Sunrise Investment Company Ltd.
South Gate Outline Plan - 2008
(Amended July, 2014)
(Amended November, 2015)
(Amended September, 2020)

UMA | AECOM

Amended July, 2014

Amended November, 2015

Amended September, 2020

Prepared for:
Sunrise Investment Co. Ltd.

Prepared by:
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Community Infrastructure
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July 4, 2008
File No.: 5296-012-00
Report No.: RPT-08-029

Amended by:

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July, 2014
Job No.: 070397CE

November, 2015
Job No.: 145632CE

Approved by the Muncipal Planning Commission February 2, 2016

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(Amended July, 2014)
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UMA | AECOM

South Gate Outline Plan Revision 2014
BYLAW AMENDMENT

Following and attached is a copy of the Amendment dated April 2014. April 2014 text changes are shown in red.

This Amendment forms an integral part of the South Gate Outline Plan and is to be read in conjunction therewith. However, should points arise which are at variance, this Amendment shall take precedence, unless otherwise clarified by the City of Lethbridge. 1d

DETAILS OF AMENDMENT

The intent of this application is to request consideration and approval of an Outline Plan Amendment for the South Gate Outline Plan, August 2008 (OP) by amending designated land uses to better fit with current market demands and infrastructure servicing strategies.

Due to changing market conditions, the planned multi-family site at Six Mile Crescent as configured does not meet current housing demands. Accordingly, single family residential uses are more desirable in this area at this time. Additionally, difficulties in extending infrastructure west through South Gate Boulevard have restricted stormwater servicing resulting in these proposed amendments to the servicing.

Several sections throughout the OP that require amending have been identified accompanied by textual changes if applicable. Attached Figures outline the areas affected by this proposed amendment.

South Gate Outline Plan Revision 2015
AMENDMENT

The intent of this application is to request consideration and approval for an Outline Plan Amendment for the South Gate Outline Plan, August 2008 and amended in July 2014.

This amendment proposes changes in the boundary of the Outline Plan.

Additionally, the City of Lethbridge is currently preparing an Area Structure Plan for SE Lethbridge that would encompass the balance of the land within the City boundary in SE Lethbridge as well as the balance of the undeveloped properties within the South Gate Area Structure, except for the properties detailed as Phase 3 and Phase 4 containing about **15.6 ha (38.5 acres)**. This amendment will not explain the reasons for these changes as they have already been directed by City Council.

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(Amended September, 2020)

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Other than the boundary change this amendment will focus on land use and servicing Phases 3 & 4 to ensure compatibility with the existing development in South Gate and to ensure compatibility and flexibility in dealing with the properties in the new SE Lethbridge ASP.

The land use for these plans remains as originally envisioned, that being Low Density Residential. We will not be addressing land uses or servicing in areas outside of Phase 3 & 4 as these will be dealt with in the new ASP. We will provide interface information (pipe flow, capacities, etc.) that could affect lands outside of Phase 3 & 4.

The sections throughout the Outline Plan that require amending have been identified in blue colored text. The attached figures have been amended to identify the changes proposed in this amendment.

AMENDED SECTIONS OF TEXT

List of Figures, Revised November 2015

List of Appendices, Revised November 2015

Appendix D – Land Use Allocation Statistics

Master Servicing Plan, Revised November 2015

Figure A – Water Distribution System
Figure B-1 – Sanitary Sewer System (INTERIM)
Figure B-2 – Sanitary Sewer System (ULTIMATE)
Figure C – Minor Storm System
Figure D – Minor Storm System
Figure E – Master Grading Plan

1.0 Introduction

1.1 Purpose

The purpose of the *South Gate Outline Plan* is to provide a detailed framework for development of the first phase, also known as the "West Neighborhood", designated by the *Southeast Lethbridge Urbanization Plan*, and is the next step in the planning process following the adoption of the *South Gate Area Structure Plan* by Council on February 23, 2004. The principles and objectives established in this Outline Plan will provide detailed information regarding the location, intensity, use and character of future land uses, as well as the circulation patterns, access points, and roadway network within the boundaries of the plan area.

This Outline Plan has been prepared as per the requirements of the City of Lethbridge South Gate Area Structure Plan, and in conformity with the City of Lethbridge Design Standards – Draft 2004m and the City of Lethbridge – Outline Plan Brief, dated December 8, 2003, as presented to UMA and area landowners on February 2, 2004.

1.2 Location and Area

The ***South Gate Outline Plan*** area is located in Southeast Lethbridge, encompassing an area of some 156.4 hectares (386.4 acres), as shown on **Figure 1.** The ***South Gate Outline Plan*** area includes:

- The southeast quarter and a portion of the southwest quarter of Section 21
- Portions of the southwest and northwest quarters of Section 22
- Portions of the northwest quarter of Section 16
- Portions of the northeast and northwest quarters of Sections 15

The ***South Gate Outline Plan*** area is physically bounded by the Fairmont Park Neighborhood to the north, the conceptual future re-alignment of the 43rd Street South corridor to the east, a future open space and storm water management corridor to the southeast, the northern limit of the River Valley Area Redevelopment Plan including Six Mile Coulee to the south, and Mayor Magrath Drive/Highway 5 to the west.

It should be noted that the ***South Gate Outline Plan*** has been prepared on behalf of Loblaw Properties West Inc., Sunrise Investment Co. Ltd., and Avonlea Land Corp. Ltd., whose holdings exist entirely within the southeast quarter of Section 21 (see **Appendix A**). It is important to ensure that issues such as servicing, circulation and land use are compatible and follow a rational sequence, which necessitates the development of a plan which encompasses an area greater in size than the parcels owned solely by the proponents. Accordingly, this Outline Plan contemplates development of the entire area contained with the *South Gate ASP*. It may be necessary to amend the Outline Plan at a later date in order to accommodate the development needs of future or different owners at such time that they choose to proceed with development of their lands.

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South Gate Outline Plan Revision 2020
AMENDMENT

Executive Summary

Following and attached is a copy of the Amendment dated September 2020, with the changes shown in green.

This Amendment forms an integral part of the South Gate Outline Plan and is to be read in conjunction therewith. However, should points arise which are at variance, this Amendment shall take precedence, unless otherwise clarified by the City of Lethbridge.

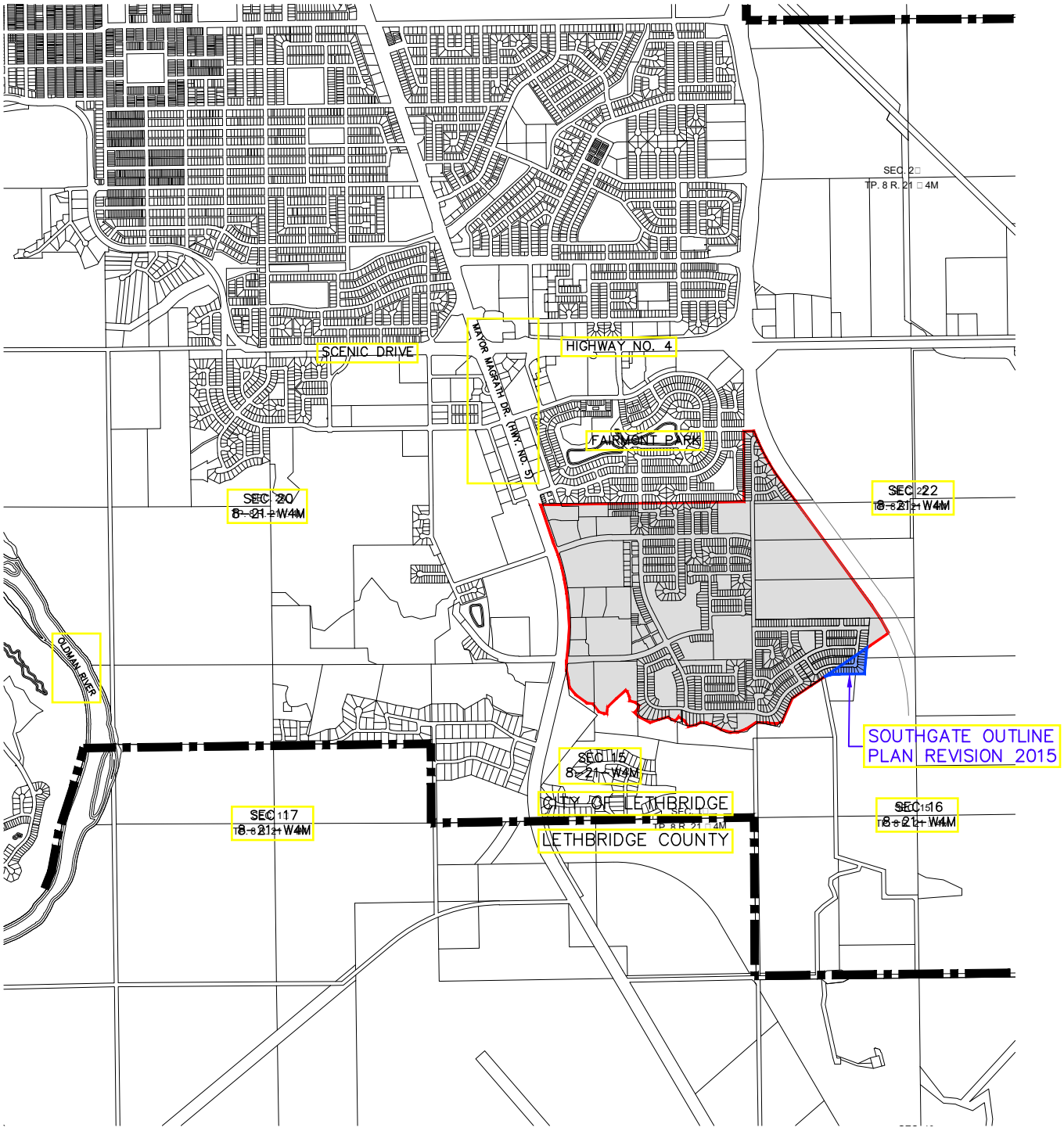
Details of Amendment

The intent of this application is to request consideration and approval of an Outline Plan Amendment for the South Gate Outline Plan, August 2008 (OP) and amended in July 2014 and November 2015.

The amendment proposes to change a high density use to a medium density use to provide a better range of accessible housing in the neighbourhood.

Due to changing market conditions, the planned high density site at 40th Avenue South and Couleecreek Boulevard South as configured does not meet current housing demand. Accordingly, medium density uses are more desirable in this area at this time. Additionally, there are site design challenges for a high density development such as meeting parking requirements and fitting building configurations.

Several sections throughout the OLP that require amending have been identified and accompanied by textual changes if applicable. Attached Figures outline the areas affected by this proposed amendment.



CLIENT/PROJECT:
DOMENIC LAND DEVELOPMENT LTD
SOUTHGATE OUTLINE PLAN REVISIONS 2014

FIGURE:
1

TITLE:
LOCATION PLAN

SOUTHGATE OUTLINE PLAN REVISIONS 2014 & 2015 COMPLETED BY MARTIN GEOMATIC CONSULTANTS LTD.. ORIGINAL OUTLINE PLAN 2008 COMPLETED BY UMA / AECOM.

UMA | AECOM

MARTIN GEOMATIC CONSULTANTS

Saved: 9–Dec–15 – By: [robm]

revised uma figures.dwg

1.3 Land Ownership

The land ownership pattern for the South Gate Outline Plan area is summarized in graphic and tabular format in Appendix A. The land is fragmented into eighteen parcels and several road allowances. The larger parcels are located within Section 21. Major land owners are: Avonlea Land Corp. Ltd (17.5 ha), Loblaw Properties West Inc. (17.4 ha), and Sunrise Investment Co. Ltd. (19.31 ha and 20.20 ha). Jointly, these four parcels comprise nearly half of the Outline Plan area.

1.4 Planning Context

The ***South Gate Outline Plan*** has been prepared within the context of the City of Lethbridge's planning hierarchy. The Outline Plan complies with the policies and land use designations contained within the *City of Lethbridge Municipal Development Plan,* the *City of Lethbridge Southeast Urbanization Plan*, and the *South Gate Area Structure Plan*, all of which conceptually designate this area of the city for future commercial development along Mayor Magrath Drive South, with residential and other ancillary development to the east.

In addition, specific land use within the city is regulated under the provisions of the *City of Lethbridge Land Use Bylaw* (LUB), Bylaw No. 4100 as amended. According to the LUB, portions of the ***South Gate Outline Plan*** area are districted DC – Direct Control. This includes an area immediately north of Six Mile Coulee and a 40 acre parcel in southwest quarter of Section 22 of Township 8, Range 21, West of the 4th Meridian. The balance of the area is districted UR – Urban Reserve. The purpose of the UR district is to control subdivision and development until the required municipal services are available, area structure or area redevelopment plans are approved, and more appropriate alternative districts are applied. Lands within the Outline Plan area will be redistricted to the appropriate land use districts, which are further discussed in Section 3.0, prior to, or in conjunction with, the subdivision of specific stages of development.

1.5 Public Participation

Extensive public participation has taken place throughout the preparation of the *Southeast Lethbridge Urbanization Plan,* the *South Gate ASP*, and the ***South Gate Outline Plan***. A number of meetings, both formal and informal, were held during the preparation of the *South Gate ASP* with residents of the Fairmont Park Neighbourhood to specifically discuss the interface treatment, and to resolve an issue related to the location of an existing fence located along the southern boundary of Fairmont Park, east of Fairmont Road. These issues have been addressed in detail in the *South Gate ASP*, and are also further discussed in Section 4.0.

In addition, an Open House was held on March 11, 2004 in order to provide all land owners, Fairmont Park residents, and any member of the public, an opportunity to ask questions or provide comments on the ***South Gate Outline Plan*** prior to final consideration by the Municipal Planning Commission.

2.0 Existing Conditions

2.1 Site Characteristics

The Outline Plan area has a rural to semi-rural character, comprising residential estates and small agricultural holdings and farms. Many of the existing farmsteads and residential estates are situated on either side of 43rd Street South and north of Six Mile Coulee. Much of the area has been extensively cultivated for many years, and the entire area has been subdivided into parcels no greater than 50 acres in size.

Forty-third Street South is a rural road that traverses the Outline Plan area north-south before heading east and then abruptly turning in a southerly direction. Parcels adjacent to Six Mile Coulee obtain road access from a private road along their northern boundary, which approximates the alignment of the extension of 40th Avenue. There are a number of planted shelterbelts along the property lines that define the existing small holdings located along 43rd Street South and 40th Avenue. Wherever possible, consideration should be given to retaining and integrating these stands into the future neighborhood.

The only commercial development that currently exists within the Outline Plan area is located on the east side of Mayor Magrath Drive immediately north of Six Mile Coulee.

An electrical substation is located to the northeast of the Outline Plan area, at the northeast corner of 24th Avenue South/Highway 4 and 43rd Street South. A 138 kV power line runs south from this substation.

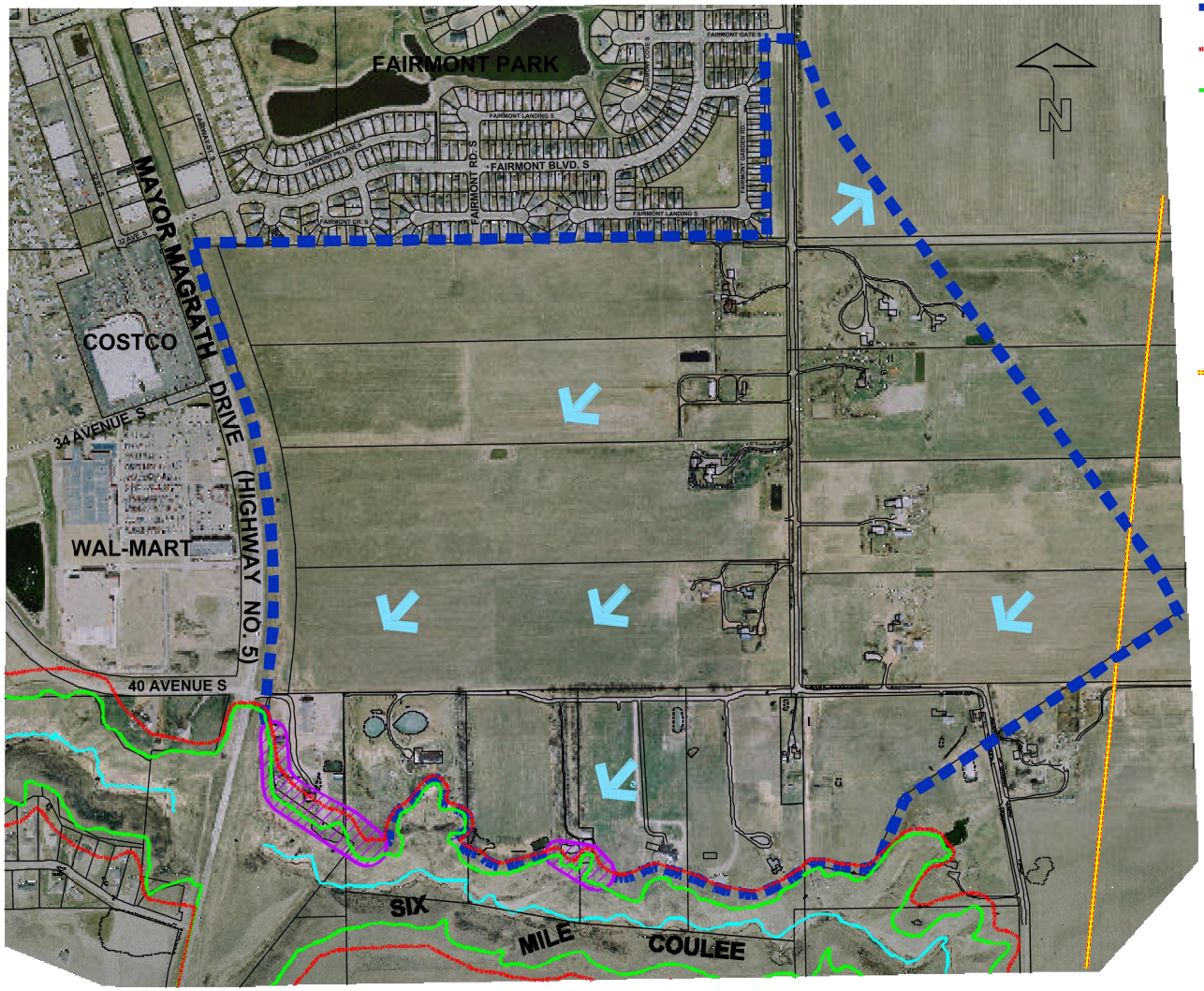
An existing irrigation system provides irrigation water from the St. Mary River Irrigation District to portions of the Outline Plan area. There are irrigation canals along both 43rd Street and 40th Avenue. The SMRID noted in a letter to the City of Lethbridge (see Appendix E), that the irrigation system would be disrupted by development and discussions with all parties should take place. In response, a meeting was held, the discussions of which are summarized in a letter from UMA Engineering to SMRID (see Appendix E).

This system also provides an opportunity to utilize irrigation water to supplement Storm Water management wet ponds.

Topographically, the Outline Plan area has level to gently sloping terrain. The upland to the north of Six Mile Coulee rises gently to a plateau extending northwest-southeast through the centre of Section 22. The plateau borders the northeast boundary of the Outline Plan area and defines the divide between land drainage to the northeast and southwest. The majority of the ASP area drains naturally to the southwest. Surface elevations on the upland fall gradually from an elevation of 918.5 meters above sea level in the northeast to some 909 meters in the southwest.

An ATCO pipeline high pressure gas pipeline runs diagonally through the property. It is contained within an existing Utility Right of Way. The east side of Phase 4 directly abuts the pipeline right of way. This City of Lethbridge Land Use Bylaw requires that no building be constructed within 15.0m of the pipeline. The portion of property that is within the 15.0m restricted area shall be protected by a right of way or other legal document that is registered on title.

Site characteristics and development considerations are shown in **Figure 2.**



LEGEND

- OUTLINE PLAN BOUNDARY
- DEVELOPMENT SETBACK LINE
- TOP OF BANK LINE
- DIRECTION OF DRAINAGE
- EXISTING RESIDENCES
- SITE SPECIFIC STUDIES REQUIRED TO ESTABLISH SETBACKS
- ATCO HIGH PRESSURE GAS LINE (ADDED NOVEMBER 2015)

0 500 1000 1500m

500 250 SCALE 1:12,500

Lethbridge
South Gate
Outline Plan

Development Constraints
Site Characteristics

Figure - 2

2.2 Geotechnical Evaluation

Six Mile Coulee is a major landscape feature that defines the southern limit of conventional urban development within the Outline Plan area. At Mayor Magrath Drive South the valley is approximately 32 meters deep. Slope stability investigations within the Outline Plan area are documented in the report *Phase II Development Setback Assessment Oldman River Valley Slopes*, prepared by AMEC Earth and Environmental Ltd., dated November 2002, for the City of Lethbridge.

The report establishes a development setback line, from the top of bank of Six Mile Coulee, for most of the southern boundary of the Outline Plan area. This line is significant as it determines the limit of development and defines the southern boundary of the Outline Plan area.

There are two zones along the southern boundary of the Outline Plan area for which the setback line was not established in the report, due to grading or some other form of alteration that has taken place on the slope or at the slope crest. General setback guidelines are not applicable in these areas and site specific geotechnical investigations will be required to establish the development setback line in support of a subdivision application for the affected properties. Top-of-bank and setback requirements are shown in Figure 2.

Additional geotechnical investigations will also be required within the area of stormwater Pond B due to its close proximity to the top-of-bank development setback. Additional engineering will also be required to ensure that Pond B will not impact the slope stability within the area.

2.3 Historical Resources

A study entitled *Historical Resources Overview of the Southeast Lethbridge Urbanization Plan Area* (January 2002) was completed by Arrow Ltd. Archaeological and GIS Consultants for the City of Lethbridge. The purpose of the study was to identify and assess the historical resource potential of lands within the boundaries of the *Southeast Lethbridge Urbanization Plan*. The study divides the *Southeast Lethbridge Urbanization Plan* area into three zones of historical resources potential. These include a high potential zone, a moderate potential zone and a low potential zone. As detailed in the study, the uplands that comprise the Outline Plan area have a low potential of containing historical resources due to the biophysical characteristics of the area. However, the lands in close proximity to Six Mile Coulee have a moderate potential for containing historical resources.

It should be noted that the historical resources overview is not a comprehensive investigation and inventory of archaeological and historical sites within Southeast Lethbridge. Therefore, the study recommended that Alberta Community Development be contacted to determine any further requirements under the *Alberta Historical Resources Act* prior to any land construction activities taking place. Accordingly, a draft version of the Outline Plan was sent to Alberta Community Development for their review. A letter, dated February 18, 2004 was received from Alberta Community Development indicating that a Historical Resources Impact Assessment is not required for the Outline Plan area. A copy of the letter is included as Appendix F.

3.0 Land Use Concept

3.1 Objectives

The objectives of the ***South Gate Outline Plan*** are:

- to guide urban development in an orderly and economical manner;
- to provide a detailed description and illustration that guides subsequent rezoning, subdivision, and development
- to provide a range of housing options reflecting future market and demographic conditions in Lethbridge
- to strategically locate commercial sites in order to easily serve the community and the region in a manner that will ensure their economic viability
- to respect existing urban development and to facilitate a smooth transition from rural to urban use
- to ensure that development is compatible with the quality and density of development to the north
- to establish urban design principles that will ensure an aesthetically pleasing and attractive neighbourhood
- to create a suitable interface with Six Mile Coulee, which will ensure its protection, while also allowing for appropriate active and passive recreational use.

The Land Use Concept to achieve these objectives is shown in **Figure 3**.

3.2 Overview

The urban form and character of the South Gate neighbourhood are significantly influenced by the collector roadway network and an extensive parks and open space system. Commercial development is strategically located along the existing Mayor Magrath Drive commercial corridor, while the balance of the Outline Plan will contain primarily low density residential dwellings interspersed with a number of strategically placed medium density residential sites. In addition, special consideration will be given to the integration of existing residential development, where possible, into the overall neighbourhood fabric. The allocation of land use is shown in Appendix D.
At assumed land use and population densities, the neighbourhood will support approximately 1792 housing units with an estimated population of 4,814. The residential density will be 37 persons per gross hectare excluding the commercial area. The proportion of **low and medium density residential development is estimated to be 88 percent low density residential units and 12 percent medium density residential units**.

The ***South Gate Outline Plan*** proposes the integration of future urban development with existing and adjacent land uses to create a quality residential neighbourhood and reinforce an economically viable commercial corridor.

3.3 Land Use Designations

3.3.1 Low Density Residential

Low density residential will be the predominant land use within the South Gate Neighbourhood, comprising 56.42 ha, or 43.4 percent of the Gross Developable Area. Low density residential uses typically include single detached and semi-detached housing forms.

'Innovative Housing' will be encouraged throughout the Outline Plan area, and may be achieved through the use of architectural controls and design covenants. Examples of innovations may include secondary suites, grow homes, self-contained servicing and/or energy systems and alternative development standards or other forms of innovation that respond to market, demographic or environmental factors. Some of these housing forms may require amendments to the Land Use Bylaw. Market forces will ultimately determine the extent of innovations in housing forms. Walk-out basements are proposed in strategic locations throughout the Outline Plan area, primarily adjacent to the storm water management facilities, and are shown in Figure 3. Additional nodes of walkout basements may be developed in areas where road grades can be adjusted without impacting overland drainage; however back-to-back walkouts will be discouraged.

It is proposed that all lands designated for low density residential development in the Outline Plan area shall be re-districted from their current designations, either DC, Direct Control or UR, Urban Reserve to R-L, Low Density Residential at an appropriate time prior to subdivision. The proposed zoning is shown in **Figure 3**.

3.3.2 Medium Density Residential

Medium density residential development, comprising **7.62 ha, or** 5.9 **percent** of the Gross Developable Area, may include a range of attached housing forms including triplexes, fourplexes, row housing and low rise apartments. These housing types may be developed for use as adult villas, senior's housing, gated communities, family-oriented developments, etc.
All medium density residential developments in the ***South Gate Outline Plan*** are conveniently located either adjacent, or in close proximity, to the collector roadway network, and are connected to the pathway system, in order to ensure adequate access to internal and external roadways and trail systems, neighbourhood parks, and the school site. These locations, along with adequate off-street parking, as per the requirements of the LUB, will help to minimize the infiltration and impact of high volumes of traffic through local residential pockets.

It is proposed that the majority of the lands designated for medium density residential development in the Outline Plan area shall be re-districted from their current designations, either **DC, Direct Control** or **UR, Urban Reserve** to **Medium Density Residential** (ranging from **R-37 to R-75**), at an appropriate time prior to subdivision. The one exception is the most northerly medium density site (approximately 1 ha), located adjacent to the Fairmont Park Neighbourhood. The nature and density of this development (active adult housing) has been pre-determined in order to respond to concerns from the residents of the Fairmont Park Neighbourhood. The most appropriate district to meet the needs of this development is **R-CM, Comprehensively Planned Medium Density Residential.** The proposed zoning is shown in **Figure 3**.

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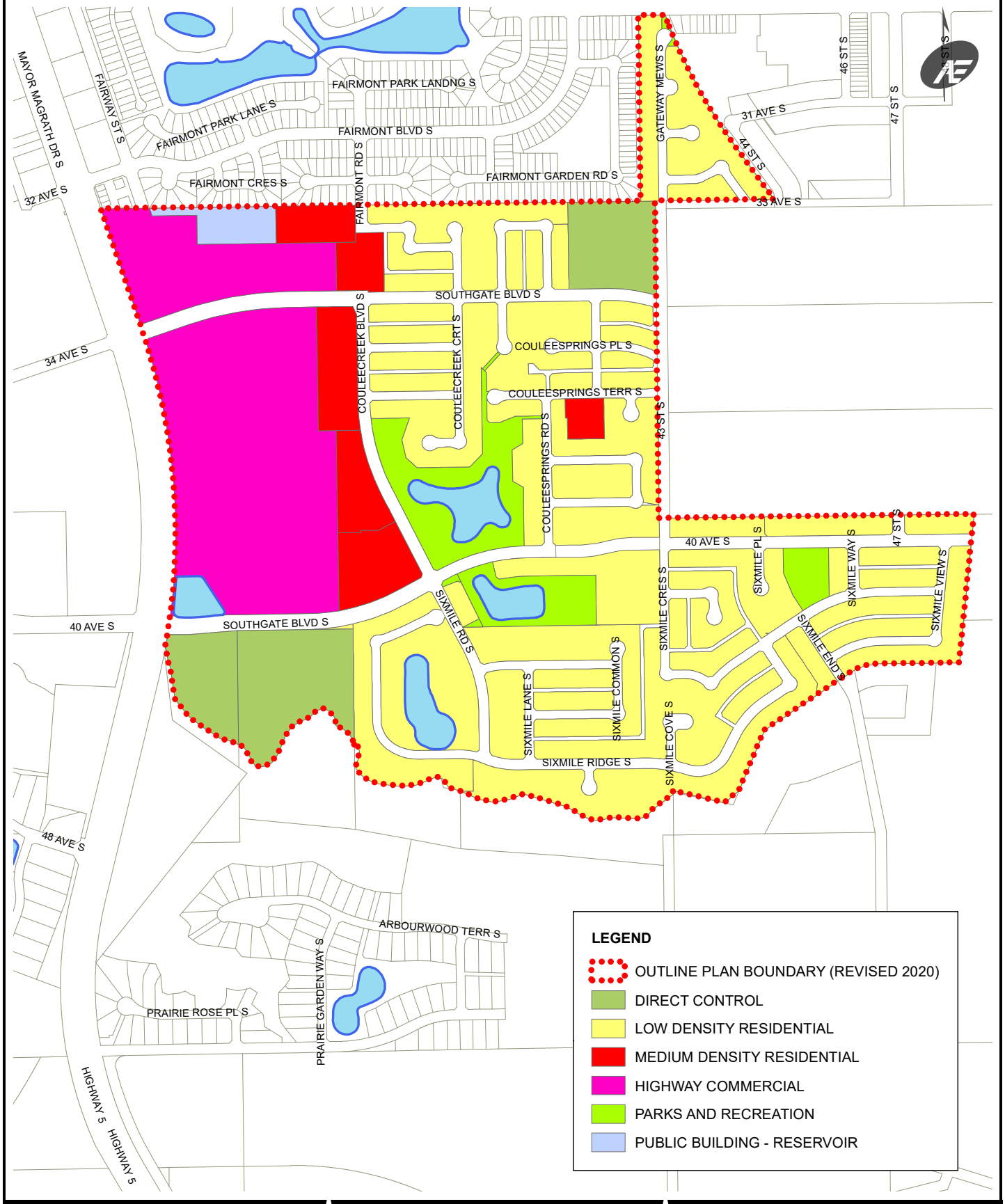
SCALE(S) SHOWN ARE INTENDED FOR LETTER (8.5X11) SIZE DRAWINGS UNLESS NOTED OTHERWISE



PLOT DATE: 2020-10-28
SAVE DATE: 2020-10-28
MXD PATH: P:\2017390000_Southgate_Family\Working_Dwgs\010_GIS\map_figure_landuse.mxd

Associated Engineering
GLOBAL PERSPECTIVE. LOCAL FOCUS.

BEST MANAGED COMPANIES
Platinum member

AE PROJECT No.	2017-3900-00
SCALE	NTS
APPROVED	B. CRAWFORD
DATE	2020-10-28
REV	A
DESCRIPTION	ISSUED FOR APPROVAL

FIGURE 1.0

CITY OF LETHBRIDGE
PLANNING

PLANNING
SOUTHGATE OUTLINE PLAN (REVISED 2020)
LAND USE

3.3.3 Commercial

All commercial development, comprising 25.6 ha, or 16.49% of the Outline Plan area, is to be located along the east side of the Mayor Magrath Drive commercial corridor, extending from the existing commercial development at the entrance to the Fairmont Park neighbourhood, south to Six Mile Coulee, south of 40th Avenue, and will be of a regional scale and nature. This location will ensure high visibility and ease of access while adding to the synergy and critical mass of existing commercial sites along the corridor. An open space corridor and water reservoir will provide a transition between commercial development and the adjacent residential development in Fairmont Park. Access to and from the commercial developments is discussed in further detail in Section 5.1.

It is proposed that all lands designated for commercial development in the Outline Plan shall be redistricted from their current designations, either **DC, Direct Control** or **UR, Urban Reserve** to **C-H, Highway Commercial** at an appropriate time prior to subdivision. The proposed zoning is shown in **Figure 3**.

3.3.4 Parks and Open Space System

The parks and open space system in the South Gate Neighbourhood, as shown in Figure 3, will consist of an integrated pathway network, a central neighbourhood park and school site, and several neighbourhood parks developed in conjunction with storm water management facilities (SWMF), comprising 19.13 ha (12.33%) of the Plan area. Elements of the system are discussed below:

Central School Site
A central public elementary school site will be a focal point of the neighborhood's overall open space system, serving not only the South Gate Neighborhood, but surrounding neighborhoods as well. The site will be situated on the 40th Avenue leg of the collector loop to facilitate ease of pedestrian, automobile and bus access. The location has been established through discussions with School District No. 51. A site of approximately 5.60 ha has been designated in this Outline Plan, although the exact site size and configuration may be further refined at the subdivision and detailed design stage.

Neighborhood Parks & Storm Water Management Facilities

The Land Use Concept designates four neighbourhood parks located in proximity to, and to be developed in conjunction with, three major storm water management facilities (SWMF). These parks will provide amenity value for the neighbourhood by providing a combination of playground opportunities, informal play areas and sitting areas. The four neighbourhood parks are described as follows:

- Two neighbourhood parks will be developed in conjunction with the storm water management facility which will straddle 40th Avenue South, just east of the north-south major collector. The first ('Park A') will be located on the east side of the north-south major collector, at the northern end of the storm water management facility. The second park ('Park B') will be located at the southern end of the SWMF, south of 40th Avenue South. Jointly, this park / storm water management facility will include 8.35 ha of land, including a 3.0 ha storm pond.
- Two additional neighbourhood parks will be developed, one in the south-west portion of the Plan area, referred to as 'Park C', and located in the southeast close to Six Mile Coulee. This neighbourhood park, approximately 2.17 ha in size, including a 1.00 ha storm pond. A walkway to the east of the pond will also provide neighbourhood access to Six Mile Coulee and a top-of-bank trail system. The final neighbourhood park, referred to as 'Park D', and 2.78 ha in size, is located in the south-east portion of the plan area. Both of these parks will also be developed in conjunction with storm water management facilities.

The storm water management facilities will provide additional visual amenity, passive recreational opportunities and functional open space to the South Gate Neighbourhood. It is intended that the SWMF's in Park A, B, and C will be developed as wet ponds, while Park D will contain a dry pond. These facilities will provide water quantity and quality management prior to storm water discharge into the Six Mile Coulee drainage basin. Treated storm water may also be used to irrigate parks, the school site and other open space uses.

No neighbourhood park space has been designated north of 34th Avenue South, as the residential development is in close proximity to the parks and open space features of the Fairmont Park Neighbourhood.

Municipal Reserve

The dedication of Municipal Reserve (MR) will be the primary tool used to facilitate the development of the parks and open space system shown in the Land Use Concept. Although the water surface of storm water management facilities will not be eligible for Municipal Reserve, it is agreed that any lands located above the high water level may be considered for Municipal Reserve credit, at the discretion of the Subdivision Authority. For the purposes of clarity, the entire SWMF will be registered as a MR parcel, however, only the appropriate lands located above the high water level will receive actual MR credit.

The creation of a coherent parks and open space system requires that Municipal Reserve will be distributed unequally among the multiple parcels of land. Where the Outline Plan indicates that less than ten per cent is required to be dedicated in parcel form, cash-in-lieu will be taken at the time of subdivision. Where a landowner is required to dedicate more than ten per cent in parcel form, a compensation mechanism will be required to provide equitable treatment to all landowners. The City will compensate land owners who are required to dedicate more than 10% of their land as MR.

Also important to note is that the City of Lethbridge requires 10.0 per cent MR dedication for areas of residential development, based on Gross Developable Area (GDA), and typically taken in parcel form (but also cash-in-lieu where sufficient lands have been acquired). Areas of commercial development are required to provide 5.0 per cent MR, again based on GDA, and typically provided in the form of cash-in-lieu.

It is proposed that all lands designated for parks and open space development in the South Gate Outline shall be re-districted from their current designations, either DC, Direct Control or UR, Urban Reserve to P-R, Park and Recreation at an appropriate time prior to subdivision. The proposed zoning is shown in Figure 3.

3.3.4 Other Land Uses

There is also a 1.05 ha site designated as a 'Reservoir' between the regional commercial area and Fairmont Park, along with a 0.13 ha PUL to the west which will provide access to the facility. It is proposed that these lands shall be re-districted from its current **UR, Urban Reserve** designation to **P-R, Park and Recreation** at an appropriate time prior to subdivision. The proposed zoning is shown in **Figure 3**.

4.0 Urban Design

4.1 Buffering and Interface Treatments

The interface between the South Gate Neighbourhood and the existing Fairmont Park Neighbourhood is given special consideration and comprises three approaches. See Appendix B for more detailed information.

Where existing residential lots in Fairmont back onto proposed residential lots in South Gate east of the southerly extension of Fairmont Road, residential development area will be similar in form, lot size and density to existing residential development.

An existing fence, currently located approximately 1.0 meter north of the property boundary of those properties abutting the southern boundary of the Fairmont Park Neighbourhood, will be relocated to the property line, to more appropriately define the parcel boundaries, and to eliminate the need to construct a second parallel fence line within such close proximity.

West of the southerly extension of Fairmont Road, an active adult multi-family housing development will act as a transition between the commercial and residential land uses. Additional landscaping will be provided by the developer of the adult multi-family housing development adjacent to the southern boundary of Fairmont Park. Immediately to the west, a water reservoir on a landscaped site will serve as the land use transition between Fairmont Park and the South Gate commercial lands. A 15.0 meter landscaped open space corridor, registered as a public utility lot (PUL) to the west will serve as access to the reservoir and also as a buffer between residential and commercial land use.

In addition, all commercial development shall be required to provide a high level of site landscaping and design, in accordance with the requirements of the Land Use Bylaw. This will reduce the visual impacts of commercial development in areas where residential and commercial uses abut.

In addition, a solid six-foot fence will be constructed by the developer along the southern boundary of the commercial lands north of Lot 1, Block 1, Plan 9610597 when commercial development proceeds.

4.2 Architectural Controls

The establishment and enforcement of architectural controls on residential development, typically registered by the developer on title subsequent to subdivision and the registration of titled lots, is a practice which is becoming more common in new residential neighborhoods. The intent of the architectural controls is to provide a set of design and development rules and guidelines that each home builder and subsequent owners are required to follow, such as:

- Minimum square footage or building footprint,
- Requirement for an attached garage,
- Fencing materials and appearance (i.e. fence materials, height, etc.),
- Roofing materials and appearance (i.e. roofing materials, pitch, etc.),

- Diversity of floor plans (i.e. same floor plan must be at least 4 lots away if on the same side of the street, etc.), and
- Exterior finish (i.e. siding materials, specified range of colors, etc.)

Architectural Controls can provide a level of comfort for home buyers who may be concerned that subsequent phases may be developed to a different standard, and often also help to encourage innovation, and establish a unique character or sense of community for a neighbourhood. Architectural Controls are not an issue typically dealt with by municipalities, and are therefore left to the developer to establish and enforce, and the homeowner to respect.

It is anticipated that the developers of the South Gate Neighbourhood will incorporate Architectural Controls for the low and medium density residential development areas, which may include, but are not limited to, the elements discussed above. Further details will be determined by the developer at the subdivision stage.

4.3 Subdivision Entrance Features

Subdivision entrance features help to provide neighbourhood residents, as well as visitors, a means of way-finding, and also help to define and establish a neighborhood's character and sense of pride and community. It is anticipated that neighbourhood entrance features will be developed at 3 key locations, as outlined below:

- 34th Avenue South – at the eastern boundary of the commercial area as you enter the residential neighbourhood.
- 40th Avenue South – same as above
- Future major collector access at 43rd Street South.

5.0 Circulation Network

5.1 Roadways and Access Points

The primary all-directional access points for the South Gate Outline Plan area will be from Mayor Magrath Drive along the western boundary of the Plan area, at 34th Avenue South and 40th Avenue South, and from 43rd Street South at the south-east corner of the plan area.

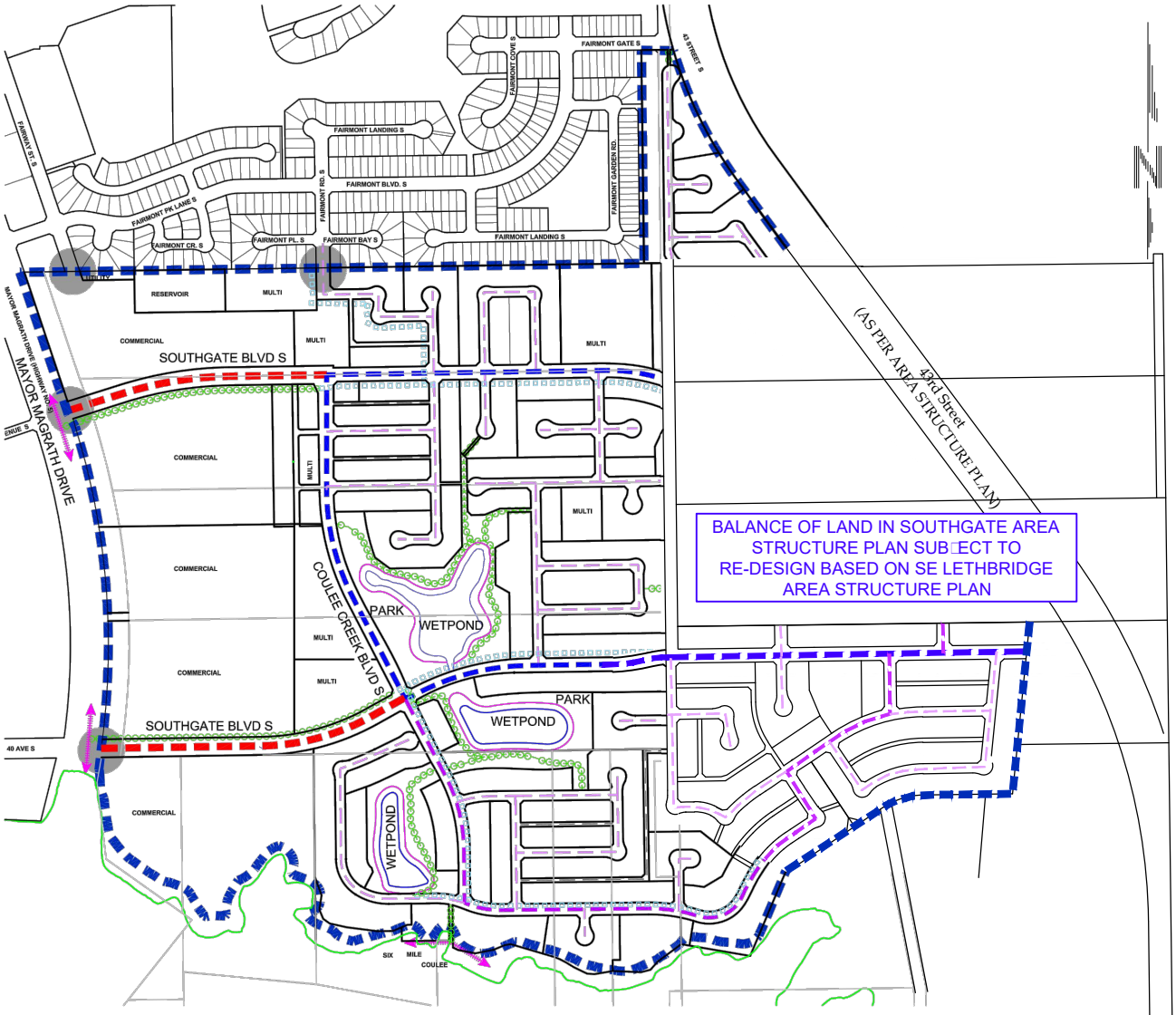
Forty-third Street South is proposed to be re-aligned some distance to the east in order to avoid disruption to existing residences and to cross Six Mile Coulee further south. The existing 43rd Street South r.o.w. will ultimately be closed and integrated into the neighbourhood. The alignment of, and access to, 43rd Street South represent the best information available at the time of the submission of this Outline Plan and are subject to refinement through functional planning or other studies. In addition, the land use and circulation patterns illustrated by the Land Use Concept, particularly in eastern portions of the plan area, may require some alteration to fit with the ultimate alignment of 43rd Street South. Both Mayor Magrath Drive and 43rd Street South are the subject of functional planning studies to confirm right-of-way requirements, access management standards, roadway cross-sections and other functional considerations.

The Outline Plan circulation network, as shown in **Figure 4**, illustrates a total of six access points to the neighbourhood, namely:

- 34th Avenue South at Mayor Magrath Drive (all-directional),
- 36th Avenue South at Mayor Magrath Drive – commercial access only (all-directional),
- 40th Avenue South at Mayor Magrath Drive (all-directional),
- South-east portion of the plan area, accessing 43rd Street South (all-directional),
- North-east portion of the plan area, accessing 43rd Street South (transit only), and
- Fairmont Road (north-central portion of the plan area), providing access to and from the Fairmont Park Neighbourhood.

Thirty-Fourth Avenue South and 40th Avenue South will be constructed as super collectors, with a r.o.w. width of 30.0 meters, adjacent to the commercial lands, then continue as major collectors, with a r.o.w. width of 23.0 meters, into the residential area. They will both extend east approximately 800 meters and then turn towards one another, joining to form a continuous loop through the neighbourhood. In addition, a major collector roadway will provide north-south mobility just east of the regional commercial area between 34th Avenue South and 40th Avenue South.

All-directional access to the regional commercial lands from 34th Avenue South and 40th Avenue South will be constructed approximately 200 meters east of Mayor Magrath Drive. This spacing may be adjusted, subject to a Traffic Impact Assessment (TIA) and further detailed design. Right-in – Right-out intersections into the commercial lands from Mayor Magrath Drive may also be constructed, subject to a TIA.



LEGEND

- OUTLINE PLAN BOUNDARY
- PATHWAY
- REGIONAL TRAIL
- PEDESTRIAN ROUTE (USING SIDEWALKS)
- SUPER COLLECTOR ROAD
- MAJOR COLLECTOR ROAD
- MINOR COLLECTOR
- LOCAL ROAD
- LANE
- MAJOR NEIGHBORHOOD ACCESS POINTS

NOVEMBER 2015 PLAN ADJUSTMENT
1. MAJOR COLLECTOR ROAD AND LOCAL ROAD LAYOUT

CLIENT/PROJECT:
DOMENIC LAND DEVELOPMENT LTD
SOUTHGATE OUTLINE PLAN REVISIONS 2014

SOUTHGATE OUTLINE PLAN REVISIONS 2014 & 2015 COMPLETED BY MARTIN GEOMATIC CONSULTANTS LTD.. ORIGINAL OUTLINE PLAN 2008 COMPLETED BY UMA / AECOM.

FIGURE:
4

TITLE:
CIRCULATION NETWORK SITE PLAN REVISED NOVEMBER 2015

UMA | AECOM

MARTIN GEOMATIC CONSULTANTS

Thirty-sixth Avenue South will also be constructed as a super collector, located on private land, and will provide all-directional access into the regional commercial lands to the east, subject to a TIA. Thirty-Sixth Avenue South will not extend into, or provide access to, the residential area.

Only one all-directional access to 43rd Street South is shown on the Land Use Concept, which will follow a circuitous collector roadway connection to the internal collector loop. The purpose of this link is to provide reasonable access to 43rd Street, particularly for the residents of the eastern portion of the neighbourhood, as well as emergency access, however, the objective is to minimize access points to 43rd Street South in order to maintain a high level of service for traffic flows on the future roadway and prevent short-cutting through the neighbourhood.

A dedicated 'transit only' access point, which would also serve as an emergency access, may be developed in the north-east portion of the plan area, connecting the collector loop road with 43rd Street South, approximately 400 meters south of the intersection of 43rd Street South and Fairmont Gate South. It is also expected that the functional plan for 43rd Street South will provide direction as to appropriate noise attenuation measures for adjacent residential development. Noise attenuation may include berming, fencing, spatial separation or a combination thereof.

Access to and from Fairmont Park will be provided through a local road connection, which will be sufficiently offset to provide an accessible, yet indirect, circuitous route in order to minimize the risk of shortcutting through the two neighborhoods.

The internal roadway network has been designed using a combination of through-roads, p-loops, and cul-de-sacs, which will, in conjunction with the collector roadway network, create distinct nodes or pockets within the neighbourhood, while still allowing for convenient neighbourhood access. All minor collector roadways will require a 20.0 meter r.o.w, while all local roads will require a r.o.w. of 16.5 meters.

The majority of the neighbourhood will have only front-of-lot access; however, two small areas will include lanes, as shown in **Figure 4**. These areas are located:

- South of 34th Avenue South, on the west side of the north-south collector and adjacent to the commercial lands, and
- South of 40th Avenue South, directly south from the institutional site.

As per City standards all lanes will require a 7.0 meter r.o.w., and shall be paved.

An existing road plan (Plan 1734 LK) adjacent to the eastern edge of Mayor Magrath Drive, originally intended to provide for a service road along the east side of Mayor Magrath Drive, is no longer required and is proposed to be closed and consolidated with lands to the east to form part of the commercial development. Similarly, other road allowances throughout the plan area (including the existing 43rd Street South) will be closed and consolidated with adjacent lands as development proceeds and as transportation route alternatives are constructed.

The road network has been changed to reflect the change from multi-family to single family. The 20m minor collector off Southgate Blvd. that connects to 43rd Street has been adjusted to reflect the revised roadway layout. Road closures for portions of 43rd Street are required as each phase is developed. Additionally as each phase is developed, traffic accommodations must be made for 43rd Street traffic through the phase. Storm water drainage from the existing 43rd Street and undeveloped lands north of each phase of development must be accommodated on a temporary basis.

The southerly leg of South Gate Blvd. South has been changed to continue straight easterly instead of looping northerly to the north leg of South Gate Blvd. 43rd Street will be changed from an arterial to a collector and will be in a different location than originally shown in the Outline Plan. This amendment will not address roadway changes required outside the boundaries of Phase 3 & 4, other than to ensure adequate road connections which will be compatible with the proposed SE Lethbridge ASP. This internal road network in Phase 3 & 4 has been recommended to reflect the boundary changes and to meet servicing and drainage requirements.

5.2 Pathway Network

An integrated pathway network will link local amenities, including the school site, neighbourhood parks, Six Mile Coulee and the Storm Water management facilities. The system will provide opportunities for recreation and non-motorized transport throughout the neighbourhood. In addition, the pathway network is designed to connect with the City's regional trail system, which may be extended along 34th Avenue South and 43rd Street South in the future.

In order to provide public access to scenic vistas and viewpoints along Six Mile Coulee a series of pathways is also shown along the coulee's top-of-bank. The Land Use Concept shows three access points from the residential area to the coulee to minimize damage or disruption to the natural resources and environment of the coulee. The pathway network is shown in **Figure 4.**

5.3 Transit

Transit routes are preferably placed on public collector roads. A route may be placed on a local road either temporarily or permanently depending on the circumstance and at the discretion of the Transit Manager. Public collector roadways will be designed to meet the current City of Lethbridge Design Standards to ensure adequate space and durability for transit vehicle passage. Transit routes and stop locations will be determined as the neighbourhood develops and may be subject to change. Transit Standards may change between the OLP approval and the implementation of a transit route in a new neighbourhood.

5.4 Community Mailboxes

The final location of community mailboxes will be determined in conjunction with Canada Post at the time of detailed design. Community mailboxes are typically located adjacent to the City sidewalk along the frontage of corner lots, or along the opening park space. Transit bus stops will not be combined with community mailbox sites.

6.0 Utility Servicing

6.1 Water Supply and Distribution

The proposed water supply and distribution system for the South Gate area closely follows that described in the Area Structure Plan and the *Southeast Lethbridge Urbanization Plan.* The proposed water supply and distribution system is shown within the attached Master Servicing Plan on **Drawing 01-CL-1001**.

Initially, the source of supply for the South Gate water distribution system will be a 450 mm diameter distribution main along Mayor Magrath Drive. An existing 450 mm diameter main ending at 28th Avenue South will be extended to 34th Avenue South as part of the Mayor Magrath Drive South Upgrade. The 450mm diameter main will eventually be extended south to 40th Avenue South. The South Gate area distribution system will ultimately connect to the 450 mm diameter main at two locations: 34th and 40th Avenues.

A reservoir and pump station is proposed for the northwest corner of the South Gate area, immediately north of 34th Avenue South. Completion of the facility is anticipated in 2005.

The *Southeast Lethbridge Urbanization Plan* envisioned two 350 mm diameter mains through the South Gate area to service future development to the east. Accordingly, the proposed distribution system for the South Gate area includes two 350 mm mains from 34th and 40th Avenue to the east boundary of the proposed development.
The water distribution network follows the roadway layout and has been sized to accommodate the levels of service set out in the *Southeast Lethbridge Urbanization Plan*. These levels of service include:

- A minimum pressure of 345kPa (50 psi) during peak hour demand and less than 621kPa (90psi) during low demand conditions.
- Fire flow of 75 L/s under maximum day demand conditions with a minimum pressure of 150kPa (21.7 psi).

With the exception of the two 350 mm diameter mains oversized for servicing future development to the east, the distribution system consists of 200 mm diameter pipe.

The proposed water distribution system was modeled at full development under peak hour and fire flow conditions. Various supply and demand scenarios were examined, including:

- Existing supply conditions at 34th Avenue South and Mayor Magrath Drive, as indicated by the City's distribution system model,
- A single connection to the 450 mm diameter main along Mayor Magrath Drive, and
- A second connection to the 450 mm diameter main at 40th Avenue South.

The model results showed that existing supply conditions (78 L/s at 380KPa) from the 450 mm main along Mayor Magrath Drive are sufficient to service the fully developed South Gate area. More

specifically:

- Development of the South Gate area is not restricted by completion of the 450mm diameter main to 40th Avenue South. The single connection at 34th Avenue South is sufficient for full development of the South Gate area under both peak hour and fire flow demand conditions.
- Development of the South Gate area is not restricted by completion of the reservoir and pump station. Existing supply conditions are sufficient for full development of the South Gate area under both peak hour and fire flow demand conditions.

Completion of the 450mm diameter main along Mayor Magrath to 40th Avenue South will however be required before areas east of the South Gate area can be serviced via the southern 350mm main intended for that purpose.

The temporary looping water main between Sixmile Common and Sixmile Crescent shall be removed and a new water main will be installed in the existing 43rd Street alignment from Southgate Blvd. to Couleesprings Terrace. The location of the new looping water main may be changed by the City of Lethbridge depending on any new changes to the Outline Plan.

The 350mm water main will be installed in South Gate Blvd. Water main locations outside of Phase 3 & 4 will not be addressed in this amendment. The internal water network in Phase 3 & 4 reflects roadway changes and provides compatibility with proposals indentified in the SE Lethbridge ASP.

6.2 Sanitary Sewer Collection System

The proposed sanitary sewer collection system for the South Gate area closely follows that described in the Area Structure Plan. The proposed sanitary collection system is shown with the attached Master Servicing Plan on **01-CL-1002.**

Sanitary flow from the South Gate area will be conveyed to a new 600mm sanitary sewer along Mayor Magrath Drive. The existing 600mm diameter sanitary sewer ending at 28th Avenue South will be extended as far south as possible (somewhere between 34th and 36th Avenue South) as part of the Mayor Magrath Drive South Upgrade. The South Gate sanitary system will connect to the 600mm diameter sewer at 34th Avenue South and its southern end.

As discussed in the Area Structure Plan, the total upstream capacity of the sanitary system is presently limited to 150 L/s for the entire southeast. Of that 150 L/s may be available to the South Gate area. As shown on Drawing 01-CL-1003, the proposed South Gate sanitary system will handle a peak flow of 118 L/s at full development. The anticipated peak flow includes dry weather and wet weather components as well as an allowance for infiltration. Unit values for each of these components are as specified in the City's infrastructure design standards.

There are three sanitary catchment areas (highlighted on **01-CL-1002**):

- The northern catchment will contribute a peak flow of 32 L/s at full development. This flow will be conveyed by gravity to the 600mm sanitary sewer at 34th Avenue South and Mayor Magrath.
- The central catchment will contribute a peak flow of 48 L/s at full development. This flow will be conveyed by gravity to the 600mm sanitary sewer between 34th and 36th Avenue South and Mayor Magrath.
- The south catchment will contribute a peak flow of 38 L/s at full development. This flow will be pumped from a lift station, north to 40th Avenue South. From there it will be conveyed by gravity to the 600mm sanitary sewer between 34th and 36th Avenue South and Mayor Magrath.

The 600mm diameter sanitary sewer along Mayor Magrath (to be constructed as part of the Mayor Magrath Drive South Upgrade) has sufficient capacity to accommodate the peak flow of 118 L/s from the fully developed South Gate area.

New sanitary sewer mains have been added to service the area based on the re-designed street layout. The westerly cul-de-sac at *3910 43rd Street South* property has been amended to drain south and into the lift station.

The lift station flow volume will not be affected as we have changed the multi-family to single family, slightly reducing the flow. At the same time we have slightly increased the sanitary flow by adding the area within *3910 43rd Street South.*

There is an interim peak flow of 16 L/s and an ultimate peak flow of 14 L/s from Phase 3 & 4 that flows south westerly to the lift station. The interim sanitary flow includes a 3.07 ha area along Sixmile Place and 40th Avenue South (Catchment area B7)which temporarily flow south along Sixmile Crest in to the existing Phase 1 lift station, and will ultimately flow west along Southgate Boulevard South. The future cul-de-sac directly west of Sixmile Bend is included in the ultimate design flow and is not included in the interim design. These two areas account for the balance of the interim and ultimate design flows for Zone C as shown in attached Master Servicing drawings. The ultimate build out of Phase 3 & 4 will utilize all of the capacity in the lift station when accounting for the future Mayor Magrath Drive commercial / Low Density Residential along 40th Avenue (currently 765 Southgate Boulevard). The interim peak design flow at the lift station will be 41 L/s and the ultimate peak design flow at the lift station will be 39 L/s. There were about 17 L/s designed to flow westerly along the south leg of South Gate Boulevard and through 3910 43rd Street South. A 250 mm sanitary has been installed along 40th Avenue easterly to the future north extension of Sixmile Place. When the sanitary line is extended through 40 Avenue across 3910 43rd Street the manhole at the intersection of 40th Avenue and 43rd Street needs to be plugged to the south to divert sanitary flow westerly along South Gate Boulevard through 3910 43RD Street that services 13L/s north of Phase 3 & 4. There will be sanitary capacity for approximately 13 L/s for land north of Phase 3 &4 to flow westerly along the south leg of Southgate Boulevard. There will be sanitary capacity for approximately 12 L/s to service land east of existing 43rd Street to flow westerly along the north leg of Southgate Boulevard.

In summary the following land east of existing 43rd Street and north of Phase 3 & 4 can be accommodated based on the sanitary design from the Outline Plan.

1. Flow into the existing lift station 0 L/s
2. Flow into future main along southerly leg of Southgate Blvd. 13 L/s
3. Flow into main along north leg of Southgate Blvd. 12 L/s

TOTAL 25 L/s

The Phase 3 & 4 sanitary network has been accommodated to reflect changes in the roadway locations and grades. The intended sanitary network outside of Phase 3 & 4 has not been addressed in this amendment.

6.3 Storm Water Management System

The proposed storm water management system for the South Gate area follows that described in the Area Structure Plan. The proposed storm water management system is shown within the attached Master Servicing Plan on **Drawing 01-CL-1004 and 01-CL-1007.**

Storm drainage catchment areas for the South Gate area were determined based upon the natural topography and the proposed pattern of development. Shown of **Drawing 01-CL-1001 AND 01-cl-1007**, there are three storm water catchment areas.

Although not included in the catchment areas defined on **Drawing 01-CL-1004**, it has been assumed that storm water runoff from Mayor Magrath Drive will be accommodated within the South Gate storm water management system. Provision for conveying runoff from Mayor Magrath Drive has been included in the drainage concept for the commercial area bordering Mayor Magrath Drive. Allowance has also been made for detention of this runoff in one of the proposed storm water detention ponds. The storm water management for the South Gate area is independent of the systems in the area west of Mayor Magrath Drive and the area east of 43rd Street South. Interactions on the boundaries may be summarized as follows:

- No overland drainage will be directed to the existing concrete swale along the southern boundary of the Fairmont area.
- The overland flow route for the proposed trapped low on 34th Avenue South will be to the east ditch along Mayor Magrath Drive.
- Concepts for accommodating future overland drainage from 43rd Street South are shown on Drawing MSP 8.

As discussed in the Area Structure Plan, the allowable release rate of the South Gate storm water management system to Six Mile Coulee will be restricted to 6.25 L/s/ha. This unit rate was derived from the 1 in 5 year predevelopment runoff for the South Gate area. Restricting the release rate to this level will mitigate any potential downstream impact.

The corresponding release rates for each of the catchment areas within the South Gate area are shown in Table 6.1.

Table 6.1 - Catchment Release Rates

Catchment Area	Land Use	Area	Release Rate
		ha	L/s
A (Residential)	Urban-Residential	53.8	336
A (Commercial)	Commercial	28.8	180
B	Urban-Residential	25.9	162
C	Urban-Residential	32.0	200

Post development flows for the minor system (1 in 5 year rainfall) are presented on **Drawings 01-CL1005 and 01-CL-1006**. The 1 in 5 year event flows were calculated for each subcatchment using the Rational Method using parameters specified in the City's infrastructure design standards. Minor system subcatchments are identified on **Drawing 01-CL-1004**.

Peak post development flows for the 1 in 100 year rainfall event are presented in Table 6.2 for each of the catchment areas. The 1 in 100 year event flows were calculated using the Rational Method and were also generated during modeling of the 1 in 100 year event. Calculated and modeled peak flows are both shown for comparison in Table 6.2.

Table 6.2 - 1 in 100 Post Development Peak Flows

Catchment Area	Area	Time of Concentration	Rainfall Intensity	Runoff Coefficient	Post Development Peak Flow	
					Calculated	Modeled
	ha	min	mm/hr		L/s	L/s
A						
A (Residential)	53.8	20	140	0.50	10,469	13,550
A (Commercial N of 36th)	17.5	10	195	1.00	9,487	6,870
A (Commercial S of 36th)	11.3	10	195	1.00	6,126	4,440
B	25.9	20	140	0.50	5,040	5,990
C	32.0	20	140	0.50	6,227	7,330

SWMHYMO was used to determine required storage volumes for the three proposed storm water management facilities. The City of Lethbridge 1 in 100 year 24 hour design storm was used for all storage and hydrograph modeling. The SWMHYMO modeling parameters used are summarized in Tables 6.3 and 6.4.

Table 6.3 - Modeling Parameters (Catchment Specific)

Catchment Area	Area	Time of Concentration	Rainfall Intensity	Runoff Coefficient	Post Development Peak Flow	
					Calculated	Modeled
	ha	min	mm/hr		L/s	L/s
A						
A (Residential)	53.8	20	140	0.50	10,469	13,550
A (Commercial N of 36th)	17.5	10	195	1.00	9,487	6,870
A (Commercial S of 36th)	11.3	10	195	1.00	6,126	4,440
B	25.9	20	140	0.50	5,040	5,990
C	32.0	20	140	0.50	6,227	7,330

Table 6.4 - Modeling Parameters (General)

Event	Time Step	Duration	IFD Coefficients
	min	hours	A / B / C
1 in 5 Year	5	4	789.60 / 5.409 / 0.796
1 in 100 Year	5	24	2067.45 / 7.067 / 0.840

The storage volume for each catchment required to limit discharge to 6.25 L/s/ha is shown in Table 6.5.

Table 6.5 - Pond Volumes

Catchment Area	Area	Required Storage Volume
	ha	ha m
A*	94.6	6.11
B	25.9	1.49
C	32.0	1.75
Total		9.35

*Includes allowance of 0.91 ha m from Mayor Magrath Drive

As noted, an allowance for detention of 0.91 ha m of runoff from Mayor Magrath Drive is included in the proposed volume for pond A. If the storm water management plan for Mayor Magrath Drive does not require the use of pond A, its volume can be reduced by this amount.

Major (overland) flow routes and the three proposed storm water management facilities are shown on **Drawing 01-CL-1007** and the **Overland Flows** figure prepared by Martin Geomatic Consultants Ltd**.**

Ponds A and B will be wet ponds, and will incorporate design parameters recommended in Alberta *Environment's Stormwater Management Guidelines* for enhanced water quality. Pond C will be a dry pond, and will discharge into Pond A to meet water quality objectives.

The allowable release rate from the wet ponds to meet water quality objectives is 5.5 L/s/ha for the first 25 mm of runoff. Outlet control devices for the two wet ponds will ensure that this criteria is met. The 1 in 5 year predevelopment rate of 6.25 L/s/ha will be used as the allowable release rate from the wet ponds for runoff over 25 mm.

The proposed outfall for pond A to Six Mile Coulee is east of Mayor Magrath Drive, south of 40th Avenue South. The appropriate approval processes will be followed with careful consideration given to environmental issues, including the potential for erosion of the embankment.

An outfall to 6 Mile Coulee is required for pond B. It will be located south of the wet pond and be installed by trenchless methods to minimize the disturbance of the coulee.

Minor Storm layout has been amended to add new storm mains to service the area based on the re-designed street layout. The westerly cul-de-sac at *3910 43rd Street South* property has an added storm main and flow will change to Zone B (southerly) instead of Zone A. A portion of the flow in the SE corner of Zone B that was previously designed as Zone B flow has been changed to Zone C flow into the Zone C storm pond. The table for pipe flow in Zone B has been amended. The net result had been a minimal reduction of pipe flow through Zone B.

Major Overland Flow in Zone B has been increased be a net of 0.10 cubic meters per second. This change is represented in the amended figures on the drawing "Major Storm System, Revised April 2014". This net change results from the fact that there is no onsite storage required for single family; whereas we were storing the 1:100 event on site in the previous multi-family site. This has resulted in an increase in overland flow to the west. We have partially mitigated the increase by redirecting overland flow in the SE corner of Zone B to Storm Pond C.
In order to allow for the next phase of development to proceed; a grass swale is proposed along Southgate Blvd. and east of the amendment area to collect surface water from the rear of the new lots and direct the flow westerly. When Southgate Blvd. and Storm Pond C are constructed, the surface water will no longer flow west. Rather it will flow directly into Pond C. Our overland flow calculations for Zone B reflect the temporary extra surface water from the rear of these lots (approx. 0.412 ha.).

The Master Grading Plan has been amended to reflect the re-designed street layout. Additionally grades east of the amendment area have been changed to re-direct surface water in the SE corner of Zone B to Pond C. Overall grading for this area has improved as a result of these changes.

The unit release rate for the area has changed from **6.25 L/s/ha** (derived from the 1 in 5 year pre-development runoff) to **3.1 L/s/ha** which is based on City of Lethbridge planning for the future Southeast Lethbridge Area Structure Plan. The storage requirement has changed to **1,000 m^3/ha** where previously the storage volumes were calculated to control the release to the pre-development levels. The net result of this change would be a greater development area being serviced by the existing downstream infrastructure, and larger stormwater storage facilities required in the future developments.

The catchment areas have been amended for Zones A, B and C.

Pond C is sized to accommodate a 100 year 24 hour storm at a storage rate of 1,000 m^3/ha. Catchment area for Zone C has been reduced to **9.95 ha** with Pond C storage volume of **10,400 m^3**. Pond C was previously sized to service 32.0 ha at a release rate of 6.25L/s/ha with a storage volume of 17,500 m^3. The remaining area which was previously intended for Pond C will be incorporated into future catchment areas and storage facilities as per the City of Lethbridge future Southeast Lethbridge Area Structure Plan. Pond C discharge location has changed from Pond A via the Zone A minor system (along 40th Avenue South), to Pond B via the Zone B minor system (along Sixmile Ridge South). Pond C will discharge at a controlled release rate of 3.1 L/s/ha or **30.8 L/s**, utilizing unused capacity in the downstream system to drain the pond. This will free up additional capacity in Pond A for future servicing of **65 ha** of undeveloped lands to the north with a release rate **of 3.1 L/s/ha or 200 L/s**. A storm pipe extending east along 40th Avenue South and north along 43rd Street South would provide a drainage outlet for this future development.

Zones A, B and C catchment areas and minor system layout has been amended to add new storm mains to service the area based on the re-designed road and lot layout. The Minor and Major Stormwater system outline plan figures are amended along with pipe tables and overland flow designs. The Master

Grading Plan is amended to reflect the re-designed layout. The interim offsite drainage area for the land north of 40th Avenue South will temporarily drain to Pond C and ultimately drain to Pond A.

6.4 Shallow Utilities

In consultation with the respective utility companies, shallow utilities, including electrical services, telephone and cable required to service the South Gate Neighbourhood will be extended into the Outline Plan area from the existing infrastructure. A draft electric utility plan has been submitted to the City in order to allow for preliminary infrastructure design and modeling.

6.5 Fire Protection

The provision of adequate fire protection is important to the safety and security of all City neighbourhoods and residents. Issues related to fire protection have been addressed in the *Southeast Lethbridge Urbanization Plan* and the *South Gate Area Structure Plan.* The South Gate neighbourhood has been designed to meet all of the required standards and guidelines for development of this nature. Roads have been designed, and are of sufficient width, to allow for safe and convenient access for all emergency vehicles. In addition, fire flow requirements of 75 L/s under maximum day demand conditions with a minimum pressure of 150 kPa (21.7 psi) have been exceeded, as shown through a modeling of the system at full development under peak hour and fire flow conditions.

Current fire protection needs for southeast Lethbridge are met by the #3 Fire Hall located at 2614 – 16th Avenue South. Future needs for all of southeast Lethbridge, including South Gate, will be met by a future fire hall constructed in South Lethbridge

7.0 Development Staging and Implementation

The objectives of the staging and implementation programs are to ensure that the implementation of this Outline Plan proceeds in a coordinated and cost-effective manner, and that this Outline Plan remains current through active monitoring, reviewing and updating. This will help to ensure that future growth and land use decisions will reflect the needs and aspirations of residents, business and industry.

7.1 Tentative Phasing

Generally, development will occur from west to east, and somewhat north to south, in line with the orderly and economical provision of municipal services, and in response to market demand. A tentative phasing plan, subject to revision, is shown in **Figure 6**.

7.2 Rezoning and Subdivision

The next step in the planning process will be to apply for appropriate re-districting, consistent with the land use designations and descriptions provided within the Outline Plan and the South Gate ASP, and as per the process outlined in the City of Lethbridge Land Use Bylaw (Bylaw No. 4100). Rezoning and subdivision applications will be advanced for specific stages in response to market demand. Applications may be made concurrently or separately, depending upon timing and need. Proposed zoning is shown in **Figure 3**.

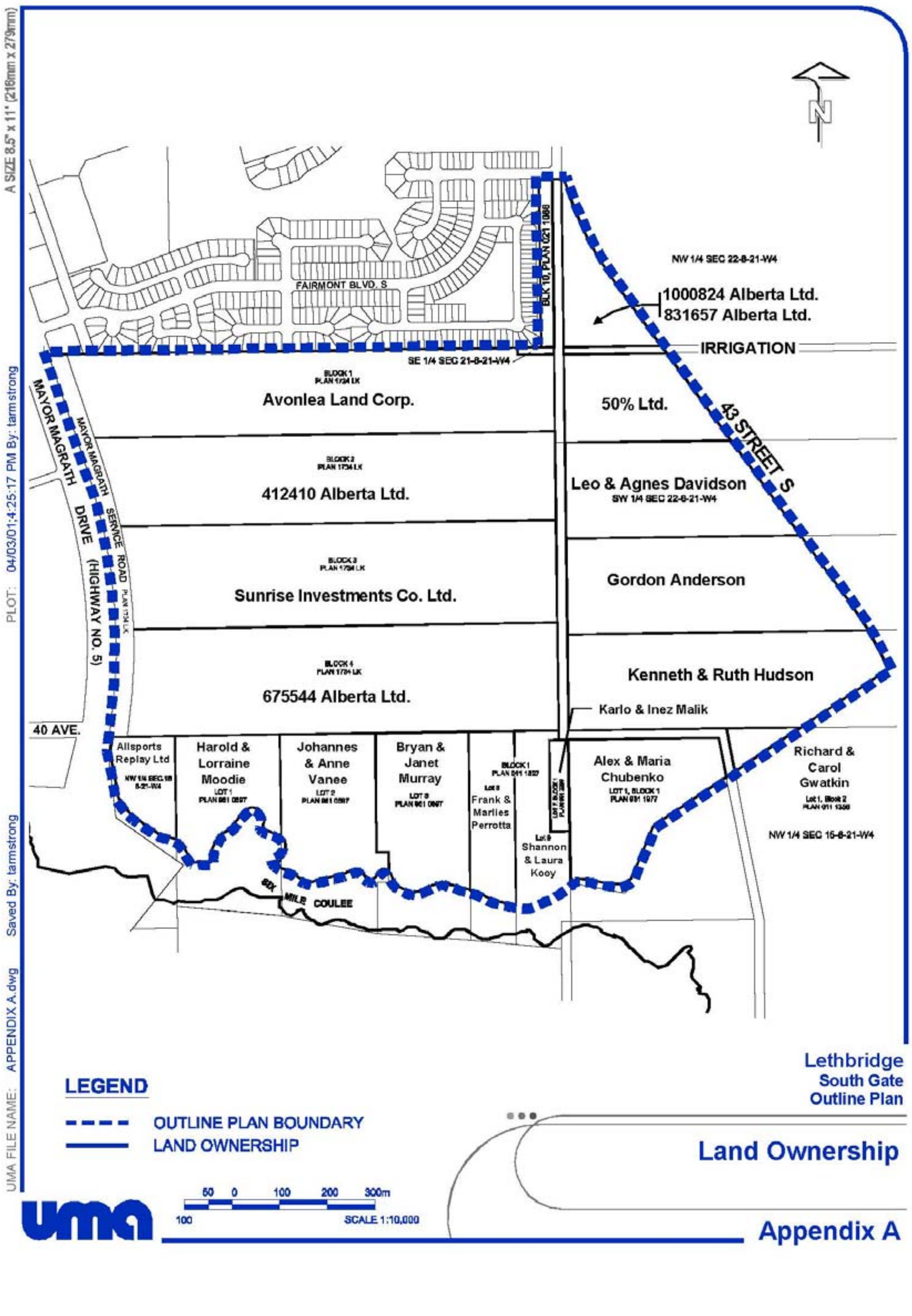
7.3 Amending the Plan

The South Gate Outline Plan is intended to provide a detailed description and illustration of development issues such as land use, circulation, and parks and open space development. However, the plan remains conceptual, and is subject to alterations and adjustments as a result of market conditions, new standards, and consumer demand at the time of development. Accordingly, it is important to create a flexible plan that gives a level of certainty to the neighbourhood and its residents, yet also allows for appropriate change as necessary.

As the Outline Plan is not a statutory plan under the Municipal Government Act, determining the regulations and requirements for adoption and amendment of an Outline Plan are the responsibility of the municipality. Outline Plans are currently approved by the City of Lethbridge Municipal Planning Commission, and it is anticipated that this practice would carry forward to any subsequent amendment applications.

APPENDIX A

Land Ownership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UMA FILE NAME: APPENDIX A.dwg
N
FAIRMONT BLVD. S
BLK 10, PLAN 021 1066
NW 1/4 SEC 22-8-21-W4
1000824 Alberta Ltd.
831657 Alberta Ltd.
IRRIGATION
SE 1/4 SEC 21-8-21-W4
Avonlea Land Corp.
50% Ltd.
43 STREET S
MAYOR MAGRATH DRIVE (HIGHWAY NO. 5)
MAYOR MAGRATH SERVICE ROAD
412410 Alberta Ltd.
Leo & Agnes Davidson
SW 1/4 SEC 22-8-21-W4
Sunrise Investments Co. Ltd.
Gordon Anderson
675544 Alberta Ltd.
Kenneth & Ruth Hudson
Karlo & Inez Malik
40 AVE.
Allsports Replay Ltd
Harold & Lorraine Moodie
Johannes & Anne Vanee
Bryan & Janet Murray
Frank & Marlies Perrotta
Shannon & Laura Kooy
Alex & Maria Chubenko
Richard & Carol Gwatkin
NW 1/4 SEC 15-8-21-W4
SIX MILE COULEE
LEGEND
OUTLINE PLAN BOUNDARY
LAND OWNERSHIP
50 0 100 200 300m
100
SCALE 1:10,000
Lethbridge
South Gate
Outline Plan
Land Ownership
Appendix A

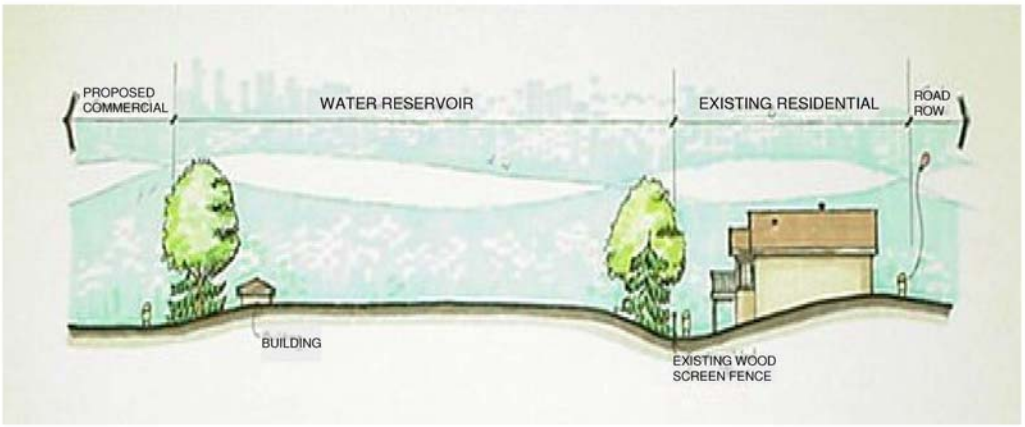
Appendix A – Land Ownership

Legal Description	Owner	Areas				% of Total
		Titled Areas		*Area Within the O.P.*		
		(ha)	(ac)	(ha)	(ac)	
Block 1, Plan 1734LK	Avonlea Land Corp	17.50	43.24	17.50	43.24	11.19%
Block 2, Plan 1734LK	Loblaw Properties West Inc.	17.40	43.00	17.40	43.00	11.13%
Block 3, Plan 1734LK	Sunrise Investment Co. Ltd.	19.31	47.72	19.31	47.72	12.35%
Block 4, Plan 1734LK	Sunrise Investment Co. Ltd.	20.20	49.91	20.20	49.91	12.92%
Plan 1734LK	Mayor Magrath Service Road ROW	2.80	6.92	2.80	6.92	1.79%
SW Section 22-8-21-W4M, 5&6	50% Ltd.	14.69	36.30	5.24	12.95	3.35%
SW Section 22-8-21-W4M, 5&6	Leo and Agnes Davidson	15.89	39.27	8.45	20.88	5.40%
SW Section 22-8-21-W4M, 3&4	Gordon Anderson	16.20	40.03	11.33	28.00	7.25%
SW Section 22-8-21-W4M, 5&6	St. Mary River Irrigation Dist.	1.51	3.73	0.32	0.79	0.20%
SW Section 22-8-21-W4M, 3&4	Kenneth and Ruth Hudson	16.20	40.03	12.27	30.32	7.85%
NW Section 16- 8-21-W4M, 14	Allsports Replay Ltd.	-	-	2.32	5.73	1.48%
NW Section 22-8-21-W4M	1000824 Alberta Ltd. and 831657 Alberta Ltd.	61.46	151.87	3.18	7.86	2.03%
Lot 1, Block 1, Plan 961 0597	Harold and Lorraine Moodie	8.10	20.02	4.60	11.37	2.94%
Lot 2, Block 1, Plan 961 0597	Johannes and Anne Vanee	8.18	20.21	6.02	14.88	3.85%
Lot 3, Block 1, Plan 961 0597	Bryan and Janet Murray	8.22	20.31	6.12	15.12	3.91%
Lot 8, Block 1, Plan 011 1827	Frank and Marlies Perrotta	4.25	10.50	3.37	8.33	2.16%
Lot 9, Block 1, Plan 011 1827	Shannon and Laura Kooy	4.25	10.50	3.19	7.88	2.04%
Lot 7, Block 1, Plan 961 2299	Karlo and Inez Malik	0.769	1.90	0.77	1.90	0.49%
Lot 1, Block 1, Plan 931 1977	Alex and Maria Chubenko	6.149	15.19	6.94	17.15	4.44%
Lot 2, Block 1, Plan 021 4078	Alex and Maria Chubenko	0.971	2.40	-	-	-
Lot 1, Block 2, Plan 011 1356	Richard and Carol Gwatkin	3.41	8.43	0.71	1.75	0.45%
SE Section 21-8-21-W4M	St. Mary River, Irrigation District	0.117	0.29	0.12	0.30	0.08%
Block 10, Plan 021 1086	ROAD PLAN	0.00	0.00	0.97	2.40	0.62%
43rd Street South	City of Lethbridge	-	-	3.25	8.03	2.08%
Total		244.78	604.85	156.38	386.41	**100.00%**

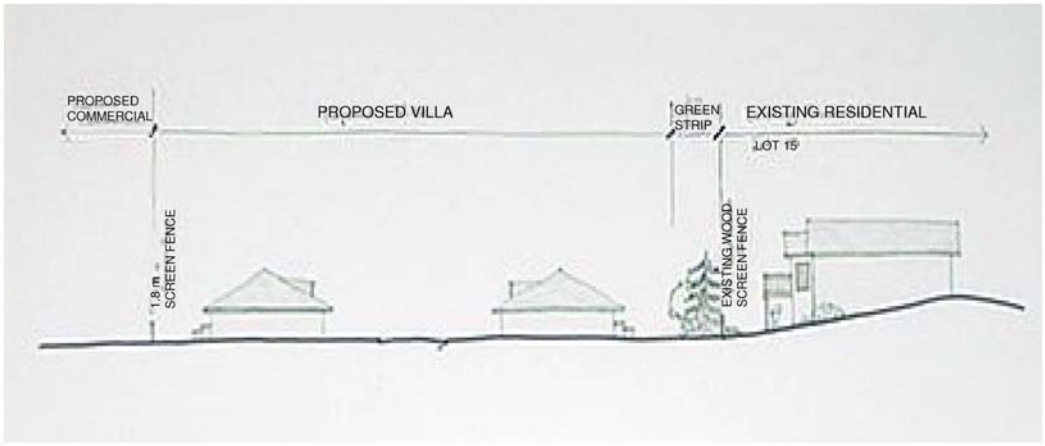
APPENDIX B

Interface Treatments

Reservoir & Villa Concept Plan - Southgate Area Structure Plan



Reservoir Concept Section - Southgate Area Structure Plan



Villa Concept Section - Southgate Area Structure Plan

UMA | AECOM

APPENDIX D

Land Use Allocations Statistics

Appendix D: Land Use Allocation Statistics - REVISED NOVEMBER 2015 REVISED SEPT 2020

Existing Outline Plan

Land Use and Population Estimates	Area (Ha)	% of GDA
Gross Area	129.94	
Environmental Reserve	-	
Gross Developable Area	129.94	
Public Land Use		
Public Right of Ways (R/W)	23.78	18.30%
Open Space	8.43	6.48%
Water Reservoir	1.18	0.91%
Public Subtotals	33.39	25.70%
Net Developable Area	96.55	74.30%
Other Land Use		
Commercial	23.00	17.70%
Direct Control	9.50	7.31%
Total	32.50	25.02%

			Population Estimates		
Residential			Density (UPHa)	Total Units	Area Population
Low Density	56.42	43.42%	25	1,411	4,091
Medium Density	5.77	4.44%	50	213	548
High Density	1.85	1.43%	150	278	528
Total	64.05	49.29%			**5,167**

Net Density		
People/NDA (Residential)	81	**Persons per Ha**
Dwelling Units/NDA (Residential)	31	**Units per Ha**

Notes:

NDA: Net Developable Area

UPH: Units per hectare

Low Density Residential: 2.9 persons per unit

Medium Density Residential: 1.9 persons per unit

Proposed Outline Plan

Land Use and Population Estimates	Area (Ha)	% of GDA
Gross Area	129.94	
Environmental Reserve	-	
Gross Developable Area	129.94	
Public Land Use		
Public Right of Ways (R/W)	23.78	18.30%
Open Space	8.43	6.48%
Water Reservoir	1.18	0.91%
Public Subtotals	33.39	25.70%
Net Developable Area	96.54	74.30%
Other Land Use		
Commercial	23.00	17.70%
Direct Control	9.50	7.31%
Total	32.50	25.02%

			Population Estimates		
Residential			Density (UPHa)	Total Units	Area Population
Low Density	56.42	43.42%	25	1,410	4,090
Medium Density	7.62	5.87%	50	381	724
High Density	-	0.00%	150	-	-
Total	64.05	49.29%			**4,814**

Net Density		
People/NDA (Residential)	75	**Persons per Ha**
Dwelling Units/NDA (Residential)	28	**Units per Ha**

Notes:

NDA: Net Developable Area

UPH: Units per hectare

Low Density Residential: 2.9 persons per unit

Medium Density Residential: 1.9 persons per unit

APPENDIX E

St. Mary River Irrigation District – Correspondence (2)

St. Mary River Irrigation District

1210 - 36th Street North, Lethbridge, Alberta P.O. Box 278 T1J 3Y7
Telephone (403) 328-4401 Fax (403) 328-4460 Email smrid@telusplanet.net

2004 03 08

City of Lethbridge
910 – 4th Avenue South
Lethbridge, AB
T1J 0P6

Attention: Barry Peat, C.E.T.
Subdivision Planner
City of Lethbridge

Dear Sir:

Re: Proposed Outline Plan – South Gate Neighbourhood

Further to your March 3, 2004 correspondence, the development of the above-noted phase will disrupt the current irrigation distribution system in this area. Therefore, the District feels this should be discussed in detail, with all parties involved, prior to any approvals.

Yours truly,

Derick Jaffray
LAND ADMINISTRATOR

lp

Date: March 15, 2004

Project No.: D489-003-00

Derick Jaffray
Land Administrator
St. Mary River Irrigation District
1210 – 36 Street, North
P.O. Box 278
Lethbridge, AB
T1J 3Y7

Dear: Mr. Derick Jaffray,

RE: South Gate Outline Plan.

Further to the meeting on Friday, March 12, 2004 between SMRID, City of Lethbridge, UMA Engineering, Sunrise Investment Co. Ltd and Avonlea Land Corp. Ltd., clarifications where made in regards to new developments disrupting the current irrigation system in the South Gate area.

Discussions indicated that the current irrigation canal along the north boundary of section SW ¼ 22-8-21W4M distributes irrigation water to Fairmont Lake from a connection in the NE corner of section SE ¼ 21-8-21W4M. The canal then flows south along the west side of 43rd Street, servicing four parcels with domestic use agreements along the east side of section SE ¼ 21-8-21W4M and the canal also services the lands north of Six Mile Coulee in section NE ¼ 16-8-21W4M that have terminable water agreements in place. The canal also serves as an emergency spill route to the coulee in the event that the canal becomes blocked and overflows.

When new development impacts the irrigation system or the emergency spill route along the west boundary of 43rd Street, it will trigger required upgrades and changes to the system agreed upon by the SMRID and the developer. These upgrades will be at the expense of the developer.

UMA Engineering Ltd. 514 Stafford Drive North PO Box 655 Lethbridge Alberta T1H 2B2 Canada
telephone (403) 329-4822 *facsimile* (403) 329-1678 *web site* www.umagroup.com

It was noted that phase 1 of the South Gate neighborhood would not, in any way, disrupt the current irrigation system.

If you have any questions or concerns, please give myself a call at (403)329-7128.

Sincerely,

UMA ENGINEERING LTD.

Trevor Loomer
Project Engineer
tloomer@umagroup.com

TL:tl
Encl.

cc: Barry Peat, City of Lethbridge
Doug Hawkins, City of Lethbridge
Ray Bourbonnais, Loblaw Properties West Inc.
Nick Paladino/John Thiessen, Sunrise Investment Co. Ltd.
Joe Meszaros, Avonlea Land Corp. Ltd.

APPENDIX F

Alberta Community Development – Historical Resources

Alberta
COMMUNITY DEVELOPMENT

RECEIVED FEB 25 2004

Cultural Facilities and
Historical Resources
Heritage Resource Management

Old St. Stephen's College
8820 - 112 Street
Edmonton, Alberta
Canada T6G 2P8
www.cd.gov.ab.ca/hrm

Telephone 780/431-2300
Fax 780/427-5598

February 18, 2004

Project File: 4835-04-017

Mr. Trevor Loomer
UMA Engineering Ltd.
514 Stafford Drive North
Lethbridge, AB
T1H 2B2

Dear Mr. Loomer:

SUBJECT: UMA ENGINEERING LTD.
SOUTH GATE OUTLINE PLAN
PTS. OF SECTIONS 15, 16, 21 & 22, TOWNSHIP 8, RANGE 21, W4M
***HISTORICAL RESOURCES ACT* REQUIREMENTS**

The Cultural Facilities and Historical Resources Division ("CFHRD") of Alberta Community Development has completed the review of the Historical Resources Overview for the Southeast Lethbridge Urbanization Plan as it applies to the South Gate Outline Plan located in pts. of Sections 15, 16, 21 and 22, Township 8, Range 21, W4M. The "CFHRD" agrees with Arrow Ltd.'s recommendation that a **Historical Resources Impact Assessment is not required.** Therefore, UMA Engineering Ltd. has *Historical Resources Act* clearance for the South Gate Outline Plan. Should you require additional information regarding the CFHRD's review of this project to impact historical resources, please contact George Chalut, Resource Management Planner.

***HISTORICAL RESOURCES ACT* REQUIREMENTS**

Reporting the discovery of historical resources: Pursuant to Section 31 of the *Historical Resources Act*, should any historic resources be encountered during construction activities, please contact George Chalut, Resource Management Planner, Protection & Stewardship Section, Heritage Resource Management Branch, Cultural Facilities and Historical Resources Division, Alberta Community Development, 8820 - 112 Street, Edmonton, Alberta, T6G 2P8; telephone (780) 431-2329 or fax (780) 427-3956. It will then be necessary for the CFHRD to issue further instructions regarding the documentation of these resources. On behalf of the Cultural Facilities and Historical Resources Division, I would like to thank officials of UMA Engineering Ltd. for their continued cooperation in our endeavour to conserve Alberta's past.

Sincerely,

J. Bieber

For George Chalut
Resource Management Planner
Protection & Stewardship Section

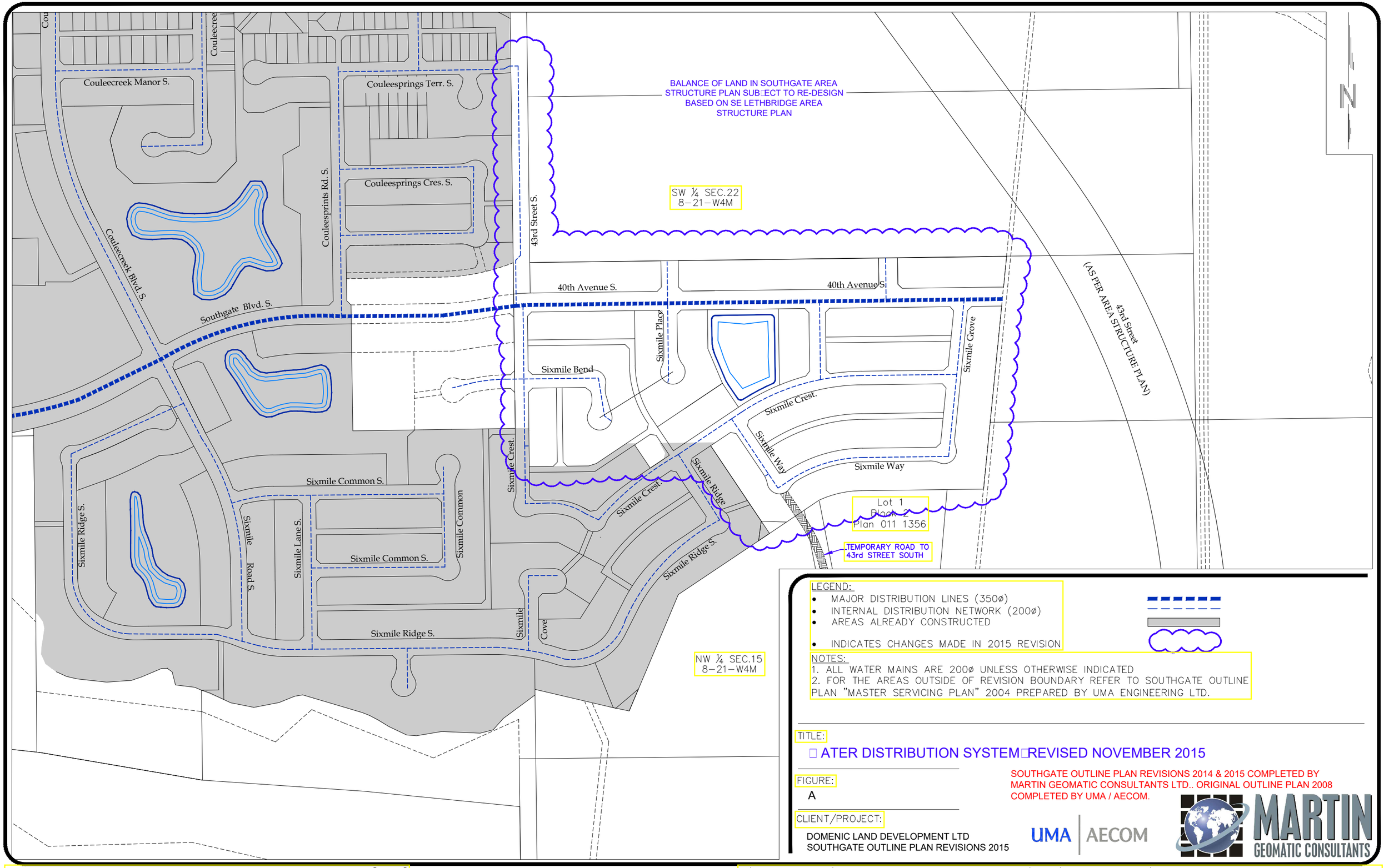
Sunrise Investment Company Ltd.
South Gate Outline Plan - 2008
(Amended July, 2014)
(Amended November, 2015)

Master Servicing Plan, Revised November 2015, By Martin Geomatic Consultants Ltd.

Figure A – Water Distribution System
Figure B-1 – Sanitary Sewer System (INTERIM)
Figure B-2 – Sanitary Sewer System (ULTIMATE)
Figure C – Minor Storm System
Figure D – Minor Storm System
Figure E – Master Grading Plan

MR1, Park / Dry Pond Conceptual Design

Figure F – Park Conceptual Landscaping Plan
Figure G – Park Conceptual Grading Plan



LEGEND:

- MAJOR DISTRIBUTION LINES (350ø)
- INTERNAL DISTRIBUTION NETWORK (200ø)
- AREAS ALREADY CONSTRUCTED
- INDICATES CHANGES MADE IN 2015 REVISION

NOTES:

1. ALL WATER MAINS ARE 200ø UNLESS OTHERWISE INDICATED
2. FOR THE AREAS OUTSIDE OF REVISION BOUNDARY REFER TO SOUTHGATE OUTLINE PLAN "MASTER SERVICING PLAN" 2004 PREPARED BY UMA ENGINEERING LTD.

TITLE:

ATER DISTRIBUTION SYSTEM REVISED NOVEMBER 2015

FIGURE:

A

CLIENT/PROJECT:

DOMENIC LAND DEVELOPMENT LTD
SOUTHGATE OUTLINE PLAN REVISIONS 2015

SOUTHGATE OUTLINE PLAN REVISIONS 2014 & 2015 COMPLETED BY MARTIN GEOMATIC CONSULTANTS LTD.. ORIGINAL OUTLINE PLAN 2008 COMPLETED BY UMA / AECOM.

UMA | AECOM

MARTIN GEOMATIC CONSULTANTS

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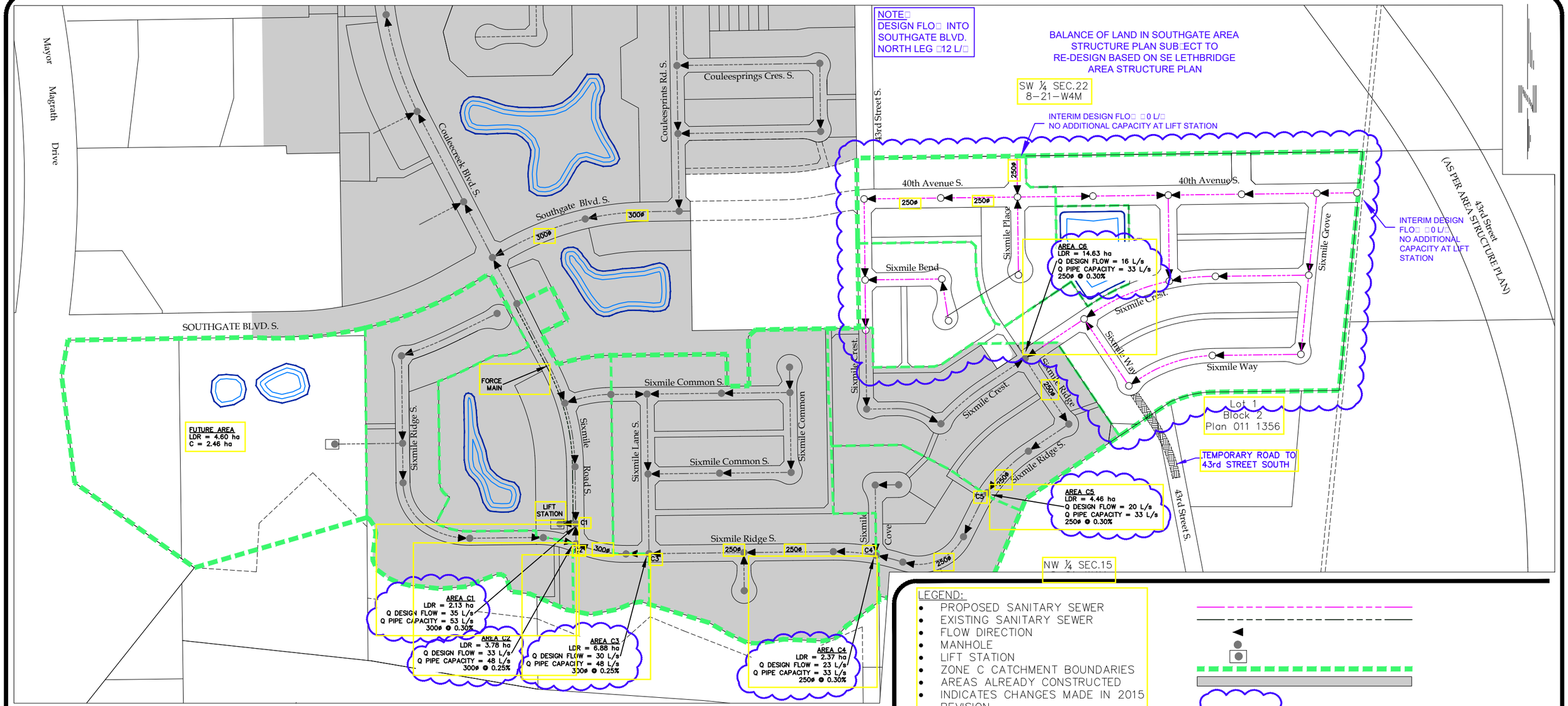

LEGEND:

- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER
- FLOW DIRECTION
- MANHOLE
- LIFT STATION
- ZONE C CATCHMENT BOUNDARIES
- AREAS ALREADY CONSTRUCTED
- INDICATES CHANGES MADE IN 2015 REVISION.

NOTES:

1. ANALYSIS IN ACCORDANCE WITH CITY OF LETHBRIDGE DESIGN STANDARDS 2013 SECTION 5.
2. ZONE C LOW DENSITY RESIDENTIAL = 42 PERSONS/ha
3. ALL SANITARY SEWER PIPES ARE 200ø UNLESS OTHERWISE SPECIFIED.
4. AREA B7 TO TEMPORARILY FLOW SOUTH TO THE LIFT STATION UNTIL A LINE IS EXTENDED ALONG 40th AVE. ACROSS 3910 43rd ST. AT WHICH TIME THE MANHOLE AT THE INTERSECTION OF 40th AVE. & 43rd ST. WILL BE PLUGGED GOING SOUTH AND AREA B7 WILL FLOW WEST.

* TABLE AMENDED NOVEMBER, 2015

INTERIM SANITARY TABLE

Coulee Creek Outline Plan Revisions 2015

ZONE C (Interim)	Land Use			Population		Dry Weather Flows				Wet Weather Flows		Peak Design Flow	
						Average Flow		Peak Flow		Average Flow	Infiltration		
Area ID	Area (Ha)	Zoning	Density (p/ha)	Increment (p)	Cumulative (p)	Increment (m^3/day)	Cumulative (m^3/day)	Peak Factor	Cumulative (m^3/day)	Cumulative (m^3/day)	(m^3/day)	(m^3/day)	(L/s)
C6 Interim	14.63	LDR	42	614	614	246	246	3.926	965	307	92	**1364**	**15.8**
C5	4.42	LDR	42	186	800	74	320	3.860	1235	400	120	**1756**	**20.3**
C4	2.37	LDR	42	100	900	40	360	3.829	1378	450	135	**1963**	**22.7**
C3	6.88	LDR	42	289	1189	116	475	3.750	1783	594	178	**2556**	**29.6**
C2	8.38	LDR	42	352	1541	141	616	3.671	2262	770	231	**3264**	**37.8**
C1	2.13	LDR	42	89	1630	36	652	3.653	2382	815	245	**3441**	**39.8**
MMD Comm.	2.3	C	0	0	0	46	46	1.000	46	17	5	**68**	**0.8**
Lift Station	41.11	LDR, C			1630		698		2428	832	250	**3510**	**40.6**

TITLE:

SANITARY SE ER SYSTEM INTERIM REVISED NOVEMBER 2015

FIGURE:

B-1

CLIENT/PROJECT:

DOMENIC LAND DEVELOPMENT LTD
SOUTHGATE OUTLINE PLAN REVISIONS 2015

SOUTHGATE OUTLINE PLAN REVISIONS 2014 & 2015 COMPLETED BY MARTIN GEOMATIC CONSULTANTS LTD.. ORIGINAL OUTLINE PLAN 2008 COMPLETED BY UMA / AECOM.

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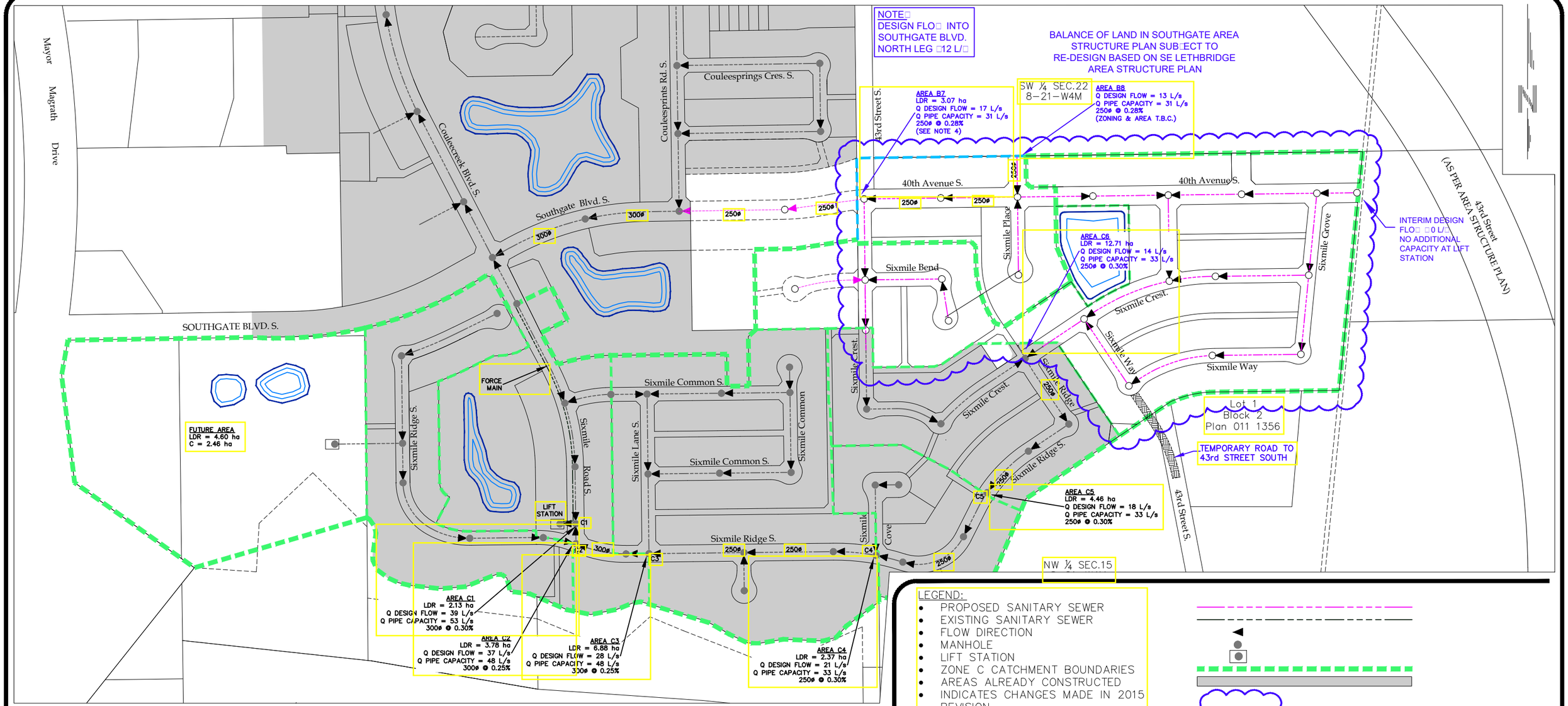
MARTIN GEOMATIC CONSULTANTS



* TABLE AMENDED NOVEMBER, 2015

ULTIMATE SANITARY TABLE

Coulee Creek Outline Plan Revisions 2015

ZONE C (Ultimate)	Land Use			Population		Dry Weather Flows				Wet Weather Flows		Peak Design Flow	
						Average Flow		Peak Flow		Average Flow	Infiltration		
Area ID	Area (Ha)	Zoning	Density (p/ha)	Increment (p)	Cumulative (p)	Increment (m^3/day)	Cumulative (m^3/day)	Peak Factor	Cumulative (m^3/day)	Cumulative (m^3/day)	(m^3/day)	(m^3/day)	(L/s)
C6 ULTIMATE	12.71	LDR	42	534	534	214	214	3.959	845	267	80	**1192**	**13.8**
C5	4.46	LDR	42	187	721	75	288	3.887	1121	361	108	**1590**	**18.4**
C4	2.37	LDR	42	100	821	40	328	3.854	1265	410	123	**1799**	**20.8**
C3	6.88	LDR	42	289	1110	116	444	3.770	1674	555	166	**2395**	**27.7**
C2	8.38	LDR	42	352	1462	141	585	3.688	2156	731	219	**3106**	**35.9**
C1	2.13	LDR	42	89	1551	36	620	3.669	2276	776	233	**3285**	**38.0**
MMD Comm.	2.3	C	0	0	0	46	46	1.000	46	17	5	**68**	**0.8**
Lift Station	39.23	LDR, C			1551		666		2322	793	238	**3353**	**38.8**

LEGEND:

- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER
- FLOW DIRECTION
- MANHOLE
- LIFT STATION
- ZONE C CATCHMENT BOUNDARIES
- AREAS ALREADY CONSTRUCTED
- INDICATES CHANGES MADE IN 2015 REVISION.

NOTES:

1. ANALYSIS IN ACCORDANCE WITH CITY OF LETHBRIDGE DESIGN STANDARDS 2013 SECTION 5.
2. ZONE C LOW DENSITY RESIDENTIAL = 42 PERSONS/ha
3. ALL SANITARY SEWER PIPES ARE 200ø UNLESS OTHERWISE SPECIFIED.
4. AREA B7 TO TEMPORARILY FLOW SOUTH TO THE LIFT STATION UNTIL A LINE IS EXTENDED ALONG 40th AVE. ACROSS 3910 43rd ST. AT WHICH TIME THE MANHOLE AT THE INTERSECTION OF 40th AVE. & 43rd ST. WILL BE PLUGGED GOING SOUTH AND AREA B7 WILL FLOW WEST.

TITLE:

SANITARY SEWER SYSTEM ULTIMATE REVISED NOVEMBER 2015

FIGURE:

B-2

CLIENT/PROJECT:

DOMENIC LAND DEVELOPMENT LTD
SOUTHGATE OUTLINE PLAN REVISIONS 2015

SOUTHGATE OUTLINE PLAN REVISIONS 2014 & 2015 COMPLETED BY MARTIN GEOMATIC CONSULTANTS LTD.. ORIGINAL OUTLINE PLAN 2008 COMPLETED BY UMA / AECOM.

UMA | AECOM

MARTIN GEOMATIC CONSULTANTS

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BALANCE OF LAND IN SOUTHGATE AREA
STRUCTURE PLAN SUBJECT TO
RE-DESIGN BASED ON SE LETHBRIDGE
AREA STRUCTURE PLAN

INTERIM OFFSITE DRAINAGE AREA=7.89ha TO TEMPORARY DRAIN TO POND 'C' AND ULTIMATELY DRAIN TO POND 'A'. FUTURE 65ha DEVELOPMENT TO DRAIN AT A CONTROLLED RELEASE OF 200 L/s

INTERM OFFSITE AREA=7.89ha Q(minor)=0.071m³/s

SW ¼ SEC.22 8–21–W4M

Pond 'C' Statistics		
Catchment Area	9.95	ha
Pond Bottom	911.70	m
Pond HWL	913.90	m
Storage Volume	10,400	m^3
Unit Release Rate	3.1	L/s/ha
Release Rate	30.8	L/s

Couleecreek Blvd S.
Couleesprints Rd. S.
Couleesprings Cres. S.
Southgate Blvd. S.
43rd Street S.
40th Avenue S.
Sixmile Place
Sixmile Bend
Sixmile Crest.
Sixmile Grove
Sixmile Crest.
Sixmile Way
Sixmile Ridge
Sixmile Common S.
Sixmile Common
Sixmile Lane S.
Sixmile Road S.
Sixmile Ridge S.
Sixmile Cove
43rd Street (AS PER AREA STRUCTURE PLAN)

ZONE 'A'
ZONE 'B'
ZONE 'C'

□ONE C1 AREA□0.□□4□□
□ONE C2 AREA□0.□□4□□
□ONE C□ AREA□0.488□□
□ONE C4 AREA□1.□10□□
□ONE C5 AREA□0.□15□□
□ONE C□ AREA□0.□14□□
□ONE C□ AREA□0.□□0□□
□ONE C8 AREA□0.□□0□□
□ONE C10 AREA□1.014□□
□ONE C1□ AREA□1.288□□
□ONE C□ AREA□0.□□0□□
□ONE C11 AREA□0.480□□
□ONE C15 AREA□1.1□□□□
□ONE C12 AREA□0.488□□
□ONE C1□ AREA□0.□5□□□
□ONE C14 AREA□0.45□□□
□ONE B1 AREA□0.8□□□□
□ONE B4 AREA□2.212□□
□ONE B2 AREA□1.□20□□
□ONE B□ AREA□0.□10□□
□ONE B5 AREA□0.□8□□□
□ONE B□ AREA□1.8□4□□
□ONE B□ AREA□1.□12□□

Lot 1
Block 2
Plan 011 1356

TEMPORARY ROAD TO 43rd STREET SOUTH

* TABLE AMENDED NOV., 2015

Coulee Creek Outline Plan Revisions 2015

ZONE B	Land Use					Hydrologic				Pipe Conveyance				
													Capacity	
Area ID	Area (ha)	Zoning	Runoff Factor C	Increment AC	Cumulative AC	Increment TC (min)	Cumulative TC (min)	Cumulative i (mm/hr)	Design Flow (m^3/s)	Size (m)	Length (m)	Slope (%)	Flow (m^3/s)	Velocity (m/s)
B1	0.879	LDR	0.4	0.352	0.352	1.3	10.0	88.7	0.087	0.375	98	0.60%	0.136	1.230
B2	1.62	LDR	0.4	0.648	0.648	0.5	11.3	81.4	0.146	0.6	40	0.38%	0.379	1.339
B3	0.61	LDR	0.4	0.244	0.892	1.6	11.8	79.0	0.196	0.75	108	0.20%	0.498	1.127
B4*	2.212	LDR	0.4	0.885	1.777	0.8	13.4	72.3	0.388	0.75	83	0.53%	0.810	1.835
B5	0.686	LDR	0.4	0.274	2.051	3.3	14.2	69.6	0.427	0.75	253	0.26%	0.568	1.285
B6	1.61	LDR	0.4	0.644	2.695	0.4	17.5	60.2	0.481	0.9	36	0.25%	0.905	1.423
B7	1.79	LDR	0.4	0.716	3.411	3.3	17.9	59.2	0.592	0.9	269	0.23%	0.868	1.365
* Includes Pond C controlled release:			9.95	ha	x	3.1	L/s/ha	=	30.845	L/s				

ZONE C	Land Use					Hydrologic				Pipe Conveyance				
													Capacity	
Area ID	Area (ha)	Zoning	Runoff Factor C	Increment AC	Cumulative AC	Increment TC (min)	Cumulative TC (min)	Cumulative i (mm/hr)	Design Flow (m^3/s)	Size (m)	Length (m)	Slope (%)	Flow (m^3/s)	Velocity (m/s)
C1 - C7	4.265	LDR	0.4	1.706	1.706	10.0	14.4	69.0	0.327	0.525	98	0.58%	0.328	1.513
C8 - C11	2.93	LDR	0.4	1.172	1.172	10.0	14.9	67.2	0.219	0.525	103	0.26%	0.219	1.013
C12 - C15	2.773	LDR	0.4	1.109	1.109	10.0	15.2	66.3	0.204	0.525	103	0.23%	0.206	0.953

LEGEND:
- PROPOSED STORM SEWER
- EXISTING STORM SEWER MANHOLE
- FLOW DIRECTION
- CATCHMENT BOUNDARIES
- AREAS ALREADY CONSTRUCTED
- TRAP LOW AEA (APPROXIMATE)
- ZONE A
- ZONE B
- ZONE C

- INDICATES CHANGES MADE IN 2015 REVISION

TITLE:
MINOR STORM SYSTEM□REVISED NOVEMBER 2015

FIGURE:
C

CLIENT/PROJECT:
DOMENIC LAND DEVELOPMENT LTD
SOUTHGATE OUTLINE PLAN REVISIONS 2015

SOUTHGATE OUTLINE PLAN REVISIONS 2014 & 2015 COMPLETED BY MARTIN GEOMATIC CONSULTANTS LTD.. ORIGINAL OUTLINE PLAN 2008 COMPLETED BY UMA / AECOM.

UMA | AECOM

MARTIN GEOMATIC CONSULTANTS

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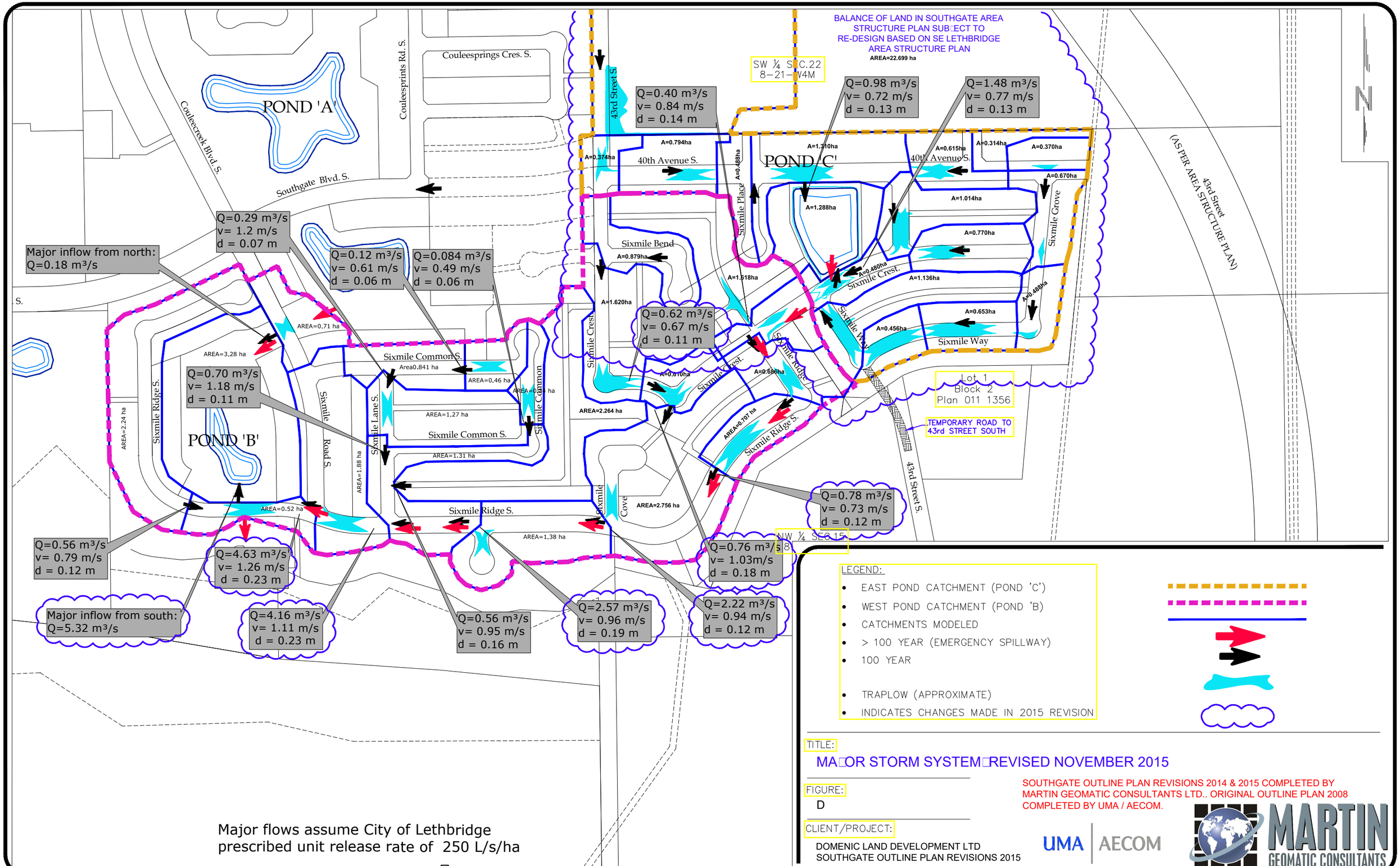

TITLE:

MAJOR STORM SYSTEM REVISED NOVEMBER 2015

FIGURE:

D

CLIENT/PROJECT:

DOMENIC LAND DEVELOPMENT LTD
SOUTHGATE OUTLINE PLAN REVISIONS 2015

SOUTHGATE OUTLINE PLAN REVISIONS 2014 & 2015 COMPLETED BY MARTIN GEOMATIC CONSULTANTS LTD.. ORIGINAL OUTLINE PLAN 2008 COMPLETED BY UMA / AECOM.

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BALANCE OF LAND IN SOUTHGATE AREA
STRUCTURE PLAN SUB□ECT TO
RE-DESIGN BASED ON SE LETHBRIDGE
AREA STRUCTURE PLAN

SW ¼ SEC.22
8–21–W4M

NW ¼ SEC.
8–21–W4

43rd Street
(AS PER AREA STRUCTURE PLAN)

GRADES AND ELEVATIONS
AMENDED

Lot
Block 2
Plan 011 1356

TEMPORARY ROAD TO
43rd STREET SOUTH

Couleecreek Blvd. S.
Couleesprints Rd. S.
Couleesprings Cres. S.
Southgate Blvd. S.
43rd Street S.
40th Avenue S.
Sixmile Place
Sixmile Bend
Sixmile Crest.
Sixmile Grove
Sixmile Way
Sixmile Ridge S.
Sixmile Common S.
Sixmile Road S.
Sixmile Lane S.
Sixmile Cove

LEGEND:

- GRADE & FLOW DIRECTION
- DESIGN ELEVATION
- OVERLAND DRAINAGE SYSTEM ROUTE
- EMERGENCY DRAINAGE SYSTEM ROUTE
- AREAS ALREADY CONSTRUCTED
- TRAPLOW AREAS
- TEMPORARY SWALE
- INDICATES CHANGES MADE IN 2015 REVISION

GRADING ELEVATIONS ARE CONCEPTUAL AND SUBJECT TO CHANGE WITH DETAILED DESIGN.

TITLE:

MASTER GRADING PLAN□REVISED NOVEMBER 2015

FIGURE:

E

CLIENT/PROJECT:

DOMENIC LAND DEVELOPMENT LTD
SOUTHGATE OUTLINE PLAN REVISIONS 2015

SOUTHGATE OUTLINE PLAN REVISIONS 2014 & 2015 COMPLETED BY MARTIN GEOMATIC CONSULTANTS LTD.. ORIGINAL OUTLINE PLAN 2008 COMPLETED BY UMA / AECOM.

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MARTIN GEOMATIC CONSULTANTS

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BLOCK 31

40th AVENUE SOUTH

HWL=913.9

CATCH BASIN

MR 1

PARK BENCH

CATCH BASIN

HWL=913.9

HWL=913.9

CATCH BASIN

HWL=913.9

BLOCK 29

BLOCK 29

BLOCK 34

SIXMILE CRES.

27

28

29

30

31

32

33

21

20

17

3

2

LEGEND

SHRUB BEDS

GRASSED AREA

TREE

2.25m ASPHALT PATH

TITLE:

MR1 - PARK CONCEPTUAL LANDSCAPING PLAN

FIGURE:

F

CLIENT/PROJECT:

DOMENIC LAND DEVELOPMENT LTD
SOUTHGATE OUTLINE PLAN REVISIONS 2015

SOUTHGATE OUTLINE PLAN REVISIONS 2014 & 2015 COMPLETED BY MARTIN GEOMATIC CONSULTANTS LTD.. ORIGINAL OUTLINE PLAN 2008 COMPLETED BY UMA / AECOM.

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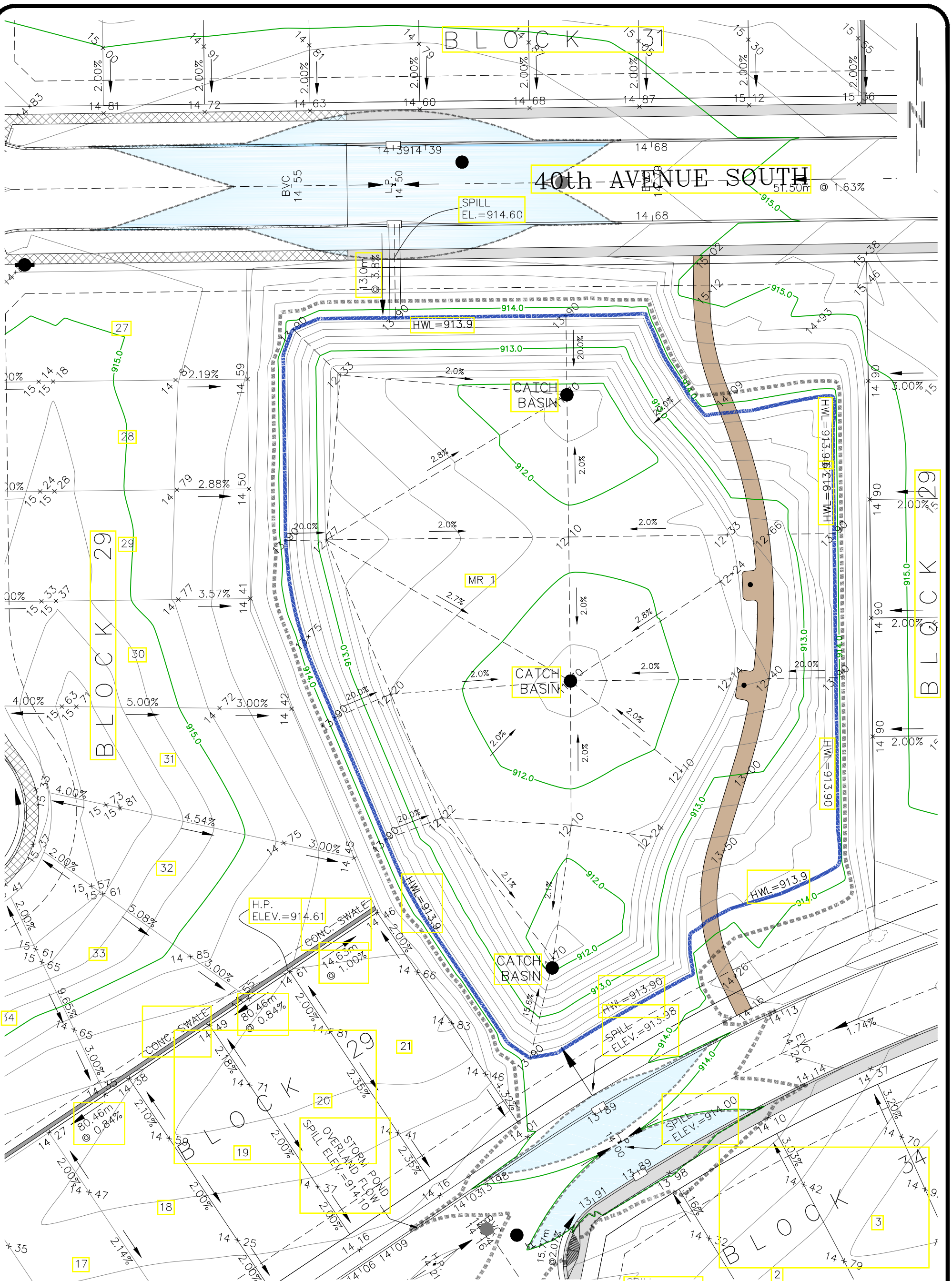

TITLE:

MR1 - PARK CONCEPTUAL GRADING PLAN

FIGURE:

G

CLIENT/PROJECT:

DOMENIC LAND DEVELOPMENT LTD
SOUTHGATE OUTLINE PLAN REVISIONS 2015

SOUTHGATE OUTLINE PLAN REVISIONS 2014 & 2015 COMPLETED BY MARTIN GEOMATIC CONSULTANTS LTD.. ORIGINAL OUTLINE PLAN 2008 COMPLETED BY UMA / AECOM.

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MARTIN GEOMATIC CONSULTANTS

Last Saved Date: Thursday, December 10, 2015 3:36:47 PM – By: [robm]

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Sunrise Investment Company Ltd.
South Gate Outline Plan - 2008
(Amended July, 2014)
(Amended November, 2015)

Master Servicing Plan, Revised July 2014, By Martin Geomatic Consultants Ltd.

Figure A – Water Distribution System
Figure B – Sanitary Sewer System
Figure C – Minor Storm System
Figure D – Minor Storm System
Figure E – Master Grading Plan

Couleecreek Blvd. S.
Couleecreek Lane S.
Couleecreek Crt. S.
Couleesprin Link S.
Couleecreek Manor S.
Couleesprings Terr. S.
Couleesprints Rd. S.
Couleesprings Cres. S.
Couleecreek Blvd. S.
Southgate Blvd. S.
43rd Street S.
SW ¼ SEC.22
8-21-W4M
FUTURE
43rd Street S.
Block 4
Plan 1734LK
Sixmile Common S.
Sixmile Ridge S.
Sixmile Road S.
Sixmile Lane S.
Sixmile Common
Sixmile Crest.
Sixmile Ridge
Sixmile Ridge S.
Sixmile Cove
Lot 1
Block 2
NW ¼ SEC.15
NW ¼ SEC.
8-21-W4M

PRIOR TO INSTALLATION OF WATER LINE ALONG 43rd STREET CITY TO DETERMINE IF AN ALTERNATE LOCATION IS MORE DESIRABLE OR IF THE CITY WANTS TO WAIT PENDING ANY NEW CHANGES TO THE OUTLINE PLAN

EXISTING TEMPORARY WATER FOR LOOPING

LEGEND:

- MAJOR DISTRIBUTION LINES (350ø)
- INTERNAL DISTRIBUTION NETWORK (200ø)
- AREAS ALREADY CONSTRUCTED
- INDICATES CHANGES MADE OUTSIDE OF MULTI-FAMILY AMENDMENT AREA

NOTES:

1. ALL WATER MAINS ARE 200ø UNLESS OTHERWISE INDICATED
2. FOR THE AREAS OUTSIDE OF REVISION BOUNDARY REFER TO SOUTHGATE OUTLINE PLAN "MASTER SERVICING PLAN" 2004 PREPARED BY UMA ENGINEERING LTD.

TITLE:

WATER DISTRIBUTION SYSTEM REVISED JULY 2014

FIGURE:

A

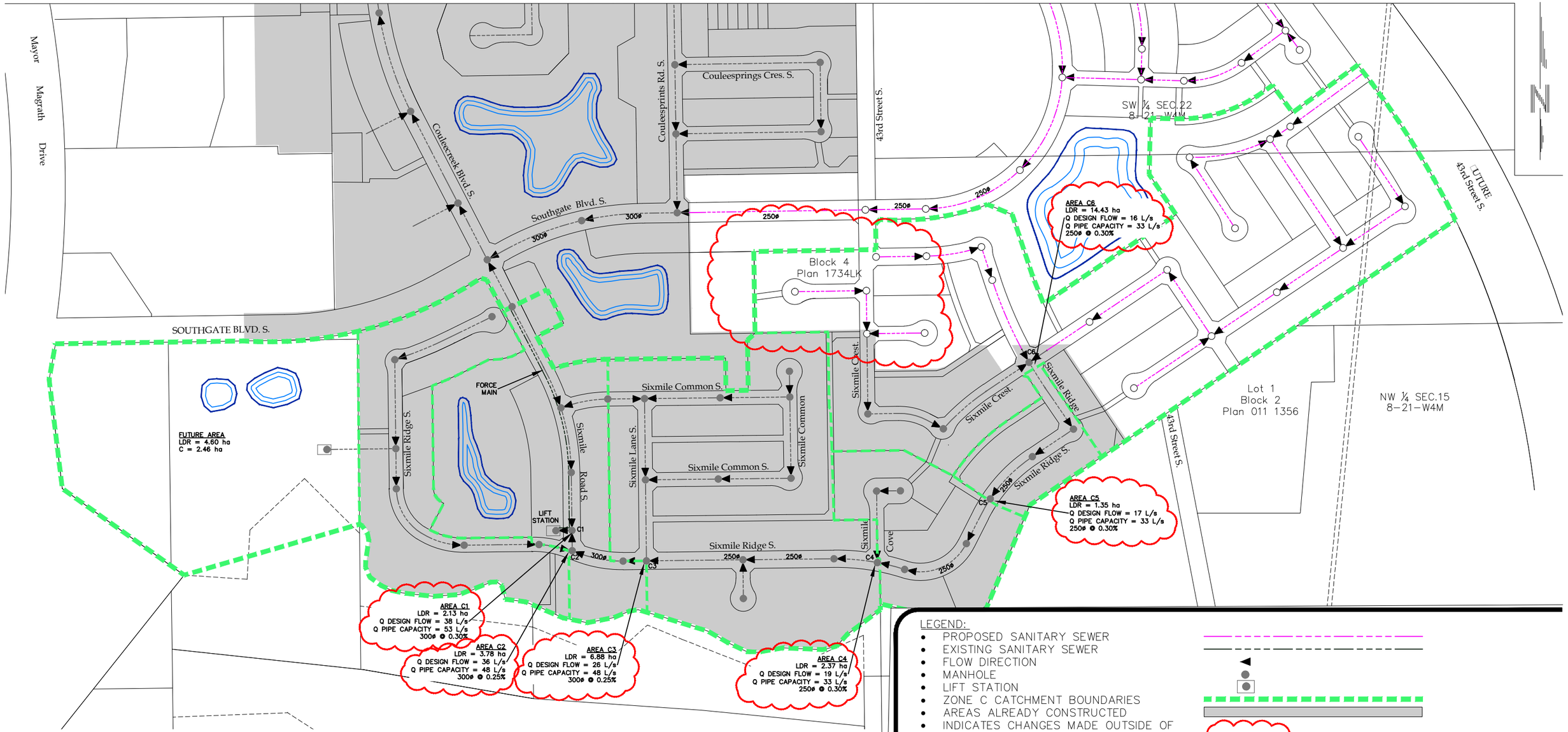
CLIENT/PROJECT:

DOMENIC LAND DEVELOPMENT LTD
SOUTHGATE OUTLINE PLAN REVISIONS 2014

SOUTHGATE OUTLINE PLAN REVISIONS 2014 COMPLETED BY MARTIN GEOMATIC CONSULTANTS LTD.. ORIGINAL OUTLINE PLAN 2008 COMPLETED BY UMA / AECOM.

UMA | AECOM

MARTIN GEOMATIC CONSULTANTS



* TABLE AMENDED JULY, 2014

Coulee Creek Outline Plan Revisions 2014

ZONE C	Land Use			Population		Dry Weather Flows				Wet Weather Flows		Peak Design Flow	
						Average Flow		Peak Flow		Average Flow	Infiltration		
Area ID	Area (Ha)	Zoning	Density (p/ha)	Increment (p)	Cumulative (p)	Increment (m^3/day)	Cumulative (m^3/day)	Peak Factor	Cumulative (m^3/day)	Cumulative (m^3/day)	(m^3/day)	(m^3/day)	(L/s)
C6	14.43	LDR	42	606	606	242	242	3.930	953	303	91	**1347**	**15.6**
C5	1.35	LDR	42	57	663	23	265	3.908	1036	331	99	**1467**	**17.0**
C4	2.37	LDR	42	100	762	40	305	3.873	1181	381	114	**1676**	**19.4**
C3	6.88	LDR	42	289	1051	116	421	3.786	1592	526	158	**2275**	**26.3**
C2	8.38	LDR	42	352	1403	141	561	3.700	2077	702	210	**2989**	**34.6**
C1	2.13	LDR	42	89	1493	36	597	3.681	2198	746	224	**3168**	**36.7**
C2	2.3	C	0	0	0	46	46	1.000	46	17	5	**68**	**0.8**
Lift Station	35.54	LDR, C			1493		643		2244	764	229	**3237**	**37.5**

LEGEND:

- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER
- FLOW DIRECTION
- MANHOLE
- LIFT STATION
- ZONE C CATCHMENT BOUNDARIES
- AREAS ALREADY CONSTRUCTED
- INDICATES CHANGES MADE OUTSIDE OF MULTI-FAMILY AMENDMENT AREA.

NOTES:

1. ANALYSIS IN ACCORDANCE WITH CITY OF LETHBRIDGE DESIGN STANDARDS 2013 SECTION 5.
2. ZONE C LOW DENSITY RESIDENTIAL = 42 PERSONS/ha
3. ALL SANITARY SEWER PIPES ARE 200ø UNLESS OTHERWISE SPECIFIED.

TITLE:

SANITARY SE□ ER SYSTEM□REVISED □ULY 2014

FIGURE:
B

CLIENT/PROJECT:

DOMENIC LAND DEVELOPMENT LTD
SOUTHGATE OUTLINE PLAN REVISIONS 2014

SOUTHGATE OUTLINE PLAN REVISIONS 2014 COMPLETED BY MARTIN GEOMATIC CONSULTANTS LTD.. ORIGINAL OUTLINE PLAN 2008 COMPLETED BY UMA / AECOM.

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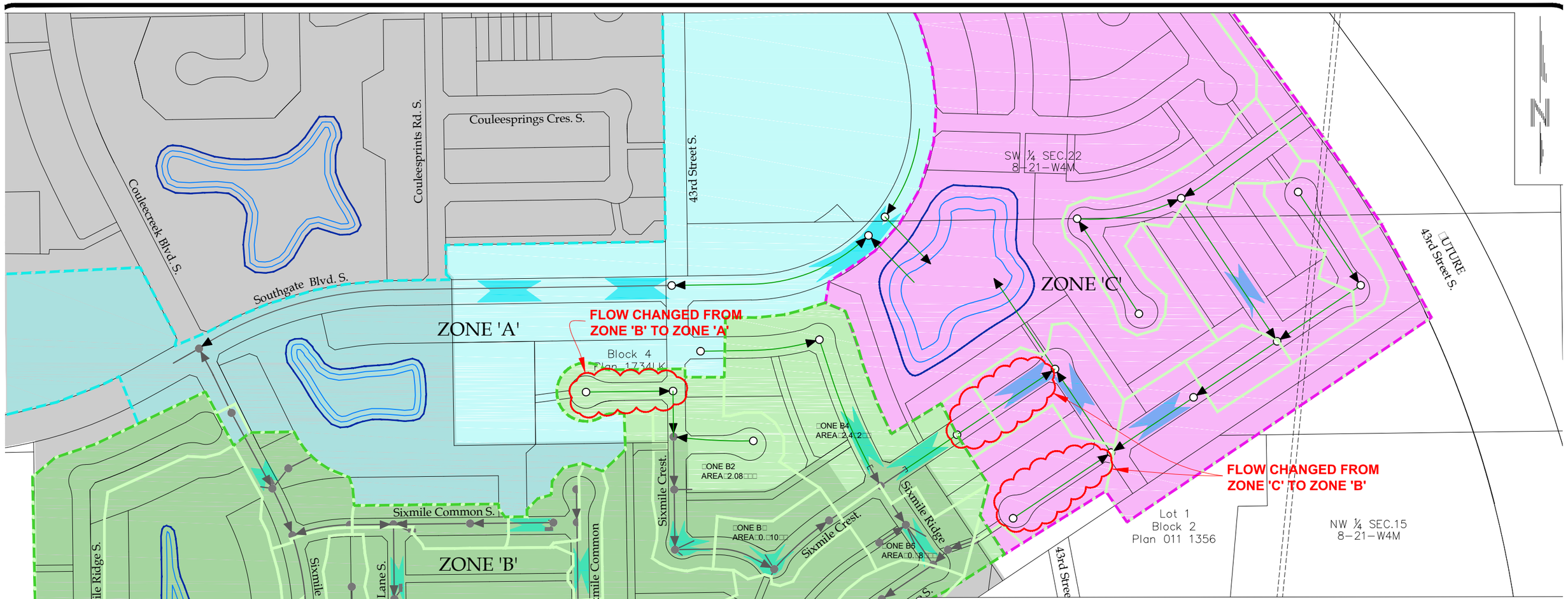
MARTIN GEOMATIC CONSULTANTS



* TABLE AMENDED JULY, 2014

Coulee Creek Outline Plan Revisions 2014

ZONE B	Land Use					Hydrologic				Pipe Conveyance				
													Capacity	
Area ID	Area (ha)	Zoning	Runoff Factor C	Increment AC	Cumulative AC	Increment TC (min)	Cumulative TC (min)	Cumulative i (mm/hr)	Design Flow (m^3/s)	Size (m)	Length (m)	Slope (%)	Flow (m^3/s)	Velocity (m/s)
B2	2.086	LDR	0.4	0.834	0.834	0.5	10.0	88.7	0.206	0.6	40	0.38%	0.379	1.339
B3	0.6102	LDR	0.4	0.244	1.078	1.6	10.5	85.8	0.257	0.75	108	0.20%	0.498	1.127
B4	2.47	LDR	0.4	0.988	2.066	0.8	12.1	77.7	0.446	0.75	83	0.53%	0.810	1.835
B5	0.686	LDR	0.4	0.274	2.341	3.3	12.9	74.5	0.485	0.75	253	0.26%	0.568	1.285
B6	1.61	LDR	0.4	0.644	2.985	0.4	16.1	63.6	0.527	0.9	36	0.25%	0.905	1.423
B7	1.79	LDR	0.4	0.716	3.701	3.3	16.6	62.5	0.642	0.9	269	0.23%	0.868	1.365

LEGEND:

- PROPOSED STORM SEWER
- EXISTING STORM SEWER MANHOLE
- FLOW DIRECTION
- ZONE B CATCHMENT BOUNDARIES
- AREAS ALREADY CONSTRUCTED
- TRAP LOW AEA (APPROXIMATE)
- ZONE A
- ZONE B
- ZONE C
- INDICATES CHANGES MADE OUTSIDE OF MULTI-FAMILY AMENDMENT AREA.

TITLE:

MINOR STORM SYSTEM REVISED JULY 2014

FIGURE:

C

CLIENT/PROJECT:

DOMENIC LAND DEVELOPMENT LTD
SOUTHGATE OUTLINE PLAN REVISIONS 2014

SOUTHGATE OUTLINE PLAN REVISIONS 2014 COMPLETED BY MARTIN GEOMATIC CONSULTANTS LTD.. ORIGINAL OUTLINE PLAN 2008 COMPLETED BY UMA / AECOM.

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MARTIN GEOMATIC CONSULTANTS

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POND 'A'

POND 'B'

POND 'C'

OVERLAND FLOW AREA SLIGHTLY INCREASED

OVERLAND FLOW RE-DIRECTED TO POND 'C' FROM POND 'B'

Major inflow from north: Q=0.18 m³/s

Major inflow from south: Q=2.01 m³/s

Major inflow from south: Q=5.28 m³/s

Q=0.29 m³/s v= 1.2 m/s d = 0.07 m

Q=0.12 m³/s v= 0.61 m/s d = 0.06 m

Q=0.084 m³/s v= 0.49 m/s d = 0.06 m

Q=0.38 m³/s v= 0.55 m/s d = 0.10 m

Q=0.61 m³/s v= 1.25 m/s d = 0.08 m

Q=0.29 m³/s v= 0.67 m/s d = 0.09 m

Q=0.63 m³/s v= 1.01 m/s d = 0.11 m

Q=0.15 m³/s v= 0.87 m/s d = 0.06 m

Q=1.22 m³/s v= 0.96 m/s d = 0.16 m

Q=1.79 m³/s v= 1.06 m/s d = 0.18 m

Q=0.17 m³/s v= 0.72 m/s d = 0.10 m

Q=0.80 m³/s v= 0.86 m/s d = 0.14 m

Q=0.98 m³/s v= 0.95 m/s d = 0.15 m

Q=0.52 m³/s v= 0.96 m/s d = 0.17 m

Q=2.19 m³/s v= 1.09 m/s d = 0.20 m

Q=2.53 m³/s v= 1.13 m/s d = 0.22 m

Q=0.56 m³/s v= 0.95 m/s d = 0.16 m

Q=4.12 m³/s v= 1.31 m/s d = 0.26 m

Q=4.59 m³/s v= 1.35 m/s d = 0.28 m

Q=0.56 m³/s v= 0.79 m/s d = 0.12 m

Q=0.70 m³/s v= 1.18 m/s d = 0.11 m

Major flows assume City of Lethbridge prescribed unit release rate of 250 L/s/ha

LEGEND:

- EAST POD CATCHMENT
- WEST POND CATCHMENT
- CATCHMENTS MODELED
- > 100 YEAR (EMERGENCY SPILLWAY)
- 100 YEAR
- STREET GRADING
- TRAPLOW (APPROXIMATE)
- INDICATES CHANGES MADE OUTSIDE OF MULTI-FAMILY AMENDMENT AREA

TITLE:

MA□OR STORM SYSTEM□REVISED □ULY 2014

FIGURE:

D

CLIENT/PROJECT:

DOMENIC LAND DEVELOPMENT LTD
SOUTHGATE OUTLINE PLAN REVISIONS 2014

SOUTHGATE OUTLINE PLAN REVISIONS 2014 COMPLETED BY MARTIN GEOMATIC CONSULTANTS LTD.. ORIGINAL OUTLINE PLAN 2008 COMPLETED BY UMA / AECOM.

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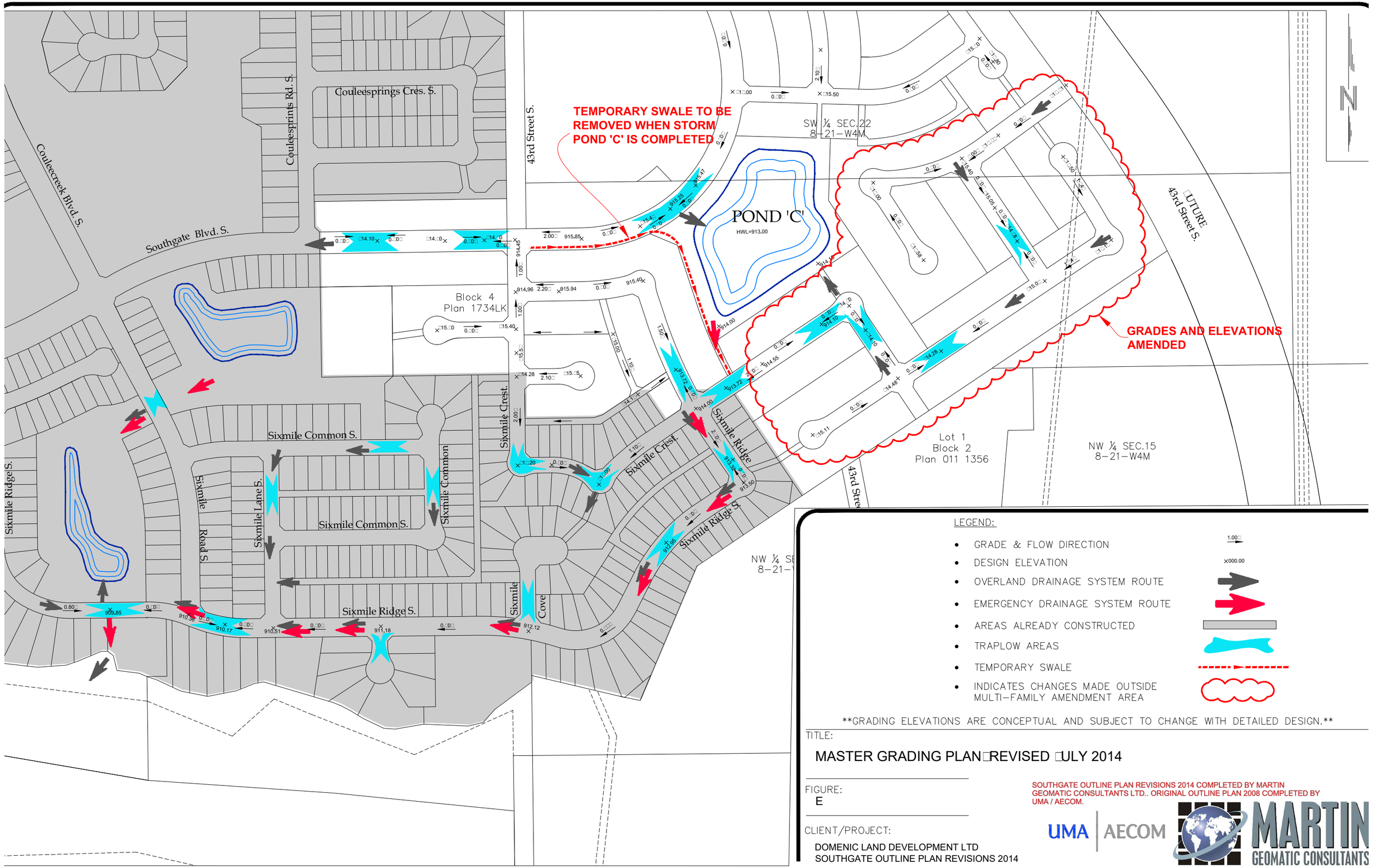
MARTIN GEOMATIC CONSULTANTS



LEGEND:

- GRADE & FLOW DIRECTION — 1.00
- DESIGN ELEVATION — ×000.00
- OVERLAND DRAINAGE SYSTEM ROUTE
- EMERGENCY DRAINAGE SYSTEM ROUTE
- AREAS ALREADY CONSTRUCTED
- TRAPLOW AREAS
- TEMPORARY SWALE
- INDICATES CHANGES MADE OUTSIDE MULTI-FAMILY AMENDMENT AREA

GRADING ELEVATIONS ARE CONCEPTUAL AND SUBJECT TO CHANGE WITH DETAILED DESIGN.

TITLE:

MASTER GRADING PLAN REVISED JULY 2014

FIGURE:
E

CLIENT/PROJECT:
DOMENIC LAND DEVELOPMENT LTD
SOUTHGATE OUTLINE PLAN REVISIONS 2014

SOUTHGATE OUTLINE PLAN REVISIONS 2014 COMPLETED BY MARTIN GEOMATIC CONSULTANTS LTD.. ORIGINAL OUTLINE PLAN 2008 COMPLETED BY UMA / AECOM.

UMA | AECOM

MARTIN GEOMATIC CONSULTANTS

Sunrise Investment Company Ltd.
South Gate Outline Plan - 2008
(Amended July, 2014)
(Amended November, 2015)

Master Servicing Plan, Original Issued 2008, By UMA
Cover Page
Water Distribution System – Site Plan & Analysis
Sanitary Sewer System – Site Plan & Analysis
Sanitary Sewer System – Zone A,B, and C Analysis
Minor Storm System – Site Plan
Minor Storm System – Zone A Analysis
Minor Storm System – Zone B and C Analysis
Master Grading Plan & Overland Flow – Site Plan
Overland Flows (Revised by Martin Geomatic Cosultants, May 2008)

Sunrise Investments
Couleecreek

Outline Plan
Master Servicing Plan

LIST OF PROJECT DRAWINGS

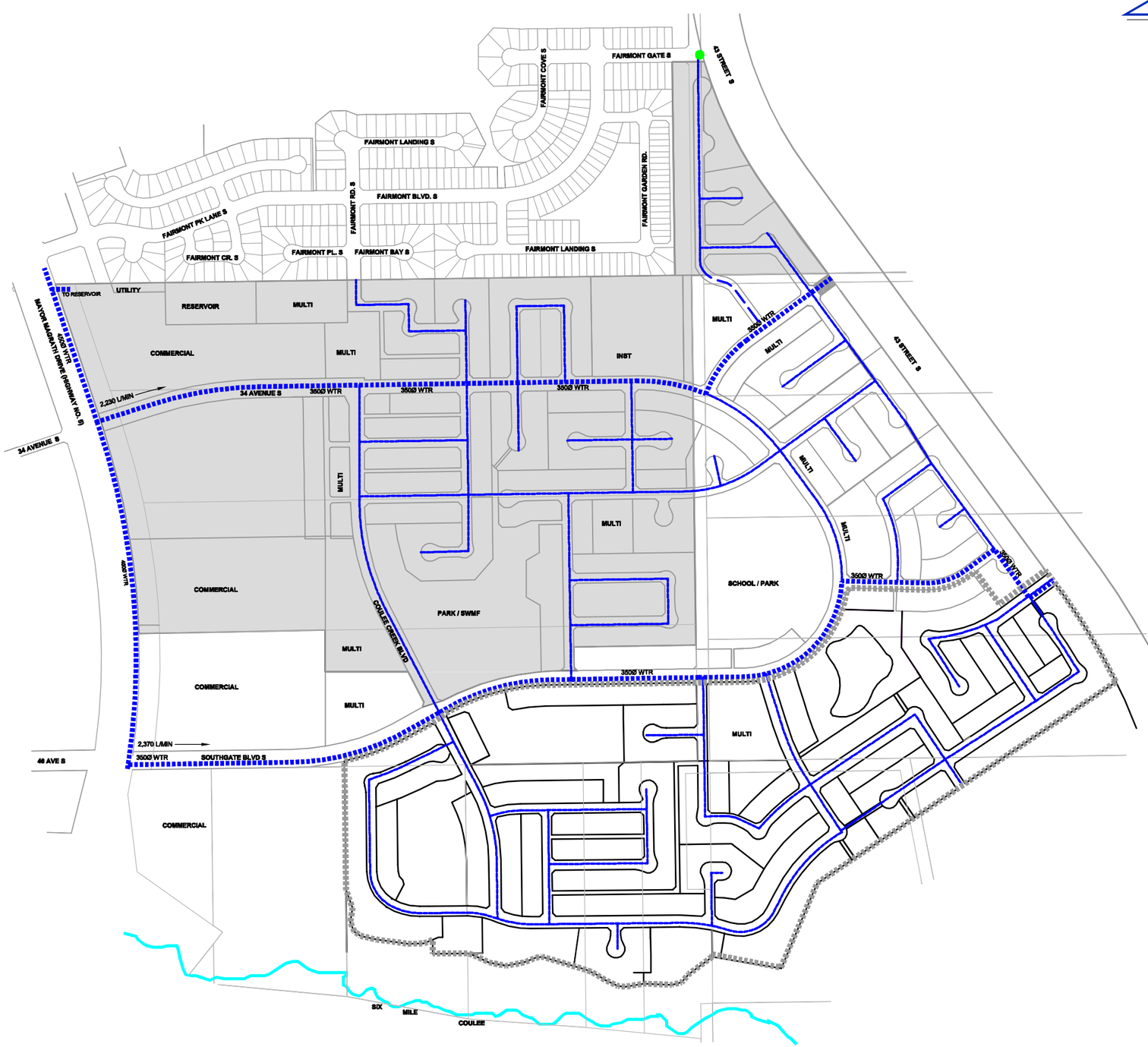
Issued For Approval

Issue Date: 08/06/30

UMA | AECOM

Set No.: _____

PROJECT NUMBER	DRAWING NUMBER	ISSUE/REVISION
5296-012-00	04-CP0001	A



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LEGEND

- MAJOR DISTRIBUTION LINES
- INTERNAL DISTRIBUTION NETWORK
- 2008 REVISION BOUNDARY
- AREAS ALREADY CONSTRUCTED

NOTES

1. ALL WATER MAINS ARE 200Ø UNLESS OTHERWISE INDICATED.

2. FOR THE AREAS OUTSIDE OF REVISION BOUNDARY REFER TO SOUTHGATE OUTLINE PLAN "MASTER SERVICING PLAN" 2004 PREPARED BY UMA ENGINEERING LTD.

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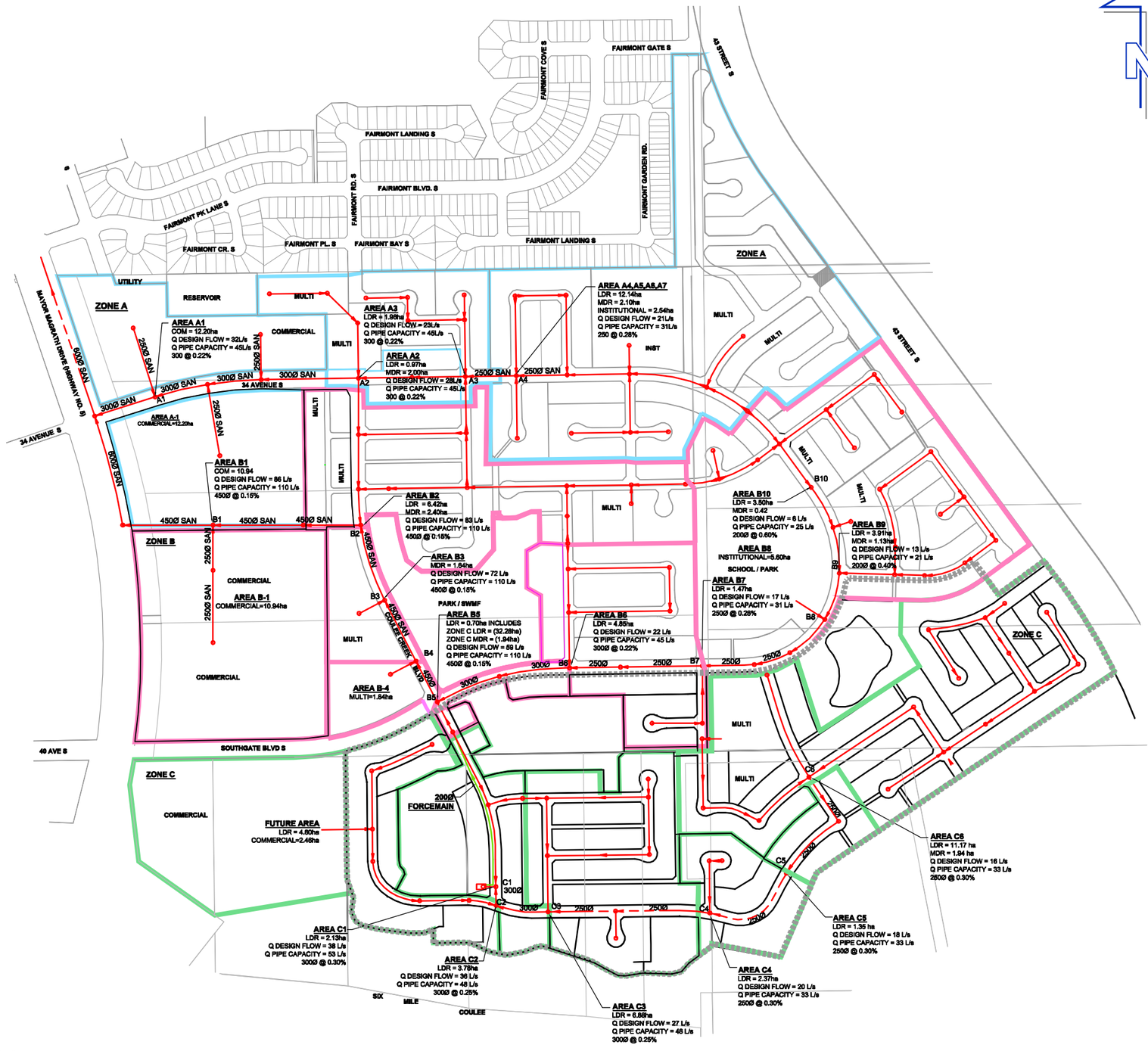
UMA | AECOM

Sunrise Investments
South Gate
Outline Plan Revision 2008

Water Distribution System
Site Plan & Analysis
01-CL1001



LEGEND

- SANITARY SEWER (SAN)
- SANITARY SEWER FORCEMAIN (SAN-FM)
- FLOW DIRECTION
- MANHOLE
- LIFT STATION
- ZONE A CATCHMENT BOUNDARIES
- ZONE B CATCHMENT BOUNDARIES
- ZONE C CATCHMENT BOUNDARIES
- 2008 REVISION BOUNDARY
- AREAS ALREADY CONSTRUCTED

NOTES

1. ANALYSIS IN ACCORDANCE WITH CITY OF LETHBIRDGE DESIGN STANDARDS 2007 SECTION 5.

2.ZONE A&B LOW DENSITY RESIDENTIAL = 50 PERSONS/ha OR 2.8 PERSONS/UNIT
ZONE C LOW DENSITY RESIDENTIAL = 42 PERSONS/ha OR 2.8 PERSONS/UNIT
MEDIUM DENSITY RESIDENTIAL = 80 PERSONS/ha OR 2.0 PERSONS/UNIT

3. ALL SANITARY SEWER PIPES ARE 200Ø UNLESS OTHERWISE SPECIFIED.

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UMA | AECOM

Sunrise Investments
South Gate
Outline Plan Revision 2008

Sanitary Sewer System
Site Plan & Analysis
01-CL1002

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ZONE A

ZONE A

RESIDENTIAL Infiltration 0.15 m3/cap/day Per Capita Dry Flow 0.400 m3/cap/day Per Capita Wet 0.500 m3/cap/day

Area ID	From MH	To MH	Area ha	Pop Density pers/ha	Pop Increment	Cumulative Population	Dry Weather Flows: Flow Increment m3/day	Dry Weather Flows: Cumulative Avg. Flow m3/day	Dry Weather Flows: Peaking Factor	Dry Weather Flows: Cumulative Peak Flow m3/day	Wet: Cumulative Flow m3/day	Cumulative Infiltration m3/day	Cumulative Flow m3/day
A-7	7	6			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A-6	6	5			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A-5	5	4			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A-4	4	3	14.24	54	769	769	307.58	307.58	3.87	1190.56	384.48	115.34	1690.38
A-3	3	2	1.96	50	98	867	39.20	346.78	3.84	1331.35	433.48	130.04	1894.87
A-2	2	1	2.97	70	208	1075	83.16	429.94	3.78	1625.00	537.43	161.23	2323.66
A-1	1	EXST	0.00	0	0	1075	0.00	429.94	0.00	1625.00	537.43	161.23	2323.66
		Total	19.17										

Note: A4 to A7 have been combined based on reused land use in northeast corner (including Institutional)

COMMERCIAL Infiltration 2.25 m3/ha/day

Area ID	From MH	To MH	Area ha	Cumulative Area ha	Avg Unit Flow m3/day/ha	Flow Increment m3/day	Cumulative Avg. Flow m3/day	Peaking Factor	Cumulative Peak Flow m3/day	Cumulative Infiltration m3/day	Cumulative Flow m3/day
A-7	7	6	0.00	0.00	0.00	0.00	0.00	1.0	0.00	0.000	0.00
A-6	6	5	0.00	0.00	0.00	0.00	0.00	1.0	0.00	0.000	0.00
A-5	5	4	0.00	0.00	0.00	0.00	0.00	1.0	0.00	0.000	0.00
A-4	4	3	0.00	0.00	0.00	0.00	0.00	1.0	0.00	0.000	0.00
A-3	3	2	0.00	0.00	0.00	0.00	0.00	1.0	0.00	0.000	0.00
A-2	2	1	0.00	0.00	0.00	0.00	0.00	1.0	0.00	0.000	0.00
A-1	1	EXST	12.20	12.20	27.50	335.50	335.50	1.0	335.50	27.460	362.95

INSTITUTIONAL Infiltration 2.25 m3/ha/day

Area ID	From MH	To MH	Area ha	Cumulative Area ha	Avg Unit Flow m3/day/ha	Flow Increment m3/day	Cumulative Avg. Flow m3/day	Peaking Factor	Cumulative Peak Flow m3/day	Infiltration m3/day	Cumulative Flow m3/day
A-7	7	6	0.00	0.00	40.00	0.00	0.00	1.0	0.00	0.000	0.00
A-6	6	5	0.00	0.00	40.00	0.00	0.00	1.0	0.00	0.000	0.00
A-5	5	4	0.00	0.00	40.00	0.00	0.00	1.0	0.00	0.000	0.00
A-4	4	3	2.54	2.54	40.00	101.60	101.60	1.0	101.60	5.715	107.32
A-3	3	2	0.00	2.54	40.00	0.00	101.60	1.0	101.60	5.715	107.32
A-2	2	1	0.00	2.54	40.00	0.00	101.60	1.0	101.60	5.715	107.32
A-1	1	EXST	0.00	2.54	40.00	0.00	101.60	1.0	101.60	5.715	107.32

SEWER DESIGN

ZONE A — HYDRAULIC ELEMENTS — A.E. 7.2.1.2.

Area ID	From MH	To MH	Cumulative Peak m3/d	Cumulative Peak L/s	Sewer Diameter m	Slope m/m	Mannings n	Capacity Q=L/s	Capacity Req=Peak/.86 Q= L/s	Velocity Full m/s (Vf)
A-7	7	6	0.000	0	0.200	0.0060	0.013	25	0	0.81
A-6	6	5	0.000	0	0.200	0.0040	0.013	21	0	0.66
A-5	5	4	0.000	0	0.250	0.0028	0.013	31	0	0.64
A-4	4	3	1797.696	21	0.250	0.0028	0.013	31	24	0.64
A-3	3	2	2002.184	23	0.300	0.0022	0.013	45	27	0.64
A-2	2	1	2430.976	28	0.300	0.0022	0.013	45	33	0.64
A-1	1	EXST	2793.926	32	0.300	0.0022	0.013	45	38	0.64
TOTALS										

ZONE B

ZONE B

RESIDENTIAL Infiltration 0.15 m3/cap/day Per Capita Dry Flow 0.400 m3/cap/day Per Capita Wet 0.500 m3/cap/day

Area ID	From MH	To MH	Area ha	Pop. Dens. p/ha	Pop Increment	Cumulative Population	Dry Weather Flows: Flow Increment m3/day	Dry Weather Flows: Cumulative Avg. Flow m3/day	Dry Weather Flows: Peaking Factor	Dry Weather Flows: Cumulative Peak Flow m3/day	Wet: Cumulative Flow m3/day	Cumulative Infiltration m3/day	Cumulative Flow m3/day
B-10	10	9	3.91	53	207	207	82.89	82.89	4.14	343.37	103.62	31.08	478.07
B-9	9	8	5.04	57	287	495	114.91	197.80	3.98	786.60	247.26	74.18	1108.04
B-8	8	7	0.00	0	0	495	0.00	197.80	0.00	786.60	247.26	74.18	1108.04
B-7	7	6	1.47	50	74	569	29.40	227.20	3.95	896.34	284.01	85.20	1265.55
B-6	6	5	4.85	50	243	811	97.00	324.20	3.86	1250.45	405.26	121.58	1777.28
B-5	5	4	34.92	44	1536	2347	614.59	938.80	3.53	3314.64	1173.50	352.05	4840.18
B-4	4	3	1.84	245	451	2798	180.32	1119.12	3.47	3881.07	1398.90	419.67	5699.63
B-3	3	2	1.64	80	131	2929	52.48	1171.60	3.45	4043.44	1464.50	439.35	5947.29
B-2	2	1	8.85	58	513	3442	205.32	1376.92	3.39	4669.09	1721.15	516.34	6906.58
B-1	1	EXST	0.00	50	0	3442	0.00	1376.92	0.00	4669.09	1721.15	516.34	6906.58
		Total	62.52										

Note:
B-4 High density site was added, assumed density = 245 p/ha
B-5 Includes area contribution from Zone C (force main) of 34.22 ha at equivalent population density of 44.3 p/ha and future commercial A= 2.30 ha

COMMERCIAL & INSTITUTIONAL Infiltration 2.25 m3/ha/day

Area ID	From MH	To MH	Area ha	Cumulative Area ha	Avg Unit Flow m3/day/ha	Flow Increment m3/day	Cumulative Avg. Flow m3/day	Peaking Factor	Cumulative Peak Flow m3/day	Cumulative Infiltration m3/day	Cumulative Flow m3/day
B-10	10	9	0.00	0.00	0.00	0.00	0.00	1.0	0.00	0.00	0.00
B-9	9	8	0.00	0.00	0.00	0.00	0.00	1.0	0.00	0.00	0.00
B-8	8	7	5.60	5.60	27.50	154.00	154.00	1.0	154.00	12.60	166.60
B-7	7	6	0.00	5.60	0.00	0.00	154.00	1.0	154.00	12.60	166.60
B-6	6	5	0.00	5.60	0.00	0.00	154.00	1.0	154.00	12.60	166.60
B-5	5	4	2.30	7.90	27.50	63.25	217.25	1.0	217.25	17.78	235.03
B-4	4	3	0.00	7.90	27.50	0.00	217.25	1.0	217.25	17.78	235.03
B-3	3	2	0.00	7.90	0.00	0.00	217.25	1.0	217.25	17.78	235.03
B-2	2	1	0.00	7.90	0.00	0.00	217.25	1.0	217.25	17.78	235.03
B-1	1	EXST	10.94	18.84	27.50	300.85	518.10	1.0	518.10	42.39	560.49

SEWER DESIGN

ZONE B — HYDRAULIC ELEMENTS — A.E. 7.2.1.2.

Area ID	From MH	To MH	Cumulative Peak m3/d	Cumulative Peak L/s	Sewer Diameter m	Slope m/m	Mannings n	Capacity Full Q=L/s	Capacity Req=Peak/.86 Q=L/s	Velocity Full m/s (Vf)
B-10	10	9	478.069	6	0.200	0.0060	0.013	25	6	0.81
B-9	9	8	1108.036	13	0.200	0.0040	0.013	21	15	0.66
B-8	8	7	1274.636	15	0.250	0.0028	0.013	31	17	0.64
B-7	7	6	1432.148	17	0.250	0.0028	0.013	31	19	0.64
B-6	6	5	1943.879	22	0.300	0.0022	0.013	45	26	0.64
B-5	5	4	5075.209	59	0.450	0.0015	0.013	110	68	0.69
B-4	4	3	5934.658	69	0.450	0.0015	0.013	110	80	0.69
B-3	3	2	6182.310	72	0.450	0.0015	0.013	110	83	0.69
B-2	2	1	7141.607	83	0.450	0.0015	0.013	110	96	0.69
B-1	1	EXST	7467.072	86	0.450	0.0015	0.013	110	100	0.69
TOTALS										

ZONE C

ZONE C

RESIDENTIAL Infiltration 0.15 m3/cap/day Per Capita Dry Flow 0.400 m3/cap/day Per Capita Wet 0.500 m3/cap/day

Area ID	From MH	To MH	Area ha	Pop.Dens. p/ha	Pop Increment	Cumulative Population	Dry Weather Flows: Flow Increment m3/day	Dry Weather Flows: Cumulative Avg. Flow m3/day	Dry Weather Flows: Peaking Factor	Dry Weather Flows: Cumulative Peak Flow m3/day	Wet: Cumulative Flow m3/day	Cumulative Infiltration m3/day	Cumulative Flow m3/day
C-6	6	5	13.11	48	629	629	251.71	251.71	3.92	986.90	314.64	94.39	1395.93
C-5	5	4	1.35	42	57	686	22.68	274.39	3.90	1070.02	342.99	102.90	1515.91
C-4	4	3	2.37	42	100	786	39.92	314.21	3.87	1214.46	392.76	117.83	1725.05
C-3	3	2	6.88	42	289	1074	115.58	429.79	3.78	1624.47	537.24	161.17	2322.88
C-2	2	1	8.38	42	352	1426	140.78	570.58	3.70	2108.42	713.22	213.97	3035.60
C-1	1	LS	2.13	42	89	1516	35.78	606.36	3.68	2229.13	757.95	227.39	3214.46
FM	LS	B5	0.00	0	0	1516	0.00	606.36	0.00	2229.13	757.95	227.39	3214.46
		TOTAL	34.22										

Note: C-2 includes future area LDR = 4.60 ha

COMMERCIAL Infiltration 2.25 m3/ha/day

Area ID	From MH	To MH	Area ha	Cumulative Area ha	Avg Unit Flow m3/day/ha	Flow Increment m3/day	Cumulative Avg. Flow m3/day	Peaking Factor	Cumulative Peak Flow m3/day	Cumulative Infiltration m3/day	Cumulative Flow m3/day
C-6	6	5	0.00	0.00	0.00	0.00	0.00	1.0	0.00	0.000	0.00
C-5	5	4	0.00	0.00	0.00	0.00	0.00	1.0	0.00	0.000	0.00
C-4	4	3	0.00	0.00	0.00	0.00	0.00	1.0	0.00	0.000	0.00
C-3	3	2	0.00	0.00	0.00	0.00	0.00	1.0	0.00	0.000	0.00
C-2	2	1	2.30	2.30	27.50	63.25	63.25	1.0	63.25	5.175	68.43
C-1	1	LS	0.00	2.30	27.50	0.00	63.25	1.0	63.25	5.175	68.43
FM	LS	B5	0.00	2.30	0.00	0.00	63.25	1.0	63.25	5.175	68.43

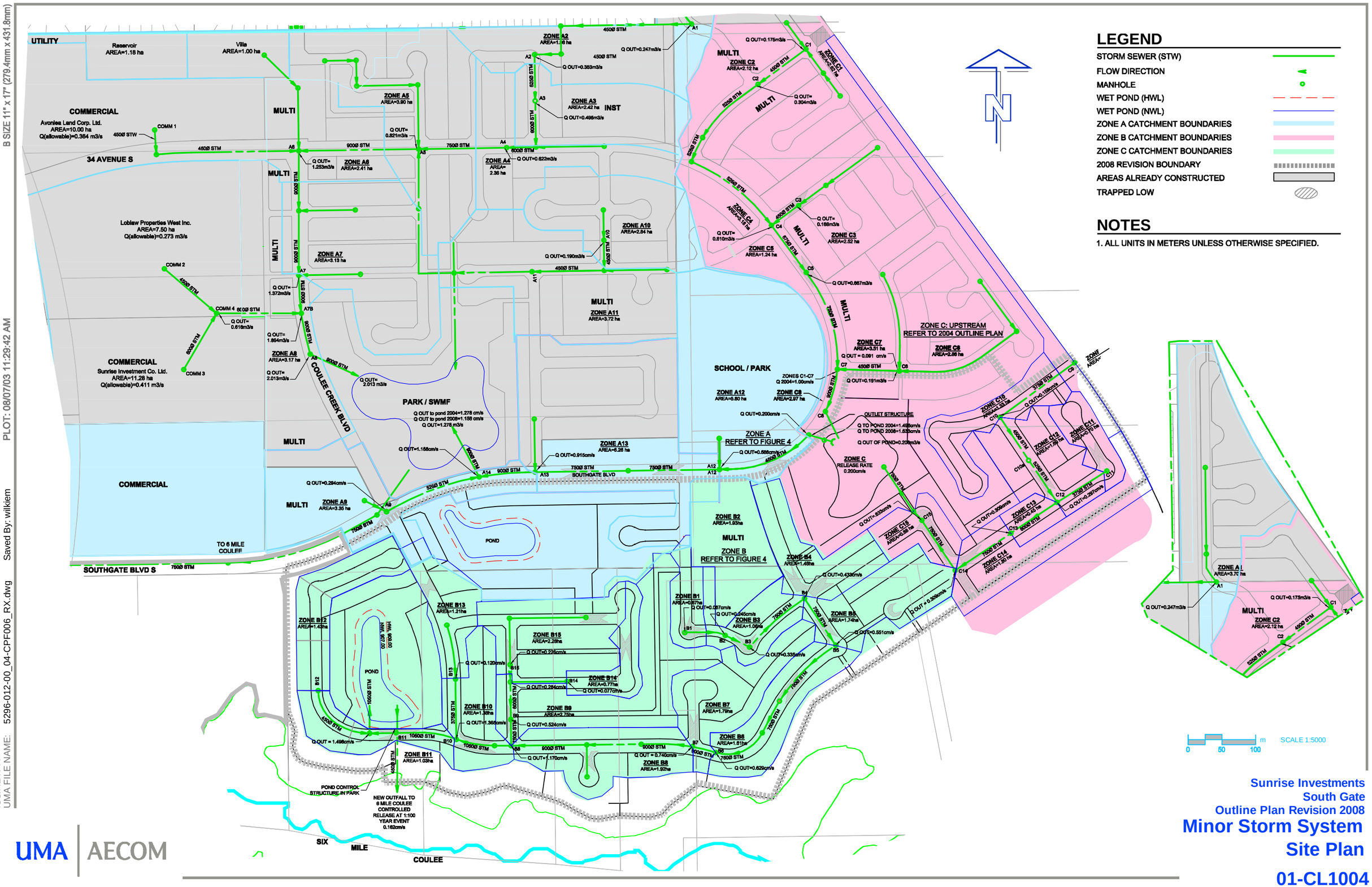
SEWER DESIGN

ZONE C — HYDRAULIC ELEMENTS — A.E. 7.2.1.2.

Area ID	From MH	To MH	Cumulative Peak m3/d	Cumulative Peak m3/s	Sewer Diameter m	Slope m/m	Mannings n	Capacity Full Q= m3/s	Capacity Req=Peak/.86 Q=m3/s	Velocity Full m/s (Vf)
C-6	6	5	1395.935	16	0.250	0.0030	0.013	33	19	0.66
C-5	5	4	1515.908	18	0.250	0.0030	0.013	33	20	0.66
C-4	4	3	1725.051	20	0.250	0.0030	0.013	33	23	0.66
C-3	3	2	2322.883	27	0.300	0.0025	0.013	48	31	0.68
C-2	2	1	3104.028	36	0.300	0.0025	0.013	48	42	0.68
C-1	1	LS	3282.895	38	0.300	0.0030	0.013	53	44	0.75
FM	LS	B5	3282.895	38						
TOTALS										

UMA | AECOM

Sunrise Investments
South Gate
Outline Plan Revisions 2008
Sanitary Sewer System
Zone A, B, and C Analysis
01-CL1003



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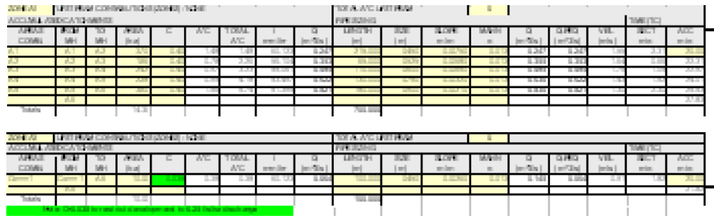
UMA | AECOM

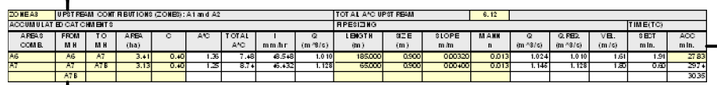
Sunrise Investments
South Gate
Outline Plan Revision 2008

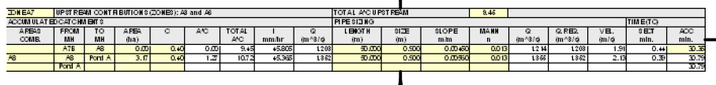
Minor Storm System Site Plan

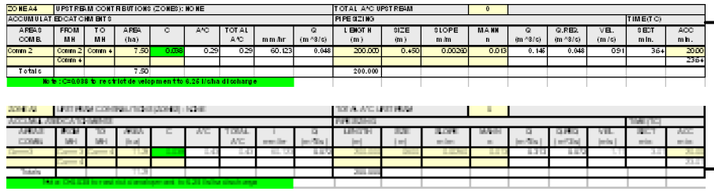
01-CL1004

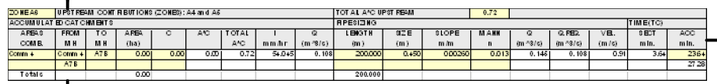
POND A CATCHMENT



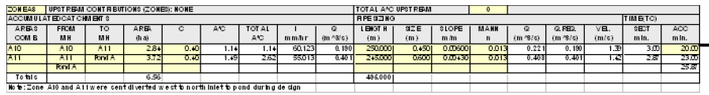


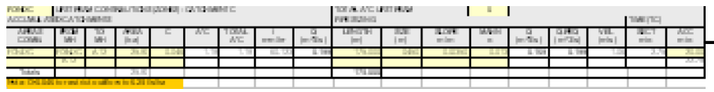


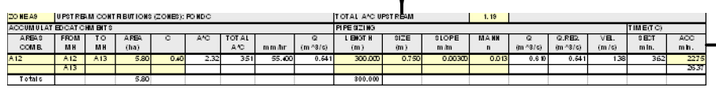


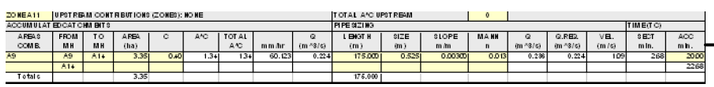


Pond A









Sunrise Investments
South Gate
Outline Plan Revisions 2008

Minor Storm Sewer System
Zone A Analysis
01-CL1005

UMA | AECOM

POND B CATCHMENT

ZONE B1	UPSTREAM CONTRIBUTIONS (ZONES): NONE					TOTAL A/C UPSTREAM			0							
ACCUMULATED CATCHMENTS						PIPE SIZING									TIME (TC)	
AREA'S COMB.	FROM MH	TO MH	AREA (ha)	C	A/C	TOTAL A/C	I mm/hr	Q req (m^3/s)	LENGTH (m)	SIZE (m)	SLOPE m/m	MANN n	VEL des (m/s)	Q des (m^3/s)	Q req (m^3/s)	SECT min.	ACC min.
B1	B1	B3	0.67	0.40	0.27	0.27	89.5	0.067	60.500	0.450	0.00250	0.013	0.50	0.148	0.067	1.12	10.00
B2	B2	B3	1.93	0.40	0.77	1.04	84.6	0.246	40.150	0.600	0.00250	0.013	1.09	0.307	0.246	0.62	11.12
B3	B3	B4	1.06	0.40	0.42	1.46	82.2	0.334	109.000	0.750	0.00150	0.013	0.96	0.441	0.334	1.86	11.74
B4	B4	B5	1.48	0.40	0.59	2.06	76.7	0.439	83.410	0.750	0.00200	0.013	1.13	0.488	0.439	1.23	13.60
B5	B5	B6	1.74	0.40	0.70	2.75	72.0	0.444	253.360	0.750	0.00450	0.013	1.69	0.747	0.641	2.50	14.83
B6	B6	B7	1.61	0.40	0.64	3.40	68.7	0.620	36.030	0.900	0.00250	0.013	1.42	0.896	0.629	0.42	17.33
B7	B7	B8	1.79	0.40	0.72	4.11	64.7	0.740	268.890	0.900	0.00250	0.013	1.42	0.896	0.740	3.15	17.75
	B8					4.11											20.90

ZONE B8	UPSTREAM CONTRIBUTIONS (ZONES): ZONES B6, B8					TOTAL A/C UPSTREAM			6.40							
ACCUMULATED CATCHMENTS						PIPE SIZING									TIME (TC)	
AREA'S COMB.	FROM MH	TO MH	AREA (ha)	C	A/C	TOTAL A/C	I mm/hr	Q req (m^3/s)	LENGTH (m)	SIZE (m)	SLOPE m/m	MANN n	VEL des (m/s)	Q des (m^3/s)	Q req (m^3/s)	SECT min.	ACC min.
B8	B8	B10	1.52	0.40	0.77	7.20	58.5	1.170	62.480	1.050	0.00250	0.013	1.58	1.364	1.170	0.87	20.90
	B10					7.20											21.77

ZONE B5	UPSTREAM CONTRIBUTIONS (ZONES): NONE					TOTAL A/C UPSTREAM			0							
ACCUMULATED CATCHMENTS						PIPE SIZING									TIME (TC)	
AREA'S COMB.	FROM MH	TO MH	AREA (ha)	C	A/C	TOTAL A/C	I mm/hr	Q req (m^3/s)	LENGTH (m)	SIZE (m)	SLOPE m/m	MANN n	VEL des (m/s)	Q des (m^3/s)	Q req (m^3/s)	SECT min.	ACC min.
B15	B15	B16	2.27	0.40	0.91	0.91	89.5	0.226	25.680	0.600	0.00180	0.013	0.52	0.261	0.226	0.46	10.00
	B16					0.91											10.46

ZONE B4	UPSTREAM CONTRIBUTIONS (ZONES): ZONES B5, B9					TOTAL A/C UPSTREAM			1.22							
ACCUMULATED CATCHMENTS						PIPE SIZING									TIME (TC)	
AREA'S COMB.	FROM MH	TO MH	AREA (ha)	C	A/C	TOTAL A/C	I mm/hr	Q req (m^3/s)	LENGTH (m)	SIZE (m)	SLOPE m/m	MANN n	VEL des (m/s)	Q des (m^3/s)	Q req (m^3/s)	SECT min.	ACC min.
-	B16	B9	0.00	0.40	0.00	1.22	84.0	0.284	556.40	0.600	0.00400	0.013	1.31	0.988	0.284	0.67	11.27
B9	B9	B8	2.75	0.40	1.10	2.32	81.4	0.524	386.60	0.750	0.00200	0.013	1.13	0.488	0.524	0.57	11.56
	B8					2.32											12.52

ZONE B6	UPSTREAM CONTRIBUTIONS (ZONES): NONE					TOTAL A/C UPSTREAM			0							
ACCUMULATED CATCHMENTS						PIPE SIZING									TIME (TC)	
AREA'S COMB.	FROM MH	TO MH	AREA (ha)	C	A/C	TOTAL A/C	I mm/hr	Q req (m^3/s)	LENGTH (m)	SIZE (m)	SLOPE m/m	MANN n	VEL des (m/s)	Q des (m^3/s)	Q req (m^3/s)	SECT min.	ACC min.
B14	B14	B16	0.77	0.40	0.31	0.31	89.5	0.077	84.170	0.300	0.00650	0.013	1.10	0.078	0.077	1.27	10.00
	B16					0.31											11.27

ZONE B	UPSTREAM CONTRIBUTIONS (ZONES): NONE					TOTAL A/C UPSTREAM			0.00							
ACCUMULATED CATCHMENTS						PIPE SIZING									TIME (TC)	
AREA'S COMB.	FROM MH	TO MH	AREA (ha)	C	A/C	TOTAL A/C	I mm/hr	Q req (m^3/s)	LENGTH (m)	SIZE (m)	SLOPE m/m	MANN n	VEL des (m/s)	Q des (m^3/s)	Q req (m^3/s)	SECT min.	ACC min.
B13	B13	B10	1.21	0.40	0.48	0.48	89.5	0.120	86.300	0.375	0.00900	0.013	1.12	0.124	0.120	1.33	10.00
	B10					0.48											11.33

ZONE B7	UPSTREAM CONTRIBUTIONS (ZONES): ZONES B8, B6					TOTAL A/C UPSTREAM			7.68							
ACCUMULATED CATCHMENTS						PIPE SIZING									TIME (TC)	
AREA'S COMB.	FROM MH	TO MH	AREA (ha)	C	A/C	TOTAL A/C	I mm/hr	Q req (m^3/s)	LENGTH (m)	SIZE (m)	SLOPE m/m	MANN n	VEL des (m/s)	Q des (m^3/s)	Q req (m^3/s)	SECT min.	ACC min.
B10	B10	B11	1.38	0.40	0.55	8.23	57.0	1.304	62.480	1.050	0.00250	0.013	1.58	1.364	1.304	0.87	22.64
	B11					8.23											22.64

ZONE B9	UPSTREAM CONTRIBUTIONS (ZONES): B7, B8					TOTAL A/C UPSTREAM			8.80							
ACCUMULATED CATCHMENTS						PIPE SIZING									TIME (TC)	
AREA'S COMB.	FROM MH	TO MH	AREA (ha)	C	A/C	TOTAL A/C	I mm/hr	Q req (m^3/s)	LENGTH (m)	SIZE (m)	SLOPE m/m	MANN n	VEL des (m/s)	Q des (m^3/s)	Q req (m^3/s)	SECT min.	ACC min.
B11	B11	Pond B	1.03	0.40	0.41	9.22	55.6	1.424	30.000	1.050	0.00300	0.013	1.73	1.486	1.424	0.29	22.64
	Pond B					9.22											22.93

ZONE B	UPSTREAM CONTRIBUTIONS (ZONES): NONE					TOTAL A/C UPSTREAM			0.00							
ACCUMULATED CATCHMENTS						PIPE SIZING									TIME (TC)	
AREA'S COMB.	FROM MH	TO MH	AREA (ha)	C	A/C	TOTAL A/C	I mm/hr	Q req (m^3/s)	LENGTH (m)	SIZE (m)	SLOPE m/m	MANN n	VEL des (m/s)	Q des (m^3/s)	Q req (m^3/s)	SECT min.	ACC min.
B12	B12	B11	1.43	0.40	0.57	0.57	89.5	0.142	107.380	0.450	0.00600	0.013	1.39	0.221	0.142	1.29	10.00
	B11					0.57											11.29

Pond B

POND C CATCHMENT

ZONE C1	UPSTREAM CONTRIBUTIONS (ZONES): NONE					TOTAL A/C UPSTREAM			0							
ACCUMULATED CATCHMENTS						PIPE SIZING									TIME (TC)	
AREA'S COMB.	FROM MH	TO MH	AREA (ha)	C	A/C	TOTAL A/C	I mm/hr	Q (m^3/s)	LENGTH (m)	SIZE (m)	SLOPE m/m	MANN n	Q (m^3/s)	Q REQ (m^3/s)	VEL (m/s)	SECT min.	ACC min.
C1	C1	C2	2.62	0.40	1.05	1.05	60.123	0.175	90.000	0.450	0.00400	0.013	0.180	0.175	1.13	1.32	20.00
C2	C2	C4	2.12	0.40	0.85	1.90	57.743	0.304	290.000	0.525	0.00900	0.013	0.304	0.304	1.41	3.44	21.32
	C4																24.76
Totals			4.74						380.000								

ZONE C3	UPSTREAM CONTRIBUTIONS (ZONES): NONE					TOTAL A/C UPSTREAM			0							
ACCUMULATED CATCHMENTS						PIPE SIZING									TIME (TC)	
AREA'S COMB.	FROM MH	TO MH	AREA (ha)	C	A/C	TOTAL A/C	I mm/hr	Q (m^3/s)	LENGTH (m)	SIZE (m)	SLOPE m/m	MANN n	Q (m^3/s)	Q REQ (m^3/s)	VEL (m/s)	SECT min.	ACC min.
C3	C3	C4	2.62	0.40	1.01	1.01	60.123	0.168	50.000	0.450	0.00400	0.013	0.180	0.168	1.13	0.73	20.00
	C4																20.73
Totals			2.62						50.000								

ZONE C2	UPSTREAM CONTRIBUTIONS (ZONES): NONE					TOTAL A/C UPSTREAM			0							
ACCUMULATED CATCHMENTS						PIPE SIZING									TIME (TC)	
AREA'S COMB.	FROM MH	TO MH	AREA (ha)	C	A/C	TOTAL A/C	I mm/hr	Q (m^3/s)	LENGTH (m)	SIZE (m)	SLOPE m/m	MANN n	Q (m^3/s)	Q REQ (m^3/s)	VEL (m/s)	SECT min.	ACC min.
C9	C9	C10	1.18	0.40	0.47	0.47	60.123	0.079	136.690	0.375	0.00900	0.013	0.180	0.079	1.23	1.85	20.00
C10	C10	C10a	1.33	0.40	0.53	1.00	56.848	0.158	63.960	0.450	0.01100	0.013	0.259	0.158	1.88	0.57	21.85
C10a	C10a	C12	0.00	0.40	0.00	1.00	55.925	0.156	87.700	0.525	0.00900	0.013	0.333	0.156	1.54	0.95	22.42
	C12																23.37
Totals			2.51						288.350								

ZONE C7	UPSTREAM CONTRIBUTIONS (ZONES): NONE					TOTAL A/C UPSTREAM			0							
ACCUMULATED CATCHMENTS						PIPE SIZING									TIME (TC)	
AREA'S COMB.	FROM MH	TO MH	AREA (ha)	C	A/C	TOTAL A/C	I mm/hr	Q (m^3/s)	LENGTH (m)	SIZE (m)	SLOPE m/m	MANN n	Q (m^3/s)	Q REQ (m^3/s)	VEL (m/s)	SECT min.	ACC min.
C11	C11	C12	0.70	0.40	0.28	0.28	60.123	0.047	110.000	0.375	0.00400	0.013	0.111	0.047	1.00	1.83	20.00
	C12																21.83
Totals			0.70						110.000								

ZONE C3	UPSTREAM CONTRIBUTIONS (ZONES): C1 and C2					TOTAL A/C UPSTREAM			2.91							
ACCUMULATED CATCHMENTS						PIPE SIZING									TIME (TC)	
AREA'S COMB.	FROM MH	TO MH	AREA (ha)	C	A/C	TOTAL A/C	I mm/hr	Q (m^3/s)	LENGTH (m)	SIZE (m)	SLOPE m/m	MANN n	Q (m^3/s)	Q REQ (m^3/s)	VEL (m/s)	SECT min.	ACC min.
C4	C4	C5	3.18	0.40	1.27	4.18	52.442	0.610	90.000	0.675	0.00530	0.013	0.610	0.610	1.71	0.88	24.76
C5	C5	C7	1.24	0.40	0.50	4.68	51.259	0.667	130.000	0.750	0.00370	0.013	0.677	0.667	1.53	1.41	25.64
	C7																27.05
Totals			4.42						220.000								

ZONE C5	UPSTREAM CONTRIBUTIONS (ZONES): C3 and C4					TOTAL A/C UPSTREAM			5.82							
ACCUMULATED CATCHMENTS						PIPE SIZING									TIME (TC)	
AREA'S COMB.	FROM MH	TO MH	AREA (ha)	C	A/C	TOTAL A/C	I mm/hr	Q (m^3/s)	LENGTH (m)	SIZE (m)	SLOPE m/m	MANN n	Q (m^3/s)	Q REQ (m^3/s)	VEL (m/s)	SECT min.	ACC min.
C7	C7	C8	3.61	0.40	1.44	7.26	49.475	0.999	130.000	0.900	0.00310	0.013	1.000	0.999	1.59	1.37	27.05
	C8	Pond C	2.97	0.40	1.19	8.45	47.527	1.118	50.000	1.050	0.00400	0.013	1.727	1.118	2.00	0.42	28.63
	Pond C																28.83
Totals			6.58						180.000								

ZONE C4	UPSTREAM CONTRIBUTIONS (ZONES): NONE					TOTAL A/C UPSTREAM			0							
ACCUMULATED CATCHMENTS						PIPE SIZING									TIME (TC)	
AREA'S COMB.	FROM MH	TO MH	AREA (ha)	C	A/C	TOTAL A/C	I mm/hr	Q (m^3/s)	LENGTH (m)	SIZE (m)	SLOPE m/m	MANN n	Q (m^3/s)	Q REQ (m^3/s)	VEL (m/s)	SECT min.	ACC min.
C6	C6	C7	2.86	0.40	1.14	1.14	60.123	0.191	95.000	0.450	0.00450	0.013	0.191	0.191	1.20	1.32	20.00
	C7																21.32
Totals			2.86						95.000								

ZONE C6	UPSTREAM CONTRIBUTIONS (ZONES): C7 and C8					TOTAL A/C UPSTREAM			1.28							
ACCUMULATED CATCHMENTS						PIPE SIZING									TIME (TC)	
AREA'S COMB.	FROM MH	TO MH	AREA (ha)	C	A/C	TOTAL A/C	I mm/hr	Q (m^3/s)	LENGTH (m)	SIZE (m)	SLOPE m/m	MANN n	Q (m^3/s)	Q REQ (m^3/s)	VEL (m/s)	SECT min.	ACC min.
C11	C11	C12	0.70	0.40	0.28	0.28	60.123	0.047	110.000	0.375	0.00400	0.013	0.111	0.047	1.00	1.83	20.00
	C12																21.83
Totals			0.70						110.000								

Pond C

Sunrise Investments
South Gate
Outline Plan Revision 2008

Minor Storm Sewer System
Zone B and C Analysis

01-CL1006

UMA | AECOM

B SIZE 11" x 17" (279.4mm x 431.8mm)

PLOT: 08/07/03 11:31:05 AM Saved By: wilkiem 5296-012-00_04-CPF010_RX.dwg

ISS/REV: A
UMA FILE NAME:

FAIRMONT CR. S
FAIRMONT PL. S
FAIRMONT BAY S
FAIRMONT LANDING S
UTILITY
COMMERCIAL
MULTI
INST
34 AVENUE S
FUTURE OVERLAND DRAINAGE COURSE
COULEE CREEK BLVD
PARK / SWMF
SCHOOL / PARK
43 STREET S
43rd St. DRAINAGE
SOUTHGATE BLVD S
SIX MILE COULEE
WET POND STATISTICS
TOTAL STORAGE= 22 400cm
NWL SURFACE AREA =0.88ha
HWL 911.50
NWL 909.50
WET POND STATISTICS
TOTAL STORAGE= 18 800cm
NWL SURFACE AREA =0.67ha
HWL 909.00
NWL 907.00
DRY POND STATISTICS
TOTAL STORAGE= 17 000cm

LEGEND

- GRADE & FLOW DIRECTION — @ 1.00%
- DESIGN ELEVATION — 000.00
- OVERLAND DRAINAGE SYSTEM ROUTE
- EMERGENCY DRAINAGE SYSTEM ROUTE
- WET POND (HWL)
- WET POND (NWL)
- ZONE A CATCHMENT (15.07)
- ZONE B CATCHMENT (32.58ha)
- ZONE C CATCHMENT (26.64ha)
- 2008 REVISION BOUNDARY
- AREAS ALREADY CONSTRUCTED
- TRAPPED LOW

NOTES

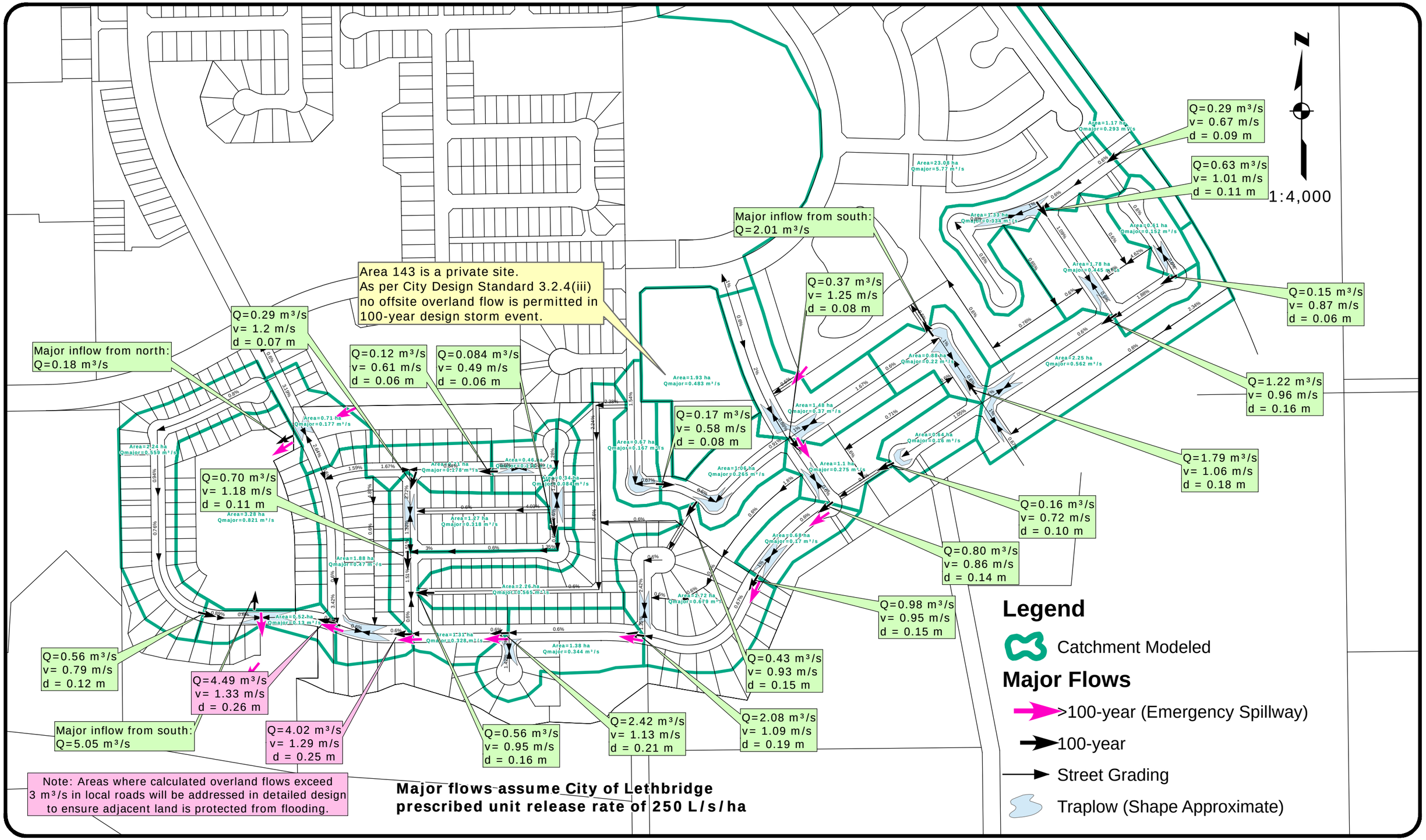
1. GRADING ELEVATIONS ARE CONCEPTUAL & SUBJECT TO CHANGE AS DETAILED DESIGN PROGRESSES.

UMA | AECOM

Sunrise Investments
South Gate
Outline Plan Revision 2008

Master Grading Plan & Overland Flow Site Plan

01-CL1007



Southgate
Revised Outline

Overland Flows

MARTIN GEOMATIC CONSULTANTS LTD

Date: May 2008
By: MAK
Project No. 070397CE