RIVERFRONT COMMUNITY OPA

EIS ADDENDUM

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SAVANTA

Riverfront Community OPA

EIS Addendum

Report Prepared for:

GR (CAN) Investments Ltd.
4342 Queen Street, Ste 203
Niagara Falls, ON
L2E 7J7

Report Prepared by:

Savanta Inc.
37 Bellevue Terrace
St. Catharines, ON
L2S 1P4

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SAVANTA

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1.0 INTRODUCTION AND PURPOSE OF THE ADDENDUM

This Addendum builds upon the September 2017 Environmental Impact Study (EIS) completed by Savanta Inc. It responds to comments received from the City of Niagara Falls, the Regional Municipality of Niagara, the Niagara Peninsula Conservation Authority (NPCA) and the Ministry of Natural Resources and Forestry (MNRF). It also provides a summary of supplementary technical work completed in response to requests from agencies.

Prepared as part of an Official Plan Amendment for the proposed Riverfront Community, this Addendum should be reviewed in conjunction with the Environmental Impact Study (EIS) (Savanta Inc. 2017), The Study Area and Subject Lands for this work occur centrally within the City of Niagara Falls (City), north of the Welland River/Chippawa Parkway, east of the Ontario Power Generation Inc. (OPG)/Chippawa Power Canal, south of Oldfield Road and west of Stanley Avenue.

Information in this Addendum provides additional information and addresses comments related principally to:

- Reptile emergence, hibernacula and turtle nesting surveys;
- Bat habitat surveys and assessment;
- Cultural woodland assessment; and
- Significant wildlife habitat/deer habitat assessments.

Certain figures from the EIS (Savanta 2017) have been updated to illustrate the results of this Addendum. Figures that have been revised are included in **Appendix A**.

2.0 REPTILE EMERGENCE, HIBERNACULA AND TURTLE NESTING SURVEYS

Section 23.2.a of the EIS noted that additional surveys in the fall of 2017 would be completed to further characterize reptile habitat on the Subject Lands.

The EIS reported on a series of surveys completed in the spring and summer of 2017. Specifically, five Reptile Emergence Surveys were conducted in the spring of 2017: April 28, May 10, May 15, May 19 and May 23, 2017. Two Turtle Basking Surveys were conducted on June 13 and June 15, 2017. This Addendum provides a summary of fall surveys, completed on October 2, October 5, and October 10, 2017.

In total, the various 2017 site visits included surveys for snake hibernacula, road mortality, turtle overwintering habitat, and turtle nesting habitat. The weather was appropriate for completion of these reptile surveys and was as follows: air temperature above 8°C, full/partial sun, and wind 1 km/hr to 5 km/hr. Survey locations are depicted on **Figures 4** and **6** (**Appendix A**), and specific survey methods are described below.

Turtle Basking Surveys

In addition to the surveys completed on June 13, and June 15, 2017, additional surveys were completed on October 2, October 5 and October 10, 2017, using methods and stations as described in the EIS (Savanta 2017).

Reptile Nesting Surveys

Potentially suitable nesting areas were searched for evidence, such as test nest dig sites, claw marks, turtle trails or predated nests. Where potential habitat was noted, soil type mapping and soil auger samples were reviewed for the presence of potentially suitable substrate. Data recorded included: nesting area size, % slope of the nesting area, % canopy cover over the nesting area, direction of orientation (i.e., east facing), location (UTM coordinates), soil substrate, and distance from roadways.

Species-specific habitat preferences (i.e., COSEWIC, 2008) and the survey methods of the MNRF (2016e) and Toronto Zoo (Caverhill et al., 2011; Kula., 2011) were considered in the formulation of this survey protocol.

Snake Hibernacula Visual Encounter Surveys

Preliminary aerial photography analyses were performed to identify suitable snake habitat (cultural meadow, disturbed meadow, wetland edges, cultural woodland, cultural savannah, rural residence and farm buildings). Surveys focused on searching natural cover objects, such as logs, and debris (discarded carpeting, tarps). All objects were replaced as they were found in order to reduce disturbance. Old barns, foundations and houses were also searched, where access was granted. This survey methodology focused on snake hibernacula features, to determine if these features occur on the Subject Lands. Survey methods are based on MNRF (2016e) and Toronto Zoo (Caverhill et al. 2011) snake survey protocols and were also informed by species-specific habitat preferences.

Searches for potential snake hibernacula were completed during each of the five reptile emergence surveys (April and May 2017) and during the three Fall, 2017 visual encounter surveys. Transects were walked within the Subject Lands as well as along roads for basking snakes or snake mortalities. Data recorded during snake surveys included species observed and location (UTM coordinates), air temperature, start and end time, and weather conditions.

Survey stations, transects and reptile observations are summarized on revised **Figures 4** and **6** (**Appendix A**). Five turtle basking stations, five turtle nesting transects, thirteen snake transects, five snake area searches, and two, lengthy road transects were established in the Study Area and on adjacent roadways.

Results of Reptile Surveys

Six reptiles were observed within the Study Area; one (Snapping Turtle, Special Concern) is listed on the Species at Risk in Ontario (SARO) list. Another species, Eastern Milksnake, was recorded in the Study Area. It was recently down-listed from Special Concern, but it is still currently identified as an S3 (Vulnerable) ranked species by the NHIC. Two species are ranked S4 (Uncommon and apparently secure), and three are provincially ranked S5 (common and secure in Ontario; NHIC 2017). Specific observations follow:

- One or more Midland Painted Turtles (S4) were observed basking at the following stations: RT-1, BS-1, BS-2, and BS-4;
- One or more Eastern Gartersnake (S5) were observed along the following transects and area searches: AS-3, BS-4, T-1, T-5, T-6, T-7, T-8, T-11 and T-13, Eastern Gartersnake were also observed Dead on the Road (DOR) along RT-1;
- One or more Dekay's Brownsnake (S5) were observed along the following transects and area searches: AS-1, T-1, T-5 and T-7, Dekay's Brownsnake were also observed DOR along RT-1;
- One or more Red-bellied Snakes (S5) were observed along the following transects and area searches: T-1 and T-9;
- One or more Snapping Turtles (provincially designated SC and S-ranked S3) were observed at the following stations: T7, BS-2 and BS-4, Snapping Turtle hatchlings were also observed DOR along RT-1;
- One Eastern Milksnake (S3) was observed along NT-1; and
- A number of frogs including Bullfrog, Western Chorus frog, and Grey Tree Frog were observed DOR at and north of RT-1.

No evidence of turtle nesting was observed during the survey. Areas of suitable habitat were tested by soil auger during nesting surveys completed by Savanta and Dougan & Associates ecologists. Attempts to take soil samples by hand auger were made intermittently (approximately every 50 m) along transects. Soils were compacted by the historic disturbances on these lands and by recreational vehicle use; the soil auger was not able to penetrate surficial layers. No samples were taken despite survey effort.

Some areas of suitable soils are located off site, south of Chippawa Parkway. These have not been surveyed. Turtle movement has been recorded across Chippawa Parkway to/from this area. These areas have been identified as candidate Turtle Nesting Areas.

The Study Area (especially the Subject Lands which are characterized by disturbance) is dominated by tight clay soils that are not generally suitable for successful turtle nesting (i.e., nest would be drowned during storm events due to lack of suitable substrate). Having said that in Niagara, some turtles may nest on shallow, drier rises where appropriate surface soils exist. These conditions, if present, would be more likely to occur in the relatively intact natural areas where soils have been subject to less compaction such as south of Chippawa Parkway. It is suspected that the Snapping Turtle hatchlings observed at RT-1 originate from nesting areas located adjacent the Welland River and OPG Power Canal.

Concentrations of snake observations suggest suitable snake hibernacula occur at the following Area Search (AS) and Transect (T) locations: AS-1, and AS-3, and potentially along T-1. A potential hibernacula site was observed during fall 2017 surveys. It is located between transects T5 and T7 and is characterized by a rocky slope. Although it possessed suitable characteristics for snake overwintering, no snake species were observed at this location during fall 2017 surveys.

3.0 BAT HABITAT ASSESSMENT

As indicated in section 2.3.2 of the September 2017 EIS, the MNRF observed that in addition to the December 2015 snag density surveys completed by Dougan & Associates, the remainder of the Subject Lands (whether proposed for development or not) would require additional snag density surveys prior to the completion of acoustic surveys. Dialogue with the MNRF determined that acoustic surveys during 2017 would not be effective or desirable without the more fulsome leaf-off snag density surveys.

The MNRF advises that any coniferous, deciduous or mixed wooded eco-site, including treed swamps, that include trees at least 10 cm diameter-at-breast height (DBH), should be considered candidate (potential) maternity roost habitat.

On November 7, 8 and 9, 2017, suitable bat roosting tree density surveys were completed for the Subject Lands. The presence of snags is considered an indicator of high quality bat maternity roost habitat. Bat maternity colonies are to be evaluated for significance as a type of Significant Wildlife Habitat (as per the Provincial Policy Statement).

Survey methods were completed using a combination of MNRF survey guidelines as outlined in "Bats and Bat Habitats: Guidelines for Wind Power Projects" and "Survey Protocols for Species at Risk Bats within Treed Habitats: Little Brown Myotis, Northern Myotis, and Tri-Coloured Bat" (MNRF 2017) and professional experience.

Areas to be surveyed were determined through the use of Ecological Land Classification (ELC) mapping of the Subject Lands. Where present, targeted ELC communities were Deciduous Forests (FOD), Mixedwood Forests (FOM), Coniferous Forests (FOC), Deciduous Swamp (SWD), Mixedwood Swamps (SWM), and Coniferous Swamps (SWC). For the purposes of this survey, hedgerows (HR), Cultural woodlands (CUW), and residential or disturbed areas were also targeted. Surveys were conducted during the leaf-off period on days when visibility was good.

Using the above criteria, 18 woodland communities were identified to be searched on the Subject Lands.

ELC communities greater than 1 ha were surveyed using a plot-based approach, which consisted of randomly selecting 10 or more plots within the community. Each plot had a radius of 12.6 m (0.05 ha) and a GPS waypoint was recorded for each plot center. Within each plot, all trees greater than or equal to 10 cm diameter-at-breast height (DBH) were visually inspected using binoculars to document any cavities, peeling bark, or other roosting characteristics that may or may not be present along the trunk or large branches. Each tree containing suitable roosting characteristics had the following information recorded: UTM, species, DBH, approximate height, decay class, canopy cover, total number of cavities and height information for the top three cavities. Each community was photographed to give a representation of the habitat potential.

For all communities and hedgerows less than 1 ha, the entire community was surveyed using a transect approach, where transects were 5 m to 20 m apart (depending on visibility).

These results were then used to assess the quality of the area to provide bat maternity roost habitat, identifying areas with >10 cavity trees/ha as providing the greatest potential bat maternity

roost habitat in accordance with MNRF guidelines.

Results of Bat Habitat Assessment

The results of the qualitative assessment are presented on **Table 1** (**Appendix B**) and correspond with the locations shown in the attached map (revised **Figure 13**, **Appendix A**).

While roosting habitat for Species at Risk bats is considered at a conservative threshold of assessing all trees over 10 cm DBH, species considered under the SWH criteria for Bat Maternity Colonies are more common and widespread, and thus a larger size threshold is used. For an evaluation of significance of SWH for Bat Maternity Colonies, focus is put on finding the communities with the best representation of trees over 25 cm DBH with characteristics suitable for maternity roosting for Big Brown and Silver-haired Bats (**Table 2**, **Appendix B**).

One vegetation community within the OPA boundary contains candidate SWH for Bat Maternity Roosting, Polygon B (FOD7-3). Other polygons with suitable densities of roosting trees include Polygon E (SWD2-2), Polygon J (SWD4-1), and Polygon M (SWD4-1), as well as the larger SWD1 forest also on the Subject Property. The results of the qualitative assessment are presented on **Table 2** (**Appendix B**) and correspond with the locations shown in the attached map (revised **Figure 13**, **Appendix A**).

It should be noted that although these communities provide suitable habitat, they are not fully evaluated until the target species (Big Brown Bat and Silver-haired Bat) are confirmed present in sufficient densities to indicate significance when evaluated against all habitat found in the local landscape (per SWH Criteria Schedules for Ecoregion 7E). Surveys to confirm presence should be completed during the maternity roosting season, between May and July. These surveys are planned for June 2018.

Habitat for Species at Risk bats, once confirmed through targeted acoustic surveys to be completed in the active roosting season in 2018, will be addressed through the permitting process, as required by the MNRF under the *Endangered Species Act, 2007* and associated regulations, policies, and guidelines. However, it should be noted that the small number of suitable roosting trees found within Polygon B are a subset of the large number of suitable trees found in forest communities outside the OPA boundary and identified for protection.

4.0 WOODLAND ASSESSMENT

4.1 Background and ELC Refinement

Botanical inventories and Ecological Land Classification assessments were conducted in 2015 with supplementary visits completed in 2017 to validate site conditions. The 2015 mapping and characterization work defined 13 ELC dominant vegetation communities from Anthropogenic, Cultural, Forest, and Swamp ELC Eco-sites. Details regarding the following Study Area ELC communities (and areas) are reported in section 3.2 of the Characterization and Environmental Impact Study Report (Dougan & Associates 2015; 2016a).

Anthropogenic	3.37 ha
Cultural Meadow	9.76 ha
Cultural Plantation	0.33 ha
Cultural Thicket	23.53 ha
Cultural Woodland	44.78 ha
Deciduous Forest	6.62 ha
Deciduous Swamp (non-PSW)	29.90 ha
Deciduous Swamp (PSW)	75.30 ha

Source: Dougan & Associates 2016

Since the time that the characterization and impact assessment work was completed by Dougan & Associates (2015; 2016a), some vegetation communities have been subject to significant change related to the presence of Emerald Ash Borer (EAB) (*Agrilus planipennis)*. EAB was first detected in North America, in Detroit and Windsor, in 2002. This insect has caused extensive mortality in every ash species it has encountered, with reported mortality of 99% in Green Ash populations. EAB has triggered significant tree mortality and canopy decline throughout Niagara and in Green Ash-dominated woodlands in the Subject Lands. Wooded areas formerly characterized as ash-dominated cultural woodland, ash lowland deciduous forest, and Green Ash mineral deciduous swamp exhibited significant forest canopy declines in 2017. Tree mortality typically occurs within about six years, with extensive stand-level mortality two to three years after the initial detection of the infestation (Aubin et al. 2015). In the case of the Subject Lands, that suggests the canopy will be subject to widespread mortality by 2020.

Quantitative vegetation surveys completed by Savanta (2017) in some woodland communities indicate that the dominant tree canopy has already been completely removed by the EAB. The absence of forest canopy in many of those communities has left in their place, a cultural thicket, generally characterized as having high densities of Common Buckthorn and, to a lesser extent, Glossy Buckthorn (*Frangula alnus*), both of which are invasive exotic species.

These woodland community areas were further refined using ELC, to indicate portions of lands now existing with Cultural Thicket characteristics. Mapped results of the refined ELC boundaries is shown on revised **Figure 10** (**Appendix A**).

It was determined through ground observations by Savanta in 2017, that communities mapped as Cultural Woodland could be refined in an effort to further distinguish between Thicket from Woodland. Google Earth 3D imagery was used as a tool in this work. Cultural Woodland polygons created by Dougan & Associates, that occurred within the proposed OPA Boundary were exported

to Google Earth. For each of these polygons, an altitude layer set at 10 m relative to ground surface was used to isolate all trees greater than 10 m tall. This approach improves visualization of canopy characteristics, such as % cover of canopy trees and distribution of canopy density within the polygon. The height of 10 m was based on ELC data provided by Dougan & Associates, where the canopy height was generally considered to be between 10 m and 25 m. Where portions of Cultural Woodland communities appeared to contain less than 25% cover of canopy trees and were at least 0.5 ha in size, the polygon was divided and re-classified as Cultural Thicket.

4.2 Supplementary Quantitative Woodland Studies

In response to agency comments, Savanta completed additional, more detailed quantitative woodland surveys on February 2 and 5, 2018, at selected locations on the Riverfront Community lands. The February surveys focused on the collection of quantitative data on the structure and composition of the areas mapped as Cultural Woodland (CUW1). The technical work contributed to an assessment of woodland significance and to a better understanding of the potential successional trajectory of these areas, given the impacts of Emerald Ash Borer.

Methodology

Four areas were surveyed, as depicted on the attached general location map (**Appendix C**). In total, 22 plots were randomly pre-selected using satellite imagery. Within the plots, which measured 10 m by 10 m, photographs were taken, and live tree stems were counted by species and by diameter-at-breast-height (DBH) class, according to the criteria of the Forestry Act for woodland definition (raw data are presented in the appendix, with tree density converted from numbers per hectare to numbers per 100 m^2). The other woodland criterion was the presence and density of the tree canopy cover, as per the Ecological Land Classification methodology, with Cultural Woodland defined as having a 35% to 60% canopy, and the forest at >60% canopy. Additional collected information included notes on community general characteristics, presence of invasive or non-native species (particularly in the shrub layer), and miscellaneous notes, such as disturbance and deer use. This survey followed up the same field methodology and approach as the September 18, 2017 survey.

For purposes of this methodology, a "tree" is defined as “any living species of woody perennial plant, including its root system, which has reached or can reach a height of at least 4.5 m at physiological maturity”. Of the 62 species, subspecies, varieties, and hybrids of hawthorns (*Crataegus*) in Ontario, few are capable of growing to 4.5 m; hawthorns were treated as tall shrubs in this assessment.

Results of February 2018 Woodland Surveys

The 2018 surveys identified that almost 70% of the plots sampled, either do not meet the woodland definition (i.e., did not meet accepted stem size and density thresholds), or only meet it because of the presence of ash (in various stages of decline/mortality). Only two (9%) of the 22 plots meet the definition of woodland based upon the presence of healthy, native trees (Cottonwood and Silver Maple). Those native woodland conditions occur in isolated pockets in the sampled areas (i.e., less than minimum size of woodland thresholds).

While the Cultural Woodland areas assessed in February would currently meet the technical definition of woodland (and significant woodland given their connection to intact woodland), these areas are rapidly losing their tree canopy and are being replaced with invasive dominated Cultural Thicket.

The areas studied in detail with the quantitative plots are dominated by open areas (without woodland canopy), young Green Ash dominated areas where the canopy is in decline and expected to be eliminated in the next two to three years, and areas where other non-native tree species (e.g., willow species, Salix x rubes; Sweet Cherry, *Prunus avium*) occur in scattered patches amongst a dense understory dominated by Common Buckthorn.

The local and scattered occurrence of American Elm exhibit the symptoms of Dutch Elm disease. That disease, first detected in Canada in 1946, is caused by a fungus (*Ophiostoma ulmi*); it has been killing native elm trees in North America and stunting the recovery of younger stems. The disease is spread by both a native elm bark beetle (*Hylurogopinus rufipes*) and an introduced European bark beetle (*Scolytus multistriatus*).

The rapid decline of the canopy in these ash dominated cultural woodlands, will continue to prevent the establishment of healthy, native forest cover over the lands within the OPA limits. This trajectory is supported by current literature related to the emerald ash borer and to Dutch elm disease. For example, EAB causes substantial decline in Green Ash (i.e., 99%) and symptoms of the disease typically appear two to three years after infection, making control difficult. Current research suggests that woodlands in urban areas and more disturbed features (e.g., the OPA lands are generally disturbed/altered) are prone to an invasive species expansion, making the recovery of ash unlikely (Aubin et al 2015, 2017). In the case of the disturbed areas dominating the OPA lands, these cultural woodland communities are transforming and will continue to transform into cultural thickets. Common Buckthorn is the leading structural component of the shrub layer. Typically, the species forms a tall and dense stratum of old and long-established individuals, being abundant in the substrata of tall, medium and low-growing plants, including abundant ground cover of buckthorn seedlings. Secondary non-native species included Tartarian Honeysuckle Japanese Barberry.

Within the OPA lands, approximately 12 ha of Cultural Woodland that is in decline from EAB, will be removed. Those lands will not meet the 35% canopy threshold as the EAB causes widespread mortality in the next two, to three years. That removal will not have a negative impact on Significant Woodlands.

Cultural Woodland and Cultural Thicket areas outside of the OPA limits are similarly affected by EAB. Opportunities exist in approximately 17 ha of affected cultural woodland adjacent to the OPA lands to generate potential benefits through restoration and enhancement works (e.g., removal of invasive shrubs and planting of disease resistant tree species).

5.0 Significant Wildlife Habitat

Comments were received from agencies regarding the need to provide detailed mapping of technical aspects of SWH, as opposed to an individual compiled map. **Figures 9a** through **9j** (**Appendix A**) present that requested information. **Figure 10** provides a general compilation of natural heritage features.

Some aspects received additional attention and discussion during the course of work completed since the September 2017 EIS; those areas were:

- Bat maternity roosts;
- SAR Bats;
- Reptiles and Deer Aggregation Areas.

Bat maternity roosts, if present in declining cultural woodlands, may be removed within the Subject Lands. It should be noted that habitat for bats is not limiting within the Study Area, and features that contain suitable roosting trees within the Subject Lands are not the best representative features for this type of habitat. The biology of tree-roosting bats is such that maternity roost sites are frequently changed from tree to tree over the duration of the maternity season, sometimes as frequently as every night. This behavior reduces the likelihood of predation. Retaining a sufficient area of suitable woodlands to support bat species during the maternity season reduces impacts of woodland edge removal and provides continuous habitat for bats.

Any SAR bat observations that might be confirmed during acoustic surveys, to be completed in June 2018, will need to be addressed through the permitting process under the *Endangered Species Act, 2007*. While the reason for the drastic decline in population sizes of SAR bat species is not related to habitat loss, but rather to the White Nose Syndrome caused by the *Pseudogymnoascus destructans* fungus, enhancement to existing habitat can assist with maintaining existing populations. SAR bat species are responding well to artificial structure use in Ontario (specifically multi-unit structures versus typical small bat boxes), in addition to habitat enhancements that support prey insects such as moths. Exact bat box locations should be determined during detailed mitigation and restoration planning.

Increasing the availability of flowering plant species will increase the availability of aerial insects including flies, bugs, butterflies, moths, bees, wasps, beetles, grasshoppers, crickets, stoneflies, and mayflies. In turn, this will increase availability of habitat for bat foraging.

Rehabilitation efforts would also incorporate areas that will be suitable for turtle nesting (currently a limiting habitat factor on the Subject Lands). To encourage nesting, artificial turtle nesting beaches, composed of a gravel and sand mixture areas, should be constructed with southern faces.

Artificial hibernacula for snakes will be constructed to increase overwintering habitat. The creation of these habitat features in close proximity to summer foraging habitat (i.e., cultural meadow and woodland edges) may allow snakes to concentrate home range and activity centers around the contiguous Natural Heritage System corridor, potentially reducing travel and the risk of road crossings.

MNRF mapping shows Deer Wintering Congregation Areas within the OPA boundary, however the MNRF mapping does not align with MNRF's Significant Wildlife Habitat Technical Guide. That Technical Guide identifies the following ecosites as Candidate Deer Wintering Congregation Areas: FOC; FOM; FOD; SWC; SWM; and, SWD.

One FOD ecosite with an area of 0.6 ha occurs within the OPA boundary. Four SWD ecosites measuring 0.2 ha, 0.2 ha, 0.3 ha and 0.6 ha respectively, occur within the OPA boundary. To meet the criteria for Candidate Significant Wildlife Habitat in MNRF's Significant Wildlife Habitat Technical Guide, contiguous ecosites must be at least 50 ha in size. None of the applicable forested ecosites within the OPA boundary are contiguous and occupy a combined area of less than 2 ha.

The MNRF Deer Winter Congregation Area mapping provided by the MNRF shows breaks across linear anthropogenic features in several areas adjacent to the Riverfront site (e.g., Oldfield Road and the railway north of Lionshead Ave). There also seem to be a number of areas where the MNRF mapping layer overlaps with other anthropogenic features such as parking lots and industrial buildings that were on the landscape long before 2009, when the MNRF baseline aerial surveys were completed. This would suggest that the MNRF mapping is very coarse, with refinements required to more accurately inform land use planning. In summary, ELC refinements to MNRF mapping, based upon detailed surveys completed by Savanta indicate that Deer Wintering Congregation Areas do not occur within the OPA boundary. There will be no negative impacts to these features.

6.0 CONCLUDING REMARKS

This Addendum, in conjunction with the EIS (Savanta Inc. 2017), addresses the natural heritage features and associated functions currently found within the Subject Lands, and more broadly within the Study Area.

Since the completion of the EIS, refinements have been made to the proposed boundaries and configuration of the OPA limits to avoid and minimize potential environmental effects associated with development. **Figure 10** (**Appendix A**) illustrates the natural heritage features and associated functions both within and adjacent to (outside of) the OPA lands.

The proposed OPA limits have avoided most Provincially Significant Wetlands. The proposal does still include minor areas of PSW – discussions amongst the proponent's consulting team have concluded that any PSWs that remain inside the OPA boundary will be avoided by future subdivision plans (i.e., avoidance of direct and indirect effects, demonstrated through appropriate studies). Additional discussions may be completed with the MNRF should more detailed technical information demonstrate that wetland boundary refinements are necessary.

Very detailed vegetation sampling work has been completed within the OPA lands as input to both bat habitat assessment and cultural woodland assessment studies. Those quantitative investigations have demonstrated that while some cultural woodland remains within the limits of the OPA (i.e., 11.6 ha) those woodlands are predominantly ash-dominated and are displaying evidence of advanced decline and mortality, associated with Emerald Ash Borer. The ash-dominated woodland canopy will not persist and is expected to be completely eliminated by EAB in the next two to three years. The removal of these areas will not result in a negative impact on Significant Woodlands.

As the canopy is eliminated, these cultural woodlands will transform into the densely growing Common Buckthorn Cultural Thicket with Tartarian Honeysuckle (*Lonicera tatarica*) and, occasionally, Japanese Barberry (*Berberis thunbergii*). These highly invasive shrubs are strong competitors that likely hinder Ash regeneration (which itself cannot succeed beyond the point of small trees when they are again infected by the borer).

Adjacent to the OPA lands, approximately 17 ha of affected cultural woodland present an opportunity for restoration and enhancement through aggressive investments and interventions (e.g., long-term soils amelioration species, removal of invasive shrubs and planting of disease resistant tree species).

Assessment of woodlands for presence and quantification of suitable bat habitat has been undertaken across the property. Within the OPA boundaries, a limited number of suitable roosting trees for bats were identified. The roosting preferences of tree-roosting bat species, combined with natural decay of suitable trees and the maternal behavior of female bats, support the assessment of no negative impact to bat habitat as a result of the proposed development. Any Species at Risk habitat for bats will be addressed to the satisfaction of the MNRF as part of ongoing discussions.

This Addendum has incorporated supplementary technical information and it has contributed to refinements in the location/configuration of proposed development. As this project advances, impacts will be further assessed in detail (i.e., associated with Draft Plan studies). Once development is further refined and a SWM report has been completed for the Subject Lands, an updated impact assessment can be completed.

Report Prepared by:
SAVANTA INC.

Kyle Hunt
Project Manager
1-800-810-3281 Ext 1300
kylehunt@savanta.ca

Shelley Lohnes
Senior Ecologist
1-800-810-3281 Ext 1230
shelleylohnes@savanta.ca

Tom Hilditch
Project Director
1-800-810-3281 Ext 1010
tomhilditch@savanta.ca

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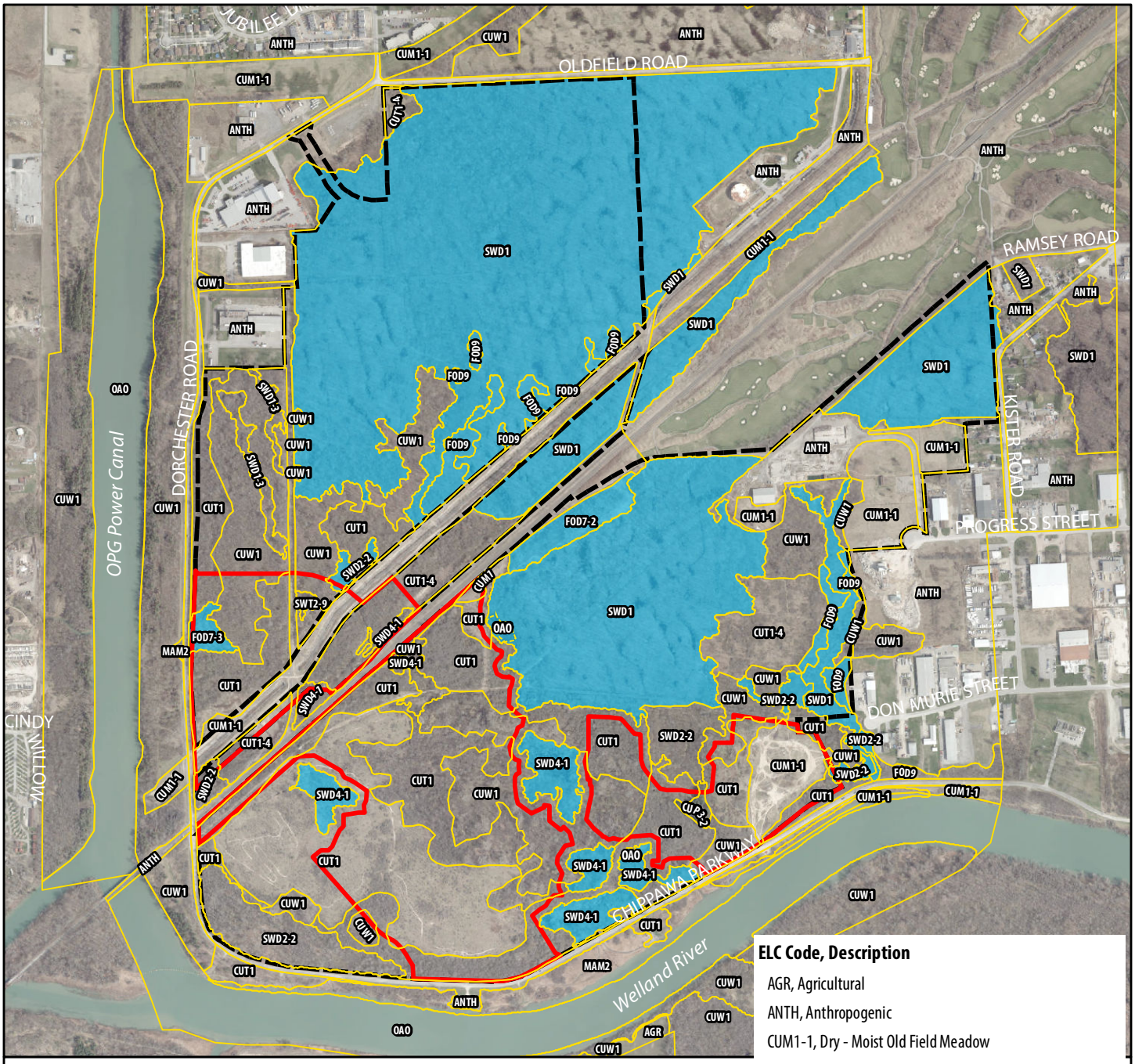
APPENDICES

Appendix A – Figures



Riverfront Community EIS

Figure 9a
Significant Wildlife Habitat Bat Maternity Colonies

- Study Area
- Subject Lands
- Candidate Bat Maternity Colonies
- Ecological Land Classification
- ELC Inclusion

SAVANTA

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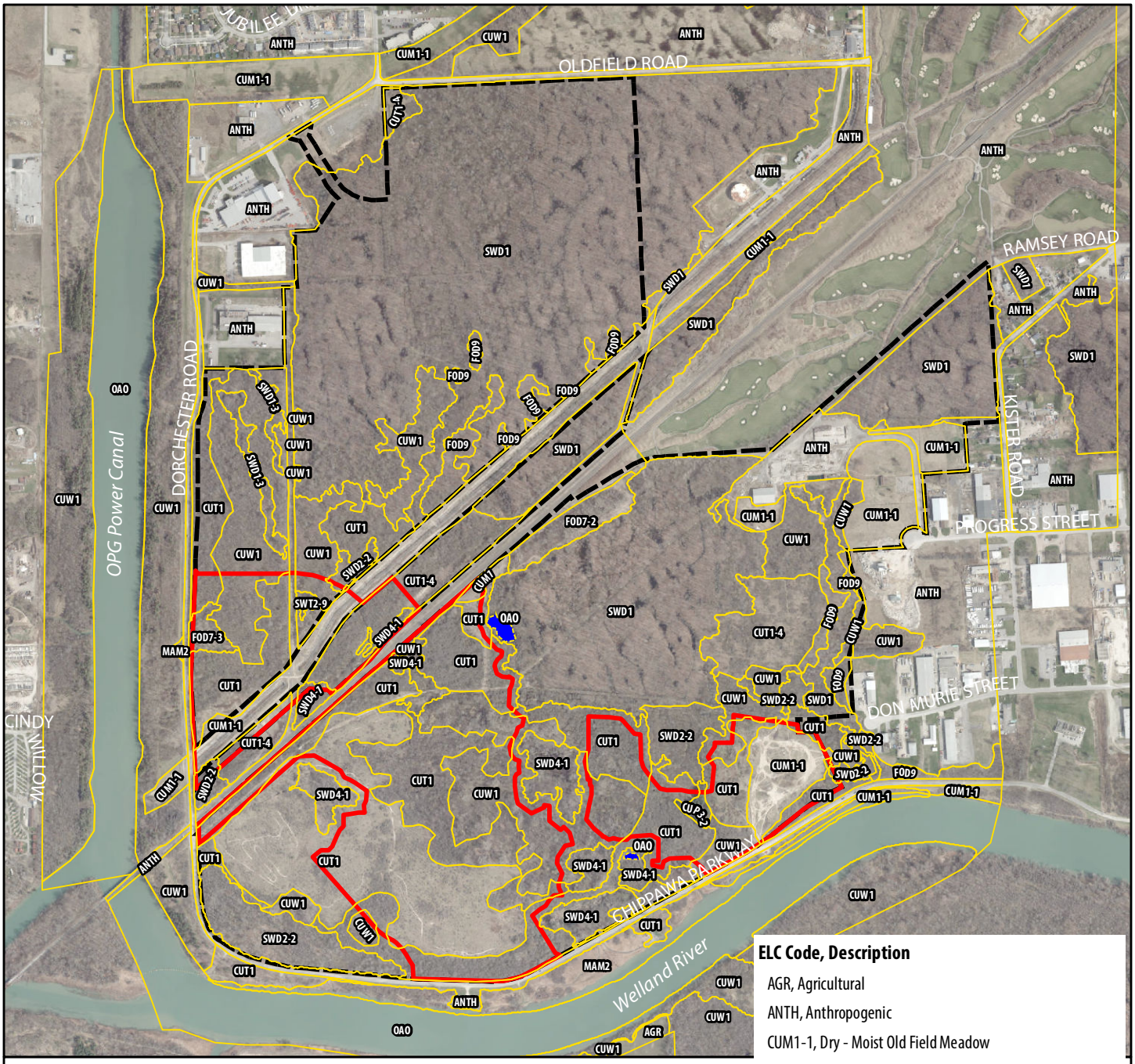
N

ELC Code, Description

- AGR, Agricultural
- ANTH, Anthropogenic
- CUM1-1, Dry - Moist Old Field Meadow
- CUP3-2, White Pine Coniferous Plantation
- CUT1, Mineral Cultural Thicket
- CUT1-4, Gray Dogwood Cultural Thicket
- CUW1, Mineral Cultural Woodland
- FOD7-2, Fresh – Moist Green Ash Lowland Deciduous Forest
- FOD7-3, Fr esh – Moist Willow Lowland Deciduous Forest
- FOD8-1, Fresh – Moist Poplar Deciduous Forest
- FOD9, Fresh – Moist Oak – Maple – Hickory Deciduous Forest
- MAM2, Mineral Meadow Marsh
- OAO, Open Aquatic
- SWD1, Oak Mineral Deciduous Swamp
- SWD1-3, Pin Oak Mineral Deciduous Swamp
- SWD2-2, Green Ash Mineral Deciduous Swamp
- SWD4-1, Willow Mineral Deciduous Swamp
- SWT2-9, Grey Dogwood Thicket Swamp



Riverfront Community EIS

Figure 9b
Significant Wildlife Habitat: Turtle Wintering Areas

Study Area

Subject Lands

Turtle Wintering Areas

Ecological Land Classification

ELC Inclusion

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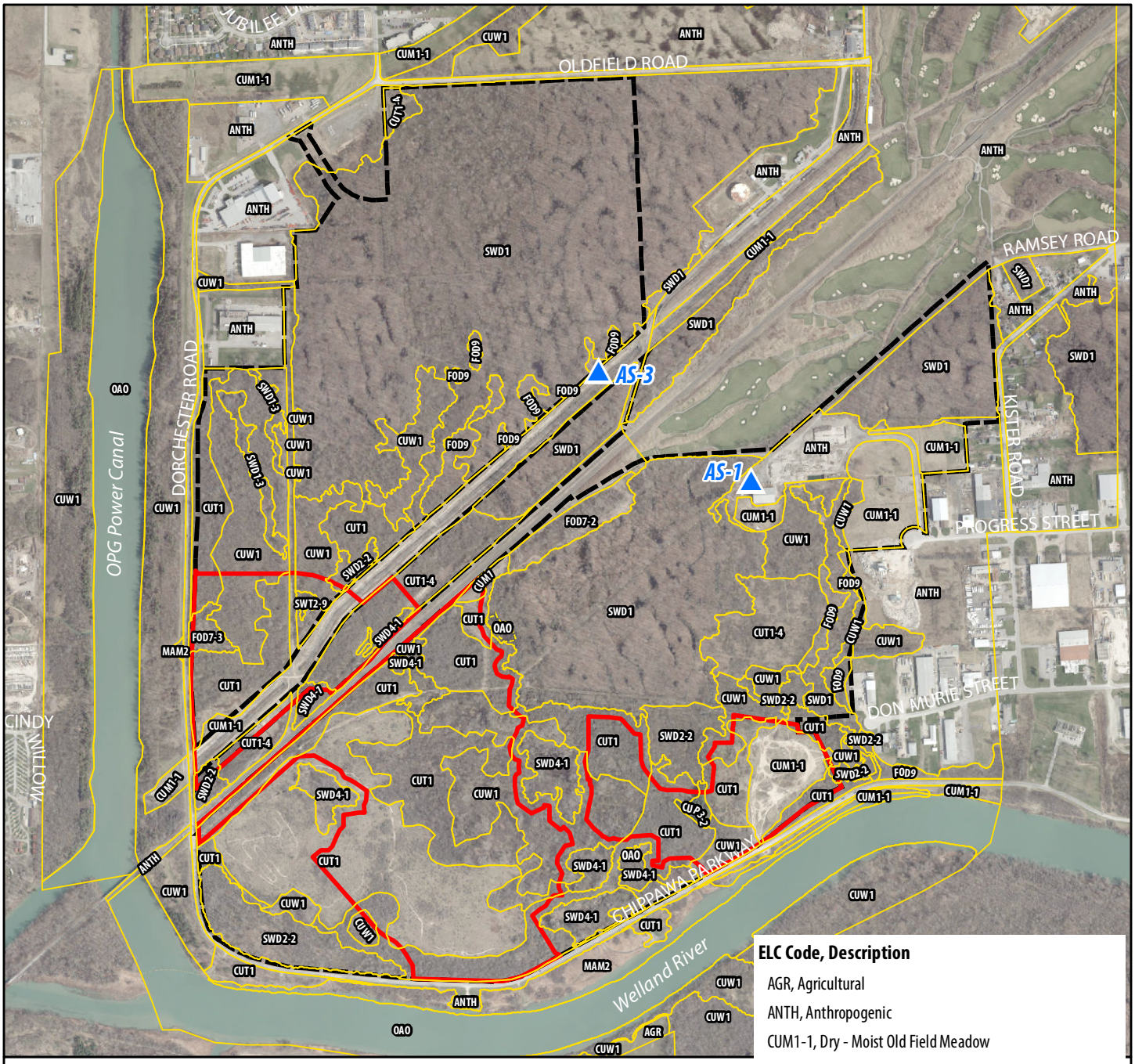
N

ELC Code, Description

AGR, Agricultural
ANTH, Anthropogenic
CUM1-1, Dry - Moist Old Field Meadow
CUP3-2, White Pine Coniferous Plantation
CUT1, Mineral Cultural Thicket
CUT1-4, Gray Dogwood Cultural Thicket
CUW1, Mineral Cultural Woodland
FOD7-2, Fresh – Moist Green Ash Lowland Deciduous Forest
FOD7-3, Fr esh – Moist Willow Lowland Deciduous Forest
FOD8-1, Fresh – Moist Poplar Deciduous Forest
FOD9, Fresh – Moist Oak – Maple – Hickory Deciduous Forest
MAM2, Mineral Meadow Marsh
OAO, Open Aquatic
SWD1, Oak Mineral Deciduous Swamp
SWD1-3, Pin Oak Mineral Deciduous Swamp
SWD2-2, Green Ash Mineral Deciduous Swamp
SWD4-1, Willow Mineral Deciduous Swamp
SWT2-9, Grey Dogwood Thicket Swamp



Riverfront Community EIS

Figure 9c
Significant Wildlife Habitat - Reptile Hibernacula

Study Area

Subject Lands

Reptile Hibernacula

Ecological Land Classification

ELC Inclusion

SAVANTA

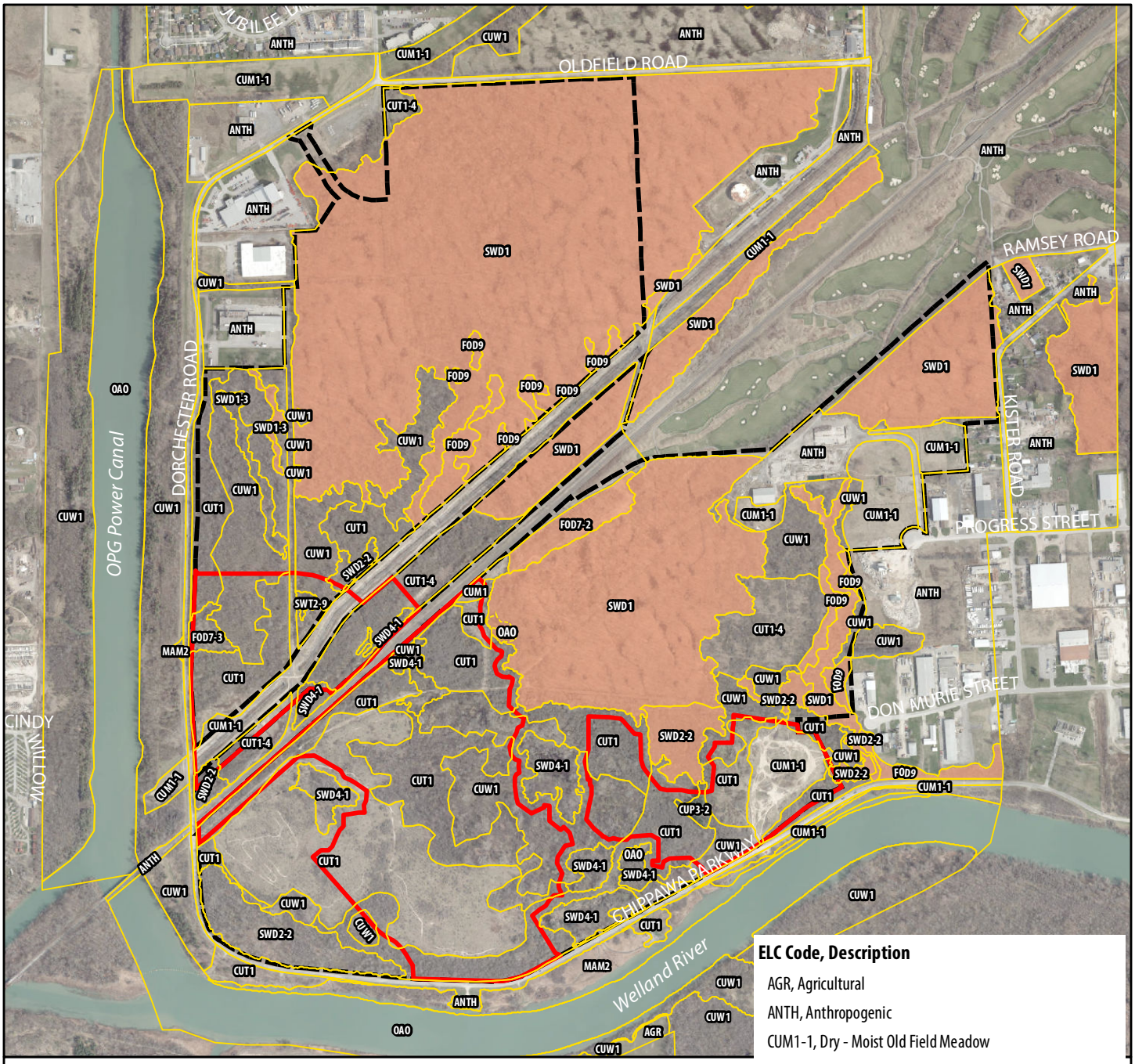
0 200 Meters

1:12,500

N

ELC Code, Description

AGR, Agricultural
ANTH, Anthropogenic
CUM1-1, Dry - Moist Old Field Meadow
CUP3-2, White Pine Coniferous Plantation
CUT1, Mineral Cultural Thicket
CUT1-4, Gray Dogwood Cultural Thicket
CUW1, Mineral Cultural Woodland
FOD7-2, Fresh – Moist Green Ash Lowland Deciduous Forest
FOD7-3, Fr esh – Moist Willow Lowland Deciduous Forest
FOD8-1, Fresh – Moist Poplar Deciduous Forest
FOD9, Fresh – Moist Oak – Maple – Hickory Deciduous Forest
MAM2, Mineral Meadow Marsh
OAO, Open Aquatic
SWD1, Oak Mineral Deciduous Swamp
SWD1-3, Pin Oak Mineral Deciduous Swamp
SWD2-2, Green Ash Mineral Deciduous Swamp
SWD4-1, Willow Mineral Deciduous Swamp
SWT2-9, Grey Dogwood Thicket Swamp



Riverfront Community EIS

Figure 9d
Significant Wildlife Habitat:
Deer Winter Congregation Areas

Study Area

Subject Lands

Deer Winter Congregation Areas

Ecological Land Classification

ELC Inclusion

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N

ELC Code, Description

AGR, Agricultural
ANTH, Anthropogenic
CUM1-1, Dry - Moist Old Field Meadow
CUP3-2, White Pine Coniferous Plantation
CUT1, Mineral Cultural Thicket
CUT1-4, Gray Dogwood Cultural Thicket
CUW1, Mineral Cultural Woodland
FOD7-2, Fresh – Moist Green Ash Lowland Deciduous Forest
FOD7-3, Fr esh – Moist Willow Lowland Deciduous Forest
FOD8-1, Fresh – Moist Poplar Deciduous Forest
FOD9, Fresh – Moist Oak – Maple – Hickory Deciduous Forest
MAM2, Mineral Meadow Marsh
OAO, Open Aquatic
SWD1, Oak Mineral Deciduous Swamp
SWD1-3, Pin Oak Mineral Deciduous Swamp
SWD2-2, Green Ash Mineral Deciduous Swamp
SWD4-1, Willow Mineral Deciduous Swamp
SWT2-9, Grey Dogwood Thicket Swamp

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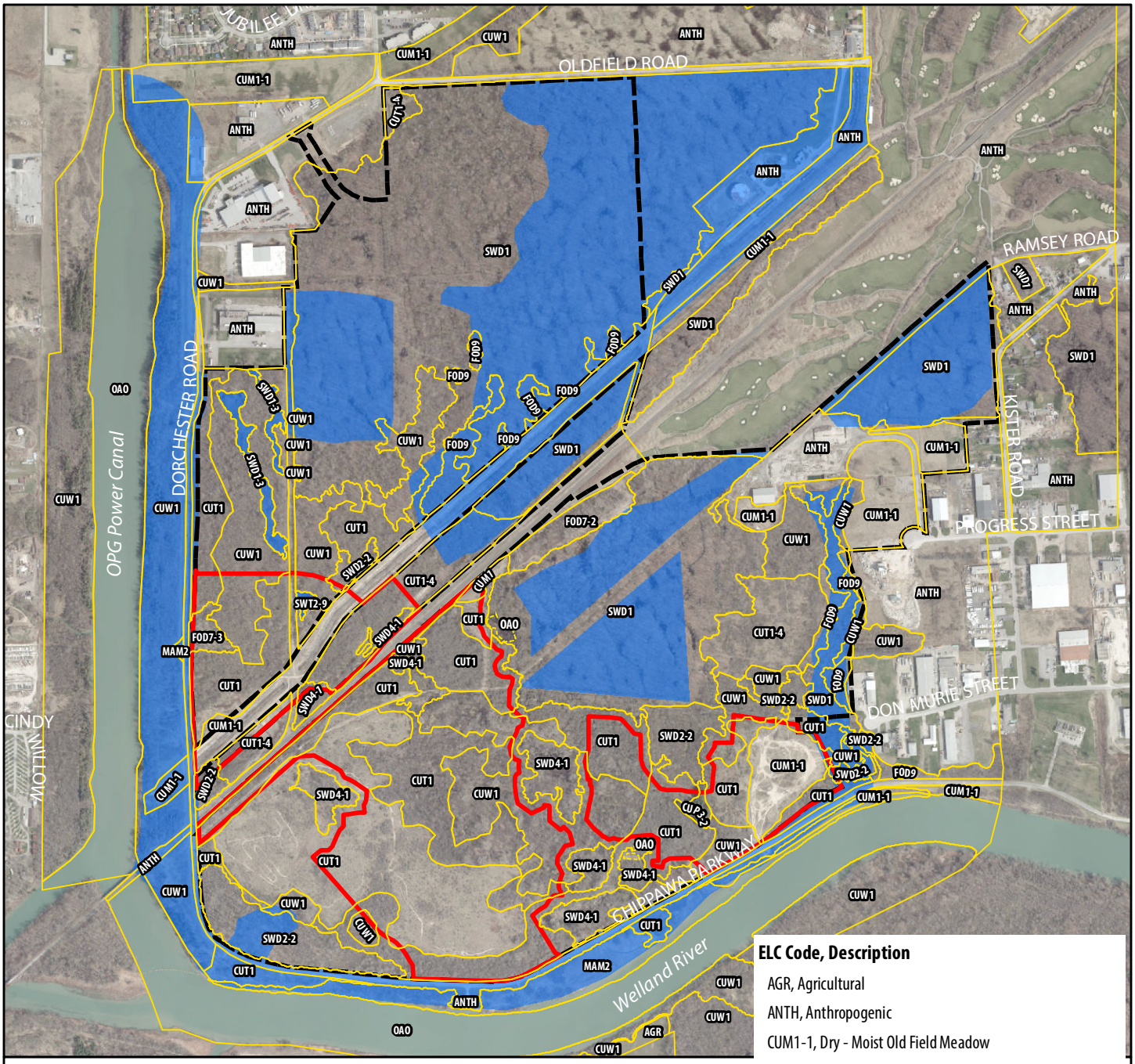

Riverfront Community EIS

Figure 9e
Significant Wildlife Habitat:
Rare Vegetation Communities

Study Area

Subject Lands

Rare Vegetation Communities

Ecological Land Classification

ELC Inclusion

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0 200 Meters

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N

ELC Code, Description

AGR, Agricultural
ANTH, Anthropogenic
CUM1-1, Dry - Moist Old Field Meadow
CUP3-2, White Pine Coniferous Plantation
CUT1, Mineral Cultural Thicket
CUT1-4, Gray Dogwood Cultural Thicket
CUW1, Mineral Cultural Woodland
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FOD7-3, Fr esh – Moist Willow Lowland Deciduous Forest
FOD8-1, Fresh – Moist Poplar Deciduous Forest
FOD9, Fresh – Moist Oak – Maple – Hickory Deciduous Forest
MAM2, Mineral Meadow Marsh
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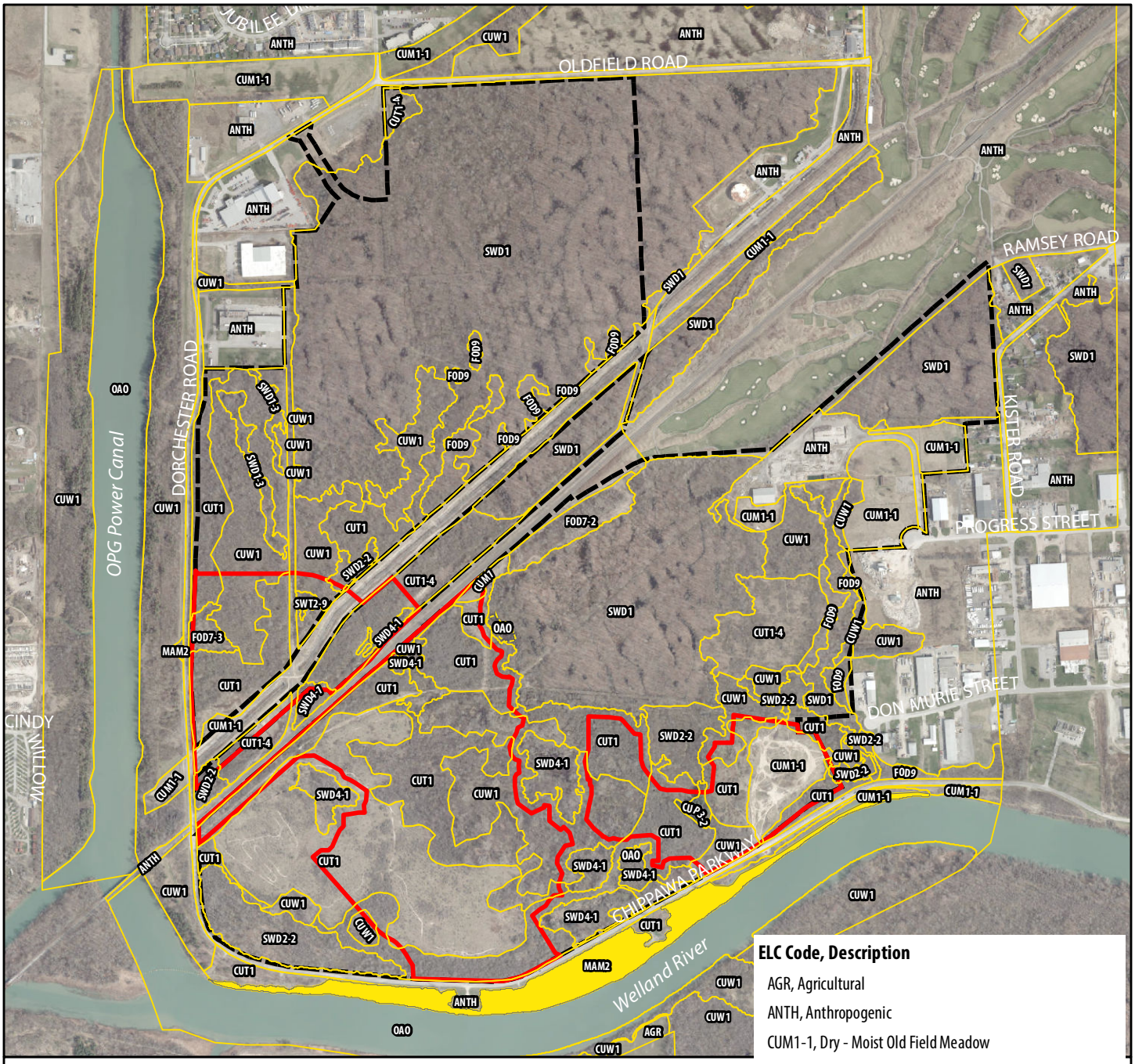
SWD1, Oak Mineral Deciduous Swamp
SWD1-3, Pin Oak Mineral Deciduous Swamp
SWD2-2, Green Ash Mineral Deciduous Swamp
SWD4-1, Willow Mineral Deciduous Swamp
SWT2-9, Grey Dogwood Thicket Swamp



Riverfront Community EIS

Figure 9f
Significant Wildlife Habitat:
Turtle Nesting Areas

- Study Area
- Subject Lands
- Candidate Turtle Nesting Area
- Ecological Land Classification
- ELC Inclusion

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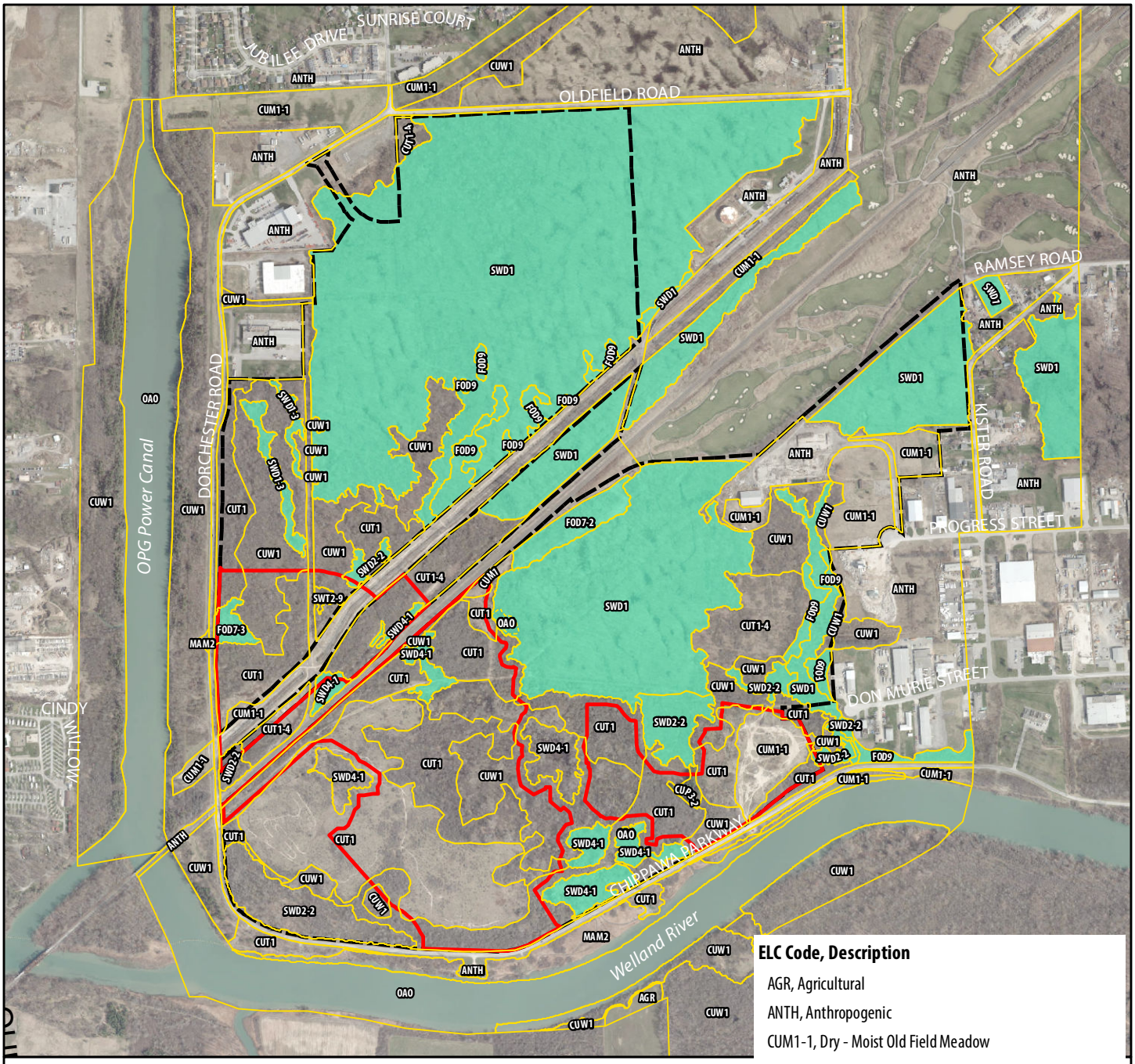
N

ELC Code, Description

- AGR, Agricultural
- ANTH, Anthropogenic
- CUM1-1, Dry - Moist Old Field Meadow
- CUP3-2, White Pine Coniferous Plantation
- CUT1, Mineral Cultural Thicket
- CUT1-4, Gray Dogwood Cultural Thicket
- CUW1, Mineral Cultural Woodland
- FOD7-2, Fresh – Moist Green Ash Lowland Deciduous Forest
- FOD7-3, Fr esh – Moist Willow Lowland Deciduous Forest
- FOD8-1, Fresh – Moist Poplar Deciduous Forest
- FOD9, Fresh – Moist Oak – Maple – Hickory Deciduous Forest
- MAM2, Mineral Meadow Marsh
- OAO, Open Aquatic
- SWD1, Oak Mineral Deciduous Swamp
- SWD1-3, Pin Oak Mineral Deciduous Swamp
- SWD2-2, Green Ash Mineral Deciduous Swamp
- SWD4-1, Willow Mineral Deciduous Swamp
- SWT2-9, Grey Dogwood Thicket Swamp



Riverfront Community EIS

Figure 9g
Significant Wildlife Habitat:
Amphibian Breeding Habitat (Woodland)

Study Area

Subject Lands

Candidate Amphibian Breeding Habitat (Woodland)

Ecological Land Classification

ELC Inclusion

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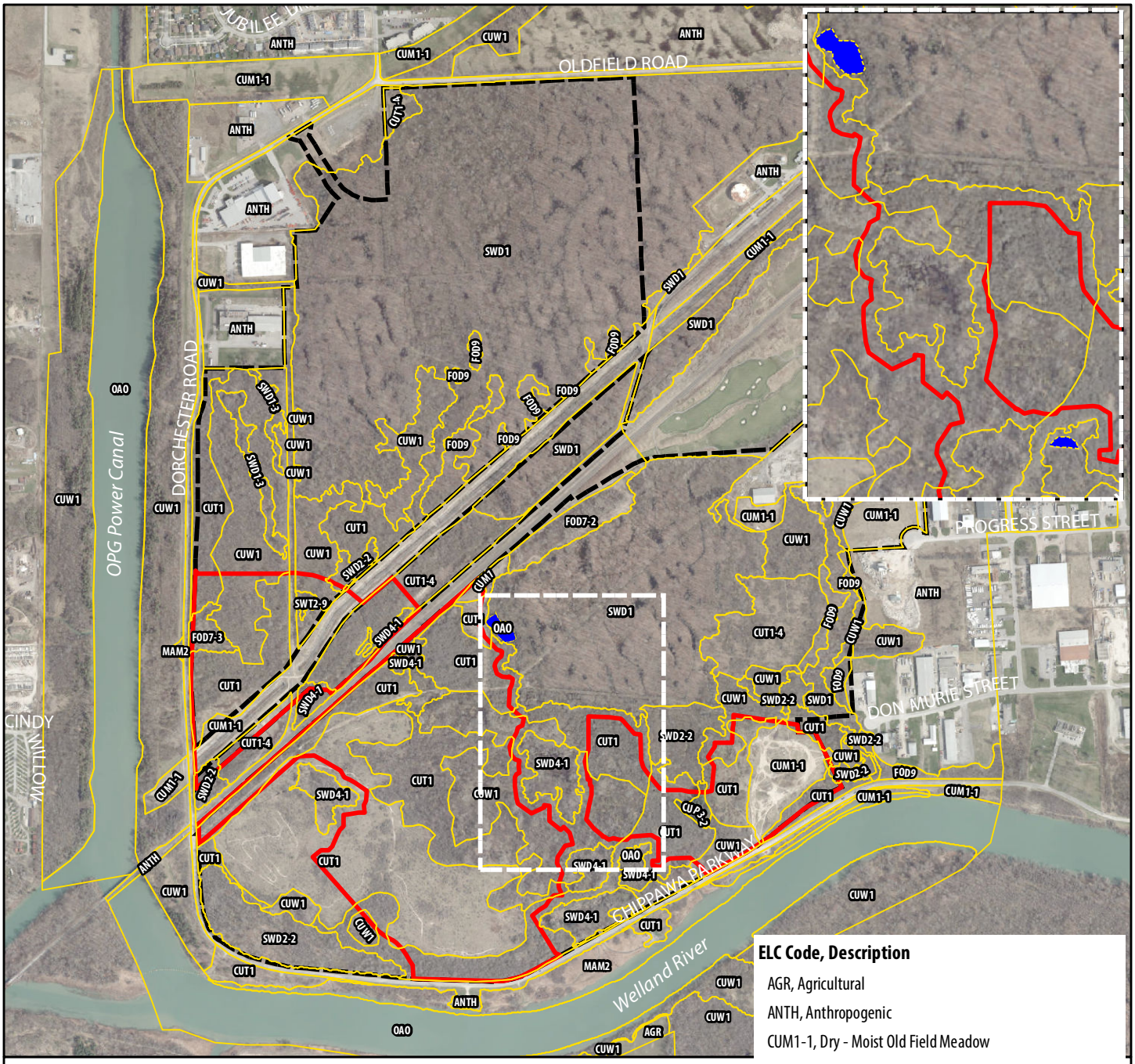
N

ELC Code, Description

AGR, Agricultural
ANTH, Anthropogenic
CUM1-1, Dry - Moist Old Field Meadow
CUP3-2, White Pine Coniferous Plantation
CUT1, Mineral Cultural Thicket
CUT1-4, Gray Dogwood Cultural Thicket
CUW1, Mineral Cultural Woodland
FOD7-2, Fresh – Moist Green Ash Lowland Deciduous Forest
FOD7-3, Fr esh – Moist Willow Lowland Deciduous Forest
FOD8-1, Fresh – Moist Poplar Deciduous Forest
FOD9, Fresh – Moist Oak – Maple – Hickory Deciduous Forest
MAM2, Mineral Meadow Marsh
OAO, Open Aquatic
SWD1, Oak Mineral Deciduous Swamp
SWD1-3, Pin Oak Mineral Deciduous Swamp
SWD2-2, Green Ash Mineral Deciduous Swamp
SWD4-1, Willow Mineral Deciduous Swamp
SWT2-9, Grey Dogwood Thicket Swamp



Riverfront Community EIS

Figure 9h
Significant Wildlife Habitat:
Amphibian Breeding Habitat (Wetland)

Study Area

Subject Lands

Amphibian Breeding Habitat (Wetland)

Ecological Land Classification

ELC Inclusion

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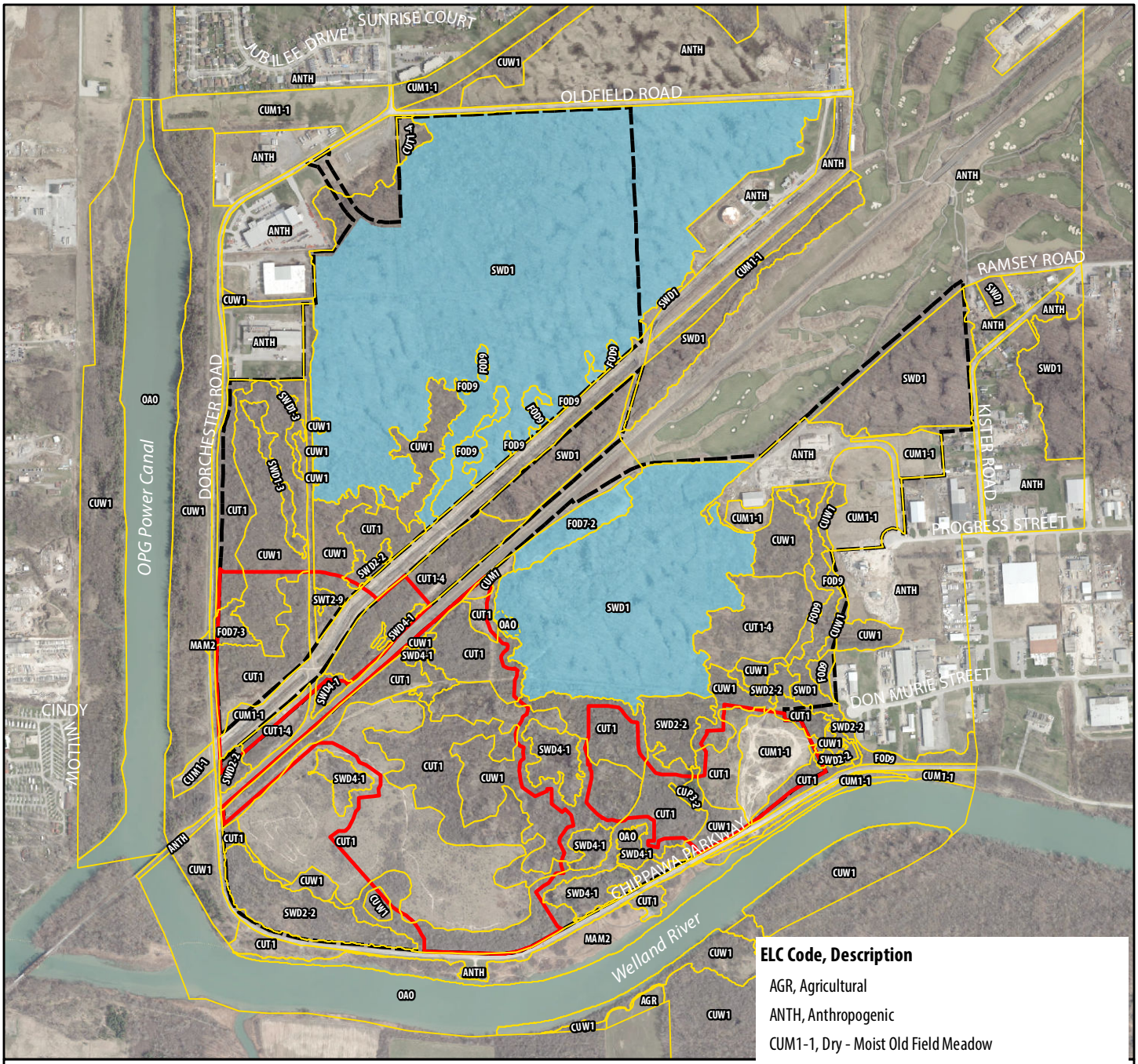
N

ELC Code, Description

AGR, Agricultural
ANTH, Anthropogenic
CUM1-1, Dry - Moist Old Field Meadow
CUP3-2, White Pine Coniferous Plantation
CUT1, Mineral Cultural Thicket
CUT1-4, Gray Dogwood Cultural Thicket
CUW1, Mineral Cultural Woodland
FOD7-2, Fresh – Moist Green Ash Lowland Deciduous Forest
FOD7-3, Fr esh – Moist Willow Lowland Deciduous Forest
FOD8-1, Fresh – Moist Poplar Deciduous Forest
FOD9, Fresh – Moist Oak – Maple – Hickory Deciduous Forest
MAM2, Mineral Meadow Marsh
OAO, Open Aquatic
SWD1, Oak Mineral Deciduous Swamp
SWD1-3, Pin Oak Mineral Deciduous Swamp
SWD2-2, Green Ash Mineral Deciduous Swamp
SWD4-1, Willow Mineral Deciduous Swamp
SWT2-9, Grey Dogwood Thicket Swamp



Riverfront Community EIS

Figure 9i
Significant Wildlife Habitat: Woodland Area - Sensitive Bird Breeding Habitat

Study Area
Subject Lands
ELC
ELC Inclusion
Woodland Area-Sensitive Bird Breeding Habitat

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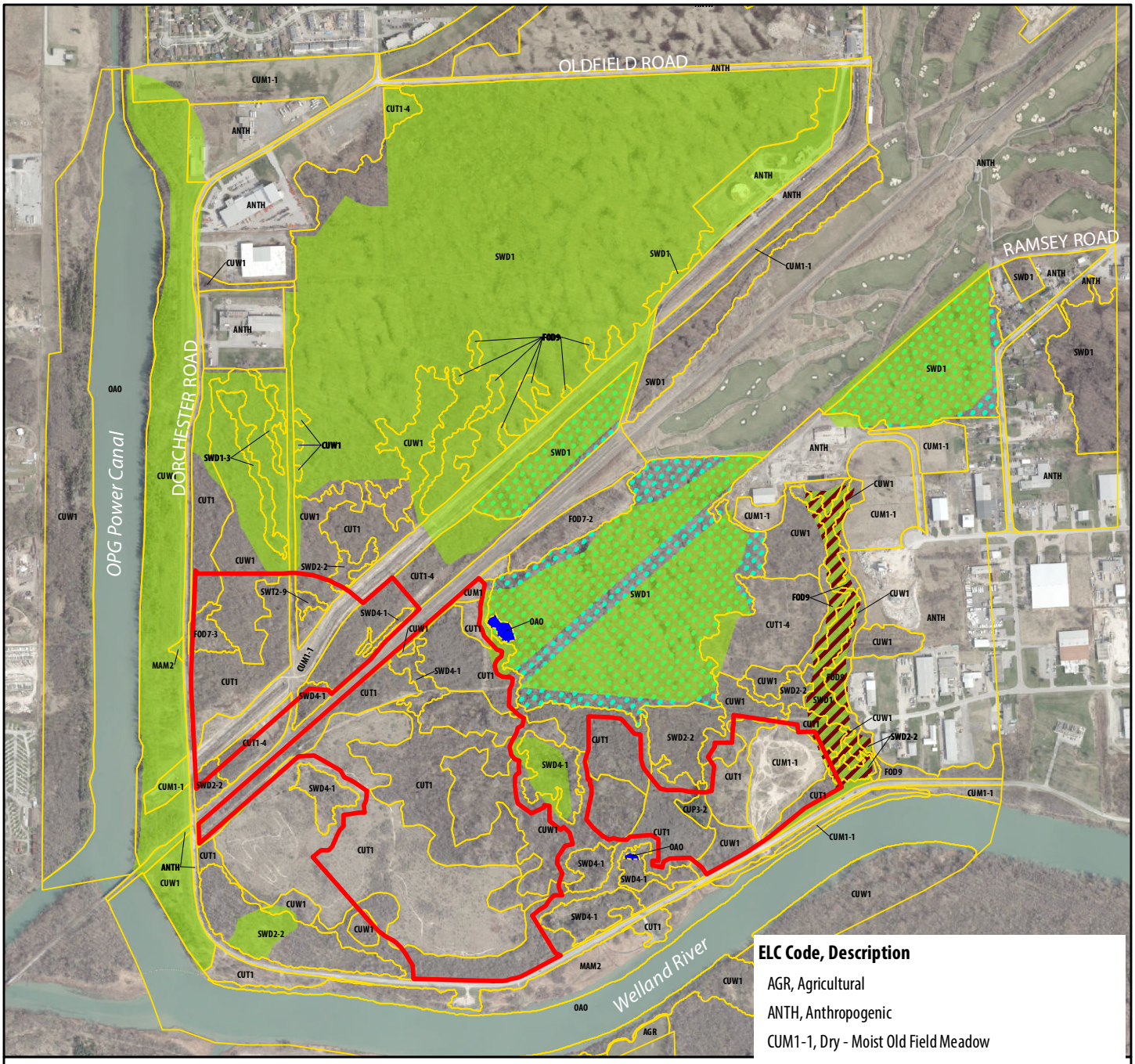
N

ELC Code, Description

AGR, Agricultural
ANTH, Anthropogenic
CUM1-1, Dry - Moist Old Field Meadow
CUP3-2, White Pine Coniferous Plantation
CUT1, Mineral Cultural Thicket
CUT1-4, Gray Dogwood Cultural Thicket
CUW1, Mineral Cultural Woodland
FOD7-2, Fresh – Moist Green Ash Lowland Deciduous Forest
FOD7-3, Fr esh – Moist Willow Lowland Deciduous Forest
FOD8-1, Fresh – Moist Poplar Deciduous Forest
FOD9, Fresh – Moist Oak – Maple – Hickory Deciduous Forest
MAM2, Mineral Meadow Marsh
OAO, Open Aquatic
SWD1, Oak Mineral Deciduous Swamp
SWD1-3, Pin Oak Mineral Deciduous Swamp
SWD2-2, Green Ash Mineral Deciduous Swamp
SWD4-1, Willow Mineral Deciduous Swamp
SWT2-9, Grey Dogwood Thicket Swamp



Riverfront Community EIS

Figure 9j
Species of Conservation Concern

- Subject Lands
- Ecological Land Classification
- ELC Inclusion
- Honey Locust
- Schreber's Aster
- Snapping Turtle
- Wood Thrush and Eastern Wood-Pewee

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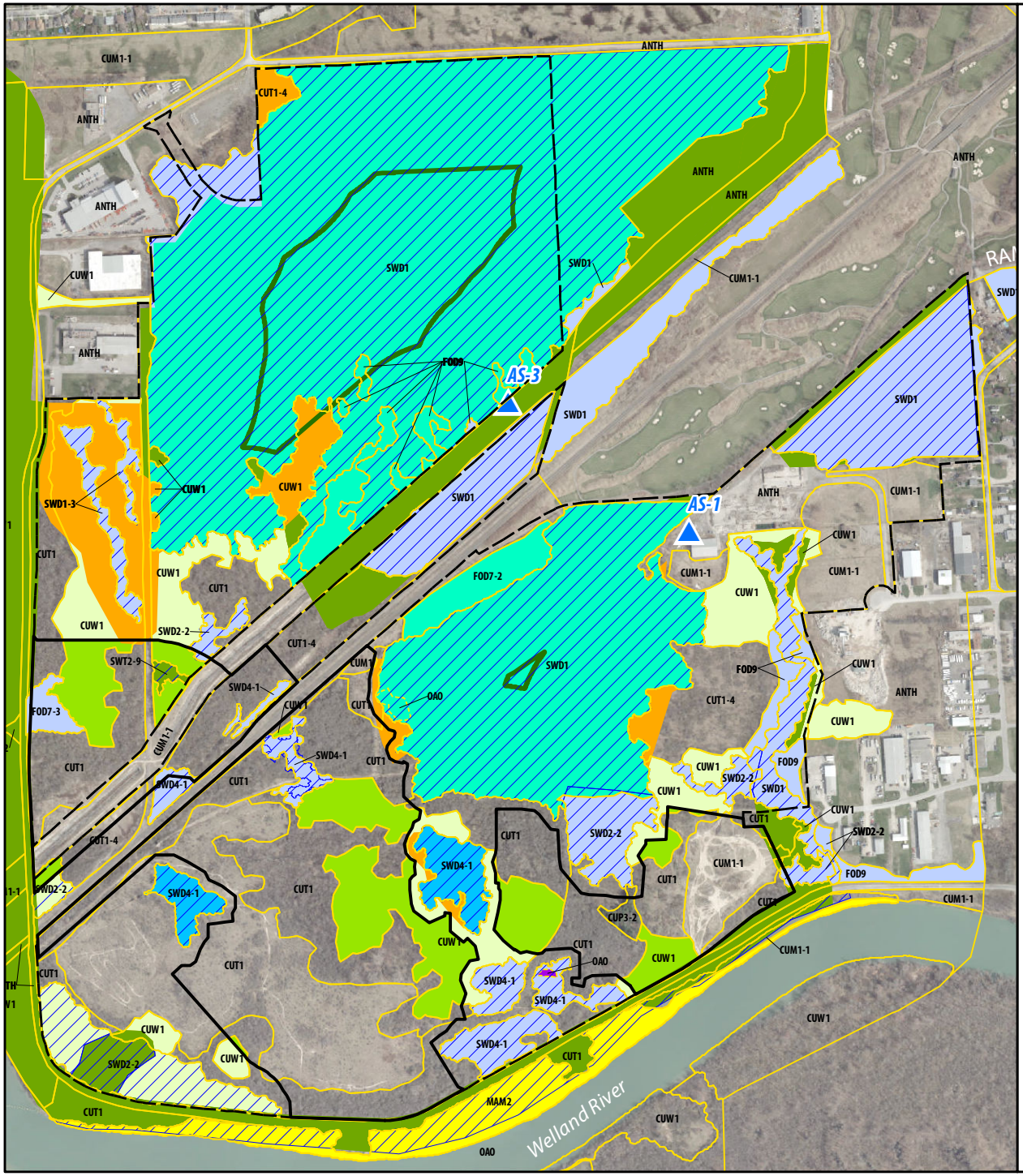
N

ELC Code, Description

- AGR, Agricultural
- ANTH, Anthropogenic
- CUM1-1, Dry - Moist Old Field Meadow
- CUP3-2, White Pine Coniferous Plantation
- CUT1, Mineral Cultural Thicket
- CUT1-4, Gray Dogwood Cultural Thicket
- CUW1, Mineral Cultural Woodland
- FOD7-2, Fresh – Moist Green Ash Lowland Deciduous Forest
- FOD7-3, Fr esh – Moist Willow Lowland Deciduous Forest
- FOD8-1, Fresh – Moist Poplar Deciduous Forest
- FOD9, Fresh – Moist Oak – Maple – Hickory Deciduous Forest
- MAM2, Mineral Meadow Marsh
- OAO, Open Aquatic
- SWD1, Oak Mineral Deciduous Swamp
- SWD1-3, Pin Oak Mineral Deciduous Swamp
- SWD2-2, Green Ash Mineral Deciduous Swamp
- SWD4-1, Willow Mineral Deciduous Swamp
- SWT2-9, Grey Dogwood Thicket Swamp



- Study Area
- Subject Lands
- Ecological Land Classification
- ELC Inclusion
- Amphibian Breeding Habitat (Wetland)
- Candidate Amphibian Breeding Habitat (Woodland)
- Woodland Area-Sensitive Bird Breeding Habitat
- Candidate Bat Maternity Colonies
- Candidate Turtle Nesting Area
- Deer Winter Congregation Areas
- Rare Vegetation Communities
- Reptile Hibernacula
- Turtle Wintering Areas
- Wetland Provincially Significant (MNRF)

Woodland Area

- Outside Subject Lands (136.2 ha)
- Within Subject Lands (11.6 ha)
- 200 m Forest Interior

Species of Conservation Concern

- Honey Locust
- Schreber's Aster
- Snapping Turtle
- Wood Thrush and Eastern Wood-Pewee

Riverfront Community EIS

Figure 10
Natural Heritage Feature Summary

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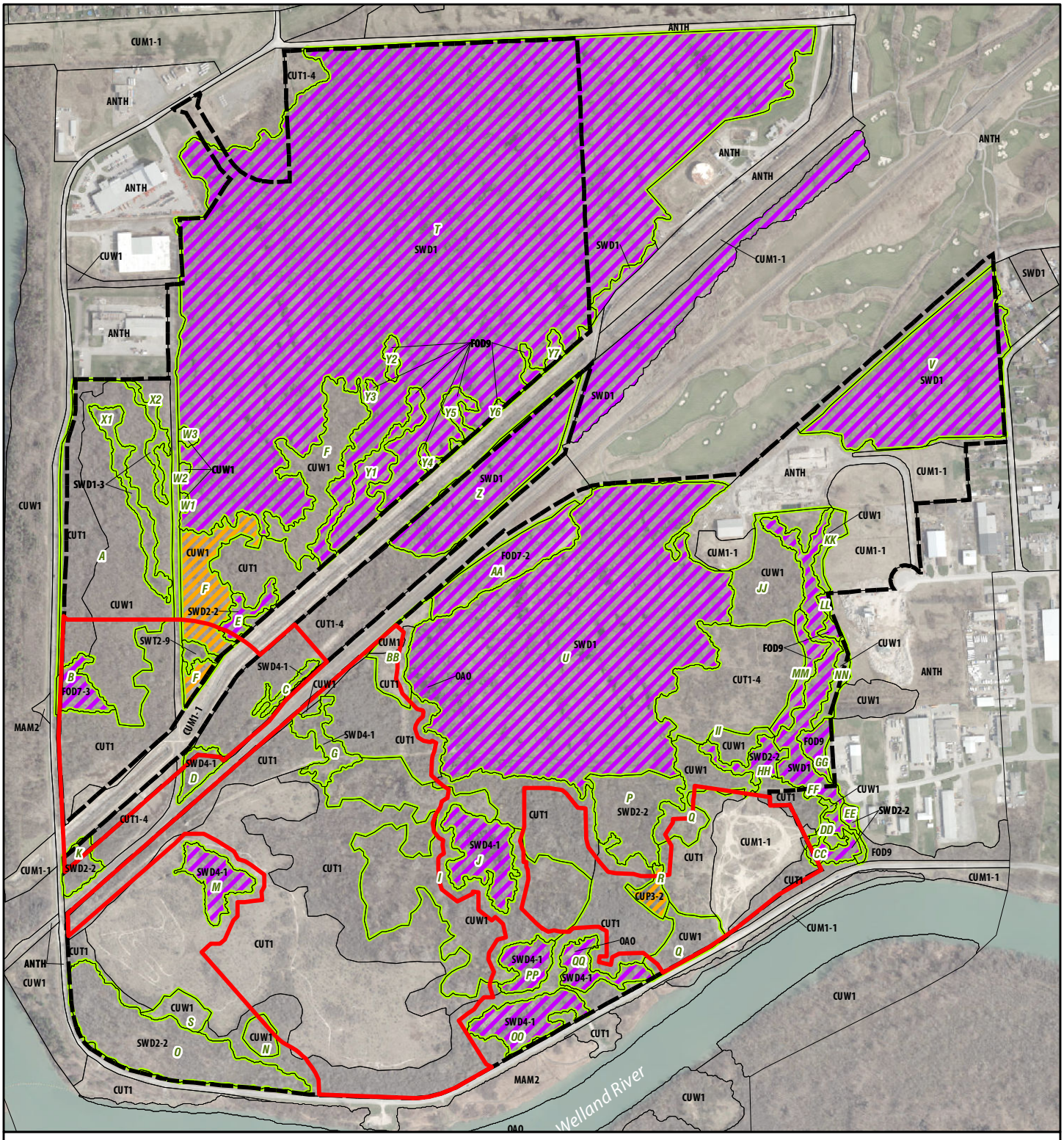

Riverfront Community Private OPA - Technical Update

Figure 13
Bat Habitat Assessment Results

- Study Area
- Subject Lands
- Ecological Land Classification
- Suitable Species at Risk (SAR) Bat Roosting Habitat
- Candidate Significant Wildlife Habitat and Suitable Species at Risk (SAR) Bat Roosting Habitat
- Area Identification Polygon and Letter

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Appendix B – Tables

Table 1 Suitable Species at Risk Bat Roosting Tree (>10 cm DBH) Density Survey Results

AREA IDENTIFICATION POLYGON LETTER	COMMUNITY TYPE	APPROX. AREA SIZE (HA)	NUMBER OF SUITABLE ROOSTING TREES OBSERVED	# OF SUITABLE TREES/HECTARE
A*	CUW1	6.67	29	4.35
B	FOD7-3	0.63	13	20.63
C	SWD4-1	0.22	-	0
D	SWD4-1	0.43	-	0
E	SWD2-2	0.42	16	37.47
F*	CUW1	2.22	24	10.81
G	SWD4-1	0.68	4	5.88
I*	CUW1	8.0	8	1.0
J	SWD4-1	1.53	16	10.45
K	SWD2-2	0.47	-	0
M	SWD4-1	0.89	19	21.34
N*	CUW1	0.34	0	0
O*	SWD2-2	3.68	9	2.44
P*	SWD2-2	1.88	17	9.04
Q*	CUW1	1.36	3	2.21
R	CUP3-2	0.33	4	12.12
S	CUW1	0.89	0	0

NOTES:

- *Polygon surveyed using 10 or more, 12.6 m radius plots
- Shaded rows indicate polygons with a suitable roosting tree density >10 suitable trees/ha.

Table 2 Candidate Significant Wildlife Habitat for Bat Maternity Roosting Tree Density Survey Results (>25 cm DBH)

AREA IDENTIFICATION POLYGON LETTER	COMMUNITY TYPE	APPROX. AREA SIZE (HA)	NUMBER OF SUITABLE ROOSTING TREES OBSERVED	# OF SUITABLE TREES/HECTARE
A*	CUW1	6.67	4	0.60
B	FOD7-3	0.63	8	12.69
C	SWD4-1	0.22	-	0
D	SWD4-1	0.43	-	0
E	SWD2-2	0.42	5	11.90
F*	CUW1	2.22	7	3.15
G	SWD4-1	0.68	1	1.47
I*	CUW1	8.0	7	0.87
J	SWD4-1	1.53	16	10.4
K	SWD2-2	0.47	-	0
M	SWD4-1	0.89	14	15.73
N*	CUW1	0.34	0	0
O*	SWD2-2	3.68	5	1.35
P*	SWD2-2	1.88	5	2.66
Q*	CUW1	1.36	1	0.73
R	CUP3-2	0.33	3	9.09
S	CUW1	0.89	0	0

NOTES:

- *Polygon surveyed using 10 or more, 12.6 m radius plots
- Shaded rows indicate polygons with a suitable roosting tree density >10 suitable trees/ha.

Table 3: Summary of Natural Heritage Features and Functions by Jurisdiction

NATURAL HERITAGE FEATURES AND ASSOCIATED FUNCTIONS MEETING EPA AND ECA DEFINITIONS	PRESENT WITHIN OPA BOUNDARY?	PRESENT ON LANDS ADJACENT* TO THE OPA BOUNDARY	REGULATORY REFERENCE AND/OR JURISDICTION	TECHNICAL DISCUSSION	ASSOCIATED ACTIONS/OBSERVATIONS
Provincially Significant Wetland	Yes	Yes	Provincial Policy Statement: - Policy 2.1.4 Niagara Region: - Policy 7.B.1.3 City of Niagara Falls: - Policy 11.2.13 - Policy 11.2.14	• The proposed footprint of the OPA intends to exclude wetlands deemed by the Province to be Significant and not available for any alteration or development • Wetland evaluations are open files. Some wetland units and areas with wetland characteristics within the OPA boundary are the subject of ongoing technical discussions	• Should any PSW units within the OPA boundary remain PSW following further review, those units will be treated as EPA and will be avoided by development
Provincially Significant Life Science Areas of Natural and Scientific Interest (ANSIs)	No	No	N/A	• Provincially Significant Life Science ANSIs do not occur within the OPA boundary. There will be no negative impacts to these features	N/A
Significant habitat of endangered and threatened species**	None confirmed by the MNRF to date; potential for endangered bat occurrences within the OPA limits	Habitat and/or candidate habitat for threatened and endangered species including bats, Acadian Flycatcher, Dense Blazing Star and Kentucky Coffee Tree have been identified on the Adjacent Lands	Provincial Policy Statement: - Policy 2.1.5 Niagara Region OP: - Policy 7.B.1.3 City of Niagara Falls OP: - Policy 11.2.13 - Policy 11.2.14 - Policy 11.2.17	• Woodlands within the Subject Lands have been assessed for suitable bat habitat. Bat habitat is not limited within the Subject Lands, nor within Niagara Region. Declines in Species at Risk bat populations are not associated with habitat loss in Ontario, rather they have been negatively affected by mortality associated with White-nose Syndrome. As such, any confirmed SAR bat habitat found within the OPA boundary would not be considered “significant” since habitat is readily available throughout the Region • No bat hibernacula have been identified within the OPA boundary • A single Acadian Flycatcher was heard calling during breeding bird surveys conducted by Dougan and Associates in 2015. Suitable habitat for this species is outside of the proposed OPA boundary • Dense Blazing Star has been identified within the study area but does not fall within the OPA boundary (not endemic to this part of Ontario – likely introduced through anthropogenic seed dispersal) • A single Kentucky Coffee Tree was identified within the OPA boundary (located in association with an old homestead – expected to have been planted - outside species’ native range in Ontario) – see: http://sararegistry.gc.ca/default.asp?lang=En&n=008AD5D2-1	• Presence of Species at Risk bats will be confirmed using acoustic surveys in the summer of 2018 • Any impacts to Species at Risk habitat will be addressed through ongoing consultation with the MNRF and the Endangered Species Act permitting process.

Table 3: Summary of Natural Heritage Features and Functions by Jurisdiction

NATURAL HERITAGE FEATURES AND ASSOCIATED FUNCTIONS MEETING EPA AND ECA DEFINITIONS	PRESENT WITHIN OPA BOUNDARY?	PRESENT ON LANDS ADJACENT* TO THE OPA BOUNDARY	REGULATORY REFERENCE AND/OR JURISDICTION	TECHNICAL DISCUSSION	ASSOCIATED ACTIONS/OBSERVATIONS
Significant Woodlands	Yes	Yes	Provincial Policy Statement: - Policy 2.1.5 Niagara Region OP: - Policy 7.B.1.4 City of Niagara Falls OP: - Policy 11.2.22	• Using the Niagara Region Policy 7.B.1.5, the Cultural Woodland areas within the OPA boundary are considered Significant Woodlands as they are greater than 2 ha in size • There is one forest community (FOD7-3, 0.63ha) within the OPA boundary, however it does not meet the minimum size to be considered Significant Woodland. This forest community overlaps with candidate Significant Wildlife Habitat for woodland amphibian breeding habitat and bat maternity colonies. Evaluation of Significance for these SWH types will be completed in 2018. • The woodlands on the Subject Property are heavily infested by Emerald Ash Borer (EAB). The canopy dieback is apparent along woodland edges where thicket communities of invasive shrubs: Common Buckthorn (*Rhamnus cathartica*) and Tartarian Honeysuckle (*Lonicera tatarica*) dominate. The ash regenerating layer is limited, but it is expected when saplings reach heights over the shrub layer they too will be infested with EAB. The inability of the woodlands to regenerate ash over the next 5 to 10 years predicts less canopy cover and progressive invasion of quick growing non-native shrubs. Without intervention, the woodland will degrade to thicket along its boundaries over a short to medium term. • Areas of intact swamp forest adjacent to the OPA area, where pockets of cultural thicket are developing, are identified for restoration through invasive species management for buckthorn and Tartarian honeysuckle. Enhancement of woodland edges to promote canopy cover and manage for invasives will increase woodland interior on adjacent lands. • Although Significant Woodlands exist within the OPA boundary, it is expected that the current stage of EAB infestation, degree of invasive shrub dominance, and limited regeneration potential of sub-canopy sapling ash specimens limits the woodland from persisting. Left without intervention, these woodlands would decrease in size over time and provide more opportunities for invasive plant species to dominate the landscape. No negative impact from development activities is anticipated to these woodlands within the OPA boundary.	See Savanta Technical Memo – Woodland Significance for additional detail
Turtle Wintering Areas	No	Yes	N/A	• Turtle Wintering Areas do not occur within the OPA boundary. There will be no negative impacts to these features	
Candidate Bat Maternity Colonies	Yes	Yes	Provincial Policy Statement: - Policy 2.1.5 Niagara Region OP:	• Candidate bat habitat was identified using a combination of desktop aerial interpretation (for areas outside the OPA boundary) and ground-truthing in ELC communities within the OPA boundary. Field studies completed by Savanta in February 2018 confirmed there is no habitat for bats present in FOD8-1, as this	• Should the FOD7-3 community be confirmed to be in use by Silver-haired or Big Brown bats in sufficient numbers to be considered for Significant Wildlife Habitat, no negative impact to this habitat type is anticipated due, in part to the larger more

Table 3: Summary of Natural Heritage Features and Functions by Jurisdiction

NATURAL HERITAGE FEATURES AND ASSOCIATED FUNCTIONS MEETING EPA AND ECA DEFINITIONS	PRESENT WITHIN OPA BOUNDARY?	PRESENT ON LANDS ADJACENT* TO THE OPA BOUNDARY	REGULATORY REFERENCE AND/OR JURISDICTION	TECHNICAL DISCUSSION	ASSOCIATED ACTIONS/OBSERVATIONS
			- Policy 7.B.1.4 City of Niagara Falls OP: - Policy 11.2.22	community should be reclassified to CUM1 and CUT1 rather than a forest community as previously identified by Dougan & Associates • FOD7-3 (previously identified as Polygon B, SWD4-1) contains 8 candidate roosting trees for bat maternity colonies (>25 cm dbh). This number should be compared with the large contiguous SWD1 slough forests being protected on the Subject Lands containing 183 suitable trees north of the Conrail Drain and 182 suitable trees south of the Conrail Drain. Both of these large woodlands provide an abundance of suitable roosting and foraging opportunities for bats. The roosting behavior of tree-roosting bats should be considered when evaluating significance of roost sites. Tree-roosting bat species will often move their pups between several roost locations during the breeding season to reduce the risk of predation	intact forest communities being protected on the same property, and therefore providing ample available habitat for tree-roosting bats • Bat boxes mounted on poles will be installed prior to removal of any confirmed maternity roosting trees for Silver-haired or Big Brown Bats within the OPA boundary. Boxes will be constructed and installed to specification in consultation with a biologist knowledgeable in bat ecology. • No negative impact to Bat Maternity Colonies is predicted
Rare Vegetation Communities	Yes	Yes	Provincial Policy Statement: - Policy 2.1.5 Niagara Region OP: - Policy 7.B.1.4 City of Niagara Falls OP: - Policy 11.2.22	• A small SWT 2-9 (Gray Dogwood Mineral Thicket Swamp, S3S4) inclusion is present in the northern portion of the OPA boundary where the ELC unit is currently mapped as PSW. Should this feature remain a PSW following additional discussion with MNRF, the feature will be avoided by development	• The Gray Dogwood Mineral Thicket Swamp, though a rare vegetation community in Ontario, is dominated by Gray Dogwood. This shrub species is adept at colonizing abandoned agricultural lands, areas disturbed by logging, and on forest edges. It occurs in other areas of the subject property. The small area identified by this ELC polygon is 0.2 ha. Any specimens of species that are easily transplanted will be relocated to areas with suitable soil conditions retained on the subject property.
Deer Winter Congregation Areas	No	Candidate Deer Winter Congregation Areas are present on adjacent lands.	N/A	• MNRF mapping shows Deer Winter Congregation Areas within the OPA boundary, however the MNRF mapping does not align with ELC communities identified as candidate areas in the MNRF's Significant Wildlife Habitat Technical Guide. Lands within the OPA boundary do not meet the SWH Technical Guide criteria for Deer Winter Congregation Areas	• A map of Deer Winter Congregation Areas has been prepared using criteria identified in the SWHTG. All woodlands that met the minimum size threshold (>50ha) are shown on the revised map. No Deer Winter Congregation Areas are found within the OPA boundary. • A revised Deer Winter Congregation Areas map was provided to MNRF for review on February 14, 2018.
Candidate Turtle Nesting Areas	No	Candidate Turtle Nesting Areas may be present south of Chippawa Parkway	N/A	• During turtle nesting surveys, attempts at taking soil samples by hand auger were made intermittently (approximately every 50 m) along the transects. Soils were severely compacted by ATV and mountain bike use, making auger samples impossible to take. Soil compaction and dense vegetation cover make areas within the OPA boundary unsuitable for turtle nesting	• Candidate Turtle Nesting Areas may exist along the shores of the Welland River south of the Chippawa Parkway, on lands adjacent to the OPA boundary. Movement opportunities to these areas from the Subject Lands will be improved through

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		adjacent the Welland River.		• Turtle Nesting Areas do not occur within the OPA boundary. There will be no negative impacts to these features	provision of ecopassages under Chippawa Parkway.
Candidate Amphibian Breeding Habitat (Woodland)	Yes	Yes	Provincial Policy Statement: - Policy 2.1.5 Niagara Region OP: - Policy 7.B.1.4 City of Niagara Falls OP: - Policy 11.2.22	• Suitable breeding habitat for salamanders is present within SWD1 communities associated with the slough forest, as well as within the FOD7-3 forest polygon within the OPA boundary. Breeding has not been confirmed in the FOD7-3 polygon, however salamander movement, and associated road mortality, has been observed along Dorchester Road to the west	• Enhancement of amphibian movement opportunities across Dorchester Road is proposed through road improvements such as fencing and underpasses to reduce road mortalities. • Intact and undisturbed forest communities provide the best opportunities for successful amphibian breeding. Enhancement of low quality cultural woodlands adjacent to deciduous slough swamp communities on adjacent lands will provide contiguous movement opportunities and upland habitat for salamanders. • No negative impact is anticipated to woodland amphibian breeding habitat.
Amphibian Breeding Habitat (Wetland)	No	Yes	N/A	• Amphibian Breeding Habitat (Wetland) does not occur within the OPA boundary. There will be no negative impacts to these features	
Woodland Area-Sensitive Bird Breeding Habitat	No	Yes	N/A	• A portion of the woodland that provides area-sensitive bird breeding habitat was identified as extending into the OPA boundary (FOD8-1). This ELC polygon was originally delineated and classified by Dougan and Associates in 2015 as FOD8-1. Additional studies completed by Savanta to evaluate candidate bat habitat in February 2018 confirmed this polygon is not forest habitat, and therefore has been reclassified to CUM1/CUT1	
Reptile Hibernacula	No	Yes	N/A	• Reptile Hibernacula does not occur within the OPA boundary. There will be no negative impacts to these features	
Significant Habitat of Species of Conservation Concern	Yes	Yes	Niagara Region	• Small pockets of suitable habitat for Wood Thrush and Eastern Wood-Pewee is found along the eastern boundary of the OPA area. These bird species were also present within the larger intact areas of slough forest where interior habitat can be found. The portions of habitat found within the eastern OPA boundary are not considered to be the best examples of habitat for these species and would not be considered Significant Habitat for either species.	

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NATURAL HERITAGE FEATURES AND ASSOCIATED FUNCTIONS MEETING EPA AND ECA DEFINITIONS	PRESENT WITHIN OPA BOUNDARY?	PRESENT ON LANDS ADJACENT* TO THE OPA BOUNDARY	REGULATORY REFERENCE AND/OR JURISDICTION	TECHNICAL DISCUSSION	ASSOCIATED ACTIONS/OBSERVATIONS
				• Honey Locust was observed in the riparian community along the eastern boundary of the OPA area; this occurrence is outside of the natural range for this species in Ontario (see: https://tidcf.nrcan.gc.ca/en/trees/factsheet/95). Regardless of the native status of the population on the Subject Property, the ecosite containing this species will be maintained, with appropriate edge management practices to be implemented at Draft Plan and Site Plan stages of development. • No negative impact to Significant Habitat of Species of Conservation Concern is predicted.	
Regionally Significant Life Science ANSIs	No	No	N/A	• Regionally Significant Life Science ANSIs do not occur within the OPA boundary. There will be no negative impacts to these features	
Other Evaluated Wetlands	No	No	N/A	• Currently all wetlands within the OPA boundary are classified as PSW by the MNRF. Should any modifications to these units result from updates associated with these Open Files, the mapping and analyses will reflect this. Should any of the individual units be reclassified, but remain as wetland features, they would be subject to the test of no significant negative impact. One former PSW feature that was recently reclassified by MNRF has been appropriately reclassified as a forest ELC community (FOD7-3)	
Significant Valleylands	No	No	N/A	• Significant Valleylands do not occur within the OPA boundary. There will be no negative impacts to these features	
Savannahs and Tallgrass Prairies	No	No	N/A	• Savannahs and Tallgrass Prairies do not occur within the OPA boundary. There will be no negative impacts to these features	
Alvars	No	No	N/A	• Alvars do not occur within the OPA boundary. There will be no negative impacts to these features	
Publically Owned Conservation Lands	No	No	N/A	• Publically Owned Conservation Lands do not occur within the OPA boundary. There will be no negative impacts to these features	

NOTES:

- * For purposes of these analyses, adjacent lands are defined as 120 m from the outer limits of the proposed OPA lands
- ** As defined by the Regional OP (… the habitat, as approved by the MNR…)

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COMMENT ID	EIS PAGE/ REFERENCE	MNRF COMMENT	SAVANTA RESPONSE
001	Page 35	• The EIS states that "Suitable breeding habitat was observed for this species within the areas surveyed in the Study Area." Given that there is suitable habitat present, and there is a record of a calling male from 2015, MNRF staff can confirm that Acadian Flycatcher habitat is on site • Dougan and Associates identified a male Acadian Flycatcher calling 3 to 4 times and was listed as a possible breeder in 2015. The area that was surveyed in 2017 did not include the original location where the male Acadian Flycatcher was identified in 2015. In addition, this species is known to have site fidelity but may not utilize it on an annual basis. As such, MNRF staff is of the opinion that the additional studies carried out have not sufficiently demonstrated absence of this species on site • As a result, MNRF staff will map potential habitat for Acadian Flycatcher on site and provide it to the proponent with our final comments on the EIS in January • At this stage if the proponent would like to carry out further studies, it is recommended that they submit their survey methodology to MNRF	• Savanta submitted an Information Gathering Form to initiate the ESA permitting process with MNRF on January 23, 2018. Savanta will continue to work with the MNRF to fulfill any potential ESA permitting requirements for Acadian Flycatcher and any other threatened or endangered species that may be impacted by the project • Savanta will evaluate the need for additional surveys in consultation with MNRF through the IGF review process
002	Page 36	• "Dense Blazing Star has not been addressed in this section as the MNRF report that this species is not native to Niagara." This approach to species at risk (SAR) is not consistent with the ESA. In addition, we could not find any reports of the work done by Dougan or Savanta identifying this species. MNRF staff recommends that the habitat for Dense Blazing Star is mapped and submitted to MNRF, along with an IGF, in order to inform the potential implications of the ESA	• Dense Blazing Star occurrences within the Subject Lands have been mapped and submitted to MNRF along with the IGF to inform potential implications of the ESA. • Although we recognize that the removal of this listed species may be handled effectively through the permitting process, the concept plan has been revised to avoid occurrences of this species
003	Page 29	• There is an old barn mentioned on Page 29 of the EIS. MNRF staff would appreciate clarification on whether or not this barn and other anthropogenic features have been surveyed for bats. If these buildings have not been surveyed, it is recommended that they be surveyed for SAR bats, as well as other possible SAR species (such as Barn Swallow, Chimney swift). This information will help to inform the ESA, as well as the City's review of the OPA application • MNRF recommends being consulted on the methodology for bat surveys for the 2018 field season	• Savanta has completed a leaf-off habitat assessment for bats utilizing feedback from MNRF regarding survey methods. Acoustic monitoring is planned for June 2018 to confirm the presence or absence of SAR bats. The final selection of acoustic monitoring stations will be completed in consultation with MNRF • Barn Swallow and Chimney Swift were detected foraging within the Subject Lands by Dougan and Associates (see Thundering Waters EIS, Dougan and Associates, June 2016). Dougan and Associates concluded that neither species is breeding on site due to an absence of suitable breeding habitat.
004		• The Kentucky Coffee-tree is listed as threatened under the ESA and has general habitat protection. This species was observed on site (in polygon #1) and has been included in Table 6 of the 2015 EIS by Dougan and Associates. • MNRF advises that this tree should be identified on a map and an IGF should be submitted for review. The proponent can include all relevant SAR in the same IGF for MNRF review. This information will help to inform the ESA, as well as the City's review of the application.	• The known occurrence of Kentucky Coffee-Tree has been identified on a map and submitted along with the IGF to MNRF to inform potential implications of the ESA.
005	Page 14 and Page 2	• The composition of the plant community has long been used as the primary criterion to determine if wetland habitat is present. The plant species composition in a given area represents the integrated response of that	Comment noted.

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		area to complex and interacting environmental factors – also known as the "biological response variable". Once a certain threshold of "soil moisture saturation" is surpassed, the plant composition shifts to those species that have adapted and are able to thrive in wet environments. Knowing which plant species are characteristic of wetland areas is necessary for delineating wetland boundaries. • Within OWES, a vegetation community may be defined as an assemblage of plant populations living in a prescribed area. Each vegetation community may contain one or several combinations of vegetation forms. Narrow-leaved Emergents "ne" Erect, rooted, graminoid monocots, including horsetails, which may be temporarily or permanently flooded at the base but are exposed at the upper portion and typically are less than 1.5 metres in height, examples of which include sedges and grasses similar to grass savannahs.	
006	Page 14 and Page 4	• The mortality of Green Ash does not indicate that the site is no longer wetland. Because of the value of dead trees (dc, dh) to wildlife, these forms should be included in the community description if they cover 10% or more of the community. Changes in composition to the community as a result of Emerald Ash Borer (EAB) only affect the dominant form, which would change from "h" to "dh". • The nature of European Buckthorn is opportunistic and tends to rapidly populate altered sites. As such, it important for wetland evaluators to realize that the physical and biological characteristics of some plants can vary with latitude, longitude, and altitude. This can result in some species, in particular European Buckthorn, being found in very different ecotypes. • In addition, the vegetation changes alone do not necessarily change the characteristics of the wetland. Changes, if any, in surficial hydrology of the site need to be considered as well.	• Comment noted.
007	Page 15 and Page 2	• Based on an MNRF staff observation in 2008, Black Gum is present on site.	• We request the MNRF provide the specific location(s) of any Black Gum stems observed on site.
008	Page 15 and Page 5	• The updated evaluation record (January 2017) is available from MNRF and should be used in this EIS. The quoted text in the EIS does not come from the current wetland evaluation. While some of the maps show part of the current extent of the complex, the text includes the wrong area figures. Overall, the EIS should be updated to reflect the current evaluation.	• The current mapping that is being used to inform the City of Niagara Falls review of the application is based on the January 2018 revision to the MNRF wetland mapping layer. Any subsequent revisions to the EIS will be updated to include the most recent wetland evaluation records, where applicable. Historic evaluations provide important input and information related to MNRF rationale for wetland mapping and evaluation updates as well as trends in wetland values.
009	Page 21, Page 22, and Page 1	• The text regarding the timelines of the Niagara Falls Slough Forest Wetland Complex PSW needs to be corrected. The original wetland evaluation was in 1986 with a score of 616 points. • The wetland complex has been reviewed a few times since. • Evaluations remain as open files, which are subject to change as more information becomes available or as a consequence of changes to the wetland itself. It is important to review only the most recent evaluation, in this case the January 2017 update.	• As noted in the comment, wetland evaluations are open files and the Niagara Falls Slough Forest Wetland Complex PSW was most recently updated in January 2018. Any subsequent revisions to the EIS will be updated to include the most recent wetland evaluation records, where applicable.
010	Page 22 and Page 1	• The OWES does not use percentages to determine PSW status. Wetlands are determined to be provincially significant based on scoring. OWES scoring is not converted to a percentage; it is a relative ranking. • For both northern and southern Ontario, a PSW is any wetland that:	• Savanta knows that percentages are not used in OWES. The use of the percentages in this instance is for illustrative purposes and is an interpretation, not an error that needs correcting.

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		1. Achieves a total score of 600 or more points, or 2. Achieves a score of 200 or more points in either the Biological component or the Special Features component. • This section of the EIS should be corrected and updated to reflect OWES evaluation scoring methods, not a percentage.	
011	Page 22 and Page 2	• The Dougan & Associates EIS provided Ecological Land Classification (ELC)-based mapping and did not delineate wetlands as per OWES. This should be clarified in the text.	• Any subsequent revisions to the EIS will be updated to clarify that OWES evaluations were completed by MNRF.
012	Page 22 and Page 4	• Wetlands must not be complexed across watersheds except in rare circumstances. For example, it can be difficult to determine to which watershed wetlands belong in major headwater areas, such as the Oak Ridges Moraine. • Watershed definition: an area drained by a river, brook or creek. In this case, the watershed is the Niagara River, the sub-watershed is the Welland River, and wetlands can cross sub-watershed boundaries. A careful examination of the drainage area for this wetland would indicate that the entire wetland drains into the Welland River Watershed.	• The determination of which units are included within wetland complexes is one of the primary sources of difficulties encountered in efforts to effectively and consistently implement OWES. The complexing rules applied are different across MNRF Districts. • It's important to note that not all wetlands that occur in close proximity, should be considered as a complex. Whether a group of wetlands should be considered as a complex depends on the particular combination of functional circumstances, location in the landscape and other characteristics of the wetlands. • The reliance upon a simple proximity measurement (i.e., <750 m apart) to guide many decisions regarding complexing, or the response that units are complexed because they can be, does not reflect a fulsome consideration of the role of wetland units within watersheds, terrain units or within complexes themselves. • It's also important to acknowledge that wetland units less than 2 ha in size may be included as part of the complex, if such tiny wetlands may provide important ecological benefit. There is no definition of important ecological benefit.
013	Page 23 and Page 3	• The term wetland is a general one and includes specific land types commonly called marshes, bogs, swamps and fens. Other terms sometimes used to describe wetlands include: mires, sloughs and peatlands. Wetlands may be relatively simple or highly complex and diverse biologically and ecologically. • Within a single wetland area (i.e., contiguous wetland) one may find very different ecological circumstances. Examples include an open water marsh, a spring fed swamp forest, a floating lakeside fen, an open channel of river, and the open water edge of a lake. Despite these profound ecological differences, the entire area is considered as a single wetland. It is to be identified and evaluated as a single unit. All wetland types are included, even if it is not slough.	• Comment noted, although the OWES guidance provided in, "Additional Guidelines for Mapping Transitional Areas". does not completely align with this MNRF comment. • Having said that, the large forested blocks are treated as wetland types (i.e., reflected in ELC mapping provided in reporting).
014	Page 23 and Page 5	• OWES wetlands are categorized into 4 different types of ecosystems: marsh, swamp, bog and fens. The marsh type is treated as two categories "marsh" and (shallow) "open water marsh." Wetland types are determined by the field evaluator on the basis of the major plant associations and physical, substrate and hydrological information obtained in the wetland and immediate surroundings. OWES does not recognize a fourth category based on recent successional features that display signs of significant and/or recent disturbance (e.g. highly disturbed).	• Agreed; this is another problem with OWES. • The Wetland Conservation Strategy for Ontario identifies marshes as the most recognized yet least common type of wetland in Ontario. Unfortunately, this does not recognize or attempt to differentiate between marshes that perform significant functions and those that have recently occurred on landscapes in the GTA, principally as a result of agricultural abandonment and/or post-industrial uses. • The rather simple interpretation presented in OWES leads to equating significance to entirely different functional wetland units: e.g., an "isolated" marsh resulting from recently abandoned agricultural land, dominated by the invasive Common Reed (*Phragmities australis* ssp. *australis*), is treated similarly to that of an isolated, native sedge marsh derived from natural processes within the landscape.

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			• The OWES when applied in these types of settings typically includes more fulsome consideration of the degree of functions present before mapping any and all wetlands and/or features with some wetland characteristics, within a complex boundary. This interpretation is made more difficult by variable approaches being implemented in different MNRF Districts. • The discussion in this section of the EIS is provided to add important context to the origin of some wetland features on the Subject Lands. This discussion highlights a challenge associated with the OWES, which can in some circumstances, exaggerate the significance of low functioning units.
	Page 23 and Page 6	• The wetland units/areas identified are part of the Niagara Falls Slough Forest Wetland Complex PSW, 2017. As such, the categorization of individual wetland areas into separate wetlands is incorrect and does not represent the OWES approach required to delineate PSWs. Any references in the EIS to wetlands and PSWs should only reflect the OWES (e.g. in the EIS text, maps and tables).	• See previous comment.
015	Page 24 and Page 2	• The OWES evaluation system is concerned with the definition, identification and measurement of wetland functions. The wetland is then evaluated based upon the perceived values of characteristics, activities, or expressions of the wetland or its parts that function to maintain ecosystem processes, or that have some utility or amenity value to a segment of society.	• Disagreed; the OWES is designed to identify and measure recognized values of wetlands. The evaluation is not a complete biophysical inventory and certain information, particularly about the presence of rare species and about hydrological functions, may be lacking even after the evaluation is completed. • Functions are neither measured nor well understood by the OWES. The MNRF is currently undertaking a review of wetland functional assessment processes across various jurisdictions, in an effort better understand the definition and measurement of wetland functions, as input to the successful implementation of Ontario's Wetland Conservation Strategy.
016	Page 24 and Page 3	• Wetlands that are vulnerable to impacts (e.g. from development) should be addressed in the EIS (including avoidance, mitigation, buffers, etc.). Wetlands are not to be removed based on the rationale that they will be destroyed by the proposed development. This analysis should include relevant sections of the PPS, including policies related to the protection of PSWs (policy 2.1.4), and a discussion on adjacent lands in the context of PSWs on site (policy 2.1.8). • The OWES does not evaluate the vulnerability of wetlands in the context of development and related pressures. The evaluation system is a tool that allows consideration of the relative value of different wetlands through the examination and ranking of wetland functions.	• All wetlands within and adjacent to the proposed concept plan have been addressed in the EIS.
017	Page 25 and Page 3	• MNRF determined that wetland units within the Niagara Falls Slough Forest Wetland Complex would not be complexed with the Welland River East Complex. For more details, refer to the Statement of Complexing Rationale of the January 2017 OWES evaluation. • Wetland complexes are commonly related in a functional way, that is, as a group they tend to have similar or complementary biological, social and/or hydrological functions. Much of the wildlife in the area of the complex is variously dependent upon the presence of the entire complex of wetlands, with each wetland unit contributing to the whole. When a wetland complex is recognized, the evaluator must score the entire complex as one wetland.	• See response to comment 012, above.
018	Page 38 and Page 8	• All areas identified by MNRF as PSW (Niagara Falls Slough Forest Wetland Complex PSW and Welland River East Wetland Complex PSW) should be addressed in the EIS. This EIS only refers to a portion of the PSW	• The EIS is focused on features that will potentially be impacted by the proposed development. No impacts to the Welland River East Wetland Complex PSW are anticipated. Savanta is engaged in ongoing discussions

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		and is incomplete. Furthermore, PSW wetland units cannot be "removed" as described in this EIS. All proposed wetland boundary changes need to follow the OWES process through MNRF. • Any use of the term 'significant' should align with the definitions of provincial policy. The definition of Significant: "means a) in regard to wetlands, coastal wetlands and areas of natural and scientific interest, an area identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time;" (PPS, 2014)	with the MNRF regarding additional/new technical information that relates to the more precise refinement of individual wetland boundaries.
019	Page 40 and Page 2	• All wetland units within the Niagara Falls Slough Forest Wetland Complex PSW on the subject lands are subject to the same OWES process and same level of protection under the PPS, 2014. The OWES process does not allow for the inclusion of stormwater management features within an evaluation.	• Comment noted; this needs further discussion. It is important to understand and address the threats posed by climate change and to carefully consider methods (including innovative approaches) to ensure some wetland features and associated functions are maintained as viable systems within urbanizing landscapes. • Conserving wetlands without considering this aspect as part of an IA process could lead to unintended negative effects, even without any form of development. The simplistic response that precludes considering this important aspect, will not optimize conservation outcomes.
020	Page 52 and Page 2	• These wetlands have been evaluated as part of the Niagara Slough Forest Wetland Complex PSW and as such are considered significant. These areas are to be assessed as part of the whole wetland complex and not as individual components.	• Savanta has reviewed functions of individual disturbance-origin wetland units that have been complexed into the Niagara Slough Forest Wetland Complex PSW to inform future discussions related to their ability to withstand impacts associated with adjacent settlement areas.
021	Page 1 of 6, Table 2	• There is no language in the PPS or in OWES to support a discussion on "net effects" or "no net loss" approaches. This section should be updated to reflect existing provincial policy and related documents (e.g. OWES). In addition, the removal of PSW is not supported through an EIS process. Any updates to PSW boundaries need to be consistent with the OWES through MNRF.	• This statement does not reflect ongoing best practices being implemented elsewhere in the GTA. • Ignoring the 2017 Wetland Conservation Strategy released by the Minister, is not in keeping with applying the best thinking to conservation methods and outcomes. We understand that the MNRF may currently feel obligated to fall back on existing rules in the absence of clearer senior direction regarding the implementation of the Wetland Conservation Strategy.
022	Appendix B, Table 3	• This table has no basis for wetland functional rationale as it does not conform to the OWES process. Functional interconnectivity is explained in the wetland evaluation record for the Niagara Falls Slough Forest Wetland Complex PSW, 2017.	• We disagree with this comment and consider it inappropriate. • The functional interconnectivity explanation provided by the MNRF is incomplete, and it demonstrates a limited understanding of wetland functional assessment literature and best practices. • Recognizing that the MNRF has not developed this understanding, the MNRF has recently initiated a review of wetland functional assessment processes, to better understand these methods and to determine how they can be used in the Ontario context, to successfully implement the 2017 Wetland Conservation Strategy. • The functional assessment rationale presented in the Savanta report is based upon extensive literature review and analyses. It presents a sound and thorough tool to understand wetland functions in the context of an IA.
023	Appendix D, Pg. 2, p. 2	• The Wetland Conservation Strategy for Ontario speaks to "Incorporating recent advances in our knowledge about science and technology" (pg. 45). There is no discussion of "correcting" the OWES within the strategy document.	• The Draft Wetland Conservation Strategy (2016) noted that the end product of the review of OWES may be a new edition of the Ontario Wetland Evaluation System, or it may be a new approach to mapping and evaluating the significance of wetlands in Ontario. That language appears to have been deleted from the final Strategy, leaving it unclear whether and when the OWES will be revised to address existing weaknesses and gaps. • Having said that, the need to incorporate "recent advances in our knowledge about science and technology" indicates that the Government of Ontario recognizes that OWES is outdated and does not reflect current

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			wetland science. Our ongoing discussions with senior levels of the MNRF confirm an interest in modernizing OWES. • It is incorrect to suggest that some of the key elements of the OWES do not need serious review and/or replacement (e.g., lack of consultation, community feedback, unclear weighting, and a misrepresentation of Aboriginal and Cultural Values)
024	Appendix D, Pg. 2, Pg. 3	• This position is not shared by MNRF. The OWES was created to meet the need for a standardized approach to map wetlands, assess their functions, and determine their level of significance for purposes of municipal land use planning. Design of the system was overseen by a committee with representation from the provincial and federal government, with input from conservation authorities, academia, consultants and others. • Development of the system began with a review of scientific literature and evaluation methods being used in other jurisdictions at the time, and involved extensive field-testing, consultation with experts, and statistical analysis. The manuals have been updated over time, most recently in 2014 to include administrative updates and technical clarifications. • The Wetland Conservation Strategy for Ontario does not identify problems with OWES. The document does, however, validate the OWES method and commits improving and strengthening it: "Much has been learned over the past 30 years of evaluating Ontario's wetlands. Information collected during past evaluations will be useful for investigating how evaluation guidance can be improved. Conservation of wetlands will be improved by making wetland evaluation results available to support informed decisions about land use and resource development."	• Savanta agrees that OWES needs to be improved as evidenced by the evaluations that result in the complexing tiny, disturbance origin areas with wetland characteristics that occur widely on recently abandoned agricultural lands and in post-industrial disturbance landscapes. • The Wetland Conservation Strategy for Ontario when fully implemented will contribute to more effective wetland conservation and enhancement outcomes. • Additional comments presented above (023)
025	Appendix D, Pg. 2, p. 5	• There is no language in the PPS or in OWES to support a discussion on "net effects" or "no net loss" approaches. This section should be updated to reflect existing provincial policy and related documents (e.g. OWES). In addition, the removal of PSW is not supported through an EIS process. Any updates to PSW boundaries need to be consistent with the OWES through MNRF. • All of the wetlands have been identified as part of the Niagara Falls Slough Forest Wetland Complex PSW. As such, the categorization of individual areas into separate wetlands (i.e. Areas 1 -4) in the EIS does not meet the standardized process under OWES.	• This project is being planned within an evolving policy context. GR Can intends to continue refining the project boundaries within that policy context. • The 2017 MNRF Wetland Conservation Strategy provides important information and a pathway to achieve better wetland conservation outcomes.
026	Appendix D, Pg. 3, p. 2	• The OWES and any updates or addendums issued are the only means of evaluating wetlands in Ontario to determine whether they are provincially significant. In the OWES, the term "significant wetland" refers to PSWs, as determined by the criteria outlined in the manual. • Although other information sources, maps or inventory approaches (e.g., the Ecological Land Classification System) may be used to aid evaluators in undertaking a wetland evaluation, it is the OWES that determines whether a wetland is a PSW and, likewise, determines the boundaries of the PSW wetland.	• Savanta understands the current policy context. The 2017 MNRF Wetland Conservation Strategy provides important information and a pathway to achieve better wetland conservation outcomes.
027	Appendix D, Pg. 3, p. 3	• These 10 wetland units/areas have been identified as part of the Niagara Falls Slough Forest Wetland Complex PSW. The categorization of individual areas into separate wetlands in the EIS does not conform to OWES and is not supported by MNRF.	• See comment 012.

Table 4 Responses to MNRF Comments (December 11, 2017 and January 15, 2018, Tara McKenna) Regarding the September 2017 Savanta Inc. EIS and November 2017 Savanta Inc. EIS Technical Update

028	Appendix A, Figure 8	• The PSW should be mapped as per the approved wetland boundaries available in Land Information Ontario (LIO).	• The current mapping that is being used to inform the City of Niagara Falls review of the application is based on the January 2018 revision to the MNRF wetland mapping layer where MNRF removed one of the units previously identified as provincially significant. • GR Can plans to review additional individual wetland pockets with MNRF in 2018 to determine if similar revisions are appropriate. Subsequent revisions to the EIS will be updated to include the most recent wetland evaluation records, where applicable.
029	n/a	• We note that PSWs are protected by provincial policy as wetlands are an important component of Ontario's landscapes and watersheds that provide a variety of economic, social and ecological benefits. Policy 2.1.4 of the 2014 PPS provides direction that there shall be no development or site alteration within PSWs in southern Ontario. Based on the review of the EIS, it appears that PSWs are proposed to be removed to support development, and that there will be development impacts proposed in some PSWs (e.g. stormwater management).	• GR Can does not plan to remove PSW's as part of this development. The final site plan will conform to current policy at the time of site plan finalization. Ongoing technical work and monitoring may contribute additional or new technical data that informs any potential future revisions to the open wetland files.
030	n/a	• We also note that in order to revise the boundaries of a PSW, all wetland evaluations must be reviewed and approved by MNRF staff before they are considered complete and 'official' (i.e. the wetland status may be used to make land use planning decisions). It is recommended that the proponent consult OWES and contact MNRF staff in order to move forward with any recommended changes to the Niagara Falls Slough Forest Wetland Complex PSW boundaries.	• Savanta will continue to work with MNRF where any revisions to PSW boundaries are proposed.
031	n/a	• We recommend that the City reviews the EIS for consistency with PPS policy regarding PSWs.	• Not a comment for Savanta Inc.
032	Page 29	• The EIS refers to Stratum I and II deer wintering habitat. This reference comes from an MNRF document titled 2.1.c Identification and Delineation of White-Tailed Deer Winter Habitat. This methodology is not suitable for Southern Ontario. In order to identify deer wintering areas for SWH, the stratum approach is not utilized. The deer wintering areas have already been delineated by MNRF. As outlined in the "Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E, January 2015." Deer wintering areas in ecoregion 7E is an MNRF responsibility and are mapped by MNRF. • The most up-to-date wintering areas mapping is available online through LIO. It is recommended that City staff review Deer Wintering Areas in the context of the map available online from MNRF.	• The City/Region are the responsible authorities for the determination of significant wildlife habitat. • A map of Deer Winter Congregation Areas using LIO data has been submitted to MNRF and NPCA for review. Savanta subsequently refined the mapping to comply with the criteria found in the MNRF's Significant Wildlife Habitat Technical Guide. This refined mapping is more precise and it incorporates detailed data collected through ongoing field investigations (Appendix A_).
033	n/a	• We recommend that MNRF staff is consulted on the acoustic monitoring planned for 2018 to confirm whether or not maternity roosting habitat for Big Brown and Silver Haired bats is present.	• Savanta will consult with MNRF on the acoustic monitoring methods planned for 2018.
034	n/a	• MNRF staff recommends that the project team maps the following SWHs (separately) using SWH Criteria Schedules for Ecoregion 7E, January 2015: - Turtle wintering areas - Reptile hibernacula - Woodland amphibian breeding habitat	- The City/Region are the responsible authorities for the determination of significant wildlife habitat. - All SWH mapping has been updated (Appendix A).

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		- Wetland amphibian breeding habitat - Woodland area-sensitive breeding bird habitat - Turtle nesting areas	
035	Page 30	• We note that there are areas of suitable habitat on site (including loam/sand substrate in disturbed areas); however, the EIS has noted that no nesting habitat was observed. To confirm SWH, there has to be one or more Northern Map Turtle or Snapping Turtle nesting. Given the presence of these species on site (observed overwintering and basking) MNRF staff is of the opinion that this EIS has not satisfactorily demonstrated the absence of turtle nesting areas on site. City staff may still want to consider this as candidate SWH for Turtle Nesting Areas. Further surveys could be undertaken to confirm presence/absence of SWH for Turtle Nesting Areas.	• Comment is addressed to the City; the City/Region are the responsible authorities for the determination of significant wildlife habitat • Savanta technical comments follow: • Areas of suitable habitat were tested by soil auger during nesting surveys completed by Savanta and Dougan & Associated ecologists. Soils were compacted by the historic disturbances on these lands and by recreational vehicle use; the soil auger was not able to penetrate surficial layers. Attempts were made along the transect routes anywhere suitable soils were observed. No samples were taken despite survey effort. • Some areas of suitable soils are located off site south of Chippawa Parkway that have not been surveyed. Turtle movement has been recorded across Chippawa Parkway to/from this area. These areas have been identified as candidate Turtle Nesting Areas. • Savanta requests any record of "Northern Map Turtle or Snapping Turtle" that exists with the MNRF. The applicant's consulting team has no record of Northern Map Turtle from the study area.
036	Page 30	• Some of the rare vegetation communities appear to have been missed in this section. FOD communities are present on site but have not been included. • Only SWD1-3 is listed, however, other SWD communities (e.g. Oak Mineral Deciduous Swamp (SWD1)) have not been included. In addition, Dougan and Associate listed polygons 3, 4, 5, 6, 27 and 32 as provincially rare vegetation communities. The most recent EIS completed by Savanta only includes polygons 3 and 4 as provincially rare vegetation communities. • Dougan and Associates noted "Old growth forest elements associated with Blocks A06, A11, and B13" in table 13 (Thundering Waters Secondary Plan Characterization and EIS, June 2016). A06 is an SWD so given that it is also has "old growth" means it is likely confirmed SWH; however, it was not included in the current EIS. B13 also has a small polygon with SWD; if this is where the old growth is located, it should also be considered for SWH. A11 is SWD and FOD, and similarly they should be considered for SWH.	• The City/Region are the responsible authorities for the determination of significant wildlife habitat. • Rare Vegetation Communities have been shown on updated Significant Wildlife Habitat mapping provided in Appendix A.
037	n/a	• As a more general comment, it appears that the 2017 EIS provides new ELC mapping. MNRF staff would appreciate clarification on how this was carried out and if there are data sheets to showing how it has been remapped. It appears that a combination of OWES mapping and ELC have been used to make a new map. • City staff may wish to request clarification on the changes to the ELC mapping in the most recent EIS.	• Additional refinements were made in response to reclassification of a wetland unit (as per MNRF, January 2018). Some other areas were reclassified due to ground conditions not reflective of previous classifications prepared through aerial interpretation.
038	n/a	• It is recommended that each SWH category is mapped separately for ease of review.	• All SWH mapping has been updated as requested (Appendix A).
039	n/a	• Planning authorities are responsible for identifying SWH or approving the work of others using municipal criteria or provincial guidance, to ensure consistency with the 2014 PPS. We recommend that the City ensure that the appropriate criteria for determining SWH have been applied to the study area.	• All SWH mapping has been updated as requested (Appendix A).

Table 4 Responses to MNRF Comments (December 11, 2017 and January 15, 2018, Tara McKenna) Regarding the September 2017 Savanta Inc. EIS and November 2017 Savanta Inc. EIS Technical Update

040	n/a	• We suggest applying caution to the interpretation of significant woodlands as outlined in the EIS. The EIS seems to suggest that woodland areas within Area 4 should not be considered significant because of further expected canopy decline due to EAB, and because of an apparent lesser degree of functional importance than Areas 1 – 3. The potential future decline in ash canopy may change the dominant canopy species but not necessarily the functional value of the woodland. The woodlands are contiguous with existing forested wetlands and upland forested areas which contribute to the overall species and structural diversity, size of the larger wooded areas, and the functional linkages between the different features within the Study Area and beyond. • MNRF's Natural Heritage Reference Manual lists a number of woodland benefits which these woodlands would presumably continue to provide, and also lists several criteria for significance that the woodlands in Area 4 may continue to meet, including size, interior area, linkages, and proximity to other natural heritage features. MNRF staff therefore recommends that the City review the Significant Woodland interpretation in the context of appropriate criteria (e.g. PPS 2014; MNRF Natural Heritage Reference Manual; Region of Niagara Official Plan).	• Woodland comments are provided for the City's consideration; the City/Region are the responsible authorities for the determination of significant woodlands • Savanta has refined the woodland boundaries based on the dominance of shrub species in some areas (details are provided in section 4.1)
041	n/a	• The EIS does not specifically identify and evaluate adjacent lands to provincially significant natural heritage features, however section six does identify several potential direct and indirect negative impacts of development on lands adjacent to natural features. Several mitigation measures are proposed but there is little discussion of their effectiveness and ability to confidently avoid negative impacts.	• This work has been completed at a Secondary Plan scale, where some of the suggested level of detail would not typically be requested. • The final site plan will be refined to ensure compliance with all provincial policy.
042	Section 6.2 and Section 6.6	• We recommend interpreting section 6.2 and 6.6 with caution for the reasons identified above in our discussion of significant woodlands. We are also unclear about the suggestion on p. 46 that the existing mosaic of eco-sites "already mimic a pre-stressed outcome". We suggest that it is difficult to compare the functional and structural nature of naturally occurring adjacent successional communities with the hard artificial edges that result with development structures and areas.	• Comment noted.
043	n/a	• The PPS does not permit development on adjacent lands to significant natural heritage features unless it satisfies the policy test that there will be no negative impacts on the natural features or their ecological functions.	• The final site plan will be refined to ensure compliance with all provincial policy.
044	n/a	• The EIS documents several features and values in the Study Area that recognize the presence of provincially significant natural heritage features in addition to the existing provincially significant wetland. The two EISs prepared in support of the application, document a relatively high degree of biodiversity and the Dougan EIS recognized the linkages between and among the features on the subject land and with those on the broader landscape. The Natural Heritage System identified in the current EIS does not appear to draw a connection to all of the significant features being considered on the subject lands and with those on the broader landscape. It is recommended that once all of the previous sections above are comprehensively addressed, that the NHS is updated to reflect connectivity on site. • We note that both the City of Niagara Falls and Niagara Region recognize in their Official Plans that the natural areas on the subject property serve as a major junction within a potential Natural Heritage Corridors running both east-west and north-south. This was not evident in the EIS's discussion of natural linkages or graphically portrayed.	• Savanta is not aware of any detailed technical studies completed in support of the relevant Official Plans, that would define the very graphical depictions of connections on the landscape. If available, Savanta expects that such MNRF technical resources would have been provided to the City during the OP review. • As the concept plan has evolved the refined NHS will revised to enhance existing corridors and linkages within the Subject Lands. The detailed work developed by the applicant provides a far more accurate and thorough information base upon which to define linkage functions.

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045	Figure 10	• Map appears to be missing features and does not reflect a fulsome summary of natural heritage features. For example, it does not include the entire PSW areas, significant woodlands, and several significant wildlife habitats (noted above). This map also does not appear to align with Figure 9 for SWH. City staff may want to consider requesting clarification or additional maps to review the full extent of the natural heritage features on site and ELC communities.	• All SWH mapping has been updated as requested (Appendix A).
046	Figure 10 and Figure 11	• Although there is a reference to Dougan and Associates on these maps, they do not match the ELC mapping done by Dougan in the 2016 EIS (Thundering Waters Secondary Plan Characterization and EIS, June 2016). City staff may want to consider requesting clarification or additional maps to review the full extent of the natural heritage features on site and ELC communities.	• Comment to City • All SWH mapping has been updated as requested (Appendix A).
047	n/a	• It is recommended that the project team update references to maps/figures throughout the EIS to ensure they are correct. For example, on page 23 of the EIS, there are references in paragraphs 5 and 6 to Figure 4, which seems to correspond with Figure 7.	• Comment noted.
048		• Acadian Flycatcher: Page 35 of the EIS states that "Suitable breeding habitat was observed for this species within the areas surveyed in the Study Area." Given that there is suitable habitat present, and there is a record of a calling male from 2015, MNRF staff can confirm that Acadian Flycatcher habitat is on site. • As a result, MNRF staff noted in our December 11, 2017 letter that we would map the potential habitat for Acadian Flycatcher on site. As per our discussion at the technical meeting on December 12, 2017, the proponent will map the potential habitat for Acadian Flycatcher and provide to MNRF for review.	• Savanta submitted an Information Gathering Form to initiate the ESA permitting process with MNRF on January 23, 2018. Suitable habitat mapping for Acadian Flycatcher was included in the initial IGF submission.
049		• Reptile Emergence, Hibernacula and Turtle Nesting Surveys: It is noted that the surveys for Significant Wildlife Habitat (SWH) seem to be focused in the areas of proposed development. In order to determine how a species is using the habitat, the ecological function of the entire feature and adjacent lands should be evaluated. MNRF staff recommends that SWH be mapped beyond the boundaries proposed for development (ideally for the whole site), which may require additional surveys.	• Surveys for Significant Wildlife Habitat were conducted within and adjacent to the OPA boundary as per Figures 3, 4, 5 and 6 in the September 2017 EIS. All SWH mapping has been updated as requested (Appendix A).
050		• It is understood that Turtle Basking Surveys were carried out on June 13, and June 15, 2017, with additional surveys completed on October 2, October 5 and October 10, 2017. However, MNRF staff recommends that the appropriate methodology for turtle basking surveys includes five surveys in April and May in order to see turtle basking behaviour effectively. In order to identify overwintering sites through basking this may be even earlier, just after the ice recedes.	• Five rounds of reptile emergence - turtle basking surveys were conducted in the spring of 2017 (April 28, May 10, May 15, May 19 and May 23) according to MNRF survey protocols. Turtle nesting surveys were completed on June 13 and June 15, 2017.
051		• Reptile Nesting Surveys: Page 3 of the Addendum notes "It is suspected that the Snapping Turtle hatchlings observed at RT-1 originate from nesting areas located adjacent the Welland River and OPG Power Canal." MNRF Staff would appreciate more information on these observations to inform our review, in particular, exact location, number of individuals, observation details and photos, if available.	• Two Snapping Turtle hatchlings were observed dead on Dorchester Road, west of the FOD7-3 ELC community (near Stations AS-5 on Figure 7 of the November 2017 Technical Update).
052		• Bat Habitat Assessment: MNRF has concerns that SWH and potential SAR bat habitat are being mapped simultaneously and leading to inaccurate mapping of both. MNRF recommends that candidate SWH for bat maternity colonies be mapped out separately from potential SAR bat habitat.	• Savanta has prepared separate mapping for SWH bat habitat and SAR bat habitat based on criteria identified. Candidate SWH Bat Maternity Colonies are shown on Figure 9a, and candidate SAR bat habitat will be submitted to MNRF as part of ongoing consultation as part of the ESA screening process.

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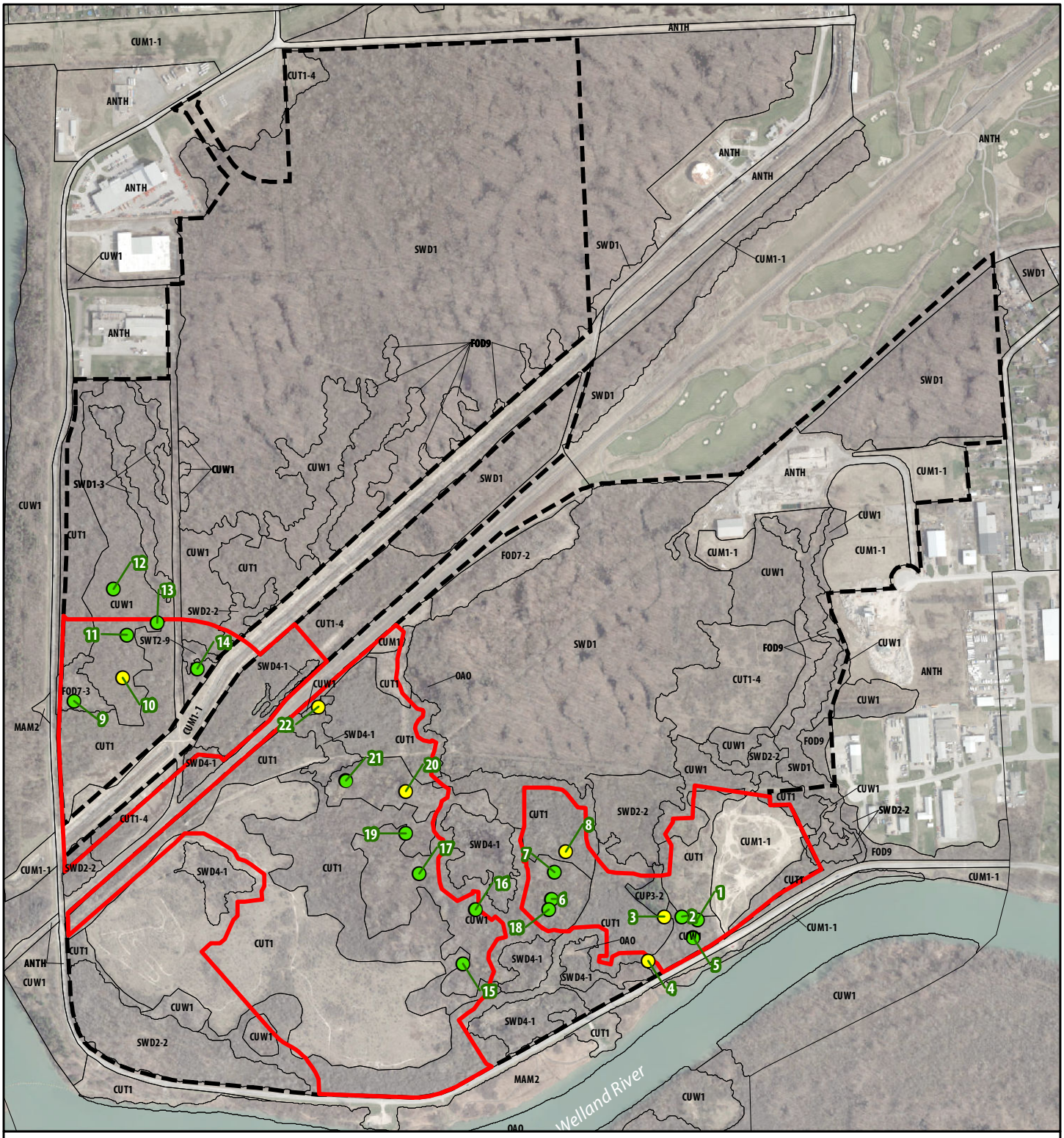
		- Candidate SWH for bat maternity colonies should be mapped according to the criteria in "Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E". - Mapping potential SAR bat habitat should be done by considering any wooded ELC polygon containing snag trees. • After mapping of potential SAR bat habitat, MNRF recommends the following steps for the project team (these recommendations align with previous email correspondence sent to the project team): - In addition to Dougan's snag density survey carried out in December 2015, we also request snag density surveys to be completed for the remainder of the site (proposed for development or not). This data is necessary for MNRF to assess the level of impact to SAR bat habitat. - Submit findings to MNRF with the proposed areas of impact included. To inform a thorough review, MNRF would appreciate receiving a map from the project team showing the snag trees that were identified as potential maternity roosts. - MNRF may request more detailed mapping for some areas – we can advise based on what is submitted. - After reviewing the results above, MNRF can give advice on the acoustic monitoring necessary for the site.	
053		• After mapping of potential SAR bat habitat, MNRF recommends the following steps for the project team (these recommendations align with previous email correspondence sent to the project team): - In addition to Dougan's snag density survey carried out in December 2015, we also request snag density surveys to be completed for the remainder of the site (proposed for development or not). This data is necessary for MNRF to assess the level of impact to SAR bat habitat. - Submit findings to MNRF with the proposed areas of impact included. To inform a thorough review, MNRF would appreciate receiving a map from the project team showing the snag trees that were identified as potential maternity roosts. - MNRF may request more detailed mapping for some areas – we can advise based on what is submitted. - After reviewing the results above, MNRF can give advice on the acoustic monitoring necessary for the site.	• Savanta has been in consultation with the MNRF. Text and updated maps are presented in this Addendum. Discussions will be held with the MNRF in advance of acoustic surveys.

Appendix C – Woodland Definition Sampling Plots



Riverfront Community

Woodland Definition Sampling Plots

Study Area

Subject Lands

Ecological Land Classification

Location of Sampling Plots

Woodland Definition Criteria Met

Woodland Definition Criteria Not Met

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Path: S:\9024 - SAV 7602 Riverfront Community\gis\mxd\2018 02 14 woodland sampling\Woodland Definition Sampling Plots.mxd REVISED: March 27, 2018