Lewis Farms Commercial
Storm & Sanitary Servicing Study

Kevin Kerswell and Daryn Naroski

1161 106395

Prepared for:
City of Edmonton

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December 8, 2017

Sign-off Sheet

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Prepared by original signed Dec 2017
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Reviewed by
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Constance Chakanyuka, P.Eng.

Updated by
(signature)

Constance Chakanyuka, P.Eng.

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Table of Contents

1.0 INTRODUCTION 1
1.1 SITE INFORMATION & PURPOSE OF REPORT 1
1.2 EXISTING CONDITIONS 1
1.3 BACKGROUND INFORMATION 2

2.0 STORM SERVICING 3
2.1 APPROACH TO DOWNSTREAM STORM CAPACITY REVIEW 3
2.2 EXISTING STORM SERVICE AND PRE-DEVELOPMENT FLOW 3
2.3 POST-DEVELOPMENT FLOW AND PROPOSED STORM SERVICING 3
2.4 STORAGE VOLUME AND ASSOCIATED COSTS 5
2.5 PERMANENT AREA CONTRIBUTION 6

3.0 SANITARY SERVICING 7
3.1 APPROACH TO DOWNSTREAM SANITARY CAPACITY REVIEW 7
3.2 EXISTING SANITARY SERVICES 7
3.3 PROPOSED SANITARY SERVICING & REDEVELOPMENT SEWAGE FLOW 7
3.4 PERMANENT AREA CONTRIBUTION 8

4.0 CONCLUSION 9

LIST OF TABLES

Table 1 – Construction Cost Summary Table 6

LIST OF FIGURES

Figure 1.1 - Location Plan
Figure 1.2 - Study Area Boundary and Existing Land Use
Figure 1.3 - Existing Topography and Site Areas
Figure 1.4 - Proposed Land Use
Figure 2.1.1 - Proposed Minor Storm System Option 1 - Centralized SWMF
Figure 2.1.2 - Proposed Minor Storm System Option 2 - Upsized Pipes
Figure 2.1.3 - Proposed Minor Storm System Option 3 - Under Road Storage
Figure 2.2 - Proposed Major Storm System
Figure 2.3 - Webber Greens Minor Storm
Figure 3.1 - Proposed Sanitary System
Figure 3.2 - Sanitary Profile

LIST OF APPENDICES

Appendix A – Storm Option 1
Appendix B – Storm Option 2
Appendix C - Storm Option 3
Appendix D – Storm Figure 2.3

1.0 Introduction

1.1 SITE INFORMATION & PURPOSE OF REPORT

Kevin Kerswell and Daryn Naroski and several other landowners are proposing rezoning from Rural Residential to Business Industrial for a site located south of Stony Plain Road, east of Winterburn Road, north of Webber Greens, and west of Steward Greens.

See **Figure 1.1** for the location plan as well as the surrounding neighbourhoods.

This sanitary and storm servicing study has been prepared on behalf of Kevin Kerswell and Daryn Naroski in support of the proposed zoning bylaw changes for the redevelopment of Area C and Area D as seen in **Figure 1.3 – Existing Topography and Site Areas** and **Figure 1.4 – Proposed Land Use**.

Specifically, this report provides an inventory of existing storm and sanitary outlets from the site and considers the capacity of the downstream sewer systems, where information is available. The purpose of this report is to assess the storm and sanitary flows anticipated to discharge from the subject site and to show that the rezoning of this study area does not negatively impact the downstream network or create any runoff issues in the study area.

1.2 EXISTING CONDITIONS

There are 4 areas for this development:

Area A is the existing school in the south west which is bordered by Winterburn Road to the west, 98 Avenue to the north and Webber Greens neighbourhood to the south. Area A consists of a school and the surrounding sports fields. This area is serviced to the south/west along Winterburn Road/Webber Greens and part of school still drains towards the ditch along the east property line of the school. Full details on exact area draining towards the ditch cannot be established without a few survey of the site and this is not within the scope of the report.

Area B consists of ten lots in the north of the study area which are already zoned as Business Industrial. These lots are currently draining their storm north into the Stony Plain ditch east, but are not connected to sanitary services.

Area C consists of 24 lots currently zoned as rural residential which are being rezoned to Business Industrial. Currently lots in this area are not connecting to sanitary services and the storm drainage is directed and controlled by ditches.

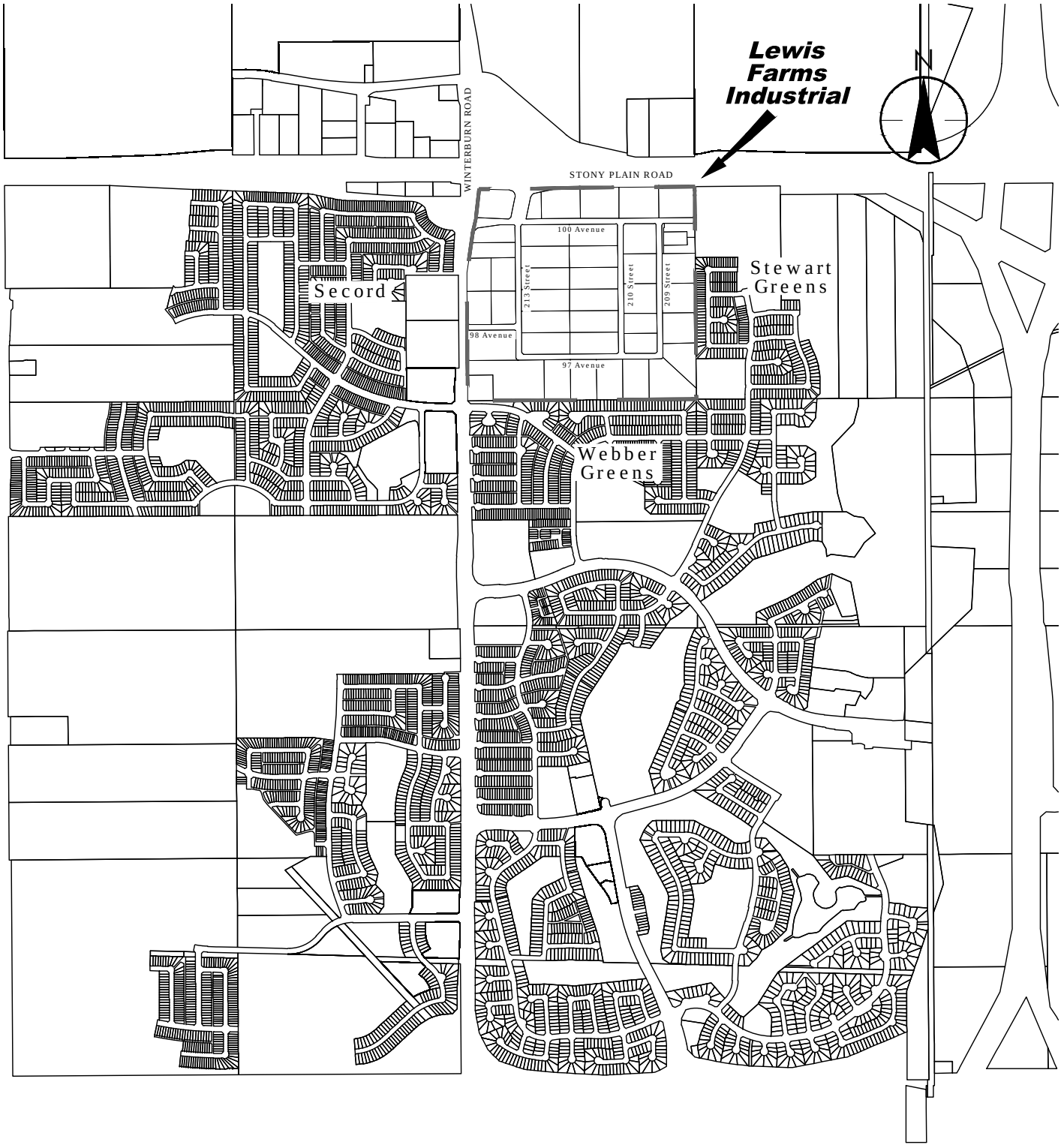
Area D consists of 4 lots currently zoned as rural residential which are being rezoned to Business Industrial. Currently lots in this area are not connecting to sanitary servicing and the storm drainage is directed towards and collecting by Stewart Greens to the east.

Figure 1.2 shows the aerial photo along with existing land use.

1.3 BACKGROUND INFORMATION

The information presented in this report is based on the review of the following information:

- As-built drawings on file with the City of Edmonton for Stewart Green Stage 1, and Stage 4.
- Issued for record drawings on file with the City of Edmonton for Webber Greens Stage 2B, Stage 2C, and Stage 3 – Trunk Sewers.
- City of Edmonton Design Standards and Specifications
- Stewart Greens & Normandeau Gardens Neighbourhood Design Report, 5th Submission, prepared by WSP, MMM Group Limited, May 2016
- Existing storm, sanitary, water services along Winterburn Road and within the study area from the City of Edmonton Drainage Planning.
- The Secord as-built drawings for the areas west of Winterburn Road.
- Amendment to the Lewis Farms Area Structure Plan prepared by Stantec Consulting Ltd (2018)
- Lewis Farms Business Employment Neighbourhood Structure Plan prepared by Stantec Consulting Ltd (2018)



Legend

Study Area Boundary

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LEWIS FARMS COMMERCIAL
STORM AND SANITARY SERVICE REPORT

Figure No.

1.1

Title

Location Plan

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1161 106395

Legend

STUDY AREA BOUNDARY

RR EXISTING LANDUSE RURAL RESIDENTIAL

IB EXISTING LANDUSE BUSINESS INDUSTRIAL

Scale

1:10,000 0 100 200 300 400 500

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Figure No.

1.2

Title

Study Area Boundary and Existing Landuse

Stantec

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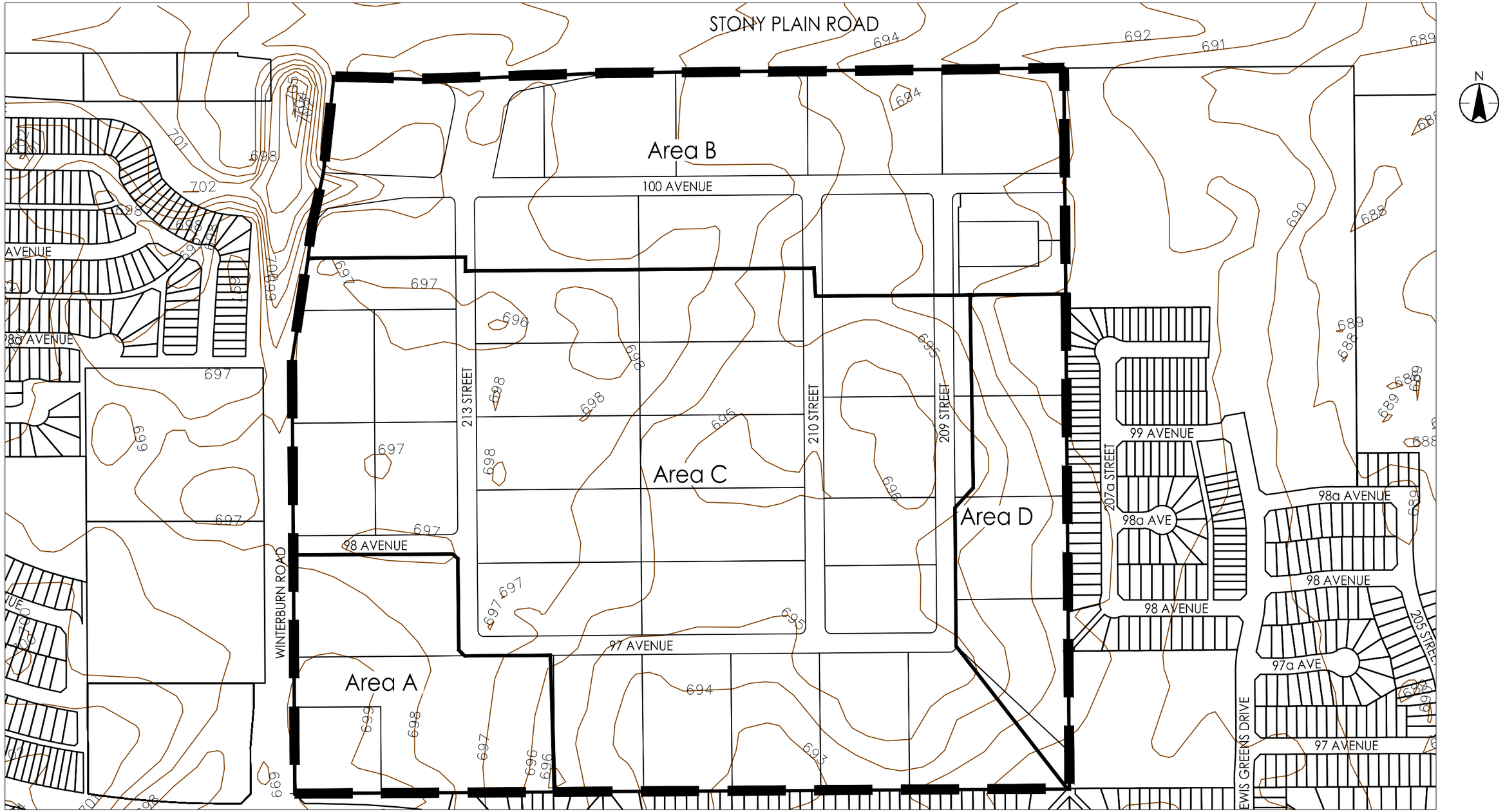

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1161 106395

Legend

STUDY AREA BOUNDARY

SITE AREAS BOUNDARY

699 EXISTING GROUND CONTOURS

Scale

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Figure No.
1.3

Title
Existing Topography and Site Areas

Stantec

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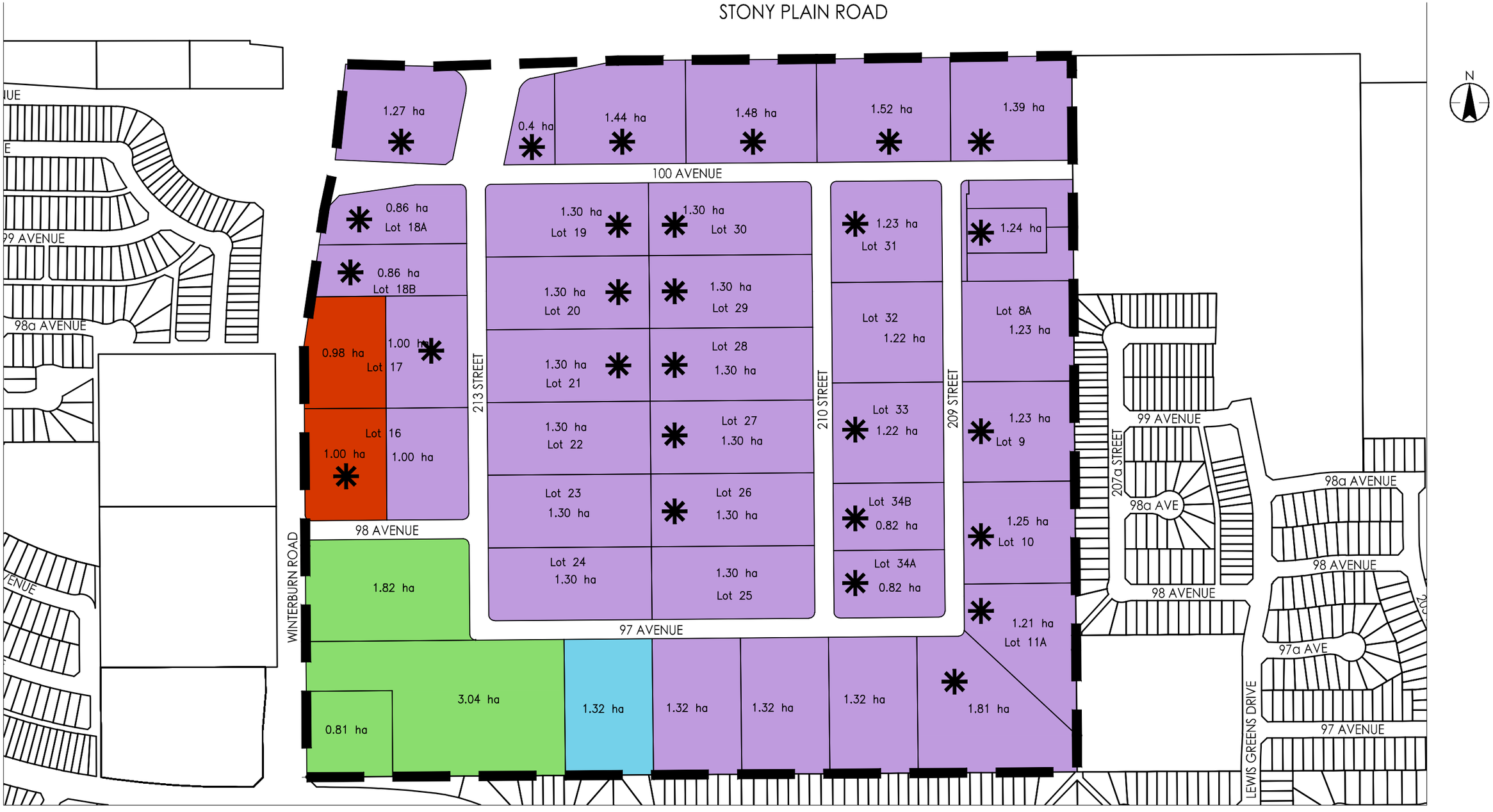

November 2017
1161 106395

Legend

- Potential Future Recreation or Industrial Business
- Industrial Business
- School
- Commercial
- Plan Boundary
- Non-Participating Land Owners

Scale

Stantec

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KEVIN KERSWELL AND DARYN NAROSKI
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STORM AND SANITARY SERVICE REPORT

Figure No.
1.4

Title
Proposed Land Use

2.0 Storm Servicing

2.1 APPROACH TO DOWNSTREAM STORM CAPACITY REVIEW

Below is an analysis of the existing storm system for the subject area, followed by an analysis of restricted post development stormwater flow. Recommendations for site servicing are provided based on constructability and cost.

2.2 EXISTING STORM SERVICE AND PRE-DEVELOPMENT FLOW

As per the background information mentioned above, there is no extra capacity in the Secord neighbourhood to the west for any portion of the storm drainage in Lewis Farms Industrial to be rerouted west.

South, there is a 525 mm and a 375 mm storm stub in easements into Webber Greens. The combined capacity to the south is 0.20 m^3/s. There is a 525 mm stub in the walkway east of Lot 11A tying in to the storm system in Stewart Greens.

The following service stubs were installed with the development of Webber Greens stage 2B

- 525mm stub in an eastment between lots 58 and 59 which has a capacity of 0.16 m3/s
- 375mm storm stub in eastment between lots 50 and 51 which has a capacity of 0.04 m3/s.

There is also a 525mm stub that was installed as part of Stewart Greens in the walkway east of Lot 11A which has a capacity of 0.098 m3/s. See Figures 2.1 for location of the aforementioned stubs and Figure 2.3 for.

Area A is currently serviced to the south through Webber Greens. Drainage from area B drains into the Stony Plain ditch eastbound. The capacities of the existing ditches are not known, since the lots are already developed the runoff and drainage should not increase. Area C and D is currently not serviced; there are ditches which direct the drainage out of the study area. Webber Greens to the south has been designed to account for 21.1 ha of predevelopment flow from Area C. Lots in Area D drain to and are accounted for in Stewart Greens.

2.3 POST-DEVELOPMENT FLOW AND PROPOSED STORM SERVICING

In the Stewart Greens and Normandeau Gardens Neighbourhood Design Report, 5th Submission, prepared by WSP, MMM Group Limited, May 2016 a central storm water management facility is proposed. Due to nonparticipating land owners, buildings which are currently located on most lots, and timing of further development of certain lots, one central storm water management

facility may not be feasible at this time and several servicing options where looked at for this development area.

While considering the servicing options for areas C & D the following assumptions were made

- Area A, which is the school site, is being serviced through Webber Greens to the south west and no intent to update the servicing has been seen.
- Lots in area B are currently zoned as Business Industrial and drain north into the Stony Plain Road ditch. Area B will continue to drain as it is with runoff values assumed to stay the same.
- Area C and D, once rezoned from Rural Residential to Business Industrial will be assumed to have an increase in runoff coefficient value from 0.65to 0.9 and generate more runoff
- The road may need to be upgraded to an urban/rural industrial combination from the current 6m rural section. To handle this increase in runoff several options were researched and the three best options are discussed below.

All servicing options for Area C will require developing lots to capture and store the 5 year and 100 year onsite drainage and release at a rate of 5 L/s/ha. Onsite storage can be provided by way of several options or combination of options such as rooftop storage, onsite underground storage tanks, onsite storm ponds, or parking lot ponding. As well, a flow control mechanism, for example an orifice plate, will be required to control drainage leaving the site This will be addressed further at the detailed design and development permit stage. Stormceptors or similar will be required on each lot and before the tie-in points into the surrounding neighbourhoods to ensure proper cleaning of the storm runoff. **Figures 2.1** show the three options listed below.

Option 1 is one centralized SWMF consisting of a wetland pond with the entire Area C draining into it with ditches and the SWMF outfalling via pipes into the 525 mm stub in the walkway in Stewart Greens at a controlled discharge. Option 2 would require large diameter pipes in 97 Avenue to provide storage for flows from both Areas C and D and release at a controlled discharge rate through the 525 mm stub in Stewart Greens. The upstream lots and road runoff would still be collected by ditches and directed towards the pipes in 97 Avenue.

Option 3 consists of underground storage and releasing at a controlled discharge to avoid flooding the downstream, offsite facilities. Ditches will direct the storm flows from the lots and road to the underground storage. For this analysis, a PVC arch-shaped pipe with an open base was considered; the dimensions of which are 2.54m wide and 1.52m high.

The lots were assumed to have a post development runoff coefficient of 0.90, with the proposed upgraded road right of way having a runoff coefficient of 0.564. The road would consist of a 20m wide right of way with a 9.0m driving surface, a 2.6m walkway on one side and the rest being grassed with a ditch on the side opposite the walkway. The major storm system is shown in **Figure 2.2.**

2.4 STORAGE VOLUME AND ASSOCIATED COSTS

To achieve the flow attenuation necessary for the post development flow, the sites will require onsite stormwater storage. Since onsite storage for the road is not possible a central storage facility is required.

Option 1, one centralized SWMF, requires 39,000 m^3 of storage which amounts to an approximate High Water Level (HWL) area of 2.2 ha based on 2.5 m fluctuation between NWL and HWL. The 5 year runoff coefficient was used as 0.9 due to the Business Industrial and the possibility of paved lots. The discharge rate of 0.098 m^3/s it taken from the Stewart Green Stage 4 as-built drawings. Storm Option 1 is shown in **Figure 2.1.1**. The total construction cost of the storm SWMF along with the outlet and interconnecting pipe to Stewart Greens is $1,555,000. This option utilizes ditches to divert the runoff into the SWMF. A detailed cost breakdown is included in the appendix.

Option 2, oversized storm pipes to capture runoff and discharge at a reduced release rate. These pipes would connect to and release into the storm stub in Stewart Greens. The approximate cost of the upsized storm pipes is $2,673,000; detailed cost breakdown is found in the appendix. Option 2 is shown in **Figure 2.1.2**.

Option 3, underground storage and release at a reduced discharge was split into two sub basins. One sub basin drains east into the 525 mm storm stub in Stewart Greens, the other drains south into the existing storm pick up points in Webber Greens. This can be seen in **Figure 2.1.3**. The 525 mm stub into Stewart Greens has a capacity of 0.098 m^3/s, of which 0.064 m^3/s is required by the lots releasing at 5 L/s/ha. The capacity to the south is 0.20 m^3/s, of which 0.083 m^3/s is required by the lots releasing at 5 L/s/ha.

- Servicing to Stewart Greens

  The east sub basin draining into Stewart Greens requires 1100 m^3 of storage for the road releasing at a rate of 0.034 m^3/s. For this analysis, a PVC arch-shaped pipe with an open base was used; the dimensions of which are 2.54m wide and 1.52m high. Approximately 500m of the PVC arch would be required. The approximate cost of option 3 for the east basin is $380,000.

- Servicing to Webber Greens

  The west sub basin draining into Webber Greens requires 1000 m^3 of storage for the road runoff of 0.079 m^3/s. For this analysis, a PVC arch-shaped pipe with an open base was used; the dimensions of which are 2.54m wide and 1.52m high. Approximately 450m of the PVC arch would be required. The approximate cost of option 3 for the west basin is $350,000. This results in a total cost of option 3 of $730,000. Detailed cost breakdown is included in the appendix.

Table 1 – Construction Cost Summary Table

Option	Approximate Cost
Option 1	$1,555,000
Option 2	$2,673,000
Option 3	$730,000

*Note, costs in the table are only the construction costs for comparison purpose, other costs such as design, surveying and testing, and others will be added to total cost.

2.5 PERMANENT AREA CONTRIBUTION

It is proposed that once an option has been selected the Onsite storm PAC rate for the basin can be established.
The City will be able to confirm other applicable assessments in this basin.

STONY PLAIN ROAD

N

1.27 ha
0.4 ha
1.44 ha
1.48 ha
1.52 ha
1.39 ha

100 AVENUE

0.86 ha
Lot 18A
0.86 ha
Lot 18B
1.30 ha
Lot 19
1.30 ha
Lot 30
1.23 ha
Lot 31
1.24 ha
1.30 ha
Lot 20
1.30 ha
Lot 29
Lot 32
1.22 ha
Lot 8A
1.23 ha
0.98 ha
1.00 ha
Lot 17
213 STREET
Freeboard 695.0
HWL 694.5
NWL 692.0
1.30 ha
Lot 21
Lot 28
1.30 ha
210 STREET
209 STREET
Lot 33
1.22 ha
1.23 ha
Lot 9
99 AVENUE
207a STREET
98a AVENUE
98a AVE
Lot 16
1.00 ha
1.00 ha
1.30 ha
Lot 22
Lot 27
1.30 ha
Lot 23
1.30 ha
Lot 26
1.30 ha
Lot 34B
0.82 ha
1.25 ha
Lot 10
98 AVENUE
98 AVENUE
Lot 24
1.30 ha
1.30 ha
Lot 25
Lot 34A
0.82 ha
1.82 ha
WINTERBURN ROAD
CMH
97 AVENUE
525ø
525ø
525ø
1.21 ha
Lot 11A
EX 525ø
EX202A
Tie Into
Existing Stub
From Stewart
Greens
205 STREET
97a AVE
LEWIS GREENS DRIVE
97 AVENUE
3.04 ha
1.32 ha
1.32 ha
1.32 ha
1.32 ha
1.81 ha
0.81 ha
EX 525ø
1090
EX 375ø
1084
96a AVE
96a AVE

Legend

- Study Area Boundary
- Basin Boundary
- Ditches
- Proposed Storm Outfall and Interconnecting Pipe System
- 100 Manhole

Scale

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Figure No.
2.1.1

Title
Proposed Minor Storm System
Option 1 - Centralized SWMF

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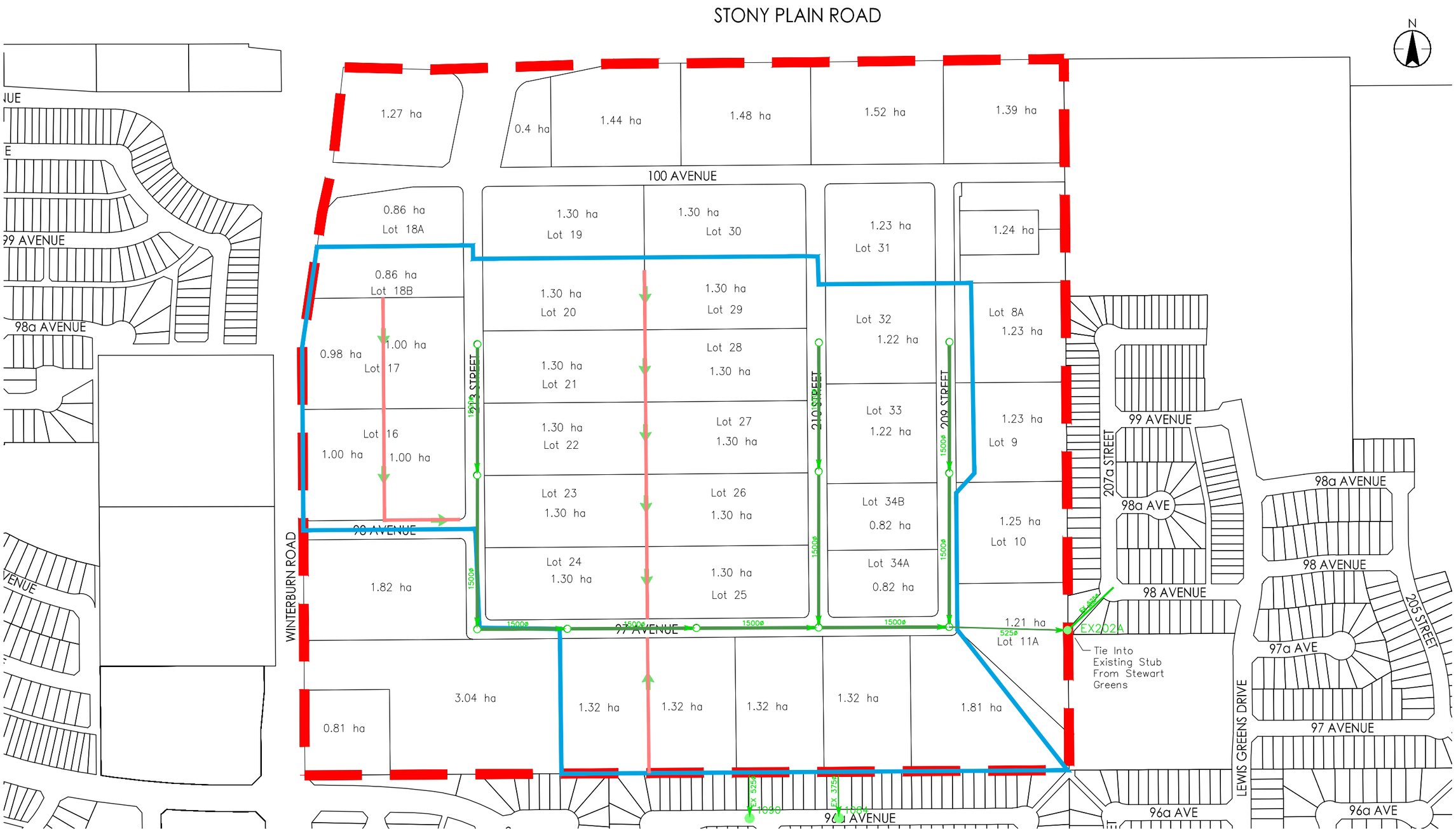

Legend

- Study Area Boundary
- Basin Boundary
- Ditches
- Proposed Upsized Storm Trunks
- 100 Manhole
- Direction of Flow in Ditch

Scale

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Figure No.
2.1.2

Title
Proposed Minor Storm System
Option 2 - Upsized Pipes

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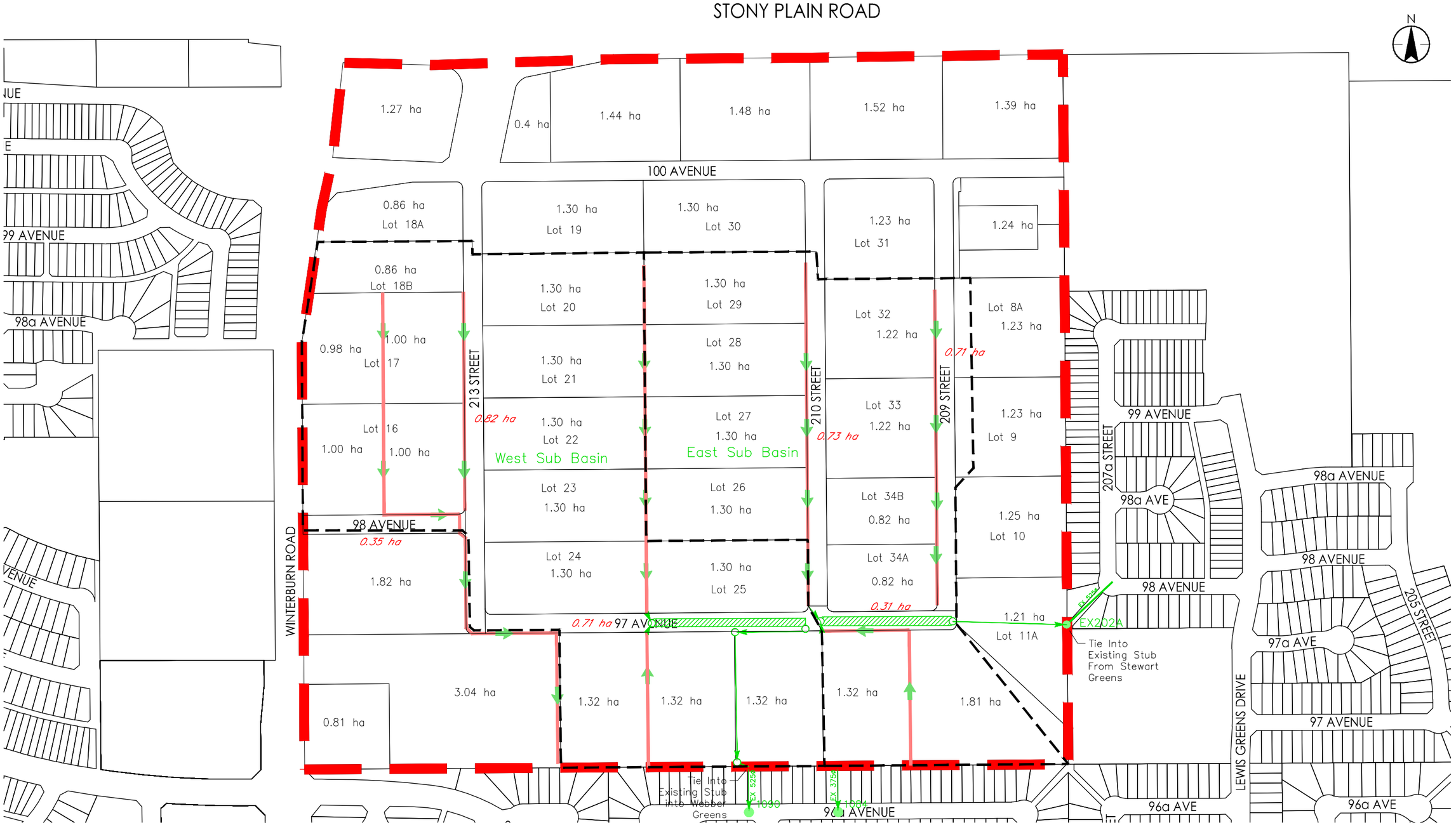

Legend

- Study Area Boundary
- Sub-Basin Boundary
- Ditches
- Approximate Footprint of Underground Storage
- "0.XX ha" Road Areas within Basin

Scale

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Figure No.
2.1.3

Title
Proposed Minor Storm System
Option 3 - Under Road Storage

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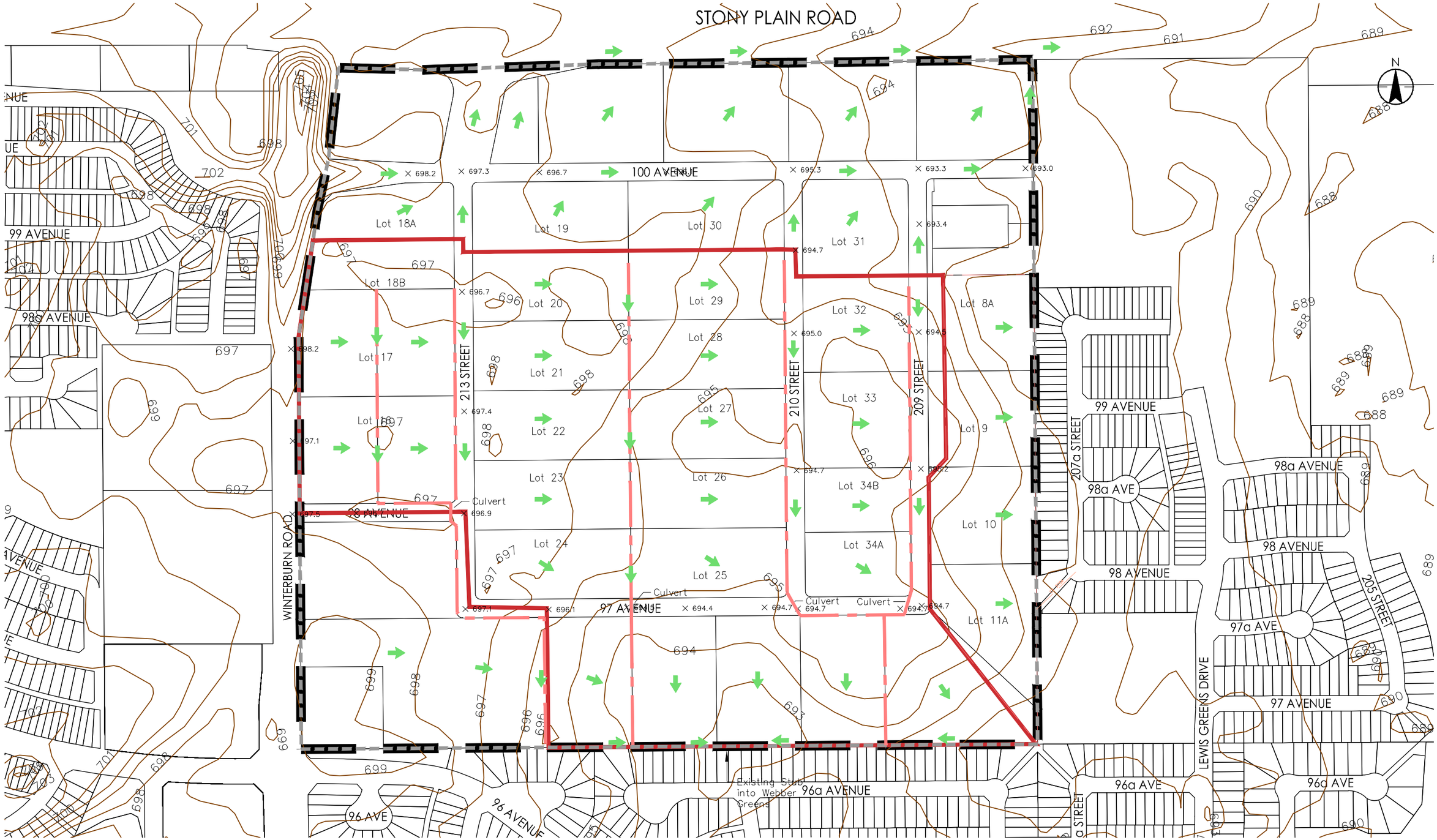

Legend

- Study Area Boundary
- Basin Boundary
- Ditches
- Proposed Design Elevation
- Direction of Flow
- Existing Ground Contours

Scale

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STORM AND SANITARY SERVICE REPORT

Figure No.
2.2

Title
Proposed Major Storm System

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November 2017 1161 106395

3.0 Sanitary Servicing

3.1 APPROACH TO DOWNSTREAM SANITARY CAPACITY REVIEW

Below is a look at the existing sanitary sewers in the area and their capacities.

3.2 EXISTING SANITARY SERVICES

As per the background information noted above, Area A is serviced by the 525 mm sewer trunk running through Webber Greens. Areas B, C, and D currently have onsite cisterns and truck out when necessary. There is an existing 375 mm stub east of Lot 11A in the walkway of Stewart Greens Stage 4. This stub has a capacity of 0.0728 m^3/s as per the as-built drawings of Stewart Greens Stage 4. The design took into account 10.1 ha of Business Industrial and 47.1 ha of Rural Residential zoned area.. The sanitary drains through Stewart Greens and connects into the West Edmonton Sanitary Sewer (WESS) at 199 Street between 96 Avenue and 97 Avenue.

3.3 PROPOSED SANITARY SERVICING & REDEVELOPMENT SEWAGE FLOW

Sanitary servicing for Area A is assumed to remain unchanged and no service modification is required, however since this is a school site and does not contribute to the sanitary system during peak hours a stub could be installed without any effect on the downstream system.. Area B will remain as Business Industrial zoning while Area C and Area D are proposed to be rezoned from Rural Residential to Business Industrial. Areas C and D are to connect to the existing 375 mm stub located in the southeast of the study area. The 375 mm stub has a capacity of 0.0728 m^3/s and the flow generated by Areas A, B, C, and D is 0.0708 m^3/s.

For sanitary flows from each lot half of the area was used with the General flow value of 20 $m^3/ha/day$, while the other have used the Business Industrial (IB) flow value of 57 $m^3/ha/day$. This assumption was used since the land use of the lots are not known and looking at the existing Business Industrial lots in Area B, the majority of the lot areas are covered with storage or parking with a small building contributing to the sanitary system. More precise flows can be determined at the detail design stage.

The total sanitary flows from Area B, Area C, and Area D are shown in **Table 3.1**. **Figure 3.1** shows the proposed sanitary network for Lewis Farms Industrial. The profile of the sanitary trunk is shown on **Figure 3.2**.

We are therefore recommending the following sanitary servicing strategy:

- Assuming Area A servicing requirements remains unchanged
- Areas B, Area C, and Area D can tie into the existing 375 mm sanitary sewer in Stewart Greens at the flows assumed above.

3.4 PERMANENT AREA CONTRIBUTION

The sanitary PAC is comprised of the sanitary trunks having a diameter of 375mm or larger.

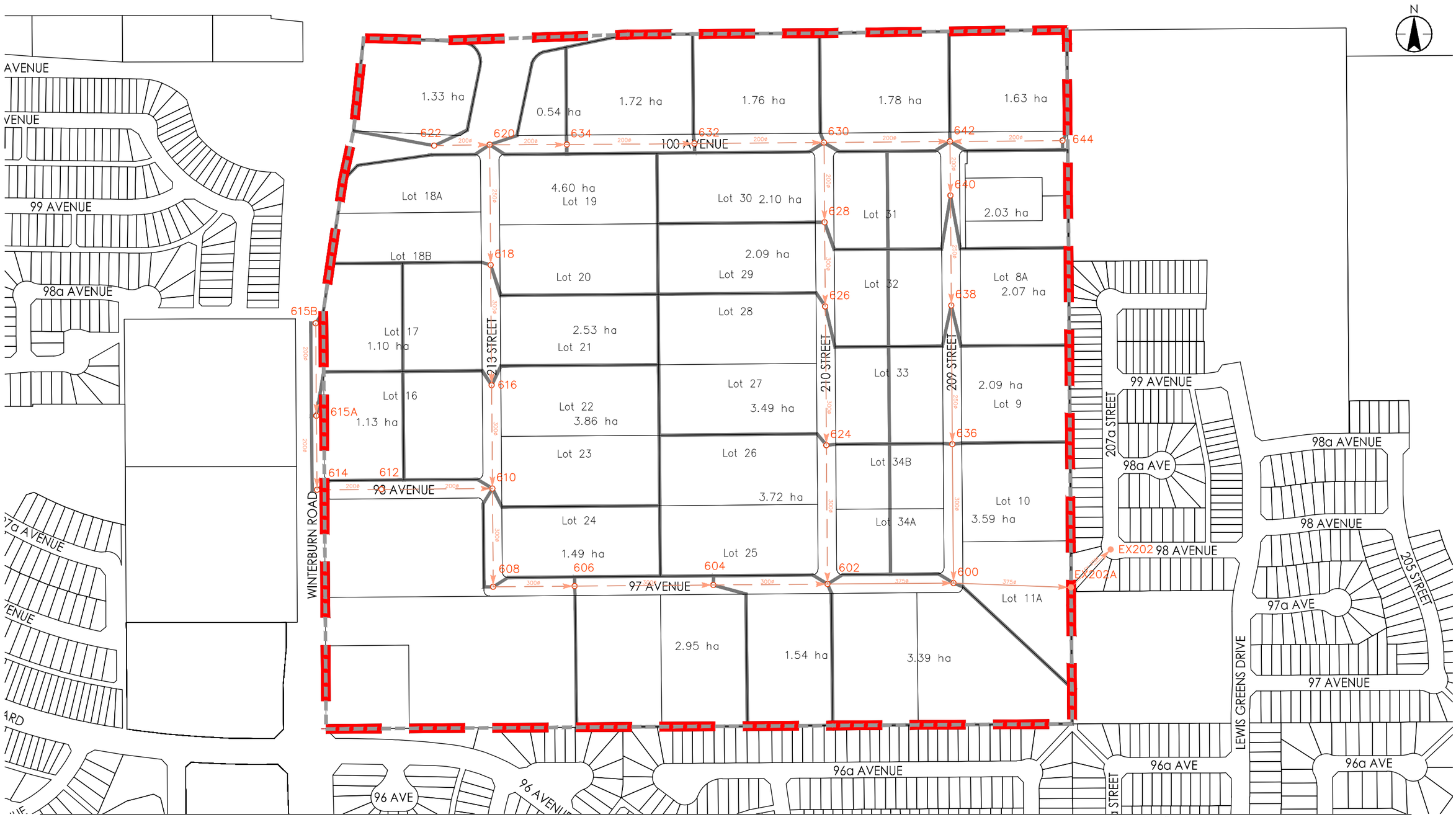
The assessable basin areas and costs, in 2018 dollars, for the sanitary trunks in the proposed development areas, based on the design completed as part of this servicing report, are calculated and summarized below. In addition to the onsite sanitary PAC's, the Lewis Farms Industrial area is subject to the WESS Expansion Assessment in the amount of $29,091 per hectare

Assessable Area (ha) for Lewis Farms Industrial	
Total Basin Area	*57.2*
Less Arterials / Road ROW	3.63
Less Natural Area / MR / Parks - assumed 10% of total basin area	5.72
Less SWMF / P.U.L.	0
Net Assessable Area	**47.85**

Onsite Sanitary Sewer Trunk Cost for Lewis Farms Industrial

Diameter (mm)		**Depth (m)**	**Length (m)**	**Est. Unit Cost ($/m)**	**Total Cost ($)**
	375	4-5	140	500	70,000
	375	7-8	130	650	84,500
Manholes (vm)					
1200mm			15	1,500	22,500
Sub-Total San Construction Cost					**177,000**
Engineering and Testing (15%)					26,550
Total Remaining Costs					**203,550**

$\frac{Total\ Remain.Trunk\ Cost}{Remain.Assessable\ Area} = Sanitary\ Basin\ PAC$	$\frac{\$203{,}550}{47.85\ ha} = \$4{,}254/ha$



Legend

- Study Area Boundary
- Sanitary Basin Boundary
- Sanitary Sub-catchment Boundary
- 2.95 ha — Sanitary Sub-catchment Boundary Area
- Proposed Sanitary Mains
- Proposed Sanitary Trunks
- 100 — Proposed Manhole
- 100 — Existing Manhole

Scale

1:10,000 (0, 100, 200, 300, 400, 500)

Client/Project

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STORM AND SANITARY SERVICE REPORT

Figure No.

3.1

Title

Proposed Sanitary System

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Table 3.1 - SANITARY SEWER CALCULATIONS

PROJECT : **Lewis Farms Commercial NDR**
JOB No. : **1161106395**
DATE : **Nov 2017**
DES. BY : **R.Karl**

General Inflow/Infiltration = 0.00028 m³/s/ha
Area Sag MH Inflow = 0.00012 m³/s/ha
Sag MH Inflow = 0.00040 m³/s/MH
Manning's n = 0.013
Per Capita Consumption = 300 l/p/day

From MH	To MH	Commercial Zoning	Flow (l/s/ha)	Added Area (ha)	Total Area (ha)	Added Q_{avg} (m³/s)	Total Q_{avg} (m³/s)	Peak Factor	Peak Flow (m³/s)	Area Sag MH Inf. (m³/s)	Gen. I/I (m³/s)	Design Flow (m³/s)	Pipe Length (m)	Pipe Diameter (mm)	Slope (%)	Req'd Cap. (m³/s)	Cap. (m³/s)	Ratio of Design vs Cap.	Design Flow Vel. (m/s)	Full Vel. (m/s)	Surf. Elev.	Invert Out	Invert In	Avg. Depth Range
		General	0.20	0.70		0.0001																		
644	642	IB	0.66	0.70	1.39	0.0005	0.0006	12.61	0.0075	0.0002	0.0004	0.0081	121.6	200	1.00	0.0094	0.0328	0.25	0.86	1.044	693.00	689.60	688.38	4.16
		General	0.20	0.76		0.0002																		
630E	642	IB	0.66	0.76	1.52	0.0005	0.0007	12.11	0.0079	0.0002	0.0004	0.0085	148.8	200	1.20	0.0099	0.0359	0.24	0.94	1.144	695.30	691.90	690.11	3.29
		General	0.20	0.93		0.0002																		
642	640	IB	0.66	0.93	4.77	0.0006	0.0021	7.24	0.0148	0.0006	0.0013	0.0168	58.3	200	0.40	0.0195	0.0207	0.81	0.73	0.660	693.30	688.32	688.09	5.14
		General	0.20	0.92		0.0002																		
640	638	IB	0.66	0.92	6.61	0.0006	0.0028	6.25	0.0178	0.0008	0.0019	0.0204	118.8	250	0.28	0.0237	0.0315	0.65	0.68	0.641	693.40	688.03	687.70	6.09
		General	0.20	0.92		0.0002																		
638	636	IB	0.66	0.92	8.45	0.0006	0.0036	5.60	0.0203	0.0010	0.0024	0.0237	150.0	250	0.28	0.0276	0.0315	0.75	0.70	0.641	694.50	687.64	687.22	7.42
		General	0.20	1.64		0.0003																		
636	600	IB	0.66	1.64	11.73	0.0011	0.0050	4.83	0.0244	0.0014	0.0033	0.0290	150.0	300	0.25	0.0338	0.0484	0.60	0.71	0.684	695.20	687.16	686.78	7.98
		General	0.20	0.20		0.0000																		
620E	634	IB	0.66	0.20	0.40	0.0001	0.0002	22.08	0.0038	0.0000	0.0001	0.0040	83.3	200	1.00	0.0046	0.0328	0.12	0.71	1.044	697.30	693.90	693.07	3.52
		General	0.20	0.72		0.0001																		
634	632	IB	0.66	0.72	1.84	0.0005	0.0008	11.11	0.0088	0.0002	0.0005	0.0095	138.0	200	0.40	0.0111	0.0207	0.46	0.65	0.660	696.70	693.01	692.45	3.67
		General	0.20	0.74		0.0001																		
632	630	IB	0.66	0.74	3.32	0.0005	0.0014	8.52	0.0122	0.0004	0.0009	0.0135	140.0	200	0.40	0.0157	0.0207	0.65	0.70	0.660	696.10	692.39	691.83	3.59
		General	0.20	0.96		0.0002																		
630	628	IB	0.66	0.96	5.24	0.0006	0.0023	6.94	0.0156	0.0006	0.0015	0.0177	86.2	200	0.50	0.0206	0.0232	0.76	0.81	0.738	695.30	691.77	691.34	3.44
		General	0.20	0.96		0.0002																		
628	626	IB	0.66	0.96	7.15	0.0006	0.0031	6.03	0.0185	0.0009	0.0020	0.0214	90.9	300	0.22	0.0249	0.0454	0.47	0.63	0.642	694.70	691.24	691.04	3.71
		General	0.20	1.61		0.0003																		
626	624	IB	0.66	1.61	10.36	0.0011	0.0045	5.11	0.0227	0.0012	0.0029	0.0269	150.0	300	0.23	0.0313	0.0464	0.58	0.68	0.656	695.00	690.98	690.64	4.04
		General	0.20	1.71		0.0003																		
624	602	IB	0.66	1.71	13.78	0.0011	0.0059	4.49	0.0266	0.0017	0.0039	0.0321	150.0	300	0.28	0.0373	0.0512	0.63	0.76	0.724	694.70	690.58	690.16	4.33
		General	0.20	0.64		0.0001																		
622	620	IB	0.66	0.64	1.27	0.0004	0.0005	13.13	0.0072	0.0002	0.0004	0.0077	60.0	200	1.20	0.0089	0.0359	0.21	0.91	1.144	698.20	694.80	694.08	3.31
		General	0.20	2.16		0.0004																		
620	618	IB	0.66	2.16	5.59	0.0014	0.0024	6.74	0.0162	0.0007	0.0016	0.0184	130.0	250	0.40	0.0214	0.0376	0.49	0.76	0.766	697.30	693.73	693.21	3.53
		General	0.20	1.15		0.0002																		
618	616	IB	0.66	1.15	7.89	0.0008	0.0034	5.77	0.0196	0.0009	0.0022	0.0227	130.0	300	0.22	0.0264	0.0454	0.50	0.64	0.642	696.70	693.15	692.86	4.04
		General	0.20	1.80		0.0004																		
616	610	IB	0.66	1.80	11.49	0.0012	0.0049	4.87	0.0241	0.0014	0.0032	0.0287	111.5	300	0.22	0.0333	0.0454	0.63	0.68	0.642	697.40	692.80	692.56	4.47
615B	615A	General	0.20	0.98	0.98	0.0002	0.0002	20.82	0.0041	0.0001	0.0003	0.0045	100.0	200	1.00	0.0052	0.0328	0.14	0.73	1.044	698.20	694.80	693.80	3.35
615A	614	General	0.20	1.00	1.98	0.0002	0.0004	15.17	0.0060	0.0002	0.0006	0.0068	80.0	200	0.41	0.0079	0.0210	0.32	0.60	0.668	697.10	693.74	693.41	3.72
614	612				1.98		0.0004	15.17	0.0060	0.0002	0.0006	0.0068	69.6	200	0.41	0.0079	0.0210	0.32	0.60	0.668	697.50	693.35	693.07	3.89
612	610				1.98		0.0004	15.17	0.0060	0.0002	0.0006	0.0068	120.0	200	0.41	0.0079	0.0210	0.32	0.60	0.668	696.70	693.01	692.51	4.04

From MH	To MH	Commercial Zoning	Flow (l/s/ha)	Added Area (ha)	Total Area (ha)	Added Q_{avg} (m^3/s)	Total Q_{avg} (m^3/s)	Peak Factor	Peak Flow (m^3/s)	Area Sag MH Inf. (m^3/s)	Gen. I/I (m^3/s)	Design Flow (m^3/s)	Pipe Length (m)	Pipe Diameter (mm)	Pipe Slope (%)	Req'd Cap. (m^3/s)	Cap. (m^3/s)	Ratio of Design vs Cap.	Design Flow Vel. (m/s)	Full Vel. (m/s)	Surf. Elev.	Invert Out	Invert In	Avg. Depth Range
		General	0.20	0.65		0.0001																		
610	608	IB	0.66	0.65	14.77	0.0004	0.0059	4.50	0.0265	0.0018	0.0041	0.0324	106.2	300	0.40	0.0377	0.0612	0.53	0.88	0.865	696.90	692.41	691.99	4.80
		General	0.20	1.32		0.0003																		
606	604	IB	0.66	1.32	17.41	0.0009	0.0070	4.16	0.0292	0.0021	0.0049	0.0362	150.0	300	0.40	0.0421	0.0612	0.59	0.90	0.865	696.10	691.52	690.92	4.03
		General	0.20	0.66		0.0001																		
604	602	IB	0.66	0.66	18.73	0.0004	0.0076	4.01	0.0305	0.0022	0.0052	0.0380	123.3	300	0.40	0.0442	0.0612	0.62	0.91	0.865	694.40	690.86	690.36	3.94
		General	0.20	1.57		0.0003																		
602	600	IB	0.66	1.57	35.64	0.0010	0.0149	2.97	0.0441	0.0043	0.0100	0.0584	136.2	375	0.40	0.0679	0.1109	0.53	1.02	1.004	694.70	690.08	689.54	4.89
600	EX202A				47.37		0.0199	2.60	0.0518	0.0057	0.0133	0.0708	127.1	375	0.40	0.0823	0.1109	0.64	1.06	1.004	694.70	686.71	686.20	7.09
EX202A	EX202				47.37		0.0199	2.60	0.0518	0.0057	0.0133	0.0708	57.7	375	0.45	0.0823	0.1176	0.60	1.11	1.065	692.39	686.15	685.89	5.85
EX202																					691.35			

Stantec

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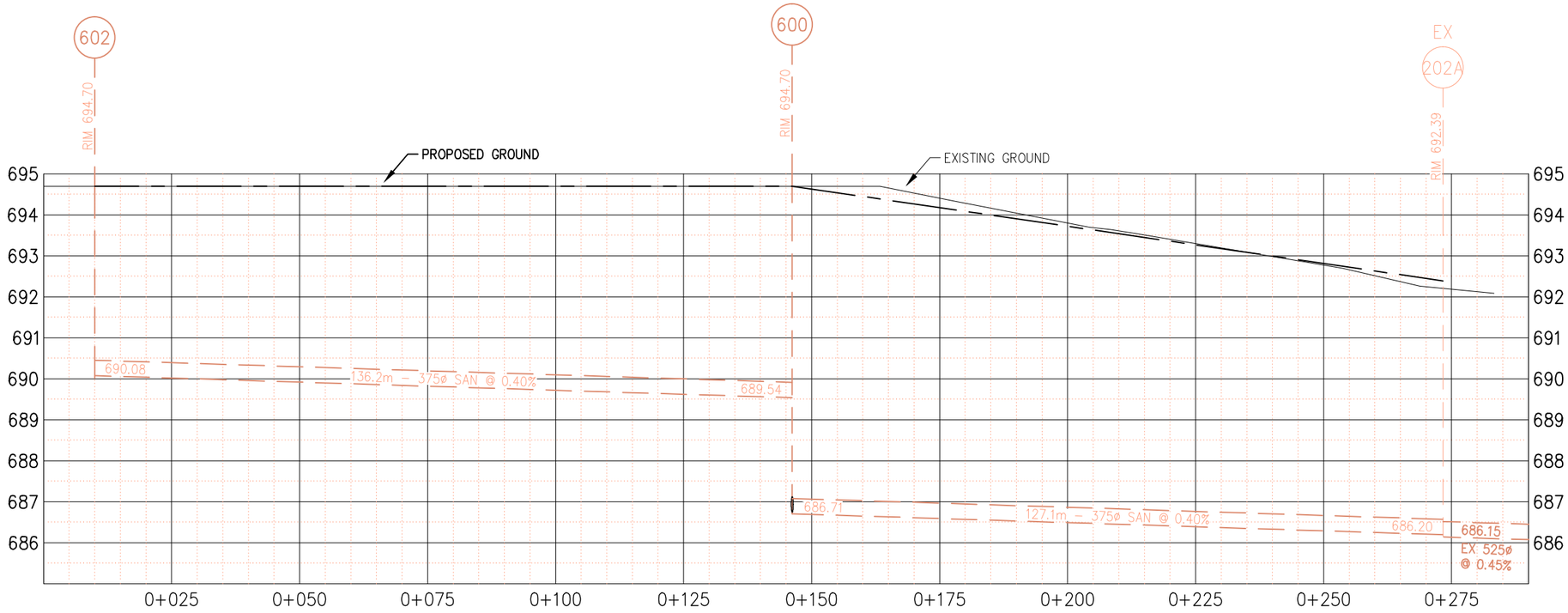

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Client/Project
KEVIN KERSWELL AND DARYN NAROSKI
LEWIS FARMS COMMERCIAL
STORM AND SANITARY SERVICE REPORT

Figure No.
3.2

Title
Sanitary Profile

November 2017 1161 106395

4.0 Conclusion

This report was prepared to provide an assessment of the storm and sanitary servicing feasibility for the proposed rezoning of lands located south of Stony Plain Road, east of Winterburn Road, north of Webber Greens, and west of Steward Greens. Based on calculations and an interpretation of downstream capacity results, we can confirm that storm and sanitary servicing for the proposed redevelopment is feasible, as follows:

Storm:

- Area A is currently being serviced through Webber Greens and we are currently not aware of any intentions to update its servicing.
- Area B is currently draining north to the Stony Plain Road ditch and is assumed to continue using this drainage as these lots are already zoned Business Industrial and are developed.
- Areas C and D are recommended to be serviced by the most feasible option of each lot storing the 5 year and 100 year storm, releasing at a controlled rate of 5 L/s/ha into ditches. The ditches divert the drainage from the lots as well as from the road into underground storage tanks which release at the calculated rates to the two existing tie in points. One tie in point into Webber Greens and the other into Stewart Greens.

Sanitary:

- Area A servicing remains unchanged. However since this site is a school site, a stub could be installed and connected into the proposed sanitary system in Areas B, C, and D as the school is off peak hours.
- Area B, C, and D are proposed to tie into the existing 375 mm sanitary sewer in Stewart Greens. In the interim, these lots can continue to be serviced by cisterns and trucked out when required.

We trust this meets with your requirements and the City can review and provide acceptance of the proposed servicing strategy presented in this report. Should you have any questions, or require further information, please contact our office.

APPENDIX A - STORM OPTION 1

STORM WATER MANAGEMENT FACILITY DESIGN

Option 1 - SWMF

PROJECT :	Lewis Farms Industrial Service Report
JOB No. :	1161106395
DATE :	November 2017
DES. BY :	R.Karl

DRAINAGE BASIN AREA	32.370	ha
5 YR RUNOFF COEFICIENT	0.900	
ALLOWABLE DISCHARGE RATE	0.098	**m³/s**
CONTROL ORIFICE:		
MAXIMUM DISCHARGE RATE	0.098	**m³/s**
STORAGE REQUIRED	37,652	**m³**

Storm Summary

	2 YEAR STORM	5 YEAR STORM	10 YEAR STORM	25 YEAR STORM	50 YEAR STORM	100 YEAR 4 HOUR	100 YEAR 24 HOUR	1937 STORM	1978 STORM	1988 STORM
Storage Volume (m³)	7,165	10,422	13,310	16,246	18,427	20,549	32,588	36,608	**37,652**	22,468
Maximum Water Level (m)	683.23	683.34	683.43	683.52	683.59	683.66	684.03	684.15	**684.18**	683.72
Maximum Discharge (m³/s)	0.034	0.046	0.054	0.061	0.066	0.070	0.091	0.096	**0.098**	0.074
Maximum Depth	0.23	0.34	0.43	0.52	0.59	0.66	1.03	1.15	**1.18**	0.72
C-Value	0.900	0.900	0.950	0.950	0.950	0.950	0.950	0.950	**0.950**	0.950
Drawdown time to allow for:										
5 yr event storage (hr:min)									**33:55**	
25 yr event storage (hr:min)									**54:55**	
90% major event storage (hr:min)									**extent table**	

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Table
Lewis Farms Industrial - Option 1 - Storm Pond Cost Estimate

Diameter (mm)	Depth (m)	Length (m)	Est. Unit Cost ($/m)	Total Cost ($)
525	0-4	490	550	270,000
525 Flared End (ea)		1	8,000	8,000
Manholes (vm)				
1200mm		8	1,310	10,000
Control MH		1	75,000	75,000
Stripping (m^3)		7,000	16.25	114,000
Excavation (m^3)		77,000	3.63	280,000
Lighting (lm)		650	170	111,000
Trail (lm)		650	380	247,000
Landscaping (ha)		2.20	200,000	440,000
Sub-Total Pond Construction Costs				**1,555,000**

APPENDIX B - STORM OPTION 2

STORM WATER MANAGEMENT FACILITY DESIGN

Option 2 - Upsized Pipes

PROJECT : Lewis Farms Industrial
JOB No. : 1161106395
DATE : November 2017
DES. BY : R. Karl

DRAINAGE BASIN AREA	3.620	ha
5 YR RUNOFF COEFICIENT	0.564	
ALLOWABLE DISCHARGE RATE	0.034	**m³/s**
MAXIMUM DISCHARGE RATE	0.032	**m³/s**
STORAGE REQUIRED	2,436	**m³**

Storm Summary

	2 YEAR STORM	5 YEAR STORM	10 YEAR STORM	25 YEAR STORM	50 YEAR STORM	100 YEAR 4 HOUR	100 YEAR 24 HOUR	1937 STORM	1978 STORM	1988 STORM
Storage Volume (m³)	417	614	830	1,026	1,287	1,510	1,853	1,470	**2,436**	956
Maximum Water Level (m)	683.18	683.26	683.35	683.42	683.51	683.59	683.71	683.58	**683.86**	683.40
Maximum Discharge (m³/s)	0.012	0.016	0.019	0.021	0.024	0.026	0.029	0.025	**0.032**	0.020
Maximum Depth	0.18	0.26	0.35	0.42	0.51	0.59	0.71	0.58	**0.86**	0.40
C-Value	0.564	0.564	0.620	0.620	0.677	0.705	0.705	0.705	**0.705**	0.705
Drawdown time to allow for:										
5 yr event storage (hr:min)									**6:45**	
25 yr event storage (hr:min)									**11:05**	
90% major event storage (hr:min)									**33:00**	

Lewis Farms Industrial - Option 2 - Upsized Pipes for Underground Storage Costs

Pipe Diameter	Depth (m)	Volume per m	Length Required (m)	Est. Unit Cost ($/m)	Total Cost ($)
1200	0-4	1.167	2142.115	1500	3,214,000
1350	0-4	1.478	1690.993	1700	2,875,000
1500	0-4	1.824	1370.504	1950	2,673,000
1800	0-4	2.627	951.531	3000	2,855,000

1500 mm pipe is most cost efficient **Total Cost** **2,673,000**

APPENDIX C - STORM OPTION 3

STORM WATER MANAGEMENT FACILITY DESIGN

Option 3 - West Sub-Basin

PROJECT :	Lewis Farms Industrial
JOB No. :	1161106395
DATE :	November 2017
DES. BY :	R, Karl

DRAINAGE BASIN AREA	1.870	ha
5 YR RUNOFF COEFICIENT	0.564	
ALLOWABLE DISCHARGE RATE	0.079	**m³/s**
CONTROL ORIFICE:		
MAXIMUM DISCHARGE RATE	0.078	**m³/s**
STORAGE REQUIRED	873	**m³**

Storm Summary

	2 YEAR STORM	5 YEAR STORM	10 YEAR STORM	25 YEAR STORM	50 YEAR STORM	100 YEAR 4 HOUR	100 YEAR 24 HOUR	1937 STORM	1978 STORM	1988 STORM
Storage Volume (m³)	191	271	353	425	520	600	557	546	**873**	331
Maximum Water Level (m)	683.09	683.12	683.16	683.19	683.23	683.26	683.27	683.25	**683.37**	683.15
Maximum Discharge (m³/s)	0.009	0.014	0.020	0.025	0.031	0.037	0.038	0.034	**0.078**	0.019
Maximum Depth	0.09	0.12	0.16	0.19	0.23	0.26	0.27	0.25	**0.37**	0.15
C-Value	0.564	0.564	0.620	0.620	0.677	0.705	0.705	0.705	**0.705**	0.705
Drawdown time to allow for:										
5 yr event storage (hr:min)									**2:00**	
25 yr event storage (hr:min)									**3:30**	
90% major event storage (hr:min)									**13:50**	

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STORM WATER MANAGEMENT FACILITY DESIGN

Option 3 - East Sub-Basin

PROJECT : Lewis Farms Industrial
JOB No. : 1161106395
DATE : November 2017
DES. BY : R. Karl

DRAINAGE BASIN AREA	1.750	ha
5 YR RUNOFF COEFICIENT	0.564	
ALLOWABLE DISCHARGE RATE	0.034	**m³/s**
MAXIMUM DISCHARGE RATE	0.034	**m³/s**
STORAGE REQUIRED	1,011	**m³**

Storm Summary

	2 YEAR STORM	5 YEAR STORM	10 YEAR STORM	25 YEAR STORM	50 YEAR STORM	100 YEAR 4 HOUR	100 YEAR 24 HOUR	1937 STORM	1978 STORM	1988 STORM
Storage Volume (m³)	198	281	350	422	526	616	640	578	**1,011**	357
Maximum Water Level (m)	683.09	683.13	683.16	683.19	683.23	683.27	683.29	683.26	**683.42**	683.16
Maximum Discharge (m³/s)	0.006	0.009	0.016	0.019	0.023	0.025	0.027	0.024	**0.034**	0.017
Maximum Depth	0.09	0.13	0.16	0.19	0.23	0.27	0.29	0.26	**0.42**	0.16
C-Value	0.564	0.564	0.620	0.620	0.677	0.705	0.705	0.705	**0.705**	0.705
Drawdown time to allow for:										
5 yr event storage (hr:min)									**3:35**	
25 yr event storage (hr:min)									**5:10**	
90% major event storage (hr:min)									**20:10**	

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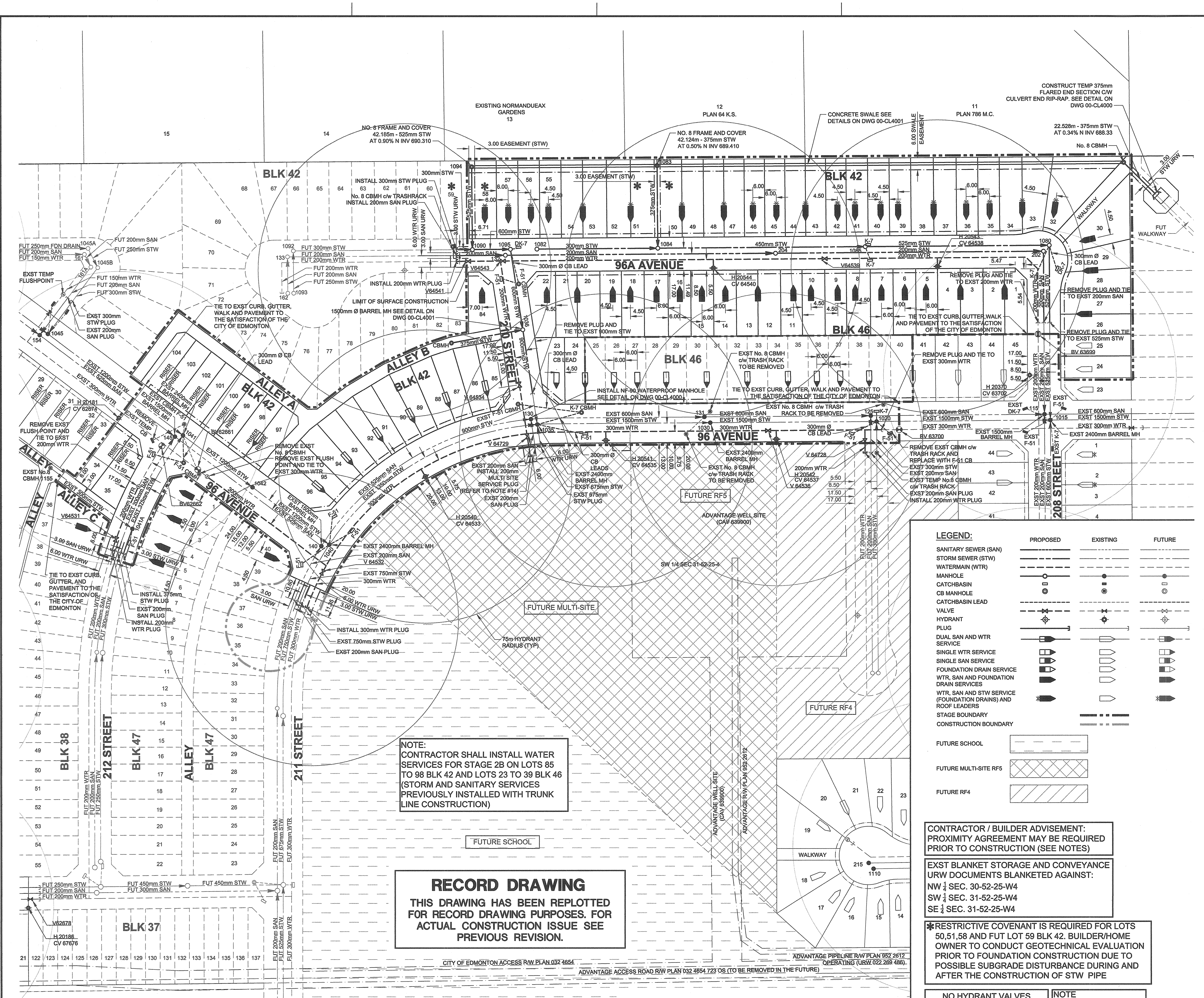
Lewis Farms Industrial - Option 3 - West and East Basin Underground Storage Costs

	Length (m)	Est. Unit Cost ($/unit)	Total Cost ($)
West Basin			
Gravel (m^2)	1000	26	26,000
Subgrade Prep (m^2)	1000	8	8,000
Excavation (m^3)	2000	4	8,000
Cost of Storage (installed) (m^3)	1000	300	300,000
Sub-Total - West Basin			**350,000**
East Basin			
Gravel (m^2)	1000	26	26,000
Subgrade Prep (m^2)	1000	8	8,000
Excavation (m^3)	2000	4	8,000
Cost of Storage (installed) (m^3)	1100	300	330,000
Sub-Total - East Basin			**380,000**
Total Construction Costs			**730,000**

APPENDIX D - STORM FIGURE 2.3



GENERAL NOTES:

1. ALL DIMENSIONS ARE IN METRES, UNLESS NOTED OTHERWISE.
2. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES WHETHER SHOWN ON THE DRAWINGS OR NOT.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BE FAMILIAR WITH ALL SAFETY PROCEDURES WHEN WORKING IN THE VICINITY OF EXISTING PIPELINES, OIL FLOW LINES AND POWER. THE CONTRACTOR SHALL CONTACT THE PIPELINE UTILITY PRIOR TO ANY CONSTRUCTION WITHIN THE PIPELINE R/W OR EXCAVATION WITHIN A 30m SAFETY ZONE. IN ACCORDANCE WITH THE NATIONAL ENERGY BOARD'S "EXCAVATION AND CONSTRUCTION NEAR PIPELINES" ALL EXCAVATION SHALL BE COMPLETED UNDER THE SUPERVISION OF THE PIPELINE OPERATOR'S INSPECTOR. FOR CANADIAN NATURAL GAS LIQUIDS PIPELINE R/W PLAN 6450, THE CONTRACTOR SHALL CONTACT:
   - VERN HEIDT, ADVANTAGE ENERGY AT (403) 443-0606 OR 1 (866) 266-5623 FOR FURTHER INFORMATION REGARDING APPLICABLE SAFETY AND CONSTRUCTION PRACTICES.

WATER NOTES:

1. ALL PROPOSED WATERMAINS 150mm TO 300mm ARE AWWA C-900 DR18 PVC PIPE. ALL PIPE TO HAVE CLASS 'B' BEDDING, UNLESS NOTED OTHERWISE.
2. ALL INSTALLATION OF WATERMAIN AND WATERMAIN FITTINGS MUST CONFORM TO THE CURRENT EDITION OF THE CITY OF EDMONTON DESIGN AND CONSTRUCTION MANUAL.
3. THE ENGINEERING CONSULTANT IS RESPONSIBLE FOR TURNING OFF ALL BOUNDARY VALVES AND FOR NOTIFICATION OF THE WATER DISPATCH (412-6800) AS TO WHICH VALVE IS BEING OPERATED AND WHETHER IT IS LEFT IN THE OPEN/CLOSED POSITION.
4. ALL BOUNDARY VALVES MUST BE OPERATED IN A MANNER WHICH PREVENTS CONTAMINATION OF THE EXISTING WATER SUPPLY IN ADJACENT WORKS.
5. ALL WATERMAINS SHALL BE TESTED AND DISINFECTED IN ACCORDANCE WITH THE "GUIDELINES FOR ACCEPTANCE TESTING OF NEW WATERMAINS IN THE CITY OF EDMONTON." OPERATING OF BOUNDARY VALVES, FLUSHING AND DISINFECTION PROCEDURES ARE TO BE REVIEWED AT THE PRE-CONSTRUCTION MEETING.
6. ALL PROPOSED WATER SERVICES TO BE 25mm KITEC B137.3, WITH HORIZONTAL GOOSENECKS UNLESS NOTED OTHERWISE.
7. KITEC SERVICES MUST BE A MINIMUM OF 2.0m FROM MANHOLE SHAFTS, LIGHT POLES, CABLES, CATCHBASINS, PEDESTALS AND TRANSFORMER'S GROUNDING RODS.
8. APPLY APPROVED PVC WATER PIPE JOINT LUBRICANT FOR POTABLE WATER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDED APPLICATION PROCEDURES.
9. HYDRANT 20540 TO BE FLOW TESTED.
10. ALL HYDRANTS TO HAVE THE HYDRANT NUMBER PAINTED ON PRIOR TO CCC. ALL HYDRANT DOMES, NOZZLE CAPS AND STEAMERS ARE TO BE PAINTED SAFETY BLUE USING BENJAMIN MOORE INDUSTRIAL MAINTENANCE RAPID DRY GLOSS ALKYD ENAMEL OR AN APPROVED EQUAL.
11. CLOSE & STOPPER ALL BOUNDARY VALVES FOR DURATION OF THE PROJECT.
12. CATCHBASIN LEADS TO BE A MINIMUM OF 3.0m FROM VALVE CASING.
13. CONSULTANT TO SUPPLY A FLUSHING STRATEGY PLAN TO BE REVIEWED WITH EPCOR WATER INSPECTOR PRIOR TO TO WATER MAIN ACCEPTANCE TESTING.
14. ON SITE BACK FLOW PREVENTION DEVICE REQUIRED AND SHALL CONFORM TO THE CANADIAN AND ALBERTA PROVINCIAL PLUMBING CODES, ON ALL WATER SERVICES THAT ARE LOOPED.

DRAINAGE NOTES:

1. ALL SANITARY SEWER ALTERNATIVES: (UNLESS NOTED OTHERWISE)
   A) PVC PIPE:
      200-375mm DIA - ASTM D-3034 SDR 35 PVC
      450-600mm DIA - ASTM F-679 SDR 35 PVC
      PIPE BEDDING SHALL CONFORM TO ASTM D2321.
   B) ULTRA-RIB PIPE:
      525mm DIA AND SMALLER - CAN/CSA B182.4-92 OR LATEST REVISION.
      PIPE BEDDING SHALL BE TO CSA B182.11-95 OR LATEST REVISION.
2. BACKFLOW PREVENTION DEVICES MUST BE INSTALLED BY LOT OWNERS ON ALL SANITARY SERVICES.
3. STORM SEWER AND STORM SERVICES:
   A) CONCRETE PIPE: SULPHATE RESISTANT, RUBBER GASKET, CONFINED O-RING
      250-525mm DIA - ASTM C14-CL3
      600-1200mm DIA - ASTM C655-CL3-65D
      PIPE BEDDING SHALL BE CLASS 'B' BEDDING.
   B) PVC PIPE:
      250-375mm DIA - ASTM D-3034 SDR 35 PVC
      450-675mm DIA - ASTM F-679 SDR 35 PVC
      PIPE BEDDING SHALL CONFORM TO ASTM D2321.
   C) ULTRA-RIB PIPE:
      525mm DIA AND SMALLER - CAN/CSA B182.4-92 OR LATEST REVISION.
      PIPE BEDDING SHALL BE TO CSA B182.11-95 OR LATEST REVISION.
4. CATCHBASIN LEADS ARE ASTM D-3034 SDR 35 PVC PIPE OR CAN/CSA B182.4-92 ULTRA-RIB PIPE UNLESS OTHERWISE INDICATED AND ARE AT MINIMUM 1.0% SLOPE, UNLESS NOTED OTHERWISE.
   -600mm CATCHBASINS TO USE 250mm DIA C.B. LEADS
   -900mm CATCHBASINS TO USE 300mm C.B. LEADS
   -SDR 35 AND ULTRA RIB PIPE REQUIRE MANUFACTURE'S FITTING TO C.B.
   -CATCHBASIN MH'S ARE 1200mm DIAMETER.
5. WEEPING TILES SHALL NOT BE CONNECTED TO THE SANITARY SYSTEM.
6. THE DISPOSAL OF WEEPING TILE FLOWS WHICH PROVIDE FOR SUB-SURFACE DISCHARGE OF ALL PROPERTIES IN THIS SUBDIVISION SHALL BE CARRIED OUT IN A MANNER ACCEPTABLE TO THE CITY OF EDMONTON BUILDING INSPECTIONS BRANCH OF THE PLANNING AND DEVELOPMENT DEPARTMENT.
7. ROOF LEADERS ARE TO DISCHARGE TO THE SPLASH PAD (SEE DETAIL ON DRAWING 00-CL1007) AS PER HYDROGEOLOGIC ASSESSMENT.
8. SANITARY SERVICE INVERTS TO BE AT MIN. 2.75m DEPTH AT PROPERTY LINE. STORM SERVICE AND FOUNDATION DRAIN SERVICE OBVERTS TO BE A MIN 2.00m DEPTH AT PROPERTY LINE.
9. A GRAVITY CONNECTION OF THE WEEPING TILES TO THE STORM AND/OR FOUNDATION DRAIN SERVICES IS NOT PERMITTED. BUILDERS/HOMEOWNERS ARE REQUIRED TO CONNECT SUMP PUMPS TO THE FOUNDATION DRAIN SERVICES.
10. WEEPING TILE SYSTEMS SHALL BE CONNECTED TO THE FOUNDATION DRAIN SERVICE ON ALL LOTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY OF EDMONTON FOUNDATION DRAIN DISCHARGE COLLECTION SYSTEM GUIDELINE, NOVEMBER 2005.
11. WHERE SEWER SERVICES ARE REQUIRED TO CONNECT TO MAINS MORE THAN 4.25m DEEP, RISERS SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF EDMONTON STANDARDS.
12. BUILDERS / HOMEOWNERS ARE REQUIRED TO CONNECT SUMP PUMPS AND ROOF LEADERS IN LOTS 32 TO 58, BLK 42 TO THE STORM SERVICES.

0 10 20 30 m SCALE 1:1000

LEGEND:

	PROPOSED	EXISTING	FUTURE
SANITARY SEWER (SAN)			
STORM SEWER (STW)			
WATERMAIN (WTR)			
MANHOLE			
CATCHBASIN			
CB MANHOLE			
CATCHBASIN LEAD			
VALVE			
HYDRANT			
PLUG			
DUAL SAN AND WTR SERVICE			
SINGLE WTR SERVICE			
SINGLE SAN SERVICE			
FOUNDATION DRAIN SERVICE			
WTR, SAN AND FOUNDATION DRAIN SERVICES			
WTR, SAN AND STW SERVICE (FOUNDATION DRAINS) AND ROOF LEADERS			
STAGE BOUNDARY			
CONSTRUCTION BOUNDARY			

FUTURE SCHOOL

FUTURE MULTI-SITE RF5

FUTURE RF4

NOTE:
CONTRACTOR SHALL INSTALL WATER SERVICES FOR STAGE 2B ON LOTS 85 TO 98 BLK 42 AND LOTS 23 TO 39 BLK 46 (STORM AND SANITARY SERVICES PREVIOUSLY INSTALLED WITH TRUNK LINE CONSTRUCTION)

CONTRACTOR / BUILDER ADVISEMENT:
PROXIMITY AGREEMENT MAY BE REQUIRED PRIOR TO CONSTRUCTION (SEE NOTES)

EXST BLANKET STORAGE AND CONVEYANCE URW DOCUMENTS BLANKETED AGAINST:
NW $\frac{1}{4}$ SEC. 30-52-25-W4
SW $\frac{1}{4}$ SEC. 31-52-25-W4
SE $\frac{1}{4}$ SEC. 31-52-25-W4

*RESTRICTIVE COVENANT IS REQUIRED FOR LOTS 50,51,58 AND FUT LOT 59 BLK 42. BUILDER/HOME OWNER TO CONDUCT GEOTECHNICAL EVALUATION PRIOR TO FOUNDATION CONSTRUCTION DUE TO POSSIBLE SUBGRADE DISTURBANCE DURING AND AFTER THE CONSTRUCTION OF STW PIPE

NO HYDRANT VALVES WITHIN SIDEWALK

NOTE
ROOF LEADERS REQUIRED ON LOTS 32 TO 58 BLK 42

BUILDERS NOTE:
DURING CONSTRUCTION BASEMENT PUMPOUT NOT PERMITTED TO SANITARY SYSTEM

PRE-SERVING OF FUTURE LOTS 1-4 AND 40 BLK 47 AS PART OF STAGE 2B CONSTRUCTION ARE AT DEVELOPERS RISK

RECORD DRAWING

THIS DRAWING HAS BEEN REPLOTTED FOR RECORD DRAWING PURPOSES. FOR ACTUAL CONSTRUCTION ISSUE SEE PREVIOUS REVISION.

NOTICE:
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PROFESSIONAL ENGINEER G. R. MAXWELL ALBERTA

PLAN OF RECORD

CONTRACTOR	DATE FROM	TO
WATERMAIN	AUG/10	SEPT/10
CONTRACTOR NAME	M.A.P WATER & SEWER	
SANITARY SEWER	AUG/10	SEPT/10
CONTRACTOR NAME	M.A.P WATER & SEWER	
STORM SEWER	AUG/10	SEPT/10
CONTRACTOR NAME	M.A.P WATER & SEWER	
SURFACE IMPROVEMENTS	SEPT/10	OCT/10
CONTRACTOR NAME	STANDARD GENERAL	

THE CITY OF EDMONTON
APPROVED
JIM WOOD — DEVELOPMENT ENGINEER PL & DEV.
MAY 26,2010 — DATE

I/R	YY/MM/DD	ISSUE/REVISION DESCRIPTION	DRN	CHK	DES	ENG	IDR	APP
2	12/05/29	Issued For Record	TN	EW				
1	10/06/28	Issued For Redline Approval	EW	-	LLK	DV	SJF	-
0	10/05/07	Issued For Construction	MA	WZ	LLK	DV	SJF	-

PROFESSIONAL SEALS

PERMIT TO PRACTICE
AECOM Canada Ltd.
Signature
Date MAY 31, 2012
PERMIT NUMBER: P10450
The Association of Professional Engineers, Geologists and Geophysicists of Alberta.

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Figure 2.3

Lewis Estates Communities Inc.
Webber Greens
Stage 2B
Overall Plan
Sanitary, Storm and Watermain

PROJECT NUMBER	DRAWING NUMBER	ISSUE/REVISION
1560-275-22	00-CL1001	2

A1 SIZE 23.39" x 33.11" (594.0mm x 841.0mm)
PLOT: 5/30/2012 2:26 PM
Saved By: nguyent6
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