3. Environmental Features

The following section summarizes the natural and socio-economic environment baseline conditions in the project area. The data was compiled from published literature and maps, Official Plans, legislation, discussions with agencies and municipalities, and information gathered during field surveys.

3.1 Natural Environment Features

This section addresses the Key Natural (terrestrial and aquatic) Heritage Features (KNHF) as set out for investigation in the following documents: the PPS (2005), Oak Ridges Moraine Conservation Plan (ORMCP) (2002), and Greenbelt Plan (2005). This assessment follows the "Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement" (MNR, 2010). In addition, the Regional and Municipal Official Plans identify three planning designations within the proposed project area: Protected Countryside, Countryside Area, and Natural Linkage Area. **Figure 3-1** presents the ORMCP and Greenbelt Plan Area Planning Designations.

The following presents the KNHF as defined in the PPS, ORMCP, and Greenbelt Plan. Further it presents the differences in KNHFs amongst these documents and states those which do not occur in the study area or project area and, as a result, will not be considered further.

Provincial Policy Statement (2005)

The KNHFs presented in **Section 2.1** of the PPS are as follows:

- Significant habitat of endangered and threatened species;
- Provincially significant wetlands (PSWs);
- Significant woodlands;
- Significant valleylands;
- Significant wildlife habitat;
- Significant Areas of Natural and Scientific Interest (ANSIs); and
- Fish habitat.

Generally these seven natural heritage features applicable to this study/project area encompass the main KNHF found in the other provincial plans namely the ORMCP, and Greenbelt Plan.

COLUMBUS RD E

REGIONAL RD 3

City of Oshawa

GRANDVIEW ST N

LANGMAID RD

ENFIELD RD

Municipality of Clarington

WINCHESTER RD E

TOWNLINE RD N

CONCESSION RD 7

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Date: July 23, 2013
Fig3-1_Map12-02_ClaringtonTS_PlanningDesignations

Source for Future Highway 407 - Municipality of Clarington, 2012

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230 kV Junctions

Transmission Lines

44 kV

230 kV

500 kV

Roads

Future Highway 407

Project Area

Watercourses

Water

Wetlands

Municipal Boundary

Greenbelt

Oak Ridges Moraine Conservation Plan - Countryside Area

Oak Ridges Moraine Conservation Plan - Natural Linkage Area

Clarington TS - Planning Designations

Figure 3-1

1:10,000

0 0.25 0.5 km

Significant woodlands and valleylands have been defined for the project area in the Municipality of Clarington Official Plan. ANSIs do not occur within the project area and, as a result, will not be considered further.

Field investigations have been undertaken to determine the status of the remaining four KNHFs.

Oak Ridges Moraine Conservation Plan (2002)

The KNHFs of the ORMCP plan are similar to those in the PPS (those that are different are shown in bold and italics).

- ***Wetlands***;
- Significant ***portions*** habitat of endangered, ***rare*** and threatened species;
- Fish habitat;
- Significant ANSIs (***Life Science***);
- Significant valleylands;
- Significant woodlands;
- Significant wildlife habitat; and
- ***Sand Barrens, savannahs and tall grass prairies***

The ORMCP includes all wetlands, not only PSWs as KNHFs. In addition to endangered and threatened species habitats, the ORCMP includes "rare" species habitats. The definition of "rare" in the Plan is similar to Species of Conservation Concern including "Special Concern" species, which these are addressed in the Significant Wildlife Habitat analysis of this report. The ORMCP natural heritage features focus on only "life science", ANSIs (Earth Science ANSI are not considered KNHFs).

Sand barrens, savannahs, tall grass prairies and ANSIs are not found in the project area and, as a result, will not be discussed further.

The hydrologically sensitive features to be considered under this plan include:

- Permanent and intermittent streams;
- Wetlands;

- Kettle Lakes; and
- Seepage areas and springs.

Kettle lakes are not found on or adjacent to the project area and, as a result, will not be discussed further.

Greenbelt Plan (2005)

The KNHFs within the Greenbelt Plan consist of the following (those that are different than those in PPS are shown in bold and italics):

- Significant habitat of endangered species, threatened species and ***special concern species***;
- Fish habitat;
- ***Wetlands***;
- Life Science ANSIs;
- Significant valleylands;
- Significant woodlands;
- Significant wildlife habitat;
- ***Sand barrens, savannahs and tallgrass prairies***; and
- ***Alvars***.

The Greenbelt Plan, similar to ORMCP, considers all wetlands, not only PSWs as KNHFs. Species of Special Concern are considered in the Greenbelt Plan and they are addressed in the Significant Wildlife Habitat in **Section 3.1.7**.

Key hydrologic features of the Green Belt include:

- Permanent and intermittent streams;
- Lakes (and their littoral zones);
- Seepage areas and springs; and
- Wetlands.

As noted in the ORMCP section above, sand barrens, savannahs, tallgrass prairies and ANSIs are neither within or adjacent to the project area and are not considered further. This also extends to lakes and alvars.

Municipality of Clarington Official Plan (2012)

The Municipality of Clarington Official Plan 1996 (April 2012 Office Consolidation) conforms to the ORMCP. The KNHFs within the Official Plan are the same as those of the ORMCP.

3.1.1 Natural Setting

The study area lies within the South Slope physiographic region, located north of the Iroquois Plain and south of the Oak Ridges Moraine physiographic region (OGS, 2012). Bedrock underlying the project area consists of the Blue Mountain Formation, consisting of blue-grey non-calcareous shales (MNDM, 2012). Surficial geological conditions in the project area consist of stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain; a minor portion of the project area consists of modern alluvial deposits (i.e., clay, silt, sand, gravel and may contain organic remains) (MNDM, 2012).

The dominant soil type in the study area is Bondhead Loam (grey brown loam over light brown loam over brownish clay loam over grey stony loam; high in lime; few stones), and is associated with rolling to hilly topography and good drainage (Webber *et al.*, 1946). Land lying along the watercourse on the west side of the project area is characterized as bottomlands, areas subject to flooding and surface-depositions materials carried by the stream (Webber *et al.*, 1946).

The soils are classified as 80 percent Class 1, with no significant limitations for agriculture; under good management they are moderately-high to high in productivity for a wide range of field crops (CLI, 1968). The soils are 20 percent Class 4, with severe limitations due to adverse topography (either steepness or the pattern of slopes limit agricultural use) (CLI, 1968).

The topography of the project area is rolling agricultural land typical of the Oak Ridges Moraine and varies in elevation approximately from 235 to 270 metres above mean sea level (AMSL).

The study area is located in the transition zone between the Niagara Section of the Deciduous Forest Region (commonly referred to as the Carolinian Zone) to the south and the Huron-Ontario Forest Section of the Great Lakes-St. Lawrence Forest Region to the north (Rowe, 1972). The forest communities of the Niagara Forest Section are dominated by broad-leaved trees with sugar maple (*Acer saccharum* spp. *saccharum*) and American beech (*Fagus grandifolia*) as characteristic species. The Deciduous Forest Region is the most southerly forest region in Ontario and houses 90 per cent of Ontario's population (MNR, 2012). Agriculture and urban development in this region have resulted in scattered smaller woodlots representative of the original communities. The Huron-Ontario Forest Section of the Great Lake-St. Lawrence Forest Region is a transitional vegetation type between the southern deciduous and northern coniferous forests, and as such is dominated by mixed wood forests (Rowe, 1972). **Figure 3-2** shows the location of natural environmental features both adjacent to and within the project area.

The study area lies within the Northern Lake Ontario drainage basin (Chapman and Putnam, 1984), with all project area watercourses draining to Lake Ontario. The watercourses arise either within the Oak Ridges Moraine or on the ground moraine, resulting in watercourses with relatively small drainage basins and limited base flows. Drainage is generally from north to south, but the pattern of headwater tributaries and in-stream meander result in many local exceptions to the general pattern of north-south flow. The project area is primarily located within the headwaters of two watersheds, the Harmony and Farewell Watersheds (**Figure 3-3**).

COLUMBUS RD E

REGIONAL RD 3

GRANDVIEW ST N

City of Oshawa

LANGMAID RD

ENFIELD RD

Municipality of Clarington

WINCHESTER RD E

TOWNLINE RD N

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Fig3-2_Map12-02_ClaringtonTS_NaturalFeatures

Source for Future Highway 407 - Municipality of Clarington, 2012

230 kV Junctions

Transmission Lines

44 kV

230 kV

500 kV

Roads

Future Highway 407

Project Area

Watercourses

Water

Wetlands

Municipal Boundary

Area of Natural and Scientific Interest

Environmentally Sensitive Area

Pit or Quarry

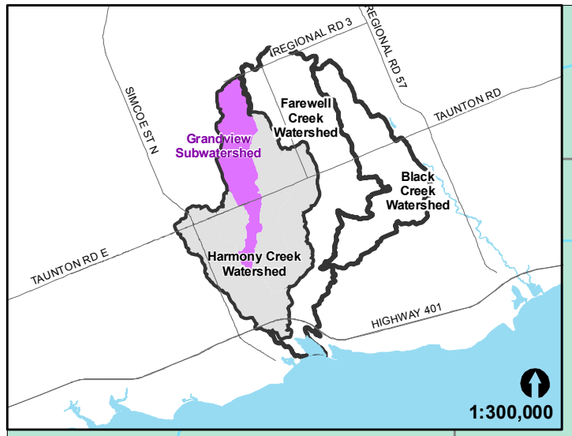
Wooded Area

Clarington TS - Natural Features

Figure 3-2

1:10,000

0 0.25 0.5 km



COLUMBUS RD E

REGIONAL RD 3

ENFIELD RD

City of Oshawa

OSHAWA NORTH JCT

Oshawa Creek Watershed

GRANDVIEW ST N

Harmony Creek Watershed

Grandview Subwatershed

LANGMAID RD

Farewell Creek Watershed

ENFIELD RD

OSHAWA SOUTH JCT

Municipality of Clarington

OSHAWA AREA JCT

WINCHESTER RD E

TOWNLINE RD N

CONCESSION RD 7

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Fig3-3_Map12-02_ClaringtonTS_Watershed

Source for Future Highway 407 - Municipality of Clarington, 2012

- 230 kV Junctions

Transmission Lines
- 44 kV
- 230 kV
- 500 kV

- Roads
- Future Highway 407
- Project Area
- Watercourses
- Water
- Wetlands
- Municipal Boundary
- Subwatersheds
- Watersheds

Clarington TS - Watershed Map

Figure 3-3

1:10,000

0 0.25 0.5 km

3.1.2 Vegetation

Within the project area, there is only one woodland located in the northwest corner, which is approximately 4.7 ha in size. The woodland has been designated as a "significant woodland" by the Municipality of Clarington (Clarington, 2012) (see **Section 3.1.7**) based on it being greater than 4 ha in size. Other wooded areas coincide with the valleylands associated with the Harmony Creek Tributary (west side of project area) and the hedgerows.

The vegetation communities in the project area were classified using the Ecological Land Classification (ELC) system for southern Ontario in the spring and summer of 2012. Additionally, a vascular plant survey was also conducted. The ELC surveys recorded the presence of three forest communities within the woodland: Dry-Fresh Ironwood Deciduous Forest, Dry-Fresh Sugar Maple Deciduous Forest and Fresh-Moist Poplar Deciduous Forest (Stantec, 2012). Bordering the woodland to the east and south are Mineral Cultural Thickets and Mineral Cultural Meadows. The northeast corner of the project area is bordered by a low-lying area with the following ELC communities: Red-osier Dogwood Mineral Deciduous Thicket Swamp, Cattail Graminoid Mineral Marsh Meadow and Reed-Canary Grass Mineral Meadow Marsh (Stantec, 2012). The ELC communities are illustrated in **Figure 3-4**. A detailed description of each ELC community and the results of the floral inventory are provided in **Appendix C**.

The ELC also identified butternut (*Juglans cinerea*) which is listed as Endangered federally (COSEWIC, 2012). The Endangered status of butternut in Ontario is based on observed and predicted declines due to Butternut Canker, a fungal disease that often results in tree mortality (MNR, 2011a). Butternut is protected under Section 9 of the *Endangered Species Act* (*ESA*), prohibiting against the killing, harming, taking, possessing, buying and selling of butternut. These prohibitions do not apply to those affected by Butternut Canker to such a degree that they are not necessary to retain for the purpose of supporting the protection or recovery of the species. These trees are known as non-retainable (Category 1) butternuts.