JOINT AGENCY REVIEW TEAM COMMENTS (NOVEMBER 14, 2023) RE: 2nd SUBMISSION OF TECHNICAL MATERIALS

APPENDIX 5: LEVEL 1 & 2 NATURAL ENVIRONMENT IMPACT STUDY COMMENTS

UPPER'S QUARRY

DATE: April 2024

	Comment	Responder	Applicant Response
Appendix 5: Level 1 & 2 Natural Environment and Environmental Impact Study Comments, Regional and NPCA staff, Dougan & Associates			
1.	Site Investigation Methodologies - Clarification is required for various methodologies employed for site investigations and evaluation of significance. Comment partially addressed. Although new information has been provided, some gaps remain hampering the ability to evaluate whether the conclusions are valid. Additional details describing the gaps are provided in the Specific Comments section below.	Stantec	Addressed in specific comments below
3.	Evaluation of Significant Wildlife Habitat - Clarification is required regarding the assessment of significance for Significant Wildlife Habitat (e.g., given presence of turtle species and habitat for species of conservation concern). Comment partially addressed. See the additional information provided in the Specific Comments section below.	Stantec	Addressed in specific comments below
4.	Fish Habitat a. The watercourse that crosses the property, which it is proposed to realign, provides spawning and nursery habitat for Northern Pike (Esox lucius). Adult Northern Pike migrate to the stream to spawn in the spring and then migrate back to downstream habitats. It is not known if Northern Pike migrate upstream past the subject property to spawn farther upstream, but the presence of young-of-the-year individuals in the entire length of the watercourse within the subject property (AECOM, 2010) suggests this may occur. Comment not addressed. No response provided. b. The regional significance of Northern Pike spawning in the watercourse that crosses the property has not been assessed but clearly the spawning habitat has significance that extends beyond the immediate study area. The watercourse is accessible to fish from an extensive area of aquatic habitat that is suitable for adult Northern Pike. Investigations to determine the number of Northern Pike that enter this watercourse to spawn and to determine if Northern Pike from the downstream habitats spawn in other locations could provide regional context and allow the scale of potential effects to be assessed. Comment partially addressed. The response does not specifically address the abundance of Northern Pike that spawn within the watercourse that it is proposed to be moved or the abundance of Northern Pike spawning habitat elsewhere. The response indicates that Northern Pike habitat will be more abundant, and that the habitat will be more productive for Northern Pike after the watercourse realignment.	Stantec	4 a.) The comment is acknowledged. It is confirmed that Northern Pike migrate upstream past the Subject Property to spawn farther upstream, as no observational data upstream of the Subject Property were collected; however, it is presumed that Northern Pike do move through the Subject Property and to reaches upstream of the Subject Property when spring flows are adequate to allow migration. It has also been assumed that Northern Pike may be spawning upstream of the Subject Property. We agree that the presence of young-of-the-year individuals in the entire length of the watercourse within the subject property (AECOM, 2010) suggests this may occur. 4 b.) No continuous monitoring involving daily counts of Northern Pike entering and spawning within the watercourse were undertaken, so the actual abundance of Northern Pike is unknown. Observations of Northern Pike spawning behaviour were recorded and the locations of observed activity were identified. Results of previous surveys including the noting of Northern Pike young-of-the year in the existing watercourse were shared in the reporting. The presence of Northern Pike and their reproductive success on the Subject Property has been acknowledged in all reporting to date. With respect to regional context and the abundance of spawning habitat elsewhere we refer again to Response 6 in the June 9, 2022 letter to Britney Fricke (Re: Information Request for Upper Quarry Natural Environment Report Received from Dougan & Associates March 31, 2022). that described spawning habitat elsewhere as follows: *The lacustrine-like lower reaches of Shriner's Creek and Beaverdams Creek are connected to each other via a wide cut extending south to north along the west side of Davis Road (Highway 58) and would provide more substantial and permanent holding water than the many tributaries that feed into both creek systems. The general area features a number of smaller, shallow marshy channels or channel sections that comprise habitat conditions in the upper reaches of these systems or that discharge into either creek at various points along their lengths. The habitat productivity in these shallow marshy habitat systems may be limited by the flashiness of the flow regime that varies on annual basis depending on snow melt and spring precipitation and the onset of intermittent flow conditions. Shallow wetland habitat is available in abundance along the margins of the lower reaches of both Beaverdams and Shriner's Creeks and likely*

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			provides a more stable habitat environment on an annual basis given the backwater influence provided by the water levels in the Welland Canal. The proposed channel realignment has been designed to provide habitat elements specific to the life cycle processes for Northern Pike including an increase in available spawning habitat, improved rearing and refuge habitat provided by a greater number of deeper pools. A net gain in overall fish habitat will be achieved through the habitat design of the new channel and the habitat elements incorporated specifically for Northern Pike are expected to result in a net gain in habitat productivity for the species. The watercourse realignment plan will be reviewed by Fisheries and Oceans Canada (DFO) and a final decision on the acceptability of the design, as well as monitoring requirements to measure productivity will be determined through ongoing consultation with DFO as the authorization process progresses.
	Detailed Peer Review (Dougan & Associates) Comments:		
5.	Section 3.2 (FIELD SURVEY METHODS) pg. 3.1 - It is noted in Table 3.1 that no dedicated Turtle surveys were conducted either on the Subject Lands or within the RAA. Given the proximity of larger wetlands to the north and the ability of turtles to move through the landscape while moving from wetland to wetland or in search of nesting habitat, please explain why no surveys were conducted, especially as it relates to potential Species at Risk and the identification of Significant Wildlife Habitat. It is noted that during the technical meeting held on March 30th, 2022, the applicant's consultant confirmed that turtles were observed along the watercourse on the subject property. These records have not been included in the Natural Environment Technical Report and Environmental Impact Study. Please address. Comment partially addressed. Although discussion regarding turtle surveys was inadvertently omitted from the original NETR report, additional information was provided in the August 2023 update. As per Section 3.2.5.1, turtle basking surveys were completed on site on April 4, May 3, May 9, May 17 and May 30, 2017. It is also noted in Section 3.2.5.2 that following receipt of JART/agency comments, six turtle nesting surveys were completed in late June 2023. However, neither section indicated what areas received survey coverage and why, limiting the ability to assess the robustness of the findings. Similarly, neither section included a description of how the surveys were actually completed, but rather indicated that the surveys followed the Blanding's Turtle Nest and Nesting Survey Guidelines (MNRF, 2016). At a minimum, a condensed version of how the surveys were carried out, that is specific to the study area, should be provided to ensure that the protocol was appropriately interpreted and applied. Finally, Table 3-1 continues to omit any mention of the turtle basking surveys. The missing information should be provided for review and completeness. Please address.	Stantec	EIS S. 3.2.5.1 and 3.2.5.2 updated with additional methodology details. Table 3-1 updated with basking survey dates.
10.	Section 3.2.5.3. (Bat Exit Surveys) pg. 3.9: Please indicate why some of the other buildings were not surveyed? Additional clarification requested. Recognizing that the buildings at one of the three locations described below have since been torn down, please confirm why the buildings at 5872 Thorold Townline Road, 10273 Upper's Lane and 5205 Beechwood Road were not surveyed? As indicated in the response matrix, were they assessed as not being suitable for bat roosts?	Stantec	The buildings were taken down in 2016 and 2019 in accordance with demolition permits issued by the City of Niagara Falls. There was some screening by Stantec as part of overall site visits and at the time there was a lack of general bat activity in the area of the homes observed in the dusk hours. Also, the exterior seemed secure based on reconnaissance of the homes.
13.	Section 3.2.7 Headwater Drainage Feature Assessment pg. 3.10 - Please provide a reference for the headwater drainage features (HDF) guidelines that the timing of site visits is stated to be	Stantec	Stantec is in agreement that the June 22, 2017 visit deviates from the timing of late April -May identified as the typical assessment period in Table 4 of *The Evaluation, Classification and Management of Headwater Features Guidelines* (CVC and

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	consistent with. If the reference is to the CVC and TRCA guidelines (finalized in 2014), which are referred to in Section 3.3.5, please explain how the timing of the site visits was consistent with the timing recommended by the HDF guidelines. Comment partially addressed. It is agreed that site visits on April 14, 2017, and April 9, 2021, are consistent with Site Visit 1 of the guidelines. The site visit on June 22, 2017, does not conform with the guideline for Site Visit 2, which is described in the guidelines as typically occurring from late April to mid-May. The primary purpose of the second site visit is to determine if flow or standing water is present at that time and, if either is, fish sampling is recommended to determine if there is seasonal fish use of the feature. The hydrological condition during the second visit is key to determining whether a feature that is dry during the third site visit is ephemeral or intermittent, which affects its classification. As the guidelines state, ephemeral features which provide contributing functions "are typically dry or surface-damp by mid-May". With no observations between early April and June 22, it is not possible to make that determination. Please address.		TRCA, TRCA Approval July 2013; finalized January 2014). Stantec observed, based on other site visits that took place in May 2017 for wildlife (snake coverboard checks, specifically), that the fields were dry by May with no signs of water in the fields through which the majority of the HDFs are mapped. Unfortunately, those May visits were not recorded as official headwater drainage feature assessment visits. The June visit, while beyond the window, was undertaken while vegetation still had not obscured visibility of the features recorded in April, and it was clear they had been dry for some time. Had water been present, a third visit would have taken place, and the hydrology classification would have been elevated to valued or contributing. Hypothetically, if a dedicated HDFA visit had been undertaken in May and found water, a third visit would have been scheduled and the hydrology classification would have been similarly elevated. Even with a hydrology classification elevated to valued or contributing, the majority of the features would have received a management recommendation of Mitigation. In Table 5-5 of the Level 1&2 report, all of the features (1-13) that were examined by Stantec in 2017 were assigned a hydrological classification of contributing (or valued) regardless, and the classification would not change with observance of water in May. These features all garnered a management recommendation of mitigation in accordance with the guidelines. The features identified as limited hydrology (14-25) were all examined by Stantec on April 9 2021 and exhibited no flow at the time. While the timing of the second visit deviates from that prescribed in the guidelines, the classifications of hydrology would not change with a hypothetical assumption of water presence in May and ultimately, the management recommendations would remain the same.
15.	Section 4.1 Landscape Context pg. 3.18 - The description could be broader and include additional information other than a description of the most common tree species. The Great Lakes Conservation Blueprint for 7E-5 provides a good summary. Comment conditionally addressed. A few facts were incorporated from the Great Lakes Conservation Blueprint for Terrestrial Biodiversity (Volume 1). Considerably more ecological statistics regarding Ecodistrict 7E-5 could have been pulled from Volume 2, i.e., the Ecodistrict Summaries. Also please note that "Big Picture Cores" represents 12.74% of the Ecodistrict 7E-5, not 5.20% reported. Similarly, "Big Picture Corridors" represents 14.16% of the Ecodistrict 7E-5, not 9.55%. Please correct.	Stantec	Added context from Great Lakes Conservation Blueprint Volume 2 to EIS S.4.1 and amended incorrect statistics.
18.	Section 5.8 Headwater Drainage Feature Assessments pg. 5.11: b. Headwater drainage feature classification, as presented in CVC and TRCA (2014) and Section 3.3.5 of this EIS, is based on up to three site visits with the first typically occurring in late March to early April. A second visit is made during late April to early May if necessary, and a third visit is made during the July-mid-September period if necessary. Please explain how data from a site visit in early April (in two years) and a site visit in late June provides the information required to determine the classifications. Comment not addressed. A June 22 site visit is not consistent with the recommended late-April – mid-May timing for the second site visit. Please address. c. Please provide the raw field observations, and their date(s), that were utilized to determine the classifications presented in Table 5.5. For example, the hydrology class is based on flow status (flow, standing water, or dry), the feature's physical form, and whether or not there is a wetland upstream. Comment partially addressed. It is stated that field notes can be provided, however to the best of our knowledge they have not been. Providing the hydrology condition and channel form during the first site visit in Table 5-5 or an ancillary	Stantec	18 b.) – Please see the response to Comment 13. 18 c.) – Stantec will provide the field notes and summarize their content with respect to observations of hydrology and channel form in a table accompanied by photos of the features under separate cover. Specifically, a copy of the downloaded Arc GIS information (field notes and photos) in a format that is clear and understandable for Dougan's peer review will be provided by April 15, 2024. 18 d.) – Please see the response to Item 13, specifically, "Stantec observed, based on other site visits that took place in May 2017 for wildlife (snake coverboard checks, specifically), that the fields were dry by May with no signs of water in the fields through which the majority of the HDFs are mapped. Unfortunately, those May visits were not recorded as official headwater drainage feature assessment visits." With respect to the woodlot, it will be eliminated to facilitate quarrying and eventually, the realignment of the channel. The portion of the channel that is coincident with the area of the woodlot will be planted to create forest habitat, that will then be contiguous with an upland forest block in the southwest corner of the Subject Property. HDF#11 will continue to convey flow from west of Thorold Townline Road and will enter the new channel in a wooded corridor. The hydrological, riparian and terrestrial functions for HDF #11 will be replicated for the new natural system.

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	table would facilitate a review of the classification, to the extent that this is possible without late-April – mid-May field investigations. Please address. d. It is not unusual for headwater drainage feature classifications to differ among reaches of an HDF. The classifications of upstream reaches can influence the classification of reaches downstream. Please consider whether this is relevant to any of the HDFs in the study area, including feature 11 and features 7, 12, 24 and 25. Comment partially addressed. Response partially accepted. The response states that HDF #11 "is dry by May, as noted in 2017 and 2019 field work." The site visits to assess HDFs, listed in Table 3-11, occurred on April 4, 2017, June 22, 2017, and April 9, 2021. The source of the May observation is unclear. It appears that the woodlot that HDF #11 is associated with provides a linkage but will be eliminated, not rehabilitated as the response indicates, by the proposed natural channel.		
19.	Section 5.9 Fish and Aquatic Habitat – Existing Watercourse pg. 5.14: c) The report states "The seasonal nature and lack of sustained flow, absence of adequate refuge pool habitat and inability to support perennial conditions favourable to fish all reduce the habitat quality of the tributary to a low rating." It should be recognized that Northern Pike often spawn on vegetation that is flooded in the spring in areas that are dry later in the year. It should further be recognized that, although those spawning areas may not be high quality fish habitat in the traditional sense, but they are critical for the Northern Pike populations that spawn there. The AECOM (2010) memorandum describing the 2010 field investigations states "Ultimately, the sensitivity of the fish and fish habitat present can be considered Moderately Sensitive due to the presence of spawning habitat for Northern Pike." Please address the significance of the Northern Pike spawning habitat in this watercourse to downstream fish communities and Northern Pike populations. Comment partially addressed. The response does not directly acknowledge the significance of the Northern Pike spawning habitat to downstream fish communities and Northern Pike populations. Given that the watercourse is Northern Pike spawning and nursery habitat, the validity of describing it as being of low habitat quality is questionable. This comment is somewhat related to comment #28. The response to Comment #28 indicates that the wording of the natural channel design report should reflect that the fish habitat is of moderate sensitivity, rather than marginal. Please address.	Stantec	As previously noted, the low rating is primarily predicated on the lack of sustained baseflow and limited refuge habitat opportunities when flow conditions become intermittent. It is recognized that the Northern Pike spawning habitat is likely the highest value habitat within the existing watercourse. The text of the Level 1&2 report does qualify the low rating by indicating "The seasonal nature and lack of sustained flow, absence of adequate refuge pool habitat and inability to support perennial conditions favourable to fish all reduce the habitat quality of the tributary to a low rating". Perhaps additional text should have been provided to indicate that, in comparison to watercourses that provide perennial flow and permanent, rather than seasonal fish habitat, the habitat quality would be given a low rating. The habitat function related to spawning and nursery habitat for Northern Pike certainly elevates its value. Moderate sensitivity would achieve an averaging of the quality that shifts from seasonal to intermittent states. Regardless of the rating, under the federal *Fisheries Act*, fish habitat is fish habitat and the removal of the existing channel and construction of a new, realigned channel will be reviewed by DFO and will require an authorization for approval to proceed. The proposed channel realignment has specifically focused on increasing the amount of potential Northern Pike spawning habitat so that an overall net gain in habitat is achieved. The design also increases the amount of deeper pool habitat to act as refuge during intermittent flow periods. The adequacy of the design will be assessed by DFO and ultimately, any design elements, as well as monitoring requirements, will be requirements of the Project to obtain authorization.
21.	Section 6.2.2 Assessment Based on Regional Criteria pg. 6.7: a) According to the analysis presented in Table 6.3, "the woodland on the Subject Property along Thorold Townline Road would be considered a Significant Woodland from a policy perspective and would become a regional Environmental Conservation Area, per Policy 7.B.1.4 of the Region of Niagara Official Plan." However, given this status, additional clarification is required to rationalize the recommendation for removal and habitat replacement of this feature. Additional discussion warranted. Although additional information was provided in the Response matrix explaining why the removal and replacement of the woodland as proposed would represent an overall net ecological benefit, removal and replacement warrants additional discussion in the context of negative impacts to the feature and its functions, including Significant Wildlife Habitat. Specific details regarding all species occurring within the woodland should be clearly	Stantec	See Woodland Assessment in Revised NETR report that offers additional details. The assessment includes a review of the policy and the Aggregate section of the PPS along with a comprehensive rehabilitation and mitigation and enhancement plan involving, to the extent possible, in situ replacement and increase in forest cover with a priority on creating ecological linkage in the otherwise isolated parcels of woodland.

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	documented – please provide the raw data for vegetation surveys, ELC, and any wildlife observations.		
22.	Section 6.6 Fish Habitat pg. 5.14 - This section describes conditions but does not provide an assessment of the significance of the existing watercourse from a fish habitat perspective. Based on the reported field observations, this watercourse provides spawning and nursery habitat for Northern Pike. Adult Northern Pike migrate into this watercourse to spawn in the spring and presumably migrate back downstream after they have spawned. No investigations were conducted to determine the number of adults moving into the watercourse to spawn or the number of young-of-the-year that move downstream after they hatch. The fact that adults migrate into the watercourse from downstream to spawn indicates that the significance of the watercourse extends beyond the study area. Its significance at a regional scale will depend, in part, on the proportion of regional pike spawning habitat that this watercourse provides. Comment partially addressed. The response indicates that collecting additional data is not necessary (emphasis ours) because it might inadvertently affect spawning activities or young of the year and because of the limited effectiveness of methods available. In the absence of any information regarding numbers of spawning fish, numbers of young-of-the-year produced, or the availability of other spawning areas, it is not possible to know how significant this watercourse is to the regional fish community and pike population(s). Furthermore, in the absence of baseline data it will not be possible to assess the effectiveness of the proposed habitat creation, except in qualitative terms. The response seems to imply that there is no need for this knowledge because Northern Pike spawning and nursery habitat will be improved and that, based on pre-consultation, Fisheries and Oceans Canada supports the proposed design. Documentation of pre-consultation with Fisheries and Oceans Canada has not been provided. Please provide. The response to Comment #38, which pertains to the Natural Channel Design, states, in part, "The pike spawning habitat is recognized as important in the watershed and sensitive including its contribution to the diversity of Beaverdam's creek." That statement addresses significance and Section 6.6 would benefit from its inclusion. Please address.	Stantec	It has been acknowledged that the design of the new channel will be reviewed by, and ultimately subject to approval by, DFO. As part of that review process, we expect ongoing dialogue with DFO biologists regarding the condition of the existing channel, including discussions on Northern Pike spawning and recruitment. It may be that DFO will require additional baseline data to be collected to provide for comparison of productivity that will be monitored in the new channel. Should DFO request the collection of additional data during spring migration and spawning activities to complement baseline data, it will be at their assessment of risk associated with inadvertently affecting spawning activities, emergence of young-of-the-year and potentially, year class recruitment. If DFO has a level of comfort with this additional data collection, it will be undertaken. The approach to monitoring as either a qualitative, quantitative, or combination thereof will be a condition of the ultimate authorization, and is at the discretion of DFO. Text similar to "The pike spawning habitat is recognized as important in the watershed and sensitive including its contribution to the diversity of Beaverdam's creek." along with text from our June 9, 2022 letter to Britney Fricke will be incorporated into the EIS to addresses significance.
23.	Section 6.7 Significant Wildlife Habitat pg. 6.10 - According to text, Table B-2, Appendix B provides a detailed assessment using the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E. a. Re: the discussion about the Turtle Nesting Areas SWH type, it states "Suitable habitat for turtle nesting is present on the road shoulders and in agricultural fields, however anthropogenic features do not qualify as significant wildlife habitat." However, the statement regarding agricultural fields is incorrect. There is no such exemption for agricultural fields. Therefore, given the close proximity of the agricultural fields to the watercourse bisecting the Subject property, and the fact that no turtle nesting surveys were conducted in support of the application, it is premature to conclude that Turtle Nesting Habitat SWH is absent. Please address. Comment partially addressed. Please see the September 2023 comment for Specific Comment #1. Until additional information is provided for review that indicates how the turtle nesting surveys were carried out, the conclusion that Turtle Nesting Habitat SWH is absent may not be justified. Furthermore, the statement that "The agricultural field is not considered preferred nesting habitat due to the high density of vegetation cover (i.e. winter wheat) during peak breeding season	Stantec	23 a.) Additional details on methodology have been provided in S. 5.2.3 (see comment 5). Added "Evidence of turtle nesting was observed on Upper's Lane but not in or adjacent to agricultural fields." To Appendix B-2. Based on survey results and known characteristics of preferred nesting sites for turtles (for example, see the Ontario Reptile and Amphibian Atlas 2009-2019 (Ontario nature, 2023) for preferred nesting habitat characteristics for species such as Blanding's Turtle "Females dig their nests in open habitat with high sun exposure…" and Midland Painted Turtle "Females nest in organic, sandy, or gravelly soils in open habitats with high sun exposure…". It is the opinion of Stantec that habitat characteristics should be considered in conjunction with general category (i.e., agriculture field), and that this meets the intent of the PPS and associated criteria schedules. The Ontario Reptile and Amphibian Atlas can be accessed at: https://view.publitas.com/on-nature/ontario-reptile-and-amphibian-atlas/page/1 The comment is correct that the Ecoregion criteria does not specifically distinguish between preferred and non preferred habitats. However the *Significant Wildlife Habitat Mitigation Support Tool Version 2014* does provide more information as well as the ***Significant Wildlife Habitat Technical Guide***.

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	and the likelihood for nest disturbance and loss by agricultural equipment." unnecessarily diminishes its significance as nesting habitat on the subject lands since the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E does not distinguish between preferred and non-preferred nesting habitat. Turtles are opportunists, often using whatever suitable habitat is available. It is also worth noting that according to Section 5.3.2: "In 2019, agricultural fields on the Subject Property were planted with soy." Therefore, the reference to winter wheat doesn't appear to make sense. Also, soy tends to allow more sunlight to penetrate to the ground than winter wheat, increasing the likelihood that the agricultural fields would be used for turtle nesting. Please address and revise the affected text. b. Re: Eastern Milksnake (Species of Conservation Concern), the assessment is based on cover board surveys conducted in 2017 "and other field investigations in 2012 and 2019". Please indicate whether the 2012 field investigations are referring to incidental observations? According to Table 3.1 no dedicated field surveys were carried out prior to 2017. Comment partially addressed. The response included in the response matrix still does not indicate whether the fieldwork, now acknowledged to have been conducted in 2011, was incidental in nature. Similarly, no mention is made of the 2019 field investigations. Please provide clarification and ensure that the text in Table B-2 (Appendix B) is updated accordingly. c. Re: Snapping Turtle (Species of Conservation Concern), please indicate if any dedicated surveys to document this species along the creek were conducted or whether the statement that "…the species was not observed during the 2017 or 2019 field investigations" was based on incidental observations only. Table 3.1 does not indicate that any dedicated surveys were conducted. Comment partially addressed. New information was provided in the updated NETR indicating that turtle basking surveys were completed on site in the spring of 2017. However, text in Section 3.2.5.1 does not indicate what areas received survey coverage, limiting the ability to assess the robustness of the findings and the conclusion that Snapping Turtle SWH is absent. It is also noted that the Snapping Turtle text in Table B-2 has not been updated to reflect the fact that the 2019 field investigations were incidental in nature, thereby limiting their value, or that additional turtle nesting surveys were conducted in 2023 that documented evidence of nesting along the road shoulders. Even though turtle nesting along municipal road shoulders is not considered SWH, it does confirm the overall presence of turtles within the subject lands. Finally, the NETR does not acknowledge the turtle observations that were made along the watercourse on the subject property. These were noted during the March 30th, 2022 technical meeting. Additional information regarding the extent of the turtle basking turtle surveys conducted in 2017 is requested, as well as a full accounting of the turtle observations made along the watercourse. d. Re: Common Nighthawk (Species of Conservation Concern), please provide additional justification why suitable nesting habitat is absent in the Study Area. The nesting habitat description provided is misleading. According to Sandilands (2007), in Cadman et al., (2007), "In the agricultural south, it has nested in grasslands, agricultural fields, gravel pits, prairies, and alvars and airports." Comment partially addressed. According to the response provided in the response matrix: "Uppers quarry area is mainly agricultural land and the		*Many of Ontario's turtles build nests along shoreline beaches. They use these areas because they are located near water and are able to dig out nests in the light sand and gravel. These areas also afford good exposure to sun and allow faster development of eggs (Carr 1952; Froom 1971, 1976; Cook 1984; Gilhen 1984; Lamond 1994).* *Sand and gravel beaches located near good turtle habitat (undisturbed shallow weedy areas of marshes, lakes, and rivers) are most frequently used. Some beach strips are used by many turtles from the surrounding area each year (Carr 1952; Froom 1971, 1976; Cook 1984; Gilhen 1984; Lamond 1994). In areas where sand or gravel beach is in limited supply, isolated beaches become highly significant for the maintenance of viable turtle populations. Certain turtles may also nest at stream crossings and interfaces between creeks and marshes.* *The exposed sand and gravel on beaches (or roadsides, railways, etc.) absorb heat from sunlight warming the substrate. This heat helps incubate the eggs, allowing them to hatch more quickly, leading to higher survival rates of young turtles.* ***For an area to function as a turtle nesting area, it must provide sand and gravel that turtles are able to dig in along with appropriate exposure to sun in areas that are free of vegetation and have good drainage.*** *The beach must be wide and elevated enough that high water does not inundate nests. Predators like striped skunks, raccoons and others will dig out and eat eggs. Large wide beaches provide more nesting area and consequently reduce the odds that nests will be found by predators.* ***Beaches adjacent to permanent water are preferred.*** *When turtles must cross roads to nest or reach water, there is often high mortality.* The earlier Significant Wildlife Habitat technical guide (MNRF 2000) is also reviewed and considered as it provides valuable information that is not available in the newer Ecoregion criteria, it states: *In spring and early summer, turtles lay their eggs in areas that may be used year after year. Preferred nesting habitats are usually on relatively soft substrates such as sand or fine gravel that allow turtles to easily dig their nests, and are located in open, sunny areas (enhancing development). In general, the best nesting habitats are close to water and away from roads (less mortality of adults and hatchlings) and sites less prone to loss of eggs by predation from skunks, raccoons, and other animals. AND* *<u>Turtle nesting habitat</u>* *Few turtle nesting sites have been identified. It is common to see turtles along roadsides attempting to lay eggs in the gravel shoulders of the roads. Obviously, these are not preferred sites. There is considerable risk to females and young as they cross roads. Turtle eggs suffer high mortality due to predation by raccoon and skunk. In some areas, virtually all eggs are lost each year. This problem becomes worse as turtles are forced to concentrate in fewer and fewer sites. Greatest significance should be assigned to sites that are natural, least disturbed and are closest to their habitat. The most significant sites should have safe movement corridors between the nesting and aquatic habitat.* In addition the site condition indicate that the surface soils at Uppers quarry consist of clay loam and silty clay loam that can be very hard under dry conditions, perhaps not the best condition for turtle digging and may be a reason why turtles nesting was not observed in the edges of the agricultural lands and they seem to be attracted to the available substrate of fine gravel on the roadside shoulder. 23 b.) Per EIS S.3.1: Walker Industries previously initiated the application process for a Category 2, Class "A" Quarry License on the Subject Property. In addition to the abovementioned resources, several ecological studies that were undertaken in support of this application were reviewed:

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	presence of nighthawk in the peripheral type habitats would not be considered SOCC. This agricultural type of habitat is widely distributed and abundant in the study area and in the Region of Niagara as such these fields would not be considered SWH." However, according to the "Special Concern and Rare Wildlife Species" SWH criterion (OMNRF, 2015), no Candidate ELC Ecosites are excluded from consideration, nor are any given preferential treatment due to their abundance in the landscape. As such, agricultural habitats should not be automatically discounted or worse yet, excluded from surveys. Nevertheless, and despite the above description of which habitat types qualify for consideration, it is Sandilands' (2010) opinion that "In southern, off-Shield Ontario, the Common Nighthawk appears to have almost abandoned nesting in natural forest clearings and rural areas; most nesting occurs in cities or communities where there are flat roofs." As such, it is acknowledged that the likelihood of Common Nighthawks nesting in the agricultural fields on the subject lands is likely low, and the absence of dedicated surveys conducted in search of the species can be ignored, if suitable nesting habitat for the species can be provided on site, during and post quarry operation. e. Re: Woodland Vole (Species of Conservation Concern), please provide other justification why suitable habitat is absent in the Study Area. The statement that "There are no records of Woodland Vole in the vicinity of the Study Area" is not satisfactory since "Woodland Voles are an often overlooked member of the fauna, as they are secretive and rarely appear above ground during daylight" (Naughton, 2012). Comment partially addressed. References in the response matrix to the questionable quality of habitat due to the absence of deep leaf litter and dense herbaceous layer preferred by the species are acceptable responses. However, the text in Table B-2 (Appendix B) as it relates to "Results of Desktop Habitat Assessment" should be revised. The sole reason why the species is likely absent should not be based on the fact that there are no records of Woodland Vole in the vicinity of the Study Area. Please address.		• AECOM conducted a fisheries assessment, environmental constraints analysis and wetland assessment on the property in 2008. The results of these assessments were outlined in two memos (AECOM 2009; AECOM 2010) and one report (AECOM 2008). • Savanta Inc. conducted an insect survey and preliminary baseline conditions assessment in 2010. The results of these assessments were presented in two reports (Savanta Inc. 2010a; Savanta Inc. 2010b). • Stantec conducted a bee, dragonfly and butterfly study; a salamander egg mass survey; a botanical inventory; an ELC habitat assessment; a breeding bird survey; an American badger survey; a winder wildlife survey; and a snake coverboard survey in 2012. The results of these surveys are presented in eight memos (Stantec 2012a-2012h). In other words, all documents listed above are considered part of the background review, and are not described as part of the current study. For full details on each, the corresponding publication can be reviewed. S.4.6.2 also provides a summary of the conclusions put forth by the 2012 memorandum, which is referenced so that it may be reviewed as required. No targeted snake surveys were conducted in 2019, per S.3.0 and table 3.1. 23 c.) Please see response to comment 5, above. Stantec agrees, the fields are not SWH. As suggested, the NCD Planting Plan includes many pond areas for basking a number of nesting mounds in the vicinity new creek alignment as part of an overall ecological benefit to the local landscape and in support of adding a significant number of nesting opportunities for all turtle species. 23 d.) Common Nighthawk habitat is effectively added to the Natural Channel Design in the riparian / meadow grasslands proposed. 23 e.) Table B-2 revised with the following text to reflect habitat considerations: "The project area is at the far northern extent of the species' limit. There is a small area of potentially suitable habitat adjacent to the roadway, but this habitat is considered low quality due to the absence of a deep leaf litter and dense herbaceous layer."
24.	Section 6.7 Significant Wildlife Habitat pg. 6.10 - Text on page 6.11 or Table B-2 (Appendix B) does not adequately justify why breeding habitat for Eastern Wood-Pewee is absent on the Subject Property. An Eastern Wood-Pewee was recorded in the woodland along Thorold Townline Road on June 14, 2019, when bat acoustic monitors were deployed but not on June 25, 2019, when monitors were collected. Given that (1) this woodlot was not monitored for breeding birds in 2019, (2) wind speeds exceeded the recommended maximum to document breeding birds for the majority of June 25, 2019, and (3) less time was spent within the woodlot removing the monitoring equipment that setting it up, it is reasonable to assume that the habitat was suitable for breeding. This is consistent with the conservative approach applied to the Breeding Bird Survey methodology (see Section 3.2.3 on page 3.5). Please provide justification to support the position that the woodland along Thorold Townline Road did not provide suitable breeding habitat for Eastern Wood-Pewee in 2019. Comment partially addressed. Additional justification was provided. It is acknowledged that Eastern Wood-Pewee was not documented from the woodland along Thorold Townline Road during the 2017 breeding bird surveys. However, that does not discount the fact that it was documented there more recently in 2019, which at the very least suggests that it is suitable habitat. Furthermore, given the significance of the observation, please explain why	Stantec	**Habitat for species of conservation concern:** The species was not detected during three rounds, (June 12, 2017 June 22, 2017 and July 5, 2017) focused breeding birds surveys in the woodland. It was recorded as an incidental observation in June 2019 (when bat acoustic monitors were deployed). Breeding habitat for Eastern Wood-Pewee is deciduous or mixed woods, often near forest edges or clearings (Cadman et al. 2007). Stantec is of the opinion that the breeding bird surveys completed specifically to assess breeding bird presence are useful and valid for this purpose.

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	additional breeding bird survey visits to the woodland were not carried out in 2023 to help confirm whether the bird was present. In absence of additional breeding bird surveys having been conducted, it is assumed that the woodland provides suitable habitat and is SWH for Eastern Wood-Pewee		
28.	Appendix E Proposed Upper's Quarry, Natural Channel Design Report – Section 3.4 Aquatic Habitat pg. 3.5-3.6: a. The Natural Channel Design Report states "Habitat conditions for potential usage by spawning Northern Pike were noted to be of marginal quality during that [the March 26, 2010] survey." We were unable to find a statement to this effect in the memorandum by AECOM (2010) describing that survey. Please clarify. Comment partially addressed. The response indicates "the Natural Channel Design [report] wording should reflect that fish habitat is of moderate sensitivity". The Natural Channel Design report has not been revised. If the Natural Channel Design report is not revised, the change to the sensitivity should be documented somewhere in a preface or addendum or list of errata appended to that report. Please address. b. The Natural Channel Design Report states "While spring freshet typically creates conditions that allow for movement of Northern Pike into potential spawning areas, as flows recede and conditions become intermittent, habitat conditions are generally too poor to support various life stages of fish. As the system dries up, refuge pool habitat becomes limiting except for the pool associated with the Upper's Lane culvert. The seasonal nature and lack of sustained flow, absence of adequate refuge pool habitat and inability to support perennial conditions favourable to fish reduce the habitat quality of the tributary to a low rating." It should be recognized that Northern Pike often spawn on vegetation that is flooded in the spring, in areas that are dry later in the year. It should be recognized that, although those spawning areas may not be high quality fish habitat in the traditional sense, but they are critical for the Northern Pike populations that spawn there. The AECOM (2010) memorandum states "Ultimately, the sensitivity of the fish and fish habitat present can be considered Moderately Sensitive due to the presence of spawning habitat for Northern Pike." Comment partially addressed. The response states "The pike spawning habitat is recognized as important in the watershed and sensitive including its contribution to the diversity of Beaverdam's creek. This understanding is best demonstrated in the level of effort and the considerations incorporated into the restoration plan including design elements, sequence of construction, and review and monitoring of the inundation capacity of the spawning habitat." Section 6.6 of the Natural Environment report and Section 3.4 of the Natural Channel Design report would benefit from inclusion of the first sentence of the preceding quote. Please address. The response further states "Pike are noted to be a course [sic] fish with a strong resiliency and adaptable to a variety of conditions and changes." It is incorrect to refer to Northern Pike as a "course" [sic] fish. Northern Pike is a sports fish in Ontario, with catch limits described in the Ontario Fishing Regulations.	Stantec	a. The reference to marginal quality has been removed from the Natural Channel Design Report and replaced with a discussion of habitat quality that reflects the wording from the 2010 AECOM memo. b. Wording is added to the Level 1&2 report to reflect the importance of Northern Pike spawning habitat in the existing watercourse and its contribution to the Beaverdams Creek system. Wording has also been added to Section 3.4 of the Natural Channel Design Report to reflect this importance. The closing paragraph of the previous response was a summary statement and did not reflect wording in the Level 1&2 report. It was not accurate to refer to pike as a coarse fish. As a starting point to the review of references regarding the resiliency and adaptability of pike, the reviewer is referred to Harvey, B. 2009. A Biological Synopsis of Northern Pike *(Esox lucius)*. Can. Manuscr. Rep. Fish. Aquat. Sci. 2885: v + 31 p. With respect to references citing the creation of pike spawning habitat, there is a relative scarcity of scientific papers available on the subject. One reference that does stands out is: Cott, P.A. 2004. Northern pike (Esox Lucius) habitat enhancement in the Northwest Territories. Canadian Technical Report of Fisheries and Aquatic Sciences 2528: vii+32p. The majority of projects that are readily available for review through an internet search are carried out by agencies and non-governmental organizations (NGOs) and are not generally reported in the scientific literature. The following list provides examples of these types of reports: Rideau Valley Conservation Authority – Jebbs Creek Wetland Embayment Creation Project. https://www.rvca.ca/jebbs-creek-wetland-embayment-creation-project Embayment C Pike Spawning Habitat Creation, described in *Tommy Thompson Park Public Urban Wilderness Habitat Creation and Enhancement Projects 1995-2000.* https://tommythompsonpark.ca/app/uploads/2017/10/TTPHabitatProjects1995_2000.pdf *Start of Construction of Wetland Enhancement Project at Lakeview Wildlife Management Area, Lake Ontario*. Article by Audubon Staff at https://ny.audubon.org/news/start-construction-wetland-enhancement-project-lakeview-wildlife-management-area-lake-ontario The article pertains to this project, which is about habitat restoration in a Priority Coastal Area identified by the Great Lakes Commission https://www.glc.org/work/priorityareas/lakeview The Green Bay, Wisconsin area has the greatest number of articles, news reports, etc. associated with various pike habitat creation projects. The Fox River Trustee Council is an NGO that is very active in habitat projects, particularly for Northern Pike. This website maps their project locations and provides fact sheets on a number of habitat creation/restoration initiatives. https://www.foxrivernrda.org/visit-nrda-project-sites/

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	Please provide references supporting the assertions that Northern Pike have a strong resiliency and are adaptable to a variety of conditions and changes. Please also provide supporting references for the statement "Creation of Pike spawning habitat has been successful completed throughout North America in the range of where Pike are distributed in warm water systems."		A number of articles, information pieces and web pages are available featuring these initiatives, some of which include: *Pathways to Pike Reproduction: Restoring Northern Pike Spawning Habitat in the Fox River Basin.* Fact Sheet contained in the 2021 Restoration Progress Report for the Lower Fox River and Green Bay Natural Resource Damage Assessment, Fox River/Green Bay Natural Resource Trustees. June 30, 2012 through December 31, 2018. Published April, 2021 by the Fox River Trustee Council. The fact sheet speaks to the following projects: • Enhancing Northern Pike Spawning in the Tributaries of the Fox and East Rivers • Improving Northern Pike Spawning in Oconto County • Creating Paths for Pike Along Spring Brook Creek Northern Pike Habitat Restoration in the Suamico / Little Suamico Waterheds https://www.foxrivernrda.org/nrda-projects/northern-pike-habitat-restoration-in-the-suamicolittle-suamico-watershed/ Fox-Wolf Watershed Alliance – *Northern Pike Habitat Restoration* https://fwwa.org/2017/03/20/northern-pike-habitat-restoration/ Little Menomonee River Habitat Restoration Project, Ozaukee County, Wisconsin https://www.co.ozaukee.wi.us/2731/Little-Menomonee-River
	New Comments		
1.	Section 5.8 Incidental Wildlife Observation pg. 5.11 During the technical meeting held on March 30th, 2022, the applicant's consultant confirmed that turtles were observed along the watercourse on the subject property. These observations have not been included in the Natural Environment Technical Report and Environmental Impact Study to date. Please address.	Stantec	As noted in the response this was not the case and we believe it was suggested at the time that this comment was subject to confirmation, and it has now been confirmed that no observations were recorded of basking turtles. The additional survey information concerning nesting surveys have been added to the report. These surveys do record observations of nesting turtles at primarily roadside locations as documented in the report.
2.	Section 6.7 Significant Wildlife Habitat pg. 6.11 Under the Seasonal Concentration Areas heading, the text indicated that the woodland on the east side of Thorold Townline Road was considered Significant Wildlife Habitat (SWH) as a Deer Winter Concentration Area. However, there is no mention of Bat Maternity Colony SWH, yet the text in Table 6-3 (Section 6.2.2) state "The woodland contains Significant Wildlife Habitat for Bat Maternity Colony and Deer Winter Concentration Area." The data included in Table 5-4 (Section 6.2.2) for Big Brown Bat and Silverhaired Bat appears to support that conclusion. Please include acknowledgement of this in this section as well as Section 8.5. In addition, please correct the conclusion for Bat Maternity Colonies in Table B-2 (Appendix B). Instead of "Absent" it should read "Present".	Stantec	Comment is acknowledge that clarification is required, and the report will be revised to include additional deer usage information, and clarify that the feature on the adjacent lands should be more appropriately consider as 'candidate' non Sar bat habitat based closer review of acoustic recording and timing of recording relative to sun rise as recommended by MECP on a technical call January 18 2024 . It will be revised in the report to reflect this further assessment and clarification.
3.	Section 8.5 Significant Wildlife Habitat [Assessment of Impacts] pg. 6.21 Section 8.5.1 is titled Potential Impact. However, given that the woodland on the east side of Thorold Townline Road, acknowledged to support provincially Significant Wildlife Habitat, is proposed for removal, the heading is inappropriate. Rather the removal of the woodland would represent a direct and permanent impact. Section 2.1.5 of the Provincial Policy Statement (PPS) also states:	Stantec	The report has been revised to more concisely address this matter with regard to the woodland assessment and the PPS which must be read in its entirety. The development is assessed, as documented in the report, with respect to individual policies and matters and their integration as a whole, to offer a means of protecting the natural heritage system (NHS) and to move toward significantly enhancing the natural heritage attributes found on the landscape.

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	"Development and site alteration shall not be permitted in: … d) significant wildlife habitat …unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions." Furthermore, Section 8.5.2.1 (Mitigation Recommendations for Woodland SWH) states: "As described in Section 8.2.2, woodland compensation1 planting will occur on 4 ha of land west of Thorold Townline Road and adjacent to an existing 14 ha woodland of similar species composition and structure." Despite the section heading (i.e., Mitigation Recommendations for Woodland SWH), what is being proposed is not mitigation, but rather compensation (i.e., replacement of damaged habitat). However, compensation is not an accepted option available in the PPS when it comes to reducing or eliminating negative impacts. Not only is compensation is not mentioned in the PPS, but it is also only mentioned once in the Natural Heritage Reference Manual2 , and specifically in relation to a HADD (i.e., the harmful alteration, disruption or destruction of fish habitat). Please revise the text/tables/figures in this section and all other applicable sections as appropriate, to reflect the discussion above and its implications to the proposed extraction scenarios.		
	Detailed Comments from NPCA Technical Staff:		
29.	Wetlands: To accommodate the proposed development on site, approximately 7.04 ha of non-Provincially Significant Wetland are proposed to be removed and approximately 11ha of wetland are proposed to be created. While the general idea of Wetland Reconfiguration is consistent with Section 8.2.2.8 of NPCA policy, further details are required to confirm that all criteria has been met to the NPCA's satisfaction. b. The impact assessment completed for wetlands within the study area has focused on the potential for decrease in hydroperiod as a result of the proposed quarry, however as identified in Section 8.4.1.4 dewatering of the quarry may result in increased hydroperiod to the watercourse. Please revise the impact assessment to account for a potential increase in hydroperiod for wetlands W1A and W1C. Comment not addressed. d. NPCA staff understand that in order to facilitate the construction of the proposed quarry approximately 7.04 ha of wetland is required to be removed. To compensate this loss, it is understood that approximately 11 ha of wetlands will be created within the realigned watercourse area and the southwestern portion of the site. (i) Additional planting details (proposed density, layout etc…) are required for the proposed creation of the thicket swamp, meadow marsh and deciduous swamp proposed in the southwestern portion of the site. Comment not addressed. (ii) Please identify how wetland hydrology will be maintained and monitored within the proposed swamp features to the satisfaction of NPCA staff. Comment not addressed. Section 12.2 of the EIS identifies that an additional 4 ha of deciduous woodland (swamp) and visual screens along setbacks on the Subject Property are to be created. NPCA staff are unclear how	Stantec	b) In the interim before the channel realignment is in place and the new wetland riparian areas are in place, there will be temporary increase in the hydroperiod of the adjacent marsh meadows and a thicket community. There are few considerations that support the conclusion of no negative impact to the feature or its ecological function. The wetland communities have a greater range of hydroperiod than other wetland communities such as some swamps , they generally remain as wetlands features when hydroperiods are increased with a potential shift for one to another wetland plant, and generally the extent of the wetland within the wetted zone may increase. These elements are further detail in the revised NETR report. Overall, the scenario could result in more wetlands along the margins of the creek until the area is realignment to the proposed NCD. D (i) a planting plan has been developed for regulatory review and comment ii) a lowland deciduous dominated woodland has been design in favour of the swamp community and is present on the NCD planting plan. It is detailed in the NCD package drawings for the Planting Plan L-460 to L463 and L-500 to L-503.

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	swamps will be established and maintained in the long term. Please provide additional details regarding the proposed enhancement of these areas. Comment not addressed.		
30.	Watercourses: The main tributary to Beaver Dams Creek is proposed to be relocated to accommodate the proposed development. This channel is impacted by the Regional Storm Flood hazard. While the NPCA is supportive of this idea in principle, the NPCA will require that the channel block be designed to adequately convey the Regional Storm floodplain hazard. In addition: Comment not addressed. The Regulatory floodplain for this watershed is the regional storm c) NPCA staff note that the outlet from the quarry lake to the realigned watercourse has not been identified on any of the proposed drawings. Please provide a preliminary design and demonstrate that natural channel design principles have been incorporated into the design to the extent practicable. Comment not addressed.	Stantec	Text has been added to the NCD report to address this comment more concisely and clarify how this flood volume is include in the design considerations.
32.	Ecological Monitoring: A comprehensive monitoring plan is required to ensure that the realigned watercourse and relocated wetlands function as designed. Section 11.0 of the EIS states that details of the monitoring plan will be developed in consultation with the MNRF and documented in a supplementary Upper's Quarry Monitoring Plan. NPCA staff are supportive of the development of a standalone Monitoring Plan and request to be consulted to ensure that NPCA interests are addressed within this plan. Comment not addressed.	Stantec	Added "in consultation with MNRF ***and NPCA***" to EIS S.11
	New Comments		
1.	NPCA Requested Plans: In order to ensure the proposed watercourse realignment and wetland compensation are completed appropriately and as per NPCA plannng policy, the NPCA requests the following detailed plans be submitted for further review and approval: a) Detailed Sequencing Plan for watercourse realignment and wetland compensation and rehabilitation; b) Detailed Sediment and Erosion Control Plan; c) Comprehensive Watercourse and Wetland Monitoring Plans; and d. Landscape and Planting Plans It is recommended that NPCA's Planning and Permit Procedural Manual (including Appendix K: Landscape Plan Guidelines and Appendix L: Channel Modification Checklist and Submission requirements) is referred to when completing certain Plans.	Stantec	Detailed sequencing and refinements to the plan, including Erosion and Sediment Control are add to the Site Plan notes and will be further refined in consultation with he MNRF. Ecological monitoring of wetlands will be complimentary to the water resource monitoring recommended in the Water Resource Report (WSP 2024). The monitoring will be developed in consultation with MNRF. The monitoring will include bot the newly created riparian wetland along the realignment and the control wetland. Plots and transect will be established in the wetlands. The corners of each plot will be marked with wood stakes and flagged with orange flagging tape. The corners of the plots will be recorded using a high accuracy sub-metre GPS unit and added to mapping. In each monitoring plot, several observations will be recorded to accurately characterize the conditions. A detailed list of the canopy trees (for treed features), understory or shrub-layer species and herbaceous ground layer species will be recorded for each plot, including the percent cover of each species within the plot. The general health of mature trees (greater than 10 cm diameter at breast height) within 5 m of each plot and standing water depth will be recorded. Data for each plot will be collected in sufficient detail to establish benchmarks for percent invasive species, average Coefficient of Wetness (CW), average Coefficient of Conservatism (CC) and Floristic Quality index (FQI), so that changes in floral composition can be identified.