



## **2.0 EXISTING SITE CONDITIONS**

### **2.1 Site Location and Legal Description**

The CRRRC Site is located on the property owned or controlled by Taggart Miller Environmental Services. The property is located in the east part of the City of Ottawa just southeast of the Highway 417/Boundary Road interchange. This portion of the City within which the Site is located is characterized by a provincial 400 series highway corridor, a partially developed industrial park, and a combination of general rural and agricultural uses. The closest developed area is the Hamlet of Edwards about 2 kilometres to the west; separated from the Site by the Highway 417 corridor are the Village of Vars about 5.5 kilometres to the east and the Village of Carlsbad Springs about 3 kilometres to the north. A 43 rural lot subdivision is located within the Township of Russell along Route 100 about 4 kilometres to the south of the Site.

The property is located on the east side of Boundary Road, north of Devine Road and west of Frontier Road, and east of an existing industrial park. Taggart Miller has acquired about 192 hectares (475 acres) of land on Lots 22 to 25, Concession XI, Township of Cumberland (refer to Figure 1, Key Plan and Figure 2, Legal Survey Plan).

### **2.2 Land Use**

The Site itself was formerly used for farming, which was mostly discontinued decades ago and vegetation cover has re-established. According to the City of Ottawa's Official Plan (City of Ottawa, 2013) (Schedule A) and as shown on Figure 3, the CRRRC is designated as a General Rural Area. Designations in the vicinity of the CRRRC include: General Rural Area, Agricultural Resource Area and Rural Natural Features Area. As shown on Figure 4, the Site is zoned as Rural Countryside Zone (RU) and Rural Heavy Industrial Zone (RH).

### **2.3 Adjacent Land Use**

There is limited development surrounding the Site; development has been constrained due to poor quality groundwater. Land uses adjacent to the Site boundaries are as follows:

- To the North: Highway 417 followed by a golf course;
- To the East: Frontier Road followed by rural and agricultural lands. These lands are zoned Rural Countryside Zone and Agricultural;
- To the South: vacant, regenerating agricultural area. These lands are zoned Rural Countryside Zone; and,
- To the West: various industrial park uses both east and west of Boundary Road, with several residences among the industrial and commercial uses along Boundary Road within 500 m of the Site. These lands are zoned Rural Heavy Industrial, Rural General Industrial Zone, Rural Commercial Zone and Rural Countryside Zone.

The approximate locations of the residential and commercial buildings located nearest to the Site are indicated on Figure 3. The nearest water well to the Site, as reported in the MOECC Water Well Information System (WWIS), is also indicated on Figure 3. It should be noted that dug wells not reported to the MOECC WWIS are not indicated on Figure 3, though are assumed to exist on the residential and commercial properties in the area of the Site.



## 2.4 Topography

As illustrated on Figure 5, the topography at the CRRRC Site is flat, and varies between 76 m above sea level (asl) on the east side of the Site to 77.5 m asl in the southwest portion of the Site. Surface water features within the vicinity of the CRRRC Site generally drain in an easterly direction following the general topographic slope.

## 2.5 Hydrology

There are four notable natural watercourses within 5 km of the CRRRC Site, which is located within the Bear Brook Creek Subwatershed. Bear Brook Creek is 3.4 kilometres to the northwest of the property boundary, and Shaw's Creek is 1.6 kilometres to the east. Bear Brook Creek is a major tributary of the South Nation River. The North Castor River is 4.7 kilometres to the southwest, while Black Creek is approximately 2.5 kilometres southeast. Both the North Castor River and Black Creek are part of the Castor River subwatershed and, as such, are isolated by the subwatershed boundary from receiving potential drainage from the CRRRC Site. The Site drains to the east via the Regimbald Municipal Drain to the northeast, to the Simpson Municipal Drain in the central portion, and to a ditch in the southern portion that leads to the Wilson-Johnston Municipal Drain. All these drains converge at the commencement of Shaw's Creek. The hydrology of the Site is described in further detail in Appendix A, Stormwater Management System Design Report.

## 2.6 Geology/Hydrogeology

Regionally, the Ottawa Valley area, within which the CRRRC Site is located, is located within the Ottawa Embayment, an area underlain by a Paleozoic sedimentary sequence which lies unconformably upon Precambrian basement rocks of the Grenville age, and structurally bounded by Precambrian rock of the Frontenac Arch, Laurentian Arch, Oka-Beauharnois Arch and the Adirondack Dome. The Ottawa Valley terrain is largely flat associated with the extensive deposition of marine clay during inundation of the region by the Champlain Sea during the post glacial period. Areas of glaciomarine sand and gravel beaches developed above the clay deposit during the retreat of the Champlain Sea from the valley, and the Ottawa River cut down into the underlying clay following former meander channels in the region. Locally, the area surrounding the CRRRC Site is underlain by shale and limestone of various sedimentary formations, followed by lower bedrock formations that lie unconformably upon the Precambrian basement.

The CRRRC Site is underlain by approximately 32 m to 40 m of soil, representing one of the thicker areas of soil deposits within the area. Much of the area is underlain by deposits of offshore marine silts and clays associated with the former Champlain Sea. Glacial till deposits situated above the bedrock underlie these marine deposits. Boreholes drilled on-Site encountered a 1 m to 2 m thick veneer of silty sand at surface overlying marine silty clay, while a few boreholes encountered the upper weathered zone of the underlying marine silty clay at surface. The silty clay is the dominant soil deposit overlying a comparatively thin (varying between 4 m to 8 m thick) glacial till layer above the bedrock. An apparent continuous but thin (0.1 m to 0.6 m), near flat lying layer of sandy silt to silty sand, trace clay (hereafter referred to as the silty layer) was encountered at a consistent depth of approximately 4 m to 6 m below ground surface. This silty layer thins to the north and south of the Site and appears to be thickest in a diagonal band passing from northwest to southeast through the central part of the Site where it locally thickens to approximately 0.4 m to 0.6 m, possibly reflecting a local erosional pattern in the surface of the clay deposit.



The horizontal groundwater flow direction in the surficial silty sand layer, the silty layer and the silty clay at the Site are consistently to the east while the groundwater flow direction in the glacial till and upper bedrock zone is towards the northeast. The Site has a predominantly downward vertical gradient with some seasonal fluctuations.

The geology and hydrogeology of the Site are described in detail in Volume III of the submission: Geology, Hydrogeology & Geotechnical Report.