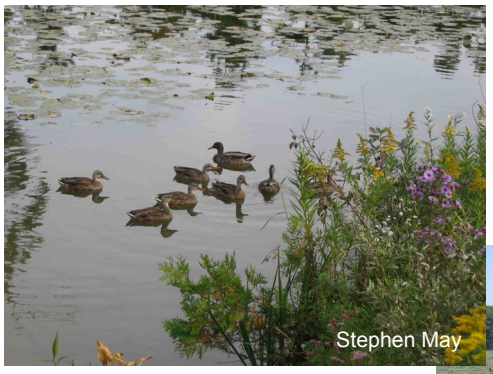
Grand River Watershed Wetland Evaluation Protocol

June 2005



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1.0 Executive Summary

The Ministry of Natural Resources (MNR), Grand River Conservation Authority (GRCA) and Ducks Unlimited Canada (DUC) play a significant role in the protection and management of wetlands throughout the Grand River watershed.

It has always been recognized that one of the most important tools in affording protection of wetland area and wetland function is good information and mapping.

The Grand River watershed wetland evaluation protocol is a product of the MNR/GRCA/DUC Wetlands Working Group. The protocol was initiated soon after the GRCA adopted their Wetlands Policy in March 2003. A key recommendation in the Policy states:

> *The GRCA will work with the Ontario Ministry of Natural Resources, member municipalities, qualified individuals and groups to develop and implement a work plan for the identification, classification, evaluation and mapping of all wetlands in the Grand River watershed by 2005.*

It is a goal of the MNR/GRCA/DUC Wetlands Working Group to begin implementation of the protocol in 2005.

Ontario
Ministry of Natural Resources

Ducks Unlimited Canada
CANADA'S CONSERVATION COMPANY

Grand River Conservation Authority

2.0 Data and Information Exchange

2.1 Information Exchange

This section provides an overview of the consensus reached between the Ministry of Natural Resources (MNR) and the Grand River Conservation Authority (GRCA) on how Wetland data will be exchanged and rationalization of data content achieved.

Within the Geographic Information Systems (GIS) of the Ministry of Natural Resources and the Grand River Conservation Authority the current data holdings represent each agency's best estimation of the real-world condition of wetland features within the Grand River watershed. Both agencies recognize that based on the sources of the wetland mapping that discrepancies exist. The MNR and GRCA representations of real-world conditions have not been rationalized into one set of wetland boundaries. The objective for establishing a process for exchanging digital wetland information is to ensure that the cumulative knowledge of the MNR and GRCA is applied to create the best "estimate" for each agency's digital representation of wetland data.

2.2 Data Exchange Agreement

In March 2001 a data exchange agreement was signed by the MNR and the GRCA that specified the terms for exchanging digital and non-digital information between the two agencies. This agreement was set for a term of three years from the signing date. The current agreement will expire in March 2004.

In June 2003 the GRCA became a member of the Ontario Geospatial Data Exchange (OGDE). The question of whether to renew the aforementioned agreement or let it terminate after three years was discussed by the MNR/GRCA/DUC Wetland Working Group. The Working Group decided that the OGDE agreement should be able to provide an adequate framework for exchanging digital data for the purposes of the MNR and GRCA wetland objectives. Therefore, the agreement signed in 2001 will not be renewed, and will be superseded by the OGDE.

2.3 Assumptions and Outstanding Issues

The assumptions that are made in the process of wetland rationalization are the following:

- NRVIS 3.0 has been implemented by MNR Districts
- The implementation of NRVIS 3.0 has allowed for a 2 week delay in posting of district data updates to the NRVIS warehouse in Peterborough
- NRVIS 3.0 has unified the update process for all MNR Districts that border on the GRCA jurisdiction
- The mapping objective for wetland rationalization is specifically targeted on the unification of wetland boundaries during the wetland evaluation process.
- The GRCA will not attempt to duplicate or capture attributes in its data that resembles the information resulting from the wetland evaluation process
- During and following the wetland boundary rationalization process, the GRCA will continue to maintain a wetland data layer over which it will retain Intellectual Property rights, exclusive of the NRVIS Evaluated and Unevaluated Wetland layers
- There may be variations between the GRCA and MNR wetland data after rationalization is completed for a given area. The differences may be negligible boundary variations, or represent wetland features that are not eligible within the Wetland Evaluation criteria.

- The GRCA will employ its membership in the OGDE to access NRVIS Wetland data from the Land Information Ontario Warehouse. This assumes that once in place, NRVIS 3.0 the synchronization of the MNR NRVIS data warehouse 3.0, and the LIO data warehouse will be approximately one day. The GRCA will not access wetland data from the MNR District offices.
- Access to the 2000 orthophoto imagery by the MNR has been resolved, as of March 2004. The MNR will have on-site access to the image data for use with wetland mapping.

2.4 Objectives

The objective of the exchange of wetland information between the Ministry of Natural Resources and the Grand River Conservation Authority is to work toward a rationalization of wetland mapping within the Grand River watershed.

The rationalization of wetland data is composed of the following activities:

- Ensuring that the best (most reliable, accurate, up-to-date) available data is used to map the boundaries of wetland features.
- NRVIS data boundaries for wetland polygons will be revised by the MNR as part of the wetland evaluation process. The source of the information for the wetland revision may be taken from MNR related studies, GRCA provided data, orthophoto review (if available), field investigation, or any other information source that proves the most suitable
- The GRCA will update its wetland polygons as a result of MNR revisions to evaluated wetland polygons.
- Standard reports will be issued against the MNR and GRCA data layers to monitor progress toward boundary rationalization.

2.5 Wetland Rationalization Process

The goal of the MNR/GRCA/DU Working Group is to conduct wetland evaluations for all wetlands within the Grand River watershed. Through the evaluation process, a unification of wetland boundaries will attempt to resolve the difference between NRVIS and GRCA data. Figure 1.0 illustrates a flow diagram that shows the main components, data flow and processes of the boundary rationalization.

2.6 Ministry of Natural Resources' Responsibilities

- The MNR is responsible for conducting wetland evaluations. The MNR will be responsible for the mapping of the wetland boundary. During the process of unification the basis for the wetland boundary will utilize one or more of existing NRVIS data, GRCA wetland mapping, edits by orthophoto, or another suitable source.
- The minimum wetland boundary adjustment that will be considered for refinement is 30m.
- The NRVIS data should store a citation linked to the polygon feature that identifies the source of the update.
- When the MNR makes a posting to the NRVIS 3.0 data warehouse, the District making the posting will notify the GRCA so that the most recent data is available for internal use and for rationalization.

2.7 Grand River Conservation Authority's Responsibilities

- The GRCA will provide the MNR with a status report resulting from analysis of the outstanding differences between the GRCA and MNR wetland boundaries.

- The GRCA staff will work with the MNR during the evaluation process and seek consensus on the boundaries.

- Once consensus is reached, the GRCA will update its wetland data to reflect the revisions made during the wetland evaluation process.

- The GRCA will maintain feature-level metadata on wetland polygons indicating the source of the mapping, changes made, and the reason for the change. This information will be conveyed to the MNR through regular shipments of GRCA wetland data.

2.8 Boundary Rationalization Issues

- Resolution of Boundary changes

- Unresolved boundaries post-rationalization

- Feature level metadata and acknowledgement of source

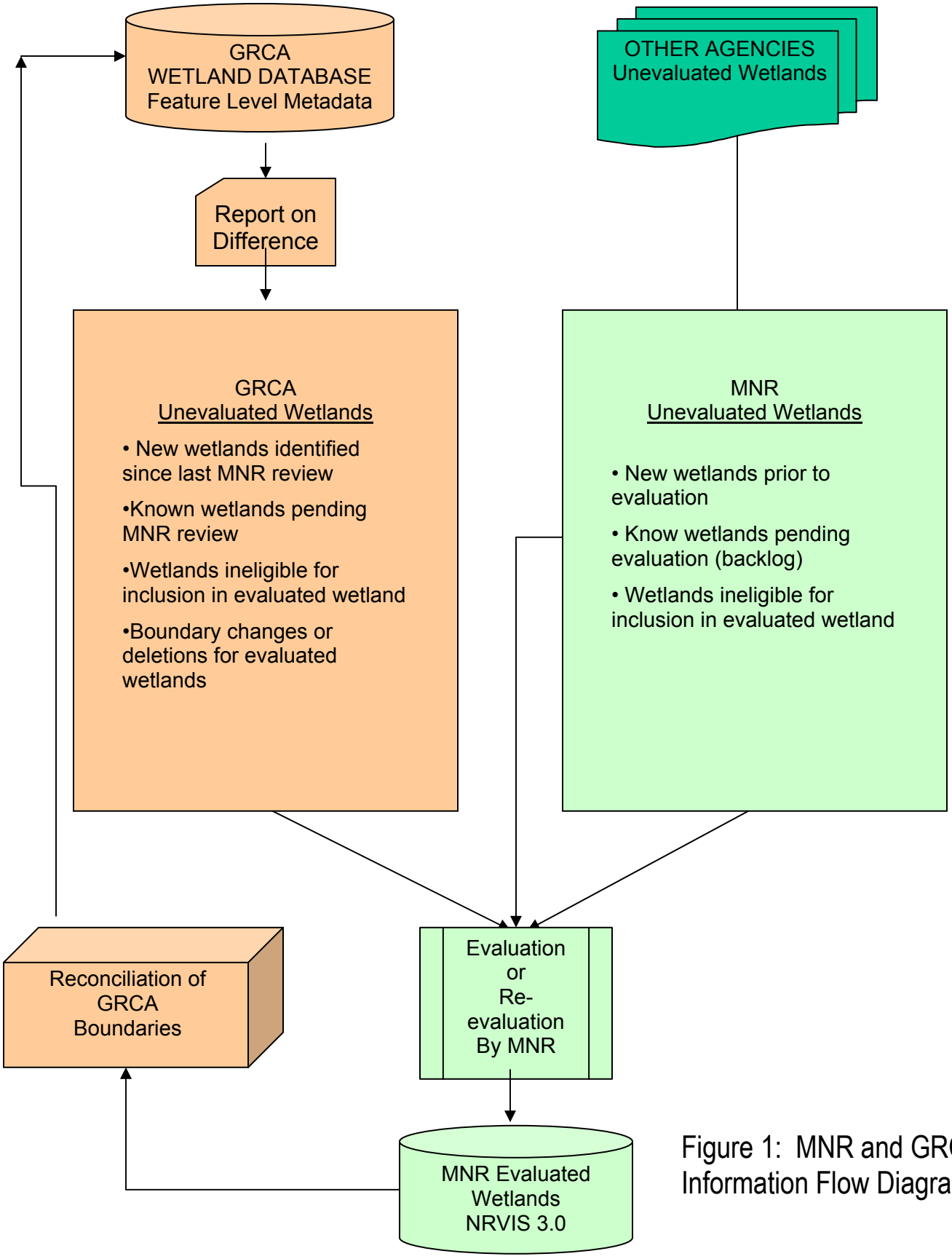

Figure 1: MNR and GRCA Information Flow Diagram

3.0 Setting Priorities and Planning

Given the size of the Grand River watershed and the large number of wetlands that fall within it, it will be necessary to prioritize areas for wetland evaluations. Priority areas will be determined on a municipal basis because it is primarily through municipal policies and planning decisions that wetlands are impacted.

A ranking system was developed to prioritize municipalities for wetland evaluations. The following represent possible options and criteria to evaluate and rank the need for wetland evaluations within a given municipality:

1. MNR District
2. Municipality (upper tier, lower/single tier)
3. Municipal Planning Documents – including the level of policy protection afforded PSWs and locally significant and unevaluated wetlands; and the timing of policy reviews.
4. Level of discrepancy in wetland area between wetlands mapped by MNR and those mapped by GRCA (based on overlay analysis)
5. Level of development pressures that may impact wetlands – e.g. from adjacent land uses, proximity to urban boundaries, growth areas, and existing development, extraction of peat, or maintenance of infrastructure such as municipal drains
6. Whether other studies are underway or expected to begin in the near future that will update or complete the evaluation process, such as subwatershed studies and natural heritage system plans
7. Hybrid approaches based on combinations and/or weights of the above criteria.

Option 1 and 2 are not criteria per se, but rather represent spatial frameworks for evaluating areas for wetland evaluations. For example, emphasis for wetland evaluations may vary between MNR districts depending on resource availability, workloads, internal priorities, available opportunities, etc. Also, the level at which municipalities are assessed - upper tier, lower tier, or single tier - may vary depending on what factors may be influential at the time such as the timing of Official Plan updates.

Options 3 through 6 represent the core criteria for determining priority areas for wetland evaluations. They reflect both shortcomings in the protection of wetlands – poor policy protection, discrepancies in wetland area, development pressures – as well as opportunities, such as upcoming policy updates and other studies that may already be proposing to do wetland evaluations.

Option 7 was determined to be the most appropriate method for determining the priority areas for wetland evaluations in the GRCA watershed and formed the basis for the proposed ranking system.

3.1 Preferred Method for Determining Wetland Evaluation Priorities

The proposed ranking system involves evaluating each municipality against the core criteria outlined above (options 3 to 6). Each criterion has a range of values that reflect the degree of importance or severity of the criterion when it is applied. The attached Criteria Definition Summary chart describes the values associated with each criterion. The values include +2, +1, 0, -1 and –2, where +2 represents a high priority for wetland evaluation and -2 the lowest priority. For example, a high value (+2) would be assigned to a municipality that has areas where wetlands are subject to the greatest risk (e.g. through lack of policy framework or significant areas not mapped etc.). Conversely, low priority areas would be assigned a low value (-2) for a policy framework that provides protection or where all wetlands are recently mapped etc. Assigning the

values to municipalities for each criterion will be completed using consistent definitions (see attached chart). This chart should be re-evaluated periodically to revise and update the priorities.

Option 1 will be integrated into the final framework in that each district will be assigned priorities. Each MNR District will determine their work plan timing for evaluating wetlands within the district based on the priorities established using the above noted method.

Table 1. Ranking Criteria

Criteria Definitions	+2 (high priority)	+1	0	-1	-2 (low priority)
Municipal Planning Documents that provide protection for PSW's and/or locally significant wetland are underway or scheduled to begin in the near future	No Natural Heritage Policies - No Natural Hazard Policies Policy update scheduled within the year	Some Policies in either natural Heritage or Natural Hazard - policy update within next 2 years	Natural Heritage and Hazard Policies that require some update - policy update within next 3 years	Natural Heritage and Hazard Policies that are recent but moderate in strength - policy update within 3 years or more	Current, progressive policies for Natural Heritage and Hazard areas - policy update within 3 years or more
Significant difference in Wetland Areas mapped by MNR and/or GRCA (based on overlay analysis)	greater than 1000 hectares difference	between 501 and 999 hectares difference	between 251 and 500 hectares difference	between 100 and 250 hectares difference	between 0-99 hectares difference
Pressure to remove/degrade wetlands -likely due pressure to develop, extraction of peat or draining of wetland (municipal drain applications and maintenance that results in significant loss of wetland or private work),	Headwaters area not protected, within area to be developed, new/extensions/ cleanouts to municipal drains common	All factors present: new/extensions/ cleanouts to municipal drains proposed, within municipal urban boundary (not yet proposed for development, wetlands being completely removed for peat, municipality does not acknowledge need for protection of wetlands	Some factors present: limited new drains / some extensions/ irregular cleanouts to municipal drains proposed, within area soon to be within urban boundary (1-2 year time frame), wetlands under threat for removed for peat, municipality relies on other groups to protect wetlands	One of these factors present: may have some new drains / few extensions/ cleanouts to municipal drains proposed, within area soon to be within urban boundary (1-2 year time frame) , wetlands under threat for removal for peat, municipality relies on other groups to protect wetlands	Drainage Act not commonly used, within area outside the urban boundary, wetlands under threat due to removal of peat, municipality actively uses municipal mechanisms to protect wetlands

Table 1. Ranking Criteria					
Criteria Definitions	**+2 (high priority)**	**+1**	**0**	**-1**	**-2 (low priority)**
Other studies are underway or will begin soon that will update or complete the evaluation process.	evaluations incomplete, some information that is very dated eg.1980's (data record minimal), no studies proposed in next 5 years (2009)	evaluations completed in 1980's (data record minimal), SWS or Community Plan background info proposed in next 5 years (2009)	evaluations recently completed (second edition), SWS or Community Plan background info proposed in 2005	evaluations recently completed (second edition), SWS or Community Plan background info proposed in 2004	evaluations recently completed (third edition), SWS or Community Plan background info recently completed.
MNR Districts - Each district will have separate priorities assigned					

Table 2. Priorities for Wetland Evaluation

			Priority		Wetland Mapping			Value (+2 to -2)	Planning Documents				Value (+2 to -2)	Subwatershed/Other Studies				Value (+2 to -2)		Value (+2 to -2)
Upper Tier Municipality	**Lower Tier Municipality**	**MNR District**	**District Priority**	**Overall Total**	**GRCA > MNR Wetland Area (Ha) Feb 2005**	**MNR > GRCA Wetland Area (Ha) Feb 2005**	**Difference**		**Document Project**	**2005**	**2-4 years**	**5+years**		**Document Project**	**2005**	**2-4 years**	**5+years**		**Pressure to remove/ degrade wetlands**	
REGION OF HALTON		AURORA							Official Plan	Completed 2004			-1	Natural Heritage Study				-2		2
REGION OF HALTON		AURORA							Official Plan	Yes			0							2
	HALTON HILLS	AURORA	2	0.0	51.6	2.0	53.6	-2.0					0							2
	MILTON	AURORA	1	0.0	298.1	9.4	307.5	0.0												
COUNTY OF OXFORD		AYLMER							OP Environmental Policies Update	completed 2004			0	Natural Heritage Study	Yes			-2		2
	BLANDFORD-BLENHEIM	AYLMER	2	4.0	1434.3	279.6	1714.0	2.0												2
	EAST-ZORRA TAVISTOCK	AYLMER	4	0.0	50.1		50.1	-2.0												2
	NORWICH	AYLMER	3	1.0	108.7	47.2	155.8	-1.0												2
NORFOLK COUNTY	NORFOLK COUNTY	AYLMER	2	4.0	305.9	15.6	321.5	0.0	Official Plan	Yes			2					2		0
HALDIMAND COUNTY	HALDIMAND COUNTY	GUELPH-ALYMER	1	7.0	1244.8	824.6	2069.4	2.0	Official Plan	Yes			2					2		1
COUNTY OF PERTH			9	-2.0									-2	Natural Heritage Study		2005 -6		0		0
	NORTH PERTH	GUELPH	12	-5.0	32.0		32.0	-2.0					-2							-1
	PERTH EAST	GUELPH	10	-3.0	428.1	28.8	456.9	0.0					-2							-1
CITY OF HAMILTON	CITY OF HAMILTON	GUELPH	5	2.0	1124.5	263.5	1387.9	1.0	Official Plan	Yes			2	Fairchild - start discussions	Prelim	Yes		-2		1
CITY OF BRANTFORD	CITY OF BRANTFORD	GUELPH	10	-3.0	113.4	56.1	169.4	-1.0					-1	Fairchild - start discussions	Prelim	Yes		-1		0
COUNTY OF BRANT	PARIS	GUELPH	6	1.0	2411.3	284.4	2695.7	2.0	Paris South West Secondary Plan	Yes			0	Fairchild - start discussions	Prelim	Yes		-1		0
COUNTY OF BRANT	COUNTY	GUELPH	7	0.0																
			3	4.0																
REGION OF WATERLOO		GUELPH	7	0.0					Region of Waterloo Official Plan Amendments - Update PSW mapping	Yes	yes		2							2
REGION OF WATERLOO		GUELPH	8	-1.0					Update Transportation Plan	Yes										
			7	0.0					Greenland Strategy	Yes			-1							
			8	-1.0					Ecologically Significant Landscapes (ESL)	Yes										

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Upper Tier Municipality	Lower Tier Municipality	MNR District	District Priority	Overall Total	GRCA > MNR Wetland Area (Ha) Feb 2005	MNR > GRCA Wetland Area (Ha) Feb 2005	Difference		Document Project	2005	2-4 years	5+years		Document Project	2005	2-4 years	5+years		Pressure to remove/ degrade wetlands	
			7	0.0					Valleyland Policy	Yes			-1							
			7	0.0					Moraine Policy	Yes			0							
			8	-1.0					Woodland Policy		2005-2006		0							
	CAMBRIDGE	GUELPH	9	-2.0	115.1	27.5	142.7	-1.0	Hespeler North and West Community Plans	Yes			-2	Hespeler West SWS (East Middle West Creeks)	complete in 2005			0		1
	CAMBRIDGE	GUELPH	8	-1.0									-2	Forbes - Implementation	Yes			0		1
	KITCHENER	GUELPH	6	1.0	214.7	66.0	280.7	0.0	Community Plan - Doon South		2004		2	Strasburg - update	Yes			-2		1
	KITCHENER		5	2.0										BBB Functional Drainage Study	Yes			1		1
	WATERLOO	GUELPH	11	-4.0	89.7	86.7	176.4	-1.0	Implement SPA in Zoning By-law	Yes			-2	SWS - north west		Yes		-1		0
	WATERLOO	GUELPH	8	-1.0					West Side Study Community Plan	Yes			-1							0
	WATERLOO	GUELPH	4	3.0					North East Side Community Plan	Yes			2							1
	WATERLOO	GUELPH	5	2.0					Comprehensive Zoning By-law - environmental policies	Yes			2							0
	NORTH DUMFRIES	GUELPH	4	3.0	302.0	93.5	395.6	0.0	Zoning By-law - environmental policies	Yes			2	Cedar Creek - Phase 1	complete in 2005			0		1
	NORTH DUMFRIES	GUELPH	11	-4.0					Ayr - SPA/Two-Zone	Yes			-2	Fairchild - start discussions	Prelim	Yes		-2		0
	WELLESLEY	GUELPH	7	0.0	120.8	46.2	167.0	-1.0	Official Plan - major update	completed in 2004			0							1
	WELLESLEY	GUELPH	5	2.0					Comprehensive Zoning By-law		yes		1							1
	WILMOT	GUELPH	9	-2.0	41.6	49.1	90.7	-2.0	Official Plan - major update	completed in 2004			0	Alder Phase 2	complete in 2005			-1		1
	WILMOT	GUELPH	6	1.0					Comprehensive Zoning By-law		yes		1							0
	TOWNSHIP OF WOOLWICH	GUELPH	5	2.0	1105.4	191.3	1296.7	2.0	Elmira - SPA/Two Zone	Yes			-2	Hopewell Creek	yes			0		2
	TOWNSHIP OF WOOLWICH	GUELPH	3	4.0					Comprehensive Zoning By-law	yes			2	Chilligo Creek	yes			0		2
	TOWNSHIP OF WOOLWICH	GUELPH	5	2.0										Randall Drain	yes			0		2
CITY OF GUELPH	GUELPH	GUELPH	12	-5.0	137.5	88.7	226.1	-1.0	York District Secondary Plan	Yes			-2	Natural Areas Inventory		2004		-2		0
CITY OF GUELPH	GUELPH	GUELPH																		
WELLINGTON COUNTY																				
	ERIN	GUELPH	2	5.0	555.2	108.1	663.3	1.0	Official Plan	Yes			1					1		2
	CENTRE WELLINGTON	GUELPH	2	5.0	851.8	303.4	1155.2	2.0					1					1		1

Table 2. Priorities for Wetland Evaluation

			Priority		Wetland Mapping			Value (+2 to -2)	Planning Documents				Value (+2 to -2)	Subwatershed/Other Studies				Value (+2 to -2)		Value (+2 to -2)
Upper Tier Municipality	**Lower Tier Municipality**	**MNR District**	District Priority	Overall Total	GRCA > MNR Wetland Area (Ha) Feb 2005	MNR > GRCA Wetland Area (Ha) Feb 2005	Difference		**Document Project**	**2005**	**2-4 years**	**5+years**		**Document Project**	**2005**	**2-4 years**	**5+years**		**Pressure to remove/ degrade wetlands**	
	GUELPH - ERAMOSA	GUELPH	8	-1.0	229.8	219.5	449.3	0.0	Mapping for Zoning By-law	Yes			-2	Hopewell		After Smart Growth		-1		2
	MAPLETON	GUELPH	4	3.0	828.7	29.1	857.8	1.0					0					1		1
	PUSLINCH	GUELPH	11	-4.0	94.8	88.8	183.6	-1.0	Mapping for Zoning By-law	Yes			-2	Mill Creek and Irish Creek		Yes		-2		1
	PUSLINCH	GUELPH	4	3.0									1							2
	WELLINGTON NORTH	GUELPH	5	2.0	1808.6	58.5	1867.1	2.0												
DUFFERIN COUNTY																				
	EAST LUTHER GRAND VALLEY	GUELPH	5	2.0	821.2	15.2	836.4	1.0	Official Plan	Yes			-2					2		1
	AMARANTH	MIDHURST	2	4.0	1388.0	272.3	1660.3	2.0	Official Plan	Yes			-2					2		2
	EAST GARAFRAXA	MIDHURST	3	1.0	786.5	100.7	887.2	1.0	Official Plan	Yes			-2					2		0
	MELANCTHON	MIDHURST	2	4.0	549.0	753.4	1302.4	2.0	Official Plan	Yes			-2					2		2
GREY COUNTY	SOUTHGATE	MIDHURST	1	5.0	389.8	115.9	505.7	1.0	Official Plan	Yes			0					2		2
					18033.1	4525.1	22558.2													

GRCA WATERSHED

Shoreline Policy	2005
CA Act - Generic Regulation	2006
Moraine Policy	

4.0 Wetland Evaluation, Wetland Boundary Mapping and Wetland Boundary Rationalization Process

The Ministry of Natural Resources is responsible for the evaluation of wetlands in Ontario. Wetland evaluation involves two separate but related exercises; the actual wetland evaluation involving the completion of a Wetland Data Record and the identification and mapping of wetland boundaries.

4.1 Wetland Evaluation

The currently approved system for evaluating wetlands in southern Ontario is the *Ontario Wetland Evaluation System, Southern Manual, 3rd Edition (Ontario Ministry of Natural Resources 1993)* and all new wetland evaluations in the Grand River watershed must be evaluated using that system.

The evaluation system is designed to identify and measure recognized values of wetlands. The wetland values are grouped into four principal components; Biological, Social, Hydrological and Special Features. The method used for assessing the value is numerical. Thus, values are assessed by ascribing points to predefined values. The scores are then totalled to provide a score for each component as well as a total score. In southern Ontario, a *Provincially Significant Wetland* is any wetland that:

1. Achieves a total score of 600 or more points, or

2. Achieves a score of 200 or more points in either the Biological component or the Special Features component.

Most wetlands in the Grand River watershed are wetland complexes. These are groups of wetlands that are commonly related in a functional way, that is, as a group they tend to have similar or complementary biological, social and/or hydrological functions. Rules and guidelines for complexing wetlands are provided in the wetland evaluation manual. Generally, wetland *complexes* with a combined size of less than 2 ha will not be evaluated. However, individual wetland *areas* may be included as part of a complex if they are greater than 0.5 ha. In some cases, wetland areas less than 0.5 ha may be included if the MNR can document reasons for including those areas.

Wetland evaluations are considered to be “open files” in that information may be added to an existing wetland evaluation at any time. The addition of new information or the deletion of obsolete information is often done after the initial wetland evaluation has been completed. As well, wetland areas may be added to or deleted from evaluated wetland complexes after the initial wetland evaluation. New information may result in the reclassification of a non-Provincially Significant Wetland to a Provincially Significant Wetland, the down-grading of a Provincially Significant Wetland and additions to or deletions from both of these types of wetlands.

Several tools were developed to assist in meeting the goal of developing a work plan for the identification, classification, evaluation and mapping all wetlands in the Grand River watershed by 2005 and implementing that plan by 2010.

4.2 Preliminary Wetland Evaluation Data Record

Wetland evaluations normally require the completion of a 41-page Wetland Data Record with a combination of field investigations and thorough search for existing information and uses. To expedite the process of wetland evaluations for the purpose of this project, a preliminary Wetland Evaluation Data Record was established (Appendix A). Using existing data sources such as

ortho-rectified air photos, GIS base layers, OMAF soils maps, district fisheries and wildlife data, Natural Heritage Information Center (NHIC) records, etc., the majority of the wetland data record can be completed *without doing field investigations*. Information on wetland values that were available *without doing field investigations* are entered into the data record to arrive at component and total scores for the wetland.

This system provides for an efficient method of evaluating wetland complexes. If evaluated using this methodology, many of the wetlands will be non-provincially significant wetlands, however, many municipalities are providing protection for *all* wetlands as long as they are *evaluated* and this system provides the ability to evaluate wetlands efficiently. This system also identifies those wetland complexes which are the best candidates to become **Provincially Significant Wetlands** if fieldwork were carried out to identify additional wetland values and functions. This system may also identify a wetland as being Provincially Significant in which case it will be up to the individual MNR district to determine if additional fieldwork should be done before accepting this classification.

4.3 Electronic Wetland Data Record

An electronic version of the Wetland Data Record in the *Ontario Wetland Evaluation System, Southern Manual (Ontario Ministry of Natural Resources 1993)* has been created as part of this process. This version has many distinct advantages over the paper version of the Wetland Data Record:

- Quicker communication of Wetland Data Record from MNR to GRCA and consultants
- More efficient and more accurate updating of information on wetland values
- More accurate calculation of component and total wetland scores

4.4 Wetland Boundary Mapping

The most important and most time consuming task in the entire wetland evaluation is the accurate location and mapping of external wetland boundaries. To accomplish the task of developing and implementing a work plan for the identification, classification, evaluation and mapping of all wetlands in the Grand River watershed by 2010, the agencies must take advantage of the various wetland maps and mapping tools that are available and develop a process for using these tools to define a common wetland layer. This single wetland layer would assist agencies as well as the municipalities and their clients and reduce confusion regarding development restrictions resulting from wetlands on their properties.

4.5 Ministry of Natural Resources Wetland Boundary Layer

Wetland evaluations and mapping of wetlands in the Grand River watershed by MNR commenced in 1984 with the bulk of the original evaluations being completed before 1990. Wetland evaluations and mapping were conducted by staff from the MNR, staff from the GRCA and environmental consultants. The methodology for delineating wetland boundaries and evaluating wetlands was provided in *An Evaluation System For Wetlands of Ontario South of the Precambrian Shield 2nd Edition (Environment Canada and MNR, 1984)* and *Ontario Wetland Evaluation System, Southern Manual (MNR, 1993)*. Wetland boundaries were then transcribed from aerial photos onto 1:10,000 scale Ontario Base Maps and digitized from these maps. When reviewing the MNR layer a number of points must be considered:

- The majority of the wetland boundaries were determined with the aid of black and white aerial photos taken in the summer of 1978; however, newer air photos were used when they were available for some areas beginning in 1987. Pertinent details about the air photos used (date, scale, etc.) can be found on page 1 of the Wetland Evaluation, Data and Scoring Record in the wetland evaluation.

- The level of expertise of the wetland evaluator varied greatly and thus the degree of accuracy of wetland boundaries can vary considerably among wetlands.

- In many cases field checks were used to verify wetland boundaries, however, the degree of verification varied greatly. This factor will also affect the degree of accuracy of wetland boundaries. It is not possible to determine from the Wetland Evaluation, Data and Scoring Record if field checks were carried out in a particular wetland and to what degree. However, a comparison between the size of the wetland and the "Estimated Time Devoted to Completing the Field Survey in "Person Hours" may provide some helpful clues. Long-time MNR staff may also have some memory of the degree of field checks carried out in particular wetlands.

- Numerous wetlands within the GRCA watershed have not been mapped and evaluated by the MNR and will not appear on this layer. These wetlands are primarily in areas considerable distances from urban areas.

- Numerous small wetland areas adjacent to evaluated wetland complexes have not been mapped and evaluated by the MNR.

4.6 Grand River Conservation Authority Wetland Boundary Layer

In 1996 the GRCA initiated the Natural Hazards Project (formerly known as the Fill Hazards Project). One of the project's mandates was to identify and delineate wetland boundaries within the watershed. The protocol included the production of field base maps, review of planning documents, air photo interpretation, field checking wetland boundaries, digitizing wetland boundaries, coding attributes, and quality checking. A brief description of each of the protocol steps is given below:

Production of Base Maps

The boundaries of wetlands were identified using 1:10,000 scale Ontario Base Maps. The base maps were produced by executing a number of Arc Macro Language programs (AMLs) in ArcInfo which extracted information pertaining to MNR wetlands, OBM drainage marshes, MNR Forestry Resources Inventory (FRI), Soils (OMAFRA and Regional Municipality of Waterloo). Relevant documents, such as Subdivisions, permits, Environmental Impact Studies (EIS) and sub-watershed studies were also reviewed to determine if they contained any relevant information on wetland boundaries due to an on-site investigation.

Air Photo Interpretation

Stereo air photographs (1:8,000 or 1:20,000) were analyzed so the terrain and identifications of wetlands could be done in three-dimensional view (3D). This step was done even after the year 2001 when 2000 orthoimagery was introduced. 2000 orthoimagery was added to the base maps in 2001 to aid with the identification and delineation of wetland boundaries. The air photo resources used by the GRCA to identify and map wetlands are identified in Table 2.

Field Checking

At a minimum, each map sheet was field checked with the 'windshield' method. Where feasible and warranted more extensive field checking occurred.

Digitizing Wetland Boundaries

A digitizing protocol was developed and established standards were followed during the course of the project. Each arc of the wetland boundary was coded with attributes which identified:
- A GRCA code for the data,

- The sources of the data,
- The date the data was acquired,
- The method used to identify the wetland boundary,
- The date the wetland boundary was confirmed,
- Who identified the wetland boundary,
- The accuracy of the data,
- The original base map used to identify the wetland boundary.

Table 3. Grand River Conservation Authority Resources for Natural Hazards Project 1996-2003

Municipality	Aerial Photography	Ortho-imagery	Method
County of Grey	12/11/79 1:8000		delineated onto 10,000 OBM mylar and digitized
County of Dufferin	12/11/79 1:8000		delineated onto 10,000 OBM mylar and digitized
County of Wellington	12/11/79 1:8000 05/94 1:8000 (Eramosa Watershed) 05/93 1:8000 (Mill Creek watershed)		delineated onto 10,000 OBM mylar and digitized delineated onto 10,000 OBM mylar and digitized delineated onto 10,000 OBM mylar and digitized
City of Guelph Guelph/Eramosa (updated 2002/03))	12/11/79 1:8000	04/2000 04/2000	digitized off orthos at 1:10,000 scale digitized off orthos at 1:10,000 scale
County of Perth	12/11/79 1:8000		delineated onto 10,000 OBM mylar and digitized
R.M. of Halton	12/11/79 1:8000		delineated onto 10,000 OBM mylar and digitized
R.M. of Waterloo (rural areas only)	05/95 1:20,000 & 1:5000 (mosaics) 12/11/79 1:8000		delineated onto 10,000 OBM mylar and digitized
City of Kitchener City of Waterloo	12/11/79 1:8000 12/11/79 1:8000	04/2000 04/2000	digitized off orthos at 1:10,000 scale digitized off orthos at 1:10,000 scale
City of Cambridge	12/11/79 1:8000	04/2000	digitized off orthos at 1:10,000 scale
County of Oxford	12/11/79 1:8000		delineated onto 10,000 OBM mylar and digitized
County of Brant	12/11/79 1:8000		delineated onto 10,000 OBM mylar and digitized
City of Brantford	12/11/79 1:8000	04/2000	digitized off orthos at 1:10,000 scale

Table 3. Grand River Conservation Authority Resources for Natural Hazards Project 1996-2003			
Municipality	Aerial Photography	Ortho-imagery	Method
City of Hamilton	12/11/79 1:8000	04/2000	delineated onto 10,000 OBM mylar and digitized
Norfolk County	12/11/79 1:8000		delineated onto 10,000 OBM mylar and digitized
Haldimand County	12/11/79 1:8000		delineated onto 10,000 OBM mylar and digitized
First Nations	NA	NA	

Quality Checking

After all wetlands were digitized and attributes coded for the base map, a plot check was printed using an AML. The plot checks were reviewed against the field base map and any omissions or errors were noted and corrected. For each map a 'Work Sheet' was filled out by the digitizer and signed by the data custodian to confirm completion of the wetland boundaries.

Pertinent information concerning the GRCA wetland layer includes the following:

- It is assumed that all wetlands in the Grand River watershed have been identified and mapped by the GRCA.
- The GRCA identified and mapped small wetlands regardless of size because they are regulated under the Conservation Authorities Act.

4.7 Wetland Boundary Rationalization Process

Objectives

The objective is to ensure that the best (most reliable, up-to-date) available data is used to map the external boundaries of wetland areas. It is also an objective to unify the MNR NRVIS and GRCA wetland boundary data layers. Two possible options are outlined below. The option selected will depend largely on the tools available; however, other considerations include the level of accuracy desired and the amount of funds available.

Option A

For this option, the GRCA wetland layer was defined using 2000 ortho-rectified aerial photographs. MNR wetland boundary mapping may or may not exist. This process can be used to define the boundaries of previously unmapped wetlands and to refine the existing MNR wetland boundaries.

Process:
For new wetland areas, the GRCA wetland layer is generally accepted for delineating wetland boundaries. Checks on the accuracy of the GRCA wetland layer are made by overlaying the GRCA wetland layer on top of the digital 2000 ortho-rectified aerial photograph layer. Where

numerous inaccuracies in the GRCA wetland layer are identified through this process then Option B should be used. Field checks may be carried out where wetland boundaries are unclear.

Where an MNR evaluated or unevaluated wetland boundary exists, the general MNR wetland boundary should be retained and with the aid of ortho-photos, boundary adjustments are made where:

- The wetland boundary is obviously incorrect such as where it includes roads, buildings or where it has been converted to agricultural or other use,
- Information from roadside or field check indicates that the line should be changed,
- Air photo interpretation **clearly** indicates that the wetland boundary should be expanded.

The above is based on the assumption that some level of field verification was carried out during the MNR wetland evaluations.

The Ministry of Natural Resources must be notified if the GRCA makes wetland boundary adjustments that are greater than 30 m (see Appendix C for details on this protocol).

The advantage of using this option is that it is less costly and time consuming than Option B, however, it does require the availability of the GRCA layer based on 2000 ortho-rectified photographs.

Option B

In this option, the GRCA wetland layer was not defined using 2000 ortho- rectified aerial photographs. Again, MNR wetland boundary mapping may or may not exist. This process can be used to define the boundaries of previously unmapped wetlands and to refine the existing MNR wetland boundaries.

Process:
For new wetland areas, digital 2000 ortho-rectified aerial photographs are used to delineate wetland boundaries. Field checks may be carried out where wetland boundaries are unclear.

Where an MNR evaluated or unevaluated wetland boundary exists, the general MNR wetland boundary should be retained and with the aid of ortho-photos, boundary adjustments are made where:

- The wetland boundary is obviously incorrect such as where it includes roads, buildings or where it has been converted to agricultural or other use,
- Information from roadside or field check indicates that the line should be changed,
- Air photo interpretation **clearly** indicates that the wetland boundary should be expanded.

The above is based on the assumption that some level of field verification was carried out during the MNR wetland evaluations.

The Ministry of Natural Resources must be notified if the GRCA makes wetland boundary adjustments that are greater than 30 m (see Appendix C for details on this protocol)

Both options may result in the reclassification of a non-Provincially Significant Wetland to a Provincially Significant Wetland, the down-grading of a Provincially Significant Wetland and additional to or deletions from both of these types of wetlands.

Note: In the 12 months ending in fall, 2005, the GRCA is reviewing all wetland boundaries in the watershed as part of preparations for the new Generic Regulation under the Conservation Authorities Act. Consequently, all wetlands will at that point have been reconciled with the 2000

orthoimagery. Option B should therefore be redundant at that point, and likely will not be prominent in the interim, as most MNR effort would likely be focused on work recently completed by GRCA.

Special Cases

MNR Guelph District staff have used Option A to refine wetland boundaries over broad geographical areas. MNR staff have identified a number of relatively consistent scenarios where the GRCA has interpreted wetland boundaries differently than the traditional approach used by staff in the MNR Guelph Area. These scenarios are presented below in Appendix B along with the rationale for decisions made in each scenario. Field checks by MNR staff on three days in the summer of 2003 were used to develop these scenarios and the resulting rationale for decisions.

External Communication Regarding Changes to Wetland Classification and Boundaries

The processes outlined above will result in the identification of new Provincially Significant Wetlands, new non-Provincially Significant Wetlands and additions to or deletions from both of these types of wetlands. Individual MNR offices may have different guidelines and requirements regarding the acceptability of Provincially Significant Wetlands identified using the preliminary wetland evaluation data record. As well, MNR offices may have a variety of procedures for communicating wetland evaluation information to private landowners, municipalities the CLTIP and other partners. There is variance between Districts in how they communicate wetland information.

5.0 Implementation

5.1 Boundary Rationalization

Conservation Authorities' power to regulate activities in wetlands has been revised under a new Generic Regulation (Conservation Authorities Act, Section 28) to come into effect May of 2006. Mapping of all wetlands in the watershed is being revisited to ensure conformity with, and appropriate quality of mapping for, the new Generic Regulation.

The entire watershed is being reviewed to reconcile GIS wetland polygons with the 2000 orthoimagery, also using data such as MNR FRI, soils mapping, contours, and drainage, etc. Additionally, information pertaining to wetland boundaries found in permits, EIS documents, natural heritage inventories, and subwatershed studies is being cross-referenced with our GIS boundaries. Older photos are consulted, and stereoscopic viewing for 3-D is applied, as appropriate. Where in-office data and interpretation yields a low level of confidence, a field check is undertaken, if possible; most field checks are done from the roadside. The work is being done by Natural Heritage Specialists on contract with GRCA.

The quality assurance protocol involves review of every wetland polygon by the Supervisor of Terrestrial Resources (who is custodian of the GRCA Wetlands layer). The layer custodian also reviews all revisions stemming from the initial checks. The GRCA planner for the area then reviews. Prior to the mapping going to public open house meetings in summer/fall 2005, MNR will have the opportunity to review the mapping, and make suggestions for revisions. GRCA staff will flag all instances where a PSW boundary has been modified by more than 30 meters, to expedite MNR review (see Appendix C for details on this protocol).

After the public open house reviews, the mapping will be scrutinized by a peer review committee established by Conservation Ontario, and the Minister of Natural Resources' sign-off is required before the new Generic Regulation can be implemented. The layer custodian will review any revisions arising from external input before final (internal) sign-off for the layer.

Several noteworthy attributes of this mapping exercise affect this Wetland Evaluation Protocol. This mapping is outside boundaries only, without any coding related to wetland significance. There is no stated minimum size for the mapping; if it can be seen at 1:10,000, it is mapped. The new Generic Regulation gives the power to regulate "interference" with a wetland, which is potentially much stronger than its predecessor regulation.

The new Generic Regulation will use the wetland definition from Section 25 of the Conservation Authorities Act:

"Wetland means 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, but does not include periodically soaked or wet land that is used for agricultural purposes and no longer exhibits a wetland characteristic referred to in clause (c) or (d)."

The second criterion has not been a consistent feature of past mapping efforts. The ability to regulate "isolated" wetlands may be in question. Consequently, this exercise includes identifying visible surface water connections intersecting with the boundary of the wetland, and coding that

connection as to the type of connection and the basis for the decision. This will allow the isolated wetlands to be treated differently, if necessary, under the new Generic Regulation, but still have all wetlands mapped together in one layer.

5.2 Wetland Evaluation

Chapter 2 outlines the ranking system that will be used to prioritize municipalities/areas for wetland evaluations.

It is expected to take a minimum of five years to complete the evaluation of all wetlands in the Grand River watershed. The timeline is dependant on staff resources and funding.

Recommendations/Tactics

MNR/GRCA/DU Canada will initiate a Wetland Evaluation Protocol Implementation Committee to:

- Meet with the Lake Erie Watershed Region technical staff team to review the importance of completing wetland evaluations as part of the Source Water Protection planning process (watershed characterization/issues identification).

- Meet annually in August to initiate discussion and development of a work plan for wetland evaluations for the following year to, among other things, ensure proper allocation of existing agency staff and financial resources.

- Source potential funding partners and subsequently develop a funding proposal(s) to hire one or more contract wetland evaluation technician(s).

6.0 Map Products and Information Dissemination

As the process for rationalizing the GRCA and MNR wetland data proceeds and wetland evaluations are undertaken, there will be a need to communicate changes to existing wetlands, and the identification of new wetlands, to various stakeholders. It will be particularly important to ensure that changes to wetlands are communicated to the relevant municipalities in a timely manner for incorporation into policy documents and consideration in planning decisions.

Considerations in the Dissemination of Wetland Information

Methods by which wetland changes can be communicated include letter, maps, and digital data. No one method will be ideal for all circumstances. Rather, the type of information disseminated, and the selection of an appropriate method or process for doing so, will be influenced by a variety of factors. These include, but are not limited to, the type of recipient (e.g. agency or private landowner), the frequency of notification, the number of wetland changes, and the size of the geographical area affected.

Type of Recipient

A variety of stakeholders may need to be notified of changes to the wetland data. They may include upper tier and lower tier municipalities, landowners of the affected properties, consultants, other agencies, and managers of affected projects. Each potential stakeholder may have varying needs or capacity to receive and make use of the data. A landowner, for example, may only need to receive a letter, and possibly a small map, but would likely not have use for digital data. A municipality, however, in addition to receiving a letter, and possibly a large map, will require the updated digital wetland information.

Frequency of Notification

Careful consideration must be given to how frequently various stakeholders and affected landowners are notified. There is a need to find the right balance between timely communication of wetland changes for planning purposes, and the workload associated with notification. The method of communicating wetland changes may also be influenced by this decision. For example, if a review of wetlands is undertaken in a comprehensive manner for an entire municipality, it would likely be more efficient to advise the municipality and landowners of any changes once the review is complete, rather than after each individual wetland change. This assumes that the review would be completed in a relatively short period of time; perhaps a month or two, so as not to prevent the timely communication of already completed changes.

If, on the other hand only small portions of a municipality are reviewed, perhaps as a result of an imminent planning situation or new project, and no further review of the municipality is anticipated, then it may be prudent to advise the municipality, affected stakeholders, and landowners as soon as the changes are made. In this case, sending a map that clearly shows the wetland boundaries, in addition to an explanatory letter, would be beneficial.

Some consideration will also need to be given to how frequently municipalities are advised of wetlands within their jurisdiction on an ongoing basis once the rationalization process is completed. It is conceivable that wetland changes will not be made in a municipality for quite some time after the initial review and rationalization is complete. Presumably, now that a protocol has been established to ensure the ongoing consistency between the GRCA's and MNR's digital wetland layers, there will no longer be a need to undertake a comprehensive review. Therefore, wetland changes in the future will likely be sporadic and so should be communicated

immediately. General notifications, reminders, and explanatory letters on wetlands and wetland policy could be communicated on an annual or bi-annual basis.

Number of Wetland Changes and Size of Area Affected

As suggested above, if the numbers of wetland changes are anticipated to be many, or the geographical area under review is large, it may be beneficial from an efficiency standpoint to wait until all changes are made before notifying affected stakeholders. If on the other hand the changes are few, or small in scale, then changes to wetlands should be communicated immediately. With respect to mapping products, if there are widespread changes to wetlands in a municipality, it may be difficult to illustrate them on a map, in which case, simply ensuring that a municipality has access to the digital data may be sufficient. Individual landowners may benefit from receiving an individual map showing just the wetland changes on their property, but this may only be feasible from a workload standpoint if the number of landowners requiring notification is relatively small.

Roles and Responsibilities

Since the MNR is the provincial authority and custodian of information on evaluated wetlands, the responsibility for advising on the status of evaluated wetlands rests with the MNR. By extension therefore, the responsibility for disseminating information on evaluated wetlands, both updates as well as regular annual or bi-annual deliveries, will rest with the MNR District offices.

The GRCA, however, makes regular use of the information on evaluated wetlands for its legislated and delegated responsibilities. This includes reviewing land use applications against wetland information, and advising stakeholders on the location, status, and configuration of evaluated wetlands. Since the purpose of rationalizing the MNR's and GRCA's respective wetland datasets is to ensure consistency in the information, the potential for communicating inaccurate or outdated information on evaluated wetlands by the GRCA should be eliminated or greatly minimized. However, if a stakeholder wishes to confirm information on evaluated wetlands, they should be directed to the local MNR District office.

Recommended Dissemination Methods

Decisions about how changes to the evaluated wetlands are disseminated to relevant stakeholders will need to be made on an individual basis recognizing particular circumstances. However, in implementing this protocol the intent will be to practice the following dissemination methods for different stakeholders:

Landowners:

Landowners should be notified by standard letter and if possible, small maps should be prepared and included. This could be accomplished by developing a mapping template, perhaps in black and white for easy printing and duplication. Landowners should be contacted by MNR District offices as soon as possible after wetland changes are made, or after the review of a defined geographical area is completed.

Municipalities (upper and lower tiers):

Scenario 1 - widespread changes made on a municipal basis:

Once the entire review of a defined geographical area is complete, municipalities will be notified by the MNR District office by letter with an accompanying map. Digital data will also be made available, by CD-ROM or by some other means. The map should show wetlands which have undergone changes in a discerning colour or symbol so it can easily be seen where changes were made.

Scenario 2 – small number of localized changes:

Municipalities will be notified by the MNR District office as soon as the wetland changes are complete. Notification will be by letter with an accompanying map. Digital data will also be made available, by CD-ROM or by some other means. Again, the map should show wetlands which have undergone changes in a discerning colour or symbol so it can easily be seen where changes were made.

Ministry of Municipal Affairs and Housing (MMAH):

The MMAH will be advised by letter only through the MNR District office at the same time as municipalities.

Other Stakeholders:

Other stakeholders will be notified on an as-needed basis.

Appendix A - Wetland Evaluation Data Record

Process Checklist				
		Notification of Regional Evaluation and Mapping Section		
		Notification of Authority Evaluation and Mapping Section		
		Ministry of Revenue Mapping Updated		
		Input Revised Data in M.N.R. Files		
		Mapping Digitized in N.R.V.I.S.		
		Notification of Town		

Process Complete:

Management Biologist

Date
Y/M/D

Link	Complete	Link	Complete	Link
Directions!		Soil Recharge Pg21'!		Polygon Id Map'!
Title Page'!		Rarity Pg22'!		Vegetation Communities'!
Identification Page'!		Breeding Pg23'!		
Wetland Data Form'!		Animal Pg24'!		
Size & Boundary'!		Plant Pg25'!		
Biological Component Pg 3'!		RS Species Pg26'!		

General Directions	
1	Blue shaded boxes require a numerical response except for those boxes with a zero value.
	Those boxes have been linked to corresponding values and formulas and should not need any input.
	Change these boxes only where necessary.
	Blue boxes with no zero value require a numerical input according to directions.
2	Orange shaded boxes are section totals and have been linked to corresponding fields and formulas.
	Change these boxes only where necessary.
	Orange boxes with no zero value require a numerical value according to directions.
3	Underlined fields without blue or orange shading require either an alpha capital letter "X" or a written explanation as per directions.
4	Start with the Identification Page as all other pages are linked to information inputted into its fields. The Title page is to be completed last.
5	To insert additional rows into the work sheet entitled "Wetland Data Form": 1st highlight the row above the "Totals" row using the numeric button to the left of it. Once highlighted press the appropriate mouse button to call up the dropdown menu and select "insert" from the menu. Insert the appropriate number of rows required. 2nd using the numeric buttons highlight a blank row, using the dropdown menu "copy" the row and proceed to paste it onto the inserted rows. Inserting additional rows this way will save all formatting and row/column calculations.
	Minimum Standards For Wetland Evaluations
A.	All section titles highlighted in red can be completed without field work. Instructions for completing various sections are provided in ***Bold Italics.***
	Requirements: digital wetland layer (CA or OMNR), the most current ortho-rectified aerial photography, OBM base layer, OMAF digital soils layer, and various feature database layers.
B.	Section titles highlighted in blue are to be considered optional depending on time constrains and final scoring outcomes.
C.	The "Wetland Data Form" must be completed as information in this sheet is linked to cells in other sections of the evaluation.

0

Wetland Evaluation Edition	

January 0, 1900

Comments
The following evaluation was completed using polygon information derived from a "Geographic Information Layer" provided by the. The wetland polygons were identified from Ortho aerial photography.

Additional Information
Include relevant information that can not be entered in the wetland data record (Ex. Sections that have not been completed.)

Official Name:	0				
Evaluation Edition:	0	Class:		Wetland ID.:	
Wetland Significance	Year/Month Last Evaluated			January 0, 1900	

	Year/Month Last Updated		
Special Planning Considerations:		**Scores**	
		Biological:	#DIV/0!
		Social:	0
		Hydrological:	#DIV/0!
		Special Features:	#REF!
Information Source		Overall:	#DIV/0!
Submitted by:			
Date:			

Southern Ontario Wetland Evaluation, Data and Scoring Record **March 1993**

Wetland Manual

WETLAND DATA AND SCORING RECORD

i) **WETLAND NAME:** _____

ii) **MNR ADMINISTRATIVE REGION:** **Central** **DISTRICT:** **Guelph**

AREA OFFICE (if different from District): _____

iii) **CONSERVATION AUTHORITY JURISDICTION:** _____

(If not within a designated CA, check here: _____

iv) **COUNTY OR REGIONAL MUNICIPALITY:** _____

v) **TOWNSHIP:** _____

vi) **LOTS & CONCESSIONS:** _____

(attach separate sheet if necessary) _____

_____

vii) **MAP AND AIR PHOTO REFERENCES**

a) Latitude: _____ Longitude: _____

b) UTM grid reference: Zone: _____ Block: _____
Grid:E _____ Grid:N _____

c) National Topographic Series:

map name(s) _____

map number(s) _____ edition _____

scale _____

d) Aerial photographs: Date photo taken: _____ Scale: _____

Flight & plate numbers: _____

_____

_____

(attach separate sheet if necessary)

e) Ontario Base Map numbers & scale _____

_____

(attach separate sheets if necessary)

Field Comm	Comm Code		Site Type							Soil Type							Dominate Vegetation															Vegetation Forms	No. of Forms	Wetland Type				% OPEN WATER			Fish Hab Data?
	A	N	I	P	R	L	RRM	LEB	LEL	C/L	S/M	Lim	S	H/M	F	G	H	C	DH	DC	TS	LS	DS	GC	M	NE	BE	RE	FF	F	SU	U			Sw	Ma	Fe	Bo	LOW	HIGH	AVG	
1																																								
Total			0.00	0.00	0.00	0.00	0.00	0.00	0.00																															
2																																								
Total			0.00	0.00	0.00	0.00	0.00	0.00	0.00																															
3																																								
Total			0.00	0.00	0.00	0.00	0.00	0.00	0.00																															
4																																								
Total			0.00	0.00	0.00	0.00	0.00	0.00	0.00																															
5																																								
Total			0.00	0.00	0.00	0.00	0.00	0.00	0.00																															
6																																								
Total			0.00	0.00	0.00	0.00	0.00	0.00	0.00																															
7																																								
Total			0.00	0.00	0.00	0.00	0.00	0.00	0.00																															
8																																								
Total			0.00	0.00	0.00	0.00	0.00	0.00	0.00																															
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10																																								
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13																																								
Total			0.00	0.00	0.00	0.00	0.00	0.00	0.00																															
14																																								
Total			0.00	0.00	0.00	0.00	0.00	0.00	0.00																															
Total			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00				

viii) WETLAND SIZE AND BOUNDARIES

a) Single contiguous wetland area: _____ hectares

b) Wetland complex comprised of _____ individual wetlands:

Wetland Unit Number (for reference)		Size of each wetland unit							
		Isolated	Palustrine	Riverine	Lacustrine	Riv. R.M.	Lac.E.B.	Lac.E.L.	
Wetland Unit No.	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ha
Wetland Unit No.	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ha
Wetland Unit No.	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ha
Wetland Unit No.	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ha
Wetland Unit No.	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ha
Wetland Unit No.	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ha
Wetland Unit No.	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ha
Wetland Unit No.	8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ha
Wetland Unit Totals:		0.00	0.00	0.00	0.00	0.00	0.00	0.00	

(Attach additional sheets if necessary)

TOTAL WETLAND SIZE 0.00 ha

c) Brief documentation of reasons for including any areas less than 0.5 ha in size:

(Attach separate sheets if necessary.)

1.0 BIOLOGICAL COMPONENT

1.1 PRODUCTIVITY

1.1.1 GROWING DEGREE-DAYS/SOILS

GROWING DEGREE DAYS (check one)		
1)	_____	<2800
2)	_____	2800 -3200
3)	_____	3200 -3600
4)	_____	3600 -4000
5)	_____	>4000

SOILS Estimated Fractional Area	
#DIV/0!	clay/loam
#DIV/0!	silt/marl
#DIV/0!	limestone
#DIV/0!	sand
#DIV/0!	humic/mesic
#DIV/0!	fibric
#DIV/0!	granite

Determine the soil type from the appropriate OMAF soils maps

SCORING:

Growing Degree-Days		Clay-Loam	Silt-Marl	Lime-stone	Sand	Humic-Mesic	Fibric	Granite
<2800		15	13	11	9	8	7	5
2800-3200		18	15	13	11	9	8	7
3200-3600		22	18	15	13	11	9	7
3600-4000		26	21	18	15	13	10	8
>4000		30	25	20	18	15	12	8

(maximum score 30; if wetland contains more than one soil type, evaluate based on the fractional area)

Steps required for evaluation: _____ (maximum score 30 points)

1. Select GDD line in evaluation table applicable to your wetland;
2. Determine fractional area of the wetland for each soil type;
3. Multiply fractional area of each soil type by score;
4. Sum individual soil type scores (round to nearest whole number).

In wetland complexes the evaluator should aim at determining the percentage of area occupied by the categories for the complex as a whole.

Score		
	clay/loam	#DIV/0!
	silt/marl	#DIV/0!
	limestone	#DIV/0!
	sand	#DIV/0!
	humic/mesic	#DIV/0!
	fibric	#DIV/0!
	granite	#DIV/0!

Final Score Growing Degree-Days/Soils (maximum 30 points) #DIV/0!

1.1.2 WETLAND TYPE (Fractional Area = area of wetland type/total wetland area)

Estimate the Wetland Type from air photos or default to "swamp" (8)

	Fractional Area			Score
Bog		x	3	0.0
Fen		x	6	0.0
Swamp	#REF!	x	8	#REF!
Marsh	#REF!	x	15	#REF!
			Subtotal:	#REF!

Wetland type score (maximum 15 points) #REF!

1.1.3 SITE TYPE (Fractional Area = area of site type/total wetland area)

Estimate from air photos

	Fractional Area				Score
Isolated	#DIV/0!	x	1	=	#DIV/0!
Palustrine (permanent or intermittent flow)	#DIV/0!	x	2	=	#DIV/0!
Riverine	#DIV/0!	x	4	=	#DIV/0!
Riverine (at rivermouth)	#DIV/0!	x	5	=	#DIV/0!
Lacustrine (at rivermouth	#DIV/0!	x	5	=	#DIV/0!
Lacustrine (on enclosed bay, with barrier beach)	#DIV/0!	x	3	=	#DIV/0!
Lacustrine (exposed to lake)	#DIV/0!	x	2	=	#DIV/0!
			Sub Total:		#DIV/0!

Site Type Score (maximum 5 points) #DIV/0!

1.2 BIODIVERSITY

1.2.1 NUMBER OF WETLAND TYPES

(Check only one)		Score	
1)	one	9	points
2)	two	13	
3)	three	20	
4)	four	30	

Number of Wetland Types Score (maximum 30 points) 0

1.2.2 VEGETATION COMMUNITIES

Attach a separate sheet listing community (map) codes, vegetation forms and dominant species.
Use the form on the following page to record percent area by dominant vegetation form. This information will be used in other parts of the evaluation

.

Communities should be grouped by number of forms. For example, 2 form communities might appear as follows:

2 forms

Code	Forms		Dominant Species				
M6	re,	ff	re,	*Typha latifolia;*	ff,	*Lemna minor,*	*Wolffia*
S1	ts,	gc	ts,	*Salix discolor;*	gc,	*lmpatiens capensis,*	*Thelypteris palustris*

Note that the dominant species for each form are separated by a semicolon. The dominant species (maximum of 2) within a form are separated by commas.
Scoring:

Total # of communities with 1-3 forms	Total # of communities with 4 -5 forms	Total # of communities with 6 or more forms
1 = 1.5 points	1 = 2 points	1 = 3 points
2 = 2.5	2 = 3.5	2 = 5
3 = 3.5	3 = 5	3 = 7
4 = 4.5	4 = 6.5	4 = 9
5 = 5	5 = 7.5	5 = 10.5
6 = 5.5	6 = 8.5	6 = 12
7 = 6	7 = 9.5	7 = 13.5
8 = 6.5	8 = 10.5	8 = 15
9 = 7	9 = 11.5	9 = 16.5
10 = 7.5	10 = 12.5	10 = 18
11 = 8	11 = 13	11 = 19
+.5 each additional community =	+.5 each additional community =	+ 1 each additional community =

e.g., a wetland with 3 one form communities 4 two form communities 12 four form communities and 8 six form communities would score:

6 + 13.5 + 15 = 34.5 = 35 points

Vegetation Communities Score (maximum 45 points) 0

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Wetland Name:	0
Wetland Size (ha):	0

Vegetation Form	% area in which form is dominant
h	#DIV/0!
c	#DIV/0!
dh	#DIV/0!
dc	#DIV/0!
ts	#DIV/0!
ls	#DIV/0!
ds	#DIV/0!
gc	#DIV/0!
m	#DIV/0!
ne	#DIV/0!
be	#DIV/0!
re	#DIV/0!
ff	#DIV/0!
f	#DIV/0!
su	#DIV/0!
u (unvegetated)	#DIV/0!
Total = 100%	#DIV/0!

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1.2.3 DIVERSITY OF SURROUNDING HABITAT

(Check all appropriate items(1))

Determine from air photos

	row crop
	pasture
	abandoned agricultural land
	deciduous forest
	coniferous forest
	mixed forest (at least 25% conifer and 75% deciduous or vice versa)
	abandoned pits and quarries
	open lake or deep river
	fence rows with cover, or shelterbelts
	terrain appreciably undulating, hilly, or with ravines
	creek flood plain
0	Subtotal

Diversity of Surrounding Habitat Score (1 for each, maximum 7 points) 0

1.2.4 PROXIMITY TO OTHER WETLANDS

(Check first appropriate category only) Scoring

Determine from air photos and other wetlands evaluations in the vicinity

1)		Hydrologically connected by surface water to other wetlands (different dominant wetlaI1d type) or to open lake or deep river within 1.5 km	8 points
2)		Hydrologically connected by surface water to other wetlands (same dominant wetland type) within 0.5 km	8
3)		Hydrologica11y connected by surface water to other wetlands (different dominant wetland type),or to open lake or deep river from 1.5 to 4 km away	5
4)		Hydrologically connected by surface water to other wetlands (same dominant wetland type) from 0.5 to 1.5 km away	5
5)		Within 0.75 km of other wetlands (different dominant wetland type) or open water body, but not hydrologically connected by surface water	5
6)		Within 1 km of other wetlands, but not hydrologically connected by surface water	2
7)		No wetland within 1 km	0

Proximity to other Wetlands Score (Choose one only, maximum 8 points) 0

1.2.5 INTERSPERSION

Optional: Complete as time permits or as scoring dictates.

	Number of Intersections (Check one)		Score
1)	26 or less		3
2)	27 to 40		6
3)	41 to 60		9
4)	61 to 80		12
5)	81 to l00		15
6)	101 to 125		18
7)	126 to 150		21
8)	151 to 175		24
9)	176 to 200		27
10)	>200		30

Interspersion Score (Choose one only maximum 30 points) 0

1.2.6 OPEN WATER TYPES

Determine from aerial photos.

	Permanently flooded: (Check one)		Score
1)		type 1	8
2)		type 2	8
3)		type 3	14
4)		type 4	20
5)		type 5	30
6)		type 6	8
7)		type 7	14
8)		type 8	3
9)		no open water	0

Open Water Type Score (Choose one only maximum 30 points) 0

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1.3 SIZE

Score may be lower than actual if "Vegetation Community and Interspersion" have not been calculated.

0.0 hectares 0 Subtotal for Biodiversity

Size Score (Biological Component) (maximum 5O points)

Evaluation Table Size Score (Biological component)

Wetland size (ha)	Total Score for Biodiversity Subcomponent									
	<37	37-48	49-60	61-72	73-84	85-96	97-108	109-120	121-132	>132
<21 ha	1	5	7	8	9	17	25	34	43	50
21-40	5	7	8	9	10	19	28	37	46	50
41-60	6	8	9	10	11	21	31	40	49	50
61-80	7	9	10	11	13	23	34	43	50	50
81-100	8	10	11	13	15	25	37	46	50	50
101-120	9	11	13	15	18	28	40	49	50	50
121-140	10	13	15	17	21	31	43	50	50	50
141-160	11	15	17	19	23	34	46	50	50	50
161-180	13	17	19	21	25	37	49	50	50	50
181-200	15	19	21	23	28	40	50	50	50	50
201-400	17	21	23	25	31	43	50	50	50	50
401-600	19	23	25	28	34	46	50	50	50	50
601-800	21	25	28	31	37	49	50	50	50	50
801-1000	23	28	31	34	40	50	50	50	50	50
1001-1200	25	31	34	37	43	50	50	50	50	50
1201-1400	28	34	37	40	46	50	50	50	50	50
1401-1600	31	37	40	43	49	50	50	50	50	50
1601-1800	34	40	43	46	50	50	50	50	50	50
1801-2000	37	43	47	49	50	50	50	50	50	50
>2000	40	46	50	50	50	50	50	50	50	50

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2.0 SOCIAL COMPONENT

2.1 ECONOMICALLY VALUABLE PRODUCTS

2.1.1 WOOD PRODUCTS

Determine the percentage of the wetland area dominated by "h" or "c" by using aerial photograph.

Area of wetland forested (ha), i.e. dominant form is h or c. Note that this is not wetland size. (Check one only)

h:	0.00		c:	0.00

		Score
1)	<5 ha	0
2)	5 -25 ha	3
3)	26 -50 ha	6
4)	51- l00 ha	9
5)	101 -200 ha	12
6)	>200 ha	18

Source of information: 0

Wood Products Score (Score one only, maximum 18 points) 0

2.1.2 WILD RICE

(Check one)			Score (Choose one)
Present (minimum size 0.5 ha)	1)		6 points
Absent	2)		0

Source of information: 0

Wild Rice Score (maximum 6 points) 0

2.1.3 COMMERCIAL FISH (BAIT FISH AND/OR COARSE FISH

(Check one)			Score (Choose one)
Present	1)		12 points
Habitat not suitable for fish	2)		0

Source of information:

If any part of the wetland is riverine or the District fisheries files indicate presence of fish score "present"

Commercial Fish Score (maximum 12 points) 0

2.1.4 BULLFROGS

(Check one)			Score (Choose one)
Present	1)		1 points
Absent	2)		0

Source of information: 0

Bullfrog Score (maximum 1 point) 0

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2.1.5 SNAPPING TURTLES

(Check one)			Score (Choose one)
Present	1)		1 point
Absent	2)		0

Source of information: 0

Snapping Turtle Score (maximum 1 point) 0

2.1.6 FURBEARERS

(Consult Appendix 9)

Name of furbearer		Source of information
1)		0
2)		0
3)		0
4)		0
5)		0
Subtotal	0	

Scoring: 3 points for each species. maximum 12

Furbearer Score (maximum 12 points) 0

2.2 RECREATIONAL ACTIVITIES

Type of Wetland-Associated Use							
Intensity of Use	Hunting		Nature Enjoyment/ Ecosystem Study		Fishing		
High	40 points		40 points		40 points		
Moderate	20		20		20		
Low	8		8		8		
Not possible/Not Known	0		0		0		
Totals		0		0		0	0

(score one level for each of the three wetland uses; scores are cumulative; maximum score 80 points)

Sources of information:

Hunting: 0

Nature: 0

Fishing: 0

Recreational Activities Score (maximum 80 points) 0

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2.3 LANDSCAPE AESTHETICS

Score using ortho-aerial photography

2.3.1 DISTINCTNESS

(Check one)			Score (Choose one)
Clearly distinct	1)		3 points
Indistinct	2)		0

Landscape Distinctness Score (maximum 3 points) 0

2.3.2 ABSENCE OF HUMAN DISTURBANCE

(Check one)			Score (Choose one)
Human disturbances absent or nearly so	1)		7 points
One or several localized disturbances	2)		4
Moderate disturbance; localized water pollution	3)		2
Wetland intact but impairment of ecosystem quality intense in some areas	4)		1
Extreme ecological degradation, or water pollution severe and widespread	5)		0

Source of information: 0

Absence of Human Disturbance Score (maximum 7 points) 0

2.4 EDUCATION AND PUBLIC AWARENESS

Optional: complete as time and scoring dictates.

2.4.1 EDUCATIONAL USES

(Check one)			Score (Choose one)
Frequent	1)		20 points
Infrequent	2)		12
No visits	3)		0

Source of information:

Requires contact with Local Boards of Education.

Educational Uses Score (maximum 20 points) 0

2.4.2 FACILITIES AND PROGRAMS

(check one)			Score (Choose one)
Staffed interpretation centre	1)		8 points
No interpretation centre or staff but a system of self-guiding trails or brochures available	2)		4
Facilities such as maintained paths (e.g., woodchips) boardwalks, boat launches or observation towers but no brochures or other interpretation	3)		2
No facilities or programs	4)		0

Source of information:

Facilities and Programs Score (maximum 8 points) 0

2.4.3 RESEARCH AND STUDIES

(check appropriate spaces)		Score
Long term research has been done		12 points
Research papers published in refereed scientific journal or as a thesis		10
One or more (non-research) reports have been written on some aspect of the wetland ' s flora fauna hydrology etc.		5
No research or reports		0
Subtotal :	0	

Attach list of known reports by above categories

Refer to ESPA, EPA and ANSI reports.

Research and Studies Score (Score is cumulative, maximum 12 points) 0

2.5 PROXIMITY TO AREAS OF HUMAN SETTLEMENT

Circle the highest applicable score

Distance of wetland from settlement	1) population> 10,000		2) population 2,500 -10,000		3) population <2,500 or cottage community	
1) Within or adjoining settlement	40 points		26		16	
2) 0.5 to 10 km from settlement	26		16		10	
3) 10 to 60 km from settlement	12		8		4	
4) >60 km from settlement	5		2		0	
		0		0		0

Name of settlement: _____

Proximity to Human Settlement Score (maximum 40 points) 0

2.6 OWNERSHIP (FA= fraction Area) Score

Select a default value of "4" if no other information exists.

FA of wetland in public or private ownership held under contract or in trust for wetland protection		x	10	=	0.00
FA of wetland area in public ownership, not as above		x	8	=	0.00
FA of wetland area in private ownership, not as above		x	4	=	0.00

Source of information: _____

Ownership Score (maximum 10 points) 0

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Additional Reports

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2.7 SIZE

The score may be lower than actual since economic and recreational values have not been completed.

0.0 hectares 0 Subtotal for Social

Evaluation Table for Size Score (Social Component)

Wetland Size (ha)	Total for Size Dependent Score									
	<31	31-45	46-60	61-75	76-90	91-105	106-120	121-135	136-150	>150
<2 ha	1	2	4	8	10	12	14	14	14	15
2 - 4ha	1	2	4	8	12	13	14	14	15	16
5 - 8ha	2	2	5	9	13	14	15	15	16	16
9 - 12ha	3	3	6	10	14	15	15	16	17	17
13-17	3	4	7	10	14	15	16	16	17	17
18-28	4	5	8	11	15	16	16	17	17	18
29-37	5	7	10	13	16	17	18	18	19	19
38-49	5	7	10	13	16	17	18	18	19	20
50-62	5	8	11	14	17	17	18	19	20	20
63-81	5	8	11	15	17	18	19	20	20	20
82-105	6	9	11	15	18	18	19	20	20	20
106-137	6	9	12	16	18	19	20	20	20	20
138-178	6	9	13	16	18	19	20	20	20	20
179-233	6	9	13	16	18	20	20	20	20	20
234-302	7	9	13	16	18	20	20	20	20	20
303-393	7	9	14	17	18	20	20	20	20	20
394-511	7	10	14	17	18	20	20	20	20	20
512-665	7	10	14	17	18	20	20	20	20	20
666-863	7	10	14	17	19	20	20	20	20	20
864-1123	8	12	15	17	19	20	20	20	20	20
1124-1460	8	12	15	17	19	20	20	20	20	20
1461-1898	8	13	15	18	19	20	20	20	20	20
1899-2467	8	14	16	18	20	20	20	20	20	20
>2467	8	14	16	18	20	20	20	20	20	20

Total Size Score (Social Component)

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2.8 ABORIGINAL AND CULTURAL HERITAGE VALUES

Either or both Aboriginal or Cultural Values may be scored. However, the maximum score permitted for 2.8 is 30 points. Attach documentation.

2.8.1 ABORIGINAL VALUES

Full documentation of sources must be attached to the data record.

1)	Significant		=	30 points	
	Not				
2)	Significant		=	0	
3)	Unknown		=	0	
	Total:	0			

2.8.2 CULTURAL HERITAGE

1)	Significant		=	30 points	
	Not				
2)	Significant		=	0	
3)	Unknown		=	0	
	Total:	0			

Aboriginal Values/Cultural Heritage Score (maximum 30 points) 0.0

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3.0 HYDROLOGICAL COMPONENT

3.1 FLOOD ATTENUATION

Estimated and Calculated values can be obtained from G.I.S. data layers.

If the wetland is a complex including isolated wetlands, apportion the l00 points according to area. For example if 10 ha of a l00 ha complex is isolated, the isolated portion receives the maximum proportional score of 10. The remainder of the wetland is then evaluated out of 90.

Step 1: Detennination of Maximum Score

_____ Wetland is located on one of the defined 5 large lakes or 5 major rivers (Go to Step 4)

_____ Wetland is entirely isolated (i.e. not part of a complex) (Go to Step 4)

_____ All other wetland types (Go through Steps 2,3 and 4B)

Step 2: Determination of Upstream Detention Factor (DF)

(a)	Wetland area (ha)		0.00	
(b)	Total area (ha) of upstream detention areas (include the wetland itself)		0.00	*estimate*
(c)	Ratio of (a):(b)		#DIV/0!	
(d)	Upstream detention factor: (c) x 2 = (maximum allowable factor = 1)	#DIV/0!	#DIV/0!	

Step 3: Determination of Wetland Attenuation Factor (AF)

(a)	Wetland area (ha)		0.00	
(b)	Size of catchment basin (ha) upstream of wetland (include wetland itself in catchment area)			*calculate*
(c)	Ratio of (a):(b)		#DIV/0!	
(d)	Wetland attenuation factor: (c) x 10 = (maximum allowable factor = 1)	#DIV/0!	#DIV/0!	

Step 4: Calculation of final score

(a)	Wetlands on large lakes or major rivers		0	
(b)	Wetland entirely isolated		l00	
(b)	All other wetlands --calculate as follows:			
(c	* Complex Formula - Isolated portion	#DIV/0!		
	Initial Score		100 *	
	Upstream detention factor (DF) (Step 2)		#DIV/0!	
	Wetland attenuation factor (AF) (Step 3)		#DIV/0!	
	Final score: [(DF + AF)/2] x Initial score =		#DIV/0!	
(c	* Final score:=	#DIV/0!		

*Unless wetland is a complex with isolated portions (see above).

Flood Attenuation Score (maximum l00 points)

3.2 WATER QUALITY IMPROVEMENT

3.2.1 SHORT TERM WATER QUALITY IMPROVEMENT

Step 1: **Determination of maximum initial score**

_____ Wetland on one of the 5 defined large lakes or 5 major rivers (Go to Step 5a)
_____ All other wetlands (Go through Steps 2, 3, 4, and 5b)

Step 2: **Determination of watershed improvement factor (WIF)**

Calculation of WIF is based on the fractional area (FA) of each site type that makes up the total area of the wetland.

(FA= area of site type/total area of wetland)	Fractional Area				
FA of isolated wetland	#DIV/0!	x	0.5	=	#DIV/0!
FA of riverine wetland	#DIV/0!	x	1	=	#DIV/0!
FA of palustrine wetland with no inflow		x	0.7	=	0.00
FA of palustrine wetland with inflows	#DIV/0!	x	1	=	#DIV/0!
FA of lacustrine on lake shoreline	#DIV/0!	x	0.2	=	#DIV/0!
FA of lacustrine at lake inflow or outflow		x	1	=	0.00
			Sub Total:		#DIV/0!
			Sum (WIF cannot exceed 1.0)		#DIV/0!

Step 3: Determination of catchment land use factor (LUF)

(Choose the first category that fits upstream land use in the catchment.)

1)	_____	Over 50% agricultural and/or urban	1.0
2)	_____	Between 30 and 50% agricultural and/or urban	0.8
3)	_____	Over 50% forested or other natural vegetation	0.6
		LUF (maximum 1.0)	0.00

Step 4: Determination of pollutant uptake factor (PUT)

Calculation of PUT is based on the fractional area (FA) of each vegetation type that makes up the total area of the wetland. Base assessment on the dominant vegetation form for each community except where dead trees or shrubs dominate. In that case base assess on the domininant live vegetation. (FA = area of vegetation type/total area of wetland)

	Fractional Area				
FA of wetland with live trees, shrubs, herbs or mosses (c,h,ts,ls,gc,m)	#VALUE!	x	0.75	=	#VALUE!
FA of wetland with emergent, submergent or floating vegetation (re,be,ne,su,f,ff)	#VALUE!	x	1	=	#VALUE!
FA of wetland with little or no vegetation (u)	#VALUE!	x	0.5	=	#VALUE!
			Subtotal:		#VALUE!

Estimate FA from air photos or use default factor of "0.75"

Sum (PUT cannot exceed 1.0) #VALUE!

Step 5: **Calculation of final score**

(a)	Wetland on large lakes or major rivers	0	
(b)	All other wetlands -calculate as follows		
	Initial score	60	
	Water quality improvement factor (WQF)	#DIV/0!	
	Land use factor (LUF)	0.00	
	Pollutant uptake factor (PUT)	#VALUE!	
	Final score: 60 x WQF x LUF x PUT =	#DIV/0!	
	Short Term Water Quality Improvement Score (maximum 60 points)		#DIV/0!

3.2.2 LONG TERM NUTRIENT TRAP

Determine wetland type from aerial photos and soil type from OMAF soils maps.

Step 1:

___	Wetland on large lakes or 5 major rivers	0 points
___	All other wetlands (proceed to Step 2)	

Step 2: Choose only one of the following settings that best describes the wetland being evaluated

1)		Wetland located in a river mouth	10 points	
2)		Wetland is a bog, fen or swamp with more than 50% of the wetland being covered with organic soil		10
3)		Wetland is a bog, fen or swamp with less than 50% of the wetland being covered with organic soil		3
4)		Wetland is a marsh with more than 50% of the wetland covered with organic soil		3
5)		None of the above		0
		Long Term Nutrient Trap Score (maximum 10 points)		0

3.2.3 GROUNDWATER DISCHARGE

The final score will be underestimated since some of the wetland characteristics cannot be scored

(Circle the characteristics that best describe the wetland being evaluated and then sum the scores. If the sum exceeds 30 points assign the maximum score of 30.)

Wetland Characteristics	Potential for Discharge					
	None to Little		Some		High	
Wetland type	1) Bog = 0		2) Swamp/Marsh = 2		3) Fen = 5	
Topography	1) Flat/rolling = 0		2) Hilly = 2		3) Steep = 5	
Wetland Area: Upslope Catchment Area	Large (>50%) = 0		Moderate (5-50%) = 2		Small <(5%) = 5	
Lagg Development	1) None found = 0		2) Minor = 2		3) Extensive = 5	
Seeps	1) None = 0		2) = or < 3 seeps = 2		3) > 3 seeps = 5	
Surface marl deposits	1) None = 0		2) = or < 3 sites = 2		3) > 3 sites = 5	
Iron precipitates	1) None = 0		2) = or < 3 sites = 2		3) > 3 sites = 5	
Located within 1 km of a major aquifer	N/A = 0		N/A = 0		Yes = 10	
Totals		0		0		0

(Scores are cumulative maximum score 30 points)

Groundwater Discharge Score (maximum 30 points) 0

3.3 CARBON SINK

Choose only one of the following

1)	Bog, fen or swamp with more than 50% coverage by organic soil		5 points
2)	Bog, fen or swamp with between 10 to 49% coverage by organic soil		2
3)	Marsh with more than 50% coverage by organic soil		3
4)	Wetlands not in one of the above categories		0

Carbon Sink Score (maximum 5 points) 0

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3.4 SHORELINE EROSION CONTROL

Step 1: ***Determine from ortho-aerial photography***

		Score
	Wetland entirely isolated or palustrine	0
	Any part of the Wetland riverine or lacustrine (proceed to Step 2)	

Step 2:

Choose the **one** characteristic that best describes the shoreline vegetation (see text for a definition of shoreline)

			Score
1)		Trees and shrubs	15
2)		Emergent vegetation	8
3)		Submergent vegetation	6
4)		Other shoreline vegetation	3
5)		No vegetation	0

Shoreline Erosion Control Score (maximum 15 points) 0

3.5 GROUND WATER RECHARGE

3.5.1 WETLAND SITE TYPE

		Score	
(a)	Wetland > 50% lacustrine (by area) or located on one of the five major rivers	0	
(b)	Wetland not as above. Calculate final score as follows: (FA= area of site type/total area of wetland)		

	Fractional Area				
FA of isolated or palustrine wetland	#DIV/0!	x	50	=	#DIV/0!
FA of riverine wetland	#DIV/0!	x	20	=	#DIV/0!
FA of lacustrine wetland (wetland <50% lacustrine)	#DIV/0!	x	0	=	#DIV/0!
			Subtotal:		#DIV/0!

Ground Water Recharge Wetland Site Type Component Score (maximum 50 points) #DIV/0!

3.5.2 WETLAND SOIL RECHARGE POTENTIAL

Determine from OMAF soils maps.

(Circle only **one** choice that best describes the hydrologic soil class of the area surrounding the wetland being evaluated.)

Dominant Wetland Type		1) Sand, loam, gravel, till		2) Clay or bedrock	
1)	Lacustrine or on a major river	0		0	
2)	Isolated	10		5	
3)	Palustrine	7		4	
4)	Riverine (not a major river)	5		2	
Totals			0		0

Ground Water Recharge Wetland Soil Recharge Potential Score (maximum 10 points) 0

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4.0 SPECIAL FEATURES COMPONENT

4.1 RARITY

4.1.1 WETLANDS

Site District _____

Presence of wetland type (check one or more)

_____ Bog

_____ Fen

_____ Swamp

_____ Marsh

Score for rarity within the landscape and rarity of the wetland type. Score for rarity of wetland type is cumulative (maximum 80 points) based on presence or absence.

Site District	Score for Rarity within the Landscape	Score for Rarity of Wetland Type			
		Marsh	Swamp	Fen	Bog
6-1	60	40	0	80	80
6-2	60	40	0	80	80
6-3	40	10	0	40	80
6-4	60	40	0	80	80
6-5	20	40	0	80	80
6-6	40	20	0	80	80
6-7	60	10	0	80	80
6-8	20	20	0	80	80
6-9	0	20	0	80	80
6-10	20	0	20	80	80
6-11	0	30	0	80	80
6-12	0	30	0	60	80
6-13	60	10	0	80	80
6-14	40	20	0	40	80
6-15	40	0	0	80	80
7-1	60	0	60	80	80
7-2	60	0	0	80	80
7-3	60	0	0	80	80
7-4	80	0	0	80	80
7-5	60	20	0	80	80
7-6	80	30	0	80	80

Rarity within the Landscape Score (maximum 80 points)

Rarity of Wetland Type Score (maximum 80 points)

The updated scores for rarity in Site Region 7-5 are in the stages of review and still require official confirmation.(June 8, 2004)

4.0 SPECIAL FEATURES COMPONENT

4.1 RARITY

4.1.1 WETLANDS

Site District _____

Presence of wetland type (check one or more)

_____ Bog
_____ Fen
_____ Swamp
_____ Marsh

Score for rarity within the landscape and rarity of the wetland type. Score for rarity of wetland type is cumulative (maximum 80 points) based on presence or absence.

Site District	Score for Rarity within the Landscape	Score for Rarity of Wetland Type			
		Marsh	Swamp	Fen	Bog
6-1	60	40	0	80	80
6-2	60	40	0	80	80
6-3	40	10	0	40	80
6-4	60	40	0	80	80
6-5	20	40	0	80	80
6-6	40	20	0	80	80
6-7	60	10	0	80	80
6-8	20	20	0	80	80
6-9	0	20	0	80	80
6-10	20	0	20	80	80
6-11	0	30	0	80	80
6-12	0	30	0	60	80
6-13	60	10	0	80	80
6-14	40	20	0	40	80
6-15	40	0	0	80	80
7-1	60	0	60	80	80
7-2	60	0	0	80	80
7-3	60	0	0	80	80
7-4	80	0	0	80	80
7-5	60	20	0	80	80
7-6	80	30	0	80	80

Rarity within the Landscape Score (maximum 80 points)

Rarity of Wetland Type Score (maximum 80 points)

The updated scores for rarity in Site Region 7-5 are in the stages of review and still require official confirmation.(June 8, 2004)

4.1.2 SPECIES

4.1.2.1 BREEDING HABITAT FOR AN ENDANGERED OR THREATENED SPECIES

	Name of species		Source of information
1)			
2)			
3)			
4)			
5)			
	Total:	0	

Attach documentation.

Scoring:

For each species 250 points

(score is cumulative, no maximum score)

Breeding Habitat for Endangered or Threatened Species Score (no maximum) 0

4.1.2.2 TRADITIONAL MIGRATION OR FEEDING HABITAT FOR AN ENDANGERED OR THREATENED SPECIES

	Name of species		Source of information
1)			
2)			
3)			
4)			
5)			
	Total:	0	

Attach documentation.
Scoring:

For one species 150 points
For each additional species 75

(score is cumulative, no maximum score)

Traditional Habitat for Endangered Species Score (no maximum) 0

4.1.2.3 PROVINCIALLY SIGNIFICANT ANIMAL SPECIES

	Name of species	Source of information
1)		
2)		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		
11)		
12)		
13)		
14)		
15)		

Attach separate list if necessary; Attach documentation

Scoring:

Number of provincially significant animal species in the wetland:

1	species	=	50 points	14 species	=	154
2	species	=	80	15 species	=	156
3	species	=	95	16 species	=	158
4	species	=	105	17 species	=	160
5	species	=	115	18 species	=	162
6	species	=	125	19 species	=	164
7	species	=	130	20 species	=	166
8	species	=	135	21 species	=	168
9	species	=	140	22 species	=	170
10	species	=	143	23 species	=	172
11	species	=	146	24 species	=	174
12	species	=	149	25 species	=	176
13	species	=	152			

Add one point for every species past 25 (for example, 26 species = 177 points, 27 species = 178 points etc.)

(no maximum score)

Provincially Significant Animal Species Score (no maximum)

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4.1.2.4 PROVINCIALLY SIGNIFICANT PLANT SPECIES

	(Scientific names must be recorded) Common Name	Scientific Name	Source of information
1)			
2)			
3)			
4)			
5)			
6)			
7)			
8)			
9)			
10)			
11)			
12)			
13)			
14)			
15)			

Attach separate list if necessary; Attach documentation

Scoring:

Number of provincially significant plant species in the wetland:

1 species	=	50 points	14 species	=	154
2 species	=	80	15 species	=	156
3 species	=	95	16 species	=	158
4 species	=	105	17 species	=	160
5 species	=	115	18 species	=	162
6 species	=	125	19 species	=	164
7 species	=	130	20 species	=	166
8 species	=	135	21 species	=	168
9 species	=	140	22 species	=	170
10 species	=	143	23 species	=	172
11 species	=	146	24 species	=	174
12 species	=	149	25 species	=	176
13 species	=	152			

Add one point for every species past 25 (for example, 26 species = 177 points, 27 species = 178 points etc.)

Provincially Significant Plant Species Score (no maximum)

25

4.1.2.5 REGIONALLY SIGNIFICANT SPECIES (SITE REGION)

Scientific names must be recorded for plant species. **Lists of significant species must be approved by MNR.**

SIGNIFICANT IN SITE REGION:

	Common Name	Scientific Name	Source of information
1)			
2)			
3)			
4)			
5)			
6)			
7)			
8)			
9)			
10)			
11)			
12)			
13)			
14)			
15)			

Attach separate list if necessary .Attach documentation.

Scoring:

No. of species significant in Site Region

1 species	=	20	6 species	=	55
2 species	=	30	7 species	=	58
3 species	=	40	8 species	=	61
4 species	=	45	9 species	=	64
5 species	=	50	10 species	=	67

Add one point for every species past 10. (no maximum score)

Regionally Significant Species Score (Site Region)(no maximum)

Additional Species							
Common Name	Scientific Name	S Rank	G Rank	Wet CoE	Tracked	Poly. Loc	Comments
Plants							
Amphibians							
Mammals							
Birds							
Reptiles							

4.2.1.6 LOCALLY SIGNIFICANT SPECIES (SITE DISTRICT)

Scientific names must be recorded for plant species. **Lists of significant species must be approved by MNR.**

	Common Name	Scientific Name	Source of information
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
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41			
42			
43			

44			
45			
46			
47			
48			
49			
50			

Attach separate list if necessary .Attach documentation.

Scoring:

No. of species significant in Site District

1 species	=	10	6 species	=	41
2 species	=	17	7 species	=	43
3 species	=	24	8 species	=	45
4 species	=	31	9 species	=	47
5 species	=	38	10 species	=	49

For each significant species over 10 in the wetland, add 1 point.

Locally Significant Species Score (Site District) (no maximum)

4.2 SIGNIFICANT FEATURES AND/OR FISH & WILDLIFE HABITAT

4.2.1 NESTING OF COLONIAL WATERBIRDS

Status	Name of species	Source of Information	Score	
1) Currently nesting			50	
2) Known to have nested within past 5 years			25	
3) Active feeding area (Do not include feeding by great blue herons)			15	
4) None known			0	

Consult the Ontario Heronry database at Bird Studies Canada. Subtotal: 0

Attach documentation (nest locations etc., if known)

Score highest applicable category only; maximum score 50 points.

Score for Nesting Colonial Water birds (maximum 50 points) 0

4.2.2. WINTER COVER FOR WILDLIFE

Score "locally significant" if trees & shrubs are present, also consult District deer yard data.

(Check only highest level of significance)

		Score (one only)
1)	Provincially significant	l00
2)	Significant in Site Region	50
3)	Significant in Site District	25
3)	Locally significant	10
4)	Little or poor winter cover present	0

Source of information: _____

Winter Cover for Wildlife Score (maximum l00 points) 0

28

4.2.3 WATERFOWL STAGING AND/OR MOULTING

(Check only highest level of significance for both staging and moulting; score is cumulative across columns, maximum score 150)

		Staging	Score (one only)	Moulting	Score (one only)
1)	Nationally significant		150		150
2)	Provincially significant		100		100
3)	Regionally significant		50		50
4)	Known to occur		10		10
5)	Not possible		0		0
6)	Unknown		0		0
	Total:	0		0	
	Subtotal:		0		

Source of information:

Waterfowl Moulting and Staging Score (maximum 150 points) 0

4.2.4 WATERFOWL BREEDING

	(Check only highest level of significance)	Score
1)	Provincially significant	100
2)	Regionally significant	50
3)	Habitat suitable	10
4)	Habitat not suitable	0

Source of information:

Waterfowl Breeding Score (maximum 100 points) 0

4.2.5 MIGRATOR PASSERINE, SHOREBIRD OR RAPTOR STOPOVER AREA

(check highest applicable category)

1)	Provincially significant	100
2)	Significant in Site Region	50
3)	Significant in Site District	10
4)	Not significant	0

Source of information:

Passerine, Shorebird or Raptor Stopover Score (maximum 100 points) 0

4.2.6	FISH HABITAT	*Consult District Fisheries files. If fish are present in the wetland, score 15 or 25 points depending on the size of the fish habitat present.*
4.2.6.1	Spawning and Nursery Habitat	

Table 5. Area Factors for Low Marsh, High Marsh, and Swamp Communities.

No. of ha of Fish Habitat	Area Factor
< 0.5 ha	0.1
0.5- 4.9	0.2
5.0- 9.9	0.4
10.0- 14.9	0.6
15.0 -19.9	0.8
20.0+ ha	1.0

Step 1:

_____ Fish habitat is not present within the wetland (Score = 0)

_____ Fish habitat is present within the wetland (Go to Step 2)

Step 2: Choose only one option

1) _____ Significance of the spawning and nursery habitat within the wetland is known (Go to Step 3)

2) _____ Significance of the spawning and nursery habitat within the wetland is not known (Go through Steps 4, 5, 6 and 7)

Step 3: Select the highest appropriate category below attach documentation:

1)	_____	Significant in Site Region	l00 points
2)	_____	Significant in Site District	50
3)	_____	Locally Significant Habitat (5.0+ ha)	25
4)	_____	Locally Significant Habitat (<5.0 ha)	15

Score for Spawning and Nursery Habitat (maximum score 100 points) 0

30

Step 4: **Proceed to Steps 4 to 7 only if Step 3 was not answered.**

(**Low Marsh**: marsh area from the existing water line out to the outer boundary of the wetland)

_____ Low marsh not present (Continue to Step 5)
_____ Low marsh present (Score as follows)

Scoring for Presence of Key Vegetation Groups

Scoring is based on the one most clearly dominant plant species of the dominant form in each Low Marsh vegetation community. Check the appropriate Vegetation Group (see Appendix 16 Table 16-2) for each Low Marsh community. Sum the areas of the communities assigned to each Vegetation Group and multiply by the appropriate size factor from Table 5.

Vegetation Group Number	Vegetation Group Name	Present as a Dominant Form (check)	Total Area (ha)	Area Factor (see Table 5)	Score	Final Score (area factor x score)
1	Tallgrass				6 pts	0.0
2	Shortgrass-Sedge				11	0.0
3	Cattail-Bulrush-Burreed				5	0.0
4	Arrowhead-Pickerelweed				5	0.0
5	Duckweed				2	0.0
6	Smartweed-Waterwillow				6	0.0
7	Waterlily-Lotus				11	0.0
8	Waterweed-Watercress				9	0.0
9	Ribbongrass				10	0.0
10	Coontail-Naiad-Watermilfoil				13	0.0
11	Narrowleaf Pondweed				5	0.0
12	Broadleaf Pondweed				8	0.0
Sub Total Score (maximum 75 points)						0.0
Total Score (maximum 75 points)						0.0

Step 5: (**High Marsh**: area from the water line to the inland boundary of marsh wetland type. This is essentially what is commonly referred to as a wet meadow, in that there is insufficient standing water to provide fisheries habitat except during flood or high water conditions.)

_____ High marsh not present (Continue to Step 6)
_____ High marsh present (Score as follows)

Scoring for Presence of Key Vegetation Groups

Scoring is based on the one most clearly dominant plant species of the dominant form in each High 1Marsh vegetation community. Check the appropriate Vegetation Group (see Appendix 16 Table 16-2) for each High Marsh community. Sum the areas of the communities assigned to each Vegetation Group and multiply by the appropriate size factor from Table 5.

Vegetation Group Number	Vegetation Group Name	Present as a Dominant Form (check)	Total Area (ha)	Area Factor (see Table 5)	Score	Final Score (area factor x score)
1	Tallgrass				6 pts	0.0
2	Shortgrass-Sedge				11	0.0
3	Cattail-Bulrush-Burreed				5	0.0
4	Arrowhead-Pickerelweed				5	0.0
Sub Total Score (maximum 25 points)						0.0
Total Score (maximum 25 points)						0.0

Step 6: (**Swamp**: Swamp communities containing fish habitat, either seasonally or permanently. Determine the total area of seasonally flooded swamps and permanently flooded swamps containing fish habitat.)

_____ Swamp containing fish habitat not present (Continue to Step 7)
_____ Swamp containing fish habitat present (Score as follows)

Swamp containing fish Habitat	Present (check)	Total area (ha)	Area Factor (see Table 5)	Score	TOTAL SCORE (factor x score)
Seasonally flooded				10	0.0
Permanently flooded				10	0.0
Sub SCORE (maximum 20 points)					0.0
SCORE (maximum 20 points)					0.0

Step 7: Calculation of final score

Score for Spawning and Nursery Habitat (Low Marsh) (maximum 75) = 0.0

Score for Spawning and Nursery Habitat (High Marsh) (maximum 25) = 0.0

Score for Swamp Containing Fish Habitat (maximum 20) = 0.0

Subtotal: 0.0

Sum (maximum score 100 points) = 0.0

4.2.6.2 Migration and Staging Habitat

Score only if information on fish migration and staging exists, e.g. migration of northern pike through a wetland to access spawning areas.

Step 1:

1) _____ Staging or Migration Habitat is not present in the wetland (Score = 0)

2) _____ Staging or Migration Habitat is present in the wetland significance of the habitat is known (Go to Step 2)

3) _____ Staging or Migration Habitat is present in the wetland significance of the habitat is not known (Go to Step 3)

NOTE: Only one of Step 2 or Step 3 is to be scored.

Step 2: Select the highest appropriate category below, attach documentation:

		Score
1)	Significant in Site Region	25 points
2)	Significant in Site District	15
3)	Locally Significant	10
4)	Fish staging and/or migration habitat present, but not as above	5

Score for Fish Migration and Staging Habitat (maximum score 25 points) 0

Step 3: Select the highest appropriate category below based on presence of the designated site type (does not have to be dominant). See Section 1.1.3. Note name of river for 2) and 3).

		Score
1)	Wetland is riverine at rivermouth or lacustrine at rivermouth	25 points
2)	Wetland is riverine, within 0.75 km of rivermouth	15
3)	Wetland is lacustrine, within 0.75 km of rivermouth	10
4)	Fish staging and/or migration habitat present, but not as above	5

Score for Staging and Migration Habitat (maximum score 25 points) 0

4.3 ECOSYSTEM AGE

(Fractional Area = area of wetland/total wetland area)

	Fractional Area				Scoring
Bog	0.00	x	25	=	0.0
Fen, treed to open on deep soils floating mats or marl		x	20	=	0.0
Fen, on limestone rock		x	5	=	0.0
Swamp	#REF!	x	3	=	#REF!
Marsh	#REF!	x	0	=	#REF!
		Sub Total:			#REF!
	Ecosystem Age Score (maximum 25 points)				#REF!

4.4 GREAT LAKES COASTAL WETLANDS

Score for coastal (see text for definition) wetlands only

Choose one only

	wetland < 10 ha	=	0 points
	wetland 10- 50 ha	=	25
	wetland 51 - 100 ha	=	50
	wetland > 100 ha	=	75

Great Lakes Coastal Wetlands Score (maximum 75 points) 0

5.0 EXTRA INFORMATION

5.1 PURPLE LOOSESTRIFE

_____ Absent/Not seen

_____ Present

(a) One location in wetland ___
Two to many locations ___

Abundance code

(b)
(1 < 20 stems ___
(2 20-99 stems ___
(3 100-999 stems ___
(4 >1000 stems ___

5.2 SEASONALLY FLOODED AREAS

Check one or more

Ephemeral	(less than 2 weeks)	___
Temporal	(2 weeks to 1 month)	___
Seasonal	(1 to 3 months)	___
Semi-permanent	(>3 months)	___
No seasonal flooding		___

5.3 SPECIES OF SPECIAL SIGNIFICANCE

5.3.1 Osprey

Present and nesting	_____
Known to have nested in last 5 yr	_____
Feeding area for osprey	_____
Not as above	_____

5.3.2 Common Loon

Nesting in wetland	_____
Feeding at edge of wetland	_____
Observed or heard on lake or river adjoining the wetland	_____
Not as above	_____

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INVESTIGATORS **AFFILIATION**

DATES WETLAND VISITED

DATE THIS EVALUATION COMPLETED:

ESTIMATED TIME DEVOTED TO COMPLETING THE FIELD SURVEY IN "PERSON HOURS"

WEATHER CONDITIONS

i) at time of field work

(Continue in the space below if necessary)

ii) summer conditions in general

OTHER POTENTIALLY USEFUL INFORMATION:

CHECKLIST OF PLANT AND ANIMAL SPECIES RECORDED IN THE WETLAND:

Attach a list of all flora and fauna observed in the wetland.

*Indicate if voucher specimens or photos have been obtained, where located, etc.

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WETLAND EVALUATION SCORING RECORD

WETLAND NAME AND/OR NUMBER	0

1.0 BIOLOGICAL COMPONENT

1.1 PRODUCTIVITY

1.1.1	Growing Degree-Days/Soils	#DIV/0!	
1.1.2	Wetland Type	#REF!	
1.1.3	Site Type	#DIV/0!	
		Total for Productivity	#DIV/0!

1.2 BIODIVERSITY

1.2.1	Number of Wetland Types	0.0	
1.2.2	Vegetation Communities (maximum 45)	0.0	
1.2.3	Diversity of Surrounding Habitat (maximum 7)	0.0	
1.2.4	Proximity to Other Wetlands	0.0	
1.2.5	Interspersion	0.0	
1.2.6	Open Water Type	0.0	
		Total for Biodiversity	0

	Sub Total for Biodiversity	0	
1.3	SIZE (Biological Component)		0
		Sub Total:	#DIV/0!
	TOTAL FOR BIOLOGICAL COMPONENT (not to exceed 250)		#DIV/0!

Total 1

2.0 SOCIAL COMPONENT

2.1	ECONOMICALLY VALUABLE PRODUCTS		
2.1.1	Wood Products	0	
2.1.2	Wild Rice	0	
2.1.3	Commercial Fish	0	
2.1.4	Bullfrogs	0	
2.1.5	Snapping Turtles	0	
2.1.6	Furbearers	0	
	Total for Economically Valuable Products		0
2.2	Recreational ACTIVITIES (maximum 80)		0
2.3	LANDSCAPE AESTHETICS		
2.3.1	Distinctness	0	
2.3.2	Absence of Human Disturbance	0	
	Total for Landscape Aesthetics		0
2.4	EDUCATION AND PUBLIC AWARENESS		
2.4.1	Educational Uses	0	
2.4.2	Facilities and Programs	0	
2.4.3	Research and Studies	0	
	Total for Education and Public Awareness		0
2.5	PROXIMITY TO AREAS OF HUMAN SETTLEMENT		0
2.6	OWNERSH1P		0
	Subtotal for Social Component	0.0	
2.7	SIZE (Social Component)		0
2.8	ABORIGINAL AND CULTURAL VALUES		0
	Sub Total:		0
	TOTAL FOR SOCIAL COMPONENT (not to exceed 250)		0

Total 2

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3.0 HYDROLOGICAL COMPONENT

3.1	FLOOD ATTENUATION		0
3.2	WATER QUALITY IMPROVEMENT		
3.2.1	Short Term Improvement	#DIV/0!	
3.2.2	Long Term Improvement	0.0	
3.2.3	Groundwater Discharge (maximum 30)	0.0	
	Total for Water Quality Improvement		#DIV/0!
3.3	CARBON SINK		0
3.4	SHORELINE EROSION CONTROL		0
3.5	GROUNDWATER RECHARGE		
3.5.1	Site Type	#DIV/0!	
3.5.2	Soils	0.0	
	Total for Groundwater Recharge		#DIV/0!
	Sub Total:		#DIV/0!
	TOTAL FOR HYDROLOGICAL COMPONENT (not to exceed 250)		#DIV/0!

Total 3

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4.0 SPECIAL FEATURES

4.1 RARITY

4.1.1	Wetlands		
4.1.1.1		Rarity within the Landscape	0.0
4.1.1.2		Rarity of Wetland Type (maximum 80)	0.0
		Total for Wetland Rarity	0
4.1.2	Species		
4.1.2.1		Endangered or Threatened Species Breeding	0.0
4.1.2.2		Traditional Use by Endangered or Threatened Species	0.0
4.1.2.3		Provincially Significant Animals	0.0
4.1.2.4		Provincially Significant Plants	0.0
4.1.2.5		Regionally Significant Species	0.0
4.1.2.6		Locally Significant Species	0.0
		Total for Species Rarity	0

4.2 SIGNIFICANT FEATURES OR HABITAT

4.2.1	Colonial Water birds	0.0
4.2.2	Winter Cover for Wildlife	0.0
4.2.3	Waterfowl Staging and Moulting	0.0
4.2.4	Waterfowl Breeding	0.0
4.2.5	Migratory Passerine, Shorebird or Raptor Stopover	0.0
4.2.6	Fish Habitat	0.0
	Total for Significant Features and Habitat	0

4.3 ECOSYSTEM AGE — #REF!

4.4 GREAT LAKES COASTAL WETLANDS — 0

Sub Total: #REF!

TOTAL FOR SPECIAL FEATURES (maximum 250) — #REF!

Total 4

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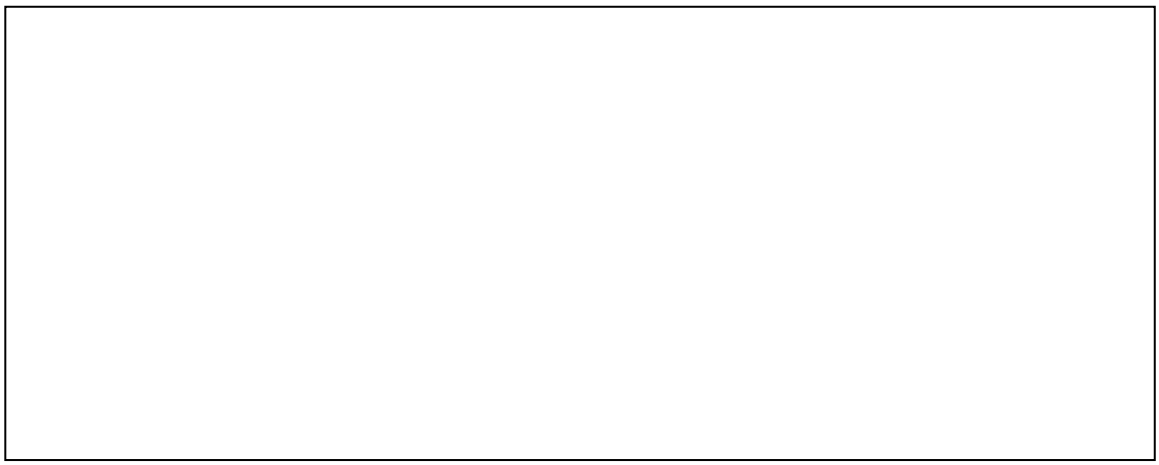
SUMMARY OF EVALUATION RESULT		
Wetland	0	
TOTAL FOR 1.0 BIOLOGICAL COMPONENT		#DIV/0!
TOTAL FOR 2.0 SOCIAL COMPONENT		0
TOTAL FOR 3.0 HYDROLOGICAL COMPONENT		#DIV/0!
TOTAL FOR 4.0 SPECIAL FEATURES COMPONENT		#REF!
	WETLAND TOTAL	#DIV/0!

INVESTIGATORS
0
0
0
0
0
AFFILIATION
0
0
0
0
0

DATE	January 0, 1900

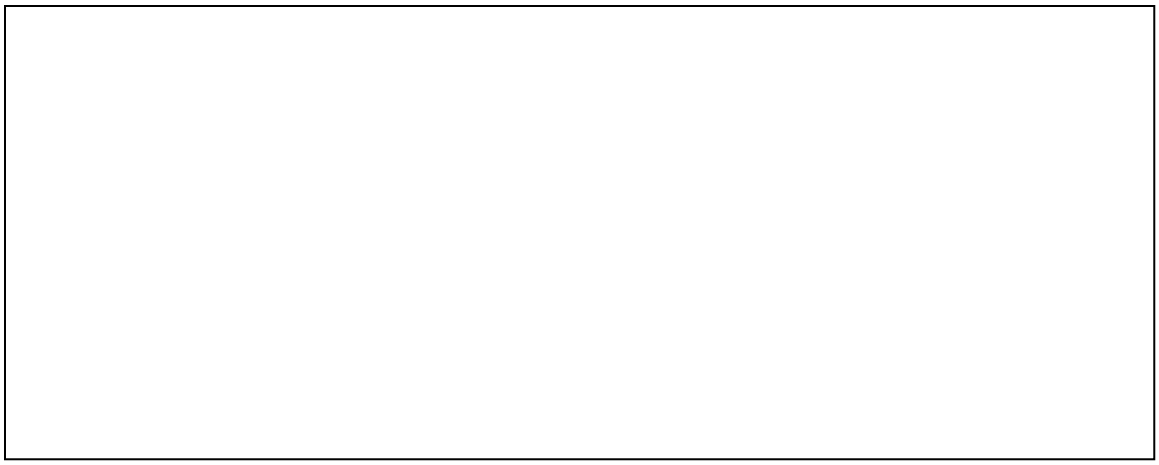
Total 5

Interspection Map



Catchment Map

Polygon Id Map



Vegetation Communities

Comm Sp Code	Comm Nu Code	Vegetation Forms	# Forms	Species	Comments

Appendix B - Common Scenarios Resulting From the Use of the GRCA Wetland Layer Based on 2000 Ortho-Photos

A number of scenarios where MNR and GRCA wetland boundaries are not coincidental are presented below along with the rationale for decisions made in each scenario. Field checks by MNR staff on three days in the summer of 2003 were used to develop these scenarios and the resulting rationale for decisions.

Scenario 1: GRCA Data Indicates That Small MNR Wetland Areas Are Not Wetlands

This scenario applies only to small wetland areas of ~ 1 ha or less. The GRCA has interpreted from 2000 ortho-photos that the area is not a wetland, either because it never was a wetland or because the wetland has been lost through development.

Decision
MNR retains the MNR wetland area until a field check is done to determine if the MNR wetland area exists or not

Rationale
Although the 2000 ortho-photos are more accurate and more current than the 1978 summer black and whites in defining the vegetation boundaries, it is also assumed that there was a generally higher level of field checks done during the original wetland evaluation work.

Scenario 2: The GRCA Wetland Boundary is Significantly Inside of An MNR Wetland Boundary

As implied, in this scenario, the GRCA wetland boundary results in a significantly smaller wetland area than the MNR wetland area.

Decision
MNR retains its wetland boundary until a field check is done to determine if the GRCA wetland boundary is accurate. If the GRCA wetland boundary is accurate, MNR accepts the GRCA boundary.

Rationale
Although the 2000 ortho-photos are more accurate and more current than the 1978 summer black and whites in defining the vegetation boundaries, it is also assumed that there was a generally higher level of field checks done during the original wetland evaluation work. Large areas which have been previously identified as wetland by the MNR should not be removed from wetland areas unless there is accurate information to justify doing so.

Scenario 3: The GRCA Wetland Boundary is Significantly Outside of An MNR Wetland Boundary

As implied, in this scenario, the GRCA wetland boundary results in a significantly larger wetland area than the MNR wetland area.

Decision
MNR retains its wetland boundary until a field check is done to determine if the GRCA wetland boundary is accurate. If the GRCA wetland boundary is accurate, MNR accepts the GRCA boundary.

Rationale
Although the 2000 ortho-photos are more accurate and more current than the 1978 summer black and whites in defining the vegetation boundaries, it is also assumed that there was a generally higher level of field checks done during the original wetland evaluation work.

Scenario 4: The GRCA Data Contains Small Wetland Areas That Have Not Been Identified By MNR

These wetland areas vary in size and may be as small as a fraction of a hectare. Often they are not included as part of wetland complexes because the effort during the original wetland evaluations was to evaluate and map the large wetland areas. Over time, the MNR has gained a better understanding and comfort level with the issue of wetland complexing and are in a better position to argue for the inclusion of these small areas into wetland complexes.

Decision
Add new GRCA wetland areas to new or existing wetland complexes if they meet the criteria for wetland complexing as outlined in the *Ontario Wetland Evaluation System - Southern Manual, MNR, 1994.* These areas *must* be within 750m of other wetlands in the complex. *Generally* these wetlands are greater than 0.5 ha, however, wetland areas as small as 0.3 ha have been included if the MNR can document reasons for including those areas. These small wetland areas may be included as parts of wetland complexes particularly in areas where the landscape consists of a number of these small areas in close proximity to each other in similar habitat.

Wetlands areas that are too small or too distant to be included by MNR in wetland complexes should be labelled as “unevaluated wetlands”.

Rationale
The wetland evaluation process allows for wetland complexing and the inclusion of small wetland areas to a wetland complex. It is understood that various wetland functions can take place within wetland areas spread out over a large geographical area. As long as wetland areas meet the established criteria for wetland complexing and wetland complexing decisions can be defended by the MNR, these areas should be included in wetland complexes.

Scenario 5: The MNR Identifies Small Wetland Areas That Have Not Been Identified By the GRCA

These wetland areas vary in size and may be as small as a fraction of a hectare. Often they were not included as part of wetland complexes because the effort during the original wetland evaluations was to evaluate and map the large wetland areas. Over time, the MNR has gained a better understanding and comfort level with the issue of wetland complexing and are in a better position to argue for the inclusion of these small areas into wetland complexes.

Decision
Add new MNR wetland areas to new or existing wetland complexes if they meet the criteria for wetland complexing as outlined in the *Ontario Wetland Evaluation System - Southern Manual, MNR, 1994.* These areas *must* be within 750m of other wetlands in the complex. *Generally* these wetlands are greater than 0.5 ha, however, wetland areas as small as 0.3 ha have been included if the MNR can document reasons for including those areas. Small wetland areas are included as parts of wetland complexes particularly in areas where the landscape consists of a number of these small areas in close proximity to each other in similar habitat.

Wetlands areas that are too small or too distant to be included by MNR in wetland complexes should be labelled as “unevaluated wetlands”.

Rationale

The wetland evaluation process allows for wetland complexing and the inclusion of small wetland areas to a wetland complex. It is understood that various wetland functions can take place within wetland areas spread out over a large geographical area. As long as wetland areas meet the established criteria for wetland complexing and wetland complexing decisions can be defended by the MNR, these areas should be included in wetland complexes.

Scenario 6: Open Water Bodies

The GRCA tends *generally* not to consider small open water bodies to be wetlands. These may be either natural bodies of water or man-made. The MNR on the other hand tends to consider these areas to be wetlands unless there is some information that suggests that they should not be. The test to determine if open water bodies should be considered to be wetlands is the presence of *wetland function.* Open water areas that are presumed not to perform some wetland function should not be considered to be wetland. Open water bodies that do not contain wetland vegetation because of turbidity caused by intrusion of livestock or annual draw-down of waterbody by the landowner should not be considered to be wetlands. Similarly, storm water ponds, irrigation ponds and golf course ponds should not be included. Naturalized dug or dammed ponds may be considered to be wetlands. In making these decisions, MNR typically does not differentiate between natural and man-made open water bodies.

Decision
Include open water bodies (or parts thereof) as wetlands if they meet the established criteria.

Scenario 7: The GRCA Data Indicates Watercourse Features As Wetlands

On occasion, the GRCA maps watercourse features such as small streams and drains as wetland. The practice among MNR staff is not to map these features as wetland unless there is a recognizable width of wetland vegetation adjacent to the watercourse feature. If the only wetland vegetation available is that which exists in the channel of the watercourse itself, MNR does not include the watercourse as wetland.

Decision
Do not include watercourse features as wetland unless it is known that there is a recognizable width of wetland vegetation adjacent to the watercourse feature and it can be demonstrated that the wetland performs *wetland function*.

Appendix C - MNR/GRCA Joint Protocol on Wetlands

Revised April 8, 2003

Evaluated Boundary Refinements

PSW's

A. Provincially significant wetland boundary refinements that result in little or no change in mapping at a scale of 1:10 000 (Change < 30 m from the latest version of NRVIS)

Protocol – GRCA makes all decisions – no MNR consultation is necessary

B. Provincially significant wetland boundary refinements that result in a change in mapping at a scale of 1:10 000 (Change > 30 m from the latest version of NRVIS)

Protocol – GRCA provides a map (scale 1:2000) and covering note to the MNR biologist requesting MNR to confirm change – MNR responds in writing (or e-mail) to the GRCA – GRCA amends mapping and informs municipality and landowner/developer of change. GRCA provides MNR with amended mapping in accordance with existing data sharing agreement (or separate agreement) - i.e. once/year. In most cases, amendments will require data collection during the growing season.

Other (non-PSW & unevaluated) Significant

C. For other wetland boundary refinements that result in a change in mapping at a scale of 1:10 000 (Change > 30 m from the latest version of NRVIS), the GRCA provides MNR with amended mapping in accordance with existing data sharing agreement (or separate agreement) - i.e. once/year.

PSW Polygon Additions or Deletions

D. Provincially significant wetland additions or deletions require MNR review and confirmation.

E. GRCA will request that Environmental Impact Statement (EIS) include rationale for addition or deletion. GRCA provides initial review and comment to consultant. Once GRCA is satisfied that the EIS is complete, the GRCA provides MNR biologist with a summary of its recommendations including a map. MNR responds in writing (or e-mail) to the GRCA with its decision. GRCA amends mapping and informs municipality and landowner/developer of the change.

Wetland Evaluation/Re-Evaluation Complexing

F. If the GRCA is aware of a significant development application or OP Update/Secondary Plan that could result in or benefit from a wetland evaluation/re-evaluation or complexing exercise then the GRCA will notify the MNR District Planner as soon as possible in writing (or-e-mail). In the case of a development application, the GRCA will notify the MNR District Planner during the pre-consultation process.

All wetland evaluations/psw re-evaluations/psw complexing shall be done in accordance with the latest (3rd Edition) psw evaluation methodology.

Notification Items

EIS's

The GRCA will provide MNR with a copy of any EIS (or related portions) that includes new and/or supporting documentation (field component) for wetland evaluations.

Hearings/Tribunals

Agencies will notify each other immediately if a psw is likely to become or is an issue at an OMB hearing or tribunal etc. Initial contact to the agencies may come from the municipality or a developer.

Official Plans/Subwatershed Studies

GRCA/MNR agree to meet as soon as possible in the process to share and compare mapping/identify priorities for evaluation etc.

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