



**BOLTON
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City of Rushford

Feasibility Study

West Area General Development Plan

H19.115225

Submitted by:

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Certification

Feasibility Report

for

West Area General Development Plan

City of Rushford
Rushford, Minnesota
H19.115225

January 10, 2018

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

By:


Derek Olinger, P.E.
License No. 54287

Date: January 18, 2018

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I. INTRODUCTION

This report contains a preliminary feasibility study for the development of an existing property, currently under private ownership, just outside of the current Rushford City limits.

Figure 1 illustrates the project location.

The scope of the study was limited to preliminary concepts for sanitary sewer, water, storm water, grading and street improvements within the development as well as the extension of municipal utilities to the development site. Issues related to annexation of the property are not addressed in this report. Additional discussion relating to access management and future planning efforts is also contained at the end of the report.

II. EXISTING CONDITIONS

The subject area is located on the west side of Rushford, directly abutting the City limits of Rushford, but within the City of Rushford Village. It is bordered to the south by Trunk Highway 30 (TH 30), to the north and east by steep bluff, and to the west by continued agricultural land. The site also contains a farmstead near the center of the property. Developable area within this parcel is approximately 100 acres. Ground elevations throughout most of the property range between 780 and 790. The majority of the property drains to a natural swale within the property which slopes from southeast to northwest.

III. GENERAL PLANNING AND LAYOUT

As requested by the City, two separate development scenarios were included in this feasibility study. The first of which was typical single family development using the City's R-1 zoning requirements. A second concept includes comparatively higher density residential development. For the second concept, the minimum requirements of R-3 (Multi-Family) zoning was used.

Figure 2 illustrates a conceptual layout using the minimum requirements for R-1 zoning.

Figure 3 illustrates a conceptual layout using the minimum requirements for R-3 zoning.

Please note that orientation of lots and streets illustrated in these figures is conceptual in nature and were developed to determine lot densities and preliminary cost estimates. It was assumed that development would occur from east to west.

A. Platting and Layout

The following table provides the minimum lot requirements for both R-1 and R-3 zoning.

Table 1: Zoning Requirements

Requirement	R-1 Zoning	R-3 Zoning
Minimum Lot Width	70 ft	50 ft
Front/Rear Setback	25 ft /30 ft	25 ft / 25 ft
Sidyard Setback	10 ft	6 ft
Minimum Lot Size	8,000 sf	6,000 sf
Minimum ROW Width	66 ft	66 ft

*Additional exceptions may apply which could change the dimensions and areas noted above.

The R-1 development concept was intended to represent typical single family development with ¼ to 1/3 acre lots. The majority of the lots illustrated are at the minimum 70’ width requirement, with varying depths.

The R-3 concept illustrates the higher density option and most lots are at the minimum 50’ width requirement. It should be noted that lots of this width will not accommodate most modern house designs with a front-facing, double stall garage. To accommodate garages using this layout, alleys will likely be needed to access garage structures at the rear side of the lot.

Street widths in both concepts were figured using 36-foot wide urban pavement section (as required by the current subdivision ordinance). For planning purposes, sidewalk on one side of the street was included in the preliminary cost estimates.

B. Sanitary and Water

Preliminary cost estimates for the initial phases of development have been figured with 8-inch diameter sanitary sewer and watermain. Sanitary sewer depths were figured at depths of 12- to 20 feet below grade, and installed at the minimum grades set forth by 10 States Standards. It should be noted that the sanitary service area noted in **Figures 2 & 3** indicates the estimated maximum extent of *gravity* sanitary main. If developed, areas north and west of this boundary will eventually need to be pumped to Rushford with a secondary lift station and forcemain. A second options would be a low pressure sanitary system (grinder pumps at each property). Watermain was figured to comply with the minimum requirements. Mainlines could be installed below new streets, with service stubs extended to the right-of-way line.

C. Stormwater and Grading

Conveyance of stormwater and siting of future treatment ponds will require additional planning by the developer. Based on a preliminary analysis of the site topography, the most cost effective means of treating stormwater will likely include the construction of localized treatment ponds, which treat and control stormwater from each respective phase of development. A regional pond system may be developed, however; this type of planning will require a large initial investment and will also likely require modification in the future as stormwater requirements change and become more stringent.

As previously mentioned, the site drains naturally to a low area near the northwest corner of the property. Wherever possible, grading and drainage costs will be minimized if the final grading design preserves this natural drainage pattern. Localized areas of the property, such as the southeast and southwest corners, may be graded toward the south (TH 30), as they do currently. In addition to meeting NPDES stormwater permit requirements, drainage directed into the TH 30 right-of-way will require a MnDOT drainage permit. **Cost** The following table provides preliminary cost estimates for the development of Phase 1 and 2 of the R-1 and R-3 Zoning Concepts. Please note that these costs do not include existing utility improvements or extensions, or any required improvements to TH 30.

Table 2: Development Cost Estimates

	R-1 Concept		R-3 Zoning Concept	
	Phase 1	Phase 2	Phase 1	Phase 2
Estimated Project Total	1,230,900	\$1,425,900	\$2,008,600	\$2,287,200
No. New Lots	29	44	60	63
Estimated Cost Per Lot	\$42,500	\$32,400	\$33,500	\$36,300

It should be noted that the costs indicated above, depict only estimated costs for the construction of streets, watermain, sanitary sewer, and storm sewer *within* the development.

Exhibits 1-4 provide additional detail relating to the costs presented above and are attached at the end of this report.

Additional costs for the extension of power (and street lighting), land acquisition, sanitary sewer access charges (SAC) and Water Access Charges (WAC) fees may be realized but were not included in this report. Costs associated with extending and upgrading existing facilities are discussed below.

IV. IMPACT TO CITY AND REGIONAL SYSTEMS

A. Wastewater Review

1. Sanitary Main Extension

In order to extend sanitary service to the future development, approximately ½ miles of new conveyance pipe will be needed. Due to the topography of the development site and surrounding area, wastewater from the development will need to be pumped to the existing sewer using a new lift station and forcemain. For preliminary planning purposes, a 4" diameter forcemain was figured for the extension. Sizing for the lift station structure and could incorporate the needs for just the initial phase of development or "oversized" to accommodate several future phases. For this report, the estimated costs for extending city sanitary service to the area include the cost of an "oversized" lift station.

The oversized lift station could be designed to accommodate gravity sewer depths of up to 20 feet deep, which could serve up to approximately 180-200 lots. The new pump would discharge wastewater to a 4-inch forcemain pipe which is located with the TH 30 right-of-way. Approximate locations of the new lift station and forcemain are illustrated in **Figures 2 & 3**.

Prior to installing the new sanitary, a Sanitary Sewer Extension Permit will be needed from the MPCA.

2. Existing Conveyance

The new sanitary forcemain from the development would be connected to the current sewer terminus at the intersection of TH 30 and Southview Court. Existing sanitary sewer from this point is conveyed in 8-inch vitrified clay pipe (VCP), within TH 30 to a point near the intersection of Maple Street and Jessie Street. Disregarding the condition of the existing pipe, the 8-inch diameter sewer has the capacity to convey wastewater from approximately 150 residential units in the new development. Continued development beyond 150 units will trigger the need for upsizing sanitary main in this area to 10-inch diameter pipe. Existing pipe downstream appears to be sized adequately as-is for development beyond 150 ERUs.

Figure 4 illustrates the existing sanitary main to be upsized in the future.

3. Existing Treatment Capacity

Preliminary analysis of the existing wastewater treatment plant (WWTP) was analyzed based on data available from recently submitted discharge monitoring reports. The existing WWTP is permitted for average wet weather (AWW) flows of 0.330 million gallons per day (MGD) (and average dry weather flow of 0.177 MGD). Based on the high level analysis of wastewater flows currently realized by the WWTP, the plant is currently operating at 60% - 65% of capacity. This will allow approximately 110 to 120 new single family residential units to develop without triggering the need for expansion at the wastewater treatment plant.

B. Water Review

1. Watermain Extension

Similar to the sanitary extension, providing City water service within the western development, will require approximately ½ miles feet of new watermain pipe. Aside from regular water service to the new development, one of the goals of the watermain extension will be to provide adequate fire flows. Residential areas such as this typically require fire flows between 1,000 and 1,500 gallons per minute (GPM). Due to the elevation of the development area and its distance from the existing pipe network, anticipated flows are expected to range between 700 and 900. Static pressures will be on the order of 50 psi. Although higher flows and pressures could be achieved through the installation of a booster pump, the costs associated with construction would far outweigh the benefit realized. In summary, we recommend extending watermain to the subject site using 10-inch diameter pipe. Upsizing the pipe from the typically installed 8-inch pipe will comparatively reduce friction losses in the pipe and keep fire flows within a usable range.

Figures 2 & 3 illustrate the location of the watermain extension.

2. Existing Pipe Network

The existing pipe network near the development terminates at the intersection of TH 30 and Southview Court. East of this location, watermain consists primarily of 8- and 6-inch diameter iron pipe. In order to increase fire flows to the ranges previously mentioned, watermain within TH 30 should be upsized to 10-inch pipe, up to the

intersection of Mill Street (TH 43).

Figure 4 illustrates the existing watermain to be upsized in the future.

3. Water Treatment and Storage

A preliminary analysis of the water treatment and storage systems was completed as part of this study. The capacity of these systems is dependent on fire flow and user demands, with the majority of needs arising from fire flow. Based on this, no significant upgrades to the water treatment plant or additional water storage volume should be required as a result of development within the subject property.

C. Cost

The following table summarizes the estimated costs for extending sanitary and water service to the future development area and upsizing pipe systems for existing watermain and sanitary main within Rushford.

Table 3: Utility Extensions and Upgrades

	Utility Extension	Existing Utility Upgrade ¹
Estimated Construction Cost	\$648,500	\$42,800
Engineering, Admin, & Legal	\$150,000	n/a
Project Total	\$798,500	\$42,800

Notes:

1. Costs do not reflect full construction, only upgrading from typical 8" diameter pipe to 10"

Detailed cost estimates are attached at the end of this report. Please note that upgrades to existing utilities do not necessarily need to occur prior to extending utilities to the development site. It is assumed that this work would occur in conjunction with the eventual reconstruction of TH 30. Also note that, prior to construction, Right-of-Way permits will need to be granted from MnDOT.

Exhibit 5 includes additional details relating to the costs for utility extensions and upgrades.

V. ACCESS MANAGEMENT

Access to the development from TH 30, would likely be discussed with future developers and will also influence the orientation of new lots and streets within the development. According to the MnDOT Access management manual and the pre-determined route designation for TH 30, minimum secondary intersection spacing should be no less than 1/8 miles. As illustrated in the concepts, intersection spacing are spaced over ¼ mile.

It should also be noted that new turn lanes may be required on TH 30. The construction of the turn lanes may require the acquisition of additional right-of-way on the north side of TH 30 and possibly, the re-alignment of the highway. Both of which will affect the layout of the future development site. Access management should be discussed early during the planning process to ensure that any additional work required with TH 30 is included in the project scope.

VI. ENVIRONMENTAL IMPACT

It should be noted that large scale development such as that included with the ultimate buildout condition will require additional planning prior to construction. Current state statutes require that development of 100 or more residential units will trigger the need for an environmental study. This study can be completed in the form of an environmental assessment worksheet (EAW) and/or an Alternative Urban Areawide Review (AUAR). Both studies would be completed to investigate impacts to area ecological and water resources, geological conditions, traffic impacts, land use regulations, cultural and historical resources, and other factors. In summary, an EAW can be used if the scope and land use plan for the subject development is well defined. In this case, an AUAR may be more appropriate as this document permits greater flexibility in terms of land use within the development. Note that the subject study area is not included in the City's current comprehensive plan. The development of an AUAR could be completed in conjunction with an update to the existing comprehensive plan since preparation of much of an AUAR coincides with a typical items included in a comprehensive or land use plan.

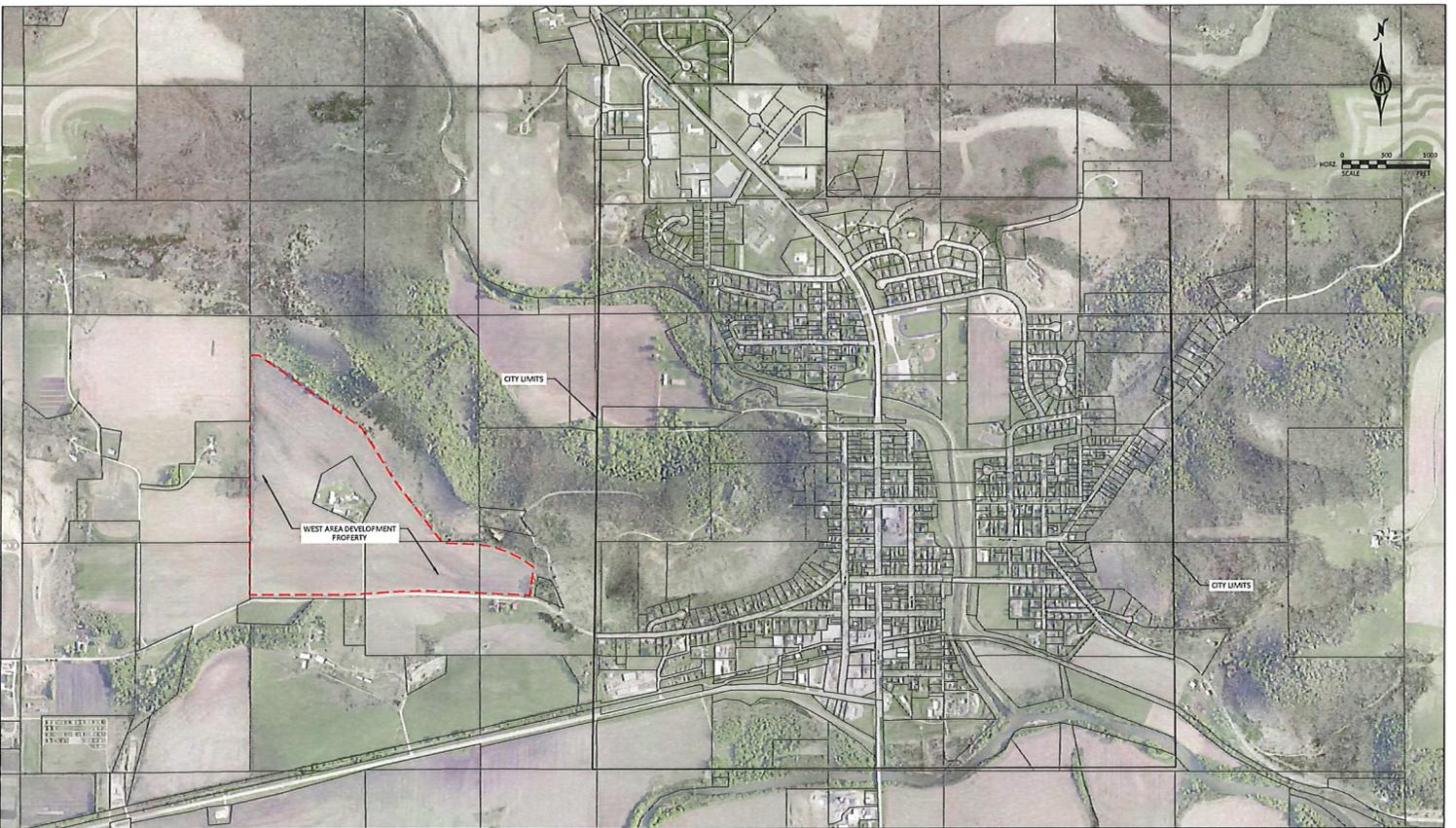
Additional details regarding the environmental review should be discussed in greater detail prior to moving forward with development and/or annexation of the development area.

Fillmore County setbacks for feedlots adjacent to residential property is 1,000 feet and meeting an odor performance standard. According to the MPCA's *What's in my Neighborhood* website, the existing farmstead (Steve Howe Farms) near the center of the subject site has an active feed lot. After verifying this with Fillmore County, this feed lot has not contained any animal units for approximately 10 years, which would void the existing permit without making improvements to bring the feedlot up to current standards. Prior to moving forward with annexation of the subject property, the City should contact the current operator of this feedlot to discuss future planning. It should also be noted that the Norstad property south of TH 30 contains a small active feed lot. This feed lot appears to be located approximately 1000 feet from TH 30, so no setback encroachments are anticipated with development of the Woxland property at this time.

VII. SUMMARY

From an engineering standpoint, development of the subject property is feasible, as described above, outside of any issues related to annexation. Minor upgrades to the existing pipe network can be expected during future utility improvement efforts within TH 30. Both watermain and sanitary forcemain may be routed within the TH 30 right-of-way to the development site once permits are secured. As discussed previously, additional planning related to access management and the potential need for an AUAR should be discussed once the size of the planned development is better understood.

Appendix A: Figures





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Appendix B: Exhibits

EXHIBIT 1



PRELIMINARY ENGINEER'S ESTIMATE

WEST AREA DEVELOPMENT FEASIBILITY STUDY
 CITY OF RUSHFORD, MN
 BMI PROJECT NO.: H19.115225

Updated: 1/10/18

ITEM NO.	ITEM	QTY	UNIT	UNIT PRICE	TOTAL
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PHASE 1: R-1 ZONING

STREET & SITE

1	MOBILIZATION	1	LS	\$35,000.00	\$35,000.00
2	TRAFFIC CONTROL	1	LS	\$10,000.00	\$10,000.00
3	EARTHWORK	8.60	ACRE	\$14,400.00	\$123,840.00
4	STREET CONSTRUCTION (36' URBAN SECTION)	14.25	STA	\$17,200.00	\$245,100.00
5	5' CONCRETE WALK (ONE SIDE)	14.25	STA	\$2,000.00	\$28,500.00
6	TOPSOIL & SEEDING	8	ACRE	\$8,550.00	\$68,400.00
7	EROSION & SEDIMENT CONTROL	1	LS	\$15,000.00	\$15,000.00
SUBTOTAL:					\$525,840.00

SANITARY SEWER

1	CONSTRUCT SANITARY MANHOLE DES 4007C	78	LF	\$300.00	\$23,400.00
2	SANITARY SEWER CASTING ASSEMBLY	5	EA	\$700.00	\$3,500.00
3	CONNECT TO EXIST SANITARY	1	EA	\$800.00	\$800.00
4	8" SANITARY SEWER	1475	LF	\$40.00	\$59,000.00
5	SANITARY SERVICE & WYE	29	EA	\$1,250.00	\$36,250.00
SUBTOTAL:					\$122,950.00

WATERMAIN

1	CONNECT TO EXIST WATERMAIN	1	EA	\$700.00	\$700.00
2	8" GATE VALVE & BOX	4	EA	\$1,900.00	\$7,600.00
3	HYDRANT, VALVE & LEAD	3	EA	\$5,930.00	\$17,790.00
4	8" WATERMAIN	1425	LF	\$50.00	\$71,250.00
5	WATER SERVICE	29	EA	\$1,600.00	\$46,400.00
6	WATERMAIN FITTINGS	1200	LB	\$9.00	\$10,800.00
SUBTOTAL:					\$154,540.00

STORM SEWER

1	CONSTRUCT DRAINAGE MANHOLE	6	EA	\$2,100.00	\$12,600.00
2	CONSTRUCT CATCH BASIN	8	EA	\$1,350.00	\$10,800.00
3	STORM SEWER CASTING ASSEMBLY	14	EA	\$500.00	\$7,000.00
4	12" PIPE SEWER	470	LF	\$35.00	\$16,450.00
5	15" PIPE SEWER	520	LF	\$38.00	\$19,760.00
6	18" PIPE SEWER	250	LF	\$40.00	\$10,000.00
7	STORMWATER POND EXCAVATION	5500	CY	\$5.00	\$27,500.00
8	STORMWATER OUTLET STRUCTURE	1	EA	\$2,500.00	\$2,500.00
SUBTOTAL:					\$106,610.00

PHASE 1 (R-1) CONSTRUCTION SUBTOTAL:	\$909,940.00
CONSTRUCTION CONTINGENCIES (10%):	\$91,000.00
PHASE 1 (R-1) CONSTRUCTION COST:	\$1,000,940.00
ESTIMATED ENGINEERING, ADMIN & LEGAL:	\$230,000.00
PHASE 1 (R-1) PROJECT TOTAL:	\$1,230,940.00

TOTAL PROJECT COST SUMMARY

PHASE 1 (R-1) PROJECT TOTAL:	\$1,230,940.00
NUMBER OF LOTS:	29
ESTIMATED COST PER LOT:	\$42,446.21

EXHIBIT 2



PRELIMINARY ENGINEER'S ESTIMATE

WEST AREA DEVELOPMENT FEASIBILITY STUDY
CITY OF RUSHFORD, MN
BMI PROJECT NO.: H19.115225

Updated: 1/10/18

ITEM NO.	ITEM	QTY	UNIT	UNIT PRICE	TOTAL
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PHASE 2: R-1 ZONING

STREET & SITE

1	MOBILIZATION	1	LS	\$35,000.00	\$35,000.00
2	TRAFFIC CONTROL	1	LS	\$10,000.00	\$10,000.00
3	EARTHWORK	12.30	ACRE	\$14,400.00	\$177,120.00
4	STREET CONSTRUCTION (36' URBAN SECTION)	19.2	STA	\$17,200.00	\$330,240.00
5	5' CONCRETE WALK (ONE SIDE)	19.2	STA	\$2,000.00	\$38,400.00
6	EROSION & SEDIMENT CONTROL	1	LS	\$15,000.00	\$15,000.00
SUBTOTAL:					\$605,760.00

SANITARY SEWER

1	CONSTRUCT SANITARY MANHOLE DES 4007C	121	LF	\$300.00	\$36,300.00
2	SANITARY SEWER CASTING ASSEMBLY	7	EA	\$700.00	\$4,900.00
3	CONNECT TO EXIST SANITARY	2	EA	\$800.00	\$1,600.00
4	8" SANITARY SEWER	1250	LF	\$40.00	\$50,000.00
5	SANITARY SERVICE & WYE	44	EA	\$1,250.00	\$55,000.00
SUBTOTAL:					\$147,800.00

WATERMAIN

1	CONNECT TO EXIST WATERMAIN	2	EA	\$700.00	\$1,400.00
2	8" GATE VALVE & BOX	3	EA	\$1,900.00	\$5,700.00
3	HYDRANT, VALVE & LEAD	5	EA	\$5,930.00	\$29,650.00
4	8" WATERMAIN	1250	LF	\$50.00	\$62,500.00
5	WATER SERVICE	44	EA	\$1,600.00	\$70,400.00
6	WATERMAIN FITTINGS	1060	LB	\$9.00	\$9,540.00
SUBTOTAL:					\$179,190.00

STORM SEWER

1	CONSTRUCT DRAINAGE MANHOLE	6	EA	\$2,100.00	\$12,600.00
2	CONSTRUCT CATCH BASIN	8	EA	\$1,350.00	\$10,800.00
3	STORM SEWER CASTING ASSEMBLY	14	EA	\$500.00	\$7,000.00
4	12" PIPE SEWER	300	LF	\$35.00	\$10,500.00
5	15" PIPE SEWER	300	LF	\$38.00	\$11,400.00
6	18" PIPE SEWER	150	LF	\$40.00	\$6,000.00
7	STORMWATER POND EXCAVATION	8300	CY	\$8.00	\$66,400.00
8	STORMWATER OUTLET STRUCTURE	1	EA	\$2,500.00	\$2,500.00
SUBTOTAL:					\$127,200.00

PHASE 2 (R-1) CONSTRUCTION SUBTOTAL:	\$1,059,950.00
CONSTRUCTION CONTINGENCIES (10%):	\$106,000.00
PHASE 2 (R-1) CONSTRUCTION COST:	\$1,165,950.00
ESTIMATED ENGINEERING, ADMIN & LEGAL:	\$260,000.00
PHASE 2 (R-1) PROJECT TOTAL:	\$1,425,950.00

PHASE 2 (R-1) COST SUMMARY

PHASE 2 (R-1) PROJECT TOTAL:	\$1,425,950.00
NUMBER OF LOTS:	44
ESTIMATED COST PER LOT:	\$32,407.95

EXHIBIT 3



PRELIMINARY ENGINEER'S ESTIMATE

WEST AREA DEVELOPMENT FEASIBILITY STUDY
CITY OF RUSHFORD, MN
BMI PROJECT NO.: H19.115225

Updated: 1/10/18

ITEM NO.	ITEM	QTY	UNIT	UNIT PRICE	TOTAL
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PHASE 1: R-3 ZONING

STREET & SITE

1	MOBILIZATION	1	LS	\$35,000.00	\$35,000.00
2	TRAFFIC CONTROL	1	LS	\$10,000.00	\$10,000.00
3	EARTHWORK	14.90	ACRE	\$14,400.00	\$214,560.00
4	STREET CONSTRUCTION (36' URBAN SECTION)	25.1	STA	\$17,200.00	\$431,720.00
5	5' CONCRETE WALK (ONE SIDE)	25.1	STA	\$2,000.00	\$50,200.00
5	16' ALLEY CONSTRUCTION	12	STA	\$5,580.00	\$66,960.00
6	EROSION & SEDIMENT CONTROL	1	LS	\$15,000.00	\$15,000.00
SUBTOTAL:					\$823,440.00

SANITARY SEWER

1	CONSTRUCT SANITARY MANHOLE DES 4007C	110	LF	\$300.00	\$33,000.00
2	SANITARY SEWER CASTING ASSEMBLY	8	EA	\$700.00	\$5,600.00
3	CONNECT TO EXIST SANITARY	1	EA	\$800.00	\$800.00
4	8" SANITARY SEWER	2550	LF	\$40.00	\$102,000.00
5	SANITARY SERVICE & WYE	60	EA	\$1,250.00	\$75,000.00
SUBTOTAL:					\$216,400.00

WATERMAIN

1	CONNECT TO EXIST WATERMAIN	1	EA	\$700.00	\$700.00
2	8" GATE VALVE & BOX	7	EA	\$1,900.00	\$13,300.00
3	HYDRANT, VALVE & LEAD	7	EA	\$5,930.00	\$41,510.00
4	8" WATERMAIN	2550	LF	\$50.00	\$127,500.00
5	WATER SERVICE	60	EA	\$1,600.00	\$96,000.00
6	WATERMAIN FITTINGS	2170	LB	\$9.00	\$19,530.00
SUBTOTAL:					\$298,540.00

STORM SEWER

1	CONSTRUCT DRAINAGE MANHOLE	7	EA	\$2,100.00	\$14,700.00
2	CONSTRUCT CATCH BASIN	12	EA	\$1,350.00	\$16,200.00
3	STORM SEWER CASTING ASSEMBLY	19	EA	\$500.00	\$9,500.00
4	12" PIPE SEWER	370	LF	\$35.00	\$12,950.00
5	15" PIPE SEWER	300	LF	\$38.00	\$11,400.00
6	18" PIPE SEWER	300	LF	\$40.00	\$12,000.00
7	STORMWATER POND EXCAVATION	9000	CY	\$8.00	\$72,000.00
8	STORMWATER OUTLET STRUCTURE	1	EA	\$2,500.00	\$2,500.00
SUBTOTAL:					\$151,250.00

PHASE 1 (R-3) CONSTRUCTION SUBTOTAL:	\$1,489,630.00
CONSTRUCTION CONTINGENCIES (10%):	\$149,000.00
PHASE 1 (R-3) CONSTRUCTION COST:	\$1,638,630.00
ESTIMATED ENGINEERING, ADMIN & LEGAL:	\$370,000.00
PHASE 1 (R-3) PROJECT TOTAL:	\$2,008,630.00

PHASE 1 (R-3) PROJECT COST SUMMARY

PHASE 1 (R-3) PROJECT TOTAL:	\$2,008,630.00
NUMBER OF LOTS:	60
ESTIMATED COST PER LOT:	\$33,477.17

EXHIBIT 4



PRELIMINARY ENGINEER'S ESTIMATE

WEST AREA DEVELOPMENT FEASIBILITY STUDY
CITY OF RUSHFORD, MN
BMI PROJECT NO.: H19.115225

Updated: 1/10/18

ITEM NO.	ITEM	QTY	UNIT	UNIT PRICE	TOTAL
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PHASE 2: R-3 ZONING

STREET & SITE

1	MOBILIZATION	1	LS	\$35,000.00	\$35,000.00
2	TRAFFIC CONTROL	1	LS	\$10,000.00	\$10,000.00
3	EARTHWORK	15.70	ACRE	\$14,400.00	\$226,080.00
4	STREET CONSTRUCTION (36' URBAN SECTION)	28.3	STA	\$17,200.00	\$486,760.00
5	5' CONCRETE WALK (ONE SIDE)	28.3	STA	\$2,000.00	\$56,600.00
5	16' ALLEY CONSTRUCTION	16.5	STA	\$5,580.00	\$92,070.00
6	EROSION & SEDIMENT CONTROL	1	LS	\$15,000.00	\$15,000.00
SUBTOTAL:					\$921,510.00

SANITARY SEWER

1	CONSTRUCT SANITARY MANHOLE DES 4007C	118	LF	\$300.00	\$35,400.00
2	SANITARY SEWER CASTING ASSEMBLY	8	EA	\$700.00	\$5,600.00
3	CONNECT TO EXIST SANITARY	1	EA	\$800.00	\$800.00
4	8" SANITARY SEWER	2830	LF	\$40.00	\$113,200.00
5	SANITARY SERVICE & WYE	63	EA	\$1,250.00	\$78,750.00
SUBTOTAL:					\$233,750.00

WATERMAIN

1	CONNECT TO EXIST WATERMAIN	1	EA	\$700.00	\$700.00
2	8" GATE VALVE & BOX	9	EA	\$1,900.00	\$17,100.00
3	HYDRANT, VALVE & LEAD	7	EA	\$5,930.00	\$41,510.00
4	8" WATERMAIN	2830	LF	\$50.00	\$141,500.00
5	WATER SERVICE	63	EA	\$1,600.00	\$100,800.00
6	WATERMAIN FITTINGS	2400	LB	\$9.00	\$21,600.00
SUBTOTAL:					\$323,210.00

STORM SEWER

1	CONSTRUCT DRAINAGE MANHOLE	7	EA	\$2,100.00	\$14,700.00
2	CONSTRUCT CATCH BASIN	19	EA	\$1,350.00	\$25,650.00
3	STORM SEWER CASTING ASSEMBLY	19	EA	\$500.00	\$9,500.00
4	12" PIPE SEWER	440	LF	\$35.00	\$15,400.00
5	15" PIPE SEWER	1170	LF	\$38.00	\$44,460.00
6	18" PIPE SEWER	325	LF	\$40.00	\$13,000.00
7	24" PIPE SEWER	300	LF	\$45.00	\$13,500.00
8	STORMWATER POND EXCAVATION	10000	CY	\$8.00	\$80,000.00
9	STORMWATER OUTLET STRUCTURE	1	EA	\$2,500.00	\$2,500.00
SUBTOTAL:					\$218,710.00

PHASE 2 (R-3) CONSTRUCTION SUBTOTAL:	\$1,697,180.00
CONSTRUCTION CONTINGENCIES (10%):	\$170,000.00
PHASE 2 (R-3) CONSTRUCTION COST:	\$1,867,180.00
ESTIMATED ENGINEERING, ADMIN & LEGAL:	\$420,000.00
PHASE 2 (R-3) PROJECT TOTAL:	\$2,287,180.00

PHASE 2 (R-3) PROJECT COST SUMMARY

PHASE 2 (R-3) PROJECT TOTAL:	\$2,287,180.00
NUMBER OF LOTS:	63
ESTIMATED COST PER LOT:	\$36,304.44

EXHIBIT 5



PRELIMINARY ENGINEER'S ESTIMATE

WEST AREA DEVELOPMENT FEASIBILITY STUDY
CITY OF RUSHFORD, MN
BMI PROJECT NO.: H19.115225

Updated: 1/18/18

ITEM NO.	ITEM	QTY	UNIT	UNIT PRICE	TOTAL
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UTILITY EXTENSION

STREET & SITE

1	MOBILIZATION	1	LS	\$15,000.00	\$15,000.00
2	TRAFFIC CONTROL	1	LS	\$7,500.00	\$7,500.00
3	PAVEMENT PATCHING	200	SY	\$55.00	\$11,000.00
4	EROSION & SEDIMENT CONTROL	1	LS	\$5,000.00	\$5,000.00
SUBTOTAL:					\$38,500.00

SANITARY SEWER

1	CONSTRUCT SANITARY MANHOLE DES 4007C	20	LF	\$300.00	\$6,000.00
2	SANITARY SEWER CASTING ASSEMBLY	1	EA	\$700.00	\$700.00
3	CONNECT TO EXIST SANITARY	1	EA	\$800.00	\$800.00
4	10" SANITARY SEWER	100	LF	\$50.00	\$5,000.00
5	4" SANITARY FCM (DIRECTIONAL BORE)	2770	LF	\$30.00	\$83,100.00
6	AIR/VAC RELEASE MANHOLE	1	EA	\$11,000.00	\$11,000.00
7	SANITARY LIFT STATION (*DOES NOT INCLUDE POWER)	1	LS	\$250,000.00	\$250,000.00
SUBTOTAL:					\$356,600.00

WATERMAIN

1	CONNECT TO EXIST WATERMAIN	1	EA	\$700.00	\$700.00
2	8" GATE VALVE & BOX	4	EA	\$1,900.00	\$7,600.00
3	HYDRANT, VALVE & LEAD	3	EA	\$5,930.00	\$17,790.00
4	10" WATERMAIN (DIRECTIONAL BORE)	2700	LF	\$60.00	\$162,000.00
5	WATERMAIN FITTINGS	700	LB	\$9.00	\$6,300.00
SUBTOTAL:					\$194,390.00

UTILITY EXTENSION CONSTRUCTION SUBTOTAL:	\$589,490.00
CONSTRUCTION CONTINGENCIES (10%):	\$59,000.00
UTILITY EXTENSION CONSTRUCTION COST:	\$648,490.00
ESTIMATED ENGINEERING, ADMIN & LEGAL:	\$150,000.00
UTILITY EXTENSION PROJECT TOTAL:	\$798,490.00

UTILITY EXTENSION PROJECT COST SUMMARY

COST PER LOT	UTILITY EXTENSION PROJECT TOTAL:	\$798,490.00
	PHASE 1-2, R-1 ZONING (73 LOTS):	\$10,940.00
	PHASE 1-4, R-1 ZONING (137 LOTS):	\$5,830.00
	PHASE 1-2, R-3 ZONING (123 LOTS):	\$6,500.00
	PHASE 1-4, R-3 ZONING (199 LOTS):	\$4,020.00

EXISTING UTILITY UPGRADE

SANITARY SEWER

1	10" SANITARY SEWER UPGRADE (FROM 8")	2780	LF	\$6.00	\$16,680.00
2	10" SANITARY WYE UPGRADE (FROM 8")	55	EA	\$100.00	\$5,500.00
SUBTOTAL:					\$22,180.00

WATERMAIN

1	10" GATE VALVE & BOX UPGRADE (FROM 8")	4	EA	\$600.00	\$2,400.00
2	10" WATERMAIN UPGRADE (FROM 8")	2690	LF	\$3.00	\$8,070.00
3	WATERMAIN FITTINGS	350	LB	\$9.00	\$3,150.00
SUBTOTAL:					\$13,620.00

UPGRADE CONSTRUCTION SUBTOTAL:	\$35,800.00
CONSTRUCTION CONTINGENCIES (20%):	\$7,000.00
UPGRADE CONSTRUCTION COST:	\$42,800.00

UPGRADE PROJECT COST SUMMARY

COST PER LOT	UPGRADE CONSTRUCTION COST:	\$42,800.00
	PHASE 1-2, R-1 ZONING (73 LOTS):	\$590.00
	PHASE 1-4, R-1 ZONING (137 LOTS):	\$320.00
	PHASE 1-2, R-3 ZONING (123 LOTS):	\$350.00
	PHASE 1-4, R-3 ZONING (199 LOTS):	\$220.00