

Integrated Environmental Review (IER)
Cedar Lakes, Phases 3 – 4, Greely South
Part of Lot 8, Concession 3
City of Ottawa

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1.0. Introduction

As requested by Sunset Lakes Developments an Integrated Environmental Review (IER) has been prepared for a village residential development in the south part of the Village of Greely, City of Ottawa.

This Integrated Environmental Review (IER) has been prepared for a village residential development in the south part of the Village of Greely, City of Ottawa. The site is just south of the Cedar Lakes Subdivision (Cedarlakes Way), west of Stagecoach Road and east of Deermeadow Drive. The site is described as Part of Lot 8, Concession III of the Geographic Township of Osgoode, City of Ottawa. The site is a combination of meadows in the central portion with wooded areas in the west, and thickets and wooded areas in the east (Figure 1).

The overall objective of the IER is to ensure that significant findings from support studies are integrated and assessed as a complete package. Specifically the IER demonstrates how all the studies in support of the application influence the design of the development with respect to effects on the environment and compliance with the appropriate policies of the City of Ottawa Official Plan and the principles of design with nature.

The following items are an integral part of the scope of an IER:

- a. An overview of the results of individual technical studies and other relevant environmental background material;
- b. A graphic illustration such as an air photo, summarizing the spatial features and functions as identified in the individual studies;
- c. A summary of the potential environmental concerns raised, the scope of environmental interactions between studies, and the total package of mitigation measures, including any required development conditions and monitoring, as recommended in individual studies;
- d. A statement with respect to how the recommendations of the support studies and the design with nature approach have influenced the design of the development; and,
- e. An indication that the statement has been reviewed and concurred with by the individual subconsultants involved in the design team and technical studies.

1.1. Description of the Proposal

The site is located in an area characterized primarily by developing residential use. To the west, north, and east are village residential subdivisions with existing and former agricultural lands to the south. Within the city's Zoning By-law No. 2008-250 these lands were zoned as Rural Area (Section D). Within the city's official plan (2022) these lands are designated as the Village of Greely and Natural Heritage Feature (Schedule C11-B).

Residential lots are proposed for the lands in the village boundary. The lots will be along an internal road network that connects to Stagecoach Road and extensions of Stableview Way. Seventy-one village residential lots with a minimum lot size of 0.40 ha are proposed for the 40 hectares site. Each village lot will be on full private individual water well and septic services, with roadside drainage ditches. Two lake areas will be used for stormwater management. Parks are designated within Block 72 and 78 (Figure 2).

1.2. Site Context

Within the city's Zoning By-law No. 2008-250 the subject lands were zoned as Rural Area (Section D). Within the city's official plan (2022) the subject lands are designated as the Village of Greely and Natural Heritage Feature (Schedule C11-B).

In the Shields Creek Subwatershed Study (Figure 6.2.1) the forested portions of the site are identified as a Level 2 Policy Area, indicating that an environmental impact statement is required with any development application (TSH, 2004). No Level 1 lands (no development permitted) are on or adjacent to the site. The ecological significance of the site was considered low by TSH (2004), with the lowest level of protection (Level 2C) assigned to the site on Figure 6.2.3. No rehabilitation opportunities are recommended in proximity to the site on Figure 6.4.1 of the Shields Creek Subwatershed Study.

The forested portions of the site represent the north-central portion of the Herberts Corners Bog Natural Area, identified as Area 20 in the Region of Ottawa-Carleton's Natural Environment System Strategy (Brownell and Blaney, 1997). The Natural Area was broadly designated to have a moderate overall significance in the evaluation summary performed as part of the Region of Ottawa-Carleton's Natural Environment System Strategy. Moderate significance was applied to two criteria, landscape attributes and vegetation community/landform and species diversity, while a high significance was applied to rare vegetation community/landform representation and endangered, threatened, and rare species criterion. The significance of three factors, seasonal wildlife concentrations, hydrological features and condition of natural area, was unknown. The southeast part of the Natural Area, east of Stagecoach Road and approximately 1.5 kilometres southeast of the site, contains the second largest open bog community in the City of Ottawa. Other features and functions of the Natural Area include a willow and alder thicket swamp adjacent to the bog, and upland deciduous and mixed forests consisting of red maple, black ash and white cedar. The forests were considered relatively young (less than 50 years old).

There are no Areas of Natural and Scientific Interest in the general vicinity of the site. The closest Provincially Significant Wetland is a portion of the West Osgoode Wetland Complex, approximately 2.5 kilometres southwest of the site.

2.0. Summary of Technical Studies

2.1. Geotechnical Investigations

Paterson Group conducted a geotechnical investigation of the site (Paterson, 2023). Generally, the subsurface profile at the subject site consists of an approximate 0.1 to 0.3 m thick layer of topsoil or peat underlain by a deposit of silty sand to sandy silt. At the southwest portion of the site, the silty sand to sandy silt was observed to be underlain by a stiff to firm grey silty clay deposit below approximate depths of 0.6 to 3.9 m. A glacial till deposit was encountered underlying the silty sand to sandy silt and/or silty clay across the majority of the site at approximate depths ranging from 0.5 to 3.7 m below the existing ground surface. Based on available geological mapping, the bedrock in the subject area consists of dolomite of the Oxford Formation with an overburden drift thickness of 3 to 10 m.

Groundwater was observed within the open test pits and hand auger holes during the geotechnical investigations. Based on these observations, the groundwater level generally varies from approximate

depths of 1 to 2 m below the existing ground surface. It should be noted that surface water was observed to be near the existing ground surface due to the presence of a peat layer overlying silty sand to silty clay. The pooled water is present as a result of poor surface drainage and the presence of an impermeable silty clay deposit. Although groundwater was present at the ground surface in the southeast portion of the site, where surficial peat was encountered. Furthermore, it should be noted that groundwater levels are subject to seasonal fluctuations, therefore, the groundwater levels could vary at the time of construction.

From a geotechnical perspective, the subject site is considered suitable for the proposed development. It is recommended that the proposed buildings be founded on conventional spread footings bearing on an undisturbed, loose to compact silty sand to sandy silt, firm to stiff silty clay or compact glacial till (Paterson, 2023).

GEMTEC Consulting Engineers and Scientists (GEMTEC) conducted a hydrogeological investigation and terrain analysis of the site (GEMTEC 2023). This study concluded that

- The site is not considered to be hydrogeologically sensitive based on the absence of significant areas of thin soils, highly permeable soils, or karst features.
- The water supply aquifer encountered at the site includes limestone of the Oxford and/or March Formations as well as sandstones of the Nepean Formation.
- Water quality testing indicates that the water quality meets the ODWQS maximum acceptable concentrations and maximum concentrations considered to be reasonably treatable. Groundwater treatment for aesthetic and operational guideline parameters will be required.
- The water quality from Cedar Lakes Phase 1 and 2 and private domestic wells sampled west of the site are similar to the water quality found in the proposed subdivision. No significant impacts have been identified from the available background reports and water quality sampling.
- The quantity of groundwater available from the proposed water supply aquifer is more than sufficient for the proposed development and will sustain repeated pumping at the test rate and duration at 24-hour intervals over the long term.
- Interference between drinking water wells is expected to be minimal under typical usage for residential developments.
- No negative impacts to the bedrock aquifer are anticipated from the use of on-site septic systems based on nitrate dilution calculations which demonstrate that offsite nitrate impacts are less than 10 mg/L.
- No negative impacts to the bedrock aquifer are anticipated from on-site stormwater management ponds constructed in accordance with MECP requirements.
- Based on the results of this hydrogeological investigation and terrain analysis, in GEMTEC's professional opinion the proposed residential development is suitable for development, subject to confirmation of the assumptions made herein.

In summary Paterson (2023) and GEMTEC (2023) did not identify any geotechnical, water quality or quantity constraints on the site.

2.2. Terrestrial Environment

The Environmental Impact Statement (BCH, 2023) describes in details the features of the terrestrial environment. The site is isolated from an environmental perspective due to developed portions of Greely

to the west, north and east and agricultural activity to the south. Since the Natural Environment System Strategy was completed by Brownell and Blaney (1997) residential developments have been completed within the Herberts Corner Bog Natural Area to the west, southwest, southeast and east of the site. This has significantly impacted the linkage functions between the site and the core and remaining portions of the Natural Area to the east of Stage Coach Road, about 1.5 kilometers to the southeast of the site.

The site is a combination of deciduous forest, coniferous forest, a mosaic of cultural meadow/thicket and remnant wetland communities (Figure 1).

Sugar maple, red maple, American basswood, trembling aspen, white birch, green ash and black cherry are the dominant trees in the west dry-fresh sugar maple deciduous forest. The forest is generally young, with some older trees (50cm dbh), but most stems are on average 30cm dbh. Ground flora includes ostrich fern, northern lady fern, grasses, poison ivy, and white trillium. Regenerating ash and maple is common in the understory.

There was also a fresh ash lowland deciduous forest in the central portion of the west forest with green ash dominant (Figure 1). Red maple and American elm are also common. The average tree diameter was 20-30cm. Ground cover consisted of ostrich fern, northern lady fern, sensitive fern, European stinging nettle, spotted jewelweed, and dwarf raspberry. Wind throw are extensive within this community.

A two small fresh-moist lowland deciduous forests were located within the north eastern portion of the site. Balsam poplar, Manitoba maple, green ash and crack willow dominated this community. Trembling aspen and white cedar were also present. The average tree diameter was 30cm. Ground cover consisted of wood nettle, riverbank grape, violets, grasses, sedges, and poison ivy.

Within the southern portion of the site there was a fresh- moist poplar deciduous forest. The dominant tree species included balsam poplar, trembling aspen, large-toothed aspen and white ash. The average tree diameter was 20cm. Ground cover consisted of grasses, goldenrods, and smooth bedstraw.

White cedar is dominant in the fresh white cedar coniferous forest in the north portion of the site, with minor representation of trembling aspen, American elm, balsam poplar, red maple, green ash, and Manitoba maple in areas (mostly along the borders). The average tree diameter was highly variable and ranged from 5 to 30cm. The understory and ground cover was limited by the dense cedar in most areas.

A mosaic of cultural thicket and meadow present throughout the site with the majority located centrally. Community composition varied depending on the locations. All these areas are highly disturbed by past clearing, infilling, and contain rock/spoil piles throughout. The thicket portions consisted of a variable mix of species (green ash, trembling aspen, American elm, willows, common buckthorn, glossy buckthorn, balsam poplar, wild red raspberry, common raspberry, and common blackberry). The meadow portions were dominated by grasses followed by goldenrods, wild carrot, and smooth bedstraw. Remnant windrows were present and consisted of American elm, green ash, and trembling aspen. Much of the ash present within these communities were dead.

The remnant wetland communities (robust emergent marsh, tall shrub swamp, and deciduous swamp) are highly affected by the drainage practices. Dredging, channelization and the removal of beaver dams have all contributed to the lowering of the water table. These wetlands appear to be within the early

stages of transitioning to upland (upland plants starting to be present; wild red raspberry). As drainage will need to be continuously maintained, these wetlands are no longer viable and in time will convert to an upland community. Water was present in isolated pockets only during the April 11, 2023 field visit. This system now drains very rapidly.

The robust emergent marsh is present centrally within the site south of the access road. This wetland presented two forms: robust emergent (broad-leaved cattail) and dead deciduous tree. This wetland does not represent fish habitat and turtle habitat is fairly unlikely as water lacked suitable depth and tree cover limits basking opportunity.

The tall shrub swamp is present centrally within the subject lands south of the access road. This wetland presented three forms: tall shrub (slender willow, pussy willow, white meadowsweet, and glossy buckthorn), narrow-leaved emergent (reed canary grass, sedges, and fowl mana-grass) and herbaceous plant (purple loosestrife, sensitive fern, early goldenrod, and common boneset).

The deciduous swamp is present centrally within the subject lands, south of the access road. This wetland presented four forms: deciduous tree (green ash, crack willow, American elm, and black ash), tall shrub (slender willow, pussy willow, and glossy buckthorn), narrow-leaved emergent (sedges), and herbaceous plant (sensitive fern, tall buttercup, purple loosestrife, and common boneset).

Wildlife observations included American toad, Gray treefrog, spring peeper, green frog, wood frog, leopard frog, painted turtle, garter snake, green heron, blue heron, turkey vulture, Canada goose, mallard, ruffed grouse, wild turkey, killdeer, mourning dove, belted kingfisher, downy woodpecker, northern flicker, pileated woodpecker, eastern wood-pewee, alder flycatcher, eastern phoebe, great crested flycatcher, eastern kingbird, warbling vireo, red-eyed vireo, blue jay, American crow, black-capped chickadee, tufted tit-mouse, white-breasted nuthatch, veery, American robin, grey catbird, European starling, yellow warbler, chestnut-sided warbler, black-and-white warbler, ovenbird, common yellowthroat, scarlet tanager, eastern towhee, chipping sparrow, field sparrow, song sparrow, swamp sparrow, northern cardinal, red-winged blackbird, common grackle, American goldfinch, eastern cottontail, red squirrel, porcupine, red fox, black bear, and white-tailed deer. A few snags contained woodpecker cavities. No stick nests were observed on or adjacent to the site. Brownell and Blaney (1997) noted that the overall Herberts Corners Bog Natural Area has a relatively low interior size relative to its total size since it is irregular in shape.

Brownell and Blaney (1997) stated that there are no large-scale linkages or corridors associated with the Herberts Corners Bog Natural Area. Regional roads, active agricultural lands and village and rural residential estate developments impact potential linkages to the remaining balance of the Herberts Corners Bog Natural Area to the southeast.

The reports of rare flora species in the Herberts Corners Bog Natural Area by Brownell and Blaney (1997) concentrated on wetland species such as bog rosemary (*Andromeda polifora*), spotted water-hemlock (*Cicuta maculata*), pale laurel (*Kalmia polifolia*), highbush blueberry (*Vaccinium corymbosum*), rose pogonia (*Pogonia ophioglossoides*), stunted sedge (*Carex magellanica*), mud sedge (*Carex limosa*), few-seeded sedge (*Carex oligosperma*), sheathed cottongrass (*Eriophorum vaginatum*) and tawny cotton-grass (*Eriophorum virginicum*). The four butterflies reported by Brownell and Blaney (1997) as regionally

rare are also associated with wetlands, in particular bog habitat (Layberry et al., 1982). The level of disturbance in the forest and wetland habitat on the site would appear to exclude the flora species of interest identified in the Herberts Corners Bog Natural Area by Brownell and Blaney (1997), including New England sedge (*Carex novae-angliae*), which has a coefficient of conservatism of 10, and thus is very unlikely to be found in relatively disturbed forests.

The Make a Map: Natural Heritage online database (OMNRF) was reviewed on April 20, 2023. This database provides sightings of provincially tracked species including Threatened and Endangered species covered by the 2008 Endangered Species Act in 1 km squares across most of Ontario. A search was conducted on the site and adjacent lands (18VR5409, 18VR5310, 18VR5309, 18VR5308, 18VR5410, 18VR5408, 18VR5208 and 18VR5209) identified the following results:

- Snapping Turtle (Special Concern)
- Eastern Wood-Pewee (Special Concern)
- Wood Thrush (Special Concern)
- Eastern Meadowlark (Threatened)
- Butternut (Endangered)

The Ontario Breeding Bird Atlas provides a searchable database in the form of a 10km square grid. A query revealed the following Species at Risk and species of special concern were identified within the 10km square that encompasses the site and adjacent lands (18VR51 and 18VR50):

- Eastern Whip-Poor-Will (Threatened)
- Chimney Swift (Threatened)
- Eastern Wood-Pewee (Special Concern)
- Barn Swallow (Special Concern)
- Bank Swallow (Threatened)
- Wood Thrush (Special Concern)
- Bobolink (Threatened)
- Eastern Meadowlark (Threatened)

Similar to the Ontario Breeding Bird Atlas, the Ontario Reptile and Amphibian Atlas provides a searchable database in the form of a 10km square grid. A query revealed the following species of special concern was identified within the 10km square that encompasses the subject lands and adjacent lands (18VR51 and 18VR50):

- Snapping Turtle (Special Concern)
- Northern Map Turtle (Special Concern)
- Blanding's Turtle (Threatened)

iNaturalist and the Global Biodiversity Information Facility provides a searchable database. A query revealed the following Species at Risk and species of special concern:

- Snapping Turtle (Special Concern)
- Blanding's Turtle (Threatened)
- Northern Map Turtle (Special Concern)

- Eastern Musk Turtle (Special Concern)
- Butternut (Endangered)
- Wood Thrush (Special Concern)
- Eastern Wood-Pewee (Special Concern)

The Department of Fisheries and Oceans provide species at risk sightings via their online map tool. A query found no results in the vicinity of the site.

In addition to the above potential Species at Risk, many other endangered and threatened species may potentially occur in the general area:

- Little Brown Myotis (Endangered)
- Northern Myotis (Endangered)
- Tri-coloured Bat (Endangered)
- Black Ash (Endangered)

Blanding's, Map, and Musk turtles are not anticipated to be utilising the subject lands. The ponds do represent suitable snapping turtle habitat, and painted turtles were noted within the eastern pond and associated drain.

Eastern wood-pewee, barn swallow, and wood thrush are designated special concern under the Ontario Endangered Species Act (ESA). The habitat of species of special concern is not regulated under the Ontario ESA. The eastern wood-pewee is mostly associated with the mid-canopy layer of forest clearings and edges of deciduous and mixed forests (COSEWIC 2012a). One species of concern was observed (Eastern wood-pewee) within the western forest on May 17, 2023 (station 1), the bird was not heard or observed during any subsequent visits and is considered as a transient, not permanently utilizing the subject lands. Eastern wood-pewee are not anticipated to be nesting within the subject lands. Barn swallow nest sites are commonly found along the interior or exterior of building structures, under bridges and wharves, and in road culverts (Heagy et al. 2014.). No barn swallow, or barn swallow nests were observed. The wood thrush nests mainly in second-growth and mature deciduous and mixed forests, with saplings and well-developed understory layers (COSEWIC 2012b). This species was not observed during the breeding bird surveys and additional visits it is not anticipated to be utilizing the subject lands.

Eastern whip-poor-will, chimney swift, bank swallow, bobolink, and eastern meadowlark are designated as threatened under the Ontario Endangered Species Act (ESA). Eastern whip-poor-will avoids both wide-open spaces and closed canopy forests. Semi-open forests or patchy forests with clearings, such as barrens or forests that are regenerating following major disturbances, are preferred. Areas with little ground cover are also preferred (COSEWIC 2009b). A whip-poor-will survey was completed to assess the presence of these birds within the subject lands (May 29, 2023, June 7, 2023, and June 26, 2023; weather conditions available in table 1). During the 3 visits, 3 listening stations were established (6 minutes at each station). No whip-poor-will were heard or observed. Chimney swift are aerial foragers, associated with water where insects are abundant and urban and rural areas where chimneys are available for nesting and roosting (COSEWIC 2007). No suitable chimneys were observed for this species use. Bank swallow are generally associated with sand-silt vertical banks (COSWIC 2013a). This habitat was not present. Bobolink and eastern meadowlark are associated with native and non-native larger grassland habitats such as

hayfields (COSEWIC 2010, and COSEWIC 2011). There is potential for these birds to be utilising the meadow, none were identified during the breeding bird survey (see section 3.2) and they are not anticipated to be present within the subject lands.

Little brown Myotis, northern Myotis, Eastern Small-footed Myotis, and tri-coloured bat are designated endangered under the Ontario Endangered Species Act (ESA). All four bats may forage in open areas on-site and may roost in trees or buildings on or adjacent to the Site. The Atlas of Mammals of Ontario (Dobbyn, 1994) suggests that the tri-colored bat is not present within this part of Ontario however, the NatureServe mapping in the COSSARO (2015) includes all southeastern Ontario. Based on this information, this species is considered to have a very low potential of occurring. Maternity colonies are established by females in the summer, often in buildings, or large-diameter trees with suitable cavities (COSEWIC 2013b). No caves, bedrock fissures, mining shafts, abandoned buildings, or other features which may function as bat hibernacula habitat were noted within the subject lands. No suitable cavity trees that may be used by bats were observed within the subject lands.

Butternut (designated as endangered by the ESA) tends to reach greatest abundance in rich well-drained mesic loams in floodplains, streambanks, terraces and ravine slopes, but can occur in a wide range of other situations (COSEWIC 2017). Two potential butternut trees were observed during the surveys. An assessment was completed on June 14, 2023. DNA was submitted to NatureMetrics by 6980848 Canada Corporation, lab results indicate that the butternut are indeed hybrids. No further action is required, hybrids are not protected by the ESA.

Black ash (designated as endangered by the ESA) occurs most frequently in floodplain forests, basin, seepage and lacustrine swamp forests, shoreline forest margins, and fens (COSEWIC 2017). The ministry temporarily suspended protections for Black Ash for a period of two years from the time the species was added to the Species at Risk in Ontario List (Ontario Regulation 230/08). During this time, proponents will not need to seek authorizations for activities that impact Black Ash and its habitat. Black ash was present within the deciduous swamp.

2.3. Aquatic Habitat

The site is within the Middle Castor River subwatershed. No natural watercourses were observed on the site. The proponent is currently proposing the removal of all drains with the exception of the main channels of Reach 1 and 2 (Figure 2). The removal of these drains is supported by this EIS, the headwater study (present in the EIS) and the Shields Creek Subwatershed Study.

The drains identified on Figure 2 as protection are man-made and are subject to maintenance to maintain flow, it is relatively featureless, and the HDW management recommendations are significantly based on the presence of fish habitat and the surrounding lands. It is important to note that these drains are fed from storm pond outlets which were artificially created and the entire network forms part of an open drainage network. These drains have a registered 15m maintenance easement by the city of Ottawa. Within this easement, a trail/access road is being proposed for recreational and maintenance purposes.

Although the headwater study recommends protection for the main branch of Reach 2, this system would be considered as type 3 fish habitat within the Shields Creek Subwatershed Study. Type 3 fish habitats are considered to have no reasonable potential for enhancement or restoration, and are often degraded by

human activities which clearly applies to this drain. These tributaries are part of an open drainage network of first order and according to the Shields Creek Subwatershed Study would receive a protection level of 3. As such, diverting flow, realignment, and the installation of culvert at the crossing can be supported. Recommendations of the HDW study should be considered during the design of these works.

Furthermore, two newly created stormwater ponds will be created, tied into Reach 1. The main portion of Reach 2 and all upstream flows diverted into these ponds and the remnant channel removed. The stormwater ponds will outlet to tributaries of the Grey's Creek Municipal Drain to the south of the site. The treatment provided in the stormwater ponds will ensure the water quality and quantity of potential downstream fish habitat in the tributaries of the Grey's Creek Municipal Drain are protected.

A single road crossing is currently being proposed within reach 1 and the main portion of reach 2. The culvert will meet the applicable standards for the volume of traffic and to properly convey the correct volume of water.

The above proposed is consistent with the wording and meets the intent in the Shields Creek Subwatershed Study.

2.4. Stormwater Site Management and Other Servicing

The stormwater management approach for the site and other servicing requirements are identified by ARK Engineering (2023). The approaches recommended in the Greely/Shields Creek Stormwater and Drainage Study (Stantec, 2002) have been followed. All dwellings will have their own wells for domestic water usage and septic systems for sewage treatment. Two stormwater management ponds are proposed to ensure that the post-development conditions of the site are similar to the pre-development conditions.

The location of the ponds will intercept surface runoff which currently drains from the north to south. The ponds outlets will be via improvements to existing watercourse which ultimately discharge into tributaries of the Grey's Creek Municipal Drain, identified as reaches SNC 18 and SNC 22 on Figure 4.3.2 of the Shields Creek Subwatershed Study (TSH, 2004).

The design criteria and guidelines used for the stormwater management of the subject subdivision are based on the October 2012 City of Ottawa Sewer Design Guidelines and subsequent technical memorandums, as well as generally accepted stormwater management design guidelines. The specific criteria used for the minor and major system and SWM pond design are presented below:

- Minor System
 - o Roadside ditches and driveway culverts are to be designed to provide, at a minimum, a 2-year level of service. That is, for a 2-year design storm, all surface drainage draining to the SWM pond shall be contained within the roadside ditches.
 - o All driveway culverts shall be a minimum of 500 mm in diameter.
- Major System
 - o The 100-year Water surface elevation in the roadside ditch should not exceed the lowest ground elevation around the perimeter of the adjacent building.
 - o The spread of major system flows for the 100-year + 20% stress test shall not exceed the building's lowest opening.

- Roof leaders shall be installed to direct the runoff to grassed areas.
- Quality and Quantity Control Design
 - As per Stantec's "Greely/Shield Creek Stormwater and Drainage Study" for future developments with stormwater management (SWM) controls, the recommended SWM strategy is to control the 2-year post-development flow to 50% of predevelopment peak flow and control 5-year to 100-year post-development peak flows to match pre-development conditions.
 - The site is required to provide an Enhanced level of protection for stormwater quality or 80% long-term removal of suspended solids as per the MECP Stormwater Management Planning and Design Manual.

2.5. Archaeological Analysis

A Stage 2 Archaeological Assessment was completed by LHC Heritage Planning & Archaeology (2023). The Stage 2 field investigation included a visual inspection of the existing landscape, and a test pit survey at 5m intervals within the area identified as possessing archaeological potential. The visual inspection documented two stone fences, two circular depressions, and one stone lined well. A total of 115 artifacts were recovered from Find Location #1, which indicates 19th century occupation of the site. Based on the artifact assemblage and historical records, Find Location #1 may reflect the 19th century occupation of the site by the Neilan family, who are inferred to have been on the property from around 1861 to circa 1866. This Stage 2 archaeological assessment has provided the basis for the following recommendations:

- Find Location #1 possesses CHVI and is recommended for Stage 3 archaeological assessment prior to any development impacts. The remaining site outside of Find Location #1 has been given clearance for development. The Stage 3 assessment should include the hand excavation of 1 m² test units in a 5 m grid across the site and the excavation of additional 1 m² infill test units amounting to 20% of the grid unit total, as outlined in Sections 3.2 and Table 3.1 of MCM's (2011) Standards and Guidelines for Consultant Archaeologists.
- A site form detailing the archaeological materials associated with Find Location #1 is required to be submitted to the MCM to register the location as an archaeological site in accordance with the Ontario Heritage Act.

2.6. Environmental Site Assessment

Paterson Group completed a Phase 1 Environmental Site Assessment (Paterson, 2022). The purpose of this Phase I-ESA was to research the past and current use of the Phase I Property and the Phase I Study Area and to identify any environmental concerns with the potential to have impacted the Phase I ESA Property.

Based on their review of historical information, the Phase I Property has solely consisted of agricultural fields and vacant land. No PCAs were identified with respect to the historical use of the Phase I Property.

The historical use of the surrounding lands consisted primarily of residential developments and vacant land. One historical PCA was identified in the form of a former quarry located to the east of the Phase I Property, across Stagecoach Road. Based on its separation distance and cross gradient orientation with

respect to the Phase I Property, the former quarry is not considered to represent an APEC on the Phase I Property.

Following the historical research, a site visit was conducted. The Phase I Property consists of vacant lightly vegetated land with forested areas in the central, northern, and western portions of the Phase I Property. Access roads used in conjunction with residential development to the north, intersect the northern and central portions of the Phase I Property. No PCAs were identified with respect to the current use of the Phase I Property.

Neighbouring land use in the Phase I Study Area consists primarily of residential properties and vacant land. No PCAs were identified with respect to the current use of the neighbouring properties.

Based on their findings of the assessment, it is our opinion that a Phase II Environmental Site Assessment is not required for the subject property.

3.0. Summary of Potential Environmental Concerns

Although portions of the site, particularly the west component, are forested, the forest is young and is disturbed by wind throw and to a lesser extent, non-native species. One natural heritage feature, as identified in the Provincial Policy Statement was observed on the site (Significant Woodland). The habitats not observed are significant wetlands, the significant portions of the habitat of endangered and threatened species, significant Areas of Natural and Scientific Interest, significant valleylands and significant wildlife habitat.

3.1. Terrestrial Habitat

As per the criteria set out in the NHRM and the City, the western woodland should be considered significant, furthermore the woodland retains this designation of significance even after construction is completed. This woodlands significance was established from the following criteria: size, woodland interior, proximity to other habitats, and linkages. After removal (12.49ha), the woodland (48.9ha after removal) still meets the criteria for significance (Table 7). There are no significant features within the development area. Although this woodland has been classified as significant, it is important to note that this was attributed to the woodland size, interior, proximity to other habitats, and linkages. Removal of 12.49ha of the forest at this location will not negatively impact this feature or its ecological functions. Woodland significance is retained.

The site is isolated from a natural environment perspective by adjacent village residential developments and agricultural activity. Several residential developments have occurred in portions of the Herberts Corners Bog Natural Area since the natural area mapping was completed. The sensitive bog component of the natural area is approximately 1.5 kilometres southeast of the site, on the opposite side of Stagecoach Road. There is no hydrological connection between the site and the bog, with surface runoff from the site entering tributaries of Grey's Creek and eventually the Middle Castor River. New forest edges will be created however sunscald is not considered a significant potential concern given the dominance of low sensitivity species such as cedar, poplar and ash. In addition, native plantings will be placed along the new forest edges to add protection for the retained trees.

Tree retention in the vicinity of the building envelope on each lot will be difficult as grade raises up to one metre are anticipated, although wherever possible woody vegetation removal should be minimized. Map 5 of BCH (2023) shows the areas of proposed conserved vegetation at the rear of many lots and peripheries of the stormwater ponds. This tree retention will maximize the long-term viability of the local stock. The extent of possible tree retention on Village lots is clearly shown on the developed lots to the west of the site, on the east side of Deer Meadow Drive.

There are no specific sensitivities for plantings on the site. A landscape plan for the site should include native species where possible including a mix of coniferous and deciduous species such as sugar maple, red maple, basswood, bur oak, red oak, tamarack and white spruce trees, along with nannyberry, other native Viburnums, elderberry and dogwood shrubs. Where possible the woody vegetation should be planted in clusters to improve the wildlife benefit. Plantings of deciduous and coniferous stems at the sides and rear of lots post grade raises will augment the retained trees at the rear of the lots and increase the natural attributes of each lot. For many lots in the cultural meadow and thicket habitats the extent of larger trees should be greater than current conditions over the long term.

To protect breeding birds, no tree or shrub removal should occur between April 1th and August 30th, unless a breeding bird survey is completed by a qualified biologist within two days of the woody vegetation removal and identifies no nesting activity. To prevent impacts to bats, no clearing of trees greater than 10cm on-site should take place between April 1 and September 30 (inclusive) without a qualified biologist first confirming the absence of bats (i.e., open work timing window from October 1 to March 3). If tree clearing is conducted between October and April, no interactions with bats are anticipated, and therefore, significant negative impacts to SAR bats would be avoided. With regard to turtles, clearing of vegetation should be undertaken between October 15th and April 15th, which is outside of the more active season for turtles. Additionally, exclusion fencing should be installed around the perimeter of the site, watercourses, and ponds to prevent turtles from entering work areas (properly installed sediment fencing can be utilised for exclusion fencing). Under the City of Ottawa's direction if a Blanding Turtle sighting is within 2km of potential development, MECP should be contacted and an IGF for be submitted, there is potential that an authorization/compensation be required by MECP for works to proceed. The contractor is to be aware of potential Species at Risk in the vicinity of the site. Appendix 1 of City of Ottawa Protocol for Wildlife Protection during Construction (2022) and Appendix D of this report for descriptions of these species. Any Species at Risk sightings are to be immediately reported to the project biologist and the MECP, and activities modified to avoid the potential for impacts until further direction is received by the Ministry.

Any tree in the vicinity of works but not slated for removal will have its critical roots zone protected by sturdy temporary fencing at least 1.3 metres in height installed from the tree trunk to a distance of ten times the retained tree's diameter where possible. No grading, heavy machinery traffic, stockpiling of material, machinery maintenance and refueling, or other activities that may cause soil compaction are to occur within three metres of the critical root zone of the trees to be protected. The root system, trunk, and branches of the trees to be protected are to be protected and not damaged. If any roots of trees to be retained are exposed during site alterations, the roots shall be immediately reburied with soil or covered with filter cloth, burlap or woodchips and kept moist until the roots can be buried permanently. A covering of plastic should be used to retain moisture during an extended period when watering may not

be possible. Any roots that must be cut are to be cut cleanly to facilitate healing and as far from the tree as possible.

The extent of any vegetation removal within the development area is to be minimized where possible. All rules governing septic systems and wells must be followed and be kept in good operational order. There will be no use of herbicides in clearing of vegetation. Municipal by-laws and provincial regulations for noise will be followed. To discourage wildlife from entering the work areas during construction, the site should be kept clear of food wastes and other garbage. Proper drainage should be provided to avoid accumulation of standing water, which could attract amphibians, birds, and other wildlife to the work areas. As recommended in City of Ottawa Protocol for Wildlife Protection during Construction (2022), prior to beginning work each day, wildlife is to be checked for by conducting a thorough visual inspection of the work space and immediate surroundings. See Section 2.0 of City of Ottawa Protocol for Wildlife Protection during Construction (2022) and Appendix C for additional recommendations on construction site management with respect to wildlife. It is the responsibility of the contractor to be familiar with all components of City of Ottawa Protocol for Wildlife Protection during Construction (2022). Any sensitive wildlife in the work area are to be relocated to the South-West the subject lands. Animals should be moved only far enough to ensure their immediate safety.

To aid in mitigating the potential for extreme heat and drought where possible native trees should be considered for planting within remnant green spaces after development. The shade produced by these trees will aid in mitigating heat being produced by hardened surfaces. To aid in the mitigation of the increased risk of rain and flood, the design of the stormwater infrastructure should accommodate the potential increased flows. Additional measures such as designing building and infrastructure to be resilient in future climate conditions such as extreme weather, greater rainfall and higher temperatures should be considered.

3.2. Aquatic Habitat

The following mitigation measures will be implemented to protect aquatic habitat:

- 1- Storm water management facility will be designed in such a way as to not impact the quality of the water contributing to the downstream watercourses.
- 2- Should dust particles be created during construction they will be suppressed using the appropriate method (i.e. water spraying).
- 3- Install and maintain the erosion control measures during construction. No work will occur until the appropriate sediment and erosion control measures have been designed and implemented prior to any work. At a minimum these will include:
 - a. Provide regular maintenance to the sediment and erosion control measures during construction. Contractor shall be responsible for ensuring that the sediment and erosion control measures are maintained. No turbid water is permitted to leave the work area.
 - b. Additional materials (i.e. rip rap, filter cloth and silt fencing) will be readily available in case they are needed promptly for erosion and/or sediment control.
 - c. Any stock piles of soil or fill material will be stored as far as possible from the watercourse and wetland and protected by silt fencing.

- d. Sediment fencing will be installed at the edge of the work area, and kept in good working condition. The sediment fencing will not be removed until the area has stabilized.
- 4- DFO standards / codes of practice must be followed where applicable, DFO authorization may be required if the standards / codes of practice cannot be adhered to. In-water work is not to occur between March 15 to June 30.
- 5- Surface water features may require additional authorization from the conservation authority.

3.3. Sediment and Erosion Control during Construction

During construction, existing conveyance systems can be exposed to significant sediment loadings. The following mitigative construction techniques will be deployed to reduce as much as possible sediment loadings during construction:

- 1- Should dust particles be created during construction they will be suppressed using the appropriate method (i.e. water spraying).
- 2- Install and maintain the erosion control measures during construction. No work will occur until the appropriate sediment and erosion control measures have been designed and implemented prior to any work. At a minimum these will include:
 - a. Provide regular maintenance to the sediment and erosion control measures during construction. Contractor shall be responsible for ensuring that the sediment and erosion control measures are maintained. No turbid water is permitted to leave the work area.
 - b. Additional materials (i.e. rip rap, filter cloth and silt fencing) will be readily available in case they are needed promptly for erosion and/or sediment control.
 - c. Any stock piles of soil or fill material will be protected by silt fencing.
 - d. Sediment fencing will be installed at the edge of the work area, and kept in good working condition. The sediment fencing will not be removed until the area has stabilized.

4.0. Design with Nature Initiatives

The following initiatives highlight the design with nature initiatives developed for the village residential development:

- Parks are designated within Block 72 and 78 (Figure 2);
- The village lot size will permit retention of woody vegetation cover on each lot. Where grading constraints prohibit retention of existing trees, plantings of native local deciduous and coniferous tree will occur. The lots within the cultural meadows and those closest to Stage Coach Road will have more tree cover than current conditions;
- The stormwater ponds have been designed to provide natural environment protection, including the required water quality and quantity controls.

Please call if you have any questions on this Integrated Environmental Review.

Yours Sincerely,



Shaun St.Pierre, B.Sc. Biology

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FIGURE 1: SUBJECT LANDS

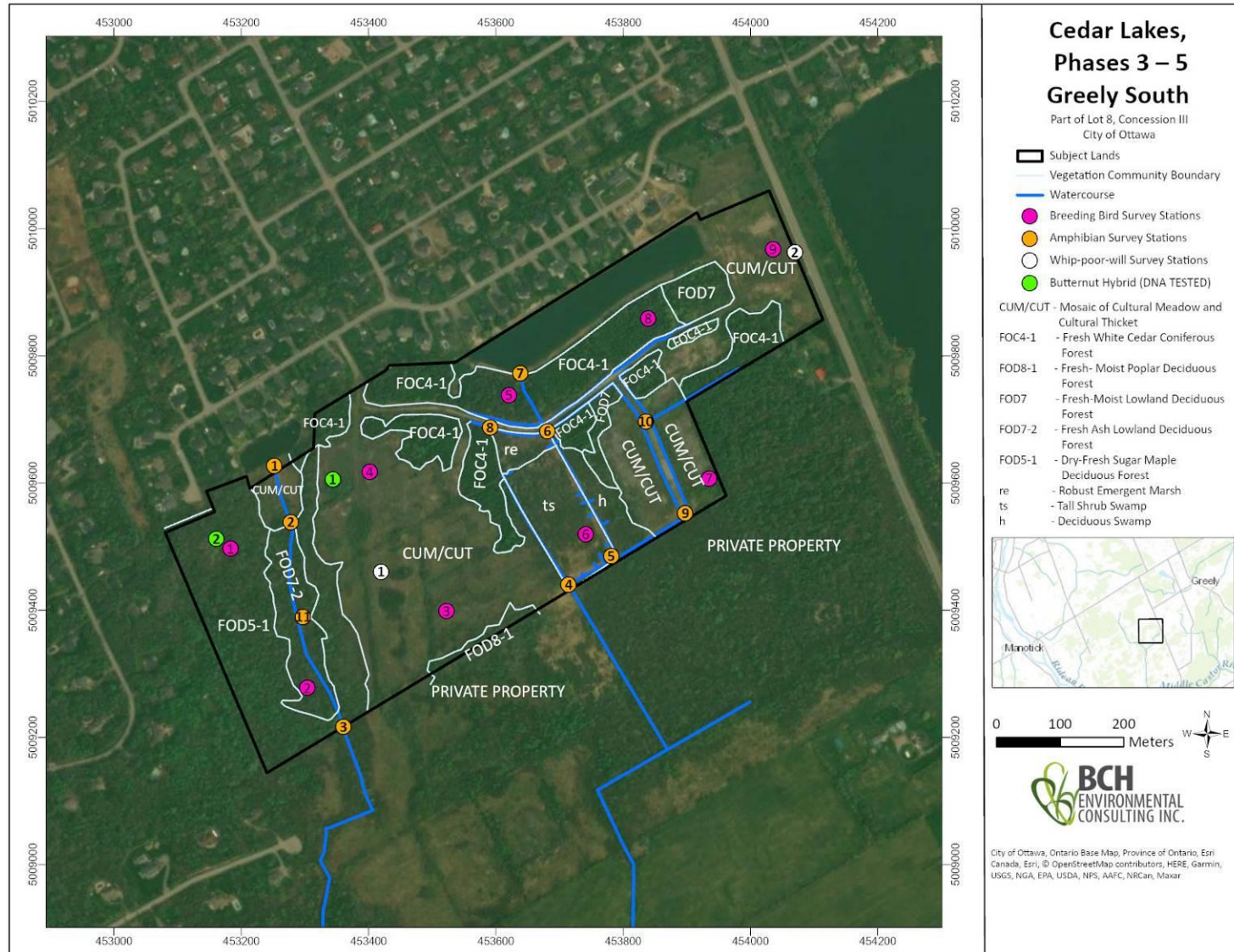


FIGURE 2: SITE PLAN

