view be compromised with the potential construction of four story condominiums (See Question 7 – Building Height), and lighting from the proposed commercial area? Please address these concerns and question.

14. Question 28

The Environmental Advisory Committee requested that the economic impacts and what entity will be impacted or responsible from this development be detailed in a table. For example impacts to the school system, fire department, police department, departments responsible for utilities, City services, etc. Please provide detailed information on these impacts, estimated costs, and who is responsible for paying for the improvement in a table format.

On behalf of the Environmental Advisory Committee, thank you for the opportunity to review the Bluffs at Marystown EAW and we look forward to responses to the comments.

Sincerely,

Ryan Hughes
Natural Resource Specialist
City of Shakopee

cc. Mark Themig, Parks, Recreation, and Natural Resources



SCOTT COUNTY PUBLIC WORKS DIVISION

HIGHWAY DEPARTMENT • 600 COUNTRY TRAIL EAST • JORDAN, MN 55352-9339
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LEZLIE A. VERMILLION
PUBLIC WORKS DIRECTOR

May 8, 2006

Michael Leek
City of Shakopee
129 South Holmes Street
Shakopee, MN 55379

RE: Bluffs of Marystown EAW

Dear Michael:

We have reviewed the Bluffs of Marystown EAW and offer the following comments:

- ◆ The traffic study assumes that an interchange will be constructed at TH 169 and CR 69 by 2015. We are not aware of any funding for the construction of an interchange at this location. An analysis should be conducted for the build and no build scenarios that do not assume an interchange at TH 169 and CR 69.
- ◆ The traffic study reveals that three intersections (CSAH 15/TH 169 north ramp, south ramp, and CSAH 15/17th Avenue) operate at poor level of service. A recommendation of the EAW traffic study is for installation of traffic signals in order to maintain the desired level of service. We recommend that an analysis be completed to determine if installation of single or dual lane roundabouts at these locations could maintain the same desired level of service.
- ◆ As property in Jackson and Louisville Township is developed with urban densities the traffic along CSAH 15, CSAH 78, and CR 69 will steadily increase. We recommend right-of-way be preserved for the future to accommodate a minimum a four-lane divided design on all County roads (75 feet from centerline).
- ◆ Zumbro Avenue/CR 73 is a 5 mile road with a connection to TH 282, and will likely serve as a major collector for the City in the future. We recommend a direct connection is made between Zumbro and 17th Avenue.
- ◆ CSAH 78 is currently an A Minor Arterial, and it likely will become a Principal Arterial with ½ mile full access spacing in the future. The accesses as shown in the EAW will not meet long term access spacing. The current Friendship Church access is approximately ¼ mile from CSAH 15 and would likely be made a right in/out when CSAH 78 is upgraded to a divided roadway. We recommend a road is provided to the church from the ½ mile long term full access location at Zumbro Avenue.

- ♦ The County is opposed to having another school site adjacent to CSAH 78. As mentioned previously, CSAH 78 will likely be a future Principal Arterial carrying a high amount of regional traffic. This will create significant pedestrian issues depending on how the property south of CSAH 78 develops in the future. The school site location should be located within the development as a neighborhood focal point and not adjacent to high speed county roadways. Moving the school location away from county roads will also allow greater local control of speed limits and pedestrian patterns.
- ♦ Noise issues will increase in the area as traffic levels increase. The EAW does not mention noise generated from the surrounding roadways and their impact on the proposed land uses or how to mitigate these issues. We recommend a noise study is completed that considers state and federal noise standards. Noise attenuation is the responsibility of the City and developer.
- ♦ The EAW traffic study mentions that 17th Avenue could fit the criteria for a County road between CSAH 15 and CSAH 69. The County feels that the jurisdiction of this road segment should be under the County jurisdiction in the long term. County jurisdiction of 17th Avenue would come with greater/restrictive standards which will result in changes to the site plan. County jurisdiction standards that would need to be met are as follows:
 - 1/4 mile full access spacing and 1/8 mile right in/out.
 - Minimum 45 MPH design from CSAH 15 to CSAH 69
 - Preservation of 150' total corridor width

The County is willing to discuss the ultimate design of the road and how these standards can be accomplished provided the long-term needs are being preserved. A design of 17th Avenue will need to be created for the entire length between CSAH 15 and CR 69.

Thank you for the opportunity to comment on the Bluffs of Marystown EAW. If you have any questions, please feel free to contact me.

Sincerely,



Craig Jenson
Transportation Planner



Minnesota Department of Natural Resources

1200 Warner Road
St. Paul, Minnesota 55106
651.772.7900

June 7, 2006

Michael Leek, Community Development Director
City of Shakopee
129 Holmes Street
Shakopee, Minnesota 55379

RE: The Bluffs of Marystown Environmental Assessment Worksheet (EAW)

Dear Mr. Leek:

The Department of Natural Resources (DNR) has reviewed the EAW for the proposed Bluffs of Marystown mixed-use development in the City of Shakopee. In general the document appears to be complete and accurate. We offer the following comments for your consideration.

Physical Impacts to Water Resources (Item No. 12)

This item describes a very small (1,481 square foot) seepage wetland on the site at the base of the bluff. It is not a public waters wetland. The EAW indicates that the wetland will not be affected by the proposed development. If the wetland is indeed associated with a groundwater discharge, the affects of developing the upland (grading, increasing impervious surfaces, turf establishment) may result in the reduction of groundwater recharge to a point at which the seepage area is affected.

Water Use (Item No. 13)

The EAW states that the combined permitted pumping capacity of Shakopee's 12 wells is 25,908 million gallons per year. It should be noted, however, that the maximum permitted annual groundwater appropriation authorized under DNR permit No. 80-6205 is 2,159 million gallons per year.

Thank you for the opportunity to review this project and the EAW. We look forward to receiving your record of decision and responses to comments at the conclusion of environmental review. If you have any questions about these comments, please call Wayne Barstad, the Regional Environmental Assessment Ecologist, at 651-772-7940.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Kurcinka", with a long horizontal flourish extending to the right.

Joseph M. Kurcinka
Regional Director

C: Steve Colvin, Wayne Barstad, Sarah Hoffmann, Diana Regenscheid, Pat Lynch,
Daryl Ellison, Dale Homuth, Dirk Peterson, Tim Bremicker (DNR)
Jon Larsen (EQB)
Nick Rowse (USFWS)
#20060471
SHK06BluffsMarystown.doc

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1-888-646-6367

TTY: 651-296-5484

1-800-657-3929

CITY OF SHAKOPEE

In the matter of the
Decision on the Need for an
Environmental Impact
Statement (EIS) for The
Bluffs at Marystown
Development in Shakopee,
MN

FINDINGS OF FACT AND CONCLUSIONS

DR Horton and Ryan Development are proposing a mixed use residential and neighborhood commercial development on 323 acres in western Shakopee. Two scenarios were evaluated. Scenario 1 includes 451 single-family homes, 232 townhome units, 60 condominium units, 50,711 sf of commercial/offices, and 52,500 sf of school. Scenario 2 includes 467 single-family homes, 284 townhome units, 180 condominium units, and 28,211 sf of commercial/offices. The difference between the two scenarios lies in whether or not the school is included in the development. The project area is generally located south of TH169, west of Marystown Road, north of 130th Street West, and east of Old Brick Yard Road.

Pursuant to Minnesota R. 4410.4300, subp. 19, an Environmental Assessment Worksheet (EAW) has been prepared for this proposed project. As to the need for an Environmental Impact Statement (EIS) on the project and based on the record in this matter, including the EAW and written comments received, the City of Shakopee makes the following Findings of Fact and Conclusions:

FINDINGS OF FACT

I. PROJECT DESCRIPTION

A. Project

The proposed project involves grading up to 304 acres to construct streets, utilities, residential units, and commercial areas. The project is anticipated to remove 13.4 acres of wooded area, construct storm water management areas, convert an agricultural area to developed with lawn and landscaping, and add approximately 136 acres of impervious area.

B. Project Site

The project area is generally located south of TH169, west of Marystown Road, north of 130th Street West, and east of Old Brick Yard Road. The site currently contains approximately 34.6 acres of wooded area, 0.03 acres of wetland, 277.2 acres of agricultural fields, and 11 acres of impervious surface and lawn areas.

II. PROJECT HISTORY

- A.** The project was subject to the mandatory preparation of an EAW under Minnesota R. 4410.4300 subp. 19.
- B.** The EAW dated April 2006 was prepared for the proposed project and distributed to the Environmental Quality Board (EQB) mailing list and other interested parties on April 19, 2006.
- C.** A public notice containing information about the availability of the EAW for public review was published in the *Shakopee Valley News* on April 27, 2006.
- D.** The EAW was noticed in the April 24, 2006 EQB Monitor. The public comment period ended May 24, 2006. Comments were received from the US Corps of Engineers, Shakopee Environmental Affairs Committee, Scott County Highway Department, and the DNR. Copies of these letters are hereby incorporated by reference. Responses to the comments are also incorporated by reference.

III. CRITERIA FOR DETERMINING THE POTENTIAL FOR SIGNIFICANT ENVIRONMENTAL EFFECTS.

Minnesota R. 4410.1700, subp. 1 states "an EIS shall be ordered for projects that have the potential for significant environmental affects." In deciding whether a project has the potential for significant environmental affects, the City of Shakopee must consider the four factors set out in Minnesota R. 4410.1700, subp. 7. With respect to each of these factors, the City finds as follows:

A. TYPE, EXTENT, AND REVERSIBILITY OF ENVIRONMENTAL EFFECTS

The first factor that the City must consider is "type, extent and reversibility of environmental effects", Minnesota R. 4410.1700, subp. 7.A. The City's findings with respect to each of these issues are set forth below.

- 1. The type of environmental impacts and mitigation efforts anticipated as part of this project include:
 - a. **Wildlife Habitat:** The land use will be converted from agriculture to residential. While the site does not provide significant wildlife habitat, wildlife that has adapted to agricultural practices will be displaced. The City will work with the developer to maintain a greenway corridor as outlined in the City's Natural Resource Corridor map. This is anticipated to aid in mitigating impacts to wildlife.

- b. **Water Consumption:** This development is anticipated to use between approximately 244,435 - 283,617 GPD of water upon full development. Construction of one new municipal well, water tower, and water main will be required to serve the needs of the proposed development. The City will obtain any necessary DNR permits for this work.
- c. **Wastewater Generation:** This development is anticipated to generate approximately 222,214 - 257,834 GPD of wastewater upon full development. Wastewater will be discharged to the City's sewer system and then to the Blue Lake Wastewater Treatment Plant. There is enough capacity at the treatment plant to serve this development. Municipal sewer lines will need to be extended to the site.
- d. **Storm Water:** The project is anticipated to generate additional storm water runoff. This runoff will be treated within a series of on-site ponding facilities. Treatment and infiltration to meet the Scott WMO standards is required. The storm water management plan is anticipated to mitigation for any negative impacts.
- e. **Wetlands:** One small (0.03 acre) wetland is located within the site at a groundwater discharge area at the bottom of the bluff. This wetland is not anticipated to be directly impacted by the project. Indirect impacts due to changes in upstream infiltration will be analyzed as part of the platting process.
- f. **Traffic:** The development will generate additional traffic in the area. The mitigation measures outlined in the Traffic Study in the EAW will mitigate the impacts of this additional traffic. The City will continue to work with the County to address traffic issues on the County roads.
- g. **Contaminated Soils:** Petroleum contamination of soils near the shed on the Theis site has been noted. A Response Action Plan (RAP) will be developed to properly address the impacted soils.

- 2. The extent and reversibility of environmental impacts are consistent with those of residential development.

B. CUMULATIVE POTENTIAL EFFECTS OF RELATED OR ANTICIPATED FUTURE PROJECTS

The second factor that the City must consider is the "cumulative potential effects of related or anticipated future projects", Minnesota R. 4410.1700 subp.7.B. The City's findings with respect to this factor are set forth below.

1. The changes in regional land use in the Shakopee area from open space and agricultural land to more urbanized uses is expected to have a cumulative impact on the area. The City of Shakopee has planned for future growth and development as part of its *Comprehensive Plan Update*. Mitigation of impacts will be from requiring parkland dedication, requiring storm water management, addressing traffic impacts, and protecting the Natural Resource Corridor.
2. There are no known plans to develop on adjacent lands. Consequently, the precise timing and nature of future development in the project vicinity is unknown. However, land adjacent to the project site is eventually expected to develop, thereby converting existing open space and agricultural land to residential and commercial uses. The *City of Shakopee Plan Update* anticipates and guides the intensity of development within the City and directs necessary infrastructure improvements to support the planned development.

C. THE EXTENT TO WHICH ENVIRONMENTAL AFFECTS ARE SUBJECT TO MITIGATION BY ONGOING PUBLIC REGULATORY AUTHORITY

1. The following permits or approvals will be required for the project:

Unit of Government	Type of Application
City of Shakopee	Preliminary Plat Approval
City of Shakopee	Orderly Annexation Agreement
City of Shakopee	Comprehensive Plan Amendment
City of Shakopee	Planned Unit Development / Conditional Use
City of Shakopee	Rezoning Application
City of Shakopee	Final Plat Approval
City of Shakopee	Grading Permit
City of Shakopee	Building Permit
Shakopee Public Utilities Commission	Municipal Water and Sewer Connection Permit
Scott County	County Roadway Connection Permit
Jackson Township or City	Wetland Delineation Confirmation
Jackson Township	Orderly Annexation Agreement
MN Department of Health	Well Abandonment and Water main Extension
MN Department of Natural Resources	Water Appropriation Permit
MN Pollution Control Agency	NPDES/SDS General Permit

Unit of Government	Type of Application
MN Pollution Control Agency	401 Water Quality Certification or Waiver
MN Pollution Control Agency	Sanitary Sewer Extension Approval
Metropolitan Council	Sanitary Sewer Connection Permit

2. The City finds that the potential environmental impacts of the project are subject to mitigation by ongoing regulatory authorities such that an EIS need not be prepared.

D. THE EXTENT TO WHICH ENVIRONMENTAL EFFECTS CAN BE ANTICIPATED AND CONTROLLED AS A RESULT OF OTHER ENVIRONMENTAL STUDIES UNDERTAKEN BY PUBLIC AGENCIES OR THE PROJECT PROPOSER, INCLUDING OTHER EIS's.

The fourth factor that the City must consider is "the extent to which environmental effects can be anticipated and controlled as a result of other environmental studies undertaken by public agencies or the project proposer, including other EIS's" Minnesota R. 4700.1700, subp. 7.D. The City's findings with respect to this factor are set forth below:

The proposed project is subject to the following plans prepared by the City:

- City of Shakopee Comprehensive Plan (updated to include project area)
- City of Shakopee Storm Water Management Plan (updated to include area)
- Traffic Study for Bluffs at Marystown

The City finds that the environmental effects of the project can be anticipated and controlled as a result of the environmental review, planning, and permitting processes.

CONCLUSIONS

The preparation of The Bluffs at Marystown Development EAW and comments received on the EAW have generated information adequate to determine whether the proposed facility has the potential for significant environmental effects.

The EAW has identified areas where the potential for environmental effects exist, but appropriate measures have or will be incorporated into the project plan and/or permits to

mitigate these effects. The project is anticipated to comply with all City of Shakopee standards and review agency standards.

Based on the criteria established in Minnesota R. 4410.1700, the project does not have the potential for significant environmental effects.

Based on the Findings of Fact and Conclusions, the project does not have the potential for significant environmental impacts.

An Environmental Impact Statement is not required.

The Bluffs at Marystown EAW



SHAKOPEE

**RGU: City of Shakopee, MN
129 Holmes Street
Shakopee, MN 55379
Phone: (952) 233-9300
Fax: (952) 233-3801**

EQB Monitor Publication Date: April 24, 2006
Comment Deadline: May 24, 2006

ENVIRONMENTAL ASSESSMENT WORKSHEET (EAW)

The Bluffs at Marystown EAW

Note to preparers: This form and EAW Guidelines are available at www.eqb.state.mn.us. The Environmental Assessment Worksheet provides information about a project that may have the potential for significant environmental effects. The EAW is prepared by the Responsible Governmental Unit or its agents to determine whether an Environmental Impact Statement should be prepared. The project proposer must supply any reasonably accessible data for — but should not complete — the final worksheet. If a complete answer does not fit in the space allotted, attach additional sheets as necessary. The complete question as well as the answer must be included if the EAW is prepared electronically.

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

1. **Project Title** The Bluffs at Marystown EAW
2. **Proposer:** D.R. Horton Ryan Development, Inc.
Contact person: Mike Suel Dennis Griswold
Title: Development Project Manager Director of Land
Address: 20860 Kenbridge Court, Suite 100 8700 13th Ave East
Lakeville, MN 55044 Shakopee MN 55379
Phone: (952) 985-7823 (952) 894-3200
Fax: (952) 985-7400 (952) 894-3207
3. **RGU:** City of Shakopee
Contact person: Michael Leek
Title: Community Development Director
Address: 129 Holmes Street
Shakopee, MN 55379
Phone: (952) 233-9300
Fax: (952) 233-3801

4. Reason for EAW Preparation

☐ EIS Scoping ☒ Mandatory EAW ☐ Citizen Petition ☐ RGU Discretion ☐ Proposer Volunteered

If EAW or EIS is mandatory give EQB rule category subpart numbers(s) Part 4410.4300 Subp. 19.D. and subpart name(s) Residential Development.

5. Project Location

County: Scott County

City: Shakopee, Minnesota

Twp: E ½ and SW ¼ of Section 14, T115N, R23W.

The proposed project is generally located west of Marystown Road, north of 130th Street W, east of Old Brick Yard Road, and south of U.S. Highway 169 in western Shakopee (Exhibits 1 & 2).

Attach copies of each of the following to the EAW:

- County map showing the general location of the project;
- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable);
- Site plan showing all significant project and natural features.

6. Description

a) Provide a project summary of 50 words or less to be published in the EQB Monitor.

Development of The Bluffs at Marystown is proposed to include up to 931 residential units, 50,711 square feet of office condominiums / neighborhood commercial land uses, and approximately 52,500 square feet for a potential elementary school. The site is located west of Marystown Road, north of 130th Street W, east of Old Brick Yard Road, and south of U.S. Highway 169.

b) Give a complete description of the proposed project and related new construction.

Attach additional sheets as necessary. Emphasize construction, operation methods, and features that will cause physical manipulation of the environment or will produce wastes. Indicate modifications to existing equipment or industrial processes and significant demolition, removal, or remodeling of existing structures. Indicate the timing and duration of construction activities.

D.R. Horton, Inc. and Ryan Development, Inc. are proposing construction of a mixed-use residential and neighborhood commercial development in western Shakopee. The proposed project area is located in the SW ¼ and E ½ of Section 14, T115N, R23W. The proposed project is generally located south of U.S. Highway 169, west of Marystown Road, north of 130th Street West and east of Old Brick Yard Road (Exhibits 1 & 2).

This EAW addresses two development scenarios in order to incorporate a range of impacts from the project. Scenario 1 would result in the lowest number of residential units, and includes development of 451 single family lots, 232 villa and coach townhomes, 60 condominium units, office condominiums, and an elementary school site in the south central portion of the property (Exhibit 3). Scenario 2 will address a more densely developed plan, including an additional 61 single family units with a portion of those in lieu of the school site, an additional 52 multi-family units in place of 26 single family lots in the southwest corner of the site, and two additional 60-unit condominiums instead of the office condominiums in Scenario 1 (Exhibit 4). Proposed commercial development is the same for both Scenarios. Table 6.1 describes the unit count for Scenarios 1 and 2.

Table 6.1
Development Scenarios

	Scenario 1		Scenario 2	
	units	square feet	units	square feet
Single-family ¹	451	--	426	--
Single-family (school site)	0	--	41	--
Multi-family (Townhomes)	232	--	284	--
Multi-family (Condominiums)	60	--	180	--
Office Condo	--	50,711	--	28,211
Neighborhood Commercial	--	52,500	--	--
School	--	52,500	--	--
Total	743	103,211	931	28,211

¹ Refers to the portion of the site outside of the 25.4 acre school site.

Project development will convert approximately 323 acres of agricultural fields and three farmsteads to streets, homes, lawns, landscaping, parkland, trails, and stormwater ponding. Land use within the site will include construction of up to 467 single family lots, and up to 464 multi-family units including townhomes and condominiums, in addition to a possible elementary school site. Potential adverse effects on the environment will be mitigated by preservation and creation of between 50 and 67 acres of woodland, parkland, open space, and wetland (Exhibit 3 & 4). Open space and parkland on the site will provide natural areas to promote wildlife movement and connections to other open areas and parkland.

Each residential lot will be served by the City of Shakopee sanitary sewer and water supply systems. At least one new municipal water well and water tower will be required to service the needs of the proposed development. The City of Shakopee is currently analyzing potential locations for a municipal well and a 500,000-gallon elevated storage tank. Due to the range in topography on site, a booster station is proposed to service the site prior to construction of the water tower and well. The booster station will service topographic elevations greater than 915 feet. No on-site sewage systems are being proposed. Public streets will service the development, funneling traffic to U.S. Highway 169, Marystown Road, and 130th Street West.

Project construction will occur in phases, with the first phase expected to begin in 2006. Full build out is anticipated in 2013; however, construction timing will ultimately depend upon market conditions. It is anticipated that construction will entail moving up to approximately 2.4 million cubic yards of soil. Construction dewatering may be conducted on an as-needed and permitted basis to install sanitary sewer, municipal water, and storm sewer. Best Management Practices will be implemented during and after construction to protect water quality and reduce the potential for soil erosion and sedimentation.

- c) 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.

Scott County is one of the fastest growing counties in the Twin Cities Metropolitan area. According to US Census data, the City of Shakopee had the third largest percent increase in population, behind the cities of Savage and Elko, between the 1990 and 2000 census. The *City of Shakopee Comprehensive Plan Update* (2004) identifies the need for additional housing to meet the demands of this growing population. The purpose of the proposed Bluffs at Marystown development is to meet the growing demand for single and multi-family residential housing, and neighborhood commercial development. The project will be constructed and implemented by D. R. Horton, Inc., and Ryan Development, Inc., private developers.

The Bluffs at Marystown development is not currently within the Shakopee city limits. The City of Shakopee and Jackson Township have initiated an Orderly Annexation Agreement to govern the eventual transfer of the study area from the Township to the City. The City's adopted Comprehensive Plan guides this area for low, medium, and high density residential and commercial uses. The MUSA boundary will need to be extended to include this area. When annexation is complete, the City's *Comprehensive Plan* will be submitted to the Metropolitan Council for review and approval.

- d) Are future stages of this development including development on any outlots planned or likely to happen? ☐ Yes ☒ No. If yes, briefly describe future stages, relationship to the present project, timeline, and plans for environmental review.
- e) Is the project a subsequent stage of an earlier project? ☐ Yes ☒ No. If yes, briefly describe the past development, timeline, and any past environmental review.

7. Project Magnitude Data

Total Project Area:	<u>322.98 acres</u>				
Number of Residential Units:					
Scenario 1	Unattached	<u>451</u>	Attached	<u>292</u>	Maximum Units per Building <u>60</u>
Scenario 2	Unattached	<u>467</u>	Attached	<u>464</u>	Maximum Units per Building <u>60</u>
Commercial, Industrial, or Institutional Building Area (total sq. ft. gross floor space):					Scenario 1: <u>103,211</u> Scenario 2: <u>28,211</u>

Indicate area of specific uses (in square feet):

Scenario 1: <u>50,711</u>			
Retail/Office	Scenario 2: <u>28,211</u>	Other Industrial	<u>none</u>
Warehouse	<u>none</u>	Institutional	Scenario 1: <u>52,500</u>
Light Industrial	<u>none</u>	Agricultural	Scenario 2: <u>none</u>
Manufacturing	<u>none</u>		<u>none</u>
Other Commercial (specify)	<u>None</u>		
Building Height	<u>2 story single family homes and up to 4 story condominiums</u>		

If over 2 stories, compare to heights of nearby buildings

Most nearby buildings are 1-2 stories.

8. Permits and Approvals Required

List all known local, state, and federal permits, approvals, 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 required permits and approvals will be obtained. Any necessary permits or approvals that are not listed in Table 8.1 were unintentionally omitted.

Table 8.1
Permits and Approvals Required

Unit of Government	Type of Application	Status
City of Shakopee	EAW Negative Declaration	To be determined
City of Shakopee	Preliminary Plat Approval	To be applied for
City of Shakopee	Orderly Annexation Agreement	In process
City of Shakopee	Comprehensive Plan Amendment	To be applied for
City of Shakopee	Planned Unit Development / Conditional Use	To be applied for
City of Shakopee	Rezoning Application	To be applied for
City of Shakopee	Final Plat Approval	To be applied for
City of Shakopee	Grading Permit	To be applied for
City of Shakopee	Building Permit	To be applied for
Shakopee Public Utilities Commission	Municipal Water and Sewer Connection Permit	To be applied for
Scott County	County Roadway Connection Permit	To be applied for
Jackson Township	Wetland Delineation Confirmation	In process
Jackson Township	Orderly Annexation Agreement	In process
MN Department of Health	Well Abandonment and Watermain Extension	To be applied for
MN Department of Natural Resources	Water Appropriation Permit	To be applied for (if needed)
MN Pollution Control Agency	NPDES/SDS General Permit	To be applied for
MN Pollution Control Agency	401 Water Quality Certification or Waiver	To be applied for (if needed)
MN Pollution Control Agency	Sanitary Sewer Extension Approval	To be applied for
Metropolitan Council	Sanitary Sewer Connection Permit	To be applied for

9. Land Use

Describe current and recent past land use and development on the site and on adjacent lands. Discuss the compatibility of the project with adjacent and nearby land uses. Indicate whether any potential conflicts involve environmental matters. Identify any potential environmental hazard due to past land uses, such as soil contamination or abandoned storage tanks, or proximity to nearby hazardous liquid or gas pipelines.

Historic aerial photography indicates that portions of the site have been under agricultural production since at least 1937. Recent aerial photography (2003) indicates the predominant land use on the site is agricultural, including the presence of three farmsteads. Land uses adjacent to the study area include agricultural land, woodland, wetland, parkland, religious, and residential (Exhibit 5). The property is currently located within Jackson Township. The City of Shakopee and Jackson Township have initiated an Orderly Annexation Agreement to govern the eventual transfer of the study area from the Township to the City. The City of Shakopee's *City-Wide Land Use Plan* (2004) shows that the site is guided for low- and medium-density residential and commercial land uses. Once the Annexation Agreement is finalized, a Rezoning Application will be submitted to the City, which will make the project consistent with the City's future land use plans and zoning requirements.

The City of Shakopee's *Natural Resource Corridor Map* (December 2005) indicates that areas within the site boundary meet *Corridor Priority Ranking* of Good, Better, and Best based on existing natural resource data. These areas are associated with existing woodland areas on the site, and a ravine located in the northern portion of the property. The project proposer has met with the City to confirm that priority areas have been identified and preserved in conformance with existing regulations. Portions of the ravine meet the Scott Watershed Management Organization (WMO) bluff designation (Exhibits 3 & 4). Development of the site will be in compliance with Scott WMO standards and setback requirements along these areas.

Phase I and Phase II Environmental Site Assessments (ESA) were conducted by American Engineering Testing, Inc. (AET) in July and August 2004. The Phase I ESA performed on the Joe Theis and Don La Tour parcels (AET Project No. 03-02040JT, July 2004) indicated that although the assessment revealed no evidence of recognized environmental conditions on the property, two disposal areas were identified on the site. The report recommended that items and equipment from the disposal areas be removed and properly disposed of at an approved landfill or recycling facility.

The Phase I conducted on the Norbert and Larry Theis Parcels (AET Project No. 03-02040NLT, July 2004) identifies the following recognized environmental conditions:

- *Surface staining of the ground or dirt surfaces within the shed/shop building, adjacent to the above ground gasoline tank, and adjacent to the exterior north side of the compressor room attached to the barn at the farmstead at 12226 Marystown Road.*
- *The on-site septic system connected to the floor drain in the shop at the farmstead at 12226 Marystown Road.*

Based on the results of the Phase II ESA (AET Project No. 03-02040.ii, August 2004), petroleum contamination was present in the shed and adjacent to the gasoline above ground storage tank (AST) west of the shop. The petroleum contamination includes diesel range organics (DROs), gasoline range organics (GROs), and various benzene, ethyl benzene, toluene, and xylene (BETX) constituents. Samples associated with the septic system and adjacent to the barn were analyzed and no constituents discernible by the analysis were detected at a level above the laboratory reporting limit. The report recommended that, in conjunction with development of the property, a response action plan (RAP) be developed for proper management of the impacted soils.

A search on the Minnesota Pollution Control Agency's (MPCA) Web site (*What's In My Neighborhood?*) revealed no known potential sources of soil or groundwater contamination.

Natural Gas Pipeline

Two 16-inch natural gas pipelines are located on the property and are currently operated by Xcel Energy (Exhibit 6). The Blue Lake Natural Gas Pipeline was constructed in February 2005 and runs east and south from the northwest property boundary. A second pipeline is oriented in a north/south direction through the eastern portion of the site and serves the Rahr Malting facility. The actual pipeline depth will be field-verified and confirmed during the early stages of project construction to avoid potential interference.

10. Cover Types

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

Exhibit 6 indicates the site currently consists of agricultural land, wetlands, woodland, lawn and landscaping, and impervious surface. Table 10.1 provides information on the estimated acreage of land cover before and after project development.

Table 10.1
Estimated Before and After Cover Types

Land Cover	Before (acres)	Scenario 1 (acres)	Scenario 2 (acres)
Agricultural Fields ¹	277.25	0	0
Wetlands	0.03	0.03	0.03
Woodland	34.60	21.00	21.00
Impervious Surface (Pavement, Buildings, Roadway)	8.70	125.90	129.30
Lawn and Landscaping	2.40	126.40	123.00
Parkland/Open Space (private and public)	0	14.20	14.20
Stormwater Ponding	0	10.10	10.10
School Site (Impervious – school and parking)	N/A ¹	4.50	7.00
School Site (Lawn and Landscaping)	N/A ¹	0	12.30
School Site (park and ponding)	N/A ¹	20.85	6.05
Total	322.98	322.98	322.98

¹ The pre-development cover type for the school site is agricultural and is accounted for under "Agricultural Fields".

If Before and After totals are not equal, explain why.

11. Fish, Wildlife, and Ecologically Sensitive Resources

- a) Identify fish and wildlife resources and habitats on or near the site and describe how they would be affected by the project. Describe any measures to be taken to minimize or avoid impacts.**

Fish and wildlife resources on and near the site are directly related to the composition, quality, size, and connectivity of natural communities including agricultural lands, woodlands, and wetlands. The existing cover types based on aerial photography are shown on Exhibit 6. Wildlife resources that exist throughout the site likely include those species that have adapted to open lands and cropland habitats such as pheasant, meadowlark, field sparrow, cottontail, red fox, and white-tailed deer. The open fields provide seasonal food and cover for these species. The wetland has the potential to provide habitat and cover for many species commonly found in the upper Midwest such as woodcock, thrushes, raccoon, and amphibians; however, the wetland on site is small and likely does not provide significant habitat compared to a larger wetland complex.

Conversion of agricultural fields to residential and commercial development is expected to result in a decline in the type and number of wildlife species that currently use the site. Populations of species that depend upon cropland, such as ring-necked pheasants, wild turkey, and meadowlarks, will likely be displaced. Migratory birds may experience competition for a reduced number of nesting sites upon their return from wintering habitats. Some songbirds that readily adapt to suburban habitats may become more numerous. Non-migratory species with small home ranges such as small mammals will experience more adverse effects. These species will compete with the same or other species to claim territories in neighboring habitats, or may succumb to mortality during project construction.

Between 16 and 21 percent of the 323 acre project area will be open space and woodland, which is expected to help mitigate adverse effects on wildlife. The project is not expected to result in a regionally significant decline in wildlife abundance or species diversity.

Measures to reduce the effects on wildlife include preservation of existing woodland and wetland, development of a trail that will be integrated with open space and parkland, and construction of stormwater ponding. In addition, open space and parkland will provide a natural connection through the site to promote wildlife movement and access to other open space areas and parks. These measures are expected to provide additional habitat for wildlife and mitigate adverse effects on some wildlife.

- b) Are any state-listed (endangered, threatened, or special concern) species, rare plant communities or other sensitive ecological resources such as native prairie habitat, colonial waterbird nesting colonies or regionally rare plant communities on or near the site? ☐ Yes ☒ No If yes, describe the resource and how it would be affected by the project. Indicate if a site survey of the resources has been conducted and describe the results. If the DNR Natural Heritage and Nongame Research program has been contacted give the correspondence reference number: ERDB 20060471. Describe measures to minimize or avoid adverse impacts.

The Minnesota Department of Natural Resources conducted a database search in December 2005 to determine if rare plant or animal species or other significant natural features are known to occur within an approximate one-mile radius of the project site. The database review did not identify any records of rare species or native plant communities within the search area (Appendix A).

12. Physical Impacts on Water Resources

Will the project involve the physical or hydrologic alteration—dredging, filling, stream diversion, outfall structure, diking, and impoundment—of any surface water such as a lake, pond, wetland, stream or drainage ditch? ☐ Yes ☒ No If yes, identify the water resource affected and give the DNR Protected Waters Inventory number(s) if the water resources affected are on the PWI. Describe alternatives considered and proposed mitigation measures to minimize impacts.

Wetland boundaries were delineated using the level two routine determination method set forth in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, Waterways Experiment Station, 1987), in which a sampling transect was established in a representative transition zone of an identified wetland. Westwood Professional Services conducted one transect, consisting of one sampling point in upland and one point in wetland. Six additional data points were sampled throughout the property to determine if other areas met wetland criteria. Wetlands were classified according to *Wetlands of the United States* (U.S. Fish and Wildlife Service Circular 39, Shaw and Fredine, 1971) and *Wetlands and Deepwater Habitats of the United States* (FWS/OBS Publication 79/31, Cowardin et al. 1979).

One intermittent riverine wetland (Wetland A) totaling 0.034 acre was delineated by Westwood on May 11, 2005 (Exhibit 7). The wetland consists of a groundwater discharge zone at the bottom of a steep, wooded ravine on the north-central portion of the property. Steep slopes are dominated by boxelder and American elm trees. The bottom of the ravine is void of vegetation.

The groundwater discharges and flows approximately 30 meters downstream, then dissipates into the sandy soils. The remaining portion of this ravine was dry at the time of the delineation. The wetland boundary was flagged to include the groundwater discharge and to include saturated soils. No other wetlands were delineated on The Bluffs at Marystown property. The wetland boundary was reviewed in the field and verbally confirmed by Jackson Township. Written confirmation of the boundary is still pending.

The 0.034 acre wetland located in the north central portion of the property will not be affected by the proposed project.

13. Water Use

Will the project involve installation or abandonment of any water wells, connection to or changes in any public water supply or appropriation of any ground or surface water (including dewatering)? ☒ Yes ☐ No. If yes, as applicable, give location and purpose of any new wells; public supply affected, changes to be made, and water quantities to be used; the source, duration, quantity and purpose of any appropriations; and unique well numbers and DNR appropriation permit numbers, if known. Identify any existing and new wells on the site map. If there are no wells known on the site, explain methodology used to determine.

According to the Minnesota Geological Survey's (MGS) 2005 *County Well Index* (CWI), there are seven wells located near the study area (unique well numbers 206812, 211853, and 206806) (Exhibit 8). The Phase I ESA completed for the study area in July 2004 indicates there are no additional wells located on the property. All existing wells are for domestic use. During construction, all wells will be identified, abandoned, and reported to the Minnesota Department of Health according to state law prior to development of the site.

Water services within the City of Shakopee are municipally-owned, but independently operated by the Shakopee Public Utilities Commission. Shakopee Public Utilities Commission currently operates 12 wells, which are permitted under DNR Water Appropriations Permit No. 806205. The combined permitted pumping capacity of all 12 wells is 25,908 million gallons per year. Reported pumping for the municipal wells, in 2004, totaled 1,588 million gallons (average 4,350,684 gallons per day). The estimated water demand for the development is between 244,435 (Scenario 1) and 283,617 (Scenario 2) gallons per day, less than 3 percent of the total allowable pumping. Water demand estimates are based on the assumption that consumption is approximately 110 percent of wastewater generation (see Item 18).

At least one new municipal water well and water tower will be required to service the needs of the proposed development. The City of Shakopee is currently analyzing potential locations for a municipal well and a 500,000-gallon elevated storage tank. Due to the range in topography on site, a booster station is proposed to service the site prior to construction of the water tower and well. The booster station will service topographic elevations greater than 915 feet. The new well and water tower will require an additional DNR Water Appropriation Permit or an amendment to the City's existing permit. Specific locations for the storage tank and well have not been finalized, but will be addressed prior to water services being required by The Bluffs at Marystown development.

Regardless of the location of new water supply facilities, the well(s) needed to service the project area will be installed according to the following procedures to ensure a safe and clean public water supply:

- a. Complete a Feasibility Study to determine the specific timing and need for the elevated storage tank, and well(s).
- b. Complete the delineation of a Wellhead Protection Area.
- c. Model the aquifer under the Wellhead Protection Plan to verify the zone of influence of pumping on the drawdown of the aquifer.
- d. Map the area contributing to the public water supply.
- e. Investigate the well yield required, the thickness of the aquifer, the integrity of the confining layer, and any hydrologic interconnection between aquifers when evaluating potential new well locations.
- f. Use protective measures during well construction, such as extending the well casing to the bottom of the confining layer to maintain the natural geologic protection of overlying materials.
- g. Properly case and grout off well boring(s) to prevent contamination of potentially deeper aquifers.
- h. Grout the well from the bottom of the casing or the top of the filter pack to the ground surface, and grout all annular spaces adjacent to the confining layer to maintain its integrity.
- i. Complete well testing to determine the rate at which water can be reliably produced, provide a measure of the productive capacity of the future well, and evaluate the associated drawdown.
- j. Determine the transmissivity of the aquifer for a 24-hour or 72-hour period.
- k. Estimate the direction and magnitude of the local groundwater flow field.
- l. Conduct chemical sampling and testing to verify that the new well is free from contamination.

The above procedures will provide for a safe, clean, and adequate municipal water supply. The new well(s) will be required to meet Minnesota Department of Health (MDH) standards and comply with the MDH Wellhead Protection (WHP) rules. The fundamental goal of WHP rules is to prevent contaminants from entering public wells. WHP rules set requirements for time-of-travel and aquifer transmissivity to ensure safe water supplies.

Dewatering

Dewatering will become necessary if surficial groundwater is encountered during utility installation. It is unlikely, however, that dewatering will be necessary because the depth to groundwater exceeds the planned depth of sanitary sewer, municipal water, and storm sewer in most areas within the study area. Groundwater depth within the vicinity of the site ranges from 153 feet to 232 feet based on records from nearby wells (County Well Index, 2005) (Appendix C). The quantity and duration of potential construction dewatering is not known at this time, but it is expected that any necessary dewatering for construction will be temporary. If groundwater is encountered during utility installation, it will be discharged to temporary

sediment basins located within the project site, which is consistent with City of Shakopee and Scott WMO regulations.

If construction dewatering and pumping from the proposed development exceeds the 10,000-gallon per day or 1,000,000 gallons per year thresholds, a DNR Water Appropriation Permit will be obtained. If it becomes apparent that construction dewatering will not exceed 50 million gallons in total and duration of one year from the start of pumping, the contractor or project proposer will apply to the DNR Division of Waters for coverage under the amended DNR General Permit 97-0005 for temporary water appropriations. It is not anticipated that construction dewatering or pumping from the proposed development will be extensive or continue long enough to impact domestic or municipal wells.

14. Water-Related Land Use Management District

Does any part of the project involve a shoreland zoning district, a delineated 100-year flood plain, or a state or federally designated wild or scenic river land use district? ☐ Yes ☒ No If yes, identify the district and discuss project compatibility with district land use restrictions.

The project site does not include a shoreland zoning district, a delineated 100-year floodplain, or a state or federally designated wild or scenic river district.

15. Water Surface Use

Will the project change the number or type of watercraft on any water body?

☐ Yes ☒ No If yes, indicate the current and projected watercraft usage and discuss any potential overcrowding or conflicts with other uses.

16. Erosion and Sedimentation

Give the acreage to be graded or excavated and the cubic yards of soil to be moved:

Acres: Scenario 1: Approximately 286 acres of the 322.98 acre site will be graded
Scenario 2: Approximately 304 acres of the 322.98 acre site will be graded

Cubic Yards: On-site grading Scenario 1: 2.2 million cubic yards
On-site grading Scenario 2: 2.4 million cubic yards

(Note: the anticipated cubic yards of grading is a preliminary estimate that is subject to change.)

Describe any steep slopes or highly erodible soils and identify them on the site map.
Describe any erosion and sedimentation control measures to be used during and after project construction.

The Highly Erodible Land List for Scott County, Minnesota (USDA NRCS, 1993) indicates that fifteen soils on the site are classified as either highly erodible land (HEL) or potentially highly erodible land (PHEL) (Exhibit 9). Table 16.1 includes information on erodible soil classifications and acreages of each soil type.

Table 16.1
Highly Erodible Soil Classification

Map Symbol	Classification	Erodibility	Acreage
DbC2	Dakota sandy loam, 6-12% slopes, moderately eroded	PHEL	4.0
EaC2	Estherville loam and sandy loam, 6-12% slopes, moderately eroded	PHEL	5.0
EbC2	Estherville gravelly sandy loam, 6-12% slopes, moderately eroded	PHEL	0.7
HaC	Hayden loam, 6-12% slopes	PHEL	9.7
HaC2	Hayden loam, 6-12% slopes, moderately eroded	PHEL	25.5
HaD	Hayden loam, 12-18% slopes	HEL	12.6
HaD2	Hayden loam, 12-18% slopes, moderately eroded	HEL	5.7
HaE2	Hayden loam, 18-25% slopes	HEL	4.6
HaF2	Hayden loam, 25-30% slopes	HEL	11.3
HbD3	Hayden sandy clay loam, 12-18% slopes, severely eroded	HEL	8.2
LaC	Lakeville loam, 6-12% slopes	PHEL	0.4
LbD	Estherville-Burnsville complex, 12-50% slopes	HEL	25.0
LcC	Lester loam, 6-12% slopes	PHEL	8.3
LcC2	Lester loam, 6-12% slopes, moderately eroded	PHEL	4.3
TbE	Terril loam, 18-25% slopes	HEL	2.6
Total			127.9

According to the Metropolitan Council, Digital Soil Survey for Scott County (1955), steep slopes (i.e., slopes steeper than 12 percent) are associated with seven of the soils listed in Table 16.1. Two-foot contour mapping indicates that elevations on the site range from 796 feet in the northwestern portion of the site to 1,004 feet in the southwestern portion of the site. Some slopes associated with the ravine in the northern portion of the site meet the definition of a bluff. Any development proposed along these areas will meet Scott WMO standards and setbacks.

Because the project will involve disturbance of more than one acre of land, application for coverage under the National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) General Permit will be submitted to the MPCA prior to initiating earthwork on the site. This permit is required for discharge of stormwater during construction activity and requires that Best Management Practices (BMPs) be used to control erosion and that all erosion controls be inspected after each rainfall exceeding 0.5 inches in 24 hours. Erosion control practices that will be implemented on the site include:

1. Construction of temporary sediment basins in the locations proposed for stormwater ponding, and development of these basins for permanent use following construction.
2. Silt fence and other erosion control features installed prior to initiation of earthwork and maintained until viable turf or ground cover is established on exposed areas.
3. Periodic street cleaning and installation of a rock construction entrance to reduce tracking of dirt onto public streets.

4. Stabilization of exposed soils, phased with grading, within 7 days for slopes steeper than 3:1, 14 days for slopes less than 3:1 but greater than 10:1, and 21 days for slopes flatter than 10:1.
5. Energy dissipation, such as riprap, installed at storm sewer outfalls.
6. Use of cover crops, native seed mixes, sod, and landscaping to stabilize exposed surface soils after final grading.

Erosion control plans must be reviewed and accepted by the City of Shakopee prior to project construction. Because the above BMPs will be implemented during and after construction, potential adverse effects from construction-related sediment and erosion on water quality will be minimized.

17. Water Quality: Surface Water Runoff

- a) Compare the quantity and quality of site runoff before and after the project. Describe permanent controls to manage or treat runoff. Describe any stormwater pollution prevention plans.

Water Quantity

The project site is approximately 323 acres. The annual runoff volume of water leaving the site for existing and proposed conditions was analyzed using the guidance from the Minnesota Stormwater Manual (November 2005). The results of this analysis are outlined below.

Existing Conditions

Existing site conditions are agricultural uses with some wooded areas and a farmstead. The site generally drains east and north toward TH169. Storm water runoff from the site enters the Shakopee Upper Valley Drainageway and eventually reaches the Minnesota River. Based on the modeling data, the site generates an annual runoff volume of approximately 77 acre-feet. This information is summarized in Table 17.1.

Proposed Conditions

Two scenarios were evaluated with this EAW as discussed in Item 6. The development will consist of a mix of single family homes, townhomes, condominiums, and neighborhood commercial uses. A school may also be constructed on the site.

The drainage patterns are anticipated to remain the same as the existing conditions with storm water being directed to the east and north, eventually discharging to the Minnesota River. Storm water ponding and infiltration to meet City and Scott County WMO standards will be required. Prior to providing infiltration, Scenarios 1 and 2 are anticipated to generate an average runoff volume of 87 acre-feet and 84 acre-feet, respectively. This represents an increase in runoff volume, which is anticipated with development. However, infiltration shall be required to meet Scott WMO rules which states that for projects that increase runoff volumes for the 2-year critical storm event, at least 1/2 inch of runoff from all new impervious surfaces will be infiltrated. Infiltration areas are proposed in the concept plan and will be further reviewed and addressed through the permitting process.

The storm water discharge rates are not anticipated to increase as ponding is required to limit the proposed discharge rates to the pre-settlement discharge rates per the Scott WMO rules. Ponding will need to be provided on-site to meet these requirements.

Water Quality

A water quality analysis has been completed for existing and proposed conditions within the project area using the guidance from the Minnesota Stormwater Manual (November 2005). This analysis included annual phosphorus loading and total suspended solids loading under existing and proposed site conditions. The multiple ponding areas proposed within the study area will be designed to provide treatment to National Urban Runoff Program (NURP) recommendations prior to discharge from the site.

Existing Conditions

The existing conditions analysis was used to predict pollutant discharges from the project area. The land cover used to predict water quality conditions for the existing conditions assumed that a majority of the drainage area was in agricultural production with small segments of woodland, grass, and farmstead land uses.

Under existing conditions, the model predicted that 67 pounds of phosphorus and 17,380 lbs of total suspended solids are generated by the site annually. There is currently no treatment or Best Management Practices (BMP) for runoff before discharging from the site.

Proposed Conditions

This analysis assumed a level of overall imperviousness for the proposed land defined for developed residential and commercial land uses. Analysis of these proposed conditions for both scenarios is shown on Table 17.1. Storm water is required to be treated to NURP recommendations. The data outlined below shows the results of the analysis with and without storm water treatment.

Table 17.1: Water Quantity and Quality Analysis

	Annual Runoff Volume (acre-feet)	Annual Phosphorus Loading Before Treatment (lbs/year)	Annual Phosphorus Loading After Treatment (lbs/year)	Annual Total Suspended Solids Before Treatment (lbs/year)	Annual Total Suspended Solids After Treatment (lbs/year)
Existing Conditions	77	67	NA	17,380	NA
Scenario 1	87*	65	26-33	10,548	1,055 – 2,637
Scenario 2	84*	65	26-33	10,869	1,087 – 2,717

* Does not take into account the required infiltration.

- b) **Identify routes and receiving water bodies for runoff from the site; include major downstream water bodies as well as the immediate receiving waters. Estimate impact runoff on the quality of receiving waters.**

According the DNR Division of Waters digital watershed mapping, the project site is located within the Minnesota River (Shakopee) major watershed (Exhibit 2). Surface water drains overland to east and north to the Shakopee Upper Valley Drainageway. Stormwater is eventually discharged to the Minnesota River and/or infiltrates on-site. Post-construction drainage will follow similar pathways, with minor differences in drainage routes. Post-development stormwater runoff will either travel overland, or through storm sewers prior to discharging to receiving waters.

Based on the water quality analysis that was completed and the storm water treatment that is required of development in this area, there is no anticipated adverse impact to downstream water bodies.

18. Water Quality: Wastewaters

- a) **Describe sources, composition and quantities of all sanitary, municipal and industrial wastewater produced or treated at the site.**

Only normal domestic wastewater production is expected. The types of wastewater produced will be typical of new residential and commercial developments. No on-site municipal or industrial wastewater treatment is anticipated.

Both the MPCA and the Metropolitan Council Environmental Services (MCES) have compiled and documented extensive data that relates wastewater flow generation to population and land use. Sanitary wastewater production for the proposed development was estimated based on the methods outlined in the Service Availability Charge (SAC) Procedure Manual (MCES, 2006). The MCES has established 274 gallons per day (gpd) to be the average daily wastewater production from a typical residential connection. One SAC unit is defined as 274 gallons of wastewater flow volume.

Scenario 1

Single family, townhomes, and condominiums are assigned one SAC unit per dwelling. The volume of wastewater production for the school was assigned one SAC unit per 18 students, which is based on 30 sq. ft. per student or 15 gallons per student. Commercial and office condominium land uses were assigned SAC units based on building area. The estimated maximum potential daily wastewater production for the entire development under Scenario 1 is 222,214 gpd. The following table provides information on wastewater production based on land use.

Table 18.1
Wastewater Production Predicted under Scenario 1

Proposed Use	SAC Rate	Units	SAC Units	Wastewater (gallons/day)
Single family units	1/Unit	451	451	123,574
Multi family units (townhomes)	1/Unit	232	232	63,568
Multi family units (condominiums)	1/Unit	60	60	16,440
Elementary school	1:18 Students	850 (students)	48	13,152
Office/condominium	1:2,400 s.f.	22,500	10	2,740
Neighborhood Commercial	1:3,000 s.f.*	28,211	10	2,740
Total			811	222,214

*Use assumes no water intensive users.

Scenario 2

As described above, single and multi family units are assigned one SAC unit per dwelling unit, and the commercial land use is assigned SAC units based on the area of the building. The estimated maximum potential daily wastewater production for the entire development under Scenario 2 is 257,834 gpd. The following table provides information on wastewater production based on land use.

Table 18.2
Wastewater Production Predicted under Scenario 2

Proposed Use	SAC Rate	Units	SAC Units	Wastewater (gallons/day)
Single family units	1/Unit	467	467	127,958
Multi family units (townhomes)	1/Unit	284	284	77,816
Multi family units (condominiums)	1/Unit	180	180	49,320
Neighborhood Commercial	1:3,000 s.f.	28,211	10	2,740
Total			921	257,834

- b) Describe waste treatment methods or pollution prevention efforts and give estimates of composition after treatment. Identify receiving waters, including major downstream water bodies, and estimate the discharge impact on the quality of receiving waters. If the project involves on-site sewage systems, discuss the suitability of site conditions for such systems.

The project will not include on-site sewage systems. As described below, wastewaters will be discharged to the City of Shakopee wastewater collection system, and appropriately treated in the Blue Lake Wastewater Treatment Plant (WWTP) where it is treated and discharged.

- c) If wastes will be discharged into a publicly owned treatment facility, identify the facility, describe any pretreatment provisions and discuss the facility's ability to handle the volume and composition of wastes, identifying any improvements necessary.

The City of Shakopee system outlets through the Metropolitan Council Environmental Services (MCES) Chaska interceptor force main and ultimately reaches the Blue Lake WWTP in Savage, Minnesota. Per information from the Metropolitan Council's website, the Blue Lake WWTP has a design capacity to treat 38 million gallons of wastewater per day. The daily flow in 2004 was 28 million gallons of wastewater per day. No wastewater facility or treatment capacity issues are anticipated.

- d) If the project requires disposal of liquid animal manure, describe disposal technique and location and discuss capacity to handle the volume and composition of manure. Identify any improvements necessary. Describe any required setbacks for land disposal systems.

The project will not include facilities that generate liquid animal manure requiring disposal.

19. Geologic Hazards and Soil Conditions

- a) Approximate depth (in feet) to groundwater: 0 minimum 202 average

Groundwater elevations within the vicinity of the site range from 690 feet to 736 feet above sea level based on records from nearby wells (County Well Index, 2005). Two-foot topographic mapping indicates that elevations on the site range from 796 to 1,004 feet. Extreme changes in topography on the site contribute to significant ranges in depth to groundwater on the site. Based on groundwater elevations from wells and existing topography, the maximum depth to groundwater is estimated at about 314 feet. Because surficial groundwater is sometimes encountered in the wetland, the minimum depth to groundwater is estimated at 0 feet.

Approximate depth (in feet) to bedrock: 77 minimum 114 average

Depth to bedrock was estimated from records of nearby wells (County Well Index, 2005). The minimum distance to bedrock is 77 feet and the maximum is 150 feet.

- b) Describe any of the following geologic site hazards to ground water and also identify them on the site map: sinkholes, shallow limestone formations or karst conditions. Describe measures to avoid or minimize environmental problems due to any of these hazards.

No known geologic hazards in the form of sinkholes, faults, shallow limestone formations, and karst topography are present on the project site. Measures to avoid or minimize environmental problems due to these hazards are not proposed.

- c) Describe the soils on site, giving NRCS (SCS) classifications, if known. Discuss soil granularity and potential for groundwater contamination from wastes or chemicals spread or spilled onto the soils. Discuss any mitigation measures to prevent such contamination.

The Soil Survey Geographic (SSURGO) digital database for Scott County (USDA NRCS, 2004) indicates that the following soils occur within the project area (Exhibit 10).

Table 19.1
Soils Classification

Map Symbol	Classification	Hydric ¹	Drainage ²
DbB	Dakota sandy loam, 2-6% slopes	No	somewhat excessively
DbB2	Dakota sandy loam, 2-6% slopes, moderately eroded	No	somewhat excessively
DbC2	Dakota sandy loam, 6-12% slopes, moderately eroded	No	somewhat excessively
EaB	Estherville loam and sandy loam, 2-6% slopes	No	somewhat excessively
EaB2	Estherville loam and sandy loam, 2-6% slopes, moderately eroded	No	somewhat excessively
EaC2	Estherville loam and sandy loam, 6-12% slopes, moderately eroded	No	somewhat excessively
EbC2	Estherville Gravelly Sandy Loam, 6-12% slopes, Moderately eroded	No	excessively
HaB	Hayden loam, 0-6% slopes	No	well
HaB2	Hayden loam, 2-6% slopes, moderately eroded	No	well
HaC	Hayden loam, 6-12% slopes	No	well
HaC2	Hayden loam, 6-12% slopes, moderately eroded	No	well
HaD	Hayden loam, 12-18% slopes	No	well
HaD2	Hayden loam, 12-18% slopes, moderately eroded	No	well
HaE2	Hayden loam, 18-25% slopes	No	well
HaF2	Hayden loam, 25-30% slopes	No	well
HbD3	Hayden sandy clay loam, 12-18% slopes, severely eroded	No	well

Map Symbol	Classification	Hydric ¹	Drainage ²
LaC	Lakeville loam, 6-12% slopes	No	somewhat excessively
LbD	Estherville-Burnsville complex, 12-50% slopes	No	somewhat excessively
LcB	Lester loam, 2-6% slopes	No	well
LcB2	Lester loam, 2-6% slopes, moderately eroded	No	well
LcC	Lester loam, 6-12% slopes	No	well
LcC2	Lester loam, 6-12% slopes, moderately eroded	No	well
PaB	Palms muck, sloping 2-12% slopes	Yes	very poorly
TbB	Terril loam, 2-6% slopes	No	moderately well
TbE	Terril loam, 18-25% slopes	No	moderately well
WaA	Waukegan silt loam, , 0-2% slopes	No	well
WaB	Waukegan silt loam, , 2-6% slopes	No	well
Wb	Webster-Glencoe silty loams	Yes	poorly

¹ Based on the List of Hydric Soils of Minnesota (USDA NRCS, 1995).

² Based on the SSURGO database for Scott County, Minnesota (USDA NRCS, SSURGO 2004).

According to the Soil Survey of Scott County, Minnesota (USDA NRCS, 1955), the site is located on the Lester-Webster-Glencoe association, which consists of rolling to nearly level soils, darkly colored, and medium texture. Soils in this association were derived from calcareous, moderately fine textured glacial material.

Potential for Groundwater Contamination

The susceptibility of groundwater to pollution relates to depth to the water table and the approximate time it takes water to infiltrate the land surface and percolate down to the underlying aquifer. The pollution sensitivity map of the *Geologic Atlas of Scott County, Minnesota (1989)* indicates that the sensitivity of groundwater to pollution is high. The High sensitivity category indicates that the estimated vertical travel time for water-borne surface contaminants to reach groundwater 50 feet below the land surface is weeks to years. However, a High sensitivity rating does not suggest that water quality has been or will be degraded. If there are no contaminant sources, for example, pollution will not occur. Preservation of large areas of parkland/open space including natural areas and adequate stormwater treatment is expected to minimize the potential for groundwater contamination at the The Bluffs at Marystown development.

Groundwater Protection and Mitigation Measures

The Bluffs at Marystown development will be consistent with the goals, policies, and strategies described in the *Scott County Groundwater Protection Plan*. The goal of the plan is to "assure County residents access to potable water by protecting existing and future ground water resources." The plan describes goals related to land use to protect groundwater in the county.

The Bluffs at Marystown project will offer a higher level of groundwater protection than exists under current conditions. Chemical applications can be high in agriculturally

dominated landscapes. The conversion of the site to urban uses will ensure greater protection of groundwater by: (1) covering exposed soils with turf and landscape plants to reduce infiltration of nutrients and pesticides; (2) reducing hazardous materials on the property to include only household quantities; (3) protecting the jurisdictional wetland on-site, (4) abandoning and sealing existing wells; (5) providing between 50 and 67 acres of parkland and open space including natural corridors; and (6) providing stormwater treatment and infiltration methods.

20. Solid Wastes, Hazardous Wastes, and Storage Tanks

- a) **Describe types, amounts and compositions of solid or hazardous wastes, including solid animal manure, sludge and ash, produced during construction and operation. Identify method and location of disposal. For projects generating municipal solid waste, indicate if there is a source separation plan; describe how the project will be modified for recycling. If hazardous waste is generated, indicate if there is a hazardous waste minimization plan and routine hazardous waste reduction assessments.**

Construction activities for this residential development will generate waste on-site. However, the amount of waste will be typical of a construction project. The contractor will dispose of wastes generated at the site in an approved method. The contractor will try and recycle any construction waste that can be recycled.

After construction, solid waste generation will be typical of residential and commercial developments. It is not anticipated that the proposed residential development will generate significant amounts of wastes that would be considered "hazardous." The majority of the solid waste generated will include paper, organics (food wastes and wood), yard waste, and inert solids. The remaining wastes will include plastics, metals, and glass.

The Minnesota Office of Environmental Assistance (MOEA) reported an estimate of residential solid waste generation of 0.33 tons per person per year in 1998 for the Twin Cities Metropolitan Area. The residential solid waste generation rates were based on the conservative figures that the average single-family dwelling consists of 2.68 persons. The household occupant number is then multiplied by 0.33 tons per person per year, based on the MOEA figure for the Twin Cities. Using these figures, the proposed development is expected to generate between 657 (Scenario 1) and 822 (Scenario 2) tons of residential municipal solid waste per year.

According to MOEA, Scott County generated 59,330 tons of municipal solid waste in 2003. Approximately 89 percent of this waste was delivered to landfills in other counties or delivered to out-of-state landfills. The remaining 11 percent was processed at the Elk River RDF Processing Facility and Hennepin Energy Resource Company.

Dick's Sanitation provides residential garbage, bulk item pickup, yard waste and recycling services for the City of Shakopee. The city requests that recyclable materials be sorted into two categories: (1) glass, aluminum, and plastic and (2) cardboard, newspaper, mixed mail, and magazines. Residents are billed quarterly for these services.

Scott County has consistently led the region in the percentage of mixed municipal waste being recycled. According to MOEA statistics for 2003, approximately 69,583 tons of

recyclable materials were collected from Scott County residents and organizations in 2003. Participation in the recycling program by future residents of the study area is expected to reduce costs for solid waste trucking and disposal.

- b) Identify any toxic or hazardous materials to be used or present at the site and identify measures to be used to prevent them from contaminating groundwater. If the use of toxic or hazardous materials will lead to a regulated waste, discharge or emission, discuss any alternatives considered to minimize or eliminate the waste, discharge or emission.**

As indicated in Item 9, petroleum contamination was present in the shed and adjacent to the gasoline above ground storage tank (AST) west of the shop. The petroleum contamination includes diesel range organics (DROs), gasoline range organics (GROs), and various benzene, ethyl benzene, toluene, and xylene (BETX) constituents. Field and laboratory analyses associated with the septic system and the barn revealed that none of the constituents that were discernible by the analysis was detected at a level above the laboratory reporting limit. The report recommended that in conjunction with development of the property, a response action plan (RAP) be developed to properly manage the impacted soils.

Future commercial development may include a retail component or may be used as an automobile convenience station. If the commercial development includes an automobile convenience station with underground storage tanks, annual licensing by the MPCA will be required. The licensing and inspection requirements of the MPCA are expected to mitigate or minimize the potential impacts from these normal business activities. Consideration will be given to development of spill and leak detection and prevention technologies, as well as double-walled tank construction, to reduce the potential for groundwater contamination from storage tanks that may be developed. Any underground storage tanks will be installed according to MPCA regulations.

- c) Indicate the number, location, size and use of any above or below ground tanks to store petroleum products or other materials, except water. Describe any emergency response containment plans.**

As indicated in Item 9, a Phase I Environmental Site Assessment was conducted by AET, and indicated that an AST and an on-site septic system were found in association with the Theis property at 12226 Marystown Road. The Phase II Environmental Site Assessment of the Larry Theis Farmstead (August 2004) presents the results of soil borings, field screening, and laboratory analysis performed for the area. No contamination was encountered in association with either tank. The project proposer will be required to remove and dispose of the fuel storage tank in compliance with applicable regulations prior to development.

It is currently unknown whether above or below ground tanks to store petroleum or other materials will be located on the project site. If above or below ground tanks are proposed on the site, they will be installed according to MPCA regulations and consideration will be given to spill and leak detection and prevention technologies, as well as double-walled tank construction.

21. Traffic

Parking spaces added: Unknown

Existing spaces (if project involves expansion): 0

Estimated total average daily traffic generated: 9,933

Estimated maximum peak hour traffic (if known) and time of occurrence: 583; PM

Provide an estimate of the impact on traffic congestion on affected roads and describe any traffic improvements necessary. If the project is within the Twin Cities metropolitan area, discuss its impact on the regional transportation system.

The full traffic study is contained in Appendix D.

22. Vehicle-Related Air Emissions

Estimate the effect of the project's traffic generation on air quality, including carbon monoxide levels. Discuss the effect of traffic improvements or other mitigation measures on air quality impacts. Note: If the project involves 500 or more parking spaces, consult EAW Guidelines about whether a detailed air quality analysis is needed.

The increased traffic will generate a corresponding increase in carbon monoxide levels and other vehicle-related air emissions. Baseline air quality monitoring or predictive air quality modeling has not been scheduled at this time, and no measures to mitigate air quality impacts have been considered. The project is expected to have a negligible impact on air quality.

23. Stationary Source Air Emissions

Describe the type, sources, quantities and compositions of any emissions from stationary sources of air emissions such as boilers, exhaust stacks or fugitive dust sources. Include any hazardous air pollutants (consult EAW Guidelines for a listing) and any greenhouse gases (such as carbon dioxide, methane, nitrous oxide) and ozone-depleting chemicals (chloro-fluorocarbons, hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride). Also describe any proposed pollution prevention techniques and proposed air pollution control devices. Describe the impacts on air quality.

No stationary source air emissions are anticipated as a result of this project because development of heavy industrial facilities is not proposed on this site.

24. Odors, Noise, and Dust

Will the project generate odors, noise or dust during construction or during operation?

☒ Yes ☐ No If yes, describe sources, characteristics, duration, quantities or intensity and any proposed measures to mitigate adverse impacts. Also identify locations of nearby sensitive receptors and estimate impacts on them. Discuss potential impacts on human health or quality of life. (Note: fugitive dust generated by operations may be discussed at item 23 instead of here.)

Project development will not generate odors, noise or dust in excess of levels emitted during construction of typical suburban developments. Any odors, noise, or dust produced during construction will meet the requirements of the MPCA and applicable local regulations.

Odors

The project will not generate significant odors during construction or operation. The emission of odor by any use shall be in compliance with applicable county or municipal regulations.

Noise

It is anticipated that noise levels will increase locally during project construction. The noise levels on and adjacent to the site will vary considerably depending on the pieces of equipment being operated simultaneously, the percent of time in operation, and the distance from the equipment to the receptors. It is anticipated that most construction activities will be confined to the hours between 7:00 am and 7:00 pm and that a number of machines could potentially be operating simultaneously.

Dust

The construction process is expected to generate some dust. It is not anticipated that fugitive dust will be generated in objectionable quantities. Consideration will be given to suppression of airborne dust by application of water if significant fugitive dust generation occurs during site grading.

25. Nearby Resources

Are any of the following resources on or in proximity to the site?

If yes, describe the resource and identify any project-related impacts on the resource.

Describe any measures to minimize or avoid adverse impacts.

Archaeological, historical or architectural resources? ☐ Yes ☒ No

The Minnesota State Historic Preservation Office (SHPO) conducted a search of the Minnesota Archaeological Inventory and Historic Structure Inventory for the project area (Appendix B). Based on their review, no archaeological sites were identified in a search of the Minnesota Archaeological Inventory for the search area requested. One Historic Structure, Jackson Town Hall, was identified within the search area; however, the building no longer exists.

Prime or unique farmlands or land within an agricultural preserve? ☒ Yes ☐ No

According to the Natural Resources Conservation Service (NRCS), seven of the 26 soil types found on the site are classified as prime farmland. One additional soil type found on-site is classified as prime farmland when drained. Eight soil types found on-site are considered farmland of statewide importance. These soils comprised approximately 242 acres or 75 percent of the site (Table 25.1).

Table 25.1
Prime Farmland and other Important Farmlands

Map Symbol	Soil Classification	Farmland Classification	Acreage
DbB	Dakota sandy loam, 2-6% slopes	Statewide Importance	2.3
DbB2	Dakota sandy loam, 2-6% slopes, moderately eroded	Statewide Importance	2.2
EaB	Estherville loam and sandy loam, 2-6% slopes	Statewide Importance	29.2
EaB2	Estherville loam and sandy loam, 2-6% slopes, moderately eroded	Statewide Importance	3.1
HaB	Hayden loam, 0-6% slopes	Prime	44.5
HaB2	Hayden loam, 2-6% slopes, moderately eroded	Prime	2.5
HaC	Hayden loam, 6-12% slopes	Statewide Importance	9.7
HaC2	Hayden loam, 6-12% slopes, moderately eroded	Statewide Importance	25.5
LcB	Lester loam, 2-6% slopes	Prime	95.1
LcB2	Lester loam, 2-6% slopes, moderately eroded	Prime	1.8
LcC	Lester loam, 6-12% slopes	Statewide Importance	8.3
LcC2	Lester loam, 6-12% slopes, moderately eroded	Statewide Importance	4.3
TbB	Terril loam, 2-6% slopes	Prime	4.8
WaA	Waukegan silt loam, , 0-2% slopes	Prime	2.4
WaB	Waukegan silt loam, , 2-6% slopes	Prime	4.4
Wb	Webster-Glencoe silty loams	Prime (if drained)	1.7
Total			241.8

¹ Based on the USDA/NRCS Prime Farmland and other Important Farmlands for Scott County, Minnesota (2005).

Prime farmlands consist of land that has the best combination of physical and chemical characteristics for producing food, feed, forage, and oilseed crops. According to the NRCS, prime farmlands have "an adequate and dependable water supply from precipitation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content and few or no rocks." This does not mean all soils listed as prime farmland produce exceptionally high crop yields.

Farmland of statewide importance consists of soils that are important to the agricultural resource base but they do not meet the requirements for prime farmland. These soils are more erodible, droughty, seasonally wet, and difficult to cultivate than prime farm land. They are also usually less productive than prime farmland soils.

No farmland preservation measures have been considered. Because the site is guided for development, no clear alternatives to conversion of prime farmland are readily identifiable.

Designated parks, recreation areas or trails? ☐ Yes ☒ No

There are currently no designated parks, recreation areas, or trails within the project boundaries. As indicated in Item 9, the City of Shakopee's *Natural Resource Corridor Map* (December 2005) identifies recommended preservation areas within the site boundary associated with the ravine and existing woodland areas. The City's Comprehensive Plan identified two park search areas within the project area. The project proposer has indicated they will work with the City to preserve these natural areas throughout the development and create park areas in conformance with City requirements.

Scenic views and vistas? ☐ Yes ☒ No

No scenic views or vistas exist within the immediate vicinity of the site.

Other unique resources? ☐ Yes ☒ No**26. Visual Impacts**

Will the project create adverse visual impacts during construction or operation? Such as glare from intense lights, lights visible in wilderness areas and large visible plumes from cooling towers or exhaust stacks? ☐ Yes ☒ No. If yes, explain.

27. Compatibility with Plans and Land Use Regulations

Is the project subject to an adopted local comprehensive plan, land use plan or regulation, or other applicable land use, water, or resource management plan of a local, regional, state or federal agency? ☒ Yes ☐ No. If yes, describe the plan, discuss its compatibility with the project and explain how any conflicts will be resolved. If no, explain.

The study area is not currently regulated under the zoning authority of the City of Shakopee. However, the City has completed land use planning as part of the City's Comprehensive Plan for this area. The City of Shakopee and Jackson Township have an Orderly Annexation Agreement. When annexation is complete, the study area will be subject to the City of Shakopee's Comprehensive Plan and Zoning Ordinance. The proposed development evaluated in this EAW is consistent with the *City of Shakopee Plan Update* (2004) and will be compatible with future adjacent land uses. The City of Shakopee's *City-Wide Land Use Plan* (2004) shows that the site is guided for low- and medium- density residential and commercial land uses.

28. Impact on Infrastructure and Public Services

Will new or expanded utilities, roads, other infrastructure or public services be required to serve the project? ☒ Yes ☐ No. If yes, describe the new or additional infrastructure or services needed. (Note: any infrastructure that is a connected action with respect to the project must be assessed in the EAW; see EAW Guidelines for details.)

Public and private infrastructure improvements will need to be constructed in association with this development. These include but are not limited to: roadways, trails, the stormwater system, electrical lines, telephone lines, and continued improvements and upgrades to the sanitary sewer and water supply systems including future development of a water tower and municipal well. Environmental impacts related to the improvements that are directly associated with the project are discussed throughout this document.

29. Cumulative Impacts

Minnesota Rule part 4410.1700, subpart 7, item B requires that the RGU consider the "cumulative potential effects of related or anticipated future projects" when determining the need for an environmental impact statement. Identify any past, present or reasonably foreseeable future project that may interact with the project described in this EAW in such a way as to cause cumulative impacts. Describe the nature of the cumulative impacts and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to cumulative impacts (or discuss each cumulative impact under the appropriate item(s) elsewhere on this form).

The changes in regional land use in the Shakopee area from open space and agricultural land to more urbanized uses is expected to have a cumulative impact on the area. Cumulative effects of this and future projects on natural resources and infrastructure are expected to be roughly proportional to the impacts discussed in this EAW, or somewhat greater if future projects are developed at a higher density. The City of Shakopee has planned for future growth and development as part of its *Comprehensive Plan Update*. This effort will ensure that the cumulative impacts of future growth and development to the environment and to the City's service capacity are anticipated and mitigated.

The project proposer is not currently planning projects on adjacent lands. Consequently, the precise timing and nature of future development in the project vicinity is unknown. However, land adjacent to the project site is eventually expected to develop, thereby converting existing open space and agricultural land to residential and commercial uses. The *City of Shakopee Plan Update* anticipates and guides the intensity of development within the City and directs necessary infrastructure improvements to support the planned development.

Mitigation of potential cumulative impacts will include providing approximately 50 to 67 acres of open space (15 to 20 percent of the site), protecting the jurisdictional wetland and quality woodlands and natural areas to the extent practicable, pretreating stormwater, providing adequate municipal facilities such as potable water and wastewater treatment, and addressing future traffic issues. These provisions will help minimize potential cumulative effects of past developments and future developments within the region.

30. Other Potential Environmental Impacts

If the project may cause any adverse environmental impacts not addressed by items 1 to 28, identify and discuss them here, along with any proposed mitigation.

No other adverse environmental impacts are anticipated as a result of this project.

31. Summary of Issues

Do not complete this section if the EAW is being done for EIS scoping; instead, address relevant issues in the draft Scoping Decision document, which must accompany the EAW. List any impacts and issues identified above that may require further investigation before the project begins. Discuss any alternatives or mitigative measures that have been or may be considered for these impacts and issues, including those that have been or may be ordered as permit conditions.

Table 31.1
Summary of Issues and Mitigation Measures

Item	Title	Issues / Mitigation Measures
11.	Fish, Wildlife, and Ecologically Sensitive Resources	Preservation of between 50 and 67 acres of parkland, stormwater ponding, woodland, wetland, and open space.
13.	Water Use	The addition of a municipal water well and water tower on or adjacent to the site; compliance with DNR Water Appropriation Permit requirements; connection to the municipal water supply system.
16.	Erosion and Sedimentation	BMP implementation; compliance with NPDES/SDS General Permit requirements.
17.	Water Quality: Surface Water Runoff	Creation of stormwater treatment ponds and infiltration areas to manage stormwater runoff.
21	Traffic	Improvements to Marystown Road/TH169 north and south ramps and to Marystown Road/17 th Avenue need to be made.
9 and 20	Petroleum contamination of soils near shed on the Theis parcel	Development of a Response Action Plan (RAP) will be developed to properly address the impacted soils

RGU CERTIFICATION

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

I hereby certify that:

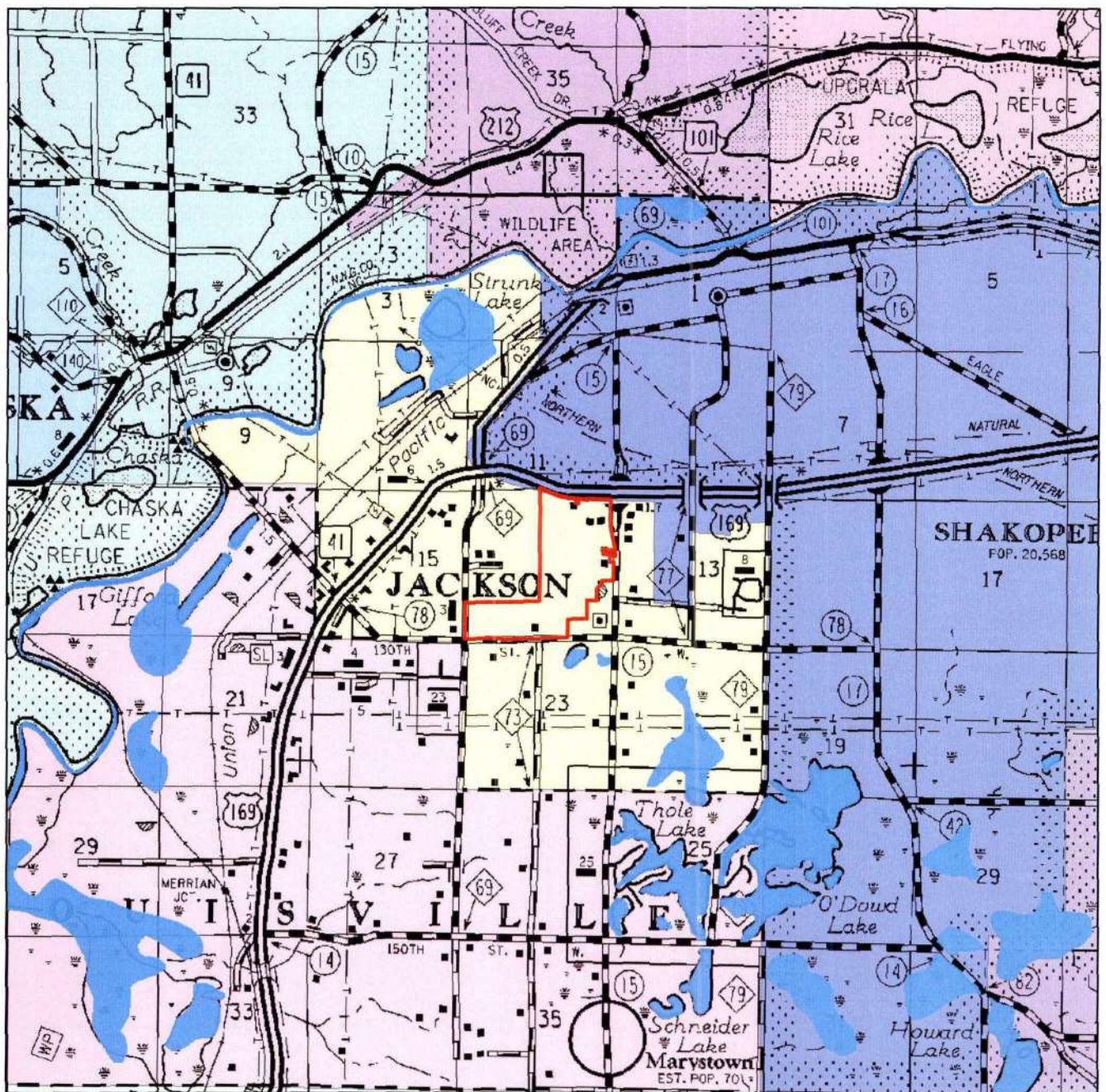
The information contained in this document is accurate and complete to the best of my knowledge. The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions,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

Signature *B. Michael Leek* Date 04/12/2006

Title: Michael Leek, Community Development Director

The Environmental Assessment Worksheet was prepared by the staff of the Environmental Quality Board at Minnesota Planning. For additional information, worksheets or for *EAW Guidelines*, contact: Environmental Quality Board, 658 Cedar Street, St. Paul, MN 55155, (651) 296-8253, or www.mnplan.state.mn.us.

EXHIBITS 1 - 10



Data Source(s): Mn/DOT County Highway Map Series (2002), Mn/DOT (2001), USGS DLG Hydrography lake and wetland-polygons.

Legend

EAW Boundary

N



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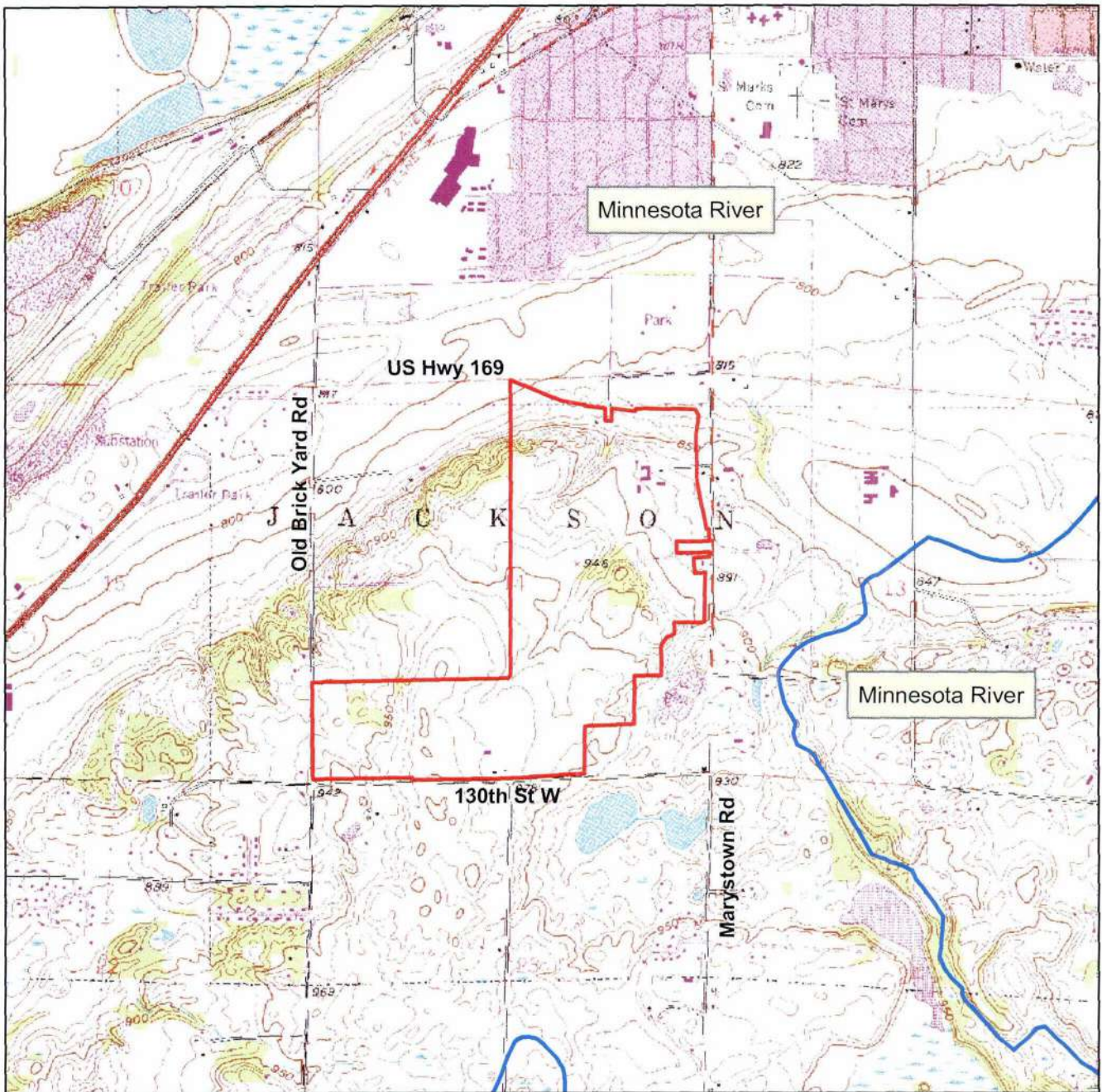
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The Bluffs at Marystown

Shakopee, Minnesota

Site Location

EXHIBIT 1

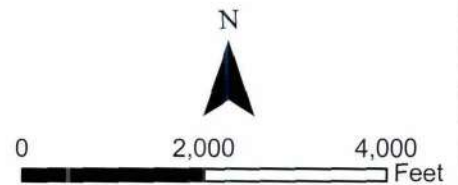


Data Source(s): USGS/MnDNR DRG (Shakopee Quad, rev. 1993), MnDNR Watersheds (1999).

Legend

- EAW Boundary
- Minor Watershed Boundary

Note: The site is located within the Minnesota River - Shakopee Major Watershed



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The Bluffs at Marystown

Shakopee, Minnesota

USGS Topography
and Watersheds

EXHIBIT 2



Data Source(s): USDA FSA APFO DOQ (2003), WPS (2006).

Legend

- EAW Boundary
- Bluff Line

N



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The Bluffs at Marystown

Shakopee, Minnesota

Scenario 1
Preliminary Site Plan

EXHIBIT 3



Data Source(s): USDA FSA APFO DOQ (2003), WPS (2006).

Legend

- EAW Boundary
- Bluff Line

N



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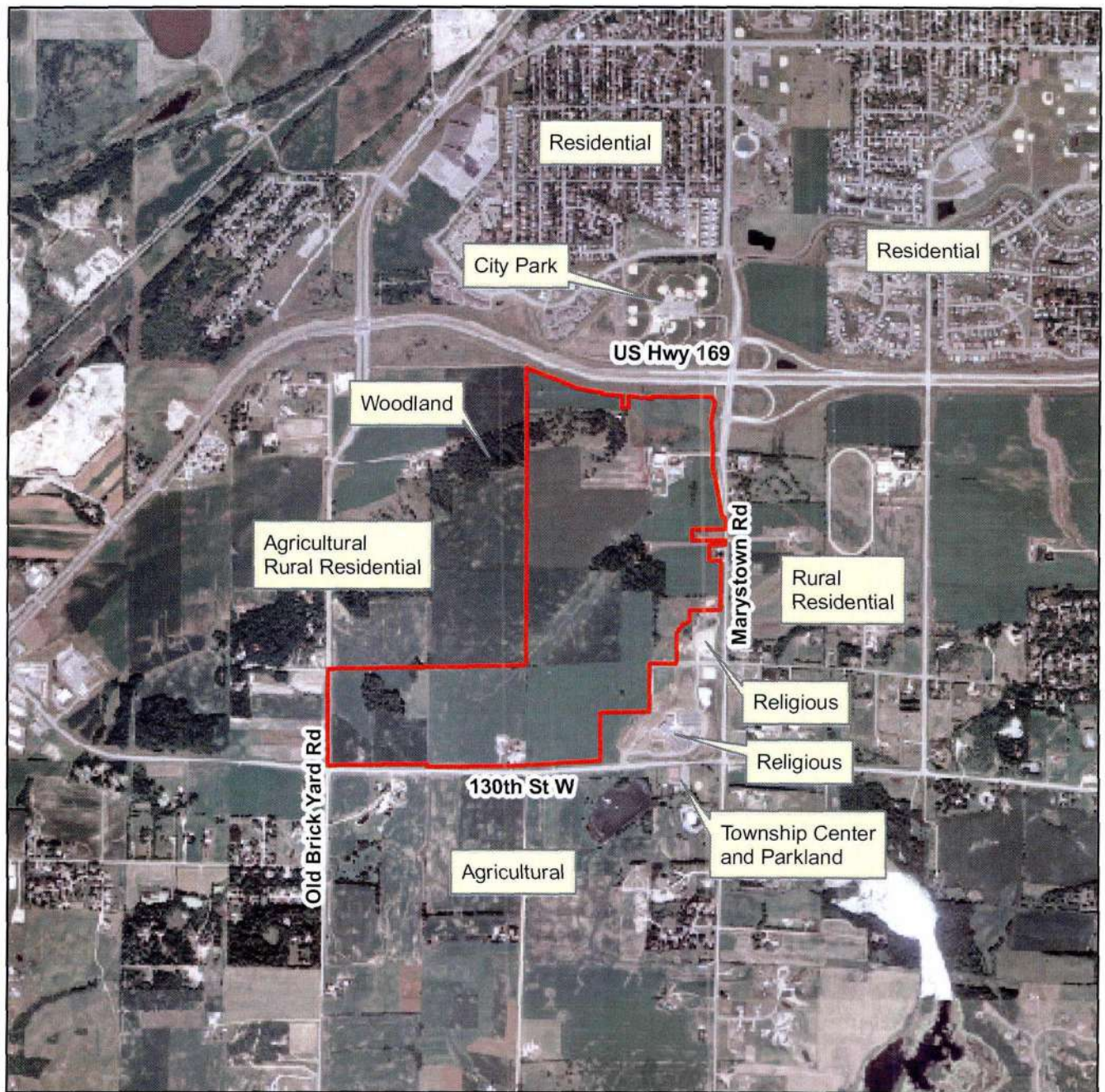
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The Bluffs at Marystown

Shakopee, Minnesota

Scenario 2
Preliminary Site Plan

EXHIBIT 4



Data Source(s): USDA FSA APFO DOQ (2003).

Legend

EAW Boundary

N



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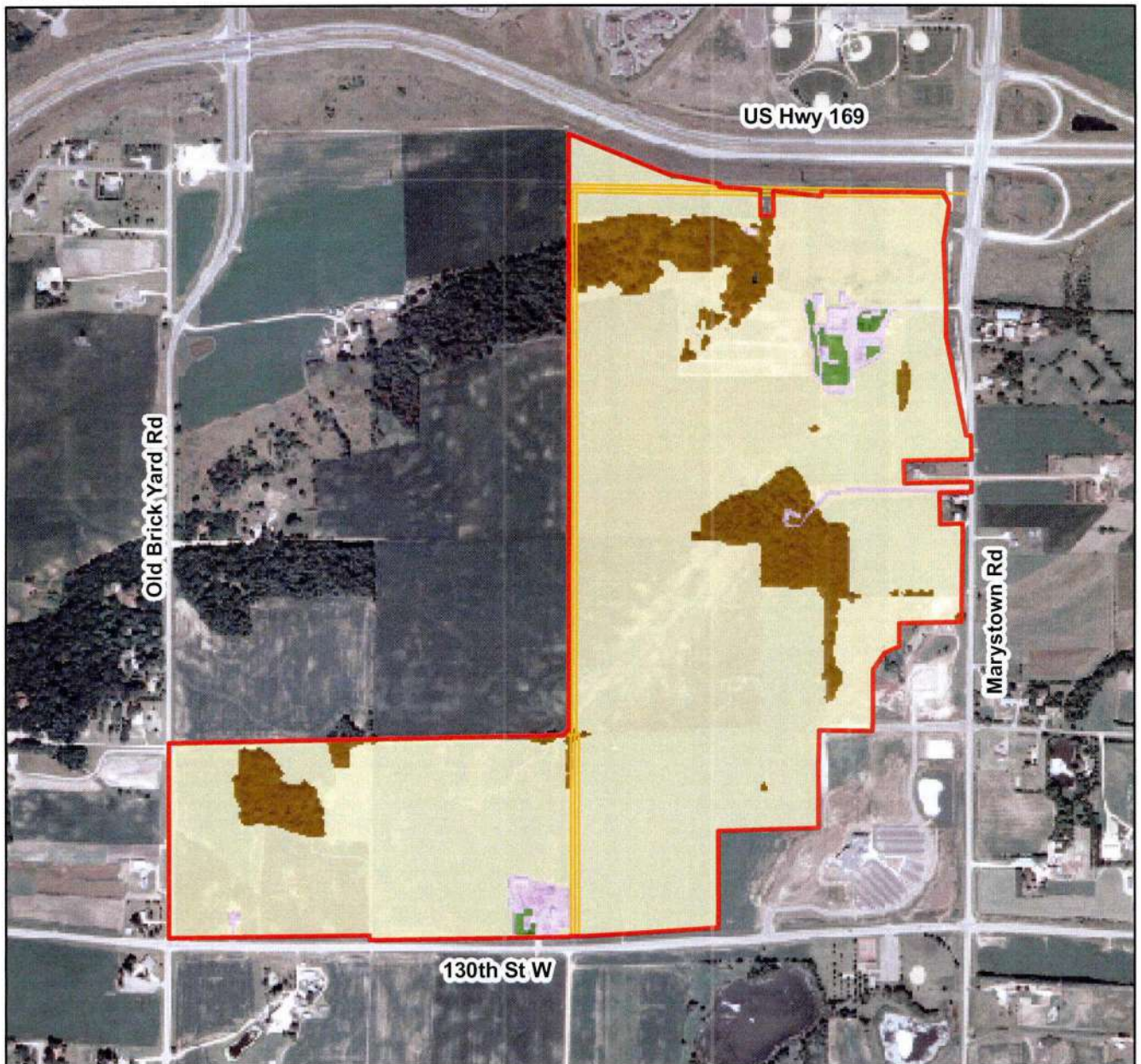
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The Bluffs at Marystown

Shakopee, Minnesota

2003 Aerial Photography
and Land Use Types

EXHIBIT 5



Data Source(s): USDA FSA APFO DOQ (2003).

Legend

-  EAW Boundary
-  Agricultural
-  Wetland
-  Woodland
-  Impervious
-  Lawn/Landscaping
-  Pipeline Easement

N



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Feet

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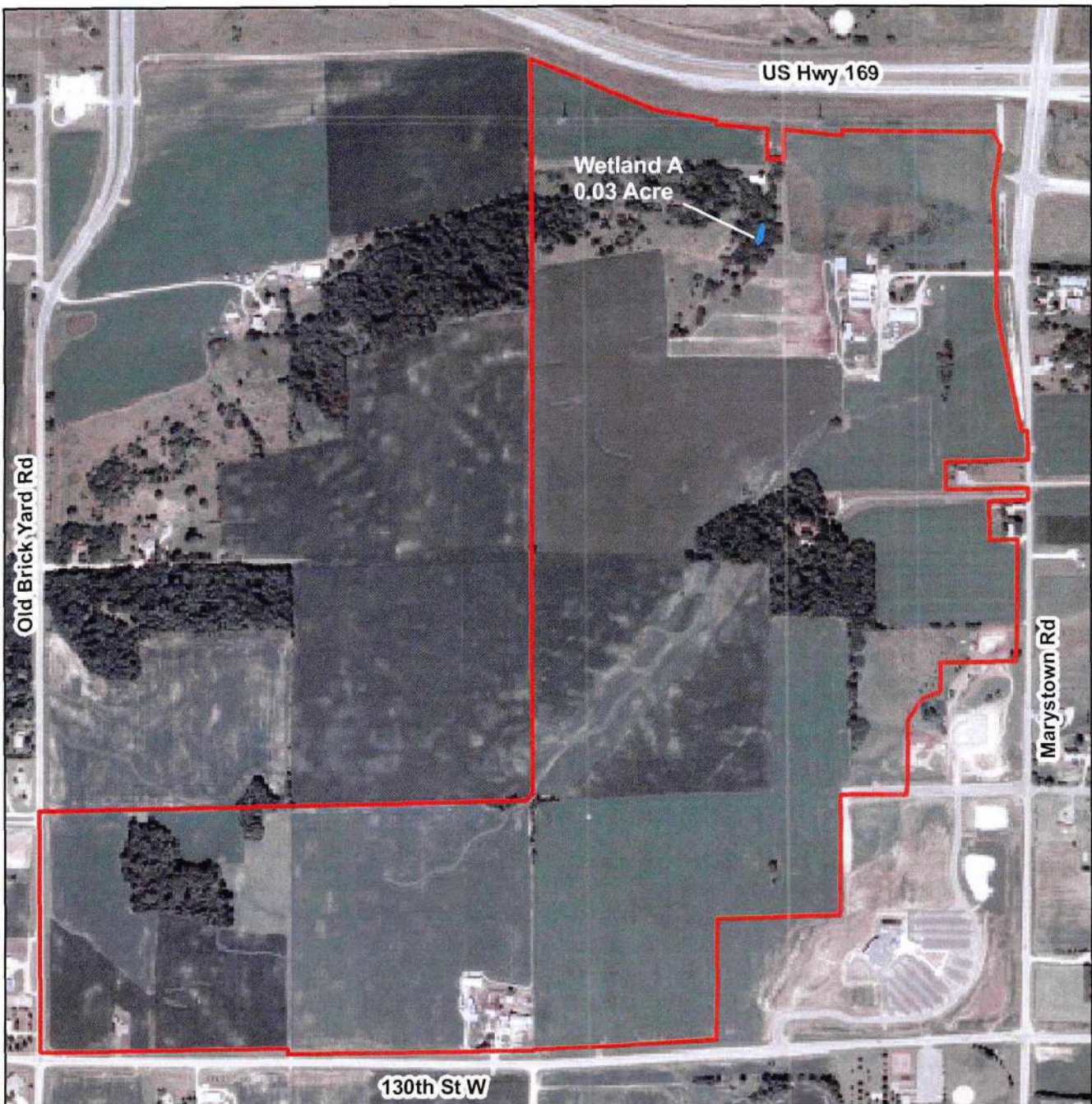
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The Bluffs at Marystown

Shakopee, Minnesota

Pre-Development
Cover Types and
Pipeline Easements

EXHIBIT 6



Data Source(s): USDA FSA APFO DOQ (2003), WPS (2005).

Legend

- EAW Boundary
- Wetland Boundary

N



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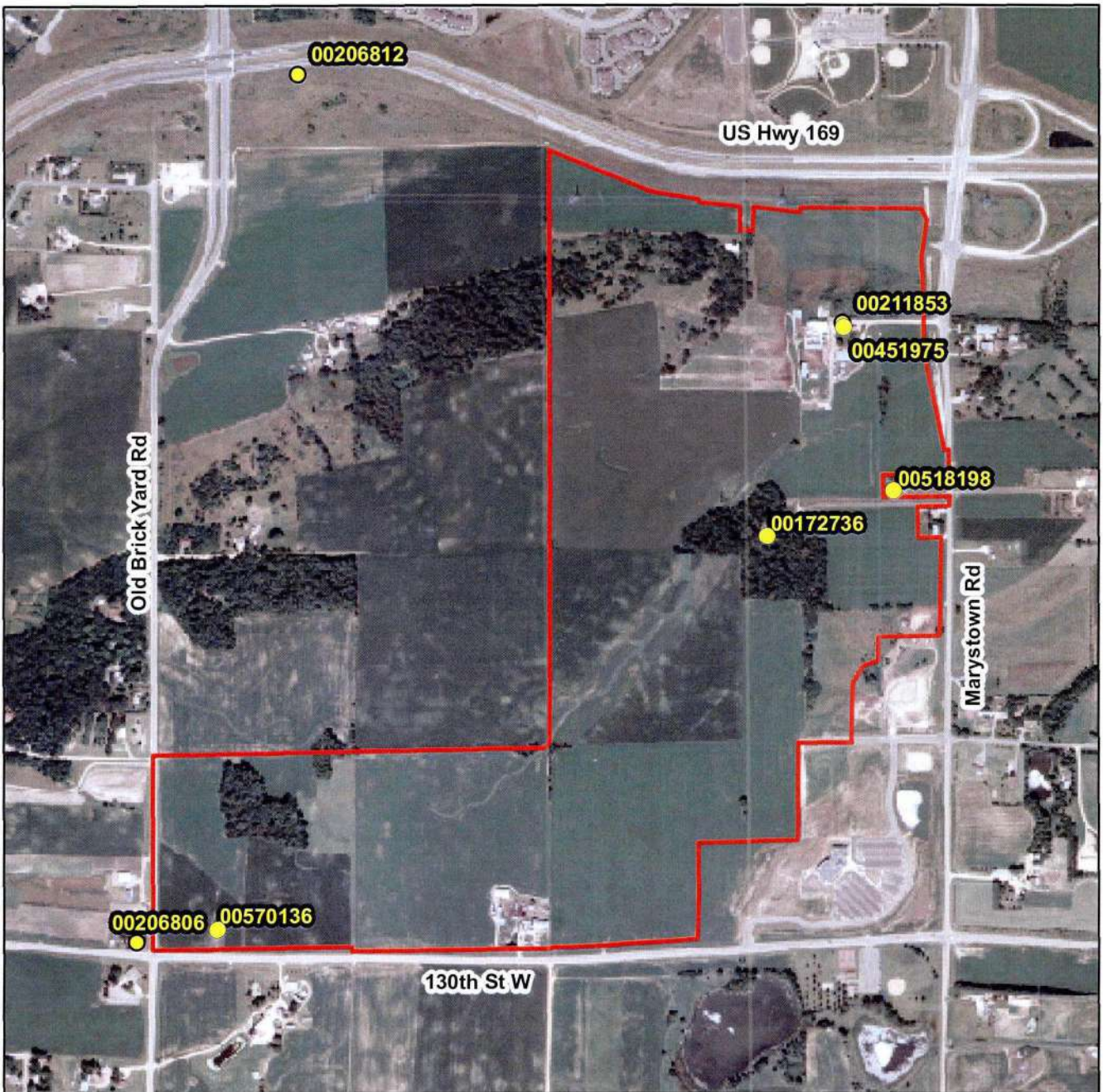
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The Bluffs at Marystown

Shakopee, Minnesota

Wetland Boundary

EXHIBIT 7



Data Source(s): USDA FSA APFO DOQ (2003), Minnesota Geologic Survey County Well Index (2004).

Legend

- EAW Boundary
- Registered Well Locations

N



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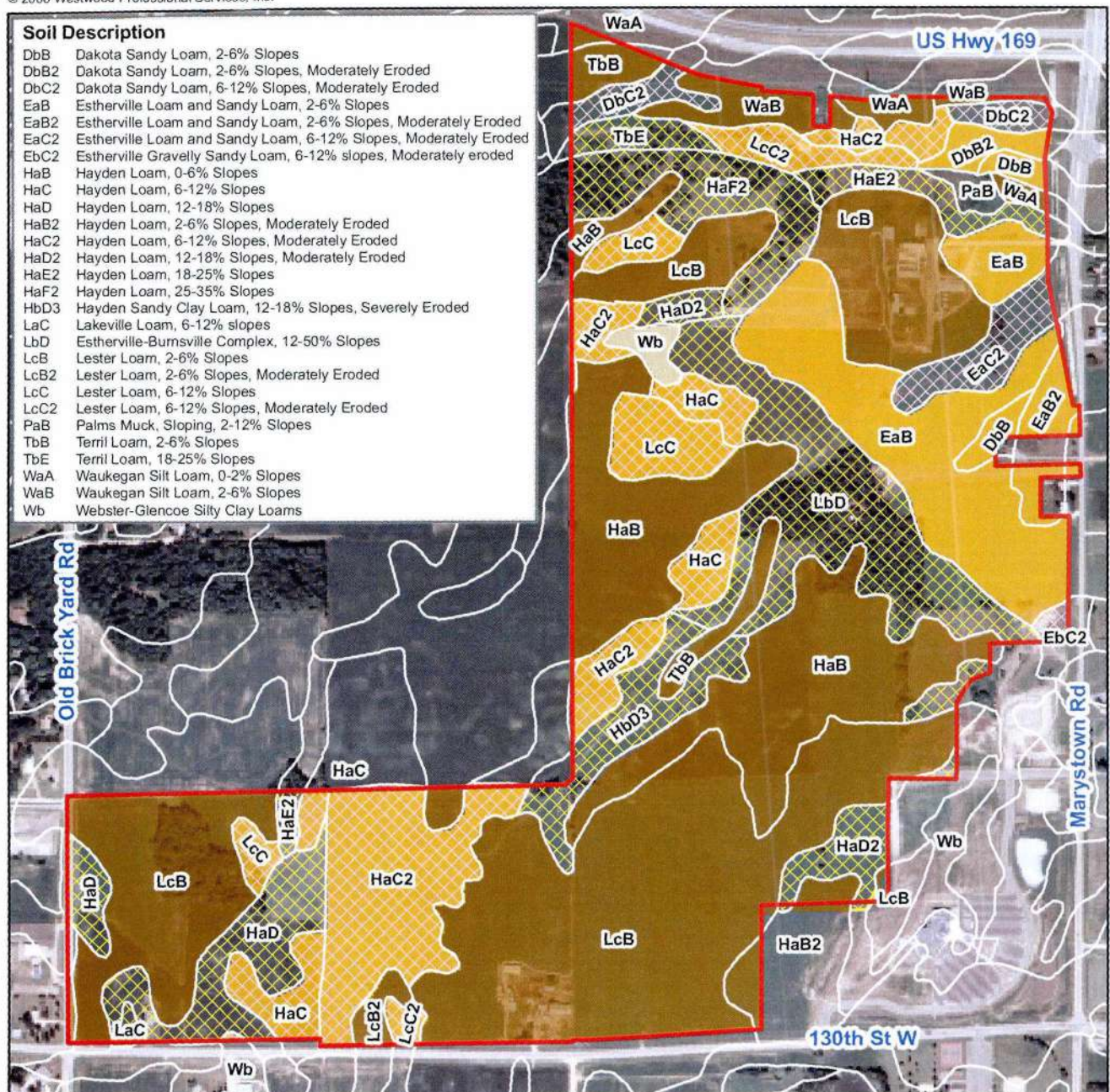
Shakopee, Minnesota

Domestic Wells

EXHIBIT 8

Soil Description

DbB	Dakota Sandy Loam, 2-6% Slopes
DbB2	Dakota Sandy Loam, 2-6% Slopes, Moderately Eroded
DbC2	Dakota Sandy Loam, 6-12% Slopes, Moderately Eroded
EaB	Estherville Loam and Sandy Loam, 2-6% Slopes
EaB2	Estherville Loam and Sandy Loam, 2-6% Slopes, Moderately Eroded
EaC2	Estherville Loam and Sandy Loam, 6-12% Slopes, Moderately Eroded
EbC2	Estherville Gravelly Sandy Loam, 6-12% slopes, Moderately eroded
HaB	Hayden Loam, 0-6% Slopes
HaC	Hayden Loam, 6-12% Slopes
HaD	Hayden Loam, 12-18% Slopes
HaB2	Hayden Loam, 2-6% Slopes, Moderately Eroded
HaC2	Hayden Loam, 6-12% Slopes, Moderately Eroded
HaD2	Hayden Loam, 12-18% Slopes, Moderately Eroded
HaE2	Hayden Loam, 18-25% Slopes
HaF2	Hayden Loam, 25-35% Slopes
HbD3	Hayden Sandy Clay Loam, 12-18% Slopes, Severely Eroded
LaC	Lakeville Loam, 6-12% slopes
LbD	Estherville-Burnsville Complex, 12-50% Slopes
LcB	Lester Loam, 2-6% Slopes
LcB2	Lester Loam, 2-6% Slopes, Moderately Eroded
LcC	Lester Loam, 6-12% Slopes
LcC2	Lester Loam, 6-12% Slopes, Moderately Eroded
PaB	Palms Muck, Sloping, 2-12% Slopes
TbB	Terril Loam, 2-6% Slopes
TbE	Terril Loam, 18-25% Slopes
WaA	Waukegan Silt Loam, 0-2% Slopes
WaB	Waukegan Silt Loam, 2-6% Slopes
Wb	Webster-Glencoe Silty Clay Loams



Data Source(s): USDA FSA APFO DOQ (2003), Met Council, Digital Soil Survey-Scott County (1955).

Legend

- EAW Boundary
- Highly Erodible Land
- Potentially Highly Erodible Land
- Prime Farmland
- Prime Farmland, If Drained
- Farmland of Statewide Importance

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The Bluffs at Marystown

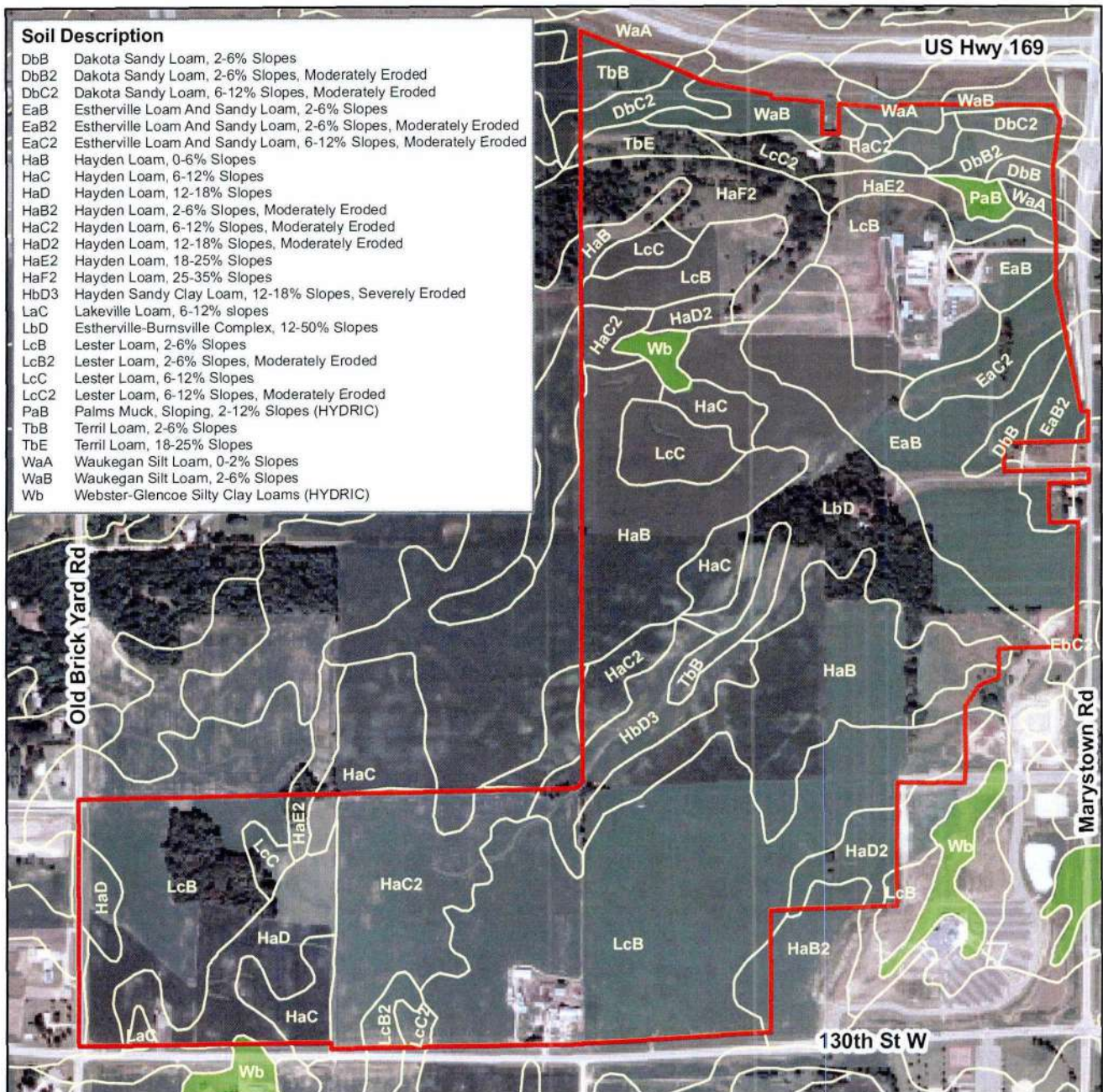
Shakopee, Minnesota

Prime Farmland,
Important Farmland,
and Erodible Soils

EXHIBIT 9

Soil Description

DbB	Dakota Sandy Loam, 2-6% Slopes
DbB2	Dakota Sandy Loam, 2-6% Slopes, Moderately Eroded
DbC2	Dakota Sandy Loam, 6-12% Slopes, Moderately Eroded
EaB	Estherville Loam And Sandy Loam, 2-6% Slopes
EaB2	Estherville Loam And Sandy Loam, 2-6% Slopes, Moderately Eroded
EaC2	Estherville Loam And Sandy Loam, 6-12% Slopes, Moderately Eroded
HaB	Hayden Loam, 0-6% Slopes
HaC	Hayden Loam, 6-12% Slopes
HaD	Hayden Loam, 12-18% Slopes
HaB2	Hayden Loam, 2-6% Slopes, Moderately Eroded
HaC2	Hayden Loam, 6-12% Slopes, Moderately Eroded
HaD2	Hayden Loam, 12-18% Slopes, Moderately Eroded
HaE2	Hayden Loam, 18-25% Slopes
HaF2	Hayden Loam, 25-35% Slopes
HbD3	Hayden Sandy Clay Loam, 12-18% Slopes, Severely Eroded
LaC	Lakeville Loam, 6-12% slopes
LbD	Estherville-Burnsville Complex, 12-50% Slopes
LcB	Lester Loam, 2-6% Slopes
LcB2	Lester Loam, 2-6% Slopes, Moderately Eroded
LcC	Lester Loam, 6-12% Slopes
LcC2	Lester Loam, 6-12% Slopes, Moderately Eroded
PaB	Palms Muck, Sloping, 2-12% Slopes (HYDRIC)
TbB	Terril Loam, 2-6% Slopes
TbE	Terril Loam, 18-25% Slopes
WaA	Waukegan Silt Loam, 0-2% Slopes
WaB	Waukegan Silt Loam, 2-6% Slopes
Wb	Webster-Glencoe Silty Clay Loams (HYDRIC)



Data Source(s): USDA FSA APFO DOQ (2003), Met Council, Digital Soil Survey-Scott County (1955).

Legend

- EAW Boundary
- Hydric Soils

N



0 800 1,600 Feet

Map Document: (P:\20041087_02\gis\EAW\20041087_02\soil01A.mxd)
12/20/2005 -- 11:44:28 AM



Westwood

Westwood Professional Services, Inc.
7699 Anagram Drive
Eden Prairie, MN 55344

PHONE 952-937-5150
FAX 952-937-5822
TOLL FREE 1-888-937-5150

www.westwoodps.com

The Bluffs at Marystown

Shakopee, Minnesota

Soils

EXHIBIT 10

APPENDIX A
Minnesota DNR Natural Heritage
Database Search



Minnesota Department of Natural Resources

Natural Heritage and Nongame Research Program, Box 25
500 Lafayette Road

St. Paul, Minnesota 55155-40__

Phone: (651) 259-5107 Fax: (651) 296-1811 E-mail: sarah.hoffmann@dnr.state.mn.us

RECEIVED

JAN 03 2006

WESTWOOD
PROFESSIONAL SERVICES

December 29, 2005

Ms. Jennifer McLoughlin
Westwood Professional Services, Inc.
7699 Anagram Drive
Eden Prairie, MN 55344

Re: Request for Natural Heritage information for vicinity of proposed The Bluffs at Marystown,
T115N R23W Section 14, Scott County
NHNRP Contact #: ERDB 20060471

Dear Ms. McLoughlin,

The Minnesota Natural Heritage database has been reviewed to determine if any rare plant or animal species or other significant natural features are known to occur within an approximate one-mile radius of the area indicated on the map enclosed with your information request. Based on this review, there are no known occurrences of rare species or native plant communities in the area searched.

The Natural Heritage database is maintained by the Natural Heritage and Nongame Research Program, a unit within the Division of Ecological Services, Department of Natural Resources. It is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. Its purpose is to foster better understanding and protection of these features.

Because our information is not based on a comprehensive inventory, there may be rare or otherwise significant natural features in the state that are not represented in the database. A county-by-county survey of rare natural features is now underway, and has been completed for Scott County. Our information about native plant communities is, therefore, quite thorough for that county. However, because survey work for rare plants and animals is less exhaustive, and because there has not been an on-site survey of all areas of the county, ecologically significant features for which we have no records may exist on the project area.

Please be aware that review by the Natural Heritage and Nongame Research Program focuses only on *rare natural features*. It does not constitute review or approval by the Department of Natural Resources as a whole. If you require further information on the environmental review process for other natural resource-related issues, you may contact your Regional Environmental Assessment Ecologist, Wayne Barstad, at (651) 772-7940.

An invoice in the amount of \$66.07 will be mailed to you under separate cover within two weeks of the date of this letter. You are being billed for map and database search and staff scientist review. Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources.

Sincerely,

Sarah D. Hoffmann

FOR

Sarah D. Hoffmann

Endangered Species Environmental Review Coordinator

DNR Information: 651-296-6157 • 1-888-646-6367 • TTY: 651-296-5484 • 1-800-657-3929

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APPENDIX B

State Historic Preservation Office

Correspondence

From: Cinadr, Thomas [thomas.cinadr@mnhs.org]

Sent: Thursday, December 22, 2005 8:43 AM

To: Jennifer McLoughlin

Subject: RE: Cultural Resources Review for The Bluffs at Marystown, Shakopee

Attachments: Historic.doc

No archaeological sites were identified in a search of the Minnesota Archaeological Inventory and Historic Structures Inventory for the search area requested. A report containing the historic properties identified is attached.

The result of this database search provides a listing of recorded archaeological sites and historic architectural properties that are included in the current SHPO databases. Because the majority of archaeological sites in the state and many historic architectural properties have not been recorded, important sites or structures may exist within the search area and may be affected by development projects within that area. Additional research, including field survey, may be necessary to adequately assess the area's potential to contain historic properties.

With regard to Environmental Assessment Worksheets (EAW), a negative known site/structure response from the SHPO databases is not necessarily appropriate information on which to base a "No" response to EAW Question 25a. It is the Responsible Governmental Unit's (RGU) obligation to verify the accuracy of the information contained within the EAW. A "No" response to Question 25a without written justification should be carefully considered.

If you require a comprehensive assessment of a project's potential to impact archaeological sites or historic architectural properties, you may need to hire a qualified archaeologist and/or historian. Please contact the SHPO by phone at 651-296-5462 or by email at mnshpo@mnhs.org for current lists of professional consultants in these fields.

The Minnesota SHPO Survey Manuals and Database Metadata can be found at <http://www.mnhs.org/shpo/survey/inventories.htm>

APPENDIX C
Minnesota County Well Index Well and
Boring Records

Unique No. 00206806		MINNESOTA DEPARTMENT OF HEALTH		Update Date 1996/02/12																																														
County Name Scott		WELL AND BORING RECORD		Entry Date 1988/02/11																																														
		<i>Minnesota Statutes Chapter 1031</i>																																																
Township Name Township Range Dir Section Subsection 115 23 W 15 DDDDDD			Well Depth 400 ft.	Depth Completed 400 ft.	Date Well Completed 1974/05/28																																													
Well Name CARPENTER, PERRY			Drilling Method																																															
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>GEOLOGICAL MATERIAL</th> <th>COLOR</th> <th>HARDNESS</th> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr> <td>CLAY</td> <td>YELLOW</td> <td></td> <td>0</td> <td>25</td> </tr> <tr> <td>GRAVEL</td> <td>BROW</td> <td></td> <td>25</td> <td>38</td> </tr> <tr> <td>CLAY</td> <td>BLUE</td> <td></td> <td>38</td> <td>110</td> </tr> <tr> <td>GRAVEL</td> <td>BROW</td> <td></td> <td>110</td> <td>115</td> </tr> <tr> <td>LIME ROCK</td> <td>BROW</td> <td></td> <td>115</td> <td>258</td> </tr> <tr> <td>SOFT SANDROCK</td> <td>WHITE</td> <td>SOFT</td> <td>258</td> <td>370</td> </tr> <tr> <td>SHALE + SANDROCK</td> <td>WHITE</td> <td></td> <td>370</td> <td>390</td> </tr> <tr> <td>SHALE + SANDROCK</td> <td>GREE</td> <td></td> <td>390</td> <td>400</td> </tr> </tbody> </table>			GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO	CLAY	YELLOW		0	25	GRAVEL	BROW		25	38	CLAY	BLUE		38	110	GRAVEL	BROW		110	115	LIME ROCK	BROW		115	258	SOFT SANDROCK	WHITE	SOFT	258	370	SHALE + SANDROCK	WHITE		370	390	SHALE + SANDROCK	GREE		390	400	Drilling Fluid		Well Hydrofractured? ☐ Yes ☐ No
			GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO																																											
			CLAY	YELLOW		0	25																																											
			GRAVEL	BROW		25	38																																											
			CLAY	BLUE		38	110																																											
GRAVEL	BROW		110	115																																														
LIME ROCK	BROW		115	258																																														
SOFT SANDROCK	WHITE	SOFT	258	370																																														
SHALE + SANDROCK	WHITE		370	390																																														
SHALE + SANDROCK	GREE		390	400																																														
		From ft. to ft.																																																
			Use Domestic																																															
			Casing Drive Shoe? ☐ Yes ☐ N	Hole Diameter																																														
			Casing Diameter 5 in. to ft.																																															
			4 in. to 280 ft.																																															
			Screen N	Open Hole From 280 ft. to 400 ft.																																														
			Make	Type																																														
			Static Water Level 190 ft. from Land surface Date 1974/05/28																																															
			PUMPING LEVEL (below land surface) 0 ft. after hrs. pumping 60 g.p.m.																																															
			Well Head Completion Pitless adapter mfr Model Casing Protection ☐ 12 in. above grade ☐ At-grade (Environmental Wells and Borings ONLY)																																															
			Grouting Information Well grouted? ☐ Yes ☐ No																																															
			Nearest Known Source of Contamination ft. direction type Well disinfected upon completion? ☐ Yes ☐ No																																															
			Pump ☐ Not Installed Date Installed Y Mfr name MCDONALD Model HP 1 Volts Drop Pipe Length ft. Capacity g.p.m. Type S																																															
REMARKS, ELEVATION, SOURCE OF DATA, etc. 217-B-7			Any not in use and not sealed well(s) on property? ☐ Yes ☐ No																																															
			Was a variance granted from the MDH for this Well? ☐ Yes ☐ No																																															
USGS Quad: Shakopee Elevation 930 Aquifer: MTPL Alt Id:			Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 70241 License Business Name Name of Driller JACOBSEN, K.																																															

Report Copy

Unique No. 00206812		MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD <i>Minnesota Statutes Chapter 1031</i>		Update Date 1996/02/12																				
County Name Scott				Entry Date 1989/02/23																				
Township Name	Township	Range	Dir	Section	Subsection																			
	115	23	W	11	CCDCA																			
Well Depth			Depth Completed		Date Well Completed																			
170 ft.			170 ft.		1972/09/12																			
Well Name VAN HEEL, VIRGIL			Drilling Method																					
Contact's Name VAN HEEL, VIRGIL 1780 SAND ST SHAKOPEE MN 55379 <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>GEOLOGICAL MATERIAL</th> <th>COLOR</th> <th>HARDNESS</th> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr> <td>DRIFT</td> <td></td> <td></td> <td>0</td> <td>27</td> </tr> <tr> <td>SHAKOPEE</td> <td></td> <td></td> <td>27</td> <td>127</td> </tr> <tr> <td>SANDSTONE</td> <td></td> <td></td> <td>127</td> <td>170</td> </tr> </tbody> </table>			GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO	DRIFT			0	27	SHAKOPEE			27	127	SANDSTONE			127	170	Drilling Fluid	
			GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO																	
			DRIFT			0	27																	
			SHAKOPEE			27	127																	
SANDSTONE			127	170																				
Well Hydrofractured? ☐ Yes ☐ No																								
From ft. to ft.																								
Use Domestic			Hole Diameter																					
Casing Drive Shoes? ☐ Yes ☐ N																								
Casing Diameter		Weight(lbs/ft)																						
4 in. to 132 ft																								
Screen N		Open Hole From 132 ft. to 170 ft.																						
Make		Type																						
Static Water Level 100 ft. from Land surface Date 1972/09/12																								
PUMPING LEVEL (below land surface)																								
0 ft. after hrs. pumping 20 g.p.m.																								
Well Head Completion																								
Pitless adapter mfr				Model																				
Casing Protection				☐ 12 in. above grade																				
☐ At-grade(Environmental Wells and Borings ONLY)																								
Grouting Information		Well grouted? ☐ Yes ☐ No																						
Nearest Known Source of Contamination																								
ft.		direction		type																				
Well disinfected upon completion? ☐ Yes ☐ No																								
Pump ☐ Not Installed		Date Installed																						
Mfr name																								
Model		HP		Volts																				
Drop Pipe Length ft.		Capacity		g.p.m.																				
Type																								
Any not in use and not sealed well(s) on property? ☐ Yes ☐ No																								
Was a variance granted from the MDH for this Well? ☐ Yes ☐ No																								
Well CONTRACTOR CERTIFICATION Lic. Or Reg. No.																								
License Business Name																								
Name of Driller LOHSE, H.																								

REMARKS, ELEVATION, SOURCE OF DATA, etc.
 172-B-7
 DAVIES 2ND BLK 2, LOT 7.
 USGS Quad: Shakopee Elevation 805
 Aquifer: CJDN Alt Id:

Report Copy

Unique No. 00211853		MINNESOTA DEPARTMENT OF HEALTH		Update Date 1996/02/12																									
County Name Scott		WELL AND BORING RECORD		Entry Date 1989/02/23																									
		<i>Minnesota Statutes Chapter 1031</i>																											
Township Name Township Range Dir Section Subsection 115 23 W 14 AACDAD			Well Depth 67 ft.	Depth Completed 60 ft.	Date Well Completed 1972/01/21																								
Well Name THEIS, NORBERT			Drilling Method																										
Contact's Name THEIS, NORBERT 12466 MARYSTOWN RD SHAKOPEE MN 55379 <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>GEOLOGICAL MATERIAL</th> <th>COLOR</th> <th>HARDNESS</th> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr> <td>SOIL</td> <td></td> <td></td> <td>0</td> <td>3</td> </tr> <tr> <td>SAND</td> <td></td> <td></td> <td>3</td> <td>24</td> </tr> <tr> <td>CLAY</td> <td></td> <td></td> <td>24</td> <td>38</td> </tr> <tr> <td>SAND</td> <td></td> <td></td> <td>38</td> <td>67</td> </tr> </tbody> </table>			GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO	SOIL			0	3	SAND			3	24	CLAY			24	38	SAND			38	67	Drilling Fluid	
			GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO																						
			SOIL			0	3																						
			SAND			3	24																						
			CLAY			24	38																						
SAND			38	67																									
Well Hydrofractured? ☐ Yes ☐ No																													
From ft. to ft.																													
Use Domestic																													
Casing Drive Shoe? ☐ Yes ☐ N		Hole Diameter																											
Casing Diameter Weight(lbs/ft) 4 in. to 19 ft																													
Screen Y		Open Hole From ft. to ft.																											
Make		Type																											
Diameter Slot Length Set		Fitting																											
5 12 5 0		ft. to ft.																											
Static Water Level 20 ft. from Land surface		Date 1978/08/14																											
PUMPING LEVEL (below land surface)																													
ft. after		hrs. pumping g.p.m.																											
Well Head Completion																													
Pitless adapter mfr		Model																											
Casing Protection		☐ 12 in. above grade																											
☐ At-grade(Environmental Wells and Borings ONLY)																													
Grouting Information		Well grouted? ☐ Yes ☐ No																											
Nearest Known Source of Contamination																													
ft. direction		type																											
Well disinfected upon completion? ☐ Yes ☐ No																													
Pump ☐ Not Installed		Date Installed Y																											
Mfr name																													
Model		HP 0.5 Volts																											
Drop Pipe Length ft.		Capacity g.p.m.																											
Type																													
Any not in use and not sealed well(s) on property? ☐ Yes ☐ No																													
Was a variance granted from the MDH for this Well? ☐ Yes ☐ No																													
Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 40174																													
License Business Name																													
Name of Driller																													

USGS Quad: Shakopee
 Aquifer: QBAA

Elevation 875
 Alt Id:

Report Copy

Unique No. 00451975		MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD <i>Minnesota Statutes Chapter 1031</i>		Update Date 1994/01/09	
County Name Scott				Entry Date 1994/01/09	
Township Name Township Range Dir Section Subsection 115 23 W 14 AA		Well Depth 300 ft.		Depth Completed 300 ft.	
				Date Well Completed 1989/09/18	
Well Name HUIS, LARRY		Drilling Method			
Contact's Name HUIS, LARRY 12226 MARYSTOWN RD SHAKOPEE MN 55379		Drilling Fluid		Well Hydrofractured? ☐ Yes ☐ No	
				From ft. to ft.	
		Use Domestic			
		Casing Drive Shoe? ☐ Yes ☐ N		Hole Diameter	
		Screen Make		Open Hole From ft. to ft. Type	
		Static Water Level 190 ft. from Land surface		Date 1989/04/18	
		PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.			
		Well Head Completion Pitless adapter mfr Model Casing Protection ☐ 12 in. above grade ☐ At-grade (Environmental Wells and Borings ONLY)			
		Grouting Information Well grouted? ☒ Yes ☐ No			
		Nearest Known Source of Contamination 75 ft. direction W type BYD Well disinfected upon completion? ☐ Yes ☐ No			
		Pump ☐ Not installed Date installed Mfr name Model HP Volts Drop Pipe Length ft. Capacity g.p.m. Type			
		Any not in use and not sealed well(s) on property? ☐ Yes ☐ No			
		Was a variance granted from the MDH for this Well? ☐ Yes ☐ No			
USGS Quad: Shakopee Elevation		Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 70350			
Aquifer: Alt Id:		License Business Name			
		Name of Driller			

Report Copy

Unique No. 00518198		MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD <i>Minnesota Statutes Chapter 1031</i>		Update Date 1993/06/09		
County Name Scott				Entry Date 1993/06/09		
Township Name	Township	Range	Dir	Section	Subsection	
	115	23	W	14	ADD	
Well Depth			Depth Completed		Date Well Completed	
260 ft.			260 ft.		1992/10/26	
Well Name KROHN,GERHARD/ELEANOR			Drilling Method			
Contact's Name KROHN,GERHARD/ELEANOR 12440 MARYSTOWN RD SHAKOPEE MN			Drilling Fluid		Well Hydrofractured? ☐ Yes ☐ No	
					From ft. to ft.	
			Use Domestic			
			Casing	Drive Shoe? ☐ Yes ☐ N	Hole Diameter	
Screen		Open Hole From ft. to ft.				
Make		Type				
Static Water Level 153 ft. from Land surface Date 1992/10/26						
PUMPING LEVEL (below land surface)						
ft. after hrs. pumping g.p.m.						
Well Head Completion						
Pitless adapter mfr Model						
Casing Protection ☐ 12 in. above grade						
☐ At-grade(Environmental Wells and Borings ONLY)						
Grouting Information Well grouted? ☒ Yes ☐ No						
Nearest Known Source of Contamination						
85 ft. direction NE type SDF						
Well disinfected upon completion? ☐ Yes ☐ No						
Pump ☐ Not Installed Date Installed						
Mfr name						
Model HP Volts						
Drop Pipe Length ft. Capacity g.p.m.						
Type						
Any not in use and not sealed well(s) on property? ☐ Yes ☐ No						
Was a variance granted from the MDH for this Well? ☐ Yes ☐ No						
Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 40174						
License Business Name						
Name of Driller						
USGS Quad: Shakopee Elevation Aquifer: Alt Id:						

Report Copy

Unique No. 00570136		MINNESOTA DEPARTMENT OF HEALTH		Update Date 1998/07/29	
County Name Scott		WELL AND BORING RECORD		Entry Date 1998/07/29	
		<i>Minnesota Statutes Chapter 1031</i>			
Township Name Township Range Dfr Section Subsection 115 23 W 14			Well Depth 340 ft.	Depth Completed 340 ft.	Date Well Completed 1996/12/02
Well Name LATOUR, DON			Drilling Method		
Contact's Name LATOUR, DON 1910 130TH ST SHAKOPEE MN 55379			Drilling Fluid		Well Hydrofractured? ☐ Yes ☐ No
					From ft. to ft.
			Use Domestic		
			Casing Drive Shoes? ☐ Yes ☐ N	Hole Diameter	
			Screen	Open Hole From ft. to ft.	
			Make	Type	
			Static Water Level 232 ft. from Land surface		Date 1996/11/22
			PUMPING LEVEL (below land surface)		
			ft. after		hrs. pumping g.p.m.
			Well Head Completion		
			Pitless adapter mfr		Model
			Casing Protection		☐ 12 in. above grade
			☐ At-grade (Environmental Wells and Borings ONLY)		
			Grouting Information		Well grouted? ☒ Yes ☐ No
			Nearest Known Source of Contamination		
			150 ft. direction N		type SDF
			Well disinfected upon completion? ☐ Yes ☐ No		
			Pump ☐ Not installed Date installed		
			Mfr name		
			Model		HP Volts
			Drop Pipe Length ft.		Capacity g.p.m.
			Type		
			Any not in use and not sealed well(s) on property? ☐ Yes ☐ No		
			Was a variance granted from the MDH for this Well? ☐ Yes ☐ No		
			Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 27259		
			License Business Name		
			Name of Driller		
USGS Quad: Shakopee Elevation					
Aquifer: Alt Id:					

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APPENDIX D

Traffic Study



CONSULTING GROUP, INC.

Transportation • Civil • Structural • Environmental • Planning • Traffic • Landscape Architecture • Parking • Right of Way

SRF No. 0065653

DRAFT MEMORANDUM

TO: Michael Leek, Community Development Director
City of Shakopee

FROM: Dave Montebello, P.E., Principal
Renae Cornelius, P.E., Senior Traffic Engineer

DATE: March 27, 2006

SUBJECT: TRAFFIC STUDY FOR THE PROPOSED BLUFFS AT MARYSTOWN RESIDENTIAL
DEVELOPMENT

INTRODUCTION

We have completed a traffic study for the proposed Bluffs at Marystown Residential development, located west of Marystown Road and north 130th Street in the City of Shakopee (see Figure 1: Project Location). The purpose of this study is to determine the traffic impacts on the adjacent roadway system related to the development of this site. This traffic study includes a.m. and p.m. peak hour operations analysis for existing and year 2015 no build and build conditions.

EXISTING CONDITIONS

To determine how traffic is currently operating in the study area, traffic operations for existing a.m. and p.m. peak hour conditions were analyzed at the following key intersections:

- Marystown Road (County Road 15) and Vierling Drive
- Marystown Road (County Road 15) and TH 169 North Ramps
- Marystown Road (County Road 15) and TH 169 South Ramps
- Marystown Road (County Road 15) and 17th Avenue
- Marystown Road (County Road 15) and 128th Street West
- Marystown Road (County Road 15) and 130th Street West (County Road 78)
- Zumbro Avenue (County Road 73) and 130th Street West (County Road 78)
- Old Brick Yard Road (County Road 69) and 130th Street West (County Road 78)
- Old Brick Yard Road (County Road 69) and TH 169

One Carlson Parkway North, Suite 150, Minneapolis, MN 55447-4443
Telephone (763) 475-0010 + Fax (763) 475-2429 + <http://www.srfconsulting.com>

Current traffic controls include signalization at the intersection of Old Brick Yard Road/TH 169. The intersection of Marystown Road/130th Street is currently controlled with all-way stop control. All other intersections have side-street stop control. The existing signal timing for the signalized intersection was used in the analysis. Intersection turning movement counts for the a.m. and p.m. peak hour were collected by SRF in February 2006. Current geometrics and peak hour traffic volumes for the key intersections are shown in Figure 2.

An operations analysis was conducted for the a.m. and p.m. peak hours at the key intersections to determine how traffic currently operates in the study area. All intersections were analyzed using the Synchro/SimTraffic and Highway Capacity Software. Capacity analysis results identify a Level of Service (LOS) which indicates how well an intersection is operating. Intersections are given a ranking from LOS A through LOS F. LOS A indicates the best traffic operation and LOS F indicates an intersection that is operating over capacity. LOS A through D are generally considered acceptable by drivers.

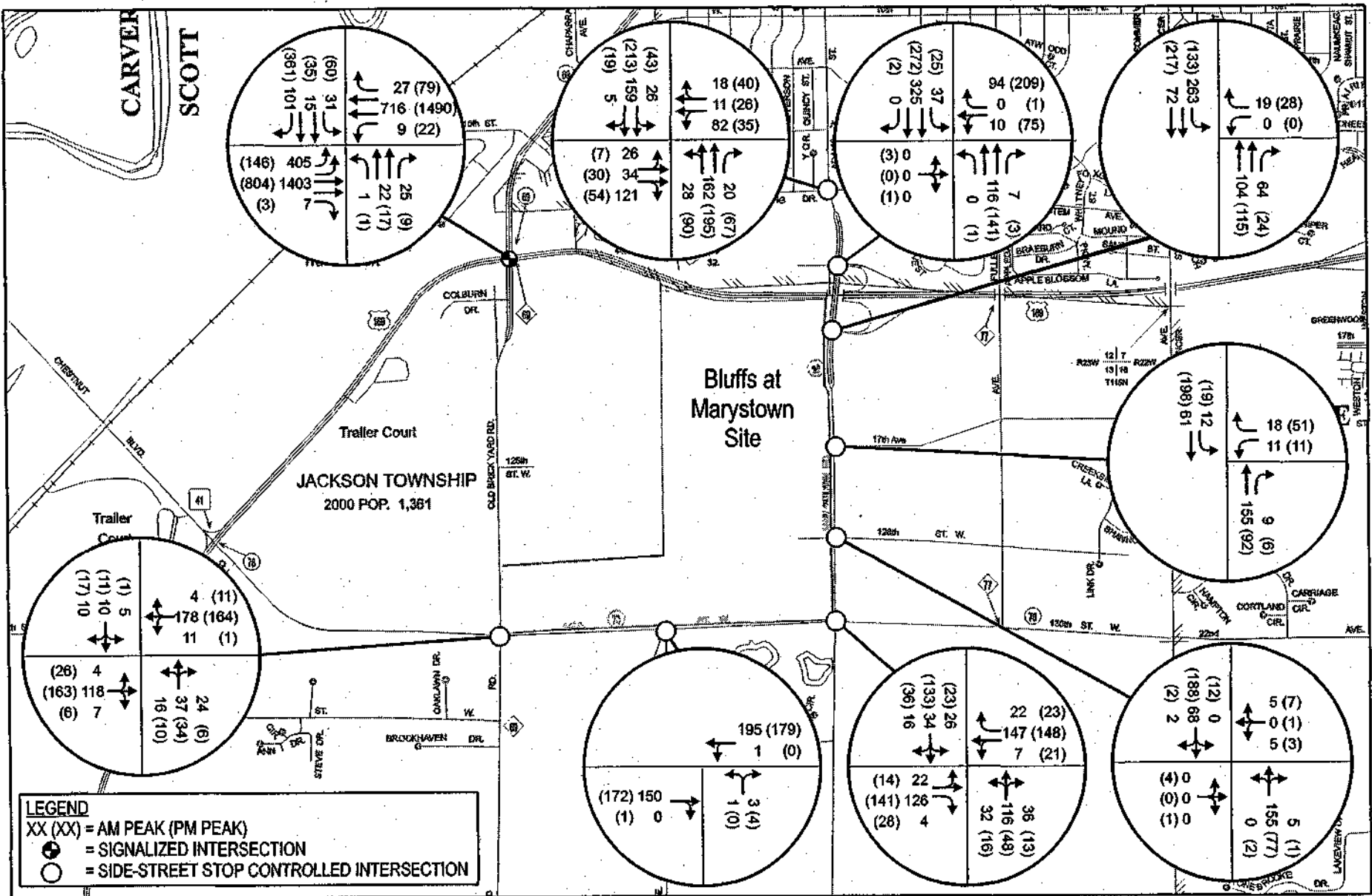
For side-street stop controlled intersections, special emphasis is given to providing an estimate for the level of service of the minor approach. The traffic operations at an unsignalized intersection with side-street stop control can be described in two ways. First, consideration is given to the overall intersection level of service. This takes into account the total number of vehicles entering the intersection and the capability of the intersection to support those volumes. Second, it is important to consider the delay on the minor approach. Since the mainline does not have to stop, the majority of delay is attributed to the side-street approaches.

Results of the analysis shown in Table 1 indicate that all of the key intersections are currently operating at an overall LOS C or better during the a.m. and p.m. peak periods, with existing traffic control and geometric layout.

Table 1
Existing Peak Hour Capacity Analysis
Level of Service Results

INTERSECTION	Level of Service	
	A.M. Peak	P.M. Peak
Marystown Road and Vierling Drive*	A/B	A/C
Marystown Road and TH 169 North Ramps*	A/A	A/B
Marystown Road and TH 169 South Ramps*	A/A	A/A
Marystown Road and 17th Avenue*	A/A	A/A
Marystown Road and 128th Street*	A/A	A/B
Marystown Road and 130th Street*	A/B	A/B
Zumbro Avenue and 130th Street*	A/A	A/A
Old Brick Yard Road and 130th Street*	A/B	A/B
Old Brick Yard Road and TH 169	C	C

* Indicates an unsignalized intersection. The overall LOS is shown followed by the worst approach LOS



FUTURE 2015 NO-BUILD CONDITIONS

Traffic forecasts for no-build conditions were developed for year 2015. This scenario was analyzed to determine future traffic operations without the proposed Bluffs at Marystown residential development. In order to account for background growth for year 2015 traffic forecasts, a two-percent yearly growth rate was applied to all roadways. This growth rate was determined by reviewing historic traffic volumes on the adjacent roadways and discussing surrounding development potential with the City of Shakopee. The no-build forecast volumes include trips generated by the proposed Countryside residential development located east of Marystown Road and north and south of 17th Avenue, as well as the new Shakopee High School which is currently being built east of Marystown Road and south of 17th Avenue.

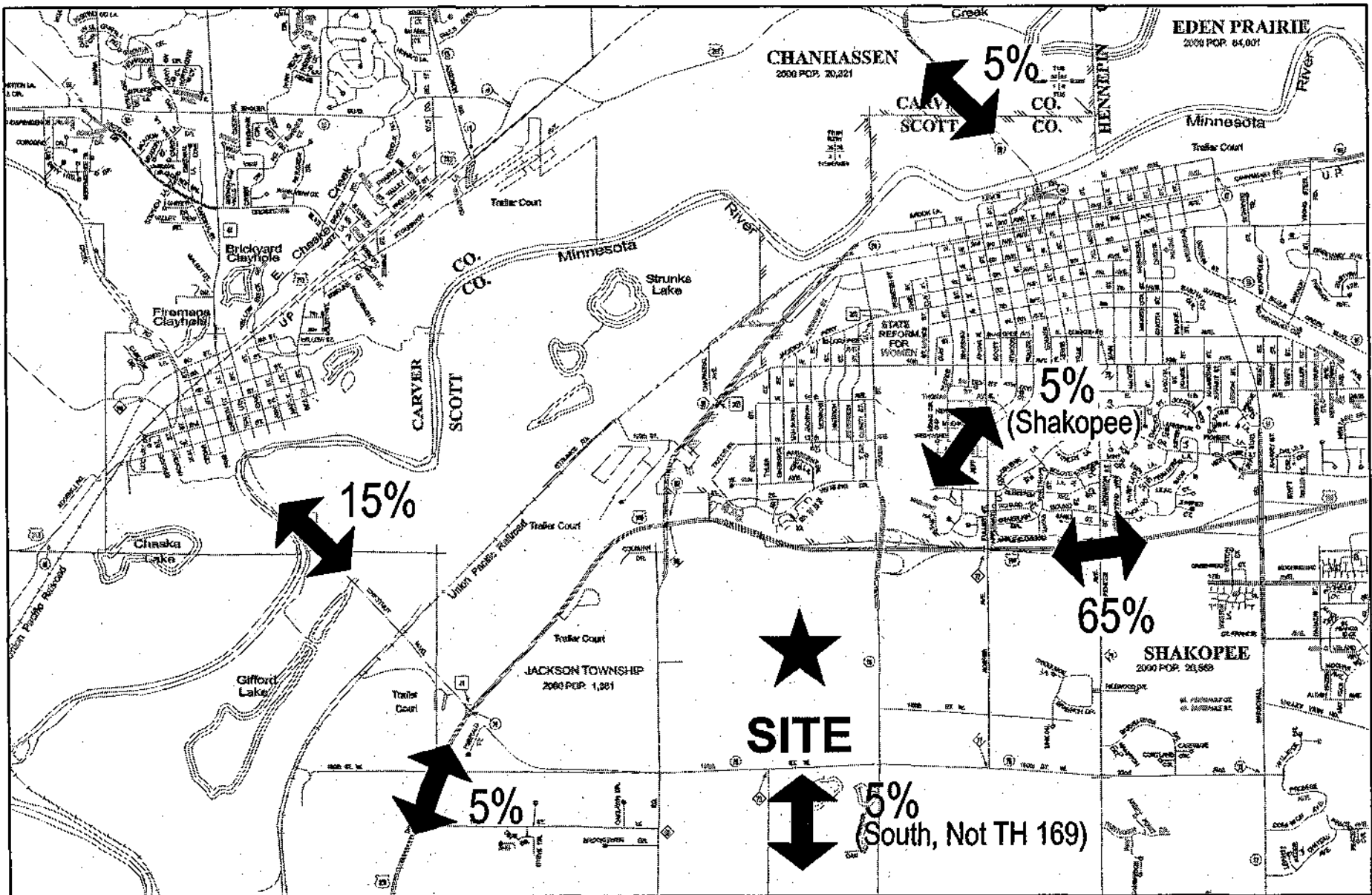
Daily and a.m./p.m. peak hour trips for the Countryside residential development were estimated based on land use type and size using the 2003 ITE Trip Generation Reports. Trips generated for the new Shakopee High School are based on data provided by the City of Shakopee and the Shakopee School District. Based on data from the existing Shakopee High School, it was assumed that 75 to 80-percent of the students will drive to school (carpooling was assumed with a 1.5 average occupancy rate) and 25-percent taking the bus or being dropped off. It is important to note that the peak hour for students arriving to school is the same as the a.m. peak hour for the adjacent roadways; however, the p.m. peak hour for the high school is earlier than the adjacent roadway p.m. peak hour, which is why the p.m. peak hour trips generated for the high school are lower than the a.m. peak hour. Trip generation estimates for the adjacent developments are shown in Table 2.

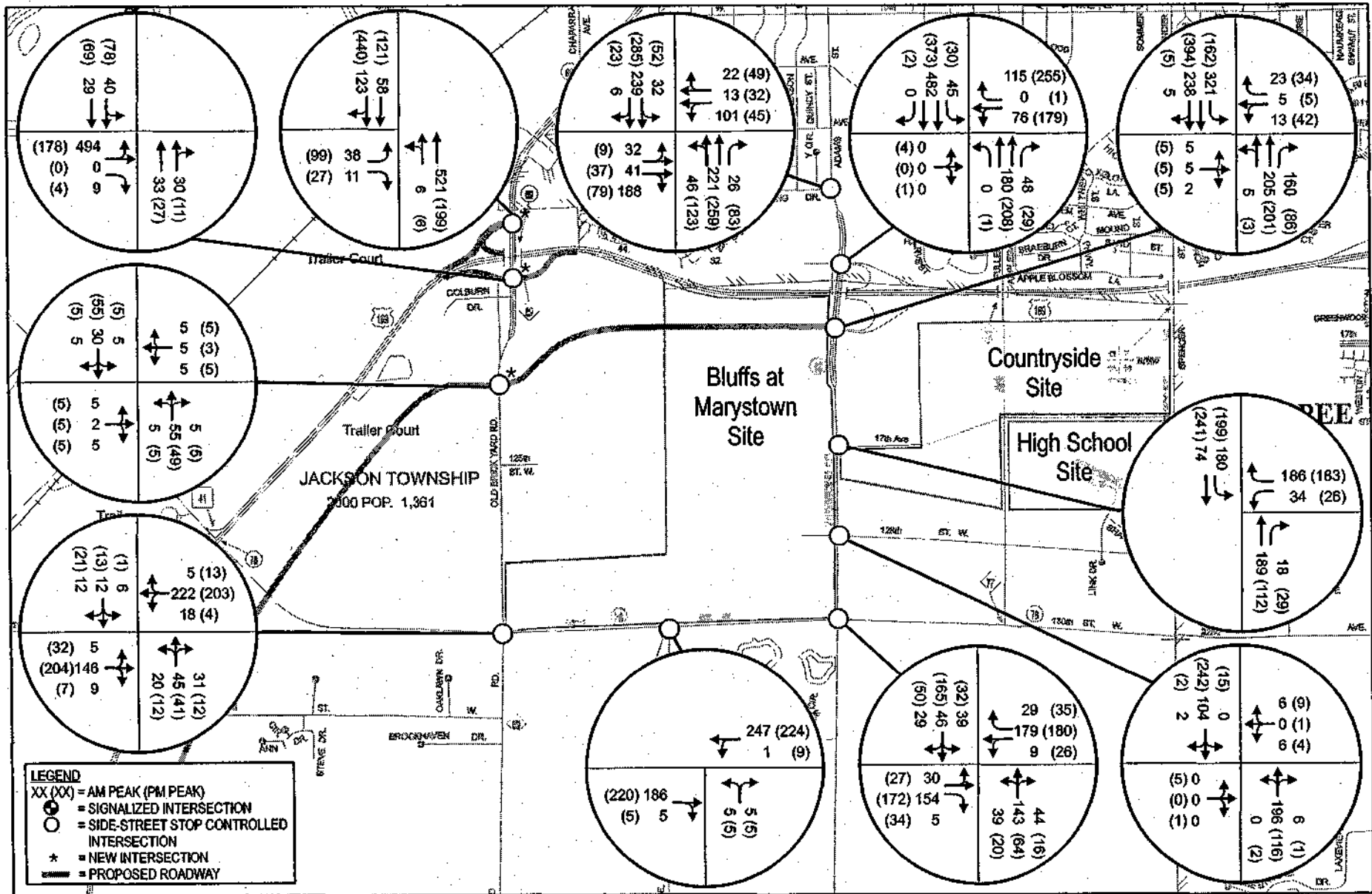
Table 2
Trip Generation Estimates

Land Use	Size	Daily Trips	A.M. Peak		P.M. Peak	
			In	Out	In	Out
<i>Countryside Residential Development</i>						
Single Family Homes	427 homes	3,953	77	231	249	146
<i>New Shakopee High School⁽¹⁾</i>						
High School	1,600 students	2,736	800	203	210	240
Total		6,689	877	434	459	386

⁽¹⁾ Trips generated for the high school are based on data from the existing Shakopee High School, which assumes that 75 to 80-percent of the students will drive to school (carpooling was assumed with a 1.5 average occupancy rate) and 25-percent taking the bus or being dropped off. Trips for the high school were distributed based on the location of residential areas within the Shakopee school district limits.

The trips for the adjacent developments were distributed to the adjacent roadways based on existing travel patterns in the area. The directional distribution for the Countryside residential development is shown in Figure 3. Trips for the high school were distributed based on the location of residential areas within the Shakopee school district limits. The combination of background traffic and trips generated by anticipated adjacent developments resulted in the year 2015 no-build traffic volumes shown in Figure 4.





For purposes of this analysis, access improvements are consistent with the development of a future TH 41 river crossing. As part of the TH 41 river crossing project, an interchange will be built at TH 169/Old Brick Yard Road as well as a south frontage road that starts at the west leg of the Marystown Road/TH 169 South Ramp intersection and parallels TH 169 to the west and south, creating a new full intersection at Old Brick Yard Road. Currently, a river crossing alternative has not been chosen, however, the configuration of the new interchange at TH 169/Old Brick Yard Road and the frontage road is essentially the same for all alternatives. Geometric design of these intersections is in the early stages and lane configurations have not yet been determined. For purposes of this analysis, it was assumed that all three new intersections are side-street stop controlled. The interchange is assumed to be similar to the Marystown Road/TH 169 interchange, with a four-lane bridge but with no turn lanes on Old Brick Yard Road and short right-turn lanes on the ramps. All approaches at the intersection of Old Brick Yard Road/New Frontage Road are assumed to be one-lane approaches. The lane geometry for the new frontage road connection at Marystown Road is assumed to be a one-lane approach. Assumed lane configurations for the new intersections are shown in Figure 4.

To determine how well the existing and future roadway system will accommodate the year 2015 no-build traffic forecasts, a traffic operations analysis was conducted for the a.m. and p.m. peak hours. As shown in Table 3, all key intersections are expected to continue to operate at an acceptable LOS C or better during the peak hours with the existing and future geometric layout and traffic control.

Table 3
2015 No-Build Peak Hour Capacity Analysis
Level of Service Results

INTERSECTION	Level of Service	
	A.M. Peak	P.M. Peak
Marystown Road and Vierling Drive*	A/C	A/C
Marystown Road and TH 169 North Ramps*	A/B	A/C
Marystown Road and TH 169 South Ramps and New Frontage Road*	A/C	A/C
Marystown Road and 17th Avenue*	A/B	A/B
Marystown Road and 128th Street*	A/B	A/B
Marystown Road and 130th Street*	B/B	B/B
Zumbro Avenue and 130th Street*	A/A	A/A
Old Brick Yard Road and 130th Street*	A/B	A/B
Old Brick Yard Road and New Frontage Road*	A/A	A/A
Old Brick Yard Road and TH 169 South Ramps*	A/B	A/B
Old Brick Yard Road and TH 169 North Ramps*	B/C	A/B

* Indicates an unsignalized intersection. The overall LOS is shown followed by the worst approach LOS

PROPOSED DEVELOPMENT

The proposed development is to be constructed in the northwest quadrant of Marystown Road and 130th Street. The site is currently vacant, with the exception of a few single family homes. There are currently two different development scenarios proposed for this site. Scenario One was chosen for this analysis, as it generates more trips (approximately five-percent more) than Scenario Two and represents the worst case scenario. The proposed development will consist predominantly of residential homes, with some neighborhood retail, office and an elementary school. The proposed development is planned to be constructed in phases by the year 2015. Figure 5 displays the proposed site plan.

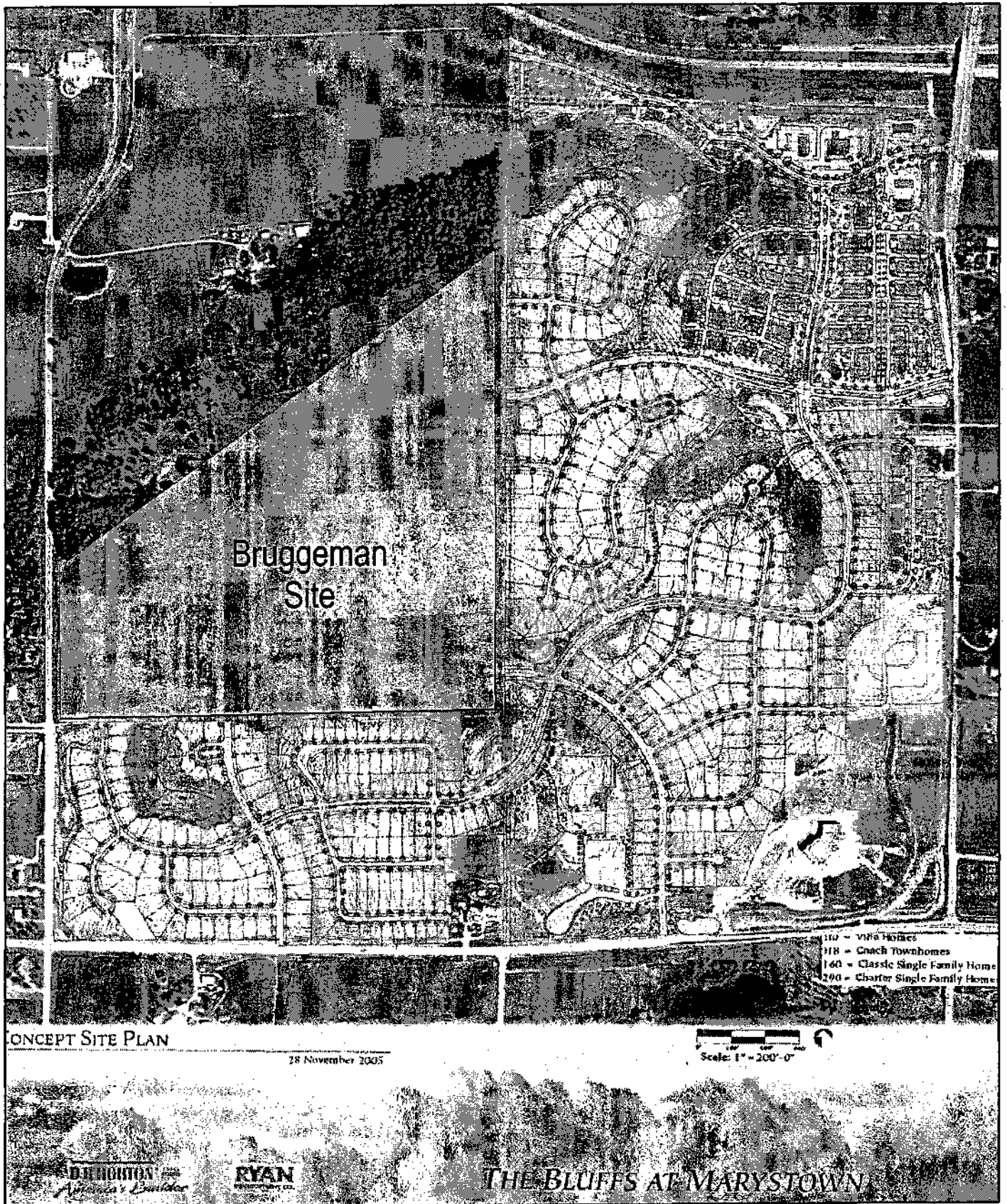
In addition, it was assumed that the Countryside residential development and New Shakopee High School assumed for the 2015 no-build analysis will be built, as well as a new adjacent residential development by Bruggeman Homes, that will be built in the undeveloped triangular area that is northwest of the Bluffs at Marystown site, east of Old Brick Yard Road and south of the bluff/tree line (see aerial map in Figure 5). This development will only be built if the Bluffs at Marystown development is built, which is why it was not assumed for 2015 no-build conditions. As part of the Bluffs at Marystown and Bruggeman residential developments, 17th Avenue will be extended from Marystown Road to Old Brick Yard Road.

TRAFFIC FORECASTS

Trip generation estimates for the a.m. and p.m. peak periods and on a daily basis were calculated for the proposed development. The trip generation estimates were generated based on the 2003 ITE Trip Generation Reports, using the land use type and size. Trip generation estimates for the proposed development as well as the adjacent Bruggeman residential development are shown in Table 4.

Table 4
Trip Generation Estimates

Land Use	Size	Daily Trips	A.M. Peak		P.M. Peak	
			In	Out	In	Out
<i>Bluffs at Marystown Development</i>						
Single Family Homes	451 units	4,157	81	244	262	154
Town homes	292 units	1,596	21	101	97	48
Neighborhood Commercial	22,500 sq. ft	2,983	45	29	130	141
Office	22,500 sq. ft.	423	50	7	18	86
Elementary School	600 students	774	139	113	76	92
Subtotal		9,933	335	494	583	522
<i>Bruggeman Residential Development</i>						
Single Family Homes	750 units	6,637	134	401	414	243
<i>Total from No-Build analysis(Table2)</i>		6,689	877	434	459	386
Grand Total (2015) Build		23,259	1,346	1,329	1,456	1,151



SITE PLAN

BLUFFS AT MARYSTOWN RESIDENTIAL DEVELOPMENT TRAFFIC STUDY
 City of Shakopee

Figure 5

Traffic forecasts were developed for year 2015 (one year after construction). The trips were assigned to the adjacent roadway system using the directional distribution shown in Figure 3. The directional distribution was developed based on current local travel patterns in the study area. In addition, a two-percent yearly growth rate was used to account for growth in background traffic volumes on all roadways. The combination of background traffic growth assumptions, adjacent Bruggeman development and the developments assumed for the 2015 no-build analysis, plus the estimated trips generated by the proposed development is shown on Figure 6.

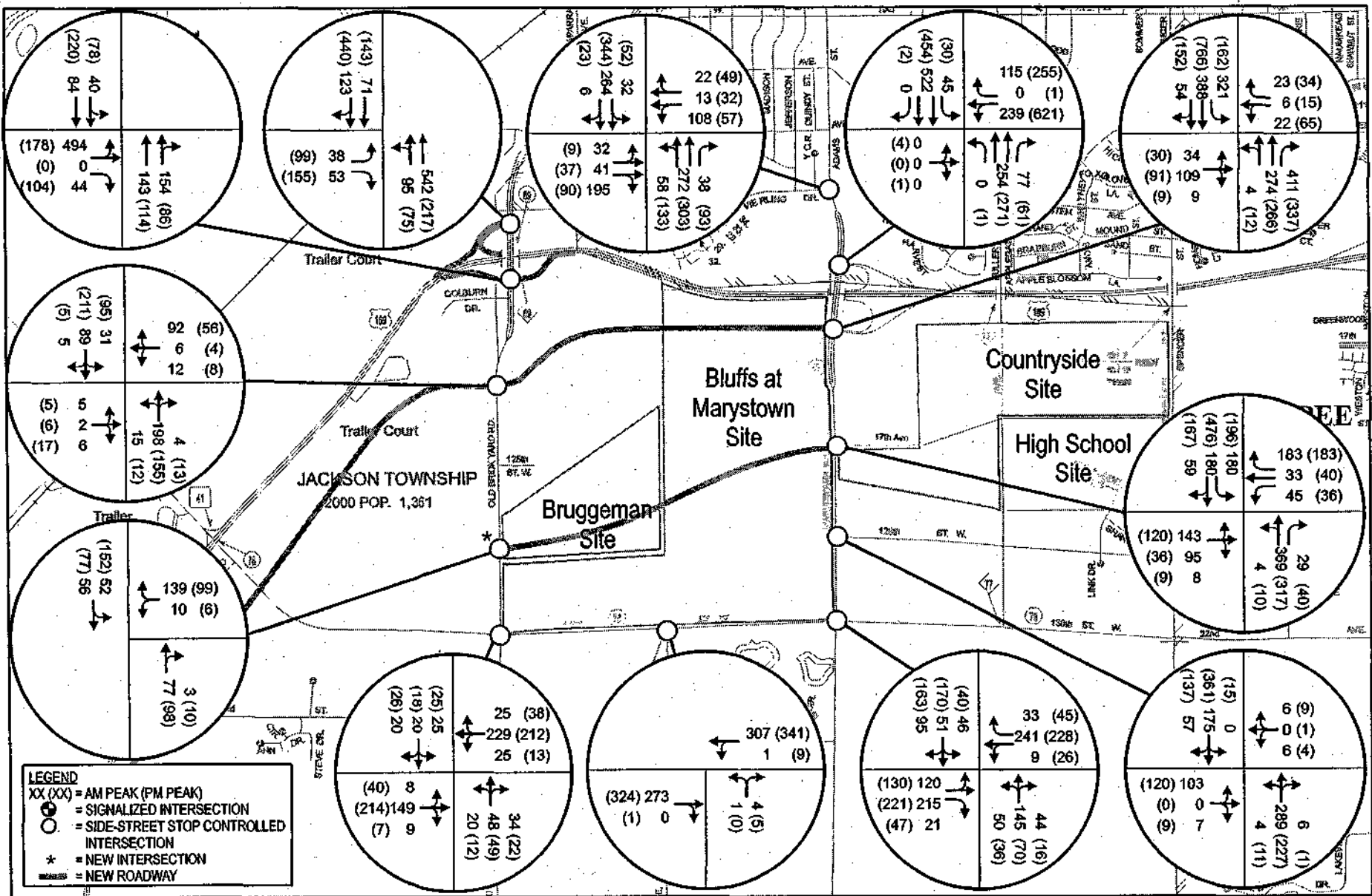
FUTURE CONDITIONS

To determine how well the existing and future roadway system will accommodate the proposed development, an a.m. and p.m. peak hour operations analysis was conducted for year 2015 build conditions. The geometric layout and traffic control assumed for the 2015 no-build analysis was assumed for all key intersections for the 2015 build analysis. Lane geometry for the new west leg at Marystown Road and TH 169 South Ramps was assumed to be a one-lane lane approach. All approaches for the new Old Brick Yard Road/17th Avenue intersection are assumed to be one-lane approaches.

Table 5
2015 Build Peak Hour Capacity Analysis
Level of Service Results

INTERSECTION	Level of Service	
	A.M. Peak	P.M. Peak
Marystown Road and Vierling Drive*	A/D	A/D
Marystown Road and TH 169 North Ramps*	B/D (B)	F/F (B)
Marystown Road and TH 169 South Ramps*	F/F (B)	F/F (A)
Marystown Road and 17th Avenue*	F/F (B)	F/F (B)
Marystown Road and 128th Street*	A/C	A/D
Marystown Road and 130th Street*	C/C	C/D
Zumbro Avenue and 130th Street*	A/B	A/B
Old Brick Yard Road and 130th Street*	A/B	A/C
Old Brick Yard Road and 17th Avenue*	A/A	A/A
Old Brick Yard Road and Frontage Road*	A/B	A/B
Old Brick Yard Road and TH 169 South Ramps*	A/B	A/B
Old Brick Yard Road and TH 169 North Ramps*	B/C	A/B

* Indicates an unsignalized intersection. The overall LOS is shown followed by the worst approach LOS
(X) - LOS in parenthesis represents the expected LOS with the recommended improvements listed below



As shown in Table 5, all key intersections are expected to continue to operate at an overall acceptable LOS C or better during the peak hours with the assumed geometric layout and traffic control, with the exception of Marystown Road/TH 169 South Ramps and Marystown Road/17th Avenue for both peak hours, and Marystown Road/TH 169 North Ramps for the p.m. peak hour. These intersections operate at poor levels of service due to the significant increase of traffic that causes queuing on side-street approaches. High traffic volumes on the mainline do not allow for gaps for side-street vehicles. In order for these intersections to operate at acceptable levels, the following intersection improvements are recommended:

Marystown Road/TH 169 North Ramps

- Installation of a traffic signal. Traffic volume for the westbound left-turn during the p.m. peak hour is over 600 vph and will not operate at an acceptable level without a traffic signal.
- In conjunction with the new traffic signal, the lane geometry for the westbound approach should be reassigned from a shared left-through and right-turn lane to a left-turn lane and shared through-right-turn lane. This allows for through vehicles to cross the intersection without being blocked by yielding left-turn vehicles and also allows for protected-permissive signal phasing

Marystown Road/TH 169 South Ramps

- Installation of a traffic signal. The addition of the west leg at this intersection and increased traffic on all approaches does not allow for gaps for side-street traffic, which experience significant delay.
- In conjunction with a new traffic signal, the side-street approaches should include a left-turn lane and a shared through-right-turn lane. A northbound left-turn lane should be built opposite the existing southbound left-turn lane. For safety reasons, a southbound right-turn lane should be considered due to the high volume and high speed limit on Marystown Road.

Marystown Road/17th Avenue

- Based on high delay experienced by eastbound vehicles and the close proximity of the high school and elementary school, a traffic signal is recommended at this location. However, overall traffic volumes may not be high enough to warrant a traffic signal. If a signal is not built at this location, traffic will have the option divert to the Marystown Road/TH 169 South Ramps/New Frontage Road to the north, to avoid the delay.
- It is recommended that the geometrics for the new west leg include a left-turn lane and a shared through-right-turn lane. A northbound left-turn lane should be built opposite the existing southbound left-turn lane. For safety reasons, a southbound right-turn lane should be considered due to the high volume and high speed limit on Marystown Road.

SYSTEM CONTEXT AND SITE ACCESS

The extension of 17th Avenue from Marystown Road to Old Brick Yard Road was reviewed to evaluate its role and potential jurisdiction within the region. Typically, County Highways within the Twin Cities Metropolitan Area tend to be longer, continuous routes that connect multiple activity centers and serve larger travel sheds. They also tend to operate at higher travel speeds (i.e. provide greater mobility) and a higher degree of access control (i.e. few, if any, private access points and limited public access points).

With the extension of 17th Avenue to Old Brick Yard Road (see Figure 7), this route, along with the CSAH 16 segment, provides increased continuity from CSAH 18 to Old Brick Yard Road. This route covers approximately eight miles. Assuming that higher speeds and access controls are in place, this route could be considered for county jurisdiction. The next parallel east-west route in this area, south of TH 169, is CSAH 42. CSAH 42 is approximately one mile south of 17th Avenue and only extends to CSAH 17. CSAH 78 is approximately ½ mile south of 17th Avenue. The spacing with CSAH 78 is typically closer than desirable spacing for county jurisdiction. However, other routes may be better suited for city jurisdiction, including CR 77 and CR 79 (north of CSAH 78) and CSAH 16 from CSAH 83 to CSAH 17. These routes lack the continuity and spacing with other higher-order routes and they lack access to TH 169. These other routes could be included in discussions with Scott County on long-term system changes.

Access spacing was also reviewed for key routes. The proposed access spacing along Marystown Road is adequate and meets county road access requirements of quarter-mile spacing. As directed by the City of Shakopee, it was assumed that there will be no new development south of 130th Street by year 2015. However, if this land does develop, there may be a need to upgrade Marystown Road and Old Brick Yard Road to four-lane sections. Preservation of right-of-way for four-lane sections on these roadways should be required.

We have reviewed the proposed Bluffs at Marystown site plan and access and the following recommendations are offered for your consideration:

- a) In general, we are concerned that the existing routes (local routes) may not be perpetuated or carried through to the proposed development. For example, 130th Street does not line up with the existing Zumbro Avenue to the south. These local street discontinuities create short movements on county facilities and do not promote neighborhood connectivity.
- b) It is unclear from the site plan how bus and drop-off traffic will be routed at the proposed elementary school; best design practice recommends that separate access be provided for bus and other site traffic.
- c) The driveway to the proposed elementary school is located on an internal roadway approximately 200 feet from 130th Street. There is a potential for traffic queuing extending onto 130th Street due to the short distance. It is recommended that the driveway to the elementary school be located to increase the distance from the

driveway to 130th Street and separate accesses provided for bus and vehicle (drop-off) traffic.

- d) 17th Avenue will be a heavily traveled internal roadway that feeds the residential area, therefore it is recommended that no homes face or access directly to this roadway (this is consistent with Figure 5).
- e) Access to local businesses along the proposed frontage road along the north side of the site should be consolidated as much as possible to reduce conflict points. This route will see increased traffic if areas to the south and west develop along TH 169.

CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis, the following conclusions and recommendation are offered for your consideration:

- 1) All key intersections currently operate at an acceptable LOS C or better during the a.m. and p.m. peak hours with existing geometric layout and traffic control.
- 2) Under 2015 no-build conditions, all key intersections are expected to continue to operate at an acceptable LOS C or better during the peak hours with the existing and future geometric layout and traffic control.
- 3) Under 2015 build conditions, all key intersections are expected to continue to operate at an overall acceptable LOS C or better during the peak hours with the geometric layout and traffic control assumed for the 2015 no-build analysis, with the exception of Marystown Road/TH 169 South Ramps and Marystown Road/17th Avenue for both peak hours, and Marystown Road/TH 169 North Ramps for the p.m. peak hour. These intersections operate at poor levels of service due to the significant increase of traffic that causes queuing on side-street approaches. High traffic volumes on the mainline do not allow for gaps for side-street vehicles. In order for these intersections to operate at acceptable levels, the following intersection improvements are recommended:

- a) Marystown Road/TH 169 North Ramps

- o Installation of a traffic signal. Traffic volumes for the westbound left-turn during the p.m. peak hour are over 600 vph and will not operate at an acceptable level without a traffic signal.
- o In conjunction with the new traffic signal, the lane geometry for the westbound approach should be reassigned from a shared left-through and right-turn lane to a left-turn lane and shared through-right-turn lane. This allows for through vehicles to cross the intersection without being blocked by yielding left-turn vehicles and also allows for protected-permissive signal phasing

b) Marystown Road/TH 169 South Ramps

- Installation of a traffic signal. The addition of the west leg at this intersection and increased traffic on all approaches does not allow for gaps for side-street traffic, which experience significant delay.
- In conjunction with a new traffic signal, the side-street approaches should include a left-turn lane and a shared through-right-turn lane. A northbound left-turn lane should be built opposite the existing southbound left-turn lane. For safety reasons, a southbound right-turn lane should be considered due to the high volume and high speed limit on Marystown Road.

c) Marystown Road/17th Avenue

- Based on high delay experienced by eastbound vehicles and the close proximity of the high school and elementary school, a traffic signal is recommended at this location. However, overall traffic volumes may not be high enough to warrant a traffic signal. If a signal is not built at this location, eastbound traffic will have the option to divert to the Marystown Road/TH 169 South Ramps/New Frontage Road signal, to avoid the delay. Westbound traffic on 17th would not have other options to get to a signalized intersection, in this immediate area
 - It is recommended that the geometrics for the new west leg include a left-turn lane and a shared through-right-turn lane. A northbound left-turn lane should be built opposite the existing southbound left-turn lane. For safety reasons, a southbound right-turn lane should be considered due to the high volume and high speed limit on Marystown Road.
- 4) Based on our review, connecting the proposed frontage road from Marystown Road to Old Brick Yard Road on the north side of the bluff to the proposed frontage road connection at TH 41 would be the best option, leaving 17th Avenue as a potential county road that ends at Old Brick Yard Road.
- 5) As directed by the City of Shakopee, it was assumed that there will be no new development south of 130th Street by year 2015. However, if this land does develop, there may be a need to upgrade Marystown Road and Old Brick Yard Road to a four-lane section (routes leading to interchanges tend to attract high-levels of traffic). Preservation of right-of-way for these sections of roadway should be required.
- 6) Site access on 130th Street should be reconsidered so that some continuity of local streets is achieved between the north and south sides of 130th Street.
- 7) It is unclear from the site plan how bus and drop-off traffic will be routed at the proposed elementary school, however, it is recommended that bus traffic and vehicle drop-off areas be separated.

- 8) The driveway to the proposed elementary school is located on an internal roadway approximately 200 feet from 130th street. There is a potential for traffic queuing extending onto 130th Street due to the short distance. It is recommended that the driveway to the elementary school be evaluated and appropriate steps taken to increase the distance from the driveway to 130th Street.
- 9) 17th Avenue will be a heavily traveled internal roadway that feeds the residential area; therefore it is recommended that no homes face this roadway.
- 10) Access to local businesses along the proposed frontage road along the north side of the site should be consolidated as much as possible to reduce conflict points. This route will see increased traffic if areas to the south and west develop along TH 169.
- 11) The city and county should discuss the jurisdiction of 17th Avenue along with other potential routes mentioned in this report. The continuity of 17th Avenue and CSAH 16 suggest that this may fit the criteria for a county facility; however, route spacing, especially with CSAH 78 and the fact that it lacks continuity on the west end (Old Brick Yard Road) detract from this jurisdiction.

Appendix B

Development Data: Density Calculations

The Bluffs at Marystown, Shakopee
Scott County, Minnesota

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Development Data: Density Calculations

TOTAL GROSS SITE AREA:	322.98 AC.
TOTAL NET SITE AREA	233.39 AC.
EXISTING UTILITY EASEMENTS: (Gas and Overhead Power)	12.83 AC.
COMMERCIAL DEVELOPMENT: (Less Utility Easements)	12.83 AC.
FUTURE DEVELOPMENT OUTLOTS:	0.34 AC.
MAJOR ROW (CR15, CR16, CR17, and Zumbro less Gas Easements)	13.05 AC.
GREEN SPACE: (Parks, Open Space, Woodlands, and Bluffs less Ponds)	50.54 AC.
TOTAL UNITS:	940 UNITS
SINGLE FAMILY	590 LOTS
MULTI-FAMILY	350 UNITS
Townhomes	312 Units
Condos	38 Units
TOTAL DENSITY (940 UNITS / 233.39 AC.)	4.03 UNITS / AC.



Appendix C

Updated Traffic Impact Study

The Bluffs at Marystown, Shakopee
Scott County, Minnesota

MEMORANDUM

Date: July 19, 2018

Re: **The Bluffs at Marystown/Windermere Traffic Study Update**
File 0014194.00

To: Micah Heckman, City of Shakopee

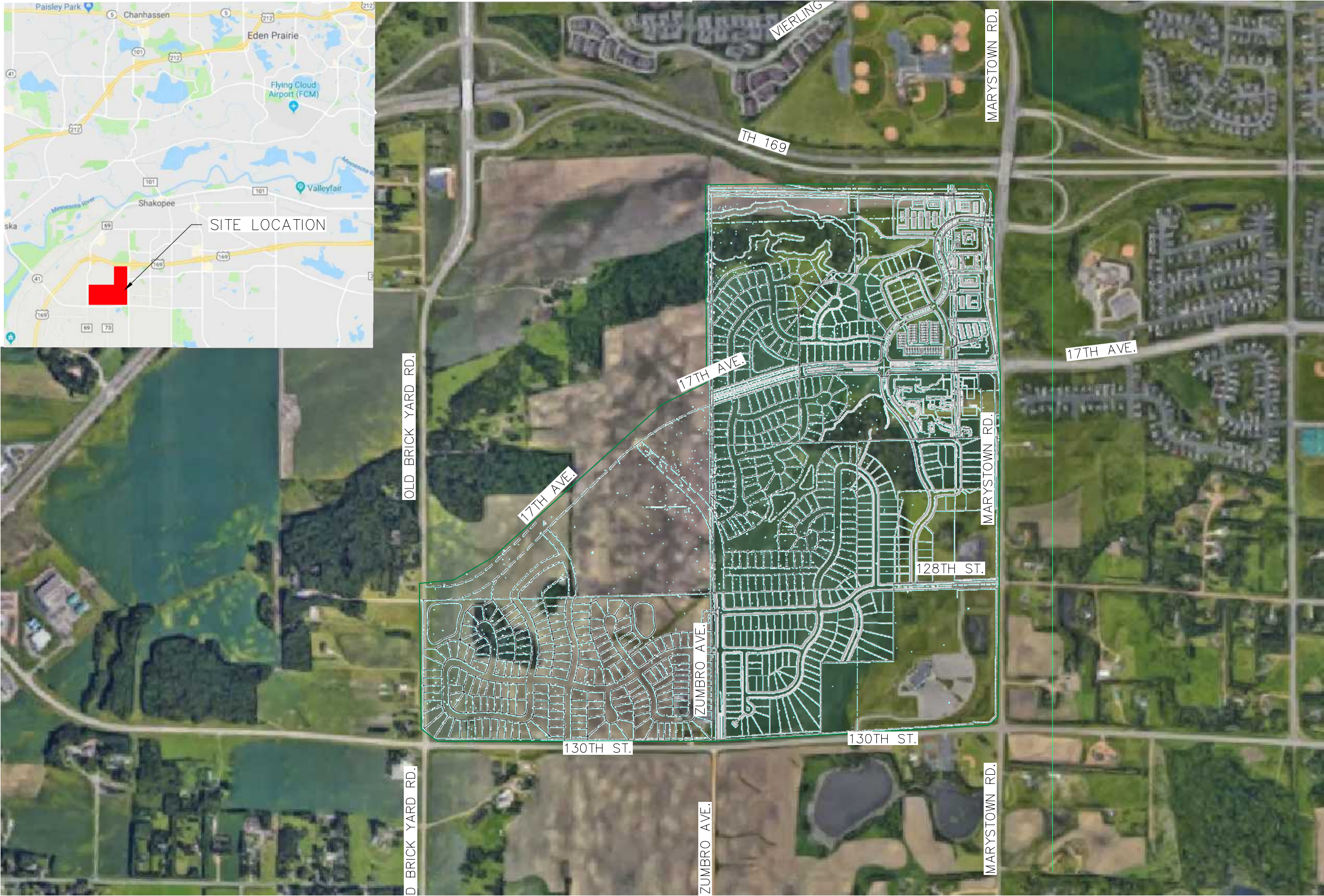
From: Steve Manhart, P.E., PTOE, PTP

Westwood Professional Services has completed a traffic study for the proposed Windermere Development in Shakopee, MN. This is an update of several documents that have preceded this analysis:

- Traffic Study For The Proposed Bluffs At Marystown Residential Development, prepared by SRF Consulting Group, 03/27/2006
- Traffic Study For The Proposed Bluffs At Marystown Residential Development – Update, prepared by SRF Consulting Group, 08/08/2006
- Traffic Impact Study – Bluffs of Marystown, prepared by Westwood Professional Services, 08/07/2014
- Traffic Impact Study – Windermere, prepared by Westwood Professional Services, 03/29/2017
- Traffic Impact Study – Windermere (BHS-Shakopee), prepared by Westwood Professional Services, 03/22/2018

This update is in response to comments from the Metropolitan Council requesting an update of the traffic section from the previous EAW. Their request was to see the impact of the land uses, which have changed over the years.

The purpose of this study is to determine the traffic impacts on the adjacent roadway system related to the development of this site (See Figure 1). This traffic study includes a.m. and p.m. peak hour operations analysis for existing and year 2025 no-build and build conditions.



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Westwood

Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.

Prepared for:
DR HORTON - MINNESOTA

**WINDERMERE EAW
UPDATE**
Shakopee, MN

SITE LAYOUT

Date: 7/19/18 Figure: 1

EXISTING CONDITIONS

To determine how traffic is currently operating in the study area, traffic operations for existing a.m. and p.m. peak hour conditions were analyzed at the following key intersections:

- Marystown Road (County Road 15) and Vierling Drive
- Marystown Road (County Road 15) and TH 169 SB Ramps
- Marystown Road (County Road 15) and TH 169 NB Ramps
- Marystown Road (County Road 15) and 17th Avenue
- Marystown Road (County Road 15) and 128th Street West
- Marystown Road (County Road 15) and 130th Street West (County Road 78)
- Zumbro Avenue (County Road 73) and 130th Street West (County Road 78)
- Old Brick Yard Road (County Road 69) and 130th Street West (County Road 78)
- Old Brick Yard Road (County Road 69) and TH 169 NB Ramps
- Old Brick Yard Road (County Road 69) and TH 169 SB Ramps

Westwood had taken counts in 2015 for all Marystown Road (County Road 15) intersections except at 130th Street West (County Road 78). These counts were then extrapolated to the 2018 condition using the 2.0% annual growth rate utilized in the Traffic Study for the Proposed Bluffs at Marystown Residential Development.¹

For the remaining intersections, Westwood deployed video cameras to record turning movements. Westwood then added these peak hour turning movement counts to the counts extrapolated from the earlier study.

Current traffic controls include:

Side Street Stop

- TH 169 ramps at Old Brick Yard Road
- Old Brick Yard Road at 130th Street
- Zumbro Avenue at the 130th Street
- 128th Street at Marystown Road
- 17th Avenue at Marystown Road
- NB & SB TH 169 Ramps at Marystown Road

All-Way Street Stop

- Marystown Road and Vierling Drive
- Old Brick Yard Road (and 130th Street West

¹ Traffic Study for the Proposed Bluffs at Marystown Residential Development, prepared for the City of Shakopee, by SRF Consulting Group, March 27, 2006.

Current geometrics and peak hour traffic volumes for the key intersections are shown in Figure 2.

An operations analysis was conducted for the a.m. and p.m. peak hours at the key intersections to determine how traffic currently operates in the study area. All intersections were analyzed using the *Synchro/SimTraffic, Version 10* software. Capacity analysis results identify a Level of Service (LOS) which indicates how well an intersection is operating. Facilities are given letter designations from A, representing the best operating conditions, to F, representing the worst. Generally in the Twin Cities metropolitan area, Level of Service D (LOS-D) represents the threshold for acceptable overall intersection operating conditions during a peak hour. A full discussion of the methodology in determining levels of service is found in the Appendix.

Results of the analysis shown in Table 1 indicate that all of the key intersections are currently operating at an overall LOS C or better during the a.m. and p.m. peak periods, with existing traffic control and geometric layout.

Table 1 - Existing Peak Hour Capacity Analysis - Level of Service Results

INTERSECTION	LEVEL OF SERVICE	
	A.M. PEAK	P.M. PEAK
Marystown Road and Vierling Drive*	A/B	A/B
Marystown Road and TH 169 SB Ramps*	A/A	A/A
Marystown Road and TH 169 NB Ramps*	A/A	A/A
Marystown Road and 17th Avenue*	A/A	A/A
Marystown Road and 128th Street*	A/A	A/A
Marystown Road and 130th Street*	A/B	A/B
Zumbro Avenue and 130th Street*	A/A	A/A
Old Brick Yard Road and 130th Street*	A/B	A/A
Old Brick Yard Road and TH 169 SB Ramps*	A/A	A/A
Old Brick Yard Road and TH 169 NB Ramps*	A/B	A/A

** Indicates an unsignalized intersection. The overall LOS is shown followed by the worst approach LOS.*

Note that in this area, the TH 169 SB Ramps appear to run westbound, and the TH 169 NB Ramps appear to run eastbound.

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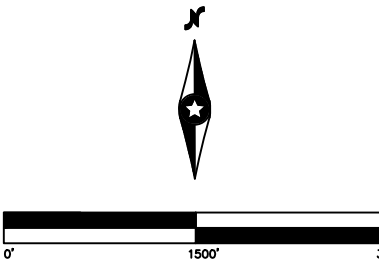
Legend

LANE DESIGNATION

AM PEAK HOUR VOLUME XX

PM PEAK HOUR VOLUME XX

UNSIGNALIZED INTERSECTION



Westwood

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Westwood Professional Services, Inc.

Prepared for:
DR HORTON - MINNESOTA

**WINDERMERE EAW
UPDATE**
Shakopee, MN

**EXISTING PEAK HOUR
VOLUMES**
Date: 07/19/2018 Figure:2

FUTURE 2025 NO-BUILD CONDITIONS

Traffic forecasts for no-build conditions were developed for year 2025. This scenario was analyzed to determine future traffic operations without the proposed Windermere residential development. In order to account for background growth for year 2025 traffic forecasts, a 2.0% yearly growth rate was applied to all roadways. This growth rate was the same as was used in the 2006 SRF report. This growth rate is more aggressive than the 0.9% growth rate calculated by applying the Traffic Projection Factor for Scott County, as published by MnDOT's office of State Aid for Local Transportation (SALT).²

The background traffic counts taken in 2015 and extrapolated to 2025 conditions are assumed to take into account traffic from the surrounding developments. The trips for the adjacent developments were distributed to the adjacent roadways based on existing travel patterns in the area (See Figure 3).

Scott County, in partnership with MnDOT, is finalizing the design for a diverging diamond interchange at the TH 169/TH 41 and Co. Rd 78 intersection, frontage roads and an overpass at Co. Rd, 14. This construction will begin in the fall of 2018 and last through the fall of 2020.

Further, Scott County is constructing a new frontage road along the southeast side of TH 169 to the west of Old Brick Yard Road (CSAH 69). This project will remove direct access to TH 169 and will provide direct access to Old Brick Yard Road across from the north/east bound ramps at the TH 169 interchange.

These projects have been added to the current analysis assumptions.

To determine how well the future roadway system will accommodate the year 2025 no-build traffic forecasts, a traffic operations analysis was conducted for the a.m. and p.m. peak hours. As shown in Table 2, all key intersections are expected to continue to operate at an acceptable LOS A during the peak hours with the existing and future geometric layout and traffic control.

Full SimTraffic Operations and Performance reports appear in the Appendix of this report.

² Traffic Projection Factors for Needs, State Aid for Local Transportation, Minnesota Department of Transportation, Saint Paul, MN, Fall 2017.

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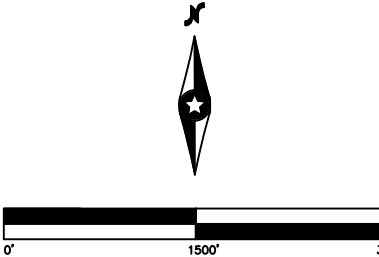
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LANE DESIGNATION

AM PEAK HOUR VOLUME

PM PEAK HOUR VOLUME

UNSIGNALIZED INTERSECTION



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**2025 NO BUILD PEAK
HOUR VOLUMES**
Date: 07/19/2018 Figure:3

Table 2 -- 2025 No-Build Peak Hour Capacity Analysis Level of Service Results

INTERSECTION	LEVEL OF SERVICE	
	A.M. PEAK	P.M. PEAK
Marystown Road and Vierling Drive*	A/B	A/B
Marystown Road and TH 169 SB Ramps*	A/B	A/A
Marystown Road and TH 169 NB Ramps*	A/A	A/A
Marystown Road and 17th Avenue*	A/B	A/A
Marystown Road and 128th Street*	A/A	A/A
Marystown Road and 130th Street*	A/B	A/B
Zumbro Avenue and 130th Street*	A/A	A/A
Old Brick Yard Road and 130th Street*	A/B	A/B
Old Brick Yard Road and TH 169 SB Ramps*	A/A	A/A
Old Brick Yard Road and TH 169 NB Ramps*	A/B	A/A

** Indicates an unsignalized intersection. The overall LOS is shown followed by the worst approach LOS*

Note that in this area, the TH 169 SB Ramps appear to run westbound, and the TH 169 NB Ramps appear to run eastbound.

PROPOSED DEVELOPMENT

The proposed development is to be constructed to the west of Marystown Road, to the north of 130th Street and to the east of Old Brick Yard Road. The site is currently vacant with the exception of two churches and a few single family homes. The proposed development will consist predominantly of residential homes, with some neighborhood retail, office and senior living center. The proposed development is planned to be constructed in phases with build-out within five years. For the sake of this analysis, a design year of 2025 was selected (one year after projected build-out). Figure 5 displays the proposed site plan.

TRAFFIC FORECASTS

Trip generation estimates for the a.m. and p.m. peak periods and on a daily basis were calculated for the proposed development. The trip generation estimates were calculated based on the Institute of Transportation Engineers' Trip Generation Manual, Tenth Edition (2017) using the land use type and size. These estimates include reductions for internal capture (i.e., trips to and from uses within the development itself). Trip generation estimates for the proposed development are shown in Table 3.

Table 3 – Projected Trip Generation

Land Use	ITE Code	Size	Weekday		AM peak		PM Peak	
			Enter	Exit	Enter	Exit	Enter	Exit
Single Family Housing	210	590 units	2,392	2,392	100	300	272	160
Multifamily Housing (Low-Rise)	220	38 units	111	111	4	14	12	7
Multifamily Housing (Low-Rise)	220	312 units	1,042	1,042	30	102	79	46
Gasoline/Service Station w/ Convenience Market	945	16 fuel pos.	1,408	1,408	100	96	88	85
Pharmacy/Drugstore w/o Drive-Thru	880	10 k.s.f.	399	399	16	8	42	43
Senior Adult Housing - Attached	252	185 units	323	323	12	23	26	21
Assisted Living	254	68 beds	79	79	8	5	5	9
Nursing Home	620	24 employees	57	57	8	2	3	6
Shopping Center	820	78 k.s.f.	2,282	2,282	111	68	168	182
			8,093	8,093	389	618	695	559
			16,186		1,007		1,254	

(Source: ITE Trip Generation Manual, Tenth Edition, 2017)

The directional distribution of future trips was developed based on current local travel patterns in the study area (See Figure 4). Traffic forecasts were developed for year 2025 (one year after construction). The trips were assigned to the adjacent roadway system using the directional distribution (see Figure 5).

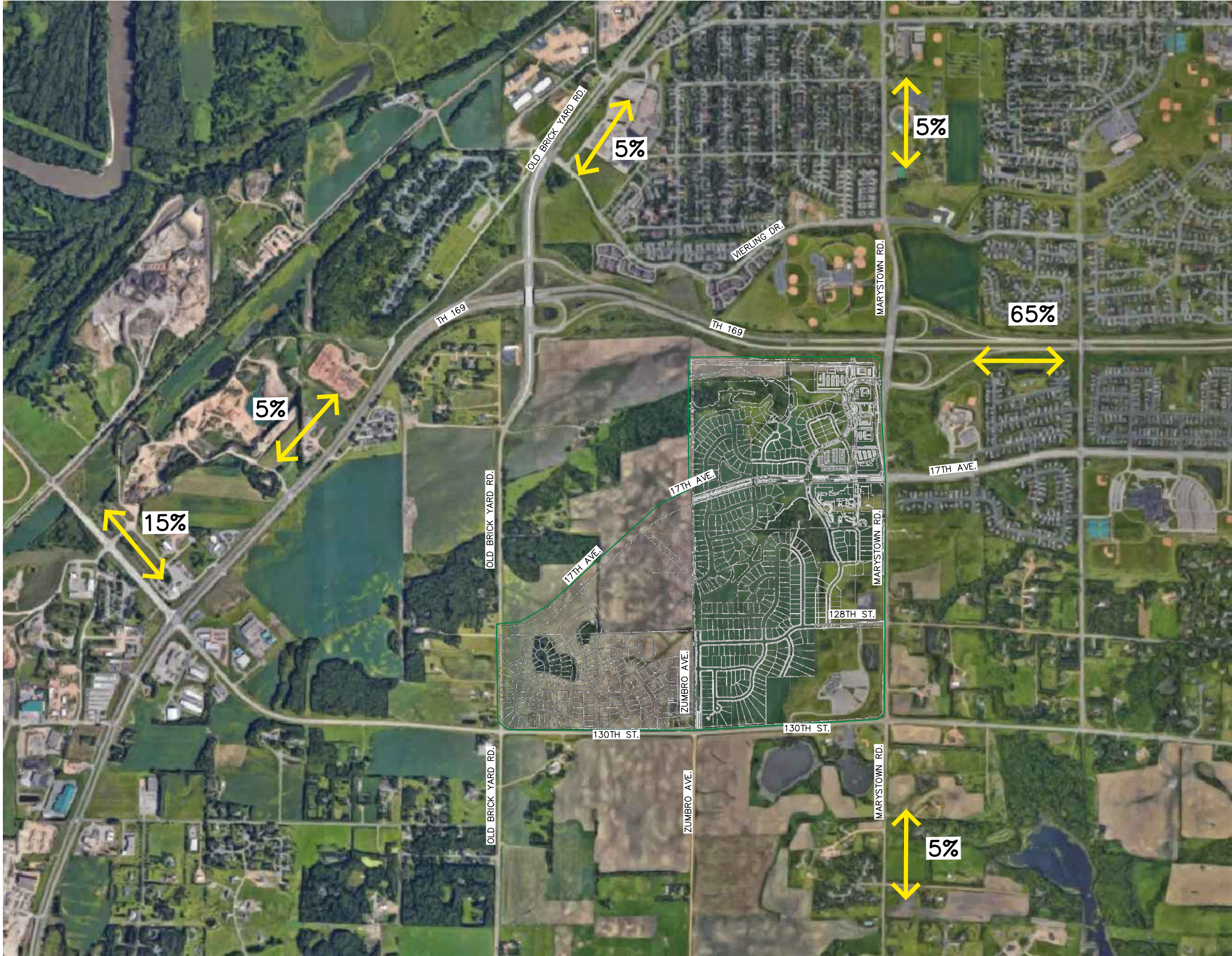
The combination of background traffic growth assumptions and the developments assumed for the 2025 no-build analysis, plus the estimated trips generated by the proposed development is shown on Figure 6.

FUTURE CONDITIONS

To determine how well the existing and future roadway system will accommodate the proposed development, a.m. and p.m. peak hour operations analyses were conducted for year 2025 build conditions. The geometric layout and traffic control assumed for the 2025 no-build analysis was assumed for all key intersections for the 2025 build analysis. Projected traffic was distributed using the trip distribution pattern from the 2006 report.

As shown in Table 5, all key intersections will continue to operate at an overall acceptable LOS A during the peak hours with the assumed geometric layout and traffic control. The intersections along Marystown Road at the TH 169 Ramps and at 17th Avenue will have specific lane groups that will operate at LOS-C or LOS-D, but no movements will operate at unacceptable levels (e.g., LOS-E or LOS-F). These lane movements will see increased delay due to the significant increase of traffic that causes queuing on side-street approaches. High traffic volumes on the mainline do not allow for gaps for side-street vehicles.

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Legend

DISTRIBUTION DIRECTION
DIRECTIONAL PERCENTAGE



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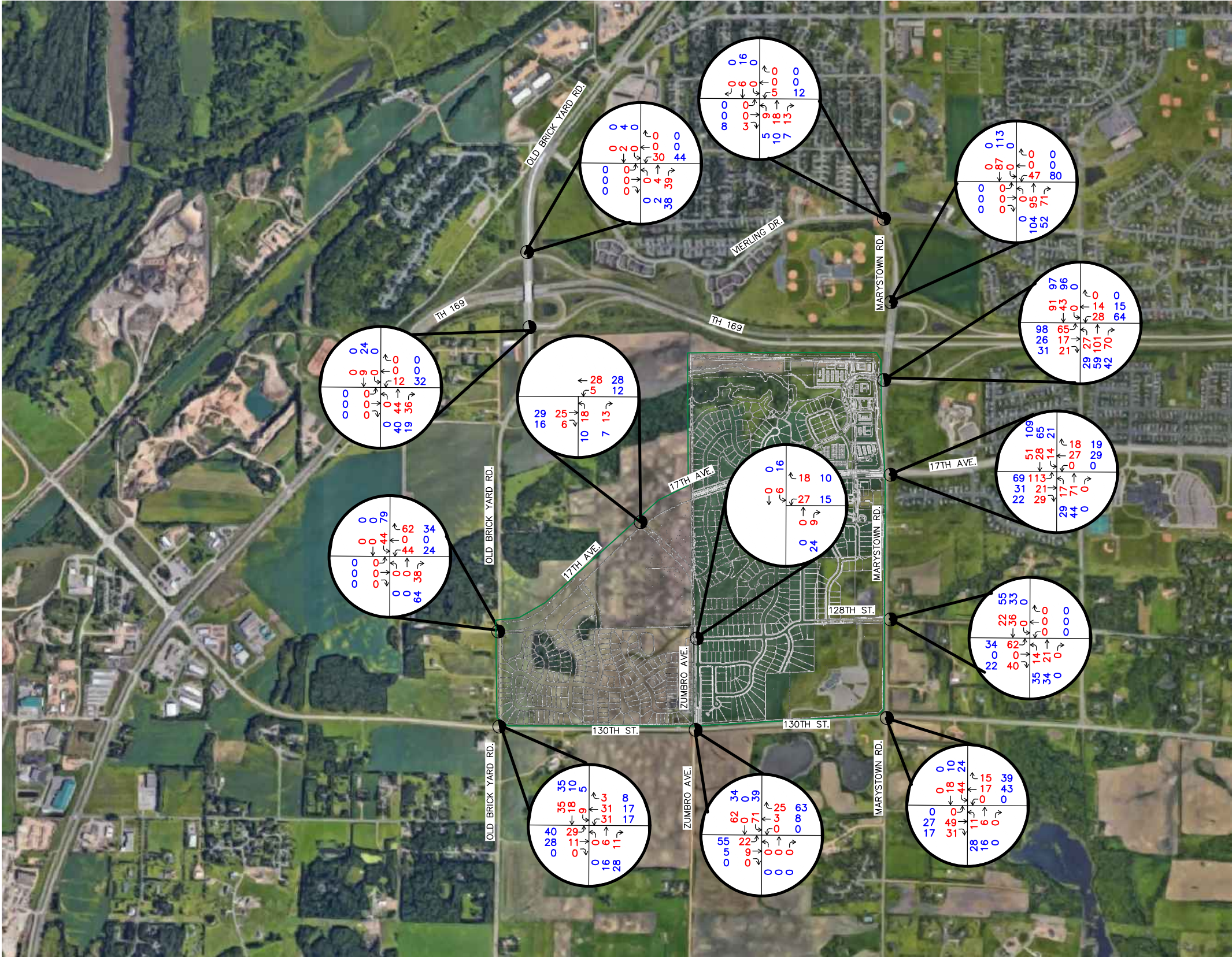
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**DIRECTIONAL
DISTRIBUTION**
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Legend

- LANE DESIGNATION
- AM PEAK HOUR VOLUME
- PM PEAK HOUR VOLUME
- UNSIGNALIZED INTERSECTION

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TRIP ASSIGNMENT

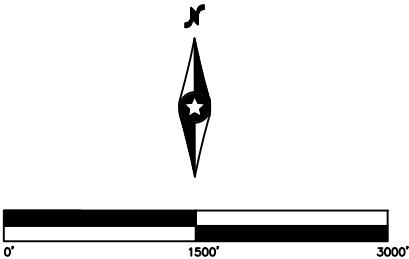
Date: 07/19/2018 Figure:5

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Legend

- LANE DESIGNATION
- AM PEAK HOUR VOLUME
- PM PEAK HOUR VOLUME
- UNSIGNALIZED INTERSECTION



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2025 BUILD PEAK
HOUR VOLUMES
Date: 07/19/2018 Figure:6

Table 5 – 2025 Build Peak Hour Capacity Analysis - Level of Service Results

INTERSECTION	LEVEL OF SERVICE	
	A.M. PEAK	P.M. PEAK
Marystown Road and Vierling Drive*	A/B	A/B
Marystown Road and TH 169 SB Ramps*	A/D	A/C
Marystown Road and TH 169 NB Ramps*	A/B	A/C
Marystown Road and 17th Avenue*	A/C	A/C
Marystown Road and 128th Street*	A/A	A/A
Marystown Road and 130th Street*	A/B	A/B
Zumbro Avenue and 130th Street*	A/A	A/B
Old Brick Yard Road and 130th Street*	A/B	A/B
Old Brick Yard Road and 17 th Avenue*	A/A	A/A
Old Brick Yard Road and TH 169 SB Ramps*	A/A	A/A
Old Brick Yard Road and TH 169 NB Ramps*	A/B	A/A
Zumbro Avenue and 17 th Avenue*	A/A	A/A
Zumbro Avenue and 128 th Street*	A/A	A/A

** Indicates an unsignalized intersection. The overall LOS is shown followed by the worst approach LOS*

Note that in this area, the TH 169 SB Ramps appear to run westbound, and the TH 169 NB Ramps appear to run eastbound.

In order for these intersections to operate at acceptable levels, Traffic conditions should be monitored regularly at these intersections to determine whether warrants will be met for other traffic control improvements.

Specifically, the following intersection improvements are recommended:

Marystown Road & TH 169 Southbound Ramps

- As warrants are met, installation of a traffic signal.
- In conjunction with the new traffic signal, the lane geometry for the westbound approach should be reassigned from a shared left-through and right-turn lane to a left-turn lane and shared through-right-turn lane. This allows for through vehicles to cross the intersection without being blocked by yielding left-turn vehicles and also allows for protected-permissive signal phasing

Marystown Road & TH 169 Northbound Ramps

- As warrants are met, installation of a traffic signal. This may occur when traffic from the west side of Marystown establishes its traffic patterns, and as eastbound delay occurs at the intersection.
- In conjunction with a new traffic signal, the side-street approaches should include a left-turn lane and a shared through-right-turn lane.

Marystown Road & 17th Avenue

- Based on high delay experienced by eastbound vehicles, a traffic signal or other traffic control may become warranted at this location.
- It is recommended that the geometrics for the new west leg include a left-turn lane and two through lanes and a right-turn lane. Left-turn lanes should be built for northbound and southbound traffic. For safety reasons, a southbound right-turn lane is recommended due to the high volume and high speed limit on Marystown Road.

Marystown Road & Vierling Drive

- As warrants are met, installation of a traffic signal.

Old Brink Yard Road & 130th Street W

- After completion of the interchange project with TH 169 to the west, this intersection should be reevaluated for turn lanes and possible signalization, as warrants are met.

Old Brink Yard Road & 17th Avenue

- As warrants are met, installation of a traffic signal.
- The side-street approach should include a left-turn lane and a right-turn lane.

Old Brink Yard Road & TH 169 NB Ramps/Mobile Manor Frontage Road

- As warrants are met, installation of a traffic signal.

Old Brink Yard Road & TH 169 SB Ramps

- As warrants are met, installation of a traffic signal.

Internal Intersections with 17th Avenue and Zumbro Avenue

- Side street stop recommended.
- As conditions warrant, and/or as traffic volumes equalize from each direction, consider all-way stop control. This, however, decreases effective mobility and increases delay for each approach.

SYSTEM CONTEXT AND ACCESS SPACING

The Scott County 2040 Comprehensive Plan Update (Draft - May 2018) identifies functional classification for various roadways in the Windermere study area:

- TH 169 – Principal Arterial
- Marystown south of TH 160 – A-Minor Arterial
- 130th Street between Marystown and Old Brick Yard Road – Principal Arterial
- Old Brick Yard Road south of TH 169 – A-Minor Arterial
- 17th Avenue between Marystown and Old Brick Yard Road– A-Minor Arterial

Further, the Scott County 2040 Comprehensive Plan Update identifies possible road jurisdiction redesignation of 130th Street from County to MnDOT control sometime in the future.

In addition, the Scott County 2040 Comprehensive Plan Update discusses the ways that the County highway system must adequately service long range mobility needs while balancing the needs for appropriate land use access. To that end Principal Arterials will be designed to serve the highest mobility with no direct land access. Conversely, Local Streets will be designed to serve the lowest mobility while providing unrestricted land access. Arterials and Collector streets will provide a varying range of mobility versus access in between Principal Arterials and Local Streets. To that end, Scott County has proposed draft Minimum Access Spacing Guidelines, as found in the Appendix of this report.

Further, the City of Shakopee had adopted their 2008 Transportation Plan, which provides detailed spacing guidelines for full and partial access from driveways and streets onto City roadways based on functional classification.

CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis, the following conclusions and recommendation are offered for your consideration:

- 1) All key intersections currently operate at an acceptable LOS A during the a.m. and p.m. peak hours with existing geometric layout and traffic control.
- 2) Under 2025 no-build conditions, all key intersections are expected to continue to operate at an acceptable LOS A during the peak hours with the existing and future geometric layout and traffic control.

- 3) Under 2025 build conditions, all key intersections are expected to continue to operate at an overall acceptable LOS A during the peak hours with the geometric layout and traffic control assumed for the 2025 no-build analysis. Some intersections along Marystown (specifically, Marystown Road & TH 169 NB Ramps, Marystown Road/17th Avenue for both peak hours, and Marystown Road/TH 169 North Ramps for the p.m. peak hour) have lane groups that operate at diminished levels of service (LOS-C or LOS-D) due to the significant increase of traffic that causes queuing on side-street approaches. High traffic volumes on the mainline do not allow for gaps for side-street vehicles. In order for these intersections to operate at acceptable levels, changes in traffic control or geometric improvements may be warranted.
- 4) 130th Street may be designated as a Principal Arterial, which would restrict direct access to adjacent land uses in the future.
- 5) 17th Avenue may be designated as an A-Minor Arterial by the County. It will become a heavily traveled internal roadway that feeds the residential area; therefore it is recommended that no homes face this roadway.

Appendix I - Level of Service Methodology

Traffic operations for the peak hour conditions within the study area were analyzed using the industry-standard *Synchro/SimTraffic Version 10* software package, which uses the data and methodology contained in the Highway Capacity Manual, Sixth Edition published by the Transportation Research Board. The software model was calibrated to replicate existing conditions as accurately as possible before being used to assess future conditions.

The operating conditions of transportation facilities, such as traffic signals, stop-controlled intersections and roundabouts, are evaluated based on the relationship of the theoretical capacity of a facility to the actual traffic volumes on that facility. Various factors affect capacity, including travel speed, roadway geometry, grade, number and width of travel lanes, and intersection control. The current standards for evaluating capacity and operating conditions are contained in the Highway Capacity Manual, Sixth Edition (HCM). The procedures describe operating conditions in terms of a Level of Service (LOS). Facilities are given letter designations from A, representing the best operating conditions, to F, representing the worst. Generally, Level of Service D (LOS-D) represents the threshold for acceptable overall intersection operating conditions during a peak hour.

At intersections, Levels of Service are assigned differently for signalized or unsignalized intersections (which include Two-Way Stop Control [TWSC], All-way Stop Control [AWSC] and roundabouts). For signalized intersections, Level of Service is calculated by taking the total Intersection Delay and converting it to a letter grade as shown in the right side of Table A-1. For an unsignalized intersection, Level of Service is calculated by taking the Intersection Delay and converting it to a letter grade, as shown in the left side of Table A-1. While similar, the signalized control delay totals are higher than that of unsignalized intersections. In any condition, when the LOS by Volume to Capacity Ratio exceeds 1.0, the LOS is always F.

Under the HCM, common movements are included into lane groups. Control Delay is then determined for each lane group and Levels of Service are based on this Control Delay. For each lane group, Control Delay is quantified by number of seconds. Control Delay is defined as the difference between the travel time that would have occurred in the absence of the intersection control, and the travel time that results because of the presence of the intersection control. Levels of Service are then based on the control delay per vehicle.

Table A-1 - Level of Service vs. Control Delay - Signalized and Unsignalized Intersections (TWSC, AWSC & Roundabouts)

<u>TWSC, AWSC & Roundabouts</u>		<u>Signalized Intersections</u>	
LOS by Volume to Capacity Ratio (≤ 1)*	Control Delay per Vehicle (Seconds)	LOS by Volume to Capacity Ratio (≤ 1)*	Control Delay per Vehicle (Seconds)
A	≤ 10	A	≤ 10
B	>10 and ≤ 15	B	>10 and ≤ 20
C	>15 and ≤ 25	C	>20 and ≤ 35
D	>25 and ≤ 35	D	>35 and ≤ 55
E	>35 and ≤ 50	E	>55 and ≤ 80
F	>50	F	>80

Per the 2010 Highway Capacity Manual, published by the Transportation Research Board.

* NOTE: When LOS by Volume to Capacity Ratio >1.00 , LOS is F.

The acceptable Level of Service threshold for a particular movement at an intersection depends on both the priority assigned to that movement and its traffic volume. In general, the higher the priority and the higher the traffic volume, the more stringent the acceptable threshold will be. For example, the acceptable threshold for a high-priority/high-volume rural movement might be C, while LOS F on a low-priority/low-volume urban movement might be appropriate.

For two-way stop-controlled intersections, a key measure of operational effectiveness is the side street LOS. Since the mainline does not have to stop, the majority of delay is attributed to the side-street/minor approaches. Long delays and poor LOS can sometimes result on the side street, even if the overall intersection is functioning well, making it a valuable design criterion. As the side-street/minor approach delay approaches and exceeds 60 seconds per vehicle, drivers may divert to another route or become impatient and accept gaps in the mainline traffic that are less than acceptable/safe gaps resulting in the potential for traffic safety concerns. Therefore, depending on priority and traffic volume, acceptable side-street LOS can range from D to F. Side streets can operate at LOS F without the intersection warranting a change in traffic control.

A final fundamental component of operational analyses is a study of vehicular queuing, as defined the line of vehicles waiting to pass through an intersection. An intersection can operate with an acceptable Level of Service, but if queues from the

intersection extend back to block entrances to turn lanes or accesses to adjacent land uses, unsafe operating conditions could result.

In reporting Levels of Service, the information from the signalized intersection analysis comes directly from the Synchro 10 and SimTraffic 10 reports. Intersection Levels of Service are reported based on the Control Delay calculated for the overall intersection and for each critical movement as determined by SimTraffic 10, and as adjusted for driver behavior.

For queuing, the 95th Percentile and the Maximum Queue Lengths that are generated after five runs. In this report, the 95th Percentile Queue Length is used to discern adequate lengths of turn lanes. The 95th Percentile Queue Length refers to that length of queue that has only a five-percent probability of being exceeded during an analysis period. This is the standard factor used to determine optimal turn lane lengths.

APPENDIX II – Scott County Minimum Access Spacing Guidelines 2040 Plan

MINIMUM ACCESS SPACING GUIDELINES 2040 PLAN

TYPE OF ACCESS BEING REQUESTED	TYPE OF COUNTY HIGHWAY FUNCTION AFFECTED BY ACCESS			
	PRINCIPAL ARTERIAL	Minor Arterial A and B Minor	Collector	Local
A. Private Residential (3 or less shared driveways)	Not Permitted	Not Permitted 1/4 mile in Agricultural & Transition Area	1/8 Mile	Determination based on other criteria
B. Commercial Driveways, Or Private Streets	Not Permitted	Not Permitted	Full access at 1/4 Mile Limited access at 1/8 Mile	Determination based on other criteria
C. Local Streets	Not Permitted	Full access at 1/4 Mile Limited access at 1/8 Mile	1/8 Mile	1/8 Mile
D. Collector Streets	1 Mile Full Access (rural) Limited access at 1/2 Mile (urban)	Full access at 1/4 Mile Limited access at 1/8 Mile	1/4 Mile	1/4 Mile
E. Minor Arterial	1 Mile full Access (urban) 1 Mile Full (rural)	1/2 to 1 Mile (urban) 1/2 Mile to 1 Mile (rural)	1/4 to 1 Mile (urban) 1/2 to 1 Mile (rural)	1/4 to 1 Mile (urban) 1/2 to 1 Mile (rural)

Notes:

1. The Functional Classification is based on the Future Functional Classification Map in the 2040 Transportation Plan.
2. Fully developed urban area will require individual evaluation on a case by case basis.
3. When there is opportunity for private or public access on more than one public roadway, access shall be taken on lower functional roadway.
4. Turn lanes shall be required at all public road access locations on County or State roads, turn lanes at private access will be evaluated on a case by case basis.
5. Intersection Control/Signals shall be installed only where warranted and justified, consistent with the MNMUTCD and County practice. 1 mile signal spacing on Principals and 1/2 mile signal spacing will be preserved on other roadways.
6. Access spacing may be modified to be more or less restrictive per County corridor study.
7. Private access shall be located where there is the optimum sight distance, future local street locations, or future shared access opportunities.
8. Environmental constraints, geometric constraints, or sight distance requirements may be considered when determining access spacing location.
9. No access permitted between interchange ramps and first full access location.
10. Existing private access on Principal Arterials in the unincorporated area may be relocated at time of platting or land use change provided sight distance is improved and opportunities for access consolidation do not exist. Future removal of the access must be planned.
11. Only one access per parcel permitted including shared access, where in determination by the County the property has no other local access.
12. Field access may be permitted where, in the determination of the County, the property has no other local road access. One field access to a property under the same ownership or controlling interest may be granted. A field access is defined as restricted use by agricultural equipment only to access a field and does not lead to a rock or paved surface on the private property.
13. Limited Access is not a full movement access.
14. Minimum Access Spacing Guidelines for subdivisions in the unincorporated area is established in the County Subdivision Ordinance.
15. Minimum public street length to be permitted as a public street shall be 500 feet.

(Source: *Scott County 2040 Comprehensive Plan, Public Hearing Draft, April 2018*)

APPENDIX III – Access Spacing Guidelines – City of Shakopee Roadways

Type Of Access	Minor Arterial	Major Collector	Minor Collector	Local Feeders	Local
Residential Driveways	No Direct Access	No Direct Access	No Direct Access	As Required	As Required
Commercial Driveways	Based on: Speed, Traffic Volume, Sight Distances, etc. (1/8 to 1/4 mile)	Based on: Speed, Traffic Volume, Sight Distances, etc. (min. 500 ft.)	Based on: Speed, Traffic Volume, Sight Distances, etc. (min. 200 ft.)	Based on: Speed, Traffic Volume, Sight Distances, etc. (min. 100 ft.)	Based on: Speed, Traffic Volume, Sight Distances, etc. (min. 100 ft.)
Low Volume Streets	Full Access – 1/8 mile	Full Access – 1/8 mile	Full Access – 1/8 mile	Full Access – 330 ft.	Full Access – 330 ft.
	Partial Access – 330 ft.	Partial Access – 330 ft.	Partial Access – 330 ft.	Partial Access – 330 ft.	Partial Access – 330 ft.
High Volume Streets < 10,000 ADT	Full Access – 1/4 mile	Full Access – 1/4 mile	Full Access – 1/8 mile	Full Access – 330 ft.	Full Access – 330 ft.
	Partial Access – 1/8 mile	Partial Access – 1/8 mile	Partial Access – 330 ft.	Partial Access – 330 ft.	Partial Access – 330 ft.
Collector Streets	Full Access – 1/2 mile	Full Access – 1/4 mile	Full access – 1/4 mile	Full Access – 1/8 mile	Full Access – 1/8 mile
	Partial Access – 1/4 mile	Partial Access – 1/8 mile	Partial Access – 1/8 mile	Partial Access – 330 ft.	Partial Access – 330 ft.

PLEASE NOTE: The spacing guidelines identified in this table may be adjusted on a case-specific basis pending detailed traffic engineering analysis and review by the City Engineer. The Scott County Transportation Plan identifies access spacing guidelines for County-level roadways which serve Shakopee and the rest of the County.

(Source: Shakopee Transportation Plan, December 2008)

Appendix IV – SimTraffic Operational and Performance Output

(NOTE: TH 169 EB Ramps actually refer to TH 169 NB Ramps; TH 169 WB Ramps actually refer to TH 169 SB Ramps)

1: Marystown Road & Vierling Dr. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1
Total Del/Veh (s)	5.3	6.3	3.0	5.2	6.4	2.9	5.0	10.9	2.4	5.7	11.2	1.6

1: Marystown Road & Vierling Dr. Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	7.7

2: Marystown Road & Park/US 169 W Performance by movement

Movement	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.0	0.1	0.0	0.0	0.0
Total Del/Veh (s)	0.4	0.4	3.7	1.6	1.2

3: Marystown Road & US 169 E Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.5	0.1	0.2
Total Del/Veh (s)	9.4	2.2	0.3	0.6	4.2	0.3	1.6

4: Marystown Road & Street A/17th Ave E Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	3.9	0.2	0.0	0.0	0.0	0.0	0.2
Total Del/Veh (s)	6.3	4.0	1.5	1.1	3.0	0.3	2.6

5: Marystown Road & 128th Street W Performance by movement

Movement	EBL	WBL	WBR	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	4.4	4.2	2.4	6.3	1.8	2.6	0.5	1.1	1.6

6: Marystown Road & 130th St. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.2	0.1	0.0	0.0	0.0
Total Del/Veh (s)	5.1	10.1	3.9	6.5	10.7	3.1	5.8	7.4	3.7	4.6	6.8	3.1

6: Marystown Road & 130th St. Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	7.7

7: Zumbro Ave. & 130th St. Performance by movement

Movement	EBT	EBR	WBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	0.7	0.3	6.2	1.2	3.7

8: Old Brick Yard Rd. & 130th St. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	4.3	0.1	0.3	0.2	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	2.2	0.2	0.1	2.2	1.2	0.7	4.4	10.6	4.2	5.5	8.6	1.5

8: Old Brick Yard Rd. & 130th St. Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	2.8

10: Old Brick Yard Rd. & 169 NB Ramp Performance by movement

Movement	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.2	0.0	0.7	0.0	0.0	0.2
Total Del/Veh (s)	4.2	0.5	0.0	1.2	0.2	2.9

11: Old Brick Yard Rd. & 169 SB Ramp Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.2	4.0	0.5
Total Del/Veh (s)	6.5	4.0	1.1	0.7	0.2	0.7	1.2

25: US 169 E Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.3	0.3

27: US 169 W Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.1	0.1

Total Network Performance

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	10.4

Intersection: 1: Marystown Road & Vierling Dr.

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LT	TR	LT	TR
Maximum Queue (ft)	52	53	50	50	77	72	66	31
Average Queue (ft)	18	32	29	15	36	36	38	12
95th Queue (ft)	43	47	47	39	56	55	57	34
Link Distance (ft)	845	845	561	561	1036	1036	519	519
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2: Marystown Road & Park/US 169 W

Movement	SB
Directions Served	L
Maximum Queue (ft)	22
Average Queue (ft)	2
95th Queue (ft)	12
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	165
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Marystown Road & US 169 E

Movement	WB	WB	NB	SB
Directions Served	L	R	R	L
Maximum Queue (ft)	44	22	22	72
Average Queue (ft)	14	14	2	35
95th Queue (ft)	36	30	13	67
Link Distance (ft)				
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			250	370
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Marystown Road & Street A/17th Ave E

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	20	77	53
Average Queue (ft)	9	22	22
95th Queue (ft)	24	47	50
Link Distance (ft)	1186		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	400		200
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Marystown Road & 128th Street W

Movement	EB	WB	NB
Directions Served	LT	LTR	LTR
Maximum Queue (ft)	25	31	21
Average Queue (ft)	1	11	1
95th Queue (ft)	8	36	7
Link Distance (ft)	1100	448	1204
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Marystown Road & 130th St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	54	56	78	56
Average Queue (ft)	35	37	44	28
95th Queue (ft)	53	53	69	51
Link Distance (ft)	2420	708	682	1204
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 7: Zumbro Ave. & 130th St.

Movement	NB
Directions Served	LR
Maximum Queue (ft)	30
Average Queue (ft)	1
95th Queue (ft)	10
Link Distance (ft)	1361
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Old Brick Yard Rd. & 130th St.

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	28	24	75	28
Average Queue (ft)	2	2	35	13
95th Queue (ft)	14	13	56	33
Link Distance (ft)			1159	3184
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	300	300		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Old Brick Yard Rd. & 169 NB Ramp

Movement	WB	SB
Directions Served	R	L
Maximum Queue (ft)	74	26
Average Queue (ft)	46	4
95th Queue (ft)	69	20
Link Distance (ft)	730	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		300
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: Old Brick Yard Rd. & 169 SB Ramp

Movement	WB	WB	NB
Directions Served	LT	R	L
Maximum Queue (ft)	30	78	24
Average Queue (ft)	11	29	1
95th Queue (ft)	34	53	8
Link Distance (ft)	639	639	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			300
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 25: US 169 E

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 27: US 169 W

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 0

1: Marystown Road & Vierling Dr. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.4	0.2	0.1
Total Del/Veh (s)	5.3	6.8	3.1	5.3	7.0	2.9	5.1	10.5	4.2	7.6	12.2	1.4

1: Marystown Road & Vierling Dr. Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	7.8

2: Marystown Road & Park/US 169 W Performance by movement

Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	6.8	3.0	2.6	0.5	0.1	4.4	2.0	2.6

3: Marystown Road & US 169 E Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	7.1	2.4	0.2	0.1	3.5	0.6	1.4

4: Marystown Road & Street A/17th Ave E Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	3.8	0.2	0.0	0.0	0.0	0.0	0.3
Total Del/Veh (s)	4.7	2.6	1.0	0.7	2.6	0.3	1.7

5: Marystown Road & 128th Street W Performance by movement

Movement	EBL	EBR	WBR	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	4.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	4.4	1.9	3.8	1.5	1.1	3.0	1.1	0.9	1.5

6: Marystown Road & 130th St. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	6.3	11.1	3.8	5.1	10.6	3.4	5.9	6.6	3.3	6.6	7.9	4.5

6: Marystown Road & 130th St. Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	8.2

7: Zumbro Ave. & 130th St. Performance by movement

Movement	EBT	EBR	WBL	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.8	0.1	4.4	5.7	3.3

8: Old Brick Yard Rd. & 130th St. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.4	0.2	0.2	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	1.8	0.6	0.2	3.6	1.3	0.1	4.4	8.4	2.6	7.2	9.4	4.7

8: Old Brick Yard Rd. & 130th St. Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	3.2

10: Old Brick Yard Rd. & 169 NB Ramp Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.2	0.0	0.2	0.0	0.0	0.1
Total Del/Veh (s)	4.4	3.0	0.3	0.0	1.0	0.3	1.3

11: Old Brick Yard Rd. & 169 SB Ramp Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.4	3.3	1.5
Total Del/Veh (s)	5.5	3.2	2.1	0.5	0.6	1.9	1.6

25: US 169 E Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.2	0.2

27: US 169 W Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.1	0.1

Total Network Performance

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	10.5

Intersection: 1: Marystown Road & Vierling Dr.

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LT	TR	LT	TR
Maximum Queue (ft)	65	75	51	52	75	78	73	79
Average Queue (ft)	28	27	30	22	35	41	45	18
95th Queue (ft)	51	51	49	44	56	64	68	49
Link Distance (ft)	845	845	561	561	1036	1036	519	519
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2: Marystown Road & Park/US 169 W

Movement	WB	WB	NB	SB
Directions Served	LT	R	L	L
Maximum Queue (ft)	72	92	31	22
Average Queue (ft)	32	40	1	4
95th Queue (ft)	58	71	10	18
Link Distance (ft)				
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		180	300	165
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Marystown Road & US 169 E

Movement	WB	WB	NB	SB
Directions Served	L	R	R	L
Maximum Queue (ft)	25	58	42	77
Average Queue (ft)	12	21	1	20
95th Queue (ft)	32	39	14	52
Link Distance (ft)				
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			250	370
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Marystown Road & Street A/17th Ave E

Movement	WB	WB	NB	SB
Directions Served	L	R	R	L
Maximum Queue (ft)	36	62	15	28
Average Queue (ft)	13	13	1	14
95th Queue (ft)	29	30	5	37
Link Distance (ft)	1186			
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	400		230	200
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Marystown Road & 128th Street W

Movement	EB	EB	WB	SB
Directions Served	LT	R	LTR	LT
Maximum Queue (ft)	26	22	29	31
Average Queue (ft)	12	1	3	2
95th Queue (ft)	33	7	17	15
Link Distance (ft)	1414		448	1812
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		300		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Marystown Road & 130th St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	72	74	55	103
Average Queue (ft)	40	37	35	51
95th Queue (ft)	60	59	51	80
Link Distance (ft)	2420	708	682	1204
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 7: Zumbro Ave. & 130th St.

Movement	WB
Directions Served	LT
Maximum Queue (ft)	24
Average Queue (ft)	1
95th Queue (ft)	8
Link Distance (ft)	2420
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Old Brick Yard Rd. & 130th St.

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	31	23	50	74
Average Queue (ft)	1	3	26	35
95th Queue (ft)	10	16	40	57
Link Distance (ft)			1159	3184
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	300	300		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Old Brick Yard Rd. & 169 NB Ramp

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	28	52	25
Average Queue (ft)	1	31	1
95th Queue (ft)	9	49	8
Link Distance (ft)	730	730	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			300
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Old Brick Yard Rd. & 169 SB Ramp

Movement	WB	WB	NB	SB
Directions Served	LT	R	L	R
Maximum Queue (ft)	30	50	24	6
Average Queue (ft)	19	26	3	0
95th Queue (ft)	42	45	17	2
Link Distance (ft)	639	639		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			300	250
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 25: US 169 E

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 27: US 169 W

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 0

1: Marystown Road & Vierling Dr. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.3	0.1	0.1
Total Del/Veh (s)	4.6	6.9	3.1	5.9	8.2	3.0	4.9	10.6	3.2	6.5	11.4	1.4

1: Marystown Road & Vierling Dr. Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	7.9

2: Marystown Road & Park/US 169 W Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	6.9	2.7	0.4	0.3	3.9	1.6	1.9

3: Marystown Road & US 169 E Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	13.8	2.4	0.3	0.7	5.7	0.4	2.3

4: Marystown Road & Street A/17th Ave E Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	4.0	0.2	0.0	0.0	0.0	0.0	0.2
Total Del/Veh (s)	10.8	4.2	1.0	1.1	3.9	0.2	3.0

5: Marystown Road & 128th Street W Performance by movement

Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Total Del/Veh (s)	4.5	3.0	3.7	1.8	0.7	2.0	0.8	1.0	1.7

6: Marystown Road & 130th St. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.2	0.3	0.1	0.2	0.2	0.0	0.0	0.1
Total Del/Veh (s)	4.5	10.7	3.3	5.3	10.8	4.1	5.8	7.1	3.8	5.7	6.7	3.9

6: Marystown Road & 130th St. Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	8.0

7: Zumbro Ave. & 130th St. Performance by movement

Movement	EBT	EBR	WBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	0.6	0.2	6.3	2.1	3.7

8: Old Brick Yard Rd. & 130th St. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	4.0	0.2	0.4	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	2.0	0.2	0.1	2.9	1.0	1.1	5.2	11.3	4.4	8.7	8.3	1.5

8: Old Brick Yard Rd. & 130th St. Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	3.0

10: Old Brick Yard Rd. & 169 NB Ramp Performance by movement

Movement	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.3	0.0	0.5	0.0	0.0	0.2
Total Del/Veh (s)	4.9	0.3	0.2	1.1	0.1	3.4

11: Old Brick Yard Rd. & 169 SB Ramp Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.2	3.8	0.5
Total Del/Veh (s)	6.4	4.2	0.4	0.7	0.1	0.9	1.2

25: US 169 E Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.4	0.4

27: US 169 W Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.2	0.2

Total Network Performance

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	11.1

Intersection: 1: Marystown Road & Vierling Dr.

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LT	TR	LT	TR
Maximum Queue (ft)	29	77	72	46	66	74	76	30
Average Queue (ft)	23	33	34	14	36	39	40	6
95th Queue (ft)	42	54	55	36	55	61	64	25
Link Distance (ft)	845	845	561	561	1036	1036	519	519
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2: Marystown Road & Park/US 169 W

Movement	WB	WB	SB
Directions Served	LT	R	L
Maximum Queue (ft)	87	77	22
Average Queue (ft)	27	29	5
95th Queue (ft)	52	60	19
Link Distance (ft)			
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		180	165
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Marystown Road & US 169 E

Movement	WB	WB	NB	SB
Directions Served	L	R	R	L
Maximum Queue (ft)	47	69	22	94
Average Queue (ft)	19	20	7	43
95th Queue (ft)	43	43	24	73
Link Distance (ft)				
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			250	370
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Marystown Road & Street A/17th Ave E

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	41	55	86
Average Queue (ft)	9	28	28
95th Queue (ft)	27	51	71
Link Distance (ft)	1186		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	400	200	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Marystown Road & 128th Street W

Movement	WB	NB
Directions Served	LTR	LTR
Maximum Queue (ft)	31	20
Average Queue (ft)	12	1
95th Queue (ft)	36	7
Link Distance (ft)	448	1204
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Marystown Road & 130th St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	67	71	78	55
Average Queue (ft)	37	43	40	34
95th Queue (ft)	56	64	63	49
Link Distance (ft)	2420	708	682	1204
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 7: Zumbro Ave. & 130th St.

Movement	NB
Directions Served	LR
Maximum Queue (ft)	28
Average Queue (ft)	1
95th Queue (ft)	9
Link Distance (ft)	1361
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Old Brick Yard Rd. & 130th St.

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	30	24	96	28
Average Queue (ft)	2	3	38	18
95th Queue (ft)	14	15	68	36
Link Distance (ft)			1159	3184
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	300	300		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Old Brick Yard Rd. & 169 NB Ramp

Movement	WB	SB
Directions Served	R	L
Maximum Queue (ft)	112	26
Average Queue (ft)	55	5
95th Queue (ft)	83	23
Link Distance (ft)	730	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		300
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: Old Brick Yard Rd. & 169 SB Ramp

Movement	WB	WB
Directions Served	LT	R
Maximum Queue (ft)	30	76
Average Queue (ft)	15	36
95th Queue (ft)	40	58
Link Distance (ft)	639	639
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 25: US 169 E

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 27: US 169 W

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 0

1: Marystown Road & Vierling Dr. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.2	0.1	0.1
Total Del/Veh (s)	5.4	7.4	3.1	6.1	7.4	2.9	6.5	11.3	4.7	8.2	12.6	1.1

1: Marystown Road & Vierling Dr. Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	8.6

2: Marystown Road & Park/US 169 W Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.3	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	9.1	3.7	0.4	0.4	4.3	2.2	3.1

3: Marystown Road & US 169 E Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	9.6	2.5	0.2	0.2	3.5	0.6	1.4

4: Marystown Road & Street A/17th Ave E Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	3.8	0.2	0.0	0.1	0.0	0.0	0.4
Total Del/Veh (s)	8.2	2.3	1.0	1.4	2.9	0.3	2.2

5: Marystown Road & 128th Street W Performance by movement

Movement	EBL	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	6.7	2.8	6.2	5.2	2.3	1.7	2.9	3.1	1.5	0.4	1.8

6: Marystown Road & 130th St. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.0	0.3	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0
Total Del/Veh (s)	7.0	12.2	4.8	7.5	12.3	3.9	6.3	7.6	4.4	8.2	9.9	5.9

6: Marystown Road & 130th St. Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	9.4

7: Zumbro Ave. & 130th St. Performance by movement

Movement	EBT	EBR	WBL	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.8	0.3	4.5	5.7	3.2

8: Old Brick Yard Rd. & 130th St. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.5	0.2	0.4	0.0	0.0	0.0	0.3	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	2.0	0.4	0.4	3.0	1.4	3.1	6.7	10.3	3.0	5.4	9.8	1.6

8: Old Brick Yard Rd. & 130th St. Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	3.3

10: Old Brick Yard Rd. & 169 NB Ramp Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.2	0.0	0.3	0.0	0.0	0.1
Total Del/Veh (s)	7.2	2.9	0.4	0.1	1.3	0.3	1.4

11: Old Brick Yard Rd. & 169 SB Ramp Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.4	3.3	1.5
Total Del/Veh (s)	5.2	3.1	6.0	0.5	0.7	2.0	1.7

25: US 169 E Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.2	0.2

27: US 169 W Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.2	0.2

Total Network Performance

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	11.9

Intersection: 1: Marystown Road & Vierling Dr.

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LT	TR	LT	TR
Maximum Queue (ft)	29	51	65	61	54	70	76	52
Average Queue (ft)	27	29	32	23	38	41	48	24
95th Queue (ft)	39	50	52	50	56	61	72	49
Link Distance (ft)	845	845	561	561	1036	1036	519	519
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2: Marystown Road & Park/US 169 W

Movement	WB	WB	SB
Directions Served	LT	R	L
Maximum Queue (ft)	92	116	22
Average Queue (ft)	41	48	4
95th Queue (ft)	74	91	17
Link Distance (ft)			
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		180	165
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Marystown Road & US 169 E

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	25	45	55
Average Queue (ft)	15	19	26
95th Queue (ft)	35	35	52
Link Distance (ft)			
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			370
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Marystown Road & Street A/17th Ave E

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	45	28	74
Average Queue (ft)	21	12	19
95th Queue (ft)	43	18	51
Link Distance (ft)	1186		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	400		200
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Marystown Road & 128th Street W

Movement	EB	EB	WB	SB
Directions Served	LT	R	LTR	LT
Maximum Queue (ft)	26	21	31	31
Average Queue (ft)	7	3	9	4
95th Queue (ft)	25	14	31	21
Link Distance (ft)	2427		448	1812
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	300			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Marystown Road & 130th St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	77	76	75	111
Average Queue (ft)	51	42	41	59
95th Queue (ft)	78	63	67	97
Link Distance (ft)	2420	708	682	1204
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 7: Zumbro Ave. & 130th St.

Movement	WB
Directions Served	LT
Maximum Queue (ft)	24
Average Queue (ft)	1
95th Queue (ft)	8
Link Distance (ft)	2420
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Old Brick Yard Rd. & 130th St.

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	30	23	61	74
Average Queue (ft)	1	4	31	35
95th Queue (ft)	10	17	52	58
Link Distance (ft)			1159	3184
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	300	300		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Old Brick Yard Rd. & 169 NB Ramp

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	28	50	52
Average Queue (ft)	4	28	6
95th Queue (ft)	19	45	28
Link Distance (ft)	730	730	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			300
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Old Brick Yard Rd. & 169 SB Ramp

Movement	WB	WB	NB	SB
Directions Served	LT	R	L	R
Maximum Queue (ft)	30	48	50	6
Average Queue (ft)	20	30	5	1
95th Queue (ft)	43	40	28	3
Link Distance (ft)	639	639		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			300	250
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 25: US 169 E

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 27: US 169 W

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 0

1: Marystown Road & Vierling Dr. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.1	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.2	0.2	0.1
Total Del/Veh (s)	5.7	7.1	3.2	6.4	7.3	2.9	5.6	8.9	3.9	7.2	11.7	1.7

1: Marystown Road & Vierling Dr. Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	7.7

2: Marystown Road & Park/US 169 W Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.7	0.4	0.0	0.1
Total Del/Veh (s)	11.4	2.8	0.5	0.7	4.8	1.6	2.4

3: Marystown Road & US 169 E Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	26.5	2.8	0.4	1.0	7.1	0.5	3.2

4: Marystown Road & 17th Ave E./17th Ave E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	2.7	0.1	2.0	3.9	0.1	3.8	0.0	0.0	0.1	0.1	0.0	0.0
Total Del/Veh (s)	19.3	9.9	2.6	17.5	16.5	9.5	3.7	1.9	1.8	4.7	0.6	0.1

4: Marystown Road & 17th Ave E./17th Ave E Performance by movement

Movement	All
Denied Del/Veh (s)	1.1
Total Del/Veh (s)	6.0

5: Marystown Road & 128th Street W Performance by movement

Movement	EBL	EBR	WBR	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.1	2.7	0.1	0.1	0.1	0.0	0.0	0.0	0.3
Total Del/Veh (s)	7.3	2.9	4.7	3.6	2.1	2.5	1.0	1.2	2.6

6: Marystown Road & 130th St. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.3	0.4	0.3	0.2	0.4	0.0	0.0	0.0
Total Del/Veh (s)	8.1	12.1	4.6	3.6	12.5	5.6	7.0	7.8	5.2	6.3	6.1	4.0

6: Marystown Road & 130th St. Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	8.9

7: Zumbro Ave. & 130th St. Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0
Total Del/Veh (s)	2.3	1.7	1.9	6.7	4.5	3.0	7.4	4.9	4.8

8: Old Brick Yard Rd. & 130th St. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.8	0.3	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0
Total Del/Veh (s)	2.8	0.5	0.2	3.5	1.6	0.9	6.8	12.3	3.9	7.9	11.9	3.6

8: Old Brick Yard Rd. & 130th St. Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	3.8

9: Old Brick Yard Rd. & 17th Ave E. Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.1	0.0	0.0
Total Del/Veh (s)	6.9	2.9	4.7	3.3	1.3	0.9	3.8

10: Old Brick Yard Rd. & 169 EB Ramp Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.2	0.3	0.0	0.7	0.0	0.0	0.2
Total Del/Veh (s)	5.1	5.3	0.6	0.1	1.8	0.4	3.4

11: Old Brick Yard Rd. & 169 WB Ramp Performance by movement

Movement	WBL	WBR	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.2	0.0	0.0	0.2	3.8	0.5
Total Del/Veh (s)	10.1	4.5	0.9	0.5	0.2	0.8	1.7

12: Zumbro Ave. & 17th Ave E. Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	0.2	0.3	2.0	0.8	4.3	2.8	1.0

13: Zumbro Ave. & 128th Street W Performance by movement

Movement	WBL	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	4.7	0.1	4.4	0.3	0.1	2.6	0.1	2.2

25: US 169 E Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.4	0.4

27: US 169 W Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.2	0.2

Total Network Performance

Denied Del/Veh (s)		0.8
Total Del/Veh (s)		13.1

Intersection: 1: Marystown Road & Vierling Dr.

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LT	TR	LT	TR
Maximum Queue (ft)	29	52	77	53	69	75	77	52
Average Queue (ft)	19	32	41	19	37	38	39	19
95th Queue (ft)	41	48	68	45	58	57	62	45
Link Distance (ft)	845	845	561	561	1036	1036	519	519
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2: Marystown Road & Park/US 169 W

Movement	WB	WB	SB
Directions Served	LT	R	L
Maximum Queue (ft)	107	67	22
Average Queue (ft)	40	24	6
95th Queue (ft)	70	47	21
Link Distance (ft)			
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		180	165
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Marystown Road & US 169 E

Movement	WB	WB	NB	SB
Directions Served	L	R	R	L
Maximum Queue (ft)	85	83	50	96
Average Queue (ft)	39	20	9	50
95th Queue (ft)	72	44	30	84
Link Distance (ft)				
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			250	370
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Marystown Road & 17th Ave E./17th Ave E

Movement	EB	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	T	R	L	T	R	L	L
Maximum Queue (ft)	90	42	20	41	45	41	165	28	75
Average Queue (ft)	41	11	6	12	13	13	40	1	39
95th Queue (ft)	75	32	20	27	36	31	95	9	75
Link Distance (ft)		2416	2416			1186			
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	200			200	400		300	200	200
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 5: Marystown Road & 128th Street W

Movement	EB	EB	WB	NB
Directions Served	LT	R	LTR	LTR
Maximum Queue (ft)	49	46	30	41
Average Queue (ft)	29	21	9	1
95th Queue (ft)	49	38	31	7
Link Distance (ft)	2404		448	1204
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		500		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Marystown Road & 130th St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	76	118	99	56
Average Queue (ft)	42	45	51	44
95th Queue (ft)	65	77	80	63
Link Distance (ft)	2414	708	682	1204
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 7: Zumbro Ave. & 130th St.

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	31	30	79
Average Queue (ft)	6	5	41
95th Queue (ft)	24	21	65
Link Distance (ft)	2464	1360	1223
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Old Brick Yard Rd. & 130th St.

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	52	22	30	22	67	74
Average Queue (ft)	11	1	8	3	37	32
95th Queue (ft)	37	7	29	15	57	57
Link Distance (ft)		608		2464	1159	3167
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	300		300			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 9: Old Brick Yard Rd. & 17th Ave E.

Movement	WB	WB	SB
Directions Served	L	R	LT
Maximum Queue (ft)	75	56	31
Average Queue (ft)	29	30	5
95th Queue (ft)	62	48	22
Link Distance (ft)	2263	2263	812
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Old Brick Yard Rd. & 169 EB Ramp

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	28	99	29
Average Queue (ft)	14	60	10
95th Queue (ft)	36	87	30
Link Distance (ft)	730	730	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			300
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Old Brick Yard Rd. & 169 WB Ramp

Movement	WB	WB
Directions Served	LT	R
Maximum Queue (ft)	54	74
Average Queue (ft)	24	32
95th Queue (ft)	54	58
Link Distance (ft)	639	639
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Zumbro Ave. & 17th Ave E.

Movement	NB
Directions Served	LR
Maximum Queue (ft)	53
Average Queue (ft)	20
95th Queue (ft)	46
Link Distance (ft)	1826
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 13: Zumbro Ave. & 128th Street W

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	55	30
Average Queue (ft)	27	1
95th Queue (ft)	53	10
Link Distance (ft)	2404	1826
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 25: US 169 E

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 27: US 169 W

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 0

1: Marystown Road & Vierling Dr. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.3	0.2	0.1
Total Del/Veh (s)	6.7	8.0	3.5	6.5	6.7	3.1	6.1	8.4	4.5	8.6	12.5	1.4

1: Marystown Road & Vierling Dr. Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	7.8

2: Marystown Road & Park/US 169 W Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	1.3	0.6	0.0	1.1	0.4	0.0	0.4
Total Del/Veh (s)	19.6	3.7	0.3	0.5	4.1	1.7	4.6

3: Marystown Road & US 169 E Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	21.0	2.3	0.2	0.3	4.9	0.7	2.8

4: Marystown Road & 17th Ave. E./17th Ave E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.9	0.1	2.5	3.6	0.1	0.1	0.0	0.0	0.1	0.3	0.0	0.0
Total Del/Veh (s)	13.5	15.6	3.2	11.6	14.1	4.7	4.2	1.6	1.4	3.1	0.6	0.4

4: Marystown Road & 17th Ave. E./17th Ave E Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	4.0

5: Marystown Road & 128th Street W Performance by movement

Movement	EBL	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.2	2.6	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	6.1	2.8	7.0	5.8	3.2	3.7	1.8	1.9	3.5	1.5	1.3	2.2

6: Marystown Road & 130th St. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.3	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0
Total Del/Veh (s)	8.6	13.9	6.6	8.2	13.3	6.3	6.0	7.8	3.5	6.7	8.6	4.9

6: Marystown Road & 130th St. Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	9.8

7: Zumbro Ave. & 130th St. Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Total Del/Veh (s)	2.6	2.6	0.2	6.5	4.4	7.1	3.6	4.4

8: Old Brick Yard Rd. & 130th St. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.8	0.3	0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	2.8	0.7	0.2	3.0	1.7	2.0	8.8	11.3	4.0	7.7	14.3	4.6

8: Old Brick Yard Rd. & 130th St. Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	4.4

9: Old Brick Yard Rd. & 17th Ave. E. Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	5.4	2.7	3.4	2.4	1.0	1.4	2.1

10: Old Brick Yard Rd. & 169 EB Ramp Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	1.0	0.0	0.0	0.1
Total Del/Veh (s)	5.2	3.0	0.6	0.1	1.8	0.6	1.6

11: Old Brick Yard Rd. & 169 WB Ramp Performance by movement

Movement	WBL	WBR	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.4	3.1	1.4
Total Del/Veh (s)	6.7	3.0	3.2	0.5	0.3	1.0	2.5	2.3

12: Zumbro Ave. & 17th Ave. E. Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Total Del/Veh (s)	0.2	0.1	3.1	0.8	4.6	2.5	0.8

13: Zumbro Ave. & 128th Street W Performance by movement

Movement	WBT	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.3	0.2	0.1	0.2

25: US 169 E Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.3	0.3

27: US 169 W Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.1	0.1

Total Network Performance

Denied Del/Veh (s)		0.8
Total Del/Veh (s)		12.8

Intersection: 1: Marystown Road & Vierling Dr.

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LT	TR	LT	TR
Maximum Queue (ft)	76	70	53	50	68	79	102	51
Average Queue (ft)	31	29	33	27	36	44	50	20
95th Queue (ft)	54	51	47	45	55	69	75	46
Link Distance (ft)	845	845	561	561	1036	1036	519	519
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2: Marystown Road & Park/US 169 W

Movement	WB	WB	SB
Directions Served	LT	R	L
Maximum Queue (ft)	116	116	22
Average Queue (ft)	70	46	4
95th Queue (ft)	118	90	18
Link Distance (ft)			
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		180	165
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Marystown Road & US 169 E

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	139	48	55
Average Queue (ft)	46	18	29
95th Queue (ft)	93	38	57
Link Distance (ft)			
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			370
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Marystown Road & 17th Ave. E./17th Ave E

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	L	R
Maximum Queue (ft)	47	43	40	38	67	42	17	59	50	88	15
Average Queue (ft)	25	18	6	9	19	13	1	26	11	21	1
95th Queue (ft)	47	38	23	24	45	31	9	51	35	58	5
Link Distance (ft)		2412	2412			1186	1186	1186			644
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	200			200	400				200	200	
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 5: Marystown Road & 128th Street W

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LTR	LTR	LT
Maximum Queue (ft)	62	46	31	42	32
Average Queue (ft)	25	12	9	3	2
95th Queue (ft)	48	32	32	17	15
Link Distance (ft)			448	1204	1812
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		300			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: Marystown Road & 130th St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	99	89	76	95
Average Queue (ft)	54	48	41	57
95th Queue (ft)	83	76	62	81
Link Distance (ft)	2413	708	682	1204
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 7: Zumbro Ave. & 130th St.

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	76	22	54
Average Queue (ft)	14	1	31
95th Queue (ft)	49	7	50
Link Distance (ft)	2464	2413	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Old Brick Yard Rd. & 130th St.

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	31	30	53	73
Average Queue (ft)	10	6	34	44
95th Queue (ft)	34	25	52	68
Link Distance (ft)			1159	3167
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	300	300		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Old Brick Yard Rd. & 17th Ave. E.

Movement	WB	WB	SB
Directions Served	L	R	LT
Maximum Queue (ft)	30	52	30
Average Queue (ft)	13	22	2
95th Queue (ft)	37	47	14
Link Distance (ft)	2265	2265	812
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Old Brick Yard Rd. & 169 EB Ramp

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	53	49	31
Average Queue (ft)	20	30	11
95th Queue (ft)	45	46	34
Link Distance (ft)	730	730	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			300
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Old Brick Yard Rd. & 169 WB Ramp

Movement	WB	WB	NB	SB
Directions Served	LT	R	L	R
Maximum Queue (ft)	71	65	24	7
Average Queue (ft)	34	35	5	0
95th Queue (ft)	55	51	20	3
Link Distance (ft)	639	639		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			300	250
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 12: Zumbro Ave. & 17th Ave. E.

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	30	31
Average Queue (ft)	1	11
95th Queue (ft)	10	36
Link Distance (ft)	2412	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 13: Zumbro Ave. & 128th Street W

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 25: US 169 E

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 27: US 169 W

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 0