1.0 INTRODUCTION

This report summarizes the results of the subsurface investigation, hydrogeological assessment and geotechnical assessment of the Capital Region Resource Recovery Centre (CRRRC) Site (Site) located in the eastern portion of the City of Ottawa. The location of the CRRRC Site was selected following a Comparative Evaluation of Alternative Sites that considered the protection of groundwater and included an assessment of the results of the preliminary geology, hydrogeology and geotechnical investigations completed at two potential Sites.

A subsurface investigation was completed by Golder Associates Ltd. (Golder) in accordance with the approved environmental assessment work plans and conformed to the scope of studies contained in the approved Terms of Reference. The subsurface investigation was undertaken to obtain Site-specific geological, hydrogeological and geotechnical information to a level of detail suitable for the purpose of supporting applications for approval of on-Site diversion and on-Site residual disposal components under the Ontario *Environmental Assessment Act* and *Environmental Protection Act*/*Ontario Water Resources Act*.

1.1 Site Description

The general location of the proposed CRRRC Site is shown on Figure 1-1. The Site is located on the east side of Boundary Road, just southeast of the Highway 417/Boundary Road interchange, on Lots 22 through 25, Concession XI, in the former Township of Cumberland. The property is east of an existing industrial park, north of Devine Road and west of Frontier Road and totals approximately 192 hectares (475 acres) in area.

The land use surrounding the Site is primarily a mixture of commercial/industrial and agricultural. The agricultural land use is found immediately east of the Site, as well as to the southeast, south and southwest; however, areas of undeveloped (heavily vegetated) land generally exists between the Site and the agricultural lands in these directions. The industrial land use is found to the west and northwest of the Site. Residential development in the vicinity of the Site is limited to some homes mixed in with the commercial/industrial uses along Boundary Road.

1.2 Proposed Site Development Plan

Taggart Miller Environmental Services (Taggart Miller) is proposing the following diversion facilities/operations for the CRRRC:

- Material Recovery Facility (MRF);
- Construction and Demolition (C&D) processing facility;
- Organics processing facility;
- PHC contaminated soil treatment;
- Surplus soil management;
- Drop off for separated materials or for separation of materials; and,
- Leaf and yard materials composting (if there is enough material available).

There would also be a landfill for disposal of residual wastes.

1.3 Organization of Report

This document is referred to as Volume III, Geology, Hydrogeology and Geotechnical Report and contains 15 chapters as follows:

- Chapter 1 – Provides an introduction to the report, relevant background information about the site and a brief description of the proposed site development plan;
- Chapter 2 – Describes the methodology used for the subsurface investigation and hydrogeological assessment completed at the Site;
- Chapter 3 – Describes the geological setting of the Site at the regional, local and site scales;
- Chapter 4 – Describes the regional tectonic setting of the Site;
- Chapter 5 – Describes the local topography and existing surface water drainage in the vicinity of the site;
- Chapter 6 – Describes the site subsurface conditions and is based on the result of the subsurface investigation completed at the Site;
- Chapter 7 – Describes the local and site hydrogeological conditions and is based on available published information and detailed site-specific hydrogeological data collected as part of the hydrogeological monitoring completed at the Site. The site-specific hydrogeological data includes groundwater levels, groundwater flow directions, hydraulic gradients and conductivity, groundwater flux and average linear groundwater velocity;
- Chapter 8 – Describes the background groundwater and surface water quality in the vicinity of the Site;
- Chapter 9 – Presents an evaluation of the potential geological impacts associated with fault rupture and subsurface settlement from earthquake ground shaking;
- Chapter 10 – Describes the proposed site design and facilities to be located at the Site;
- Chapter 11 – Provides geotechnical considerations of the site design including a stability assessment, seismic assessment and settlement assessment, and presents a proposed geotechnical monitoring program;
- Chapter 12 – Presents a hydrogeological conceptual model for the Site, along with the results of the groundwater flow modelling and contaminant transport modelling;
- Chapter 13 – Presents the proposed groundwater and surface water monitoring programs and trigger mechanisms;
- Chapter 14 – Discusses proposed contingency measures in the event that the groundwater and/or surface water monitoring programs identify an impact on groundwater and/or surface water which was not predicted; and,
- Chapter 15 – Discusses the limitations and use of the report.

1.4 List of Contributing Authors

The following provides a list of authors who contributed to the Geology, Hydrogeology & Geotechnical Report for the CRRRC Site.

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