



Soil and Weed Management Plan

Mountain Ash Limited Partnership Summit Pit

SLR Project No: 212.06650.00006

April 2021



SLR 

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Rocky View County, Alberta

SLR Project No: 212.06650.00006

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This document has been prepared by SLR Canada. The material and data in this report were prepared under the supervision and direction of the undersigned.

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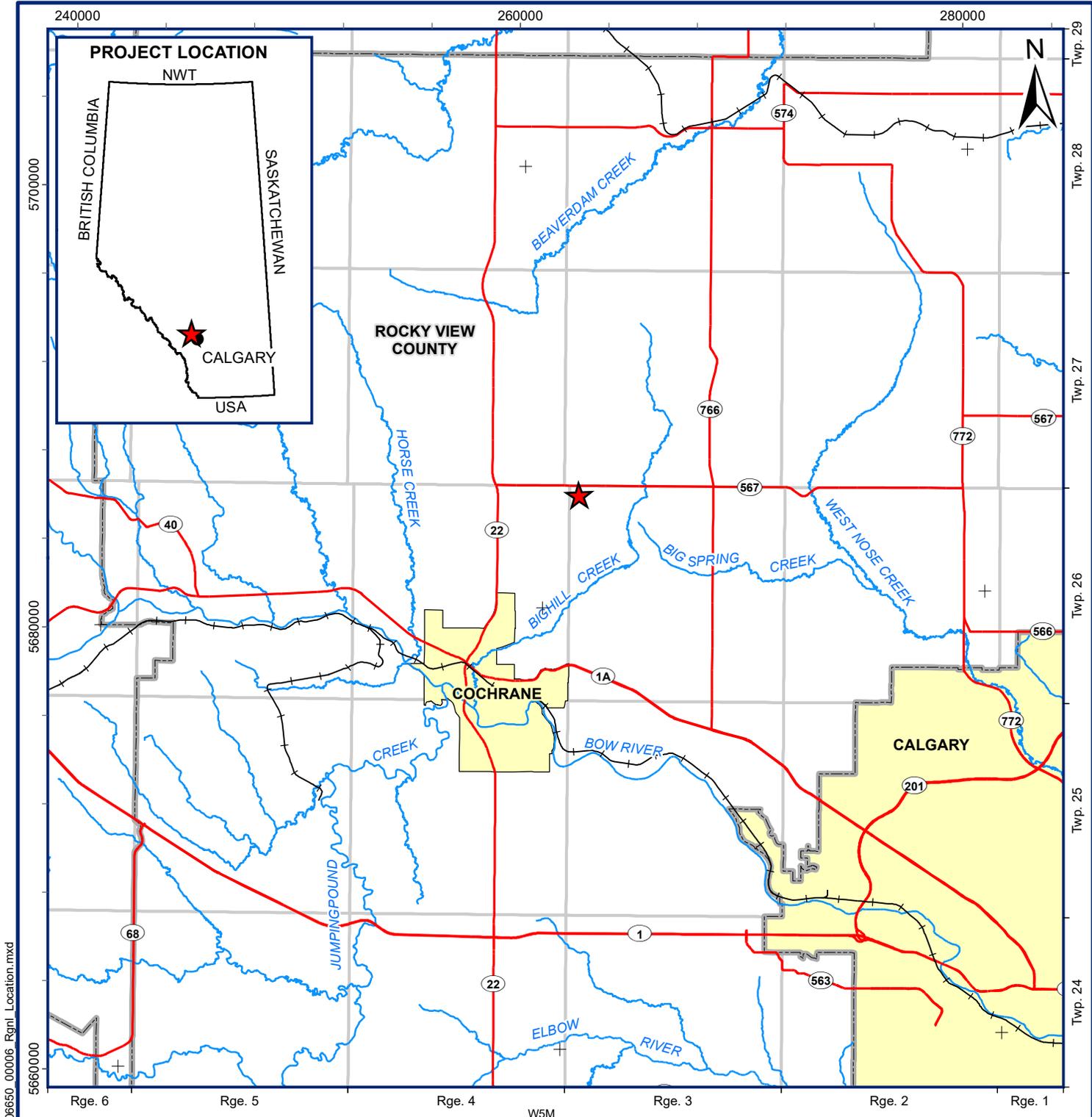
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1.0 INTRODUCTION

Mountain Ash Limited Partnership (Mountain Ash) is planning to develop the Summit Pit (the Project) along Highway 567 within NW and SW 31-026-03 W5M, northeast of the Town of Cochrane, in Rocky View County (RVC), Alberta (Figure 1). The Project will encompass approximately 208 acres (84 ha) excluding existing road rights-of-way. Mountain Ash is applying for Phase 1 of a six-phase mining plan. This land is currently owned by 1410266 Alberta Ltd. (a general partner of Mountain Ash). Summit Pit received land use and a master site development plan (MSDP) approval on March 2, 2021 (Land Use Bylaw C-8051-2020).

A biophysical impact assessment was undertaken as part of the MSDP application to assess baseline conditions for soils, vegetation and wildlife and to provide an impact and cumulative effects assessment on these resources. As a requirement for the Code of Practice (COP) for Pits and Development Permit (DP) applications, this report details the Soil Management Plan (SMP) and Weed Management Plan (WMP) in relation to the operation of the Summit Pit. This is also consistent with a condition required as part of the land re-designation and MSDP.



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LEGEND

- PROJECT LOCATION
- HIGHWAY
- COUNTY BOUNDARY
- RAILWAY
- WATERCOURSE
- URBAN

NOTES

This map is for conceptual purposes only and should not be used for navigational purposes.
 Basedata: AltaLIS Government of Alberta under the Alberta Open Data License.

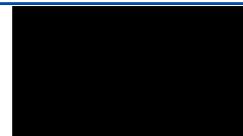
SCALE: 1:250,000 KILOMETRES
 WHEN PLOTTED CORRECTLY AT 8-1/2 x 11
 NAD 1983 UTM Zone 12N

**MOUNTAIN ASH LIMITED PARTNERSHIP
 SUMMIT PIT
 NW & SW 31-26-03 W5M
 ROCKY VIEW COUNTY, ALBERTA**

**SOIL AND WEED
 MANAGEMENT PLAN**

SUMMIT PIT LOCATION

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2.0 SOIL ASSESSMENT

The AGRASID Alberta Soil Information Viewer (Alberta Agriculture and Forestry 2021) was accessed to determine soils expected to be present in the proposed Project area. The Alberta Soil Names File (Generation 4) User's Handbook (Alberta Soil Information Centre 2021) was also consulted. This document presents the authoritative suite of acceptable soil series names, with some of their defining attributes, for use in Alberta. The document outlines soil series name, characteristics such as order, great group, subgroup and parent material type and texture of soils that occur within a subject area (Alberta Soil Information Centre 2021).

Desktop review determined that underlying parent material in the Project area is moderately to strongly calcareous, mixed Continental and Cordilleran till (Alberta Soil Information Centre 2016). Fertile loam to clay loam Orthic Black Chernozemic soils are extensive, with Gleysolic soils present in poorly drained and lower slope positions expected at the Project (Alberta Agriculture and Forestry 2016). The Dunvargan soil series, a fertile, well-drained Orthic Black Chernozem formed on glacial till parent material, was identified across the majority of the Project area, with the gleyed variant (Dunvargan-GL) identified in depressional areas.

Soils were classified in the field in accordance with criteria established by the Soil Classification Working Group (1998). Soil inspection locations were completed to verify the desktop review and to help determine the presence or absence of wetlands on the landscape. Soil investigations were conducted on foot with a shovel and hand auger from July 2 to 4, 2020. The soils were investigated to a depth of approximately 1 m at all test hole locations unless auger refusal was encountered. Soil inspection locations (SILs) were advanced at a rate of approximately one to two locations per hectare for a total of 10 soil inspection locations. The depth of each soil horizon encountered at each SIL was recorded to determine best methods for soil handling and replacement. Soil map units have a certain range of properties or variability due to soil being a continuum. Consequently, the soil inspections were extrapolated using the principles of geomorphology and surficial geology in concert with the vegetation patterns to delineate individual soil map units. Soil map units identified in the field were correlated to the general soil series established in each unique ecosite identified within the proposed Project area.

Further soil field work will be completed prior to or in conjunction with site stripping to guide soil storage and stripping practices onsite.

In the field, upland soil inspection locations confirmed that the majority of the Project area consists of Orthic Black Chernozems of the Dunvargan soil series. Textures were loam to sandy clay loam. Wetlands contained gleyed Dunvargan soil series, with mottling in the Bmgj and Ccag and Ckg horizons. Areas of soil disturbance were noted in the vicinity of the several residences in the Project area. Example profiles of Dunvargan and Dunvargan-GL soils are identified in Tables 1 and 2. These soils have low wind erosion risk and moderate water erosion risk.

Table 1: Example Profile for Dunvargan Soil Series

HORIZON	DEPTH (CM)	COLOUR	FIELD TEXTURE	STRUCTURE	CONSISTENCE
Ap	0-19	black	Clay loam	granular	Friable
Bm	19-38	dark yellowish brown	Clay loam	prismatic	Firm
Cca	38-57	pale brown	Sandy clay loam	massive	Very Firm
Ck	57-100	yellowish brown	Sandy clay loam	massive	Very Firm

Table 2: Example Profile for Dunvargan-gl Soil Series

HORIZON	DEPTH (CM)	COLOUR	FIELD TEXTURE	STRUCTURE	CONSISTENCE
Ap	0-33	black	Clay loam	granular	Friable
Bmgj	33-52	brown	Clay loam	prismatic	Firm
Ccag	52-59	grayish brown	Clay loam	massive	Firm
Ckg	59-100	yellowish brown	Sandy clay loam	massive	Firm

2.1 Soil Handling and Soil Management

During construction, best practices for erosion and sedimentation control will need to occur to prevent soil erosion once the vegetation is removed. Topsoil and upper subsoil will be salvaged and stockpiled separately for reclamation purposes. These soils are not susceptible to wind erosion; however, water erosion during spring melt or heavy rainfall events is a concern. Soil stockpiles will be vegetated with an appropriate seed mix to prevent water erosion.

Average topsoil onsite for upland areas is approximately 25 cm and approximately 30 cm in wetland areas. Approximately 20 cm of suitable subsoil is present. Soil series and subsoil will be further characterized onsite during stripping and grading. Soils will be appropriately managed under the direction of a qualified professional onsite. Unique or problem soils, if present, will be handled separately.

3.0 WEED MANAGEMENT PLAN

Weed species and weed control fall under both provincial and municipal legislation. Provincial legislation (i.e., the *Weed Control Act*), is enforced by municipalities, which may have additional bylaws or policies that they also enforce. Under the *Weed Control Act*, exotic or alien plant species are listed as either prohibited noxious or noxious (GoA 2010). According to the *Weed Control Act*, prohibited noxious weeds need to be destroyed, which means “to kill all growing parts or to render reproductive mechanisms non-viable”. Noxious weeds need to be controlled, which means “to inhibit their growth or spread or to destroy”.

3.1 Weed Survey

A weed survey was conducted as part of the biophysical assessment in June 2019 and no weeds were identified. Professionals supporting the site through construction will assess and monitor stockpiles for noxious and invasive weed species. This includes the list of invasive species provided by RVC and species listed under the *Weed Control Act*.

3.2 Weed Control Methods

Since no specific species of weeds have been identified onsite, general weed control methods are presented in this section. Mountain Ash will implement weed control as part of their regular operating practices that will cover construction, operation and reclamation.

Weed control methods may include a combination of or any one of the following:

- Chemical (e.g., herbicides)
- Mechanical (e.g., mowing prior to flowering)
- Manual (e.g., hand pulling prior to seed set)
- Grazing and/or cultivation (may be limited due to landuse)

Herbicide spraying is conducted in early spring, late fall or throughout the growing season depending on weeds treated, for example, late fall application is effective on Canada thistle; whereas, early spring application is effective for downy brome. Mechanical weed control may include mowing scentless chamomile prior to flowering to reduce seed spread. Manual methods would be hand pulling weeds prior to seed set for species such as nodding thistle, scentless chamomile and purple loosestrife. Weed management should optimize control methods with timing of construction.

Onsite staff during the initial stripping and grading phases will identify different types of weeds and develop a map indicating weed species, no spray zones (i.e., water including a buffer area) and different control methods.

4.0 REFERENCES

Alberta Agriculture and Forestry. 2021. AGRASID Alberta Soil Information Viewer.
<https://soil.agric.gov.ab.ca/agrasidviewer/>

Alberta Soil Information Centre. 2021. Alberta Soil Names File (Generation 4) User's Handbook.

Alberta Weed Control Regulations. 2010. https://www.qp.alberta.ca/documents/Regs/2010_019.pdf

5.0 STATEMENT OF LIMITATIONS

This report has been prepared and the work referred to in this report has been undertaken by SLR for Mountain Ash Limited Partnership., hereafter referred to as the "Client". The report has been prepared in accordance with the Scope of Work and agreement between SLR and the Client. It is intended for the sole and exclusive use of the Client. Other than by the Client and as set out herein, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of SLR.

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