



**Strategic Infill Area Sector Plan  
Natural Area Screening Study**

September 28, 2018

Prepared for:

City of Saskatoon  
222 3rd Avenue North  
Saskatoon, SK S7K 0J5

Prepared by:

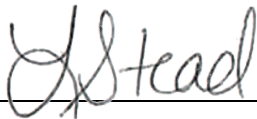
Stantec Consulting Ltd.  
100-75 24th Street East  
Saskatoon, SK S7K 0K3



## Sign-off Sheet

This document entitled Strategic Infill Area Sector Plan Natural Area Screening Study was prepared by Stantec Consulting Ltd. ("Stantec") for the account of City of Saskatoon (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

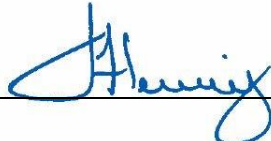
Prepared by



(signature)

**Lauren Stead, M.A., RPA**

Reviewed by



(signature)

**Jordan Hennig, B.Sc., P.Ag.**

Approved by



(signature)

**Neil Cory, M.E.Des.**

## Table of Contents

<b>1.0</b>	<b>INTRODUCTION .....</b>	<b>1.1</b>
1.1	PROJECT SCOPE .....	1.1
1.2	PROJECT PURPOSE .....	1.1
<b>2.0</b>	<b>STUDY AREAS.....</b>	<b>2.1</b>
<b>3.0</b>	<b>ENVIRONMENTAL SETTING .....</b>	<b>3.1</b>
<b>4.0</b>	<b>METHODS .....</b>	<b>4.1</b>
4.1	PREVIOUS STUDIES .....	4.1
4.2	SOILS.....	4.1
4.3	VEGETATION AND WETLANDS .....	4.2
4.3.1	Vegetation.....	4.2
4.3.2	Wetlands.....	4.2
4.4	WILDLIFE.....	4.3
4.5	HERITAGE RESOURCES.....	4.4
4.6	SENSITIVE AREAS.....	4.4
<b>5.0</b>	<b>RESULTS .....</b>	<b>5.1</b>
5.1	SOILS.....	5.1
5.1.1	Potential Soil Contamination .....	5.1
5.2	VEGETATION AND WETLANDS .....	5.4
5.2.1	Land Cover .....	5.4
5.2.2	Historical Occurrences of Plant SOMC.....	5.5
5.2.3	Wetlands.....	5.6
5.3	WILDLIFE.....	5.7
5.3.1	Historical Occurrences of Wildlife SOMC .....	5.7
5.3.2	Habitat Suitability .....	5.8
5.4	HERITAGE RESOURCES.....	5.9
5.4.1	Areas of No Further Concern .....	5.9
5.4.2	Previously Recorded Heritage Resources .....	5.10
5.4.3	Homestead Records .....	5.11
5.4.4	Registered Historic Places .....	5.11
<b>6.0</b>	<b>SENSITIVE AREAS .....</b>	<b>6.1</b>
<b>7.0</b>	<b>SUMMARY AND RECOMMENDATIONS .....</b>	<b>7.1</b>
<b>8.0</b>	<b>REFERENCES.....</b>	<b>8.1</b>



## LIST OF TABLES

Table 4-1 Stewart and Kantrud (1971) Wetland Classification.....	4.3
Table 5-1: Summary of Potential Soil Contamination .....	5.2
Table 5-2: Land Cover within the Study Area and the Regional Context Area .....	5.4
Table 5-3: Plant SOMC Historical SKCDC Records within the Regional Context Area.....	5.5
Table 5-4: Desktop Mapped Wetlands within the Study Area .....	5.7
Table 5-5: Wildlife SOMC Historical SKCDC Records within the Regional Context Area .....	5.8
Table 5-6: Quarter Sections of No Further Heritage Concern.....	5.9
Table 5-7: Homestead Records within the Study Area .....	5.11
Table 5-8: City of Saskatoon Registered Historic Places within the Study Area .....	5.12
Table 5-9: University of Saskatchewan Register of Category 'A' Heritage Assets .....	5.12
Table 7-1: Recommendations for Areas with Potential Soil Contamination .....	7.2

## LIST OF FIGURES

Figure 1: Study Area and Regional Context .....	A.1
Figure 2: Land Parcels within the Study Area.....	A.2
Figure 3: Landcover .....	A.3
Figure 4 a-c: Biophysical Atlas .....	A.4
Figure 5: Historical Occurrences of SOMC.....	A.5
Figure 6: Heritage Sensitivity and Previously Recorded Heritage Resources .....	A.6

## LIST OF APPENDICES

APPENDIX A	FIGURES .....	A.1
------------	---------------	-----

## Abbreviations

AAFC	Agriculture and Agri-Food Canada
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
ESRI	Environmental Systems Research Institute
GIS	Geographic Information System
HCB	Heritage Conservation Branch
HRIA	Heritage Resource Impact Assessment
ISC	Information Services Corporation of Saskatchewan
MVA	Meewasin Valley Authority
SARA	<i>Species at Risk Act</i>
SARR	Saskatchewan Archaeological Resource Record
SGIC	Saskatchewan Geospatial Imagery Collaborative
SKCDC	Saskatchewan Conservation Data Centre
SKMOE	Saskatchewan Ministry of Environment
SOMC	Species of Management Concern

## Glossary

ArcGIS	Environmental Systems Research Institute's (ESRI's) geographic information system (GIS) is a computerized system designed to capture, store, manipulate, analyze, manage, and present all types of spatial or geographical data.
Heritage resource	Archaeological and palaeontological sites, features, and objects.
Invasive	For the purpose of this study, invasive is plant species that are not native to the region being studied.
Natural area	Areas such as wetlands, native grasslands, woodlands, and areas that have not been disturbed, or have had limited disturbance by development.
Small Swale	A historical South Saskatchewan River channel scar that extends from the riverbank in a northeast direction; located in NE 14-37-5-W3M and north east to NW 30-37-4-W3M, on the north side of the city of Saskatoon.
Species of Management Concern (SOMC)	Species that are listed provincially under <i>The Saskatchewan Wildlife Act</i> , the federal <i>Species at Risk Act</i> (SARA) and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as well as any species that are ranked S1, S2, or S3 by the Saskatchewan Conservation Data Centre (SKCDC).
Study area	The study area was provided by the City of Saskatoon and is outlined in Section 2.1 and on Figure 1.
Wetland complex	For the purpose of this study wetland complex consists of individual wetlands that are directly connected or in close proximity that they share some function or attribute.

## 1.0 INTRODUCTION

Stantec Consulting Ltd. (Stantec) was retained by the City of Saskatoon (the City) to conduct a desktop natural area screening for the Strategic Infill Area Sector Plan (the Project) (Figure 1) as required by the City's Official Community Plan No. 8769.

### 1.1 PROJECT SCOPE

The scope of work for the Project, includes a desktop review to:

- Assess, inventory, and classify the ecological condition and habitat value of the natural areas for the study area (Section 2.1)
- Assess and classify wetlands according to the Stewart and Kantrud Wetland Classification System (1971)
- Conduct a high-level analysis of vegetation communities, wildlife presence, and wildlife habitat, and identify any rare and/or endangered species or habitats with potential to occur in the study area
- Review and classify an inventory of soil conditions in the area using the Canada Land Inventory Soil Class Rating System (Environment Canada 1972)
- Review the Saskatchewan Homestead Index database and identify any lands referenced
- Conduct a heritage sensitivity screening using the Developers' Online Screening Tool maintained by the Heritage Conservation Branch (HCB), Ministry of Parks, Culture and Sport <sup>1</sup>
- Contact the HCB regarding the provincial inventory of archaeological records and review records for sites within the study area
- Identify any areas needing further review by the HCB prior to land development
- Identify 'hot spots' within the study area to be flagged as having potential soil contamination and/or areas with potential for dumping or burial

### 1.2 PROJECT PURPOSE

The purpose of completing the natural area screening is to provide information to assist the City in identifying areas that are suitable for urban development and areas that should be protected from development and conserved when preparing land use plans such as Sector Plans and Area Concept Plans. For the purposes of this document, natural areas include wetlands, native grasslands, and areas that have not be disturbed, or have had limited disturbance by agricultural or industrial development.

---

<sup>1</sup> This task was included in the original RFP and Stantec's proposal but was removed as a result of a discussion between the City and Stantec during the project kick off meeting on July 19, 2018. During the meeting it was decided that completing the referral for submission to the HCB for review, as outlined in the RFP and Stantec proposal, would be deferred until detailed development plans were available.

## 2.0 STUDY AREAS

The study area encompasses the University of Saskatchewan Management Areas, including the University of Saskatchewan campus, Regional Psychiatric Centre, Sutherland Beach Off-leash Recreation Area, land managed by the Meewasin Valley Authority (MVA), and privately-owned land (Figure 1). The general boundaries of the study area are 14<sup>th</sup> Street East to the South, the South Saskatchewan River to West, Preston Avenue and Central Avenue to the East, and the northern edge of NE 11-37-05-W3M to the North. The University of Saskatchewan Management Areas are illustrated on Figure 2.

Since landscape connectivity and surrounding land cover are important factors when determining potentially sensitive areas, a 5 km buffer was used for the regional context area so that sensitive habitat in the Northeast and Small Swale were included.

## 3.0 ENVIRONMENTAL SETTING

The study area is in the Moist Mixed Grassland ecoregion of Saskatchewan. Dark Brown Chernozems are the dominant soil throughout this largely hummocky and undulating glaciolacustrine and glacial till landscape (Acton et al. 1998). The major land use within the ecoregion is agriculture, with approximately 80% of the land being cultivated (Acton et al. 1998). The native vegetation that exists includes salt-tolerant grasses in low-lying saline areas, mixed grasses, shrubs, and aspen in more elevated, non-saline areas, and shrubs and aspen along the river valley (Acton et al. 1998). The study area and the regional context area includes regionally recognized ecological features such as the South Saskatchewan River, Northeast Swale, and Peturrson's Ravine (Stantec 2012).

## 4.0 METHODS

### 4.1 PREVIOUS STUDIES

Stantec has completed several studies for the City near the current study area with relevance to this scope of work. These studies include:

- University Heights Neighbourhood 3 – Natural Area Screening and Heritage Resource Impact Assessment (Stantec 2014)
- North Commuter Parkway – Baseline Terrestrial and Aquatic Field Studies (Stantec 2013)
- North Central/Northeast Natural Area Screening Study (Stantec 2013)
- Northwest Natural Area Screening Study (Stantec 2012)
- East Sector Fall Vegetation and Wildlife Survey (Stantec 2010)
- City Wetland Policy Study (Stantec 2009)

These studies have been reviewed and a summary of each is provided to provide context to the results and recommendations established as part of this scope of work.

### 4.2 SOILS

The following resources were reviewed to determine existing soils conditions within the study area:

- Saskatchewan Soil Survey Reports (Government of Canada 2012)
- Ecoregions of Saskatchewan (Acton et al. 1998)

Stantec completed a review of aerial imagery from the following sources to identify potential for soil contamination within the study area:

- Information Services Corporation of Saskatchewan (ISC). 2018. Interactive website: <https://apps.isc.ca/MapSearch2/MapSearchWeb/MapSearchPage.aspx> (Accessed August 16, 2018)
- City of Saskatoon Information Map. 2018. Interactive website: [http://rpbackapps2.saskatoon.ca/lapp/Geocortex/Essentials/GeocortexAnon/COSSV/Viewer.html?Viewer=iMap\\_GeneralVW](http://rpbackapps2.saskatoon.ca/lapp/Geocortex/Essentials/GeocortexAnon/COSSV/Viewer.html?Viewer=iMap_GeneralVW) (Accessed: August 16, 2018)
- Google Earth Pro. 2018. (Accessed August 16, 2018)

Imagery from 1997 onwards was obtained from the City of Saskatoon Information Map, the Information Services Corporation of Saskatchewan (ISC), and Google Earth™. Current land use was determined by reviewing aerial imagery. Each parcel was then classified as having low, low to moderate, moderate, moderate to high, or high potential for environmental concerns based on current land use.

## 4.3 VEGETATION AND WETLANDS

### 4.3.1 Vegetation

The following resources were reviewed to identify land cover, past and present land use, and designated land (i.e., Crown lands) and to desktop map the land cover using the ArcGIS platform:

- Agriculture and Agri-Food Canada (AAFC) land cover data (AAFC 2017)
- Ecoregions of Saskatchewan (Acton et al. 1998)
- Google Earth Pro™ (2018)
- Saskatchewan Geospatial Imagery Collaborative (SGIC) Flysask 2008-2011 (SGIC 2011)
- Environmental Systems Research Institute (ESRI) World Imagery (ESRI 2014)
- HabiSask (Government of Saskatchewan 2018a)
- Species at Risk Public Registry (Government of Canada 2018)

For the purposes of this report, plant species of management concern (SOMC) were identified as:

- Species listed under Schedule 1 of the *Species at Risk Act* (SARA) (Government of Canada 2018)
- Species ranked as S1 to S3 by the Saskatchewan Conservation Data Centre (SKCDC) (SKCDC 2018a, 2018b, 2018c)

Stantec reviewed existing data sources to determine historical occurrences of plant SOMC and available habitat within the regional context area.

For this natural area screening the AAFC land cover data was used to identify land cover and wetlands within the study area and the regional context area. Wetland and land cover mapping completed during previous City of Saskatoon natural area screenings (Stantec 2013a, 2013b, 2015) was reviewed and considered where appropriate when completing the land cover mapping for this Project.

### 4.3.2 Wetlands

Wetland boundaries and classes were reviewed and interpreted at a scale of 1:3,000 scale using satellite imagery from 2008-2011, 2014, 2017, and aerial imagery from 2005. All visible wetlands were mapped including Class I and II wetlands. Class I and II wetlands are often under represented by desktop mapping as they may not be visible on satellite imagery especially in agricultural land where the wetlands are often seeded to crop.

Wetlands were classified according to Stewart and Kantrud (1971) (Table 4-1). A wetland is defined as “land that is saturated with water long enough to promote wetland or aquatic processes as is indicated by poorly defined soils, hydrophytic vegetation and various kinds of biological activity which are adapted to the wet environment” (Mitsch and Gosselink 2007). Imagery from both wet and dry years was used to make a conservative estimate of the wetland boundary.



**Table 4-1 Stewart and Kantrud (1971) Wetland Classification**

Wetland Class	Central Zone	Description
Class I – ephemeral ponds	Wetland low prairie zone	Ephemeral ponds occur in small swales and contain species such as Kentucky bluegrass ( <i>Poa pratensis</i> ).
Class II –temporary ponds	Wet meadow zone	In freshwater temporary ponds, the central wet meadow zone is the deepest part of the wetland area and is usually dominated by western wheatgrass ( <i>Pascopyrum smithii</i> ) and foxtail barley ( <i>Hordeum jubatum</i> ).
Class III – seasonal ponds	Shallow marsh zone	Seasonal ponds are wetlands with a shallow marsh zone dominating the deepest part of the wetland area. These ponds are frequently surrounded by a ring of willows ( <i>Salix</i> spp.) with a wet centre containing sedges ( <i>Carex</i> spp.).
Class IV – semi-permanent ponds	Deep marsh zone	In semi-permanent ponds and lakes, the deep marsh zone dominates the deepest part of the wetland area. Common cattail ( <i>Typha latifolia</i> ) and bulrushes ( <i>Scirpus</i> spp.) are typical emergent species.
Class V – permanent ponds	Permanent open water zone	The permanent open water zone dominates the deepest part of the wetland area and is devoid of emergent vegetation.
Dugout – artificial ponds <sup>1</sup>	n/a	Artificial pond created by humans. May contain emergent and submerged vegetation.
Drainage <sup>1</sup>	n/a	Channel where water can flow between two wetland/waterbodies. May be artificial or natural. May be ephemeral or permanent.
Note: <sup>1</sup> Dugout and Drainage are not recognized wetland Classes under Stewart and Kantrud.		

## 4.4 WILDLIFE

The desktop screening process for potential wildlife SOMC was similar to plant SOMC and used the same information sources as listed in Section 3.2.1. Desktop sources including HabiSask were searched to determine if any wildlife SOMC had been documented within the regional context area. Additionally, land cover data was used to assess habitat suitability for potential wildlife SOMC. Areas with extensive native vegetation (e.g., broadleaf forest, native grassland) were considered potentially high-quality habitat for wildlife SOMCs.

For the purposes of this report, wildlife SOMC were identified as:

- Species listed provincially as a Wild Species at Risk under *The Wild Species at Risk Regulations* (Government of Saskatchewan 1999)
- Species designated by Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as *endangered, threatened, or of special concern* (COSEWIC 2018)
- Species ranked as S1 to S2 by the Saskatchewan Conservation Data Centre (SKCDC) (SKCDC 2018a, 2018b, 2018c)
- Species listed in the Saskatchewan Activity Restriction Guidelines for Sensitive Species (SKMOE 2017)

## 4.5 HERITAGE RESOURCES

The study area was screened to identify heritage sensitive quarter sections that will require further review by the HCB and potentially a Heritage Resource Impact Assessment (HRIA) prior to land development. The following resources were used to conduct the desktop screening:

- HCB's Developers' Online Screening Tool
- HCB's Provincial Inventory of Archaeological Records
- Saskatchewan Archaeological Resource Records (SARRs) for previously recorded sites within the study area
- Reports on file with the HCB pertaining to previously recorded sites within the study area
- Saskatchewan Homestead Index database
- Dominion Land Survey maps

## 4.6 SENSITIVE AREAS

Sensitive Areas are defined as areas that continue to have natural integrity and provide potential habitat for plant and wildlife SOMCs and were ranked in terms of potential habitat quality for SOMCs. Sites were ranked using available desktop information (i.e., land cover, SOMC records, satellite imagery) using a scale that considered the percent native vegetation cover, area size and intactness, and habitat connectivity as follows:

- Low quality – retains some native vegetation cover and/or potential habitat for at least one SOMC
- Moderate quality – primarily native vegetation cover and provides potential habitat for multiple SOMC, and exhibits some connectivity to larger landscape features
- High quality – dominated by native vegetation cover, provides potential habitat for multiple SOMC and is connected to larger landscape features

Sites that were ranked as moderate or high quality were designated as a Sensitive Area and discussed in further detail in Section 6.0.

## 5.0 RESULTS

### 5.1 SOILS

The soils within the study area were not mapped by the Saskatchewan Institute of Pedology, but nearby soils are classified as part of the Bradwell Association, a group of Chernozemic Dark Brown soils that form under grassland vegetation (Acton and Ellis 1978). Soils of the Bradwell Association formed in medium to moderately fine texture, moderately calcareous, sandy glacio-lacustrine deposits and are found mainly on landscapes that are nearly level or undulating (Acton and Ellis 1978). The texture of these soils is primarily loam, fine, and very fine sandy loam.

#### 5.1.1 Potential Soil Contamination

The desktop review of aerial imagery within the study area ranged from undeveloped land to developed areas, such as the University of Saskatchewan campus and commercial developments at Preston Crossing (Figure 2). Most of the parcels within the study area (15 of 26 Parcels) are undeveloped land which is considered to have low potential for environmental concerns. These properties were generally used as an off-leash recreation area, recreational hiking, or for agriculture. Parcels with minor development, including storage buildings, are primarily utilized for agriculture purposes (3 of 26 Parcels) and are considered to have low to moderate potential for environmental concerns. The parcel containing the Regional Psychiatric Centre (based on the age of the facility (1978)) and the parcel with the field house, arena, condos, and agriculture land were considered to have moderate potential for environmental concerns. The five Parcels with moderate development including power stations, livestock activities, active farmyard were considered to have moderate to high potential for environmental concerns. The parcels that contain the University of Saskatchewan campus and commercial developments at Preston Crossing were considered to have high potential for environmental concerns due to the amount and diversity of the development on the properties. The results of the desktop assessment are further detailed in Table 5-1.

**Table 5-1: Summary of Potential Soil Contamination**

Location	Current Land Use	Environmental Concerns	Comments
Block B Plan 101392354	Undeveloped	Low to moderate	Trails throughout, appears to be some excavated material in southern portion of parcel
Block C Plan 101392680	Undeveloped	Low	Trails throughout, wetlands with vegetation throughout
Portion of SE 11-37-05-W3M Ext 128	Off-leash Recreation Area/undeveloped	Low	Trails throughout, wetlands with vegetation throughout
Blk/Par B-Plan Portion of SE 11-37-05-W3M	Regional Psychiatric Centre Unique Institution (Developed in 1978)	Moderate	Developed property with buildings and parking lot and road network
Blk A Plan - SW 11-37-05-W3M	Undeveloped - Storm sewer outfall, small building in southeast portion	Low	Trails throughout, wetlands with vegetation throughout, small building could be pump house
Blk/Par A-Plan CE1862	Undeveloped - small building in southeast portion	Low	Trails throughout, wetlands with vegetation throughout, small building could be pump house
NW 02-37-05-W3M	Partially utilized for agriculture, livestock operations, numerous building/sheds in farm yard, appears to be lagoons in northeast corner of property, house and machinery throughout	Moderate to high	Active farmyard with livestock pens and associated buildings and infrastructure
NE 02-37-05-W3M	Agriculture land, developed plot within	Low	Agriculture land
Portion of SE 10-37-05-W3M	Undeveloped	Low	Trails and vegetation throughout
Blk A Plan G252	Undeveloped	Low	Trails and vegetation throughout
Blk. 6 Plan 102119352	Undeveloped	Low	Trails and vegetation throughout
Blk. 2,3 & 4 Plan G128	Off-leash Recreation Area/undeveloped	Low	Trails and vegetation throughout
Blk. Y Plan 85S28041	Agriculture land, with trees on west edge	Low	Agriculture land
Blk. X Plan 85S28041	Undeveloped	Low	Trails and vegetation throughout

Location	Current Land Use	Environmental Concerns	Comments
Block A Plan 77S27535	Agriculture	Low	Agriculture land
Blk/Par MR2-Plan	Undeveloped, small building within and a man-made dugout	Low	Trails and vegetation throughout with man-made dugout
Blk H Plan 101865225, SW 35-36-05-W3M	Agriculture	Low	Agriculture land
SW 02-37-05-W3M	Agriculture land with buildings and man-made dugout, power station	Moderate to high	Storage buildings, shop and power station
NW 35-36-05-W3M	Agriculture land with developed buildings in southwest corner	Moderate to high	Storage buildings and bins
SW 35-36-05-W3M	Agriculture with power station	Moderate to high	Agriculture with power station
LSD 2-35-36-05-W3M	Undeveloped	Low	Appears to have had foreign material along west edge of parcel, perhaps during road construction
LSD 7-35-36-05-W3M	Undeveloped	Low	Appears to have had foreign material along west edge of parcel, perhaps during road construction
NE 27-36-05-W3M	Developed U of S Field House and Condos, Arena, Agriculture Land	Moderate	Active buildings, storage buildings and field house
NW 26-36-05-W3M	Agriculture/storage	Low to moderate	Some storage buildings in northern portion, appears to have agriculture plots
NE 26-36-05-W3M	Agriculture/storage	Low to moderate	Primarily agriculture, with trees, storage building
University of Saskatchewan Campus	Developed in 1910	High	Many active buildings, labs and areas that could present an environmental concern
Preston Crossing (1715 Preston Ave N and 1706 Preston Ave N)	Commercial outlets	Moderate to high	Commercial buildings with gas station and outlets that sell materials that could potentially be an environmental concern

## 5.2 VEGETATION AND WETLANDS

The study area is located in the Moist Mixed Grassland Ecoregion of Saskatchewan within the Saskatoon Plain landscape area. The Moist Mixed Grassland is characterized by mid-grasses (e.g., northern wheatgrass [*Elymus lanceolatus*]) and short-grasses (e.g., blue grama grass [*Bouteloua gracilis*]) in the drier uplands and shrubs and trees (e.g., western snowberry [*Symphoricarpos occidentalis*], prairie rose [*Rosa arkansana*], trembling aspen [*Populus tremuloides*]) in the wetter lowlands (Acton et al. 1998).

### 5.2.1 Land Cover

The study area is dominated by urban and developed land (48.4%) and agricultural land (26.8%) which provide little to no habitat for plant SOMC (Table 5-2 and Figure 3). Land cover with the potential for plant SOMC include shrubland (7.8%), broadleaf (3.0%), native grassland (4.2%), pasture and forage (1.2%), water/wetland (3.4%), and exposed and barren land (5.3%).

**Table 5-2: Land Cover within the Study Area and the Regional Context Area**

Land Cover Type <sup>1</sup>	Study Area		Regional Context Area <sup>2</sup>	
	Area (ha)	Percent (%)	Area (ha)	Percent (%)
Agriculture	256.2	26.8	1839.7	11.0
Broadleaf	28.3	3.0	125.0	0.7
Coniferous	0.1	0.0	0.5	0.0
Exposed Land and Barren	50.8	5.3	1247.8	7.5
Native Grassland	39.8	4.2	904.1	5.4
Pasture and Forage	11.4	1.2	203.9	1.2
Shrubland	75.0	7.8	658.4	4.0
Urban and Developed	463.5	48.4	10520.6	63.1
Water	0.9	0.1	465.5	2.8
Wetland	31.2	3.3	699.9	4.2
<b>Total</b>	<b>957.2</b>	<b>100</b>	<b>16665.2</b>	<b>100.0</b>
<b>NOTE:</b>				
<sup>1</sup> Land cover metrics calculated using AAFC (2017) dataset.				
<sup>2</sup> Regional context area includes the study area				

The majority of potential plant SOMC habitat occurs along the banks of the South Saskatchewan River and in the University of Saskatchewan - North Management Area. Previous field studies in the Northeast and Small Swale, which are connected to the University of Saskatchewan Lands - North Management Area, found areas of native vegetation within the swales although these patches displayed increasing levels of invasive species (Stantec 2013a, 2015). The dominant species observed in these native grassland patches were green needlegrass (*Nassella viridula*), needle-and-thread grass (*Hesperostipa comata*), Rocky Mountain fescue (*Festuca saximontana*), and smooth brome (*Bromus inermis*) (Stantec 2015). Invasive species observed during previous field surveys include 13 noxious and

nuisance weeds (as defined by *The Weed Control Act* (2014)): burdock (*Arctium minus*), absinthe (*Artemisia absinthium*), Canada thistle (*Cirsium arvense*), nodding thistle (*Carduus nutans*), bull thistle (*Cirsium vulgare*), leafy spurge (*Euphorbia esula*), perennial sow-thistle (*Sonchus arvensis*), prickly lettuce (*Lactuca serriola*), common tansy (*Tanacetum vulgare*), quackgrass (*Elymus repens*), foxtail barley (*Hordeum jubatum*), and dandelion (*Taraxacum officinale*) (Stantec 2015).

The construction of the Regional Psychiatric Centre in the 1970s and the development of Preston Crossing in the early 2000s represent the last significant change in land use (e.g., native grassland to urban/developed) within the University of Saskatchewan Management Area. Since then the majority of construction projects have been infill projects and located within the already developed area west of Preston Avenue and south of the rail line.

## 5.2.2 Historical Occurrences of Plant SOMC

A search of the HabiSASK Application (Government of Saskatchewan 2018a) identified 43 historical records of plant SOMC within the regional context area (Table 5-3 and Figures 4a-c). Many of these observations were recorded along the South Saskatchewan River and in the Northeast and Small Swale in areas with native vegetation communities (e.g., native grassland, shrubland).

**Table 5-3: Plant SOMC Historical SKCDC Records within the Regional Context Area**

Common Name	Scientific Name	SKCDC Rank
American bugseed	<i>Corispermum americanum</i> var. <i>americanum</i>	S3
Blue wild rye	<i>Elymus glaucus</i> ssp. <i>glaucus</i>	S3
Blueflag	<i>Iris versicolor</i>	S1
Bristle-leaved sedge	<i>Carex eburnea</i>	S3
Bristly gooseberry	<i>Ribes oxycanthoides</i> ssp. <i>setosum</i>	S2
Bushy cinquefoil	<i>Potentilla supina</i> ssp. <i>paradoxa</i>	S3
Columbia needlegrass	<i>Achnatherum nelsonii</i> ssp. <i>dorei</i>	S3
Crawe's sedge	<i>Carex crawei</i>	S3
Crowfoot violet	<i>Viola pedatifida</i>	S3
Curved yellow-cress	<i>Rorippa curvipes</i>	S3
Dry goosefoot	<i>Chenopodium desiccatum</i>	S3
Dwarf clubrush	<i>Trichophorum pumilum</i>	S1
Early cinquefoil	<i>Potentilla concinna</i> var. <i>concinna</i>	S2
Engelmann's spike-rush	<i>Eleocharis engelmannii</i>	S3
Few-flowered aster	<i>Almutaster pauciflorus</i>	S3
Hairy bugseed	<i>Corispermum villosum</i>	S2
Hooker's bugseed	<i>Corispermum hookeri</i> var. <i>hookeri</i>	S2
Leathery grape-fern	<i>Sceptridium multifidum</i>	S3
Longstem water-wort	<i>Elatine triandra</i>	S2
Marsh felwort	<i>Lomatogonium rotatum</i>	S3
Menzies' catchfly	<i>Silene menziesii</i>	S3

Common Name	Scientific Name	SKCDC Rank
Mucronate blue-eyed-grass	<i>Sisyrinchium mucronatum</i>	S3
Narrow-leaved water plantain	<i>Alisma gramineum</i>	S3
Northern blue-eyed-grass	<i>Sisyrinchium septentrionale</i>	S3
Pale bulrush	<i>Scirpus pallidus</i>	S3
Pale moonwort	<i>Botrychium pallidum</i>	S1
Pallas' bugseed	<i>Corispermum pallasii</i>	S2
Plains rough fescue	<i>Festuca hallii</i>	S3
Prairie dunewort	<i>Botrychium campestre</i>	S2
Red bulrush	<i>Blysmopsis rufa</i>	S3
Red-stemmed cinquefoil	<i>Potentilla rubricaulis</i>	S3
Rocky mountain sedge	<i>Carex saximontana</i>	S3
Sandhills cinquefoil	<i>Potentilla lasiodonta</i>	S2
Small dropseed	<i>Sporobolus neglectus</i>	S2
Small yellow lady's-slipper	<i>Cypripedium parviflorum</i>	S3
Smooth hawk's-beard	<i>Crepis runcinata ssp. hispidulosa</i>	S1
Smooth wild rose	<i>Rosa blanda</i>	S1
Soft wild bergamot	<i>Monarda fistulosa var. mollis</i>	S3
Striped coral-root	<i>Corallorhiza striata var. striata</i>	S3
Tall beggar's-ticks	<i>Bidens frondosa</i>	S3
Tall blue lettuce	<i>Lactuca biennis</i>	S3
Yellow-rattle	<i>Rhinanthus minor ssp. minor</i>	S2
Yukon silverweed	<i>Potentilla anserina ssp. yukonensis</i>	S2

### 5.2.3 Wetlands

Approximately 56 wetlands were desktop mapped in the study area, the majority of which occur in agricultural land. Desktop-mapped wetlands are presented in Table 5-4 and Figures 4a-c.

Wetlands in the agricultural lands in the south of the study area have a low potential for vegetation SOMC as they are heavily disturbed and will provide lower quality habitat due to a lack of native vegetation and/or a lack of a vegetative buffer. Wetlands in native grassland and shrubland in the North Management Area have a high potential for vegetation SOMC. Native vegetation cover in the uplands surrounding a wetland provides a vegetative buffer which may increase the overall habitat quality of the wetland through higher water quality and reduced invasive species. Approximately 11 wetlands, of which 3 are Class III or higher, occur in native vegetation cover primarily in the North Management Area.



**Table 5-4: Desktop Mapped Wetlands within the Study Area**

Wetland Class	Number of Wetlands	Area (ha)	Percent (%)
Class I – ephemeral ponds	28	5.6	0.6
Class II –temporary ponds	17	5.4	0.6
Class III – seasonal ponds	4	4.0	0.4
Class IV – semi-permanent ponds	1	1.3	0.1
Dugout – artificial ponds	5	0.5	0.1
Drainage	1	0.1	0.0
Wetland <sup>1</sup>	n/a	28.4	3.0
Water <sup>1</sup>	n/a	0.8	0.1
Note: <sup>1</sup> The Wetland and Water land covers are areas that were mapped by the AAFC. Since only wetlands and not overall land cover was desktop mapped, and the AAFC is coarser than the desktop wetland mapping, there is remnant wetland and water land cover.			

Some unclassified wetland and water land cover polygons remain after the desktop wetland mapping. This is due to the AAFC being at a coarser scale than desktop mapping and included riparian habitat along the South Saskatchewan River as wetland/water. Without desktop mapping the land cover for the entire study area these wetland and water polygons will remain in the overall land cover data.

## 5.3 WILDLIFE

### 5.3.1 Historical Occurrences of Wildlife SOMC

A search of the HabiSASK Application (Government of Saskatchewan 2018a) identified eight wildlife SOMC within the regional context area (Table 5-5 and Figure 5).

**Table 5-5: Wildlife SOMC Historical SKCDC Records within the Regional Context Area**

Common Name	Scientific Name	SKCDC Rank	COSEWIC	SARA
<b>Birds</b>				
Common nighthawk	<i>Chordeiles minor</i>	S4B, S4M	Special Concern	Threatened
Horned grebe	<i>Podiceps auritus</i>	S5B, S5M	Special Concern	Special Concern
Loggerhead shrike	<i>Lanius ludovicianus excubitorides</i>	S2B, S2M	Threatened	Threatened
Short-eared owl	<i>Asio flammeus</i>	S3B, S2N, S3M	Special Concern	Special Concern
<b>Fish</b>				
Lake sturgeon	<i>Acipenser fulvescens</i>	S2	Endangered	No Status
<b>Amphibian</b>				
Northern leopard frog	<i>Lithobates pipiens</i>	S3	Special Concern	Special Concern
<b>Invertebrates</b>				
Monarch	<i>Danaus plexippus</i>	S2B	Endangered	Special Concern
Western tiger swallowtail	<i>Papilio rutulus</i>	SNA	Not Listed	Not Listed

Field surveys completed in 2013 for a previous project, recorded the following wildlife SOMC in the South Saskatchewan River, Northeast and/or Small Swale: American white pelican (*Pelecanus erythrorhynchos*), Baird's sparrow (*Ammodramus bairdii*), barn swallow (*Hirundo rustica*), great blue heron (*Ardea herodias*), horned grebe (*Podiceps auritus*), turkey vulture (*Cathartes aura*), and northern leopard frog (*Lithobates pipiens*) (Stantec 2013a).

### 5.3.2 Habitat Suitability

As discussed in Section 4.2.1, the habitat within the study area that provides the highest potential habitat for wildlife SOMC include shrubland, broadleaf, native grassland, pasture and forage, water/wetland, and exposed and barren land. The majority of the native grassland, shrubland, and broadleaf habitat are connected along the banks of the South Saskatchewan River and in the North Management Area. These areas provide an important link for wildlife to native grassland and wetland habitat found in the Northeast and Small Swale. Habitat connectivity allows for greater mobility among wildlife species. Terrestrial wildlife such as amphibians (e.g., northern leopard frog, Canadian toad [*Anaxyrus hemiophrys*]), reptiles (e.g., plains garter snake [*Thamnophis radix*]) and mammals (e.g., white-tailed deer [*Odocoileus virginianus*], red fox [*Vulpes vulpes*], American badger [*Taxidea taxus taxus*]) can travel between various habitat types without having to cross unsuitable and/or hostile landscapes (e.g., urban and developed lands, roads) which can result in increased mortality often due to vehicular traffic when crossing roads; herptiles are especially vulnerable when roads are located near wetlands (Forman and Alexander 1998).

Wetlands with native land cover in the surrounding uplands provide the best habitat for potential wildlife SOMC. Native land cover provides habitat connectivity allowing wildlife (e.g., waterfowl, amphibians) to move between foraging and breeding grounds. Northern leopard frogs require different habitat types for breeding, foraging, and

overwintering. The South Saskatchewan River has been identified as habitat for northern leopard frog, specifically providing overwintering habitat as the water does not freeze solid (Government of Canada 2013). Both adult and juvenile northern leopard frogs were observed within the Small Swale during previous field studies (Stantec 2013a, 2013b) suggesting that frogs may be using the connected habitat of the North Management Area and Small Swale to the South Saskatchewan River as a wildlife corridor allowing them to travel between breeding, foraging, and overwintering habitat. Northern leopard frogs use wetlands with shallow, warm waters without predatory fish for breeding and can travel up to 8 km from breeding wetlands to forage in riparian or upland habitat (Government of Canada 2013).

The South Saskatchewan River has been designated as a Migratory Bird Concentration Site and is considered an important resting and feeding area for birds as they migrate between breeding and over wintering ground.

Habitat suitability surveys were conducted in the Northeast and Small Swales during previous field studies and found good quality habitat for amphibian species and tree nesting raptors (e.g., red-tailed hawk [*Buteo jamaicensis*], osprey [*Pandion haliaetus*]) and both good and moderate habitat for shelterbelt adaptable species such as loggerhead shrikes (*Lanius ludovicianus excubitorides*) (Stantec 2015).

## 5.4 HERITAGE RESOURCES

Based on the HCB's Online Developers' Screening Tool, 11 of the 22 quarter sections within the study area were identified as heritage sensitive (Figure 6). Heritage sensitivity is determined based on the presence of previously recorded heritage resources, the potential for heritage resources to exist (including proximity to waterbodies or watercourses and landscape), previous land disturbance and the nature and scope of the proposed development. Heritage sensitive quarter sections throughout the study area are concentrated along the South Saskatchewan River.

An inventory was requested from HCB to identify the number and type of previously recorded heritage resources present within the study area. The inventory data, updated using SARRs as heritage resources are discovered and recorded, is provided according to National Topographic System (NTS) mapsheets. The City of Saskatoon is located on NTS mapsheet 73B02. The inventory contains three heritage resources within the study area: FaNp-7, FaNp-27, and FbNp-35. Also located within the study area is the Moose Woods - Batoche Trail (Batoche Trail), a historical trail identified on Dominion Lands Survey maps dating to 1884.

### 5.4.1 Areas of No Further Concern

Eleven quarter sections within the study area are not heritage sensitive and require no further investigation in terms of heritage resources (Table 5-6 and Figure 6). These quarter sections have been previously disturbed by cultivation or land development and do not contain previously recorded archaeological sites.

**Table 5-6: Quarter Sections of No Further Heritage Concern**

NW 35-36-05-W3M	NE 26-36-05-W3M	NE 02-37-05-W3M	SW 35-36-05-W3M
NE 27-36-05-W3M	SE 35-36-05-W3M	NW 26-36-05-W3M	NW 27-36-05-W3M
NE 34-36-05-W3M	SW 02-37-05-W3M	SE 34-36-05-W3M	

## 5.4.2 Previously Recorded Heritage Resources

### FaNp-7: Rocky Island Site

FaNp-7, a late Pelican Lake site in the NE 4-37-5-W3M, was first recorded by Dr. Ernest Walker of the University of Saskatchewan Department of Anthropology and Archaeology in August of 1983. At that time, Dr. Walker observed a hearth area and a post hole and collected 2 side notched project points, 1 biface, 1 end scraper, and 1200 flakes and pieces of lithic debitage (HCB 1983).

Eight square meters of the site were excavated and mapped in 1983, which revealed a single component site that produced a radiocarbon date of  $2475 \pm 120$  BP (Friend-Heath 1995). In 1995, the site was further excavated during the summer of 1996 in advance of a trail development proposed by the MVA. During the 1995 excavations, archaeologists discovered nine hearths, two complete projectile points, three projectile point tips, and an assortment of other artefacts (Friend-Heath 1995). It was concluded that the activities that took place at the site included hide processing and stone tool manufacture.

The site was revisited in August of 2008 by Butch Amundson of Stantec, who observed four bone fragments, two fire broken rocks and a quartzite retouched flake (HCB 2008). The site is currently located within the Sutherland Beach Off-Leash Recreation Area.

### FaNp-27: Unnamed Historic Site

FaNp-27 is a historic midden site within NE 3-37-5-W3M. When the site was first recorded in January of 1994, archaeologists observed historic period artefacts such as fragments of depression and manganese glass, broken ceramic dishes, a square head bolt and a clear glass bottle. According to the Saskatchewan Homestead Index, NE 3-37-5-W3M was not a registered homestead (HCB 1994).

### FbNp-35: Unnamed Precontact Artefact Find

FbNp-35 is a precontact artefact find in the southwest corner of Peturrson's Ravine (NE 11-37-5-W3M). Two quartzite flakes were recovered along an existing trail when the site was recorded in February of 1994 (HCB 1994).

### Moose Woods, Batoche, River Heritage Trail (Batoche Trail)

In the 1800s travel across what is now Saskatchewan often occurred along trails that in some places can still be seen today as worn cart paths. The Moose Woods – Batoche Trail, also known as the Nutana – Batoche trail, is a historical trail that was often traveled by Indigenous peoples and later settlers. The Memorial Gates, meant to mark the main entrance to campus, were built where the trail crossed onto what is now the University of Saskatchewan campus (University of Saskatchewan 2013). The original 1909 campus plan was eventually abandoned and redesigned, moving the main campus entrance elsewhere, but the Memorial Gates still stand as a commemoration of students and faculty members who lost their lives during the First World War and mark the historical trail.

An approximately 700 m length of intact cart tracks were observed and recorded as FbNp-72 in NW 12-37-5-W3M, immediately east of the north end of the study area near Peturrson's Ravine. The extent of the original trail across the study area is mapped on Figure 6 based on how it appears on Dominion Land Survey maps from 1883 and 1884.

### 5.4.3 Homestead Records

The Saskatchewan Homestead Index is a locator database to the homestead files, the originals of which are housed at the Saskatchewan Archives Board in Saskatoon (Saskatchewan Homestead Index n.d.). The homestead files are a collection of documents that record the settlement of western Canada by European settlers at the beginning of the 20<sup>th</sup> century. A search of the Saskatchewan Homestead Index revealed that six quarter sections within the study area, in part or whole, were registered as homesteads between 1872 and 1930 under the terms of the Dominion Lands Act (Saskatchewan Homestead Index n.d.). Table 5-7 indicates the quarter sections that were registered as homesteads and the individuals or organizations to whom they were registered.

The existence of a homestead record for quarter sections within the study area does not impact future development unless physical artefacts of the homestead are recorded during an HRIA. An HRIA would only be conducted on quarters with homestead records that are also heritage sensitive and required by the HCB.

**Table 5-7: Homestead Records within the Study Area**

Quarter Section	Homestead Record
NE 26-36-05-W3M	<ul style="list-style-type: none"><li>• Henderson, Alfred; Aided by loan from the Temperance Colonization Society</li><li>• University of Saskatchewan</li></ul>
NW 02-37-05-W3M	<ul style="list-style-type: none"><li>• Kusch, Carl</li></ul>
SW 02-37-05-W3M	<ul style="list-style-type: none"><li>• Kusch, Carl</li></ul>
NE 02-37-05-W3M	<ul style="list-style-type: none"><li>• Conn, John James</li></ul>
SE 34-36-05-W3M	<ul style="list-style-type: none"><li>• Copeland, Thomas</li></ul>
SW 34-36-05-W3M	<ul style="list-style-type: none"><li>• Copeland, Thomas</li></ul>

### 5.4.4 Registered Historic Places

The Saskatoon Register of Historic Places is a database of heritage resources maintained by the City of Saskatoon that are deemed to have significant heritage value or interest. Heritage resources are added to the Saskatoon Register of Historic Places based on being representative of a distinct or unique architectural style, associated with a significant person, attributed to a particular historical event or theme, exhibiting cultural, environmental, archaeological, or paleontological significance, or adding value in the context of its surrounding area or landscape (City of Saskatoon 2018). The University of Saskatchewan also maintains the University of Saskatchewan Heritage Register as a database of heritage assets at the university that have “*character-defining elements* that may contribute to or indicate heritage and architectural value” (University of Saskatchewan 2013).

Not all heritage resources included in the Saskatoon Register of Historic Places or the University of Saskatchewan Heritage Register are designated heritage properties or historic sites. Those that are not designated have no legal protection. Heritage resources designated as Municipal or Provincial Heritage Properties are legally protected under *The Heritage Property Act* from demolition or unsympathetic alteration. Heritage resources identified as a Holding Bylaw Property are required to be reviewed for heritage designation by City Council within a 60-day hold period following the filing of a demolition permit (City of Saskatoon 2018). Heritage assets included in the University of

Saskatchewan Heritage Register are listed as either category 'A' or 'B'. Any alterations to category 'A' heritage assets are required to follow the *Standards and Guidelines for the Conservation of Historic Places in Canada* as determined by the University of Saskatchewan Facilities Management Division, whereas category 'B' heritage assets are recommended to follow those same guidelines (University of Saskatchewan 2013).

Table 5-8 lists the properties included in the register within the study area (City of Saskatoon 2018, City of Saskatoon n.d.). Table 5-9 lists the category 'A' properties in the University of Saskatchewan Heritage Register.

**Table 5-8: City of Saskatoon Registered Historic Places within the Study Area**

Property Name	Construction Date	Location	Original Use Category	Heritage Protection
<b>Diefenbaker Canada Centre</b>	1979	University of Saskatchewan	Museums and Galleries	None
<b>Little Stone School House</b>	1887	University of Saskatchewan	Education Facilities and Schools	Municipal Heritage Property
<b>Memorial Gates</b>	1927-1928	University of Saskatchewan	Monuments, Memorials and Public Art Installations	None
<b>Patterson Garden Arboretum</b>	1966	Preston Avenue North (University of Saskatchewan)	Parks, Recreation Facilities and Landscapes	None
<b>Peter MacKinnon Building (formerly the College Building)</b>	1910-1912	105 Administration Place (University of Saskatchewan)	Education Facilities and Schools	Provincial Heritage Property
<b>R.J.D. Williams School</b>	1930	221 Cumberland Avenue	Education Facilities and Schools	Holding Bylaw
<b>Royal University Hospital</b>	1955	103 Hospital Drive	Health Care and Related Facilities	None
<b>Rugby Chapel</b>	1911	1337 College Drive	Religious Institutions and Churches	Municipal Heritage Property
<b>St. Andrew's College</b>	1922	1121 College Drive	Education Facilities and Schools	None
<b>Stone Barn</b>	1911-1912	University of Saskatchewan	Education Facilities and Schools	None

**Table 5-9: University of Saskatchewan Register of Category 'A' Heritage Assets**

Property Name	Construction Date	Location	Note
<b>Archaeology Building</b>	1928-1929, 1937	55 Campus Drive	None
<b>The Bowl</b>	1923	Outdoor courtyard between the MacKinnon Building, Physics Building, Biology/Geology Building, Saskatchewan Hall, Qu'Appelle Hall and Marquis Hall	None

<b>College of Emmanuel and St. Chad</b>	1910-1911	114 Seminary Crescent	None
<b>Diefenbaker's Gravesite</b>	1979	Diefenbaker Building	None
<b>Law Building</b>	1964-1967	15 Campus Drive	None
<b>Little Stone School</b>	1887	University of Saskatchewan	Also included in Saskatoon Register of Heritage Places and designated as a Municipal Heritage Property
<b>Lutheran Seminary</b>	1968	114 Seminary Crescent	None
<b>Memorial Gates</b>	1927-1928	University of Saskatchewan	Also included in Saskatoon Register of Heritage Places
<b>Observatory</b>	1928-1930	108 Wiggins Road	None
<b>Peter MacKinnon Building</b>	1910-1912	105 Administration Place (University of Saskatchewan)	Also included in Saskatoon Register of Heritage Places and designated as a Provincial Heritage Property
<b>President's Residence</b>	1913	University of Saskatchewan	None
<b>Physics Building</b>	1919-1921	116 Science Place	None
<b>Qu'Appelle Hall</b>	1914-1916	University of Saskatchewan	None
<b>Rugby Chapel</b>	1911	1337 College Drive	Also included in Saskatoon Register of Heritage Places and designated as a Municipal Heritage Property
<b>St. Andrew's College</b>	1922-1923, 1959-1961	1121 College Drive	None
<b>Saskatchewan Hall</b>	1910-1912	91 Campus Drive	None
<b>Stone Barn</b>	1911-1912	University of Saskatchewan	Also included in Saskatoon Register of Heritage Places
<b>Thorvaldson Building</b>	1921-1924, additions in 1966, 1988 and 2003	University of Saskatchewan	None

## 6.0 SENSITIVE AREAS

Sensitive Areas have been identified (Figures 4a-c) as areas where future field studies will be required so that potential plant and wildlife SOMC can be identified and wetland quality can be determined through functional assessments. Sensitive Areas require further study so that management plans can be developed that consider the environmental sensitivities of these areas.

### Sensitive Area 1

Sensitive Area 1 is approximately 13 ha and contains high quality habitat for vegetation and wildlife SOMC due to its native vegetation cover and connectivity with additional native habitat (i.e., Sensitive Area 2, Northeast Swale). The area contains upland (i.e., native grassland, shrubland) and river valley (i.e., broadleaf, riparian) habitat and is directly adjacent to the Northeast Swale. The Northeast Swale is recognized as a unique ecosystem and contains native grassland and ecologically important wetlands (Stantec 2012, City of Saskatoon 2013a). Over 186 bird species have been identified in the Swale including SOMC such as common nighthawk (*Chordeiles minor*), loggerhead shrike, and horned grebe (Stantec 2012). Sensitive Area 1 provides an important wildlife corridor between the Northeast Swale and the South Saskatchewan River.

### Sensitive Area 2

Sensitive Area 2 is approximately 18 ha and includes Peturrson's Ravine as defined by the MVA's Northeast Policy (2015). This area contains high quality habitat for vegetation and wildlife SOMC due to its native vegetation cover and connectivity with additional native habitat (i.e., Sensitive Areas 1 and 3, Northeast Swale). Peturrson's Ravine and the Northeast Swale are considered significant environmental features containing unique ecological, hydrological, and hydrogeological features. The ravine acts as a corridor connecting the South Saskatchewan River to upland native grasslands and wetlands in the Northeast Swale (City of Saskatoon 2013a). Studies completed by the MVA have recorded an estimated 325 plant species in the ravine (City of Saskatoon 2013a). A marl bog found in the ravine represents a unique ecosystem that supports SOMC such as dwarf clubrush (*Trichophorum pumilum*), red bulrush (*Blismopsis rufa*), and marsh felwort (*Lomatogonium rotatum*) (City of Saskatoon 2013a). The mineral composition of the bog is a result of highly mineralized groundwater seeps, resulting a unique wetland community. This coexists with a different plant community supported by fresh surface water from a culvert under Central Avenue. The maintenance of these two communities is only possible under the current hydrological conditions (Stantec 2012). The MVA Northeast Policy report (2015) states that "only improvements that conserve the natural and cultural heritage resources or enhance the passive recreational and educational use of the Meewasin Valley will be allowed within Peturrson's Ravine and the adjacent river bank".

### Sensitive Area 3

Sensitive Area 3 is approximately 23 ha and contains high quality habitat for vegetation and wildlife SOMC due to its native vegetation cover and connectivity with additional native habitat (i.e., Sensitive Areas 2, 4, Northeast Swale). The area contains upland (i.e., native grassland, shrubland) and river valley (i.e., broadleaf, riparian) habitat. The upland directly north of the Regional Psychiatric Centre is known as the Crocus Prairie and has been identified by the MVA as an ecologically sensitive site worth preserving (City of Saskatoon 2013a). Development within the area must consider the existing landscape and permit public access along the river valley (MVA 2015).



## Sensitive Area 4

Sensitive Area 4 is approximately 22 ha and contains high quality habitat for vegetation and wildlife SOMC due to its native vegetation cover and connectivity with additional native habitat (i.e., Sensitive Areas 3, 5, and 6). The area follows the South Saskatchewan River valley, including Sutherland Beach, and the habitat is primarily broadleaf forest and riparian. The area has been delineated as part of the MVA's Northeast Policy (2015) and identified as having ecological significance (City of Saskatoon 2013a). Development within the area must consider the existing landscape and permit public access along the river valley (MVA 2015).

## Sensitive Area 5

Sensitive Area 5 is approximately 29 ha and contains high quality habitat for vegetation and wildlife SOMC due to its native vegetation cover and connectivity with additional native habitat (i.e., Sensitive Areas 4 and 6). The area is upland habitat adjacent to the South Saskatchewan River and consists of shrubland, native grassland, broadleaf forest, and pasture/forage. The area has been delineated as part of the MVA's Northeast Policy (2015) and identified as having ecological significance (City of Saskatoon 2013a). Development within the area must consider the existing landscape and permit public access along the river valley (MVA 2015).

## Sensitive Area 6

Sensitive Area 6 is approximately 31 ha and contains moderate quality habitat for vegetation and wildlife SOMC due to its native vegetation cover and limited connectivity with additional native habitat (i.e., Sensitive Area 4). The area follows the South Saskatchewan River valley and the habitat is primarily broadleaf forest and riparian. The area has been delineated as part of the MVA's Northeast Policy (2015) and identified as containing a semi-natural environment. Development in this area must not "irrevocably damage the natural and cultural heritage resources of the area as a whole" (MVA 2015).

## Other Habitats

Other habitats within the study area that have the potential to provide habitat for wildlife SOMC include shelterbelts, trees, pasture/forage, and wetlands. These land covers are unlikely to provide habitat for vegetation SOMC as they have been altered through agricultural practices (i.e., native vegetation was ploughed under and seeded with domestic species) and/or developed (i.e., converted to lawns and gardens). The shelterbelts found in the agricultural lands, primarily located east of Preston Avenue, provide potential habitat for loggerhead shrikes. The small patch of pasture/forage land east of Circle Drive and north of College Drive provides potential habitat for bobolink (*Dolichonyx oryzivorus*, listed as *Threatened* under SARA). The landscaped habitat (i.e., mowed lawns, gardens, trees) west of Preston Avenue around the University Campus provides potential habitat to breeding birds such as American robins (*Turdus migratorius*), American goldfinch (*Spinus tristis*), blue jays (*Cyanocitta cristata*), and black-capped chickadees (*Poecile atricapillus*) but not for any SOMCs except for barn swallows (*Hirundo rustica*, listed as *Threatened* under SARA). The Class III and IV wetlands found in agricultural lands throughout the study area, provide potential breeding habitat for northern leopard frogs and horned grebes.

## 7.0 SUMMARY AND RECOMMENDATIONS

The purpose of this natural area screening report for the Strategic Infill Area Sector Plan is to provide information to assist the City in identifying areas that are suitable for urban development and areas that should be protected from development and conserved when preparing land use plans. The natural area screening consisted of desktop review to identify natural areas, known heritage resources, and potential areas of soil contamination within the study area.

Key results, recommendations, and next steps are outlined below.

### Potential Soil Contamination

- Stantec recommends that a Phase I Environmental Site Assessment (ESA) be completed at each parcel within the study area for due diligence. Parcels with low to moderate, moderate, moderate to high and high environmental concerns would generally trigger a Phase II ESA to determine potential environmental concerns that may be present. However, the Phase I ESA would determine if a Phase II ESA is warranted or not. The recommendations of the desktop assessment are further detailed in Table 7-1.

**Table 7-1: Recommendations for Areas with Potential Soil Contamination**

Location	Environmental Concerns	Recommendations
Block B Plan 101392354	Low to moderate	Phase I ESA
Block C Plan 101392680	Low	Phase I ESA to confirm there are no dumping pits within
Portion of SE 11-37-05-W3M Ext 128	Low	Phase I ESA to confirm there are no dumping pits within
Blk/Par B-Plan Portion of SE 11-37-05-W3M	Moderate	Phase I ESA
Blk A Plan -SW 11-37-05-W3M	Low	Phase I ESA to confirm there are no dumping pits within
Blk/Par A-Plan CE1862	Low	Phase I ESA to confirm there are no dumping pits within
NW 02-37-05-W3M	Moderate to high	Phase I ESA and Phase II ESA
NE 02-37-05-W3M	Low	Phase I ESA
Portion of SE 10-37-05-W3M	Low	Phase I ESA to confirm there are no dumping pits within
Blk A Plan G252	Low	Phase I ESA to confirm there are no dumping pits within
Blk 6 Plan 102119352	Low	Phase I ESA to confirm there are no dumping pits within
Blk 2,3 & 4 Plan G128	Low	Phase I ESA to confirm there are no dumping pits within
Blk Y Plan 85S28041	Low	Phase I ESA to confirm there are no dumping pits within
Blk X Plan 85S28041	Low	Phase I ESA to confirm there are no dumping pits within
Block A Plan 77S27535	Low	Phase I ESA to confirm there are no dumping pits within
Blk/Par MR2-Plan	Low	Phase I ESA to confirm there are no dumping pits within
Blk H Plan 101865225, SW 35-36-05-W3M	Low	Phase I ESA
SW 02-37-05-W3M	Moderate to high	Phase I and Phase II ESA
NW 35-36-05-W3M	Moderate to high	Phase I and Phase II ESA
SW 35-36-05-W3M	Moderate to high	Phase I and Phase II ESA
LSD 2-35-36-05-W3M	Low	Phase I ESA
LSD 7-35-36-05-W3M	Low	Phase I ESA
NE 27-36-05-W3M	Moderate	Phase I ESA and Phase II ESA
NW 26-36-05-W3M	Low to moderate	Phase I ESA and Phase II ESA
NE 26-36-05-W3M	Low to moderate	Phase I ESA and Phase II ESA
University of Saskatchewan Campus	High	Phase I ESA and Phase II ESA
Preston Crossing (1715 Preston Ave N and 1706 Preston Ave N)	Moderate to high	Phase I ESA and Phase II ESA

## Vegetation and Wetlands

- The areas with the highest potential for plant SOMC are primarily concentrated along the South Saskatchewan river and in the North Management Area. These areas are defined as Sensitive Areas 1 through 6 and shown on Figures 4a-c. These areas form a connected corridor of native land cover (e.g., native grassland, shrubland) linking the study area to the Northeast and Small Swale, creating a landscape corridor to areas of native land cover outside the city (e.g., potential habitat for plant SOMC).
- Field surveys should be completed to refine and verify land cover boundaries and potential plant SOMC habitat.
- Given the study area provides habitat for plant SOMC, mitigation measures such as avoidance of suitable habitat through detailed planning, design, timing or setback restrictions will help reduce or avoid potential adverse effects to plant SOMC. Prior to finalizing land use or management plans within the study area site assessment field surveys should be completed to detect plant SOMC or sensitive environmental features (e.g. rare plant surveys, vegetation community surveys). This approach will help identify constraints to future developments. Surveys included in a site assessment depend on the specific site location and the nature of the development. They will need to consider the land cover, known distribution of SOMC, locations of sensitive environmental features, and regulatory agency expectations. Based on the results of this natural area screening, field surveys would include areas with potential plant SOMC habitat with a priority on the identified Sensitive Areas as they have the highest potential for plant SOMC.
- The City will need to consult with the Ministry of Environment prior to completing the field surveys to ensure they are complying with current survey protocols and considering Saskatchewan Activity Restriction Guidelines for Sensitive Species (SKMOE 2017).
- Consultation with the Ministry of Environment should occur after field surveys are complete to develop site-specific recommendations and integrate them into the development planning process. Depending on the results of the field surveys, a rare plant and weed management plan may need to be developed.
- Prior to finalizing land use or management plans within the study area a wetland survey including functional assessments of selected wetlands is recommended to better understand the quality of wetlands within the study area and to confirm the boundary and class of desktop mapped wetlands. A functional assessment is used to quantify the quality of function in a wetland (City of Saskatoon 2013b). As per the City of Saskatoon Wetland Policy (2013b) the City will “maintain an inventory of wetland resources that includes both classification and functional assessment of wetlands.” Functional assessment should to be conducted on selected Class III, IV, and V wetlands where “conditions are conducive to a high level of wetland function” (City of Saskatoon 2013b). Wetland surveys and functional assessments should focus on wetlands mapped within the Sensitive Areas. Large wetlands, major wetland complexes and wetlands of Class III or higher that are in undisturbed areas should be given highest priority for wetland surveys compared to highly disturbed wetlands and small isolated wetlands in cultivated fields. The results of the wetland surveys and functional assessments can be used identify high quality wetlands which should be protected from development and to develop management plans to maintain the wetland water quality, ecological, and habitat functions of these wetlands. A buffer, which can be determined during field studies, from wetlands is recommended to maintain wetland water quality, ecological, and habitat functions (Neiber 2011).

- Additional investigation, including fieldwork, is recommended to determine appropriate setbacks between sensitive areas and adjacent proposed development. A setback is the distance from the edge of a developed area to an identifiable natural area. To determine the potential presence of SOMC and whether any provincial activity restriction setbacks would apply, studies should include: early and late rare plant surveys for uplands and wetlands, and wildlife surveys including breeding bird surveys, nocturnal spring amphibian surveys and amphibian fall visual encounter surveys. Based on this additional information, general and site-specific setbacks can be developed to help retain the structure and function of sensitive areas.

## Wildlife

- The areas with the highest potential for wildlife SOMC are primarily concentrated along the South Saskatchewan river and in the North Management Area. These areas are defined as Sensitive Areas 1 through 6 and shown on Figures 4a-c. These areas form a connected corridor of native land cover (e.g., native grassland, shrubland) linking the study area to the Northeast and Small Swale, creating a landscape corridor to areas of native land cover outside the city (e.g., potential habitat for wildlife SOMC).
- Given the study area provides habitat for wildlife SOMC, mitigation measures such as avoidance of suitable habitat through detailed planning, design, timing or setback restrictions will help reduce or avoid potential adverse effects to wildlife SOMC. Prior to finalizing land use or management plans within the study area site assessment field surveys should be completed to detect wildlife SOMC or sensitive environmental features (e.g. species-specific surveys such as breeding bird surveys). This approach will help identify constraints to future developments. Surveys included in a site assessment depend on the specific site location and the nature of the development. They will need to consider the land cover, known distribution of SOMC, locations of sensitive environmental features, and regulatory agency expectations. Based on the results of this natural area screening, field surveys would include areas with potential wildlife SOMC habitat with a priority on the identified Sensitive Areas as they have the highest potential for wildlife SOMC.
- The City will need to consult with the Ministry of Environment prior to completing the field surveys to ensure they are complying with current survey protocols and considering Saskatchewan Activity Restriction Guidelines for Sensitive Species (SKMOE 2017).
- Consultation with the Ministry of Environment should occur after field surveys are complete to develop site-specific recommendations and integrate them into the development planning process.

## Heritage Resources

- In discussion with the City during the project kick off meeting on July 19, 2018, it was decided that the completion of a referral to be submitted to the HCB will be deferred to the next phase of the project. HCB issues requirements based on the proposed development and therefore it is advised that the City have the referral completed once more specific development information is known within the study area.
- A referral will be required for proposed development on any of the 11 quarter sections identified as heritage sensitive. Once the type of development has been determined, a referral will need to be prepared and forwarded to HCB for their review. The HCB will then issue either clearance for the development to proceed as planned or provide detailed requirements for an HRIA to be carried out under an Impact Assessment

Investigation Permit issued by the HCB. It is highly likely that the HCB will require an HRIA for any development with the potential to impact previously undisturbed areas. The HCB may require an HRIA for proposed development on quarter sections with previously recorded heritage sources (NE 4-37-5-W3M, NE 3-37-5-W3M, NE 11-37-5-W3M). This may involve revisiting the previously recorded sites to establish the current condition of the site and determine if any additional information can be recorded about the site.

## 8.0 REFERENCES

- AAFC (Agriculture and Agri-Food Canada). 2017. AAFC Annual Crop Inventory. Government of Canada. Available at: <https://open.canada.ca/data/dataset/cb3d7dec-ecc6-498b-ac17-949e03f29549>. Accessed: August 2018.
- Acton, D.F., G.A. Padbury, and C.T. Strushnoff. 1998. The Ecoregions of Saskatchewan. Canadian Plains Research Centre, University of Regina, Regina SK.
- City of Saskatoon. No Date. Saskatoon Register of Historic Places (Pamphlet). Available at: [https://www.saskatoon.ca/sites/default/files/documents/community-services/planning-development/development-review/heritage-conservation/heritageregistry\\_final.pdf](https://www.saskatoon.ca/sites/default/files/documents/community-services/planning-development/development-review/heritage-conservation/heritageregistry_final.pdf). Accessed: September 2018.
- City of Saskatoon. 2018. Saskatoon Register of Historic Places. Available at: <https://www.saskatoon.ca/community-culture-heritage/heritage-properties-programs/heritage-register>. Accessed: September 2018.
- City of Saskatoon. 2013a. University Heights Sector Plan, 2013 Amendment. Prepared by Future Growth Section, Planning and Development Branch, City of Saskatoon. Available at: <https://www.saskatoon.ca/sites/default/files/documents/community-services/planning-development/future-growth/sector-planning/UniversityHeightsSectorPlan2013Amendment.pdf>. Accessed: August 2018.
- City of Saskatoon. 2013b. Wetland Policy. Available at: <https://www.saskatoon.ca/sites/default/files/documents/city-clerk/civic-policies/C09-041.pdf>. Accessed: August 2018.
- ECCC (Environment and Climate Change Canada). 2017. General Nesting Periods of Migratory Birds in Canada. Government of Canada, Environment Canada. Available at: <https://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1>. Accessed: September 2017.
- Environmental Systems Research Institute (ESRI). 2014. World Imagery. Available at: <https://www.arcgis.com/home/item.html?id=10df2279f9684e4a9f6a7f08feb2a9>. Accessed: August 2018.
- Friend-Heath, Rebecca. 1995. The Rocky Island Site: A Report. Regina: Unpublished report on file with the HCB. .
- Heritage Conservation Branch (HCB). 1994. "Preliminary Saskatchewan Archaeological Resource Record: FbNp-35." Unpublished record on file with the Heritage Conservation Branch.
- Heritage Conservation Branch (HCB). 2008. "Saskatchewan Archaeological Resource Record - Update - FaNp-7." Unpublished record on file with the Heritage Conservation Branch.
- Heritage Conservation Branch (HCB). 1983. "Saskatchewan Archaeological Resource Record: FaNp-7." Saskatoon: Unpublished record on file with the Heritage Conservation Branch.
- Forman, R. T. T. and L. E. Alexander. 1998. Roads and their major ecological effects. *Annual Review Ecological Systems*. 29:207-31.
- Government of Canada. 2002. Species at Risk Act (S.C. 2002, c.29). Last amended: 2018-05-30. Available at: <http://laws-lois.justice.gc.ca/eng/acts/S-15.3/>. Accessed: August 2018.
- Government of Canada. 2013. Management Plan for Northern Leopard Frog (*Lithobates pipiens*), Western Boreal/Prairie Populations, in Canada – 2013. Available at: <http://www.registrelep-sararegistry.gc.ca/default.asp?lang=En&n=6741DEC5-1>. Accessed: August 2018.
- Government of Canada. 2016. COSEWIC Definitions and Abbreviations. Available at: <https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife/definitions-abbreviations.html#e>. Accessed: August 2018.
- Government of Canada. 2018. Species at Risk Public Registry. Available at: [http://www.sararegistry.gc.ca/search/advSearchResults\\_e.cfm?stype=species&lng=e&advkeywords=&op=2&locid=3&](http://www.sararegistry.gc.ca/search/advSearchResults_e.cfm?stype=species&lng=e&advkeywords=&op=2&locid=3&). Accessed: August 2018.
- Government of Saskatchewan. 1998. The Wildlife Act, 1998. Last amended: 2015-05-14. Available at: <http://www.qp.gov.sk.ca/documents/English/Statutes/Statutes/W13-12.pdf>. Accessed: August 2018.

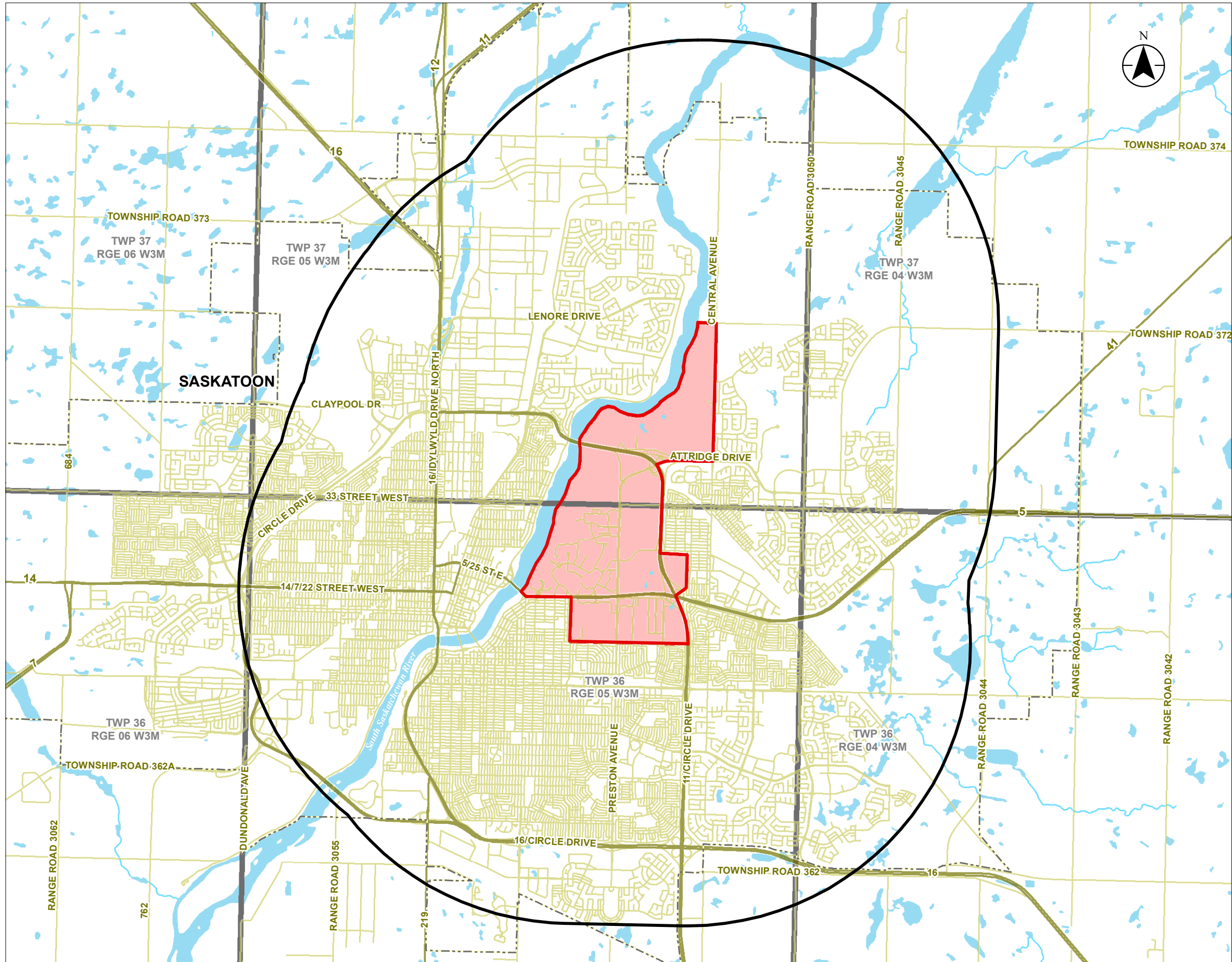
- Government of Saskatchewan. 2018a. HABISask Application. Available at: <http://www.biodiversity.sk.ca/HABISask.htm>. Accessed: August 2018.
- Government of Saskatchewan. 2018b. Developers' Online Screening Tool. Available at: <https://www.saskatchewan.ca/residents/parks-recreation-heritage-and-arts/heritage/developers-online-heritage-screening-tool>. Accessed: August 2018.
- Meewasin Valley Authority (MVA). 2015. Northeast Policy, Policy No. 1.3. Updated June 9, 2015. Available at: <https://meewasin.com/assets/upload/resources/1-3-northeastpolicy-june2015-557af88a37d65.pdf>. Accessed: August 2018.
- Mitsch, W.J. and J.G. Gosselink. 2007. Wetlands, fourth edition. John Wiley and Sons. Hoboken, New Jersey, USA.
- Neiber, J. 2011. Department of Bioproducts and Biosystems Engineering, University of Minnesota. Evaluation of Buffer Width on Hydrological Function, Water Quality, and Ecological Integrity of Wetlands. Available at: <http://www.dot.state.mn.us/research/TS/2011/201106.pdf>. Accessed: August 2018.
- Saskatchewan Land Resource Unit. 2009. SKSIDv4, Digital Soil Resource Information for Agricultural Saskatchewan, 1:100,000 Scale. Agriculture and Agri-Food Canada, Saskatoon, Saskatchewan.
- SKCDC (Saskatchewan Conservation Data Centre). 2018b. Taxa List: Vascular Plants. Last updated: May 14, 2018. Available at: <http://www.biodiversity.sk.ca/SppList/vasc.pdf>. Accessed: August 2018.
- SKCDC. 2018b. Taxa List: Invertebrates. Last updated: August 13, 2018. Available at: <http://www.biodiversity.sk.ca/SppList/invert.pdf>. Accessed: August 2018.
- SKCDC. 2018c. Taxa List: Vertebrates. Last updated: August 13, 2018. Available at: <http://www.biodiversity.sk.ca/SppList/verts.pdf>. Accessed: August 2018.
- SKCDC. 2018d. Species Conservation Rankings. Available at: <http://www.biodiversity.sk.ca/ranking.htm>. Accessed: August 2018.
- Saskatchewan Geospatial Imagery Collaborative (SGIC). 2011. FlySask.ca. Available at: <http://flysask.ca>. Accessed: August 2018.
- Saskatchewan Homestead Index. n.d. Saskatchewan Homestead Index. Accessed 2018. <http://www.saskhomesteads.com/>.
- Saskatchewan Institute of Pedology. 1978. Soils of the Saskatoon Map Area, 73B, Saskatchewan. University of Saskatchewan.
- SKMOE (Saskatchewan Ministry of Environment). 2017. Saskatchewan Activity Restriction Guidelines for Sensitive Species. Available at: <http://publications.gov.sk.ca/documents/66/89554-Saskatchewan%20Activity%20Restriction%20Guidelines%20for%20Sensitive%20Species%20-%20April%202017.pdf>. Accessed: August 2018.
- Stantec (Stantec Consulting Ltd.). 2012. Northeast Swale Development Guidelines, City of Saskatoon. Prepared for the Planning and Development Branch, City of Saskatoon.
- Stantec. 2013a. North Central/North East Natural Area Screening Study, City of Saskatoon. Prepared for the Planning and Development Branch, City of Saskatoon.
- Stantec. 2013b. North Commuter Parkway – Baseline Terrestrial and Aquatic Field Studies, and Heritage Resource Impact Assessment. Prepared for the Planning and Development Branch, City of Saskatoon.
- Stantec. 2015. University Heights Neighbourhood 3 – Natural Area Screening and Heritage Resource Impact Assessment. Prepared for the Land Branch, City of Saskatoon.
- Stewart, R.E. and H.A. Kantrud. 1971. Classification of Natural Ponds and Lakes in the Glaciated Prairie Region. Resource Publication 92, Bureau of Sport Fisheries and Wildlife, U.S. Fish and Wildlife Service, Washington, DC.
- Thorpe, J. (Saskatchewan Research Council). 2007. Saskatchewan Rangeland Ecosystems Publications 1 through 10: Ecoregions and Ecosites. Available at: <http://www.pcap-sk.org/resources-literature>. Accessed: August 2018.
- University of Saskatchewan. 2013. University of Saskatchewan Heritage Register. <https://facilities.usask.ca/documents/heritage/Heritage%20Register%20-%20introduction.pdf>



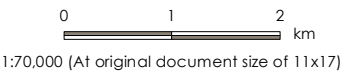


# **APPENDIX**

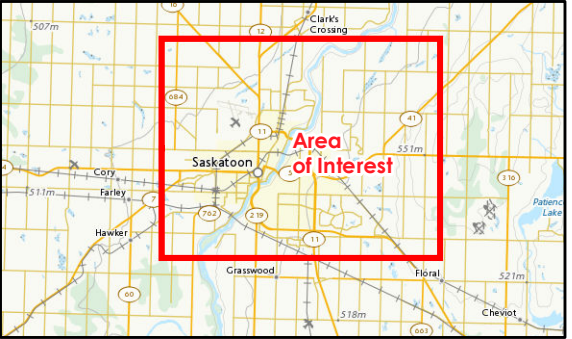
G:\active\clients\city of saskatoon\university of saskatchewan\113254195-001 REV.C \$taLocation.mxd    Revised: 2018-08-17 By: JHiebert



- Study Area
- Regional Context Area
- City
- Township
- Major Road
- Minor Road
- Watercourse
- Waterbody



- Notes**
- Coordinate System: NAD 1983 UTM Zone 13N
  - Base features provided by the Government of Saskatchewan and the Government of Canada.



Project Location  
Saskatoon,  
Saskatchewan

113254195-001 REV.C  
Prepared by JHiebert on 2018-08-17  
Technical Review by Istead on 2018-08-17

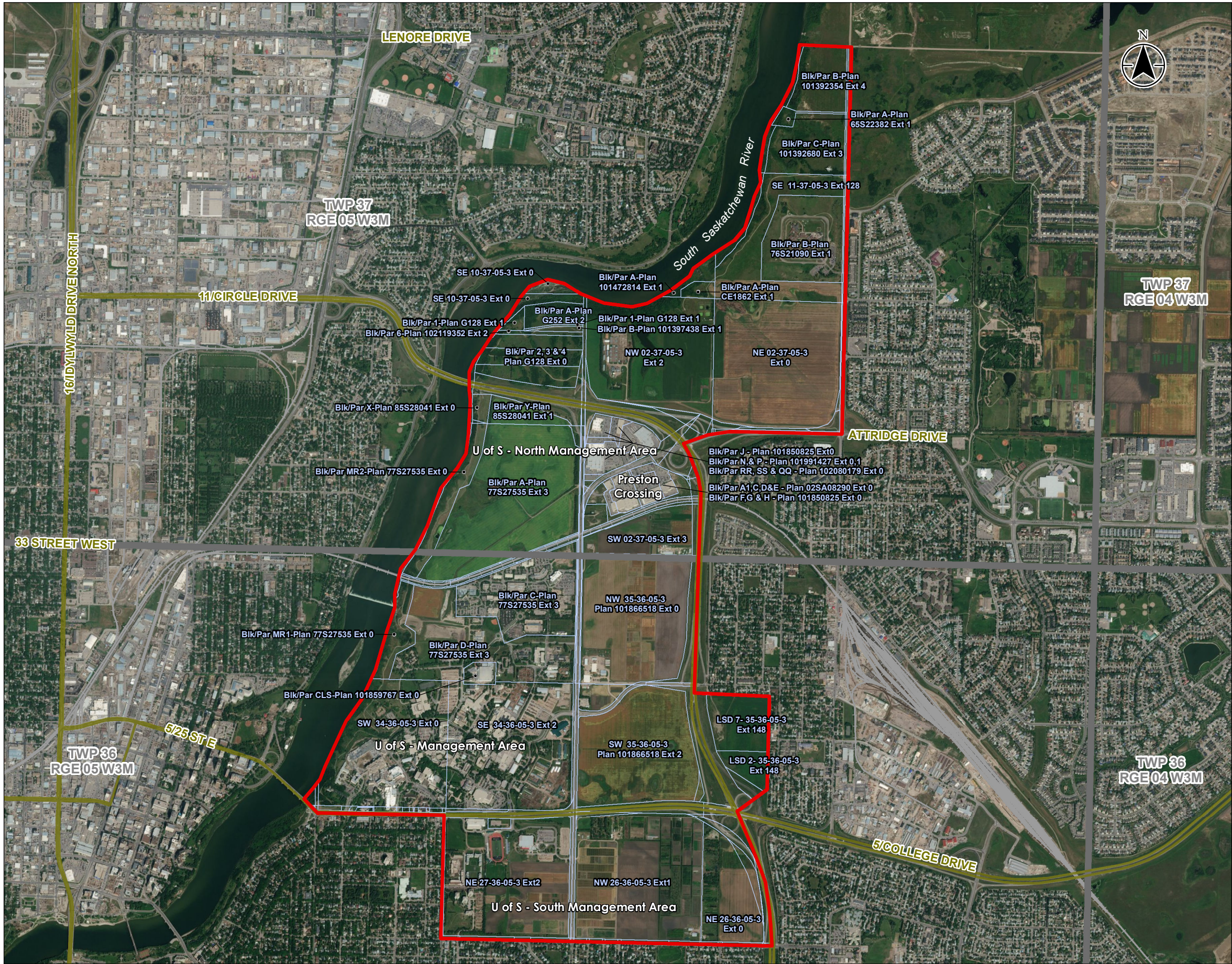
Client/Project  
City of Saskatoon  
Natural Area Screening  
University of Saskatchewan Management Area,  
Saskatoon, Saskatchewan

Figure No.  
**1**  
Title

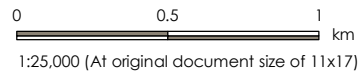
**Study Area and Regional Context**

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data. Utility data is for illustrative purposes only. The data is provided without warrant or representation of accuracy, timeliness or completeness. Users must follow facility locate procedures.

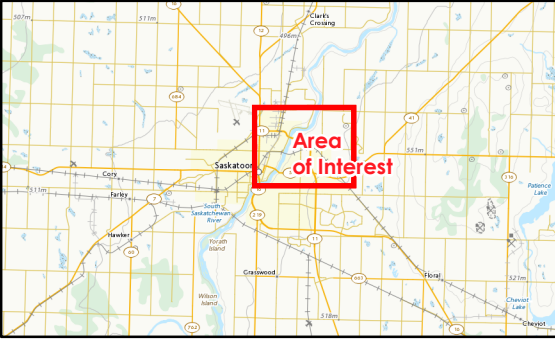




- Study Area
- Parcel
- City
- Section
- Township
- Major Road
- Railway
- Watercourse
- Waterbody



- Notes**
- Coordinate System: NAD 1983 UTM Zone 13N
  - Base features provided by the Government of Saskatchewan and the Government of Canada. Parcel information from ISC SaskGIS Cadastral 2008.
  - Imagery Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User



Project Location  
Saskatoon,  
Saskatchewan

113254195-002 REV B  
Prepared by JHiebert on 2018-09-06  
Review by gmichaud on 2018-09-06

Client/Project  
City of Saskatoon  
Natural Area Screening  
University of Saskatchewan Management Area,  
Saskatoon, Saskatchewan

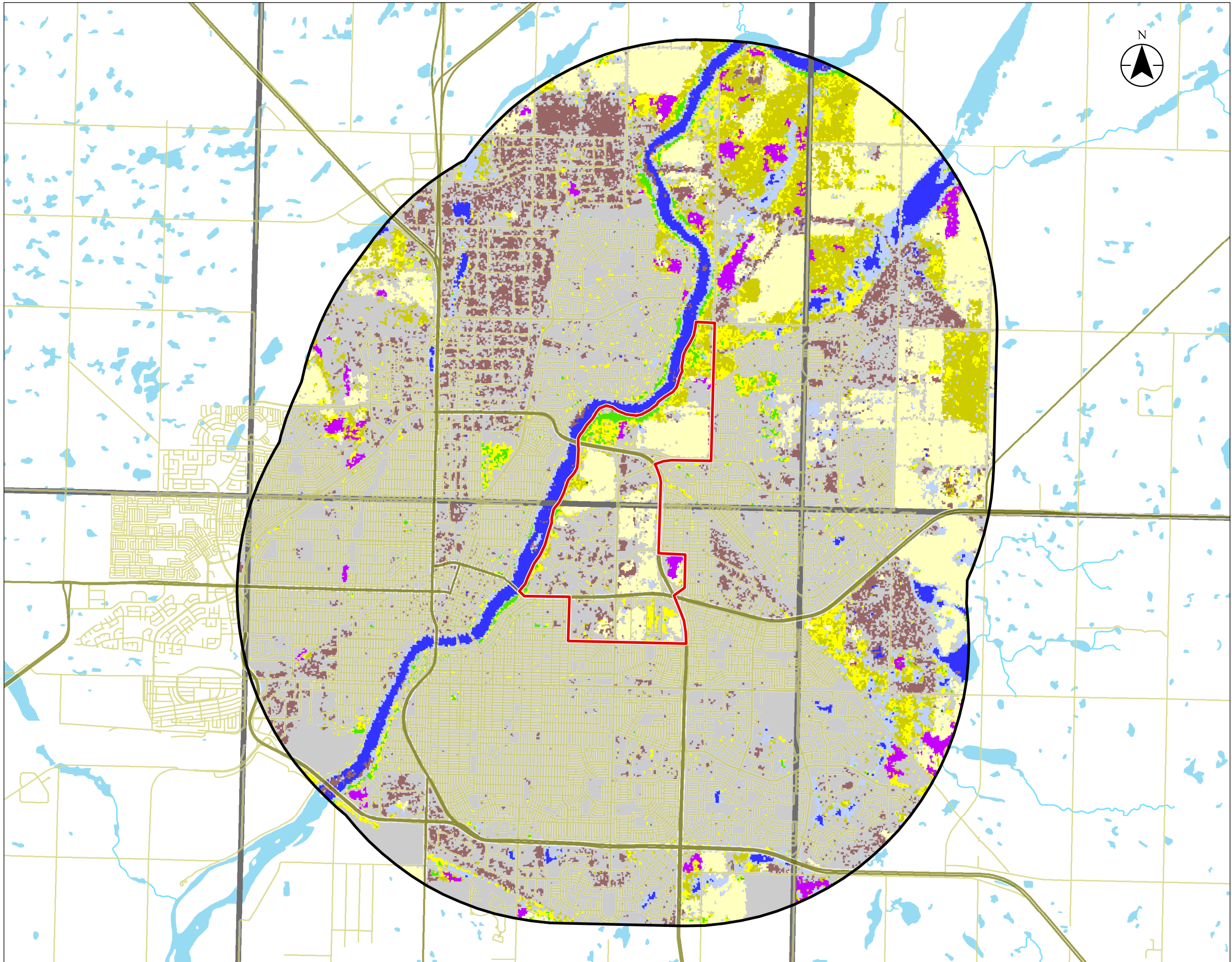
Figure No.  
**2**

Title  
**Land Parcels within the Study Area**

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data. Utility data is for illustrative purposes only. The data is provided without warrant or representation of accuracy, timeliness or completeness. Users must follow facility locate procedures.



\\cd1043-01\gis\_invo\client\city\_of\_saskatoon\university\_nat\figure\113254195\_003\_REV0\_Landcover.mxd Revised: 2018-08-28 By: acampigotto



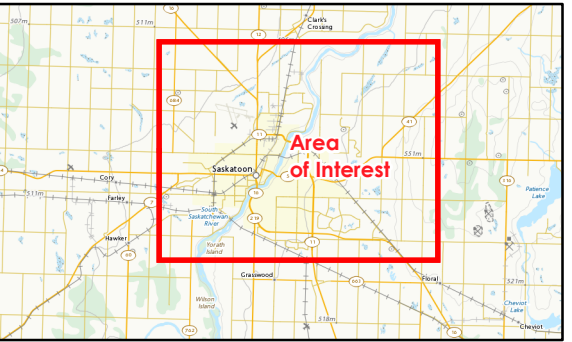
- Study Area
- Regional Context Area

**Landcover**

- Agriculture
- Broadleaf
- Coniferous
- Exposed Land and Barren
- Grassland
- Pasture and Forages
- Shrubland
- Urban and Developed
- Water
- Wetland
- Major Road
- Minor Road
- Watercourse
- Waterbody

0 1,000 2,000 metres  
1:70,000 (At original document size of 11x17)

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 13N
  2. Base features provided by the Government of Saskatchewan and the Government of Canada.
  3. Landcover information obtained from Agriculture & Agri-food Canada (2017).



Project Location  
Saskatoon,  
Saskatchewan

113254195-003 REV0  
Prepared by acampigotto on 2018-08-28  
Technical Review by lstead on 2018-08-28

Client/Project  
City of Saskatoon  
Natural Area Screening  
University of Saskatchewan Management Area,  
Saskatoon, Saskatchewan

Figure No.

**3**

Title

**Landcover**

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data. Utility data is for illustrative purposes only. The data is provided without warrant or representation of accuracy, timeliness or completeness. Users must follow facility locate procedures.





- Study Area
- Sensitive Areas

**Landcover**

- Agriculture
- Broadleaf
- Exposed Land and Barren
- Native Grassland
- Pasture and Forages
- Shrubland
- Urban and Developed
- Water
- Wetland

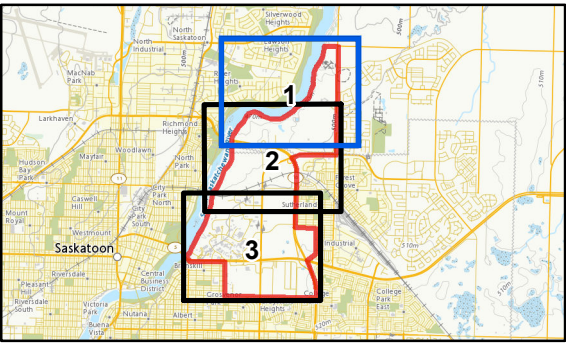
**Wetland Classes**

- 1 - Ephemeral Wetland
- 2 - Temporary Wetland
- 3 - Seasonal Wetland
- 4 - Semi-Permanent Wetland
- Drainage
- Dugout

0 100 200 300 Meters  
1:10,000 (At original document size of 11x17)

**Notes**

1. Coordinate System: NAD 1983 UTM Zone 13N
2. Base features provided by the Government of Saskatchewan and the Government of Canada.
3. Landcover data obtained from Agriculture & Agri-food Canada (2017) Imagery;Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP,



Project Location  
Saskatoon,  
Saskatchewan  
113254195-004-REV8  
Prepared by acampigotto on 2018-08-28  
Technical Review by lstead on 2018-08-28

Client/Project  
City of Saskatoon  
Natural Area Screening  
University of Saskatchewan Management Area,  
Saskatoon, Saskatchewan

Figure No.

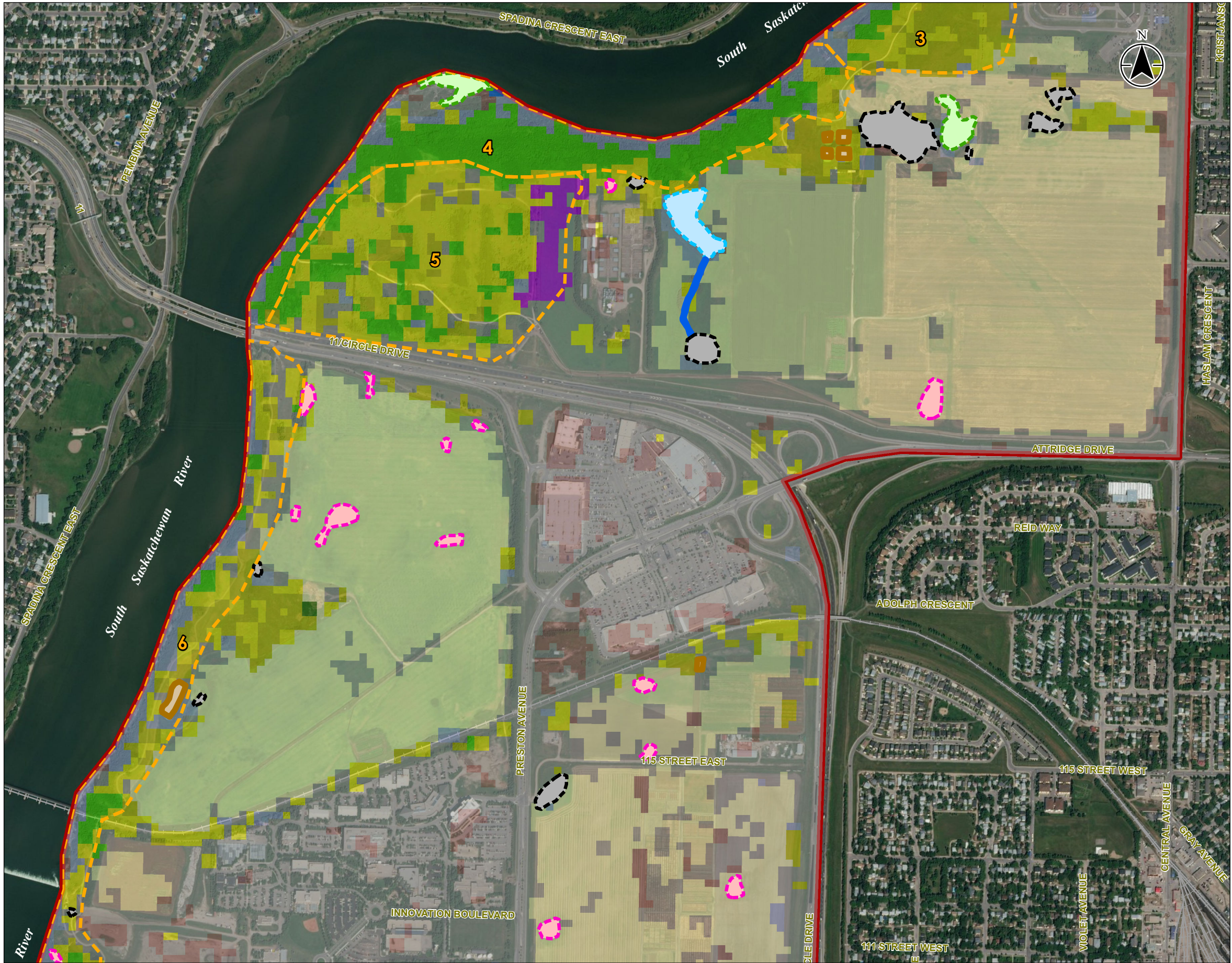
**4a**

Title

**Biophysical Atlas**

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data. Utility data is for illustrative purposes only. The data is provided without warrant or representation of accuracy, timeliness or completeness. Users must follow facility locate procedures.





- Study Area
- Sensitive Areas

Landcover

- Agriculture
- Broadleaf
- Coniferous
- Exposed Land and Barren
- Native Grassland
- Pasture and Forages
- Shrubland
- Urban and Developed
- Water
- Wetland

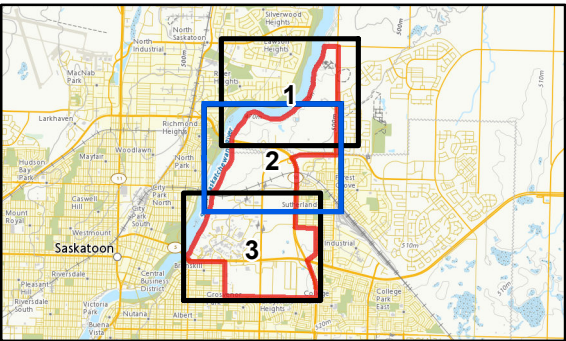
Wetland Classes

- 1 - Ephemeral Wetland
- 2 - Temporary Wetland
- 3 - Seasonal Wetland
- 4 - Semi-Permanent Wetland
- Drainage
- Dugout
- Railway

0 100 200 300 Meters  
1:10,000 (At original document size of 11x17)

Notes

- Coordinate System: NAD 1983 UTM Zone 13N
- Base features provided by the Government of Saskatchewan and the Government of Canada.
- Landcover data obtained from Agriculture & Agri-food Canada (2017) Imagery;Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP,



Project Location  
Saskatoon,  
Saskatchewan  
113254195-004-REV8  
Prepared by acampiglotto on 2018-08-28  
Technical Review by Istead on 2018-08-28

Client/Project  
City of Saskatoon  
Natural Area Screening  
University of Saskatchewan Management Area,  
Saskatoon, Saskatchewan

Figure No.

4b

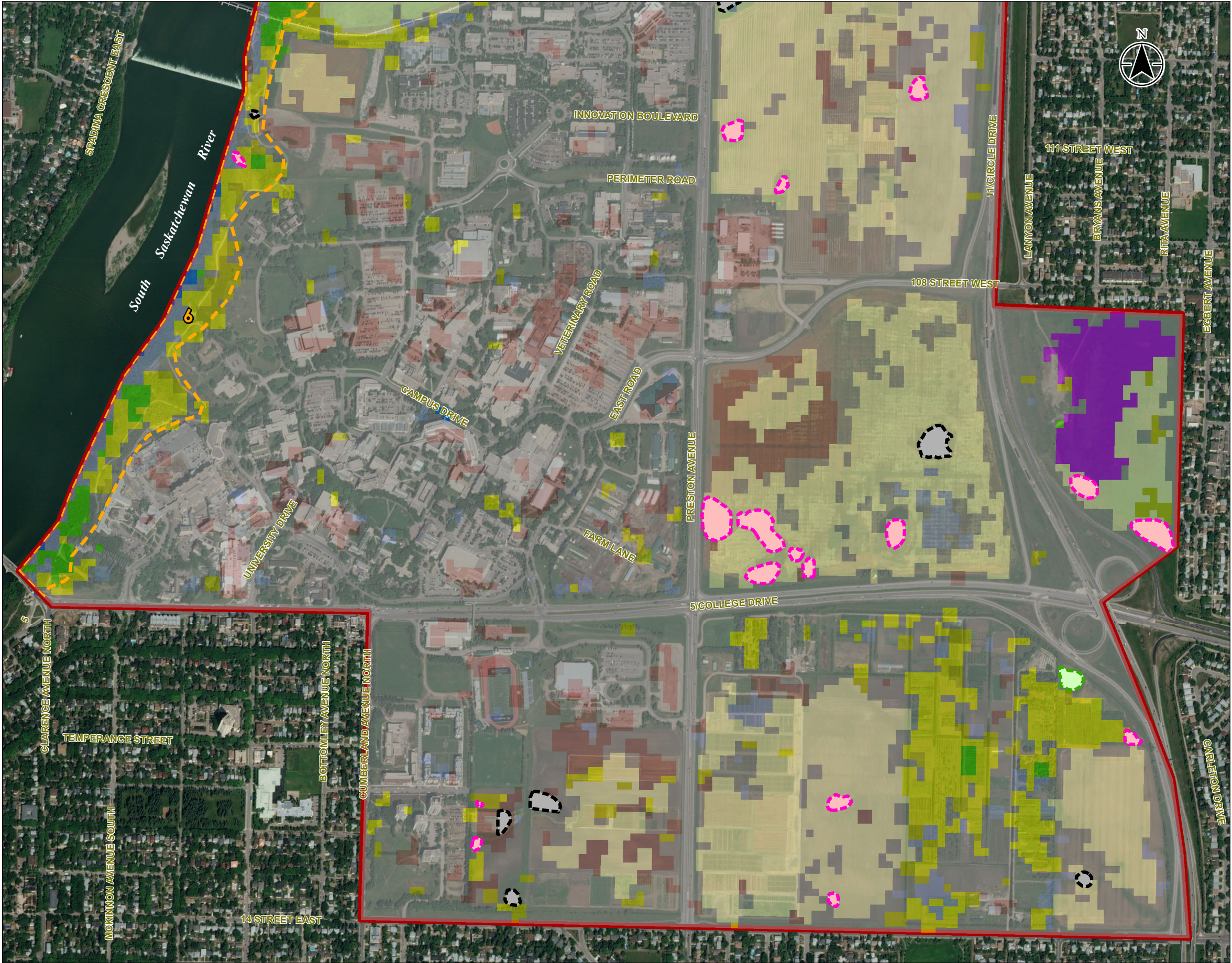
Title

Biophysical Atlas

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data. Utility data is for illustrative purposes only. The data is provided without warrant or representation of accuracy, timeliness or completeness. Users must follow facility locate procedures.



\\cd1043-01\gis\_invo\live\clients\city\_of\_saskatoon\university\_nas\figure\113254195\_004\_REV8\_Biophysical\_Atlas.mxd    Revised: 2018-08-28 By: acampigotto



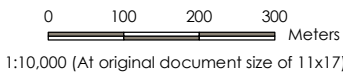
- Study Area
- Sensitive Areas

Landcover

- Agriculture
- Broadleaf
- Exposed Land and Barren
- Native Grassland
- Pasture and Forages
- Shrubland
- Urban and Developed
- Water
- Wetland

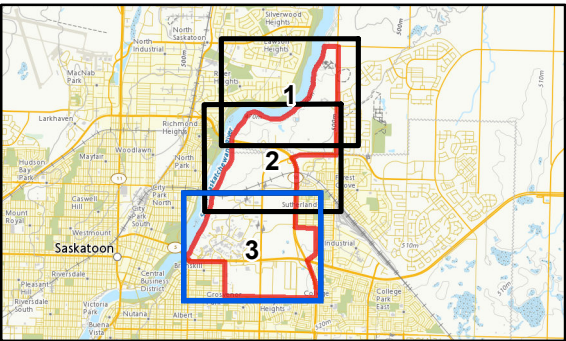
Wetland Classes

- 1 - Ephemeral Wetland
- 2 - Temporary Wetland
- 3 - Seasonal Wetland
- 4 - Semi-Permanent Wetland
- Drainage
- Dugout
- Railway



Notes

1. Coordinate System: NAD 1983 UTM Zone 13N
2. Base features provided by the Government of Saskatchewan and the Government of Canada.
3. Landcover data obtained from Agriculture & Agri-food Canada (2017) Imagery;Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP,



Project Location  
Saskatoon,  
Saskatchewan

113254195-004-REV8  
Prepared by acampigotto on 2018-08-28  
Technical Review by Istead on 2018-08-28

Client/Project  
City of Saskatoon  
Natural Area Screening  
University of Saskatchewan Management Area,  
Saskatoon, Saskatchewan

Figure No.

4c

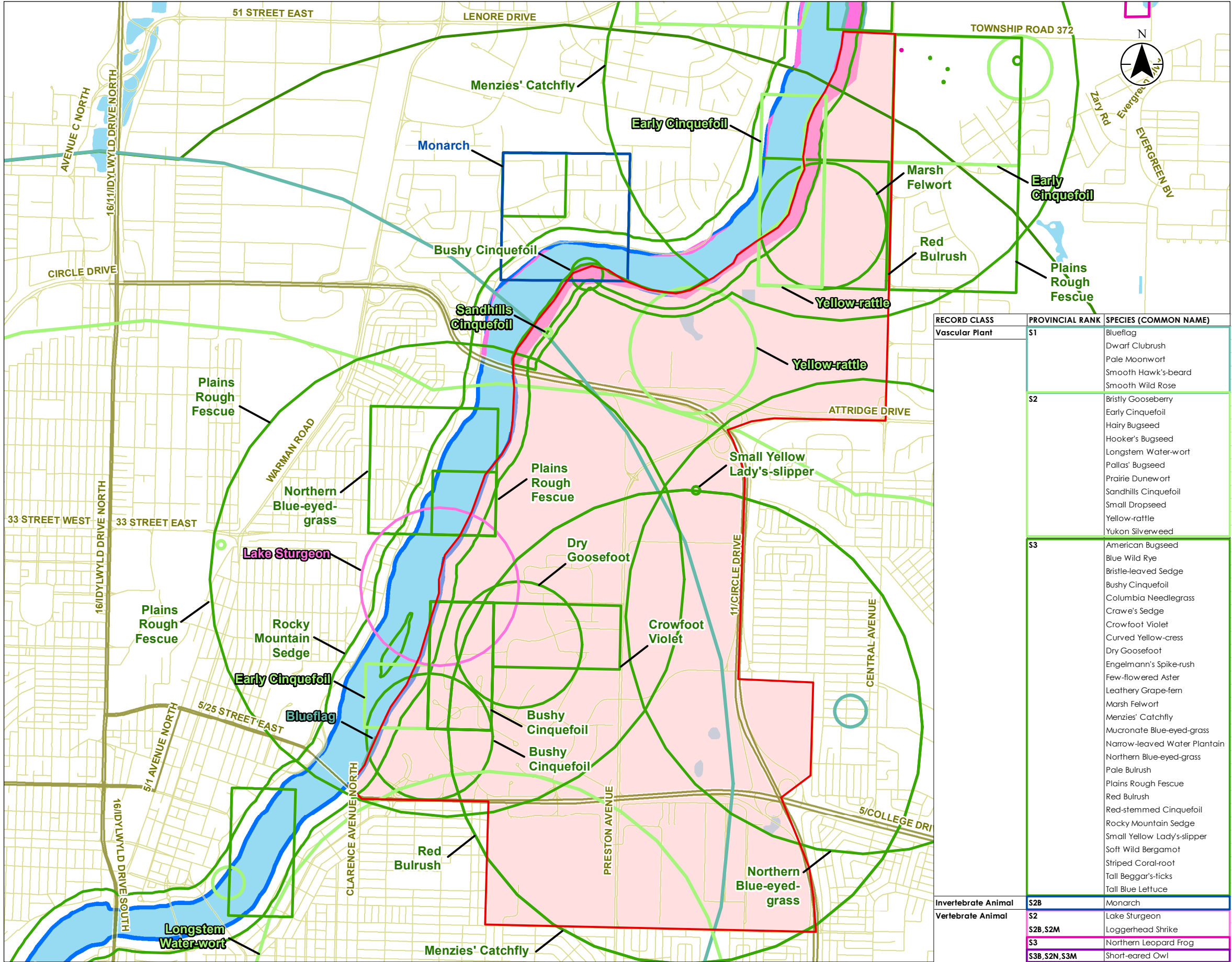
Title

Biophysical Atlas

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data. Utility data is for illustrative purposes only. The data is provided without warrant or representation of accuracy, timeliness or completeness. Users must follow facility locate procedures.



\\Cd\043\001\_GIS\IMA active\client\city\_of\_saskatoon\university\_nsa\figure5\113254195\_005\_REV5\_SKCDC\_Records\_with\_labelsV2.mxd      Revised: 2018-09-26 By: acampigotto



Study Area

Historic Records of Wildlife Species of Management Concern (See Inset Table for Species)

Occurrence Class, Provincial Rank

Vascular Plant, S1

Vascular Plant, S2

Vascular Plant, S3

Invertebrate Animal, S2B

Vertebrate Animal, S2

Vertebrate Animal, S3

Vertebrate Animal, S2/S3

Migratory Bird Concentration Site

Major Road

Minor Road

Watercourse

Waterbody

0250500

metres

1:25,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 13N

2. Base features provided by the Government of Saskatchewan and the Government of Canada.

3. Historical wildlife records from Saskatchewan Conservation Data Centre (SKCDC), August 16, 2018.

RECORD CLASS	PROVINCIAL RANK	SPECIES (COMMON NAME)
Vascular Plant	S1	Blueflag Dwarf Clubrush Pale Moonwort Smooth Hawk's-beard Smooth Wild Rose
	S2	Bristly Gooseberry Early Cinquefoil Hairy Bugseed Hooker's Bugseed Longstem Water-wort Pallas' Bugseed Prairie Dunewort Sandhills Cinquefoil Small Dropseed Yellow-rattle Yukon Silverweed
	S3	American Bugseed Blue Wild Rye Bristle-leaved Sedge Bushy Cinquefoil Columbia Needlegrass Crawe's Sedge Crowfoot Violet Curved Yellow-cress Dry Goosefoot Engelmann's Spike-rush Few-flowered Aster Leathery Grape-fern Marsh Felwort Menzies' Catchfly Mucronate Blue-eyed-grass Narrow-leaved Water Plantain Northern Blue-eyed-grass Pale Bulrush Plains Rough Fescue Red Bulrush Red-stemmed Cinquefoil Rocky Mountain Sedge Small Yellow Lady's-slipper Soft Wild Bergamot Striped Coral-root Tall Beggar's-ticks Tall Blue Lettuce
Invertebrate Animal	S2B	Monarch
Vertebrate Animal	S2	Lake Sturgeon
	S2B, S2M	Loggerhead Shrike
	S3	Northern Leopard Frog
	S3B, S2N, S3M	Short-eared Owl

Project Location

Saskatoon,  
Saskatchewan

113254195-005 REV5

Prepared by acampigotto on 2018-09-26  
Technical Review by arichardson on 2018-09-26

Client/Project

City of Saskatoon  
Natural Area Screening  
University of Saskatchewan Management Area,  
Saskatoon, Saskatchewan

Figure No.

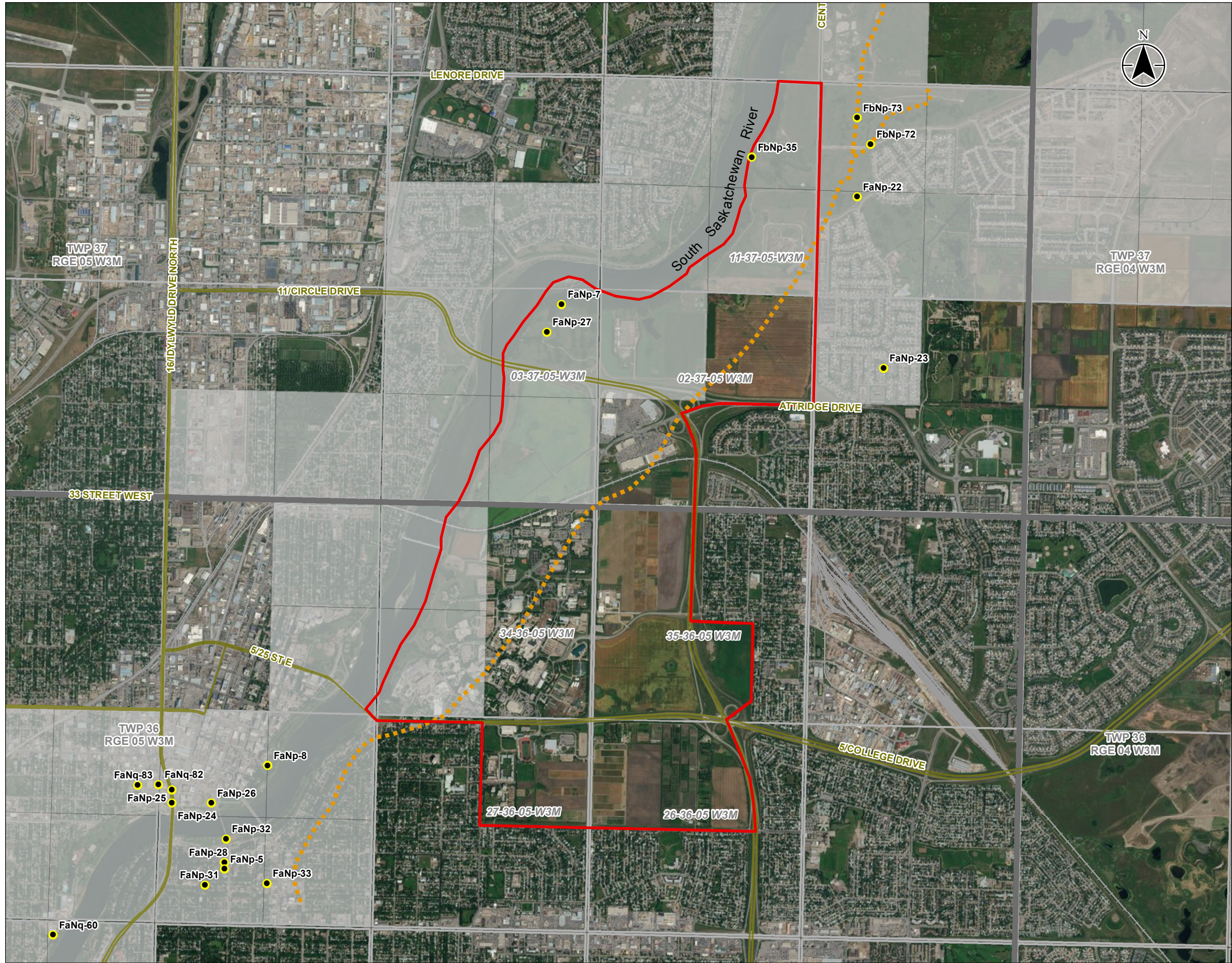
5

Title

Historical Occurences of SOMC



\\cd1043-01\gis\_invo\live\clients\city\_of\_saskatoon\university\_maa\figure\113254195-006\_REV8\_Heritage\_Sensitivity.mxd Revised: 2018-08-28 By: acampiglotto



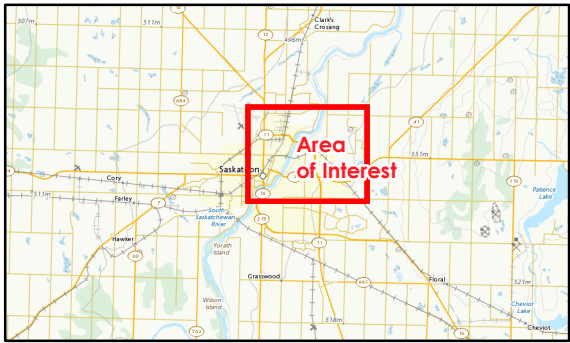
Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data. Utility data is for illustrative purposes only. The data is provided without warrant or representation of accuracy, timeliness or completeness. Users must follow facility locate procedures.



- Previously Recorded Heritage Resources
- Moose Woods - Batoche Historical Trail
- Study Area
- Heritage Sensitive Quarter Sections
- City
- Section
- Township
- Major Road
- Railway
- Watercourse
- Waterbody

0 0.5 1 km  
1:30,000 (At original document size of 11x17)

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 13N
  2. Base features provided by the Government of Saskatchewan, City of Saskatoon and the Government of Canada.
  3. Imagery: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP,



Project Location  
Saskatoon, Saskatchewan  
Client/Project  
City of Saskatoon  
Natural Area Screening  
University of Saskatchewan Management Area,  
Saskatoon, Saskatchewan

Figure No.  
**6**  
Title  
**Heritage Sensitivity and  
Previously Recorded Heritage  
Resources**