



Grand River  
Conservation Authority

# Grand River Conservation Authority

## Environmental Impact Study Guidelines and Submission Standards for Wetlands

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## 1. Introduction

In March 2003, the Grand River Conservation Authority (GRCA) adopted a new wetland policy to provide a framework for improved wetland protection throughout the Grand River watershed (GRCA 2003). The policy is intended to complement the current Provincial Policy Statement (MMAH 2005) regarding significant wetlands in Ontario, and to promote greater protection of all wetlands throughout the watershed, regardless of their status. This policy states that the GRCA will work with member municipalities to prepare technical guidelines and standards for site-specific environmental impact studies regarding wetlands. The overall purpose of these environmental impact study guidelines is to facilitate GRCA's regulatory and advisory roles with respect to land use planning applications submitted under provincial and federal legislation. The intent of these guidelines is to:

- i. Provide a standardized set of study guidelines specific to wetlands;
- ii. Improve the quality of reports submitted in support of development applications; and
- iii. Facilitate and expedite the GRCA permit/municipal plan review process

The GRCA, in collaboration with local municipalities, supports the development of comprehensive plans that assess the significance of wetlands at a landscape or watershed scale. A comprehensive plan may take the form of a watershed or sub-watershed plan, and qualifies as a Comprehensive Environmental Impact Study if it accomplishes the following:

1. Identify wetland form and functions, benefits and significance;
2. Identify associated surface and groundwater regimes (including associated hydrological and hydro-geological conditions) that sustain wetlands;
3. Identify and prioritize protection/restoration needs and creation/enhancement opportunities;
4. Identify existing or potential linkages to other natural heritage features and habitats;
5. Prescribe guidelines for determining buffers and setbacks; and
6. Develop management recommendations to ensure the long-term sustainability of wetlands.

Comprehensive studies provide general guidelines for future site-specific studies that may be required to address how a particular development will affect wetlands and other natural heritage features such as fish habitat. Comprehensive studies also provide a generalized level of direction for the identification of lands to be protected, criteria to be applied for the identification and protection of natural features and ecological functions, best management practices to avoid impacts from existing and proposed land uses, and programs to promote education, awareness and stewardship. Community or Secondary (District) Plans may also provide a sufficient level of ecological background information needed to assess the significance of natural heritage features and recommend appropriate protection measures.

The Ontario Ministry of Natural Resources (OMNR) is the lead agency for setting criteria and standards for wetland identification and evaluation in Ontario, and has traditionally conducted wetland evaluations. The GRCA regularly collaborates with OMNR, Ducks Unlimited Canada, member municipalities, and other qualified individuals and groups to identify, classify, evaluate, and map wetlands within the Grand River watershed using current standards approved by the Ministry. The OMNR is responsible for mapping boundaries of evaluated wetlands using

existing agency data, orthophotos, field data, and/or other suitable data sources. The GRCA will continue to identify and map unevaluated wetlands, and will notify OMNR about inaccuracies in the boundaries of evaluated wetlands based on air photo interpretation and/or site investigations. However, given the potential for errors in interpreting air photos, a site visit will normally be conducted in order to verify wetland boundaries.

### **1.1 Definition of an Environmental Impact Study**

Within the context of the GRCA's Wetland Policy, an Environmental Impact Study (EIS) is a process that addresses the potential impact of site-specific development on wetlands and supporting hydrological features such as watercourses and groundwater recharge areas. The study should present sufficient information on a proposed development, identify and assess anticipated or potential impacts on wetland features or functions resulting from that development, and specify measures that would avoid or mitigate those impacts. The EIS will often be coordinated with other technical studies (e.g. hydrological, hydrogeological, stormwater management), and will provide recommendations for wetland protection, enhancement, and monitoring whenever possible. There are three types of EIS:

1. A Comprehensive EIS is a landscape scale (usually watershed or sub-watershed) study which identifies natural heritage features for protection, potential development areas, and development setbacks that are ecologically sustainable. Appendix D offers guidance for the investigation, establishment and maintenance of natural wetland buffers and development setbacks from wetlands. The natural heritage or environmental management strategy developed through some watershed, sub-watershed, or secondary (district) plans may in some cases fulfill the requirements of a Comprehensive EIS, and by identifying areas requiring further studies or investigations at a more site-specific level (subdivision or site plan application).
2. A Full EIS is an area or site-specific study prepared in the absence of a comprehensive study to address possible impacts from a development. Due to the lack of guidance from a comprehensive study, the full EIS is typically much more detailed than a scoped study, and will also include statements that address possible negative impacts at a regional scale.
3. A Scoped EIS is an area or site-specific study that addresses issues of particular concern not previously addressed in sufficient detail in a comprehensive study.

Even in the absence of a comprehensive study, a Scoped EIS may be sufficient. The requirement for a scoped versus a full EIS will be dependent upon whether or not a Comprehensive EIS (e.g. an approved sub-watershed study) exists, the nature and extent of the proposed development, and perceived degree of environmental impact. In some cases (e.g. a minor variance), the requirement for a scoped EIS may be waived by the GRCA and/or relevant municipality if it is determined at the outset that the proposed development will not have a negative impact on the form or function of a nearby wetland.

## 1.2 Where is an Environmental Impact Study Required?

### *Provincial Policy*

The Natural Heritage component of the Provincial Policy Statement (PPS) states that development and site alteration shall not be permitted in provincially significant wetlands in southern Ontario. Development and site alteration shall not be permitted on adjacent lands that are contiguous to a provincially significant wetland unless it has been demonstrated that there will be no negative impacts on the wetland or on its ecological function. The extent of the adjacent lands may be recommended by the Province or based upon municipal policies which achieve the same objectives (OMMAH 2005). Development or site alteration proposed within 120 metres of a provincially significant wetland will generally trigger the requirement for an EIS.

### *GRCA Wetlands Policy*

The intent of the GRCA's Wetland Policy is to provide a stronger, more systematic approach to wetland protection. The following policy sections provide the standard framework for the implementation of the GRCA's Wetland Policy, and will serve as a generic guideline for the completion of Scoped Environmental Impact Studies specific to wetlands.

**Section 6.2.9:** "Where development is proposed within or adjacent to an unevaluated wetland, the GRCA will request that a wetland evaluation be performed during the pre-consultation phase using the most recent version of the OMNR Wetland Evaluation System."

Proponents should contact GRCA and OMNR prior to initiating a wetland evaluation. Notwithstanding Section 6.2.9 above, GRCA may exercise some flexibility regarding the need for a wetland evaluation. Individual wetland areas should not be evaluated on their own if the unevaluated wetland area in question is within 750 metres of an existing Provincially Significant Wetland Complex or if it can be evaluated as part of a larger, new wetland complex. Typically, a wetland or wetland complex must be 2 ha or larger to be evaluated. With respect to agricultural lands, only lands that have retained the characteristics of a wetland in terms of water, soil and vegetation should be included in the evaluation. In some cases, a complete wetland evaluation may not be feasible for a consultant where the wetland (or wetlands) extend outside the proponent's properties and access permission for the off property lands is not available. Provincially Significant Wetland boundary changes should always be made in consultation with the GRCA and OMNR. These issues are subject to further discussion with the OMNR and GRCA during the pre-consultation phase. In cases where a wetland evaluation is completed, information collected by the consultant will be made available to both GRCA and OMNR.

**Section 6.2.10:** "Where a comprehensive plan is available, the GRCA, in consultation with the affected municipalities, will request a more detailed site-specific study (i.e. a Scoped Environmental Impact Study) to determine the wetland boundary using the most recent OMNR Wetland Evaluation System, appropriate buffers and setbacks using the prescribed guidelines identified in the comprehensive plan, and how the form and functions of the wetlands will be sustained, improved or restored."

**Section 6.2.11:** “Where a comprehensive plan is not available or has not prescribed guidelines for determining buffers and setbacks, the GRCA will request an EIS for development (including new lot lines) **within 30 metres** of a non-provincially significant wetland, except where municipal policies require an EIS within a greater distance from the wetland boundary.”

The GRCA recognizes that municipalities have the ability to prescribe their own requirements for an EIS within Official Plans, Secondary Plans, Community Plans, and through the completion of sub-watershed studies. Therefore, the GRCA reserves the right to adopt municipal EIS guidelines, provided they are more stringent than GRCA’s guidelines.

**Section 6.2.12:** “The GRCA, in consultation with the affected municipalities, will request an EIS for development (including new lot lines) **within 120 metres** of the boundary of a Provincially Significant Wetland or an unevaluated wetland.”

Where required, an EIS will be completed by a qualified ecologist and approved by the GRCA and relevant municipality prior to the approval of an Official Plan amendment, Zoning By-Law amendment, subdivision application, severance, or site plan application when development is proposed entirely or partially within the prescribed distances adjacent to a wetland feature as indicated in the table below:

**Table 1. Areas Adjacent to Wetlands Subject to an Environmental Impact Study\***

<b>Wetland Classification</b>	<b>Distance to Wetland</b>	<b>Policy</b>
Provincially Significant Wetland	Any Adjacent Lands	Provincial Policy Statement
Provincially Significant Wetland	Within 120 metres	GRCA Wetland Policy
Unevaluated Wetland	Within 120 metres	GRCA Wetland Policy
Non-provincially Significant Wetland	Within 30 Metres	GRCA Wetland Policy

\*These are generic guidelines only. Relevant watershed or sub-watershed plans, municipal Official Plans, and the GRCA should be consulted to confirm the area in which a Scoped EIS will be required. The Natural Heritage Reference Manual (OMNR 1999) should be consulted to identify lands adjacent to other significant natural heritage features that may require an EIS.

Where an unevaluated wetland is present, a wetland evaluation will be undertaken to determine the status of the wetland according to the Ontario Wetland Evaluation System for Southern Ontario (OMNR 1993). If the wetland is deemed provincially significant, then an EIS may be required if development or site alteration is proposed within 120 metres of the wetland boundary. If the wetland is deemed non-provincially significant, then an EIS may be required only if development or site alteration is proposed within 30 metres of the wetland boundary.

### **1.3 Pre-Consultation with GRCA**

The EIS will be prepared to the satisfaction of GRCA staff with input from the relevant municipality. Therefore, it is strongly recommended that the development proponent consult with both the GRCA and the relevant municipal planning authority early in the development process in order to review the development proposal and harmonize GRCA and municipal EIS requirements. This initial consultation will also confirm whether or not a wetland evaluation is required and whether or not an EIS is required. A pre-consultation meeting may be held to

ensure that all relevant information, issues, and policies are considered; to identify study parameters; and to identify ecological features and functions that may be affected by development prior to the initiation of such studies. After reviewing a complete application and provided there is no objection from the municipality, the GRCA may in some cases waive the EIS requirement if it concludes that the proposed development (e.g. minor variance, zone changes) will clearly have no impact on a wetland.

The scoping process will occur in consultation with the Region of Waterloo whenever development is proposed within or adjacent to an Environmentally Sensitive Policy Area (ESPA). In some cases, a wetland may occur adjacent to the ESPA. Therefore, the scoping process, which may require a site meeting, should be harmonized with the Region to avoid redundancy.

Scoping identifies the specific information requirements needed to complete an impact assessment. Generally, scoping will address the following:

1. Description of the proposed development for which the EIS will be required;
2. Type of EIS required (scoped or full);
3. Study area boundaries, key ecological features, functions, linkages, and other natural processes that may be affected, directly or indirectly, by development;
4. Information needs and availability of information;
5. Potential impacts (direct and indirect) associated with the proposed development;
6. Means of avoiding or mitigating anticipated impacts; and
7. The nature and extent of additional information or studies that may be required.

An EIS **checklist** has been prepared (see Appendix A) to assist the scoping process, and should be used in conjunction with other pre-consultation checklists that are available on the GRCA website. The purpose of the checklist is to identify study parameters that will be addressed in order to support a proposed development application. The checklist will provide a brief synopsis of the expectations of the GRCA and all other parties involved in the review of proposed development plans. It is anticipated that use of this checklist will help ensure complete submissions, thereby minimizing the need for re-submissions and hence the overall time and effort spent in the review/approval process. The checklist will also provide proponents of small-scale developments, where little or no impact on wetlands is expected, with a simple and cost-effective way to address the technical requirements of the GRCA's Wetland Policy.

The types of small-scale development for which the scoping checklist may be used include lot severances, variances, site-specific zone changes, and official plan amendments. The scoping checklist (Appendix A) should be completed jointly as necessary by a qualified ecologist, the relevant municipality, and/or the GRCA, and should be submitted as part of the application and subsequently attached to the EIS report. All applicable GRCA checklists should be completed by individuals bearing appropriate credentials. Once the scoping checklist has been completed and approved, the consultant may be asked to develop Terms of Reference (TOR) to demonstrate how all of the checklist items will be addressed in the EIS report. Depending on the size and complexity of the development, a meeting may be held to develop and agree upon the TOR for the EIS. The agreed upon TOR should also be submitted as an appendix to the EIS. The scope

of work should not change unless there has been an extraordinary change in circumstances, and the change in scope is mutually agreed upon. The following **submission guidelines** will give the proponent specific direction and guidance as to the anticipated format of the EIS report, which must also adhere to specific **technical standards** (see Appendix B).

## **2. Submission Guidelines**

### **2.1 Biophysical Description of Site**

This section of the EIS will provide a description of the existing natural environment that will be affected or might reasonably be affected, either directly or indirectly, by the proposed development or change in land use. This section will summarize relevant background studies and reports (e.g. sub-watershed, hydrological, geo-technical, etc.), and report the results of any field work conducted during the current study. Study area, survey dates, and field methodology will be discussed in detail. Wetland mapping may be obtained directly from GRCA. Detailed information on provincially significant wetlands, rare species, and Areas of Natural and Scientific Interest (ANSIs) may be obtained directly from OMNR District Offices. Proper citations are to be provided for all existing information. All wetland features, functions, issues, and concerns that were identified on the EIS checklist (Appendix A) will be addressed in this section. This section of the report should provide clear descriptions of all wetlands and adjacent upland communities on site using the Ecological Land Classification System for Southern Ontario (Lee et al. 1998). These vegetation units are to be superimposed onto an air photo or a base map of a scale not greater than 1:5000. Ideally, a scale of 1:2000 would provide the level of detail needed to evaluate a typical grading plan. Watercourses and surveyed flood lines should be mapped as well. **Wetland boundaries will be flagged in the field by a qualified wetland biologist, verified by GRCA staff, total-station surveyed by a qualified land surveyor, and mapped on all draft plans and final site plans.**

### **2.2 Description of Proposed Development**

This section will provide details about **existing** conditions and **proposed** development on the subject property, and is divided into two subsections for clarity.

#### **2.2.1 Inventory of Existing Conditions**

This section will elaborate on the current planning context by discussing current land uses and land use policy and regulations on and adjacent to the subject property. A general location map and a site map will be mandatory. A detailed site plan will be required to illustrate any **existing** structures and natural features (see Section 2.1) such as:

- main roads;
- lot lines;
- all building(s) and structures located within the study area;
- laneways;
- right-of-ways or easements;



- septic system(s);
- well(s) or waterline location;
- drainage tiles; and
- on-site and/or surrounding natural heritage features (i.e. wetlands, woodlots, and watercourses) or areas

### **2.2.2 Proposed Development Conditions**

This section will provide information about the proposed development and/or site alteration in order to enable a full assessment of potential impacts associated with various development alternatives and methods. The level of detail required will be determined during the pre-consultation meeting. Details regarding stormwater management, erosion and sedimentation, and/or landscaping plans may be submitted as part of the detailed site design prior to grading, provided that the EIS sets out conditions that must be met prior to approving development plans. Detailed site plans will illustrate surveyed wetland boundaries and associated natural features (e.g. watercourses, recharge/discharge areas) in relation to developed areas in order to facilitate review of the application. The final site plan should provide sufficient detail, which may include but is not necessarily limited to the following:

- a detailed map illustrating proposed building envelope(s), the location of any new building(s) or structures, new lot lines and fences, stormwater management areas, drainage features (e.g. swales, culverts, tile beds), septic system areas, service areas, driveways and parking lots, utility corridors, maintenance routes, public trails
- erosion and sedimentation control measures;
- grading limits and post-grading contours;
- extent of proposed vegetation removal/retention;
- surrounding natural heritage features or areas;
- development or land use alternatives;
- timing of construction, including any phasing of development;
- all proposed activities associated with the development that may have environmental impacts (e.g. removal of vegetation, grading, filling, draining, and other construction activities); and
- other features as requested through the EIS pre-consultation.

This list requires information that may not be available during the Draft Plan stage of a proposed Plan of Subdivision and which may therefore be omitted from the initial EIS report. Many of these elements can be discussed or described in a general or conceptual manner in the EIS, with the understanding that further detail will be provided when detailed grading information and building envelope information is available. Impacts can be clearly stated in the EIS with final details and impacts clarified during detailed design stages.

### **2.3 Assessment of Potential Impacts**

This section will address impacts that might reasonably be expected to occur as a result of development, and that are to be avoided whenever possible. Impacts may be **direct** and immediately evident (e.g. wetland filling/drainage, woodlot clearing, vegetation removal) or **indirect** and not immediately apparent at the time of initial development (e.g. downstream sedimentation, reduced base flow, change in hydroperiod, eutrophication, noise/light disturbance, invasion of exotic or invasive species, loss of biodiversity). The impact assessment will describe negative or positive impacts associated with the development proposal, including any impacts identified by concurrent hydrogeological and/or geotechnical studies by addressing:

- the potential for impacts on specific wetland features and/or functions;
- the spatial extent, magnitude, frequency, and duration of wetland impacts (direct and indirect);
- the extent and degree to which lands adjacent to wetlands will be affected; and
- the possibility of cumulative impacts.

### **2.4 Recommendations for Wetland Protection and/or Enhancement**

Section 6.2.6 of the GRCA's Wetlands Policy clearly states that "where the GRCA has jurisdiction under the Conservation Authorities Act, it will protect wetlands from construction and placement of fill using the Fill, Construction and Alteration to Waterways Regulation. Notwithstanding Section 6.2.6, the GRCA may grant approval of an application for a Fill, Construction, and Alteration to Waterways Permit only when certain conditions have been met. Please refer to section 6.2.7 of the GRCA Wetlands Policy for specific details.

This section of the EIS will demonstrate how the development proposal complies with the GRCA's Wetlands Policy. Wetland avoidance and protection measures should be clearly identified and evaluated with respect to all development alternatives being considered as part of the development proposal. Proposed development, protection efforts, and mitigation measures should not result in interference with the wetland in question. This section of the EIS report will thus address the following:

- GRCA's Wetlands Policy, including
- opportunities for wetland protection and/or enhancement;
- impacts that can and cannot be avoided or mitigated under various development scenarios;
- detailed description of the proposed avoidance, protection, and/or mitigation measures; and
- development setbacks, wetland buffer zones, and other development constraints and environmental protection opportunities (see Appendix D)

## 2.5 Monitoring

This section will identify any monitoring requirements. There are two types of monitoring (OMNR 1999):

1. **Compliance Monitoring** – ensures that the proponent has implemented all mitigation measures identified in the EIS, and that the measures are performing as intended. This monitoring will be undertaken before, during, and after construction.
2. **Effectiveness Monitoring** – determines the adequacy of the protection or mitigation measures identified in the EIS. Such monitoring may be particularly appropriate where there is uncertainty as to the efficacy of established mitigation measures or if new and untested mitigation measures are used.

Monitoring must be able to detect environmental change that can be attributed to work or activity related to the development, and for which some anticipated level of mitigation may be employed if necessary. Monitoring may be established as a condition of approval for consents, subdivisions, Environmental Assessments, and aggregate licences, and will provide GRCA and other planning authorities with an opportunity to review monitoring results before proceeding with subsequent phases of development, in accordance with appropriate conditions of approval. Examples of such conditions could include:

- Adoption of planning and regulatory instruments such as zoning, site plans, and development agreements;
- Submission of certain infrastructure (e.g. stormwater management facility) designs in accordance with accepted standards; and
- Registration of conservation easements on the subject property

Some municipal policies specify 2 years of pre-development monitoring. In some cases, long-term post-development monitoring programs may be required, particularly to address potential impacts on surface or groundwater quality or quantity, which in turn may influence the form and/or function of nearby wetlands. Remedial steps may be necessary where the results of monitoring indicate that actual impacts are greater than those predicted initially. This section will clearly specify the need for, type, and frequency of environmental monitoring and reporting, and indicate the parties responsible for such an undertaking. If long-term monitoring is warranted, a reasonable monitoring time frame will be established, as well as a mechanism for continued monitoring by the municipality.

## 2.6 Recommendations and Conclusions

Since the EIS is typically submitted during the Draft Plan stage of a proposed subdivision development, detailed information regarding stormwater management, erosion and sediment control, and buffer plantings is typically not presented in the EIS. Rather, the EIS should identify the proposed locations and conceptual nature of such protection/enhancement measures.

Detailed site plans will be submitted to and approved by GRCA during the detailed design stage, or as soon as they become available.

This section of the EIS report will:

- Identify and provide the rationale for the preferred development alternative;
- Summarize any potential impacts to the wetland and/or associated natural heritage features on and off the site;
- Summarize wetland protection and/or enhancement measures to be implemented;
- Indicate the need for a new, amended, or consolidated EIS or Environmental Implementation Report (EIR) if significant modifications to the original application are being proposed, or if additional studies are expected to be completed after the original EIS is submitted

Attach all site plans and designs supporting all of the following, if applicable:

- wetland boundary and appropriate buffers and development setbacks;
- preliminary stormwater management plans;
- preliminary erosion and sediment control plans; and
- preliminary vegetation planting and management plans for proposed restoration or buffer areas (may be submitted as part of an Environmental Implementation Report)

If an amended EIS is being submitted, indicate any modifications to the original proposal. Such modifications may include:

- a modification to the concept plan or site plan;
- a new development requirement, environmental constraint, or potential impact; and
- other wetland protection measures recommended by GRCA and municipal authorities.

## APPENDIX A EIS Scoping Checklist

Type of Application: \_\_\_\_\_  
 Proponent or Applicant: \_\_\_\_\_  
 Location: \_\_\_\_\_  
 Comprehensive Plan (if available): \_\_\_\_\_

Check **first** box if sufficient information is available; Check **second** box if to be addressed by current EIS)

<input type="checkbox"/> <input type="checkbox"/>	<b>Natural Heritage Designations and Zoning:</b>	
	<input type="checkbox"/> <input type="checkbox"/> Provincially Significant Wetland	<input type="checkbox"/> <input type="checkbox"/> Significant Wildlife Habitat
	<input type="checkbox"/> <input type="checkbox"/> Non-provincially Significant Wetland	<input type="checkbox"/> <input type="checkbox"/> Significant Areas of Natural and Scientific Interest (ANSI)
	<input type="checkbox"/> <input type="checkbox"/> Unevaluated Wetland	<input type="checkbox"/> <input type="checkbox"/> Fish Habitat
	<input type="checkbox"/> <input type="checkbox"/> Threatened or Endangered Species Habitat	<input type="checkbox"/> <input type="checkbox"/> Other Designations (e.g. ESA, ESPA, Core Greenlands, etc.)
	<input type="checkbox"/> <input type="checkbox"/> Significant Woodland	
	<input type="checkbox"/> <input type="checkbox"/> Significant Valleyland	
<input type="checkbox"/> <input type="checkbox"/>	<b>Geology, Hydrology, and Hydrogeology:</b>	
	<input type="checkbox"/> <input type="checkbox"/> Sub-watershed or Wetland Catchment Boundary	<input type="checkbox"/> <input type="checkbox"/> Surface Drainage Pattern, including all permanent and intermittent watercourses
	<input type="checkbox"/> <input type="checkbox"/> Geomorphology & Topographic Features	<input type="checkbox"/> <input type="checkbox"/> Groundwater Recharge/Discharge Areas
	<input type="checkbox"/> <input type="checkbox"/> Soils (surface and subsurface)	<input type="checkbox"/> <input type="checkbox"/> Hydrogeologic Conditions
	Specify timing of any field studies to be done:	<input type="checkbox"/> Winter, <input type="checkbox"/> Spring, <input type="checkbox"/> Summer, <input type="checkbox"/> Fall
<input type="checkbox"/> <input type="checkbox"/>	<b>Natural Hazard Lands:</b>	
	<input type="checkbox"/> <input type="checkbox"/> Surveyed Flood Plain	<input type="checkbox"/> <input type="checkbox"/> Erosion Hazards
	<input type="checkbox"/> <input type="checkbox"/> Valley Lands	<input type="checkbox"/> <input type="checkbox"/> Poorly Drained Soils
<input type="checkbox"/> <input type="checkbox"/>	<b>Biological Inventory:</b>	
	<input type="checkbox"/> <input type="checkbox"/> Wetland Evaluation (see OMNR 1993)	
	<input type="checkbox"/> <input type="checkbox"/> Wetland Boundary Delineation (see OMNR 1993)	
	<input type="checkbox"/> <input type="checkbox"/> Ecological Land Classification (see Lee et al. 1998)	
	<input type="checkbox"/> <input type="checkbox"/> Wildlife Inventory (see OMNR 1999)	
<input type="checkbox"/> <input type="checkbox"/>	<b>Complete this section if field work is required</b>	
	<b>Taxonomic Group:</b>	<b>Inventory Date:</b>
	<input type="checkbox"/> Amphibians.....	<input type="checkbox"/> March, <input type="checkbox"/> April, <input type="checkbox"/> May, <input type="checkbox"/> June
	<input type="checkbox"/> Reptiles.....	<input type="checkbox"/> June, <input type="checkbox"/> July, <input type="checkbox"/> August, <input type="checkbox"/> September
	<input type="checkbox"/> Birds.....	<input type="checkbox"/> May, <input type="checkbox"/> June, <input type="checkbox"/> July, <input type="checkbox"/> August
	<input type="checkbox"/> Plants	Specify:
	<input type="checkbox"/> Mammals.....	Specify:
	<input type="checkbox"/> Rare Species or Subspecies.....	Specify:
	Specify:	
<input type="checkbox"/> <input type="checkbox"/>	<b>Complete this section if existing information is available</b>	
	<input type="checkbox"/> <input type="checkbox"/> Significant Wildlife Habitat (see OMNR 2000):	<input type="checkbox"/> Raptor Perching/Feeding/Nesting Area
	<input type="checkbox"/> Critical Habitat for Species At Risk	<input type="checkbox"/> Forest with springs, seeps, or hummocky topography
	<input type="checkbox"/> Waterfowl Habitat	<input type="checkbox"/> Interior Forest
	<input type="checkbox"/> Colonial Bird Nesting Area	<input type="checkbox"/> Ephemeral (Vernal) Pond
	<input type="checkbox"/> Snake Hibernaculum	<input type="checkbox"/> Cavity Trees
	<input type="checkbox"/> Bat Hibernaculum	
	<input type="checkbox"/> Winter Deer Yard	

Completed by: \_\_\_\_\_ (please print)      Date Submitted: \_\_\_\_\_

Signature: \_\_\_\_\_

## **APPENDIX B**

### **EIS Reporting Standards**

Please ensure that the following standards are met:

- 3 copies of report, signed by the principal author (s) to be submitted to GRCA; consult with municipality regarding number of copies to be submitted;
- 8½” x 11” paper, double-sided;
- Maps 11 by 17 shall be bound into the report. Larger maps shall be inserted in a pocket inside the back cover of the report;
- A title page listing the name of the proponent, address of the subject property, name of consulting firm, and the date the report was completed;
- A complete list of dates of site investigation and brief description of field methodology employed;
- Minimum map size to be 8 X 11 inch, maximum 36 X 60 inch (folded to 11 X 17 inch)
- All maps to include a metric scale, north arrow, full legend corresponding to all mapped features
- Surveyed site plan and maps showing community boundaries identified using the Ecological Land Classification System for Southern Ontario (Lee et al. 1998), surveyed wetland boundary verified by GRCA staff, flood and fill lines, existing and proposed land use, and property boundaries
- use of orthoimagery is encouraged
- appendix to include:
  - annotated species checklists
  - a brief CV of principal author and list of contributors
  - copy of the approved terms of reference and EIS checklist

Submitted documents shall remain the property of the GRCA

## **APPENDIX C**

### **Data Collection Standards**

#### **Guidelines for Data Collection**

The requirement for multi-season biological inventory will be determined during the pre-consultation meeting. A multi-season inventory may be waived or reduced in scale when relatively current (5 years old or less) data is available for the site and meets the GRCA's standards required for collection and analysis. Such studies may include sub-watershed studies, life science inventories, wetland evaluations, or site-specific biological studies completed for a municipality or in support of other development applications. In most cases, a minimum of three site visits at the appropriate time of year will be required. When older (5 years or older) inventory data are available, it must be updated through the current study. In this case, existing data should be collected to supplement existing field data in order to provide a full account of the species known to occur in the area. The need to supplement existing data through a single or multi-season inventory will be evaluated on a case by case basis depending on the nature of the development and the wetland.

Appendix D of the Significant Wildlife Habitat Technical Guide (OMNR 2000) lists standard protocols for species and habitat inventories. The field inventory protocols identified in this guide should be used, especially when determining or confirming the presence of species that are considered locally, regionally, provincially, or nationally significant.

#### **Suggested Inventory Schedule**

##### ***a) Early Spring (late March/early April)***

**Target Species** – Raptors, owls, salamanders, ducks, and geese, early frogs (wood frog, spring peeper, chorus frog)

**Special time requirements** -conduct amphibian surveys at night during snow melt/spring thaw period and immediately after first spring rains; use call-back tape at night to survey owls; look for stick nests during daylight hours

##### ***b) Spring (May)***

**Target Species** – Frogs, migratory birds, ephemeral flora

**Special time requirements** – conduct road-side amphibian surveys on warm evenings

##### ***c) Early Summer (June)***

**Target Species** – Breeding birds, flora, forest vegetation communities, fish habitat

**Special time requirements** - 5:00 to 10:00 a.m. using Breeding Bird Atlas breeding codes; use seine, minnow traps, and electrofishing techniques to sample fish populations

##### ***d) Summer (mid-July / early August)***

**Target Species** – Ecological Land Classification field data collection, wildlife habitat, summer flora, wetland species, prairie species, butterflies

**Special time requirements** – none

*e) Fall (September)*

**Target Species** – late season plant species (e.g. asters, goldenrods, gentians), prairie species, migratory birds, butterflies

**Special time requirements** – track flowering times

**Standard Methods and Conventions**

1. Ontario Wetland Evaluation System for Southern Ontario (OMNR, 1993)
2. Ecological Land Classification System for Southern Ontario (Lee et al. 1998)
3. Significant Wildlife Habitat Technical Guide (OMNR 2000)
4. Natural Heritage Information Centre Element, Element Occurrence, and Natural Areas Database ([http://nhic.mnr.gov.on.ca/nhic\\_.cfm](http://nhic.mnr.gov.on.ca/nhic_.cfm))
5. Ontario Breeding Bird Atlas protocol and conventions ([http://www.birdsontario.org/download/atlas\\_feb03.pdf](http://www.birdsontario.org/download/atlas_feb03.pdf))
6. Marsh Monitoring Protocol (Long Point Bird Observatory and Environment Canada 1997)
7. Environment Canada List of Species At Risk ([http://www.sararegistry.gc.ca/species/default\\_e.cfm](http://www.sararegistry.gc.ca/species/default_e.cfm))
8. Ontario Ministry of Natural Resources List of Species At Risk (<http://www.ontarioparks.com/saro-list.pdf>)
9. Conservation rankings for birds in the Grand River basin: a tool for conservation and management (Couturier, 2000)
10. List of Significant Plant Species in the Regional Municipality of Waterloo



## **Vegetation Community Classification**

The overall goal of the **Ecological Land Classification System for Southern Ontario** (Lee et al. 1998) is to establish a comprehensive and consistent approach for ecosystem inventory, description, and interpretation that will facilitate conservation, planning, and ecosystem management at various scales. The site-specific goal of an ELC is to identify, describe, classify, and map discrete ecological land units within a defined study area using a consistent and well-defined methodology. Although ELC methodology can be applied at coarse scales (Community Class and Series), a site-specific EIS involving field work will enable classification of natural and cultural areas into discrete Vegetation Types, which is the finest level of community resolution. The following technical information should be included in tables in the report body or as appendices:

### ***Required:***

1. A fully annotated checklist of vascular plant and animal species, including an indication of their provincial abundance (i.e. Sub-national Rank assigned by the Natural Heritage Information Centre), provincial or national status (i.e. as assigned by OMNR and/or the Committee on the Status of Endangered Wildlife In Canada), and any municipal or regional designations
2. The element rank for each ELC Vegetation Type (following NHIC)
3. An assessment of soil type(s), drainage regime, and moisture regime for each ELC Vegetation Type
4. A summary of tree species, with age and/or size class distribution, including basal area by size class for upland forest and swamps units
5. A summary of existing and/or past disturbance factors, including their intensity and extent for each ELC Vegetation Type

### ***Optional:***

6. Calculation of the following floristic quality indicators (Oldham et al. 1996): number of native species, number of non-native species, number of conservative species (conservatism coefficient  $\geq 7$ ), mean coefficient of conservatism, mean coefficient of native species, and sum of weediness scores

## **APPENDIX D**

### **Buffer & Setback Guidelines**

**Buffers** are planned and managed strips of naturally vegetated land located between wetlands and development sites, which are intended to protect the wetland and sustain its identified ecological functions. The ecological and hydrological benefits of buffers include but are not necessarily limited to the following:

1. Erosion and sediment control through passive or active vegetation enhancement
2. Promote infiltration and groundwater recharge/discharge
3. Attenuate and filter surface runoff from adjacent agricultural or urban lands
4. Maintain nutrient balance and water quality within wetlands
5. Maintain and protect wildlife habitat within and adjacent to wetlands
6. Control the spread of exotic and/or invasive plants into wetlands
7. Mitigate impacts of wind, noise, and artificial light
8. Reduce or prevent encroachment by humans and pets
9. Provide passive recreational opportunities such as hiking trails (provided there is no perceived impact) and increased quality of life

**Setback** refers to the physical separation (measured in metres) between the wetland and the proposed development site or structure. Impacts generally expected of development can often be avoided or mitigated if a very broad area of land is maintained in a naturally vegetated state or as green space. The width of the development setback is determined in general terms in planning guidelines, sub-watershed studies and comprehensive environmental impact statements.

In some areas proposed for development, the setback distance may be the entire width of the proposed buffer. In other areas and depending on the results of detailed investigations, planning studies and site-specific environmental impact studies, development setback widths can vary (i.e. can be narrower than the prescribed buffer width) depending upon a number of factors, including:

1. The type and scope of development or site alteration;
2. The ecological status of the wetland, including the habitat requirements of resident wildlife, and its sensitivity to disturbance;
3. The surrounding topography, soils, and hydrology; and
4. The existing and proposed land uses surrounding the wetland

Because of site-specific differences, a one-size-fits-all buffer width is not recommended, and flexibility in width may be warranted on a site-by-site basis. The scientific literature (Woodward and Rock 1995, Castelle et al. 1994) dealing with buffer functions consistently recommends a minimum buffer width of 15-30 metres on slopes less than 12 percent with good ground cover to protect wetlands under most circumstances. A 15 metre buffer would be effective for sediment

and nutrient removal, except where steep slopes are present. Buffers in excess of 30 metres may be warranted to protect environmentally sensitive bogs and fens or wetlands harbouring locally, regionally, or provincially significant species. Based on current knowledge, the literature increasingly indicates that larger buffer requirements tend to be associated with the habitat requirements of wildlife, especially those species inhabiting marshes (Environment Canada 2004). Therefore, minimum buffer widths based on water quality parameters alone are unlikely to be sufficient for wildlife protection.

The concept of a **Critical Function Zone (CFZ)** has been recently introduced by Environment Canada (2004) to describe non-wetland areas containing biophysical functions or attributes related to wetlands. For example, these zones could encompass adjacent upland nesting habitat for waterfowl, foraging areas for amphibians, or groundwater recharge areas critical for the wetland of concern. The CFZ is essentially a functional extension of the wetland into the adjacent upland area. Once identified, even the CFZ needs to be protected from adjacent land uses by a **Protection Zone (PZ)**. These two layers together constitute the wetland *buffer zone*. This protection may range in scope from a naturalized area, which would intercept stormwater discharge to fencing, which would prevent encroachment into ecologically sensitive areas. The combined CFZ and its Protection Zone may range from a few metres to hundreds of metres in width. However, the PZ can be integrated into urban designs, offering opportunities that would enable better integration of public trails and urban infrastructure (e.g. stormwater management facilities).

Once a wetland boundary has been identified and a suitable buffer width established, the *buffer zone* should be measured outward from the edge of the wetland. Some land uses or activities may be permitted in the buffer areas. The identification of permitted land uses within prescribed buffer zones is one of the on-going challenges of land-use planning. For instance, although some buffer functions could be enhanced by a stormwater management facility designed for water quality and quantity control, the location of such facilities entirely within the buffer zone should be discouraged because discharge from these facilities is often directed toward wetlands and associated watercourses. The need for outlet structures, cooling trenches, and spreader berms also requires grading, an activity that should not take place within a natural buffer zone. Stormwater management facilities may also accumulate toxins that are harmful to wetland dependent wildlife. Though sometimes designed to function like a wetland, these facilities do not provide suitable habitat for wildlife, and as such should remain physically separated as much as possible from natural wetlands. **A rationale for the proposed development setbacks from the wetland should be provided in the EIS.**

Buffers and setbacks may include non-spatial related controls such as chain link or other constructed fencing, living fences, and municipal zoning. In special cases where wildlife disturbance is a concern (for example, nesting/staging waterfowl), which can be triggered by visual cues, measures such as contour grading and visual buffer landscaping to provide both visual and noise buffering from adjacent development may be considered. This may be particularly relevant where an expectation of expansive buffers must be balanced by efficient land use planning in the urban envelope.

## Glossary

**Adjacent Lands** means those lands, contiguous to a specific *natural heritage feature or area*, where it is likely that *development* or *site alteration* would have a *negative impact* on the feature or area. The extent of the adjacent lands may be recommended by the Province or based on municipal approaches which achieve the same objectives (Provincial Policy Statement, 2005, page 28).

**Development** means the creation of a new lot, a change in land use, or the construction of buildings and structures, requiring approval under the Planning Act; but does not include activities that create or maintain infrastructure authorized under an environmental assessment process or works subject to the Drainage Act (Provincial Policy Statement, 2005, page 30).

**Significant wetlands** are wetlands identified by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time.

**Site Alteration** means activities, such as grading, excavation and the placement of fill that would change the landform and natural vegetative characteristics of a site.

**Wetlands** are lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at its surface. In either case the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic plants or water tolerant plants. The four major types of wetlands are swamps, marshes, bogs and fens. Periodically soaked or wet lands being used for agricultural purposes which no longer exhibit a wetland characteristic are not considered to be wetlands for the purposes of this definition (Provincial Policy Statement, 2005, page 37).

For the purpose of Regulation under the Conservation Authorities Act, **wetlands** are defined as land that **a)** is seasonally or permanently covered by shallow water or has a water table close to or at its surface, **b)** directly contributes to the hydrological function of a watershed through connection with a surface watercourse, **c)** has hydric soils, the formation of which has been caused by the presence of abundant water, and **d)** has vegetation dominated by hydrophytic plants or water tolerant plants, the dominance of which has been favoured by the presence of abundant water.

**Wetland Complex** means a group of wetlands which are usually within the same watershed, located within 0.75 kilometres of each other and related in a functional way. As a group they have similar or complementary biological, social, and/or hydrological functions. (Ontario Wetland Evaluation System Manual, May 1994 revised).

**Wetland Form** means the physical character of the wetland, comprised of mainly the combination of site, vegetation, wetland age and water distribution and affected by ecological processes. Bogs, fens, marshes, swamps and open water wetlands have several different forms which develop under the influence of the supply of water, surficial geology, natural drainage,

vegetation overstory species, vegetation understory species, aspect, microclimate, age and ecological functions. Some wetland forms are rare and some forms provide specialized habitat preferred by rare species.

**Wetland Functions** include the biological, physical, and socio-economic interactions that occur in the environment because of the properties of the wetlands that are present, including, but not limited to:

- groundwater recharge and discharge;
- flood damage reduction;
- shoreline stabilization;
- nutrient retention and removal;
- carbon sequestration;
- food chain support;
- habitat for fish, wildlife, and native plants;
- natural amenities; and
- attendant social and economic benefits

**Wetland Types** include the following: marsh, fen, bog, swamp and open water. In the OMNR's Wetland Evaluation System Manual, the open water type is combined with marsh. These wetland types differ in form or appearance, in the numbers and kinds of both plant and animal species present, and in their rates of primary productivity (OMNR 1993).

- **Marshes** are wet areas periodically inundated with standing or slowly moving water, and/or permanently inundated areas characterized by robust emergents, and to a lesser extent, anchored floating plants and submergents.
- **Bogs** are peat-covered areas or peat-filled depressions with a high water table and a surface carpet of mosses, chiefly *Sphagnum*. Bogs may be treed or treeless but tree cover does not exceed 25%. Peat mosses (*Sphagnum* species), ericaceous shrubs, and sedges play a prominent role in these nutrient poor, acid peatlands.
- **Fens** are peatlands characterized by surface layers of poorly to moderately decomposed peat, often with well-decomposed peat near the base. *Sphagnum* moss, if present, is usually of different *Sphagnum* species than occur in bogs. The waters and peats are less acid than in bogs, and are often relatively nutrient rich and minerotrophic since they receive water through groundwater discharge from adjacent uplands. Some fens have developed directly on limestone rock and others have developed at the edges of lakes.
- **Swamps** are wooded wetlands with 25% or more cover of trees or tall shrubs. Many swamps are characteristically flooded in spring, with dry relict pools apparent later in the season. Waters are circumneutral to moderately acid in reaction, and show little deficiency in oxygen or in mineral nutrients.

- **Open Water Wetland** refers to bodies of water, which are less than 2 metres in depth and smaller than a natural lake or pond, or, which are part of a wetland complex, pond or lake and cover wetland soils. These are distinguished from ordinary puddles of water by their long-term persistence (months, seasons) and presence of some wetland characteristics including some vegetation, wetland soil and surrounding or contiguous natural vegetation.

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