Proposed Milton Quarry East Extension
JART COMMENT SUMMARY TABLE – Natural Environment

Please accept the following as feedback from the Milton Quarry Joint Agency Review Team (JART). Fully addressing each comment below will help expedite the potential for resolutions of the consolidated JART objections and individual agency objections. **Additional, new comments may be provided once a response has been prepared to the comments raised below and additional information provided**.

	JART Comments (December 2022)	Reference	Source of Comment	Applicant Response (Jan 2023)	JART Response (June 2023)
Report/Date: Level 1 and 2 Natural Environment Technical Report (NETR) and Environmental Impact Assessment (EIA) December 2021 Author: Goodban Ecological Consulting Inc. (GEC)					
1.	The term “common setback” used in the first line of the fourth paragraph on page 1 should be explained/defined.	Page 1	Sarah Mainguy, NSE	The Aggregate Resources Act (ARA) provides for eliminating the prescribed excavation setback area adjacent to other properties when the adjacent landowner provides consent. Since the East Cell is licensed and owned by CRH, the excavation setback along the common boundary of the CRH lands, the Milton Quarry East Cell and the proposed MQEE, has been reduced to 0 m.	Response accepted.
2.	Section 1.3. Environmental Impact Assessment (EIS), Page 4, second full paragraph, third bullet references a local NHS. Please clarify what this refers to.	Section 1.3	Sarah Mainguy, NSE	The local NHS refers to the Town of Halton Hills Greenlands area. See Figure 7 of the MHBC Planning Report.	Response accepted.
3.	It is stated on page 63 that there are no suitable breeding pools in the Cox Tract for Jefferson Salamander. However, the investigations within the Cox Tract are not described. Dates and other details for these investigations should be provided. Should woodland pools be present in the Cox Tract, the potential function of the pools as Jefferson Salamander habitat should be examined, with potential re-mapping of regulated habitat. - The MECP should provide comment on the need to survey the Cox Tract for salamander habitat	Level 1 and 2 Natural Environment Technical Report and Environmental Impact Assessment	Sarah Mainguy, NSE	The portion of the Cox Tract between the existing haul road and the Townline Road allowance was surveyed for vegetation/flora at a reconnaissance level and detailed wildlife surveys (breeding birds, butterflies, etc.) were also completed. GEC had previously covered this area when preparing a Scoped EIA for the haul road crossing of the Cox Tract, circa 1997/98. There are no vernal pools or wet areas of any kind in the northeast portion of the Cox Tract. It is entirely upland and mainly comprises conifer plantations planted in 1951 on what was formerly agricultural land. The conifer plantations are gradually taking on a more natural character, as native deciduous tree species gradually become established. There is no need to survey the Cox Tract for salamander habitat. As noted, there are no vernal pools or wet areas in the northeast section of the Cox Tract. The haul road crossing is an impenetrable barrier to salamanders, with extensive erosion control measures in place on both sides of the haul road. There are no vernal pools in the remainder of the Cox Tract. The entire Cox Tract between Sixth Line and the Townline Road allowance is more than 1.25 km in length.	Response accepted.

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4.	The potential occurrence of bat hibernacula within 200 m of the study area should be investigated. The area of bat hibernacula SWH includes a 200m radius (OMNR 2000) around the entrance of the hibernaculum within which most development types have the potential for impacts. - The absence of bat hibernacula in this part of the escarpment should be confirmed.	Level 1 and 2 Natural Environment Technical Report and Environmental Impact Assessment	Sarah Mainguy, NSE	Bat hibernacula may be found in caves, mine shafts, underground foundations and certain karst features. GEC did not identify any of these features within the Natural Environment Study Area (see NETR & EIA Figure 8 for the study area boundary). GEC has not observed any of these features in proximity to the existing Milton Quarry Extension either. Some areas within 500 m of the proposed extraction area fall beyond the original Natural Environment Study Area, i.e., beyond Wetlands W36 and W41. These areas were examined for the potential presence of caves, mine shafts, underground foundations and certain karst features by GEC on July 17, 2022. No such features were identified during the survey. GEC notes that portions of the MQEE Natural Environment Study Area are within 500 m of the extraction areas of the East Cell of the approved Milton Quarry Extension, the North Quarry and the Main Quarry.	Response accepted.
5.	Methods for bat maternity roost habitat assessment provided in Section 5.1.2, which state that trees over 25 cm diameter at breast height (dbh) were counted, do not conform to the most recent protocols published by MNRF (Guelph District Office, 2017). These state: “Following the completion of ELC mapping of a study area, any coniferous, deciduous or mixed wooded ecosite, including treed swamps, that includes trees at least 10cm dbh should be considered suitable maternity roost habitat.” All potential bat habitat trees of 10 cm dbh and over should be counted.	Section 5.1.2	Sarah Mainguy, NSE	In a document issued by Christopher Martin of the Ministry of Environment, Conservation and Parks (MECP) on March 29, 2021, it was stated that there are numerous peer-reviewed publications demonstrating that trees with a DBH of less than 25 cm support maternity and day roosts of species-at-risk bats. None of these references were provided however. The protocol for surveying for maternity roosts that was attached to that document stated that only those cavity trees 25 cm or larger needed to be documented, and all previous protocols had the same stipulation. In the July 22, 2022, MHBC response letter to MECP regarding species at risk, it was requested that MECP provide a list of references for peer-reviewed publications that demonstrate that trees measuring less than 25 cm DBH (diameter at breast height) support maternity and day roosts of species at risk bats. As research during the preparation of the NETR & EIA, a literature review on the characteristics of maternity roosts for Northern and Little Brown Myotis was completed and the results did not support that these species use trees smaller than 25 cm. The Northern Myotis typically roosts in very large trees, with an average DBH of 65 cm. The Little Brown Myotis prefers to roost in sites that are much warmer than ambient temperatures, generally >32°C. These temperatures are required for adequate development of the fetus and pup. It typically uses trees that are a minimum of 45 cm DBH, and rarely as small as 25 cm. Larger trees are required so that numerous bats can	This comment still stands. There is increasing evidence that trees < 25 cm dbh can harbour bat nursery colonies.

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				use the same cavity and thermoregulate together. The references that provide this information are cited in the NETR & EIA. In their May 14, 2022, email commenting on the MQEE application, with respect to species at risk, MECP stated the following: *"With respect to Little Brown Myotis, Northern Myotis and Tri-coloured Bat, given the scale of the project relative to the local treed landscape the Ministry agrees that it is likely that impacts can be avoided by timing the tree removals to occur outside of the roost period. Given the possible presence of Eastern Small-footed Myotis, the recommended window to remove trees is December 1 to March 14."* Dufferin subsequently agreed to limit tree removal to the period between December 1 and March 14, and this is reflected on the updated Site Plans.	
6.	Analysis of Significant Features Black Ash (Fraxinus nigra) should be listed as a significant species in Section 6.1. This species was listed as Endangered under the Endangered Species Act, 2007 on January 26, 2022.	Section 6.1	Sarah Mainguy, NSE	Comment noted. Black Ash was listed as Endangered in Ontario on January 26, 2022. Protections for Black Ash under the Endangered Species Act were temporarily suspended until January 25, 2024, through Ontario Regulation 23/22. The NETR & EIA was completed in December 2021, prior to Black Ash being listed as Endangered in Ontario. At that time the NETR & EIA did acknowledge that Black Ash had been designated as Threatened at the federal level by Environment and Climate Change Canada in November 2018. In GEC's opinion there will be no negative impacts on Black Ash as a result of the proposed MQEE. Further discussion is provided below in response to Comment 15.	Response accepted.
7.	Section 7 provides an analysis of the provincial significance of wetlands in Ecoregion 6E. However, significance of wetlands in Halton Region should also be considered. Analysis of whether wetlands U1 and W56 would be considered significant according to Region of Halton criteria should be provided, in accordance with s.276.5(1) of the Regional Official Plan and in consultation with Conservation Halton and MNRF staff. - it is noted that these wetlands are being protected from extraction, with a buffer of 50 m, which is likely more than a Regionally significant wetland would be buffered.	Section 7	Sarah Mainguy, NSE	Wetland U1 is already identified as a Key Natural Heritage Feature on Schedule 1G (Key Features within the Greenbelt and Regional Natural Heritage Systems) of the Region of Halton Official Plan. As indicated in Dufferin's July 22, 2022, responses to ARA objection letters from the agencies, Wetland U1 is being treated as Provincially Significant for planning purposes. The ARA Site Plans were updated to reflect this. See **Tab A** (Updated NETR & EIA Figures 31, 32, 34 and 35) and **Tab B** (Updated ARA Site Plans). As indicated on page 75 of the NETR & EIA, Wetland W56 is a small, minor feature with a short, ephemeral hydroperiod. GEC would not ordinarily recommend its	Response accepted.

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				inclusion within the Halton Escarpment Wetland Complex. W56 is located within the Significant Woodland, more than 400 m away from the proposed extraction area, and it will be protected from any dewatering influences through mitigation via the (WMS). Supplementary monitoring (surface water levels and wetland ecology) is proposed as part of the AMP Addendum.	
8.	As noted in Region's comments on the Terms of Reference, wetlands U1 and W56 have not been evaluated by the Ministry of Natural Resources and Forestry (MNRF); however, they have been identified within MNRF and Conservation Halton wetland mapping. It is recommended that the NETR/EIS assess whether these wetlands should be added to the Provincially Significant Wetland complex. Comments on the analysis of Wetland U1 as an ecological trap are provided in point 12 below.	Level 1 and 2 Natural Environment Technical Report and Environmental Impact Assessment	Sarah Mainguy, NSE	Please refer to the response to Comment 7. Please note that Wetland W56 was not identified by MNRF. Shapefiles for Wetlands U1, V2 and W56 were provided to Aurora District MNRF on November 21, 2022.	Response accepted.
9.	Section 7 recommends a 50 m buffer to Wetland U1. The appropriate buffer width for the wetlands should also be determined in accordance with s.220.1.1 of the ROP.	Level 1 and 2 Natural Environment Technical Report and Environmental Impact Assessment	Sarah Mainguy, NSE	A 50 m buffer was proposed by GEC for Wetland U1, recognizing that if the wetland hydrology is enhanced over current conditions, it will become a viable Jefferson Salamander breeding pool. The buffer is presently a regenerating field that will be reforested. The open areas between Wetland U1 and the forested areas to the north, east and south will also be reforested and habitat features such as rock piles and woody debris will be added, creating forested migration habitat between Wetland U1 and the existing forest. In GEC's opinion, ROP policy s.220.1.1 has been satisfied through the documentation provided in the NETR & EIA.	Response accepted.
10.	Mapping and Interpretation of Significant Features Wetland U1 is described as an ecological trap, but no evidence is provided to support that statement other than the description of the hydroperiod. However, the wetland has been instrumented only since 2020 (with general observations in 2019). Section 6.1.2.4,, page 63, referring to Figure 26, states that "The area shown in green tint would not function as dispersal habitat related to Wetland U1, because under existing conditions this pool does not contain water for a long enough period, i.e., its hydroperiod is too short, and no juveniles emanate from this feature." However, there is no description of drift fence studies to determine if juvenile salamanders emanate from the feature. This should be clarified. This wetland appears, on the basis of the breeding population numbers provided, to have a high function as breeding habitat for amphibians. It is described in Section 5.5.1.3 as having eight Jefferson Salamander captured in 2019 and 20 Jefferson Salamander captured in 2020. In addition, the wetland was found to have full choruses of Spring Peepers in one of the years studied, as well as low numbers of Wood Frogs, American Toad and Gray Treefrog. Salamanders and frogs have a high fidelity to breeding habitat, so their continued presence in this feature may indicate that they breed successfully in some years. Many amphibians are dependent on "good" years for reproduction. There is insufficient information on hydroperiod to show how long	Section 6.1.2.4,, page 63	Sarah Mainguy, NSE	GEC acknowledges that a diverse mix of amphibians was recorded at Wetland U1 during the field surveys for the MQEE, including a surprising number of Jefferson Salamanders and Unisexual Ambystoma in 2019 and 2020 during minnow trapping surveys. This is the primary reason for GEC recommendations that the Wetland U1 be retained and enhanced as part of the MQEE. As noted on page 75 of the NETR & EIA, Wetland U1 presently lacks a suitable springtime high water level and hydroperiod of suitable duration to support amphibian breeding. Under existing conditions, it functions as an ecological trap for breeding frogs, toads and salamanders. On June 8, 2019, GEC observed a small pool of water at least 30 cm deep remaining in the grove of Green Ash trees at the southeast (lower) end of Wetland U1. On June 30 no standing water was observed and this appeared to have been the case for at least one week.	Response accepted.

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	the low water levels have persisted. The potential for successful breeding in some years should be discussed. The rationale for the conclusion that juveniles are not produced should be clarified. - It is understood that the property was formerly owned by another company, and has only been monitored since 2019 because there was no access to the pond. It is not known when the spring water levels stopped being appropriate for amphibian breeding. The main quarry has likely affected the spring water levels in the pond for many years. The East Extension likely exacerbated these impacts, but it is not possible to separate the proportion of impact to the main quarry and East Extension. - Regardless of when the impacts took place, it is clear that water levels should be supplemented in this pond as soon as possible to restore the function of the pond to support breeding amphibians. We understand that Wetland V2 was temporarily restored prior to the implementation of the Water Management System, which effectively restored the function. We recommend that the same approach be used to supplement early spring water levels in Wetland U1 as early as possible after the license is obtained.			The hydroperiod may have been just long enough for transformation of Spring Peeper and Wood Frog tadpoles to occur but this is not a certainty, but the hydroperiod was far too short for transformation of salamander larvae to occur. The wetland contained little/no water during the spring period in 2020, 2021 and 2022. During the minnow trapping survey for salamanders on March 20, 2020, the standing water was not deep enough to entirely submerge the minnow traps; U1 was observed by GEC to be dry on May 16, 2020. GHD indicated that Wetland U1 likely dried out in late April, 2020, and this was confirmed on May 13, 2020. In 2021, GEC observed that no water was present on March 25, but GHD measured very shallow standing water briefly before and after that date. GHD confirmed Wetland U1 was dry on May 12, 2021. In 2022, water was first registered at the staff gauge on March 16. On April 10, 2022, GEC observed that there was only a small pool of shallow water in Wetland U1 that was less than 10 m by 10 m in size. The pool level declined to dry or nearly dry by of April 12, 2022 and intermittently received water until May 10. The wetland was dry from May 10, 2022 through the balance of the year. This means that from 2020 to 2022, the hydroperiod of Wetland U1 was too short to support any recruitment to amphibian populations. The hydroperiod was too short to allow any tadpoles and salamander larvae to mature and transform into terrestrial juveniles. There may have been some recruitment of Wood Frog and Spring Peeper in 2019, if water persisted in the wetland in mid-June. GEC agrees with the recommendation that water levels in Wetland U1 be supplemented as early as possible after the licence is obtained and the OWRA permits are amended. This would enhance the function of the pool, such that it functions as viable breeding habitat for amphibians. The wetland hydroperiod in nearby Wetland V2 was initially restored on a temporary basis using an overland pipe starting in early spring 2009 and continuing until the permanent WMS was installed in late 2011. CRH is prepared to implement the same approach for Wetland U1 subject to the issuance of any required approvals.	

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11.	The extraction footprint encroaches on a Jefferson Salamander movement corridor shown in Figure 26. The extraction footprint should be restricted outside the movement corridor, notwithstanding the application of the salamander habitat regulation shown in Section 6.1.2.4. As noted in point 12, the evidence indicating that Wetland U1 is not suitable salamander breeding habitat is quite weak. It is noted in Section 6.1.2.4. that the field habitat surrounding wetland U1 would not be ideal dispersal habitat, but there is no direct evidence of whether it does or does not in fact provide dispersal habitat. The fact that there are salamanders and frogs still breeding in the pond may indicate that the pond is still functional. Amphibians move through farmland and fields to and from breeding habitat in many areas of southern Ontario, moving through long grass or cropland at night and during rainy periods to minimize desiccation. - The restoration of amphibian breeding in Wetland U1 may mean that the corridor between the ponds becomes more important to the breeding population of salamanders in the area.	Section 6.1.2.4	Sarah Mainguy, NSE	Section 16.1.2 of the NETR & EIA deals with potential effects on Jefferson Salamander and Unisexual Ambystoma (Jefferson Salamander dependent population). Section 16.1.2.1 (page 154) discusses the proposed extraction footprint and it is repeated below: *"Based on an analysis of the Jefferson Salamander Habitat Regulation as shown on Figure 26, the proposed MQEE extraction footprint overlaps with approximately 3.99 ha of what is conservatively mapped as potential migration and dispersal habitat. This habitat is almost entirely comprised of old field vegetation, which is not the preferred habitat of the Jefferson Salamander and Unisexual Ambystoma (Jefferson Salamander dependent population). Salamanders may be susceptible to desiccation and predation when they move across open fields between forested areas and breeding pools. The habitat that will be removed by extraction is likely not actually used for migration or dispersal. The direct routes between Wetland U1 and the nearby forest do not overlap with the extraction footprint. Wetland U1 is approximately 115 m away from forest to the northwest, 115 away from forest to the northeast, and approximately 220 m from forest to the southeast. It is more likely that salamanders would select the more direct routes from the forest to Wetland U1, rather than wandering further out into the open fields and taking a more circuitous route."* Dufferin continues to work with MECP with respect to species at risk and, in particular, with regard to Jefferson Salamander and Unisexual Ambystoma (Jefferson Salamander dependent population). Correspondence from MECP dated May 15, 2022, states: "*The Ministry generally supports what has been proposed for mitigation and overall benefit and will work with the project team as necessary to finalize the mitigation and overall benefit plans*."	Response accepted.

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12.	The Cox Tract should be enhanced by connecting it to the forests to the east as much as possible following rehabilitation, by restoring the haul road (as well as providing linkage as shown in the Site Plans). It is important that the Cox Tract remain linked to the forests to the east, as they provide additional habitat for forest species. This linkage should be enhanced as part of the woodland restoration. Please refer to guidance in the Sustainable Halton Report 3.02 – Natural Heritage System Definition and Implementation (NSE 2009) to incorporate an ecologically appropriate linkage as part of the Regional NHS. It is understood that the linkage will be enhanced following rehabilitation, but the linkage should also be maintained during extraction.	Level 1 and 2 Natural Environment Technical Report and Environmental Impact Assessment	Sarah Mainguy, NSE	During extraction of the MQEE, there will be 87 metres of land between the proposed MQEE extension area and the approved extraction area for the Milton Quarry. This will maintain a linkage between the Cox Tract and lands to the east during extraction. Following extraction, in conjunction with the restoration of the haul road across the Cox Tract, the reforestation to be completed as part of the MQEE Rehabilitation Plan will provide an improved connection between the Cox Tract and the existing Significant Woodland (see NETR & EIA Figures 41a, 43 and 44). As noted on pages 181-182 of the NETR & EIA, the Cox Tract haul road crossing is between 29 and 31 m wide. On both sides of the haul road crossing, heavy-duty silt fencing was installed at the request of the Region of Halton. On the southwest side of the Cox Tract crossing, large dolostone boulders have been placed along the top of the steep road shoulder for safety, and a heavy-duty silt fence and heavy-duty chain-link supporting fence have been installed, as well as a secondary silt fence. The crossing and associated silt fencing and other obstacles form a barrier to the movement of many species. Some of the more mobile mammals, such as Coyote, White-tailed Deer, Red Fox, Raccoon, etc. can still move across the haul road by crossing at either end. Any ecological linkage function is limited at present, but this function will continue during operations. As noted above, the haul road will ultimately be rehabilitated and only a small access road or driving trail will remain.	Response accepted.
13.	Page 92 provides a description of Significant Wildlife Habitat (SWH) for breeding amphibians, which is supported by mapping in Figure 32. The Ecoregion Schedules for Ecoregion 7E specify that SWH for woodland breeding amphibians should include the breeding pool plus the woodland 230 m surrounding the pool. The SWH should be mapped accordingly.	Page 92	Sarah Mainguy, NSE	Please note that the MQEE is located in Ecoregion 6E. In Dufferin's July 22, 2022, responses to agency objection letters, NETR Figures 32 and 35 have been updated to map all woodland habitat within 230 m of the vernal pool habitats within Wetlands V2, W41 and W46a as SWH for Amphibian Breeding Habitat (Woodland). The updated NETR & EIA figures and updated ARA Site Plan detail showing Key Natural Heritage Features were provided to the agencies at that time. For ease of reference, the revised NETR Figures 32 and 35 are provided again at **Tab A**. The current draft ARA Site Plans are provided at **Tab B**.	Response accepted.

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14.	The methods for mapping of Significant Wildlife Habitat (SWH) for Forest Area-sensitive Breeding Birds and Significant Wildlife Habitat for bird Species of Conservation Concern should be explained, as the mapping shown on Figure 31 does not conform to standard practice. The entire forest unit, which is a mosaic of several forest types, should be included in area-sensitive breeding bird habitat. The habitat is described as "candidate" SWH on page 90, but the identification of a forest of the suitable configuration and size, meeting the criteria for the number and type of species, would be confirmed SWH rather than candidate.	Page 90	Sarah Mainguy, NSE	As noted in Dufferin's July 22, 2022, responses to agency objection letters, GEC has updated Figures 31, 34 and 35 in the NETR to show almost the entire woodland as SWH for Woodland Area-sensitive Bird Breeding Habitat and Habitats for Species of Conservation Concern. The Key Natural Heritage Features Figure on the Existing Features page of the ARA Site Plans was also updated to show almost the entire woodland as SWH for Woodland Area-sensitive Bird Breeding Habitat and Habitats for Species of Conservation Concern. The updated NETR & EIA figures and updated ARA Site Plans were provided to the agencies at that time. For ease of reference, the revised NETR Figures 31, 34 and 35 are provided at **Tab A**. The current draft ARA Site Plans are provided at **Tab B**.	Response accepted.
15.	There should be discussion of potential impacts on habitat for Black Ash in wetland W41. This species was listed as Endangered under the Endangered Species Act, 2007 on January 26th, 2022, though the prohibitions of the Act were deferred. A recovery strategy for this species was prepared (by NSE), which has been posted on the Environmental Registry of Ontario (ERO) for additional information (ERO Number 019-5053). Even though the wetland that supports this species is being protected for Jefferson Salamander, the potential impacts on the wetland's ability to support this tree species should be determined. Section 16.2.2 notes that additional water will be recharged to the wetland through the recharge wells designed to provide hydrogeological support to Jefferson Salamander breeding salamander ponds. Black Ash may not tolerate flooding to the same depth and duration as the salamander, should there be an increase in groundwater or flooding periods to Wetland W41, as is predicted in Section 16.2.2. We disagree with the statement in Section 9.3.1. that the habitat for Black Ash should not be considered for protection because the species is at risk because of Emerald Ash Borer. Without protection of the habitat, and thereby protection of populations that may be resistant, there would be no chance of recovery. The Recovery Strategy lists protection of remaining populations as an important part of recovery.	Section 16.2.2 and Section 9.3.1.	Sarah Mainguy, NSE	As noted in Section 16.2.2 of the NETR & EIA, there will be no reduction in surface catchment to Wetland W41 and any dewatering influence from the MQEE will be mitigated through the use of recharge wells to maintain groundwater levels and gradients. Figure 42b shows the groundwater contours in the rehabilitated condition (i.e., when the East Cell Lake is at its operational level of 333 mASL). The +0.2 m contour intersects with the southernmost portion Wetland W41, suggesting a slight increase in groundwater on an annualized basis. Wetland W41 has an existing outlet that drains to Wetland W42 and, ultimately, to Wetland W44. Standing water can only reach a certain level before excess water outlets from Wetland W41. Since any surplus water in Wetland W41 would outlet to Wetland W42 and, ultimately, Wetland W44, it is concluded that there will be no negative impact on Wetland W41 or on the declining Black Ash trees, saplings, or seedlings that grow primarily on hummocks and raised areas within this wetland.	Response accepted; however, it was noted in the AMP that "Monitoring of Black Ash will occur where the species is located within the vicinity of fixed-point photo stations and wetland vegetation monitoring plots." Black Ash should receive dedicated monitoring in wetland W41.
16.	Cumulative Impacts Cumulative impacts have been dealt with only in a cursory way (in short sections on page 16.2.1.4 and on 17.4). Additional detail of cumulative impact analysis should be provided that examines the potential interaction between the change in groundwater regime, increase in drying winds and ambient light as a result of removal of vegetation and extraction activities, and invasion of non-native species. These cumulative impacts particularly should be examined for the period between extraction and rehabilitation as well as post-rehabilitation. - The effect of the water management on wetland V2 was demonstrated during the site visit, and many aspects of cumulative impacts were addressed by the effect of the water management system on that wetland. It was noted that the non-native species that originally dominated the wetland (Reed Canary-grass) had been replaced by a more diverse suite of species because of the increase	Sections 16.2.1.4 and 17.4	Sarah Mainguy, NSE	As discussed at the meeting with JART on June 30, 2022, and as stated in Dufferin's July 22, 2022, responses to the agency objection letters, cumulative impacts have been considered as part of the proposed MQEE application. As part of the Milton Quarry Extension in 2007, the impacts of the existing Milton Quarry operation were assessed and included as part of the technical information made available for review. This technical information was reviewed, considered and concluded on by the agencies at that time. The determinations on the impacts of the existing quarry operation were used to inform the design of the Milton Quarry extension, including the resulting water management system and agreements with	Response accepted.

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	in water levels. However, this is not necessarily certain to occur in wetland U1. It is understood that the water management system is proposed to compensate for the increase in drying winds, ambient light and change in groundwater regime. Monitoring should be proposed to assess the changes in the vegetation of the wetland over the long term, to account for these potential cumulative impacts.			Conservation Halton. Further, the existing Adaptive Management Plan and Protection Plan (AMP) in effect at the Milton Quarry provides ongoing assessment and hydrologic and natural environment data. The technical work for the proposed MQEE builds on the previous technical work completed at the quarry and the data collected over approximately 20 years. From a land use policy perspective, this is the last parcel of land designated 'Escarpment Rural Area' adjacent to the existing Milton Quarry and therefore the last viable area which can be contemplated for aggregate extraction in accordance with the policies of the NEP. The proposed MQEE application assesses baseline conditions taking into account the existing approved Milton Quarry and Milton Quarry Extension Lands, including the operating mitigation system and final rehabilitation. Baseline conditions are representative of the approved land uses to date and any impacts to water resources and the natural environment were recognized as existing approved impacts and would continue without further approvals and changes to the existing operation. A copy of the June 30, 2022, GHD/GEC presentation regarding baseline conditions and cumulative impacts was provided as Tab A in Dufferin's July 22, 2022, responses to the NEC's April 26, 2022, objection letter. Regarding Natural Environment Comment 16, GEC notes that most of the proposed MQEE extraction is comprised of existing open fields that are already exposed to the west winds. There are few trees associated with most of the extraction area, except in proximity to the Cox Tract where some woody regeneration has occurred over the past 30 years. The Cox Tract is on higher ground (340 mASL – see NETR Figure 6 for contours) relative to the young regeneration that will be removed as part of the MQEE extraction area. Stand data from Halton Region indicates that the trees in the plantations at the northeast end of the Cox Tract are between 21 m and 25 m in height. It is anticipated that the Cox Tract will provide some protection from the prevailing winds. The mature edges of the Significant Woodland are well established and contiguous tree regeneration was also included within the Significant Woodland boundary. The Significant Woodland buffers and Ecological Enhancement Plan (EEP) will be reforested which, over time, will further protect the edge of the existing woodland. "Increase in drying winds and ambient light" are not anticipated to result in negative impacts because no new woodland edges will be created, long-	

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				established woodland edges will be retained, existing suitable woody regeneration within buffers will be retained and augmented with woody plantings. Further, much of the proposed extraction area is already quite open and the portion that is not is partly sheltered from the prevailing wind by the Cox Tract. Regarding "invasion of non-native species", GEC prepared a *Proposed Invasive Species Monitoring and Mitigation Strategy*, which was included in Dufferin's July 22, 2022, response to objection letters from MNRF (May 9, 2022) and Region of Halton (May 6, 2022). Please see **Tab C**. The groundwater regime that supports water-dependent natural features will be maintained and, where possible, enhanced, through the implementation of the AMP Addendum and the construction and operation of the Water Management System (WMS), and through the final rehabilitation condition. Wetland U1 is presently dominated by Reed Canary Grass. With the enhancement of wetland hydrology in U1 due to the operation of the WMS, GEC anticipates that Reed Canary Grass will decline over time. Wetlands V2 and W5 are 2 well documented examples where Reed Canary Grass has declined greatly as a result of WMS operation, with more conservative wetland plant species being more prevalent. The AMP Addendum includes requirements for ecological monitoring of Wetland U1, including fixed-point photography, wetland reconnaissance, amphibian call counts (using Song Meter SM4 units or equivalent), salamander egg mass surveys and wetland vegetation monitoring. Certain components of the AMP wetland monitoring will be able to assess changes in wetland vegetation over the long term.	
17.	Proposed Mitigation Section 15.3.1.2 describes that mitigation measures for potential impacts on groundwater (Section 15.3) prior to rehabilitation are highly dependent on the effectiveness of constructed recharge wells. The effectiveness of this mitigation should be discussed with JART's groundwater experts. - This comment still stands. It is our understanding that the groundwater rehabilitation is still under review.	Section 15.3.1.2	Sarah Mainguy, NSE	Comment noted. The effectiveness of mitigation measures is best addressed by the groundwater experts as noted.	This comment stands, as groundwater rehabilitation is still under review.
18.	As described in Section 15.3.1.2, seasonal pumping with quarry water will be used extensively for mitigation prior to rehabilitation, should there be reductions in water levels in salamander breeding wetlands. It is understood that the water management system has been highly effective in the past. However, there is evidence that high conductivity, which can be found in quarry discharge, can impair amphibian larval development. It should be clarified whether water monitoring includes monitoring of parameters related to ecological function. For example, if quarry water continues to be used to mitigate impacts on vernal pool hydroperiod,	Section 15.3.1.2	Sarah Mainguy, NSE	The recharge water is compatible with the proposed extension of its use to support wetlands in the vicinity of the MQEE, similar to the existing approved quarry mitigation. As described in the GWRA (Section 7): "Water quality and the underlying water chemistry have been extensively evaluated at the Milton Quarry and continues to be monitored through the provisions	This comment still stands. Monitoring of water for parameters of importance to ecological, particularly amphibian, receptors (which are different from those related to human health) should be conducted as a precautionary measure. The use of discharge water as the primary mitigation tool to maintain and enhance the habitat of a significant population of an

	JART Comments (December 2022)	Reference	Source of Comment	Applicant Response (Jan 2023)	JART Response (June 2023)
	it should be confirmed that discharge water conductivity (and other parameters that could affect amphibian breeding such as pH) will not change with excavation in the extension, and/or that it will be monitored for potential changes in conductivity, pH and other parameters that could affect amphibian breeding, with appropriate actions if mitigation indicated a potential adverse impact.			of the WMS and the private well water supply monitoring program under the AMP and the Ontario Water Resources Act (OWRA) approvals. Based on the results of these monitoring programs to date and a substantial assessment completed for the 5-Year AMP Review (GHD 2020), there is no indication that Dufferin's operations have had any adverse water quantity or quality effects on residential wells or water resources in the vicinity of the quarry. These previous assessments have demonstrated the continued suitability of recharge water for mitigation and the proposed MQEE will not alter the water quality." These assessments have included the demonstrated success in using the recharge water to maintain and/or enhance the conditions at existing amphibian breeding pools in Wetlands W5, V2, W7 and W8, as described in the 5-Year AMP Review (GHD 2020), which included the *Milton Quarry Extension AMP: Wetland Ecology 5-Year Review Report* (2013-2018) (GEC 2019). The following response from GHD was originally included in Dufferin's July 22, 2022, response to Halton Region's May 6, 2022, objection letter. The addition of the MQEE does not appreciably alter the water quality considerations or monitoring requirements for the Water Management System. The current program includes monitoring of recharge water, dewatering flows, and reservoir water quality, including the AMP requirements plus additional requirements of the Environmental Compliance Approval (ECA) for Industrial Sewage Works (ISW) issued by MECP. Recharge water quality is currently evaluated at the entry point to the WMS (recharge pumping station) and at 3 locations within the system (before first recharge well, adjacent to nearest private water well, and at a distant point from the recharge pumping station). It is anticipated that an additional recharge water quality sampling location within the MQEE will be added to the current monitoring program as will be reviewed with MECP. Quarry dewatering flows from the MQEE will be combined with flows from the East Cell and directed to the Reservoir prior to discharge. Reservoir discharge sampling is currently underway, and the program does not require amendment. Water quality sampling requirements will be reviewed with MECP prior to issuance of amended Ontario	endangered Species justifies an abundance of caution.

	JART Comments (December 2022)	Reference	Source of Comment	Applicant Response (Jan 2023)	JART Response (June 2023)
				Water Resources Act (OWRA) approvals. Current sampling requirements and concentration limits are stipulated by the Environmental Compliance Approval (ECA) for Industrial Sewage Works (ISW). The application for such approvals will also be circulated to the water-related agencies.	
19.	Some detail on compensation for Eastern Meadowlark and Bobolink habitat in accordance with requirements under the ESA should have been included, as this habitat is to be removed.	Level 1 and 2 Natural Environment Technical Report and Environmental Impact Assessment	Sarah Mainguy, NSE	Details on how Dufferin complied with the rules in regulation under the ESA with respect to Bobolink and Eastern Meadowlark habitat were provided in Section 16.1.3 (pages 160-161) of the NETR & EIA.	Response accepted.
20.	Buffers Additional, detailed justification should be provided for reduction of buffers to the Significant Woodland on the southwest side of the extraction area on Page 173 (mapped on Figure 39). The Region OP Schedule 1G includes a 30 m buffer width from Key Features of the Regional Natural Heritage System (RNHS). Buffers are a component of the RNHS as per Section 115.3 of the ROP. Section 116.1 of the ROP allows for refinements and boundary adjustments to components of the RNHS, including buffers, through the submission of a study accepted by the Region. As part of the NETR, refinements to the 30 m buffer should be justified, including clearly illustrating the relationship between the buffer and the installation of the feedermain, recharge wells, control huts and the access road on more detailed mapping of this area.	Section 115.3 and 116.1	Sarah Mainguy, NSE	The following response is adapted from that provided in Dufferin's July 22, 2022, response to the NEC's April 26, 2022, objection letter. For mineral aggregate operations, planning policy does not require a 30 m buffer adjacent to Significant Woodlands. For example, Development Criteria 2.9.1 of the Niagara Escarpment Plan notes that mineral aggregate operations may be permitted in any vegetation protection zone. The buffer that has been recommended is a *minimum* of 10 m in width, plus an additional 10 m wide area to accommodate the WMS, e.g., watermain and access road, CV Huts, etc., resulting in a 20 m extraction setback to the Significant Woodland boundary that will protect the Significant Woodland from negative effects. The Ecological Enhancement Plan (EEP) includes a series of Significant Woodland buffer treatments. Units TP-B1 to TP-B6 are buffer planting areas that will be planted in the first two years after licence issuance (please refer to NETR & EIA Figure 39 for detailed mapping of EEP Units). The buffer planting areas are in proximity to the proposed MQEE extraction area and they provide a buffer for the Significant Woodland and/or other EEP planting areas. The species selected for this purpose are White Birch (*Betula papyrifera*), White Cedar (*Thuja occidentalis*), White Pine (*Pinus strobus*) and Trembling Aspen (*Populus tremuloides*). These pioneering species have all colonized newly created cliff rim habitats at the Milton Quarry and Acton Quarry, along the edges of former extraction areas, and they are well suited as buffer plantings. Existing suitable woody vegetation within the 10 m buffers will be retained. The 10 m Significant Woodland is the *minimum* buffer that will be applied. The Significant Woodland boundary on the MQEE property is approximately 2340 m in length. The 10 m buffer applies to only 215 m of the Significant Woodland boundary (see **Tab D**, Figures 1 and 2). The edge of the Significant	Response accepted.

	JART Comments (December 2022)	Reference	Source of Comment	Applicant Response (Jan 2023)	JART Response (June 2023)
				Woodland in these areas is well established and no new woodland edges will be created. As shown on **Tab D**, Figure 1, only a very small portion of the Significant Woodland buffer is at the minimum 10 m width, with the remainder being up to 55 m in width in this general vicinity. It should also be noted that where the 10 m minimum buffer was applied, the Significant Woodland comprises a row of mature trees that were formerly in a hedgerow, as well as some deciduous regeneration that has spread into the former agricultural field. This can clearly be seen on the aerial photograph used for Figure 1 in **Tab D**. As shown on **Tab D**, Figure 2, adjacent to the southeast portion of the proposed MQEE extraction area, there are two sections of the Significant Woodland boundary where a 10 m buffer and 10 m WMS setback was applied. The edge of the Significant Woodland is generally comprised of younger successional growth next to the long-established mature forest edge. This was readily apparent during the site visits. This can clearly be seen on the aerial photograph used for Figure 2 in **Tab D** and this is quite clear when reviewing the sequence of historical air photos that are available. Elsewhere the Significant Woodland buffers are larger, often considerably larger. As much as possible the routing of the watermain and feeder lines, and the placement of recharge wells, was located away from the Significant Woodland boundary. It should be noted that the watermain and driving access and CV huts are all located outside of the Significant Woodland buffers. In a few instances the feeder lines and recharge wells are located within the buffer; installation of these WMS components is subject to strict conditions in Section 2.4 (WMS Installation) of the AMP Addendum and any buffers that are temporarily disturbed will be promptly restored. NETR & EIA Figures 38a, 39, 41a and 43 all show the carefully designed WMS layout. Minimum 10 m buffers for Significant Woodlands were accepted by the agencies for the Acton Quarry Extension. Considering that the 10 m minimum buffer, plus an additional 10 m setback to accommodate the WMS beside the extraction limit, is only applicable to relatively short lengths of the Significant Woodland boundary (215 m out of a total length of 2340 m) that generally comprises successional growth at the edge, and that the 10 m buffers will be planted with suitable fast-growing woody species, the buffers in these cases are appropriate. This allows access to the dolostone bedrock resource while protecting the adjacent	

	JART Comments (December 2022)	Reference	Source of Comment	Applicant Response (Jan 2023)	JART Response (June 2023)
				Significant Woodland. GEC has not observed any negative effects as a result of the woodland buffers applied to the Milton Quarry Extension and the Acton Quarry Extension. Elsewhere on the MQEE lands, the buffers are much larger and they form part of the EEP Units that will be planted. Furthermore, with the implementation of the EEP, these significant woodlands will increase in size and overall, the application results in an enhancement to significant woodlands in vicinity to the site.	
21.	In accordance with Section 116.1 of the ROP, the reduction in the 30 m buffer width for the woodland adjacent to wetland V2 should be justified in detail. This pond appears to have a high function, that is protected by the surrounding woodland.	Section 116.1	Sarah Mainguy, NSE	Please see response to Comment 20. As shown on **Tab D**, Figure 1, at the closest points to the MQEE extraction footprint, Wetland V2 is located between 68 m and 79 m away. This means Wetland V2 has a 58 m to 69 m buffer, plus an additional 10 m setback. As noted in the response to Comment 20, only a very small portion of the Significant Woodland buffer is at the minimum 10 m width, with the remainder being up to 55 m in width in this general vicinity. It should also be noted that where the 10 m minimum buffer was applied, the Significant Woodland comprises a row of mature trees that were formerly in a hedgerow, as well as some deciduous regeneration that has spread into the former agricultural field. This can clearly be seen on the aerial photograph used for Figure 1 in **Tab D**.	Response accepted.
22.	Monitoring Section 16.1.2.2: In areas where feeder lines will be installed within the woodland boundary, long-term commitment to monitoring and management of non-native species should be described.	Section 16.1.2.2	Sarah Mainguy, NSE	The following response from GEC was originally included in Dufferin's July 22, 2022, response to MNRF's May 9, 2022, objection letter. GEC has not observed invasive plant species to be a significant problem in relation to WMS components installed within environmental features for the existing Milton Quarry Extension. Garlic Mustard (*Alliaria petiolata*) is the main species of concern and it only occurred in a few localized areas where it was previously established along old skidder trails and areas of past logging, unauthorized bike trails and pedestrian trails, and near former farmstead areas. Garlic Mustard was removed where feasible. All areas within natural features that were disturbed during the installation of feeder lines were promptly treated with a 4" to 6" layer of fresh wood chips, which break down over several years. This approach greatly reduces the establishment of woodland invasive plant species. Over time native woodland species such as Sugar Maple (*Acer saccharum*), Alternate-leaved Dogwood (*Cornus alternifolia*), Chokecherry (*Prunus virginiana*), Zigzag Goldenrod (*Solidago flexicaulis*), sedges (e.g., *Carex gracillima, C. pedunculata, C. pensylvanica*), Bottlebrush Grass (*Elymus hystrix*), Virginia Wildrye	Response accepted.

	JART Comments (December 2022)	Reference	Source of Comment	Applicant Response (Jan 2023)	JART Response (June 2023)
				(*Elymus virginicus*), Virginia Waterleaf (*Hydrophyllum virginianum*), Violets (*Viola* spp.), etc. gradually become established. See Natural Environment Technical Report & EIA Attachment B1: Photos 14-22 and 29-38. A woodland invasive species monitoring and mitigation strategy has been developed; this was provided to the agencies in Dufferin's July 22, 2022, responses to agency objection letters. Attached as **Tab C,** please find the program that will be added to the AMP Addendum.	
23.	In addition, in Section 16.1.2.2, a long-term monitoring plan should be outlined to manage the potential for invasion of non-native invasive species into the restoration areas, also in the long term.	Section 16.1.2.2	Sarah Mainguy, NSE	GEC prepared a *Proposed Invasive Species Monitoring and Mitigation Strategy*, which was included in Dufferin's July 22, 2022, response to objection letters from MNRF (May 9, 2022) and Region of Halton (May 6, 2022). Please see **Tab C**.	Response accepted.
24.	Rehabilitation Plan The rehabilitation plan aims to create a lake, islands and cliffs in place of the current landscape that includes meadow, thicket and small patches of woodland. The restoration is to enhance Niagara Escarpment biodiversity. However, Policy 2.9.11 of the Niagara Escarpment Plan states: Rehabilitation shall incorporate the following: a) natural heritage and hydrologic features and functions shall be restored or enhanced; b) aquatic areas remaining after extraction shall be rehabilitated as representative of the natural ecosystem in that particular setting or ecodistrict, and the combined terrestrial and aquatic rehabilitation shall protect and where possible enhance the ecological value of the site. This policy emphasizes that the proposed rehabilitation should be representative of the existing ecodistrict. However, lakes, shoals and islands are not characteristic features within this Ecodistrict, Ecodistrict 6E-7 (Henson and Brodribb 2006). The following are documented as vegetation types characteristic of this Ecodistrict (Henson and Brodribb 2006): • Broad-leaved Sedge Organic Shallow Marsh Type • Bulblet Fern - Herb Robert Open Shaded Limestone / Dolostone Cliff Face Type • Cliffbrake - Lichen Open Unshaded Limestone / Dolostone Cliff Face Type • Dry - Fresh Red Oak Deciduous Forest Type • Dry - Fresh Sugar Maple - Oak Deciduous Forest Type • Dry - Fresh White Oak Deciduous Forest Type • Dry - Fresh White Pine - Oak Mixed Forest Type • Dry - Fresh White Pine - Red Maple Mixed Forest Type • Dry Black Oak - White Oak Tallgrass Woodland Type • Dry Black Oak Deciduous Forest Type • Dry Black Oak-Pine Tallgrass Savannah Type • Dry Herbaceous Limestone / Dolostone Talus	Section 110	Sarah Mainguy, NSE	The Ecodistrict 6E-7 (Oak Ridges Ecodistrict) is shown on **Tab E**, Figure 1. This expansive Ecodistrict covers approximately 4,418 km^2 and the main physiographic feature is the Oak Ridges Moraine, extending eastwards almost to Belleville. Only around 498 km^2 or 11.3% of the Ecodistrict falls within the Niagara Escarpment. Ecodistrict 6E-7 contains many features that are not representative of the Niagara Escarpment. The list of "vegetation types characteristic of this Ecodistrict" provided by JART includes a number of community types that are either not characteristic of the Niagara Escarpment in general or the Halton Section of the Niagara Escarpment in particular, or are not suitable for incorporation into a quarry rehabilitation plan for various practical reasons. At **Tab F**, GEC sorted the list of 31 vegetation community types into the following groupings: Forest; Tallgrass Prairie, Oak Savannah and Oak Woodland; Cliff Rim, Cliff and Talus; and, Wetland. For the 12 forest community types listed as characteristic of Ecodistrict 6E-7: • There are no White Oak or Black Oak dominated forests in the Halton Section of the Niagara Escarpment; • Red Pine is not native to Halton Region and it is typically associated with conifer plantations, although it will spread by seed; • White Ash is in severe decline due to the Emerald Ash Borer, making this species unsuitable for use in reforestation projects; and, • Most of the forest types listed are later successional or climax communities that are not readily established in reforestation projects or for pit/quarry	Response accepted – we appreciate the effort that has gone into this thorough reply.

	JART Comments (December 2022)	Reference	Source of Comment	Applicant Response (Jan 2023)	JART Response (June 2023)
	• Dry Red Pine - White Pine Coniferous Forest Type • Dry Tallgrass Prairie Type • Fresh Sugar Maple - Beech Deciduous Forest Type • Fresh Sugar Maple - White Ash Deciduous Forest Type • Fresh Sugar Maple Deciduous Forest Type • Hemlock - Sugar Maple Moist Limestone Talus Type • Leatherleaf Shrub Kettle Peatland Type • Moist - Fresh Hemlock - Sugar Maple Mixed Forest Type • Moist - Fresh Sugar Maple - Black Maple Deciduous Forest Type • Mountain Maple Open Limestone Talus Shrubland Type • Open Limestone / Dolostone Seepage Cliff Type • Round-leaved Dogwood Open Limestone / Dolostone Cliff Rim Shrubland Type • Sugar Maple Moist Treed Limestone Talus Type • White Birch Dry Treed Limestone Talus Type • White Cedar - Hemlock Coniferous Organic Swamp Type • White Cedar - White Spruce Coniferous Organic Swamp Type • White Cedar Dry Treed Limestone Talus Type • White Cedar Treed Limestone Cliff Type • Willow Organic Thicket Swamp Type Additional policies emphasize the need for compatibility with the existing landscape. Goal of the Niagara Escarpment Plan section 1.9.1.5 states: To ensure that, after a licence is surrendered, the land is re-designated to a land use designation that is compatible with the rehabilitation of the site, the designation criteria of adjacent lands, the surrounding Escarpment environment and existing land uses in the area. In addition, Niagara Escarpment Plan policies governing the use of off-site material state: 2.9.9 The use of off-site material shall not be permitted unless it is determined through appropriate environmental, technical and planning studies that doing so will achieve greater long-term ecological and land use compatibility (e.g., the importation of topsoil to improve site capability for agriculture, forestry or habitat diversity) and the implementing authority is satisfied that the use of off-site material does not constitute a commercial fill or landfill operation. Regional policies echo this philosophy in Section 110 (7.2) d) C): Priorities for restorations or enhancements to the Greenbelt and/or Regional Natural Heritage Systems through post-extraction rehabilitation shall be based on the following in descending order of priority: [i] restoration to the original features and functions on the areas directly affected by the extractive operations, It is understood that there are no alternatives to a rehabilitation plan for a quarry on the Niagara Escarpment other than a large lake of some kind. However, it should be demonstrated that the rehabilitation plan is composed of communities as consistent as is feasible with the characteristic vegetation communities of the Niagara Escarpment.			rehabilitation. Also, species such as Beech and Eastern Hemlock would experience high mortality if planted in open areas. There are 3 tallgrass communities listed, including Tallgrass Prairie, Tallgrass Savannah and Tallgrass Woodland. There are no tallgrass community types known from the Halton Section of the Niagara Escarpment. The only tallgrass prairie community listed by Riley et al. (1996) for the entire Niagara Escarpment is the Ancaster Prairie, which is a small, degraded remnant on a loess sand deposit. The 11 cliff rim, cliff and talus communities listed for Ecodistrict 6E-7 are all associated with the Niagara Escarpment. For the MQEE Rehabilitation Plan, opportunities to create cliffs are limited, but there are some cliff features that are proposed. The cliffs will occur next to open water, to promote the movement of groundwater under the rehabilitation condition. The list of 5 wetland communities are all organic community types, which are defined as having organic substrates that are at least 40 cm deep. It is not practical to create these types of wetlands as part of a lake-based quarry rehabilitation. There is no peat available at the site for this purpose. No conifer swamps with White Spruce as codominant are listed for the Halton Section of the Niagara Escarpment by Riley et al. (1996). White Spruce is arguably not native to Halton Region. The Leatherleaf Shrub Kettle Peatland Type is not representative of the Halton Section of the Niagara Escarpment. There are no Leatherleaf bog-like communities listed for the Halton Section by Riley et al. (1996). The target communities listed in the NETR & EIA for the Ecological Enhancement Plan (EEP) and Rehabilitation Plan are provided at **Tab G**. GEC sorted the list of 17 ecosites and vegetation community types into the following groupings: Forest; Tallgrass Prairie; Cliff; and Lake, Islands and Coves, Wetlands. The target communities for the EEP and Rehabilitation Plan are based on GEC's field observations from the natural areas surrounding the Milton and Acton Quarries since the mid-1990's, as well as the community listings for the Halton Section of the Niagara Escarpment and the Halton Forest North, Halton Forest South and Speyside Forest ANSIs, found in the ANSI site summaries provided in the *Ecological Survey of the Niagara Escarpment Biosphere Reserve* (Riley et al. 1996). The Halton Section of the Niagara Escarpment is shown at **Tab D**, Figure 1. Volume II (Technical Appendices) of Riley et	

	JART Comments (December 2022)	Reference	Source of Comment	Applicant Response (Jan 2023)	JART Response (June 2023)
				al. (1996) includes Appendix A, which is entitled *Vegetation Communities of the Niagara Escarpment Biosphere Reserve*. Appendix A provides listings of vegetation community types by Escarpment Section, e.g., Niagara, Halton, Dufferin, Grey and Bruce Peninsula. The community classification system used by Riley et al. (1996) predates the *Ecological Land Classification for Southern Ontario: A First Approximation* (Lee et al. 1998), but there are many similarities between the two. GEC reviewed Riley et al.'s (1996) community types documented for the Halton Section of the Niagara Escarpment; analogs of almost all of the ELC ecosites and community types listed by GEC at **Tab G** for the MQEE EEP and Rehabilitation Plan are also listed from the Halton Section of the Niagara Escarpment by Riley et al. (1996). One exception is the Dry Tallgrass Prairie Ecosite (TPO1); prairie grasses are to be planted on the islands that will be created. These grass species are native to Halton Region and the intent is to keep the islands relatively open in character, so that the turtle nesting areas to be created will not be shaded out. Other exceptions are the beach/bar and gravel beach communities, associated with the lake feature. These communities provide important habitats for fish and wildlife. The Demo Area in the Main Quarry includes a lake, wetlands, islands, etc., that provide a variety of important habitats for wildlife and fish. For example, in 2021 and 2022, GEC noted breeding Common Loons and Trumpeter Swans, as well as foraging Common Terns, Caspian Terns and Ospreys. The Demo Area has become an important stopover habitat for migrating waterfowl and shorebirds. The islands, beach/bar and gravel beach features proposed for the MQEE Rehabilitation Plan, while not typical of the Halton Section of the Niagara Escarpment, do occur naturally in the Niagara, Grey and Bruce Peninsula sections. They also occur in the Halton Section in association with manmade lakes/reservoirs. The aquatic and wetland vegetation ecosites and communities are representative of the Halton Section, occurring mainly in lakes (e.g., Lake Medad), beaver pond wetlands, etc. For the earlier Milton Quarry Extension and Acton Quarry Extension applications, the agencies pushed Dufferin to create a range of lake-based habitats (wetlands, islands, shoreline features) because they didn't want "deep sterile lakes". That is why the Site Plans for the Milton Quarry Extension and Acton Quarry Extension include such habitat types and features. In order to create similar habitats and to	

	JART Comments (December 2022)	Reference	Source of Comment	Applicant Response (Jan 2023)	JART Response (June 2023)
				enhance the Cox Tract linkage, fill importation is necessary. As proposed, the importation of soil allows for a greater diversity of features in the rehabilitation plan and resulting landform. In summary, the Rehabilitation Plan primarily includes plant species selections that are typical of the limestone plain above the Niagara Escarpment in this part of Halton Region. The terrestrial communities to be created include new forests and some cliffs, which are characteristic Escarpment features. A key theme in the Ecological Enhancement Plan (EEP) and Rehabilitation Plan is to use plant species that are characteristic of, and complementary to, the Escarpment landscape. There are some exceptions, but these are mainly in relation to the island features that will be created and essentially function as shoreline habitats. The lake feature is an essential part of the rehabilitated condition, to provide passive groundwater support and protect adjacent water-dependent features. The wetlands, shorelines and islands were designed to provide a range of naturalized habitats and features that will increase local biodiversity. In GEC's opinion, the NEP and ROP policies with respect to quarry rehabilitation and landscape compatibility have been satisfied to a high degree. **Reference:** Riley, J.L., J.V. Jalava and S. Varga. 1996. Ecological Survey of the Niagara Escarpment Biosphere Reserve. Volume I. Significant Natural Areas. Volume II. Technical Appendices. Ontario Ministry of Natural Resources, Southcentral Region, Peterborough, Ontario. Open File Site Report SR 9601. v + 629 pp., vii + 310 pp.	
25.	Within the Geology and Water Resources Assessment Report it is stated that some of the key wetlands are within the historic zone of influence of the Main, North Quarry and East Cell. Based on this, the proposed extension may cause additional impacts within its zone of influence, therefore, additional target levels are required, and further mitigation measures may be needed to ensure there will be no negative impacts to the regulated wetlands form and functions.	Level 1 and 2 Natural Environment Technical Report and Environmental Impact Assessment Sections 16.2.1.4 a and 17.4 Cumulative Effects (Pages 169 and 185)	CH	The potential for negative impacts to wetlands if the MQEE proceeds without mitigation measures is clearly recognized in the NETR & EIA, as well as the GWRA. To address this potential for impacts and to enhance the existing condition of certain wetlands, a comprehensive program of mitigation and monitoring is proposed as part of the MQEE Extension, including appropriate additional target levels. It is not proposed to extract the MQEE in the absence of suitable mitigation and monitoring measures. Please also refer to the response provided for Comment #12 in the AMP Addendum Comment Table.	On January 1, 2023, Ontario Regulation 596/22 came into effect. As a result, technical review services for planning and development applications previously provided by Conservation Halton (CH) under Memorandums of Understanding with municipalities (e.g., technical reviews related to natural heritage and select aspects of stormwater management) can no longer be provided. O. Reg. 596/22 does not affect CH's mandatory programs or services. CH has only reviewed this comment based on natural hazard, and wetland matters, per Ontario Regulation 686/21 and Ontario Regulation 162/06. Based on the meetings and discussions held on

	JART Comments (December 2022)	Reference	Source of Comment	Applicant Response (Jan 2023)	JART Response (June 2023)
					February 3, 2023, and March 3, 2023, as well as the memo entitled “Supplemental Monitoring Wells and Triggers”, dated March 3, 2023, provided for review, CH can confirm this comment has been addressed from a regulatory perspective. We defer any remaining natural heritage related comments to the other JART members to confirm whether it has been addressed. Sarah Mainguy, NSE has reviewed Dufferin’s response and provided the following JART response: The response is acceptable (NSE) Norbert Woerns has reviewed Dufferin’s response and provided the following comment. The response seems reasonable
26.	We recommend a screening table be included that provides a full complement of SWH present within the MQEE area and Natural Environment Study area that incorporates all components in the SWH Ecoregion Criteria Schedule 7E, 2015 on the confirmed and candidate SWH identified, impacts to the ecological functions characterized to ensure the mitigation measures proposed are appropriate and ensure no negative impacts to natural heritage features and their ecological functions.	Level 1 and 2 Natural Environment Technical Report and Environmental Impact Assessment Section 9.0 Significant Wildlife Habitat (Page 83)	CH	Please note that the MQEE is located in Ecoregion 6E. A comprehensive assessment of Significant Wildlife Habitat (SWH) was undertaken and documented in Section 9 of the NETR & EIA and as mapped on Figures 31 to 35. The primary resource for determining what qualifies as Significant Wildlife Habitat is the Significant Wildlife Habitat Technical Guide (SWHTG) prepared by OMNR (2000). OMNRF (2015) has also prepared Significant Wildlife Habitat Ecoregion Criteria Schedules (SWHECS) that may be used to assist in determining what constitutes Significant Wildlife Habitat. The Natural Heritage Reference Manual (NHRM) (OMNR 2010) states that the SWHECS are a resource that may be used to determine which features qualify as Significant Wildlife Habitat, but that the SWHTG “is still the authoritative source for the identification and evaluation of Significant Wildlife Habitat”. GEC has applied the SWHECS for Ecoregion 6E where it was appropriate to do so (e.g., Bat Maternity Colonies, Amphibian Breeding Habitat [Woodland], Woodland Area-sensitive Bird Breeding Habitat). If CH has any outstanding concerns with respect to SWH, then specific details of these concerns should be provided to Dufferin for consideration.	On January 1, 2023, Ontario Regulation 596/22 came into effect. As a result, technical review services for planning and development applications previously provided by Conservation Halton (CH) under Memorandums of Understanding with municipalities (e.g., technical reviews related to natural heritage and select aspects of stormwater management) can no longer be provided. However, to facilitate the transition of our review to other JART members, CH has reviewed the response and based on the meeting held on January 24, 2023, can confirm that this comment has been addressed.
27.	We recommend consultation with MNRF to determine if the wetland significance of unevaluated wetlands U1 and W56 should be further evaluated from a complexing perspective as they both are within close proximity to the Halton Escarpment Wetland PSW Complex.	Level 1 and 2 Natural Environment Technical Report and Environmental Impact Assessment,	CH	Please see response to Comment 7. As indicated in Dufferin’s July 22, 2022, responses to ARA objection letters from the agencies, Wetland U1 is being treated as Provincially Significant for planning purposes. The ARA Site Plans were updated to reflect this.	See response to Comment #26 above.

	JART Comments (December 2022)	Reference	Source of Comment	Applicant Response (Jan 2023)	JART Response (June 2023)
		Section 5.5 Wetland Characterization, (Page 43)		See **Tab B** (Updated ARA Site Plans). Shapefiles for Wetlands U1, V2 and W56 were provided to Aurora District MNRF on November 21, 2022.	
28.	The boundary delineation for wetland U1 was completed on Wednesday, August 10th with CH staff, North South Environmental, and Goodban Consulting. Minor modifications to Dufferin's previously staked wetland boundary were completed by moving some of the stakes to better represent the wetland vegetation community and establish CH's regulatory limits. A memo entitled, "MQEE Wetland Boundary Review – August 10, 2022 Site Visit" dated August 29th, 2022, prepared by Goodban Consulting was provided regarding the updated wetland staking exercise and adjusted boundary limit. Upon review of this memo, CH does not have any concerns and agree with the adjusted limit of extraction in response to the adjusted boundary limits for wetland U1. Update all drawings, report figures and the proposed site plan to accurately show the updated boundary limits for wetland U1 and revised limits of extraction.	Level 1 and 2 Natural Environment Technical Report and Environmental Impact Assessment	CH	The ARA Site Plans have been updated to reflect the minor changes made to the Significant Woodland boundary and Wetland U1 boundary resulting from the August 8 and 10, 2022, site visits. Please see **Tab B** for the updated ARA Site Plans.	On January 1, 2023, Ontario Regulation 596/22 came into effect. As a result, technical review services for planning and development applications previously provided by Conservation Halton (CH) under Memorandums of Understanding with municipalities (e.g., technical reviews related to natural heritage and select aspects of stormwater management) can no longer be provided. O. Reg. 596/22 does not affect CH's mandatory programs or services. CH has only reviewed this comment based on natural hazard, and wetland matters, per Ontario Regulation 686/21 and Ontario Regulation 162/06. Based on the review of the updated ARA Site Plan, CH can confirm that this comment has been addressed from a regulatory perspective. We defer any remaining natural heritage related comments to the other JART members to confirm whether it has been addressed. Sarah Mainguy, NSE has reviewed Dufferin's response and provided the following JART response: The response is acceptable (NSE)
29.	We recommend conducting targeted turtle basking or nesting surveys to provide a comprehensive characterization of potential habitat present to identify and address potential negative impacts to ensure the mitigation measures and habitat enhancements proposed are appropriate.	Section 4.2.2 (Page 13)	CH	In North-South Environmental's (NSE) May 2, 2022, letter report to Halton Region, which was not originally made available to Dufferin, the following comment was made: *"The surveys of this proposed extension have been comprehensive and conducted in suitable weather conditions and times. The only exception is that surveys for basking turtles were not conducted. Turtle basking surveys can reveal turtle overwintering habitat if turtle surveys are conducted early in the spring. The omission of turtle surveys should be explained, as it appears possible that some of the areas of standing water could support turtles."* In NSE's September 13, 2022, updated letter report, which was provided to Dufferin, the following was noted:	See response to Comment #26 above.

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				"This comment is no longer relevant. Now that we have seen the site, we understand that turtle overwintering habitat is not present on the proposed extension."	
30.	This section indicates that if the final lake level is high enough to support wetlands and sufficient seasonal fluctuations the groundwater recharge system operation will be discontinued. Please clarify the expected monitoring duration to ensure the lake levels are sufficient to ensure the wetlands form and function are maintained post extraction.	Section 10.3.3.2 (Page 70)	CH	The section and page number referenced do not correspond to those in the NETR & EIA. The AMP requirements for MQEE rehabilitation are listed in AMP Addendum Part I, Section 3.2 and Section 3.3 (MQEE Rehabilitation). These requirements include confirmatory studies prior to the completion of extraction and following lake filling to ensure the lake level and other mitigation measures are suitable optimized. AMP Addendum Part I, Table 1 provides a summary of AMP Addendum monitoring requirements. During the post lake filling period, water levels at trigger wells and in wetlands with targets will continue for a minimum of 3 years post lake filling then it will cease if appropriate. There is a contingency for long-term monitoring program if ongoing seasonal recharge is required. As described in AMP Addendum Part II, Section D.4.5.3, during the final rehabilitation and lake-filling stage, wetland ecology monitoring surveys will be conducted annually for Wetlands U1 and W36, and every two years for Wetlands W41, W46a, W46b and W56. Once the lakes are at their final elevations, data will be collected annually for an additional 3 years. The ecological monitoring frequency may be refined based on the results of the data collection.	On January 1, 2023, Ontario Regulation 596/22 came into effect. As a result, technical review services for planning and development applications previously provided by Conservation Halton (CH) under Memorandums of Understanding with municipalities (e.g., technical reviews related to natural heritage and select aspects of stormwater management) can no longer be provided. O. Reg. 596/22 does not affect CH's mandatory programs or services. CH has only reviewed this comment based on natural hazard, and wetland matters, per Ontario Regulation 686/21 and Ontario Regulation 162/06. Based on the response and discussions during the January 24, 2023 meeting, CH can confirm that this comment has been addressed from a regulatory perspective. We defer any remaining heritage related comments to the other JART members to confirm whether it has been addressed. Sarah Mainguy, NSE has reviewed Dufferin's response and provided the following JART response: The response is acceptable (NSE) Norbert Woerns has reviewed Dufferin's response and provided the following comment: The response seems reasonable.
31.	Without detailed surveys completed for the woodland within the Cox Tract (West of the extraction area), it is difficult to confirm that JESA habitat is not present. Therefore, we recommend conducting additional surveys to confirm the potential migration and dispersal habitat of the Jefferson Salamander and Unisexual Ambystoma (Jefferson Salamander dependent population) to the west of the extraction area.	Section 16.1.2.1, Extraction Footprint (Page 153)	CH	There are no vernal pools or wet areas of any kind in the northeast portion of the Cox Tract. It is entirely upland and mainly comprises conifer plantations established in 1951 on what was formerly agricultural land. Please see the response to Comment 3.	See response to Comment #26 above.
32.	Figure 42b Simulated Water Level Change- Rehabilitation Condition: The Significant woodland located between the North and Main Quarry shows an increase water level ranging from 5.00 to 0.20m. Include additional discussion on potential impacts, as there is no interim condition proposed for the woodland.	16.2.1.2 Groundwater Assessment	CH	The ground surface elevation in the Cox Tract near the Townline Road allowance is 336 to 344 mASL. The maximum depth of extraction closest to Cox Tract is 302.6 to 302.9 mASL. The existing water table is 327.6 to 327.9 mASL Under the rehabilitation condition the predicted 5.00 m increase in the water table, up to around 332.5 mASL, will still be 4.5 to 11.5 mASL below ground surface.	See response to Comment #26 above.

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				Closer to the existing haul road, the water table increase is much smaller. Considering the above, no negative impacts on the Cox Tract are anticipated as a result of the predicted changes in the water table under the rehabilitation condition.	
33.	Figure 42a and 42b: There is a decrease in water level conditions for Wetland U1 during the proposed mitigation (interim period) Please provide discussion on the proposed conditions in the interim (during extraction) and after rehabilitation for this wetland. Please update the figures and discuss this in the report.	16.2.1.2 Groundwater Assessment	CH	Figure 42a shows the predicted groundwater level changes during the interim period. Surface water level targets were established for Wetland U1, as described in Section 13.1.3 of the NETR & EIA, and Part II, Section B.3 of the AMP Addendum. The proposed preliminary surface water targets for Wetland U1 are shown on Figure B.2 of the AMP Addendum. Surface water targets for Wetland U1 will be achieved during the interim period using diffuse discharge, similar to the mitigation for Wetlands W7, W8 and V2 in the East Cell. The continued use of diffuse discharge for Wetland U1 may be necessary under the rehabilitation condition. It is not necessary to update the figures. The NETR & EIA, Geology and Water Resources Assessment Report and AMP Addendum all provide extensive discussion on the wetland characterization for Wetland U1, as well as the proposed mitigation under both the interim and final rehabilitation conditions.	See response to Comment #30 above. Sarah Mainguy, NSE has reviewed Dufferin's response and provided the following JART response: The response is acceptable (NSE) Norbert Woerns has reviewed Dufferin's response and provided the following comment: The response seems reasonable.
34.	The Level 1 and 2 NETR and EIA (Goodban 2021b) identified a confirmed Jefferson Salamander and Unisexual Ambystoma breeding pond contained within the licensed area of the MQEE named as wetland U1. The NETR also identified another confirmed Jefferson Salamander and Unisexual Ambystoma breeding pond breeding pond, known as wetland V2, that occurs just outside of the licensed area boundary to the north and northeast of the proposed extraction area limit.	General	Matrix Solutions	This comment does not provide a specific question, only statements and assumptions. **Tab D** Figure 1 illustrates the buffers and setbacks associated with Wetland V2 which is located within the existing East Cell licence area. Extraction has already occurred in proximity to Wetland V2 and is completed. No evidence of blasting-related effects upon amphibians was observed during routine ecological and water resources monitoring at V2. A 50 m buffer is proposed for Wetland U1, as shown on numerous figures and described in detail in the NETR & EIA. Blasting will not "occur within 50 m of Wetland U1". The limit of extraction-related disturbance is set at 50 m from Wetland U1. A stable 2:1 slope must be established between the ground surface and top of bedrock from that limit, so any blasting will occur at a distance greater than 50 m from Wetland U1. Please also refer to Dufferin's responses provided in the separate *JART Comment Summary Table – Blast Impact Analysis (BIA).*	Clarification of the setback distance from Wetland U1 has been noted, based on additional detail provided which includes the slope. It is assumed that with respect to Wetland V2, the same additional detail regarding the setback (which accounts for the additional slope) is applicable for the southern boundary. With respect to no blasting related impacts to Wetland V1 despite blasting within close proximity of the northern boundary, this observation has been noted. The original comment provided was intended to establish the distance of the wetland boundary in relation to the extraction limit. Clarification has been provided and there is no further comment.

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	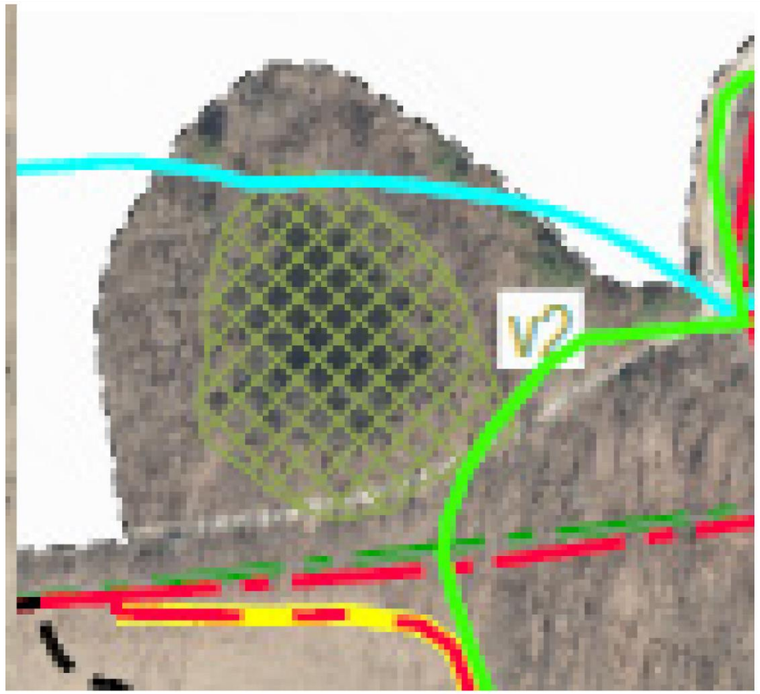 FIGURE 1 Wetland U1 and Wetland V2 in relation to the extraction limit boundary (Figure 36 of the Level 1 and 2 NETR) Figure 40 of the Level 1 and 2 NETR shows that the distance from the edge of the MQEE extraction limit and wetland U1 to be 50 m. For wetland V2, no distance measurement is provided between the edge of the MQEE extraction limit and the wetland boundary in any of the figures provided in in the Level 1 and 2 NETR. However, based on the scale of the mapping provided in the NETR, the distance from the northeast corner edge of the MQEE Extraction Limit to wetland V2 is estimated to be 60 to 70 m. The northern edge of wetland V2 appears to be within 35m of the southern extraction limit of the East Cell. It is not known whether blasting will occur or has already occurred within the northern edge of wetland V2, as this is within an existing approved licensed area in the East Cell. The Level 1 and 2 NETR states that expansion of the quarry will occur with the elimination of the common setback between the East Cell and the MQEE. As blasting is used to break up the rock as part of the excavation process, it is assumed that blasting activities in the East Cell and the MQEE will be conducted near wetland V2 at distances ranging from 35 to 70m. It is also assumed that blasting activities will be conducted within 50 m of wetland U1.				
35.	Although the function of Salamander breeding within wetlands U1 and V2 is documented in the Level 1 and 2 NETR, the Environmental Impact Analysis does not discuss the potential impacts to Jefferson Salamanders and unisexual Ambystoma at all life stages and their habitat in relation to blasting activities. By extension, other animals using the wetlands U1 and V2, such as amphibians, may also be impacted by blasting. Although untested, amphibians with air-containing	General	Matrix Solutions	Please refer to Dufferin's responses provided in the separate *JART Comment Summary Table – Blast Impact Analysis (BIA).*	Response acknowledged that a more specific discussion on blasting impacts has been provided in separate table. The comment refers to inclusion of blasting as part of the extraction process. If the blasting

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	organs, such as lungs, probably have mortality comparable to fish with swim bladders. For impact assessment purposes, the relationship between distance/pressure and fish mortality/injury are likely to be similar. The Level 1 and 2 NETR, the Environmental Impact Analysis should include discussion of the potential impact of blasting associated with all animals residing in wetlands U1 and V2, given the close proximity of blasting activities to directly affect or disrupt their life cycle activities.				process is considered as a potential impact, it is suggested that it be included in the Environmental Impact Analysis and summarized and cross referenced from the table which discusses blasting impacts in further detail.
36.	NEC concurs with and relies upon all of the peer review findings and identified additional areas of concern identified herein as they relate to the requirements of the NEP. Of particular note are the comments respecting cumulative impacts in Item 16 above, as it relates to the conclusions of the PJR. NEC concurs that the cumulative impacts discussion requires additional consideration.	General	NEC	Please refer to the responses provided above with respect to the requirements of the NEP. Please refer to the response to Comment 16, with respect to cumulative impacts.	Response acknowledged. The response to Comment 16 accepted. As our comment 36 refers to our reliance on peer findings on Natual Environment matters overall, we retain an interest in Comments 5, 17 18 and 19.