

VALLEY ROAD BUSINESS PARKS LTD.

Valley Road Business Park
Comprehensive Development Review
Report
Rezoning and Land Use Amendment

Revision:

Final

KGS Group Project:

23-4236-001

Date:

May 3, 2024

SCATLIFF + MILLER + MURRAY

visionary urban design + landscapes



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FOREWARD

The following is a letter of support from the University of Saskatchewan in support of the proposed land use amendment and rezoning of the Valley Road Business Park.



January 19, 2024

RM Corman Park
111 Pinehouse Drive
Saskatoon, SK S7K 5W1

Attention: Adam Toth
Senior Planner, Development Review

**RE: University of Saskatchewan Support for Valley Road Business Park
and Proposed Amendment to P4G Land Use**

Dear Mr. Toth,

The University of Saskatchewan is approaching the RM Corman Park to ask for your partnership to support a proposed amendment to P4G land use that will enable the University to be the beneficiary of a transformational land donation from Valley Road Business Park. Nearly all the members of the Valley Road Business Park consortium are dedicated USask alumni, and they are looking for a way to give back by contributing to the University of Saskatchewan's \$500 Million fundraising Campaign *Be What the World Needs*. This is the largest Campaign in Saskatchewan history, and we would be proud to include Corman Park as a supporter and partner in this incredible initiative. The province of Saskatchewan, the City of Saskatoon and many other local and Indigenous bodies stand with us in supporting the Campaign and are eager for its successful completion in May of 2025.

As one of our province's largest municipalities, Corman Park is a critical player in the economic success of Saskatchewan and the future growth of the City of Saskatoon and the University of Saskatchewan. In reviewing the Saskatoon North Partnership for Growth (P4G) Vision, Principles, and Strategic Direction we noted that the latest projections show the P4G region nearing a population of 500,000 in the next 20 years. The University of Saskatchewan wants to be a part of that growth. We are excited about the possibility of a large land donation within Corman Park because we see it as a prime area for development by the University, potentially leading to partnerships with the municipality, with the City of Saskatoon and/or with other key development partners. Rezoning the land for future development will, we believe, enhance regional competitiveness; financial sustainability; environmental sustainability; improved community integration; and enhanced partnerships.

With Corman Park as a partner in what will be a transformational land acquisition for the University of Saskatchewan, you will help us achieve an important part of our Vision 2057 which is to continue to acquire endowment lands - a critical resource for sustainable University success and growth.

We are seeking your support specifically for a proposed amendment to the P4G land use and rezoning of the Valley Road Business Park (VRBP) property to commercial and industrial. The rezoning will support donation of the VRBP land to the university so that the university may hold this land in its endowment for future use, development, and/or sale for development with proceeds to benefit the academic,

research and student support mission of the University of Saskatchewan. We believe this vision is in line with the objectives of the P4G Plan:

- Support and encourage regional economic prosperity and entrepreneurship;
- Support initiatives to strengthen and diversify the regional economic base;
- Support efforts by the P4G municipalities, First Nations and Métis communities and economic development organizations in increasing economic opportunities in the region; and,
- Enhancing regional competitiveness.

The P4G plan objectives closely mirror the principles set out in the University of Saskatchewan's Plan 2025: sustainability, creativity, diversity, and connectivity. Also central to the University's strategic plan is integration and alignment with the Government of Saskatchewan's Growth Plan 2030.

The VRBP property is in proximity (approximately 9 kilometers) to the University and makes use of the Valley Road Interchange and the City's south bridge. This proximity to the main campus is an important consideration when selecting future university land for use, development, or sale to further the mission of the university. Regardless of the final use of the land, we believe it will act as a catalyst for economic development consistent with the region.

We trust that Corman Park will see value in entering this partnership with us as we build the future of the University of Saskatchewan and the future of Corman Park. We see you as integral supporters of our *Be What the World Needs Campaign* and will be proud to celebrate and promote your role in helping us achieve this incredible land donation.

The University of Saskatchewan has witnessed an unprecedented period of growth, success and heightened pre-eminence as one of Canada's leading, research-intensive centers of learning and discovery. The opportunity to expand our land holding through donation of a commercial/industrial zoned business park at the Valley Road Business Park site aligns with our objectives and, we believe, with the P4G vision.

Thank you for your consideration of this important matter. We look forward to the opportunity to discuss this proposal and hope to move the application forward as expeditiously as possible.

Yours truly,



Peter Stoicheff, Ph.D.
President and Vice-Chancellor

cc: Laurie Bradley – Overpass Farms Ltd.
Doug Ramage, P.Eng, ENV SP – KGS Group
Don Atchison - Consultant

EXECUTIVE SUMMARY

The purpose of this document is to provide the Rural Municipality of Corman Park and the P4G District Planning Commission with a Comprehensive Development Review report to support the application to amend the land use designation of Parcels B & C of NE 14-36-06 W3M and Parcel A of NW 13-36-06-03 (see **Appendix A**) in the District Official Community Plan from an Agricultural to Urban Commercial / Industrial land use. Additionally, an application to rezone the property from D-Agricultural (DAG 1 and DAG2) district to an Arterial Commercial (DC2) district to support a proposed multi-lot business and research park subdivision known as the Valley Road Business Park (VRBP).

Valley Road Business Park is intended to act as a business / research park providing employment opportunities in the southwest P4G district area, adding to the University's endowment lands, and providing a buffer from the heavy industrial uses to the east of the country residential development Cedar Villa Estates.

Development in the overall P4G district is constrained due to a lack of confirmed connections, the timing of infrastructure extensions, and the cost recovery mechanisms that are yet to be determined. The conceptual site plan and servicing strategy outlines the preferred servicing options and how future development of the lands may be phased to allow consideration to explore innovative servicing strategies. The VRBP property benefits from the availability of servicing to the property to support the proposed business / research park. A raw water line along the south property line, natural gas, power, and communications are available to support the proposed rezoning and land use amendment. Municipal sewer services can be provided by means of pump out systems. Confirmation of servicing from utility providers is included within this report.

The development context recognizes the importance of integrating natural, ecological, and heritage features present on the VRBP lands as part of addressing climate resiliency, and creating an aesthetically pleasing future development that complements the transition from rural to urban land uses. Additional investigation and studies are anticipated to be necessary to advance the development to subdivision design based on the approval of the rezoning and land use amendment. The conceptual site plan used in this report is to demonstrate the feasibility of the property to support urban commercial / industrial zoning and associated uses. Approval of the rezoning and land use amendment is required to provide the certainty to advance future subdivision design that would include dedicating future underground infrastructure right-of-ways and selection of the final servicing strategy.

The timelines of continuing to advance the development are unknown at this time as the lands will be donated to the University of Saskatchewan endowment on completion of the rezoning and land use amendment.

On April 12, 2024 the public consultation phase was initiated which consisted of the delivery of public notice of the proposed rezoning and land use amendment to all landowners within the required one mile (1.6 km) notification radius. Public notices were hand delivered to residents in Cedar Villa Estates and the Montgomery neighbourhood which provided the opportunity to speak with residents about the rezoning and the public open house. The public open house was held on April 26, 2024 at the Black Fox Distillery from 7:00pm to 9:00pm. The open house was attended by approximately 50 – 60 people with representatives

from Cedar Villa Estates, Montgomery neighbourhood, the City of Saskatoon, and the Friends of the Saskatoon Afforestation Areas Inc. in attendance.

The summary of public consultation is included in **Section 7**, and the record of comments with both regulatory agencies and the public can be found in **Appendix G & H** respectively.

This application to designate the VRBP lands as Urban Commercial/Industrial and rezone the property to an Arterial Commercial (DC2) designation aligns with the Vision, Principles, and Strategic Direction set out in the P4G DOCP. It recognizes the vision of a vibrant, prosperous, and internationally competitive region through expanding the university's endowment lands. Most importantly, it recognizes the partnerships, sustainability, and opportunity to provide a diverse, vibrant regional economy and a high quality of life.

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STATEMENT OF LIMITATIONS AND CONDITIONS

Limitations

This report has been prepared for Valley Road Business Park] (“VRBP”) in accordance with the agreement between KGS Group and [VRBP] (the “Agreement”). This report represents KGS Group’s professional judgment and exercising due care consistent with the preparation of similar reports. The information, data, recommendations and conclusions in this report are subject to the constraints and limitations in the Agreement and the qualifications in this report. This report must be read as a whole, and sections or parts should not be read out of context.

This report is based on information made available to KGS Group by [VRBP]. Unless stated otherwise, KGS Group has not verified the accuracy, completeness or validity of such information, makes no representation regarding its accuracy and hereby disclaims any liability in connection therewith. KGS Group shall not be responsible for conditions/issues it was not authorized or able to investigate or which were beyond the scope of its work. The information and conclusions provided in this report apply only as they existed at the time of KGS Group’s work.

Third Party Use of Report

Any use a third party makes of this report or any reliance on or decisions made based on it, are the responsibility of such third parties. KGS Group accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions undertaken based on this report.

Geo-Environmental Statement of Limitations

KGS Group prepared the geo-environmental conclusions and recommendations for this report in a professional manner using the degree of skill and care exercised for similar projects under similar conditions by reputable and competent environmental consultants. The information contained in this report is based on the information that was made available to KGS Group during the investigation and upon the services described, which were performed within the time and budgetary requirements of [VRBP]. As this report is based on the available information, some of its conclusions could be different if the information upon which it is based is determined to be false, inaccurate or contradicted by additional information. KGS Group makes no representation concerning the legal significance of its findings or the value of the property investigated.

1.0 INTRODUCTION

The purpose of this document is to provide the Rural Municipality of Corman Park (the RM) and the P4G District Planning Commission with a Comprehensive Development Review report to support an application to amend the land use designation and rezoning of 68.05 ha (168.15 acres) located within Parcels B & C of NE 14-36-06 W3M and Parcel A of NW 13-36-06-03 from Agricultural to Urban Commercial / Industrial land use and an application to rezone the property from D-Agricultural (DAG 1 and DAG2) district to an Arterial Commercial (DC2) district in the District Official Community Plan. The applications to amend the land use in the Official Community Plan and to rezone the property from D-Agricultural (DAG 1 and DAG2) district to an Arterial Commercial (DC2) district to support a proposed multi-lot business and research park subdivision known as the Valley Road Business Park (VRBP) are included as part of this submission. The conceptual site plan to support the rezoning and land use amendment is included in **Appendix A**.

The proposed land use amendment and rezoning will support the donation of the VRBP land to the University of Saskatchewan so that the university may hold this land in its endowment for future use, development, and/or sale for development with proceeds to benefit the academic, research and student support mission of the University of Saskatchewan. We believe this vision is in line with the objectives of the P4G Plan:

- Support and encourage regional economic prosperity and entrepreneurship;
- Support initiatives to strengthen and diversify the regional economic base;
- Support efforts by the P4G municipalities, First Nations and Métis communities and economic development organizations in increasing economic opportunities in the region; and,
- Enhancing regional competitiveness.

This CDR report provides a conceptual site plan for the purpose of supporting the application and to provide the necessary detail to demonstrate the feasibility the proposed redesignation and rezoning of the VRBP property. As the plans are conceptual at this time, additional investigation and study to refine the site plan towards future subdivision applications to be accompanied by servicing cost estimates. Redesignating and rezoning the VRBP lands will be necessary to provide the certainty to the developer, prior to the additional investigation, that the property has the necessary zoning and land use for an Urban Commercial purpose.

With the approval of the land use amendment and rezoning application, this donation of commercially zoned land will contribute to the University of Saskatchewan's \$500 Million fundraising Campaign *Be What the World Needs* - the largest Campaign in Saskatchewan history. The province of Saskatchewan, the City of Saskatoon and many other local and Indigenous bodies stand with us in supporting the Campaign and are eager for its successful completion in May of 2025.

1.1 Overview

Universities are one of the greatest sources of talent development, research, and entrepreneurship that are a catalyst for economic development and prosperity in the regions they serve. Identified in the University of Saskatchewan's Vision 2057 "land is a critical resource to sustainable University success and growth.

The location of this proposed business and research park has been chosen based on its proximity to the City of Saskatoon and its compatibility with surrounding land uses. The strategic location of the subject property is in close proximity to the University and makes use of the Valley Road Interchange and the City's south bridge. The subject property additionally provides the necessary land for expansion of the University of Saskatchewan promoting talent development, research, and entrepreneurship as a catalyst for economic development consistent with the Regional Plan. Moreover, the development of a business and research park allows for the a transition from the heavy industrial uses of the City of Saskatoon's Civic Operations Centre, Snow Storage Facility, and Material Recovery Centre and provides an aesthetically pleasing transition from rural to urban development.

The P4G plan objectives closely mirror the principles set out in the University of Saskatchewan's Plan 2025: sustainability, creativity, diversity, and connectivity. Also central to the University's strategic plan is integration and alignment with the Government of Saskatchewan's Growth Plan 2030. The University of Saskatchewan has witnessed an unprecedented period of growth, success and heightened pre-eminence as one of Canada's leading, research-intensive centers of learning and discovery.

This application to designate the VRBP lands as Urban Commercial/Industrial and rezone the property to an Arterial Commercial (DC2) designation aligns with the Vision, Principles, and Strategic Direction set out in the DOCP. It recognizes the vision of a vibrant, prosperous, and internationally competitive region through expanding the university's endowment lands. It recognizes the partnerships, sustainability, and opportunity to provide a diverse, vibrant regional economy and a high quality of life.

2.0 INVENTORY AND ANALYSIS

2.1 Existing Land Use

The subject property is in the RM of Corman Park No. 344, comprised of 68.05 ha (168.15 acres), and within the boundaries of the P4G District. The Valley Road Business Park property is in proximity (approximately nine (9) kilometers) to the University and makes use of the Valley Road Interchange and the City's south bridge. This proximity to the main campus is an important consideration when selecting future university land for use, development, or sale to further the mission of the university. The adjacent land uses within approximately one mile (1.6 km) of the VRBP property consist of those illustrated in **Figure 1** and identified in **Table 1**.

FIGURE 1: VRBP PROPERTY AND SURROUNDING LAND USE



TABLE 1: ADJACENT LAND USE AND PROMIXITY TO VRBP

Land Use	Description	Distance
Residential	Cedar Villa Estates	~0.8 km
Commercial	Turf Tuff	Adjacent to south
	Black Fox Distillery	~1.7 km
Recreation or Conservation	Richard St. Barbe Baker Afforestation Area	~0.6 km
	Southwest Dog Park	~1.0 km
	Chappell Marsh Conservation Area	Adjacent to west
Industrial	Saskatoon Civic Operations Centre	Adjacent to north
	Saskatoon Snow Management Facility	Adjacent to north
	Saskatoon Material Recovery Centre	~0.8 km
	SaskPower land	Adjacent to east
Landfill	Saskatoon Landfill	~1.3 km

The site is currently undeveloped and used for purposes within the existing agricultural zoning and land use including the cultivation of hay crops. Further developing and intensifying agricultural operations under existing zoning on the VRBP site would create land-use conflicts with the surrounding country residential land uses and recreational lands (Richard St. Barbe Baker Afforestation, and dog park) to the north of the property.

A survey of the existing parcel topography was completed by Geoverra on July 6th, 2023. The survey demonstrated the existing topographic survey data, NE Section 14-36-06-W3M Parcel C exhibits a natural drainage inclination from east to west leading towards the natural occurring wetland known as "Chappell Marsh." Understanding and respecting the existing drainage patterns is crucial to maintaining the ecological balance of the area and ensuring responsible development practices. Future development of the site represents an opportunity to integrate natural features into development consistent with the direction within the DOCP. Furthermore, consideration towards the use of constructed wetlands allows the opportunity to improve the water quality of run-off and habitat condition currently associated with sedimentation from agricultural land uses reaching the marsh.

Maintaining the existing agricultural land use and zoning results in the fragmentation of agricultural land which is discouraged in the P4G DOCP. Based on the 2021 Census of Agriculture, the average farm size in Saskatchewan is 1,766 acres in comparison to the 168 acres of agricultural land at the Valley Road Business Park site. Without opportunities for land expansion for agricultural purposes due to the surrounding land uses, this results in the fragmentation of agricultural land contrary to the objectives of the P4G DOCP. As a result, maintaining the agricultural land use of the VRBP lands is contrary to intentions of the DOCP as the lands are not suitable for intensifying agricultural operations.

However, aligning with land use objectives outlined in Section 10.2 of the DOCP, establishing an Urban Commercial/Industrial land use as proposed for the subject property minimizes land use conflicts, provides a logical buffer between country residential development and the industrial land uses located at the Saskatoon Civic Operations Centre and the recent Material Recycling Centre and Landfill, and supports complete, innovative and context-appropriate communities with diverse opportunities for living and working through a compatible mix of land uses.

2.2 Proposed Land Use and Rationale

The VRBP site is proposed to be designated from Agricultural to Urban Commercial / Industrial, and rezoned from Agricultural to Arterial Commercial (DC2). The proposed amendment to the DOCP land use designation and rezoning represents a logical and compatible land use including allowing for a transition from country residential to industrial.

The compatibility and logical transition of the proposed land use for the VRBP site is demonstrated through the use of urban design principles such as the rural-to-urban transect. This transect promotes the understanding of the relationships between the built environment and natural environment and encourages compatible development patterns. An example of the development pattern that would result from the land use designation and zoning is illustrated in **Figure 2**.

FIGURE 2: RURAL TO URBAN LAND USE TRANSITION



Further examples of where a similar transect is applied to residential, recreational, and commercial land uses in close proximity to each other are demonstrated through the following examples:

- Rosewood Neighbourhood – Hyde Park / Lakewood Suburban Centre
- University Heights – University Heights Suburban Centre / Forest Park connecting to Forestry Farm
- Preston Crossing / Sutherland Off-leash Recreation Area

Additionally, the proximity of the Chappell Marsh and the Richard St. Barbe Baker Afforestation Area to the VRBP property provides the opportunity for the “integration and complement of natural features and landscapes including the incorporation of natural vegetation and conserved wetlands” in an aesthetically pleasing environment that works towards addressing climate resiliency specified in the P4G DOCP¹.

Furthermore, minimal employment opportunities exist in the south-west area of the P4G area contrary to the policy of equitable distribution of employment to encourage job growth in the P4G municipalities. The P4G Land Use map indicates that urban commercial and industrial areas are planned for the lands north and north-west of the city centre, and lands to the north-east to south east as predominantly urban residential; however, employment opportunities in the southwest portion of the P4G plan remain limited.

Recent recommendations to City of Saskatoon from city administration to propose a zoning bylaw amendment to permit ‘as-of-right’ development for up to four residential units on a property in a residential zoning district, and permitting four storey multiple-unit development within 800 metres of the bus rapid transit system corridors can be expected to increase housing densities and promote population growth beyond what was envisioned at the time of the initial development of the P4G plan. This additional housing development and potential population growth will require additional employment lands to be incorporated in the P4G plan and impact the population growth patterns originally contemplated in the plan.

This proposed amendment to the P4G Regional Plan through the VRBP proposal represents 168 acres of Urban Commercial / Industrial land use that was not previously considered in the creation of the P4G land use map; however, the anticipated impact of removing 68.1 hectares (168 acres) of fragmented agricultural land from the land use to allow for an Urban Commercial / Industrial land use is considered minimal due to the vast agricultural zoning otherwise contemplated in the Regional Plan and the surrounding area.

Significant changes to the P4G land use map have occurred since 2017 that include the removal of agricultural land in the north-east and south-east sections of the land use map. Furthermore, in 2018 the land use of Urban Commercial / Industrial of SW 16-38-05 W3M was changed to Regional Infrastructure to support the Loraas Nutrient Recycling Facility. Based on a similar land area, the VRBP proposal does not create additional Urban Commercial / Industrial lands instead replaces the land area taken by Regional Infrastructure and provides for an equitable distribution of commercial / industrial land in the south-west area of the P4G region.

¹ P4G District Official Community Plan Section 6.3.6

This report will outline the preferred servicing considerations based on the accessibility and availability of services and utilities to support the proposed business / research park. While it is noted that there are constraints on municipal servicing from the City of Saskatoon in the south areas of the P4G map, it is also noted that lands designated as urban commercial / industrial, specifically in the area between the City of Saskatoon and the City of Martensville, have been adopted despite infrastructure servicing constraints existing across the P4G area related to the timing and extension of servicing to support the same land use as proposed for the VRBP site.

The servicing strategy presented further in this report demonstrates how the site can be serviced with or without a connection to the City of Saskatoon. Examples of existing and planned development without connecting to the City of Saskatoon in the south area of the P4G map include:

- Greenbyre Golf and Country Club
- Grasswood Junction (Des Nedhe Group and EPCOR Utilities) – Water Treatment Facility and associated infrastructure

3.0 POLICY CONTEXT

3.1 University of Saskatchewan and City of Saskatoon Memorandum of Understanding

The memorandum of understanding (MOU) signed between the university and City of Saskatoon in 2018 to address issues that include urban planning, land development, reconciliation, transit and research collaborations. This was seen as a “new approach of intentional collaboration and problem-solving to create the best results our community”. It is anticipated that this MOU will provide a framework for the VRBP lands, once donated to the University of Saskatchewan, to establish both interim servicing strategies to support development in a phased manner and consider the ultimate servicing strategy to provide an urban-level of service for the development on a long-term basis.

3.2 Policy Overview

As noted in the P4G District Official Community Plan (DOCP) Section 31.3.1 “amendments to this Plan may be considered to ensure the region remains flexible, diversified and globally competitive, and evolves with a changing environment, based on rationale including new information not considered during the development of the Plan or a change in the planning context”, and further to this in the previous section - Section 31.2 references the importance of providing opportunities for stakeholders and rightsholders to be engaged in regional decision-making to ensure that the Plan is updated and amended as necessary to adapt to changes in regional needs and contexts.

Currently, the VRBP site is zoned for agricultural uses (DAG1 & DAG2). This zoning is not only preventing the highest and best use of the property but moreover is counter to the policies and objectives of the P4G District Official Community Plan in the following respects:

- **Section 4.3.3 – Distribution of Employment.** Minimal employment opportunities exist in the south-west area of the P4G area contrary to the policy of equitable distribution of employment to encourage job growth in the P4G municipalities. P4G Land Use map indicates that urban commercial and industrial areas are planned for the lands north and north-west of the city centre, and lands to the north-east to southeast as predominantly urban residential.

Recent recommendations to City of Saskatoon administration to propose a zoning bylaw amendment to permit ‘as-of-right’ development for up to four residential units on a property in a residential zoning district, and permitting four storey multiple-unit development within 800 metres of the bus rapid transit system corridors can be expected to increase housing densities and promote population growth beyond what was envisioned at the time of the initial development of the P4G plan and the basis for the allocation of land uses within the P4G plan. This is a major change to the direction of the P4G plan and provides the basis to reassess the allocation of land uses in the region.

Furthermore, in 2018 the land use of Urban Commercial / Industrial of SW 16-38-05 W3M was changed to Regional Infrastructure to support the Loraas Nutrient Recycling Facility. Based on a similar land area, the VRBP proposal does not create additional Urban Commercial / Industrial lands instead replaces the land area taken by Regional Infrastructure and provides for an equitable distribution of commercial / industrial land in the south-west area of the P4G region.

- **Section 11.2 – Promote agricultural innovation, conservation, and value-added industries.** Intensifying agricultural operations on the VRBP lands would create land-use conflicts with the surrounding country residential land uses. Maintaining the agricultural land use of the VRBP property is contrary to intentions of the DOCP as the lands are not suitable for intensifying agricultural operations.

Whereas, aligning with land use objectives outlined in Section 10.2, establishing an Urban Commercial/Industrial land use as proposed for the subject property provides a logical buffer between country residential development and the industrial land uses located at the Saskatoon Civic Operations Centre and the recent Material Recycling Centre and Landfill.

- **Section 11.3.1 – Fragmentation of agricultural land for uses other than intensive agricultural operations is discouraged.** Limited land expansion opportunities for agricultural purposes resulting in the fragmentation of agricultural land. Based on the 2021 Census of Agriculture, the average farm size in Saskatchewan is 1,766 acres in comparison to the 168 acres of agricultural land at the Valley Road Business Park site. Addressing Section 31.3.3, the proposed amendment to the Regional Plan through the VRBP proposal represents 168 acres of Urban Commercial / Industrial land use that was not previously considered in the creation of the P4G land use map. The anticipated impact of removing 68.1 hectares (168 acres) of fragmented agricultural land from the land use to allow for an Urban Commercial / Industrial land use is considered minimal due to the vast agricultural zoning otherwise contemplated in the Regional Plan.

The rezoning and land use amendment for the VRBP site aligns with the Vision, Principles, and Strategic Direction set out in the DOCP. It recognizes the vision of a vibrant, prosperous, and internationally competitive region through expanding the university’s endowment lands. It recognizes partnerships, sustainability, and opportunity to provide a diverse, vibrant regional economy and a high quality of life.

The following sections address the specific policies of both the P4G District Official Community Plan and P4G Zoning Bylaw.

3.3 P4G District Official Community Plan

The DOCP contains policies intended to guide land use, development and infrastructure services in this area of the RM. The following sections of the DOCP are anticipated to have the greatest influence on the form, intensity and configuration of development within the plan area.

TABLE 2: P4G DOCP POLICY REVIEW AND RESPONSE

Policy Section	Policy	CDR Response
4.3.2	Business Retention, Expansion and Attraction	The proposed rezoning and land use amendment is required to support the unprecedented period of growth, success, and heightened pre-eminence of the University of Saskatchewan as one of Canada’s leading, research-intensive centers of learning and discovery. This proposal allows for the opportunity to attract, retain and promote investment that is beneficial for the region.
6.3.1	Identification of significant Natural and Heritage Resources.	The Developers’ Online Heritage Screening Tool results were referred to the Heritage and Conservation Branch (HCB) regarding heritage sensitive and conditionally sensitive quarter-sections. The referral letter to HCB and response are included in Appendix D.
6.3.4	Habitat Conservation Ref: The Wildlife Act, 1998.	The proposed rezoning and land use amendment acknowledges and respects this Act and all its facets.
6.3.5	Impacts to Natural and Heritage Resources.	Areas of natural and heritage significance such as the been identified by the appropriate provincial authority. Refer to the appendices for the supporting documentation.
6.3.6	Integration of Natural Features	The conceptual site plan contemplates the integration of the Chappell Marsh as a natural feature and part of the overall stormwater management strategy for the VRBP site. This integration has the opportunity to alleviate water level challenges, address sediment transport and improve water quality. This CDR contemplates the use of constructed wetlands to effectively control run-off rates as part of integrating into the natural areas.

6.3.8	Coordination with the Province	Provincial agencies have been contacted regarding the proposed rezoning and land use amendment. Refer to Section 7.
6.3.9	Designating Environmental Reserve.	Future subdivision planning to consider designation of ecological and heritage sensitive areas on the west portion of the subject property immediately adjacent to the Chappell Marsh to be designated as Environmental Reserve. This area will be determined and refined based on investigation and study after approval of rezoning and land use amendment.
8.3.1	Source Water Protection (SWP).	Future development will not restrict the use of groundwater or surface water or alter the flow of surface water in a way that detrimentally affects other property or the ecology of the drainage systems in the area. The WSA has provided comments and will be further consulted.
8.3.2	Runoff from Site Development	<p>Under the existing land use as agriculture, sediment transport of soils during heavy precipitation events into the Chappell Marsh may be occurring. The use of constructed wetlands will be further explored to address run off from site development. Runoff will be directed to a retention pond or similar feature to address sediment and pollutants inputs into surface water and wetlands.</p> <p>Further design will be addressed through additional subdivision planning following the rezoning and land use amendment.</p>
8.3.3 & 8.3.4	Regional Wetlands Inventory & Regional Wetlands Policy	<p>The Water Security Agency (WSA) has been contacted regarding this proposed rezoning. They have commented that any infilling of wetlands, or the diversion of water would be considered drainage, and as such, a drainage approval from Water Security Agency would be required.</p> <p>The Chappell Marsh is directly adjacent to the subject property and is considered as part of the Green Network Study Area. At time of subdivision, Lots adjacent to the Chappell Marsh shall be developed in accordance with the Regional Wetlands Policy.</p>
8.3.5 & 8.3.6	Wetlands Protection and Development & Least Disturbance to Wetlands	The intent of future subdivision and development design will ensure the least possible disturbance and alteration of retained wetlands. At time of subdivision and development, protection of wetlands will be addressed through separate applications.

<p>8.3.8</p>	<p>Wetland and Riparian Buffers.</p>	<p>As shown on the site concept plan, a 30 m buffer from the Chappell Mash has been integrated into the site plan layout. This maintains and improves water quality, minimizes disturbance to native vegetation, and provides habitat for wildlife.</p> <p>Development within this buffer would be prohibited and native vegetation within it will be preserved. Refining the wetland and riparian buffer area may require a wetland survey to delineate the wetland area and identify the appropriate mitigation strategies at the time of subdivision planning.</p>
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PART 3- LAND USE

<p>10.3.1</p>	<p>Land Use Compatibility</p>	<p>The proposed DOCP land use amendment and rezoning is compatible and complementary to the adjacent land uses. The phased development approach accounts for the change in land use overtime. However, at the same time, seamlessly integrates into the surroundings. As demonstrated in Section 2.2 and Figure 2 of this report future development is proposed to enhance the area overall.</p>
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<p>10.3.3</p>	<p>Future Urban Growth Areas</p>	<p>The subject property is within the P4G District boundary; however, not identified as a future urban growth area for population growth to 700,000 or 1,000,000.</p> <p>Changes to residential zoning in the City of Saskatoon are expected to impact the population growth patterns for the P4G region and provide the basis for assessing the opportunity to provide additional employment lands in the south-east area of the district.</p>
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11.0 Agriculture

<p>11.3.1</p>	<p>Fragmentation of Agricultural Land.</p>	<p>Limited land expansion opportunities exist for the current agricultural purposes resulting in the fragmentation of agricultural land.</p> <p>Based on the 2021 Census of Agriculture, the average farm size in Saskatchewan is 1,766 acres in comparison to the 168 acres of agricultural land at the Valley Road Business Park site.</p> <p>Maintaining the agricultural land use of the VRBP lands is contrary to intentions of the DOCP as the lands are not suitable for intensifying agricultural operations.</p>
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15.0 Future Urban Growth Areas		
15.3.3	Intended Uses in Future Urban Growth Areas	The proposed land uses are not currently accommodated by the current policy designation identified in the P4G land use map; however, as shown on the site concept plan provided and herein this CDR, the proposed amendment and rezoning compliments the surrounding land uses and long-term vision of the District.
15.3.5	Development Standards for Intended Uses	The proposed development will be consistent with the relevant municipal standards and direction of P4G DOCP. Detailed planning and design will be completed in future subdivision planning. Conceptual servicing strategies to demonstrate the serviceability of the site have been provided to support the initial rezoning and land use amendment.
15.3.25	Detailed Planning for Multi Parcel Interim Commercial and Industrial Development:	The proposed development will be consistent with the standards of rural-urban fringe development and direction of P4G DOCP. Detailed planning and design will be completed in future subdivision planning. Conceptual servicing strategies to demonstrate the serviceability of the site have been provided to support the initial rezoning and land use amendment.
17.0 Green Network Study Area		
17.3.8	Habitat Corridors	Future development adjacent to the bed, bank or boundary of Chappel Marsh wetland and any work activities that will alter any terrain or vegetation (within those areas) will require an Aquatic Habitat Protection Permit from the Water Security Agency prior to conducting any work. As per section 38(4) (a) (b) and (c) of The Environmental Management and Protection Act, 2010 and section (6)1 of The Environmental Management and Protection (General) Regulations.
17.3.9	Passive Recreation Opportunities	At the time of subdivision planning, connections to the southwest dog park and the Richard St. Barbe Baker Afforestation Area from the VRBP site may be considered to expand the passive recreation opportunities in the area.
23.0 Servicing		
24.3.4	Connections to Municipal Potable Water Lines	The WSA has commented that, unless to obtain from the City of Saskatoon, the only potable water source in that area is a raw

		(non-potable) water pipeline from SaskWater. This would mean either having holding tanks to haul in potable water from an outside source or constructing a water treatment plant. Any construction of a waterworks system would require approval (Permit to Construct) from WSA and, depending on what is constructed for a system, may require a Permit to Operate as well. The servicing strategy, Section 5 , addresses the servicing options in more detail.
25.3.5, 25.3.6, 25.3.7	Septic Utilities, Wastewater Flow Management, Innovation in Septic Treatment Encouraged	At time of subdivision and development, Septic Utilities, Wastewater Flow Management, and Septic Treatment will be addressed through separate applications. The developer may explore modular on-site treatment technologies that would be required to meet regulatory requirements.
26.3.2	Drainage Plans	Development will be designed and constructed to mitigate on and off-site impacts. Conceptual stormwater management strategies are discussed in this report that will be further detailed and refined during subdivision planning.
26.3.3	Existing Watercourses and Wetlands	The site concept plan proposes site setbacks that meet the 30m setback distance required from the Chappell Marsh Area. Inflows will be managed to reduce peak flows and minimize pollutant and sediment loading.
27.3.3	Roadway Access	The site concept plan identifies an access point off of Cedar Villa Road, and a paved structural primary road to access the site from Valley Road.
27.3.4	Minimize New Roadway Construction	There is a paved structural primary road to access the site from Valley Road, also future development will have access to an internal right-of-way off of an existing road (Cedar Villa Road.).
27.3.5	Access Requirements for Developments	Commercial, recreational, and institutional developments shall have year-round, legal, all weather physical access to a municipally maintained roadway. Future development will have access to an internal right-of-way off of an existing road (Cedar Villa Road.). This road can accommodate the proposed uses.

27.3.6	Safe Access and Egress	There is a paved structural primary road to access the site from Valley Road and a point of access to the subject property from an existing right-of-way (Cedar Villa Road.)
31.3.21	Engagement for Significant Development	Refer to Section 7 of this report for all public engagement activities and summary of consultation.

3.4 P4G Zoning Bylaw

The P4G Zoning Bylaw contains policies intended to guide land use, development, and infrastructure services in this area of the RM. The following sections of the Zoning Bylaw are anticipated to have the greatest influence on the form, intensity, and configuration of development within the plan area.

TABLE 3: P4G ZONING BYLAW REVIEW AND RESPONSE

Policy Section	Policy	CDR Response
2.8.1	Comprehensive Development Review	This CDR is in support of a Land Use Amendment to the DOCP and a rezoning of the subject property and addresses the requirements identified.
2.8.2	Public Engagement Required for a CDR	Refer to Section 7 of this report for all public engagement activities.
2.20.3	Zoning Bylaw (ZBL) Amendment	<p>This CDR supports a ZBL amendment to change the land use from agricultural to urban commercial through the rezoning of an DAG1 parcel to urban commercial DC2.</p> <p>The proposed change of land use and rezoning has been made by application on the prescribed form. Rationale and supporting documentation for the proposed change of use and rezoning have been included.</p>
2.23.1	Servicing Agreements	<p>This application to rezone and amend the land use designation does not include the subdivision of land at this time.</p> <p>The site plan provided in report is conceptual to demonstrate the feasibility of rezoning and land use amendment. Servicing agreements would be addressed at the time of subdivision application.</p>

<p>3.5.1</p>	<p>Contaminated Lands</p>	<p>The subject property is not known to have any contaminated soils. A Phase II will be required in the south portion of the bluff / treed area on Parcel A where approximately twenty (20) empty 20 L steel pails were found to determine if the site has been adversely impacted by the releases (if any) of chemicals such as hydrocarbons. At the time of subdivision and development the developer will submit professional engineering and geotechnical studies, environmental assessments, water reports and soils analysis as part of an application. Refer to the Phase I ESA in Appendix B.</p>
<p>3.8</p>	<p>Design Standards- Commercial Development</p>	<p>At the development permit application stage, site plans will be submitted to the RM for all proposed buildings. Plans would be submitted by individual lot owners to demonstrate solutions to various requirements regarding: building dimension size, landscaping plan, storage, screening, parking, and lighting.</p>
<p>3.10.1</p>	<p>Drainage</p>	<p>The drainage plan concept to accommodate water runoff for a 1:100 year storm event and effectively controlling the pre/post runoff rate is included in this report. Additional investigation to delineate the wetland boundary and design considerations of incorporating constructed wetlands will be completed during subdivision design.</p>
<p>3.11.1</p>	<p>Environmental Features</p>	<p>The concept plan indicates property setbacks greater than 30m from the top of the Chappell Marsh banks.</p>
<p>3.11.6</p>	<p>Development enabled within the Green Network Study Area.</p>	<p>The Water Security Agency (WSA) has reviewed this quarter section and screened it for historic projects. There are no historic water projects or complaints which would be impacted by this development. Other comments from the WSA include:</p> <ul style="list-style-type: none"> • Chappell Marsh Conservation Area is situated adjacent to this land on the NW 14-36-6 W3. WSA recommends that reaching out to Ducks Unlimited Canada for further review. • Future development within/near the bed, bank or boundary of Chappel Marsh wetland any work activities that will alter any terrain or vegetation (within those areas) will require an Aquatic Habitat Protection Permit from the Water

		Security Agency prior to conducting any work as per section 38(4) (a) (b) and (c) of The Environmental Management and Protection Act, 2010 and section (6)1 of The Environmental Management and Protection (General) Regulations.
3.22	Public Roadways	The proposed internal right of way will be developed per municipal standards and will be confirmed at the time of development via a Development Permit application. Future developments will have access to a paved internal public right of way.
3.22.6, 3.22.7	Public Roadways	<p>A traffic impact assessment has been completed for the site concept plan (see Appendix C).</p> <p>The proposed development meets all municipal and provincial regulations respecting access to and from provincial highways and municipal roads. The Ministry of Highways (MH) has commented that since this development will be impacting a municipal road and will be accessed mainly by Circle drive, MH will not require a traffic impact assessment. Future development will comply with all provincial regulations respecting access to and the location of buildings or structure on the site, to be confirmed at the Development Permit application stage.</p>
3.28.1	Utility Services	Local utility providers have confirmed that servicing each of the 24 lots is possible. Any costs to upgrade or connect services will be born by the developer.
3.30.1	Wastewater Treatment Systems	The wastewater servicing strategy is included in this report. At the time of subdivision, the sewage works collection system with a form of final disposal; or on-site treatment systems which would have to have approval from the Saskatchewan Health Authority.
3.30.4 & 3.30.5	Wastewater Treatment Systems	On-site treatment systems will be required to obtain approval from the Saskatchewan Health Authority prior to operations.
3.31.1 , 3.31.2, 3.31.3	Water Supply	There is a SaskWater raw water line located at the south boundary of the VRBP site. Should municipal water from the City of Saskatoon not be possible, future development may access the SaskWater line for the provision of potable water.

		Additionally, water haulers in the area have provided confirmation to provide water to the site.
6.11 / 6.11.1	D-Arterial Commercial 2 District (DC2)	<p>The purpose of the DC2 District is to accommodate a diverse range of commercial activities serving the traveling public and the local populations, displaying a high standard of appearance and along major transportation corridors.</p> <p>The rezoning supports this land use designation as it is located on a significant transportation corridor serving local and regional populations.</p> <p>Following rezoning process, development is to occur in a phased approach, creating a consistent and reinforced development pattern.</p>
6.11.5	Site Development Regulations	<p>Site Area – the area of the smallest site is 0.70ha (1.72ac), which exceeds the minimum site area of 0.2 ha (0.5 ac).</p> <p>Site Frontage – All proposed lots exceed the minimum site frontage of 30 m (98.4 ft).</p>

4.0 DEVELOPMENT CONTEXT

4.1 Land Use Context

The location of this proposed business and research park has been chosen based on its proximity to the City of Saskatoon and its compatibility with surrounding land uses. The strategic location of the subject property is in close proximity to the University and makes use of the Valley Road Interchange and the City’s south bridge. The subject property additionally provides the necessary land for expansion of the University of Saskatchewan promoting talent development, research, and entrepreneurship as a catalyst for economic development consistent with the Regional Plan. Moreover, the development of a business and research park allows for the logical extension of infrastructure servicing to surrounding development and a transition from the industrial uses of the City of Saskatoon’s Civic Operations Centre, Snow Storage Facility, and Material Recovery Centre.

4.2 Physical Conditions

The land is relatively flat and slopes naturally west towards the Chappell Marsh. A portion of NE-14-36-03 W3M comprised of 3.13 ha is within the Green Network Area (GNSA) defined in the P4G DOCP. A review of the available imagery identified nine (9) wetlands in the project development area (PDA), occupying a total area of 5.27 ha identified in **Table 4**.

One Class V (permanent) wetland, a part of Chappell Marsh, accounts for the largest proportion of wetland area. The Chappell Marsh Conservation Area is located along the western boundary of the PDA, in a quarter section with an easement under the Saskatchewan Conservation Easement Act, managed by Ducks Unlimited Canada.

TABLE 4: WETLAND CLASSIFICATIONS IN PLAN AREA

Wetland Classes	No. of Wetlands	Area (ha)	% of Wetland Area
Class II (Temporary)	7	1.79	34.00
Class III (Seasonal)	1	0.35	6.65
Class V (Permanent)	1	3.13	59.35
Total	9	5.27	

All wetlands within the finalized PDA will require field verification of wetland class, boundary, and function. It was noted, through aerial imagery, that the Chappell Marsh was confirmed to have completely dried in 2022.

Further investigation through a Phase II ESA is required to determine if the site has been adversely impacted by releases (if any) of chemicals such as petroleum hydrocarbons associated with a pile of at least twenty (20) empty 20 L steel pails in the south portion of the bluff / treed area on Parcel A.

High-tension transmission lines with the potential to generate significant electromagnetic fields (EMFs) run along the northeast portion of the site. Electrical current flows (e.g., in power lines and cables, wiring, electrical appliances, etc.) inducing EMFs. Although questions have been raised to whether or not exposure to EMFs can lead to adverse health effects, no scientific evidence exists to support these claims (Health Canada, 2023). SaskPower recommends that buildings be located at least 15 m from overhead power lines (Saskpower, 2023).

KGS Group has reviewed the subsurface investigation report, **Appendix E**, completed by P. Machibroda Engineering Ltd. titled “Subsurface Soil Investigation, Valley Road Parcels Band C, Plan 1023271622 Ext 0, RM of Corman Park No. 344, Saskatchewan, PMEL Project No. 20269” dated May 17, 2023. The geotechnical investigation by P. Machibroda Engineering Ltd. included three (3) test holes to a depth of 9.0 m below grade surface (BGS). One (1) test hole was drilled at each of the southeast, northeast and northwest corners of the site.

The subsurface conditions at the site, as observed from the provided test hole, consist of a layer of the following:

- Topsoil – Consisting clayey organic material containing varying amounts of silt and sand. The topsoil was observed at the surface of all three (3) test holes, ranging in thickness from 0.2 to 1.0 m.
- Sand and Silt - Sand and silt was observed in all three (3) test holes. At the southeast corner, the sand and silt layer was observed below a 0.7 m thick clay layer; at the northwest corner the sand and silt was

observed interbedded with the clay; and at the northeast corner the sand and silt was observed below the topsoil and extended the full depth explored of 9.0 m BGS.

- Clay - Observed below the topsoil at the southeast and northwest corners of the site. The clay in the southeast test hole extended to a depth of 1.5 m BGS and then occurred in seams ranging from 0.2 to 0.7 m thick within the sand and silt. The clay in the northwest test hole extended the full depth explored and had interbedded sand and silt. The silt layers varied in thickness from 0.3 to 1.0 m.

Groundwater monitoring wells were installed at the northwest and northeast corners. Groundwater levels were measure to ranging from 4.3 to 5.7 m BGS. Groundwater will fluctuate with seasonal changes and precipitation events.

Based on the data available, limited to the locations of the provided test hole logs, the observed sand and silt soil can be expected to be water bearing and will present challenges with sloughing and stability of temporary excavations during construction. Water bearing cohesionless soil is generally not considered suitable for construction of drilled cast-in-place piles. Groundwater inflows and sloughing will occur when advancing excavations or drilled pile shafts through the sand and silt layer. The clay soil may be susceptible to shirk/swelling from changes in moisture content.

KGS Group recommends that a geotechnical investigation and assessment be completed to review the subsurface and groundwater conditions across the planned development area consistent with the process of advancing a conceptual subdivision plan and high level cost estimate for the development.. An additional and more thorough investigation will serve to provide the following:

- Confirm topsoil thicknesses across the site for estimating purposes;
- Discussion of subgrade conditions and subgrade preparation recommendations for pavement structures;
- Suitability of on-site soils for reuse site grading fill and/or backfill;
- Discussion on subsurface conditions and potential constructability issues associated with installation of underground utilities; and
- Discussion of suitable foundation options for development for planning purposes.

The recommended geotechnical investigation and assessment for the proposed development will not include foundation recommendations or design parameters. Separate, lot and structure specific geotechnical engineering assessments should be completed for the design and construction of the proposed developments.

4.3 Wildlife and Wildlife Habitat

KGS Group reviewed publicly available digital and hardcopy resources to determine potential existing condition for environmental and heritage resources at the VRBP site. Each technical discipline considered the proposed project components to determine potential interactions with the environment. The result of the study is included in **Appendix D**.

4.4 Fish and Fish Habitat

The proposed project footprint overlaps a portion of Chappell Marsh and is transected by an unnamed tributary of the South Saskatchewan River. The tributary has connectivity when water levels are high (flood level) during spring freshet and is considered fish bearing by Department of Fisheries and Oceans (DFO).

The tributary flows from Chappell Marsh, a wetland complex that intersects the plan area, to the South Saskatchewan River through several smaller wetland complexes. During times of high-water, fish can swim upstream and access Chappell Marsh and the tributary. However, through aerial imagery, Chappell Marsh was confirmed to have completely dried in 2022. Due to the intermittent connectivity of the unnamed tributary with the South Saskatchewan River, any number of the 38 species identified in the South Saskatchewan River could potentially travel through the tributary flows to the South Saskatchewan River.

4.5 Heritage Resources

A KGS Group archaeologist performed a screening of the PDA on October 10, 2023, for heritage sensitive lands, using the Developers' Online Heritage Screening Tool. The Heritage Sensitivity Screening Report is provided in **Appendix D**.

The Heritage Sensitivity Screening Report identified NW-13-36-06-3 as heritage sensitive and SE-14-36-06-3 as conditionally heritage sensitive. Conditionally sensitive quarter-sections are subject to the condition that if any proposed Project activities will impact land that has not been previously disturbed (examples of previous disturbances include cultivation, roads, railways, residential developments, pipelines, utilities, gravel pits, facilities, etc.), a formal Heritage Referral Letter to the HCB will be required. Since the Project is on both heritage sensitive and conditionally sensitive quarter-sections, development does not have heritage clearance to proceed and submission of a formal Heritage Referral Letter to the HCB is required.

According to the HCB Heritage Site Inventory, as of November 2023 there are no archaeological sites in direct conflict with the proposed development. Three archaeological sites are located within 1 km (Table 2). In addition, numerous archaeological sites have been recorded along the South Saskatchewan River, located 1.4 km to the southeast. Most of the anticipated project area is in disturbed terrain within cultivation. However, some green space exists that may contain native vegetation and undisturbed native terrain. The area also has the potential to contain cultural material relating to historic homesteading. Known archaeological sites within one (1) kilometer of the VRBP are included in **Table 5**.

TABLE 5: KNOWN ARCHAEOLOGICAL SITES IN SURROUNDING AREA

Borden	Site Name	Site Type	Affiliation	Distance
FaNq-21	Site Q	Pre-Contact Artifact	Oxbow	400 m to South
FaNq-39	Glow Site II	Pre-Contact Artifact Scatter	Oxbow	1 km to Southeast
FaNq-24	N/A	Pre-Contact Artifact Find	Unidentified	1 km to East

The response to the HCB referral confirmed that there are no known heritage sites located in direct conflict with the proposed business park. Although portions of the development area have been previously impacted by cultivation, there does appear to be an intact glacial spillway valley adjacent to seasonal water sources in NE 14 and a potential historic farmyard in NW 13. This area is also located on a terrace of the South Saskatchewan River which could contain deeply buried archaeological sites. This type of terrain has a moderate to high potential to contain intact heritage resources.

HCB indicated that an HRIA is required prior to further work in Parcel A in NW 13-36-06 W3M, and in NE-14-36-06 W3M around and adjacent to Chappell Marsh in the former glacial spillway in Phase 2 and the Intended Undeveloped Area. There are no further heritage concerns with Phase 1 and Phase 3 in NE 14-36-06 W3M currently as illustrated in **Figure 3**.

FIGURE 3: RURAL TO URBAN LAND USE TRANSITION



5.0 CONCEPTUAL SERVICING

The conceptual servicing strategy outlined in the following sections is based on the site concept plan found in **Appendix A**. The conceptual servicing strategy is intended to demonstrate the serviceability of the VRBP site to support the proposed rezoning and land use amendment. Further investigation and subdivision design will be required following the approval of the rezoning and land use amendment requested.

The MOU signed between the university and City of Saskatoon is anticipated to provide the framework for the VRBP lands, once donated to the University of Saskatchewan, to establish both interim servicing strategies to support development in a phased manner and consider the ultimate servicing strategy to provide an urban-level of service for the development on a long-term basis.

5.1 Roadways

The VRBP property is located approximately nine kilometers from the University of Saskatchewan and makes use of the Valley Road Interchange and the City's south bridge. Valley Road (Highway 762) is a paved, two-lane, undivided highway with a posted speed limit of 60 km/h, to the east of the Cedar Villa Access Road, and increases to 90 km/h adjacent to the proposed development site. The roadway converts into a four-lane, divided road approximately 1.3 km before its termination at the Circle Drive interchange. The two existing study intersections along Valley Road have the following characteristics:

- **East Access Road (Landfill Access Road) Intersection** – is a four-legged intersection with traffic signals providing access to the Saskatoon Civic Operations Centre to the north and Saskatoon Regional Waste Management Centre and the Queen Elizabeth Power Station to the south. Valley Road has dedicated right- and left-turn lanes in the eastbound and westbound directions. The northbound and southbound approaches have channelized right-turn lanes. The intersection is served by corridor lighting along Valley Road and streetlights on East Access Road.
- **Cedar Villa Access Road (Township Road 362A)** – is a stop-controlled T-intersection which provides access to Cedar Villa Estates. There are no turning lanes at this intersection. Overhead streetlights are installed near the road but are located within the Civic Operations Centre site. There is no delineation lighting or area lighting at the Valley Road and Cedar Villas Access Road intersection itself.

The proposed site plan shows a connecting north-south access road that runs parallel along Valley Road and provides secondary access to the business park via Cedar Villa Access Road to the north. The traffic impact assessment noted the following:

- At full build-out, the Valley Road and Landfill Access Road intersection is anticipated to operate at a LOS B during the morning and afternoon peak hours. However, the northbound and southbound through approaches will experience increased delay (LOS C) during the peak hour with existing intersection geometry and signal timing.
- At full build-out, the Valley Road and Cedar Villa Access Road intersection is anticipated to operate at a LOS A overall during both the morning and afternoon peak hours. However, the southbound left-turn movement will experience delays operating at a LOS E during the afternoon peak hour.
- The two proposed accesses to the business park (North Access and South Access) are anticipated to operate at a LOS A during both the morning and afternoon peak hours.
- The two proposed approaches for Parcel A and Lot 1 access are anticipated to operate at a LOS A during both the morning and afternoon peak hours.

The Ministry of Highways and Infrastructure has reviewed the TIA and indicated that since this TIA is not adjacent to a ministry highway or includes analysis of nearby ministry highways or intersections with ministry highways, the ministry does not have any comments to provide. The full TIA report is included in **Appendix C**.

5.2 Potable Water Servicing

The conceptual design criteria and assumptions for the potable water distribution system proposed for the VRBP development are listed in **Table 6**. At this time, the development has been assumed to have a land use category of “Arterial Commercial 2 District (DC2). The anticipated commercial activities within the site concept plan would be consistent with a Commercial Complex, Multiple Building identified as a discretionary use in the P4G Zoning Bylaw. The design criteria listed in **Table 6** will be further refined as the specific uses and activities within a DC2 zoning are determined in further refinements to the site plan.

The design population, estimated water consumption, maximum daily, and peak hourly flow rates will all need to be developed in consultation with the service provider at the time for development. Water mains within the development will be sized using the current *Saskatoon Design and Development Standards Manual: Section 4 – Water Distribution System*.

TABLE 6: POTABLE WATER DESIGN CRITERIA

Item	Result
Development Area	62.56 ha
Equivalent Population	160 people/ha
Design Population	10 010 people
Estimated Water Consumption	290 Litres/Capita/Day
Average Daily Demand	33.6 Liters/Second
Maximum Daily Demand	67.2 Liters/Second

There are a variety of potable water servicing options that can be considered to support development.

1. Expansion of Cedar Villa Estates water treatment capacity
2. On-site modular treatment

Of all the sources of raw or potable water near the proposed Valley Road Business Park (VRBP), the closest in proximity is a non-potable waterline owned and operated by SaskWater. This water line provides the Hamlet of Cedar Villa with raw water, which in turn uses that water to support a water treatment plant (WTP). The WTP is privately owned and operated by the Hamlet and provides safe potable drinking water for the Hamlet residents. The primary option for servicing VRBP will be to come to an agreement with the Hamlet of Cedar Villa to supply the new development with the required potable water servicing.

Should an agreement not be possible with the Hamlet, a connection to the raw water line nearby, seeking to provide treatment on site, would be the most efficient. The developer will be looking at new innovative technologies for providing on-site modular treatment for potable water should this option be explored further.

5.3 Wastewater Servicing

There are a variety of wastewater servicing options that can be considered to support development.

1. Local Sewage Disposal
2. Low Pressure Sewer System with On-site Modular Treatment.

Under Option 1, the proposed development would require the individual property owner(s) to install septic holding tanks to manage all sanitary wastewater flows generated within each property. Each property owner would be individually responsible for contracting the services of a licensed septic hauler to evacuate the holding tank and dispose of the waste to an approved disposal facility.

It is anticipated that this option would be an interim strategy in the initial phases of development, until such a time that the phasing of development supports options including mechanical wastewater treatment. As required by the RM to support a new subdivision utilizing private on-site wastewater disposal, a copy of a letter from a licensed septic hauler is attached in **Appendix G** confirming their ability to service the properties.

Option 2 consists of a low-pressure system scenario where each lot has an individual pump out tank that is connected to a pressurized forcemain connecting to a wastewater treatment facility. A developer may consider the installation of a localized mechanical wastewater treatment system. Many of these systems are available on the market in modular form and can be customized to suit specific applications. The developer would be looking at new, innovative technologies should this option be chosen for further exploration. This option may be further investigated during detailed subdivision design.

5.4 Drainage and Stormwater Management

Understanding and respecting the existing drainage patterns is crucial to maintaining the ecological balance of the area and ensuring responsible development practices. A survey of the existing parcel demonstrated the existing topographic survey data, NE ¼ Section 13-36-3-W3M exhibits a natural drainage inclination from east to west, as illustrated in **Appendix F**, leading towards Chappell Marsh. Chappell Marsh is included in the land bank of Ducks Unlimited and is under their control.

Two separate calculations were performed to estimate the amount of runoff generated by the new development for comparison, which are both shown in **Table 7**. The first calculation utilizes the Rational Method, based upon a typical rural facility. The second calculation uses the procedure outlined in the City of Saskatoon design standards for estimating runoff values. Please note that the City of Saskatoon method utilizes a 1-in-2-year storm frequency.

For the conceptual design scenario, it was noted that numerous previous CDR's developed within the RM used a predevelopment run-off coefficient of 0.05 to reflect the existing agricultural land use. Using a weighted combination of post-development land from compacted gravel (gravel yards), Roofs, Grass and Landscaped areas, and asphalt pavement areas, the post-development weighted coefficient was calculated to be 0.59. Copies of the calculations are provided in **Appendix F**.

TABLE 7: STORMWATER DESIGN CRITERIA

Item	Result
Overall Catchment Area within Development Bounds	62.56 ha
Design Storm	1-in-100-year frequency, 24-hour duration
Pre-Development Run-Off Coefficient	0.05
Post-Development Run-Off Coefficient	0.59
Runoff Volume Generated (Rational Method)	48,685 m ³
Runoff Volume Generated (City of Saskatoon Estimate Method – Uses a 1-in-2-year frequency)	28,564 m ³

All drainage infrastructure within VRBP will be planned to be constructed and sized to retain a 1:100 year, 24- hour return design event to reflecting the inability at this time to connect the facilities to an established underground storm sewer.

Overland storm ditches within road rights-of-way's will be utilized to collect overland stormwater runoff from individual lots and convey flow towards the Chappell Marsh area. All overland drainage ditches will be designed following the parameters defined in the *City of Saskatoon Design and Development Standards Manual: Section 6 – Storm Water Drainage System*.

The conceptual plan for development includes the construction of a stormwater management facility (SWMF) / constructed wetland to capture and temporarily store the incremental increase in run-off resulting from development and to act as a means of sediment control for flows into the Chappell Marsh. The SWMF will be designed to control the release of on-site run-off at predevelopment flow rates that will maintain and enhance a connected natural infrastructure system by managing storage and on-site drainage.

The use of a forebay will be required to store runoff generated from major rainfall events, as well as regulate the contributions made from the development to the Chappel Marsh area through the use of a controlled outfall. Additional investigation to define the wetland area and integrate the natural features into the site plan will be required as part of future development and subdivision planning.

5.5 Shallow Utilities

Shallow utilities will be provided by SaskPower, SaskEnergy and SaskTel along with underground cable following construction of deep utilities. Shallow utilities will be located within the road right-of-way to provide service to the front of each lot. Letters confirming these arrangements are attached as **Appendix G**.

5.6 Solid Waste

Domestic solid waste disposal services in the RM of Corman Park are provided by Loraas. Correspondence from Loraas confirms that they are able to service development at VRBP site. The correspondence with Loraas is included in **Appendix G**.

5.7 Fire and Protective Services

Police services would be provided by the Corman Park Police Services and the Saskatoon Detachment of the RCMP. The correspondence with Saskatoon Fire and Protective Services, and the RCMP are included in **Appendix G**.

6.0 PHASING AND IMPLEMENTATION

This CDR is to support the initial phase of amending the land use designation of agriculture to Urban Commercial and the rezoning to DC2. The conceptual site plan contemplated in this report is intended to demonstrate the capability of the VRBP site to support the intended business / research park. On completion of the rezoning and land use amendment, the lands will be donated to the University of Saskatchewan to be held in its endowment for future use, development, and/or sale for development with proceeds to benefit the academic research and student support mission of the University of Saskatchewan.

Further phasing and schedule of implementation would be completed in the future based on a finalized concept plan and subdivision application.

7.0 PUBLIC AND REGULATORY AGENCY CONSULTATION

7.1 P4G Consultation

The following comments were received from the P4G pre-application review.

TABLE 8: P4G PRE-APPLICATION REVIEW COMMENTS AND RESPONSE

Comments	CDR Response
Natural Resources and Drainage	
<p>You will need to further define the drainage channel and preserve it in the SW corner of the NE 14-36-6-W3.</p>	<p>The delineation of the wetland area to determine its boundaries and area of preservation will be completed as part of the additional investigation and studies during subdivision planning. The site concept plan provided is for ‘proof of concept’ that the lands can support the rezoning and land use amendment towards Arterial Commercial zoning and Urban Commercial land use.</p> <p>After the approval of the rezoning and land use amendment, further studies and investigation can proceed.</p>
<p>Lot 4 may not be developable based on the natural drainage channel.</p>	<p>Lot 4 in the site concept plan is within the area that will require further investigation and study of the drainage channel and preservation area. At the time of this submission, it is understood to be intended to remain a natural area.</p>
Infrastructure Servicing	
<p>You should consider rural commercial/industrial land use designation since the current urban service provider in the area is the City of Saskatoon and they have no plans to expand/extend services into this area.</p>	<p>We can service the lands to an urban standard without the City extending services into the area. There are examples of current and planned development south of Saskatoon where development without a connection to the City of Saskatoon has occurred.</p>
Phasing and Implementation	
<p>Is there a timeline before subdivision and development is planned? What is the ownership plan for future lots and the current parcel before subdivision? Will the University develop the lands?</p>	<p>The timelines of continuing to advance the development are unknown at this time as the lands will be donated to the University of Saskatchewan endowment on completion of the rezoning and land use amendment.</p>

Land Use	
<p>The proposal is for land use amendment and rezoning by hold.</p>	<p>It is acknowledged that approval of the DC2 zoning with a holding provision would provide the certainty that the zoning would be place to permit development under the desired Arterial Commercial District zoning, the application of a holding provision is considered prohibitive to advancing development where there is no obligation of the municipality or P4G to remove the holding provision on the property.</p> <p>It is noted that there is very limited application of a holding provision across the P4G area. The necessary studies and investigation to refine the site concept plan and advance the development to subdivision will be required prior to submission of development permits. Any conditions that would be applied under a holding provision would be addressed at the time of a subdivision and development permit. Due to these considerations, the application of a holding provision is requested to not be applied to the VRBP site.</p>
<p>Compatibility with adjacent land uses is important. For example, The City of Saskatoon adopted a conceptual master plan for RSBBA, see link here: filestream.ashx (escrimeetings.com)</p>	<p>Arterial Commercial land uses would be compatible with the RSBBA as any other recreational path adjacent to commercial lands such as University Heights Suburban Centre, and Stonebridge.</p> <p>If the Civic Operations Centre and Material Recycling Facility adjacent to the Richard St. Barbe Baker Afforestation Area (RSBBA) are considered compatible, a business / research park would be compatible with the surrounding land uses and further provide a buffer / transition from the Cedar Villa residential area from the industrial uses of the City.</p>
Policy	
<p>We can't support a land use amendment application unless a rezoning application is submitted concurrently and we move both applications through the process at the same time.</p>	<p>The required land use amendment and rezoning applications are submitted concurrently with this CDR.</p>

7.2 Regulatory Agency Consultation

The following comments have been received based on communication with regulatory agencies during the development of this CDR.

TABLE 9: REGULATORY AGENCY COMMENTS AND RESPONSE

Stakeholder / Regulatory Agency	Contact	Comments	CDR Response
Transportation			
Ministry of Highways	Nathan Morhart, P.Eng.	Since this TIA is not adjacent to a ministry highway or includes analysis of nearby ministry highways or intersections with ministry highways, the ministry does not have any comments to provide.	No response necessary
City of Saskatoon	Goran Lasic, P. Eng. Vanessa Wellsch, RPP, MCIP	I assume this is for our information only at this time because of the interest in potential impact on the City network in advance of a formal application by your client to the regional planning group. I will definitely take a look, but a formal review will be conducted when an application and associated documentation are received. I believe the RM will lead the TIA review, but at that time I may also provide some comments	No response necessary at this time. Based on comments received during the review process, a response will be provided.
Future Land Requirements			
City of Saskatoon	Tyler Kopp Planner Development Review Planning & Development	Thank you for contacting Development Services for information on any potential developments or upgrades to the roadway noted below. Unfortunately, the Development	Inquiry was sent to the City as to future plans for Valley Road from the civic operations center south towards Township Road 362 and whether any plans for

		<p>Services group will not be able to provide any information on any roadway projects as it does not fall within the City of Saskatoon zoning boundary. However, given the close proximity of the roadway to city limits, it may be best to receive confirmation from the Transportation and Construction department that you have also included in the email.</p>	<p>widening the road that would require purchasing land on the west side of the current road allowance? Explained that we are working on a site plan that considers potential development on the west side of Valley Road that would be impacted if there are plans to acquire additional land to widen the road. Understanding the future transportation plans for Valley Road will help us with site planning.</p>
<p>City of Saskatoon</p>	<p>Wayne M. Kuntz Transportation & Construction</p>	<p>Enclosed you will find a link to the Transportation Master Plan and a link to the 2023 Prioritized Transportation Infrastructure Project List. Please feel free to review this information, and if you have any questions or concerns regarding this information, please feel free to contact us again through this email address, so we can address any further inquiries that you may have.</p>	
<p>Heritage Resources</p>			
<p>Ministry of Parks, Culture and Sport Heritage Conservation Branch</p>	<p>Kim Cloutier Assistant Director, Archaeology and Heritage Management</p>	<p>Within Parcel A, manual subsurface testing must go as deep as possible but may not achieve sufficient depth to encounter sites; therefore, the HRIA must provide a recommendation regarding the potential need for mechanical testing (i.e., backhoe testing). The assessment of the portions of Parcel A that are currently not under the recently added clay fill will determine if further testing is required under the recent stockpiled fill, and if the stockpiles</p>	<p>Addressed in CDR report.</p>

		must be removed to non-heritage sensitive portions of the project.	
Infrastructure Servicing			
Saskatoon Health Authority		Application sent Jan 18, 2024. Saskatchewan Wastewater Disposal Guide = (18 US gallons/day/employee) @ 10 employees/site= 18*10= 180* 18= 3,240 US gallons/day. Standard septic truck sizing is 2,500 US gallons.	Response from SHA included in Appendix G
Saskatoon Water		Saskatoon Water -306-975-2476. Each lot may require an individual reservoir and pump in order to meet peak day demands and fire suppression, if required. The recommended minimum storage for each lot is equal to the average daily consumption if no fire suppression is required, or twice the average daily consumption if fire suppression is required.	Conceptual servicing strategy provided in this CDR.
Sasktel	Maureen Jenson SaskTel Land Negotiator cc: Jaclyn Hodgson Eng. Asst.	SaskTel has no objections to the proposed subdivision, provided that existing registered easements are maintained and any new joint utility easement are granted to SaskPower. Also, if SaskTel requires any SaskTel only easements that they will be granted.	Response from Sasktel included in Appendix G .
SaskEnergy		~350,000 BTU/day/lot. 2x email responses	Response from SaskEnergy included in Appendix G .
SaskPower		Letter of confirmation that there is electrical service available to provide power to the property.	Response from SaskPower included in Appendix G .

Protective Services			
Saskatoon Police/ RM Police		The RM will need to correspond with Saskatoon Fire and Protective Services to set up the general parameters for these services at the proposed Development. Police services will be provided by the Corman Park Police Services and the Saskatoon Police Services.	No response necessary at this time.
Saskatoon Fire		Fire Map acknowledges the proposed site as an area of service.	No response necessary at this time.
Services			
Loraas Garbage	Jory Blakley Sales Manager	Loraas has confirmed that they can service the 24 potential sites.	

7.3 Public Consultation

On April 12, 2024 the public consultation phase was initiated which consisted of the delivery of public notice of the proposed rezoning and land use amendment to all landowners within the required one mile (1.6 km) notification radius. Public notices were hand delivered to residents in Cedar Villa Estates and the Montgomery neighbourhood which provided the opportunity to speak with residents about the rezoning and the public open house. The public open house was held on April 26, 2024 at the Black Fox Distillery from 7:00pm to 9:00pm. The open house was attended by approximately 50 – 60 people with representatives from Cedar Villa Estates, Montgomery, the City of Saskatoon, and the Friends of the Saskatoon Afforestation Areas Inc. in attendance. The summary of public consultation is included in **Table 10** with the responses based on the available information as of April 28, 2024. The record of comments received is found in **Appendix H**.

TABLE 10: PUBLIC CONSULTATION COMMENTS AND RESPONSE

Comment	Response
Expected/unanticipated traffic increases on the road through the Hamlet of Cedar Villa Estate - TWP RD 362A The proposed development of a business/research park will no doubt increase traffic on a road that	The proposed rezoning and land use amendment at this time has not considered upgrades to TWP 362A because the necessary zoning and land use designation is not yet in place to further those conversations.

already has weight restrictions and can experience structural issues during times when water levels are high. (The last two years of drought have been favourable for this road.) Is the proposed development considering any upgrades to this road?

We are already seeing increased traffic speed and volume concerns though our hamlet directly as a result of the reduced speed restrictions on Valley Road and increased activity at the potash mines, prompting us to work with the Corman Park Police and the RM to address traffic safety concerns (our streets are our sidewalks). This new development will likely add to these concerns.

The Ministry of Highways' background traffic volume growth rates consider open highway conditions and are largely impacted by community growth applied to sections of highways within or adjacent to municipalities. The Ministry's 15-year growth rate for Valley Road is 1.40, which represents a 40% increase in traffic volumes over the next 15 years.

Based on the conceptual site layout, the TIA assumes approximately 70% of traffic associated with future development would access the site from the south access along Valley Road which limits the increase of traffic along Cedar Villa Road.

The 15-year traffic projections indicate an increase in traffic along Cedar Villa Road and the report includes some recommendations on potential intersection improvements to be considered. The projections do not include any traffic associated with future development continuing further west into the Cedar Villa development.

Traffic to potential future development would not be related to the Cory potash mine or other traffic looking to shortcut through to Highway 7 through Cedar Villa.

People have chosen our hamlet because it is quiet and relatively unknown in the area. This proposed development will likely raise the community profile. There are pros and cons related to this.

Acknowledged.

The conceptual plan indicates that the land will become under the ownership and direction of the UofS to "the benefit and future of the academic, research and student needs for the province". This is understandably a broad statement at this point. The concern is that once it is owned, the UofS may sell off some of this land for use not originally intended, resulting in additional concerns for the community and surrounding area.

The P4G zoning bylaw sets out the permitted and discretionary uses that may be applied to the property.

If the land were to be sold by the current private owners, or in the future once owned by the University, any use of the land would need to follow the uses under the zoning outlined in the Zoning Bylaw.

<p>Environmental impacts to Chappell Marsh Conservation Area. This area has been seriously affected by drought the last couple of years, but this prairie wetland habitat is a unique part of our community and an environment that needs upfront consideration and probably input from organizations such as Ducks Unlimited. Are these discussions underway?</p>	<p>Ducks Unlimited has been contacted and provided an opportunity to submit comments on the rezoning and land use amendment proposal.</p> <p>I believe there are examples of natural wetlands being incorporated into the neighbourhood of Brighton. The intention would be to coordinate further design efforts with Ducks Unlimited.</p> <p>From the Ducks Unlimited Canada site:</p> <p>“DUC is working with cities like Moncton, N.B., Edmonton, Alta., as well as Winnipeg and Brandon, Man. to construct naturalized stormwater retention ponds. Wetland-like in appearance and function, these basins incorporate natural biological processes to filter and store water.” Urban wetlands make cities more livable — Ducks Unlimited Canada</p> <p>The area is also part of the Green Network within the P4G plan that sets out requirements for development in proximity to natural wetlands. The P4G plan does speak towards the value of integrating natural features into development.</p>
<p>Servicing options (water and sewer) for the proposed development. Considerations for Cedar Villa Estates? As you indicated there may be some mutual benefits that warrant discussion and consideration.</p>	<p>We are interested in exploring discussions towards the opportunity to work with Cedar Villa Estates on expanding the treatment and reservoir capacity of the water treatment plant, and finding mutually beneficial servicing options for wastewater treatment. Wastewater treatment may be from a modular type treatment system.</p> <p>More detailed investigation into water and wastewater servicing would come after the rezoning and land use amendment; however, it is an option that we’d like to discuss and if Cedar Villa is open to discussions on shared servicing.</p>
<p>Any timelines being proposed?</p>	<p>No timelines are available at this time. Once the land has been rezoned and the land use designation changed that will provide more certainty that future development can move forward and that can</p>

<p>“I'm not sure if the paper I received is vague as to what is going to be going out on valley road for a reason, or if you're unsure. I would like more information as to what research and what the buildings would be used for. As it is not close to the university this concerns me. I would be against rezoning it as we don't need to get rid of more agricultural land.</p> <p>If you could provide me with more information that would be great.”</p>	<p>allow the opportunity to continue planning for the site.</p> <p>Thank you for your email and your comments. The land is currently owned by private landowners that are working on rezoning the property to allow for commercial uses listed in the P4G zoning bylaw for future development. At this stage of proposing the rezoning there are no defined plans for the property rather the concept site plan provided is to illustrate a potential development scenario. If the private landowners are successful in the rezoning process, the land would then be donated to the university as part of their larger fundraising efforts.</p> <p>The university would then hold the land in as part of their endowment lands (land bank) and may develop the land in the future or may in the future sell the land to a developer.</p> <p>Any uses on the property would need to conform to the permitted and discretionary uses in the P4G Zoning Bylaw under a DC2 Commercial zone.</p>
<p>“Hello, I received a flyer about the proposed refining. Can you provide any information regarding the intended application for use of the research park?</p> <p>Is it going to be used for the level 4 virus research lab?”</p>	<p>After following up with the University, I can confirm that the level 4 virus research lab is not being located in the Valley Road Business Park. That lab is already in the process of being built on main campus.</p> <p>The University is excited and appreciates the work or the landowners and potential donation of the land once rezoned to commercial and intends to include it as part of the land endowment bank for future development. Future development would be consistent with the uses defined as permitted or discretionary in the P4G Zoning Bylaw.</p> <p>A virus research lab is not identified either permitted or discretionary use in the Arterial Commercial (DC2) being proposed for the property.</p>

In the documents that were given to the community it states that the land would be rezoned to allow for development of a UofS research park however under the DC2 zoning my understanding is that any commercial development could be done on this land. What is preventing the University from changing their development plans in the future and just leasing the land for general commercial use such as what they have done with Preston Crossing?

The land is currently owned by a group of private landowners that are working towards rezoning and amending the land use designation to the DC2 zoning. The site concept plan is provided as part of the planning process to demonstrate that the land can support the intended zoning and the concept currently is for a business/research park. The land development process can result in changes to development plans over time; however, would need to be consistent with the permitted and discretionary uses outlined in the zoning bylaw. Based on my understanding, if a future landowner, such as the University, were to develop this land for general commercial that may be considered by the RM as a 'Commercial Complex, Multiple Buildings' use. That would be defined as a discretionary use and would follow the discretionary use approval process before proceeding.

If this rezone is granted what is the possibility of this also opening the door to rezoning of the land west of cedar villa to proposed residential? This would substantially increase traffic through the hamlet.

Unfortunately, I can't speak to that as development on other lands is separate from this proposal and I can't speculate on possible future development that may be influenced by any number of factors independent of this proposal.

What if any road improvements are being planned to accommodate for the increased traffic of the proposed development? The Cedar Villa Access road has already seen a substantial increase in traffic due to the snow dump access and increase use of the SW dog park and no doubt access to this facility from the access road would only add to this. I am also concerned regarding potential increased traffic through Cedar Villa to access the facility from the west areas of Saskatoon via grid access from west of Cedar Villa.

The proposed rezoning and land use amendment at this time has not considered upgrades to TWP 362A because the necessary zoning and land use designation is not yet in place to further those conversations.

The Ministry of Highways' background traffic volume growth rates consider open highway conditions and are largely impacted by community growth applied to sections of highways within or adjacent to municipalities. The Ministry's 15-year growth rate for Valley Road is 1.40, which represents a 40% increase in traffic volumes over the next 15 years.

Based on the conceptual site layout, the TIA assumes approximately 70% of traffic associated with future development would access the site

	<p>from the south access along Valley Road which limits the increase of traffic along Cedar Villa Road.</p> <p>The 15-year traffic projections indicate an increase in traffic along Cedar Villa Road and the report includes some recommendations on potential intersection improvements to be considered. The projections do not include any traffic associated with future development continuing further west into the Cedar Villa development.</p> <p>Traffic to potential future development would not be related to the Cory potash mine or other traffic looking to shortcut through to Highway 7 through Cedar Villa.</p>
<p>What considerations have been made for wildlife in the area? There are currently a number of different animals that are in the area such as deer and coyotes and the ducks unlimited marsh adjacent to the proposed site.</p>	<p>Ducks Unlimited has been contacted and provided an opportunity to submit comments on the rezoning and land use amendment proposal.</p> <p>I believe there are examples of natural wetlands being incorporated into the neighbourhood of Brighton. The intention would be to coordinate further design efforts with Ducks Unlimited.</p> <p>From the Ducks Unlimited Canada site:</p> <p>“DUC is working with cities like Moncton, N.B., Edmonton, Alta., as well as Winnipeg and Brandon, Man. to construct naturalized stormwater retention ponds. Wetland-like in appearance and function, these basins incorporate natural biological processes to filter and store water.” Urban wetlands make cities more livable — Ducks Unlimited Canada</p> <p>The area is also part of the Green Network within the P4G plan that sets out requirements for development in proximity to natural wetlands. The P4G plan does speak towards the value of integrating natural features into development. The wildlife and habitat screening has been completed for the area that will have recommendations for future development considerations.</p>

<p>The current light configuration (priority out of the COC) is a necessary component of our route timings and helps to ensure that buses are able to exit the COC and start their trips with minimal delay.</p>	<p>Acknowledged to be addressed as development progresses.</p>
<p>We have concerns about the access into the commercial area and how that might impact the City’s operations at Civic Operations Center. The main concern is traffic volumes and back ups along Valley Road that hinder or slow access to the snow management facility.</p>	<p>Acknowledged. Traffic Impact Assessment completed for the site concept plan assumes that approximately 70% of the site generated traffic would access the site from the south entrance along Valley Road thereby minimizing site access along Cedar Villa Road.</p>
<p>Has the RM requested a traffic impact assessment/study? If not, the City would strongly suggest an assessment be provided</p>	<p>The Traffic Impact Assessment was shared with the City of Saskatoon on February 13, 2024. The response from the City (G.Lazic) indicated that a formal review would be conducted when the application and associated documents are received. This correspondence is included in Appendix H.</p>

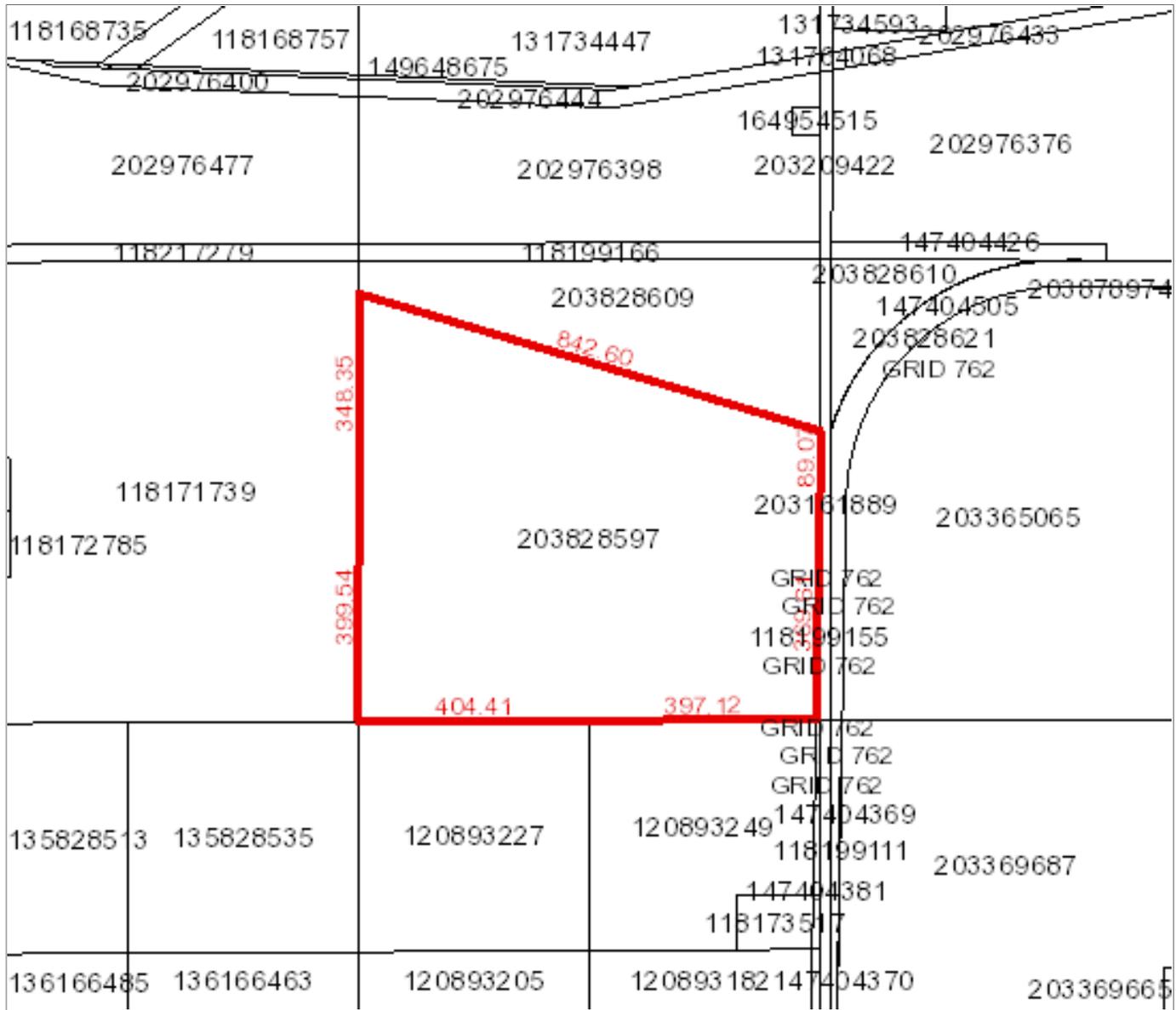
APPENDIX A

Conceptual Site Plan and Site Context



Surface Parcel Number: 203828597

REQUEST DATE: Wed Sep 27 10:41:19 GMT-06:00 2023



Owner Name(s) : VALLEY ROAD BUSINESS PARKS LTD.

Municipality : RM OF CORMAN PARK NO. 344

Area : 50.445 hectares (124.65 acres)

Title Number(s) : 153519824

Converted Title Number : 99SA36460

Parcel Class : Parcel (Generic)

Ownership Share : 1:1

Land Description : Blk/Par C-Plan 102327162 Ext 0

Source Quarter Section : NE-14-36-06-3

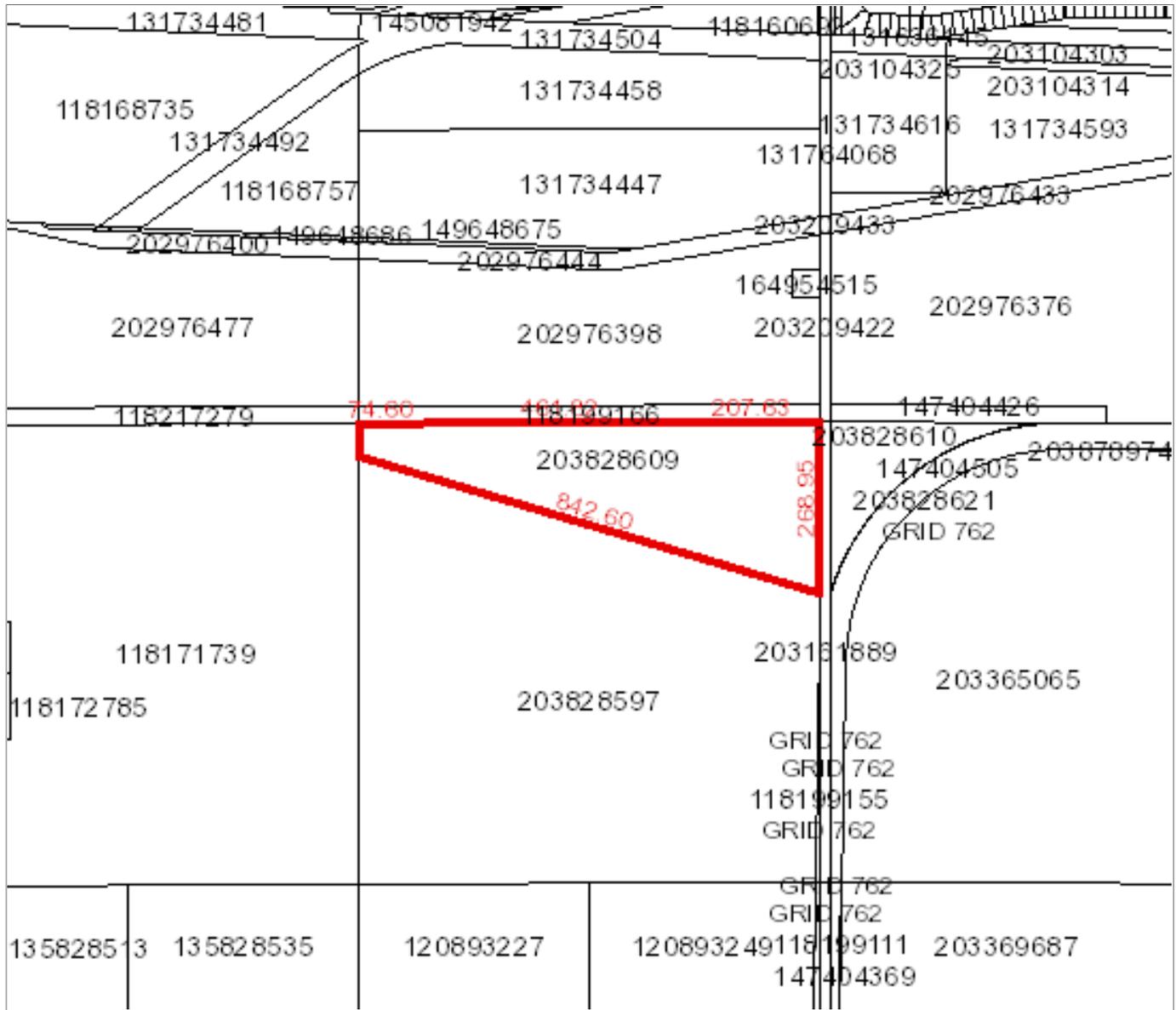
Commodity/Unit : Not Applicable

DISCLAIMER: THIS IS NOT A PLAN OF SURVEY It is a consolidation of plans to assist in identifying the location, size and shape of a parcel in relation to other parcels. Parcel boundaries and area may have been adjusted to fit with adjacent parcels. To determine actual boundaries, dimensions or area of any parcel, refer to the plan, or consult a surveyor.



Surface Parcel Number: 203828609

REQUEST DATE: Wed Sep 27 10:41:34 GMT-06:00 2023



Owner Name(s) : VALLEY ROAD BUSINESS PARKS LTD.

Municipality : RM OF CORMAN PARK NO. 344

Area : 14.44 hectares (35.68 acres)

Title Number(s) : 153519835

Converted Title Number : 99SA36460

Parcel Class : Parcel (Generic)

Ownership Share : 1:1

Land Description : Blk/Par B-Plan 102327162 Ext 0

Source Quarter Section : NE-14-36-06-3

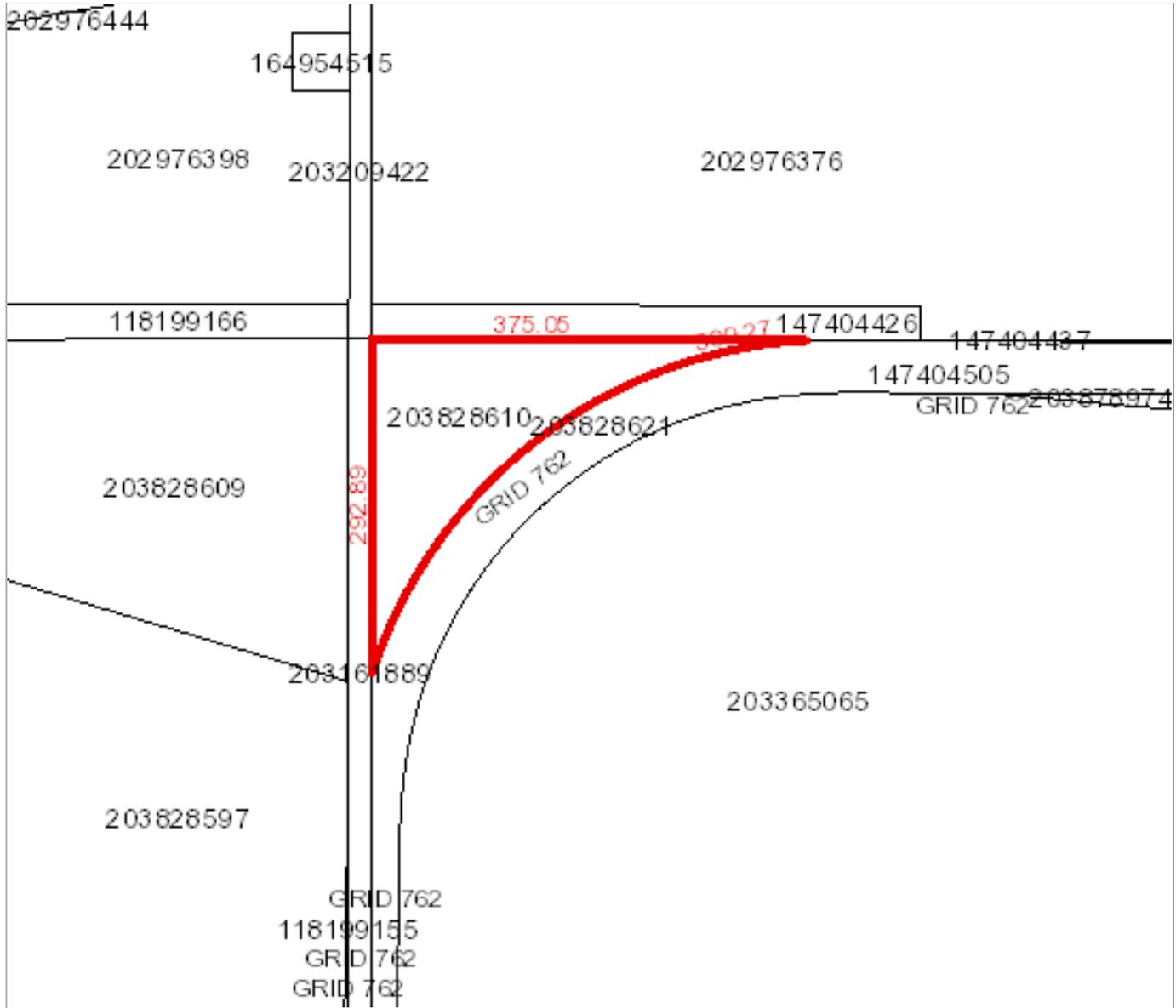
Commodity/Unit : Not Applicable

DISCLAIMER: THIS IS NOT A PLAN OF SURVEY It is a consolidation of plans to assist in identifying the location, size and shape of a parcel in relation to other parcels. Parcel boundaries and area may have been adjusted to fit with adjacent parcels. To determine actual boundaries, dimensions or area of any parcel, refer to the plan, or consult a surveyor.



Surface Parcel Number: 203828610

REQUEST DATE: Wed Sep 27 10:41:26 GMT-06:00 2023



Owner Name(s) : VALLEY ROAD BUSINESS PARKS LTD.

Municipality : RM OF CORMAN PARK NO. 344

Area : 3.164 hectares (7.82 acres)

Title Number(s) : 153519857

Converted Title Number : 91S37657

Parcel Class : Parcel (Generic)

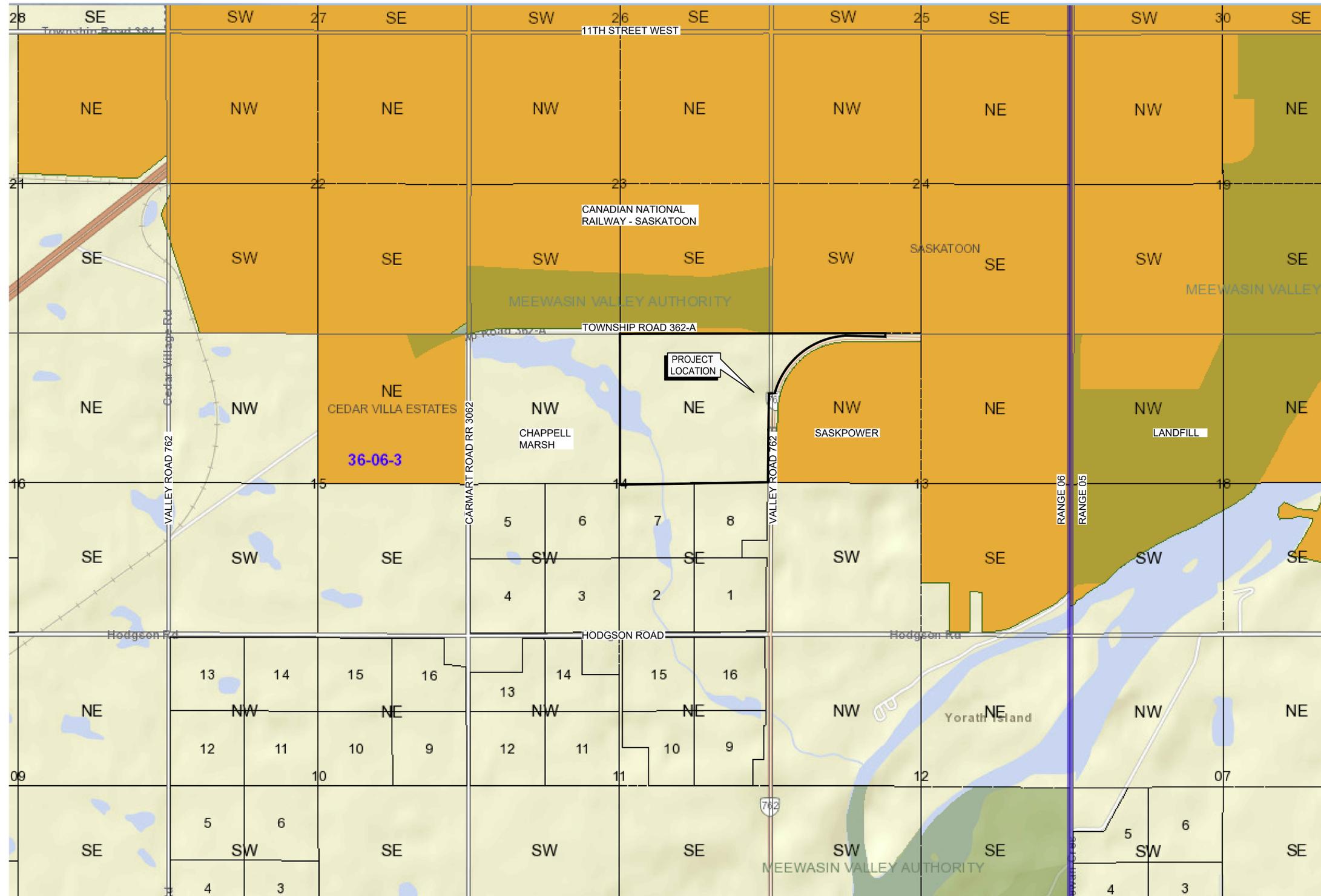
Ownership Share : 1:1

Land Description : Blk/Par A-Plan 102327162 Ext 0

Source Quarter Section : NW-13-36-06-3

Commodity/Unit : Not Applicable

DISCLAIMER: THIS IS NOT A PLAN OF SURVEY It is a consolidation of plans to assist in identifying the location, size and shape of a parcel in relation to other parcels. Parcel boundaries and area may have been adjusted to fit with adjacent parcels. To determine actual boundaries, dimensions or area of any parcel, refer to the plan, or consult a surveyor.



- NOTES:**
1. ALL UNITS ARE IN METRES UNLESS OTHERWISE NOTED.
 2. DRAWING DEVELOPED FROM ISC BASE MAP.
 3. IMAGE COURTESY OF ©2023 DIGITALGLOBE ©CNES(2023) DISTRIBUTION AIRBUS DS@2023 MICROSOFT CORPORATION.
 4. ALL PROPERTY LINES AND CADASTRAL DATA SHOWN ARE APPROXIMATE AND SHOULD BE VERIFIED PRIOR TO CONSTRUCTION.
 5. ALL UTILITIES SHOWN ARE APPROXIMATE AND MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION.

LEGENDS
 CITY OF SASKATOON
 MEEWASIN VALLEY AUTHORITY

File Name: \\reg-file-p-data\Projects\2023\23-4236-001\Drawings\Mun\CD\30\23-4236-001_M-FIG0-FIG2.dwg - Tab: FIG 0 Plotted By: VRico 24/05/01 [Wed 12:22pm] 24"x36" PLOT SCALE: 1:1

1 CONTEXT MAP
 SCALE: NTS

PRELIMINARY
 NOT TO BE USED FOR CONSTRUCTION

A	24/01/18	ISSUED FOR REVIEW	DR	SB
NO.	YYMMDD	DESCRIPTION	DESIGN BY	DESIGN CHECK

REVISIONS / ISSUE

CLIENT:
VALLEY ROAD BUSINESS PARK

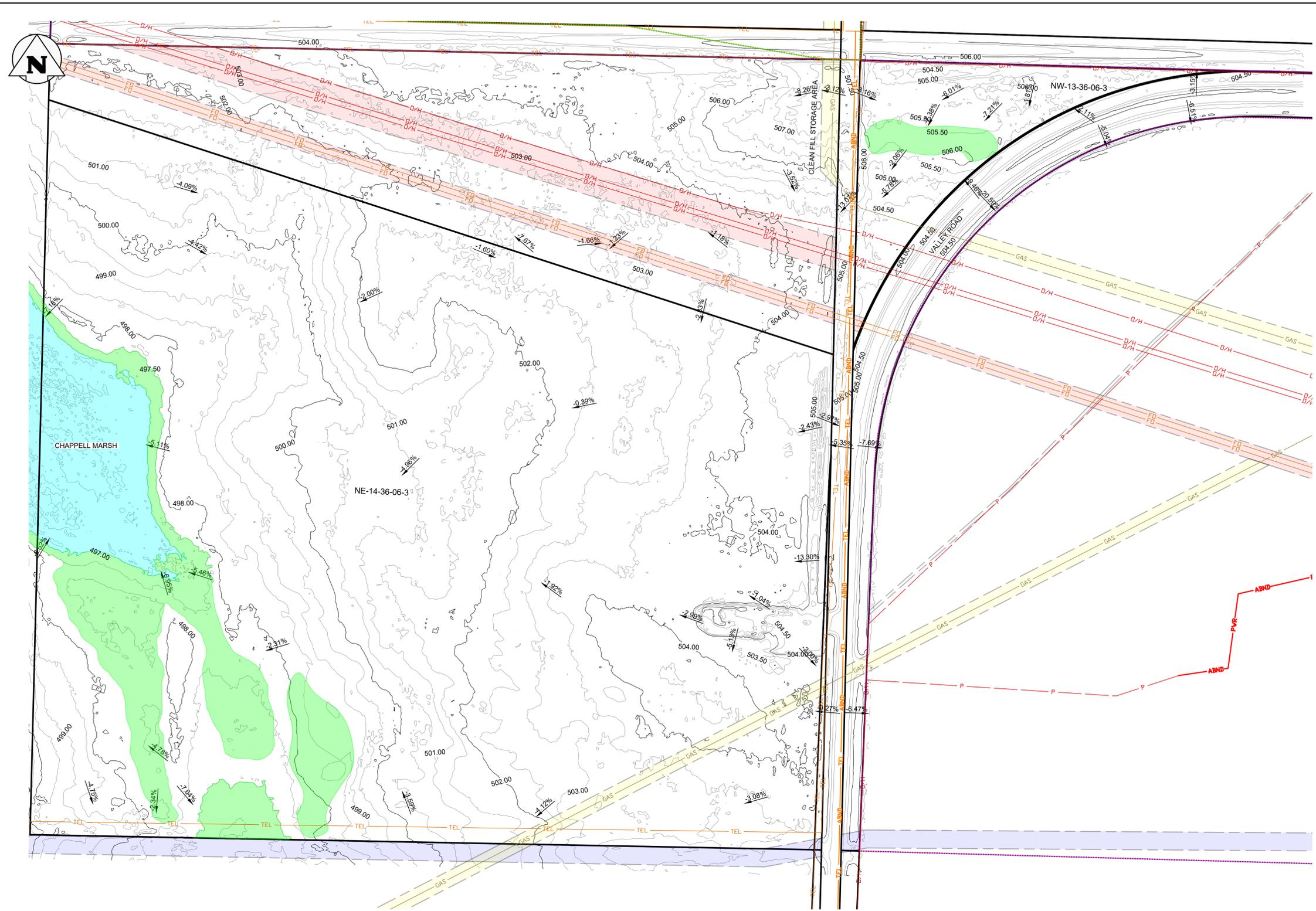
PROJECT:
VALLEY ROAD DEVELOPMENT

DWG. DESCRIPTION:
**CONTEXT MAP
 BLK/PAR A, B, & C - PLAN 102 327162 EXT 0**

KGS GROUP	DESIGN BY:	DATE (YYMMDD):
	DESIGN CHECK:	DATE:
	DRAWN BY: ZA	DATE: 23/12/08
	DWG CHECK: CJD	DATE: 23/12/08

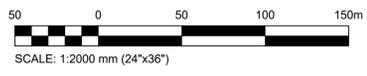
DWG. NO. 23-4236-001 FIG 0 REV A

File Name: \\reg-file-jr-data\Projects\2023\23-4236-001\Drawings\23-4236-001_M-FIG0-FIG2.dwg - Tab: FIG 1 Plotted By: VRico 24/05/01 [Wed 12:22pm]
 24"x36" PLOT SCALE: 1:1



- NOTES:**
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 5. ALL UTILITIES SHOWN ARE APPROXIMATE AND MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION.
 6. CONTOUR INTERVALS ARE 0.5m.

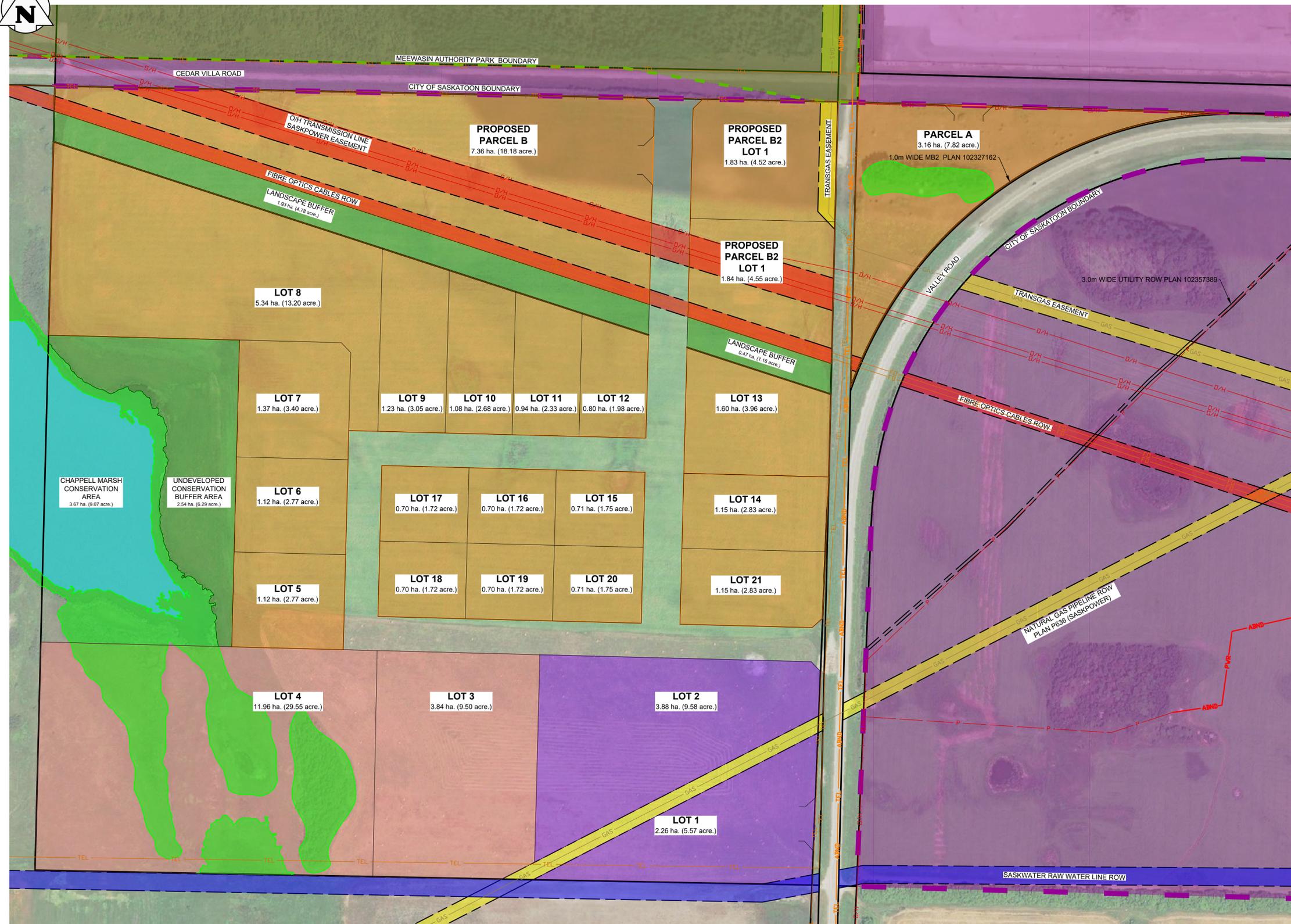
- LEGENDS**
- SURFACE DRAINAGE
 - CHAPPELL MARSH
 - EXISTING VEGETATION
 - SASKPOWER EASEMENT
 - SASKWATER EASEMENT
 - SASKENERGY EASEMENT
 - MAJOR CONTOUR
 - MINOR CONTOUR
 - PROPERTY LINE
 - RIGHT OF WAY LINE
 - EX O/H POWER
 - EX U/G POWER
 - ABND POWER
 - EX GAS
 - EX TELEPHONE
 - ABND TELEPHONE
 - EX FIBRE OPTIC



1 EXISTING SITE PLAN
 SCALE: 1:2000

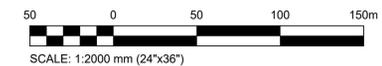
PRELIMINARY
 NOT TO BE USED FOR CONSTRUCTION

A	24/01/18	ISSUED FOR REVIEW	ZA	CJD
NO.	YYMMDD	DESCRIPTION	DESIGN BY	DESIGN CHECK
REVISIONS / ISSUE				
CLIENT: VALLEY ROAD BUSINESS PARK				
PROJECT: VALLEY ROAD DEVELOPMENT				
DWG. DESCRIPTION: EXISTING SITE SURFACE DRAINAGE				
KGS GROUP	DESIGN BY:	DATE (YYMMDD):		
	DESIGN CHECK:	DATE:		
	DRAWN BY:	DATE:	ZA	23/12/08
	DWG CHECK:	DATE:	CJD	23/12/08
DWG. NO.	23-4236-001	FIG 1	REV	A



- NOTES:**
1. ALL UNITS ARE IN METRES UNLESS OTHERWISE NOTED.
 2. DRAWING DEVELOPED FROM DRONE SURVEY COMPLETED BY GEOVERA DATED JULY 06, 2023.
 3. IMAGE COURTESY OF ©2023 DIGITAL GLOBE ©CNES(2023) DISTRIBUTION AIRBUS DS@2023 MICROSOFT CORPORATION.
 4. ALL PROPERTY LINES AND CADASTRAL DATA SHOWN ARE APPROXIMATE AND SHOULD BE VERIFIED PRIOR TO CONSTRUCTION.
 5. ALL UTILITIES SHOWN ARE APPROXIMATE AND MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION.
 6. CONTOUR INTERVALS ARE 0.5m.

- LEGENDS**
- CHAPPELL MARSH
 - EXISTING VEGETATION
 - SASKPOWER EASEMENT
 - SASKWATER EASEMENT
 - SASKENERGY EASEMENT
 - MAJOR CONTOUR
 - MINOR CONTOUR
 - PROPERTY LINE
 - RIGHT OF WAY LINE
 - PHASE 1
 - PHASE 2
 - PHASE 3
 - LANDSCAPE BUFFER
 - EX O/H POWER
 - EX U/G POWER
 - ABND POWER
 - EX GAS
 - EX TELEPHONE
 - ABND TELEPHONE
 - EX FIBRE OPTIC



B	24/01/19	ISSUED FOR REVIEW	DR	NG
A	24/01/18	ISSUED FOR REVIEW	DR	NG
NO.	YYMMDD	DESCRIPTION	DESIGN BY	DESIGN CHECK
REVISIONS / ISSUE				

CLIENT:
VALLEY ROAD BUSINESS PARK

PROJECT:
VALLEY ROAD DEVELOPMENT

DWG DESCRIPTION:
**PROPOSED SITE PLAN
BLK/PAR A, B, & C - PLAN 102 327162 EXT 0**

KGS GROUP	DESIGN BY:	DATE (YYMMDD):
	DESIGN CHECK:	DATE:
	DRAWN BY: VR	DATE: 24/01/11
	DWG CHECK:	DATE:

DWG. NO. 23-4236-001	FIG 3	REV B
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1 PROPOSED SITE PLAN
SCALE: 1:2000

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

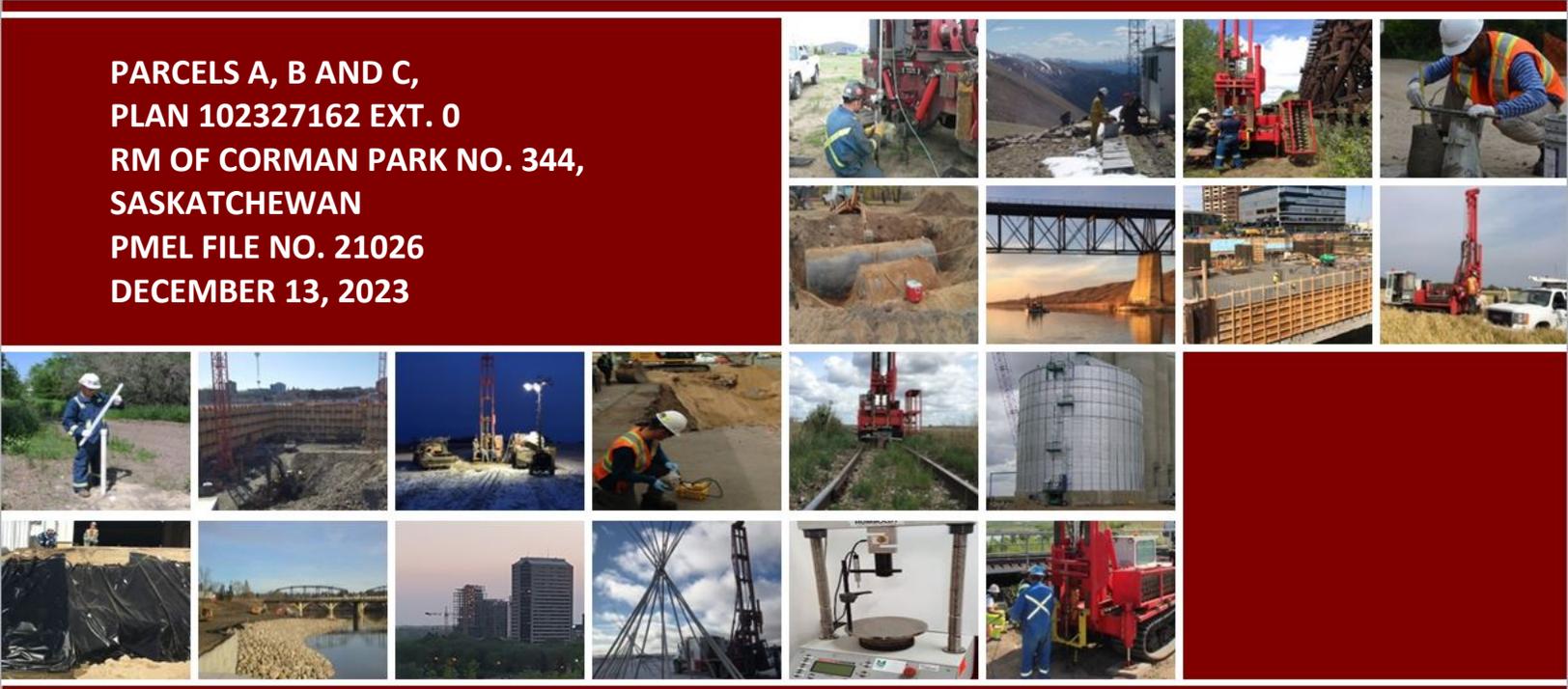
File Name: \\reg-file-jp-data\Projects\2023\23-4236-001\DWG\Mun\CD\3D\23-4236-001_M-FIG3.dwg - Tab: FIG 3 Plotted By: V.Ritico, 24/05/01 [Wed 12:15pm] 24"x36" PLOT SCALE: 1:1

APPENDIX B

Phase I ESA

PHASE I ENVIRONMENTAL SITE ASSESSMENT

**PARCELS A, B AND C,
PLAN 102327162 EXT. 0
RM OF CORMAN PARK NO. 344,
SASKATCHEWAN
PMEL FILE NO. 21026
DECEMBER 13, 2023**



**PREPARED FOR:
VALLEY ROAD BUSINESS PARKS LTD.**

ATTENTION: Laurie Bradley | Director

PRIVILEGED AND CONFIDENTIAL

PROJECT: Phase I Environmental Site Assessment
Parcels A, B and C, Plan 102327162 Ext. 0
RM of Corman Park No. 344, Saskatchewan
PMEL File No. 21026
December 13, 2023

LEGAL LAND DESCRIPTION: *Parcels A, B and C, Plan 102327162 Ext. 0,
RM of Corman Park No. 344, Saskatchewan*

PREPARED FOR: Valley Road Business Parks Ltd.
803 - 46th Street East
Saskatoon, SK T2G 3A4

ATTENTION: Laurie Bradley | Director

DISTRIBUTION: Valley Road Business Parks Ltd. – One Electronic Copy
P. Machibroda Engineering Ltd. – One Copy

EXECUTIVE SUMMARY

The following report presents the results of a Phase I Environmental Site Assessment (ESA), conducted by P. Machibroda Engineering Ltd. (PMEL) for the property (i.e., site) legally described as:

- *Parcels A, B and C, Plan 102327162 Ext. 0, Rural Municipality (RM) of Corman Park No. 344, Saskatchewan*

The site is located at the southwest intersection of Valley Road and Township Road 362-A, adjacent to the southern boundary of the City of Saskatoon, in the RM of Corman Park No. 344.

In accordance with the Canadian Standards Association (CSA Z768-01 [R2016]) Standards for Phase I Environmental Site Assessments, the Phase I ESA consisted of a review of available background and historical information; a visual site review; and a report of our findings. The purpose of the Phase I ESA was to determine the potential existence of contaminants and/or environmental concerns on the site.

SITE HISTORY/DESCRIPTION

The site is comprised of three irregularly shaped parcels that have a combined area of 68.049 hectares (168.15). The west portion of the site (i.e., Parcels B and C) has no buildings and is currently leased as agricultural land. The east portion of the site (i.e., Parcel A) is currently unoccupied. Approximately 300 dump truck loads (end dumps) of soil have been imported onto the north portion of Parcel A. A service road is currently being developed to the west of Valley Road. Soil fill, which is reportedly being used to construct the service road, is stockpiled along the east portion of Parcel C. Bluffs/treed areas are located on Parcel A, to the south of the imported soil fill, and to the south boundary of the site. Stored items including four (4) wood grain bins, and stored waste material (i.e., plastic pails, wood building materials, metal containers) are located on Parcel A to the south of the northeast bluff/treed area. A portion of the Chappell Marsh extends onto the western portion of Parcel C.

Utilities located at the site include: buried natural gas lines (proximate the northeast and the southwest corner of the site); overhead high-tension power lines (that run northwest to southeast across Parcel A and B); and overhead utility lines (along the north boundary of Parcel A).

The site is located in an area of commercial, agricultural and parkland (natural area) development.

ENVIRONMENTAL HAZARD POTENTIAL

Based on the information reviewed, and the observations made during the visual site review, the following potential environmental concerns were identified for the site:

- The exact origin of the soil fill stockpiled located on Parcel A is unknown. Minor amounts of debris (i.e., electrical wire) was visible proximate the south side of the soil stockpile. No other evidence of contamination (e.g., staining, adverse odours, etc.) were apparent in the stockpiled soil based on limited (i.e., visual and/or olfactory) observations. In general, fill material of this nature is sourced from new residential developments and represents a low environmental concern towards the site. However, this cannot be confirmed without further investigation (i.e., a Phase II ESA).
- The soil fill located in the built-up area proximate the east boundary of the site was reportedly sourced from excavation activities at 210 Avenue P South. Debris (i.e., concrete chunks and asphalt) was visible proximate the south side of the soil stockpile. No evidence of contamination (e.g., staining, adverse odours, etc.) was apparent in the stockpiled soil based on limited (i.e., visual and/or olfactory) observations. Further investigation (i.e., Phase II ESA) is required to determine if the soil fill located at the site represents an environmental concern towards the site.
- Further investigation (i.e., Phase II ESA) is required to determine if the site has been adversely impacted by releases (if any) of chemicals (e.g., petroleum hydrocarbons, pesticides, etc.) associated with a pile of at least twenty (20) empty 20 L steel pails in the south portion of the bluff/treed area on Parcel A.

In addition to the above, the following environmental management considerations or issues that could result in future costs were identified at the site:

- It is recommended that all debris (e.g., fuel/chemical pails, derelict buildings, etc.) be taken offsite for disposal in accordance with applicable guidelines and/or regulations.
- High-tension transmission lines with the potential to generate significant electromagnetic fields (EMFs) run along the northeast portion of the site. Electrical current flows (e.g., in power lines and cables, wiring, electrical appliances, etc.) inducing EMFs. Although questions have been raised to whether or not exposure to EMFs can lead to adverse health effects, no scientific evidence exists to support these claims (Health Canada, 2023). Saskpower recommends that buildings be located at least 15 m from overhead power lines (Saskpower, 2023).

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Appendix G	Photographs

1 INTRODUCTION

The following report presents the results of a Phase I Environmental Site Assessment (ESA), conducted by P. Machibroda Engineering Ltd. (PMEL) for the property (i.e., site) legally described as:

- *Parcels A, B and C, Plan 102327162 Ext. 0, Rural Municipality (RM) of Corman Park No. 344, Saskatchewan*

The site is located at the southwest intersection of Valley Road and Township Road 362-A, adjacent to the southern boundary of the City of Saskatoon, in the RM of Corman Park No. 344.

The Terms of Reference for this investigation were presented in PMEL Proposal No. 21026, dated November 20, 2023. Written authorization to proceed with this investigation was provided in the November 23, 2023, signed Consulting Agreement between Valley Road Business Parks Ltd. and PMEL. A visual site review of the site was conducted on November 27, 2023.

In accordance with the Canadian Standards Association (CSA Z768-01 [R2016]) Standards for Phase I Environmental Site Assessments, the Phase I ESA consisted of a review of available background and historical information; a visual site review; and a report of our findings. The purpose of the Phase I ESA was to determine the potential existence of contaminants and/or environmental concerns on the site.

2 REVIEW OF BACKGROUND AND HISTORICAL INFORMATION

2.1 METHODOLOGY

Historical information available for the site was reviewed to identify potential environmental concerns, which may not be evident based on current site conditions. Information sources available and reviewed for the site included (but was not limited to) aerial/satellite images and property use records. A review of general background information for the site and area (e.g., topographic maps, geologic maps, hydrogeological reports) was also conducted.

2.2 SITE DESCRIPTION

The location of the site is shown on the Key Plan and Surrounding Land Use Drawing, Drawing No. 21026-1, while details of the site are shown on the Site Plan, Drawing No. 21026-2.

The site is comprised of three irregularly shaped parcels that have a combined area of 68.049 hectares (168.15). The west portion of the site (i.e., Parcels B and C) has no buildings and is currently leased as agricultural land. The east portion of the site (i.e., Parcel A) is currently unoccupied. Approximately 300 dump truck loads (end dumps) of soil have been imported onto the north portion of Parcel A. A service road is currently being developed to the west of Valley Road. Soil fill, which is reportedly being used to construct the service road, is stockpiled along the east portion of Parcel C. Bluffs/treed areas are located on Parcel A, to the south of the imported soil fill, and to the south boundary of the site.

Stored items including four (4) wood grain bins, and stored waste material (i.e., plastic pails, wood building materials, metal containers) are located on Parcel A to the south of the northeast bluff/treed area. A portion of the Chappell Marsh extends onto the western portion of Parcel C.

Utilities located at the site include: buried natural gas lines (proximate the northeast and the southwest corner of the site); overhead high-tension power lines (that run northwest to southeast across Parcel A and B); and overhead utility lines (along the north boundary of Parcel A).

The site is located in an area of commercial, agricultural and parkland (natural area) development

2.3 BACKGROUND INFORMATION

2.3.1 PHYSIOGRAPHY AND REGIONAL GEOLOGY

A review of published physiography and regional geology information (Acton et al., 1960, Christiansen, 1967 and MDH, 2011) revealed the following:

1. The site lies in the physiographic region known as the Saskatchewan Rivers Plain.
2. The Saskatchewan Rivers Plain is characterized as gently undulating to rolling glacial lacustrine-alluvial (glacial lake) plains, aeolian plains (dunes) and till plains.
3. The surficial soil deposits consist of variable textured lacustrine and alluvial sands, silts and clays, aeolian sands, glacial till and local bedrock exposures in the South Saskatchewan River.
4. The surficial soil deposits at this site consist of approximately 80 m of glacial till and stratified drift (sand, silt and clay) underlain by noncalcareous silt and clay of the Lea-Park Formation-Upper Colorado Group.

2.3.2 TOPOGRAPHY AND DRAINAGE

A review of Google Earth (2023) revealed the following:

1. The land surface elevation at the site ranged from 506 meters above sea level (masl) at its northwest corner to approximately 498 MASL at its southwest corner.
2. The site slopes gently downward to the west towards the Chappel Marsh (498 masl) the east portion of which, is located along the west portion of the site.
3. Regionally the ground surface slopes gently downward towards the South Saskatchewan River (477 masl) located, at its nearest point, approximately 1.5 km to the southeast.

2.3.3 HYDROGEOLOGY

An examination of hydrogeological data (Christiansen, 1967 and MDH, 2011) for this region revealed the following observations:

1. The site overlies a large surficial stratified deposit which is estimated to be up to 17 m thick in the vicinity of the site. Where saturated, this deposit can be considered to represent a surficial (unconfined) aquifer.

2. The site overlies a relatively large Upper Floral Aquifer which is estimated to be up to 5 m thick in the vicinity of the site. Proximate the site, the surface of this aquifer is located at a depth of approximately 19 m below grade.
3. The site overlies a Battleford Formation Aquifer which is estimated to be up to over 25 m thick in the vicinity of the site. Proximate the site, the surface of this aquifer is located at a depth of approximately 28 m below grade.
4. The site is on the edge of the Tyner Valley Aquifer (which is a large Empress Group Aquifer). The Tyner Valley Aquifer system is the most extensive and potentially productive aquifer in the Saskatoon region. The Tyner Valley Aquifer is utilized for dairy and stock raising operations outside the area where the Dalmeny Aquifer is present. The surface of this aquifer is estimated to be located approximately 60 m below grade in the vicinity of the site.
5. The site is on the edge a Bearpaw Formation Aquifer. The surface of this aquifer is located at a depth of approximately 66 m below grade.
6. The site overlies a large Judith River Formation Aquifer. In the vicinity of the site this aquifer is expected to be less than 15 m thick with its surface located at a depth of approximately 77 m below grade.
7. No Lower Floral Aquifers, Warman Formation Aquifers, Upper or Lower Dundurn Formation Aquifers or Mennon Formation Aquifer are located within 1 km of the site.

2.3.4 WATER SUPPLY

It is anticipated that the site will be connected to the SaskWater Raw water distribution system. SaskWater obtains their water from the City of Saskatoon. The supply for the City of Saskatoon is obtained via a piped distribution system with a river intake on the South Saskatchewan River.

2.3.5 WATER WELLS

A review of the Saskatchewan Water Security Agency (WSA) Water Well GIS site (WSA, 2023a) revealed eleven (11) registered groundwater wells are potentially located within 500 m of the site. Review of the water well records revealed the following:

1. Nine (9) of the wells are registered as domestic withdrawal. These wells were completed between 1959 and 2020 drilled to depths between approximately 8.2 and 67 m below grade.
2. Two (2) of the wells are registered as test holes. These wells were completed between 1967 and 1975 and drilled to depths between approximately 25.9 and 115.5 m below grade.

2.4 AERIAL/SATELLITE IMAGERY REVIEW

Historical aerial/satellite images dated 1956, 1967, 1974, 1994, 2004, 2014, 2017 and 2022 were obtained for the site and examined to identify site specific land-use which may have resulted in environmental concerns on and/or adjacent to the site.

Select aerial/satellite images have been included in Appendix A, while summaries of observations made have been presented below.

- 1956:** The northeast corner of the site houses approximately four (4) structures (i.e., farmhouse and associated structures). A wetland (Chappell Marsh) cuts diagonally across the southwest corner of the site. The remainder of the site is undeveloped (no buildings) pastureland. The surrounding area is under cultivated farmland.
- 1967:** The site and surrounding area are relatively unchanged from 1956.
- 1974:** The farmhouse and associated structures are no longer visible at the site. Overhead utility lines are now visible running northwest to southeast across Parcel B. Bluffs/treed areas are now visible in northeast corner (Parcel A) and the south boundary of the site (Parcel C). The wetland appears to be smaller than in 1967.
- 1994:** The majority of the site is now cultivated. Six (6) structures (i.e., grain bins) are now visible to the south of the bluff/treed area in the northeast corner of the site. Over twenty (20) apparent hay bails are visible to the north of the northeast bluff/treed area. Valley Road is now visible to the east of the site.
- 2004:** The apparent hay bails are no longer visible at the site. A metal structure is now visible to the west of the south bluff/treed area.
- 2014:** A graded area with an associated gravel approach is now visible proximate the north boundary of the site. The metal structure proximate the south boundary of the site is no longer visible.
- 2017:** An area has been cleared and/or graded proximate the east boundary of the site and soil stockpiling (i.e., end dumps) are visible.
- 2022:** The soil stockpile located along the east boundary of the site has increased in size. The site and surrounding area are relatively consistent with current levels of development.

2.5 LAND TITLES SEARCH

A search of current and historic land titles was conducted for the site. Land title searches provide information on the chronology of ownership (i.e., Chain of Title) of a property as well as interests on the titles such as utility right(s)-of-way, easements and leases (e.g., gas stations, oil and gas wells, etc.). The Chain of Title for the site is presented in Appendix B.

Review of the historic land titles/Chain of Title revealed the following:

1. Valley Road Business Parks Ltd. has owned Parcels B and C since 2015.
2. Valley Road Business Parks Ltd. has owned Parcel A since 2020.
3. Saskatchewan Power Corporation has had an easement on Parcels B and C since 1954.
4. TransGas has had an easement on Parcels B and C since 2009.

5. No evidence of potential environmental concerns was apparent on the titles reviewed for the site.

2.6 STREET DIRECTORIES

No street directories (e.g., Henderson Directories) were available for the R.M. of Corman Park No. 344.

2.7 FIRE INSURANCE PLANS

No Fire Insurance Plans were available for the R.M. of Corman Park No. 344.

2.8 ZONING

The site is zoned DAG1 – (District Agricultural) as shown on the Saskatoon North Partnership for Growth district for zoning map, dated May 20, 2021.

2.9 RM OF CORMAN PARK NO. 344 BUILDING PERMITS

A search of the building permits and plans records for the site by the RM of Corman Park No. 344 revealed the RM has no records of building permits or plans issued for the site.

2.10 RM OF CORMAN PARK NO. 344 - FILE SEARCH

A search of the RM of Corman Park No. 344 records revealed the following:

1. The RM has no records of storage, handling, spills, leaks or releases of hazardous substances or waste dangerous goods at or in the immediate vicinity of the site.
2. The RM is aware of unpermitted fill activity on the property and is unaware of any potential contamination that may have occurred as a result of the fill.
3. The RM has no records of outstanding orders for the site.

A copy of the file search has been included in Appendix C.

2.11 CITY OF SASKATOON- SASKATOON FIRE DEPARTMENT FILE SEARCH

A file search conducted by the City of Saskatoon-Saskatoon Fire Department for the site revealed the following:

1. There are no records of spills, leaks, underground storage tanks, storage of dangerous goods or fire orders relating to the site.
2. The last fire inspection occurred in November of 2023 with no deficiencies found.

A copy of the file search has been included in Appendix D.

2.12 SASKATCHEWAN ASSESSMENT MANAGEMENT AGENCY (SAMA)

Tax Assessment Records (field sheets) for the site were obtained from the Saskatchewan Assessment Management Agency (SAMA) during this investigation. Review of the Tax Assessment Records revealed the following:

1. The site was last inspected by SAMA on October 6, 1998.
2. The site consisted of 54.63 ha (135 acres) of agricultural land and 10.12 ha (25 acres) of waste slough.
3. The land use is described as cultivated.
4. There are no buildings located at the site.

Copies of the tax assessment field sheets for the site have been presented in Appendix E

2.13 SASKATCHEWAN ENVIRONMENT DATABASE SEARCH

A search of the Saskatchewan Ministry of Environment (SKMoE) files for the site revealed the following:

1. The site is not registered pursuant to the Hazardous Substances and Waste Dangerous Goods Regulations.
2. There were no reported spills pursuant to the Environmental Spill Control Regulations.
3. The site is not registered as an environmentally impacted site.

2.14 ERIS ECOLOG DATABASE REPORT

An ERIS ECOLOG database report search was conducted for the site. The database report provides the search results of various Federal, Provincial and Private Source databases for a 250 m radius surrounding the site. A copy of the report is presented in Appendix F. Review of the report did not reveal any environmental concerns associated with the site.

3 INTERVIEWS

A solicited interview conducted on November 28, 2023 with Laurie Bradley, the Director of Valley Road Business Parks., revealed the following:

1. Laurie has been associated with the site for approximately 10 years.
2. There are no buildings at the site.
3. The majority of the site is leased for agricultural cultivation. The northeast corner and a portion of the east boundary of the site are being used for soil stockpiling.
4. The soil fill stockpiled in the northeast corner of the site was taken from multiple sites and sources and as such, the exact origin of the soil stockpile is unknown.

5. The soil fill located proximate the east boundary of the site was reportedly sourced from excavation activities carried out at 210 Avenue P South during the construction of the St Paul's Hospital parking area.
6. To Laurie's knowledge there are no environmental concerns (e.g., rodents, hazardous material storage, spills, underground or aboveground fuel storage tanks, mould, leaks, air quality concerns, pesticides and/or fertilizers, buried and/or burned materials, wood preserving/treating, etc.) associated with the site or surrounding area.

4 VISUAL SITE REVIEW

4.1 SITE VISIT

PMEL personnel conducted a visual review of the site and accessible surrounding areas on November 27, 2023. Select photographs taken of the site have been included in Appendix G, while brief summaries of the observations made during the visual review are presented below.

1. The site does not house any buildings and is primarily cultivated farmland.
2. Approximately 300 dump truck (end dumps) of soil are visible along the north portion of Parcel A.
3. A service road is currently being developed to the west of Valley Road. Soil fill, which is reportedly being used to construct the service road, is stockpiled along the east portion of the site.
4. Bluffs/treed areas are located at the northeast corner, south of the imported soil fill, and proximate the south boundary of the site.
5. Items to the south of the northeast bluff/treed area of the site included four (4) wood grain bins, and debris (i.e., wood building materials, approximately 20-20 L metal pails and, approximately 10-20 L plastic pails).
6. The eastern extent of the Chappell Marsh is located on the west portion of Parcel C.
7. Buried high pressure natural gas lines run north-south between Valley Road and the currently under-construction service road.
8. Buried natural gas lines are located proximate the southeast corner of the site.
9. Overhead high-tension power lines run northwest to southeast across Parcel B and Parcel A.
10. Overhead utility lines are located along the north boundary of Parcel A.
11. The surrounding area consists of natural areas to the west, commercial developments to the north, and agricultural land use to the south and east of the site.

4.2 SURROUNDING LAND USE

As shown on Drawing No. 21026-1, surrounding land use in the vicinity of the site includes the following:

North: Township Road 362-A followed by the Saskatoon Civic Operations Centre, The Southwest Dog Park and Richard St. Barbe Baker Afforestation Area.

South: Agricultural land followed by Hodgson Road.

East: Valley Road Followed by agricultural development.

West: Chappel Conservation Area followed by Range Road 3062.

4.3 BUILDINGS

Since there are no permanent buildings located on the site, building materials such as asbestos, Urea Formaldehyde Foam Insulation (UFFI), polychlorinated biphenyl (PCB) and/or mercury containing equipment, ozone depleting substances, lead paint, etc. are unlikely to exist on the site.

4.4 WASTE MANAGEMENT

4.4.1 LIQUID WASTE

No liquid waste is reportedly generated on the site.

4.4.2 SOLID WASTE

No solid waste is reportedly generated on the site.

Stored waste material including wood building materials and/or debris, and at least twenty (20) approximately 20 L metal pails are located to the south of the northeast bluff/treed area located on Parcel A. At the time of the visual review these containers were empty and no evidence of spills or staining was visible. However, the containers were in poor (i.e., rusted out) condition. Due to the poor condition of the containers the exact nature and contents of these containers was not evident.

In addition, approximately ten (10) – 20 L plastic pails were stored inside the wooden grain bins located on Parcel A. These pails appeared to be filled with precipitation and leaf litter.

4.4.3 HAZARDOUS SUBSTANCES AND WASTE DANGEROUS GOODS

No major releases of hazardous substances and/or waste dangerous goods were apparent during the visual site review.

4.5 STORAGE TANKS

No Aboveground Storage Tanks (ASTs) or visible evidence (e.g., pump islands, vent pipes) of Underground Storage Tanks (USTs) were apparent at the site during the visual site review.

4.6 SURFACE STAINING/STRESSED VEGETATION AND SOIL FILL

No stressed vegetation was visible at the site.

A soil fill stockpile was visible proximate the northeast corner of the site. The exact location and source of this fill is unknown. Minor amounts of debris (i.e., electrical wire) were visible proximate the south side of the soil stockpile. No other evidence of staining (e.g., staining, adverse odours, etc.) was apparent in the stockpiled soil based on limited (i.e., visual and/or olfactory) observations. Soil testing would be required to confirm whether the stockpiled soil represents an environmental concern towards the site.

A built-up area containing imported fill, reportedly sourced from excavation activities at the St. Paul's Hospital parking lot (210 Avenue P South), was located proximate the east boundary of the site. Debris (i.e., concrete pieces and asphalt) was visible proximate the south side of the soil stockpile. No other evidence of staining (e.g., staining, adverse odours, etc.) were apparent in the stockpiled soil based on limited (i.e., visual and/or olfactory) observations. Soil testing would be required to confirm whether the stockpiled soil represents an environmental concern towards the site.

4.7 AIR EMISSIONS

No obvious sources of adverse air emissions were present.

4.8 NOISE AND VIBRATION

Aside from traffic (e.g., vehicle, aircraft, rail) noise, no obvious sources of noise and/or vibration were apparent at the time of the visual site review.

4.9 ELECTROMAGNETIC FIELDS

High-tension transmission lines with the potential to generate significant electromagnetic fields (EMFs) run along the northeast portion of the site. Electrical current flows (e.g., in power lines and cables, wiring, electrical appliances, etc.) inducing EMFs. Although questions have been raised to whether or not exposure to EMFs can lead to adverse health effects, no scientific evidence exists to support these claims (Health Canada, 2023). Saskpower recommends that buildings be located at least 15 m from overhead power lines (Saskpower, 2023).

4.10 RADIOACTIVE SOURCES

No labelled radioactive sources with the potential to generate significant environmental concerns were apparent during the visual site review.

4.11 NEIGHBOURING PROPERTIES

Based on historical information and observations made at the time of the visual site review, the risks associated with the properties surrounding the site appear low.

The precise nature of the activities carried out on the surrounding sites and their potential impacts to the subject site are outside the scope of this report. Potential contamination associated with surrounding land use cannot be confirmed without further investigation including detailed inspections of the surrounding properties.

5 ENVIRONMENTAL HAZARD POTENTIAL

Based on the information reviewed, and the observations made during the visual site review, the following potential environmental concerns were identified for the site:

- The exact origin of the soil fill stockpiled located on Parcel A is unknown. Minor amounts of debris (i.e., electrical wire) was visible proximate the south side of the soil stockpile. No other evidence of contamination (e.g., staining, adverse odours, etc.) were apparent in the stockpiled soil based on limited (i.e., visual and/or olfactory) observations. In general, fill material of this nature is sourced from new residential developments and represents a low environmental concern towards the site. However, this cannot be confirmed without further investigation (i.e., a Phase II ESA).
- The soil fill located in the built-up area proximate the east boundary of the site was reportedly sourced from excavation activities at 210 Avenue P South. Debris (i.e., concrete chunks and asphalt) was visible proximate the south side of the soil stockpile. No evidence of contamination (e.g., staining, adverse odours, etc.) was apparent in the stockpiled soil based on limited (i.e., visual and/or olfactory) observations. Further investigation (i.e., Phase II ESA) is required to determine if the soil fill located at the site represents an environmental concern towards the site.
- Further investigation (i.e., Phase II ESA) is required to determine if the site has been adversely impacted by releases (if any) of chemicals (e.g., petroleum hydrocarbons, pesticides, etc.) associated with a pile of at least twenty (20) empty 20 L steel pails in the south portion of the bluff/treed area on Parcel A.

In addition to the above, the following environmental management considerations or issues that could result in future costs were identified at the site:

- It is recommended that all debris (e.g., fuel/chemical pails, derelict buildings, etc.) be taken offsite for disposal in accordance with applicable guidelines and/or regulations.
- High-tension transmission lines with the potential to generate significant electromagnetic fields (EMFs) run along the northeast portion of the site. Electrical current flows (e.g., in power lines and cables, wiring, electrical appliances, etc.) inducing EMFs. Although questions have been raised to whether or not exposure to EMFs can lead to adverse health effects, no scientific evidence exists to support these claims (Health Canada, 2023). Saskpower recommends that buildings be located at least 15 m from overhead power lines (Saskpower, 2023).

6 CLOSURE

A Phase I Environmental Site Assessment (ESA) was conducted by P. Machibroda Engineering Ltd. (PMEL) for the property (i.e., site) legally described as:

- *Parcels A, B and C, Plan 102327162 Ext. 0, RM of Corman Park No. 344, Saskatchewan*

The site is located southwest of the intersection of Valley Road and Township Road 362-A, directly south of the Saskatoon City limits in the RM of Corman Park No. 344.

The Phase I ESA consisted of a review of sequential aerial/satellite images, historical records, Provincial Land Titles, a visual site review, interviews and file searches conducted by the RM of Corman Park and/or the City of Saskatoon.

If additional information becomes available regarding the environmental hazard potential of this site, our report and recommendations should be reviewed in the light of any new information.

The Phase I ESA report has been prepared for the exclusive use of Valley Road Business Parks Ltd. and their agents for specific application to Parcels A, B, and C, Plan 102327162 Ext. 0, in the RM of Corman Park No. 344, Saskatchewan. It has been prepared in accordance with generally accepted geoenvironmental engineering practices and no other warranty, express or implied, is made.

Any use which a Third Party makes of this report, or any reliance on decisions to be made based on it, is the responsibility of such Third Parties. P. Machibroda Engineering Ltd. and/or its employees, servants and agents accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

If this report has been transmitted electronically, it has been digitally signed and secured with personal passwords to lock the document. Due to the possibility of digital modification, only those reports sent directly by PMEL can be relied upon without fault.

We trust that this report fulfils your requirements for this project. Should you require additional information, please contact us.

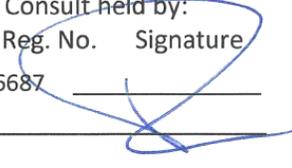
P. MACHIBRODA ENGINEERING LTD.



Jordan Comfort, B.Sc., Toxicology



Keegan Arnyek, Geoscientist-in-Training

Association of Professional Engineers & Geoscientists of Saskatchewan		
CERTIFICATE OF AUTHORIZATION		
P. MACHIBRODA ENGINEERING LTD.		
Number 172		
Permission to Consult held by:		
Discipline	SK. Reg. No.	Signature
Geoenvironmental	6687	
<hr/>		
2023-12-13		
<hr/>		



Ray Machibroda, P. Eng., M.Sc.

JC:RM:zz

7 REFERENCES

Literature Cited

Acton, D. F., Clayton, J. S., Ellis, J. G., Christiansen, E. A., and Kupsch, W. O. 1960. Physiographic divisions of Saskatchewan. Saskatchewan Research Council, Map No. 1.

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8 QUALIFICATIONS OF ASSESSORS

Jordan Comfort, B.Sc., has a degree Toxicology from the University of Saskatchewan. His experience includes Phase I and Phase II environmental site assessment, soil and groundwater sampling, storage tank decommissioning, site remediation, and preparation of technical reports.

Keegan Armyek, Geoscientist-in-Training, is an environmental geoscientist with a degree in geology from the University of Saskatchewan. He is experienced in Phase I and Phase II environmental site assessments, site remediation, core/soil logging, materials testing, aquifer characterization, and preparation of technical reports. His experience also includes geotechnical and environmental drilling, mine geology, bedrock mapping, geomatics, geotechnical lab testing, landfill monitoring, pile inspecting and data management.

Ray Machibroda, P. Eng, M.Sc., is a senior geoenvironmental engineer with over 25 years of experience. He has conducted hundreds of Environmental Site Assessments and is experienced in both assessment and remediation of sites including industrial, commercial and residential properties. His experience also includes assessment of landfills and sewage lagoons, risk assessments, and Brownfield redevelopment.

DRAWINGS



NOTE:
 1. THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.
 2. THIS DRAWING WAS COMPILED FROM GOOGLE EARTH PRO ©2023, IMAGE ©2023 DIGITALGLOBE, (IMAGERY DATE: 04/29/21).

LEGEND	-----	-APPROXIMATE SITE BOUNDARY	—X—	-FENCE	—o/h—	-HIGH TENSION TRANSMISSION LINE
	— GAS —	-HIGH PRESSURE GAS LINE	----	-PARCEL BOUNDARY		

PM CONSULTING
 GEOENVIRONMENTAL
 GEOTECHNICAL
 ENGINEERS

**P. MACHIBRODA
 ENGINEERING LTD.**

806 - 48th STREET EAST
 SASKATOON, SK
 S7K 3Y4

DRAWING TITLE: SITE PLAN		
PROJECT: PHASE I ENVIRONMENTAL SITE ASSESSMENT PARCELS A TO C - VALLEY ROAD BUSINESS PARK, SASKATOON, SK		
APPROVED BY: JC	DRAWN BY: TP	DRAWING NUMBER: 21026-2
DATE: NOVEMBER, 2023	SCALE: NOT TO SCALE	

APPENDIX A

Aerial/Satellite Images

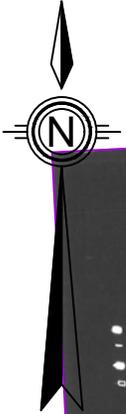


NOTE:
 1. THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.
 2. THIS DRAWING WAS COMPILED FROM AERIAL PHOTOGRAPH: A15451-99, (1906).

LEGEND	-----	-APPROXIMATE SITE BOUNDARY	-----	-PARCEL BOUNDARY


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 ENGINEERS**
**P. MACHIBRODA
 ENGINEERING LTD.**
 806 - 48th STREET EAST
 SASKATOON, SK
 S7K 3Y4

DRAWING TITLE: AERIAL PHOTOGRAPH (1906)		
PROJECT: PHASE I ENVIRONMENTAL SITE ASSESSMENT PARCELS A TO C - VALLEY ROAD BUSINESS PARK, SASKATOON, SK		
APPROVED BY: JC	DRAWN BY: TP	DRAWING NUMBER: 21026-1906
DATE: NOVEMBER, 2023	SCALE: NOT TO SCALE	



152.12
244.667A



NOTE:
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 2. THIS DRAWING WAS COMPILED FROM AERIAL PHOTOGRAPH: C.S.M.A. 94664 06 1□L3E, (1994).

LEGEND	- APPROXIMATE SITE BOUNDARY	- PARCEL BOUNDARY



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**P. MACHIBRODA
 ENGINEERING LTD.**

806 - 48th STREET EAST
 SASKATOON, SK
 S7K 3Y4

DRAWING TITLE: AERIAL PHOTOGRAPH (1994)		
PROJECT: PHASE I ENVIRONMENTAL SITE ASSESSMENT PARCELS A TO C - VALLEY ROAD BUSINESS PARK, SASKATOON, SK		
APPROVED BY: JC	DRAWN BY: TP	DRAWING NUMBER: 21026-1994
DATE: NOVEMBER, 2023	SCALE: NOT TO SCALE	

APPENDIX B

Chain of Title

Legal Description: Parcels A, B & C, Plan 102327162, RM of Corman Park, Saskatchewan

Date	Certificate of Title	Remarks
December 9, 2020	Valley Road Business Parks Ltd.	Parcel A, B & C
November 17, 2015	Valley Road Business Parks Ltd.	NE-14-36-6-W3M
October 20, 2009	Holly Adele Glow (personal representative for Raymond Daryle Glow)	NE-14-36-6-W3M
November 1, 2002	Her Majesty the Queen (Saskatchewan)	NW-13-36-6-W3M, Plan 91S37657, Ext. 2
May 23, 2002	Raymond Daryle Glow	NE-14-36-6-W3M
December 15, 1999	Raymond Daryle Glow	NE-14-36-6-W3M
February 11, 1992	Anthony Glow	NE-14-36-6-W3M
October 11, 1991	Her Majesty the Queen (Saskatchewan)	NW-13-36-6-W3M, Parcel B, Plan 91S37657
May 22, 1968	Saskatchewan Power Corporation	N1/2-13-36-6-W3M
December 9, 1965	Saskatchewan Power Corporation	N1/2-13-36-6-W3M
April 15, 1965	Anthony Glow (farmer)	NE-14-36-6-W3M
October 27, 1964	Dame Marie Exillia Maxere Montabmeault (widow), executrix for Joseph Jeffrey Bordeleau)	NE-14-36-6-W3M
October 24, 1964	Canada Permanent Trust Company (administrator for Albert Arthur Roy), Reverend Joseph Eugene Limoges (roman catholic bishop, administrator for Joseph Alphonse Genier), Rosaire Leduc and Claude Leduc (butcher and electrician, administrators for William Josphe Leduc)	NE-14-36-6-W3M
May 4, 1959	Edith Agnes Henderson (widow, executrix for Albert Stanley Henderson)	N1/2-13-36-6-W3M
August 9, 1954	Guy Geffroy	NE-14-36-6-W3M
June 28, 1954	Jean M. Legris (executor for Henri Alphonse DesRosiers)	NE-14-36-6-W3M
April 27, 1945	Albert S. Henderson (farmer)	N1/2-13-36-6-W3M
April 27, 1945	Grace Griffin MacGregor (widow), Alexander MacGregor (king's council) and Margaret Jane Martin (secretary) (executors for James Patrick MacGregor)	N1/2-13-36-6-W3M
January 25, 1938	James Patrick MacGregor (barrister)	N1/2-13-36-6-W3M
November 3, 1937	Ruth E. Austin (married woman) (executrix for James Walter Curry)	N1/2-13-36-6-W3M
January 31, 1913	J.A. Genier, Albert A. Roy, Alphonse DesRosiers, W.J. Leduc and A. Bordeleau (gentlemen)	
March 23, 1911	James Walter Curry (barrister)	N1/2-13-36-6-W3M

Chain of Title continued...

Date	Certificate of Title	Remarks
November 7, 1905	James Hill Thomson (contractor)	N1/2-13-36-6-W3M
January 13, 1905	George D. Gaylen	NE-14-36-6-W3M
September 11, 1902	George Grinley Sharpe (farmer)	NE-14-36-6-W3M
Grant April 15, 1902	George Grinley Sharpe	NE-14-36-6-W3M
July 11, 1891	The Temperance Colonization Society Limited	Portion of 13-36-6-W3M
Grant June 17, 1891	The Temperance Colonization Society Limited	Portion of 13-36-6-W3M

APPENDIX C

RM of Corman Park No. 344 – File Search

November 23, 2023

Our File: 06-14-100
06-14-101

Cindy Bettin
P. Machibroda Engineering Ltd.
806 – 48th Street East
Saskatoon SK S7K 3Y4
Via Email

**Re: File Search – Environmental Site Assessment
Parcel(s) A, B, C, Plan 102327162
RM of Corman Park, Saskatchewan**

Further to your letter regarding the above files, we can advise the following:

- i) The R.M. has no record of storage, handling, spills, leaks or release of hazardous substances or waste dangerous goods at or in the immediate vicinity of the above property. The R.M. is aware of unpermitted fill activity on the property and is unaware if any soil contamination has occurred as a result of the fill. We recommend that Saskatchewan Environment be contacted in this regard.
- ii) Saskatoon Fire and Protective Services provide fire protection service in this area, and we recommend that the department be contacted for records of any fires on or in the vicinity of the above property.
- iii) To date the R.M. does not have a record of any outstanding orders on the above property.

A request for a zoning compliance certificate must be made if you require information regarding building permits on the above noted property. If you have any questions, please do not hesitate to contact me.

Regards,



Shayden Brandt, BA Hons.

Planner 1

111 Pinehouse Drive, Saskatoon, SK. S7K 5W1

 (306)978-6421

sbrandt@rmcormanpark.ca

APPENDIX D

Saskatoon Fire Department File Search

November 24, 2023

P. Machibroda Engineering Ltd.
806 48th Street East
Saskatoon, SK S7K 3Y4

Attention: Cindy Bettin

**Re: File Search
Parcels A, B, & C, Plan 102327162, Valley Road and Grid 762**

A file search was conducted on the above-mentioned address on November 23, 2023.

Our files do not indicate any records of any spills, leaks, underground storage tanks, storage of dangerous goods or fire orders on this property. A fire inspection was conducted in November 2023 with no deficiencies found.

Attached is an invoice for the cost of the file search conducted. Unless otherwise arranged, interest will be charged at Bank Prime Rate plus 2% if full payment is not received within 30 days of invoice date.

This letter does not certify or imply that the building/facility complies with The City of Saskatoon Fire Prevention Bylaw, the City of Saskatoon Property Maintenance and Nuisance Abatement Bylaw, The Fire Safety Act or the Regulations passed pursuant to The Fire Safety Act including the National Fire Code. The information provided hereon is provided on the express condition and understanding that The City of Saskatoon and its agents and employees shall not be liable for any damage or expense should, for any reason including negligence on the part of The City of Saskatoon, its agents or employees, the information be inaccurate, incomplete or misleading.

Yours truly,



Michael Dobrowolski
Risk Reduction Coordinator
Saskatoon Fire

APPENDIX E

Saskatchewan Assessment Management
Agency (SAMA)



Property Report

Print Date: 22-Nov-2023

Page 1 of 2

Municipality Name:	CORMAN PARK (RM)	Assessment ID Number:	344-000614100	PID:	203320833
Civic Address:		Title Acres:	159.60	Reviewed:	06-Oct-1998
Legal Location:	Qtr NE Sec 14 Tp 36 Rg 06 W 3 Sup	School Division:	206	Change Reason:	
Supplementary	:	Neighbourhood:	344-114	Year / Frozen ID:	2023/-3
		Puse Code:	2000	Predom Code:	
		Call Back Year:		Method in Use:	C.A.M.A. - Cost

AGRICULTURAL ARABLE LAND

Acres	Land Use	Productivity Determining Factors	Economic and Physical Factors	Rating	
60.00	K - [CULTIVATED]	Soil association 1 AQ - [ASQUITH] Soil texture 1 LS - [LOAMY SAND] Soil profile 1 OR10 - [CHERN-ORTH (CA 9-12)]	Topography T2 - Gentle Slopes Stones (qualities) S1 - None to Few Natural hazard WS: Waste Slough Rate: 0.98	\$/ACRE Final	732.99 27.29
30.00	K - [CULTIVATED]	Soil association 2 VR - [VERA] Soil texture 3 Soil texture 4 Soil profile 2 OR - [REGOSOL-ORTHIC] Top soil depth ER10	Topography T1 - Level / Nearly Level Stones (qualities) S1 - None to Few Natural hazard WS: Waste Slough Rate: 0.98	\$/ACRE Final	1,469.76 54.72
45.00	K - [CULTIVATED]	Soil association 1 AQ - [ASQUITH] Soil texture 3 Soil texture 4 Soil profile 2 OR12 - [CHERN-ORTH (CA 12+)] Top soil depth 3-5	Topography T1 - Level / Nearly Level Stones (qualities) S1 - None to Few Natural hazard WS: Waste Slough Rate: 0.98	\$/ACRE Final	1,221.93 45.49
		Soil association 2 AQ - [ASQUITH] Soil texture 3 Soil texture 4 Soil profile 2 OR10 - [CHERN-ORTH (CA 9-12)]			

Top soil depth 3-5

AGRICULTURAL WASTE LAND

Acres	Waste Type
25	WASTE SLOUGH1

Assessed & Taxable/Exempt Values (Summary)

Description	Appraised Values	Adjust Reason	Liability Subdivision	Tax Class	Percentage of value	Taxable	Adjust Reason	Exempt	Adjust Reason	Tax Status
Agricultural	\$143,300		1	Other Agricultural	55%	\$78,815				Taxable
Total of Assessed Values:	\$143,300					Total of Taxable/Exempt Values:				\$78,815

APPENDIX F

ERIS ECOLOG Database Report



DATABASE REPORT

Project Property: *Parcels A, B & C, Plan 102327162
Parcels A, B & C, Plan 102327162
Vanscoy SK*

Project No: *6636*

Report Type: *Quote - Custom-Build Your Own Report*

Order No: *23112200590*

Requested by: *P. Machibroda Engineering Ltd.*

Date Completed: *November 27, 2023*

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Reliance on information in Report: This report DOES NOT replace a full Phase I Environmental Site Assessment but is solely intended to be used as a database review of environmental records.

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Executive Summary

Property Information:

Project Property: *Parcels A, B & C, Plan 102327162
Parcels A, B & C, Plan 102327162 Vanscoy SK*

Project No: 6636

Order Information:

Order No: 23112200590
Date Requested: November 22, 2023
Requested by: P. Machibroda Engineering Ltd.
Report Type: Quote - Custom-Build Your Own Report

Historical/Products:

ERIS Xplorer [ERIS Xplorer](#)

Executive Summary: Report Summary

<i>Database</i>	<i>Name</i>	<i>Searched</i>	<i>Project Property</i>	<i>Boundary to 0.30km</i>	<i>Total</i>
AUWR	<i>Automobile Wrecking & Supplies</i>	Y	0	0	0
CDRY	<i>Dry Cleaning Facilities</i>	Y	0	0	0
CHM	<i>Chemical Register</i>	Y	0	0	0
CNG	<i>Compressed Natural Gas Stations</i>	Y	0	0	0
CONV	<i>Convictions</i>	Y	0	0	0
DIS	<i>Wastewater Dischargers</i>	Y	0	0	0
EEM	<i>Environmental Effects Monitoring</i>	Y	0	0	0
EHS	<i>ERIS Historical Searches</i>	Y	2	0	2
EIS	<i>Environmental Issues Inventory System</i>	Y	0	0	0
ENVI	<i>Environmentally Impacted Sites</i>	Y	0	0	0
ES	<i>Environmental Spills (Sask Spills)</i>	Y	0	0	0
ESDC	<i>Environmental Discharges (Spills)</i>	Y	0	0	0
FCON	<i>Federal Convictions</i>	Y	0	0	0
FCS	<i>Contaminated Sites on Federal Land</i>	Y	0	0	0
FRST	<i>Federal Identification Registry for Storage Tank Systems (FIRSTS)</i>	Y	0	0	0
GHG	<i>Greenhouse Gas Emissions from Large Facilities</i>	Y	0	0	0
HMS	<i>Hazardous Material Storage</i>	Y	0	0	0
HORW	<i>Horizontal Wells</i>	Y	0	0	0
HSSS	<i>Hazardous Substance Storage Sites</i>	Y	0	0	0
HSST	<i>Hazardous Substance Storage Tanks</i>	Y	0	0	0
IAFT	<i>Indian & Northern Affairs Fuel Tanks</i>	Y	0	0	0
ILOA	<i>Intensive Livestock Operation Approvals</i>	Y	0	0	0
MINE	<i>Canadian Mine Locations</i>	Y	0	0	0
MNR	<i>Mineral Occurrences</i>	Y	0	0	0
NATE	<i>National Analysis of Trends in Emergencies System (NATES)</i>	Y	0	0	0
NDFT	<i>National Defense & Canadian Forces Fuel Tanks</i>	Y	0	0	0
NDSP	<i>National Defense & Canadian Forces Spills</i>	Y	0	0	0
NDWD	<i>National Defence & Canadian Forces Waste Disposal Sites</i>	Y	0	0	0
NEBI	<i>National Energy Board Pipeline Incidents</i>	Y	0	0	0
NEBP	<i>National Energy Board Wells</i>	Y	0	0	0
NEES	<i>National Environmental Emergencies System (NEES)</i>	Y	0	0	0
NPCB	<i>National PCB Inventory</i>	Y	0	0	0
NPR2	<i>National Pollutant Release Inventory 1993-2020</i>	Y	0	0	0
NPRI	<i>National Pollutant Release Inventory - Historic</i>	Y	0	0	0
OGF	<i>Oil & Gas Facilities</i>	Y	0	0	0
OGS	<i>Upstream Oil & Gas Site Spills</i>	Y	0	0	0

<i>Database</i>	<i>Name</i>	<i>Searched</i>	<i>Project Property</i>	<i>Boundary to 0.30km</i>	<i>Total</i>
OGW	<i>Oil & Gas Wells</i>	Y	0	0	0
OGWW	<i>Oil and Gas Wells</i>	Y	0	0	0
PAP	<i>Canadian Pulp and Paper</i>	Y	0	0	0
PCFT	<i>Parks Canada Fuel Storage Tanks</i>	Y	0	0	0
PES	<i>Pesticide Register</i>	Y	0	0	0
PFCH	<i>NPRI Reporters - PFAS Substances</i>	Y	0	0	0
PFHA	<i>Potential PFAS Handlers from NPRI</i>	Y	0	0	0
RST	<i>Retail Fuel Storage Tanks</i>	Y	0	0	0
SCT	<i>Scott's Manufacturing Directory</i>	Y	0	0	0
SPL	<i>Petroleum and Natural Gas Spill Report Directory</i>	Y	0	0	0
WDS	<i>Waste Disposal Site Inventory</i>	Y	0	0	0
WWIS	<i>Water Well Information System</i>	Y	0	0	0
Total:			2	0	2

Executive Summary: Site Report Summary - Project Property

<i>Map Key</i>	<i>DB</i>	<i>Company/Site Name</i>	<i>Address</i>	<i>Dir/Dist (m)</i>	<i>Elev diff (m)</i>	<i>Page Number</i>
1	EHS		n/a Rm Of Corman Park No. 344 SK	SW/0.0	-1.02	12
2	EHS		NE 14-036-06-03 W3M near Saskatoon SK	N/0.0	2.94	12

Executive Summary: Site Report Summary - Surrounding Properties

<i>Map Key</i>	<i>DB</i>	<i>Company/Site Name</i>	<i>Address</i>	<i>Dir/Dist (m)</i>	<i>Elev Diff (m)</i>	<i>Page Number</i>
--------------------	-----------	--------------------------	----------------	---------------------	--------------------------	------------------------

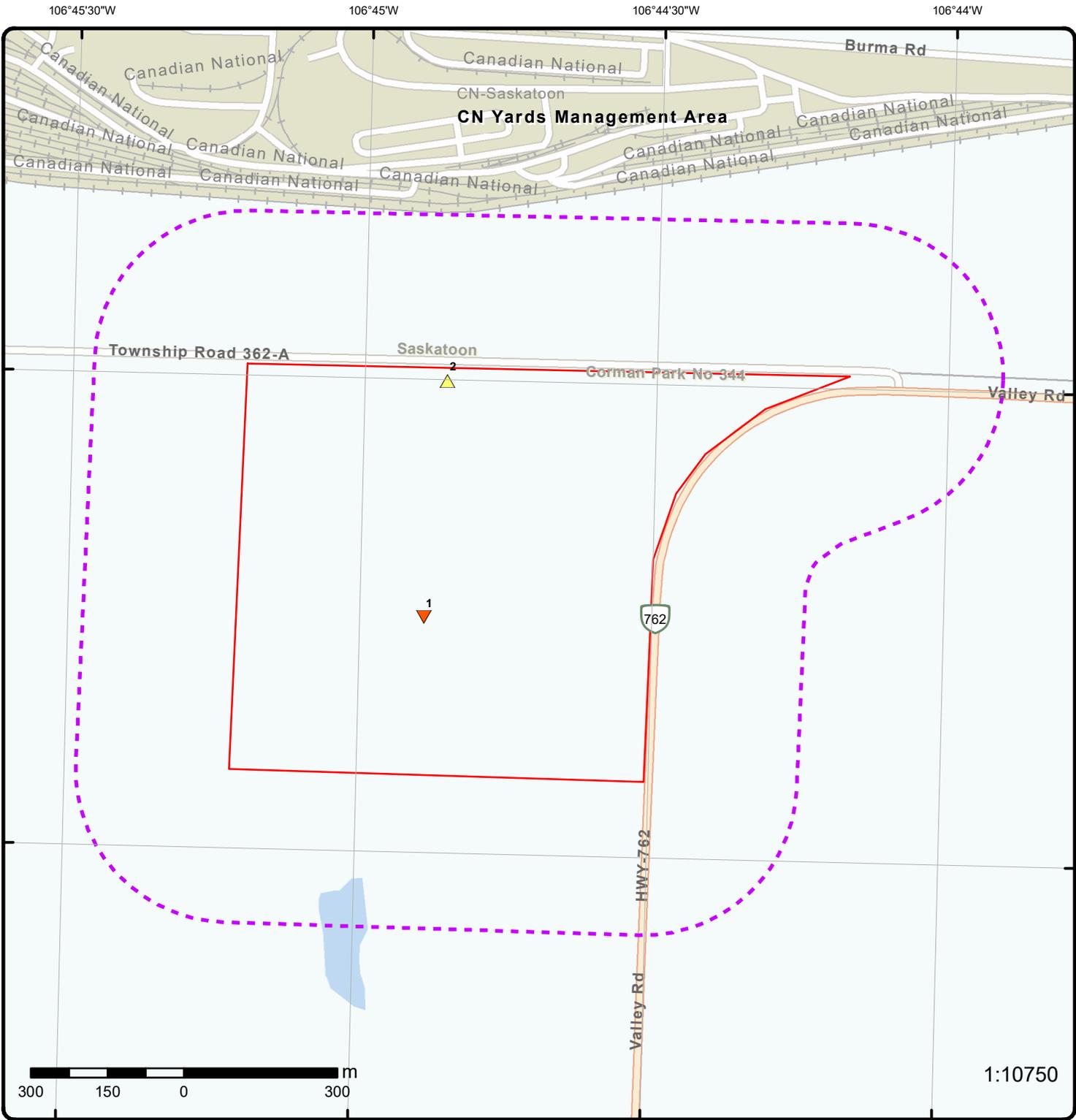
No records found in the selected databases for the surrounding properties.

Executive Summary: Summary By Data Source

EHS - ERIS Historical Searches

A search of the EHS database, dated 1999-Sep 30, 2023 has found that there are 2 EHS site(s) within approximately 0.30 kilometers of the project property.

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
	n/a Rm Of Corman Park No. 344 SK	0.0	<u>1</u>
	NE 14-036-06-03 W3M near Saskatoon SK	0.0	<u>2</u>



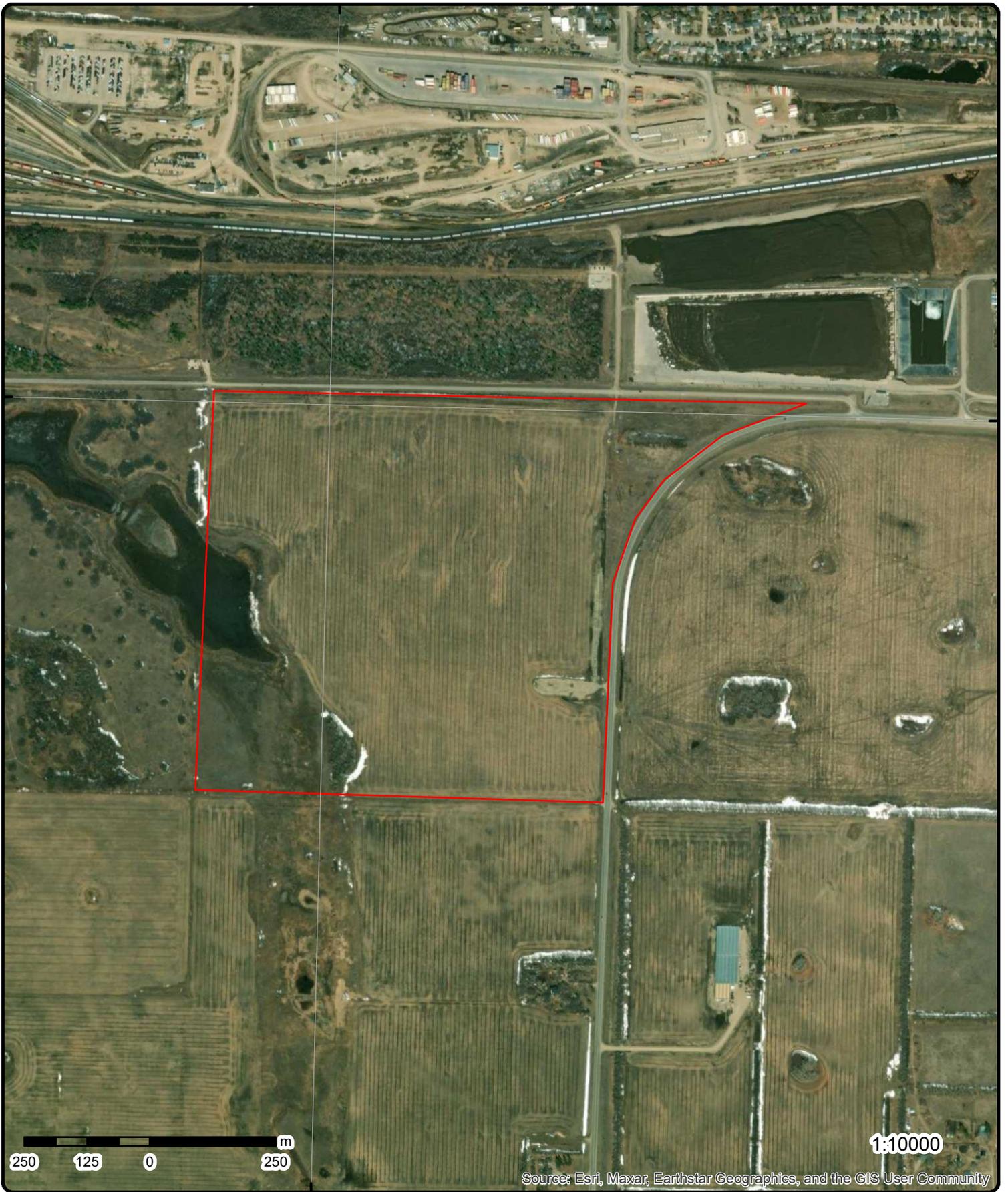
Map: 0.3 Kilometer Radius

Order Number: 23112200590

Address: Parcels A, B & C, Plan 102327162, Vanscoy, SK



Project Property	Freeways; Highways	Beach	Shopping & Sports Area
Buffer Outline	Traffic Circle; Ramp	Airport	University/College
Eris Sites with Higher Elevation	Major Arterial; Minor Arterial	Industrial Area	Cemetery; Golf Course
Eris Sites with Same Elevation	Local Road	Military Base	Parkt (National)
Eris Sites with Lower Elevation	Service Road; Traffic Circle; Ramp	Aircraft Roads	Park (City/County)
Eris Sites with Unknown Elevation	Rail	Native Reservation	Hospital



Aerial Year: 2023

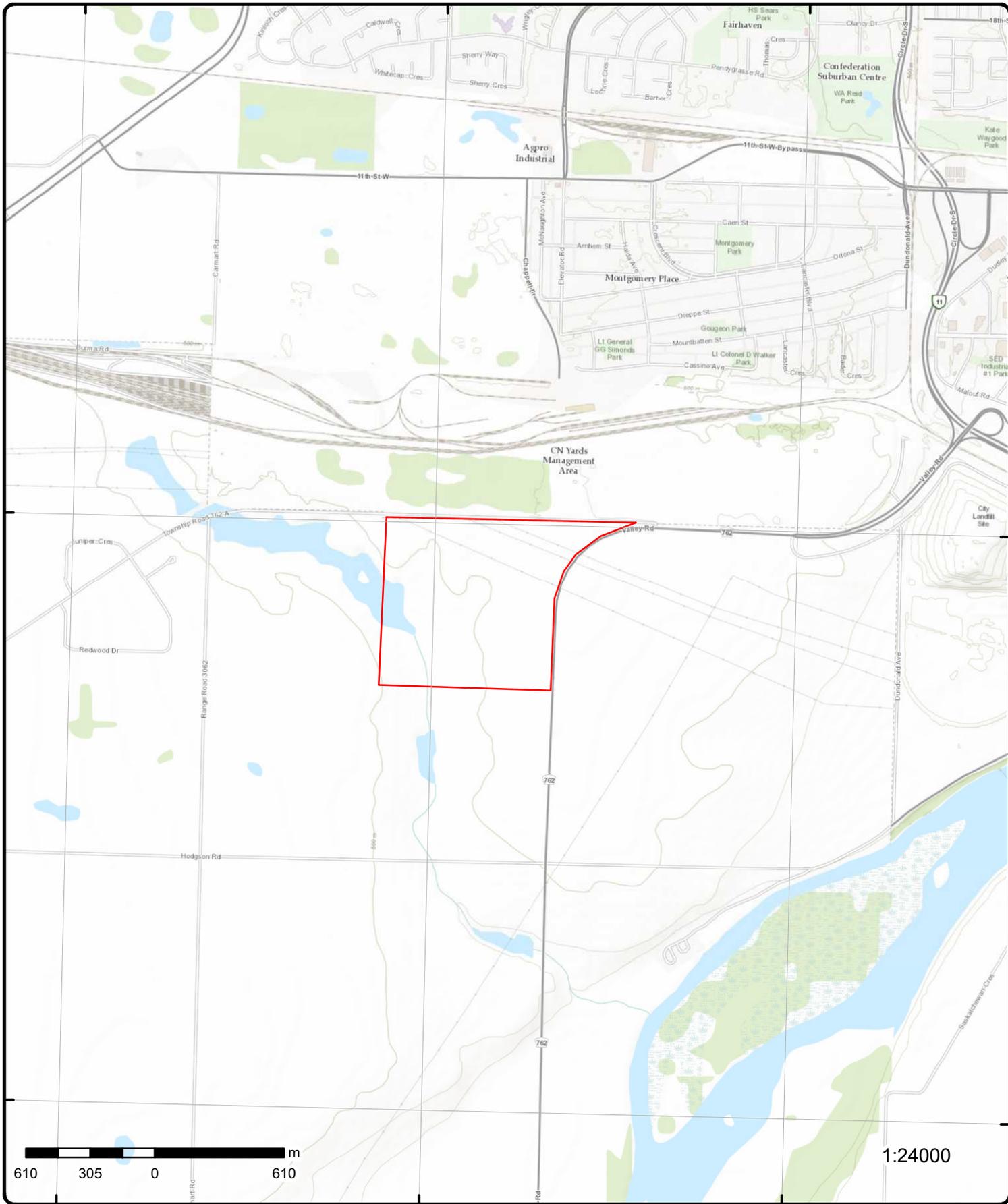
Order Number: 23112200590

Address: Parcels A, B & C, Plan 102327162, Vanscoy, SK



Source: ESRI World Imagery

© ERIS Information Limited Partnership



Topographic Map

Order Number: 23112200590

Address: Parcels A, B & C, Plan 102327162, SK



Source: ESRI World Topographic Map

© ERIS Information Limited Partnership

Detail Report

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
<p>1</p> <p>Order No: 20130527032 Status: C Report Type: Custom Report Report Date: 05-JUN-13 Date Received: 27-MAY-13 Previous Site Name: Lot/Building Size: Additional Info Ordered:</p>	<p>1 of 1</p>	<p>SW/0.0</p>	<p>498.1 / -1.02</p>	<p>n/a Rm Of Corman Park No. 344 SK</p> <p>Nearest Intersection: Municipality: RM of Corman Park No. 344 Client Prov/State: SK Search Radius (km): .5 X: -106.748142 Y: 52.095802</p>	<p>EHS</p>
<p>2</p> <p>Order No: 20090402038 Status: C Report Type: Custom Report Report Date: 4/14/2009 Date Received: 4/2/2009 Previous Site Name: Lot/Building Size: Additional Info Ordered:</p>	<p>1 of 1</p>	<p>N/0.0</p>	<p>502.0 / 2.94</p>	<p>NE 14-036-06-03 W3M near Saskatoon SK</p> <p>Nearest Intersection: Moonlake Road and Dundonald Avenue Municipality: Corman Park Client Prov/State: SK Search Radius (km): 0.25 X: -106.747631 Y: 52.099979</p>	<p>EHS</p>

Unplottable Summary

Total: 0 Unplottable sites

DB	Company Name/Site Name	Address	City	Postal
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Unplottable Report

No unplottable records were found that may be relevant for the search criteria.

Appendix: Database Descriptions

Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. **Note:** Databases denoted with " * " indicates that the database will no longer be updated. See the individual database description for more information.

Automobile Wrecking & Supplies:

Private

[AUWR](#)

This database provides an inventory of known locations that are involved in the scrap metal, automobile wrecking/recycling, and automobile parts & supplies industry. Information is provided on the company name, location and business type.

Government Publication Date: 1999-Oct 31, 2023

Dry Cleaning Facilities:

Federal

[CDRY](#)

List of dry cleaning facilities made available by Environment and Climate Change Canada. Environment and Climate Change Canada's Tetrachloroethylene (Use in Dry Cleaning and Reporting Requirements) Regulations (SOR/2003-79) are intended to reduce releases of tetrachloroethylene to the environment from dry cleaning facilities.

Government Publication Date: Jan 2004-Dec 2021

Chemical Register:

Private

[CHM](#)

This database includes a listing of locations of facilities within the Province or Territory that either manufacture and/or distributes chemicals.

Government Publication Date: 1999-Oct 31, 2023

Compressed Natural Gas Stations:

Private

[CNG](#)

Canada has a network of public access compressed natural gas (CNG) refuelling stations. These stations dispense natural gas in compressed form at 3,000 pounds per square inch (psi), the pressure which is allowed within the current Canadian codes and standards. The majority of natural gas refuelling is located at existing retail gasoline that have a separate refuelling island for natural gas. This list of stations is made available by the Canadian Natural Gas Vehicle Alliance.

Government Publication Date: Dec 2012 -Aug 2023

Convictions:

Provincial

[CONV](#)

This database summarizes the penalties and convictions handed down by the Saskatchewan courts. Companies and individuals that have been found guilty of environmental offenses under Saskatchewan's Environmental Protection Legislation are listed in this database. The records in this database are associated with the City the offense took place and are not plotted.

Government Publication Date: 1995-May 31, 2022

Wastewater Dischargers:

Provincial

[DIS](#)

This database is maintained by SERM and supplies the locations of the wastewater dischargers in the province. The geographic coordinates have been provided in DLS (Dominion Land Survey) format but do not contain offsets that are necessary to pinpoint a specific location. Therefore, locations will be accurate to the LSD or Quarter section only.

Government Publication Date: 2000-Oct 2016

Environmental Effects Monitoring:

Federal

[EEM](#)

The Environmental Effects Monitoring program assesses the effects of effluent from industrial or other sources on fish, fish habitat and human usage of fisheries resources. Since 1992, pulp and paper mills have been required to conduct EEM studies under the Pulp and Paper Effluent Regulations. This database provides information on the mill name, geographical location and sub-lethal toxicity data.

Government Publication Date: 1992-2007*

ERIS Historical Searches:

Private

[EHS](#)

ERIS has compiled a database of all environmental risk reports completed since March 1999. Available fields for this database include: site location, date of report, type of report, and search radius. As per all other databases, the ERIS database can be referenced on both the map and "Statistical Profile" page.

Government Publication Date: 1999-Sep 30, 2023

Environmental Issues Inventory System:

Federal EIIS

The Environmental Issues Inventory System was developed through the implementation of the Environmental Issues and Remediation Plan. This plan was established to determine the location and severity of contaminated sites on inhabited First Nation reserves, and where necessary, to remediate those that posed a risk to health and safety; and to prevent future environmental problems. The EIIS provides information on the reserve under investigation, inventory number, name of site, environmental issue, site action (Remediation, Site Assessment), and date investigation completed.

Government Publication Date: 1992-2001*

Environmentally Impacted Sites:

Provincial ENVI

Locations of environmentally impacted sites in Saskatchewan with confirmed substance and current status. Environmentally impacted sites are areas of land or water that contain a substance that may cause, or is causing, an adverse effect. Adverse effect means impairment of – or damage to – the environment, or harm to human health. An impacted site is usually a piece of land or a body of water that has been disturbed or affected by a chemical or substance as a result of human activities that have changed it in a way that may harm or alter the environment. Data made available by the Government of Saskatchewan.

Government Publication Date: Sep 30, 2023

Environmental Spills (Sask Spills):

Provincial ES

This database includes an inventory of known spills that occurred throughout the province and that are reported under regulation R.R.S. c. D-14, Reg. 1. Some of the geographic coordinates have been provided in DLS (Dominion Land Survey) format but do not contain offsets that are necessary to pinpoint a specific location. Therefore, locations will be accurate to the LSD or Quarter section only.

Government Publication Date: 1977-Mar 2022

Environmental Discharges (Spills):

Provincial ESDC

A list of environmental discharges (spills) in Saskatchewan reported to the Ministry of Environment since January 1, 2015. The Ministry of Environment is responsible for responding to incidents where a substance of potential concern has been discharged into the environment. The Environmental Management and Protection Act, 2010 defines this as a discharge, drainage, deposit, release or emission into the environment.

Government Publication Date: Jan 1, 2015 - Sep 2023

Federal Convictions:

Federal FCON

Environment Canada maintains a database referred to as the "Environmental Registry" that details prosecutions under the Canadian Environmental Protection Act (CEPA) and the Fisheries Act (FA). Information is provided on the company name, location, charge date, offence and penalty.

Government Publication Date: 1988-Jun 2007*

Contaminated Sites on Federal Land:

Federal FCS

The Federal Contaminated Sites Inventory includes information on known federal contaminated sites under the custodianship of departments, agencies and consolidated Crown corporations as well as those that are being or have been investigated to determine whether they have contamination arising from past use that could pose a risk to human health or the environment. The inventory also includes non-federal contaminated sites for which the Government of Canada has accepted some or all financial responsibility. It does not include sites where contamination has been caused by, and which are under the control of, enterprise Crown corporations, private individuals, firms or other levels of government. Includes fire training sites and sites at which Per- and Polyfluoroalkyl Substances (PFAS) are a concern.

Government Publication Date: Jun 2000-Sep 2023

Federal Identification Registry for Storage Tank Systems (FIRSTS):

Federal FRST

A list of federally regulated Storage tanks from the Federal Identification Registry for Storage Tank Systems (FIRSTS). FIRSTS is Environment and Climate Change Canada's database of storage tank systems subject to the Storage Tank for Petroleum Products and Allied Petroleum Products Regulations. The main objective of the Regulations is to prevent soil and groundwater contamination from storage tank systems located on federal and aboriginal lands. Storage tank systems that do not have a valid identification number displayed in a readily visible location on or near the storage tank system may be refused product delivery.

Government Publication Date: Oct 31, 2021

Greenhouse Gas Emissions from Large Facilities:

Federal GHG

List of greenhouse gas emissions from large facilities made available by Environment Canada. Greenhouse gas emissions in kilotonnes of carbon dioxide equivalents (kt CO2 eq).

Government Publication Date: 2013-Dec 2020

Hazardous Material Storage:

Provincial HMS

The Saskatchewan Hazardous Materials Storage Program collects this information. With the approval of the Ministry of Environment, hazardous substances and waste dangerous goods can be stored in underground storage tanks, above-ground storage tanks, outdoor storage site and warehouse/indoor storage sites. A hazardous substance/waste is defined as a substance/waste that because of its quantity, concentration or physical, chemical or infectious characteristics, either individually or in combination with other substances, is an existing or potential threat to the environment or human health. This inventory includes information on operator ID, operation name, address, legal land description and operation status.

Government Publication Date: 1980 - Aug 31, 2023

Horizontal Wells:Provincial **HORW**

Saskatchewan Industry and Resources maintains an inventory of horizontal wells drilled in the province. The database provides detailed information in regard to well name, owner name, status, license no., initial and final drilling date, well type, horizon name and pool name.

Government Publication Date: Aug 1987-Jun 2007*

Hazardous Substance Storage Sites:Provincial **HSSS**

This is an inventory of hazardous substance storage sites that must be registered under regulation 25/92, S. 3. The database is a catalog of information on the location of outdoor and warehouse sites, housing hazardous products used by companies in the agricultural, chemical, farming, warehousing, trucking, waste recycling, distribution, service stations/repair shops, bulk stations, autobody, mining, and manufacturing industry. Information is provided on the type of product(s) stored, application date, company name, location, and the type of business service operated on site. For current information, please refer to the HMS database.

Government Publication Date: 1989-Feb 2006*

Hazardous Substance Storage Tanks:Provincial **HSST**

This is an inventory of hazardous substance storage tanks that must be registered under regulation 25/92, S. 3. The database is a compilation of information on aboveground and underground storage tanks that hold substances such as gasoline, diesel, chemicals, heating oil, kerosene and alcohol blended products. Information is provided on the contents and capacity of the tank, company name, location, and the type of business service operated on site. For current information, please refer to the HMS database.

Government Publication Date: 1989-Feb 2006*

Indian & Northern Affairs Fuel Tanks:Federal **IAFT**

The Department of Indian & Northern Affairs Canada (INAC) maintains an inventory of aboveground & underground fuel storage tanks located on both federal and crown land. Our inventory provides information on the reserve name, location, facility type, site/facility name, tank type, material & ID number, tank contents & capacity, and date of tank installation.

Government Publication Date: 1950-Aug 2003*

Intensive Livestock Operation Approvals:Provincial **ILOA**

Under the Agricultural Operations Act, certain types of intensive livestock operations are required to obtain plan approval. Approvals are subject to the size of operation and their proximity to a water source. Those requiring plan approvals must submit documentation regarding manure storage, utilization of manure nutrients and disposal method for dead animals. Sask. Agriculture, Food and Rural Revitalization maintains a database of approvals issued over the last three decades, for operations that may or may not be currently operational. An ILO plan approval may have been issued to an intensive livestock operation but never been constructed, been approved and not constructed yet, or it may have been constructed and later discontinued. There is no distinction in the database between operational and non-operational sites. Please note that the value "Sum of Animal Units" is a calculation used to compare different types of livestock operations (each type of animal is rated on a scale). Geographic coordinates were provided in DLS (Dominion Land Survey) format but do not contain offsets that are necessary to pinpoint a specific location. Therefore, locations will be accurate to the Quarter section only.

Government Publication Date: 1971-Jul 2023

Canadian Mine Locations:Private **MINE**

This information is collected from the Canadian & American Mines Handbook. The Mines database is a national database that provides over 290 listings on mines (listed as public companies) dealing primarily with precious metals and hard rocks. Listed are mines that are currently in operation, closed, suspended, or are still being developed (advanced projects). Their locations are provided as geographic coordinates (x, y and/or longitude, latitude). As of 2002, data pertaining to Canadian smelters and refineries has been appended to this database.

Government Publication Date: 1998-2009*

Mineral Occurrences:Provincial **MNR**

This inventory of mineral occurrences in the "Saskatchewan Mineral Deposit Index" (SMDI) includes metallic, industrial mineral, coal deposits, uranium and other known occurrences. Information within the data pertains to the SMDI No., showing name, location, commodity, deposit type, status, classification and geographical reference data. The data is sourced from the Saskatchewan Geological Survey and provided by the Mining and Petroleum GeoAtlas of the Saskatchewan Ministry of Energy and Resources, Government of Saskatchewan. For additional information regarding geological data and exploration history, please contact the source office and quote the SMDI No.

Government Publication Date: 1981-Nov 2022

National Analysis of Trends in Emergencies System (NATES):Federal **NATE**

In 1974 Environment Canada established the National Analysis of Trends in Emergencies System (NATES) database, for the voluntary reporting of significant spill incidents. The data was to be used to assist in directing the work of the emergencies program. NATES ran from 1974 to 1994. Extensive information is available within this database including company names, place where the spill occurred, date of spill, cause, reason and source of spill, damage incurred, and amount, concentration, and volume of materials released.

Government Publication Date: 1974-1994*

National Defense & Canadian Forces Fuel Tanks:

Federal

[NDFT](#)

The Department of National Defense and the Canadian Forces maintains an inventory of all aboveground & underground fuel storage tanks located on DND lands. Our inventory provides information on the base name, location, tank type & capacity, tank contents, tank class, date of tank installation, date tank last used, and status of tank as of May 2001. This database will no longer be updated due to the new National Security protocols which have prohibited any release of this database.

Government Publication Date: Up to May 2001*

National Defense & Canadian Forces Spills:

Federal

[NDSP](#)

The Department of National Defense and the Canadian Forces maintains an inventory of spills to land and water. All spill sites have been classified under the "Transportation of Dangerous Goods Act - 1992". Our inventory provides information on the facility name, location, spill ID #, spill date, type of spill, as well as the quantity of substance spilled & recovered.

Government Publication Date: Mar 1999-Oct 2022

National Defence & Canadian Forces Waste Disposal Sites:

Federal

[NDWD](#)

The Department of National Defence and the Canadian Forces maintains an inventory of waste disposal sites located on DND lands. Where available, our inventory provides information on the base name, location, type of waste received, area of site, depth of site, year site opened/closed and status.

Government Publication Date: 2001-Apr 2007*

National Energy Board Pipeline Incidents:

Federal

[NEBI](#)

Locations of pipeline incidents from 2008 to present, made available by the Canada Energy Regulator (CER) - previously the National Energy Board (NEB). Includes incidents reported under the Onshore Pipeline Regulations and the Processing Plant Regulations related to pipelines under federal jurisdiction, does not include incident data related to pipelines under provincial or territorial jurisdiction.

Government Publication Date: 2008-Jun 30, 2021

National Energy Board Wells:

Federal

[NEBP](#)

The NEBW database contains information on onshore & offshore oil and gas wells that are outside provincial jurisdiction(s) and are thereby regulated by the National Energy Board. Data is provided regarding the operator, well name, well ID No./UWI, status, classification, well depth, spud and release date.

Government Publication Date: 1920-Feb 2003*

National Environmental Emergencies System (NEES):

Federal

[NEES](#)

In 2000, the Emergencies program implemented NEES, a reporting system for spills of hazardous substances. For the most part, this system only captured data from the Atlantic Provinces, some from Quebec and Ontario and a portion from British Columbia. Data for Alberta, Saskatchewan, Manitoba and the Territories was not captured. However, NEES is also a repository for previous Environment Canada spill datasets. NEES is composed of the historic datasets ' or Trends ' which dates from approximately 1974 to present. NEES Trends is a compilation of historic databases, which were merged and includes data from NATES (National Analysis of Trends in Emergencies System), ARTS (Atlantic Regional Trends System), and NEES. In 2001, the Emergencies Program determined that variations in reporting regimes and requirements between federal and provincial agencies made national spill reporting and trend analysis difficult to achieve. As a consequence, the department has focused efforts on capturing data on spills of substances which fall under its legislative authority only (CEPA and FA). As such, the NEES database will be decommissioned in December 2004.

Government Publication Date: 1974-2003*

National PCB Inventory:

Federal

[NPCB](#)

Environment Canada's National PCB inventory includes information on in-use PCB containing equipment in Canada including federal, provincial and private facilities. Federal out-of-service PCB containing equipment and PCB waste owned by the federal government or by federally regulated industries such as airlines, railway companies, broadcasting companies, telephone and telecommunications companies, pipeline companies, etc. are also listed. Although it is not Environment Canada's mandate to collect data on non-federal PCB waste, the National PCB inventory includes some information on provincial and private PCB waste and storage sites. Some addresses provided may be Head Office addresses and are not necessarily the location of where the waste is being used or stored.

Government Publication Date: 1988-2008*

National Pollutant Release Inventory 1993-2020:

Federal

[NPR2](#)

The National Pollutant Release Inventory (NPRI) is Canada's public inventory of pollutant releases (to air, water and land), disposals, and transfers for recycling. The inventory, managed by Environment and Climate Change Canada, tracks over 300 substances. Under the authority of the Canadian Environmental Protection Act (CEPA), owners or operators of facilities that meet published reporting requirements are required to report to the NPRI.

Government Publication Date: Sep 2020

National Pollutant Release Inventory - Historic:

Federal

[NPRI](#)

Environment Canada has defined the National Pollutant Release Inventory ("NPRI") as a federal government initiative designed to collect comprehensive national data regarding releases to air, water, or land, and waste transfers for recycling for more than 300 listed substances. This data holds historic records; current records are found in NPR2.

Government Publication Date: 1993-May 2017

Oil & Gas Facilities:

Provincial [OGF](#)

A list of oil and gas facilities licensed in Saskatchewan made available by the government of Saskatchewan. Includes new and active facilities, as well as those whose operational status is suspended.

Government Publication Date: Aug 2023

Upstream Oil & Gas Site Spills:

Provincial [OGS](#)

This database contains incidents occur in the field that are notified/reported by upstream oil and gas operators to the Government of Saskatchewan's Ministry of Energy and Resources.

Government Publication Date: 1990-Aug 31, 2023

Oil & Gas Wells:

Provincial [OGW](#)

Well data includes well licences, drilling information, completion information, core analysis, drill stem tests, coordinate information, logs, casing details, etc. The data includes wells drilled under the Oil and Gas Conservation Regulations, 1985 as well as shallow structure test holes. The Oil and Gas Wells database is maintained by the Government of Saskatchewan.

Government Publication Date: Jun 30, 2023

Oil and Gas Wells:

Private [OGWW](#)

The Nickle's Energy Group (publisher of the Daily Oil Bulletin) collects information on drilling activity including operator and well statistics. The well information database includes name, location, class, status and depth. The main Nickle's database is updated on a daily basis, however, this database is updated on a monthly basis. More information is available at www.nickles.com.

Government Publication Date: 1988-Aug 31, 2023

Canadian Pulp and Paper:

Private [PAP](#)

This information is part of the Pulp and Paper Canada Directory. The Directory provides a comprehensive listing of the locations of pulp and paper mills and the products that they produce.

Government Publication Date: 1999, 2002, 2004, 2005, 2009-2014

Parks Canada Fuel Storage Tanks:

Federal [PCFT](#)

Canadian Heritage maintains an inventory of known fuel storage tanks operated by Parks Canada, in both National Parks and at National Historic Sites. The database details information on site name, location, tank install/removal date, capacity, fuel type, facility type, tank design and owner/operator.

Government Publication Date: 1920-Jan 2005*

Pesticide Register:

Provincial [PES](#)

Saskatchewan Agriculture and Food maintains a database of all vendors of registered pesticides.

Government Publication Date: 1998-Apr 2010

NPRI Reporters - PFAS Substances:

Federal [PFCH](#)

The National Pollutant Release Inventory (NPRI) is Canada's public inventory of releases, disposals, and transfers, tracking over 320 pollutants. Per- and polyfluoroalkyl substances (PFAS) are a group of over 4,700 human-made substances for which adverse environmental and health effects have been observed. This listing of PFAS substance reporters includes those NPRI facilities that reported substances that are found in either: a) the Comprehensive Global Database of PFASs compiled by the Organisation for Economic Co-operation and Development (OECD), b) the US Environmental Protection Agency (US EPA) Master List of PFAS Substances, c) the US EPA list of PFAS chemicals without explicit structures, or d) the US EPA list of PFAS structures (encompassing the largest set of structures having sufficient levels of fluorination to potentially impart PFAS-type properties).

Government Publication Date: Sep 2020

Potential PFAS Handlers from NPRI:

Federal [PFHA](#)

The National Pollutant Release Inventory (NPRI) is Canada's public inventory of releases, disposals, and transfers, tracking over 320 pollutants. Per- and polyfluoroalkyl substances (PFAS) are a group of over 4,700 human-made substances for which adverse environmental and health effects have been observed. This list of potential PFAS handlers includes those NPRI facilities that reported business activity (NAICS code) included in the US Environmental Protection Agency (US EPA) list of Potential PFAS-Handling Industry Sectors, further described as operating in industry sectors where literature reviews indicate that PFAS may be handled and/or released. Inclusion of a facility in this listing does not indicate that PFAS are being manufactured, processed, used, or released by the facility - these are facilities that potentially handle PFAS based on their industrial profile.

Government Publication Date: Sep 2020

Retail Fuel Storage Tanks:

Private [RST](#)

This database includes an inventory of retail fuel outlet locations (including marinas) that have on their property gasoline, oil, waste oil, natural gas and / or propane storage tanks.

Government Publication Date: 1999-Oct 31, 2023

Scott's Manufacturing Directory:

Private

[SCT](#)

Scott's Directories is a data bank containing information on over 200,000 manufacturers across Canada. Even though Scott's listings are voluntary, it is the most comprehensive database of Canadian manufacturers available. Information concerning a company's address, plant size, and main products are included in this database.

Government Publication Date: 1992-Mar 2011*

Petroleum and Natural Gas Spill Report Directory:

Provincial

[SPL](#)

List of spill locations and links to detail reports for spills data gathered under the reporting requirements of the Oil and Gas Conservation Regulations, 1985 and 2012. This list does not contain records of spills, incidents, or releases reported under other legislation or regulations. Made available by the Petroleum and Natural Gas Division of the Ministry of the Economy. Upstream oil and gas operators are required to notify and report any incidents that occur in the field to the Government of Saskatchewan's Ministry of Energy and Resources; incidents that have occurred since November 4, 2015 are reported in Upstream Oil & Gas Site Spills.

Government Publication Date: Feb 1961-Nov 4, 2015*

Waste Disposal Site Inventory:

Provincial

[WDS](#)

This database contains data of the Provincial inventory of regulated and monitored Solid Waste sites (landfills, industrial landfills, transfer stations, industrial landfarms and unauthorized sites), which includes information on current Status – closed/open/proposed, Permit Expiry Date, Permit Number, Recent Inspection Date, Site Name, Site Type – industrial landfarm/industrial landfill/landfill/transfer station/unauthorized. The data is provided by Saskatchewan Ministry of Environment.

Government Publication Date: 2000-Sep 2023

Water Well Information System:

Provincial

[WWIS](#)

This database was collected from Saskatchewan Water, Water Resource Administration and contains over 100,000 records. The geographic coordinates have been provided in DLS (Dominion Land Survey) format but do not contain offsets that are necessary to pinpoint a specific location. Therefore, locations will be accurate to the LSD or Quarter section only.

Government Publication Date: Sep 30, 2023

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

APPENDIX G

Photographs



Photograph No. 21026-01

Panoramic photograph of the site, taken proximate the northeast corner, looking south to west



Photograph No. 21026-02

Panoramic photograph of the site, taken proximate the southeast corner, looking west to north.



Photograph No. 21026-03

Panoramic photograph of the site, taken proximate the southwest corner, looking north to east.



Photograph No. 21026-04

Panoramic photograph of the site, taken proximate the northwest corner, looking east to south.



Photograph No. 21026-05

Aerial photograph of the northeast soil stockpile located on Parcel A..



Photograph No. 21026-06

Aerial photograph of four grain bins located proximate parcel A, taken proximate the northeast corner of the site.



Photograph No. 21026-07

Aerial photograph of soil stockpile (built-up area) located proximate the east boundary of the site, taken proximate the northeast corner of the site.



Photograph No. 21026-08

Panoramic photograph of soil stockpile (built-up area) located proximate the east boundary of the site, taken proximate the east boundary of the site looking south.



Photograph No. 21026-09

Plastic Pails filled with apparent precipitation and leaf litter, stored in several of the wood grain bins located on Parcel A.



Photograph No. 21026-10

At least twenty (20) 20 L metal pails stored in the bluff/treed area located on Parcel A.



Photograph No. 21026-11

Sask Water Raw water Marker located proximate the south boundary of the site.



Photograph No. 21026-12

Buried Natural Gas line marker located proximate the southwest corner of the site.

APPENDIX C

Traffic Impact Assessment

January 19, 2024

Overpass Farm Inc.
Comp. 17, Site 414 RR4
Saskatoon, Saskatchewan S7K 3J7

Attention: Mr. Laurie Bradley

Re: Valley Road Business Park Transportation Impact Assessment – Draft

Dear Mr. Laurie Bradley:

KGS Group is pleased to submit the following letter report which summarizes the results of the Valley Road Business Park Transportation Impact Assessment. The purpose of this assessment is to evaluate the potential impact of the proposed development on the existing road network and to recommend any required mitigation measures.

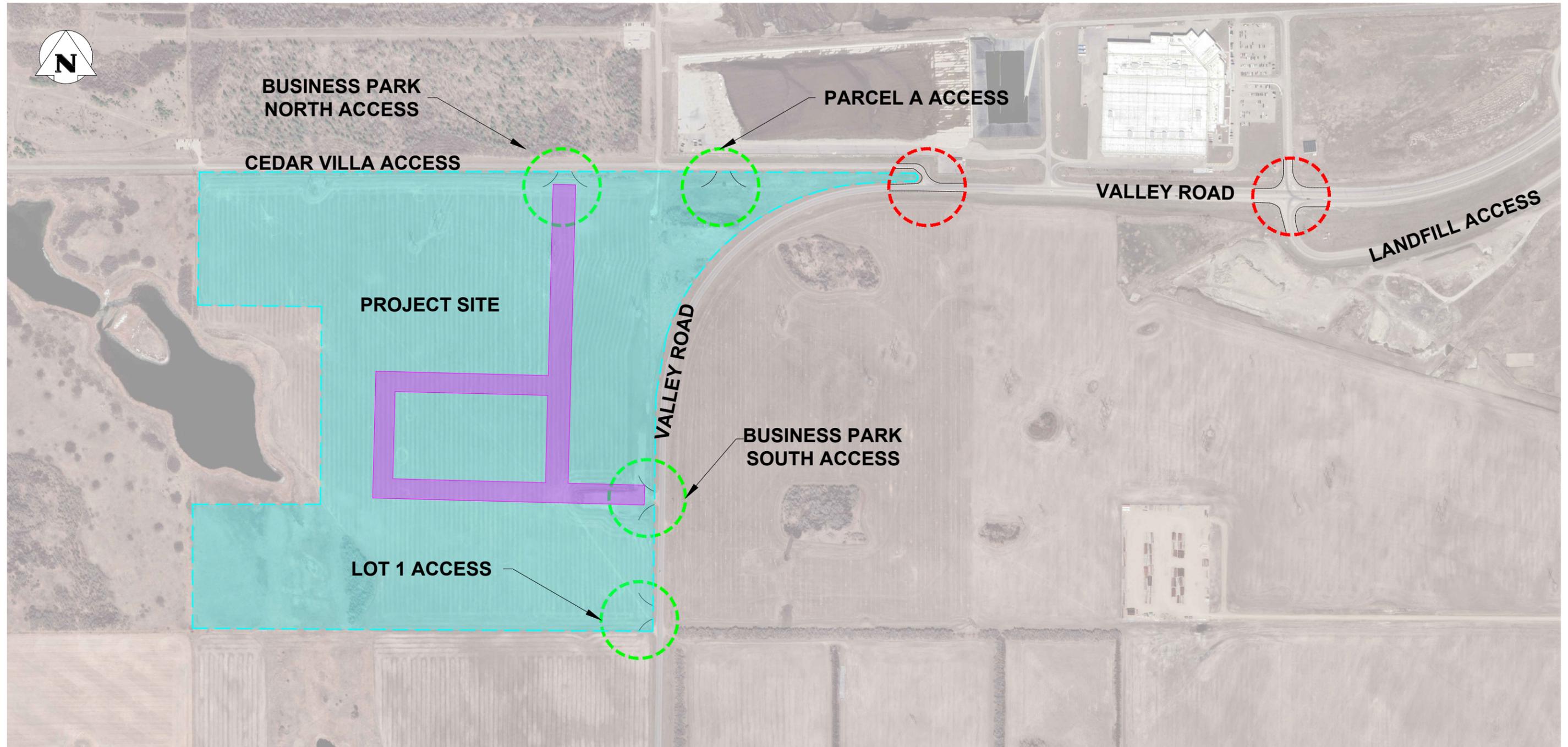
INTRODUCTION

KGS has been commissioned by Overpass Farm Inc. to complete a Transportation Impact Assessment (TIA) for a proposed 54-hectare (ha) Research/Business Park along Valley Road. The objective of this TIA is to assess the transportation infrastructure needs surrounding the proposed development, estimate the impacts that the change in traffic volumes will have on the adjacent transportation system, and recommend improvements to meet the demand.

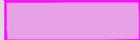
The proposed development is located in the southwest end of Saskatoon and will be primarily accessed via Valley Road. Valley Road is also the source of primary access to the Saskatoon Power Management, the Saskatoon Regional Waste Management, and the Saskatoon Civic Operations Centre facilities which are located just one kilometer east of the proposed development location.

The study area for this TIA extends from the Valley Road and East Access Road intersection (Civic Operations Centre and Landfill access road) to 1.5km west of the intersection. The proposed development includes a new proposed intersection along Valley Road, referred within the TIA as the Business Park South Access.

Figure 1 illustrates the project location.



LEGEND:

	PROJECT SITE
	STUDY OF EXISTING INTERSECTION
	STUDY OF PROPOSED INTERSECTION
	PROPOSED INTERNAL ROAD NETWORK

KGS GROUP	OVERPASS FARMS INC.	
PROJECT: VALLEY ROAD BUSINESS PLAN TRAFFIC IMPACT ASSESSMENT		
DWG. DESCRIPTION: STUDY AREA		
DATE: JANUARY 2024	FIG. NO. FIGURE 1	REV. 0

Scope

The purpose of this TIA is to assess the impact of the proposed development on the surrounding transportation network. The principal objectives of this report include:

- Examine existing traffic volume conditions;
- Determine the new traffic volume generated by the development;
- Distribute the new trips to/from potential origin and destination areas;
- Assign the new traffic volumes to the surrounding street system at existing and proposed access points;
- Evaluate existing and projected Level of Service (LOS) for study intersections;
- Identify roadway geometry and intersection control improvements to provide an acceptable level of service;
- Identify any potential safety improvements that are triggered by the change in traffic patterns or collision history; and,
- Recommend modifications that may be needed at the study intersections to mitigate the impacts of the proposed development.

EXISTING CONDITIONS

Development

The proposed development is located southwest of Saskatoon. The lands surrounding the proposed development are mostly undeveloped fields (existing farming land use) with a forested area to the north, a marsh conservation area to the west, and a light industrial area to the northeast.

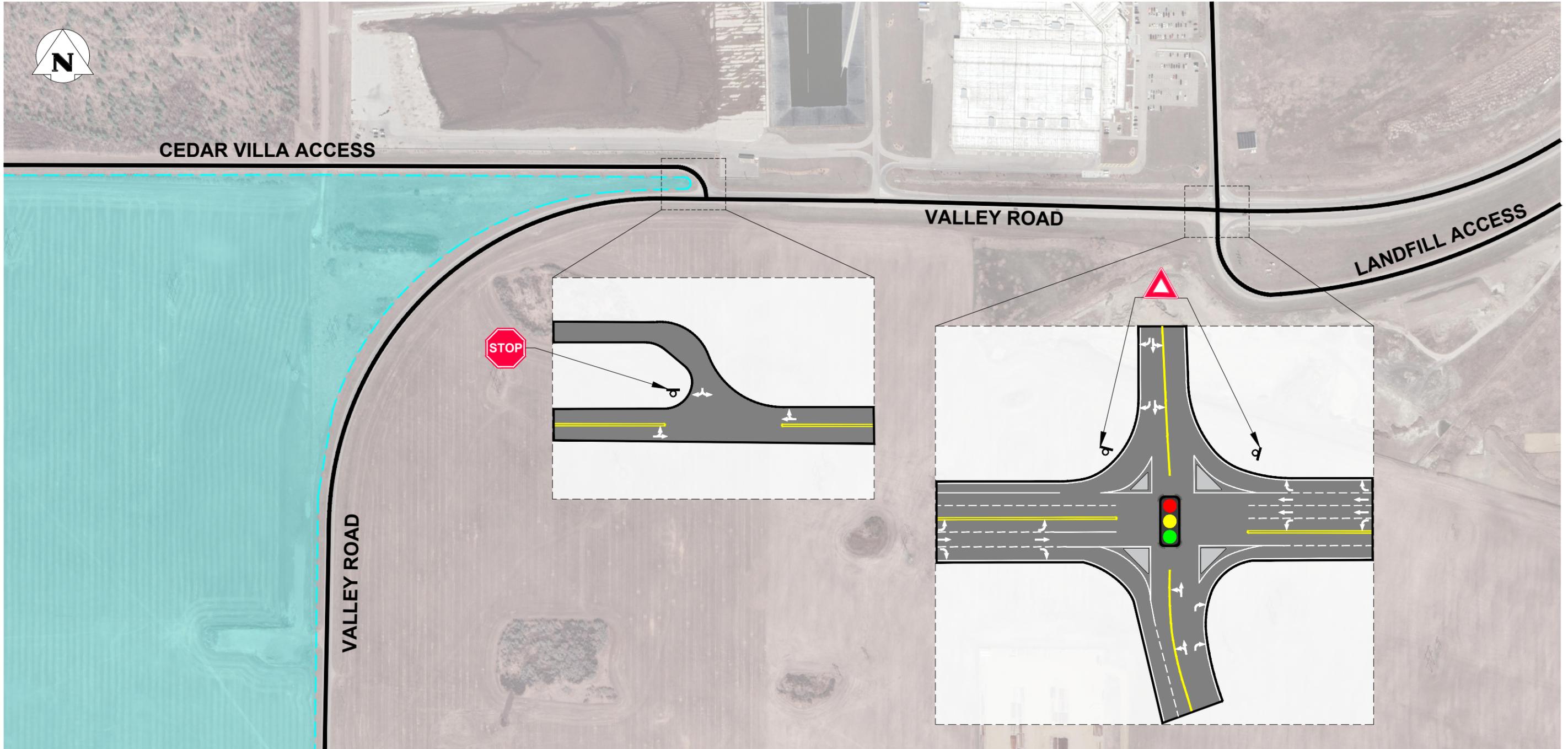
Intersections

Valley Road (Highway 762) is a paved, two-lane, undivided highway with a posted speed limit of 60 km/h, to the east of the Cedar Villa Access Road, and increases to 90 km/h adjacent to the proposed development site. The roadway converts into a four-lane, divided road approximately 1.3 km before its termination at the Circle Drive interchange. The two existing study intersections along Valley Road have the following characteristics:

- **East Access Road (Landfill Access Road) Intersection** – is a four-legged intersection with traffic signals providing access to the Saskatoon Civic Operations Centre to the north and Saskatoon Regional Waste Management Centre and the Queen Elizabeth Power Station to the south. Valley Road has dedicated right- and left-turn lanes in the eastbound and westbound directions. The northbound and southbound approaches have channelized right-turn lanes. The intersection is served by corridor lighting along Valley Road and streetlights on East Access Road.

- **Cedar Villa Access Road (Township Road 362A)** – is a stop-controlled T-intersection which provides access to Cedar Villa Estates. There are no turning lanes at this intersection. Overhead streetlights are installed near the road but are located within the Civic Operations Centre site. There is no delineation lighting or area lighting at the Valley Road and Cedar Villas Access Road intersection itself.

Figure 2 shows the existing lane configuration at the two intersections.



LEGEND:

-  PROJECT SITE
-  LANE ARRANGEMENTS
-  STOP CONTROL SIGN (RA-1)
-  YIELD SIGN (RA-2)

KGS
GROUP

OVERPASS FARMS INC.

PROJECT:
VALLEY ROAD BUSINESS PLAN
TRAFFIC IMPACT ASSESSMENT

DWG. DESCRIPTION:
EXISTING LANE CONFIGURATION

DATE: JANUARY 2024	FIG. NO. FIGURE 2	REV. 0
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Traffic Volumes

The existing traffic volumes were collected in November 2023. The traffic volume data was collected by turning movement and classified into cars, trucks, and buses. The turning movement counts captured the weekday morning (5:30 a.m. to 10:30 a.m.) and the weekday afternoon (2:00 p.m. to 7:00 p.m.) to identify the morning and afternoon peak hours. The traffic data was collected by turning movement and classified into cars, trucks, and buses. **Table 1** summarizes the peak hours for the two study intersections.

TABLE 1: COLLECTED PEAK HOURS

Intersection	AM Peak Hour	PM Peak Hour
Valley Rd/ Cedar Villa Access	8:00-9:00	4:00-5:00
Valley Rd/ Landfill Access Rd	7:30-8:30	4:00-5:00

Traffic volumes along Valley Road show that the peak hour volumes correspond to typical commute hours. The morning and afternoon peak hour travel patterns are consistent with commuters commuting to work in the morning and returning in the afternoon.

The Cedar Villa Access is primarily used by residents to commute to work, and the peak hour aligns with the typical morning working hours between 8:00-9:00 am, while the landfill access intersection has a slightly earlier peak hour due to the early operational hours of the Civic Operations Centre and the Regional Waste Management Centre.

Figure 3 summarizes the total vehicular turning movements (rounded to the nearest five vehicles) recorded at the study intersections during both the morning and afternoon peak hours.

TRAFFIC ANALYSIS

The study area was analyzed under three scenarios to identify how vehicles move through the study intersections. The scenarios analyzed include:

- Existing Traffic Volumes– How the intersections operate today.
- 2038 Background Traffic Volumes – How the intersections would operate in the future **without** the proposed development.
- 2038 Total Traffic Volumes – How the intersections would operate in the future **with** the proposed Business Park.

Appendix D presents the background and total traffic volume analyses from the development of the Business Park.

Analysis Assumptions

The study area was analyzed using the existing roadway geometry and traffic controls to identify how vehicles move through the study intersections. Synchro 11 was used to assess the study intersections during the weekday morning and weekday afternoon peak hours when Valley Road is busiest.

Synchro, which is based on the methodology outlined in the Highway Capacity Manual, produces two key measures to determine the operations of an intersection. The first is the level of service (LOS), which is based on the average delay per vehicle, and the second is the volume-to-capacity (v/c) ratio, which indicates the traffic volume at an intersection or for a traffic movement in relation to the capacity available. The LOS criteria for signalized and unsignalized (stop-controlled) intersections are presented in Table 2. A LOS A indicates good traffic flow with minimal delay and LOS F indicates congested traffic operations with considerable delay (i.e. stop and go conditions). The V/C ratio identifies the intersection's overall or individual movement's ability to accommodate fluctuations in traffic flow. In a rural environment, a system that is reaching the limits of its operational effectiveness will experience ratios greater than 80%.

SimTraffic, a traffic simulation software program included in the Synchro Studio 11 suite, was used to perform a queuing analysis. SimTraffic can be used to help predict the length of vehicle queues that will form at an intersection. The results for the SimTraffic analysis were based on an average of ten 60-minute simulation runs for all scenarios. The queuing analyses were conducted for the 95th percentile queues. The 95th percentile queue length provides the queue length that would only be exceeded five percent of the time. The 95th percentile queue represents the worst-case scenario, and they are used as an indicator to determine where further examination of storage length is required.

TABLE 2: LEVEL OF SERVICE CRITERIA

Level-of-Service	Signalized Intersection	Unsignalized Intersection
A	≤ 10	≤ 10
B	>10 – 20	>10 – 15
C	> 20 – 35	> 15 – 25
D	> 35 – 55	> 25 – 35
E	> 55 – 80	> 35 – 50
F	> 80	> 50

Source: Highway Capacity Manual

2023 Existing Traffic Volumes

Both study intersections were analyzed using existing geometry, traffic control, and 2023 peak hour traffic volumes. The results of the existing operations of the Valley Road intersection at the Cedar Villa Access and at the Landfill Access Road are summarized in **Table 3 and Table 4** respectively.

The capacity analysis results show that the Valley Road and Cedar Villa Access Road operates well overall (LOS A). With individual movements operating at LOS B or better during peak hours. Vehicles making a southbound left-turn at the Valley Road and Cedar Villa Access intersection experienced an average delay per vehicle of 10 seconds during the peak hours due to the higher volume of eastbound and westbound traffic volumes on Valley Road.

The capacity analysis for the Valley Road and Landfill Access Road intersection operates well overall (LOS A) during both peak hours with individual movements operating at LOS B or better. The northbound and southbound through movements experience the highest amount of delay, with an average delay per vehicle of 16 seconds (LOS B) during the morning peak hour as shown in **Table 4**.

**TABLE 3: VALLEY RD AND CEDAR VILLA ACCESS
2023 INTERSECTION OPERATIONS**

Peak Hour	Measure	Eastbound			Westbound			Northbound			Southbound			
		L	T	R	L	T	R	L	T	R	L	T	R	
AM Peak Hour	LOS	A				A						A		
	Delay (s)	0				0						10		
	V/C ratio	--				--						0.02		
	Queue (m)	0				--						11		
	Overall LOS	A (1 s)												
PM Peak Hour	LOS	A				A						B		
	Delay (s)	0				0						10		
	V/C ratio	--				--						0.05		
	Queue (m)	--				--						12		
	Overall LOS	A (1 s)												

**TABLE 4: VALLEY RD AND LANDFILL ACCESS RD
2023 INTERSECTION OPERATIONS**

Peak Hour	Measure	Eastbound			Westbound			Northbound			Southbound			
		L	T	R	L	T	R	L	T	R	L	T	R	
AM Peak Hour	LOS	--	B	A	A	A	A	B	A			B		
	Delay (s)	--	11	0	5	4	2	16	0			16		
	V/C ratio	--	0.19	--	0.07	0.05	0.05	0.02	0.01			0.08		
	Queue (m)	--	25	--	14	17	--	10	--			21		
	Overall LOS	A (8 s)												
PM Peak Hour	LOS	--	A	A	A	A	A	B	A			B		
	Delay (s)	--	10	0	5	6	2	14	0			14		
	V/C ratio	--	0.19	--	0.04	0.13	0.03	0.03	0.07			0.11		
	Queue (m)	--	22	--	11	22	--	9	--			22		
	Overall LOS	A (7 s)												

2038 Background Traffic Volumes

Background conditions provide a point of reference to understand the relative impact of a development on the transportation network. Background conditions refer to the transportation network and how it is expected to operate, regardless of the proposed development.

2038 BACKGROUND TRAFFIC FORECAST

The future background traffic volume projections were developed for the 2038 horizon, when the proposed business park is expected to reach full build-out.

The Ministry of Highways' background traffic volume growth rates consider open highway conditions and are largely impacted by community growth applied to sections of highways within or adjacent to municipalities. The Ministry's 15-year growth rate for Valley Road is 1.40, which represents a 40% increase in traffic volumes over the next 15 years.

The 2038 background traffic volumes were estimated by applying the 15-year growth rate of 1.40 to the existing 2023 traffic volumes. The estimated 2038 peak hour background traffic volumes are illustrated in **Figure 4**.

2038 BACKGROUND TRAFFIC OPERATIONS

The background capacity analysis evaluates the traffic conditions in the area that would occur if the proposed development did not proceed. The study intersections were analyzed using the existing roadway geometry and traffic control, and the estimated 2038 peak-hour background traffic volumes. The results of the 2038 background traffic conditions operations analysis are summarized in **Tables 5** and **Table 6**.

The Valley Road and Cedar Villa Access intersection is anticipated to operate well overall (LOS A) indicating free-flowing traffic with minimal delay. However, the southbound left-turn movement experiences a slightly increased delay during the afternoon peak hour and operates at a LOS B (15 seconds) as compared to LOS B (10 seconds) in the 2023 background analysis.

The Valley Road and Landfill Access intersection is anticipated to operate well overall (LOS A) during both peak hours. However, most of the movements experience a slight increase in delay with the eastbound through traffic operating at LOS B (13 seconds) as compared to a LOS A (10 seconds) during the afternoon peak hour in 2023 background analysis.

The target operating parameter for individual movements is a LOS D on a rural road network. Both the intersections operate well above the minimum threshold.

**TABLE 5: VALLEY RD AND CEDAR VILLA ACCESS
2038 INTERSECTION OPERATIONS**

Peak Hour	Measure	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak Hour	LOS	A				A							B
	Delay (s)	0				0							10
	V/C ratio	--				--							0.04
	Queue (m)	--				--							13
	Overall LOS	A (1 s)											
PM Peak Hour	LOS	A				A							B
	Delay (s)	0				0							12
	V/C ratio	--				--							0.08
	Queue (m)	--				--							15
	Overall LOS	A (1 s)											

**TABLE 6: VALLEY RD AND LANDFILL ACCESS RD
2038 INTERSECTION OPERATIONS**

Peak Hour	Measure	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak Hour	LOS	--	B	A	A	A	A	B	A			B	
	Delay (s)	--	14	--	5	5	2	17	0			19	
	V/C ratio	--	0.35	0.00	0.11	0.07	0.07	0.04	0.01			0.17	
	Queue (m)	--	41	--	15	16	--	13	--			24	
	Overall LOS	A (10 s)											
PM Peak Hour	LOS	--	B	A	A	A	A	B	A			B	
	Delay (s)	--	13	0	5	6	2	18	0			19	
	V/C ratio	--	0.29	0.00	0.06	0.18	0.04	0.06	0.09			0.27	
	Queue (m)	--	28	0	11	28	--	18	--			18	
	Overall LOS	A (8 s)											

Development Traffic Volumes

TRIP GENERATION

The proposed development encompasses approximately 54 hectares (ha) of land, which is expected to be developed as 50 ha of business/ research park and 4 ha of veterinary clinic. The proposed development is anticipated to be completed in three phases.

- Phase 1 (2028 Horizon)- Vet Clinic (4 ha) and Business/Research Park (2 ha)
- Phase 2 (2033 Horizon)- Vet Clinic (4 ha) and Business/Research Park (15 ha)
- Phase 3 (2038 Horizon)- Vet Clinic (4 ha) and Business/Research Park (50 ha)

The proposed layout plan along with the construction phases are shown in **Appendix A**.

The Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, was used to estimate the trips generated by the proposed development for the weekday morning and afternoon peak hours. The land use code, trip rates, and in/ out ratios applied to the land uses within the proposed development are listed in **Table 7**.

TABLE 7: TRIP GENERATION RATES

Land Use	ITE Code	Peak Hour	Trip Generation Equation	Directional Distribution	
				Entering	Exiting
Veterinary Clinic	640	AM	$T = 4.07(X) - 2.48$	67%	33%
		PM	$T = 4.75(X) - 6.96$	40%	60%
Business Park	770	AM	$\ln(T) = 0.94 \ln(X) + 0.59$	85%	15%
		PM	$\ln(T) = 0.88 \ln(X) + 0.93$	26%	74%

T= Average Vehicle Trips X= 1,000 sq. ft. GFA

Following assumptions were made as part of the trip generation analysis:

- The floor-area ratio (FAR) is assumed to be 8% of the total area to estimate the gross floor area (GFA) of the vet clinic and the business park. The FAR was estimated by examining the existing light industrial developments located north of Saskatoon in the vicinity of Highway 11 and Highway 12.

Table 8 presents the total number of site-generated trips at full build-out (rounded to the nearest 5) and the directional allocation (entering or exiting) for the proposed development for each peak hour.

TABLE 8: SITE-GENERATED TRIPS

Land Use	AM Peak Hour			PM Peak Hour		
	Trips In	Trips Out	Total Trips	Trips In	Trips Out	Total Trips
Vet Clinic	95	45	140	65	95	160
Business Park	455	80	535	135	385	525
Total	550	125	675	200	480	680

This development is not expected to generate any pass-by trips. It is also unlikely that any of the trips generated will be multi-use trips within the proposed development (i.e. vehicles stopping at one site before proceeding to work at another site within the proposed development).

The following site-generated trips are anticipated by phase:

- 2028 Phase 1
 - AM Peak Hour: 170 new trips (120 trips entering and 50 trips exiting)
 - PM Peak Hour: 195 new trips (75 trips entering and 120 trips exiting)
- 2033 Phase 2
 - AM Peak Hour: 310 new trips (240 trips entering and 70 trips exiting)
 - PM Peak Hour: 340 new trips (110 trips entering and 230 trips exiting)

- 2038 Full Build-out
 - AM Peak Hour: 675 new trips (550 trips entering and 125 trips exiting)
 - PM Peak Hour: 680 new trips (200 trips entering and 480 trips exiting)

TRIP DISTRIBUTION AND ASSIGNMENT

The traffic volume forecast was completed by distributing the site-related traffic volumes and assigning them to the road network based on an assessment of how people will access and egress the site. Trip distribution refers to the origins and destinations of the site-generated trips while trip assignment assesses the actual route that the vehicles will take between their origin and destination. The assignment process assumes that motorists will use the most efficient route.

To facilitate the trip distribution process, the surrounding area was divided into four zones with respect to the location of the proposed development and Saskatoon neighborhood population density (2021). The trip distribution estimates are as follows:

- 20% will travel to / from the north
- 70% will travel to / from the east
- 5% will travel to / from the south
- 5% will travel to / from the west

The new vehicle trips were then assigned to the road network based on the distribution estimates. The vehicle assignment accounts for the routes that drivers will use to reach the site and the access points that they will use.

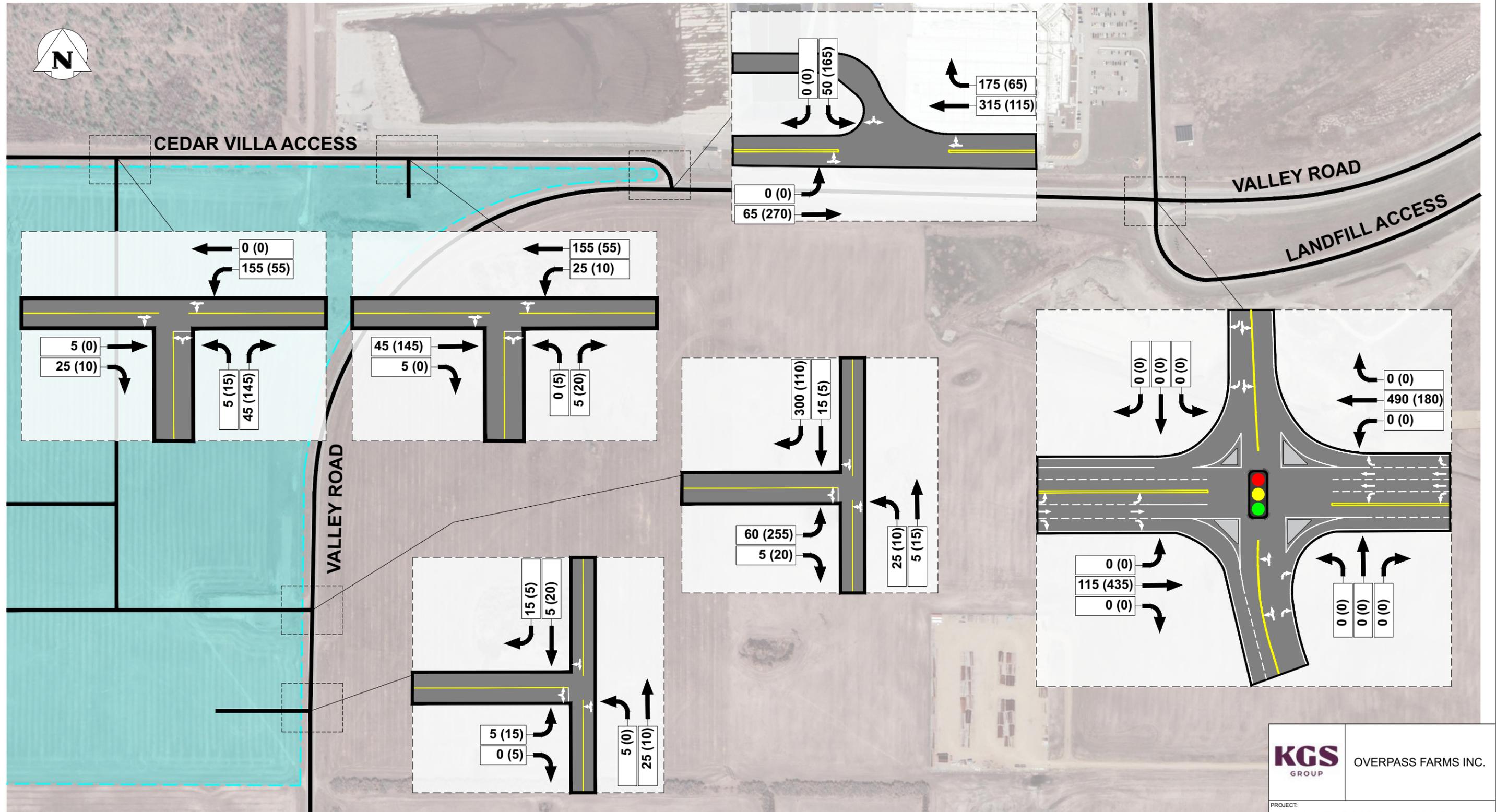
The site-generated trips for the full build-out are illustrated in **Figure 5**.

2038 Total Traffic

2038 TOTAL TRAFFIC FORECAST

The site-generated trips were added to the projected 2038 background traffic volume forecast volumes to obtain 2038 total forecast traffic volumes, illustrated in **Figure 6**.

The traffic volume forecast projects approximately 900 vehicles on Valley Road during the morning peak hour, of which 680 trips will be generated by the proposed development. Similarly, the traffic volume forecast projects approximately 1,070 vehicles on Valley Road during the afternoon peak hour, of which 680 vehicles are associated with the proposed development.

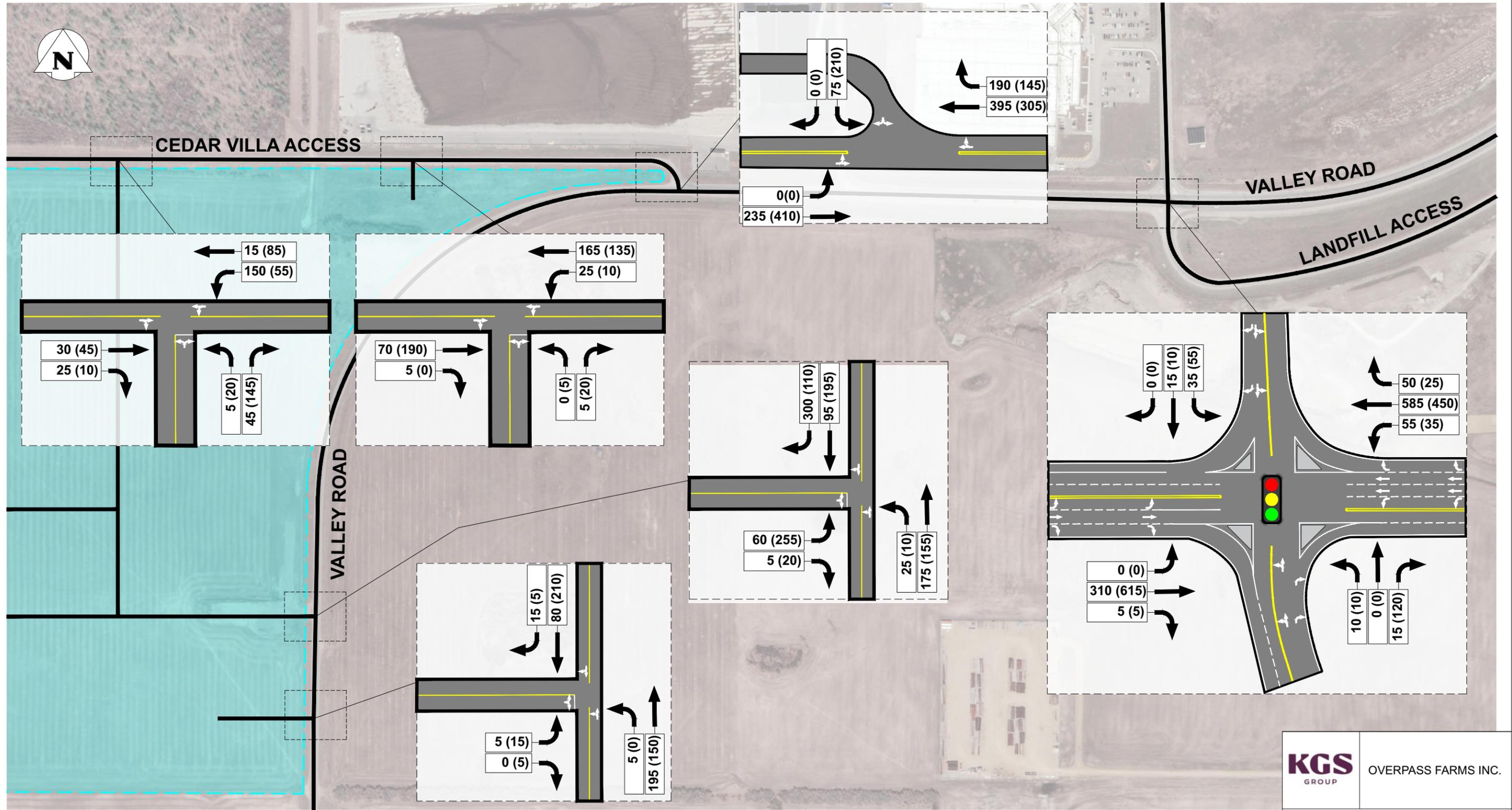


LEGEND:

PROJECT SITE

00 (00) AM (PM) PEAK HOUR TRAFFIC VOLUMES ROUNDED TO THE NEAREST FIVE (5)

KGS GROUP		OVERPASS FARMS INC.
PROJECT: VALLEY ROAD BUSINESS PLAN TRAFFIC IMPACT ASSESSMENT		
DWG. DESCRIPTION: SITE GENERATED TRIPS		
DATE: JANUARY 2024	FIG. NO. FIGURE 5	REV. 0



KGS GROUP OVERPASS FARMS INC.

PROJECT: VALLEY ROAD BUSINESS PLAN TRAFFIC IMPACT ASSESSMENT

DWG. DESCRIPTION: 2038 TOTAL TRAFFIC VOLUMES FORECAST

DATE: JANUARY 2024 FIG. NO. FIGURE 6 REV. 0

2038 TOTAL TRAFFIC OPERATIONS

The 2038 total traffic operations analysis evaluates the traffic volume conditions with the proposed development. The intersections along Valley Road at the Cedar Villa Access and at the Landfill Access Road were analyzed using the existing geometry. The new business park accesses (North and South Accesses) along with Lot 1 and Lot A accesses were analyzed as two-way-stop controlled (TWSC) intersections and with no turning lane treatments. **Table 9** and **Table 10** summarize the traffic operations during the morning and afternoon peak hours, respectively.

The Valley Road and Landfill Access Road intersection is anticipated to have slightly more delay with the proposed development, operating at a LOS B overall (instead of a LOS A) for both the morning and afternoon peak hours. Most turning movements are anticipated to experience an increase in delay as a result of the additional vehicles on the network. The southbound approach is expected to experience the most delay with an average delay per vehicle estimated at 28 seconds (LOS C) during the afternoon peak hour.

The Valley Road and Cedar Villa Access intersection is anticipated to operate at a LOS A overall during the peak hours. The southbound left-turn movement is anticipated to experience the most delay, with an estimated average delay per vehicle of 39 seconds (LOS E) as compared to 12 seconds (LOS B) during the 2038 background horizon without the development.

The proposed Business Park North and South accesses operate at a LOS A with individual movements operating at a LOS C or better. The two approaches for Lot A and Lot 1 access operate at a LOS A with individual movements operating at a LOS B or better. The capacity analysis indicates that both intersections and approaches accommodate the projected development traffic volumes without any significant delays.

TABLE 9: TOTAL MORNING PEAK HOUR TRAFFIC OPERATION

Peak Hour	Measure	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Valley Rd and Landfill Access Rd (Signalized)	LOS	--	B	A	A	A	A	B	A	C			
	Delay (s)	--	17	0	5	7	2	18	0	21			
	V/C ratio	--	0.55	--	0.11	0.42	0.07	0.06	0.01	0.27			
	Queue (m)	--	46	--	15	41	--	9	--	30			
	Overall LOS	B (10 s)											
Valley Road and Cedar Villa Access (TWSC)	LOS	A				A				C			
	Delay (s)	9				0				18			
	V/C ratio	0.00				--				0.23			
	Queue (m)	3				--				28			
	Overall LOS	A (2 s)											
Cedar Villa Access and Business Park North Access (TWSC)	LOS	A		A				A					
	Delay (s)	0		8				9					
	V/C ratio	--		0.11				0.06					
	Queue (m)	--		14				13					
	Overall LOS	A (6 s)											
Valley Road and Business Park South Access (TWSC)	LOS	B						A				A	
	Delay (s)	14						8				0	
	V/C ratio	0.16						0.03				--	
	Queue (m)	15						9				--	
	Overall LOS	A (2 s)											
Cedar Villa Access and Parcel A Access	LOS	A		A				A					
	Delay (s)	0		7				9					
	V/C ratio	--		0.02				0.0					
	Queue (m)	--		--				6					
	Overall LOS	A (1 s)											
Valley Road and Lot 1 Access	LOS	B						A				A	
	Delay (s)	10						7				0	
	V/C ratio	0.01						0.01				--	
	Queue (m)	3						--				--	
	Overall LOS	A (0 s)											

TABLE 10: 2038 TOTAL AFTERNOON PEAK HOUR TRAFFIC OPERATION

Peak Hour	Measure	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Valley Rd and Landfill Access Rd (Signalized)	LOS	--	B	A	A	A	A	C	A	C			
	Delay (s)	--	18	0	4	5	1	25	0	28			
	V/C ratio	--	0.72	0.00	0.08	0.25	0.03	0.08	0.09	0.36			
	Queue (m)	--	56	--	14	29	--	18	--	28			
	Overall LOS	B (12 s)											
Valley Road and Cedar Villa Access (TWSC)	LOS	A				A						E	
	Delay (s)	8				0						39	
	V/C ratio	0.01				--						0.72	
	Queue (m)	9				--						118	
	Overall LOS	A (8 s)											
Cedar Villa Access and Business Park North Access (TWSC)	LOS		A		A			A					
	Delay (s)		0		7			10					
	V/C ratio		--		0.04			0.19					
	Queue (m)		--		4			17					
	Overall LOS	A (6 s)											
Valley Road and Business Park South Access (TWSC)	LOS		C					A					A
	Delay (s)		18					8					0
	V/C ratio		0.52					0.01					--
	Queue (m)		25					6					--
	Overall LOS	A (7 s)											
Cedar Villa Access and Lot A Access	LOS		A		A			A					
	Delay (s)		0		8			10					
	V/C ratio		--		0.01			0.03					
	Queue (m)		--		6			13					
	Overall LOS	A (1 s)											
Valley Road and Lot 1 Access	LOS		B					A					A
	Delay (s)		11					0					0
	V/C ratio		0.03					--					--
	Queue (m)		11					--					--
	Overall LOS	A (1 s)											

HIGHWAY WARRANT ANALYSIS

Intersection Lighting Warrants

DELINEATION LIGHT (DM 2621-1)

As per the Ministry of Highways' Design Manual for Partial or Area Lighting (DM 2621-1), delineation lighting is warranted if one of the three warrant criteria is met:

- All provincial highway-to-highway intersections
- All intersections of the designated community access road with the provincial highway system
- All rural and urban public highway intersections with a provincial highway with an intersection roadway traffic volume greater than 150 Annual Average Daily Traffic (AADT) or 250 Seasonal Average Daily Traffic (SADT) for seasonal recreational roads.

The intersection of Valley Road and Cedar Villa Access was assessed for delineation lighting. Based on the existing conditions, Valley Road and Cedar Villa Access is warranted for delineation lighting as it provides primary access to the community of Cedar Villa Estates.

AREA LIGHTING (DM 2621-2)

As per the Ministry of Highways' Design Manual for Area Lighting (DM 2621-2), for an intersection to qualify for area lighting, one of the following three requirements must be met:

- Traffic Volume Warrant
- Raised Channelized/Median Curbing Warrant, or
- Traffic Accident Rate Warrant

Based on the Traffic Volume Warrant criterion, the intersections of Valley Road and Cedar Villa Access, Valley Road and Business Park South Access and Cedar Villa Access and Business Park North Access are warranted for area lighting based on estimated 2038 total forecast traffic volumes.

Intersections of Valley Road with Cedar Villa Access and Business Park South Access were also assessed for area lighting for 2028 Phase 1 and 2033 Phase 2 of the proposed development. Area lighting was warranted for both intersections based on 2028 Phase 1 traffic volumes.

INTERSECTION LIGHTING WARRANTS SUMMARY

The summary of lighting warrants is shown in **Table 11** and available in **Appendix C**.

TABLE 11: INTERSECTION LIGHTING WARRANT SUMMARY

Intersection	2023 Existing Traffic Volumes	2038 Background Traffic Volumes	2028 Phase 1 Traffic Volumes	2033 Phase 2 Traffic Volumes	2038 Total Traffic Volumes
Valley Rd and Landfill Access Rd	No Additional Lighting Warranted				
Valley Road and Cedar Villa Access	Delineation Lighting Warranted	Area Lighting Warranted	Area Lighting Warranted	Area Lighting Warranted	Area Lighting Warranted
Cedar Villa Access and Business Park North Access	--	--	--	--	Area Lighting Warranted
Valley Rd and Business Park South Access	--	--	Area Lighting Warranted	Area Lighting Warranted	Area Lighting Warranted

Turning Lane Warrants

The turning lane warrants were completed for the study intersections and a copy is provided in **Appendix C**.

VALLEY ROAD AND CEDAR VILLA ACCESS INTERSECTION

Right-Turn Lane (SP 20614)

Currently, there are no turning lanes at the Valley Road and Cedar Villa Access intersection to accommodate the turning movements. According to Standard Plan 20614 in the MoH’s Design Manual, a right-turn lane is warranted at the Valley Road and Cedar Villa Access intersection for the westbound approach. The westbound right-turn lane is warranted for both the 2023 existing traffic volumes and 2038 total traffic volume forecast.

Standard Plan 20618 describes the geometric characteristics of the right-turn lane, which indicates that at a 70 km/h design speed, and a stop condition on the minor approach, the right-turn lane should have a minimum of 65 m of storage and 50 m of taper, for a total length of 115 m. As there is another intersection located approximately 220 m east of the intersection providing secondary access to the Saskatoon Civic Operations Centre, it is recommended to extend the right-turn lane to accommodate vehicles turning right onto Valley Road and to reduce conflict.

VALLEY ROAD AND BUSINESS PARK SOUTH ACCESS INTERSECTION

Right-Turn Lane (SP 20614)

Based on the Saskatchewan Ministry of Highways' Standard Plan 20614 a southbound right-turn lane is warranted at the Valley Road and Business Park South Access based on the 2028 Phase 1 traffic forecast.

The 2038 total forecast right-turn traffic volume will range between 110 vehicles to 300 vehicles during the peak hours, which represents between 35%-75% of the total southbound traffic volumes during the peak hours. Typically, a right-turn lane is considered at an intersection when the right-turn volume is greater than 20% of the total approach volume.

Standard Plan 20618 which describes the geometric characteristics of the right-turn and left-turn deceleration lanes, indicates that at a design speed of 70 km/h, the minimum recommended storage space is 65 m and a minimum taper of 50 m, indicating a total length of 115 m.

Flared Intersection (SP 20613)

Installation of a flared treatment at an intersection helps to mitigate the conflict between the left-turning vehicles and the through vehicles. According to the Ministry of Highways' Standard Plan 20613, one of the criteria for an intersection to qualify for a flared treatment is at an intersection with the highway, where the highway AADT exceeds 600 and the left-turn AADT exceeds 50. Based on this criterion, the intersection of Valley Road and Business Park South Access is warranted for a northbound flare based on 2028 phase 1 traffic volume forecast.

Channelization (SP 20611)

Channelization warrants were completed for the northbound left turns at the Valley Road and Business Park South Access intersection. According to Standard Plan 20611, the Valley Road and Business Park South Access is warranted for a northbound channelization based on the 2038 total traffic forecast.

However, due to the proximity of the Valley Road and Lot 1 Access intersection, located just south of the Business Park South Access, it is recommended that a northbound bypass lane that extends through both intersections is implemented instead.

CEDAR VILLA ACCESS AND BUSINESS PARK NORTH ACCESS INTERSECTION

Flared Intersection (SP 20613)

According to the Ministry of Highways' Standard Plan 20613, one of the criteria for an intersection to qualify for a flared treatment is at an intersection with the highway, where the highway AADT exceeds 600 and the left-turn AADT exceeds 50. Based on this criterion, the intersection of Cedar Villa Access and the Business Park North Access is warranted for a westbound flare treatment based on 2038 total traffic volume forecast.

TURNING LANE WARRANTS SUMMARY

The summary of turning lane warrants is shown in **Table 12** and available in **Appendix C**.

TABLE 12: TURNING LANE WARRANT SUMMARY

Intersection	2023 Existing Traffic Volumes	2038 Background Traffic Volumes	2028 Phase 1 Traffic Volumes	2033 Phase 2 Traffic Volumes	2038 Total Traffic Volumes
Valley Rd and Landfill Access Rd	No Additional Lanes Warranted				
Valley Road and Cedar Villa Access	Westbound Right-turn	Westbound Right-turn	Westbound Right-turn	Westbound Right-turn	Westbound Right-turn
Cedar Villa Access and Business Park North Access	--	--	--	--	Westbound Flare
Valley Rd and Business Park South Access	--	--	Northbound Flare Left-Turn Southbound Right-Turn	Northbound Flare Left-Turn Southbound Right-Turn	Northbound Channelization Southbound Right Turn ¹

¹ While a northbound channelized left-turn is warranted, a northbound bypass lane is recommended.

Proposed Development Internal Road Network

The proposed site plan shows a connecting north-south access road that runs parallel along Valley Road and provides secondary access to the business park via Cedar Villa Access Road to the north.

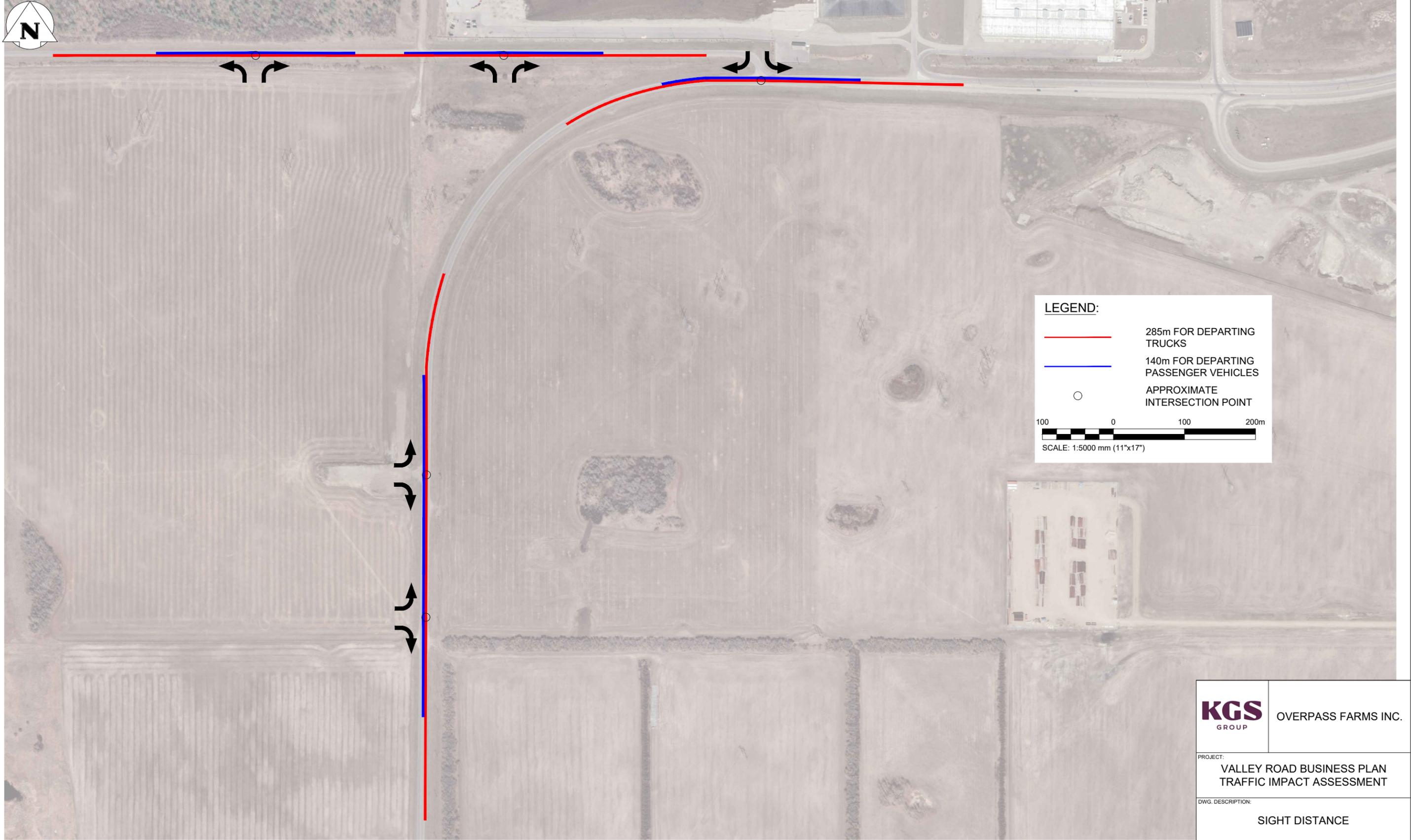
The clear-throat length is the set-back distance measured from the end of the driveway curb return radii to the first point of conflict on-site. Inadequate clear-throat distances can result in frequent blocking of on-site circulation resulting in queues of vehicles entering the site. For major driveways to operate efficiently, both from the roadside and internally, it is desirable to provide a no-conflict and storage zone within the driveway. According to the Transport Association of Canada, the clear throat distances range from 15 m (very small sites) to 70 m (shopping centers greater than 70,000 sq. ft.) depending on the land use. The driveway clear-throat length for the proposed light industrial development with an area of 540,000m² is approximately 60 m. Failure to provide sufficient throat distance can result in extended queues of entering vehicles and potential spillback onto the adjacent road network.

The north-south access road located one parcel to the west of Valley Road will provide additional separation and minimize the potential for queued vehicles to impact traffic flow along Valley Road.

Adequate sight distance is important for the entry and exit maneuvers at development accesses. Objects that can affect sight distance include utility cabinets and landscaping within the right of way. According to MoH's Standard Plan 20630 and 20632, the minimum sight distance for vehicles on a roadway with a design speed of 70km/h is 140 m for light vehicles and 285 m for heavy vehicles. A review of the Valley Road intersection with Cedar Villa Access and the proposed Business Park South Access indicates that the sight distances are adequate in both directions.

A desktop review of the proposed Business Park North access shows some vegetation along its intersection with Cedar Villa Access Road which can obstruct the view of the approaching vehicles. It is recommended that the vegetation is removed within the sight distance triangle as shown in **Figure 7**.

Driveways that intersect at less than 70 degrees can result in restricted sightlines and can create additional safety concerns and increase collision potential. To ensure appropriate sight distance and field of view, the ideal desirable intersection angle should be at 90 degrees. Based on the site plan drawings, the site accesses intersects both Valley Road and the Cedar Villa Access Road at 90 degrees.



LEGEND:

- 285m FOR DEPARTING TRUCKS
- 140m FOR DEPARTING PASSENGER VEHICLES
- APPROXIMATE INTERSECTION POINT

100 0 100 200m

SCALE: 1:5000 mm (11"x17")

KGS
GROUP

OVERPASS FARMS INC.

PROJECT:
VALLEY ROAD BUSINESS PLAN
TRAFFIC IMPACT ASSESSMENT

DWG. DESCRIPTION:
SIGHT DISTANCE

DATE:
JANUARY 2024

FIG. NO.
FIGURE 7

REV:
0

NETWORK MITIGATION MEASURES

Valley Road and Cedar Villa Access Road Intersection

The highway warrant analysis indicates that a westbound right-turn lane is warranted at the Valley Road and Cedar Villa Access Road intersection, as illustrated in **Figure 8**. Installation of a right-turn lane for the westbound approach decreases the delay for southbound left-turning vehicles by 8 seconds and operates at a LOS D as compared to LOS E without the right turn lane. In addition to a decrease in delay, the installation of a right-turn lane will discourage motorists from using the shoulder to make right-turns and reduce the possibility of rear end collisions. The results of the capacity analysis for the mitigation measures are summarized in **Table 13**.



**FIGURE 8: VALLEY ROAD & CEDAR VILLA ACCESS
WESTBOUND RIGHT-TURN LANE**

TABLE 13: VALLEY ROAD AND CEDAR VILLA ACCESS – RIGHT-TURN LANE

Peak Hour	Measure	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak Hour	LOS	A			A	A							C
	Delay (s)	9			0	0							16
	V/C ratio	0.01			--	--							0.20
	Queue (m)	3			--	--							19
	Overall LOS	A (1 s)											
PM Peak Hour	LOS	A			A	A							D
	Delay (s)	8			0	0							31
	V/C ratio	0			--	--							0.64
	Queue (m)	--			--	--							50
	Overall LOS	A (6 s)											

Valley Road and Business Park South Access Intersection

For the Valley Road and Business Park South Access intersection, a southbound right-turn lane and northbound channelization are warranted. Channelization directs northbound vehicles traveling through the intersection to an outer lane while left-turning vehicles use an inner lane as shown in **Figure 9**. The dedicated lane for left-turning vehicles reduces the probability of rear-end collisions and discourages motorists from using the shoulder for passing. The addition of a southbound right-turn and a northbound channelization treatment reduces the delay experienced by the eastbound left-turning vehicles from 18 seconds to 16 seconds.



FIGURE 9: VALLEY ROAD AND BUSINESS PARK SOUTH ACCESS NB CHANNELIZATION AND SB RIGHT TURN LANE

TABLE 14: VALLEY ROAD AND BUSINESS PARK SOUTH ACCESS INTERSECTION- SB RIGHT-TURN AND NB CHANNELIZATION LANE

Peak Hour	Measure	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak Hour	LOS		B					A	A			A	A
	Delay (s)		12					8	0			0	0
	V/C ratio		0.13					0.03	--			--	--
	Queue (m)		15					11	--			--	--
	Overall LOS	A (2 s)											
PM Peak Hour	LOS		C					A	A			A	A
	Delay (s)		16					8	0			0	0
	V/C ratio		0.48					0.01	--			--	--
	Queue (m)		25					5	--			--	--
	Overall LOS	A (6 s)											

Cedar Villa Access Road and Business Park North Access Intersection

A westbound flare treatment is warranted for the Cedar Villa Access Road and Business Park North Access intersection. Saskatchewan Ministry of Highway’s standard flared intersection includes an entrance bay taper, a parallel auxiliary lane, and a departure taper as shown in **Figure 10**. The parallel auxiliary lane can be utilized by the left-turning vehicles into the Business Park, while the westbound vehicles traveling through the intersection can utilize either the entrance bay taper and merge back into the main lane using the departure taper or can continue using the parallel auxiliary lane in the absence of left-turning vehicles. The flare treatment helps mitigate the conflict between the left-turning vehicles and vehicles travelling through the intersection.



FIGURE 10: CEDAR VILLA ACCESS ROAD AND BUSINESS PARK NORTH ACCESS WB FLARED INTERSECTION

With the installation of a westbound flare, the intersection still operates at a LOS A with an approximate delay of 6 seconds. The individual movement experiencing the highest delay is the northbound approach with an approximate delay of 10 seconds and operating at a LOS A. The flare treatment will reduce the probability of rear-end collisions and prevent motorists from using the shoulder to pass the left-turning vehicles. The results of the capacity analysis for the mitigation measures are summarized in **Table 15**.

TABLE 15: CEDAR VILLA ACCESS ROAD AND BUSINESS PARK NORTH ACCESS INTERSECTION- WB FLARE

Peak Hour	Measure	Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak Hour	LOS		A		A			A					
	Delay (s)		0		8			9					
	V/C ratio		--		0.11			0.06					
	Queue (m)		--		11			14					
	Overall LOS	A (6 s)											
PM Peak Hour	LOS		A		A			A					
	Delay (s)		0		7			10					
	V/C ratio		--		0.04			0.19					
	Queue (m)		--		8			17					
	Overall LOS	A (6 s)											

Valley Road Pavement Structure

Currently, the Cedar Villa Access is constructed with a Thin Membrane Surface (TMS). With the increase in future traffic volumes and more frequent use of this access by heavy vehicles, this roadway may require upgrade of the road structure to an industrial road standard.

Valley Road Twinning

Beyond the horizon of the TIA, road network modifications such as Valley Road serving as a link to Highway 7 and/or the Saskatoon Freeway have the potential to be implemented and would change the function and anticipated traffic volumes along this corridor. Valley Road may require twinning or additional lanes to facilitate the potential modifications and the twinning would most likely occur to the south side of the existing road due to the limited area between the Valley Road alignment near the Cedar Villa Access Road intersection and the west end of the Civic Operations Centre. The warranted westbound right-turn lane at the Cedar Villa Access Road intersection may also serve to necessitate the widening to occur on the south side of the existing Valley Road alignment.

It may be beneficial prior to further development along Valley Road for the City of Saskatoon, Ministry of Highways, and the RM of Corman Park to determine the location and extent of additional required right-of-way to facilitate the potential widening.

CONCLUSIONS & RECOMMENDATIONS

This traffic impact assessment (TIA) reviewed the transportation impacts of the proposed Valley Road Business Park located southwest of Saskatoon. The following conclusions and recommendations are made for efficient and safe traffic operations around the adjacent road network:

- The proposed development includes 54 ha of Business/Research Park development.
- The proposed development will be accessed via Valley Road to the south and Cedar Villa Access Road to the north.
- The estimated number of new trips generated at full build-out includes 675 new trips (550 trips entering and 125 trips exiting) during the weekday morning peak hour and 680 new trips (200 trips entering and 480 trips exiting) during the weekday afternoon peak hour.
- It is unlikely that any of the trips generated will be multi-use trips within the proposed development and the development is not expected to generate any pass-by trips.
- At full build-out, the Valley Road and Landfill Access Road intersection is anticipated to operate at a LOS B during the morning and afternoon peak hours. However, the northbound and southbound through approaches will experience increased delay (LOS C) during the peak hour with existing intersection geometry and signal timing.
- At full build-out, the Valley Road and Cedar Villa Access Road intersection is anticipated to operate at a LOS A overall during both the morning and afternoon peak hours. However, the southbound left-turn movement will experience delays operating at a LOS E during the afternoon peak hour.
- The two proposed accesses to the business park (North Access and South Access) are anticipated to operate at a LOS A during both the morning and afternoon peak hours.
- The two proposed approaches for Parcel A and Lot 1 access are anticipated to operate at a LOS A during both the morning and afternoon peak hours.
- A delineation light is warranted for the Cedar Villa Access and Business Park North Access intersection based on 2023 existing traffic volumes.
- The intersection area lighting warrants were completed for the study intersections. Area lighting was found to be warranted to the Valley Road and Cedar Villa Access intersection in the 2038 background horizon, and area lighting was found to be warranted for the Valley Road and Business Park South Access and North Access during Phase 1 of the proposed development.

Turning lane warrants were completed for the Valley Road and Business Park South Access for the 2028 Phase 1, 2033 Phase 2, and full build-out traffic volumes. A southbound right turn lane is warranted in the 2028 opening day scenario. A northbound flare was found to be warranted based on 2028 Phase 1 traffic volumes and in the full build-out horizon, a northbound channelized left-turn lane is warranted. Due to the proximity of the Valley Road and Lot 1 access, a bypass lane that extends through both intersections is recommended instead.

- The following modifications were found to be warranted on the network as well:
 - A westbound right-turn lane was warranted for the Valley Road and Cedar Villa Access intersection.
 - A westbound flared intersection treatment was warranted for the Cedar Villa Access Road and Business Park North Access intersection.
- The posted speed limit adjacent to the proposed development is currently 90 km/h. Due to the proximity of the curve and the proposed new accesses, it recommended that the posted speed limit be reduced to 60 km/h adjacent to the proposed development. The reduced speed limit also allows for adequate sight distance at the accesses.

Recommendations

The following intersection modifications are recommended based on the findings from this assessment:

2023 Existing Horizon

- Install delineation lighting at the Valley Road and Cedar Villa Access Intersection.
- Install the westbound right-turn lane at the Valley Road and Cedar Villa Access intersection and extend the length of the right-turn lane to the Civic Operations Centre's West Access Road intersection.

2038 Background Horizon

- Install area lighting at the Valley Road and Cedar Villa Access intersection.

2028 Phase 1 Horizon

- Install area lighting at the Valley Road and Business Park South Access intersection.
- Install southbound right turn lane and northbound bypass lane at the Valley Road and Business Park South intersection.
- Reduce the speed limit on Valley Road to 60 km/h adjacent to the proposed development. The posted speed limit can return to 90 km/h south of the proposed development.

2038 Total Horizon

- Install area lighting at the Cedar Villa Access and Business Park North Access.
- Install a westbound flare treatment at the Cedar Villa Access and Business Park North Access intersection.
- Upgrade the Cedar Villa Access Road from TMS to an industrial road structure to avoid structural damage.
- Clear sight triangle of vegetation at the Cedar Villa Access and Business Park North Access intersection.
- Sightlines at all intersections and accesses should be kept free of obstructions (i.e. utility cabinets, landscaping etc.).

We trust that this letter report will assist in addressing any concerns regarding the infrastructure needs of the proposed development.

Prepared By:

Approved By:

Waleed Javed
Engineering Aide

Nathan Gray, P.Eng., PTOE, PMP
Senior Transportation Engineer

STATEMENT OF LIMITATIONS AND CONDITIONS

Limitations

This report has been prepared for Overpass Farm Inc. in accordance with the agreement between KGS Group and Overpass Farm Inc. (the "Agreement"). This report represents KGS Group's professional judgment and exercising due care consistent with the preparation of similar reports. The information, data, recommendations and conclusions in this report are subject to the constraints and limitations in the Agreement and the qualifications in this report. This report must be read as a whole, and sections or parts should not be read out of context.

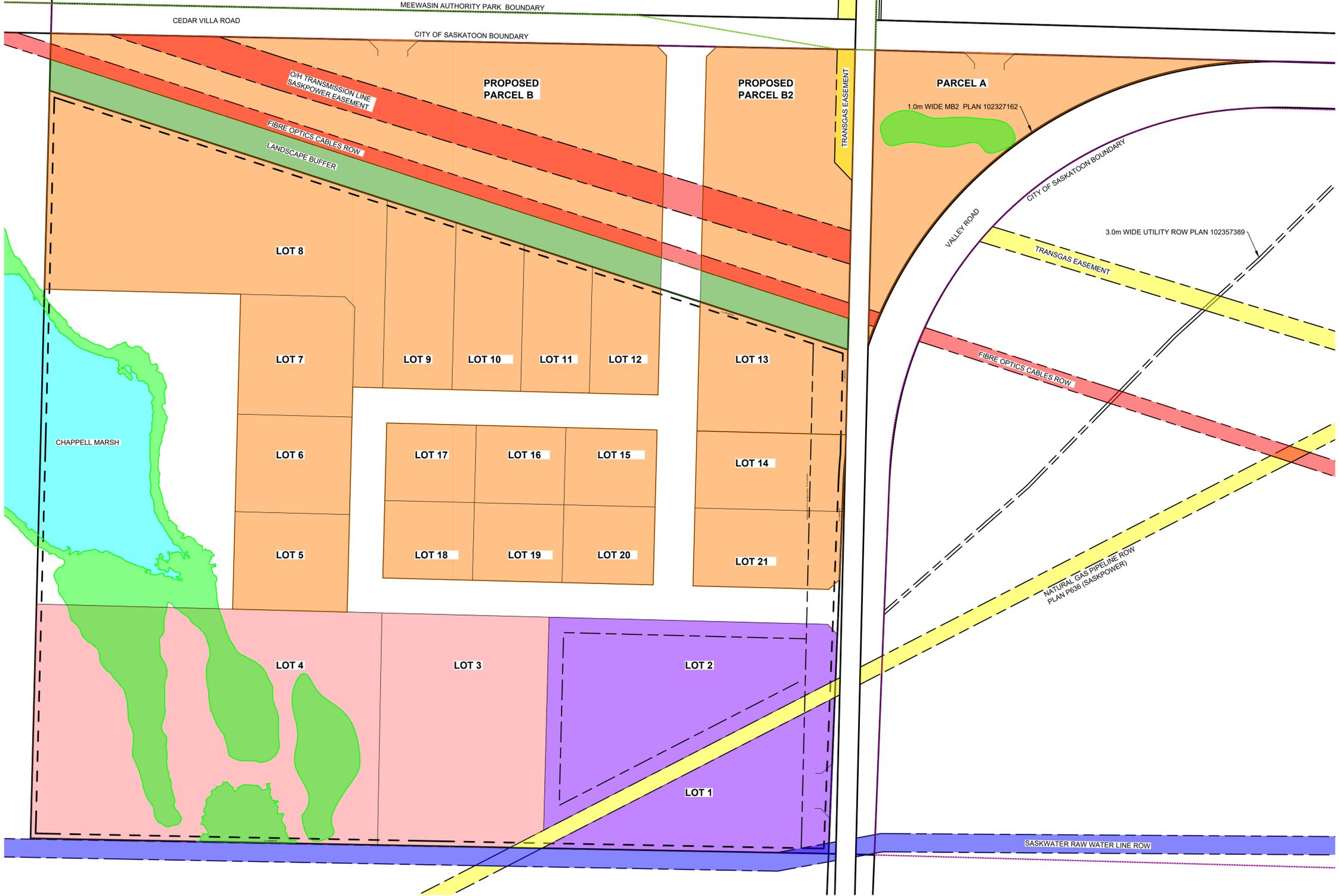
This report is based on information made available to KGS Group by Overpass Farm Inc. Unless stated otherwise, KGS Group has not verified the accuracy, completeness, or validity of such information, makes no representation regarding its accuracy and hereby disclaims any liability in connection therewith. KGS Group shall not be responsible for conditions/issues it was not authorized or able to investigate or which were beyond the scope of its work. The information and conclusions provided in this report apply only as they existed at the time of KGS Group's work.

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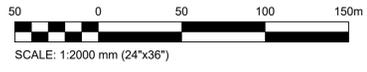
APPENDIX A

Proposed Layout



- NOTES:**
1. ALL UNITS ARE IN METRES UNLESS OTHERWISE NOTED.
 2. DRAWING DEVELOPED FROM DRONE SURVEY COMPLETED BY GEOVERRA DATED JULY 06, 2023.
 3. IMAGE COURTESY OF ©2023 DIGITAL GLOBE ©CNES(2023) DISTRIBUTION AIRBUS DS©2023 MICROSOFT CORPORATION.
 4. ALL PROPERTY LINES AND CADASTRAL DATA SHOWN ARE APPROXIMATE AND SHOULD BE VERIFIED PRIOR TO CONSTRUCTION.
 5. ALL UTILITIES SHOWN ARE APPROXIMATE AND MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION.
 6. CONTOUR INTERVALS ARE 0.5m.

- LEGENDS**
- CHAPPELL MARSH
 - EXISTING VEGETATION
 - SASKPOWER EASEMENT
 - SASKWATER EASEMENT
 - SASKENERGY EASEMENT
 - MAJOR CONTOUR
 - MINOR CONTOUR
 - PROPERTY LINE
 - RIGHT OF WAY LINE
 - PHASE 1
 - PHASE 2
 - PHASE 3
 - LANDSCAPE BUFFER



A	24/01/15	ISSUED FOR REVIEW	DR	NG
NO.	YYMMDD	DESCRIPTION	DESIGN BY	DESIGN CHECK

REVISIONS / ISSUE

CLIENT:
OVERPASS FARMS INC.

PROJECT:
VALLEY ROAD DEVELOPMENT

DWG. DESCRIPTION:
**PROPOSED SITE PLAN
BLK/PAR A, B, & C - PLAN 102 327162 EXT 0**

KGS GROUP	DESIGN BY:	DATE (YYMMDD):
	DESIGN CHECK:	DATE:
	DRAWN BY: VR	DATE: 24/01/11
	DWG CHECK:	DATE:

DWG. NO.	REV.
23-4236-001 FIG 3	A

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

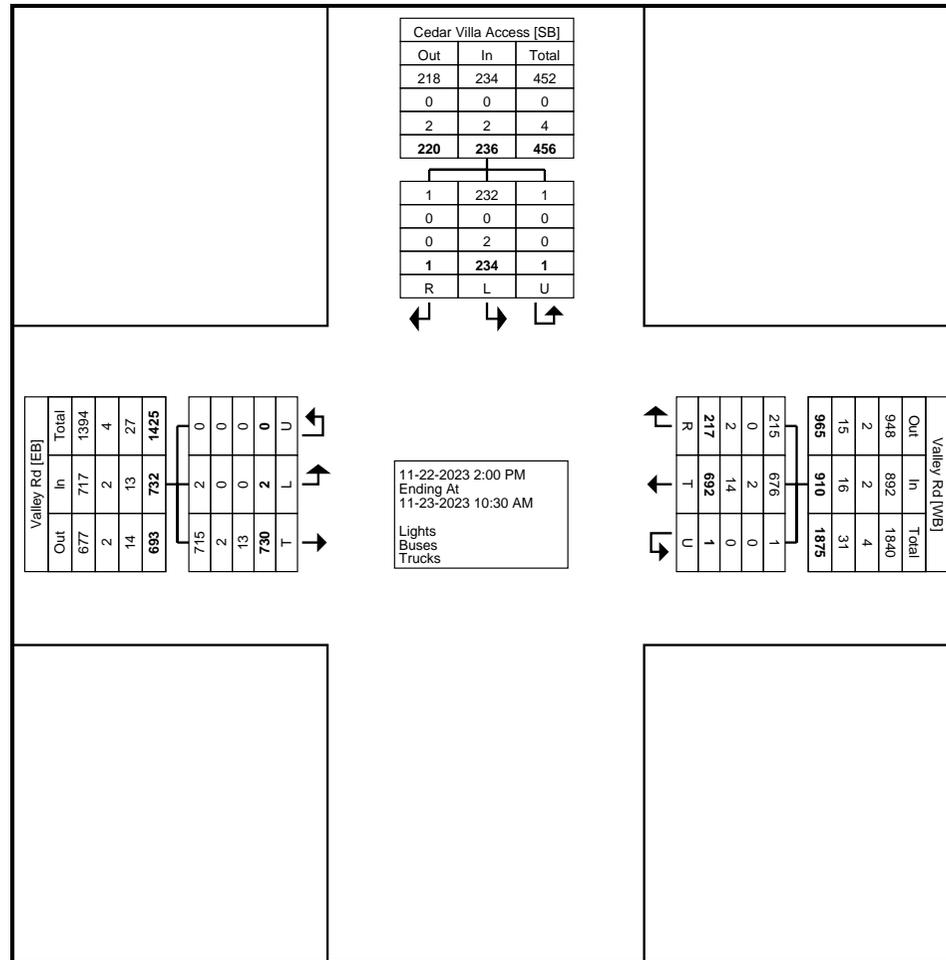
APPENDIX B

Turning Movement Counts

Turning Movement Data

Start Time	Cedar Villa Access Southbound				Valley Rd Westbound				Valley Rd Eastbound				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
2:00 PM	0	9	0	9	7	22	0	29	13	0	0	13	51
2:15 PM	0	3	0	3	9	24	0	33	12	0	0	12	48
2:30 PM	0	9	0	9	4	23	0	27	14	0	0	14	50
2:45 PM	0	6	0	6	7	17	0	24	16	0	0	16	46
Hourly Total	0	27	0	27	27	86	0	113	55	0	0	55	195
3:00 PM	0	10	0	10	3	13	0	16	13	0	0	13	39
3:15 PM	0	5	0	5	11	20	0	31	19	0	0	19	55
3:30 PM	0	9	0	9	10	32	0	42	20	0	0	20	71
3:45 PM	0	9	0	9	9	22	0	31	16	0	0	16	56
Hourly Total	0	33	0	33	33	87	0	120	68	0	0	68	221
4:00 PM	0	9	0	9	15	43	0	58	22	0	0	22	89
4:15 PM	0	10	0	10	11	27	0	38	26	0	0	26	74
4:30 PM	0	6	0	6	16	35	0	51	27	0	0	27	84
4:45 PM	0	8	0	8	16	31	0	47	23	0	0	23	78
Hourly Total	0	33	0	33	58	136	0	194	98	0	0	98	325
5:00 PM	0	6	0	6	12	45	0	57	17	0	0	17	80
5:15 PM	0	16	0	16	8	31	0	39	21	0	0	21	76
5:30 PM	0	15	0	15	5	25	0	30	24	1	0	25	70
5:45 PM	0	10	0	10	6	29	0	35	28	0	0	28	73
Hourly Total	0	47	0	47	31	130	0	161	90	1	0	91	299
6:00 PM	1	6	0	7	7	14	0	21	17	0	0	17	45
6:15 PM	0	2	1	3	8	20	0	28	14	0	0	14	45
6:30 PM	0	8	0	8	1	15	0	16	15	0	0	15	39
6:45 PM	0	2	0	2	5	12	0	17	7	0	0	7	26
Hourly Total	1	18	1	20	21	61	0	82	53	0	0	53	155
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-
5:30 AM	0	1	0	1	0	2	0	2	5	0	0	5	8
5:45 AM	0	0	0	0	0	4	0	4	4	0	0	4	8
Hourly Total	0	1	0	1	0	6	0	6	9	0	0	9	16
6:00 AM	0	3	0	3	0	3	0	3	7	0	0	7	13
6:15 AM	0	3	0	3	1	7	0	8	14	0	0	14	25
6:30 AM	0	3	0	3	0	2	0	2	16	0	0	16	21
6:45 AM	0	2	0	2	0	8	0	8	11	0	0	11	21
Hourly Total	0	11	0	11	1	20	0	21	48	0	0	48	80
7:00 AM	0	3	0	3	1	4	0	5	18	0	0	18	26
7:15 AM	0	5	0	5	2	5	0	7	20	0	0	20	32
7:30 AM	0	3	0	3	1	10	0	11	32	0	0	32	46
7:45 AM	0	5	0	5	1	20	0	21	24	0	0	24	50
Hourly Total	0	16	0	16	5	39	0	44	94	0	0	94	154

8:00 AM	0	4	0	4	1	17	0	18	29	0	0	29	51
8:15 AM	0	4	0	4	2	6	0	8	36	0	0	36	48
8:30 AM	0	5	0	5	4	14	0	18	31	0	0	31	54
8:45 AM	0	5	0	5	4	20	0	24	24	0	0	24	53
Hourly Total	0	18	0	18	11	57	0	68	120	0	0	120	206
9:00 AM	0	2	0	2	3	7	0	10	21	0	0	21	33
9:15 AM	0	5	0	5	6	11	0	17	15	0	0	15	37
9:30 AM	0	3	0	3	6	11	0	17	13	0	0	13	33
9:45 AM	0	4	0	4	9	16	0	25	18	0	0	18	47
Hourly Total	0	14	0	14	24	45	0	69	67	0	0	67	150
10:00 AM	0	9	0	9	4	15	1	20	19	0	0	19	48
10:15 AM	0	7	0	7	2	10	0	12	9	1	0	10	29
Grand Total	1	234	1	236	217	692	1	910	730	2	0	732	1878
Approach %	0.4	99.2	0.4	-	23.8	76.0	0.1	-	99.7	0.3	0.0	-	-
Total %	0.1	12.5	0.1	12.6	11.6	36.8	0.1	48.5	38.9	0.1	0.0	39.0	-
Lights	1	232	1	234	215	676	1	892	715	2	0	717	1843
% Lights	100.0	99.1	100.0	99.2	99.1	97.7	100.0	98.0	97.9	100.0	-	98.0	98.1
Buses	0	0	0	0	0	2	0	2	2	0	0	2	4
% Buses	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.2	0.3	0.0	-	0.3	0.2
Trucks	0	2	0	2	2	14	0	16	13	0	0	13	31
% Trucks	0.0	0.9	0.0	0.8	0.9	2.0	0.0	1.8	1.8	0.0	-	1.8	1.7



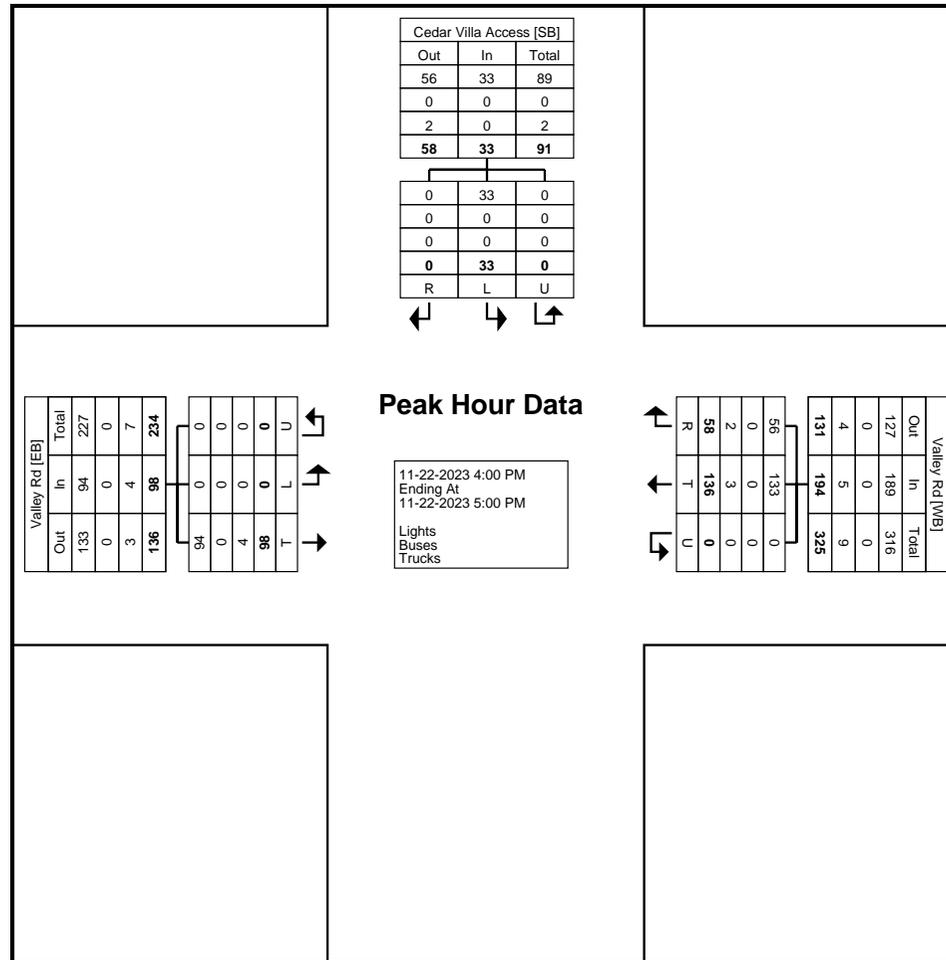
Turning Movement Data Plot

KGS Group (SK)
 Suite 2004561 Parliament Ave
 Regina, Saskatchewan, Canada S4W 0G3
 3065002357 dpiper@kgsgroup.com

Count Name: Valley Rd & Cedar Villa Access
 Site Code:
 Start Date: 11-22-2023
 Page No: 4

Turning Movement Peak Hour Data (4:00 PM)

Start Time	Cedar Villa Access Southbound				Valley Rd Westbound				Valley Rd Eastbound				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
4:00 PM	0	9	0	9	15	43	0	58	22	0	0	22	89
4:15 PM	0	10	0	10	11	27	0	38	26	0	0	26	74
4:30 PM	0	6	0	6	16	35	0	51	27	0	0	27	84
4:45 PM	0	8	0	8	16	31	0	47	23	0	0	23	78
Total	0	33	0	33	58	136	0	194	98	0	0	98	325
Approach %	0.0	100.0	0.0	-	29.9	70.1	0.0	-	100.0	0.0	0.0	-	-
Total %	0.0	10.2	0.0	10.2	17.8	41.8	0.0	59.7	30.2	0.0	0.0	30.2	-
PHF	0.000	0.825	0.000	0.825	0.906	0.791	0.000	0.836	0.907	0.000	0.000	0.907	0.913
Lights	0	33	0	33	56	133	0	189	94	0	0	94	316
% Lights	-	100.0	-	100.0	96.6	97.8	-	97.4	95.9	-	-	95.9	97.2
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	-	-	0.0	0.0
Trucks	0	0	0	0	2	3	0	5	4	0	0	4	9
% Trucks	-	0.0	-	0.0	3.4	2.2	-	2.6	4.1	-	-	4.1	2.8



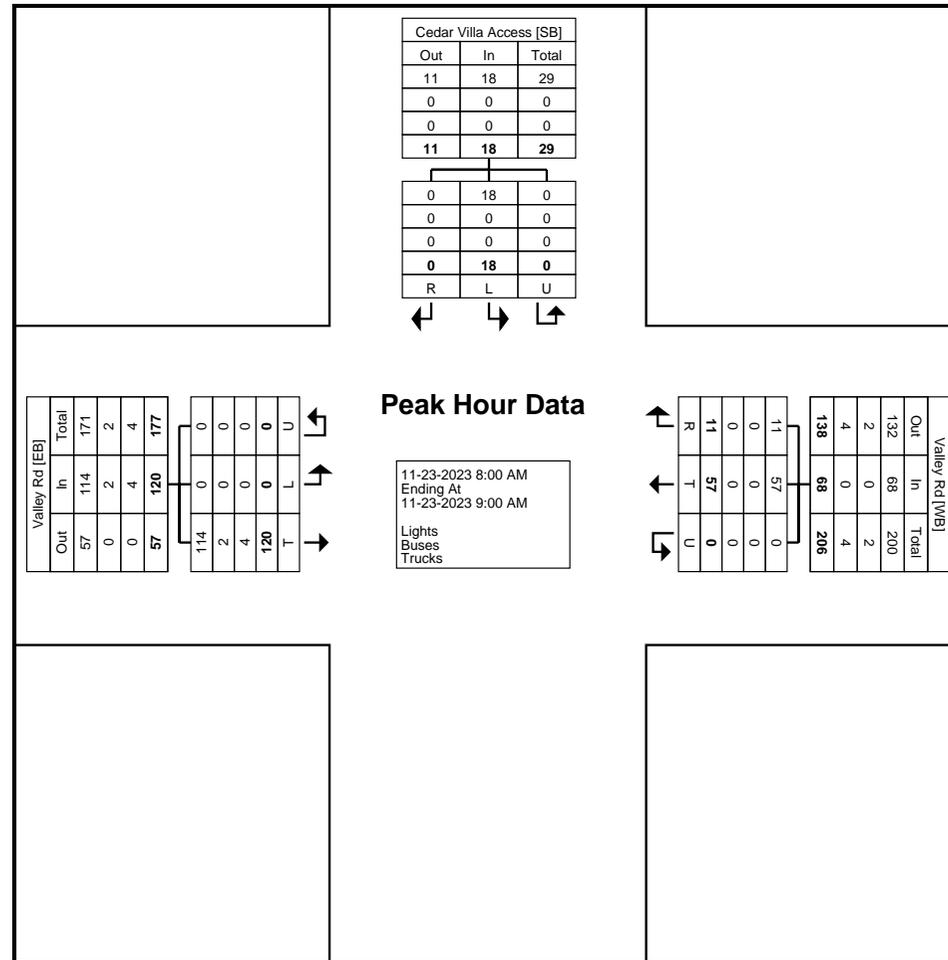
Turning Movement Peak Hour Data Plot (4:00 PM)

KGS Group (SK)
 Suite 2004561 Parliament Ave
 Regina, Saskatchewan, Canada S4W 0G3
 3065002357 dpiper@kgsgroup.com

Count Name: Valley Rd & Cedar Villa Access
 Site Code:
 Start Date: 11-22-2023
 Page No: 6

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Cedar Villa Access Southbound				Valley Rd Westbound				Valley Rd Eastbound				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
8:00 AM	0	4	0	4	1	17	0	18	29	0	0	29	51
8:15 AM	0	4	0	4	2	6	0	8	36	0	0	36	48
8:30 AM	0	5	0	5	4	14	0	18	31	0	0	31	54
8:45 AM	0	5	0	5	4	20	0	24	24	0	0	24	53
Total	0	18	0	18	11	57	0	68	120	0	0	120	206
Approach %	0.0	100.0	0.0	-	16.2	83.8	0.0	-	100.0	0.0	0.0	-	-
Total %	0.0	8.7	0.0	8.7	5.3	27.7	0.0	33.0	58.3	0.0	0.0	58.3	-
PHF	0.000	0.900	0.000	0.900	0.688	0.713	0.000	0.708	0.833	0.000	0.000	0.833	0.954
Lights	0	18	0	18	11	57	0	68	114	0	0	114	200
% Lights	-	100.0	-	100.0	100.0	100.0	-	100.0	95.0	-	-	95.0	97.1
Buses	0	0	0	0	0	0	0	0	2	0	0	2	2
% Buses	-	0.0	-	0.0	0.0	0.0	-	0.0	1.7	-	-	1.7	1.0
Trucks	0	0	0	0	0	0	0	0	4	0	0	4	4
% Trucks	-	0.0	-	0.0	0.0	0.0	-	0.0	3.3	-	-	3.3	1.9



Turning Movement Peak Hour Data Plot (8:00 AM)

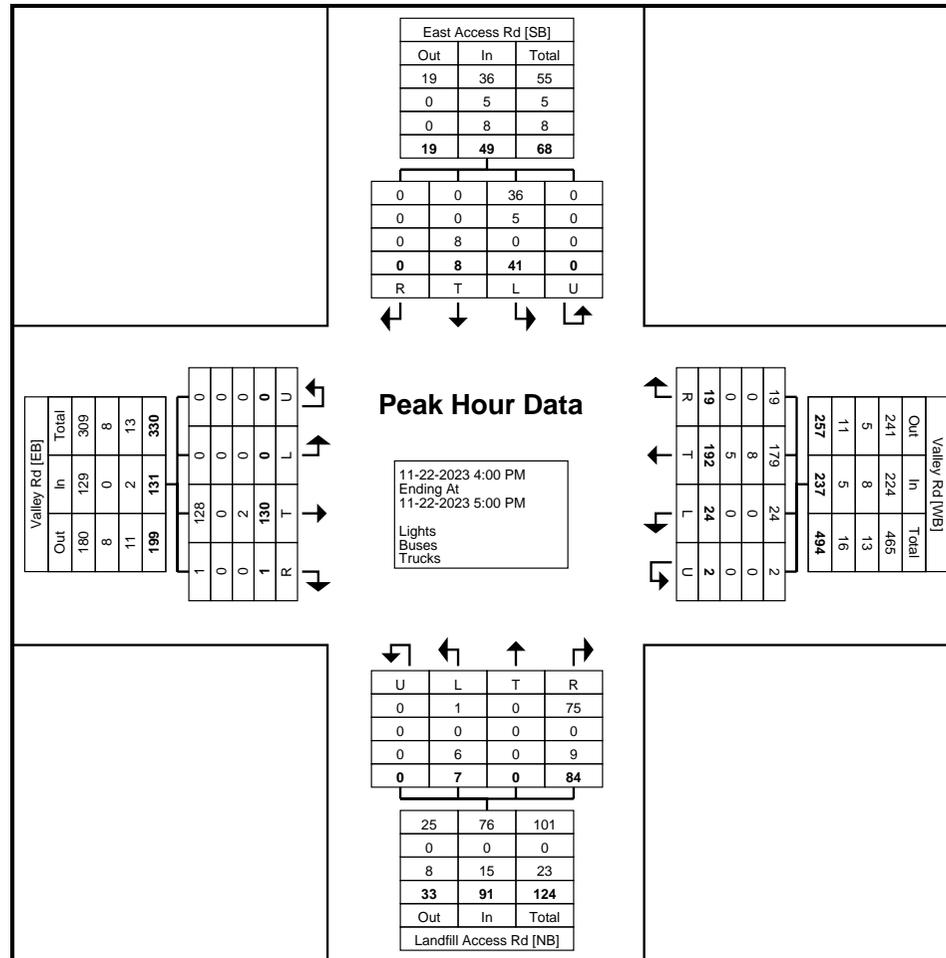
Turning Movement Data

Start Time	East Access Rd Southbound					Valley Rd Westbound					Landfill Access Rd Northbound					Valley Rd Eastbound					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
2:00 PM	0	2	13	0	15	3	38	13	1	55	13	0	6	0	19	0	25	0	0	25	114
2:15 PM	0	4	10	0	14	3	31	7	0	41	16	0	2	0	18	0	15	0	0	15	88
2:30 PM	0	0	9	0	9	4	28	7	0	39	10	0	4	0	14	0	23	0	0	23	85
2:45 PM	0	5	7	0	12	3	23	8	0	34	15	0	0	0	15	0	21	0	0	21	82
Hourly Total	0	11	39	0	50	13	120	35	1	169	54	0	12	0	66	0	84	0	0	84	369
3:00 PM	0	1	11	0	12	6	20	5	0	31	10	0	6	0	16	0	22	0	0	22	81
3:15 PM	1	6	9	0	16	3	29	10	2	44	6	0	2	0	8	0	25	0	0	25	93
3:30 PM	0	4	11	0	15	3	45	7	1	56	12	0	4	0	16	0	27	0	0	27	114
3:45 PM	1	4	18	0	23	4	34	6	0	44	14	0	4	0	18	0	26	0	0	26	111
Hourly Total	2	15	49	0	66	16	128	28	3	175	42	0	16	0	58	0	100	0	0	100	399
4:00 PM	0	4	19	0	23	3	53	10	0	66	19	0	4	0	23	0	32	0	0	32	144
4:15 PM	0	4	5	0	9	6	38	6	0	50	20	0	2	0	22	0	30	0	0	30	111
4:30 PM	0	0	9	0	9	3	50	5	2	60	30	0	1	0	31	1	36	0	0	37	137
4:45 PM	0	0	8	0	8	7	51	3	0	61	15	0	0	0	15	0	32	0	0	32	116
Hourly Total	0	8	41	0	49	19	192	24	2	237	84	0	7	0	91	1	130	0	0	131	508
5:00 PM	1	0	15	0	16	2	64	2	0	68	9	0	0	0	9	0	22	0	0	22	115
5:15 PM	0	0	9	0	9	1	40	2	0	43	13	0	0	0	13	1	36	0	0	37	102
5:30 PM	1	0	10	0	11	2	35	0	0	37	12	0	0	0	12	0	39	0	0	39	99
5:45 PM	0	0	8	0	8	2	37	3	3	45	2	0	0	0	2	0	37	0	0	37	92
Hourly Total	2	0	42	0	44	7	176	7	3	193	36	0	0	0	36	1	134	0	0	135	408
6:00 PM	0	0	6	0	6	0	23	3	0	26	0	0	0	0	0	0	24	0	0	24	56
6:15 PM	0	0	2	0	2	0	32	2	1	35	3	0	0	0	3	0	16	0	0	16	56
6:30 PM	0	0	3	0	3	0	24	2	0	26	6	0	0	0	6	0	23	0	0	23	58
6:45 PM	0	0	8	0	8	0	23	0	0	23	2	0	0	0	2	0	10	0	0	10	43
Hourly Total	0	0	19	0	19	0	102	7	1	110	11	0	0	0	11	0	73	0	0	73	213
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5:30 AM	0	0	10	0	10	24	2	0	0	26	0	0	0	0	0	0	6	0	0	6	42
5:45 AM	0	0	20	0	20	16	4	5	0	25	1	0	0	0	1	0	4	0	0	4	50
Hourly Total	0	0	30	0	30	40	6	5	0	51	1	0	0	0	1	0	10	0	0	10	92
6:00 AM	0	0	18	0	18	4	4	8	0	16	2	0	0	0	2	0	9	0	0	9	45
6:15 AM	0	0	10	0	10	8	9	8	0	25	2	0	0	0	2	0	16	0	0	16	53
6:30 AM	0	0	4	0	4	8	3	16	0	27	2	0	0	0	2	0	19	0	0	19	52
6:45 AM	0	0	2	0	2	12	9	19	0	40	3	0	0	0	3	0	15	0	0	15	60
Hourly Total	0	0	34	0	34	32	25	51	0	108	9	0	0	0	9	0	59	0	0	59	210
7:00 AM	0	0	7	0	7	5	8	11	0	24	1	0	0	0	1	0	21	0	0	21	53
7:15 AM	0	0	5	0	5	4	9	17	0	30	0	0	0	0	0	0	19	0	0	19	54
7:30 AM	0	0	13	0	13	6	13	17	0	36	3	0	0	0	3	0	38	0	0	38	90
7:45 AM	0	2	6	0	8	16	28	11	0	55	6	0	0	0	6	0	32	0	0	32	101
Hourly Total	0	2	31	0	33	31	58	56	0	145	10	0	0	0	10	0	110	0	0	110	298

8:00 AM	0	4	2	0	6	11	18	6	1	36	3	0	2	0	5	1	30	0	0	31	78
8:15 AM	0	3	4	0	7	3	9	7	0	19	0	0	4	0	4	0	41	0	0	41	71
8:30 AM	0	4	1	0	5	3	20	7	0	30	2	0	3	0	5	0	37	0	0	37	77
8:45 AM	0	4	3	0	7	6	29	13	0	48	5	0	4	0	9	0	29	0	0	29	93
Hourly Total	0	15	10	0	25	23	76	33	1	133	10	0	13	0	23	1	137	0	0	138	319
9:00 AM	0	5	5	0	10	8	15	5	0	28	6	0	5	0	11	1	18	0	0	19	68
9:15 AM	0	3	3	0	6	5	21	8	1	35	6	0	4	0	10	0	19	0	0	19	70
9:30 AM	0	6	3	0	9	3	22	12	1	38	10	0	5	0	15	0	20	0	0	20	82
9:45 AM	0	2	15	0	17	5	28	7	0	40	9	0	6	0	15	0	19	0	0	19	91
Hourly Total	0	16	26	0	42	21	86	32	2	141	31	0	20	0	51	1	76	0	0	77	311
10:00 AM	0	5	9	0	14	2	22	6	0	30	7	0	3	0	10	0	32	0	0	32	86
10:15 AM	0	2	11	0	13	5	16	8	0	29	5	0	4	0	9	0	16	0	0	16	67
Grand Total	4	74	341	0	419	209	1007	292	13	1521	300	0	75	0	375	4	961	0	0	965	3280
Approach %	1.0	17.7	81.4	0.0	-	13.7	66.2	19.2	0.9	-	80.0	0.0	20.0	0.0	-	0.4	99.6	0.0	0.0	-	-
Total %	0.1	2.3	10.4	0.0	12.8	6.4	30.7	8.9	0.4	46.4	9.1	0.0	2.3	0.0	11.4	0.1	29.3	0.0	0.0	29.4	-
Lights	4	0	192	0	196	204	885	271	13	1373	269	0	3	0	272	4	945	0	0	949	2790
% Lights	100.0	0.0	56.3	-	46.8	97.6	87.9	92.8	100.0	90.3	89.7	-	4.0	-	72.5	100.0	98.3	-	-	98.3	85.1
Buses	0	0	138	0	138	0	92	0	0	92	0	0	0	0	0	0	2	0	0	2	232
% Buses	0.0	0.0	40.5	-	32.9	0.0	9.1	0.0	0.0	6.0	0.0	-	0.0	-	0.0	0.0	0.2	-	-	0.2	7.1
Trucks	0	74	11	0	85	5	30	21	0	56	31	0	72	0	103	0	14	0	0	14	258
% Trucks	0.0	100.0	3.2	-	20.3	2.4	3.0	7.2	0.0	3.7	10.3	-	96.0	-	27.5	0.0	1.5	-	-	1.5	7.9

Turning Movement Peak Hour Data (4:00 PM)

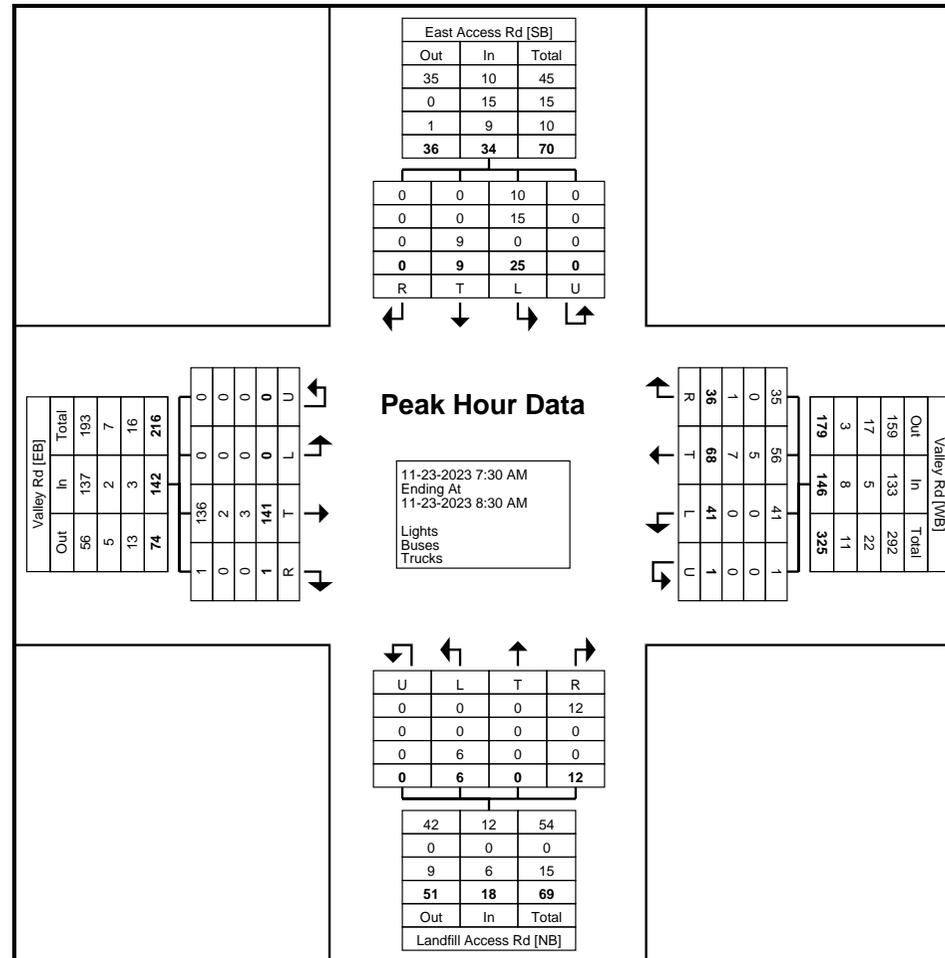
Start Time	East Access Rd Southbound					Valley Rd Westbound					Landfill Access Rd Northbound					Valley Rd Eastbound					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
4:00 PM	0	4	19	0	23	3	53	10	0	66	19	0	4	0	23	0	32	0	0	32	144
4:15 PM	0	4	5	0	9	6	38	6	0	50	20	0	2	0	22	0	30	0	0	30	111
4:30 PM	0	0	9	0	9	3	50	5	2	60	30	0	1	0	31	1	36	0	0	37	137
4:45 PM	0	0	8	0	8	7	51	3	0	61	15	0	0	0	15	0	32	0	0	32	116
Total	0	8	41	0	49	19	192	24	2	237	84	0	7	0	91	1	130	0	0	131	508
Approach %	0.0	16.3	83.7	0.0	-	8.0	81.0	10.1	0.8	-	92.3	0.0	7.7	0.0	-	0.8	99.2	0.0	0.0	-	-
Total %	0.0	1.6	8.1	0.0	9.6	3.7	37.8	4.7	0.4	46.7	16.5	0.0	1.4	0.0	17.9	0.2	25.6	0.0	0.0	25.8	-
PHF	0.000	0.500	0.539	0.000	0.533	0.679	0.906	0.600	0.250	0.898	0.700	0.000	0.438	0.000	0.734	0.250	0.903	0.000	0.000	0.885	0.882
Lights	0	0	36	0	36	19	179	24	2	224	75	0	1	0	76	1	128	0	0	129	465
% Lights	-	0.0	87.8	-	73.5	100.0	93.2	100.0	100.0	94.5	89.3	-	14.3	-	83.5	100.0	98.5	-	-	98.5	91.5
Buses	0	0	5	0	5	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	13
% Buses	-	0.0	12.2	-	10.2	0.0	4.2	0.0	0.0	3.4	0.0	-	0.0	-	0.0	0.0	0.0	-	-	0.0	2.6
Trucks	0	8	0	0	8	0	5	0	0	5	9	0	6	0	15	0	2	0	0	2	30
% Trucks	-	100.0	0.0	-	16.3	0.0	2.6	0.0	0.0	2.1	10.7	-	85.7	-	16.5	0.0	1.5	-	-	1.5	5.9



Turning Movement Peak Hour Data Plot (4:00 PM)

Turning Movement Peak Hour Data (7:30 AM)

Start Time	East Access Rd Southbound					Valley Rd Westbound					Landfill Access Rd Northbound					Valley Rd Eastbound					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
7:30 AM	0	0	13	0	13	6	13	17	0	36	3	0	0	0	3	0	38	0	0	38	90
7:45 AM	0	2	6	0	8	16	28	11	0	55	6	0	0	0	6	0	32	0	0	32	101
8:00 AM	0	4	2	0	6	11	18	6	1	36	3	0	2	0	5	1	30	0	0	31	78
8:15 AM	0	3	4	0	7	3	9	7	0	19	0	0	4	0	4	0	41	0	0	41	71
Total	0	9	25	0	34	36	68	41	1	146	12	0	6	0	18	1	141	0	0	142	340
Approach %	0.0	26.5	73.5	0.0	-	24.7	46.6	28.1	0.7	-	66.7	0.0	33.3	0.0	-	0.7	99.3	0.0	0.0	-	-
Total %	0.0	2.6	7.4	0.0	10.0	10.6	20.0	12.1	0.3	42.9	3.5	0.0	1.8	0.0	5.3	0.3	41.5	0.0	0.0	41.8	-
PHF	0.000	0.563	0.481	0.000	0.654	0.563	0.607	0.603	0.250	0.664	0.500	0.000	0.375	0.000	0.750	0.250	0.860	0.000	0.000	0.866	0.842
Lights	0	0	10	0	10	35	56	41	1	133	12	0	0	0	12	1	136	0	0	137	292
% Lights	-	0.0	40.0	-	29.4	97.2	82.4	100.0	100.0	91.1	100.0	-	0.0	-	66.7	100.0	96.5	-	-	96.5	85.9
Buses	0	0	15	0	15	0	5	0	0	5	0	0	0	0	0	0	2	0	0	2	22
% Buses	-	0.0	60.0	-	44.1	0.0	7.4	0.0	0.0	3.4	0.0	-	0.0	-	0.0	0.0	1.4	-	-	1.4	6.5
Trucks	0	9	0	0	9	1	7	0	0	8	0	0	6	0	6	0	3	0	0	3	26
% Trucks	-	100.0	0.0	-	26.5	2.8	10.3	0.0	0.0	5.5	0.0	-	100.0	-	33.3	0.0	2.1	-	-	2.1	7.6



Turning Movement Peak Hour Data Plot (7:30 AM)

APPENDIX C

Warrant Analysis

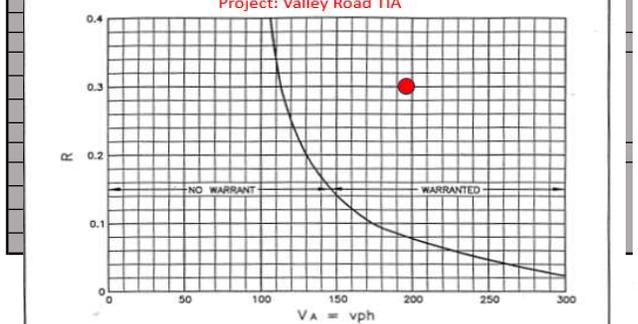
Valley Road Business Park TIA
Turning Movement Warrant Analysis

Intersection Valley Road and Cedar Villa Access
Horizon 2023 Existing

	PM Peak					
	Eastbound			Westbound		
	L	T	R	L	T	R
Unadjusted Traffic	0	98	0	0	136	58
Truck %	0	4%	0	0	2%	3%
Truck Volume	0	4	0	0	3	2
Car Volume	0	94	0	0	133	56
E _T 1.7	0	7	0	0	5	3
E _T 3.0						
Adjusted Volume 1.7	0	101	0	0	138	59

Right Turn Warrants		
V _a	101	197
V _r	0	59
R	0.00	0.30

Flared Intersection Warrants



Warrants are based on Design Hourly Volumes
V_A = Advancing Volume, includes Volume Right and Volume Left unless exclusive left turn lane.
V_R = Right Turn Volume, vph.
 $R = V_R / V_A$
Warrants: NON FLARED INTERSECTION - Provide 3.7 m turning lane.
FLARED INTERSECTION - Lengthen deceleration lane to meet the right turn lane standard.

Valley Road and Cedar Villa (2023 Existing PM Peak)
V_a=197
V_r=59
R=0.30

Saskatchewan Highways and Transportation
WARRANTS FOR RIGHT TURN LANES RURAL HIGHWAYS
RECOMMENDED BY: [Signature] DATE: 05/03/24 STANDARD PLAN NO: 20614
APPROVED BY: [Signature] DATE: 05/22/24 SHEET: 1 of 2

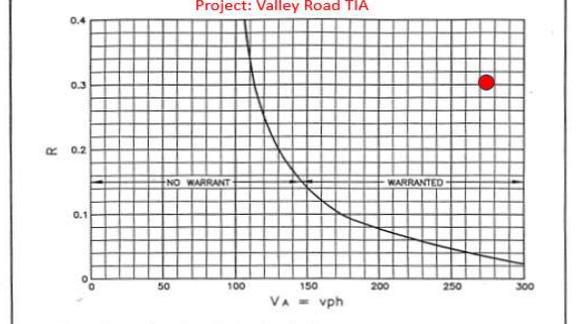
Valley Road Business Park TIA
Turning Movement Warrant Analysis

Intersection Valley Road and Cedar Villa Access
Horizon 2038 Background PM Peak

	PM Peak					
	Eastbound			Westbound		
	L	T	R	L	T	R
Unadjusted Traffic	2	137	0	0	190	81
Truck %	0	4%	0	0	2%	3%
Truck Volume	0	5	0	0	4	2
Car Volume	2	132	0	0	186	79
E _T 1.7	0	9	0	0	6	4
E _T 3.0						
Adjusted Volume 1.7	2	141	0	0	193	83

Right Turn Warrants		
V _a	143	275
V _r	0	83
R	0.00	0.30

Flared Intersection Warrants



Warrants are based on Design Hourly Volumes
V_A = Advancing Volume, includes Volume Right and Volume Left unless exclusive left turn lane.
V_R = Right Turn Volume, vph.
 $R = V_R / V_A$
Warrants: NON FLARED INTERSECTION - Provide 3.7 m turning lane.
FLARED INTERSECTION - Lengthen deceleration lane to meet the right turn lane standard.

Valley Road and Cedar Villa (2038 Background PM Peak)
V_a=275
V_r=83
R=0.30

Saskatchewan Highways and Transportation
WARRANTS FOR RIGHT TURN LANES RURAL HIGHWAYS
RECOMMENDED BY: [Signature] DATE: 05/03/24 STANDARD PLAN NO: 20614
APPROVED BY: [Signature] DATE: 05/22/24 SHEET: 1 of 2

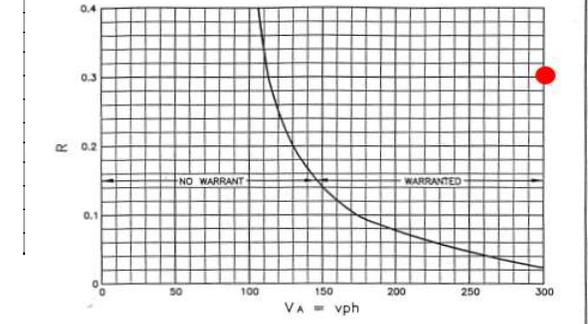
Valley Road Business Park TIA
Turning Movement Warrant Analysis

Intersection Valley Road and Cedar Villa Access
Horizon 2038 Total

	AM Peak					
	Eastbound			Westbound		
	L	T	R	L	T	R
Unadjusted Traffic	2	232	0	0	398	192
Truck %	0	5%	0	0	0%	0
Truck Volume	0	12	0	0	0	0
Car Volume	2	220	0	0	398	192
E _T 1.7	0	20	0	0	0	0
E _T 3.0						
Adjusted Volume 1.7	2	240	0	0	398	192

Right Turn Warrants		
V _a	242	590
V _r	0	192
R	0.00	0.33

Flared Intersection Warrants



Warrants are based on Design Hourly Volumes
V_A = Advancing Volume, includes Volume Right and Volume Left unless exclusive left turn lane.
V_R = Right Turn Volume, vph.
 $R = V_R / V_A$
Warrants: NON FLARED INTERSECTION - Provide 3.7 m turning lane.
FLARED INTERSECTION - Lengthen deceleration lane to meet the right turn lane standard.

V_a=590
V_r=192
R=0.33

Saskatchewan Highways and Transportation
WARRANTS FOR RIGHT TURN LANES RURAL HIGHWAYS
RECOMMENDED BY: [Signature] DATE: 05/03/24 STANDARD PLAN NO: 20614
APPROVED BY: [Signature] DATE: 05/22/24 SHEET: 1 of 2

Valley Road TIA
Turning Movement Warrant Analysis

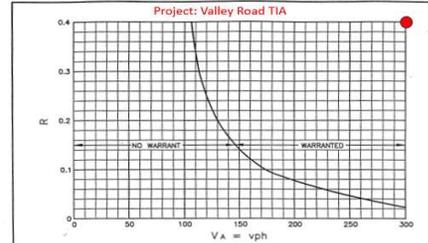
Intersection Valley Road and Business Park Access South
Horizon 2038 Total

	AM Peak					
	Northbound			Southbound		
	L	T	R	L	T	R
Unadjusted Traffic	26	172	0	0	98	301
Truck %	0%	5%	0%	0%	0%	0%
Truck Volume	0	9	0	0	0	0
Car Volume	26	163	0	0	98	301
E _T 1.7	0	15	0	0	0	0
E _T 3.0						
Adjusted Volume 1.7	26	178	0	0	98	301

Right Turn Warrants				
V _a	204	NA	399	Warranted
V _r	0		301	
R	0.00		0.75	
#REF!				
V _o	399		204	
V _L	26		0	
V _A	204		399	

Flared Intersection Warrants				
AADT	6000	Warranted	6000	NA
Left turn AADT	260		0	
#REF!				
V _o	399	Warranted	204	NA
V _L	26		0	
V _A	204		399	
L	0.13		0.00	

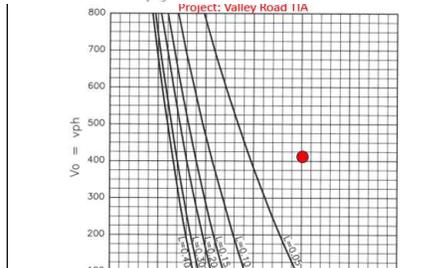
Bypass Lane Warrants				
V _o	399	Warranted	204	NA
V _L	26		0	
V _A	204		399	
L	0.13		0.00	



Warrants are based on Design Hourly Volumes
V_a = Advancing Volume, includes Volume Right and Volume Left unless exclusive left turn lane.
V_r = Right Turn Volume, vph.
R = V_r/V_a
Warrants: NON FLARED INTERSECTION - Provide 3.7 m turning lane.
FLARED INTERSECTION - Lengthen deceleration lane to meet the right turn lane standard.
Valley Road and Business Park South (2038 Total AM)
V_a= 399
V_r=301
R=0.75

WARRANTS FOR RIGHT TURN LANES RURAL HIGHWAYS

RECOMMENDED BY: [Signature] DIRECTOR TECH. STDS. & POLICES DATE: 05/10/14 STANDARD PLAN NO: 20614
APPROVED BY: [Signature] ASST. DIR. TRAFFIC BRANCH DATE: 02/12/14 SHEET: 1 of 2



Valley Road and Business Park South (2038 Total)
V_o= 399
V_L=26
V_A=204
L=0.13
V_a = Advancing volume, includes volume left and volume right unless exclusive right turn lane.
V_o = Opposing volume, includes volume left, and volume right unless separated right turning roadway (ramp).
L = V_L / V_a
NOTES:
1. Use corrected peak hourly volumes (vph) projected to the 10th year after the proposed construction date. Refer to correction factors under SKS 2.3.1-C for further information.
2. No warrant for a bypass lane is plotted point falls to left of applicable "L" line, or if L < 0.05.
3. If a bypass lane is not warranted, check flared intersection treatment warrants, Standard Plan 20613.
4. For additional information please refer to SKS 2.2.2-B, SKS 2.3.1-F, SKS 2.3.5-C & SKS 2.3.8-B.

WARRANTS FOR BYPASS LANE INTERSECTIONS 2 LANE RURAL HIGHWAYS

RECOMMENDED BY: [Signature] DIRECTOR & TRAFFIC ENG DATE: 05/10/14 STANDARD PLAN NO: 20611
APPROVED BY: [Signature] ASST. DIR. TRAFFIC BRANCH DATE: 02/12/14 SHEET: 1 OF 1

Valley Road TIA

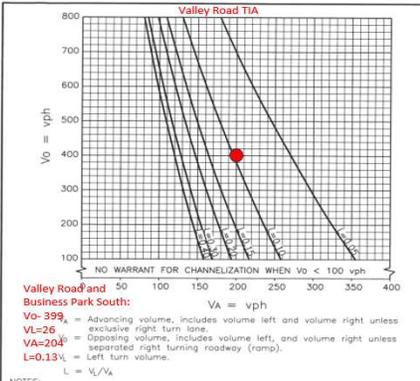
A flared intersection treatment is warranted at the following locations:

- At all intersections with Provincial Highways.
- At all accesses to towns and villages where:
 - highway classification is a major or minor arterial and the population exceeds 500; or
 - highway classification is a collector or local and the population exceeds 700.
- At all provincial parks, regional parks, provincial campsites, and provincial picnic sites where:
 - highway classification is a major or minor arterial; or
 - highway classification is a collector or local and the highway AADT exceeds 600 and the left turn AADT exceeds 50.
- At all industrial access roads where: Highway AADT=6000
LT AADT= 260
 - the highway AADT exceeds 500 and the left turn AADT exceeds 25.
- At all other intersection roads where:
 - the highway AADT exceeds 600 and the left turn AADT exceeds 50.

NOTE:
1. Use highway AADT projected to the 10th year after the proposed construction date.
2. Check warrants for Channelized or Bypass Lane before considering a flared intersection treatment.

WARRANTS FOR FLARED INTERSECTIONS 2 LANE RURAL HIGHWAYS

RECOMMENDED BY: [Signature] DIRECTOR TECH. STDS. & POLICES DATE: 05/10/14 STANDARD PLAN NO: 20614
APPROVED BY: [Signature] ASST. DIR. TRAFFIC BRANCH DATE: 02/12/14 SHEET: 1 of 1



Valley Road and Business Park South:
V_o= 399 = Advancing volume, includes volume left and volume right unless exclusive right turn lane.
V_L=26 = Opposing volume, includes volume left, and volume right unless separated right turning roadway (ramp).
L=0.13 = Left turn volume.
L = V_L / V_a
NOTES:
1. Use corrected peak hourly volumes (vph) projected to the 10th year after the proposed construction date. Refer to correction factors under SKS 2.3.1-C for further information.
2. No warrant for channelization if plotted point falls to left of applicable "L" line, or if L < 0.05.
3. If channelization is not warranted, check bypass lane treatment, Standard Plan 20614.
4. Check right turn lane warrants, Standard Plan 20614.
5. For additional information please refer to SKS 2.2.2-B, SKS 2.3.1-F, SKS 2.3.5-C & SKS 2.3.8-B.

WARRANTS FOR CHANNELIZED INTERSECTIONS 2 LANE RURAL HIGHWAYS

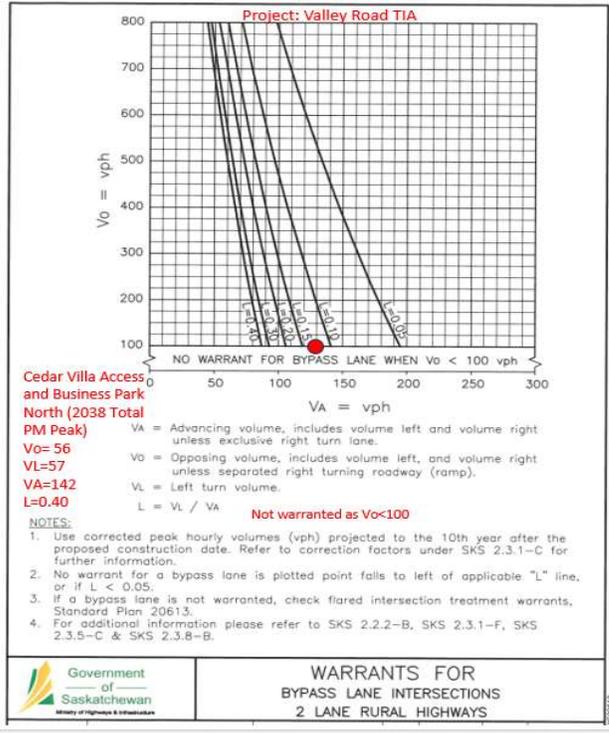
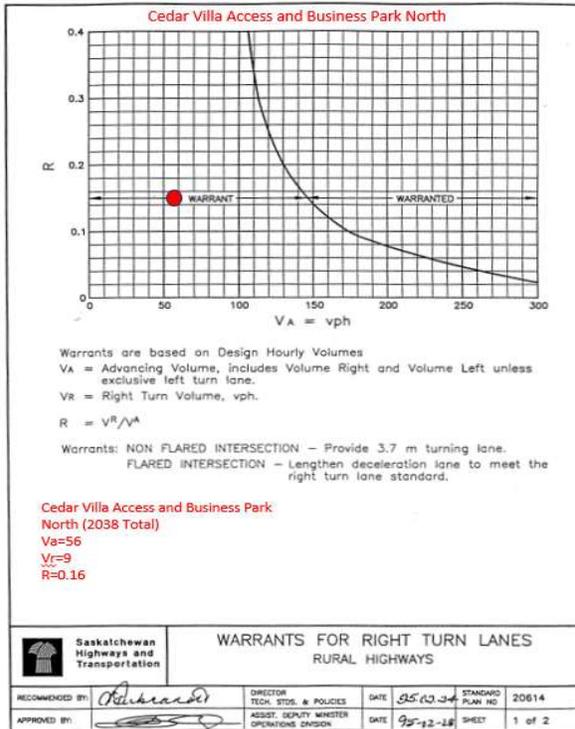
RECOMMENDED BY: [Signature] DIRECTOR & TRAFFIC ENG DATE: 05/10/14 STANDARD PLAN NO: 20611
APPROVED BY: [Signature] ASST. DIR. TRAFFIC BRANCH DATE: 02/12/14 SHEET: 1 OF 1

Valley Road TIA
Turning Movement Warrant Analysis

Intersection Cedar Villa and Business Park North
Horizon 2038 Total

	PM Peak					
	Eastbound			Westbound		
	L	T	R	L	T	R
Unadjusted Traffic	0	47	9	57	83	0
E_T 3.0						
Adjusted Volume 1.7	0	47	9	57	85	0
Adjusted Volume 3.0						

Right Turn Warrants				
V_s	56	Not Warranted	142	NA
V_r	9		0	
R	0.16		0.00	
#REF!				
V_o				
V_l				
V_A				
Flared Intersection Warrants				
AADT	2000	NA	2000	NA
Left turn AADT	0		570	
0				
V_o	142	NA	56	NA
V_l	0		57	
V_A	56		142	
L	0.00		0.40	
Bypass Lane Warrants				
V_o	142	NA	56	Not Warranted
V_l	0		57	
V_A	56		142	
L	0.00		0.40	



Valley Road TIA
Turning Movement Warrant Analysis

Intersection Cedar Villa and Business Park North
Horizon 2038 Total

	AM Peak					
	Eastbound			Westbound		
	L	T	R	L	T	R
Unadjusted Traffic	0	27	26	153	15	0
Truck %	0%	0%	0%	0%	3%	0%
Truck Volume	0	0	0	0	0	0
Car Volume	0	27	26	153	15	0
E_T 1.7	0	0	0	0	1	0
E_T 3.0						
Adjusted Volume 1.7	0	27	26	153	15	0
Adjusted Volume 3.0						

Right Turn Warrants				
V_a	53	Not Warranted	168	NA
V_r	26		0	
R	0.49		0.00	
Flared Intersection Warrants				
AADT	2200	NA	2200	Warranted
Left turn AADT	0		1530	
0				
V_o	168	NA	53	NA
V_L	0		153	
V_A	53		168	
L	0.00		0.91	
Bypass Lane Warrants				
V_o	168	NA	53	Not Warranted
V_L	0		153	
V_A	53		168	
L	0.00		0.91	

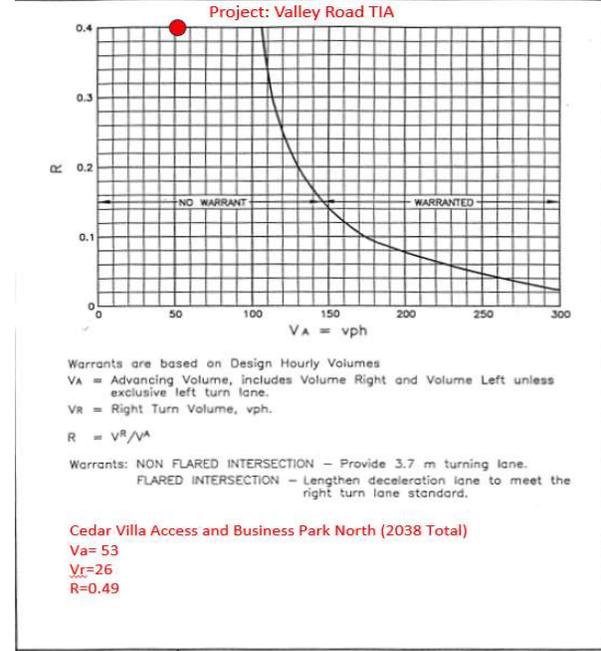
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 - highway classification is a collector or local and the population exceeds 700.
- At all provincial parks, regional parks, provincial campsites, and provincial picnic sites where:
 - highway classification is a major or minor arterial; or
 - highway classification is a collector or local and the highway AADT exceeds 600 and the left turn AADT exceeds 50.
- At all industrial access roads where:
 - AADT = 2200
 - Left Turn AADT 1530
 - the highway AADT exceeds 500 and the left turn AADT exceeds 25.
- At all other intersection roads where:
 - the highway AADT exceeds 600 and the left turn AADT exceeds 50.

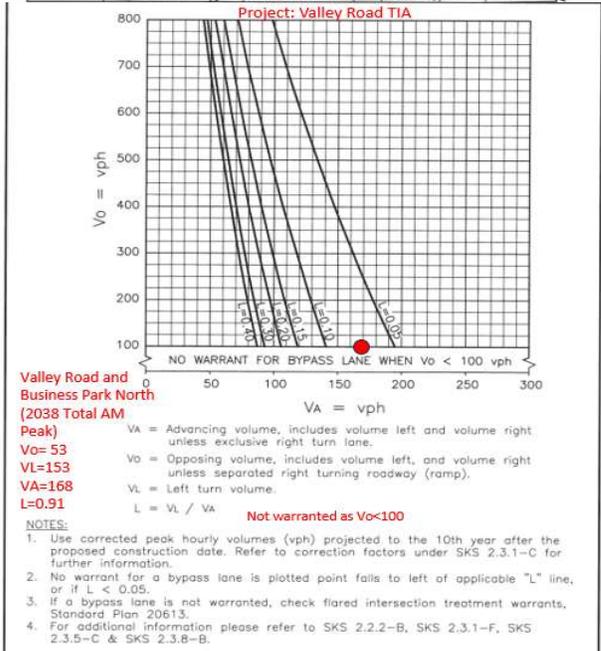
NOTE:

- Use highway AADT projected to the 10th year after the proposed construction date.
- Check warrants for Channelized or Bypass Lane before considering a flared intersection treatment.

Saskatchewan Highways and Transportation		WARRANTS FOR FLARED INTERSECTIONS 2 LANE RURAL HIGHWAYS			
RECOMMENDED BY:	<i>[Signature]</i>	DIRECTOR TECH. STDS. & POLICIES	DATE	31.08.17	STANDARD PLAN NO
APPROVED BY:	<i>[Signature]</i>	ASST. DEPUTY MINISTER OPERATIONS DIVISION	DATE	9.9.2018	SHEET 1 of 1



Saskatchewan Highways and Transportation		WARRANTS FOR RIGHT TURN LANES RURAL HIGHWAYS			
RECOMMENDED BY:	<i>[Signature]</i>	DIRECTOR TECH. STDS. & POLICIES	DATE	31.08.17	STANDARD PLAN NO
					20614



Government of Saskatchewan Ministry of Highways & Infrastructure		WARRANTS FOR BYPASS LANE INTERSECTIONS 2 LANE RURAL HIGHWAYS			
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					Peak Hour	AADT		
Valley Road and Cedar Villa Access	2023 Existing PM Peak	Major	Leg 1	West	234	2340	2795	Warranted
			Leg 2	East	325	3250		
		Minor	Leg 1	North	91	910	910	Not Warranted
			Leg 2	South	0	0		
	2023 Existing AM Peak	Major	Leg 1	West	177	1770	1915	Warranted
			Leg 2	East	206	2060		
		Minor	Leg 1	North	29	290	290	Not Warranted
			Leg 2	South	0	0		
	2038 Background PM Peak	Major	Leg 1	West	327	3270	3905	Warranted
			Leg 2	East	454	4540		
Minor		Leg 1	North	127	1270	1270	Warranted	
		Leg 2	South	0	0			
2038 Total PM Peak	Major	Leg 1	West	712	7120	8900	Warranted	
		Leg 2	East	1068	10680			
	Minor	Leg 1	North	0	0	3600	Warranted	
		Leg 2	South	360	3600			
Valley Road and Business Park South Access	2038 Total PM Peak	Major	Leg 1	South	380	3800	5460	Warranted
			Leg 2	North	712	7120		
		Minor	Leg 1	East	0	0	3940	Warranted
			Leg 2	West	394	3940		
Cedar Villa and Business Park North Access	2038 Total AM Peak	Major	Leg 1	West	161	1610	2465	Warranted
			Leg 2	East	332	3320		
		Minor	Leg 1	North	0	0	0	Not Warranted
			Leg 2	South	0	0		

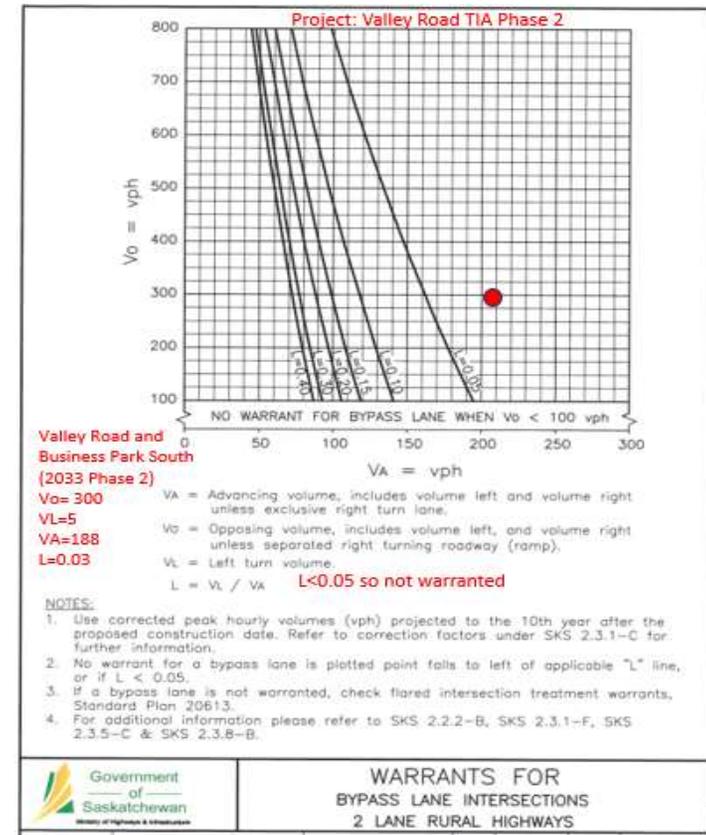
Design Manual	DM 2621-2
Section: PARTIAL OR AREA LIGHTING	Subject: INTERSECTION AREA LIGHTING
FIGURE 2621-2-1	
WARRANTS FOR INTERSECTION AREA LIGHTING	
<ol style="list-style-type: none"> 1. Traffic Volume Warrant <ol style="list-style-type: none"> 1.1 Through Highway <ol style="list-style-type: none"> Leg 1 AADT + Leg 2 AADT = X1 >= 1500 AADT, , and 1.2 Intersecting Roadway <ol style="list-style-type: none"> Leg 1 AADT + Leg 2 AADT = X2 >= 1000 AADT Note: For T intersections leg 1 or leg 2 = 0 AADT 2. Raised Channelization/Median Curbing Warrant <ol style="list-style-type: none"> 2.1 Traffic Speed <ol style="list-style-type: none"> Posted speed limit or actual 85th percentile speed >= 60 km/h, and 2.2 Traffic Engineering Assessment <ol style="list-style-type: none"> Traffic engineering assessment supports retention of the raised islands/median and the provision of area lighting Note: The limits of the area lighting for raised islands should extend to the limits of the raised islands/media. 3. Traffic Accident Rate Warrant <ol style="list-style-type: none"> 3.1 Traffic Volume <ol style="list-style-type: none"> Through highway traffic volume >= 1000 AADT, and 3.2 Accident Rate <ol style="list-style-type: none"> The intersection accident rate is >= 1.5 accidents/million entering vehicles/year. The ratio of the last three year average night to day accident rate is > 1.5. A traffic engineering study supports area lighting as an acceptable expenditure 	

Valley Road TIA
Turning Movement Warrant Analysis

Intersection Valley Road and Business Park Access South
Horizon 2033 Phase 2

	AM Peak					
	Northbound			Southbound		
	L	T	R	L	T	R
Unadjusted Traffic	5	177	0	0	210	90
Truck %	0%	5%	0%	0%	0%	0%
Truck Volume	0	9	0	0	0	0
Car Volume	5	168	0	0	210	90
E _T 1.7	0	15	0	0	0	0
E _T 3.0						
Adjusted Volume 1.7	5	183	0	0	210	90
Adjusted Volume 3.0						

Right Turn Warrants				
V _a	188	NA	300	Warranted
V _r	0		90	
R	0.00		0.30	
#REF!				
V _o				
V _L				
V _A				
Flared Intersection Warrants				
AADT	4900	Warranted	4900	NA
Left turn AADT	50		0	
0				
V _o	300	Not Warranted	188	NA
V _L	5		0	
V _A	188		300	
L	0.03		0.00	
Bypass Lane Warrants				
V _o	300	Not Warranted	188	NA
V _L	5		0	
V _A	188		300	
L	0.03		0.00	



APPENDIX D

Synchro Reports

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	0	120	57	11	18	0
Future Vol, veh/h	0	120	57	11	18	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	5	0	0	0	0
Mvmt Flow	0	126	60	12	19	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	72	0	-	0	192 66
Stage 1	-	-	-	-	66 -
Stage 2	-	-	-	-	126 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1541	-	-	-	801 1003
Stage 1	-	-	-	-	962 -
Stage 2	-	-	-	-	905 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1541	-	-	-	801 1003
Mov Cap-2 Maneuver	-	-	-	-	801 -
Stage 1	-	-	-	-	962 -
Stage 2	-	-	-	-	905 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1541	-	-	-	801
HCM Lane V/C Ratio	-	-	-	-	0.024
HCM Control Delay (s)	0	-	-	-	9.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	0	98	136	58	33	0
Future Vol, veh/h	0	98	136	58	33	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	4	2	3	0	0
Mvmt Flow	0	108	149	64	36	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	213	0	-	0	289 181
Stage 1	-	-	-	-	181 -
Stage 2	-	-	-	-	108 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1369	-	-	-	706 867
Stage 1	-	-	-	-	855 -
Stage 2	-	-	-	-	921 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1369	-	-	-	706 867
Mov Cap-2 Maneuver	-	-	-	-	706 -
Stage 1	-	-	-	-	855 -
Stage 2	-	-	-	-	921 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1369	-	-	-	706
HCM Lane V/C Ratio	-	-	-	-	0.051
HCM Control Delay (s)	0	-	-	-	10.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Lanes, Volumes, Timings

5: Landfill Access Road/Landfill Access Rd & Valley Road

01-11-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	141	1	41	68	36	6	0	12	25	9	0
Future Volume (vph)	0	141	1	41	68	36	6	0	12	25	9	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	160.0		145.0	140.0		140.0	100.0		35.0	0.0		50.0
Storage Lanes	1		1	1		1	0		1	0		0
Taper Length (m)	65.0			55.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			
Flt Protected				0.950				0.950			0.965	
Satd. Flow (prot)	1900	1827	1615	1805	3059	1568	0	902	1615	0	1074	0
Flt Permitted				0.386				0.730			0.852	
Satd. Flow (perm)	1900	1827	1615	733	3059	1568	0	694	1615	0	948	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			159			46			275			
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		372.2			386.1			351.0			300.0	
Travel Time (s)		22.3			23.2			21.1			18.0	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	4%	0%	0%	18%	3%	100%	0%	0%	60%	100%	0%
Adj. Flow (vph)	0	168	1	49	81	43	7	0	14	30	11	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	168	1	49	81	43	0	7	14	0	41	0
Enter Blocked Intersection	No	No	No	No	No	No						
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		5.2			5.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex							
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free	Perm	NA	
Protected Phases		2		1	6			8			4	

Lanes, Volumes, Timings

5: Landfill Access Road/Landfill Access Rd & Valley Road

01-11-2024

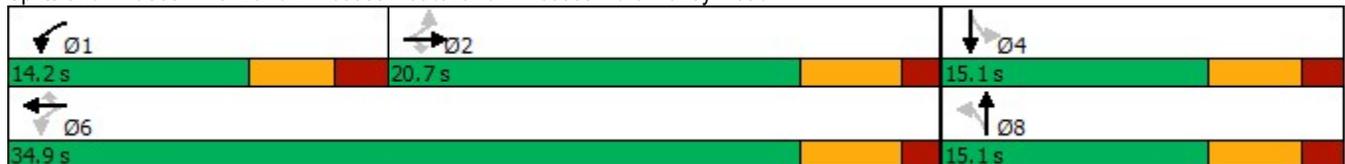


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6		6	8		Free	4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	9.0	15.0	15.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.4	20.4	20.4	14.2	20.3	20.3	15.1	15.1		15.1	15.1	
Total Split (s)	20.7	20.7	20.7	14.2	34.9	34.9	15.1	15.1		15.1	15.1	
Total Split (%)	41.4%	41.4%	41.4%	28.4%	69.8%	69.8%	30.2%	30.2%		30.2%	30.2%	
Maximum Green (s)	15.4	15.4	15.4	9.0	29.6	29.6	10.0	10.0		10.0	10.0	
Yellow Time (s)	3.8	3.8	3.8	3.2	3.8	3.8	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5	1.5	2.0	1.5	1.5	1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Lost Time (s)	5.3	5.3	5.3	5.2	5.3	5.3		5.1			5.1	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	8.0	8.0	8.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	Min	Min		Min	Min	
Act Effct Green (s)		17.4	17.4	17.7	21.5	21.5		19.7	36.7		19.7	
Actuated g/C Ratio		0.47	0.47	0.48	0.59	0.59		0.54	1.00		0.54	
v/c Ratio		0.19	0.00	0.07	0.05	0.05		0.02	0.01		0.08	
Control Delay		11.1	0.0	4.8	4.4	1.8		16.0	0.0		15.9	
Queue Delay		0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay		11.1	0.0	4.8	4.4	1.8		16.0	0.0		15.9	
LOS		B	A	A	A	A		B	A		B	
Approach Delay		11.1			3.8			5.3			15.9	
Approach LOS		B			A			A			B	

Intersection Summary

Area Type:	Other
Cycle Length:	50
Actuated Cycle Length:	36.7
Natural Cycle:	50
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.19
Intersection Signal Delay:	8.2
Intersection LOS:	A
Intersection Capacity Utilization:	46.6%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 5: Landfill Access Road/Landfill Access Rd & Valley Road



Lanes, Volumes, Timings

5: Landfill Access Road/Landfill Access Rd & Valley Road

01-11-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	130	1	24	192	19	7	0	84	41	8	0
Future Volume (vph)	0	130	1	24	192	19	7	0	84	41	8	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	160.0		145.0	140.0		140.0	100.0		35.0	0.0		50.0
Storage Lanes	1		1	1		1	0		1	0		0
Taper Length (m)	65.0			55.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			
Flt Protected				0.950				0.950			0.960	
Satd. Flow (prot)	1900	1863	1615	1805	3374	1615	0	970	1455	0	1446	0
Flt Permitted				0.460				0.720			0.800	
Satd. Flow (perm)	1900	1863	1615	874	3374	1615	0	735	1455	0	1205	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			123			35			211			
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		372.2			386.1			351.0			300.0	
Travel Time (s)		22.3			23.2			21.1			18.0	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	2%	0%	0%	7%	0%	86%	0%	11%	12%	100%	0%
Adj. Flow (vph)	0	148	1	27	218	22	8	0	95	47	9	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	148	1	27	218	22	0	8	95	0	56	0
Enter Blocked Intersection	No	No	No	No	No	No						
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		5.2			5.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex							
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free	Perm	NA	
Protected Phases		2		1	6			8			4	

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	0	120	57	11	18	0
Future Vol, veh/h	0	120	57	11	18	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	5	0	0	0	0
Mvmt Flow	0	177	84	16	27	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	100	0	-	0	269 92
Stage 1	-	-	-	-	92 -
Stage 2	-	-	-	-	177 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1505	-	-	-	725 971
Stage 1	-	-	-	-	937 -
Stage 2	-	-	-	-	859 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1505	-	-	-	725 971
Mov Cap-2 Maneuver	-	-	-	-	725 -
Stage 1	-	-	-	-	937 -
Stage 2	-	-	-	-	859 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1505	-	-	-	725
HCM Lane V/C Ratio	-	-	-	-	0.037
HCM Control Delay (s)	0	-	-	-	10.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0	98	136	58	33	0
Future Vol, veh/h	0	98	136	58	33	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	4	2	3	0	0
Mvmt Flow	0	151	209	89	51	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	298	0	0	405	254
Stage 1	-	-	-	254	-
Stage 2	-	-	-	151	-
Critical Hdwy	4.1	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	3.5	3.3
Pot Cap-1 Maneuver	1275	-	-	606	790
Stage 1	-	-	-	793	-
Stage 2	-	-	-	882	-
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	1275	-	-	606	790
Mov Cap-2 Maneuver	-	-	-	606	-
Stage 1	-	-	-	793	-
Stage 2	-	-	-	882	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1275	-	-	-	606
HCM Lane V/C Ratio	-	-	-	-	0.084
HCM Control Delay (s)	0	-	-	-	11.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Lanes, Volumes, Timings

5: Landfill Access Road/Landfill Access Rd & Valley Road

01-11-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	141	1	41	68	36	6	0	12	25	9	0
Future Volume (vph)	0	141	1	41	68	36	6	0	12	25	9	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	160.0		145.0	140.0		140.0	100.0		35.0	0.0		50.0
Storage Lanes	1		1	1		1	0		1	0		0
Taper Length (m)	65.0			55.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			
Flt Protected				0.950				0.950			0.964	
Satd. Flow (prot)	1900	1827	1615	1805	3059	1568	0	902	1615	0	1074	0
Flt Permitted				0.423				0.720			0.824	
Satd. Flow (perm)	1900	1827	1615	804	3059	1568	0	684	1615	0	918	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			159			60			275			
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		372.2			386.1			351.0			300.0	
Travel Time (s)		22.3			23.2			21.1			18.0	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Growth Factor	140%	140%	140%	140%	140%	140%	140%	140%	140%	140%	140%	140%
Heavy Vehicles (%)	0%	4%	0%	0%	18%	3%	100%	0%	0%	60%	100%	0%
Adj. Flow (vph)	0	235	2	68	113	60	10	0	20	42	15	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	235	2	68	113	60	0	10	20	0	57	0
Enter Blocked Intersection	No	No	No	No	No	No						
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		5.2			5.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex							
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free	Perm	NA	

Lanes, Volumes, Timings

5: Landfill Access Road/Landfill Access Rd & Valley Road

01-11-2024

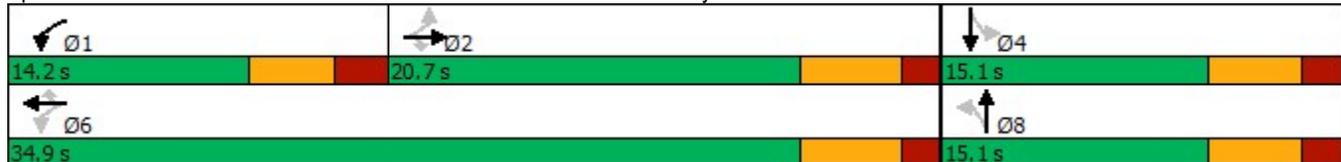


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8		Free	4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	9.0	15.0	15.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.4	20.4	20.4	14.2	20.3	20.3	15.1	15.1		15.1	15.1	
Total Split (s)	20.7	20.7	20.7	14.2	34.9	34.9	15.1	15.1		15.1	15.1	
Total Split (%)	41.4%	41.4%	41.4%	28.4%	69.8%	69.8%	30.2%	30.2%		30.2%	30.2%	
Maximum Green (s)	15.4	15.4	15.4	9.0	29.6	29.6	10.0	10.0		10.0	10.0	
Yellow Time (s)	3.8	3.8	3.8	3.2	3.8	3.8	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5	1.5	2.0	1.5	1.5	1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Lost Time (s)	5.3	5.3	5.3	5.2	5.3	5.3		5.1			5.1	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	8.0	8.0	8.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	Min	Min		Min	Min	
Act Effct Green (s)		15.9	15.9	21.6	23.3	23.3		16.2	43.1		16.2	
Actuated g/C Ratio		0.37	0.37	0.50	0.54	0.54		0.38	1.00		0.38	
v/c Ratio		0.35	0.00	0.11	0.07	0.07		0.04	0.01		0.17	
Control Delay		14.4	0.0	4.9	4.7	1.8		17.1	0.0		18.6	
Queue Delay		0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay		14.4	0.0	4.9	4.7	1.8		17.1	0.0		18.6	
LOS		B	A	A	A	A		B	A		B	
Approach Delay		14.3			4.0			5.7			18.6	
Approach LOS		B			A			A			B	

Intersection Summary

Area Type:	Other
Cycle Length:	50
Actuated Cycle Length:	43.1
Natural Cycle:	50
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.35
Intersection Signal Delay:	9.9
Intersection LOS:	A
Intersection Capacity Utilization:	47.4%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 5: Landfill Access Road/Landfill Access Rd & Valley Road



Lanes, Volumes, Timings

5: Landfill Access Road/Landfill Access Rd & Valley Road

01-11-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	130	1	24	192	19	7	0	84	41	8	0
Future Volume (vph)	0	130	1	24	192	19	7	0	84	41	8	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	160.0		145.0	140.0		140.0	100.0		35.0	0.0		50.0
Storage Lanes	1		1	1		1	0		1	0		0
Taper Length (m)	65.0			55.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			
Flt Protected				0.950				0.950			0.960	
Satd. Flow (prot)	1900	1863	1615	1805	3374	1615	0	970	1455	0	1440	0
Flt Permitted				0.480				0.706			0.754	
Satd. Flow (perm)	1900	1863	1615	912	3374	1615	0	721	1455	0	1131	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			123			35			211			
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		372.2			386.1			351.0			300.0	
Travel Time (s)		22.3			23.2			21.1			18.0	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	140%	140%	140%	140%	140%	140%	140%	140%	140%	140%	140%	140%
Heavy Vehicles (%)	0%	2%	0%	0%	7%	0%	86%	0%	11%	12%	100%	0%
Adj. Flow (vph)	0	207	2	38	305	30	11	0	134	65	13	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	207	2	38	305	30	0	11	134	0	78	0
Enter Blocked Intersection	No	No	No	No	No	No						
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		5.2			5.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex							
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free	Perm	NA	

Lanes, Volumes, Timings

5: Landfill Access Road/Landfill Access Rd & Valley Road

01-11-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8		Free	4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	9.0	15.0	15.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.4	20.4	20.4	14.2	20.3	20.3	15.1	15.1		15.1	15.1	
Total Split (s)	29.0	29.0	29.0	16.0	45.0	45.0	20.0	20.0		20.0	20.0	
Total Split (%)	44.6%	44.6%	44.6%	24.6%	69.2%	69.2%	30.8%	30.8%		30.8%	30.8%	
Maximum Green (s)	23.7	23.7	23.7	10.8	39.7	39.7	14.9	14.9		14.9	14.9	
Yellow Time (s)	3.8	3.8	3.8	3.2	3.8	3.8	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5	1.5	2.0	1.5	1.5	1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Lost Time (s)	5.3	5.3	5.3	5.2	5.3	5.3		5.1			5.1	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	8.0	8.0	8.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	Min	Min		Min	Min	
Act Effct Green (s)		16.9	16.9	21.5	21.3	21.3		11.0	43.3		11.0	
Actuated g/C Ratio		0.39	0.39	0.50	0.49	0.49		0.25	1.00		0.25	
v/c Ratio		0.29	0.00	0.06	0.18	0.04		0.06	0.09		0.27	
Control Delay		12.5	0.0	5.2	5.9	2.0		17.5	0.1		19.1	
Queue Delay		0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay		12.5	0.0	5.2	5.9	2.0		17.5	0.1		19.1	
LOS		B	A	A	A	A		B	A		B	
Approach Delay		12.4			5.5			1.4			19.1	
Approach LOS		B			A			A			B	

Intersection Summary

Area Type: Other

Cycle Length: 65

Actuated Cycle Length: 43.3

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.29

Intersection Signal Delay: 7.9

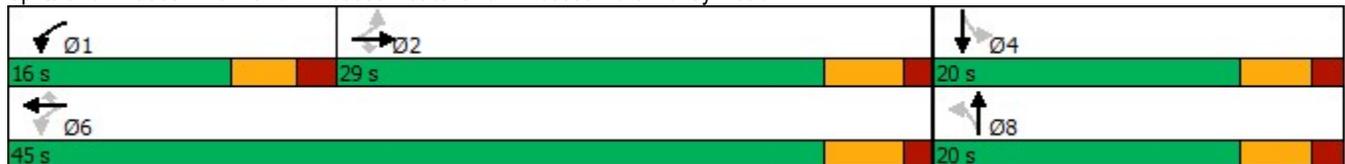
Intersection LOS: A

Intersection Capacity Utilization 47.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 5: Landfill Access Road/Landfill Access Rd & Valley Road



Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2	232	398	192	75	1
Future Vol, veh/h	2	232	398	192	75	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	5	0	0	0	0
Mvmt Flow	2	255	437	211	82	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	648	0	-	0	802 543
Stage 1	-	-	-	-	543 -
Stage 2	-	-	-	-	259 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	947	-	-	-	356 544
Stage 1	-	-	-	-	586 -
Stage 2	-	-	-	-	789 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	947	-	-	-	355 544
Mov Cap-2 Maneuver	-	-	-	-	355 -
Stage 1	-	-	-	-	585 -
Stage 2	-	-	-	-	789 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	18.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	947	-	-	-	357
HCM Lane V/C Ratio	0.002	-	-	-	0.234
HCM Control Delay (s)	8.8	0	-	-	18.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.9

Intersection						
Int Delay, s/veh	7.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	1	404	306	145	213	1
Future Vol, veh/h	1	404	306	145	213	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	4	2	3	0	0
Mvmt Flow	1	444	336	159	234	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	495	0	-	0	862
Stage 1	-	-	-	-	416
Stage 2	-	-	-	-	446
Critical Hdwy	4.1	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1079	-	-	-	328
Stage 1	-	-	-	-	670
Stage 2	-	-	-	-	649
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1079	-	-	-	328
Mov Cap-2 Maneuver	-	-	-	-	328
Stage 1	-	-	-	-	669
Stage 2	-	-	-	-	649

Approach	EB	WB	SB
HCM Control Delay, s	0	0	39.2
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1079	-	-	-	329
HCM Lane V/C Ratio	0.001	-	-	-	0.715
HCM Control Delay (s)	8.3	0	-	-	39.2
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0	-	-	-	5.2

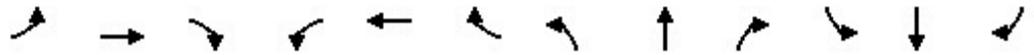
Lanes, Volumes, Timings
5: Landfill Access Rd & Valley Road/Valley Road

01-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	311	1	57	590	50	8	0	17	35	13	0
Future Volume (vph)	0	311	1	57	590	50	8	0	17	35	13	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	160.0		145.0	140.0		140.0	100.0		35.0	0.0		50.0
Storage Lanes	1		1	1		1	0		1	0		0
Taper Length (m)	65.0			55.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			
Flt Protected				0.950				0.950			0.965	
Satd. Flow (prot)	1900	1827	1615	1805	3059	1568	0	902	1615	0	1073	0
Flt Permitted				0.354				0.721			0.796	
Satd. Flow (perm)	1900	1827	1615	673	3059	1568	0	685	1615	0	885	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			159			57			275			
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		421.8			617.5			368.0			306.5	
Travel Time (s)		25.3			37.1			22.1			18.4	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	4%	0%	0%	18%	3%	100%	0%	0%	60%	100%	0%
Adj. Flow (vph)	0	353	1	65	670	57	9	0	19	40	15	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	353	1	65	670	57	0	9	19	0	55	0
Enter Blocked Intersection	No	No	No	No	No	No						
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		5.2			5.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex							
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free	Perm	NA	
Protected Phases		2		1	6			8			4	

Lanes, Volumes, Timings
 5: Landfill Access Rd & Valley Road/Valley Road

01-17-2024

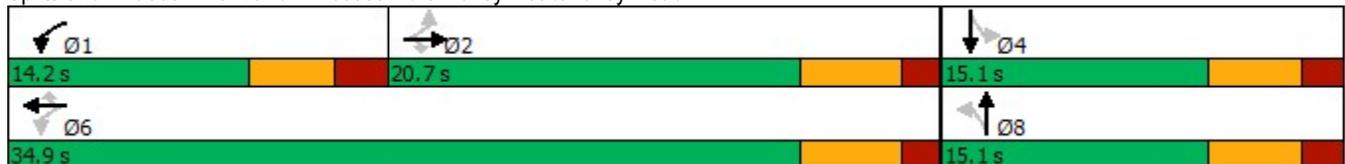


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6		6	8		Free	4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	9.0	15.0	15.0	9.8	9.8		10.0	10.0	
Minimum Split (s)	20.4	20.4	20.4	14.2	20.4	20.4	15.1	15.1		15.1	15.1	
Total Split (s)	20.7	20.7	20.7	14.2	34.9	34.9	15.1	15.1		15.1	15.1	
Total Split (%)	41.4%	41.4%	41.4%	28.4%	69.8%	69.8%	30.2%	30.2%		30.2%	30.2%	
Maximum Green (s)	15.4	15.4	15.4	9.0	29.6	29.6	10.0	10.0		10.0	10.0	
Yellow Time (s)	3.8	3.8	3.8	3.2	3.8	3.8	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5	1.5	2.0	1.5	1.5	1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Lost Time (s)	5.3	5.3	5.3	5.2	5.3	5.3		5.1			5.1	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	8.0	8.0	8.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	Min	Min		Min	Min	
Act Effct Green (s)		15.7	15.7	23.3	23.2	23.2		10.3	44.2		10.3	
Actuated g/C Ratio		0.36	0.36	0.53	0.52	0.52		0.23	1.00		0.23	
v/c Ratio		0.55	0.00	0.11	0.42	0.07		0.06	0.01		0.27	
Control Delay		17.3	0.0	4.9	6.8	1.8		17.5	0.0		20.8	
Queue Delay		0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay		17.3	0.0	4.9	6.8	1.8		17.5	0.0		20.8	
LOS		B	A	A	A	A		B	A		C	
Approach Delay		17.2			6.3			5.6			20.8	
Approach LOS		B			A			A			C	

Intersection Summary

Area Type:	Other
Cycle Length:	50
Actuated Cycle Length:	44.2
Natural Cycle:	50
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.55
Intersection Signal Delay:	10.1
Intersection LOS:	B
Intersection Capacity Utilization:	51.2%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 5: Landfill Access Rd & Valley Road/Valley Road



Lanes, Volumes, Timings
5: Landfill Access Rd & Valley Road/Valley Road

01-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	616	1	34	449	27	10	0	118	57	11	0
Future Volume (vph)	0	616	1	34	449	27	10	0	118	57	11	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	160.0		145.0	140.0		140.0	100.0		35.0	0.0		50.0
Storage Lanes	1		1	1		1	0		1	0		0
Taper Length (m)	65.0			55.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			
Flt Protected				0.950				0.950			0.960	
Satd. Flow (prot)	1900	1863	1615	1805	3374	1615	0	970	1455	0	1440	0
Flt Permitted				0.178				0.706			0.754	
Satd. Flow (perm)	1900	1863	1615	338	3374	1615	0	721	1455	0	1131	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			123			35			211			
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		421.8			617.5			368.0			306.5	
Travel Time (s)		25.3			37.1			22.1			18.4	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	2%	0%	0%	7%	0%	86%	0%	11%	12%	100%	0%
Adj. Flow (vph)	0	700	1	39	510	31	11	0	134	65	13	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	700	1	39	510	31	0	11	134	0	78	0
Enter Blocked Intersection	No	No	No	No	No	No						
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		5.2			5.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex							
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free	Perm	NA	
Protected Phases		2		1	6			8			4	

Lanes, Volumes, Timings
5: Landfill Access Rd & Valley Road/Valley Road

01-17-2024

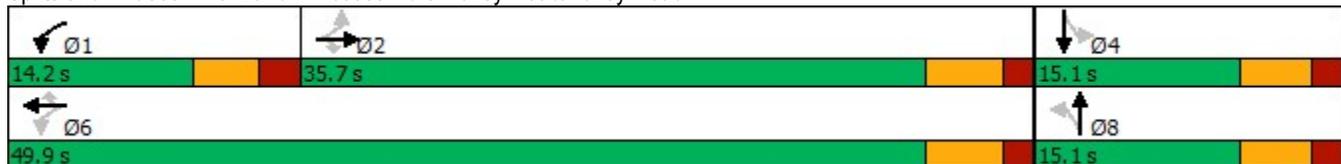


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6		6	8		Free	4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	9.0	15.0	15.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.4	20.4	20.4	14.2	20.3	20.3	15.1	15.1		15.1	15.1	
Total Split (s)	35.7	35.7	35.7	14.2	49.9	49.9	15.1	15.1		15.1	15.1	
Total Split (%)	54.9%	54.9%	54.9%	21.8%	76.8%	76.8%	23.2%	23.2%		23.2%	23.2%	
Maximum Green (s)	30.4	30.4	30.4	9.0	44.6	44.6	10.0	10.0		10.0	10.0	
Yellow Time (s)	3.8	3.8	3.8	3.2	3.8	3.8	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5	1.5	2.0	1.5	1.5	1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Lost Time (s)	5.3	5.3	5.3	5.2	5.3	5.3		5.1			5.1	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	8.0	8.0	8.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	Min	Min		Min	Min	
Act Effct Green (s)		27.9	27.9	32.7	32.6	32.6		10.3	53.7		10.3	
Actuated g/C Ratio		0.52	0.52	0.61	0.61	0.61		0.19	1.00		0.19	
v/c Ratio		0.72	0.00	0.08	0.25	0.03		0.08	0.09		0.36	
Control Delay		17.5	0.0	3.9	4.8	1.3		24.5	0.1		28.2	
Queue Delay		0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay		17.5	0.0	3.9	4.8	1.3		24.5	0.1		28.2	
LOS		B	A	A	A	A		C	A		C	
Approach Delay		17.4			4.5			2.0			28.2	
Approach LOS		B			A			A			C	

Intersection Summary

Area Type:	Other
Cycle Length:	65
Actuated Cycle Length:	53.7
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.72
Intersection Signal Delay:	11.5
Intersection LOS:	B
Intersection Capacity Utilization	51.5%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 5: Landfill Access Rd & Valley Road/Valley Road



Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	62	5	26	172	98	301
Future Vol, veh/h	62	5	26	172	98	301
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	5	0	0
Mvmt Flow	73	6	31	202	115	354

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	556	292	469	0	0
Stage 1	292	-	-	-	-
Stage 2	264	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	496	752	1103	-	-
Stage 1	762	-	-	-	-
Stage 2	785	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	480	752	1103	-	-
Mov Cap-2 Maneuver	480	-	-	-	-
Stage 1	738	-	-	-	-
Stage 2	785	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.7	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1103	-	493	-	-
HCM Lane V/C Ratio	0.028	-	0.16	-	-
HCM Control Delay (s)	8.4	0	13.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

Intersection						
Int Delay, s/veh	6.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	252	22	9	153	196	111
Future Vol, veh/h	252	22	9	153	196	111
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	4	2	0
Mvmt Flow	274	24	10	166	213	121

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	460	274	334	0	0
Stage 1	274	-	-	-	-
Stage 2	186	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	563	770	1237	-	-
Stage 1	777	-	-	-	-
Stage 2	851	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	558	770	1237	-	-
Mov Cap-2 Maneuver	558	-	-	-	-
Stage 1	770	-	-	-	-
Stage 2	851	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18	0.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1237	-	571	-	-
HCM Lane V/C Ratio	0.008	-	0.522	-	-
HCM Control Delay (s)	7.9	0	18	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	3	-	-

Intersection						
Int Delay, s/veh	6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	27	26	153	15	6	46
Future Vol, veh/h	27	26	153	15	6	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	3	0	0
Mvmt Flow	29	28	166	16	7	50

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	57	0	391 43
Stage 1	-	-	-	-	43 -
Stage 2	-	-	-	-	348 -
Critical Hdwy	-	-	4.1	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	2.2	-	3.5 3.3
Pot Cap-1 Maneuver	-	-	1560	-	617 1033
Stage 1	-	-	-	-	985 -
Stage 2	-	-	-	-	719 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1560	-	551 1033
Mov Cap-2 Maneuver	-	-	-	-	551 -
Stage 1	-	-	-	-	985 -
Stage 2	-	-	-	-	642 -

Approach	EB	WB	NB
HCM Control Delay, s	0	6.9	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	938	-	-	1560	-
HCM Lane V/C Ratio	0.06	-	-	0.107	-
HCM Control Delay (s)	9.1	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.4	-

Intersection						
Int Delay, s/veh	5.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	47	9	57	83	22	145
Future Vol, veh/h	47	9	57	83	22	145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	3	0	0
Mvmt Flow	51	10	62	90	24	158

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	61	0	270
Stage 1	-	-	-	-	56
Stage 2	-	-	-	-	214
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1555	-	724
Stage 1	-	-	-	-	972
Stage 2	-	-	-	-	826
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1555	-	694
Mov Cap-2 Maneuver	-	-	-	-	694
Stage 1	-	-	-	-	972
Stage 2	-	-	-	-	791

Approach	EB	WB	NB
HCM Control Delay, s	0	3	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	957	-	-	1555	-
HCM Lane V/C Ratio	0.19	-	-	0.04	-
HCM Control Delay (s)	9.6	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	3	0	1	195	86	17
Future Vol, veh/h	3	0	1	195	86	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	0	1	212	93	18

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	316	102	111	0	0
Stage 1	102	-	-	-	-
Stage 2	214	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	677	953	1479	-	-
Stage 1	922	-	-	-	-
Stage 2	822	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	676	953	1479	-	-
Mov Cap-2 Maneuver	676	-	-	-	-
Stage 1	921	-	-	-	-
Stage 2	822	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1479	-	676	-	-
HCM Lane V/C Ratio	0.001	-	0.005	-	-
HCM Control Delay (s)	7.4	0	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	15	1	0	147	213	5
Future Vol, veh/h	15	1	0	147	213	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	1	0	160	232	5

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	395	235	237	0	0
Stage 1	235	-	-	-	-
Stage 2	160	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	610	804	1330	-	-
Stage 1	804	-	-	-	-
Stage 2	869	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	610	804	1330	-	-
Mov Cap-2 Maneuver	610	-	-	-	-
Stage 1	804	-	-	-	-
Stage 2	869	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1330	-	619	-	-
HCM Lane V/C Ratio	-	-	0.028	-	-
HCM Control Delay (s)	0	-	11	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	72	1	26	168	0	4
Future Vol, veh/h	72	1	26	168	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	78	1	28	183	0	4

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	79	0	318 79
Stage 1	-	-	-	-	79 -
Stage 2	-	-	-	-	239 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1519	-	675 981
Stage 1	-	-	-	-	944 -
Stage 2	-	-	-	-	801 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1519	-	661 981
Mov Cap-2 Maneuver	-	-	-	-	661 -
Stage 1	-	-	-	-	944 -
Stage 2	-	-	-	-	784 -

Approach	EB	WB	NB
HCM Control Delay, s	0	1	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	981	-	-	1519	-
HCM Lane V/C Ratio	0.004	-	-	0.019	-
HCM Control Delay (s)	8.7	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	-

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	192	0	7	139	1	22
Future Vol, veh/h	192	0	7	139	1	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	209	0	8	151	1	24

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	209	0	376 209
Stage 1	-	-	-	-	209 -
Stage 2	-	-	-	-	167 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1362	-	625 831
Stage 1	-	-	-	-	826 -
Stage 2	-	-	-	-	863 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1362	-	621 831
Mov Cap-2 Maneuver	-	-	-	-	621 -
Stage 1	-	-	-	-	826 -
Stage 2	-	-	-	-	858 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	819	-	-	1362	-
HCM Lane V/C Ratio	0.031	-	-	0.006	-
HCM Control Delay (s)	9.5	-	-	7.7	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	2	232	398	192	75	1
Future Vol, veh/h	2	232	398	192	75	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	5	0	0	0	0
Mvmt Flow	2	255	437	211	82	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	648	0	-	0	696 437
Stage 1	-	-	-	-	437 -
Stage 2	-	-	-	-	259 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	947	-	-	-	411 624
Stage 1	-	-	-	-	655 -
Stage 2	-	-	-	-	789 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	947	-	-	-	410 624
Mov Cap-2 Maneuver	-	-	-	-	410 -
Stage 1	-	-	-	-	654 -
Stage 2	-	-	-	-	789 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	947	-	-	-	412
HCM Lane V/C Ratio	0.002	-	-	-	0.203
HCM Control Delay (s)	8.8	0	-	-	15.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.7

Intersection						
Int Delay, s/veh	6.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	1	404	306	145	213	1
Future Vol, veh/h	1	404	306	145	213	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	4	2	3	0	0
Mvmt Flow	1	444	336	159	234	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	495	0	0	782	336
Stage 1	-	-	-	336	-
Stage 2	-	-	-	446	-
Critical Hdwy	4.1	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	3.5	3.3
Pot Cap-1 Maneuver	1079	-	-	366	711
Stage 1	-	-	-	728	-
Stage 2	-	-	-	649	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1079	-	-	366	711
Mov Cap-2 Maneuver	-	-	-	366	-
Stage 1	-	-	-	727	-
Stage 2	-	-	-	649	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	30.7
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1079	-	-	-	367
HCM Lane V/C Ratio	0.001	-	-	-	0.641
HCM Control Delay (s)	8.3	0	-	-	30.7
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	4.3

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	62	5	26	172	98	301
Future Vol, veh/h	62	5	26	172	98	301
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	5	0	0
Mvmt Flow	73	6	31	202	115	354

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	379	115	469	0	0
Stage 1	115	-	-	-	-
Stage 2	264	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	627	943	1103	-	-
Stage 1	915	-	-	-	-
Stage 2	785	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	609	943	1103	-	-
Mov Cap-2 Maneuver	609	-	-	-	-
Stage 1	889	-	-	-	-
Stage 2	785	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.6	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1103	-	626	-	-
HCM Lane V/C Ratio	0.028	-	0.126	-	-
HCM Control Delay (s)	8.4	-	11.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Intersection						
Int Delay, s/veh	6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	252	22	9	153	196	111
Future Vol, veh/h	252	22	9	153	196	111
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	4	2	0
Mvmt Flow	274	24	10	166	213	121

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	399	213	334	0	0
Stage 1	213	-	-	-	-
Stage 2	186	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	611	832	1237	-	-
Stage 1	827	-	-	-	-
Stage 2	851	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	606	832	1237	-	-
Mov Cap-2 Maneuver	606	-	-	-	-
Stage 1	820	-	-	-	-
Stage 2	851	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.1	0.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1237	-	620	-	-
HCM Lane V/C Ratio	0.008	-	0.48	-	-
HCM Control Delay (s)	7.9	-	16.1	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	2.6	-	-

APPENDIX D

Environment & Heritage Desktop Assessment

OVERPASS FARMS INC.

Valley Road Business Park – Environmental and Heritage Desktop Assessment

Revision:

Draft

KGS Group Project:

23-4236-001

Date:

November 24, 2023

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STATEMENT OF LIMITATIONS AND CONDITIONS

Limitations

This report has been prepared for Overpass Farms Incorporated (Overpass Farms Inc.) in accordance with the agreement between Kontzamanis Graumann Smith MacMillan Inc. (KGS Group) and Overpass Farms Inc. (the "Agreement"). This report represents KGS Group's professional judgment and exercising due care consistent with the preparation of similar reports. The information, data, recommendations, and conclusions in this report are subject to the constraints and limitations in the Agreement and the qualifications in this report. This report must be read as a whole, and sections or parts should not be read out of context.

This report is based on information made available to KGS Group by Overpass Farms Inc. Unless stated otherwise, KGS Group has not verified the accuracy, completeness, or validity of such information, makes no representation regarding its accuracy, and hereby disclaims any liability in connection therewith. KGS Group shall not be responsible for conditions/issues it was not authorized or able to investigate or which were beyond the scope of its work. The information and conclusions provided in this report apply only as they existed at the time of KGS Group's work.

Third Party Use of Report

Any use a third party makes of this report or any reliance on or decisions made based on it, are the responsibility of such third parties. KGS Group accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions undertaken based on this report.

1.0 INTRODUCTION

Kontzamanis Grauman Smith MacMillan Inc. (KGS Group) was retained by Overpass Farms Inc. to provide a high-level summary of potential environmental and heritage resource sensitivities associated with the proposed Valley Road Business Park (the Project). An Environmental and Heritage Resource Desktop Assessment (EHDA) was completed using existing publicly available data sources to summarize environmental and heritage sensitivities, with a focus on identifying:

- Environmental features that may require regulatory approval or permits for the Project to proceed; and,
- Species, habitats, or heritage resources that may require additional mitigation measures during construction, operations, or decommissioning of the Project.

Qualified KGS Group Ecologists and Archaeologists completed this EHDA using available information in the context of the current regulatory framework.

1.1 Project Description

Overpass Farms Inc. has requested to re-designate the zone for the Project site from Agricultural (DAG1 and DAG2) to a Regional Institutional Facility within the Rural Municipality (R.M.) of Corman Park No. 344, under their associated Regional Land Use Plan. The proposed Valley Road Business Park would include office buildings and associated parking lots and road access.

Overpass Farms Inc. has requested services from KGS Group to support the Comprehensive Development Report (CDR) required for rezoning requests. This EHDA will provide a summary of the environmental and heritage sensitivities found within and near the Project.

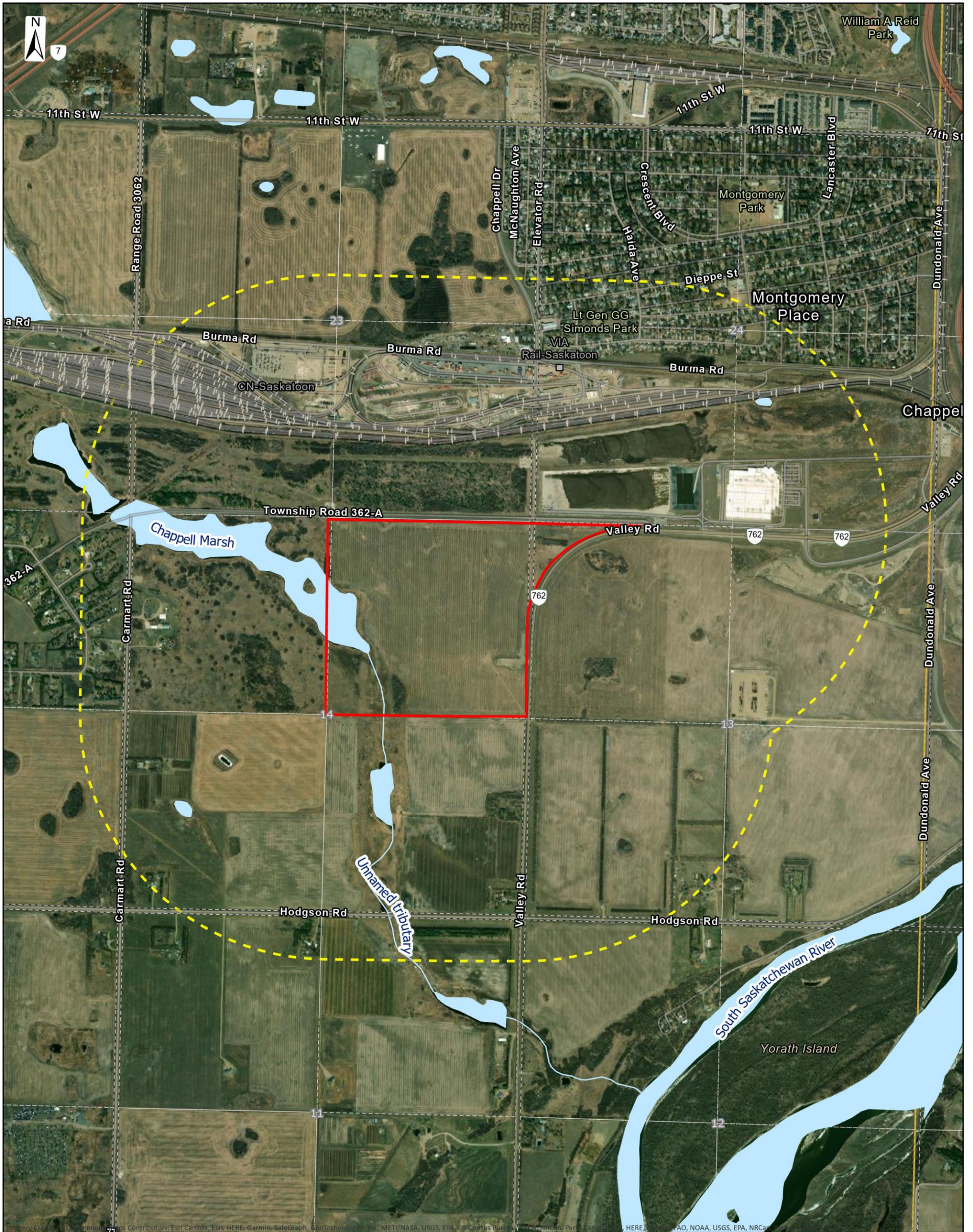
1.2 Project Location

The Project is located south of the City of Saskatoon, just west of Valley Road (Highway 762) and south of Township Road 362A, within the R.M. of Corman Park No. 344 (Figure 1). The Project is located in two quarter sections, NW-13-36-6-W3M and NE-14-36-6-W3M, and occupies an area of approximately 68 hectares (168 acres).

1.3 Project Study Area

For the purposes of the EHDA, the Project Development Area (PDA) is defined as all areas that may be temporarily or permanently disturbed during proposed Project activities. The current PDA follows the maximum potential extent of the preliminary design.

A Project Study Area (PSA) for the EHDA was established to provide localized context surrounding the PDA and accommodate the maximum setback distances associated with sensitive species that may occur in the PDA, as identified in the *Saskatchewan Activity Restriction Guidelines for Sensitive Species* (Saskatchewan Ministry of Environment [ENV], 2017). The PSA includes the PDA plus a one-kilometer buffer. For all disciplines, mapping is completed and presented in figures to the PSA extent to provide localized context surrounding the PDA. However, interpretation of the mapping results will focus on the PDA where direct Project interactions will occur, unless discipline-specific conditions in the PSA are also relevant.



- LEGEND**
- Project Development Area (PDA)
 - Project Study Area (PSA)
 - Township
 - Quarter Section
 - Section
 - Waterbody
 - Watercourse



NOTES:
 1. All units are metric and in meters unless otherwise specified.
 Transverse Mercator Projection, CSRS NAD 1983, Zone 13.
 Elevations are in meters above sea level (MSL).

1	23/11/21	FINAL REPORT	SM	RH
NO.	YYMMDD	DESCRIPTION	ISSUED BY	CHECK BY
REVISIONS / ISSUE				
KGS GROUP		OVERPASS FARMS INC.		
VALLEY ROAD BUSINESS PARK EHDA				
PROJECT LOCATION				
NOVEMBER 2023		FIGURE 1		REV: 2

1.4 Regulatory Context

The Project must comply with applicable provincial and federal environmental legislation, regulations, and policies. This EHDA aims to support understanding of the existing environmental and heritage sensitivities and to identify regulatory requirements for the Project.

1.4.1 REGULATORY REQUIREMENTS

Based on our current understanding of the Project as currently proposed, KGS Group expects the following environmental and heritage resource Acts and Regulations to apply to the Project:

Provincial

- *The Environmental Assessment Act;*
- *The Environmental Management and Protection Act;*
- *The Weed Control Act;*
- *The Wildlife Act*
- *The Wild Species at Risk Regulations;* and
- *The Heritage Property Act.*

Federal

- *Fisheries Act;*
- *Migratory Birds Convention Act*
- *Migratory Birds Regulations;* and
- *Species at Risk Act (SARA).*

Details of the application of each of the above Acts and Regulations are provided in Appendix A. Changes to the Project's design may result in changes to the environmental regulatory requirements.

1.4.2 PERMITTING AND APPROVALS

The following is a preliminary list of environmental reviews, permits, and approvals that are administered through the above Acts and associated Regulations, and are typically required for similar projects:

- Aquatic Habitat Protection Permit (AHPP) from the Water Security Agency (WSA) or Saskatchewan Ministry of Environment (ENV) for work in and adjacent to water (i.e., wetlands, watercourses, lakes, ponds).
- Fisheries and Oceans Canada (DFO) letter of advice in response to a submitted Request for Review for any potential work that interacts with fish-bearing waters, such as installations, extensions, or major modifications to culverts.
- Species Detection Survey Permits from ENV to conduct most biological field surveys, when required to assess the current environmental setting or complete certain mitigation measures (such as amphibian translocation, for example).
- Clearance from the Saskatchewan Heritage Conservation Branch (HCB) to proceed with construction.
- Archaeological Resource Investigation Permits from HCB to conduct Heritage Resource Impact Assessments (HRIA), when required.

2.0 OBJECTIVES

The objectives of the EHDA are to identify the following:

- Potential environmental and heritage constraints associated with the PDA that may interact with the proposed Project;
- Environmental and heritage authorization or permits anticipated to be required by regulatory agencies for construction and operations;
- Information, studies, and field surveys required to assess potential constraints;
- Strategies and recommendations to mitigate potential constraints; and
- Identify other non-biophysical setbacks or requirements that may be required for the Project.

3.0 METHODS

KGS Group reviewed publicly available digital and hardcopy resources to determine potential existing conditions for environmental and heritage resources at the proposed Project location. Each technical discipline (e.g., Soils and Terrain, Vegetation and Wetlands, Wildlife and Wildlife Habitat, Fish and Fish Habitat, and Heritage Resources) considered the proposed Project components to determine potential interactions with the environment. Species of conservation concern (SOCC) and their habitats are of particular consideration, which are identified by the Government of Saskatchewan (2021) as the following:

- Species listed in Schedules 1, 2 and 3 of the federal *Species at Risk Act* (SARA);
- Species recognized as being at risk by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC);
- Species listed in the provincial Wild Species at Risk Regulations;
- Species listed by the Saskatchewan Conservation Data Centre (SKCDC) as S1, S2, SH, and SX; and
- Species listed in the provincial Activity Restriction Guidelines (ARGs).

The occurrence of SOCC typically requires specific mitigation measures, studies, or permitting for a project to proceed.

3.1 Soils and Terrain

A desktop review of site-specific soil and terrain conditions was completed for the PSA and specifically the PDA. Information for soil association distribution (map units) and soil characteristics was obtained from the Saskatchewan Soil Information System (SKSIS) (SKSIS Working Group, 2018). The review of the SKSIS digital soil resource information was used to identify dominant soil types, textures, salinity, erosion potentials, landform/surface expression, and slope classes. This information can be used to support the development of soil conservation practices for the Project and identify areas that may require additional mitigation during construction (e.g., erosion and sediment control measures or special soil handling requirements).

Soil map units represent the soil associations found within an individual mapped polygon. Soil association is a term used to represent the relationship between different soil profiles that have formed on the same geological deposit within a particular climatic zone (Agriculture and Agri-Food Canada, 2009).

The numbers associated with the map unit reflect the variations in the composition and distribution of soil profiles from one area to the next.

The map units are defined as simple or complex units (Agriculture and Agri-Food Canada, 2009). A simple unit is defined when one soil association represents over 85% of the unit area. Where two geological units occur within a polygon area, two associations are used in a complex unit and represent the dominant soil association (60% to 70% of the polygon) and subdominant association (25% to 30% of the polygon area). All map units encompass inclusions of additional soil types in proportions not extensive enough to be described to the unit.

3.2 Vegetation and Wetlands

3.2.1 LAND COVER TYPES

A review of “The Ecoregions of Saskatchewan” provided a general overview of the existing land use and vegetation cover in the PSA (Acton et al., 1998). The land cover types presented are mapped using Saskatchewan’s Southern Digital Landcover Classification (SDLC) data layer (Government of Saskatchewan, 2021).

3.2.2 VEGETATION

A review of plant species previously reported in the PSA was completed to identify SOCC and regulated weeds that may occur in the PDA.

3.2.2.1 Plant Species of Conservation Concern

Vegetation SOCC include federally and provincially tracked plant species. A list of plant SOCC known to occur or with potential to occur (expected) within the PSA was compiled using data from the SKCDC. This includes information from federal and provincial status documents, provincial tracking lists, literature, modeling, and recorded distributions. In addition, a review of the *Tracked Vascular Plant Taxa by Ecoregion and Landscape Area* dataset was completed to identify plant SOCC with potential to occur in the PDA (SKCDC, 2023a). The Hunting, Angling and Biodiversity Information of Saskatchewan (HABISask) online mapping application was used to identify historical occurrence of SOCC and potential habitat for SARA listed species (SKCDC, 2023b).

3.2.2.2 Regulated Weed Species

In Saskatchewan, weed species are defined as Prohibited under Schedule I, Noxious under Schedule II, and Nuisance under Schedule III of *The Weed Control Act*. The iMapInvasives platform was used to identify historical reported occurrences of weed species within the PSA that have potential to occupy the PDA (NatureServe, 2023a).

3.2.3 WETLANDS

Wetland polygon boundaries were manually delineated by an experienced biologist using the ArcGIS Pro platform through interpretation of available aerial imagery for the PSA. Wetland polygons were delineated at 1:3,000 scale after evaluation of a series of wet season (April through June) aerial imagery dating 2003 to 2022.

Once wetland delineation was completed, wetlands were classified following Stewart and Kantrud (1971). The primary wetland classes used in Saskatchewan are Class I (ephemeral), Class II (temporary), Class III (seasonal), Class IV (semi-permanent), and Class V (permanent) (Stewart and Kantrud, 1971). Wetland classification was completed in the ArcGIS Pro platform using dry season imagery (July - October) dating 2003 to 2022 and completed at 1:3,000 scale. Exceptional flood years were excluded from the imagery data set in determining classification as these years did not represent an average condition but rather an extreme, showing overland flooding in non-wetland areas.

All wetland classes should be field verified for accuracy.

3.3 Wildlife and Wildlife Habitat

Wildlife and wildlife habitat was assessed within the PSA with a focus on identifying SOCC that may interact with the Project. A project screening report was generated using the SKCDC HABISask online database which identified Known and Expected potential occurrences of SOCC. Known species are confirmed observations of species in the PSA that have been previously reported to the SKCDC and Expected potential species are those that may occur in the PSA based on a modelled prediction (SKCDC, 2023b). A qualified wildlife biologist reviewed the results of the screening report, the desktop landcover mapping, and SOCC habitat requirements to assess the potential of the PDA and surrounding PSA to support wildlife SOCC. The findings were used to inform potential permitting and species detection surveys that are required during baseline studies to support identifying appropriate mitigation measures to complete the Project.

3.4 Fish and Fish Habitat

Existing data sources and information on potential fish passage requirements were reviewed to determine the potential for fish, and fish SOCC in particular, to occur within the PDA. A search of the SKCDC HABISask online database was completed to identify previous records of fish SOCC (SKCDC, 2023b). A review of aerial imagery was completed by a qualified fisheries biologist to identify if the PDA has permanent, intermittent, or seasonal connectivity with known fish-bearing watercourses and waterbodies.

3.5 Heritage Resources

Heritage resources in Saskatchewan are protected under *The Heritage Property Act*. Any commercial land development projects in Saskatchewan that involve ground disturbance must be reviewed for their potential to impact heritage resources. The Heritage Conservation Branch (HCB) within the Saskatchewan Ministry of Parks, Culture, and Sport oversees the heritage resources of the province and is responsible for determining if a Heritage Resource Impact Assessment (HRIA) is required for the proposed Project. Several factors are considered when a proposed project is assessed for heritage potential. Environmental factors include the proposed Project's proximity to major bogs, fens, watercourses, lakes, and strandlines, as well as the presence of high potential landforms within the PDA, such as prominent dry uplands, escarpments, hills, ridges, and islands. Sociocultural factors include the Project's proximity to previously recorded archaeological sites, sites of a Special Nature, historic communities, historic trails, traplines, and Traditional Land Use areas.

Project scope factors are also considered, including the types of activities that will be carried out in the proposed Project area and how the Project will cause ground disturbance and impact mineral soils and subsoils.

To support compliance with requirements under *The Heritage Property Act*, a KGS Group Archaeologist completed a desktop review of the PDA for heritage resources. All quarter-sections included in the PDA were screened using the Developers' Online Heritage Screening Tool (DOST) and by applying knowledge of locations with high potential for archaeological resources in the PDA (Government of Saskatchewan, 2022). Quarter-sections deemed Heritage Sensitive or requiring further screening will be referred to the HCB.

4.0 RESULTS

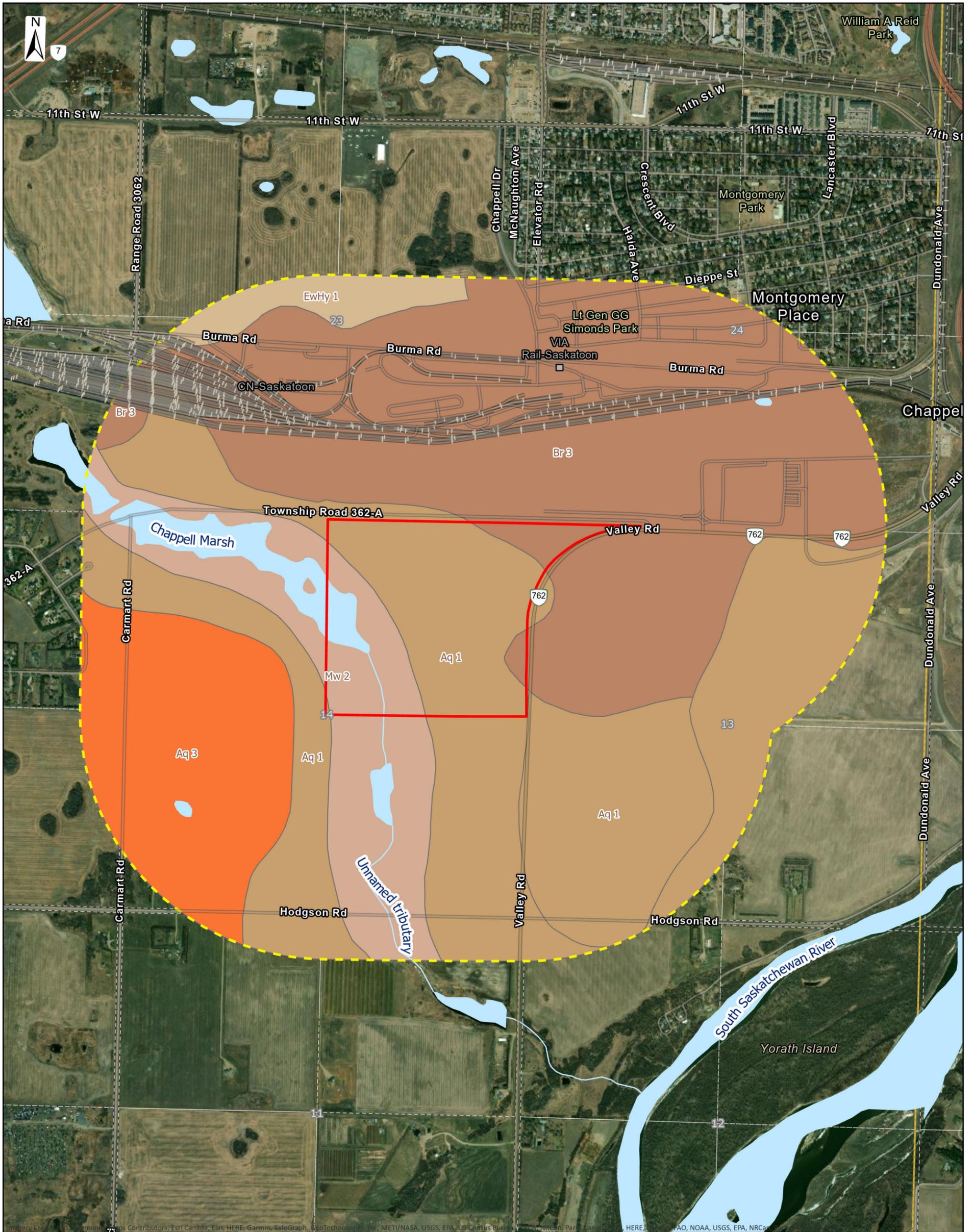
KGS Group's review of digital and hardcopy resources to determine potential existing conditions for environmental and heritage resources pertaining to the Project was conducted. Each technical discipline below (e.g., Soils and Terrain, Vegetation and Wetlands, Wildlife and Wildlife Habitat, Fish and Fish Habitat, and Heritage Resources) considered the proposed Project components in the PDA and the PSA to determine potential interactions of the Project with the environment.

4.1 Soils and Terrain

The desktop review of site-specific soil and terrain conditions within the PSA identified three soil associations, Asquith, Bradwell, and Meadow, which are comprised of multiple occurrences of four simple map units: Aq 1, Aq 3, Br 3, and Mw 2 and one complex map unit: EwHy 1 (Figure 2) (SKSIS Working Group, 2018). Of these, Aq 1, Br 3, and Mw 2 occur in the PDA.

The soils in the PDA are composed of various parent materials, including fluvial, fluviolacustrine, and undifferentiated mineral material. The dominant soil classes are Orthic Dark Brown Chernozems and Rego Humic Gleysols, and the one subdominant class is Eluviated Dark Brown Chernozems. The surface expressions in the PDA ranges, including hummocky, undulating, and level, with gentle (2.0-5.0%) to nearly level (0.0-0.5%) slopes, and exhibits sandy loam, loamy sand, and loam surface texture, throughout. The wind erosion potential ranges from low to high and the water erosion potential ranges from very low to low, with dissected areas in Aq 1 and Br 3 map units being more likely to experience water erosion (Agriculture and Agri-Food Canada, 2009). The percentage of each map unit affected by salinity varies from 0 to greater than 70%, where a strong degree of salinity may be present, particularly throughout the bottoms of depressions and wetlands in Mw 2 map unit in the PDA.

It is worth noting that the Aq 3 soils that fall outside the PDA, but within the PSA, have moderate potential for wind erosion, and 10-20% of the map unit is affected by salinity. Although these soils occur outside the PDA, there is potential for their characteristics to interact with the Project under certain environmental conditions.



LEGEND

- Project Development Area (PDA)
- Project Study Area (PSA)
- Township
- Quarter Section
- Section

SOIL MAP UNIT

- Aq 1
- Aq 3
- Br 3
- EwHy 1
- Mw 2
- Waterbody
- Watercourse



NOTES:
 1. All units are metric and in meters unless otherwise specified.
 Transverse Mercator Projection, CSRS NAD 1983, Zone 13.
 Elevations are in meters above sea level (MSL).

NO.	DATE	DESCRIPTION	ISSUED BY	CHECK BY
1	23/11/21	FINAL REPORT	SM	RH
REVISIONS / ISSUE				
KGS GROUP		OVERPASS FARMS INC.		
VALLEY ROAD BUSINESS PARK EHDA				
SOIL MAPPING IN THE PROJECT STUDY AREA				
NOVEMBER 2023		FIGURE 2		REV: 2

TABLE 1: SOIL MAP UNITS AND ASSOCIATED SOIL CHARACTERISTICS WITHIN THE PROJECT DEVELOPMENT AREA

Soil Association	Map Unit	Parent Material	Dominant/Subdominant Soils	Surface Expression	Dominant Surface Texture	Slope Class	Wind Erosion Potential	Water Erosion Potential	Percentage of Map Unit Affected by Salinity
Asquith	Aq 1	Fluvial	Orthic Dark Brown Chernozem	Hummocky dissected to hummocky	Loamy sand to sandy loam	Gentle slopes (2.0 to 5.0%)	Moderate to high	Low, low (D) or very low (D) ¹	0-10%
Bradwell	Br 3	Fluviolacustrine	Orthic Dark Brown Chernozem Eluviated Dark Brown Chernozem	Undulating to undulating dissected	Loam	Gentle slopes (2.0 to 5.0%)	Low to moderate	Low to low (D)	0-3%
Meadow	Mw 2	Undifferentiated mineral	Rego Humic Gleysol	Level	Sandy loam	Nearly level (0.0-0.5%)	Low	Very low	>70%

Source: SKSIS Working Group, 2018; Agriculture and Agri-Food Canada, 2009.

¹(D) modifier following a water erosion susceptibility class (water erosion potential) indicates that that an area was observed to be dissected. Higher rates of erosion may occur on the slopes of the dissection if they are left unprotected. A dissection refers to shallow gullies that can be crossed with farm implements.

4.2 Vegetation and Wetlands

The Project is located within the Moist Mixed Grassland ecoregion; specifically, most of the PDA is located in the Saskatoon Plain Landscape Area with a small portion at the southeast corner that falls within the Moose Wood Sand Hills Landscape Area. (Acton et al., 1998). The glacial till landscape of the Moist Mixed Grassland ecoregion is typically characterized by short, steep slopes with numerous prairie pothole wetlands and several large glacial lake plains. The mean July and January temperatures are 18.4°C and -16.7°C, respectively. The average total annual precipitation is 383 mm (Acton et al., 1988).

4.2.1 LAND COVER TYPES

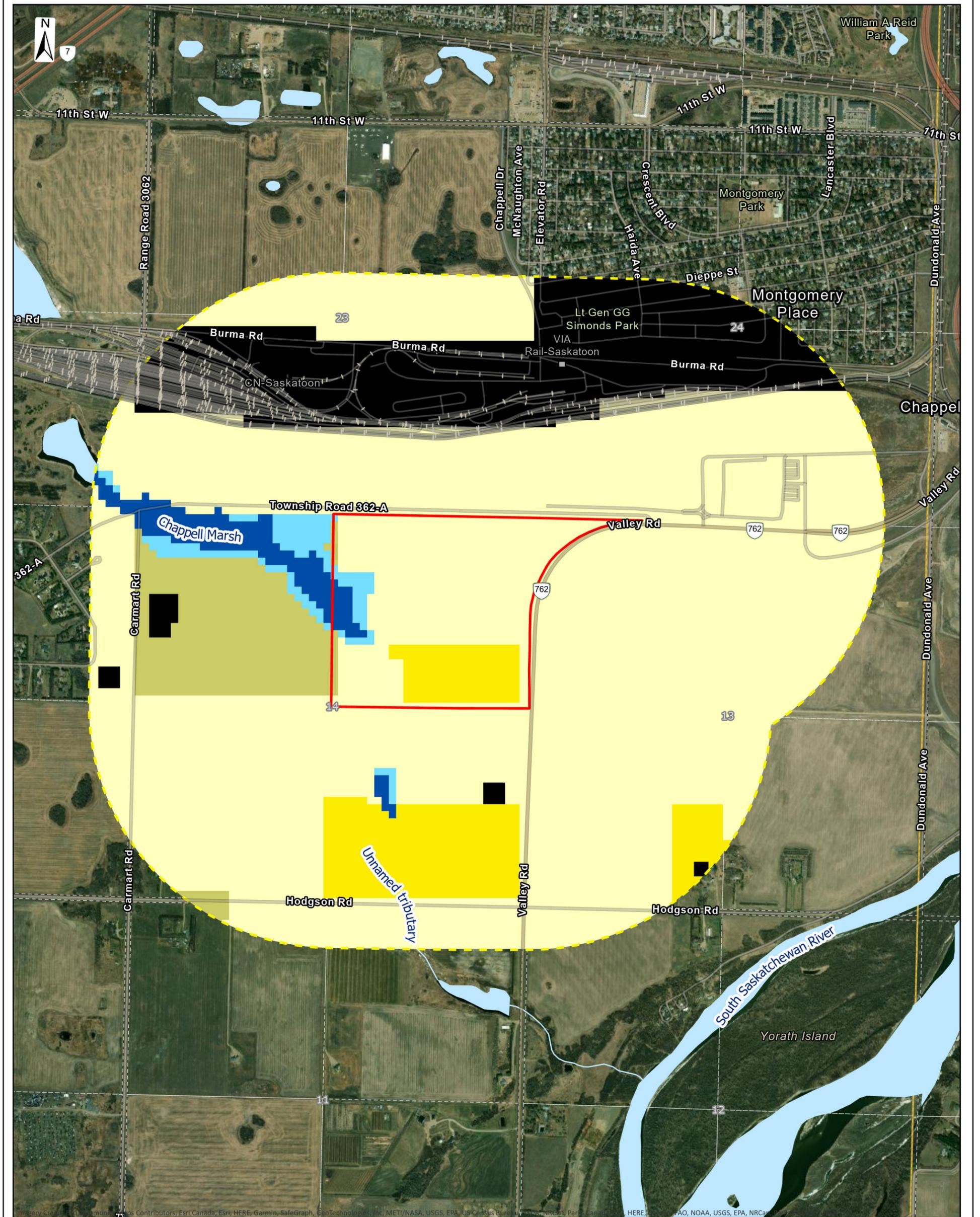
Landcover was evaluated using the *SDLC* geodatabase and is presented in Figure 3 (Government of Saskatchewan, 2021). There were five land cover classes identified in the PDA, dominated predominantly by agriculture, followed in descending order by hay crops (forage), native dominant grasslands, water, and marsh (Table 2).

It should be noted that the *SDLC* is historic and coarsely classified such that landcover classes may be missed (e.g., such as tree cover, in this case, which is visible in recent aerial imagery) or no longer correct (i.e., potential landcover conversion from one class to another) and digitization of polygons may be inaccurate. This emphasizes the importance of field verifying the current existing landcover within the PDA.

TABLE 2: LAND COVER TYPES WITHIN THE PROJECT DEVELOPMENT AREA

SDLC Land Cover Type	Area (ha)	% Coverage in the PSA
Agriculture	51.52	74.57%
Hay Crops (Forage)	11.88	17.20%
Native Dominant Grasslands	1.06	1.53%
Water	1.92	2.79%
Marsh	2.71	3.92%
Totals	69.09	100%

Source: Government of Saskatchewan, 2021



LEGEND

- Project Development Area (PDA)
- Project Study Area (PSA)
- Township
- Quarter Section
- Section
- Saskatchewan Digital Land Cover (SDLC)**
- Agriculture
- Hay Crops (Forage)
- Native Dominant Grasslands
- Water
- Marsh
- Anthropogenic Feature
- Waterbody
- Watercourse



NOTES:
 1. All units are metric and in meters unless otherwise specified.
 Transverse Mercator Projection, CSRS NAD 1983, Zone 13.
 Elevations are in meters above sea level (MSL).

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VALLEY ROAD BUSINESS PARK EHDA				
LANDCOVER CLASSIFICATION IN THE PROJECT STUDY AREA				
NOVEMBER 2023		FIGURE 3		REV: 2

4.2.2 VEGETATION

4.2.2.1 Plant Species of Conservation Concern

Five provincially tracked plant SOCC have been previously reported within the PSA: blue wild rye (*Elymus glaucus* ssp. *glaucus*), narrow-leaved water plantain (*Alisma gramineum*), red-stemmed cinquefoil (*Potentilla rubricaulis*), small dropseed (*Sporobolus neglectus*), and small yellow lady's slipper (*Cypripedium parviflorum* var. *makasin*) (Table 3). Additionally, two plant SOCC are Expected potential species based on the species predictive models provided by HABISask: slender mouse-ear-cress (*Crucihimalaya virgata*) and smooth goosefoot (*Chenopodium subglabrum*) (Table 3). The HABISask Project Screening Report is provided in Appendix B and provincial ranking and federal status designation definitions are provided in Appendix C.

TABLE 3: PLANT SPECIES OF CONSERVATION CONCERN PREVIOUSLY OBSERVED WITHIN THE PROJECT STUDY AREA

SKCDC Common Name ¹	SKCDC Scientific Name ¹	Provincial Rank ¹	COSEWIC Status ²	Species at Risk Act Status ²	Screening Status ³ (date last observed)
Blue wild rye	<i>Elymus glaucus</i> ssp. <i>glaucus</i>	S3	-	-	Known (1931)
Narrow-leaved water plantain	<i>Alisma gramineum</i>	S3	-	-	Known (1956)
Red-stemmed cinquefoil	<i>Potentilla rubricaulis</i>	S3	-	-	Known (1939)
Slender mouse-ear-cress	<i>Crucihimalaya virgata</i>	S1	TH	TH	Expected potential
Small dropseed	<i>Sporobolus neglectus</i>	S2	-	-	Known (1993)
Small yellow lady's slipper	<i>Cypripedium parviflorum</i> var. <i>makasin</i>	S3	-	-	Known (2021)
Smooth goosefoot	<i>Chenopodium subglabrum</i>	S3	TH	TH	Expected potential

¹ Provincial common names, scientific names, and rank definitions are provided by the Saskatchewan Conservation Data Centre (SKCDC, 2023c; 2023d).

² Federal status designated by COSEWIC and official listing under the SARA: SC (Special Concern), TH (Threatened), EN (Endangered) (Government of Canada, 2023).

³ Applicable SOCC that may have potential to occupy the PSA identified in Appendix B, the HABISask Project Screening Report (Known and Expected potential species), and through additional desktop screening (possible species).

Because the dates that blue wild rye, narrow-leaved water plantain, red-stemmed cinquefoil, and small dropseed were last observed at least 20 years ago, it is considered unlikely that these plant SOCC still occur in the PSA and could occupy the PDA. However, species occurrence can only be confirmed by field verification.

There is potential for additional plant SOCC to occur in the PDA, based on suitable habitat availability. A list of additional vascular plant SOCC that have potential to occur in the PSA based on its location in the Saskatoon Plain and Moose Wood Sand Hills Landscape Areas is presented in Appendix D.

4.2.2.2 Regulated Weed Species

Ten Schedule II Noxious weed species have previously been reported within the PSA that have potential to occur in the PDA (Table 4).

TABLE 4: REGULATED WEEDS FOUND WITHIN THE PROJECT STUDY AREA

Common Name	Scientific Name	Weed Control Act Status ¹	No. of Recorded Observations in PSA ²
Absinthe	<i>Artemisia absinthium</i>	Noxious	21
Annual hawkbeard	<i>Crepis tectorum</i>	Noxious	1
Canada thistle	<i>Cirsium arvense</i>	Noxious	5
European buckthorn	<i>Rhamnus cathartica</i>	Noxious	2
Narrow leafy spurge	<i>Euphorbia virgata</i>	Noxious	9
Ox-eye daisy	<i>Leucanthemum vulgare</i>	Noxious	6
Scentless chamomile	<i>Tripleurospermum inodorum</i>	Noxious	2
Tall baby's breath	<i>Gypsophila paniculata</i>	Noxious	132
Tansy	<i>Tanacetum vulgare</i>	Noxious	14
Yellow toad-flax	<i>Linaria vulgaris</i>	Noxious	1

¹ Under *The Weed Control Act*, weed species are defined as Prohibited under Schedule I, Noxious under Schedule II, and Nuisance under Schedule III.

² Source: iMapInvasives (NatureServe, 2023a)

Considerable infestations have been reported to the iMapInvasives platform for absinthe, narrow leafy spurge, tall baby's breath, and tansy. As per Sections 14 and 15 of *The Weed Control Act*, landowners or occupiers are responsible for the identification and eradication of Prohibited and Noxious weed infestations, and the control of Nuisance weeds located on the land. A full list of all existing weed observations reported within the PSA, including unregulated species, can be provided upon request.

Please note that this list does not preclude the occurrence of other regulated weeds in the PDA. Species occurrence can only be confirmed by field verification.

4.2.3 WETLANDS

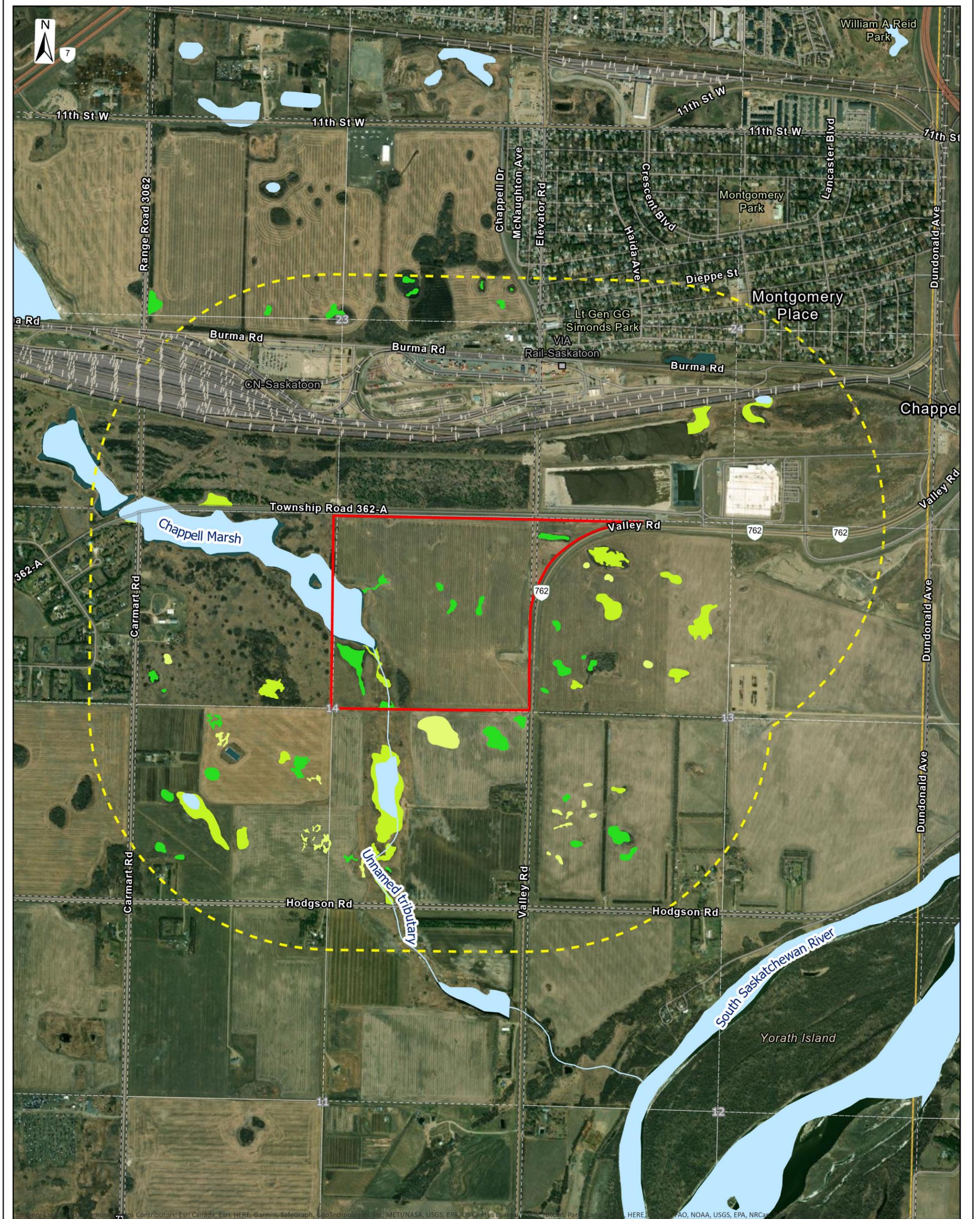
A review of the available imagery identified 9 wetlands in the PDA, occupying a total area of 5.27 ha in the PDA (Figure 4; Table 5). One Class V (permanent) wetland, a part of Chappell Marsh, accounts for the largest proportion of wetland area in the PDA (59.35%; 3.13 ha). The Chappell Marsh Conservation Area is located along the western boundary of the PDA, in a quarter section with an easement under the *Saskatchewan Conservation Easement Act*, managed by Ducks Unlimited Canada. One Class III (seasonal) wetland is located in the PDA, and accounts for 6.65% (0.35 ha) of wetland area in the PDA. Class II wetlands (temporary) are the most numerous wetland class documented in the PDA, with seven wetlands accounting for 34.00% (1.79 ha) of the total wetland area mapped in the PDA (Table 5).

TABLE 5: MAPPED WETLANDS IN THE PROJECT DEVELOPMENT AREA

Wetland Classes	No. of Wetlands	Area (ha) in the PSA	Proportion of Total Wetland Area
Class II	7	1.79	34.00%
Class III	1	0.35	6.65%
Class V	1	3.13	59.35%
Totals	9	5.27	100.00%

Wetlands are important habitats that provide a multitude of ecosystem services, functions, and values. Wetlands should be avoided whenever possible. If wetland avoidance is not possible, an Aquatic Habitat Protection Permit (AHPP) will be required.

All wetlands within the finalized PDA will require field verification of wetland class, boundary, and function.



LEGEND

- Project Development Area (PDA)
- Project Study Area (PSA)
- Township
- Quarter Section
- Section
- Wetland Class**
- Class I - Ephemeral Wetland
- Class II - Temporary Wetland
- Class III - Seasonal Pond/Lake
- Class V - Permanent Pond/Lake
- Waterbody
- Watercourse

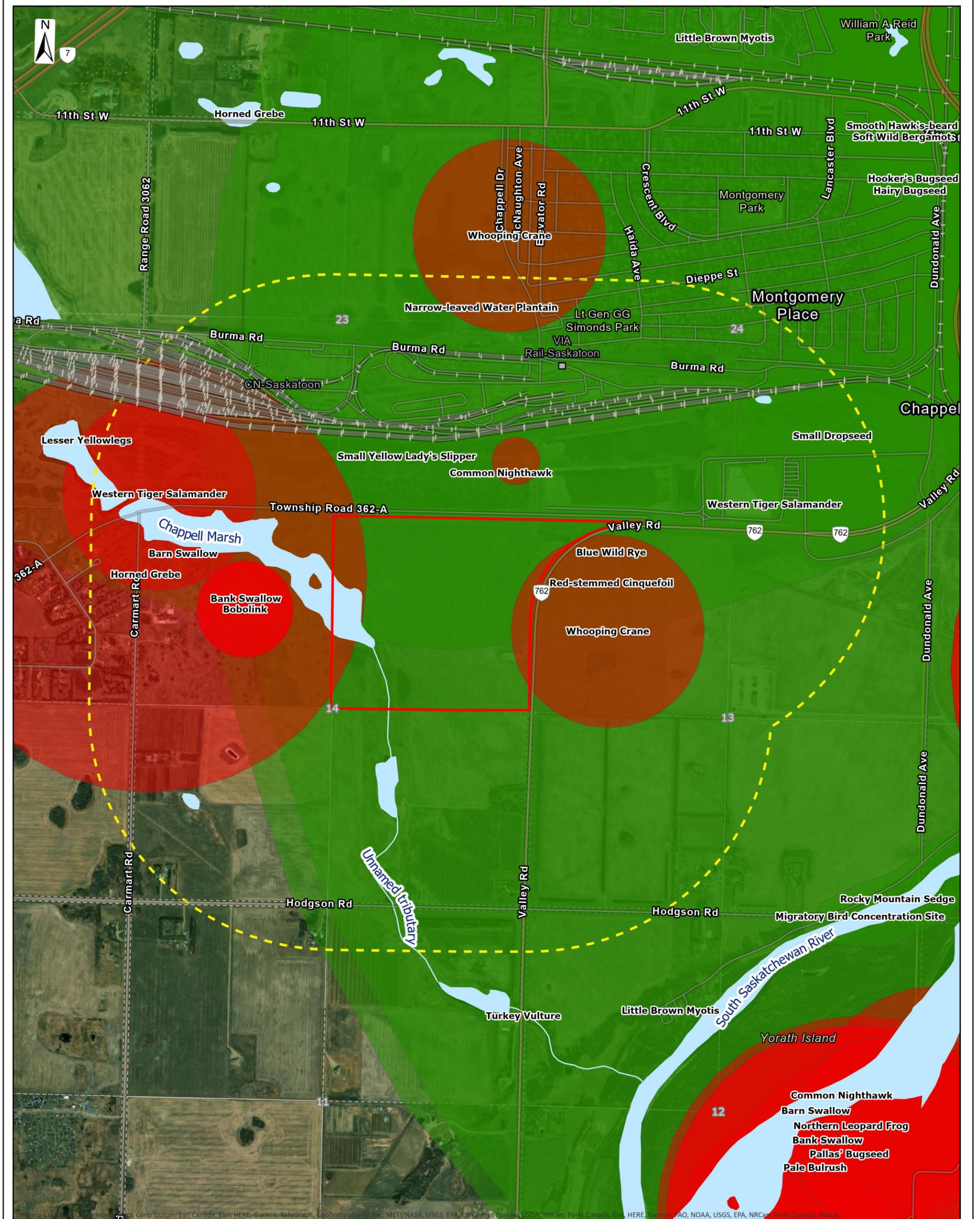


NOTES:
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NO.	DATE	DESCRIPTION	ISSUED BY	CHECK BY
1	23/11/21	FINAL REPORT	SM	RH
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VALLEY ROAD BUSINESS PARK EHDA				
WETLAND MAPPING IN THE PROJECT STUDY AREA				
NOVEMBER 2023		FIGURE 4		REV: 2

4.3 Wildlife and Wildlife Habitat

A total of 19 SOCC, as defined by ENV, were identified that may occupy the PSA and interact with the PDA. The HABISask Project screening report identified 18 SOCC; seven species which have been previously observed within the PSA and reported to the SKCDC and eleven species considered to have expected potential (Table 6; Figure 5; Appendix B). Bats were additionally identified as possible SOCC that may occupy the PDA (Table 6). Following a review of the land cover mapping and satellite aerial imagery, only some of the identified SOCC have potentially suitable habitat within the PDA that may support individuals. These include amphibians such as northern leopard frog (*Rana pipiens*) and western tiger salamander (*Ambystoma mavortium*), mammals such as American badger (*Taxidea taxus taxus*) and bats, and birds such as barn swallow (*Hirundo rustica*), bobolink (*Dolichonyx oryzivorus*) and horned grebe (*Podiceps auratus*). Suitable habitat for several SOCC is also present in the PSA that surrounds the PDA where ARGs could also be applicable, as identified in Table 6.



- LEGEND**
- Project Development Area (PDA)
 - Project Study Area (PSA)
 - Township
 - Quarter Section
 - Section
 - Saskatchewan Rare and Endangered Species**
 - Vertebrate Animal
 - Animal Assemblage
 - Vascular Plant
 - Waterbody
 - Watercourse



NOTES:
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REVISIONS / ISSUE				
KGS GROUP		OVERPASS FARMS INC.		
VALLEY ROAD BUSINESS PARK				
PREVIOUSLY REPORTED KNOWN OCCURRENCES OF SPECIES OF CONSERVATION CONCERN				
NOVEMBER 2023		FIGURE 5		REV: 2

TABLE 6: WILDLIFE SPECIES OF CONSERVATION CONCERN THAT MAY INTERACT WITH THE PROJECT

Wildlife Group	SKCDC Common Name ¹	SKCDC Rank ¹	COSEWIC Status ²	SARA Status ²	Screening Status ³	Saskatchewan Activity Restriction Guidelines (ARGs) ⁴			Preferred Suitable Habitat ⁵ (Likelihood of occurrence in the PDA dependent on the presence, quantity, and quality of suitable habitat)
						Activity Restriction Setback Distance (m)	Habitat Feature	Restricted Activity Period	
Invertebrate	Monarch	S2B,SNRM	EN	SC	Expected potential	30*	Host plants	June 1 to September 30*	Asclepias spp. (Milkweed) – host plants.
Amphibian	Northern leopard frog	S3	SC	SC	Expected potential	500	Breeding/winter habitat	Year-round	Breed in wetlands, streams, dugouts; open habitats for foraging; overwinter in waterbodies that don't freeze to substrate.
	Western tiger salamander	S4	SC	SC	Known (2016)	500*	Breeding/winter habitat	Year-round*	Open grassland habitats that include sandy/friable soils surrounding semi-permanent to permanent waterbodies lacking predatory fish
Mammal	American badger	S3	SC	SC	Expected potential	200*	Active den	Year-round*	Dry/open grasslands, fields, and pastures where ground squirrels are abundant (main prey)
	Bats	-	EN	EN	Possible	500	Roost/foraging site	Year-round	Roost in trees and in artificial structures and forage over wetlands, streams, and treed edges.
Birds	Baird's sparrow	S4B	SC	SC	Expected potential	200*	Breeding bird	May 15 to August 31*	Mainly native grasslands with little to no shrubs, and tame pasture and dry wetland areas
	Bank swallow	S4B,S5M	TH	TH	Known (2018)	50*	Nesting site	May 1 to August 31*	Construct nests in exposed vertical banks (>70 degrees) in riparian areas, gravel pits, road-cuts
	Barn swallow	S4B	SC	TH	Known (2018)	50*	Nesting site	May 1 to August 31*	Affixes nests to structures such as barns, bridges, culverts; forages in nearby open areas and over wetlands
	Bobolink	S5B	SC	TH	Known (2018)	200*	Nesting site	May 1 to August 31*	Open, treeless habitats including grasslands, hay lands, tame pasture, and wetlands
	Burrowing owl	S2B	EN	EN	Expected potential	500	Nesting burrow	Year-round	Typically, short to mid-grass native prairie or tame pasture; rely on burrows from burrowing mammals
	Chestnut-collared longspur	S3B	EN	TH	Expected potential	200	Breeding bird	May 1 – July 31	Rolling mixed-grass and shortgrass uplands, native pastures, moist lowlands
	Common nighthawk	S4B	SC	SC	Known (2021)	200	Breeding bird	May 1 - Aug 31	Open habitats such as dunes, short-grass prairies, tame pastures, marshes, wetlands, riverbanks, disturbed areas.
	Ferruginous hawk	S3B	SC	TH	Expected potential	1000	Nest site	Mar 15 – July 15	Native and tame grassland, pastures, hayland, cropland, shrubsteppe, elevated platforms in large grassland areas
	Horned grebe	S5B	SC	SC	Known (2017)	100*	Nesting wetland	April 1 to August 31*	Small to moderate sized, shallow wetlands with open water and emergent vegetation for nesting
Loggerhead shrike	S3B	TH	TH	Expected potential	400	Breeding bird	May 1 – Aug 15	Open habitats for foraging, shrubs or hedgerows for nesting, and elevated perching sites.	

Wildlife Group	SKCDC Common Name ¹	SKCDC Rank ¹	COSEWIC Status ²	SARA Status ²	Screening Status ³	Saskatchewan Activity Restriction Guidelines (ARGs) ⁴			Preferred Suitable Habitat ⁵ (Likelihood of occurrence in the PDA dependent on the presence, quantity, and quality of suitable habitat)
						Activity Restriction Setback Distance (m)	Habitat Feature	Restricted Activity Period	
	Piping plover	S3B	EN	EN	Expected potential	600	High-water mark	Year-round	Shorelines of alkaline lakes, reservoir beaches, and sandy river islands. Prefer wide, gravelly beaches with clumped, but sparse, vegetation.
	Short-eared owl	S3B,S2N	TH	SC	Expected potential	500	Breeding bird	Mar 25 – Aug 1	May be found in almost all treeless habitats, but prefer mid- to tall prairie or tame pasture.
	Sprague’s pipit	S3B	TH	TH	Expected potential	250	Breeding bird	May 1 – July 31	Grassland habitat of intermediate height (10-30 cm) and few shrubs; prefers to nest in open native grasslands.
	Whooping crane	SXB,S1M	EN	EN	Known (2017)	1000	Staging area	May 1 – Nov. 1	Migration habitat includes marshes, shallow lakes, lagoons, salt flats and cropped fields.

¹ Provincial common names and rank definitions are provided by the Saskatchewan Conservation Data Centre (SKCDC, 2023e; 2023d).

² Federal status designated by COSEWIC and official listing under the SARA: SC (Special Concern), TH (Threatened), EN (Endangered) (Government of Canada, 2023).

³ SOCC identified in the HABISask Project Screening Report (Appendix B; known reports and expected species) and through additional desktop screening (possible species) that may occupy the Project area.

⁴ Activity Restriction Guidelines (ARGs) for Sensitive Species in Saskatchewan (ENV, 2017).

⁵ Preferred suitable habitat types as described in the Ecology and Life History section of NatureServe Explorer (2023b).

* Federally defined ARGs developed by Environment and Climate Change Canada (P. Grégoire, personal communication, May 25, 2023) for federally listed species at risk (no ARG defined provincially⁴)

- indicates No Status/Not Applicable

4.4 Fish and Fish Habitat

The proposed Project footprint overlaps a portion of Chappell Marsh and is transected by an unnamed tributary of the South Saskatchewan River. The tributary has connectivity when water levels are high (flood level) during spring freshet and is considered fish bearing by DFO. The tributary flows from Chappell Marsh, a wetland complex that intersects the PDA, to the South Saskatchewan River through several smaller wetland complexes. During times of high-water, fish can swim upstream and access Chappell Marsh and the tributary. However, through aerial imagery, Chappell Marsh was confirmed to have completely dried in 2022.

Due to the intermittent connectivity of the unnamed tributary with the South Saskatchewan River, any number of the 38 species identified in the South Saskatchewan River could potentially travel into the PDA (Appendix B). Many species travel upstream to spawn during spring freshet, including catostomids (sucker species) and cyprinids (carps and minnows). Several species that may be present in Chappell Marsh include fathead minnow (*Pimephales promelas*), brook stickleback (*Culaea inconstans*), white sucker (*Catostomus commersonii*), northern pike (*Esox lucius*), and *Carassius* species (goldfish genus).

Carassius species are invasive to Saskatchewan and are very successful in low quality environments. Many urban retention ponds in Saskatoon have goldfish (*Carassius* spp.), and due to the proximity to the city, this review did not exclude potential pet releases. In addition, Prussian carp (*Carassius gibelio*) are found in the South Saskatchewan River from Calgary to north of Saskatoon. Prussian carp can migrate upstream during highwater periods and live in what was thought to be non-fish bearing, semi-closed, shallow waters for years before detection.

4.5 Heritage Resources

A KGS Group archaeologist performed a screening of the PDA on October 10, 2023, for heritage sensitive lands, using the Developers' Online Heritage Screening Tool. The Heritage Sensitivity Screening Report is provided in Appendix E.

The Heritage Sensitivity Screening Report identified NW-13-36-06-3 as heritage sensitive and SE-14-36-06-3 as conditionally heritage sensitive. Conditionally sensitive quarter-sections are subject to the condition that if any proposed Project activities will impact land that has not been previously disturbed (examples of previous disturbances include cultivation, roads, railways, residential developments, pipelines, utilities, gravel pits, facilities, etc.), a formal Heritage Referral Letter to the HCB will be required. Since the Project is on both heritage sensitive and conditionally sensitive quarter-sections, development does not have heritage clearance to proceed and submission of a formal Heritage Referral Letter to the HCB is required.

5.0 RECOMMENDATIONS

Based on the findings of the EHDA and experience on other similar projects, the following detailed and general mitigation measures are recommended. This is not intended to be an exhaustive list of all potential requirements but rather a high-level overview of anticipated provincial and federal requirements, organized by Project phase.

5.1 Planning and Design

Primary mitigation efforts for environmental sensitivities should focus on avoidance. Avoidance of sensitive features and periods reduces review times for regulatory agencies and time required for responses and decision making. Avoidance measures also minimize disruptions to planned construction activities and project schedules and prevent potential project delays. Types of avoidance strategies include:

- Minimize direct project interactions with sensitive natural habitats such as wetlands, watercourses, native grassland, tame grassland, shrubs, and trees, whenever possible.
- Schedule all disruptive or destructive construction activities to occur outside the potential nesting bird period. This is the most effective and primary mitigation measure to avoid inadvertent harm to migratory birds, their nests, and eggs. Consult an Avian Specialist to identify the appropriate site-specific nesting period for the Project location.
 - For example, the regional nesting period for the proposed Valley Road Business Park location is mid-April to late August; however, these dates should be considered approximate due to inter-annual variation in weather conditions, available habitat types, and potential species present (ECCC, 2023).
- If avoidance of the identified nesting bird period is not possible, secondary mitigation strategies should be applied, such as:
 - Consult an Avian Specialist to identify suitable nesting habitat where construction activities are planned and apply habitat management actions outside of the identified nesting period (i.e., between late fall and early spring), such that the available habitat becomes no longer suitable or accessible for nesting when breeding birds return; and
 - Schedule Project initiation to begin prior to the start of the identified nesting period and continue Project disturbance with minimal delays into the nesting period so nesting birds are deterred from nesting in the construction footprint and are self-imposing the Project disturbance on nesting attempts in the surrounding area if established during active works.
- To avoid contravention of the *Migratory Birds Convention Act* and its regulations, it is strongly advised to consult an Avian Specialist to develop a site-specific mitigation plan (i.e., beneficial management practice [BMP]) to prevent harm to legally protected nesting birds.

5.1.1 PERMITTING AND APPROVALS

- Due to the extent of the proposed Project, a Technical Proposal (TP) submitted to the ENV may be required. Consultation with ENV is advised.
- Engage early and often with regulatory agencies for all applicable environmental permits.
- Apply for regulatory permits as early as possible to avoid scheduling delays. Regulators have designated turnaround times for each permit; however, backlogs and delays may occur during busy times.
- It is likely that an Aquatic Habitat Protection Permit (AHPP) issued through the ENV or Water Security Agency (WSA) will be required due to the presence of wetland habitat in the PDA.
- A Request for Review (RFR) submitted to DFO may be required if the Project design will interact with fish-bearing waters such as Chappell Marsh and the unnamed tributary that flows through the PDA.

5.1.2 FIELD SURVEYS

Based on the scope of the Project, environmental field surveys in 2024 are advised. These surveys will provide the necessary information on avoidance and mitigation measures that can be incorporated into the design and tender process. To best avoid Project delays due to regulatory permitting and approvals, field surveys should be done well in advance of proposed construction.

Recommended baseline field surveys include plant SOCC, weeds, wetlands, select wildlife SOCC and habitat, and fish and fish habitat. Baseline field investigations will validate the desktop findings and support development of effective mitigation practices. The field investigations will also provide the necessary information for any permitting or regulatory requirements for the Project. All baseline field surveys must follow ENV approved survey protocols, timing windows, and survey effort.

Recommended ecological field surveys are presented below:

- Baseline field surveys for plant SOCC in targeted habitats within the proposed PDA and with a buffer following provincial ARGs. Note: a buffer is required per ENV survey protocols.
- Baseline pre-construction weed survey to establish occurrence and abundance of existing regulated weed species prior to commencing construction activities, which will help inform post-construction weed management responsibilities.
- Baseline field verification of wetland delineation and classification within the proposed PDA.
- Baseline field surveys for wildlife SOCC in the PDA, including their respective ARG buffers:
 - Amphibian SOCC in potential breeding and overwintering habitat.
 - Mammal den survey targeting American badger.
 - Bat habitat assessment and acoustic surveys in potential roosting and foraging habitat, if applicable.
 - Breeding bird SOCC in suitable nesting habitat such as wetlands, hay land, and artificial structures such as the wooden grain bins present in the PDA and stick nest surveys for breeding raptors that may be active in the tree habitat that is present.
- Pre-construction nesting bird surveys (i.e., nest sweep) will be required if disruptive or destructive Project activities are initiated in suitable nesting habitat during the potential nesting bird period for the Project location, as identified by an Avian Specialist (see Section 5.2.5).
- Field fish presence and habitat assessments in potentially impacted fish-bearing waters and at each culvert location to determine connectivity and the need for/support of a DFO RFR submission.

Baseline pre-construction surveys must be conducted within all applicable areas of the PDA, at minimum.

5.1.3 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

It is recommended to develop and implement a site-specific Construction Environmental Management Plan (CEMP) with clear procedures and mitigation measures for reducing or avoiding Project effects on the environment. It is recommended that this be completed and distributed with the tender to minimize potential contractor change order requests. The CEMP should contain, at a minimum, the following Project- and site-specific plans:

- Communications Plan;
- Environmental Monitoring Plan(s);
- Sediment and Erosion Control Plan;

- Wildlife Management Plan(s);
- Aquatic Habitat Management Plan;
- Water Management Plan;
- Waste Management Plan;
- Wildfire Management Plan;
- Spill Response Plan;
- Soil Salvage Plan;
- Weed Management Plan;
- Site Specific Reclamation Plan(s);
- Wetland Mitigation Plan; and
- Access Plan.

Site-specific CEMPs supplement generic, province-wide specifications with project-specific environmental concerns, which provide superior environmental mitigation and oversight. Examples of typical mitigation measures that are included in the management plans, or are often included in issued permit conditions, include but are not limited to the following:

- Environmental monitoring by a Qualified Environmental Professional during construction works in or near sensitive habitats, or near identified SOCC. Sensitive habitats can include watercourses, wetlands, and native prairie. The SOCC could include identified rare plants, dens, active nests, sensitive amphibian breeding or overwintering sites, etc.
- Use of exclusion fencing in areas of wetlands, watercourses, and upland habitat during construction if occupied by amphibian SOCC.
- Removal of trees, shrubs, grasses, forbs, and wetland vegetation cover should occur outside of the nesting bird period. If the Project's schedule does not allow for vegetation removal outside of this window, it is recommended that the services of an Avian Specialist be retained to develop an appropriate mitigation plan. The mitigation plan would include measures to assess and minimize impacts to migratory birds, as required by the *Migratory Birds Convention Act*.
- Installation of effective erosion and sediment control measures (e.g., silt fencing, turbidity curtain), following manufacturer specifications, prior to starting work near watercourses and waterbodies (including wetlands). This includes regular inspection of measures to maintain integrity and address necessary repairs, if damage occurs or upgrades are necessary, and removal after construction.
- All vehicles and machinery must arrive on site in a clean condition, be well maintained, free of fluid leaks, invasive species, and controlled weeds.
- Refueling and maintenance (oiling and lubrication, repairs, etc.) of equipment, machinery, and vehicles will occur at least 100 m from wetlands, waterbodies, and watercourses.
- Weed management will be carried out by maintenance crews as required, post-construction.

Additional mitigation measures may be required when the final Project design is completed.

5.2 Construction

It is advised that the following general mitigation measures should be employed during construction to reduce or remove negative impacts that the Project may have on regulated environmental components. Once the final design has been completed, a detailed list should be finalized based upon that design.

5.2.1 SOIL AND TERRAIN

The following standard mitigation measures should be employed during construction, to eliminate or reduce negative project effects on soils:

- Machinery working in and around organic soils should use swamp mats or similar mitigation measures, to avoid excessive rutting.
- In the instances where both saline and non-saline soil occurs, saline soil must be kept separate from non-saline during all earthworks to prevent admixing and to preserve the productivity of non-saline soil.
- Sediment and erosion control measures should be installed prior to the commencement of earth moving activities, inspected daily, maintained, and upgraded as necessary throughout the Project.
- Soil stockpiles should be stabilized against erosion and monitored and managed for weed infestations.

5.2.2 WEEDS

To support compliance with Saskatchewan's *Weed Control Act*, construction equipment used for the Project should arrive clean and free of weed plant propagules (i.e., seeds and vegetative plant parts). Inspections will be required for equipment coming from outside the region or from areas with documented occurrences of weed species, to prevent the introduction of Prohibited, Noxious, and Nuisance weeds. Equipment should be carefully inspected prior to entering habitats such as wetlands and/or riparian areas because introduced weedy species can cause severe habitat degradation and management of such areas is particularly challenging and costly.

5.2.3 WETLANDS

Wetland avoidance should always be the primary mitigation measure, to the extent possible. In cases where avoidance of wetland boundaries is not possible, minimization of wetland impacts is the next mitigation strategy. An Aquatic Habitat Protection Permit (AHPP) that outlines additional mitigation measures shall be acquired prior to Project activities proceeding within wetland areas.

A setback distance of 30 m from all wetland habitats is recommended for permanent infrastructure, with required road crossings being placed at the narrowest locations in each affected wetland.

If, through the issuance of permits, work is carried out within wetland habitats, work should be completed under dry or frozen conditions, or in isolation from other open water, and using measures such as swamp mats, to avoid soil compaction and rutting by machinery.

5.2.4 WILDLIFE AND WILDLIFE HABITAT

ARCs may be applicable during sensitive time periods, if certain SOCC (wildlife and plants) are present. Mitigation measures may require activity restriction setbacks based on the species, type of disturbance, and timing (ENV, 2017; P. Grégoire, pers. comm., May 25, 2023).

5.2.5 NESTING BIRDS

To avoid harm to legally protected nesting birds and prevent conflicts with scheduled construction activities, it is imperative to consult an Avian Specialist to discuss your planned activities ahead of time, to evaluate if the activities may cause harm, and to determine the most effective measures that can be taken to avoid causing harm to nesting birds. For example:

- Avoid disruptive or destructive construction activities during the nesting period for the project location, as identified by an Avian Specialist. This is the most effective and primary mitigation measure to eliminate inadvertent harm to birds, their nests, and eggs.
- If avoidance of this nesting period is not possible, then all suitable nesting habitat where construction activities are planned should be managed outside of this nesting period, such that nesting attempts by breeding birds will be deterred if they return to the previously suitable nesting habitat.
- Managing nesting habitat outside of the nesting period, before breeding birds are present, may include several different strategies, depending on project size and the types of habitat present:
 - Clear all vegetation, if the area is planned to be cleared during construction anyways;
 - Mow ground vegetation as short as possible and continue mowing at appropriate intervals or until construction activities in the area can be initiated;
 - Clear/mulch shrubs and trees only when necessary;
 - Drain wetlands only if necessary and if approved through permitting;
 - Install non-entrapment exclusion netting around the underside of a bridge or other structures that provide suitable nesting habitat, to prevent access to nesting cliff swallows and barn swallows;
 - Contour exposed soil banks in borrow pits or quarries to have a slope of less than 70 degrees, to make them unsuitable for cavity-nesting species such as bank swallow. Consult an Avian Specialist to advise on how suitable habitat can be retained for bank swallow as they are a SARA-listed SOCC; and
 - Demolish old, abandoned wooden structures such as barns and grain bins within the construction footprint, to prevent access to nesting barn swallows, if they are planned to be removed during construction anyways. If these structures do not necessarily need to be removed, consult an Avian Specialist to assess the risk of leaving this habitat intact, as barn swallows are a SARA-listed SOCC.
- Management of suitable nesting habitat should also consider a buffer around the Project's construction footprint, to avoid disturbing birds that may nest in habitat adjacent to the PDA. This is particularly important to consider for species with ARGs (ENV, 2017; P. Grégoire, pers. comm., May 25, 2023). Consult an Avian Specialist to determine the applicability and an appropriate buffer.

5.2.5.1 Pre-construction Nesting Bird Survey

If avoiding the identified nesting period cannot be achieved and if in the opinion of the Avian Specialist there is suitable nesting habitat remaining within or adjacent to the PDA, a pre-construction nesting bird survey will need to be conducted by a field-qualified Avian Biologist. If nesting birds are detected, no-activity exclusion zones will be established using ECCC and ENV guidelines (i.e., buffers with a defined setback distance). Disruptive Project activities will not be able to occur in these areas until the nest is determined no longer active by the Avian Biologist.

Pre-construction nesting bird survey should never be considered a primary mitigation measure, as doing so has a high probability of identifying active nests which can conflict with planned construction activities and result in project schedule changes and project delays. These surveys are only valid for a period of 7 days and will need to be redone, if no activity has been initiated in the survey area within that time period.

5.2.6 FISH AND FISH HABITAT

Alterations to fish and fish habitat should apply measures to avoid harm to fish and to avoid the harmful alteration, disruption, or destruction of fish habitat (HADD). When fish are present, mitigation measures generally include working outside the designated timing windows, working in isolation from other open water, and employing other best management practices as outlined by DFO. Work within the restricted activity period may be approved by DFO, upon review of a detailed aquatic habitat assessment, which demonstrates habitat to be disturbed is not critical for local fish SOCC populations and additional mitigation measures are applied.

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APPENDIX A

Regulatory Context

The following sections detail the applications of federal and provincial environmental regulations that are anticipated to apply to the proposed Valley Road Business Park (the Project). A change to the Project's design may result in changes to the environmental regulatory requirements.

FEDERAL

FISHERIES ACT

The modernized *Fisheries Act* includes the fisheries protection prohibition against causing death to fish, or the harmful alteration, disruption, or destruction (HADD) of fish habitat. Projects that will result in the death of fish, or a HADD, require Authorization under subsections 34.4(2)(b) and 35(2)(b) of the *Fisheries Act*. Fisheries and Oceans Canada (DFO) interprets HADD as "any temporary or permanent change to fish habitat that directly or indirectly impairs the habitat's capacity to support one or more life processes of fish."

Fish, as defined in the *Fisheries Act* (Section 2), includes "shellfish, crustaceans, marine animals, the eggs, sperm, spawn, larvae, spat, and juvenile stages of fish, shellfish, crustaceans, and marine animals." Fish habitat is defined (Section 2) as "waters frequented by fish and any other areas upon which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply, and migration areas."

Road developments sited near fish-bearing waters and culvert installations, extensions, and replacements have the potential to affect fish and fish habitat during construction, operation, decommission, and reclamation. All surface waterbodies or watercourses with direct connectivity or seasonal connectivity to waterbodies or watercourses known to support fish should be considered fish-bearing until determined otherwise by completion of the appropriate field studies.

The Project must also consider the restricted timing windows for fish to reduce or avoid harm to fish. Restricted activity timing windows have been identified for Saskatchewan lakes, rivers and streams to protect fish during spawning and incubation periods when spawning fish, eggs, and fry are vulnerable to disturbance or sediment. Restricted activity periods are determined on a case-by-case basis according to the species of fish in the waterbody, whether those fish spawn in the spring or fall/winter, and whether the waterbody is in northern, central, or southern Saskatchewan (DFO, 2013).

Instream works such as excavation, infill, placement of bridge piers, culvert installation, extension, and/or replacement will require the submission of Request for Review to DFO. DFO review time is highly variable dependent upon regulatory workloads, with a turnaround time sometimes exceeding 12 weeks; therefore, it is recommended the Request for Review be submitted early in the process to avoid project schedule delays.

MIGRATORY BIRDS CONVENTION ACT

The *Migratory Birds Convention Act* aims to protect migratory birds, their nests, and their eggs. The *Migratory Birds Convention Act* is applicable on all lands and waterbodies in Canada and to all activities associated with organizations, industries, and individuals. Under Section 2 of the *Migratory Birds Convention Act*, ‘migratory bird’ means “a bird referred to in the Convention, and includes the sperm, eggs, embryos, tissue cultures, and parts of the bird.” Under Article V of the *Migratory Birds Convention Act*, “the taking of nests or eggs of migratory game or insectivorous or nongame birds shall be prohibited, except for scientific or propagating purposes under such laws or regulations as the High Contracting Powers may severally deem appropriate.” The taking of nests or eggs includes loss through the removal of trees or vegetation from a site during the avian breeding season, generally from April 20 to August 31 in this area (Breeding Bird Zone B5; Environment and Climate Change Canada [ECCC], 2018), is prohibited. During this time, vegetation clearing is not recommended. Activities which may disturb nests and nesting birds include, but are not limited to:

- land disturbance (i.e., building roads, clearing trees and vegetation),
- infrastructure rehabilitation and decommissioning disturbances (i.e., culvert replacement, building removal),
- sensory disturbance (i.e., noises, lights, and other human activities), and
- emergency incidents (i.e., fires, spills, hazardous materials).

SPECIES AT RISK ACT

The *Species at Risk Act* (SARA) provides for the legal protection of wildlife species and the conservation of their biological diversity. The key purposes of SARA include prevention of Canadian indigenous species, subspecies, and distinct populations from becoming extirpated or extinct; provision for the recovery of Endangered or Threatened species; and encouragement of management of other species to prevent them from becoming at risk. All species designated as being at risk (i.e., Extirpated, Endangered, Threatened and of Special Concern) by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) are addressed under SARA and species officially listed on Schedule 1 of SARA are protected. If any species listed by SARA are found on the site during any construction phase, measures must be taken to mitigate any potential harm to those species.

PROVINCIAL

ENVIRONMENTAL ASSESSMENT ACT

The Saskatchewan *Environmental Assessment Act* describes the environmental assessment process and aims to ensure that development within the province proceeds with appropriate environmental protections and in a manner understood and accepted by the public. The provincial environmental assessment (EA) process is a results-based regulatory and outcomes-based approach that enables development in balance with the conservation and sustainable use of natural resources. The Saskatchewan EA process involves three primary, successive steps to guide projects through the approval process: Self-assessment, Technical Proposal (TP), and Environmental Impact Assessment (EIA).

The first step is to complete a Self-assessment, as per the guidelines in the Technical Proposal Guidelines (MOE, 2014). This desktop review report would feed a more thorough Self-assessment – a high-level project review that assists proponents in identifying whether a project is likely to be a ‘development’ as defined in subsection 2(d) of the Saskatchewan *Environmental Assessment Act*.

The Self-assessment process begins with a high-level desktop information review, identification of potential environmental sensitivities for the Project, and subsequent high-level assessment of the possible impacts of a proposed project on the environment. A site visit (i.e., ground-truth) is often required to supplement this review, verify, and update desktop information as site conditions may change from the date of available information.

If after the Self-assessment the conclusion is unclear whether a project meets the criteria of a ‘development’ under the Saskatchewan *Environmental Assessment Act*, proponents are required to submit an online application and a Technical Proposal following Saskatchewan Ministry of Environment (MOE) guidelines, including proposed mitigation measures to the Environmental Assessment and Stewardship Branch (EASB) for review. The EASB will screen the Technical Proposal to determine whether a proposed project is likely to meet the definition of a ‘development’ and require Ministerial Approval (SKMOE, 2021).

If the proposed project is deemed not likely to be a ‘development’, the project may proceed as proposed, subject to any conditions and applicable regulatory requirements including licenses, permits, leases, and approvals. If the project is determined to be a ‘development’ by the Minister of Environment, then a formal Environmental Impact Assessment would be required.

ENVIRONMENTAL MANAGEMENT AND PROTECTION ACT

The Saskatchewan *Environmental Management and Protection Act* protects the air, land, and water resources of the province through regulating and controlling potentially harmful activities and substances. The *Environmental Management and Protection Act* makes provisions for water pollution control, industrial effluent works, sewage works, waterworks, and regulations of all matters concerning water quality.

Protection requirements are outlined in subsection 38(4) of the *Environmental Management and Protection Act* dealing with riparian and aquatic habitat in Saskatchewan. Specifically, it states that no person without a valid permit shall alter the configuration of any river, stream, lake, creek, marsh, or other watercourse or waterbody; remove, displace, or add any sand, gravel, or other material; or remove vegetation from said watercourse or waterbody. An Aquatic Habitat Protection Permit (AHPP) is required for alteration or development in or around the bed, bank, or boundary of watercourses, waterbodies, or wetlands. Drainage approvals from the Saskatchewan Water Security Agency also fall under this *Environmental Management and Protection Act*.

WEED CONTROL ACT

Notification of occurrences of weeds listed as Prohibited under Schedule I, Noxious under Schedule II, and Nuisance under Schedule III of the Saskatchewan *Weed Control Act* must be given to landowners and occupants of a property and to the Rural Municipality.

Steps must be taken by landowners and occupants, under the supervision of a weed inspector, to eradicate Prohibited or isolated infestations of Noxious weeds, contain and control established infestations of Noxious weeds, or control any Nuisance weeds. Projects should employ measures to avoid the transfer of all weeds listed under the *Weed Control Act*.

WILDLIFE ACT

The purpose of the *Wildlife Act* is to protect wildlife and wild species at risk in Saskatchewan. Section 49 deals with the designation and listing of wild species as: Extirpated, Endangered, Threatened, or Vulnerable. Subject to regulations, a recovery plan may be prepared and implemented to protect any designated species. Subsection 51(1) stipulates activities that are prohibited under the *Wildlife Act*, including the killing, injuring, possessing, disturbing, taking, capturing, harvesting, genetically manipulating, or interfering with any designated wild species at risk. Under Section 21, the Minister may for purposes of propagation, rehabilitation, and scientific objectives, issue a license pursuant to the *Wildlife Act*. Under the *Wildlife Act*, the Wild Species at Risk Regulations lists those wild species at risk that are designated as Extirpated, Endangered and Threatened. Subsection 5(1) of the Wild Species at Risk Regulations stipulates that no person shall disturb the den, house, nest, dam, or usual place of habitation of any wild species at risk designated as Extirpated or Endangered dealing with animal species. A license may be issued to remove or destroy the den, house, nest, dam, or usual place of habitation of any wild species at risk (animal species) listed that are causing or is likely to cause damage to property.

HERITAGE PROPERTY ACT

The *Heritage Property Act* is the governing legislation that stipulates that a heritage review by the Saskatchewan Heritage Conservation Branch (HCB) of all ground disturbing development and activity that has the potential to damage heritage property is required prior to commencing construction. Section 63 of the *Heritage Property Act* states, “ where the minister is of the opinion that any operation or activity which may be undertaken by a person is likely to result in the alteration, damage or destruction of heritage property, he may require that person to: (a) carry out an assessment to determine the effect of the proposed operation or activity on that heritage property (b) prepare and submit to the minister a report...(c) undertake any salvage, preservation or protective measures...” Section 67 of the *Heritage Property Act* stipulates that a permit is required for the purpose of collection, researching, or otherwise managing heritage property.

APPENDIX B

HABISask Project Screening Report

Notes:

Report Generated
10/03/2023

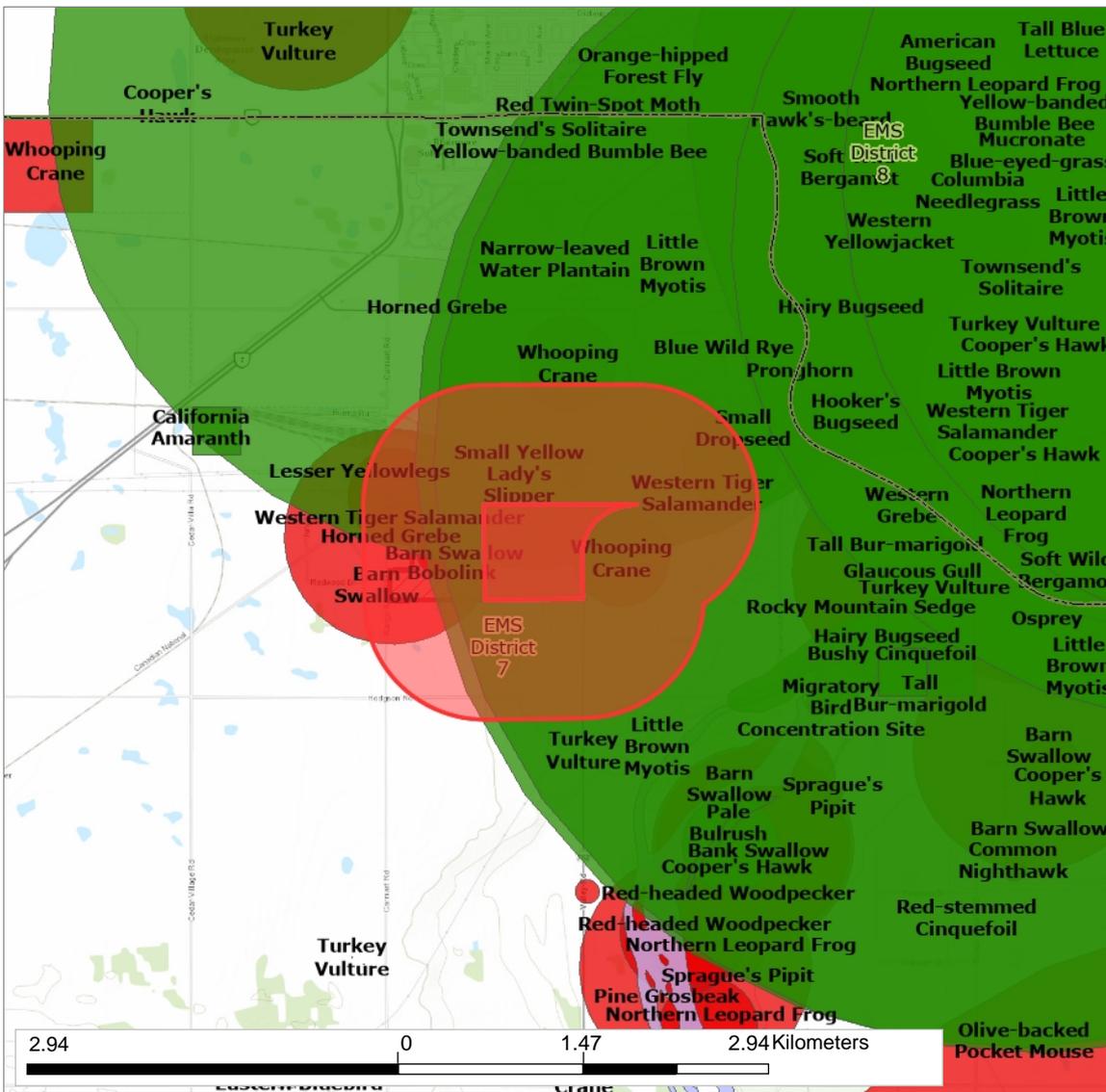
Map Information



Buffer Size:
1 Kilometers

Feature Selection
Uploaded Layer

Area of Interest

- Screened Areas:**
- Ecological Management Specialists (EMS) District
 - Compliance & Field Service (CFS) Area
 - Compliance & Field Service (CFS) Region
 - Area Fisheries Ecologists Area(s)
 - Area Wildlife Ecologist(s)
 - Rural Municipality
 - First Nation Reserve
 - AG Crown Land Management Specialist Districts
 - Rare and Endangered Species Fish Species
 - Woodland Caribou Range Species Predictive Models
 - Whooping Crane Corridor
 - Federal Critical Habitat
 - Proposed Critical Habitat
 - Wind Energy Avoidance Zones
 - Important Natural Areas
 - Provincial Parks
 - Recreation Sites
 - Game Preserves
 - RC Game Preserve
 - National Wildlife Areas
 - Federal Pastures
 - Wildlife Habitat Protection Act Lands
 - Fish & Wildlife Development Fund Lands
 - Migratory Bird Sanctuary
 - Wildlife Refuge
 - Conservation Easements
 - Crown Conservation Easements
 - Ecological Reserves
 - Ramsar Wetlands
 - Reservoir Development Areas
 - Representative Areas
 - Special Management Areas

Species Likely to be Present

Known Species

“Known” species are species that have known occurrences in the area from the Saskatchewan Conservation Data Centre’s Rare and Endangered Species map layer. However, absence of species observation records does not preclude the existence of species in the area of interest. Observations may simply not have been recorded for the given area or may not have yet been entered into the ministry data holdings – new observation records are continuously being discovered. Information accessible through HABISask is not intended to be a definitive statement on the presence, absence or status of a species within a given area, nor as a substitute for onsite surveys.

Rare and Endangered Species

Category: Vascular Plant

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
Blue Wild Rye	<i>Elymus glaucus ssp. glaucus</i>	G5T5	NNR	S3			
Narrow-leaved Water Plantain	<i>Alisma gramineum</i>	G5	N4	S3			
Red-stemmed Cinquefoil	<i>Potentilla rubricaulis</i>	G4G5	N4	S3			
Small Dropseed	<i>Sporobolus neglectus</i>	G5	N4	S2			
Small Yellow Lady's Slipper	<i>Cypripedium parviflorum var. makasin</i>	G5T4T5	N4N5	S3			

Category: Vertebrate Animal

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
Bank Swallow	<i>Riparia riparia</i>	G5	N4N5B, N5M	S4B, S5M	Threatened	Threatened	
Barn Swallow	<i>Hirundo rustica</i>	G5	N4N5B	S4B	Special Concern	Threatened	
Bobolink	<i>Dolichonyx oryzivorus</i>	G5	N5B, N4N5M	S5B	Special Concern	Threatened	
Common Nighthawk	<i>Chordeiles minor</i>	G5	N4N5B, N5M	S4B	Special Concern	Special Concern	
Horned Grebe	<i>Podiceps auritus</i>	G5	N5B, N4N5N	S5B	Special Concern	Special Concern	
Western Tiger Salamander	<i>Ambystoma mavortium</i>	G5	N5	S4	Special Concern	Special Concern	
Whooping Crane	<i>Grus americana</i>	G1	N1B	SXB, S1M	Endangered	Endangered	Endangered

Expected Species

“Expected” is based on a modelled prediction if a species might occur in areas based upon developed statistical relationships between local and landscape characteristics and species presence. Models utilized by this report have only been created in the prairie ecozone for a selection of species. The boreal plain, boreal shield and taiga shield will not return any expected species results. Models are not a substitute for on the ground surveys to determine species presence.

Species Predictive Models

Category: Invertebrate Animal

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
Monarch	<i>Danaus plexippus plexippus</i>	G4T3	N3B, NNRM	S2B, SNRM	Endangered	Special Concern	

Category: Vascular Plant

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
Slender Mouse-ear-cress	<i>Crucihimalaya virgata</i>	G3	N2	S1	Threatened	Threatened	Threatened
Smooth Goosefoot	<i>Chenopodium subglabrum</i>	G3G4	N3	S3	Threatened	Threatened	

Category: Vertebrate Animal

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
American Badger	<i>Taxidea taxus taxus</i>	G5T5	N4	S3	Special Concern	Special Concern	
Baird's Sparrow	<i>Centronyx bairdii</i>	G4	N4B, N4M	S4B	Special Concern	Special Concern	
Bank Swallow	<i>Riparia riparia</i>	G5	N5B, N5M	S4B, S5M	Threatened	Threatened	
Bobolink	<i>Dolichonyx oryzivorus</i>	G5	N5B, N4N5M	S5B	Special Concern	Threatened	

Category: Vertebrate Animal

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
Burrowing Owl	<i>Athene cunicularia</i>	G4	N1N2B, N1N2M	S2B	Endangered	Endangered	Endangered
Chestnut-collared Longspur	<i>Calcarius ornatus</i>	G5	N3B,N3M	S3B	Endangered	Threatened	
Common Nighthawk	<i>Chordeiles minor</i>	G5	N4B,N3M	S4B	Special Concern	Special Concern	
Ferruginous Hawk	<i>Buteo regalis</i>	G4	N3B,N3N, NUM	S3B	Special Concern	Threatened	
Horned Grebe	<i>Podiceps auritus</i>	G5	N5B,N5N, N5M	S5B	Special Concern	Special Concern	
Loggerhead Shrike	<i>Lanius ludovicianus excubitorides</i>	G4T4	N3B	S3B	Threatened	Threatened	
Northern Harrier	<i>Circus hudsonius</i>	G5	N5B,N4N	S4B	Not at Risk		
Northern Leopard Frog	<i>Lithobates pipiens</i>	G5	N5	S3	Special Concern	Special Concern	
Piping Plover	<i>Charadrius melodus circumcinctus</i>	G3T3	N3B	S3B	Endangered	Endangered	Endangered
Short-eared Owl	<i>Asio flammeus</i>	G5	N4B,N3N, N4M	S3B,S2N	Threatened	Special Concern	
Sprague's Pipit	<i>Anthus spragueii</i>	G3G4	N3N4B, N3N4M	S3B	Threatened	Threatened	

Fish Species by Watershed

All fish species expected to be in any watershed that intersects the area searched are provided and their presence in the direct project area will depend on habitat.

Watershed: South Saskatchewan River

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
Blacknose Dace	<i>Rhinichthys obtusus</i>	G5	N5	S3			
Brook Stickleback	<i>Culaea inconstans</i>	G5	N5	S5			
Brook Trout	<i>Salvelinus fontinalis</i>	G5	N5B,N5N, N5M	SNA			
Burbot	<i>Lota lota</i>	G5	N5	S5			
Cisco	<i>Coregonus artedii</i>	G5	N5B,N5N, NUM	S5			
Common Shiner	<i>Luxilus cornutus</i>	G5	N5	S3			
Emerald Shiner	<i>Notropis atherinoides</i>	G5	N5	S5			
Fathead Minnow	<i>Pimephales promelas</i>	G5	N5	S5			
Finescale Dace	<i>Chrosomus neogaeus</i>	G5	N5	S4			
Flathead Chub	<i>Platygobio gracilis</i>	G5	N5	S3			
Goldeye	<i>Hiodon alosoides</i>	G5	N5	S4			
Iowa Darter	<i>Etheostoma exile</i>	G5	N5	S5			
Johnny Darter	<i>Etheostoma nigrum</i>	G5	N5	S5			
Lake Chub	<i>Couesius plumbeus</i>	G5	N5	S5			
Lake Sturgeon	<i>Acipenser fulvescens</i>	G3G4	N3	S2	Endangered		
Lake Trout	<i>Salvelinus namaycush</i>	G5	N5	S5			
Lake Whitefish	<i>Coregonus clupeaformis</i>	G5	N5B,N5N, N5M	S5	Not at Risk		
Logperch	<i>Percina caprodes</i>	G5	N5	S5			
Longnose Dace	<i>Rhinichthys cataractae</i>	G5	N5	S5			
Longnose Sucker	<i>Catostomus catostomus</i>	G5	N5	S5			
Mooneye	<i>Hiodon tergisus</i>	G5	N5	S3			
Ninespine Stickleback	<i>Pungitius pungitius</i>	G5	N5B,N5N, N5M	S5			
Northern Pike	<i>Esox lucius</i>	G5	N5	S5			
Pearl Dace	<i>Margariscus nachtriebi</i>	G5	N5	S5			

Watershed: South Saskatchewan River

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
Prussian Carp	<i>Carassius gibelio</i>	GNR	NNA	SNA			
Quillback	<i>Carpoides cyprinus</i>	G5	N5	S4			
Rainbow Trout	<i>Oncorhynchus mykiss</i>	G5	N5B,N5N, N5M	SNA			
River Shiner	<i>Notropis blennioides</i>	G5	N5	S3			
Sauger	<i>Sander canadensis</i>	G5	N5	S5			
Shorthead Redhorse	<i>Moxostoma macrolepidotum</i>	G5	N5	S4			
Silver Redhorse	<i>Moxostoma anisurum</i>	G5	N5	S4			
Slimy Sculpin	<i>Cottus cognatus</i>	G5	N5	S4			
Spoonhead Sculpin	<i>Cottus ricei</i>	G5	N5	S5	Not at Risk		
Spottail Shiner	<i>Notropis hudsonius</i>	G5	N5	S5			
Trout-perch	<i>Percopsis omiscomaycus</i>	G5	N5	S5			
Walleye	<i>Sander vitreus</i>	G5	N5	S5			
White Sucker	<i>Catostomus commersonii</i>	G5	N5	S4			
Yellow Perch	<i>Perca flavescens</i>	G5	N5	S5			

- Whooping Crane Corridor** 50% Core Area
- Whooping Crane Corridor** 95% Core Area
- Whooping Crane Corridor** 75% Core Area

Species with Critical Habitat Present

This dataset displays the geographic areas within which federal Critical Habitat for species at risk listed on Schedule 1 of the federal Species at Risk Act (SARA) occurs in Saskatchewan. Please be aware that not all of the area within these boundaries is necessarily Critical Habitat. To determine if a specific area is Critical Habitat and if your activity might be considered "destruction" of Critical Habitat, other information available in each individual species' Recovery documents (<http://www.sararegistry.gc.ca>) need to be considered, including biophysical attributes and activities likely to result in destruction of Critical Habitat.

Note that recovery documents (and therefore Critical Habitat) may be amended from time to time. Species are added as the data becomes ready, which may occur after the recovery document has been posted on the SAR Public Registry. Although HABISask will try to provide the latest data, the SAR Public Registry should always be considered as the official source for Critical Habitat information.

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
No Critical Habitat found							

Proposed Critical Habitat Present

This section identifies federally proposed critical habitat that is up for consultation as per the information contained within the federal recovery strategies developed under the federal Species at Risk Act (SARA). This information on location of critical habitat is intended for reference by landowners and/or lease holders. Shapefiles or additional maps of critical habitat can be obtained by contacting Environment and Climate Change Canada at ec.leprpn-sarapnr.ec@canada.ca.

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
No Critical Habitat found							

Managed Areas

Managed areas are a diverse collection of lands and waters on which the conservation of biodiversity and ecosystem function are among the goals of the land management programs. Each of the unique or sensitive landscapes, within the network of managed areas, have some level of protection or activity restrictions placed on them by legislation, agreement or policy. These lands include provincial and national parks, ecological reserves, wildlife lands, game preserves, conservation easements and other privately held stewardship lands.

Provincial Park	Recreation Site	Game Preserve	Road Corridor Game Preserve
Nothing Found	Nothing Found	Nothing Found	Nothing Found

National Wildlife Area

Nothing Found

Pasture Boundary

Nothing Found

Wildlife Habitat Protection Act (WHPA)

Nothing Found

Fish & Wildlife Development Fund (FWDF)

Nothing Found

Migratory Bird Sanctuary

Nothing Found

Wildlife Refuge

Nothing Found

Conservation Easement

Yes

Crown Conservation Easement

Nothing Found

Ecological Reserve

Nothing Found

Ramsar Wetland

Nothing Found

Reservoir Development Area

Nothing Found

Representative Area Ecological Reserve

Nothing Found

Special Management Area

Nothing Found

Rare and Endangered Species Occurrences

The absence of information provided by the Saskatchewan Conservation Data Centre (SKCDC) does not categorically mean the absence of sensitive species or features. The quantity and quality for data collected by the SKCDC are dependent on the research and observations of many individuals and organizations. SKCDC reports summarize the existing natural heritage information, known to the SKCDC, at the time of the request.

SKCDC data should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. The user therefore acknowledges that the absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources.

Occurrence ID: 9999101861	First Observation: 2017-10-11
Occurrence Class: Vertebrate Animal	Last Observation: 2017-10-11
Scientific Name: <i>Grus americana</i>	
Common Name: Whooping Crane	
Occurrence Rank:	
General Description: 0 Adult(s) (Unknown Sex); 1 Juvenile(s); Breeding Bird Status: Migrant; (2017)	
Occurrence Data:	
Directions: N END OF VALLEY ROAD AT THE TURN	
Occurrence ID: 9999101621	First Observation: 2015-07-31
Occurrence Class: Vertebrate Animal	Last Observation: 2015-07-31
Scientific Name: <i>Grus americana</i>	
Common Name: Whooping Crane	
Occurrence Rank:	
General Description: 2 Adult(s) (Unknown Sex); 0 Juvenile(s); Breeding Bird Status: Migrant; (2015)	
Occurrence Data:	
Directions: OVER MONTGOMERY PLACE (SASKATOON)	
Occurrence ID: 9999149486	First Observation: 2020-10-27
Occurrence Class: Vertebrate Animal	Last Observation: 2020-10-27
Scientific Name: <i>Ambystoma mavortium</i>	
Common Name: Western Tiger Salamander	
Occurrence Rank:	
General Description: Species detected (2020)	
Occurrence Data:	
Directions: Valley Rd, Saskatoon, SK, CA	
Occurrence ID: 24637	First Observation: 2016-08-06
Occurrence Class: Vertebrate Animal	Last Observation: 2016-08-06
Scientific Name: <i>Ambystoma mavortium</i>	
Common Name: Western Tiger Salamander	
Occurrence Rank: E - Verified extant (viability not assessed)	
General Description:	
Occurrence Data: Species detected (2016)	
Directions: Township Rd 362A, Saskatoon, SK, CA	
Occurrence ID: 9999149282	First Observation: 2020-07-05
Occurrence Class: Vertebrate Animal	Last Observation: 2020-07-05
Scientific Name: <i>Ambystoma mavortium</i>	
Common Name: Western Tiger Salamander	
Occurrence Rank:	
General Description: Species detected (2020)	
Occurrence Data:	
Directions: Township Road 362A, Saskatoon, SK, CA	

Occurrence ID: 9999128032
Occurrence Class: Vertebrate Animal
Scientific Name: Podiceps auritus
Common Name: Horned Grebe

First Observation: 2017-07-02
Last Observation: 2017-07-02

Occurrence Rank:
General Description: 1 Adult(s) Unknown Sex; Breeding Bird Status: H; (2017)

Occurrence Data:
Directions: Saskatoon--Chappell Marsh Conservation Area

Occurrence ID: 9999138994
Occurrence Class: Vertebrate Animal
Scientific Name: Chordeiles minor
Common Name: Common Nighthawk

First Observation: 2021-06-23
Last Observation: 2021-06-23

Occurrence Rank:
General Description: 1 Unknown Sex/Age; Breeding Bird Status: H; (2021)

Occurrence Data:
Directions:

Occurrence ID: 9999127319
Occurrence Class: Vertebrate Animal
Scientific Name: Dolichonyx oryzivorus
Common Name: Bobolink

First Observation: 2018-07-15
Last Observation: 2018-07-15

Occurrence Rank:
General Description: 1 Adult(s) Unknown Sex; Breeding Bird Status: A; (2018)

Occurrence Data:
Directions: Chappel Marsh Conservation Area

Occurrence ID: 9999146468
Occurrence Class: Vertebrate Animal
Scientific Name: Hirundo rustica
Common Name: Barn Swallow

First Observation: 2018-06-17
Last Observation: 2018-06-17

Occurrence Rank:
General Description: 1 Adult(s) Unknown Sex; Breeding Bird Status: NU; Nest/Burrow/Den; (2018)

Occurrence Data:
Directions: Chappell Marsh butterfly outing

Occurrence ID: 9999125726
Occurrence Class: Vertebrate Animal
Scientific Name: Hirundo rustica
Common Name: Barn Swallow

First Observation: 2018-07-15
Last Observation: 2018-07-15

Occurrence Rank:
General Description: 1 Adult(s) Unknown Sex; Breeding Bird Status: H; (2018)

Occurrence Data:
Directions: Chappell Marsh Conservation Area

Occurrence ID: 9999126288
Occurrence Class: Vertebrate Animal
Scientific Name: Riparia riparia
Common Name: Bank Swallow

First Observation: 2018-07-15
Last Observation: 2018-07-15

Occurrence Rank:
General Description: 60 Adult(s) Unknown Sex; Breeding Bird Status: H; (2018)

Occurrence Data:
Directions: Chappell Marsh Conservation Area

Occurrence ID: 917
Occurrence Class: Vascular Plant
Scientific Name: *Elymus glaucus* ssp. *glaucus*
Common Name: Blue Wild Rye
Occurrence Rank: H - Historical

First Observation: 1931
Last Observation: 1931-07-23

General Description:

Occurrence Data: 1931 - no data in 1 site.
Directions: Saskatoon

Occurrence ID: 9999138458
Occurrence Class: Vascular Plant
Scientific Name: *Cypripedium parviflorum* var. *makasin*
Common Name: Small Yellow Lady's Slipper
Occurrence Rank:

First Observation: 2021-06-29
Last Observation: 2021-06-29

General Description: 1 Individual(s) (Count); 1 Groups (Count); (2021)
Occurrence Data:
Directions:

Occurrence ID: 5188
Occurrence Class: Vascular Plant
Scientific Name: *Sporobolus neglectus*
Common Name: Small Dropseed
Occurrence Rank: E - Verified extant (viability not assessed)

First Observation: 1993-09-17
Last Observation: 1993-09-17

General Description: Damp gravel between CNR railway lines With *S. cryptandrus*, *Setaria viridis* One patch
Occurrence Data:
Directions: Saskatoon, Chappell yards (52 07'N 106 43'W) 52.12 106.72 LSD 07 Sec 24 T36 R06 W3

Occurrence ID: 999969205
Occurrence Class: Vascular Plant
Scientific Name: *Alisma gramineum*
Common Name: Narrow-leaved Water Plantain
Occurrence Rank:

First Observation: 1956-09-06
Last Observation: 1956-09-06

General Description: specimen collected (1956)
Occurrence Data:
Directions: 2 mi W of Saskatoon

Occurrence ID: 2118
Occurrence Class: Vascular Plant
Scientific Name: *Potentilla rubricaulis*
Common Name: Red-stemmed Cinquefoil
Occurrence Rank: H - Historical

First Observation: 1939-06-29
Last Observation: 1939-06-29

General Description:
Occurrence Data: 1939 - species observed in 1 sit
Directions: Saskatoon

Occurrence ID: 999988490
Occurrence Class: Vascular Plant
Scientific Name: *Cypripedium parviflorum* var. *makasin*
Common Name: Small Yellow Lady's Slipper
Occurrence Rank:

First Observation: 2018-06-17
Last Observation: 2018-06-17

General Description: Species observed (2018)
Occurrence Data:
Directions: Richard St. Barbe Baker Afforestation Site

Wild Species Research Permitting

A Research Permit is required to detect or observe plants or wildlife for commercial purposes, such as pre-screening surveys to collect baseline data or other activities, or to conduct academic research. Research Permits are not required if you are doing surveys for personal, recreational, educational or other non-commercial purposes. Revisions were made to Section 21 of The Wildlife Act in 2015 and to Section 6.2 of The Wildlife Regulations in 2016.

See the Government of Saskatchewan [Wild Species Research Permitting](#) page for more information.

All forms and related information pertaining to Research Permits can be found in the Publications Centre. Be sure to check out the Conservation Standards Terms and Conditions for Research Permits for general, wildlife and research-specific and information submission conditions that pertain to all research permits.

Subscribe to our Mail-out List Subscriptions for updates regarding Species Detection Permits, SKCDC Lists and Ranks, Legislation and Policy and HABISask.

Species Detection Survey Protocols

The [Species Detection Survey Protocols](#) are used to detect rare and sensitive species so Activity Restriction Guidelines can be applied. Their use is required by industry/environmental consultants for proposed or existing commercial activities.

Activity Restriction Guidelines for Sensitive Species

The [Activity Restriction Guidelines for Sensitive Species](#) outline restricted activity periods and distance setbacks for rare and sensitive species to assist proponents in minimizing impacts to rare and sensitive species and habitats.

Administrative Areas

District 7	Ecological Management Specialist (EMS) District(s)
Saskatoon	Compliance and Field Services Area(s)
Saskatoon	Compliance and Field Services Region(s)
Saskatoon	Area Fisheries Ecologist Area(s)
PARKLAND REGION	Area Wildlife Ecologist(s)
344 - CORMAN PARK	Rural Municipality
Nothing Found	First Nation Reserve
District 9	AG Crown Land Management Specialist District

Contact Us

For more information, please contact our Client Service Office:

Email: centre.inquiry@gov.sk.ca

Tel (toll free in North America): 1-800-567-4224

Tel (Regina): 306-787-2584

APPENDIX C

Species Ranking and Status Definitions

In Canada, biological taxa are assessed nationally for their risk of extirpation by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and protected under the *Species at Risk Act* (SARA) according to their status designation. Taxa are also assessed on this basis and tracked subnationally by provincial regulatory agencies. In Saskatchewan, the provincial agency that designates ranks and tracks taxa is the Saskatchewan Conservation Data Centre (SKCDC) (Saskatchewan Conservation Data Centre [SKCDC], 2023d). Additionally, global conservation status ranks are designated by NatureServe, an international non-profit organization that tracks the risk for taxon extinction and extirpation in North America (NatureServe, 2023c).

PROVINCIAL SPECIES RANKING DEFINITIONS

In Saskatchewan, biological taxa are ranked using a subnational or S-rank to categorize a taxon by its risk of extirpation. Ranks are calculated following a standardized procedure set by NatureServe, and consider not only rarity, but also trends and threats. Ranks range from an S1 to an S5, where an S1 is deemed to have a high risk of extirpation (SKCDC, 2023d).

Table C-1 provides descriptions of basic Saskatchewan Conservation Data Centre species rankings.

TABLE C-1: PROVINCIAL SASKATCHEWAN CONSERVATION DATA CENTRE RANK DEFINITIONS

Rank	Rank Name	Description
1	Critically Imperiled/ Extremely rare	At very high risk of extinction or extirpation due to extreme rarity, very steep declines, high threat level, or other factors.
2	Imperiled/Very rare	At high risk of extinction or extirpation due to a very restricted range, very few populations, steep declines, threats, or other factors.
3	Vulnerable/Rare to uncommon	At moderate risk of extinction or extirpation due to a restricted range, relatively few populations, recent and widespread declines, threats, or other factors.
4	Apparently Secure	Uncommon but not rare; some cause for long-term concern due to declines or other factors.
5	Secure/Common	Demonstrably secure under present conditions; widespread and abundant; low threat level.

A range rank (such as S3S4) is used when the taxon straddles the criteria for more than one rank (i.e., S3 and S4).

Letters in the rank are referred to as modifiers and can have various meanings as identified in Table C-2.

TABLE C-2: SASKATCHEWAN CONSERVATION DATA CENTRE RANK MODIFIERS

Modifier	Modifier Description
A	Accidental or causal in the province, including species recorded infrequently that are far outside their range (birds and butterflies)
B	For a migratory species, applies to the breeding population in the province

Modifier	Modifier Description
N	For a migratory species, applies to the non-breeding population in the province
M	For a migratory species, rank applies to the transient (migrant) population
H	Historical occurrence of the taxon, without recent verification (e.g., 20-40 years or older)
U	Status is uncertain in Saskatchewan because of limited or conflicting information (unrankable)
X	Believed to be extinct or extirpated from the province
NR	Rank is not yet assigned, or species has not yet been assessed (not ranked)
NA	Conservation status is not applicable to the species (e.g., it may have been determined to have been introduced in Saskatchewan)

A “?” following a rank means that there is some uncertainty associated with it. For example, a rank of S3? means that it is believed to be most likely an S3, but there is a significant chance that it could be an S2 or S4.

The SKCDC prioritizes taxa for ranking based on a five-year rotation. Information on each taxon is gathered and compiled prior to assessing the rank factors. Once a rank is calculated, it is reviewed by SKCDC staff and other experts (e.g., members of the Botanical Assessment Working Group for plants) and can be adjusted if the reviewers feel that it is necessary. The ranks are only as good as the information that is put into the calculator, so it is very important for the SKCDC to have all of the most up-to-date information on a taxon before ranking it. External data may play a role in adjusting the rank, but, if at all possible, the SKCDC will incorporate such data into its database prior to the rank calculation.

Where data is scarce, the SKCDC may rely on expert opinion to inform a conservation rank.

Why are these ranks important? Conservation activities are focused on taxa that have a rank of S1, S2 or S3, and avoidance or mitigation is required for these taxa during any development projects. Taxa with a rank including S3 or less are tracked by the SKCDC and locations of conservation significance are mapped. Taxa that are not ranked S1, S2 or S3 may still be tracked if special circumstances warrant.

FEDERAL SPECIES STATUS LISTINGS

Committee on the Status of Endangered Wildlife in Canada

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC), a committee of government and non-government experts, directs the assessments and classifies species using the best available scientific, community, and Aboriginal traditional knowledge. COSEWIC species status recommendations consider various datasets, including federal and provincial species conservation data as well as global conservation status and extinction risk data from the World Conservation Union (formerly known as the International Union for the Conservation of Nature, or IUCN).

COSEWIC submits recommendations regarding status updates for Canadian biological taxa to the federal Minister of Environment, who must respond to COSEWIC’s recommended status updates within 90 days. The Canadian federal Cabinet then has nine months to decide on the addition of a given species to the list of species legally protected under the Canadian *Species at Risk Act*. This listing process acknowledges that adding species to the legal list could have economic and social implications for Canadians. Species are designated as one of the following statuses: extirpated, endangered, threatened, or a special concern (COSEWIC, 2003) as defined in Table C-3.

TABLE C-3: COSEWIC SPECIES LISTING DEFINITIONS

Code	Category	Definition
X	Extinct	A wildlife species that no longer exists.
XT	Extirpated	A wildlife species that no longer exists in the wild in Canada but exists elsewhere.
E	Endangered	A wildlife species facing imminent extirpation or extinction.
T	Threatened	A wildlife species that is likely to become an endangered if nothing is done to reverse the factors leading to its extirpation or extinction
SC	Special Concern	A wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.
DD	Data Deficient	A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.
NAR	Not At Risk	A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances

Species At Risk Act

Under the *Species at Risk Act*, Schedule 1 is the official list of legally protected species at risk in Canada. Species status definitions are shared between COSEWIC, and are therefore listed as extirpated, endangered, threatened, or special concern.

Due to the nature of the COSEWIC status recommendation process and the legal implications of the federal Cabinet’s adoption of the recommended species status updates, species can be ranked by both COSEWIC and SARA, and their status may be different under each.

GLOBAL RANKINGS

Global conservation status ranks for North American taxa are assigned by NatureServe scientists or by a designated lead office in the NatureServe network (NatureServe, 2023c). NatureServe Conservation status ranks are presented below, in Table C-4.

TABLE C-4: GLOBAL RANKINGS – NATURESERVE CONSERVATION STATUS RANKS

Rank	Name	Definition
GX	Presumed Extinct (Species)	Not located despite intensive searches and virtually no likelihood of rediscovery.
GX	Presumed Eliminated (ecosystems, i.e., ecological communities and systems)	Eliminated throughout its range, due to loss of key dominant and characteristic taxa and/or elimination of the sites and ecological processes on which the type depends.
GH	Possibly Extinct (species), Possibly Eliminated (ecosystems)	Known from only historical occurrences but still some hope of rediscovery. Examples of evidence include (1) that a species has not been documented in approximately 20-40 years despite some searching and/or some evidence of significant habitat loss or degradation; (2) that a species or ecosystem has been searched for unsuccessfully, but not thoroughly enough to presume that it is extinct or eliminated throughout its range.
G1	Critically Imperiled	At very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors.
G2	Imperiled	At high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
G3	Vulnerable	At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
G4	Apparently Secure	At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
G5	Secure	At very low risk of extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.

Range Rank — A numeric range rank (e.g., G2G3, G1G3) is used to indicate uncertainty about the exact status of a taxon or ecosystem type. Ranges cannot skip more than two ranks (e.g., GU should be used rather than G1G4).

APPENDIX D

Additional Vascular Plant Species of Conservation
Concern with Potential to Occur in the Project Study
Area

Provincially and federally tracked vascular plant species of conservation concern recorded by the Saskatchewan Conservation Data Centre to occur in the Saskatoon Plain and Moose Wood Sand Hills ecoregions are presented below, in Table D-1. Although these species were not identified in the HABISask Project Screening Report (Appendix B) as previously reported element occurrences within the Project Study Area (PSA), the species listed below have potential to occur in the PSA due to the situation of the PSA in the Saskatoon Plain and Moose Wood Sand Hills ecoregions, if suitable habitat is present. Only field studies can confirm the presence of species in the PSA.

TABLE D-1: ADDITIONAL VASCULAR PLANT SPECIES OF CONSERVATION CONCERN WITH POTENTIAL TO OCCUR IN THE PROJECT STUDY AREA

Scientific Name	Common Name	Provincial Rank	COSEWIC Status	Species at Risk Act Status	SK Wild Species at Risk Regulations	Saskatoon Plain Ecoregion	Moose Wood Sand Hills Ecoregion
<i>Achnatherum nelsonii ssp. dorei</i>	Columbia Needlegrass	S3	-	-	-	✓	✓
<i>Alisma gramineum</i>	Narrow-leaved Water Plantain	S3	-	-	-	✓	✓
<i>Allium cernuum</i>	Nodding Onion	S3	-	-	-	-	✓
<i>Almutaster pauciflorus</i>	Few-flowered Aster	S3	-	-	-	✓	-
<i>Amaranthus californicus</i>	California Amaranth	S2	-	-	-	✓	-
<i>Ambrosia acanthicarpa</i>	Bur Ragweed	S2	-	-	-	-	✓
<i>Amphiscirpus nevadensis</i>	Nevada Bulrush	S3	-	-	-	-	✓
<i>Anagallis minima</i>	Chaffweed	S3	-	-	-	✓	-
<i>Antennaria dimorpha</i>	Low Pussytoes	S3	-	-	-	-	✓
<i>Astragalus australis var. glabriusculus</i>	Southern Milk-vetch	S3	-	-	-	-	✓
<i>Astragalus purshii var. purshii</i>	Pursh's Milk-vetch	S3	-	-	-	✓	-

Scientific Name	Common Name	Provincial Rank	COSEWIC Status	Species at Risk Act Status	SK Wild Species at Risk Regulations	Saskatoon Plain Ecoregion	Moose Wood Sand Hills Ecoregion
<i>Bidens beckii</i>	Water-marigold	S2	-	-	-	-	✓
<i>Bidens frondosa</i>	Tall Bur-marigold	S3	-	-	-	✓	✓
<i>Blysmopsis rufa</i>	Red Bulrush	S3	-	-	-	✓	✓
<i>Botrychium campestre</i>	Prairie Dunewort	S3	-	-	-	✓	-
<i>Botrychium minganense</i>	Mingan Moonwort	S1	-	-	-	✓	✓
<i>Botrychium pallidum</i>	Pale Moonwort	S1	-	-	-	✓	-
<i>Cardamine nymanii</i>	Meadow Bitter Cress	S3	-	-	-	-	✓
<i>Carex crawei</i>	Crawe's Sedge	S3	-	-	-	✓	-
<i>Carex eburnea</i>	Bristle-leaved Sedge	S3	-	-	-	✓	✓
<i>Carex hystericina</i>	Porcupine Sedge	S3	-	-	-	-	✓
<i>Carex saximontana</i>	Rocky Mountain Sedge	S3	-	-	-	✓	✓
<i>Chenopodium desiccatum</i>	Dry Goosefoot	S3	-	-	-	✓	✓
<i>Chenopodium subglabrum</i>	Smooth Goosefoot	S3	Threatened	Threatened	-	-	✓
<i>Cirsium drummondii</i>	Short-stemmed Thistle	S3	-	-	-	-	✓
<i>Corallorhiza striata var. striata</i>	Striped Coral-root	S3	-	-	-	✓	✓

Scientific Name	Common Name	Provincial Rank	COSEWIC Status	Species at Risk Act Status	SK Wild Species at Risk Regulations	Saskatoon Plain Ecoregion	Moose Wood Sand Hills Ecoregion
<i>Corispermum americanum</i> var. <i>americanum</i>	American Bugseed	S3	-	-	-	✓	✓
<i>Corispermum hookeri</i> var. <i>hookeri</i>	Hooker's Bugseed	S2	-	-	-	✓	✓
<i>Corispermum pallasii</i>	Pallas' Bugseed	S2	-	-	-	✓	✓
<i>Corispermum villosum</i>	Hairy Bugseed	S2	-	-	-	✓	✓
<i>Crepis runcinata</i> ssp. <i>hispidulosa</i>	Smooth Hawk's-beard	S1	-	-	-	✓	✓
<i>Cyperus schweinitzii</i>	Schweinitz's Flatsedge	S3	-	-	-	-	✓
<i>Cyperus squarrosus</i>	Awed Cyperus	S3	-	-	-	✓	-
<i>Cypripedium parviflorum</i> var. <i>makasin</i>	Small Yellow Lady's Slipper	S3	-	-	-	✓	-
<i>Dalea villosa</i> var. <i>villosa</i>	Hairy Prairie Clover	S2	Special Concern	Special Concern	Endangered	-	✓
<i>Elatine triandra</i>	Longstem Water-wort	S2	-	-	-	✓	-
<i>Eleocharis elliptica</i>	Slender Spike-rush	S3	-	-	-	-	✓
<i>Eleocharis engelmannii</i>	Engelmann's Spike-rush	S3	-	-	-	✓	✓
<i>Elymus glaucus</i> ssp. <i>glaucus</i>	Blue Wild Rye	S3	-	-	-	✓	✓

Scientific Name	Common Name	Provincial Rank	COSEWIC Status	Species at Risk Act Status	SK Wild Species at Risk Regulations	Saskatoon Plain Ecoregion	Moose Wood Sand Hills Ecoregion
<i>Elymus lanceolatus ssp. psammophilus</i>	Sand-dune Wheatgrass	S2	-	-	-	-	✓
<i>Erigeron strigosus var. strigosus</i>	Daisy Fleabane	S3	-	-	-	-	✓
<i>Festuca hallii</i>	Plains Rough Fescue	S3	-	-	-	✓	✓
<i>Festuca idahoensis</i>	Idaho Fescue	S2	-	-	-	-	✓
<i>Gentiana fremontii</i>	Moss Gentian	S3	-	-	-	-	✓
<i>Gentianopsis virgata ssp. macounii</i>	Macoun's Gentian	S3	-	-	-	✓	-
<i>Impatiens noli-tangere</i>	Yellow Touch-me-not	S2	-	-	-	-	✓
<i>Iris versicolor</i>	Blueflag	S1	-	-	-	✓	-
<i>Lactuca biennis</i>	Tall Blue Lettuce	S3	-	-	-	✓	-
<i>Lemna minor</i>	Lesser Duckweed	S1	-	-	-	✓	-
<i>Lomatogonium rotatum var. fontanum</i>	Marsh Felwort	S3	-	-	-	✓	-
<i>Lupinus pusillus ssp. pusillus</i>	Small Lupine	S3	-	-	-	-	✓
<i>Maianthemum racemosum ssp. amplexicaule</i>	False Spikenard	S1	-	-	-	✓	-

Scientific Name	Common Name	Provincial Rank	COSEWIC Status	Species at Risk Act Status	SK Wild Species at Risk Regulations	Saskatoon Plain Ecoregion	Moose Wood Sand Hills Ecoregion
<i>Monarda fistulosa</i> var. <i>mollis</i>	Soft Wild Bergamot	S3	-	-	-	-	✓
<i>Muhlenbergia mexicana</i>	Wood Muhly	SH	-	-	-	-	✓
<i>Najas flexilis</i>	Flexible Naiad	S3	-	-	-	-	✓
<i>Oenothera caespitosa</i> ssp. <i>caespitosa</i>	Gumbo Evening Primrose	S3	-	-	-	-	✓
<i>Orobanche ludoviciana</i>	Louisiana Broom-rape	S3	-	-	-	-	✓
<i>Paronychia sessiliflora</i>	Low Whitlowwort	S3	-	-	-	✓	-
<i>Platanthera dilatata</i> var. <i>dilatata</i>	Scentbottle	S3	-	-	-	-	✓
<i>Polygala alba</i>	White Milkwort	S3	-	-	-	-	✓
<i>Polygonatum biflorum</i> var. <i>commutatum</i>	Great Solomon's Seal	S2	-	-	-	✓	-
<i>Potamogeton strictifolius</i>	Upright Narrow-leaved Pondweed	S3	-	-	-	-	✓
<i>Potentilla anserina</i> ssp. <i>yukonensis</i>	Yukon Silverweed	S2	-	-	-	✓	-
<i>Potentilla concinna</i> var. <i>concinna</i>	Early Cinquefoil	S2	-	-	-	✓	-

Scientific Name	Common Name	Provincial Rank	COSEWIC Status	Species at Risk Act Status	SK Wild Species at Risk Regulations	Saskatoon Plain Ecoregion	Moose Wood Sand Hills Ecoregion
<i>Potentilla effusa</i> var. <i>effusa</i>	Branched Cinquefoil	S3	-	-	-	-	✓
<i>Potentilla hudsonii</i>	Hudson's Cinquefoil	S2	-	-	-	✓	-
<i>Potentilla lasiodonta</i>	Sandhills Cinquefoil	S2	-	-	-	✓	✓
<i>Potentilla rubricaulis</i>	Red-stemmed Cinquefoil	S3	-	-	-	✓	✓
<i>Potentilla supina</i> ssp. <i>paradoxa</i>	Bushy Cinquefoil	S3	-	-	-	✓	✓
<i>Rhinanthus minor</i> ssp. <i>minor</i>	Little Yellow-rattle	S3	-	-	-	✓	-
<i>Ribes oxycanthoides</i> var. <i>setosum</i>	Bristly Gooseberry	S2	-	-	-	-	✓
<i>Sambucus racemosa</i> ssp. <i>pubens</i>	Red Elderberry	S2	-	-	-	-	✓
<i>Samolus parviflorus</i>	Water Pimpernel	SH	-	-	-	✓	✓
<i>Scirpus pallidus</i>	Pale Bulrush	S3	-	-	-	-	✓
<i>Shinnersoseris rostrata</i>	Beaked Annual Skeleton-weed	S2	-	-	-	-	✓
<i>Silene menziesii</i>	Menzies' Catchfly	S3	-	-	-	✓	✓
<i>Sisyrinchium mucronatum</i>	Mucronate Blue-eyed-grass	S3	-	-	-	✓	✓

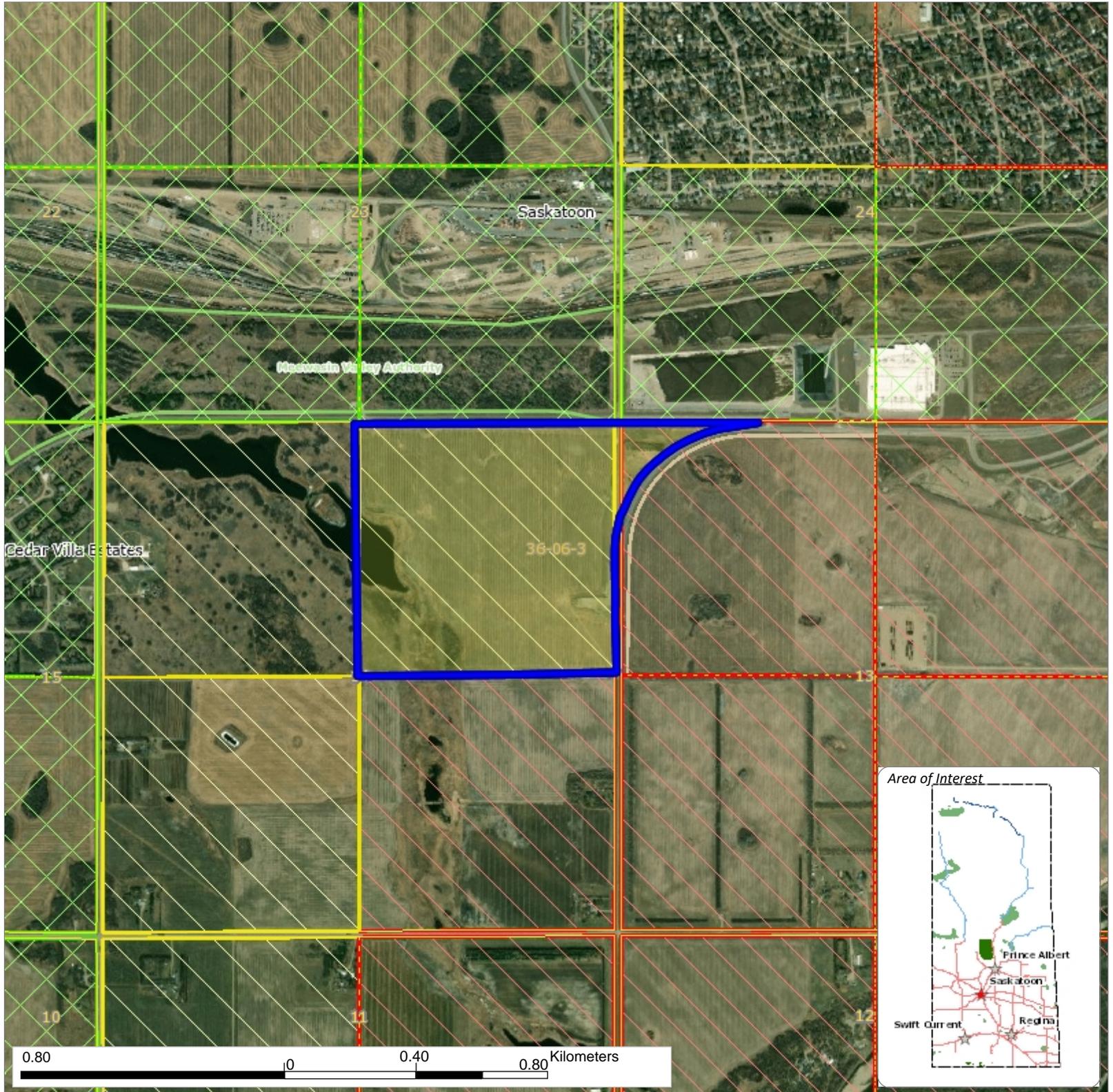
Scientific Name	Common Name	Provincial Rank	COSEWIC Status	Species at Risk Act Status	SK Wild Species at Risk Regulations	Saskatoon Plain Ecoregion	Moose Wood Sand Hills Ecoregion
<i>Sisyrinchium septentrionale</i>	Northern Blue-eyed-grass	S3	-	-	-	✓	✓
<i>Solidago ptarmicoides</i>	Upland White Goldenrod	S3	-	-	-	✓	-
<i>Sporobolus neglectus</i>	Small Dropseed	S2	-	-	-	✓	✓
<i>Teucrium canadense var. occidentale</i>	Hairy Germander	S3	-	-	-	✓	-
<i>Trichophorum pumilum</i>	Dwarf Clubrush	S1	-	-	-	✓	-
<i>Viola pedatifida</i>	Crowfoot Violet	S3	-	-	-	-	✓

APPENDIX E

Heritage Sensitivity Screening Report

Sensitivity: This selection is Heritage Sensitive.
This development does not have heritage clearance to proceed. Submit this project to the Heritage Conservation Branch for further review.

Report Generated
Oct/10/2023 2:33 PM



Heritage Sensitivity Screening Report

Parcel Description	Sensitivity	Parcel Description	Sensitivity
NE-14-36-06-3	C	SE-14-36-06-3	Y
SW-14-36-06-3	C	NW-14-36-06-3	C
NW-13-36-06-3	Y		

Sensitivity Legend:

Y = Heritage Sensitive, C = Conditionally Heritage Sensitive, N = Not Heritage Sensitive, Blank = Heritage Sensitive.

When the parcel description and sensitivity listing is blank, the project is outside of the quarter sections screened for sensitivity. All projects within these areas are automatically heritage sensitive and require review.

Disclaimer:

Attention landowners: The majority of small scale activities that involve improvements to, or maintenance of, private property usually have little or no impact on archaeological heritage resources. Access the Exempt Activities Checklist for Private Landowners to determine if your proposed activity is exempt from archaeological heritage screening using the Developers' Online Screening Tool. If the activity is exempt, please retain a copy (paper or electronic) of the completed Exempt Activities Checklist for Private Landowners for your records. Include the completed checklist with any applications for regulatory approvals or permits that may be required for the proposed activity to confirm that heritage concerns have been addressed.

Exempt Activities Checklist: <https://applications.saskatchewan.ca/eachecklist>

Contact us:

For more information, please contact the Heritage Conservation Branch:

Email: arms@gov.sk.ca

Tel 306-787-2817.

KGS
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Experience in Action

OVERPASS FARMS INC.

Valley Road Business Park

Heritage Referral Document

Revision:

Final

KGS Group Project:

23-4236-001

Date:

November 28, 2023



PREPARED BY:

Kristian Sullivan, M.A., RPA
Senior Archaeologist



APPROVED BY:

Reed Hentze, B. Sc., P.Biol., EP
Ecology & EIA Department Head

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1.0 INTRODUCTION	1
2.0 HERITAGE ONLINE SCREENING AND RESULTS	2
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Figure 1: Location of Valley Road Business Park (white polygon)

Figure 2. Footprint of development areas within the proposed Valley Road Business Park

List of Tables

Table 1. Known archaeological sites within 1 km of Valley Road Business Park

STATEMENT OF LIMITATIONS AND CONDITIONS

Limitations

This report has been prepared for Overpass Farms Inc. (“the Client”) in accordance with the agreement between KGS Group and the Client (the “Agreement”). This report represents KGS Group’s professional judgment and exercising due care consistent with the preparation of similar reports. The information, data, recommendations and conclusions in this report are subject to the constraints and limitations in the Agreement and the qualifications in this report. This report must be read as a whole, and sections or parts should not be read out of context.

This report is based on information made available to KGS Group by the Client. Unless stated otherwise, KGS Group has not verified the accuracy, completeness or validity of such information, makes no representation regarding its accuracy and hereby disclaims any liability in connection therewith. KGS Group shall not be responsible for conditions/issues it was not authorized or able to investigate or which were beyond the scope of its work. The information and conclusions provided in this report apply only as they existed at the time of KGS Group’s work.

Third Party Use of Report

Any use a third party makes of this report or any reliance on or decisions made based on it, are the responsibility of such third parties. KGS Group accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions undertaken based on this report.

1.0 INTRODUCTION

Overpass Farms Inc. (the Client) is preparing land within the Rural Municipality (R.M.) of Corman Park No. 344 for the purposes of development. The Project is located south of the City of Saskatoon, just west of Valley Road (Highway 762) and south of Township Road 362A, within the R.M. of Corman Park No. 344 (Figure 1). The Project is located in two quarter sections, NW-13-36-6-W3M and NE-14-36-6-W3M, and occupies an area of approximately 68 hectares (168 acres).

Overpass Farms Inc. has requested to re-designate the zone for the Project site from Agricultural (DAG1 and DAG2) to a Regional Institutional Facility within the Rural Municipality (R.M.) of Corman Park No. 344, under their associated Regional Land Use Plan. The proposed Valley Road Business Park would include office buildings and associated parking lots and road access.

Overpass Farms Inc. has requested services from KGS Group to support the Comprehensive Development Report (CDR) required for rezoning requests. As part of this process, the KGS Group Ecology and Environmental Impact Assessment team completed an Environmental and Heritage Resource Desktop Assessment (EHDA) to summarize of the environmental and heritage sensitivities found within and near the Project.



FIGURE 1. LOCATION OF VALLEY ROAD BUSINESS PARK (WHITE POLYGON).

2.0 HERITAGE ONLINE SCREENING AND RESULTS

In October of 2023, KGS Group submitted the affected lands to the Developers' Online Screening Tool website. Potential heritage concerns were identified in both quarter sections. Lands within quarter-section NW-13-36-06-3 were deemed Heritage Sensitive. This designation states that all development within this land parcel is subject to further screening by the Heritage Conservation Branch (HCB). Lands within quarter-section NE-14-36-06-3 were deemed Conditionally Heritage Sensitive. This designation states that the development has heritage clearance only if it is clearly impacting land that has been previously disturbed. If any portion of the development footprint is situated within undisturbed land, the project will require further screening by the HCB. Based on these results, KGS Group is submitting this project on behalf of the client for formal heritage screening.

3.0 PROJECT DETAILS

The Client plans on splitting the development into 5 distinct phases:

- LSD 13-13-36-06-3
 - Parcel A: 3.28 ha
- NE-14-36-06-3
 - Phase 1: 6.45 ha
 - Phase 2: 11.55 ha
 - Phase 3: 38.5 ha
 - Area around Chappell Marsh to be left undeveloped: 6.14 ha

The following construction tasks would likely be carried out under the type of development:

- Excavation and installation of water, wastewater, stormwater, and shallow utilities
- Geotechnical investigation
- Site clearing and surface stripping
- Landscaping of open space
- Construction of roadways

Construction activities are not slated to begin until at least spring of 2024. However, there is currently a pile of clay fill situated within Parcel A, stored there with the intent for use elsewhere. The Client has been instructed not to add to this pile until any potential heritage sensitivities are properly managed.



FIGURE 2. FOOTPRINT OF DEVELOPMENT AREAS WITHIN THE PROPOSED VALLEY ROAD BUSINESS PARK.

4.0 POTENTIAL HERITAGE IMPACT

According to the HCB Heritage Site Inventory, as of November 2023 there are no archaeological sites in direct conflict with the proposed development. Three archaeological sites are located within 1 km (Table 2). In addition, numerous archaeological sites have been recorded along the South Saskatchewan River, located 1.4 km to the southeast.

Most of the anticipated project area is in disturbed terrain within cultivation. However, some green space exists that may contain native vegetation and undisturbed native terrain. The area also has the potential to contain cultural material relating to historic homesteading.

TABLE 1. KNOWN ARCHAEOLOGICAL SITES WITHIN 1 KM OF VALLEY ROAD BUSINESS PARK.

Borden	Site Name	Site Type	Affiliation	Distance
FaNq-21	Site Q	Pre-Contact Artifact Find	Oxbow	400 m to South
FaNq-39	Glow Site II	Pre-Contact Artifact Scatter	Oxbow	1 km to Southeast
FaNq-24	N/A	Pre-Contact Artifact Find	Unidentified	1 km to East

5.0 CLOSURE

KGS Group requests HCB's opinion on the heritage sensitivity of the development and an explanation of the requirements (if applicable) for the management of heritage resources as it relates to this development.

For any questions or concerns about this heritage referral submission, please contact KGS Group Senior Archaeologist Kristian Sullivan at ksullivan@ksgsgroup.com or 639-471-2921.

KGS
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Experience in Action

December 1, 2023

Our file: 23-1204

Kris Sullivan
KGS Group
Agent for: Overpass Farms Inc.
Suite 300-203 Stonebridge Blvd.
SASKATOON SK S7T 0G3
Phone: 631-471-2921
Email: ksullivan@ksgroup.com

Dear Kris Sullivan:

**RE: Overpass Farms Inc.'s Valley Road Business Park in the RM of Corman Park No. 344;
NW 13- 36-06 W3M: Parcel A (3.28 ha);
NE 14-36-06 W3M: Phase 1 (6.45 ha), Phase 2 (11.55 ha), Phase 3 (38.5 ha), and Intended
Undeveloped Area (6.14 ha);
HERITAGE RESOURCE REVIEW**

Thank you for referring this development for heritage resource review.

In determining the need for, and scope of, a Heritage Resource Impact Assessment (HRIA) pursuant to s.63 of *The Heritage Property Act*, the following factors were considered: the presence of previously recorded heritage sites, the area's overall heritage resource potential, the extent of previous land disturbance, and the scope of new proposed land development.

No known heritage sites are located in direct conflict with the proposed business park. Although portions of the development area have been previously impacted by cultivation, there does appear to be an intact glacial spillway valley adjacent to seasonal water sources in NE 14 and a potential historic farmyard in NW 13. This area is also located on a terrace of the South Saskatchewan River which could contain deeply buried archaeological sites. This type of terrain has a moderate to high potential to contain intact heritage resources. As the project may damage or disturb archaeological sites, **an HRIA is required prior to further work in Parcel A in NW 13-36-06 W3M, and in NE-14-36-06 W3M around and adjacent to Chappell Marsh in the former glacial spillway in Phase 2 and the Intended Undeveloped Area.** There are no further heritage concerns with Phase 1 and Phase 3 in NE 14-36-06 W3M currently. Within Parcel A, manual subsurface testing must go as deep as possible but may not achieve sufficient depth to encounter sites; therefore, the HRIA must provide a recommendation regarding the potential need for mechanical testing (i.e., backhoe testing). The assessment of the portions of Parcel A that are currently not under the recently added clay fill will determine if further testing is required under the recent stockpiled fill, and if the stockpiles must be removed to non-heritage sensitive portions of the project.

...2

The required HRIA, including systematic surface survey and sub-surface test exploration, is a proponent responsibility. The study will first establish the presence of heritage sites within the project area and where suitable site avoidance and protection measures (including relocation of testing locations and flagging of site boundaries prior to construction activity) may be implemented. If heritage sites are located in unavoidable conflict with the development, the study must also establish the content, structure and significance of those sites, and, on that basis, recommend both the need for and scope of any further study (including archaeological salvage excavation or other heritage management action).

The HRIA must be carried out by qualified personnel under an approved investigation permit issued through this office. A minimum of two business days are required to process a permit application for an archaeological HRIA. The HRIA must be conducted under snow-free and frost-free conditions.

If you have any questions regarding these heritage regulatory requirements, please contact Brent Kevinsen at brent.kevinsen@gov.sk.ca or by calling 306-787-5774. Thank you again for referring these proposed developments and for your cooperation in protecting the province's cultural heritage.

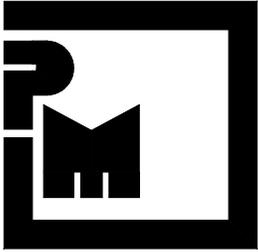
Sincerely,



Kim Cloutier
Assistant Director, Archaeology and Heritage Management

APPENDIX E

Subsurface Soils Investigation



P.MACHIBRODA
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- Pile Integrity Testing (PIT)



Member of the Association of
Consulting Engineering
Companies/Canada

May 17, 2023

Valley Road Business Parks Ltd.
Saskatoon, Saskatchewan

ATTENTION: Laurie Bradley

**RE: SUBSURFACE SOIL INVESTIGATION
VALLEY ROAD
PARCELS B AND C, PLAN 102327162 EXT 0
RM OF CORMAN PARK NO. 344, SASKATCHEWAN
PMEL PROJECT NO. 20269**

1 INTRODUCTION

The following report presents the results of a subsurface soil investigation, conducted by P. Machibroda Engineering Ltd. (PMEL), for the properties (i.e., site) legally described as:

- *Parcels B and C, Plan 102327162, Ext. 0, RM of Corman Park No. 344, Saskatchewan*

The southeast corner of the site is located approximately 1.0 km north of the Township Road 362 and Valley Road intersection. The approximate centre of the site is located at Latitude 52.097080 and Longitude -106.747194 in the RM of Corman Park No. 344.

The terms of reference for this investigation were presented in P. Machibroda Engineering Ltd. (PMEL) Proposal No. 20269C, dated April 21, 2023. Authorization to proceed with this investigation was provided on April 28, 2023, in the signed consulting agreement between Valley Road Business Parks Ltd. and PMEL.

Field work, including borehole drilling and soil sampling, was conducted on May 5, 2023. Subsurface monitoring was conducted at the site on May 12, 2023.

2 OBJECTIVES

The objective of this investigation was to determine if the soil on the northern half of the site was considered suitable, in accordance with Section 02320 of Contract No. 23-0174, for use as a compacted clay cover.

In accordance with the specifications, the soil is considered suitable for use as a compacted clay cover if it meets the following criteria:

1. Liquid Limit (LL): $30\% < LL < 50\%$
2. Plastic Index (PI): $PI \geq 15\%$
3. % Passing 0.080 mm sieve: $\geq 50\%$
4. Clay Fraction: $\geq 25\%$
5. Maximum Hydraulic Conductivity: $1 \times 10^{-7} \text{ m/s}$

In addition to the above, a secondary objective of this investigation was to provide a general description of the upper (i.e., 9 m) of soil profile proximate the southeast corner of the site.

3 FIELD INVESTIGATION

Three boreholes, located as shown on the Site Plan, Drawing No. 20269-1, were dry drilled on May 5, 2023, using PMEL's track-mounted, continuous flight auger drill rig. The boreholes were 150 mm in diameter and extended to depths of approximately 9.0 m below grade. Borehole No. 23-1 was drilled proximate the southeast corner of the site to determine the general soil profile in this area of the site. The remaining boreholes (i.e., Borehole 23-2 and 23-3) were drilled proximate the northwest and northeast corners of the site to determine if the soil in these areas was suitable for use as cover material.

Borehole logs, as shown on the attached Drawing Nos. 20269-2 to 4, inclusive, were compiled during test drilling to record the soil stratification, the groundwater condition, the position of unstable sloughing soils and the depths at which cobblestones and/or boulders were encountered (if any). Disturbed samples of auger cuttings were collected during test drilling and sealed in plastic bags to minimize moisture loss. The auger cutting soil samples were returned to our laboratory for analysis.

Monitoring wells (piezometers) were installed, immediately following drilling, in Boreholes 23-2 and 23-3 to allow for subsurface monitoring. For the remainder of this document a borehole completed with a monitoring well will be referenced as Monitoring Well. For example, the monitoring well installed in Borehole 23-3, will be referenced as Monitoring Well 23-3.

Each monitoring well consisted of a 50 mm diameter, Schedule 40, PVC machine slotted screen with a solid riser pipe. The annular space around each slotted screen was filled with silica sand to approximately 300 mm above the top of the well screen, with a bentonite seal from the top of the sand to near the ground surface. The top of each monitoring well was completed approximately 1 m above grade.

The borehole locations/elevations were surveyed using a Trimble GeoXH Global Navigation Satellite System (GNSS) to determine the northing and eastings within the Universal Transverse Mercator (UTM) co-ordinate system NAD 1983, Zone B projection. The accuracy of the GNSS is in the order of $\pm 1 \text{ m}$.

4 SOIL AND GROUNDWATER CONDITIONS

4.1 SOIL PROFILE

In general, the soil stratigraphy for Boreholes 23-1 and 23-2 consisted of approximately 1 m of topsoil underlain by variable deposits of sand, silt and/or clay which extended to a depth of at least 9.0 m below existing grade, the maximum depth explored during our field investigation. Borehole 23-3 consisted of approximately 0.2 m of topsoil underlain by a deposit of sand and silt to a depth of at least 9.0 m below grade.

4.2 GROUNDWATER CONDITIONS

Groundwater seepage and sloughing conditions were encountered during test drilling. The depths at which groundwater seepage and sloughing conditions were encountered have been shown on the borehole logs. A summary of the groundwater levels recorded in the monitoring wells installed in Borehole Nos. 22-1 and 22-3 during this investigation has been presented in Table I.

Review of the groundwater monitoring results presented in Table I revealed that the depth to groundwater on May 12, 2023, ranged from approximately 4.3 to 5.7 m below grade.

Groundwater levels can be locally affected by a number of factors including buried services, backfill areas, and precipitation. The direction of groundwater flow can change, especially following precipitation events (e.g., rain, snowmelt, etc.).

TABLE I: RECORDED GROUNDWATER LEVELS

Borehole No.	Monitoring Well Rim Elevation (m) ^a	Ground Surface Elevation (m) ^a	Groundwater Elevation (m)	Groundwater Depth (m) Below Ground Surface
			May 12, 2023	
23-2	501.2	500.2	495.9	4.3
23-3	508.0	507.0	501.3	5.7

^aSurveyed using a Trimble GeoXH GNSS which has an accuracy in the order of ± 1 m.

5 LABORATORY ANALYSIS

The soil classification and index tests performed during this investigation consisted of a visual classification of the soil and water contents.

The results of soil classification and index tests conducted on representative samples of soil recovered from Borehole 23-2 are presented in Table II. The assessment criteria is also presented in Table II. The soil in borehole 23-3 was deemed, on the basis of a visual review, to be predominantly sand. As such no index testing was performed on samples recovered from that borehole. Review of the results presented in Table II revealed the following:

1. Sample Nos. 16 and 19, recovered from Borehole 23-2, exceed the maximum allowable Liquid Limit (LL) of 50%.

2. Sample No. 20 has a % clay fraction of 24% which is below the minimum allowable 25% clay fraction.
3. Sample No. 22 passes all the index tests as per the provided specifications.

TABLE II: RESULTS OF LABORATORY INDEX TESTS

Sample No.	Sample Depth (m)	Liquid Limit (%)	Plastic Limit (%)	% Passing 0.080 mm Sieve	% Clay Fraction	Soil Type
16	1.5	76	51	95	61	Clay
19	3.8	71	44	98	55	Clay
20	4.5	38	17	96	24	Silt
22	6.0	47	27	99	42	Silt
Assessment Criteria	-	30% < LL < 50%	≤ 15%	≤ 50%	≤ 25%	-

Not suitable for clay cover material as per provided specifications.

6 CONCLUSION

The liquid limits and/or clay content of the samples analyzed from Borehole No. 23-2 did not meet the specified criteria. Based on a visual review, the soil in Borehole No. 23-3 was predominantly sand and thus not considered suitable for liner construction.

The specifications indicated that the clay cover material must have a maximum hydraulic conductivity of 1×10^{-7} m/s. It is expected that the hydraulic conductivity of the soil from Borehole No. 23-3 would be close to 1×10^{-7} m/s. Further testing (ASTM D5084) would be required to determine this.

7 CLOSING

A subsurface soil investigation, was conducted by P. Machibroda Engineering Ltd. (PMEL), for the property (i.e., site) legally described as:

- *Parcel B and C, Plan 102327162, Ext. 0, RM of Corman Park No. 344, Saskatchewan*

The southeast corner of the site is located approximately 1.0 km north of the Township Road 362 and Valley Road intersection. The approximate centre of the site is located at Latitude 52.097080 and Longitude -106.747194 in the RM of Corman Park No. 344.

The presentation of the results of the subsurface soil investigation has been completed as authorized. Three (3) boreholes were drilled at the site using PMEL's owned and operated truck-mounted continuous flight auger drilling rig on May 5, 2023. Field drill logs were compiled during drilling, which we believe are representative of the subsurface conditions at the borehole locations at the time of test drilling.

Variations in the subsurface conditions from those shown at locations other than the exact borehole locations should be anticipated.

It should be recognized that the subsurface conditions and soil chemistry reported here may change with time at any specific test locations and may be different at locations other than the exact sampling locations.

The subsurface investigation necessitated the excavation of deep boreholes. Please be advised that some settlement of the backfill material will occur which may leave a depression or an open hole. It is the responsibility of the client to inspect the site and backfill, as required, to ensure that the ground surface at each borehole location is maintained level with the existing grade.

This report has been prepared for the exclusive use of Valley Road Business Parks Ltd., and their agents for specific application to Parcel B and C, Plan 102327162, Ext 0, RM of Corman Park, Saskatchewan. It has been prepared in accordance with generally accepted geoenvironmental engineering practices and no other warranty, express or implied, is made. Any use which a Third Party makes of this report, or any reliance on decisions to be made based on it, is the responsibility of such Third Parties. P. Machibroda Engineering Ltd. accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

If this report has been transmitted electronically, it has been secured with personal passwords to lock the document. Due to the possibility of digital modification, only originally signed reports and those reports sent directly by PMEL can be relied upon without fault.

We trust that this report fulfils your requirements for this project. Should you require additional information, please contact us.

P. MACHIBRODA ENGINEERING LTD.

Keegan Arnyek, Geoscientist-in-Training



Ray Machibroda, P. Eng., M.Sc.
KA/RM:tbs

Enclosures:

- Drawing No. 20269-1 Site Plan - Borehole Locations
- Drawing Nos. 20269-2 to 4 Borehole Logs

Association of Professional Engineers & Geoscientists of Saskatchewan		
CERTIFICATE OF AUTHORIZATION		
P. MACHIBRODA ENGINEERING LTD.		
Number 172		
Permission to Consult held by:		
Discipline	SK. Reg. No.	Signature
Geoenvironmental	6687	
2023-06-02		

DRAWINGS



KEY PLAN
NOT TO SCALE



NOTE:
 1. THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.
 2. THIS DRAWING WAS COMPILED FROM GOOGLE EARTH PRO ©2023, IMAGE ©2023 DIGITALGLOBE, (IMAGERY DATE: 4/20/21).
 3. BENCHMARK: TOP OF NORTHEAST FENCE POST, ELEVATION 506.8 m.

LEGEND	-PMEL BOREHOLE	-PMEL BOREHOLE (MONITORING WELL INSTALLED)	-BENCHMARK
---------------	----------------	--	------------

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ENGINEERING LTD.**

806 - 48th STREET EAST
SASKATOON, SK
S7K 3Y4

DRAWING TITLE: SITE PLAN - BOREHOLE LOCATIONS		
PROJECT: SOIL INVESTIGATION PARCEL B & C, PLAN 102327162, EXT 0, RM OF CORMAN PARK, SK		
APPROVED BY: KA	DRAWN BY: BS	DRAWING NUMBER: 20269-1
DATE: MAY, 2023	SCALE: AS SHOWN	



PROJECT: SOIL INVESTIGATION

LOCATION: PARCEL B & C, PLAN 102327162 EXT 0, RM OF CORMAN PARK, SK

NORTHING (m): 5772977

EASTING (m): 380612

ELEVATION (m): 504.0 (+/-1.0 m)

DATE DRILLED: MAY 05/23

SAMPLE TYPE: CUTTINGS

SPLIT SPOON

SHELBY TUBE

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m ³)	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/m ²)	DEPTH (m)
		▼ After Drilling ▽ During Drilling									
0		TOPSOIL, silt, sandy, clayey, firm to stiff, low plastic, moist, black/brown, organics.								1.75	0
1		CLAY, silty, firm to stiff, medium plastic, moist, brown.								1.5	1
2		SAND AND SILT, some clay, loose to compact, poorly graded, fine grained, moist, brown.									2
3		wet below 2.7 m.									3
3.1		clay seam 3.1 to 3.3 m.									3.1
4.6		clay seam 4.6 to 4.9 m.									4.6
6		SILT AND SAND, clayey to some clay, firm to stiff, medium plastic, wet, brown.								1.0	6
7										1.0	7
8		CLAY, some silt, stiff to very stiff, highly plastic, moist, grey.								2.0	8
9		SILT AND SAND, clayey, firm, low plastic, wet, grey.								0.75	9

NOTE:

1. Borehole sloughed to 3.9 m Immediately After Drilling.

PROJECT: SOIL INVESTIGATION

LOCATION: PARCEL B & C, PLAN 102327162, EXT 0, RM OF CORMAN PARK, SK

NORTHING (m): 5773507

EASTING (m): 379979

ELEVATION (m): 501.2 (+/-1.0 m)

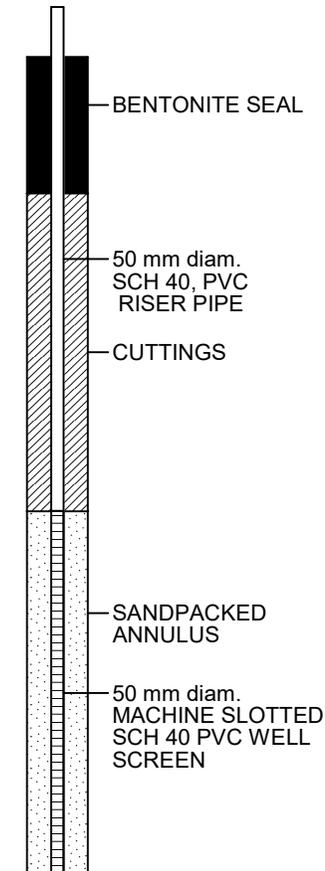
DATE DRILLED: MAY 05/23

SAMPLE TYPE: CUTTINGS

SPLIT SPOON

SHELBY TUBE

DEPTH (m)	STRATIGRAPHY	WATER LEVELS		SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m ³)	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/m ²)	MONITORING WELL: BH23-2 ELEV.: 502.2 m	DEPTH (m)
		▼ After Drilling	▽ During Drilling										
0													0
0											2.25		0
1											2.0		1
2													2
3													3
4											1.75		4
5											1.5		5
6													6
7											1.5		7
8											2.0		8
9													9
10													10
11													11
12													12



NOTE:
1. Monitoring Well open and dry Immediately After Drilling.

PROJECT: SOIL INVESTIGATION

LOCATION: PARCEL B & C, PLAN 102327162, EXT 0, RM OF CORMAN PARK, SK

NORTHING (m): 5773569

EASTING (m): 380653

ELEVATION (m): 508.0 (+/-1.0 m)

DATE DRILLED: MAY 05/23

SAMPLE TYPE: CUTTINGS

SPLIT SPOON

SHELBY TUBE

DEPTH (m)	STRATIGRAPHY	WATER LEVELS		SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m ³)	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/m ²)	MONITORING WELL: BH23-3 ELEV.: 509.0 m	DEPTH (m)
		▼ After Drilling	▽ During Drilling										
0	TOPSOIL, silt, sandy, clayey, firm to stiff, low plastic, moist, black/brown, organics.											BENTONITE SEAL	0
1	SAND AND SILT, some clay, loose to compact, poorly graded, fine grained, damp, brown.											50 mm diam. SCH 40, PVC RISER PIPE	1
2												CUTTINGS	2
3	some silt, dense to very dense below 2.6 m.												3
4													4
5												SANDPACKED ANNULUS	5
6	dense, wet below 5.7 m.											50 mm diam. MACHINE SLOTTED SCH 40 PVC WELL SCREEN	6
7													7
8												SLOUGH	8
9													9
10													10
11													11
12													12

NOTE:

1. Monitoring Well sloughed to 5.5 m Immediately After Drilling.

APPENDIX F

Stormwater Management Calculation

Table B-2
Runoff Coefficients for Urban Areas

Land Use		C (2 year)
Single family residential ¹		0.30
Multi-unit residential, industrial and commercial ²		0.60
Parks, cemeteries, playgrounds, landscaped areas (lawns, gravel, etc.)		0.10
Unimproved & undeveloped		0.05
Streets, sidewalks, parking lots	Asphalt, concrete, brick, etc.	0.95
	Gravel (compacted)	0.50
Roofs		0.95

Table B-2 Notes:

1. The runoff coefficient for single-family residential includes the streets. The C value for single family residential is currently under review.
2. Higher runoff coefficients may be applicable for parcels with no requirement for internal storm water management system.

Table B-1
Intensity-Duration-Frequency (IDF) Data
University of Saskatchewan and Saskatoon Airport
 1926 to 1986 (61 years)

Time		Intensity (mm/h)			
Minutes	Hours	2-yr	5-yr	25-yr	100-yr
10	-	53	85	132	168
15	-	41	67	104	133
30	-	26.4	46.1	74	97
60	1	16.6	28.9	46.5	60
120	2	10.7	17.5	27.3	35
360	6	4.7	7.0	10.3	12.9
720	12	2.73	3.90	5.59	6.91
1440	24	1.56	2.18	3.07	3.76

Source: Meteorological Service of Canada (formerly Atmospheric Environment Services), Environment Canada and the University of Saskatchewan.

Table B-1.1
Interpolation Equation
(for 10 min to 2 hr durations)
University of Saskatchewan and Saskatoon Airport
 1926 to 1986 (61 years)

Intensity = $A / (t + C)^B$	Return Frequency				
	2-yr	5-yr	10-yr	25-yr	100-yr
A (mm/hr)	299	748	1112	1473	2336
B	0.694	0.776	0.809	0.820	0.861
C (min)	2.7	6.6	8.3	9.0	11.1

Source: Meteorological Service of Canada (formerly Atmospheric Environment Services), Environment Canada and the University of Saskatchewan.

4.4 Maximum Allowable Discharge Rate and Onsite Storage Requirement

Multi-family residential, commercial and industrial land uses may propose runoff coefficients higher than the design values. Also many old areas of the City were designed with runoff coefficients lower than the values listed in Table B-2. In these instances, the flow rate to the city storm management system shall be restricted using flow restriction devices to flow rates as per the minor system design flows. The following equation can be used to calculate the allowable release rate into the city system in a 1-in-2 year storm.

$$\text{Flow (L/s/ha)} = 114 \times C_d$$

where C_d is the design runoff coefficient of the site for 1-in-2 year storm, as per the area concept plan or original design. To determine the design runoff coefficient in developed areas, contact CoS prior to designing and applying for a building permit.

Onsite storage is also mandatory for the parcels having runoff coefficients higher than the design values. The following equation can be used to estimate the required onsite storage volume:

$$\begin{aligned} \text{Volume (m}^3\text{/ha)} &= A \times (C_p - C_d) + B \times (C_p - C_d)^2 \\ A &= 869 - (200 \times C_d), B = 33 - (1055 \times C_d) \end{aligned}$$

Where C_p is the proposed runoff coefficient for 1-in-2 year storm.

Onsite storm water management is also required on re-development sites. When constructing a new building or parking lot or adding to an existing building on a paved re-development lot is proposed, storm water management requirements will apply only to the incremental development.

Example 1: New Development Site

A 2.0 ha commercial site has been allocated $C_d=0.60$ as per the original system design. The developer has proposed a higher runoff coefficient, $C_p=0.85$ for the site. The allowable release rate to the minor system and onsite storage are calculated as:

Allowable release flow:

$$\text{Unit flow rate} = 114 \times 0.60 = 68 \text{ L/s/ha,}$$

Environment Canada/Environnement Canada

Short Duration Rainfall Intensity-Duration-Frequency Data
Données sur l'intensité, la durée et la fréquence des chutes
de pluie de courte durée

Gumbel - Method of moments/Méthode des moments

2012/02/09

SASKATOON U OF S SK 4057200
Latitude: 52 8'N Longitude: 106 38'W Elevation/Altitude: 515 m
Years/Années : 1926 - 1959 # Years/Années : 33

Table 1 : Annual Maximum (mm)/Maximum annuel (mm)

Year Année	5 min	10 min	15 min	30 min	1 h	2 h	6 h	12 h	24 h
1926	4.8	7.4	9.7	17.3	22.9	23.6	31.7	31.7	32.8
1927	5.8	10.2	13.5	20.1	23.4	29.0	30.7	30.7	42.2
1928	9.7	19.0	20.3	25.1	28.7	30.5	30.7	30.7	31.5
1929	7.4	10.4	10.9	14.5	15.7	16.3	16.3	16.3	19.6
1930	14.2	20.3	23.4	29.0	29.2	29.2	29.2	29.2	34.8
1931	4.1	6.6	8.1	13.0	22.9	33.8	54.6	54.6	54.6
1932	4.6	7.4	9.4	12.7	16.3	19.0	19.0	22.4	22.6
1933	2.5	3.8	4.1	5.3	8.9	12.7	22.6	22.9	31.0
1934	4.3	5.8	7.4	10.4	16.8	25.9	30.2	30.7	36.8
1935	5.1	5.8	7.1	13.2	19.3	20.8	23.9	28.4	46.7
1936	2.0	2.0	2.3	3.0	5.8	10.7	26.2	38.1	40.9
1937	4.3	5.8	6.1	7.4	12.4	14.5	14.5	15.5	18.3
1938	3.3	6.1	7.4	8.1	8.4	11.4	21.1	28.2	45.0
1939	6.1	7.6	9.7	14.2	19.0	21.6	35.1	45.5	59.4
1940	4.6	7.6	8.6	11.4	14.2	18.8	23.9	23.9	24.1
1941	1.8	2.5	3.0	4.3	6.3	10.9	21.6	23.1	30.7
1942	7.1	11.2	11.9	12.7	14.7	19.3	34.0	39.1	45.5
1943	13.2	15.5	15.7	15.7	23.6	31.2	34.3	50.5	53.3
1944	11.9	20.8	21.3	22.1	23.1	25.1	28.2	33.0	34.8
1945	5.1	10.2	12.7	21.1	27.4	39.1	58.2	65.5	82.5
1946	12.7	22.9	33.0	59.7	75.4	78.0	79.0	79.0	79.8
1947	4.3	8.1	9.4	12.4	16.0	18.3	20.6	21.3	37.6
1949	7.6	12.7	14.7	20.8	22.9	27.2	34.5	36.6	41.9
1950	3.8	6.1	7.6	10.4	13.7	17.8	25.1	37.1	53.3
1951	15.7	21.3	22.1	23.9	24.9	27.9	33.8	33.8	33.8
1952	3.0	4.6	6.6	8.1	8.1	10.4	16.5	20.1	21.8
1953	17.8	25.4	29.0	29.2	29.2	29.2	30.2	34.0	37.6
1954	7.6	13.7	16.3	18.3	19.0	22.9	29.0	36.3	43.4
1955	4.1	5.3	6.1	7.6	8.6	13.5	19.0	21.8	25.7
1956	12.2	24.4	29.7	37.6	41.1	45.2	48.8	48.8	48.8
1957	4.3	8.1	9.1	9.7	9.7	10.7	21.3	23.6	24.9
1958	3.0	4.1	4.1	4.8	8.1	12.2	24.6	41.9	58.4
1959	7.6	11.2	13.7	16.3	18.8	20.3	25.1	27.9	38.1
# Yrs. Années	33	33	33	33	33	33	33	33	33
Mean Moyenne	6.8	10.7	12.5	16.3	19.8	23.5	30.1	34.0	40.4
Std. Dev. Ecart-type	4.2	6.7	7.9	11.1	12.9	13.1	13.3	13.8	15.3
Skew. Dissymétrie	1.11	0.90	1.11	2.08	2.66	2.42	2.05	1.46	1.03
Kurtosis	3.47	2.85	3.75	9.32	13.34	11.67	8.25	5.82	4.52

*-99.9 Indicates Missing Data/Données manquantes

Environment Canada/Environnement Canada

Short Duration Rainfall Intensity-Duration-Frequency Data
Données sur l'intensité, la durée et la fréquence des chutes
de pluie de courte durée

Gumbel - Method of moments/Méthode des moments

2012/02/09

=====

SASKATOON WATER TP SK 4057202

Latitude: 52 7'N Longitude: 106 41'W Elevation/Altitude: 483 m

Years/Années : 1982 - 2000 # Years/Années : 17

=====

Table 1 : Annual Maximum (mm)/Maximum annuel (mm)

=====

Year Année	5 min	10 min	15 min	30 min	1 h	2 h	6 h	12 h	24 h
1982	3.6	6.2	7.8	9.4	13.7	16.2	25.2	31.1	38.6
1983	8.2	14.6	20.0	29.4	39.4	45.2	49.4	52.4	63.6
1985	4.4	8.3	10.7	13.3	19.0	32.0	32.0	32.0	32.2
1986	7.2	11.7	16.7	20.9	24.2	26.2	28.6	28.6	31.8
1987	3.9	6.7	6.9	6.9	8.0	8.2	8.9	13.4	16.2
1988	6.6	8.9	11.5	15.0	17.3	20.7	21.0	23.0	27.4
1989	3.4	4.8	5.8	11.1	14.2	16.7	28.9	33.3	37.4
1990	3.8	7.3	10.7	18.2	26.2	28.4	32.0	33.4	36.0
1991	6.2	7.0	7.9	9.8	12.1	13.2	23.8	29.6	38.0
1992	4.4	7.3	10.9	15.6	16.7	17.0	24.8	29.9	30.0
1993	2.8	5.6	6.7	7.5	7.8	14.2	27.9	32.8	44.4
1994	5.5	8.1	8.6	15.3	17.6	31.4	37.3	43.9	52.9
1995	5.9	9.0	10.3	10.5	14.3	17.5	27.6	33.9	48.4
1996	6.0	8.6	9.2	11.3	14.0	17.1	-99.9	-99.9	50.0
1997	2.6	4.1	6.0	8.5	10.9	13.0	24.7	36.3	38.6
1998	6.4	10.7	12.8	17.1	28.2	38.4	49.1	50.4	52.7
1999	6.7	8.1	9.4	13.2	15.2	18.5	19.2	19.2	28.3
2000	7.7	10.5	15.7	20.7	27.3	32.4	32.4	33.1	38.5

# Yrs. Années	18	18	18	18	18	18	17	17	18
Mean Moyenne	5.3	8.2	10.4	14.1	18.1	22.6	29.0	32.7	39.2
Std. Dev. Écart-type	1.7	2.5	3.9	5.7	8.1	10.0	9.9	9.8	11.3
Skew. Dissymétrie	-0.02	0.78	1.11	1.13	1.14	0.79	0.54	0.29	0.24
Kurtosis	2.27	4.48	4.34	4.96	4.70	3.28	4.68	4.20	3.71

*-99.9 Indicates Missing Data/Données manquantes

Pre and Post Runoff Calculations - Entire Development - 23-4236-001

VRBP

Area	Type of Land Use	Area (ha)	Area (m2)	<u>Pre Development</u>		<u>Post Development</u>	
				C2	C100	C2	C100
1	Compacted Gravel	41.69	416900	0.05	0.05	0.5	0.5
2	Roof	11.91	119100	0.05	0.05	0.95	0.95
3	Grass/Landscaped	5.96	59600	0.05	0.05	0.3	0.3
4	Asphalt Pavement	3	30000	0.05	0.05	0.95	0.95
TOTAL		62.56	625600				

Kirpich formula = $0.0195(L^{0.77}/S^{0.385})$

Tc	14.9869172	min	0.249781953	h
S	0.02	m/m		
L	790.9487973	m		

Rainfall Intensity - AES Data - Saskatoon U of S

$R = AT^B$ mm/hr

A ₂	B ₂	A ₁₀₀	B ₁₀₀	R ₂	R ₁₀₀
16.1	-0.702	48.8	-0.773	2.4	6.0

Rational Formula (Flow Rate)

$Q = 2.78CIA$ (L/s)

	Cpre	Cpost
2 year	0.05	0.59
100 year	0.05	0.59

Area	Return Period	Pre				Post			
1	2 year	13.9483402	L/s	0.01394834	m3/s	164.086972	L/s	0.164086972	m3
	100 year	34.88517479	L/s	0.034885175	m3/s	410.3859397	L/s	0.41038594	m3
2	2 year	3.984762096	L/s	0.003984762	m3/s	46.87636931	L/s	0.046876369	m3
	100 year	9.965997404	L/s	0.009965997	m3/s	117.2390631	L/s	0.117239063	m3
3	2 year	1.994053912	L/s	0.001994054	m3/s	23.45786407	L/s	0.023457864	m3
	100 year	4.98718258	L/s	0.004987183	m3/s	58.66875031	L/s	0.05866875	m3
4	2 year	1.003718412	L/s	0.001003718	m3/s	11.8076497	L/s	0.01180765	m3
	100 year	2.510326802	L/s	0.002510327	m3/s	29.53125016	L/s	0.02953125	m3
Total	2 year	20.93087462	L/s	0.020930875	m3/s	246.2288551	L/s	0.246228855	m3
	100 year	52.34868158	L/s	0.052348682	m3/s	615.8250033	L/s	0.615825003	m3

Rational Method Storage Volume

48684.4 m3

C _d	0.05
C _p	0.59
Total Area	62.56

Maximum Allowable Release Rate

Flow (L/s/ha)	5.7
Q _{release} (L/s)	356.592
Q_{release} (m³/s)	0.3566

Onsite Storage Requirement

$$\text{Unit Volume (m}^3\text{/ha)} = A * (C_p - C_d) + B * (C_p - C_d)^2$$

A	859
B	-19.75

Unit Volume (m ³ /ha)	456.6
----------------------------------	-------

Volume (m³)	28564.2
-------------------------------	----------------

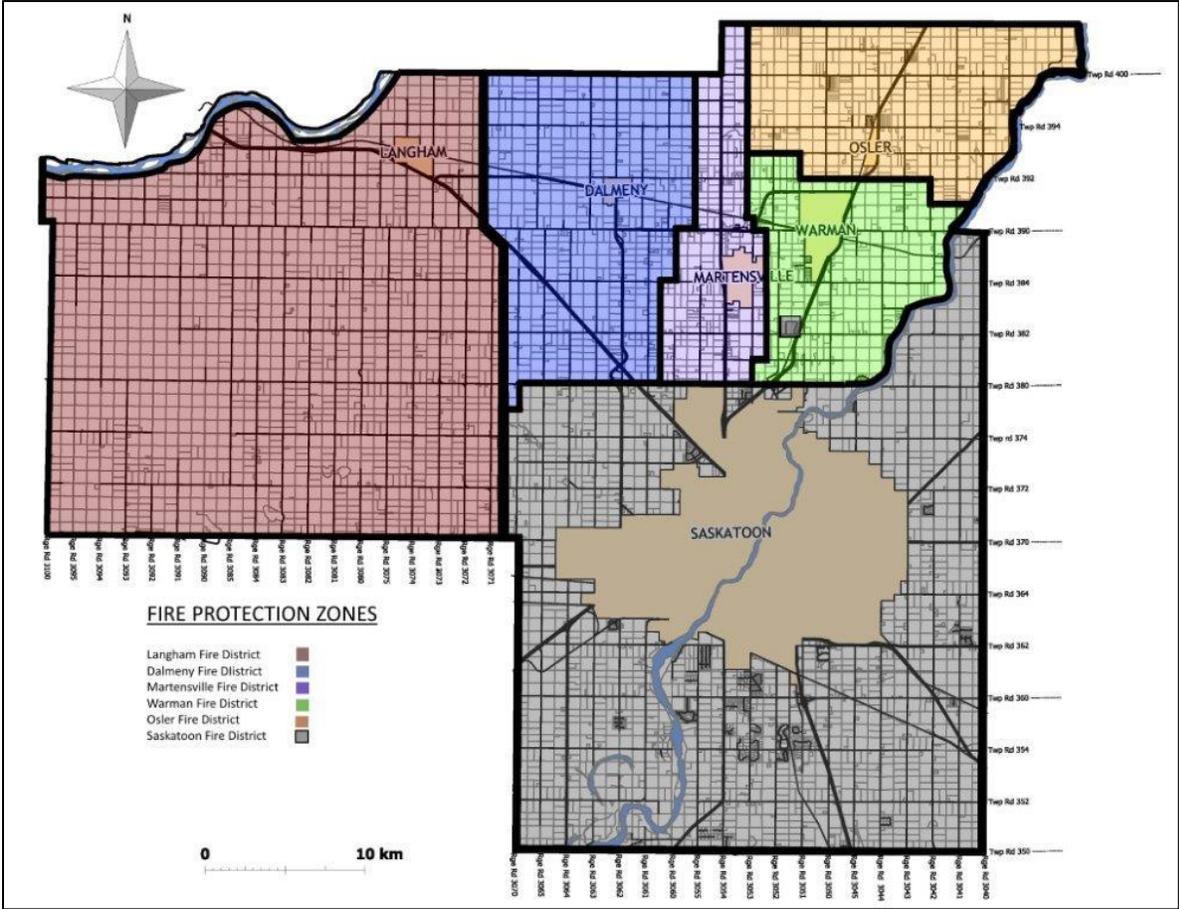
APPENDIX G

Record of Regulatory Agency Consultation

CONFIRMATION OF SERVICES:

Protective Services:

The RM of Corman Park provides fire protection to its residents by entering into agreements with 7 urban municipalities to extend their fire department's coverage into the rural areas. The subject property is described as the Saskatoon Fire District.



The RM will need to correspond with Saskatoon Fire and Protective Services to set up the general parameters for these services at the proposed Development. Police services will be jointly provided by the Corman Park Police Services and the Saskatoon Police Services.

Water Security Agency (WSA)

Good Morning James,

The Compliance Promotion Branch of Water Security Agency has the following comments regarding this subdivision:

- 1) To my knowledge, and unless you would be able to obtain potable water from the City of Saskatoon, the only water source in that area is a raw (non-potable) water pipeline from

SaskWater. This would mean either having holding tanks to haul in potable water from an outside source or constructing a water treatment plant.

- 2) A wastewater system would be required whether that be holding tanks (which the waste would have to be hauled to a licensed facility); a sewage works collection system with a form of final disposal; or on-site treatment systems which would have to have approval from the Saskatchewan Health Authority.
- 3) Any construction of a waterworks or sewage works system would require approval (Permit to Construct) from WSA and, depending on what is constructed for a system, may require a Permit to Operate as well.

Feel free to contact me directly if you have any further questions or require any clarification.

Regards,

Lee Reinhart

Supervisor, Environment Officer - Compliance Promotion Branch
10 - 3904 Millar Avenue
Saskatoon, SK S7P 0B1
Ph: 306.230.3254 | Fax: 306.933.6820
wsask.ca | lee.reinhart@wsask.ca

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Ministry of Highways

Good morning,

I have reviewed the information provided for the proposed land development at NE 14-36-6-W3. Because Lot 4, Lot 5, Lot 8 and possibly Lot 6 and Lot 7 are within/near the bed, bank or boundary of Chappel Marsh wetland any work activities that will alter any terrain or vegetation (within those areas) will require an Aquatic Habitat Protection Permit from the Water Security Agency prior to conducting any work as per section 38(4) (a) (b) and (c) of *The Environmental Management and Protection Act, 2010* and section (6)1 of *The Environmental Management and Protection (General) Regulations*.

Please visit our webpage at [Aquatic Habitat Protection - Water Security Agency \(wsask.ca\)](http://www.wsask.ca/aquatic-habitat-protection) or contact us at 866.727.5420 for any questions regarding these guidelines or Aquatic Habitat Protection Permits.

Thanks,

Logan Sitter - B.Sc.

Aquatic Habitat Protection Specialist, Water & Wastewater
300-2365 Albert Street
Regina, SK S4P 4K1
Ph: 306.526.8495 | Fax: 306.787.0780
wsask.ca | logan.sitter@wsask.ca



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Good morning James,

I was forwarded your email regarding the NE 14-36-6 W3 proposed development.

Water Security Agency Approvals North has reviewed this quarter section and screened it for historic projects. There are no historic water projects or complaints which would be impacted by this development. A few items were noted during our review:

- Multiple Species at Risk hits were found using the Ministry of Environment's GIS layer. WSA recommends that you reach out to the Ministry of Environment for further review regarding these species.
- Chappell Marsh Conservation Area is situated adjacent to this land on the NW 14-36-6 W3. WSA recommends that you reach out to Ducks Unlimited Canada for further review. This wetland also extends into the NE 14, whereas the proposed development of Lot 4 would take place, as per your concept plan.
- Any infilling of wetlands, or the diversion of water would be considered drainage, and as such, a drainage approval from Water Security Agency would likely be required.

Please note the development of this site should block, divert, drain, or otherwise alter natural drainage conditions without prior approval from WSA.

If there is anything else, please reach out.

Thanks,

Trenton Spence - A.Sc.T.

Supervisor, Approvals North
402 Royal Bank Tower 1101 - 101st Street
North Battleford, SK S9A 0Z5
Ph: 306.441.0271
wsask.ca | trenton.spence@wsask.ca



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From: Jessica Phelps

Sent: Thursday, January 25, 2024 4:18 PM

To: jmcknight@scatliff.ca

Cc: WSA Sub Reviews <subreviews@wsask.ca>; Trenton Spence <Trenton.Spence@wsask.ca>; Lee Reinhart <Lee.Reinhart@wsask.ca>

Subject: RE: Proposal for a commercial business/research park south/west of Saskatoon

Hi James,

A Water Rights Licence (WRL) will need to be obtained for the right to use surface or groundwater, with the exception on some domestic uses. An Approval to Construct and Operate Work (ATC/ATO) is also required for works which convey water. For more information on domestic purpose water use, please visit our website at [Domestic Purpose Water Use - Water Security Agency \(wsask.ca\)](http://www.wsask.ca/Domestic-Purpose-Water-Use).

Depending on the source and whether the water is to be used for non-domestic purposes, then a WRL, and potentially an ATC/ATO, would need to be obtained from the Water Security Agency.

If you have any questions, feel free to contact me at the number below.

Regards,

Jessica Phelps - B.Sc. Hons, Geoscientist-in-Training

Senior Technologist, Water & Wastewater
402 Royal Bank Tower 1101 - 101st Street
North Battleford, SK S9A 0Z5
Ph: 306.480.6792
wsask.ca | jessica.phelps@wsask.ca



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Traffic Engineering and Development Ministry of Highways

Hey James,

Hope you are well.

Typically, we have the developer complete a traffic impact assessment when the development will impact the highway.

However, since this development will be impacting a municipal road and will be accessed mainly by Circle drive, we will not require you complete a traffic impact assessment.

You will have to work with the municipal group on the required permits.

Please let me know if you have any questions.

Thanks,

Samson Zeremariam, EIT (he/him)
Government of Saskatchewan

Operations Project Engineer
Traffic Engineering and Development, Ministry of Highways

18-3603 Millar Avenue
Saskatoon, Canada S7P 0B2
Office: 306-933-5340
Cell : 306-280-0724
Samson.Zeremariam@gov.sk.ca



PCSARMS arms@gov.sk.ca

Kevisen, Brent PCS brent.kevisen@gov.sk.ca

Good afternoon James,

This project has already been submitted to the Heritage Conservation Branch (HCB) for a Heritage Resource Review under HCB File No: 23-1204. Please contact the proponent (Overpass Farms Ltd.) and/or their heritage consultants to obtain the up to date requirements for this subdivision under the *Heritage Property Act 1980*.

Feel free to contact me if you have any questions.

Brent Kevisen (he/him)
Government of Saskatchewan
Archaeologist
Heritage Conservation Branch, Ministry of Parks, Culture and Sport

102-112 Research Drive
Saskatoon, SK S7N 3R3
Canada
Bus 306-787-5774



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SaskEnergy

#WR362993 Route and Grade Approval

Proposed SaskEnergy Main Instillation.

Acknowledging your access and consent to receive and sign documents electronically.

All parties have completed Please DocuSign: WR362993 Route and Grade Approval.pdf.

To contact us by email send messages to: jshaw@saskenergy.com



NOTE: DEVELOPER TO CLEAR ALL TREES / BUSH & OBSTACLES PRIOR TO THE PROPOSED SASKENERGY MAIN INSTALLATION

SASKATOON B0011



NE14-36-06-W3M

NW13-36-06-W3M

406.4mm ST HP A474 (2008022)

BORE: ROAD

PROPOSED 88.9mm PE

5.0m EASEMENT REQUIRED

CAUTION: SASKPOWER TRANSMISSION POWERLINE CROSSINGS

CAUTION: FIBRE OPTIC CABLE CROSSING

CAUTION: TRANSGAS HP PIPELINE CROSSING

406.4mm ST HP A474 (2008022)

PROPOSED 88.9mm PE

5.0m EASEMENT REQUIRED

PROPOSED 88.9mm PE

5.0m EASEMENT REQUIRED

BORE: ROAD

CAUTION: TRANSGAS HP PIPELINE CROSSING

PROPOSED 88.9mm PE

TIE INTO EXISTING 48.3mm PE 550 (INLINE TEE)

BORE: ROAD

~25.0

273.1mm ST HP

3.5

48.3 PE 550

ROUTING AND DIMENSIONS SHOWN HAVE BEEN REVIEWED AND APPROVED FOR CONSTRUCTION THE GRADES FOR THE ROUTING WILL BE AT FINAL LEVEL BY: 2024/ 04/01 Year / Month / Day
NAME: James McKnight
TITLE: Planner
SIGNATURE: James McKnight
DATE: April 1, 2024 4:57 PM CST

PROJECT: KGS ENGINEERING/SCATLIFF & MILLER & MURRAY
LOCATION: NW13-36-06-W3M & NE14-36-06-W3M
WORK REQUEST: WR#362993
ACCOUNT NUMBER: 2024333000
DISTRICT NUMBER: 3304
SYSTEM PRESSURE: 550 kPa (IP SYSTEM)
PIPE REQUIREMENT:
APPROXIMATELY 2,255m OF 88.9mm PE (MAIN)

Distribution Services

April 22, 2024

CONFIRMATION LETTER

Notification No. 303125308

SUBJECT: ELECTRICAL SERVICE

To Whom it May Concern:

Re: Subdivision at NW-14-36-06-W3, Valley Road; RM of Corman Park (the "Site")

Please accept this letter as confirmation that there is electrical service available to provide power to your subdivision.

Once you have received your approval from the RM of Corman Park and wish to proceed please call our office at 1-888-757-6937. At that time, we will provide you with a written quote setting out the costs and terms and conditions to move your project forward.

If you require anything else at this time, please let us know by contacting customerrelationssaskatoon@saskpower.com.

SASKATCHEWAN POWER CORPORATION

Justin Bloor

Justin Bloor - Business Manager, Customer Relations – Saskatoon Region



5th Floor
140 - 1st Avenue North
Saskatoon, Saskatchewan
S7N 1Y7

January 30, 2024

File: .277 S'toon West Wire

Scatliff + Miller + Murray
300 – 203 Stonebridge Blvd.
Saskatoon, SK
S7T 0G3

Attention: James R. McKnight

RE: Plan of Proposed Subdivision
NE14 36-06-W3, Surface Parcels#203828597, 203828609,
Along Valley Rd. Saskatoon, SK.

Please be advised that SaskTel has no objections to the proposed subdivision, provided that existing registered easements are maintained and any new joint utility easement are granted to SaskPower. Also, if SaskTel requires any SaskTel only easements that they will be granted.

There are buried distribution facilities boarding the south and east property lines of Surface Parcel# 203828597 and the east property line of Surface Parcel# 203828609.

If there is any further information that you require, please call Maureen Jenson at (306)931-5654 or e-mail at maureen.jenson@sasktel.com or Eng. Asst. Jaclyn Hodgson at (306) 230-5338 or email at jaclyn.hodgson@sasktel.com.

Yours truly,

A handwritten signature in cursive script that reads "Maureen Jenson".

Maureen Jenson
SaskTel Land Negotiator
cc: Jaclyn Hodgson Eng. Asst.

FW: Confirmation of Services- Commercial Development



Jory Blakley <jory.blakley@loraas.ca>
To: James McKnight
Cc: Tim Morse

Reply Reply All Forward

Tue 2024-01-16 5:08 PM

Hi James,

I did confirm that we can service these potential sites.

Thank you,



Jory Blakley
Sales Manager
805 – 47th Street East, Saskatoon, SK S7K 8G7
p: (306)242-2300 c: (306) 361-4195
e: jory.blakley@loraas.ca web: www.loraas.ca

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From: 7510 - Customer Service <customerservice@loraas.ca>
Sent: Monday, January 15, 2024 12:02 PM
To: Jory Blakley <jory.blakley@loraas.ca>; Iain Macfarlane <iain.macfarlane@loraas.ca>; Heather Button <heather.button@loraas.ca>
Subject: FW: Confirmation of Services- Commercial Development

Septic Services

RE: Proposed Subdivision- Confirmation of Service

econoseptic@sasktel.net

Hi James,

Yes that is within our working area, When you know how many imperial gallons your tank is I can provide you an estimate.

- Econo Septic

Potable Water

Re: Proposed Subdivision- Confirmation of Service

Andrea Zimmer prairiewaterhauling@gmail.com

Hello James,

We would be happy to discuss providing bulk water delivery for the proposed development noted below. For the NE.14.36.6 subdivision (20-24 lots), Prairie Water Hauling would source water from the RM of Corman Park rural fill stations (<https://www.rm-cormanpark.ca/219/Water-Fill-Stations>) .

We look forward to discussing this opportunity further with you.

Marc Zimmer
Prairie Water Hauling
306-381-9885

Saskatoon Water

306-975-2476

Each lot may require an individual reservoir and pump in order to meet peak day demands and fire suppression, if required. The recommended minimum storage for each lot is equal to the average daily consumption if no fire suppression is required, or twice the average daily consumption if fire suppression is required.

December 1, 2023

Our file: 23-1204

Kris Sullivan
KGS Group
Agent for: Overpass Farms Inc.
Suite 300-203 Stonebridge Blvd.
SASKATOON SK S7T 0G3
Phone: 631-471-2921
Email: ksullivan@ksgroup.com

Dear Kris Sullivan:

**RE: Overpass Farms Inc.'s Valley Road Business Park in the RM of Corman Park No. 344;
NW 13- 36-06 W3M: Parcel A (3.28 ha);
NE 14-36-06 W3M: Phase 1 (6.45 ha), Phase 2 (11.55 ha), Phase 3 (38.5 ha), and Intended
Undeveloped Area (6.14 ha);
HERITAGE RESOURCE REVIEW**

Thank you for referring this development for heritage resource review.

In determining the need for, and scope of, a Heritage Resource Impact Assessment (HRIA) pursuant to s.63 of *The Heritage Property Act*, the following factors were considered: the presence of previously recorded heritage sites, the area's overall heritage resource potential, the extent of previous land disturbance, and the scope of new proposed land development.

No known heritage sites are located in direct conflict with the proposed business park. Although portions of the development area have been previously impacted by cultivation, there does appear to be an intact glacial spillway valley adjacent to seasonal water sources in NE 14 and a potential historic farmyard in NW 13. This area is also located on a terrace of the South Saskatchewan River which could contain deeply buried archaeological sites. This type of terrain has a moderate to high potential to contain intact heritage resources. As the project may damage or disturb archaeological sites, **an HRIA is required prior to further work in Parcel A in NW 13-36-06 W3M, and in NE-14-36-06 W3M around and adjacent to Chappell Marsh in the former glacial spillway in Phase 2 and the Intended Undeveloped Area.** There are no further heritage concerns with Phase 1 and Phase 3 in NE 14-36-06 W3M currently. Within Parcel A, manual subsurface testing must go as deep as possible but may not achieve sufficient depth to encounter sites; therefore, the HRIA must provide a recommendation regarding the potential need for mechanical testing (i.e., backhoe testing). The assessment of the portions of Parcel A that are currently not under the recently added clay fill will determine if further testing is required under the recent stockpiled fill, and if the stockpiles must be removed to non-heritage sensitive portions of the project.

...2

Kris Sullivan
Page 2
December 1, 2023

The required HRIA, including systematic surface survey and sub-surface test exploration, is a proponent responsibility. The study will first establish the presence of heritage sites within the project area and where suitable site avoidance and protection measures (including relocation of testing locations and flagging of site boundaries prior to construction activity) may be implemented. If heritage sites are located in unavoidable conflict with the development, the study must also establish the content, structure and significance of those sites, and, on that basis, recommend both the need for and scope of any further study (including archaeological salvage excavation or other heritage management action).

The HRIA must be carried out by qualified personnel under an approved investigation permit issued through this office. A minimum of two business days are required to process a permit application for an archaeological HRIA. The HRIA must be conducted under snow-free and frost-free conditions.

If you have any questions regarding these heritage regulatory requirements, please contact Brent Kevinsen at brent.kevinsen@gov.sk.ca or by calling 306-787-5774. Thank you again for referring these proposed developments and for your cooperation in protecting the province's cultural heritage.

Sincerely,



Kim Cloutier
Assistant Director, Archaeology and Heritage Management

APPENDIX H

Record of Public Consultation

Douglas Ramage

From: Adam Toth <atoth@rmcormanpark.ca>
Sent: February 20, 2024 2:07 PM
To: Douglas Ramage
Subject: RE: VRBP - Follow Up from P4G Pre-application Meeting
Attachments: Concept Plan Rationale Submission to RM Corman Park_Rev.DRAFT_V.01.01.pdf;
Proposed Bradley Land Donation - RM Corman Park Letter V2 Jan 19 2024 Signed PS.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

*** This is an external eMail. Please be careful with attachments and links. ***

Hi Doug,

Here are our initial comments on the proposal:

- You will need to further define the drainage channel and preserve it in the SW corner of the NE 14-36-6-W3.
- You should consider rural commercial/industrial land use designation since the current urban service provider in the area is the City of Saskatoon and they have no plans to expand/extend services into this area.
- Lot 4 may not be developable based on the natural drainage channel.
- Is there a timeline before subdivision and development is planned? What is the ownership plan for future lots and the current parcel before subdivision? Will the University develop the lands?
- The proposal is for land use amendment and rezoning by hold.
- Compatibility with adjacent land uses is important. For example, The City of Saskatoon adopted a conceptual master plan for RSBBA, see link here: [filestream.ashx \(escrimeetings.com\)](https://filestream.ashx(escrimeetings.com))
- We can't support a land use amendment application unless a rezoning application is submitted concurrently and we move both applications through the process at the same time.

We hope to have an OCP amendment application form on our website shortly which you can fill out and submit with your detailed planning document. Our rezoning process and requirements can be found at the link below:

<https://www.rmcormanpark.ca/206/Rezoning>

Thanks,

Adam Toth RPP, MCIP

Senior Planner
RM of Corman Park
111 Pinehouse Drive
Saskatoon, SK S7K 5W1
ph: (306) 975-0208
fx: (306) 242-6965
email: atoth@rmcormanpark.ca



From: Adam Toth
Sent: Thursday, February 15, 2024 9:30 AM
To: Douglas Ramage <DRamage@kgsgroup.com>
Subject: RE: VRBP - Follow Up from P4G Pre-application Meeting

Hi Doug,

I have a meeting with Jim to go over several items including this one. The partners didn't have any major concerns or see any red flags. I will get you a formal response early next week.

Thanks,

Adam Toth RPP, MCIP

Senior Planner
RM of Corman Park
111 Pinehouse Drive
Saskatoon, SK S7K 5W1
ph: (306) 975-0208
fx: (306) 242-6965
email: atoth@rmcormanpark.ca



From: Douglas Ramage <DRamage@kgsgroup.com>
Sent: Thursday, February 15, 2024 9:02 AM
To: Adam Toth <atoth@rmcormanpark.ca>
Subject: RE: VRBP - Follow Up from P4G Pre-application Meeting

Hi Adam,

Following up again about receiving the comments from the P4G group regarding the VRBP concept rationale so that we can continue to move this project ahead.

Thank you,

Doug Ramage P.Eng., ENV SP
SENIOR MUNICIPAL ENGINEER



P 306-500-2357
C 306-361-0264
dramage@kgsgroup.com | kgsgroup.com
Suite 300 - 203 Stonebridge Blvd.
Saskatoon, SK S7T 0G3

From: Douglas Ramage
Sent: Monday, February 5, 2024 8:59 AM
To: Adam Toth <atoth@rmcormanpark.ca>
Cc: Don Atchison <d.atch@shaw.ca>; Hamelin, Cheryl <cheryl.hamelin@usask.ca>
Subject: VRBP - Follow Up from P4G Pre-application Meeting

Hi Adam,

Thanks again for meeting with Don, Cheryl, and myself the other week.

Following up to see how the VRBP concept rationale was received by the P4G group on January 30th? Was there general support for the plan? Any further guidance coming from the meeting?

Thank you!

Doug Ramage P.Eng., ENV SP
SENIOR MUNICIPAL ENGINEER



P 306-500-2357
C 306-361-0264
dramage@kgsgroup.com | kgsgroup.com
Suite 300 - 203 Stonebridge Blvd.
Saskatoon, SK S7T 0G3

Douglas Ramage

From: Brian Howells [REDACTED]
Sent: April 14, 2024 12:44 PM
To: Douglas Ramage
Subject: Valley road business parks rezoning

*** This is an external eMail. Please be careful with attachments and links. ***

Hello,

I'm not sure if the paper I received is vague as to what is going to be going out on valley road for a reason, or if you're unsure. I would like more information as to what research and what the buildings would be used for. As it is not close to the university this concerns me. I would be against rezoning it as we don't need to get rid of more agricultural land.

If you could provide me with more information that would be great.

Thanks,

Brian

Douglas Ramage

From: Douglas Ramage
Sent: April 18, 2024 9:04 AM
To: Brian Howells
Subject: RE: Valley road business parks rezoning

Hi Brian,

Thank you for your email and your comments. The land is currently owned by private landowners that are working on rezoning the property to allow for commercial uses listed in the P4G zoning bylaw for future development. At this stage of proposing the rezoning there are no defined plans for the property rather the concept site plan provided is to illustrate a potential development scenario. If the private landowners are successful in the rezoning process, the land would then be donated to the university as part of their larger fundraising efforts.

The university would then hold the land in as part of their endowment lands (land bank) and may develop the land in the future or may in the future sell the land to a developer.

Any uses on the property would need to conform to the permitted and discretionary uses in the P4G Zoning Bylaw under a DC2 Commercial zone.

Cheers,

Doug Ramage P.Eng., ENV SP

SENIOR MUNICIPAL ENGINEER



P 306-500-2357

C 306-361-0264

dramage@kgsgroup.com | kgsgroup.com

Suite 300 - 203 Stonebridge Blvd.

Saskatoon, SK S7T 0G3

From: Brian Howells [REDACTED]
Sent: Sunday, April 14, 2024 12:44 PM
To: Douglas Ramage <DRamage@kgsgroup.com>
Subject: Valley road business parks rezoning

*** This is an external eMail. Please be careful with attachments and links. ***

Hello,

I'm not sure if the paper I received is vague as to what is going to be going out on valley road for a reason, or if you're unsure. I would like more information as to what research and what the buildings would be used for. As it is not close to the university this concerns me. I would be against rezoning it as we don't need to get rid of more agricultural land.

If you could provide me with more information that would be great.

Thanks,
Brian

Douglas Ramage

From: Proximity <proximity@cn.ca>
Sent: April 15, 2024 1:36 PM
To: Samantha Burns
Cc: CONTACT; Douglas Ramage; jmcknight@scatliff.ca
Subject: 2024-04-15_CN Comments_Valley Road Business Park – Public Notice of Proposal for Rezoning and Land Use Amendment
Attachments: Public Notice Valley Road Business Parks Ltd._V.01.01.pdf

*** This is an external eMail. Please be careful with attachments and links. ***

Hello Samantha,

Thank you for consulting CN on the proposed amendment of the current 'P4G Official Community Plan' to accommodate a proposed University of Saskatchewan Business / Research Park to accommodate the University's current and future growth plan. CN's guidelines reinforce the safety and well-being of any existing and future occupants of the area. Please refer to CN's guidelines for the development of sensitive uses in proximity to railways. These policies have been developed by the Railway Association of Canada and the Federation of Canadian Municipalities.

Since the site is located within 1000 meters of CN's Saskatoon Rail Yard, CN recommends University of Saskatchewan to assess whether the noise generated from Rail Yard operations could adversely impact the future use being contemplated. CN recommends retaining a qualified acoustic consultant to undertake an analysis of noise, and make recommendations for mitigation to reduce the potential for any adverse impact on future use of the property.

Thank you



CN Proximity

proximity@cn.ca

From: Samantha Burns [REDACTED]
Sent: Friday, April 12, 2024 4:29 PM
To: Proximity <proximity@cn.ca>
Cc: CONTACT <contact@cn.ca>; Douglas Ramage <DRamage@kgsgroup.com>; jmcknight@scatliff.ca
Subject: Valley Road Business Park – Public Notice of Proposal for Rezoning and Land Use Amendment

CAUTION: This email originated from outside CN: DO NOT click links or open attachments unless you recognize the sender AND KNOW the content is safe.

AVERTISSEMENT : ce courriel provient d'une source externe au CN : NE CLIQUEZ SUR AUCUN lien ou pièce jointe à moins de reconnaître l'expéditeur et d

To Whom it may concern,

Please find attached the public notice being provided to adjacent landowners (within a 1.6 kilometer radius) including homeowners in both the R.M. of Corman Park and in the Montgomery area of the City of Saskatoon.

The notice proposes to amend the current 'P4G Official Community Plan' to accommodate a proposed University of Saskatchewan Business / Research Park on 168.15 acres of land located on NE 14-36-06-W3, this land is located in the R.M. of Corman Park and is currently zoned Agricultural. It is being proposed to rezone this land into Arterial Commercial 2 District (DC2) in the P4G jurisdiction which encircles the City of Saskatoon.

A Public Open House will be hosted on Wednesday April 24, 2024 at the Black Fox Farm and Distillery located at 245 Valley Road from 7:00 pm to 9:00 pm.

Thank you for your interest in this proposal. Your comments and responses are appreciated.

Please respond to this request for comments before April 26, 2024.

Thank You,

Douglas Ramage

[sent by document control]

Samantha Burns

ADMINISTRATIVE ASSISTANT



P 306-500-2357 ext

[REDACTED] | kgsgroup.com

Suite 300 - 203 Stonebridge Blvd

Saskatoon, SK S7T 0G3

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Douglas Ramage

From: b.r.biddle@[REDACTED]
Sent: April 15, 2024 10:09 AM
To: Douglas Ramage
Subject: Re: Public Notice -Valley Road Business Parks Ltd.

*** This is an external eMail. Please be careful with attachments and links. ***

perfect, thank you

Barb

On Mon, 15 Apr 2024 13:41:47 +0000, Douglas Ramage <DRamage@kgsgroup.com> wrote:

Good morning Barb,

The public notice area of 1.6km' is up to 11th street. I can confirm that residents in Montgomery from 11th street to the south end of the neighborhood were provided the notice.

Cheers,

- Doug

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From: b.r.biddle@[REDACTED]
Sent: Sunday, April 14, 2024 4:51:06 PM
To: Douglas Ramage <DRamage@kgsgroup.com>
Subject: Public Notice -Valley Road Business Parks Ltd.

*** This is an external eMail. Please be careful with attachments and links. ***

Concerning the flyer I received concerning the Public Notice re application to rezone land -Valley Road Business Park, I would like clarification - was this flyer distributed to everyone in Montgomery Place?

I would like to ensure this information is available to all residents of Montgomery Place.

sincerely

Barb Biddle, President of Montgomery Place Community Association

Douglas Ramage

From: Douglas Ramage
Sent: April 17, 2024 10:55 AM
To: Denis Grimard
Cc: Barb Biddle; Hilary Gough
Subject: Re: Proposed application action to rezone - valley road

Hi Denis,

After following up with the University, I can confirm that the level 4 virus research lab is not being located in the Valley Road Business Park. That lab is already in the process of being built on main campus.

The University is excited and appreciates the work of the landowners and potential donation of the land once rezoned to commercial and intends to include it as part of the land endowment bank for future development. Future development would be consistent with the uses defined as permitted or discretionary in the P4G Zoning Bylaw.

A virus research lab is not identified either permitted or discretionary use in the Arterial Commercial (DC2) being proposed for the property.

Thanks again,

- Doug

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From: Douglas Ramage <DRamage@kgsgroup.com>
Sent: Wednesday, April 17, 2024 9:57:57 AM
To: Denis Grimard [REDACTED]
Cc: Barb Biddle <b.r.biddle@kgsgroup.com>; Hilary Gough <hilary.gough@kgsgroup.com>
Subject: Re: Proposed application action to rezone - valley road

Hi Denis,

Thank you for the call this morning. As mentioned I will reach out regarding your question and will follow up with you.

The intent of this proposal for the private landowners to take the property through the rezoning purpose and donate the land to the university.

The uses of the land considered in the proposal would be mixed commercial within a business / research park concept. I have no information about the land being used as a virus research lab. I will pass along your question and will follow up with the answer I receive.

Thank you,

- Doug

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From: Denis Grimard <[REDACTED]>
Sent: Monday, April 15, 2024 10:24:17 PM
To: Douglas Ramage <DRamage@ksggroup.com>
Cc: Barb Biddle <b.r.biddle@[REDACTED]>; Hilary Gough <hilary.[REDACTED]>
Subject: Proposed application action to rezone - valley road

*** This is an external eMail. Please be careful with attachments and links. ***

Hello, I received a flyer about the proposed refining. Can you provide any information regarding the intended application for use of the research park?

Is it going to be used for the level 4 virus research lab?



VIDO looking to expand to a level four containment lab
globalnews.ca

Regards,

Denis Grimard

I blame errors and omissions on my iPhone

Douglas Ramage

From: bj.guillemine [REDACTED]
Sent: April 18, 2024 11:09 AM
To: Douglas Ramage
Cc: Don Atchison; Cedar Villa Estates (via Google Sheets)
Subject: Re: Schedule Meeting to Discuss Potential Servicing Options re: Valley Road Rezoning and Land Use Amendment

Follow Up Flag: Follow up
Flag Status: Completed

*** This is an external eMail. Please be careful with attachments and links. ***

Thanks Doug! I look forward to the discussion next week.

All the best,

Brian

From: Douglas Ramage <DRamage@ksgroup.com>
Sent: Thursday, April 18, 2024 8:43 AM
To: bj.guillemine [REDACTED] <bj.guillemine [REDACTED]>
Cc: Don Atchison [REDACTED] Cedar Villa Estates (via Google Sheets) <[REDACTED]>
Subject: RE: Schedule Meeting to Discuss Potential Servicing Options re: Valley Road Rezoning and Land Use Amendment

Hi Brian,

Thanks for the email and the comments below. I'll go through them and provide a response for early next week.

Don and I can meet you and the other board members at Black Fox for 6:30pm before the open house starts. Looking forward to the discussion!

Thank you,

Doug Ramage P.Eng., ENV SP
SENIOR MUNICIPAL ENGINEER
 P 306-500-2357
C 306-361-0264
dramage@ksgroup.com | ksgroup.com
Suite 300 - 203 Stonebridge Blvd.
Saskatoon, SK S7T 0G3

From: bj.guillemine [REDACTED] <[REDACTED]>
Sent: Tuesday, April 16, 2024 4:12 PM

To: Douglas Ramage <DRamage@kgsgroup.com>

Cc: Don Atchison [REDACTED] Cedar Villa Estates (via Google Sheets) [REDACTED]

Subject: Re: Schedule Meeting to Discuss Potential Servicing Options re: Valley Road Rezoning and Land Use Amendment

*** This is an external eMail. Please be careful with attachments and links. ***

Afternoon Doug,

We had our board meeting last night and as can be expected, the Valley Road Rezoning and Land Use Amendment was part of our discussion. Given the availability you proposed, we are open to have a discussion prior to the open house at Black Fox on April 24th. We were thinking of meeting at 6:30pm, but we could meet earlier as well.

Our initial discussion last night raised concerns/questions regarding the following topics:

- Expected/unanticipated traffic increases on the road through the Hamlet of Cedar Villa Estate - TWP RD 362A
 - the proposed development of a business/research park will no doubt increase traffic on a road that already has weight restrictions and can experience structural issues during times when water levels are high. (The last two years of drought have been favourable for this road.) Is the proposed development considering any upgrades to this road?
 - We are already seeing increased traffic speed and volume concerns through our hamlet directly as a result of the reduced speed restrictions on Valley Road and increased activity at the potash mines, prompting us to work with the Corman Park Police and the RM to address traffic safety concerns (our streets are our sidewalks). This new development will likely add to these concerns.
- People have chosen our hamlet because it is quiet and relatively unknown in the area. This proposed development will likely raise the community profile. There are pros and cons related to this.
- The conceptual plan indicates that the land will become under the ownership and direction of the UofS to "the benefit and future of the academic, research and student needs for the province". This is understandably a broad statement at this point. The concern is that once it is owned, the UofS may sell off some of this land for use not originally intended, resulting in additional concerns for the community and surrounding area.
- Environmental impacts to Chappell Marsh Conservation Area. This area has been seriously affected by drought the last couple of years, but this prairie wetland habitat is a unique part of our community and an environment that needs upfront consideration and probably input from organizations such as Ducks Unlimited. Are these discussions underway?
- Servicing options (water and sewer) for the proposed development. Considerations for Cedar Villa Estates? As you indicated there may be some mutual benefits that warrant discussion and consideration.
- Any timelines being proposed?

On behalf of the board, we very much appreciate your offer for a separate discussion and your invitation to the Public Open House on Wednesday, April 24. I believe all four of us will be in attendance and I fully expect there will also be a number of people from our community in attendance.

Please let me know if meeting before the Open House works with your team and we will schedule our attendance accordingly.

Much appreciated,

Brian Guillemain
Chairperson, Cedar Villa Estates Community Association
[REDACTED]

From: Douglas Ramage <DRamage@kgsgroup.com>
Sent: Friday, April 12, 2024 2:47 PM
To: bj.guillemain [REDACTED]
Cc: Don Atchison [REDACTED]
Subject: Schedule Meeting to Discuss Potential Servicing Options re: Valley Road Rezoning and Land Use Amendment

Hi Brian,

Thanks for the call earlier today!
As mentioned, Don and I would like to chat with you and the Board about some potential servicing options that may be beneficial for us both.
Unfortunately, either Don or I are available on the 15th.

We are available at the following times:
Friday, April 19th 1:30pm – 5:00pm
Monday, April 22nd
Tuesday, April 23rd
Wednesday, April 24th – we could meet prior to the open house at Black Fox.

Is there a time that works for yourself and the Board?

Thanks again,

Doug Ramage P.Eng., ENV SP
SENIOR MUNICIPAL ENGINEER
 P 306-500-2357
C 306-361-0264
dramage@kgsgroup.com | kgsgroup.com
Suite 300 - 203 Stonebridge Blvd.
Saskatoon, SK S7T 0G3

Douglas Ramage

From: Douglas Ramage
Sent: April 23, 2024 2:32 PM
To: Michael Gavelis
Subject: RE: Valley zone rezoning

Hi Michael,

Thank you for your email. Some of your questions would be best addressed at future development planning stages that would follow the rezoning and land use amendment; however, I have provided a response to your questions below based on the information available at this time.

1) The land is currently owned by a group of private landowners that are working towards rezoning and amending the land use designation to the DC2 zoning. The site concept plan is provided as part of the planning process to demonstrate that the land can support the intended zoning and the concept currently is for a business/research park. The land development process can result in changes to development plans over time; however, would need to be consistent with the permitted and discretionary uses outlined in the zoning bylaw. Based on my understanding, if a future landowner, such as the University, were to develop this land for general commercial that may be considered by the RM as a 'Commercial Complex, Multiple Buildings' use. That would be defined as a discretionary use and would follow the discretionary use approval process before proceeding.

2) Unfortunately, I can't speak to that as development on other lands is separate from this proposal and I can't speculate on possible future development that may be influenced by any number of factors independent of this proposal.

3) The proposed rezoning and land use amendment at this time has not considered upgrades to TWP 362A because the necessary zoning and land use designation is not yet in place to further those conversations.

The Ministry of Highways' background traffic volume growth rates consider open highway conditions and are largely impacted by community growth applied to sections of highways within or adjacent to municipalities. The Ministry's 15-year growth rate for Valley Road is 1.40, which represents a 40% increase in traffic volumes over the next 15 years.

Based on the conceptual site layout, the TIA assumes approximately 70% of traffic associated with future development would access the site from the south access along Valley Road which limits the increase of traffic along Cedar Villa Road.

The 15-year traffic projections indicate an increase in traffic along Cedar Villa Road and the report includes some recommendations on potential intersection improvements to be considered. The projections do not include any traffic associated with future development continuing further west into the Cedar Villa development.

Traffic to potential future development would not be related to the Cory potash mine or other traffic looking to shortcut through to Highway 7 through Cedar Villa.

4) Ducks Unlimited has been contacted and provided an opportunity to submit comments on the rezoning and land use amendment proposal.

I believe there are examples of natural wetlands being incorporated into the neighbourhood of Brighton. The intention would be to coordinate further design efforts with Ducks Unlimited.

From the Ducks Unlimited Canada site:

“DUC is working with cities like Moncton, N.B., Edmonton, Alta., as well as Winnipeg and Brandon, Man. to construct naturalized stormwater retention ponds. Wetland-like in appearance and function, these basins incorporate natural biological processes to filter and store water.” Urban wetlands make cities more livable — Ducks Unlimited Canada

The area is also part of the Green Network within the P4G plan that sets out requirements for development in proximity to natural wetlands. The P4G plan does speak towards the value of integrating natural features into development. The wildlife and habitat screening has been completed for the area that will have recommendations for future development considerations.

Please let me know if you have any other questions.

Thank you,

Doug Ramage, P.Eng., ENV SP

-----Original Message-----

From: Michael Gavelis [REDACTED]
Sent: Tuesday, April 23, 2024 10:20 AM
To: Douglas Ramage <DRamage@ksgroup.com>
Subject: Valley zone rezoning

*** This is an external eMail. Please be careful with attachments and links. ***

Hello. I am a member of Cedar Villa Estates and have a few concerns regarding the rezoning of the proposed plot of land adjacent to Valley Road.

- 1) In the documents that were given to the community it states that the land would be rezoned to allow for development of a UofS research park however under the DC2 zoning my understanding is that any commercial development could be done on this land. What is preventing the University from changing their development plans in the future and just leasing the land for general commercial use such as what they have done with Preston Crossing?
- 2) If this rezone is granted what is the possibility of this also opening the door to rezoning of the land west of cedar villa to proposed residential? This would substantially increase traffic through the hamlet.
- 3) What if any road improvements are being planned to accommodate for the increased traffic of the proposed development? The Cedar Villa Access road has already seen a substantial increase in traffic due to the snow dump access and increase use of the SW dog park and no doubt access to this facility from the access road would only add to this. I am also concerned regarding potential increased traffic through Cedar Villa to access the facility from the west areas of Saskatoon via grid access from west of Cedar Villa.
- 4) What considerations have been made for wildlife in the area? There are currently a number of different animals that are in the area such as deer and coyotes and the ducks unlimited marsh adjacent to the proposed site.

Sincerely
Mike Gavelis BSc DMD

Douglas Ramage

From: antoinettehon@[REDACTED]
Sent: April 25, 2024 11:27 AM
To: Douglas Ramage
Subject: Valley Road Buiness Parks Ltd - Rezone Land

*** This is an external eMail. Please be careful with attachments and links. ***

Thank you for inviting me to your Public Open House at the Black Fox Farm and Distillery on Wednesday April 24th, 2024. You have given consideration as to the plans for this location and the purpose for it. You were willing to listen to the various concerns that were brought forward. It was quite noisy in the crowded area it was held with so many talking at the same time.

In all, the information on display was much appreciated.

I left with the information that all aspects of the development will be of benefit for all. Lastly, it is wonderful that the University of Saskatchewan will continue being one of Canada's leaders in research and learning.

I say, rezone, and get the project started, Thank you

Douglas Ramage

From: b.r.biddle@ [REDACTED]
Sent: April 25, 2024 12:17 PM
To: Douglas Ramage
Subject: Valley Road Business Parks Ltd. - Application to rezone land

Follow Up Flag: Follow up
Flag Status: Completed

*** This is an external eMail. Please be careful with attachments and links. ***

If this rezoning was approved and University of Saskatchewan acquired the land and considered an Innovation type development which offers a unique environment for innovation and research, I am confident that they would be a good neighbour.

However, I am greatly concerned that the University of Saskatchewan doesn't know at this point what type of development they would do and it would be at least 10 - 15 years away. Within that time frame, they may decide they need funds vs the land and would sell the land.

There would be no control over what type of development the buyer would do and many of the uses allowed in this zoning would not be compatible with the area. Retail sales such as Gas Bar, Vehicle sales, or repairs and many others would not be suitable for this environment which is very close to sensitive environmental habitat nor would the many residents in communities around this area wish to see.

Barb Biddle, President of Montgomery Place

Douglas Ramage

From: Wellsch, Vanessa <[REDACTED]>
Sent: April 26, 2024 9:25 AM
To: Douglas Ramage; Samantha Burns
Cc: James McKnight
Subject: RE: Valley Road Business Park – Public Notice of Proposal for Rezoning and Land Use Amendment - KGS Group Transmittal No. 23-4236-001-0007
Attachments: Valley Road COS Public Notice Comments.pdf
Follow Up Flag: Follow up
Flag Status: Flagged

*** This is an external eMail. Please be careful with attachments and links. ***

Good Morning,

Thank you for sharing this public notice with the City of Saskatoon. I was able to work with some internal contacts much more knowledgeable than myself to sort out who to send/share this with. I have attached the couple of comments that were received back.

Please note, for future reference, that those addresses that are within the City of Saskatoon as City owned properties should likely be mailed out as well to ensure no contacts/properties are missed. It is a very large organization.

Thanks, have a great weekend.

Vanessa Wellsch, RPP, MCIP | tel 306.986.3028 Senior Planner – Regional Planning Planning and Development, Community Services Division City of Saskatoon | 222 3rd Avenue North | Saskatoon, SK S7K 0J5 Treaty 6 Territory & Homeland of the Métis vanessa.wellsch@saskatoon.ca www.saskatoon.ca www.partnershipforgrowth.ca

If you receive this email in error, please do not review, distribute or copy the information.
Please contact the sender and delete the message and any attachments

-----Original Message-----

From: KGS Resource <resource@system.ksgroup.com> On Behalf Of Douglas Ramage
Sent: Friday, April 12, 2024 11:06 AM
To: Wellsch, Vanessa <[REDACTED]>
Cc: James McKnight <jmcknight@scatliff.ca>; KGS Document Control <[REDACTED]>
Subject: Valley Road Business Park – Public Notice of Proposal for Rezoning and Land Use Amendment - KGS Group Transmittal No. 23-4236-001-0007

[Warning: This email originated outside our email system. Do not click links or open attachments unless you recognize the sender and know the content is safe.]

Dear Vanessa Wellsch,

Please find attached the public notice being provided to adjacent landowners (within a 1.6 kilometer radius) including homeowners in both the R.M. of Corman Park and in the Montgomery area of the City of Saskatoon.

The notice proposes to amend the current 'P4G Official Community Plan' to accommodate a proposed University of Saskatchewan Business / Research Park on 168.15 acres of land located on NE 14-36-06-W3, this land is located in the R.M. of Corman Park and is currently zoned Agricultural. It is being proposed to rezone this land into Arterial Commercial 2 District (DC2) in the P4G jurisdiction which encircles the City of Saskatoon.

A Public Open House will be hosted on Wednesday April 24, 2024 at the Black Fox Farm and Distillery located at 245 Valley Road from 7:00 pm to 9:00 pm.

Thank you for your interest in this proposal. Your comments and responses are appreciated. Please respond to this request for comments before April 26, 2024.

Thank you,

Douglas Ramage

SENT BY: Samantha Burns [Document Control]

NOTE: Please confirm receipt via email.

From Michael Mollenbeck, Director of Transit, City of Saskatoon:

- The current light configuration (priority out of the COC) is a necessary component of our route timings and helps to ensure that buses are able to exit the COC and start their trips with minimal delay.

From Amanda Mushaw, Engineering Manager, Technical Services, City of Saskatoon

- We have concerns about the access into the commercial area and how that might impact the City's operations at Civic Operations Center. The main concern is traffic volumes and back ups along Valley Road that hinder or slow access to the snow management facility.
- Has the RM requested a traffic impact assessment/study? If not, the City would strongly suggest an assessment be provided.
- Also, as a side comment. When the snow management facility is in use, the occupants of the commercial lots can expect tailgate slamming noise to occur. The City tries to minimize this impact, but is providing this information as it may make the commercial lots less desirable for occupants.

Douglas Ramage

From: Friends Saskatoon Afforestation Areas Inc [REDACTED]
Sent: April 26, 2024 6:50 AM
To: Friends Saskatoon Afforestation Areas Inc
Subject: Re Valley Road Business Parks Ltd. Application to Rezone Land
Attachments: ReZoning Proposal ValleyRoadBusinessParksLtd.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

*** This is an external eMail. Please be careful with attachments and links. ***

Dear Doug Ramage and Cheryl Hamelin

Thank you for the Public Notice Valley Road Business Parks Ltd. Application to Rezone Land.

I am writing to you on behalf of the Friends of the Saskatoon Afforestation Areas, a non-profit environmental charity dedicated to the preservation and advocacy of natural spaces in our community, including the 132-hectare Richard St. Barbe Baker Afforestation Area.

The Friends of the Saskatoon Afforestation Areas would like to submit the following comments as attached.

We would appreciate the opportunity to discuss these matters further and collaborate on solutions that prioritize both development and environmental stewardship. Thank you for considering our concerns, and we look forward to hearing from you soon.

Kind Regards

Julia Adamson

--

[on behalf of the Friends of the Saskatoon Afforestation Areas Inc. http://www.friendsareas.ca](http://www.friendsareas.ca) -a Canadian non profit registered charity 777143876RR0001 and SK provincial non profit; entity number 102084283.

[Social Media on LinkTree](#)

[Richard St. Barbe Baker Afforestation Area Directions](#)
[George Genereux Urban Regional Park Directions](#)

[Friends of the Saskatoon Afforestation Areas https://stbarbebaker.wordpress.com](https://stbarbebaker.wordpress.com)

City Nature Challenge 2024

[Saskatoon and area City Nature Challenge 2024](#) iNaturalist project page

[Saskatoon City Nature Challenge](#) website with more information

[City Nature Walk Song for families and children](#)

April 26 - April 29, 2024: [Snap pictures record sounds of wild plants and animals, signs of life.](#)

April 30 - May 5, 2024: Identify the discovered species.

Results will be unveiled on Monday, May 6, 2024.

From the CWF for the CNC YXE

Webinar #1: [Observing with iNaturalist in urban spaces: webinar one in the City Nature Challenge series.](#)

Webinar # 2: [Observing with iNaturalist around wetland habitat: webinar two in the City Nature Challenge series.](#)

Webinar #3: [Observing with iNaturalist in forest settings: webinar three in the City Nature Challenge series.](#)

[Jane's Walk Festival](#)

Three exciting evening events this spring! Inspired by Jane Jacobs, we'll discuss mindful city development and citizen advocacy. This dialogue invites community engagement for the afforestation areas urban planning, honoring Jacobs' legacy and envisioning the area's future.

[Exploring Urban Green Spaces: A Jane's Walk Conversation At Richard St. Barbe Baker Afforestation Area](#) Friday, 3 May 2024 from 6:30 PM (CST) to 8:00 PM (CST)

[Discovering George Genereux Urban Regional Park: A Jane's Walk Conversation On Urban Planning And Community Legacy](#) Saturday, 4 May 2024 from 6:30 PM (CST) to 8:00 PM (CST)

[Unveiling Saskatoon's Hidden Gem: Richard St. Barbe Baker Walk](#) Sunday, 5 May 2024 from 6:30 PM (CST) to 8:00 PM

[Arbor Week](#)

Explore these events in honour of Arbor Week Two tree conversations.

[Branching Out: A Tree-Centric Celebration for Arbor Week](#) Friday May 31 6:30 pm

[Tree-athlon at George Genereux Urban Regional Park](#) Wednesday May 29 6:30 pm

June ParticipACTION Community Challenge month

Become a member of the Friends of the Saskatoon Afforestation Areas Inc. today. **Help Safeguard Saskatoon's Greenspaces Wanted:** [Join Us as board member and Support Environmental Conservation! Act now!](#)

The afforestation areas are situated in the West Swale Yorath Island Glacial Spillway, a sacred site in Treaty 6 Territory and Homeland of the Métis. Those who entered into Treaty 6 are the *nêhiyawak* (Cree), *nakawē* (Saulteaux), and *yankton* and *yanktonai* (Nakota) people. May our relationships with the land, standing peoples, forests, and waters teach us to honour and respect the past and invite us to move forward in harmony. May we all come together as friends, to find inspiration and guidance from histories, languages, and cultures which broaden our understanding and community collaboration for the present and future.



**Friends of the Saskatoon
Afforestation Areas Inc.**
Registered **Charity #777143876 RR 0001**
Come To Nature Come To life
<http://friendsareas.ca/>

Friends of the Saskatoon Afforestation Areas
210 Appleby Court, Saskatoon, SK S7M 4B2
friendsafforestation@gmail.com
306 380 5368

April 2024

Cheryl Hamelin, BsC CFRE Office of the Vice-President University Relations University of Saskatchewan 252
Peter McKinnon Building 107 Administration Place Saskatoon, SK S7N 5A2

Doug Ramage, P.Eng. ENV SP KGS Group 203 Stonebridge Blvd Saskatoon, SK S7T 0G3

Dear Ms. Hamelin and Mr. Ramage,

I am writing to you on behalf of the Friends of the Saskatoon Afforestation Areas, a non-profit environmental charity dedicated to the preservation and advocacy of natural spaces in our community, including the 132-hectare Richard St. Barbe Baker Afforestation Area.

We appreciate the opportunity to express our concerns and accolades regarding the proposed zoning changes across the street from the Richard St. Barbe Baker Afforestation Area. Specifically, the rezoning of the land from Agricultural to "Arterial Commercial 2 District DC2" raises questions about the potential impact on the surrounding natural environment, particularly the biodiversity-rich areas adjacent to the proposed development.

While we understand the potential benefits of the proposed University Business/Research Park, we urge careful consideration of the ecological implications and the adoption of sustainable practices. Our organization strongly believes in the importance of balancing development with environmental conservation, as outlined in our 2030 Green Vision which builds upon our Advocacy Strategy Document.

We request that the new proposed innovation place be a partner in the future ecological restoration of the neighboring greenspaces. Furthermore, we encourage the incorporation of ecological restoration efforts into the development plans, with a focus on enhancing the natural, geological, cultural, and historical heritage of the area.

In summary we advocate for the following:

1. Overall Concept

- Commercial district zoning proposal be changed in writing to zoning that would limit the maximum height to two floors, as we discussed verbally.
- Ensure that the eastern wetlands of Chappell Marsh and West Swale areas continue to serve as vital wildlife corridors and flood resilience pathways detailed in the P4G Official Community Plan

- Preservation designation of the geological significance of the West Swale geological significance as is well documented Larry Edwin Hodges' research.
- Urge Protection of the P4G OCP "Green Network study area" amid zoning changes and formally ~~request~~ provide written assurances for preservation
- Preserve and enhance the scenic viewscape from Richard St. Barbe Baker Afforestation Area

2. Design and Construction

- Build "Green Walled Buildings" or have a buffer of trees and shrubbery to harmonize with natural surroundings
- Consideration for bird strike mitigation measures and bird-friendly window design in design plans
- Consider wildlife movements during roadway infrastructure planning
- Recognition that spring brings increased ungulate and ruminant activity, raising collision risks, human and biodiversity fatalities
- Traffic calming measures and practices that promote biodiversity coexistence
- Minimize light pollution to protect biodiversity
- Careful consideration needed for impact on Little Brown Myotis and the 60 other species of concern

3. Potential for Synergy of the two areas

- Collaborate with the environmental protection and education vision of the Richard St. Barbe Baker Afforestation Area as premier heritage ecological restoration
- Consider honouring Richard St. Barbe Baker's legacy in the proposed innovation place. Ideally this would recognize his dedication to environmental conservation, his contributions to global reforestation efforts, and highlight his ties to Saskatoon.

The proposed development entails a change in land zoning from Agricultural (Ag) to "Arterial Commercial 2 District DC2" within the P4G jurisdiction. This zoning allows for buildings to be constructed up to four stories high, which raises concerns about the potential impact on the east side of the Richard St. Barbe Baker Afforestation Area. Given this, we respectfully inquire whether there exists a Commercial district zoning that would limit the maximum height to two floors, as previously discussed verbally. Additionally, we urge that if the proposed development proceeds, consideration for bird strike mitigation measures, such as the incorporation of bird-friendly window design, be included in the design plans.

It is evident from the maps that the eastern side wetlands portion of Chappell Marsh, along with areas identified in the "Green Network Corridor" map of the North Partnership For Growth Official Community Plan (OCP), are not explicitly designated for "preservation in perpetuity" as are the afforestation areas, but are rather enumerated as parcels for zoning change and development.

The "Green Network Study Area Corridor" was initially intended to serve as vital water and wildlife connectivity pathways, facilitating resilience against the 1 in a 100-year flood scenario and enabling wildlife movement from the afforestation areas, through Chappell Marsh, to the river and Maple Grove. [Pages 44-46 of the OCP detail this corridor](#), which long-range planners envisioned incorporating into the P4G concept.

We note that [Larry Edwin Hodges, Professor Emeritus in his PhD thesis: Morphology of the South Saskatchewan River Valley Outlook to Saskatoon](#) described the early formations of the West Swale as a Pleistocene era Glacial Spillway for an amazing geological treasure for Saskatoon to honour.

To gain approval for the zoning changes, the Friends of the Saskatoon Afforestation Areas request written assurances that these wetlands of the West Swale and biodiversity connectivity spaces will be preserved and protected from development, ensuring they remain vibrant natural habitat corridors for future generations.

Additionally, we urge the incorporation of "[Green Walled Buildings](#)" and/or the establishment of a buffer or border of trees/shrubbery between the proposed "Innovation Place 2.2" U of S University Business/Research Park and greenspace. Careful consideration must be given to the selection and placement of vegetation within the buffer/boundary zone to ensure safety and ecological balance while effectively delineating the natural area from the built environment.

As we are writing this in the spring, we also highlight the importance of considering wildlife movements when planning roadway infrastructure in the area. Increased activity of ungulates and ruminants crossing roads during this season poses risks of collisions with motorists and wildlife/human fatalities especially in light of the increase in vehicular traffic to the area. We urge the incorporation of traffic calming measures and promotion of practices that promote coexistence with biodiversity among users of the proposed development.

The Richard St. Barbe Baker Afforestation Area is not only home to [60 species at risk](#) as well as endemic species but also serves as a vital habitat for the Little Brown Myotis (*Myotis lucifugus*). Considering this, if the proposed zoning and development is approved, we implore that careful consideration be given to minimizing light pollution and its impact on biodiversity. Ecological assessment and conservation efforts are imperative to preserve these natural treasures, which include the Chappell Marsh Conservation Area and the Richard St. Barbe Baker Afforestation Area. These areas are cherished biodiversity hotspots in our southwest region of Saskatoon and require utmost protection for future generations to appreciate and enjoy.

The proposed innovation place could honor the [Legacy of Richard St. Barbe Baker](#), a distinguished English biologist, botanist, environmental activist, and author who made significant contributions to global reforestation efforts. As the founder of Men of the Trees, which is now known as the International Tree Foundation, Baker's legacy continues to inspire reforestation projects worldwide. His early ties to Saskatoon, including his tenure and graduation as one of the first students at the University of Saskatchewan followed by his honorary degree from the U of S, and his fonds at the U of S special collections and archives further underscore the significance of honoring his memory in this development. St. Barbe Baker's dedication to environmental conservation aligns with the vision for the Richard St. Barbe Baker Afforestation Area to become, alongside the ground-breaking initiatives led by University Research Parks, we believe this investment could catalyze efforts to preserve and enhance the ecological significance of the Chappell Marsh Conservation Area and Richard St. Barbe Baker Afforestation Area, fostering a deeper connection with the community and positioning them as invaluable assets for future generations to cherish and enjoy.

The Friends of the Saskatoon Afforestation Areas strongly believe in the importance of balancing development with environmental conservation. Our [2030 Green Vision](#) recognizes many of the United Nations Sustainable Development Goals and United Nations Decades. While we understand the potential benefits of the proposed University Business/Research Park, we urge careful consideration of the ecological implications and the adoption of sustainable practices.

We have actually written a treatise why these afforestation areas should be Municipal Heritage Sites with a strong statement of significance, description of historic place and heritage value emphasizing their character-

defining elements. It is conceivable that the ground breaking initiatives led by University Research Parks could elevate the status of Chappell Marsh Conservation Area and Richard St. Barbe Baker Afforestation Area to become premier ecological, natural, geological, cultural, and historical heritage sites in Saskatoon. As new neighbors and recipients poised to receive the substantial \$56 million donated endowment, the new neighbours could play a pivotal role in the ecological restoration and recognition of these areas. Innovation could catalyze efforts to preserve and enhance their ecological and heritage significance, fostering a deeper connection with the community and positioning them as invaluable assets for future generations to cherish and enjoy.

We request that the University of Saskatchewan and KGS Group take proactive measures to mitigate the environmental impact of the development. This includes the preservation of wetlands connectivity spaces, the implementation of green building practices, and the establishment of traffic calming measures to ensure the safety of wildlife and motorists alike.

We would appreciate the opportunity to discuss these matters further and collaborate on solutions that prioritize both development and environmental stewardship. Thank you for considering our concerns, and we look forward to hearing from you soon.

Sincerely



Julia Adamson, Chair

Friends of the Saskatoon Afforestation Areas

With support from



CC: Saskatoon North Partnership for Growth (P4G), Rural Municipality of Corman Park 344, City of Saskatoon Council, Tyson McShane City of Saskatoon Long Range Planner P4G Administrative Contact, Councillor Bev Dubois District Planning Commission P4G, Councillor Randy Donauer District Planning Commission P4G

We believe in the spirit of Witaskêwin, living together on the land. We believe this environmental and heritage education and awareness project can be part of an effective long-term strategy to focus our vision on this ideal. In a significant way the afforestation area protection project allows the past to meet the present and future. The rich geological, historical, natural, and cultural heritage of the areas honours where we have been. Science, conservation, and hands on learning about the land, the environment and sustainability ensure our future.

KGS
GROUP

Experience in Action