

Lehigh Hanson Materials Limited

# Scott Property – Landscape and Visual Impact Assessment

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**Date:** July, 2020

**Project #:** 60610856

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July 16, 2020

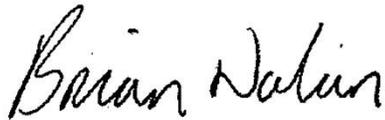
**Project #**  
60610856

Dear Ms. Haaf:

**Subject: Scott Property – Landscape and Visual Impact Assessment**

AECOM Canada Ltd. is pleased to provide Lehigh Hanson Materials Limited with the following Landscape and Visual Impact Assessment Report for the Scott Property Project. If you have any questions, please do not hesitate to contact the undersigned.

Sincerely,  
**AECOM Canada Ltd.**



Brian Nolan, AALA, CSLA  
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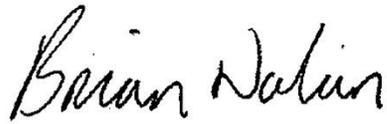
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# Executive Summary

Lehigh Hanson Materials Limited (Lehigh) is proposing to construct and operate the Scott Property Project (the Project), which will be a Class I Aggregate Pit located in Rocky View County (RVC), in the rural community of Bearspaw, Alberta. The Project will occupy the majority of 05-26-02-W5M, with the exception of 33.9 acres located in the southwest corner (the Project Area). The Project Footprint refers to the proposed area of disturbance within the Project Area. The property totals an area of approximately 600 acres (243 hectares [ha]), of which 395 acres (160 ha) are proposed for development as a sand and gravel pit. The Project will be constructed and operated in six phases with an anticipated operational lifespan of 25 to 30 years; each phase will be approximately five years in duration. Project development is planned to commence in 2022, with material extraction starting in 2024.

This report describes the Project, outlines the Project's components and activities that may impact visual amenity and landscape character, presents methods and results of the Landscape and Visual Impact Assessment (LVIA) undertaken, and recommends mitigation measures to reduce or avoid impacts to visual amenity and landscape character.

AECOM identified an overall Landscape and Visual Impact Assessment Study Area of an approximate 2.5 km radius for the Project. Our desktop assessment identified 19 viewpoints, 4 within the Project Area and 15 in the Study Area. Following an assessment of impacts on landscape character and visual amenity, a set of mitigation measures were developed. These measures aim to avoid and reduce adverse impacts as far as reasonably practicable during the Site Preparation, Operation and Reclamation phases of the Project.

Post-mitigation, there are four residential lots (one to the north and three to the south) that may have impacted views due to their elevated nature.

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## Definitions

**Landscape:** a specific area perceived by people, the character of which is the result of interactions between natural and human factors.

**Landscape and Visual Impact Assessment (LVIA):** a tool used to identify and assess the significance and effects of change, typically resulting from development, on a landscape. LVIA considers the landscape as both an environmental resource, and visual amenity. The two components of a LVIA are:

- Assessment of landscape effects: assessing effects on the landscape as a resource in its own right, and
- Assessment of visual effects: assessing effects on specific views and on the general visual amenity experienced by people.

**Landscape character:** a distinct, recognizable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.

**Feature:** particularly prominent or eye-catching elements in the landscape, such as tree clumps, church towers or wooded skylines or particular components of the project proposal.

**Visual amenity:** the overall perceived attractiveness or pleasantness of a landscape element or pattern of landscape elements, which provide an attractive visual setting or backdrop for the enjoyment of activities of people living, working, recreating, visiting or travelling through an area.

**Visual receptor:** individuals and/or defined groups of people who have the potential to be affected by a proposal (Guidelines for Landscape and Visual Impact Assessment, 2013).

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# 1. Introduction

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AECOM Canada Ltd. (AECOM) was retained by Lehigh Hanson Materials Limited (Lehigh) to complete environmental studies and reporting for various technical disciplines, including a Landscape and Visual Impact Assessment for the proposed Scott Property Project (the Project), an aggregate extraction operation. This report describes the Project, outlines the Project's components and activities; summarizes desktop information review; presents methods and results of the assessment undertaken, and recommends mitigation measures.

## 1.1 Project Description

Lehigh is proposing to construct and operate the Project, which will be a Class I Aggregate Pit located in Rocky View County (RVC) in the rural community of Bearspaw, Alberta. The Project will occupy most of Section 05-26-02-W5M, except 33.9 acres located in the southwest corner of the parcel. The Project is bound by 144 Avenue NW (also known as Burma Road) to the south, Range Road 24 to the east, and Range Road 25 (also known as Twelve Mile Coulee Road) to the west (see **Figure 1** Study Area and Viewpoints in **Appendix A**).

The property totals an area of approximately 600 acres (243 ha), of which 395 acres (160 ha) are proposed for development as a sand and gravel pit, with a maximum open pit area of 60 acres (24 ha) at any given time. The Project Footprint refers to the proposed area of disturbance within the Project Area. The Project will be constructed and operated in six phases with an overall anticipated operational lifespan of 25 to 30 years; each phase will be approximately five years in duration (see **Figure 6** Preliminary Mine Phase Plan in **Appendix A**).

The Project location was selected for development as the lands contain a significant quantity of high quality, close to market aggregate resources. The Project land use is currently pastureland with several wetlands and ephemeral water bodies throughout. Following operation, the Project lands will be reclaimed to an equivalent end land use.

In addition to aggregate extraction, RVC supports a range of industries and businesses, including oil and gas production; energy; agriculture; film; engineering and construction; professional and technical services; logistics, and tourism (RVC 2020a). In the early 1900s, Canadian Pacific Railway established a station in Bearspaw. The community grew up around the station. Settled initially by dairy farmers, Bearspaw is now a mix of ranches, country residential acreages and subdivisions (RVC 2020b).

### 1.1.1 Project Components

The Project will include the following key components. Please refer to the Master Site Development Plan (MSDP) for additional details:

- Crusher with in-pit conveyor;
- Access roads;
- Off-site conveyor system;
- Operation and Maintenance Building;
- Perimeter berms, and
- Site ponds for water management.

## 1.1.2 Project Activities

Project activities are described in detail in the MSDP and include the following:

### 1.1.2.1 Site Preparation

- Initial topsoil, subsoil and overburden stripping and stockpiling for future reclamation;
- Berm construction, and
- Establishing operating footprint (access roads, crusher, conveyors, stormwater ponds).

### 1.1.2.2 Operation

- Material excavation;
- Crushing and screening with use of in-pit conveyors to move material;
- Dust control;
- Conveying material to Inland's Spy Hill Property using off-site conveyor;
- Topsoil, subsoil and overburden stripping and stockpiling for future reclamation, and
- Progressive reclamation.

### 1.1.2.3 Final Reclamation

- Replacing and recontouring reclamation materials;
- De-compaction;
- Removing infrastructure, and
- Seeding and weed control (see **Figure 7** Preliminary Mine Reclamation Topography in **Appendix A** and **Figure 13** Preliminary Landscape Plan in **Appendix D**).

## 1.1.3 Study Area

The Project Study Area (Study Area) aims to identify an overall area within which the Project may influence landscape and/or visual receptors. The overall LVIA Study Area, illustrated in **Figure 1** Study Area and Viewpoints, includes the Project Area and lands within an approximate 2.5-kilometre (km) radius. It is unlikely that any visual receptors located beyond the boundary of the 2.5 km Study Area would be able to obtain clear views of the Project.

## 1.1.4 Project Schedule

Pending regulatory approval, Project development is scheduled to commence in 2022, with material extraction starting in 2024.

The anticipated schedule for each Project activity (as described in the sub-sections above) is provided below in **Table 1**.

**Table 1: Project Schedule**

Project Activity	Period
Site Preparation	Commencing in 2022 for an estimated period of 2 years.
Operation (including Progressive Reclamation)	Commencing in 2024 for an estimated period of 25 to 30 years.
Final Reclamation	Commencing following operational activities for an estimated period of 3 years.

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## 2. Methods

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### 2.1 Landscape and Visual Impact Assessment

There are currently no federal or provincial guidelines for LVIA in Canada; therefore, the approach to this LVIA has been developed with reference to accepted municipal guidelines and from other reputable sources, which include:

- RVC County Servicing Standards (2013);
- The Landscape Institute and the Institute of Environmental Management and Assessment, UK, Guidelines for Landscape and Visual Impact Assessment, Third Edition (LIIEMA 2013);
- The Landscape Institute and the Institute of Environmental Management and Assessment, UK, Guidelines for Landscape and Visual Impact Assessment, Second Edition (LIIEMA 2002), and
- Province of British Columbia Visual Impact Assessment Guidebook, Second Edition (MOF 2001).

The objective of the LVIA within the Study Area is to:

- Analyze and describe the existing landscape character and visual amenity, considering factors including land use, vegetation cover and built elements;
- Identify notable landscape features and topography;
- Identify potential impacts on the existing landscape character and visual amenity;
- Identify considerations during key development stages and assess the likely magnitude of changes that will be experienced, and
- Identify sight lines and the views that may be obtained by these sight lines towards the Project.

Limitations associated with the LVIA include the following:

- The LVIA process aims to be objective and factually describe any anticipated changes to landscape character, views and visual amenity. Potential changes as a result of the Project have been defined; however, impacts associated with these changes requires qualitative judgements to be made. The conclusions of this assessment therefore combine objective measurement and professional interpretation.
- The description and understanding of the Project are based on the description of the Project available at the time of assessment. The end form may change to some degree from what is herein described and illustrated.

The RVC Land Use Bylaw describes approaches to soften visual impacts and outlines landscaping requirements (RVC 2020c).

#### 2.1.1 Desktop Assessment

Key information sources were identified and reviewed as a component of the desktop assessment and in preparation for LVIA plan production. These sources include:

- Provincial and municipal biophysical data;
- Relevant plans and maps from the provincial government and the local councils (RVC and City of Calgary);

- Publicly available information on open spaces and public visitor areas;
- Digital aerial photography derived from ArcGIS and Street View panorama photography from Google Earth;
- Cadastral data (showing roads, property boundaries and built areas), and
- Existing infrastructure plans.

A desktop analysis of existing landscape character and visual amenity, within the Study Area as well as the wider landscape, was undertaken to inform this LVIA. Although many of the documents referenced in this section do not strictly relate to the existing landscape character and visual amenity, their intentions and outcomes have the potential to affect both the immediate study area and wider landscape.

#### 2.1.1.1 *Provincial*

Findings of the provincial biophysical data review follow:

**Natural Regions and Subregions of Alberta:** The Project is in the Parkland Natural Region and Foothills Parkland Natural Subregion; the subregion is defined by 'rolling to hilly native grasslands on southerly slopes, aspen woodlands or willow shrublands in low-lying areas or on northerly slopes, and hay lands on undulating to rolling terrain' (Natural Regions Committee 2006).

**Environmentally Significant Areas Report:** The Project Area is not categorized as an Environmentally Significant Area as per the Government of Alberta's Environmentally Significant Areas Report (Government of Alberta 2014).

A review of provincial plans identified the following:

**South Saskatchewan Region Regional Forest Landscape Assessment:** No formal inventory of high value visual landscape areas exists in Alberta (Forcorp Solutions Inc. 2012).

**South Saskatchewan Regional Plan:** As part of the Plan, the Province, municipal governments and other partners were encouraged to identify, establish and promote scenic byways to showcase unique scenic resources and cultural landscapes in the Region. The Project is not within a Tourism Destination Area or on a scenic byway (Government of Alberta 2018).

#### 2.1.1.2 *Municipal*

Note, RVC is currently reviewing their Municipal Development Plan, Land Use By-law and Bearspaw Area Structure Plan (BASP). As the documents are in development and not approved by Council, they have not been reviewed for this Project.

Findings of the municipal biophysical data review follow:

**Watershed Sub-Basins:** The Project is in the West Nose Creek Watershed (RVC 2014).

**Biophysical Attributes Rating:** Land cover mapping identifies forage and grass as the main land cover types within and adjacent to the Project, and this cover having a lower rating for biophysical sensitivity. Note, wetlands and ravines also exist in the Project Area and have a higher biophysical sensitivity (RVC 2003).

**Nose Creek Watershed Water Management Plan:** Electrical transmission lines exist within the west side of the property off Township Road 25 (Palliser Environmental Services Ltd. 2018).

A review of RVC plans and maps identified the following:

**County Plan:** The RVC County Plan is the County’s Municipal Development Plan (the County Plan) which provides strategic growth direction, overall guidance for land use planning, and service delivery policy. The County Plan identifies principles which guide the County’s decision making. One of the principles is to ‘maintain the rural landscape and character of dark skies, open vistas, and working agricultural lands’. The Plan divides the County in four regions; the Project is in the Central West Rocky View Region. Central West Rocky View Region is described as the transition from the hills and valleys of the foothills to prairie grasslands. The County Plan notes the glacial river valleys and pot and kettle topography contribute to dramatic landscapes and views in the Central West Rocky View Region. “Views” are defined in the County Plan as ‘those features that provide a community asset, such as pleasing vistas and scenes that provide a sense of landscape identification and character’. Views within views include ‘open land, vistas, skylines, ridgelines, and peaks.’ A significant portion of the County’s residential population live in the Central West Rocky View Region, primarily in country residential acreages. A Vision of the Future for Central West Rocky View Region encourages development to be sensitive to the landscape and views to be preserved (RVC 2018).

**Bearspaw Area Structure Plan:** The Project is located within the area of the Bearspaw Area Structure Plan (BASP), which identifies the future land scenario for the Project Area as Country Residential. The BASP defines Country Residential land use as ‘a primarily residential land use in which auxiliary pursuits may be allowed dependent on the parcel size and proximity to other residences; excluding the separation of farmsteads’. Lands to the east, south and west are also identified as Country Residential, and the lands to the north as Agricultural. The north portion of the Project Area is identified as having potential slopes steeper than 15%. The BASP provides a map of the distribution of areas with a high potential for natural resource (aggregates) extraction and notes these areas should be protected for such purposes. Guidelines for Natural Resource Extractive Industry are outlined, noting that consideration should be given to setbacks between land uses; buffering and screening (RVC 1994).

**Land Use Bylaw, County Atlas:** Land use mapping identifies the existing land use for the Project Area as Ranch and Farm (RF). The land to the east has been rezoned as Direct Control (DC), Natural Resource Industrial use and is an active aggregate extraction operation. Land to the south, southwest and west is zoned Residential. Land to the north and northwest is zoned RF or Farmstead (F) (RVC 2020d). The Land Use By-law defines the main districts in the Study Area (see **Figure 4** Project Area Lot Parcels and Existing Land Use and **Figure 5** Study Area Lot Parcels and Existing Land Use in **Appendix A**) as:

- AH: ‘the purpose and intent of this District is to provide for a range of parcel sizes for agricultural uses’;
- F: ‘the purpose of this District is to provide for a single parcel of land containing an existing Farmstead from an un-subdivided quarter section’;
- NRI: ‘the purpose and intent of the District is to provide for the development of industrial uses related to non-renewable natural resource extraction and processing’;
- R: ‘the purpose of this District is to provide for a residential use’, and
- RF: ‘the purpose and intent of this District is to provide for agricultural activities as the primary land use on a quarter section of land or on large balance lands from a previous subdivision, or to provide for residential and associated minor agricultural pursuits on a small first parcel out’ (RVC 2020c).

**Bearspaw Area Map:** 144 Avenue NW (Burma Road) to the south of the Project is paved, Range Road 24 to the east is unbuilt, Range Road 25 (Twelve Mile Coulee Road) to the west is chip-sealed from Burma Road to Harvey Hills and granular from Harvey Hills to Township Road 262 (RVC 2020e).

**Parks and Open Space Master Plan:** The Project is in the Grand Valley Foothills Geographic Region; the eastern side of this Region is described as gentle rolling hills and plateaus, used for agriculture and ranching. Mapping

indicates no planned parks or open space in proximity to the Project. Although the roads in the Study Area are used by walkers and cyclists, no formal trails exist or are planned (RVC 2011a).

**Agricultural Master Plan:** The Plan acknowledges the land as natural capital and notes agricultural land provides scenic vistas and views (RVC 2011b).

## 2.1.2 Site Assessment

A field visit was carried out on April 20, 2020 by an Alberta Association of Landscape Architects registered Landscape Architect, with experience in LVIA. The field survey has been used to ground truth the findings of the desktop assessment and to undertake an on-site assessment of landscape character and visual amenity. Deciduous tree leaf cover and screening were at a minimum prior to leaf out. Viewpoints were selected to represent those views that could possibly be obtained by motorists traveling on existing roads and existing residential areas (see **Figure 1** Study Area and Viewpoints in **Appendix A**). Privately owned land was not visited as part of the field visit. Photographs were taken to:

- Portray landscape character;
- Inform the viewpoint assessment from representative viewpoints, and
- Provide base images for production of photomontages.

It should be noted that the assessment tables in the following sections, as defined by AECOM based on the Guidelines for Landscape and Visual Impact Assessment (2002), are intended as a guide to the LVIA process only. The descriptions of magnitude and sensitivity are illustrative, as there are no defined boundaries between levels of impacts.

### 2.1.2.1 Landscape Assessment

The sensitivity of a landscape is professionally judged on the extent to which it can accept change. Levels of sensitivity shown in **Table 2**, vary according to the type of development and the character of the landscape.

**Table 2: Defining Landscape Sensitivity**

Sensitivity of Landscape	Attributes of Landscape Sensitivity Categories
<b>High</b>	A landscape protected by federal designation and/or widely acknowledged for its quality and value; a landscape with distinctive character and low capacity to accommodate the type of change envisaged.
<b>Medium</b>	A moderately valued landscape, perhaps a regionally important landscape and/or protected by regional/provincial designation, or where its character, land use, pattern and scale may have some capacity to accommodate a degree of the type of change envisaged.
<b>Low</b>	A landscape valued to a limited extent, perhaps a locally important landscape or where its character, land use, pattern and scale is likely to have the capacity to accommodate the type of change envisaged.
<b>Negligible</b>	A landscape which is not valued for its scenic quality or where its character, existing land use, pattern and scale are tolerant of the type of change envisaged, and the landscape has capacity to accommodate change.

The magnitude of change to landscape character, as illustrated in **Table 3**, depends on the type, scale and duration of the change that is expected to occur. The magnitude of change also depends on the loss, change or addition of any feature to the existing landscape and is based upon that part of the landscape character type which is likely to be impacted to the greatest extent by the Project (i.e., worst case scenario) before the application of any mitigation.

**Table 3: Defining Magnitude of Change to Landscape Amenity**

Magnitude of Change	Examples
<b>High</b>	Dominant change: a clear and frequent/continuous change in landscape character occurring within a localized area (project site boundaries) that is likely to fundamentally change most of the characteristics that contribute to the composition of the immediate landscape.
<b>Medium</b>	Considerable change: an evident and frequent or continuous change in landscape character occurring within a localized area (project site boundaries) that is likely to change the characteristics that contribute to the composition of the immediate landscape, but over a restricted area.
<b>Low</b>	Perceptible change: a change to the way a landscape is perceived as a whole and the configuration of these elements which contribute to the character of the adjoining landscape types.
<b>Negligible</b>	Barely perceptible change: a barely or rarely perceivable change to the characteristics of the wider landscape.

### 2.1.2.2 Visual Assessment

Levels of sensitivity, shown in **Table 4**, vary according to the type of development and the visual receptor audience.

**Table 4: Defining Viewpoint Sensitivity**

Sensitivity of Viewpoint	Attributes of Viewpoint Sensitivity Categories
<b>High</b>	Large numbers of viewers, particularly those with proprietary interest and prolonged viewing opportunities such as residents and users of attractive and/or well-used recreational facilities. Views from a regionally important location such as a scenic lookout whose interest is specifically focused on the landscape.
<b>Medium</b>	Medium numbers of residents and moderate numbers of visitors with an interest in their environment e.g., visitors to Provincial Parks, including bush walkers, horse riders, trail bikers. Larger numbers of travellers with an interest in their surroundings.
<b>Low</b>	Small numbers of people and/or with a passing interest in their surroundings e.g., those travelling along principal roads. Viewers whose interest is not specifically focused on the landscape e.g., workers, commuters.
<b>Negligible</b>	Very occasional numbers of viewers and/or with a passing interest in their surroundings e.g., those travelling along minor roads, views from the air.

The magnitude of change to views and visual amenity, as illustrated in **Table 5**, depends on the type, scale and duration of the change that is expected to occur. The magnitude of change also depends on the loss, change or addition of any feature in the field of view of the receptor; or any change to the backdrop to, or outlook from, a viewpoint. The assessment assumes a worst-case scenario without mitigation.

**Table 5: Defining Magnitude of Change to Visual Amenity**

Magnitude of Change	Examples
<b>High</b>	Dominant change: major changes in view at close distances (typically <100 m), affecting a substantial part of the view, continuously visible for a long duration, or obstructing a substantial part or important elements of the view.

**Table 5: Defining Magnitude of Change to Visual Amenities**

Magnitude of Change	Examples
<b>Medium</b>	Considerable change: clearly perceptible changes in views at intermediate distances (typically 100 – 500 m), resulting in either a distinct new element in a part of the view, or a wider ranging, less concentrated change across a wider area.
<b>Low</b>	Noticeable change: minor changes in views, at long distances (typically 500 m – 1 km) or visible for a short duration, and/or are expected to blend in with the existing view to a moderate extent.
<b>Negligible</b>	Barely perceptible change: change, which is barely visible, at a very long distance (typically >1 km), or visible for a very short duration, and/or are expected to blend with the existing view.

2.1.2.3 *Impact Assessment*

The overall level of effect considers sensitivity and magnitude of change that is likely to occur for each landscape character type and representative. The overall level of effect expected as a result of the Project is determined by using the below matrix of the sensitivity and magnitude of change that has been determined in the individual assessments.

**Table 6: Determining Overall Level of Effect and Impact**

Level of Adverse Effect		Magnitude of Change in Landscape/Visibility			
		High <i>(dominant change)</i>	Medium <i>(considerable change)</i>	Low <i>(noticeable change)</i>	Negligible <i>(barely perceptible change)</i>
<b>Sensitivity of Landscape/ Visual Receptor</b>	High	Major	Moderate to major	Moderate	Minor to moderate
	Medium	Moderate to major	Moderate	Minor to moderate	Minor
	Low	Moderate	Minor to moderate	Minor	Minor to negligible
	Negligible	Minor to moderate	Minor	Minor to negligible	Negligible

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## 3. Results

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### 3.1 Landscape Impact Assessment

Landscape Assessment is a tool for identifying what makes one place different from another. The tool can identify what makes a place distinctive, without necessarily assigning a value to it. This approach has been used to establish the existing character of the landscape and to provide a framework for measuring the impact of the Project on landscape character. The general character of the Project Area landscape is described in this section.

#### 3.1.1 Existing Landscape

The specific relevant characteristics of the Foothills Parkland Natural Subregion are:

- Cooler summers and warmer winters;
- Shorter growing season has resulted in less intensive cultivation;
- Grassland with groves of trees and/or shrubs to grassy openings to closed tree planting, and
- Aspen and Balsam poplar are the dominant deciduous tree species (White spruce and other coniferous trees are prevalent on developed lots).

Landscape character types (Agricultural, Country Residential, and Natural Resources) have been defined to provide a framework for describing these areas:

- **Agriculture:** forage grass is the main land cover on the Project Area, small areas of trees and/or shrub plantings are scattered across the Project Area. A corral, residence and farm operation remnants exist in the northwest quarter section and is accessed off Range Road 25. In the southeast quarter section, tree planting indicates a previous residence and farm operations. Both residences are visible on Google Earth Satellite Imagery from 2008 (Google Earth 2020). Lands to the north and northeast continue to be used for agriculture, the land cover is predominantly grass with isolated farmsteads and granular roads. Open and rural character is interspersed with scattered trees, grassland, grazing land and arable land.
- **Country Residential:** lands to the west, south, and southwest are primarily residential development with a variety of lot sizes and unique houses. Residential areas generally possess a lightly undulating topography. Several residential buildings are two-storey, which could enable elevated views.
- **Natural Resources:** the land to the east is used for aggregate extraction. Operations are not visible from adjoining roads; the visual impact is mitigated by berm and landscaping. The land is inaccessible to the public.

Coniferous and deciduous tree planting is a feature of residential lots found in both Agriculture and Country Residential areas, providing a visual buffer between land uses. Other features common to all landscape character types include overhead electrical services and fencing (barb wire or post and rail). The Project Area consists of predominantly dark nighttime landscapes, with lighting associated with rural residences, mining activities and agriculture infrastructure. Aside from the trail on the east side of Rocky Ridge Road, there is no publicly accessible open space in the Study Area.

The landscape character sensitivities for each identified landscape character type, the likely magnitude of change as a result of the Project and an overall level of visual effect is summarized in **Table 7**. As the Study Area has been modified by agriculture, residential development, and natural resource extraction, the landscape is likely to have the capacity to accommodate the type of change envisaged.

**Table 7: Summary of Impacts on Landscape Character**

Landscape Character Type	Location	Sensitivity	Magnitude of Change	Level of Effect
<b>Agriculture</b>	viewpoint 5, viewpoint 6, viewpoint 7, viewpoint 8, viewpoint 9, viewpoint 10, viewpoint 11, viewpoint 15	Negligible	Low	Minor to negligible, impacts will occur outside the Project Area within the adjoining agriculture landscape.
<b>Agriculture (Project Area)</b>	viewpoint A, viewpoint B, viewpoint C, viewpoint D	Low	Medium	Minor to moderate, alterations to existing landform and the clearing of vegetation within the Project Area will continuously alter the landscape character of the Project Area.
<b>Country Residential</b>	viewpoint 1, viewpoint 2, viewpoint 3, viewpoint 4, viewpoint 5, viewpoint 12, viewpoint 13, viewpoint 14	Low	Medium	Minor to moderate, due to the sensitivity of viewers (e.g., nearby residents on south side of Burma Road) and existing rural views to Project Area (agriculture character).
<b>Natural Resources</b>	viewpoint 4, viewpoint 6	Negligible	Negligible	Negligible, existing aggregate operation is likely to have the capacity to accommodate the type of change.

**3.1.2 Notable Landscape Features**

Wetlands, rolling hills and steep valleys are notable features of the Study Area. The Rocky Mountain ranges are a prominent visual backdrop to the wider landscape. The West Nose Creek system contains a high level of naturalness, contributing to the scenic amenity of the local area.

**3.1.3 Topography**

The Project Area terrain is rolling and features three valleys running north to south (see **Figure 2** Project Area Topography and **Figure 3** Study Area Topography in **Appendix A**). Lands to the south of the Study Area are flatter and fall to the northeast; changes in elevation are often linked to the West Nose Creek system. The topography directly east of the Project has been significantly influenced by other aggregate operations (visible in aerial photography). Roads follow the topography.

**3.2 Visual Impact Assessment**

A visual receptor audience is any person with the potential to view the Project from outside the Project Footprint when looking in from the surrounding landscape. A public receptor is any member of the general public who may be using public roads. A private receptor is any person living on private land that does not allow general public access. Generally, there are higher numbers of individuals in the public receptor audiences than those occurring on private land. Viewpoint receptors are located in residential areas and along publicly accessible roads in approximately 2.5 km proximity to the Project Area. Representative viewpoints and a summary of anticipated impacts on visual amenity follow (see **Figure 1** Study Area and Viewpoints in **Appendix A**).

### 3.2.1 Existing Views

**Study Area:** To the north and east, undulating open spaces predominantly used for agriculture enable wide and expansive views. Dense natural vegetation and site landscaping limit views from residential lots to the south and west.

**Private residential land:** Four residential lots exist directly north of the Project Area, three are located on low lying lands with limited views to the overall Project Footprint and the other is located on top a hill with likely open views to the Project Footprint. Approximately ten residential lots exist directly south of Project Area, three likely have open views and the remainder have limited views due to existing vegetation. To the southwest, residential lots in Crestview Estates have limited views due to existing vegetation (see **Figure 15** Visual Impact Mitigation in **Appendix D**). Residential lots to the west and northwest (refer **Viewpoint 12** Bears paw Acres below) have limited views due to distance, topography and vegetation.

The wide variety of views that can be obtained by individual visual receptors are intended to be represented by the 15 off-site viewpoints that are included in this assessment. Each of these viewpoints has been carefully selected to represent areas where either the most sensitive receptors are permanently located or where the highest number of receptors are likely to pass by. The representative viewpoint locations are therefore based on the identification of both public and private visual receptor audiences in the immediate landscapes surrounding the Project Area as well as locations in the wider landscape that may have views towards the Project. **Table 8** identifies the visual impact on each of the 15 viewpoints. No substantial impacts are considered likely to occur on visual amenity as the wider landscape has an undulating topography featuring hill and hollows. Also, the presence of existing vegetation provides partial screening of the Project.

**Table 8. Summary of Impacts on Visual Amenity**

Viewpoint	Location	Sensitivity	Magnitude of Change	Level of Effect
<b>Viewpoint 1</b>	Range Road 25 and Township Road 260/Burma Road looking northeast	Low	Not applicable (N/A), Project Area not currently visible due to vegetation	N/A
<b>Viewpoint 2</b>	Range Road 25 and Meadow Drive looking northeast	Negligible	N/A, Project Area not currently visible due to distance, topography and vegetation	N/A
<b>Viewpoint 3</b>	Meadow Drive looking northeast	Negligible	N/A, Project Area not currently visible due to distance, topography and vegetation	N/A
<b>Viewpoint 4</b>	Rocky Ridge Road NW and Meadow Drive looking north	Negligible	N/A, Project Area not currently visible due to distance, topography and vegetation	N/A
<b>Viewpoint 5</b>	Rocky Ridge Road NW and Township Road 260/Burma Road looking west	Medium	Medium, Project Area currently visible (view from residential developments as well). The setback and berm will screen aggregate extraction, as with the existing berm north of Burma Road at the aggregate extraction operation directly east	Moderate
<b>Viewpoint 6</b>	85 Street NW and 144 Avenue NW looking west	Low	N/A, Project Area not currently visible due to distance, topography and vegetation	N/A
<b>Viewpoint 7</b>	Range Road 23 looking southwest	Negligible	N/A, Project Area not currently visible due to distance, topography and vegetation	N/A
<b>Viewpoint 8</b>	Range Road 23 and Township Road 261A looking southwest	Low	Negligible, Project Area currently visible in the distance. Distance, combined with the ability of the undulating wider landscape to absorb topographic changes, the presence of screening vegetation reduces the potential visual magnitude of change	Minor to negligible

**Table 8. Summary of Impacts on Visual Amenity**

Viewpoint	Location	Sensitivity	Magnitude of Change	Level of Effect
<b>Viewpoint 9</b>	Range Road 24 and Township Road 261A looking southwest	Negligible	Medium, Project Area currently visible. Residential developments are lower than the Project. Existing topography restricts views, the berm will be visible	Minor
<b>Viewpoint 10</b>	Range Road 24 and Township Road 262 looking southwest	Negligible	N/A, Project Area not currently visible due to distance, topography and vegetation	N/A
<b>Viewpoint 11</b>	Range Road 30/Bearspaw Road and Township Road 262 looking southeast	Low	N/A, Project Area not currently visible due to distance, topography and vegetation	N/A
<b>Viewpoint 12</b>	Bearspaw Acres looking southeast	Negligible	Low, Project Area currently visible in the distance. Distance, combined with the ability of the undulating wider landscape to absorb topographic changes, the presence of screening vegetation reduces the potential visual magnitude of change	Minor
<b>Viewpoint 13</b>	Rolling Acres Drive and Township Road 260/Burma Road looking northeast	Low	N/A, Project Area not currently visible due to distance, topography and vegetation	N/A
<b>Viewpoint 14</b>	Crestview Estates looking east	Low	Low, Project Footprint not currently visible due to topography and vegetation. The berm will be visible	Minor
<b>Viewpoint 15</b>	Range Road 25 looking southeast	Negligible	Medium, Project Area currently visible. Existing topography restrict views from residential developments lower than the Project. Views of the wider landscape are more prominent from the existing residential development on the hill. The berm will be visible	Minor

### 3.3 Anticipated Landscape and Visual Impacts

Project activities are described in detail in the MSDP and noted in **Section 1.1.2**. Key components that have the potential to impact landscape character and visual amenity are as follows:

- During Site Preparation:
  - Work would primarily be conducted during daylight working hours;
  - Vehicle traffic may increase on surrounding roads and within the Project Area;
  - Construction workers and large-scale equipment will be present;
  - Berm construction will include relocating overburden and topsoil into place around the perimeter of the site, and
  - Establishment of vegetation on perimeter berms may take some time.
- Off-site conveyor system may be partially visible at the intersection of Range Road 24 and Burma Road.
- Aggregate extraction will alter topography in the Project Area, high points (visible from off-site) will be removed.

The pit, preliminary processing areas, and associated equipment and structures will be below grade.

### **3.3.1 Special Considerations due to Extraction, Reclamation and Changes**

Considerations of how the landscape may change over the life of operation include:

- The berm on the north side of the Project Area is planned to be constructed prior to Phase 4 of mining. Constructing the north berm earlier, at the same time as other berms, would provide an established berm upon commencement of the northern Phases and will be considered as the Project advances.
- The extraction of the aggregate from the pit will result in the colour and landform of the Project Area being in contrast to the surrounding landscape.
- The colours visible in reclaimed landscapes are likely to be noticeably different to existing. This is due to the new growth of grass seed and juvenile trees, which may stand out as being somewhat greener than surrounding forage and grass, at least in the early years of establishment.
- As reclamation is undertaken it is likely that equipment and workers will be present as a result of re-grading, landscaping and maintenance.
- As part of the Final Reclamation, perimeter berms will be recontoured along the slopes and tied in with progressively reclaimed areas.

## **3.4 Mitigation Measures for Landscape Plan**

### **3.4.1 Retained Landscape and Boundary Features**

The Project will include approximately 30 m to 150 m setbacks around the perimeter of the site from resource extraction. The setback area existing landscape and vegetation will be maintained as it currently exists wherever possible. Plantings in the setback rather than on the berm could provide more of a visual barrier and will be considered as the Project advances.

### **3.4.2 Berms and Landscaping Screens**

East, south and west berm construction will occur during Site Preparation using overburden and topsoil from the first phase. The berm is planned to be approximately 6 to 7 m high; the north, east and west berms are approximately 30 m wide and the south berm is approximately 50 m wide. Berms will be located within the Project Footprint.

### **3.4.3 Site Landscape Design**

The landscape and visual mitigation measures seek to eliminate or minimize adverse landscape and visual impacts through careful design and planning of the aggregate extraction operation. The following measures will help to minimize the impacts on landscape character and visual amenity:

- Existing vegetation and landscape features will be retained in the setback where possible.
- Berms and landscaping will screen views into the extraction area. The berms will be stable and feature self-sustaining grass with tree planting consistent with undisturbed areas.
- During operations, mining equipment and activity will be located approximately 5 to 15 m below grade and will be lowered to approximately 40 m below grade as extraction progresses.

- The site will be progressively landscaped: upon completion of each phase, overburden and topsoil from the next phase will be placed in the previous phase.
- Where topsoil stockpiles are required, the height of topsoil stockpiles will be minimized to the greatest extent possible. Topsoil will be re-used as soon as practicable or seeded to prevent erosion.
- Tree planting will be conducted, considering sight lines when locating and aligning berms.
- Existing (setback) and new (berm) landscape areas will have a naturalized appearance, a low maintenance (no mow) landscape.
- The Project Area will be maintained in good condition, particularly adjacent to neighbouring properties. Litter will be removed.
- Buildings and site infrastructure will be located on the pit floor, hidden from view outside the Project Area.

### 3.5 Post Mitigation Potential Views

Setback areas and the east, south and west berms are the proposed visual and landscape mitigation measures for the first 10 years after Project commencement (see **Figure 13** Preliminary Landscape Plan in **Appendix D**). An additional berm will be constructed on the north end of the Project after Year 10, and the original berms will be maintained throughout the life of the site. Representative photo montages at approximately Year 10 have been compiled to represent the potential visual impact of the presence of the Project mitigation measures. The photo montages present a view which is representative of the human eye, the photographs were taken at human viewing height (see **Figure 12** Representative Photo Montages in **Appendix C**).

The visual and landscape measures will provide additional screening of the Project Area from private residential lots with existing limited views. The residential lots that may have existing open views, one to the north and three to the south, are elevated and could have impacted views post mitigation. Refer **Figure 15** for Visual Impact Mitigation from private residential lots.

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## 4. Conclusions

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The LVIA identified three different landscape character types within the Study Area and considered the potential effect that the Project will have upon them. The effects for each landscape character type varied from negligible to minor to moderate.

Of the 15 day-time viewpoints that were assessed to represent a variety of receptor audiences, the overall level of effect was deemed not applicable (the Project was not visible from the viewpoint) for nine viewpoints, minor to negligible for one viewpoint, minor for four viewpoints and moderate for one viewpoint.

No impacts/effects ranked as 'high' were identified for the landscape character types or the viewpoints.

The mitigation measures developed aim to avoid or reduce adverse impacts as far as reasonably practicable during the Site Preparation, Operation and Reclamation phases of the Project.

Post-mitigation, there are four residential lots (one to the north and three to the south) that may have impacted views due to their elevated nature.

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## 5. References

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Forcorp Solutions Inc 2012:

South Saskatchewan Region Regional Forest Landscape Assessment. Prepared for Forest Management Branch Alberta Environment and Sustainable Resource Development. Available at <https://open.alberta.ca/dataset/a76b3754-fc85-4dfd-b0d3-17777952d1d1/resource/f32efd75-b68d-4bef-80ce-e43efc7c6df3/download/af-regional-forest-landscape-assessment-south-saskatchewan-region-2012.pdf>. Accessed June 2020.

Google Earth 2020:

Map showing location of Project. *Google Earth*, earth.google.com/web/

Government of Alberta 2014.

Environmentally Significant Areas Report. Available online at: <https://www.albertaparks.ca/albertaparksca/library/environmentally-significant-areas-report/>. Accessed June 2020.

Government of Alberta 2018:

South Saskatchewan Regional Plan. Available at <https://open.alberta.ca/dataset/460ac866-4416-4d77-a25a-a02fab85a6ec/resource/8261ce03-aa0f-4621-8e2d-c610a72ac37c/download/south-saskatchewan-regional-plan-2014-2024-february-2017.pdf>. Accessed June 2020.

Landscape Institute and the Institute of Environmental Management and Assessment (LIIEMA) 2002:  
Guidelines for Landscape and Visual Impact Assessment, Second Edition. London: Spon Press.

Landscape Institute and the Institute of Environmental Management and Assessment (LIIEMA) 2013:  
Guidelines for Landscape and Visual Impact Assessment, Third Edition. Oxford: Routledge.

Ministry of Forests (MOF), Forest Practices Branch. 2001:

Visual Impact Assessment Guidebook. 2nd ed. For. Prac. Br., Min. For., Victoria, B.C.

Natural Regions Committee 2006:

Natural Regions and Subregions of Alberta. Available online at: [https://www.albertaparks.ca/media/2942026/nrsrcomplete\\_may\\_06.pdf](https://www.albertaparks.ca/media/2942026/nrsrcomplete_may_06.pdf). Accessed June 2020.

Palliser Environmental Services Ltd. 2018:

Nose Creek Watershed Water Management Plan. Available online at: [http://nosecreekpartnership.com/wp-content/uploads/2018/12/Updated-NCWWMP\\_FINAL\\_2018.pdf](http://nosecreekpartnership.com/wp-content/uploads/2018/12/Updated-NCWWMP_FINAL_2018.pdf). Accessed June 2020.

Rocky View County (RVC) 1994:

Bearspaw Area Structure Plan. Available online at: <https://www.rockyview.ca/Portals/0/Files/BuildingPlanning/Planning/ASP/ASP-Bearspaw.pdf>. Accessed June 2020.

Rocky View County (RVC) 2003:

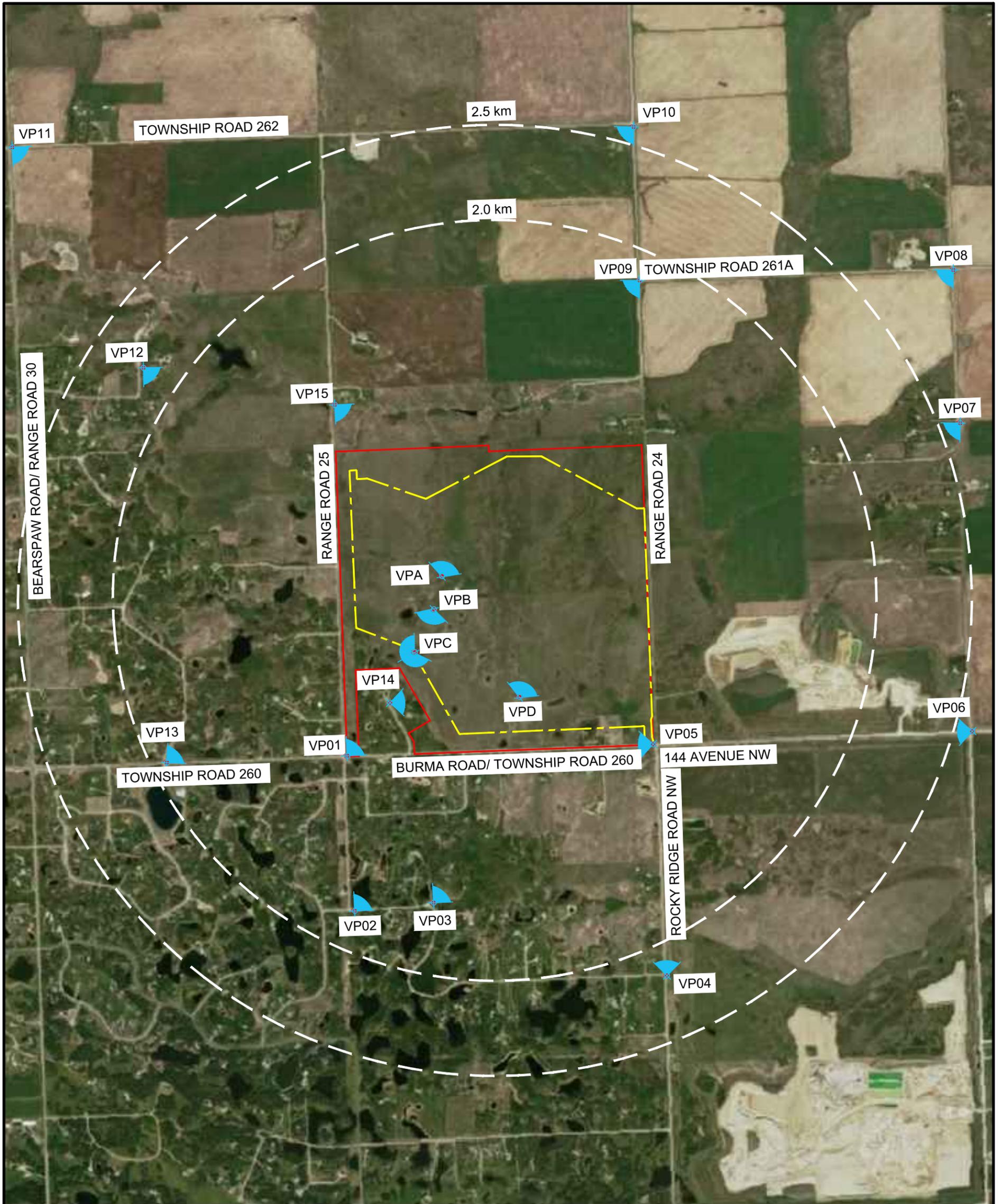
Biophysical Attributes Rating in the M.D. of Rocky View No. 44 Alberta, Canada. Available online at: <https://www.rockyview.ca/Portals/0/Files/Agriculture/RVC-Biophysical-Attribute-Ratings.pdf>. Accessed June 2020.

- Rocky View County (RVC) 2011a:  
Parks and Open Space Master Plan. Available online at:  
<https://www.rockyview.ca/Portals/0/Files/BuildingPlanning/Planning/RVC-Parks-and-Open-Space-Master-Plan.pdf>. Accessed June 2020.
- Rocky View County (RVC) 2011b:  
Agriculture Master Plan. Available online at:  
<https://www.rockyview.ca/Portals/0/Files/Agriculture/Agriculture-Master-Plan.pdf>. Accessed June 2020.
- Rocky View County (RVC) 2013:  
County Servicing Standards. Approved by Resolution No. 188-13. Available online at:  
<https://www.rockyview.ca/Portals/0/Files/BuildingPlanning/Standards/Servicing-Standards.pdf>. Accessed June, 2020.
- Rocky View County (RVC) 2014:  
Watershed Sub-Basins Map. Available online at:  
<https://www.rockyview.ca/Portals/0/Files/Agriculture/Watershed-Map.pdf>. Accessed June 2020.
- Rocky View County (RVC) 2018:  
County Plan. Available online at:  
<https://www.rockyview.ca/Portals/0/Files/BuildingPlanning/Planning/CountyPlan/RVC-County-Plan.pdf>.  
Accessed June 2020.
- Rocky View County (RVC) 2020a:  
Growth Sectors. Available online at:  
<https://www.rockyview.ca/Business/InvestinRockyView/GrowthSectors.aspx>. Accessed June 2020.
- Rocky View County (RVC) 2020b:  
About Rocky View. Available at: <https://www.rockyview.ca/LivinginRockyView/AboutRockyView.aspx>.  
Accessed June 2020.
- Rocky View County (RVC) 2020c:  
By-laws. Available at: <https://www.rockyview.ca/Government/By-laws.aspx>. Accessed June 2020.
- Rocky View County (RVC) 2020d:  
County Atlas. Available at: <https://atlas.rockyview.ca/atlas/>. Accessed June 2020.
- Rocky View County (RVC) 2020e:  
Bears paw Area Map. Available online at:  
<https://www.rockyview.ca/Portals/0/Files/CountyServices/Maps/Communities/Bears paw-Map.pdf>. Accessed June 2020.

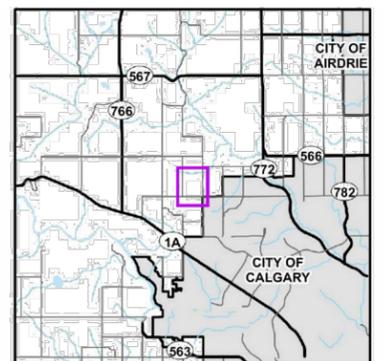
# Appendix **A**

## **Desktop Assessment**

- Figure 1. Study Area and Viewpoints
- Figure 2. Project Area Topography
- Figure 3. Study Area Topography
- Figure 4. Project Area Lot Parcels and Existing Land Use
- Figure 5. Study Area Lot Parcels and Existing Land Use
- Figure 6. Preliminary Mine Phase Plan
- Figure 7. Preliminary Mine Reclamation Topography

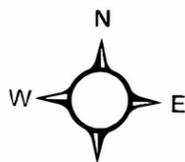
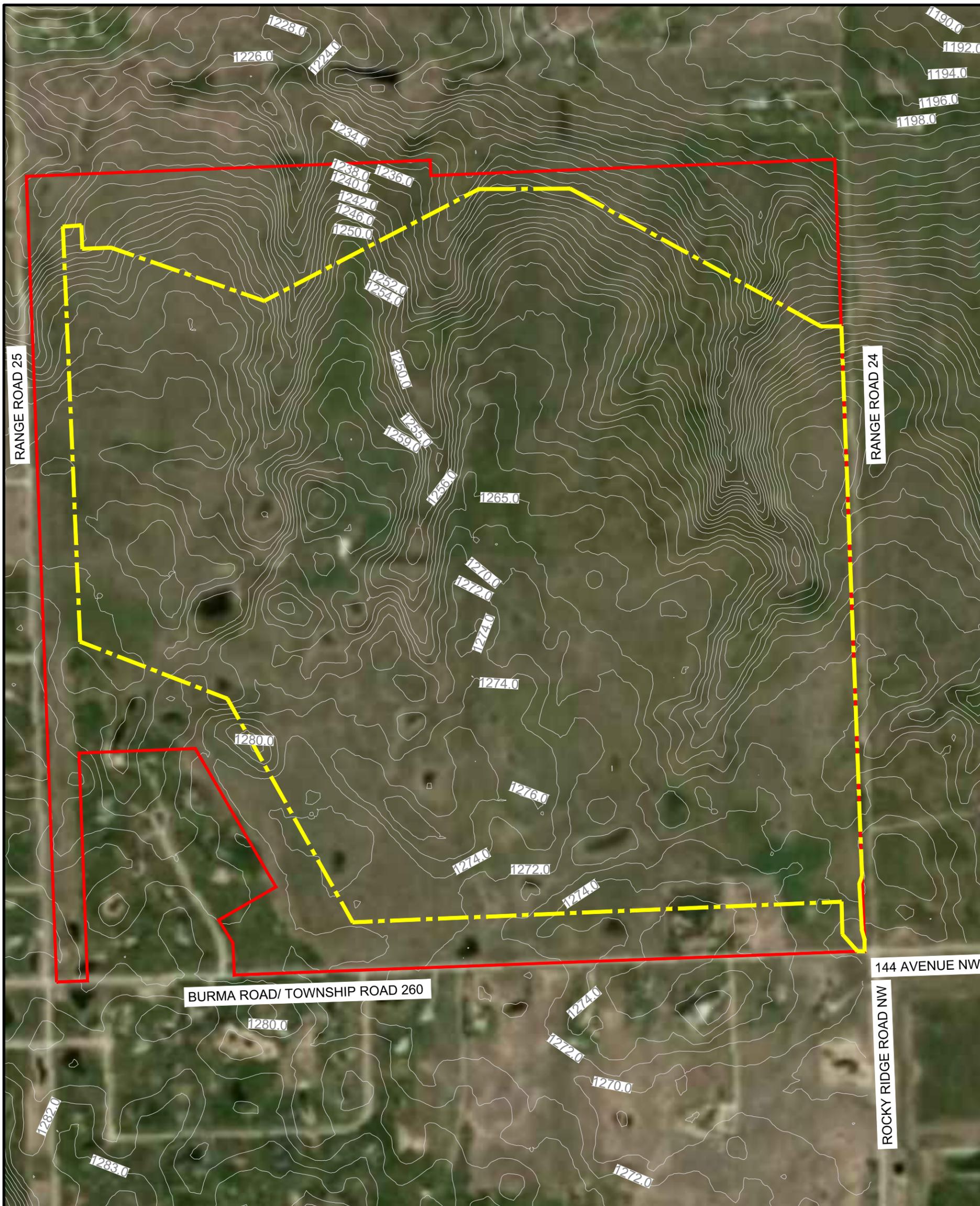


Legend	
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	Project Footprint
	View Direction



Key Map

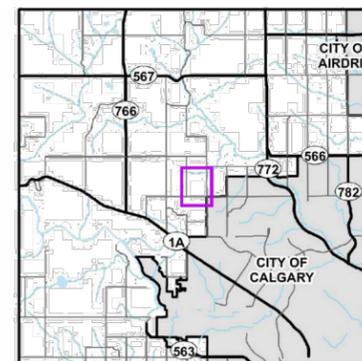
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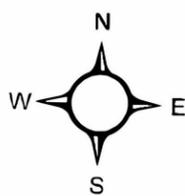
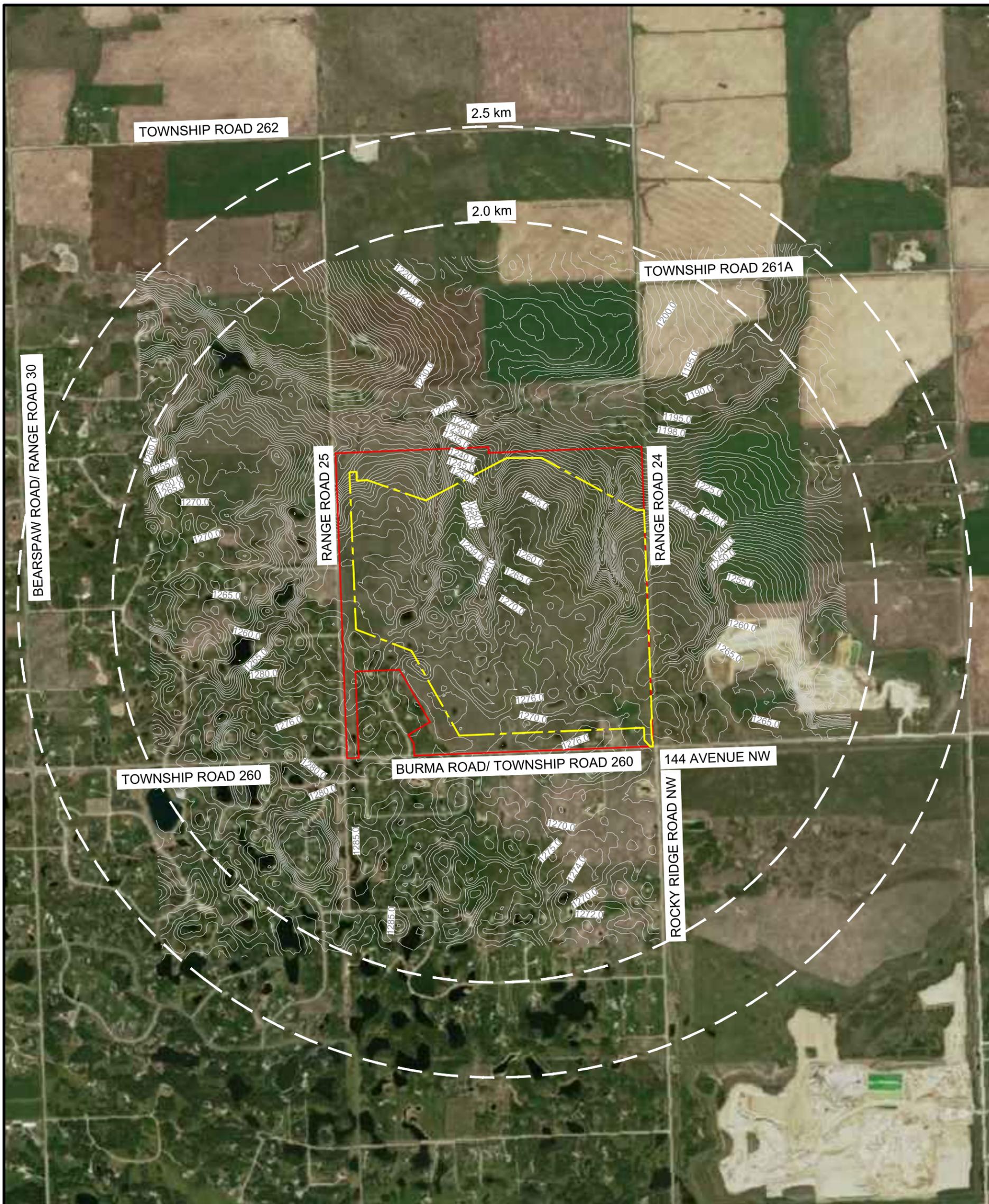
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Legend	
	Property Boundary
	Project Footprint
	1.0 m Contour Interval



Key Map

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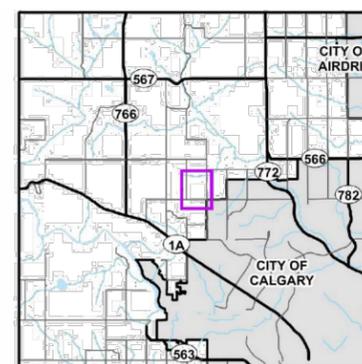


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**Legend**

- Property Boundary
- - - Project Footprint
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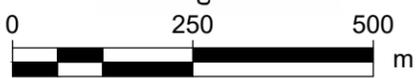
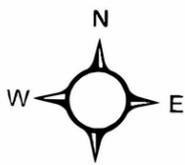


**Key Map**

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**LEHIGH SCOTT PROPERTY  
STUDY AREA TOPOGRAPHY**

LEHIGH HANSON  
Project No.: 60610856

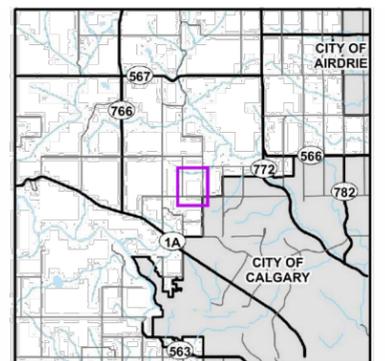


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**Legend**

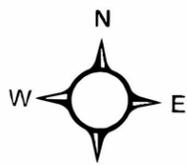
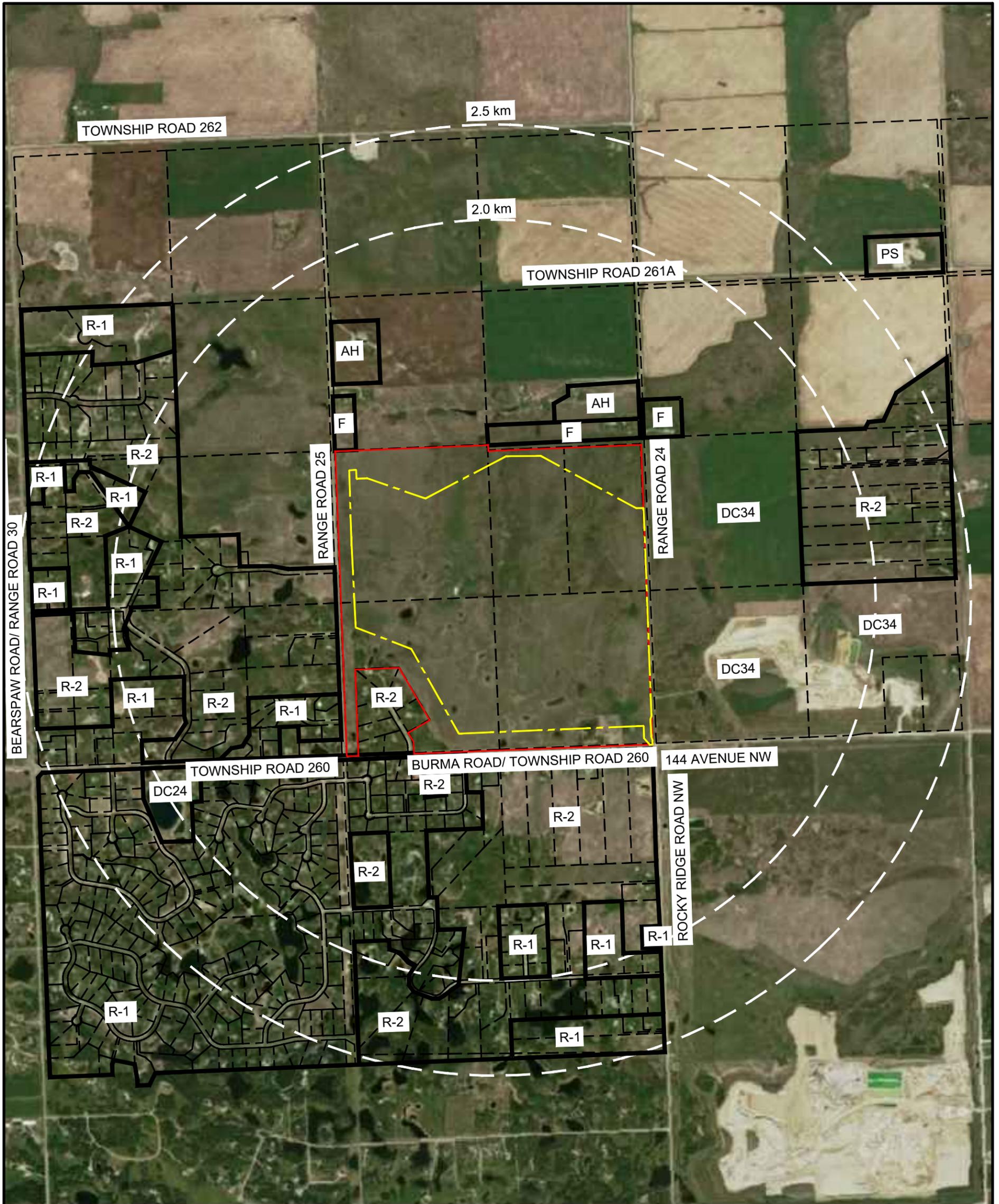
- Property Boundary
- - - Project Footprint
- - - Lot Parcel



**Key Map**

**LEHIGH SCOTT PROPERTY  
PROJECT AREA LOT PARCELS AND EXISTING LAND USE**

LEHIGH HANSON  
Project No.: 60610856



0 500 1000  
m

Scale 1:20,000

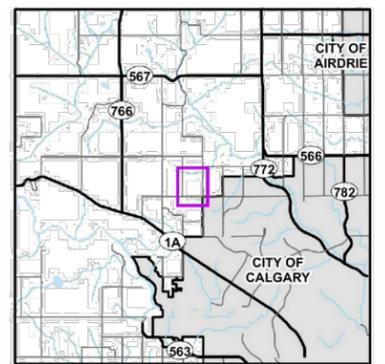
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**Legend**

- Property Boundary
- - - Project Footprint
- - - Lot Parcel
- Surrounding Lot Parcel

**Land Uses**

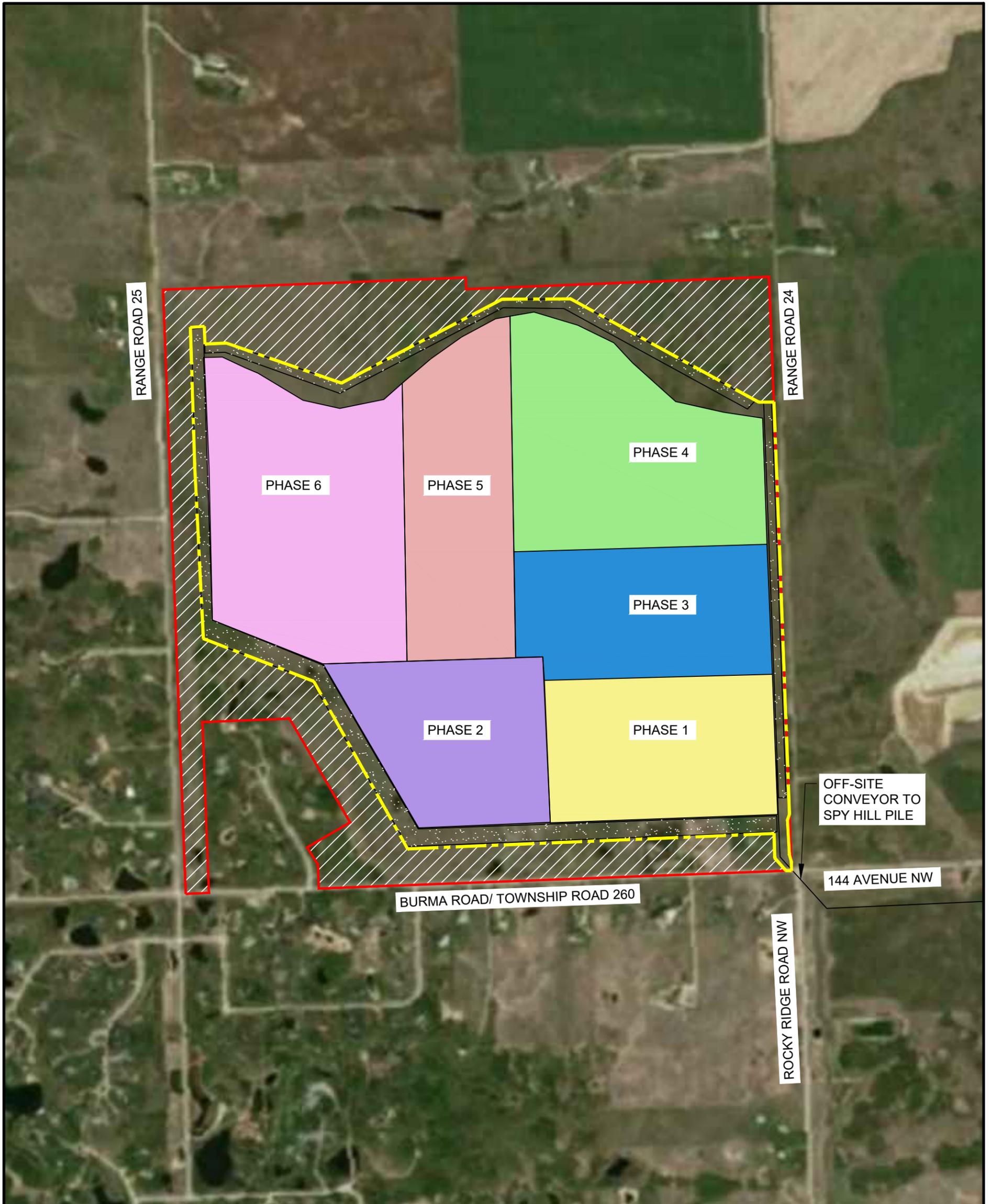
- AH = Agricultural Holding
- F = Farmstead
- DC24 = PS: Public Services
- DC34 = NRI: Natural Resource Industrial
- PS = Public Services
- R-1 = Residential One
- R-2 = Residential Two
- RF = Ranch and Farm



**Key Map**

**LEHIGH SCOTT PROPERTY  
STUDY AREA LOT PARCELS AND EXISTING LAND USE**

LEHIGH HANSON  
Project No.: 60610856



RANGE ROAD 25

RANGE ROAD 24

PHASE 6

PHASE 5

PHASE 4

PHASE 3

PHASE 2

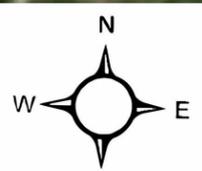
PHASE 1

OFF-SITE  
CONVEYOR TO  
SPY HILL PILE

144 AVENUE NW

BURMA ROAD/ TOWNSHIP ROAD 260

ROCKY RIDGE ROAD NW



0 250 500 m

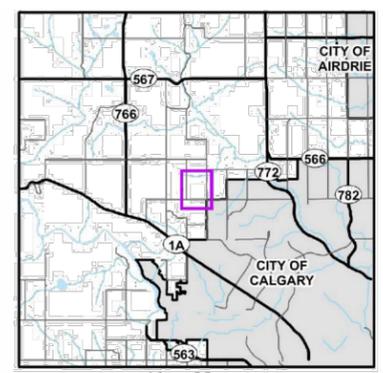
SCALE 1:10,000

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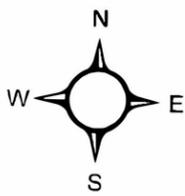
**Legend**

- Property Boundary
- - - Project Footprint
- Setback (Existing Landscape Retained)
- Berm (New Landscape)
- Phase 1
- Phase 2
- Phase 3
- Phase 4
- Phase 5
- Phase 6

Note: Preliminary layout of berms shown.



Key Map



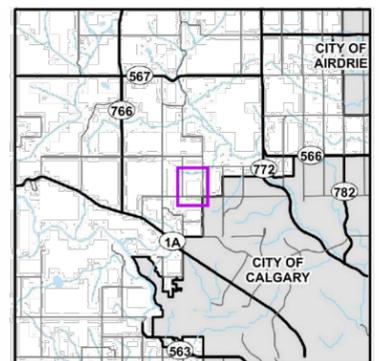
0 250 500  
m

SCALE 1:10,000

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**Legend**

- Property Boundary
- - - Project Footprint
- 1215.0 — 5.0 m Preliminary Contour Interval



**Key Map**

# Appendix **B**

## **Site Assessment**

Figure 8. Viewpoints

Figure 9. Viewpoints

Figure 10. Viewpoints

Figure 11. Viewpoints



**Viewpoint 1** (Range Road 25 and Township Road 260/ Burma Road looking northeast)  
 Project Area not currently visible due to vegetation. Aggregate operation will not impact view.



**Viewpoint 2** (Range Road 25 and Meadow Drive looking northeast)  
 Project Area not currently visible due to distance, topography and vegetation. Aggregate operation will not impact view.



**Viewpoint 3** (Meadow Drive looking northeast)  
 Project Area not currently visible due to distance, topography and vegetation. Aggregate operation will not impact view.



**Viewpoint 4** (Rocky Ridge Road NW and Meadow Drive looking north)  
 Project Area not currently visible due to distance, topography and vegetation. Aggregate operation will not impact view.



**Viewpoint 5** (Rocky Ridge Road NW and Township Road 260/ Burma Road looking west)  
 Project Area currently visible. Landscaped berm will be visible.



**Viewpoint 6** (85 Street NW and 144 Avenue NW looking west)  
 Project Area not currently visible due to distance, topography and vegetation. Aggregate operation will not impact view.



**Viewpoint 7** (Range Road 23 looking southwest)  
 Project Area not currently visible due to distance, topography and vegetation. Aggregate operation will not impact view.



**Viewpoint 8** (Range Road 23 and Township Road 261A looking southwest)  
 Project Area currently visible in the distance. Landscaped berm may be visible.



**Viewpoint 9** (Range Road 24 and Township Road 261A looking southwest)  
 Project Area currently visible. Landscaped berm may be visible.



**Viewpoint 10** (Range Road 24 and Township Road 262 looking southwest)  
 Project Area not currently visible due to distance and topography. Aggregate operation will not impact view.



**Viewpoint 11** (Range Road 30/ Bears paw Road and Township Road 262 looking southeast)  
 Project Area not currently visible due to distance, topography and vegetation. Aggregate operation will not impact view.



**Viewpoint 12** (Bears paw Acres looking southeast)  
 Project Area currently visible in the distance. Landscaped berm may be visible.



**Viewpoint 13** (Rolling Acres Drive and Township Road 260/ Burma Road looking northeast)  
 Project Area not currently visible due to distance, topography and vegetation. Aggregate operation will not impact view.



**Viewpoint 14** (Crestview Estates looking east)  
 Project Footprint not currently visible due to topography and vegetation. Landscaped berm may be visible.



**Viewpoint 15** (Range Road 25 looking southeast)  
 Project Area currently visible. Landscaped berm may be visible.



**Viewpoint A**  
View north to northeast on the Project Area



**Viewpoint B**  
View south to southwest on the Project Area



**Viewpoint C**  
View west to northwest on the Project Area



**Viewpoint C**  
View south to southwest on the Project Area



**Viewpoint D**  
View north to northeast on the Project Area

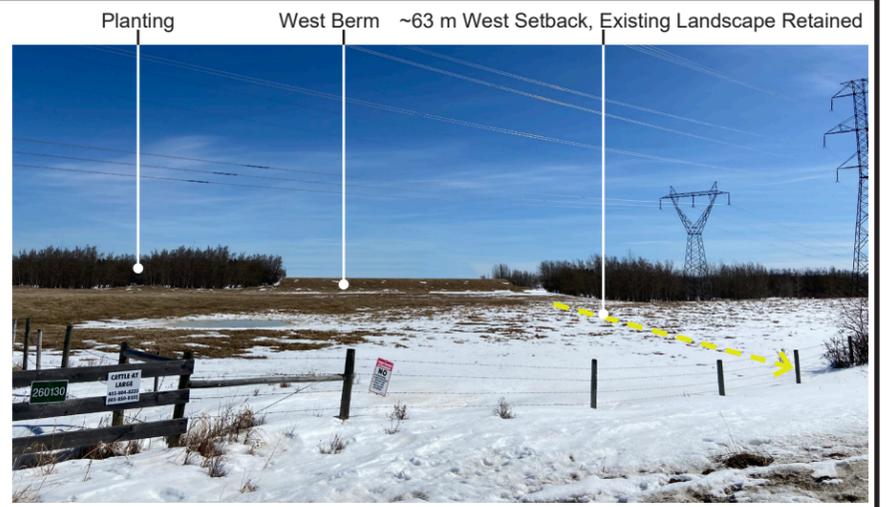
# Appendix **C**

## Photo Montages

Figure 12. Representative Photo Montages



Spring 2020  
Range Road 25 South



Post mitigation - 10 years from construction of berm



Spring 2020  
Burma Road/ Township Road 260



Post mitigation - 10 years from construction of berm



Spring 2020  
Range Road 25 North



Post mitigation - 10 years from construction of berm

# Appendix **D**

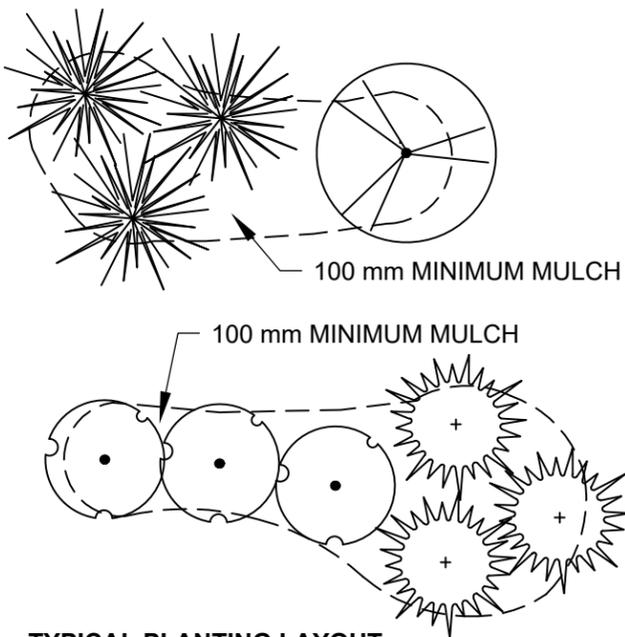
## Landscape Plan

Figure 13. Preliminary Landscape Plan

Figure 14. Preliminary Cross Sections

Figure 15. Visual Impact Mitigation

Note: dimensions have been rounded up to whole numbers.



**TYPICAL PLANTING LAYOUT**  
Consider sight lines when locating and aligning beds.

### PLANT SCHEDULE

Key	Botanical Name	Common Name	Native to Alberta	Size	Remarks
<b>Deciduous Trees</b>					
A	<i>Populus balsamifera</i>	BALSAM POPLAR	X	70 mm CALIPER	B&B, MATURE SIZE - 25 m HEIGHT, 5 m SPREAD
B	<i>Populus tremuloides</i>	TREMBLING ASPEN	X	70 mm CALIPER	B&B, MATURE SIZE - 15 m HEIGHT, 9 m SPREAD
<b>Coniferous Trees</b>					
C	<i>Pinus contorta</i>	LOGSPOLE PINE	X	3.5 m HEIGHT	B&B, MATURE SIZE - 15 m HEIGHT, 6 m SPREAD
D	<i>Larix siberica</i>	SIBERIAN LARCH	X	3.5 m HEIGHT	B&B, MATURE SIZE - 15 m HEIGHT, 6 m SPREAD
E	<i>Picea glauca</i>	WHITE SPRUCE	X	3.5 m HEIGHT	B&B, MATURE SIZE - 15 m HEIGHT, 6 m SPREAD
<b>Shrubs</b>					
a	<i>Alnus crispa</i>	GREEN ALDER	X	#5 CONTAINER	600 mm HEIGHT - MINIMUM 4 CANES
b	<i>Amelanchier alnifolia</i>	SASKATOON	X	#5 CONTAINER	600 mm HEIGHT - MINIMUM 4 CANES
c	<i>Cornus sericea</i>	RED OSIER DOGWOOD	X	#5 CONTAINER	600 mm HEIGHT - MINIMUM 4 CANES
d	<i>Potentilla fruticosa</i>	SHRUBBY CINQUEFOIL	X	#5 CONTAINER	600 mm HEIGHT - MINIMUM 4 CANES
e	<i>Shepherdia argentea</i>	SILVER BUFFALOBERRY	X	#5 CONTAINER	600 mm HEIGHT - MINIMUM 4 CANES
f	<i>Shpherdia canadensis</i>	CANADA BUFFALOBERRY	X	#5 CONTAINER	600 mm HEIGHT - MINIMUM 4 CANES

#### Legend

- Property Boundary
- - - - - Project Footprint
- Setback (Existing Landscape Retained)
- Berm, 6 to 7 m high, seed over 150 mm depth topsoil

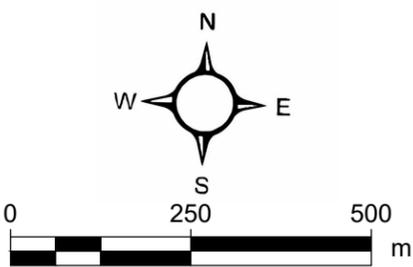
#### Notes:

1. The east, south and west berms will be installed in year 1.
2. The north berm will be installed prior to Phase 4.
3. Preliminary layout of berms shown.

#### Seed Mix:

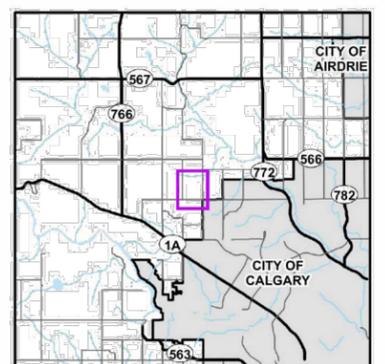
- Rural Road Mix:  
 40% Pubescent Wheat Grass (Native to Alberta)  
 22% Dahurian Wildrye  
 30% Sheep Fescue  
 8% Perennial Ryegrass (Native to Alberta)

Seed mix is to be seeded at 175 kg per hectare.

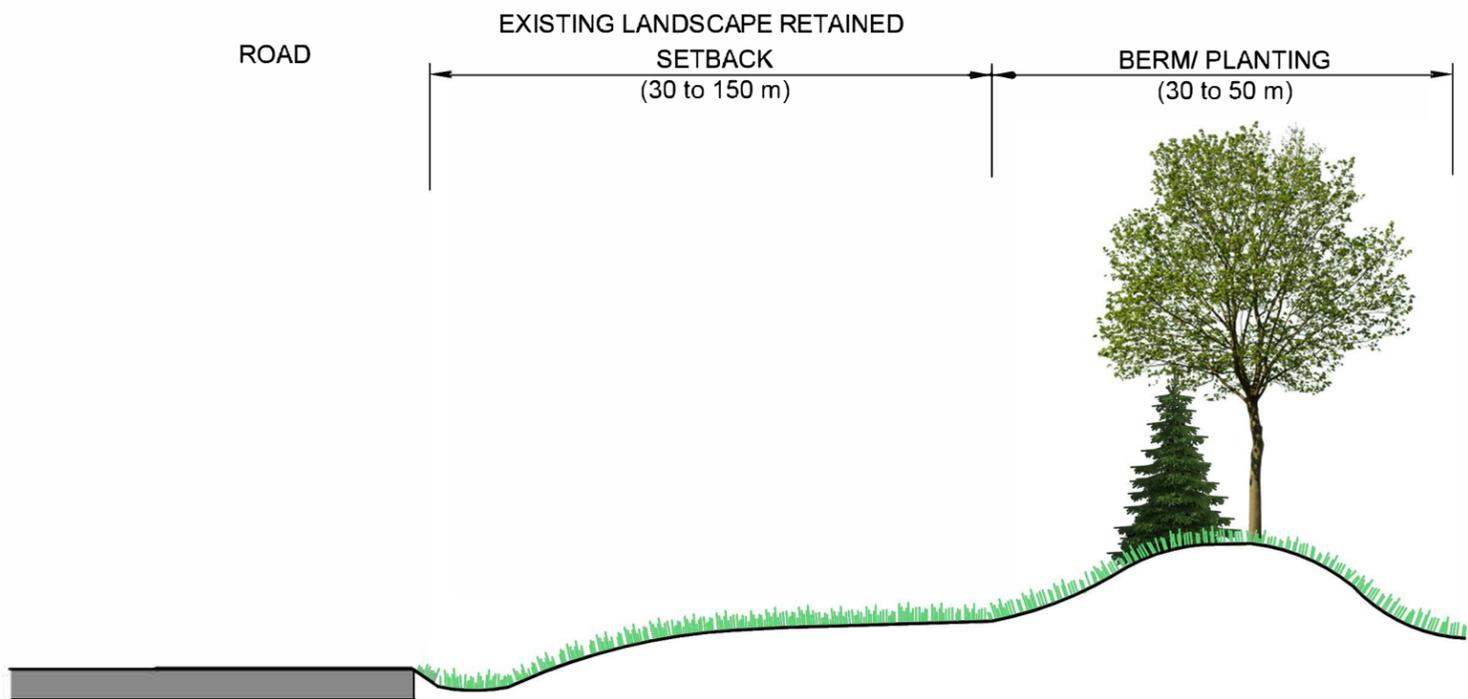


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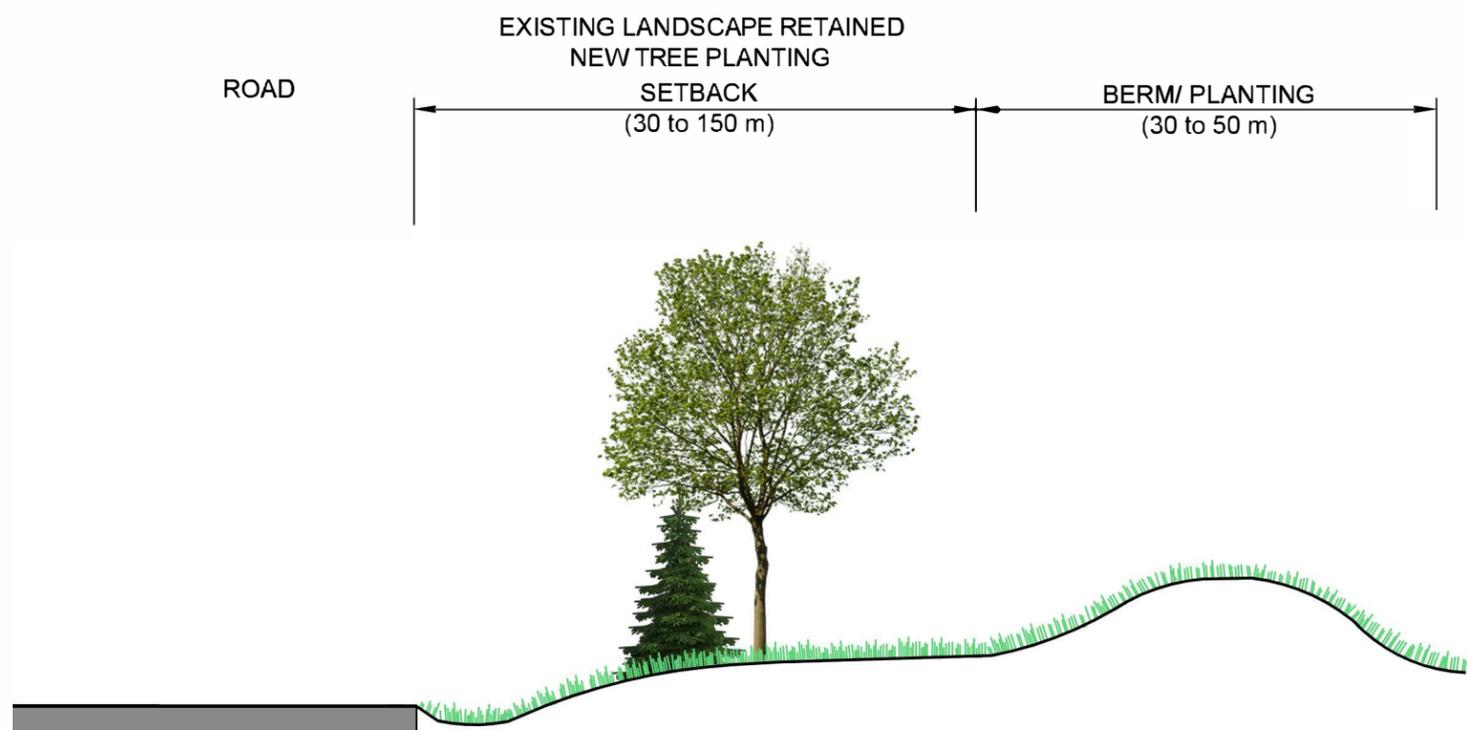
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Key Map



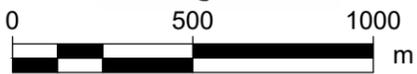
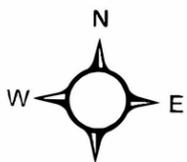
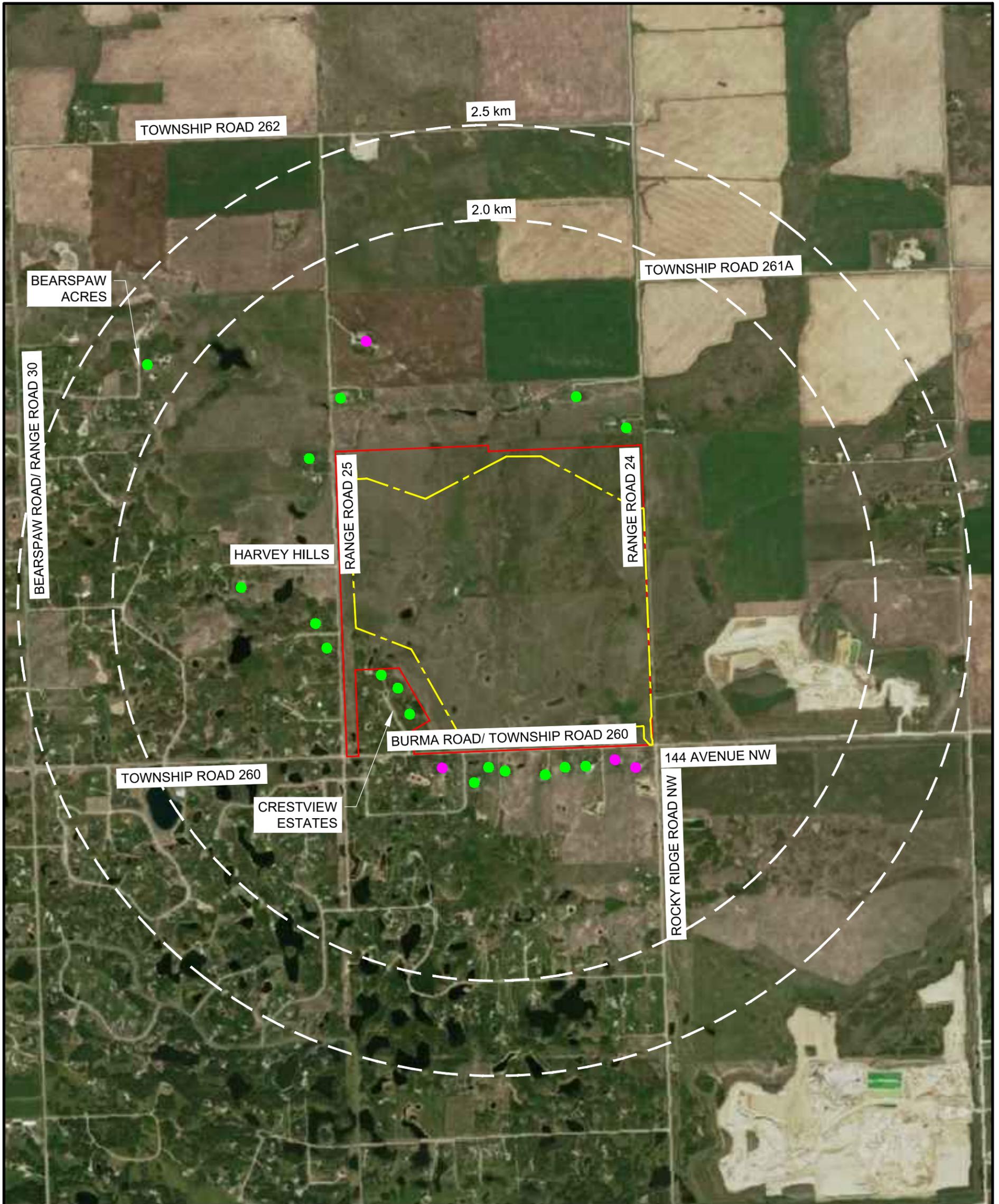
TYPICAL CROSS SECTION - BERM PLANTING



TYPICAL CROSS SECTION - SETBACK TREE PLANTING

Scale N.T.S.

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SCALE 1:20,000

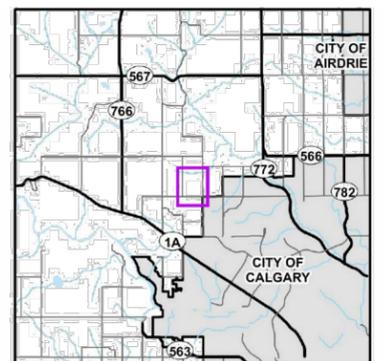
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**Legend**

- Property Boundary
- - - Project Footprint
- Private Lot View to Landscape Measures
- Private Lot View to Landscape Measures, Likely View of Project Footprint

**Notes:**

1. Privately owned land was not visited as part of the field visit.
2. Several residential buildings are two-storey, which could enable elevated views.
3. Accuracy is limited by data available and collection from public lands.



**Key Map**

**LEHIGH SCOTT PROPERTY  
VISUAL IMPACT MITIGATION**

LEHIGH HANSON  
Project No.: 60610856

