

Ecological & Environmental Solutions

March 1, 2023

Craig A. Rohe, M.Pl., MCIP, RPP
Senior Planner
Upper Canada Consultants
3-30 Hannover Drive
St. Catharines, ON. L2W 1A3

Dear Mr. Rohe

**Re: Scoped Impact Assessment for proposed Plan of Condominium
 7769, 7751 & 7735 Thorold Stone Road, *City of Niagara Falls***

Ecological & Environmental Solutions (EES, formerly LCA Environmental) was retained by the proponent to prepare a Scoped Impact Assessment to address the impacts associated with a proposed Plan of Condominium for the Subject Lands. The proposed development is located at 7769, 7751, and 7735 Thorold Stone Road in the City of Niagara Falls. The site is between Cardinal Drive and Montrose Road and is located immediately south of Mount Carmel Park.

The site backs onto a tributary of Shriner's Creek, which is located within adjacent Municipally owned lands and is part of Mount Carmel Park. The watercourse and its associated buffer are regulated by the Niagara Peninsula Conservation Authority (NPCA).

A pre-consultation meeting was held in August 2021, and the NPCA and Region of Niagara environmental planning staff requested that a Constraints Analysis be completed for the subject lands with scope of work informed by a site visit. It was noted at the pre-consultation meeting that there may be potential woodlands and unevaluated wetlands on the subject properties.

Site Conditions

EES completed a preliminary site visit to note the existing conditions of the subject properties in advance of arranging a site visit with the review agencies. There are existing residential dwellings on each of the individual lots, located on the east side of the subject lands. Based on aerial imagery, the central portion of 7769 Thorold Stone Road previously contained a small regenerating woodlot, but most of the trees had been removed in advance of EES' involvement. It is unclear when the trees were removed, however, it is possible that this was done to remove Ash trees which had been injured by the Emerald Ash Borer and represented hazardous conditions. The western half of the property has had limited regeneration and does not represent a natural feature.

Presently, the subject properties are largely devoid of vegetation with a few Black Walnut, Ash, and Maple trees scattered through the property. The perimeter of the study area contains native shrubs such as Staghorn Sumac and Grey Dogwood. Site Photos are included in Appendix C.



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EES noted that the area which had been identified by the agencies as a potential unevaluated wetland is a small depression that was likely created during construction of the residential dwelling between 1968 and 2000 to facilitate site grading. The depression is approximately 0.05 hectares and there is no surface connection to the adjacent Shriner's Creek. Vegetation within the depression was limited to new growth of the invasive *Phragmites australis* and wild grape. Based on the existing conditions, including size and lack of surface connection to the adjacent watercourse the area does not provide wetland habitat as it is defined under the Conservation Authority's Act.

Following preliminary review of the subject lands, EES set up a site visit with NPCA and Regional environmental planning staff on October 8, 2021, to review the site conditions and determine the requirements of a scoped EIS. Based on the existing conditions of the site, staff agreed that the study could be scoped to a brief memo which summarizes expected impacts of the proposed development, and provides mitigation measures, including recommendations for restoration of the existing watercourse buffer. Staff noted that most of the watercourse buffer is located on Municipal land and any restoration efforts would require the involvement of the City of Niagara Falls (see email correspondence in Appendix A).

Proposed Development

Site plans for the subject lands include construction of forty-nine condominiums on the subject lands. Twenty-four units are proposed to back onto Shriner's Creek and associated buffer, ten units will be located along the eastern property boundary, and fifteen located central to the site. A 6m roadway will provide access to all units and will include an additional twenty-two parking spaces. A dry pond is proposed in the central portion of the site and a 1.5m perimeter fence is proposed along the northern boundary of the property where it interfaces with Shriner's Creek. Along the eastern property boundary, a 1.8m wood board fence will be installed.

Development within the 15m watercourse buffer is limited to the installation of the perimeter fencing. No building footprints are proposed within the buffer.



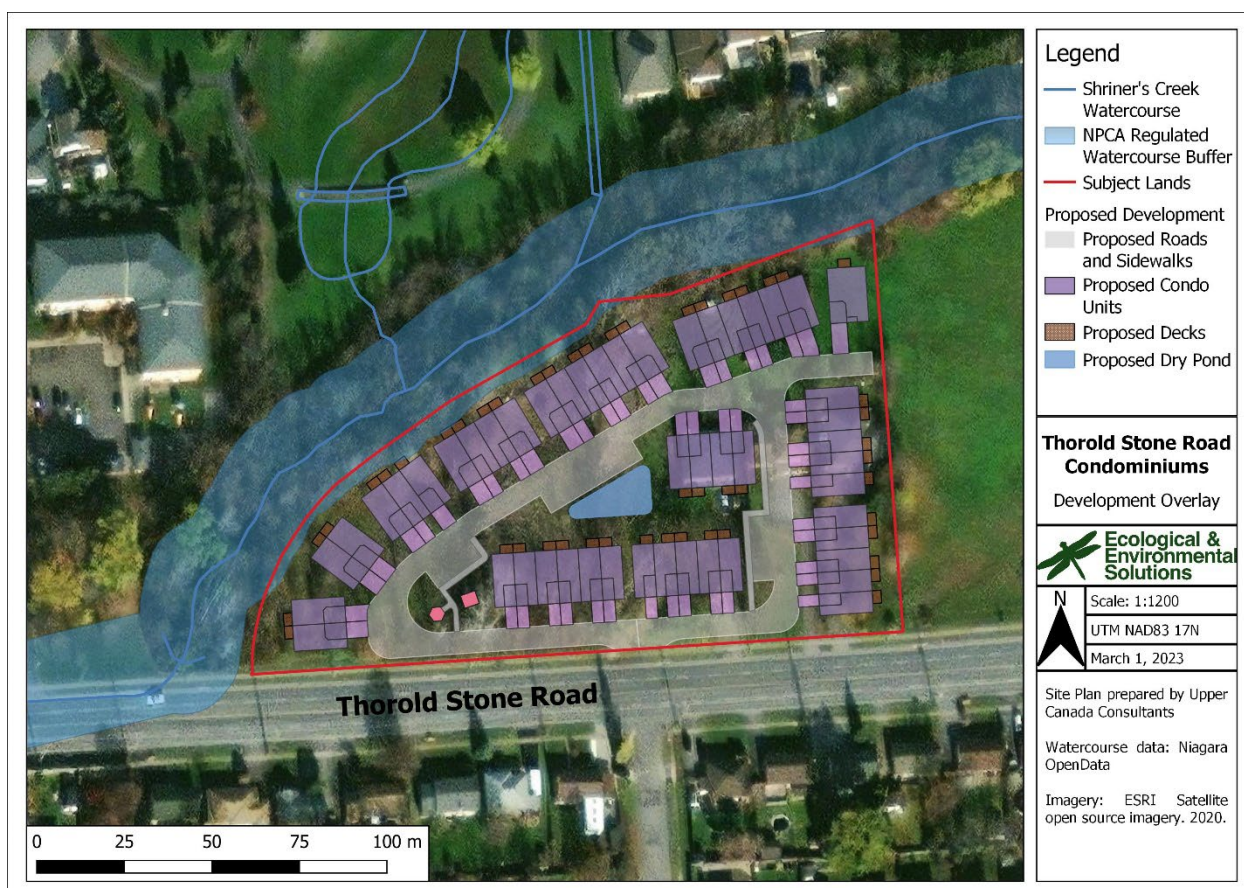


Figure 1: Proposed site plan for the Thorold Stone Road condominiums at 7769 Thorold Stone Road, in the City of Niagara Falls.

Assessment of Impacts

Some vegetation removal will be required to accommodate the proposed site plan and grading but as noted above there is minimal vegetation on the subject lands which will be impacted. Most of the trees for removal will be young Ash and Black Walnuts. There are no anticipated impacts to Species at Risk, Significant Wildlife Habitat, wetlands, or any other important natural features, as the site does not support any features or important functions. The site, which is located within an existing built-up landscape, does not provide any corridor function. While the adjacent watercourse and associated riparian is likely to provide this corridor function, the proposed development will occur within the previously disturbed areas and will not impede wildlife movement through the landscape.

Given the proximity to Shriners's Creek, indirect impacts to the watercourse and associated fish habitat may occur as a result of the proposed development. The creek provides permanent flow conditions and has been classified as Type 2 Important Fish Habitat. The upstream catchment area for the adjacent tributary of Shriners's Creek includes drainage ditches along the QEW, the Mount Carmel Shopping Centre, and drainage from the adjacent Mount Carmel Park lands. The channel is piped at Thorold Stone Road, and daylights again south of Thorold Stone, just west of Brookdale



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Drive where it was realigned through the existing subdivision. Beyond Kalar Road, the Shriner's Creek Conservation area acts as a 31-hectare naturalized stormwater management facility.

According to the Beaverdams and Shriners Creek Watershed Plan (NPCA, 2011) the water quality in Shriner's Creek is impaired with levels of chloride, phosphorous, *E.coli* and suspended solids which exceeded the Provincial Water Quality Objectives. Fish sampling completed in 1993 and 1994 found only 5 species in Shriner's Creek including spottail shiner, bluntnose minnow and common carp.

The subject properties contribute some surface overflow to Shriner's Creek, but the contribution has been altered as a result of existing alterations to grade on the site. Surface overflow from the central portion of the study area is directed to the depression, which holds water for a short period before it infiltrates. While this feature will be removed to accommodate grading and construction, the proposed dry pond is approximately the same size and will provide similar infiltration function following large rainfall events.

Section 9.2.5 of the NPCA Land Use Policy Document regulates watercourse buffers. Policy 9.2.5.1 requires a 10m buffer from Type 2 Important Fish Habitat and Type 3 Marginal Fish habitat. However, it also prescribes a 15m buffer from all permanent flow watercourses. Accordingly, the 15m buffer is applicable to the adjacent Shriner's Creek tributary.

Pursuant to NPCA Policy 9.2.5.2, reductions to a minimum of 5m will be considered dependent on factors including the nature of the proposed development, existing conditions of the buffer area, and potential for restoration. The Site Plan does not propose construction of any dwellings within the existing buffer. The only development proposed within the 15m buffer is a 1.5m chainlink perimeter fence. The fence will be installed at a minimum 9m from the watercourse, however, most of the site will maintain a 10m minimum buffer from the creek to the fence. Impacts associated with the fence are expected to be limited to disturbance from any additional tree removal required and installation of the fence posts.

Additionally, the site will be graded such that the rear lots of the units which back onto Shriner's Creek will convey surface overflow into the creek, through sheet flow. Use of sheet flow will maintain surface flow contributions to Shriner's Creek while dissipating energy and reducing the potential for accelerated erosion which can occur where swales create concentrated flows into the creek.

Some grading is expected to occur within the 15m buffer but will not extend beyond the property boundary and chainlink fence. The existing conditions of the buffer within the study area are degraded, due to previous site maintenance activities including removal of vegetation to the limits of the property. It is assumed that post-construction, the rear lots of the condos backing onto the



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creek will be maintained as manicured lawn, which will provide similar function to the existing conditions of the site.

During construction, demolition of the existing homes and site grading will disturb the earth and result in exposed soils, which could enter the Creek during rainfall event in the absence of sediment and erosion control measures. This would result in an increase in suspended solids within the creek, and in significant storm events, could alter existing downstream habitat.

While it is often expected that increased occupancy will lead to impacts to natural features, there is existing evidence of encroachment and human disturbance such as littering and trampling of vegetation. The installation of the perimeter fence will limit access to the creek through the subject lands and prevent rear yard encroachment. Additionally, occupancy of the subject lands may deter use by other members of the public, reducing the amount of existing disturbance.

Mitigation Recommendations

In order to prevent impacts to the adjacent watercourse and Important Fish habitat, heavy duty silt fencing should be installed along the northern perimeter of the property to prevent eroded soils from entering the creek. Silt fencing shall be installed prior to any construction on the site and maintained until the completion of the development, when the perimeter fence is ready to be installed. Where possible, any excess soil and machinery should always be stored away from the watercourse and its associated 15m buffer.

Any vegetation removal required to accommodate the installation of the silt fencing, perimeter fence, or site grading for the proposed condominiums, should be done carefully such that it doesn't impact any natural vegetation to be maintained within the buffer zone.

A landscaping plan should be prepared for the condominiums which utilizes species native to the Niagara Region. There are opportunities to plant native tree species such as Red/White Oak, Sugar Maple, Shagbark Hickory, or Serviceberry within the open areas around the dry pond and parking areas. Additionally, a landscaping plan should consider planting native shrubs around the pond and along the perimeter fencing such as Dogwood, Sumac, or Chokeberry.

Restoration Opportunities

During their site visit, NPCA and Regional staff noted the potential for restoration of the adjacent Shriner's Creek. It is noted that the Creek is located on the City of Niagara Falls property and all restoration efforts would have to be initiated by City staff.

The City of Niagara Falls has developed a Woodland Management Plan. The management plan provides an inventory and assessment of all city-owned woodlands to identify priority woodlands and recommendations for management or restoration. The woodland associated with the riparian



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habitat of Shriner's Creek in Mount Carmel Park was assessed as part of this Management Plan and was identified as 15th on the priority list based on its priority scoring.

The City's assessment of the woodlot in Mount Carmel Park describes the woodland along the Creek as being impacted by encroachment of the adjacent residential homes (mowed lawns, gardens, fire pits) and abundant invasive species, including Sweetbrier and Multiflora Rose. The recommendations for the Mount Carmel Park Woodlot, as identified in the City of Niagara Falls Woodland Management Plan include removing encroachments and debris from the woodland, expanding the riparian habitat by planting native species, and removing invasives.

Based on our site visits, the riparian buffer is well established along Shriner's Creek within the adjacent property and is composed of native Dogwood shrubs and Box Elder (*Acer negundo*). Although Box Elder is considered non-native in Ontario, it is not recommended to remove the trees or manage as an invasive species. Instead, additional canopy trees should be planted to improve biodiversity and stratification. Native species which would do well in the over-bank areas include Silver Maple, Swamp White Oak, or Pin Oak.

Some portions of the buffer, especially in the upstream portion of the site are sparsely vegetated and planting native trees and shrubs would enhance this area. Suggested tree species have been provided above. Native shrubs which should be considered include Red-osier Dogwood, Grey Dogwood, Sandbar Willow, or raspberry.

Invasive species are present sporadically within this portion of the riparian buffer including Multiflora Rose, Phragmites, and wild grape. These species should be removed prior to planting native species and ongoing monitoring and management should take place. Wild grape has formed a dense layer through some of the tree canopies and threatens to hinder healthy canopy development as well as establishment of native species in the understory or ground layer.

EES noted bank erosion on the right (south) bank of Shriner's Creek. This bank should be monitored to ensure stability and confirm there is no long-term risk of property damage. Potential source of erosion includes the unmitigated inputs from the Mount Carmel Park drainage feature approximately 10m upstream. The proposed development is not expected to contribute to increased erosion of the southern bank of Shriner's Creek because appropriate setbacks have been maintained and the proposed sheet overland flow will dissipate energy as water flows over the riparian zone into the creek.

A summary of the restoration opportunities identified for Shriner's Creek is included in Appendix B, including a suggested planting plan. As stated above the areas for restoration are located on City-owned property and restoration efforts are the responsibility of the City staff. However, the findings and recommendations for restoration confirm those of the assessment carried out as part of the City of Niagara Falls Woodland Management Plan.



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The proposed Plan of Condominium for the subject lands is not expected to have any negative impacts to the adjacent fish habitat associated with Shriner's Creek, provided mitigation measures are incorporated as recommended in this report. This includes the installation of heavy-duty silt fencing along the northern property boundary and storing equipment and material away from the buffer to prevent excess soil from entering Shriner's Creek. Native species should also be incorporated into the landscaping plan for the condominiums.

We trust that the above will satisfy NPCA and Regional environmental staff requirements for a scoped EIS to ensure no negative impacts from the proposed Site Plan. If you have any questions regarding the above information, please do not hesitate to contact us.

Sincerely,



Anne McDonald, B.Sc., EP
Principal Ecologist



Appendix A
Agency Correspondence



From: [Boudens, Adam](#)
To: [Anne McDonald](#)
Cc: ["Jessica Abrahamse \(jabrahamse@npca.ca\)"; Lampman, Cara; "Adam Aldworth \(aaldworth@npca.ca\)"; "Craig Rohe"; Shanks, Amy; Karlewicz, Lori](#)
Subject: RE: Site meeting for 7769, 7751 & 7735 Thorold Stone Road
Date: October 26, 2021 11:50:18 AM

Hi Anne,

A short letter similar to a technical memo that includes the information you are proposing is sufficient.

Please feel free to reach out if any additional questions come up.

Thanks,
Adam

Adam Boudens
Senior Environmental Planner/Ecologist

Planning and Development Services, Niagara Region
1815 Sir Isaac Brock Way, P.O. Box 1042
Thorold, ON L2V 4T7
Phone: **905-980-6000 ext. 3770** Toll-free: 1-800-263-7215
Adam.Boudens@niagararegion.ca

From: Anne McDonald <amcdonald@eesn.ca>
Sent: Wednesday, October 20, 2021 10:10 AM
To: Boudens, Adam <Adam.Boudens@niagararegion.ca>
Cc: 'Jessica Abrahamse (jabrahamse@npca.ca)' <jabrahamse@npca.ca>; Lampman, Cara <Cara.Lampman@niagararegion.ca>; 'Adam Aldworth (aaldworth@npca.ca)' <aaldworth@npca.ca>; 'Craig Rohe' <craig@ucc.com>; Shanks, Amy <Amy.Shanks@niagararegion.ca>; Karlewicz, Lori <Lori.Karlewicz@niagararegion.ca>
Subject: RE: Site meeting for 7769, 7751 & 7735 Thorold Stone Road

CAUTION EXTERNAL EMAIL: This email originated from outside of the Niagara Region email system. Use caution when clicking links or opening attachments unless you recognize the sender and know the content is safe.

Hi Adam,

Thank you for sending this. I just want to clarify – you have indicated the Regional staff are supportive of a Scoped EIS. Are you looking for a full EIS report format, or will a short letter suffice?

Per our discussions, we had planned to provide a brief description of the site, the proposed development and a assessment of the impacts to the adjacent Shriners' Creek and fish habitat. As

part of the letter we will also propose mitigation and a restoration plan for the existing riparian buffer along the property boundary.

Can you please confirm that this approach will satisfy the Region's scoping, and that a full EIS report format is not necessary?

Anne

From: Boudens, Adam <Adam.Boudens@niagararegion.ca>
Sent: October 14, 2021 10:41 AM
To: Anne McDonald <amcdonald@eesn.ca>
Cc: 'Jessica Abrahamse' (<jabrahamse@npca.ca>) <jabrahamse@npca.ca>; Lampman, Cara <Cara.Lampman@niagararegion.ca>; 'Adam Aldworth' (<aaldworth@npca.ca>) <aaldworth@npca.ca>; 'Craig Rohe' <craig@ucc.com>; Shanks, Amy <Amy.Shanks@niagararegion.ca>; Karlewicz, Lori <Lori.Karlewicz@niagararegion.ca>
Subject: RE: Site meeting for 7769, 7751 & 7735 Thorold Stone Road

Hi Anne,

Thanks for coordinating the site visit last week. As discussed on-site, as the majority of the property has been cleared of vegetation with only a few scattered trees remaining, Regional Environmental Planning staff are supportive of scoping the Environmental Impact Study (EIS) to an impact assessment that justifies the proposed watercourse buffer width, including an evaluation of any potential hydrological impacts that the development may have on the adjacent watercourse. The scoped EIS should also identify Restoration opportunities to reinstate the watercourse buffer to a vegetative state, including removal of any invasive species present. Please also ensure that the Final Report provides recommended mitigation measures that will ensure no negative impacts occur to the natural heritage system. Staff note that permissions may be required from the City of Niagara Falls, who own the adjacent property containing the watercourse.

Thanks and let me know if you have any questions.

Adam

Adam Boudens

Senior Environmental Planner/Ecologist

Planning and Development Services, Niagara Region
1815 Sir Isaac Brock Way, P.O. Box 1042
Thorold, ON L2V 4T7
Phone: **905-980-6000 ext. 3770** Toll-free: 1-800-263-7215
Adam.Boudens@niagararegion.ca

From: Anne McDonald <amcdonald@eesn.ca>

Sent: Wednesday, October 6, 2021 10:05 AM

To: Boudens, Adam <Adam.Boudens@niagararegion.ca>

Cc: 'Jessica Abrahamse' (jabrahamse@npca.ca)' <jabrahamse@npca.ca>; Lampman, Cara <Cara.Lampman@niagararegion.ca>; 'Adam Aldworth' (aaldworth@npca.ca)' <aaldworth@npca.ca>; 'Craig Rohe' <craig@ucc.com>

Subject: RE: Site meeting for 7769, 7751 & 7735 Thorold Stone Road

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Great, thanks everyone. We will see on Friday.

Anne

From: Boudens, Adam <Adam.Boudens@niagararegion.ca>

Sent: October 6, 2021 8:41 AM

To: Anne McDonald <amcdonald@eesn.ca>

Cc: Jessica Abrahamse (jabrahamse@npca.ca) <jabrahamse@npca.ca>; Lampman, Cara <Cara.Lampman@niagararegion.ca>; Adam Aldworth (aaldworth@npca.ca) <aaldworth@npca.ca>; Craig Rohe <craig@ucc.com>

Subject: RE: Site meeting for 7769, 7751 & 7735 Thorold Stone Road

Hi Anne,

I can attend this meeting on behalf of the Region. I'll see you on-site this Friday at 11:15am.

Thanks,
Adam

Adam Boudens

Senior Environmental Planner/Ecologist

Planning and Development Services, Niagara Region

1815 Sir Isaac Brock Way, P.O. Box 1042

Thorold, ON L2V 4T7

Phone: **905-980-6000 ext. 3770** Toll-free: 1-800-263-7215

Adam.Boudens@niagararegion.ca

From: Anne McDonald <amcdonald@eesn.ca>

Sent: Tuesday, October 5, 2021 3:19 PM

To: 'Jessica Abrahamse' <jabrahamse@npca.ca>; Lampman, Cara <Cara.Lampman@niagararegion.ca>

Cc: 'Craig Rohe' <craig@ucc.com>; 'Adam Aldworth' <aaldworth@npca.ca>

Subject: RE: Site meeting for 7769, 7751 & 7735 Thorold Stone Road

CAUTION EXTERNAL EMAIL: This email originated from outside of the Niagara Region email system. Use caution when clicking links or opening attachments unless you recognize the sender and know the content is safe.

Hi Jessica,

That would be great. Let's plan for then.

Cara, is anyone from the Region available to meet this Friday at 11:15am?

Thanks,
Anne

From: Jessica Abrahamse <jabrahamse@npca.ca>
Sent: October 4, 2021 4:00 PM
To: Anne McDonald <amcdonald@eesn.ca>; 'Cara.Lampman@niagararegion.ca' <Cara.Lampman@niagararegion.ca>
Cc: 'Craig Rohe' <craig@ucc.com>; Adam Aldworth <aaldworth@npca.ca>
Subject: RE: Site meeting for 7769, 7751 & 7735 Thorold Stone Road

Hi Anne,

Myself and Adam are available Friday at 11:15 am or in the early afternoon.

With Best Regards,

Jessica Abrahamse M.E.S.
Watershed Planner

250 Thorold Road West, 3rd Floor
Welland, On
L3C 3W2
(905) 788-3135 Ext. 235
jabrahamse@npca.ca
www.npca.ca
[NPCA Mapping Tool](#)

Thank you for your email. Due to the COVID-19 pandemic, the NPCA has taken measures to protect staff and public while providing continuity of services. NPCA enforcement, permitting and planning functions are continuing to operate, however there may be delays in receiving responses to inquiries or complaints due to staff restrictions and remote work locations. Updates with regards to NPCA operations and activities can be found on our website at www.npca.ca/our-voice, the NPCA Facebook page at <https://www.facebook.com/NPCAOntario> and on Twitter at https://twitter.com/NPCA_Ontario.

For more information on Permits, Planning and Forestry please go to the Permits & Planning webpage at

<https://npca.ca/administration/permits>.

For mapping on features regulated by the NPCA please go to our GIS webpage at <https://gis-npca-camaps.opendata.arcgis.com/> and utilize our Watershed Explorer App or GIS viewer.

To send NPCA staff information regarding a potential violation of Ontario Regulation 155/06 please go to the NPCA Enforcement and Compliance webpage at <https://npca.ca/administration/enforcement-compliance>.

From: Anne McDonald <amcdonald@eesn.ca>

Sent: October-04-21 10:06 AM

To: Jessica Abrahamse <jabrahamse@npca.ca>; 'Cara.Lampman@niagararegion.ca' <Cara.Lampman@niagararegion.ca>

Cc: 'Craig Rohe' <craig@ucc.com>

Subject: Site meeting for 7769, 7751 & 7735 Thorold Stone Road

Good morning,

I understand a pre-consultation meeting was held for the above properties in the City of Niagara Falls and it was requested by Regional and NPCA staff that a Constraints Analysis be prepared. In order to effectively scope the constraints analysis, I would like to set up a site visit with Regional and NPCA staff to review existing conditions and identify all necessary studies going forward.

Please let me know if you have any availability later this week to meet on site.

Anne

Due to the COVID-19 pandemic, the NPCA has taken measures to protect staff and public while providing continuity of services. The NPCA main office is open by appointment only with limited staff, please refer to the [Staff Directory](#) and reach out to the staff member you wish to speak or meet with directly. Our Conservation Areas are currently open, but may have modified amenities and/or regulations.

Updates regarding NPCA operations and activities can be found at [Get Involved NPCA Portal](#), or on social media at [NPCA's Facebook Page](#) & [NPCA's Twitter page](#).

The information contained in this communication, including any attachment(s), may be confidential, is intended only for the use of the recipient(s) named above. If the reader of this message is not the intended recipient, you are hereby notified that any disclosure of this communication, or any of its contents, is prohibited. If you have received this communication in error, please notify the sender and permanently delete the original and any copy from your computer system. Thank-you. Niagara Peninsula Conservation Authority.

The Regional Municipality of Niagara Confidentiality Notice The information contained in this communication including any attachments may be confidential, is intended only for the use of the recipient(s) named above, and may be legally privileged. If the reader of this message is not the intended recipient, you are hereby notified that any dissemination, distribution, disclosure, or copying of this communication, or any of its contents, is strictly prohibited. If you have received this communication in error, please re-send this communication to the sender and permanently delete

the original and any copy of it from your computer system. Thank you.

Appendix B

Mount Carmel Woodland Restoration Recommendations



Mount Carmel Woodlot Restoration Recommendations

As part of the impact assessment for the proposed plan of Condominium for the properties located at 7769, 7751 & 7735 Thorold Stone Road in the City of Niagara Falls, Ecological & Environmental Solutions (EES) have reviewed the conditions of Shriner's Creek and its riparian buffer which is located within the City-owned Mount Carmel Park Lands.

The City of Niagara Falls prepared a Woodland Management Plan to assess the city owned and operated woodlots and provided recommendations for priority restoration areas. The Mount Carmel woodlot was identified as 15th on the list of priorities, and recommendations for restoration were made based on the existing conditions. The recommendations identified in the Niagara Falls Woodland Management Plan included removal of residential encroachment, removal of litter, and expansion of the riparian zone through removal of invasive species and native vegetation plantings.

The assessment completed by EES as part of a proposed condominium adjacent to Shriner's Creek provides site specific recommendations which conform to the recommendations of the City's Woodland Management Plan. The proposed development will include installation of a chainlink fence along the property boundary to prevent future encroachment into the riparian buffer and priority areas for planting have been identified based on existing riparian conditions.

In addition to managing encroachment and planting native species, EES has identified an area of erosion on the southern bank of Shriner's Creek which should be monitored for stability. Erosion pins should be installed to monitor the rate of erosion and determine the need for further rehabilitation or stabilization of the bank.

Figure 1 below identifies the priority areas for restoration and monitoring. Priority areas were identified based on existing vegetation density and/or presence of invasive species.



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Figure 1: Restoration recommendations for the Mount Carmel Woodlot and Shriners' Creek Riparian buffer, adjacent to the proposed Thorowest Condominiums.

Prior to planting any native vegetation, invasive species including Multiflora Rose, European Common Reed, Sweetbrier, invasive Honeysuckle, and wild grape should be removed. Following removal of invasives, a variety of native trees and shrubs should be planted. A list of recommended trees and shrubs has been included in Table 1, below. In accordance with NPCA density recommendations, plantings should be installed at densities of 3 – 5m off centre for caliper trees, and 1m off centre for shrubs to ensure full coverage of any areas currently devoid of vegetation.



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Table 1: Native species which can be used for native vegetation restoration.

Species Common Name	Species Latin Name	Vegetation Layer	Preferred conditions
Silver Maple	<i>Acer saccharinum</i>	Canopy	Moist, part-shade
Sugar Maple	<i>Acer saccharum</i>	Canopy	Normal to moist, part-shade
Shagbark Hickory	<i>Carya ovata</i>	Canopy	All conditions
Black Walnut	<i>Juglans nigra</i>	Canopy	Moist, sunny
Swamp White Oak	<i>Quercus bicolor</i>	Canopy	Moist, sunny
Pin Oak	<i>Quercus palustris</i>	Canopy	Moist, sunny
Ironwood	<i>Ostrya virginiana</i>	Sub-canopy	Normal, shade
Chokeberry	<i>Aronia melanocarpa</i>	Understory	All conditions
Grey Dogwood	<i>Cornus racemosa</i>	Understory	All conditions
Red-osier Dogwood	<i>Cornus stolonifera</i>	Understory	Moist, sunny
Staghorn Sumac	<i>Rhus typhina</i>	Understory	Normal to moist, sunny
Wild Red Raspberry	<i>Rubus idaeus</i>	Understory	Normal, part-shade
Purple Flowering Raspberry	<i>Rubus odoratus</i>	Understory	Normal, shade
Common Elderberry	<i>Sambucus canadensis</i>	Understory	Moist, part-shade

The restoration recommendations provided above are intended to build on those identified in the City of Niagara Falls Woodland Management Plan, which was developed in partnership with the Niagara Falls Nature Club. The assessment completed by EES confirms the findings and recommendations of the Woodland Management Plan. Specific recommendations for priority areas and native vegetation species have been provided which will enhance the conditions of the Shriner's Creek riparian buffer and watercourse.

We trust that this information will assist in future restoration initiatives for the Mount Carmel Park Woodlot. If you require any additional information, please do not hesitate to contact us.

Sincerely,



Anne McDonald, B.Sc.
Principal



6 - Mount Carmel Park



Table 6- Mount Carmel Park

Site 6 Mount Carmel Park

<i>General Description</i>	Mount Carmel Park contains both a park as well as a naturalized area. It is a remnant Carolinian forest in the Shriner's Creek watershed.
<i>Polygon 1</i>	Polygon1 is a well-used park. People walk the paths to go from condos on Thorold Stone Road to stores on Montrose. Three residents mentioned they were hoping that the city would provide them with benches. The playground and tennis courts were also being used. In the short time that the Nature Club visited the site, they noticed a number of people of all ages using the park. Tall white pines were the most impressive trees. Red Maples and some other native species had been planted.
<i>Polygon 2</i>	Polygon 2 is a naturalized area around the creek, containing some native trees and shrubs. Sweetbrier and Multiflora Rose are the most noticeable invasive species, and they are truly abundant. Encroachments where the park met the backyards were noticed, some of which extended almost all the way to the creek. There were tree plantings, mowed lawns, fire pits and gardens. Dumping of garden debris, lumber and other materials had also occurred.
<i>Recommendations</i>	1. Neighbour encroachments shall be removed from the woodland. In addition to being illegal under the City parks by-law, these encroachments degrade the quality of the natural habitat and may negatively impact the public use of the lands. 2. Extending the riparian zone around the creek by removing invasive species and planting some native species would improve the area and perhaps the health of the creek. 3. To raise awareness of the woodland features and functions, informative signage should be put on site. The signage should be installed near a main trail or access point to the woodland. 4. Litter and debris should be removed from the woodland. Consideration should be made for the installation of waste receptacles at the entrance to the woodland in a convenient location for both the public and maintenance staff. Natural debris from dead trees shall be left on-site but moved off trails.



Figure 1 – Multiflora rose, which is invasive. Credit: NF Nature Club

Mount Carmel Park Plant Species Inventory

Legend:

Layer: 1=Canopy(>10M), 2=Sub-Canopy, 3=Understory, 4=Ground Layer

Abundance: r=Rare, o=Occasional, a=Abundant, d=Dominant

Invasive Species: ai=Aggressive Invasive Species, i=Invasive Species

Old Growth: og=Old Growth

Plantation: p=Plantation Species

Federal Status: t=Threatened, v=Vulnerable, sp=Special Concern

Provincial Status: e=Endangered, t=Threatened, v=Vulnerable

Site Number	Site Name	Polygon	Layer	Species	Abundance	Invasive	Old Growth	Plantation	Federal	Provincial
6	Mount Carmel Park	2	1	Acer negundo	o					
6	Mount Carmel Park	1	1	Acer negundo	o			p		
6	Mount Carmel Park	1	1	Acer platanoides	o	i		p		
6	Mount Carmel Park	1	1	Acer rubrum	r			p		
6	Mount Carmel Park	1	1	Acer saccharum	o			p		
6	Mount Carmel Park	1	1	Fraxinus americana	o			p		
6	Mount Carmel Park	2	1	Fraxinus pennsylvanica	o					
6	Mount Carmel Park	2	1	Fraxinus sp.	o					
6	Mount Carmel Park	1	1	Fraxinus sp.	o			p		
6	Mount Carmel Park	1	1	Gleditsia tricanthos var. inermis.	o			p		
6	Mount Carmel Park	1	1	Hibiscus syriacus	r	i		p		
6	Mount Carmel Park	2	1	Juglan nigra	o					
6	Mount Carmel Park	1	1	Metasequoia glyptostroboides	r			p		
6	Mount Carmel Park	2	1	Morus alba	o					
6	Mount Carmel Park	1	1	Picea pungens	o			p		
6	Mount Carmel Park	1	1	Picea sp.	o			p		
6	Mount Carmel Park	1	1	Pinus sp.	o			p		
6	Mount Carmel Park	1	1	Pinus strobus	o			p		
6	Mount Carmel Park	2	1	Prunus avium	o					
6	Mount Carmel Park	2	1	Pyrus communis	r					
6	Mount Carmel Park	2	1	Salix sp.	o					
6	Mount Carmel Park	1	1	Salix sp.	o			p		
6	Mount Carmel Park	1	1	Tilia cordata	o			p		
6	Mount Carmel Park	2	1	Ulmus americana	r					
6	Mount Carmel Park	2	2	Catalpa speciosa	r					

Site Number	Site Name	Polygon	Layer	Species	Abundance	Invasive	Old Growth	Plantation	Federal	Provincial
6	Mount Carmel Park	2	2	Crataegus sp.	r					
6	Mount Carmel Park	2	3	Cornus racemosa	o					
6	Mount Carmel Park	2	3	Cornus stolonifera	o					
6	Mount Carmel Park	2	3	Lonicera tatarica	o	i				
6	Mount Carmel Park	2	3	Rhamnus cathartica	o	ai				
6	Mount Carmel Park	2	3	Rhus typhina	r					
6	Mount Carmel Park	2	3	Rosa eglanteria	a					
6	Mount Carmel Park	2	3	Rosa multiflora	a	i				
6	Mount Carmel Park	2	3	Rubus sp.	a					
6	Mount Carmel Park	2	4	Agrimonia gryposepala	o					
6	Mount Carmel Park	2	4	Alliaria petiolata	o	ai				
6	Mount Carmel Park	2	4	Allium sp.	r					
6	Mount Carmel Park	2	4	Arctium minus	o					
6	Mount Carmel Park	2	4	Erigeron annuus	o					
6	Mount Carmel Park	2	4	Galium aparine	a					
6	Mount Carmel Park	2	4	Geum canadense	o					
6	Mount Carmel Park	2	4	Glechoma hederacea	o					
6	Mount Carmel Park	2	4	Hesperis matronalis	o	ai				
6	Mount Carmel Park	2	4	Lysimachia nummularia	o	i				
6	Mount Carmel Park	2	4	Parthenocissus sp.	o					
6	Mount Carmel Park	2	4	Ranunculus acris	o					
6	Mount Carmel Park	2	4	Solanum dulcamara	o					
6	Mount Carmel Park	2	4	Solidago sp.	a					
6	Mount Carmel Park	2	4	Vitus sp.	a					

Mount Carmel Park Disturbance Report

Site	Polygon	Disturbance / Extent	Total Score
06 Mount Carmel Park	1	Alien Species / Extent Of Alien Species	4
06 Mount Carmel Park	1	Beaver Activity / Extent Of Beaver Activity	0
06 Mount Carmel Park	1	Browse (e.g. Deer) / Extent Of Browse	0
06 Mount Carmel Park	1	Disease/Death Of Trees / Extent Of Disease/Death	0
06 Mount Carmel Park	1	Dumping (rubbish) / Extent Of Dumping	1
06 Mount Carmel Park	1	Earth Displacement / Extent Of Displacement	0
06 Mount Carmel Park	1	Fire / Extent Of Fire	0
06 Mount Carmel Park	1	Flooding (Pools & Puddling) / Extent Of Flooding	0
06 Mount Carmel Park	1	Gaps In Forest Canopy / Extent Of Gaps	0
06 Mount Carmel Park	1	Ice Damage / Extent Of Ice Damage	0
06 Mount Carmel Park	1	Intensity / Extent Of Logging	0
06 Mount Carmel Park	1	Livestock (Grazing) / Extent Of Livestock	0
06 Mount Carmel Park	1	Noise / Extent Of Noise	1
06 Mount Carmel Park	1	Planting (plantation) / Extent Of Planting	0
06 Mount Carmel Park	1	Recreational Use / Extent Of Recr. Use	4
06 Mount Carmel Park	1	Sugar Bush Operations / Extent Of Operations	0
06 Mount Carmel Park	1	Time Since Logging	0
06 Mount Carmel Park	1	Tracks And Trails / Extent Of Tracks/Trails	9
06 Mount Carmel Park	1	Wind Throw (blow Down) / Extent Of Wind Throw	0
06 Mount Carmel Park	2	Alien Species / Extent Of Alien Species	4
06 Mount Carmel Park	2	Beaver Activity / Extent Of Beaver Activity	0
06 Mount Carmel Park	2	Browse (e.g. Deer) / Extent Of Browse	0
06 Mount Carmel Park	2	Disease/Death Of Trees / Extent Of Disease/Death	0
06 Mount Carmel Park	2	Dumping (rubbish) / Extent Of Dumping	4
06 Mount Carmel Park	2	Earth Displacement / Extent Of Displacement	0
06 Mount Carmel Park	2	Encroachment	6
06 Mount Carmel Park	2	Fire / Extent Of Fire	0
06 Mount Carmel Park	2	Flooding (Pools & Puddling) / Extent Of Flooding	0
06 Mount Carmel Park	2	Gaps In Forest Canopy / Extent Of Gaps	0
06 Mount Carmel Park	2	Ice Damage / Extent Of Ice Damage	0
06 Mount Carmel Park	2	Intensity / Extent Of Logging	0
06 Mount Carmel Park	2	Livestock (Grazing) / Extent Of Livestock	0
06 Mount Carmel Park	2	Noise / Extent Of Noise	1
06 Mount Carmel Park	2	Planting (plantation) / Extent Of Planting	0
06 Mount Carmel Park	2	Recreational Use / Extent Of Recr. Use	4
06 Mount Carmel Park	2	Sugar Bush Operations / Extent Of Operations	0
06 Mount Carmel Park	2	Time Since Logging	0
06 Mount Carmel Park	2	Tracks And Trails / Extent Of Tracks/Trails	0
06 Mount Carmel Park	2	Wind Throw (blow Down) / Extent Of Wind Throw	0

Appendix A

Site Photos



Ecological & Environmental Solutions



Figure 2: View of site clear of vegetation. Facing west, with Shriners' Creek riparian on right side of photo



Figure 3: Photo facing east, showing existing residential dwelling and small depression.



Ecological & Environmental Solutions



Figure 4: Photo taken from northern boundary of property, facing south.





Figure 5: Photo of Shriver's Creek, looking downstream (west).





Figure 6: Photo of erosion on south bank of Shriner's Creek.





Figure 7: Photo of Shriver's Creek looking upstream (east)





Figure 8: Photo of proposed restoration area with sparse riparian vegetation.

