



CONSIDERATIONS FOR THE DEVELOPMENT OF A WETLAND OFFSETTING POLICY FOR ONTARIO

A Report of the Wetland Conservation Strategy Advisory Panel

SUBMITTED TO THE HONOURABLE NATHALIE DES ROSIERS, MINISTER OF NATURAL RESOURCES AND FORESTRY

May 2018

EXECUTIVE SUMMARY

The Wetland Conservation Strategy Advisory Panel (The Panel) was established to enable discussion among Indigenous people, agencies, the agriculture sector, industry, and non-government organizations and provide recommendations to the Ministry of Natural Resources and Forestry to inform the development of a wetland offsetting policy as a component of a mitigation sequence in Ontario.

The Panel met five times between January and May 2018. Despite the relatively short timelines, consensus was achieved on more than 30 recommendations for the development of a wetland offsetting policy for Ontario. Key among these was an emphasis on prevention: that offsetting should only be considered when the requirements for avoidance, minimization and mitigation have been met. Given that approvals for activities that result in wetland impacts fall under a variety of statutes, regulations and policies, the Panel feels strongly that the mitigation sequence, including the offsetting policy should be embedded across a wider range of legislation, regulations, and policy. This would broaden the application of, and adherence to the mitigation sequence and ensure the ability to impose meaningful restrictions and sanctions.

The Panel explored many aspects of and possible models for offsetting, but the limited time available did not allow for the development of detailed conclusions about a complete program design. The recommendations acknowledge the need for the development of detailed technical guidance on specific elements of implementation, including roles and responsibilities, wetland evaluation, offset ratios, and the size and location of offsets.

Consistent with *A Wetland Conservation Strategy for Ontario*, the Panel acknowledges that there are limits to offsetting: that some wetlands should not be eligible for offsets because of their vulnerability and/or irreplaceability. The policy and any associated regulations should clearly articulate these limits and be supported by technical guidance for implementation. Finally, a variety of offsetting mechanisms are in use in Canada and elsewhere in the world, each offering both challenges and opportunities that were considered in making recommendations with respect to offsetting in Ontario.

Cover picture of the Wye Marsh, by OTMPC

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1 INTRODUCTION

In 2014, the Ministry of Natural Resources and Forestry (MNRF) was given a mandate to work with other ministries, municipalities and partners to review Ontario's broad wetland conservation framework and identify opportunities to strengthen policies and stop the net loss of wetlands. This mandate was reiterated in 2016 with a commitment to complete a strategic plan for Ontario's wetlands in 2017.

In July 2017, the MNRF released *A Wetland Conservation Strategy for Ontario, 2017–2030* (the Wetland Strategy) which outlines a comprehensive suite of actions that government is taking, or will take, to advance the conservation of wetlands across the province.

Throughout the extensive consultation leading to the development of the Wetland Strategy, the ministry heard support for strong wetland targets and aggressive timelines and focussing efforts on areas where wetland loss has been the greatest. Halting the net loss and achieving a net gain of wetlands are key pillars of the Wetland Strategy. Through the Wetland Strategy, the government has committed to two targets:

- By 2025, the net loss of area and function is halted where wetland loss has been the greatest; and
- By 2030, a net gain in area and function is achieved where wetland loss has been the greatest.

Following the launch of the Wetland Strategy, the Minister of Natural Resources and Forestry announced the establishment of The Wetland Conservation Strategy Advisory Panel, who were tasked with providing a report to the Minister outlining recommendations and considerations to guide the development of a wetland offsetting policy in Ontario.

1.1 Mandate

The Panel was asked to provide advice on the following matters as they relate to the development of a wetland offsetting policy for Ontario:

- Jurisdictional/environmental scan,
- Research and information analysis,
- Monitoring and performance,
- Options for implementation,
- Communications, and
- Policy opportunities.

This report presents the Panel's findings on these and other matters.

1.2 Guiding Principles

The Panel's work was guided by the principles that:

- Public interest is paramount;
- A transparent and accountable process will be maintained;
- Wetland conservation is a balance of environmental, economic and social needs of a community; and
- Recommendations made will be consistent with direction established in provincial legislation and policy, and as set out in the Wetland Conservation Strategy for Ontario.

1.3 Membership

The Panel was appointed on November 28, 2017 and was co-chaired by Ducks Unlimited Canada and Conservation Ontario. The Ministry of Natural Resources and Forestry acted as the Secretariat to the Panel. The members of the Panel include:

CO-CHAIRS	ORGANIZATION
Kim Gavine	Conservation Ontario
Lynette Mader	Ducks Unlimited Canada

MEMBER	ORGANIZATION
Bonnie Fox	Conservation Ontario
Kevin Rich	Ducks Unlimited Canada
Kathleen Padulo	Chiefs of Ontario
Tim Gray	Environmental Defence
Wendy Cridland	Nature Conservancy of Canada
Keith Currie	Ontario Federation of Agriculture
Mark Ryckman	Ontario Federation of Anglers and Hunters
Mike Collins Williams	Ontario Home Builders' Association
Anne Bell	Ontario Nature
Gerry McKenna	Ontario Power Generation
Ashlee Zelek	Ontario Sand, Stone and Gravel Association
Paul Norris	Ontario Water Power Association
Nicholas Stow	City of Ottawa
Carolyn Laronde	Temagami First Nation

The Panel met monthly from January to May 2018, including a two-day workshop on April 10-11, 2018. As per the Panel's Terms of Reference, participation on the Panel does not constitute consultation, but rather an opportunity to share and discuss elements of a mitigation sequence and engage in dialogue in an open and transparent process.

1.4 Indigenous Panel Membership

The Chiefs of Ontario were invited to participate and provide broad perspectives. In March 2018 the following Indigenous organizations and communities were also invited to join the Panel:

- Union of Ontario Indians
- Grand Council Treaty #3
- Nishnawbe Aski Nation
- Association of Iroquois and Allied Indian
- Animbiigoo Zaagi'igan Anishinaabek First Nation
- Chippewas of Nawash Unceded
- Kitchenuhmaykoosib Inninuwug
- Mohawks of Akwesasne
- Saugeen Ojibway Nation
- Shawanaga First Nation
- Six Nations of the Grand River Territory
- Temagami First Nation
- Wabaseemoong First Nation
- Bkejwanong Territory
- Whitesand First Nation

Of the new invitees, Temagami First Nation confirmed their acceptance of the invitation. Six Nations of the Grand River Territory and Saugeen Ojibway Nation expressed interest, but were unable to participate in the meetings. Temagami First Nation was able to attend the workshop and the April meeting.

There was overwhelming agreement amongst the Panel members that the timing of the invitations to the Indigenous organizations and communities, and the resulting lack of representation throughout the Panel's discussions at the onset, limited the Panel's ability to develop recommendations that reflect the involvement, knowledge and practices of Indigenous people.

Consistent with the Wetland Strategy, it is recognized that the successful development and implementation of a wetland offsetting policy requires the support, involvement, knowledge, innovations and practices of Indigenous people.

The principle and recommendations highlighted in this section were developed with the Indigenous panel members in attendance at the Panel meetings and workshop.

PRINCIPLE: Indigenous engagement. The development of the wetland offsetting policy and any subsequent projects implemented under the policy should undertake early and continuous engagement of Indigenous peoples commencing with a Letter of Intent. (Note: A Letter of Intent does not constitute consultation.)

Recommendation: The Panel recommends that further engagement of Indigenous communities on the development of the wetland offsetting policy is required and that the Ontario government extend opportunities to facilitate their engagement, building on work of the Panel.

Recommendation: The wetland offsetting policy should explicitly state that it is to be implemented in a manner that is consistent with the recognition and affirmation of existing Indigenous rights. It should also clearly indicate how the Crown's duty to consult could be delegated to third parties, such as municipalities.

Recommendation: The wetland offsetting policy should recognize and provide relevant guidance on the right to free, prior and informed consent.

Recommendation: The government of Ontario should commit to investing the funds and resources needed to positively and proactively engage affected Indigenous communities and knowledge keepers in the development of the wetland offsetting policy, wetland offset planning and decisions. Engagement should commence with a Letter of Intent.

Recommendation: The beneficial outcomes secured through an offset should extend beyond the project impacts and ideally should last in perpetuity. Impacts to be considered include harm to biodiversity, as well as harm to Indigenous cultural values and interests.

Recommendation: The appropriate level of government, or delegated party, should be required to engage Indigenous people in discussions and wetland activities when offsets are to occur on traditional lands.

The Panel acknowledges that these, along with the summary, issues, concerns and priorities presented in this report do not necessarily reflect the official responses from respective Provincial Territorial Organizations (PTOs), Tribal Councils, individual First Nations, elders and youth.

2 DEVELOPING A WETLAND OFFSETTING POLICY FOR ONTARIO

2.1 Risks and Opportunities

The development of a wetland offsetting policy in Ontario could provide a tool for better land use decisions and help compensate for the loss of wetlands in the province, particularly in areas where wetland loss has been greatest. The result of an offsetting policy should be a net gain in both wetland area and function.

It is acknowledged that there are risks and uncertainty associated with wetland offsetting which can impact the achievement of desired outcomes and must be considered during policy design and implementation. An offsetting policy should be based on a precautionary approach.

2.2 State of Ontario's Wetlands

Wetlands—lands that are seasonally or permanently wet—play a vital role in supporting Ontario's rich biodiversity and providing ecosystem services. They offer habitat for diverse wildlife and fish species, filter air and water, mitigate flooding and erosion, reduce greenhouse gas emissions and provide a wide range of recreation and tourism

opportunities. In the southern portion of the province (Mixedwood Plains Ecozone)(Figure 1) many wetlands have been drained or filled to accommodate infrastructure and agricultural, industrial and residential land uses with estimated losses of 72% by 2015; however, a recent assessment has shown that the rate of loss appears to be decreasing (OBC 2015). Ontario's Great Lakes coastal wetlands have experienced similar historical losses and degradation largely resulting from shoreline alteration, water level control, nutrient and sediment loading, invasive species, dredging, and development.

Wetlands in the northern part of Ontario (Hudson Bay Lowlands and Ontario Shield ecozones) (Figure 1) remain largely intact. Although urban development and drainage for agriculture are a concern in the more settled regions of northern Ontario, pressures from activities such as mining, hydro-electric and alternative energy development, and transportation infrastructure are more common. While land conversion is the primary cause of wetland loss, pollution, invasive species, alteration to natural water levels and climate change also pose serious threats.

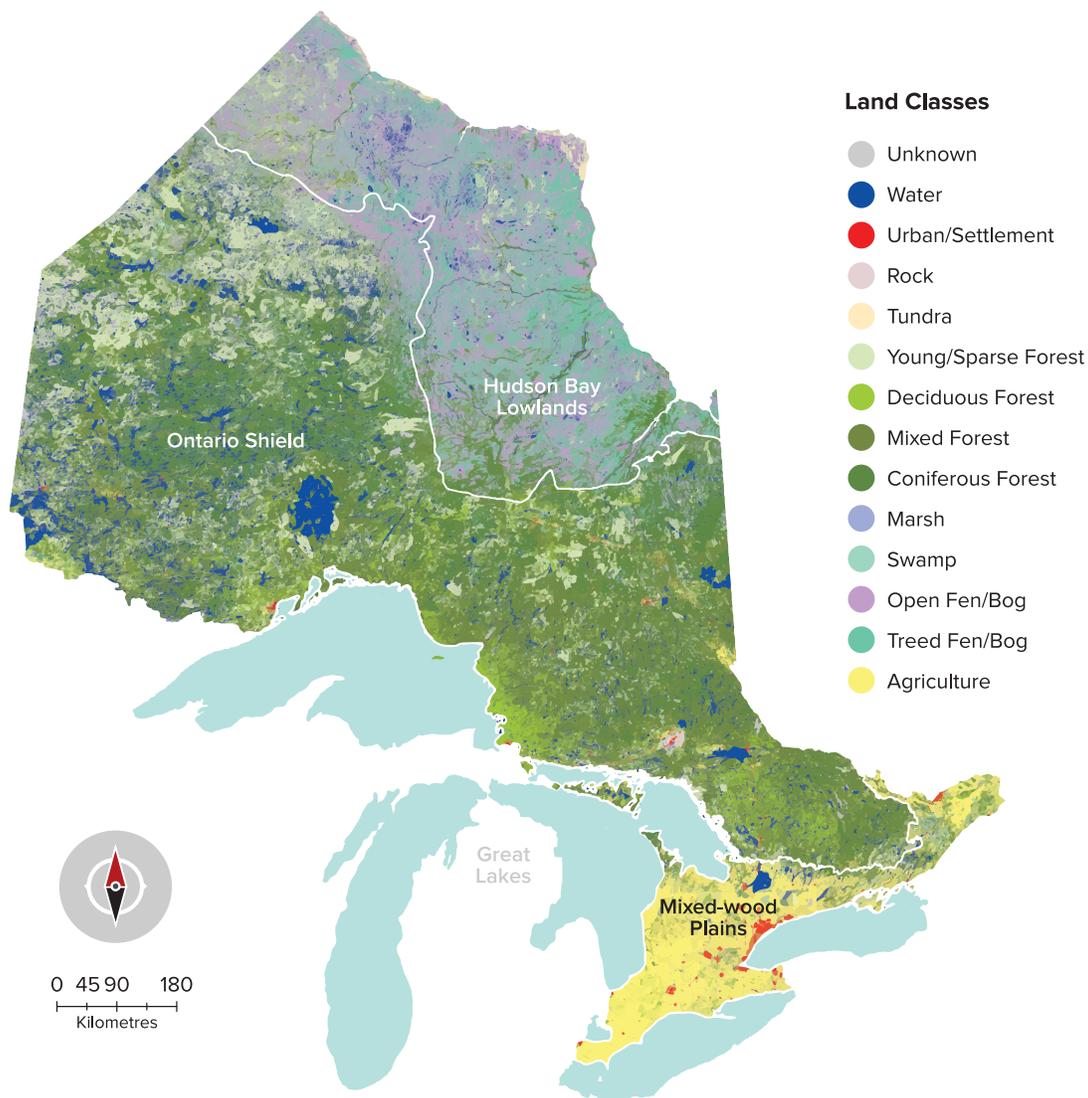


Figure 1. Ontario’s ecozones and associated land cover. Source: MNR

Since the implementation of the Ontario Wetland Evaluation System in 1983, 2,477 wetland evaluations have been completed. Of these, 1,497 have resulted in the identification of Provincially Significant Wetlands (60%). Strengthening Ontario’s wetland inventory (i.e., mapping, evaluations) is a priority action in the Wetland Strategy and will improve the availability and accessibility of wetlands data, laying the foundation for enhanced wetland conservation across the province.

2.3 Ontario’s Wetland Conservation Policy Framework

Ontario’s wetland conservation policy framework encompasses a number of different statutes, regulations and policies. In the north, the *Crown Forest Sustainability Act*, provides for forest management planning and provides a process for consideration of wetland values. Other relevant statutes in this region include the *Public Lands*

Act and the *Far North Act*. None of these laws contains explicit provisions for wetland offsetting.

In the south, wetland conservation is primarily implemented through the land use planning framework, including the *Planning Act* and the Provincial Policy Statement. A variety of provincial land use plans and statutes provide specific protections for natural heritage features, including wetlands. They include the *Greenbelt Act*, the *Oak Ridges Moraine Conservation Act*, the *Niagara Escarpment Planning and Development Act*, the *Lake Simcoe Protection Act*, the *Conservation Authorities Act* and the Growth Plan for the Greater Golden Horseshoe. Resource extraction activities are governed by separate legislation, including the *Aggregate Resources Act* and the *Crown Forest Sustainability Act*. Again, none of these incorporate provisions for wetland offsetting, although a few conservation authorities have developed their own offsetting policies.

2.4 Ontario's Wetland Conservation Strategy

In July, 2017, the Ontario Ministry of Natural Resources and Forestry released *A Wetland Conservation Strategy for Ontario 2017–2030*, the first framework to improve wetland conservation across the province. Priority Action 2 of the Wetland Strategy is “Creating a No Net Loss Policy for Ontario’s Wetlands”, and is the impetus for the Panel’s work.

One option to compensate for the loss of wetlands in Ontario is to develop a wetland offsetting policy. Wetland offsetting is an approach in which negative impacts on wetlands are offset by the intentional restoration or creation of new wetlands, which can provide positive environmental impacts of an equivalent or greater magnitude and kind. In order to be consistent with the intent of the Wetland

Strategy, our discussions regarding how best to conceive and implement a wetland offsetting policy focused on a number of considerations, including the following outlined under Priority Action 2 of the Wetland Strategy:

- **Consideration 1:** Providing provincial oversight to improve conservation outcomes, while not reducing protection for those wetlands already protected by existing policy (e.g., provincially significant wetlands, coastal wetlands protected by the PPS, 2014).
- **Consideration 2:** Understanding the types of land or resource use that would be subject to a wetland offsetting policy. This includes consideration of local and regional issues affecting wetlands, the variety of existing land use planning frameworks in the province, other permitting requirements and the need for compliance.
- **Consideration 3:** Defining wetland functions, and identifying the types of wetlands and functions that can or cannot be offset. Some sites, features and habitats will be ineligible for offsetting based on their status (i.e., provincially significant wetlands, coastal wetlands protected by the PPS, 2014), their vulnerability, or their irreplaceability (e.g., bogs and fens).
- **Consideration 4:** Understanding and establishing equivalence or greater in offsetting, in particular, replacement of both area and function of the wetland.
- **Consideration 5:** Determining/identifying the location of the wetland offset, including its proximity to the negative impact and its landscape context (e.g., within a subwatershed/watershed), and selecting a site where restoration success is optimized and will result in an improvement in ecosystem services.
- **Consideration 6:** Confirming that wetland losses in the south should not be offset by gains in the north.

- **Consideration 7:** Determining the duration of wetland offsets. This may be based on the duration of the negative impacts of the development project or require wetlands to be secured in perpetuity.
- **Consideration 8:** Developing appropriate policy mechanisms for implementation.
- **Consideration 9:** Identifying clear roles and responsibilities for implementation.
- **Consideration 10:** Reviewing long-term results of wetland off-setting and restoration projects as well as the lessons learned from other jurisdictions.
- **Consideration 11:** Establishing monitoring requirements to ensure that wetland functions are restored.

The Panel's findings and recommendations for further action are informed by these 11 considerations; see Section 4.

2.5 Wetland Offsetting and Net Gain

2.5.1 No Net Loss

As noted in Section 1, the Wetland Strategy sets out two overarching targets for conservation of wetlands in Ontario:

- By 2025, the net loss of wetland area and function is halted where wetland loss has been the greatest.
- By 2030, a net gain in wetland area and function is achieved where wetland loss has been the greatest.

These targets were established to stop the net loss of wetlands in Ontario and reverse the trend to focus on restoration and net gain. There are a number of ways the province, in partnership with others, can achieve no net loss of wetlands,

including land use planning, education and outreach, land acquisition and stewardship (Figure 2). Among these approaches and tools are the development and implementation of a mitigation sequence.

2.5.2 Mitigation Sequence

Consistent with the Wetland Strategy, a mitigation sequence offers a framework for managing environmental risk and potential impact on wetlands, while supporting informed decision-making. It is an internationally recognized stepwise approach to preventing or limiting the negative impacts of human activity (see NRC 2001; McKenney 2005; Kiesecker et al. 2009). The mitigation sequence has four steps: avoid, minimize, mitigate and compensate (Figure 2); compensation approaches include offsetting. The mitigation sequence is intended to be applied in a stepwise fashion. Offsetting should only be considered when the requirements for avoidance, minimization and mitigation have been met.

2.5.3 Offsetting

The Wetland Strategy defines wetland offsetting as an approach in which negative impacts on wetlands are offset by the intentional restoration or creation of new wetlands, which can provide positive environmental impacts of an equivalent or greater magnitude and kind. In practice, this should mean that the offset is greater than the original negative impact. An offsetting policy is typically set within the compensate phase of the mitigation sequence and considered only after the sequential consideration of impact avoidance, minimization or mitigation alternatives. Offsetting does not refer only to wetland area; it should also compensate for loss of ecological function (e.g., hydrologic functions, carbon storage, and biodiversity), and traditional, cultural and Indigenous values.

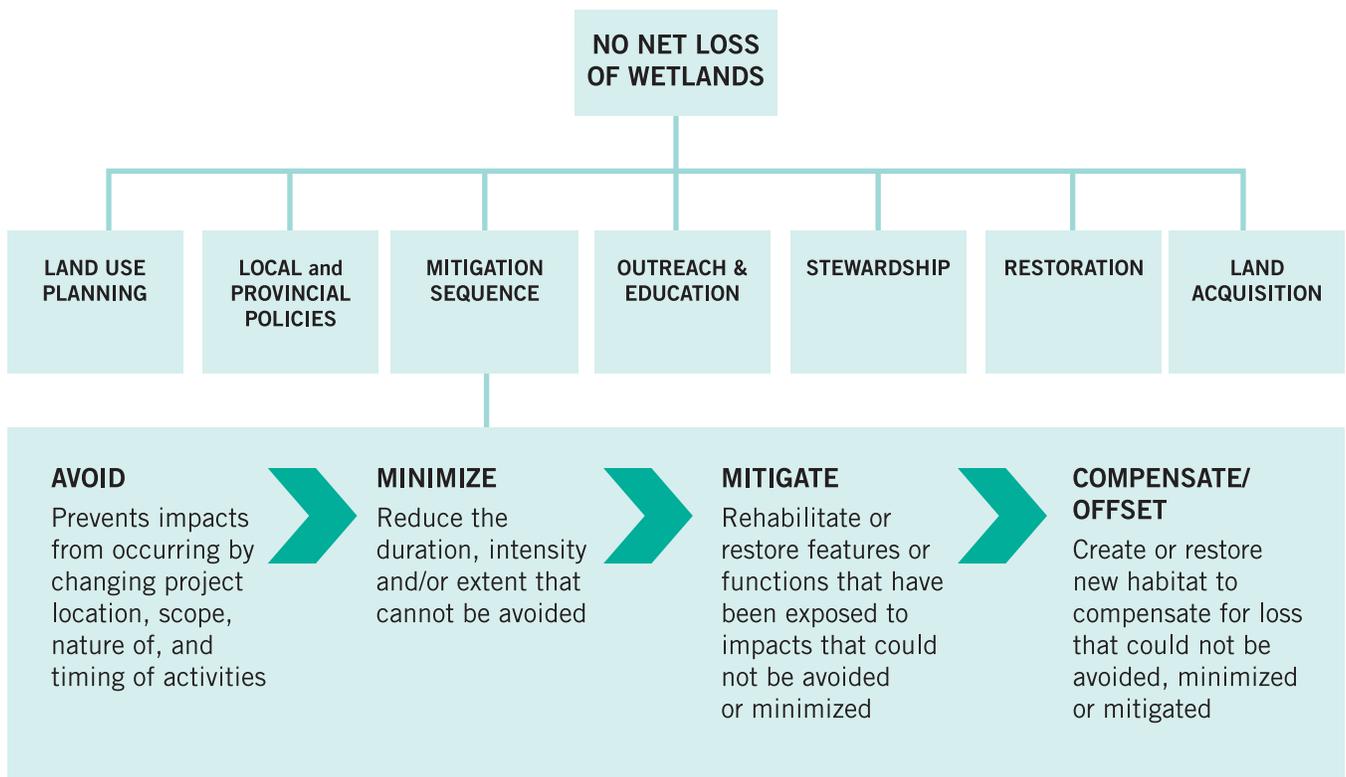


Figure 2. Approaches to achieving no net loss of Ontario's wetlands.

3 JURISDICTIONAL AND ENVIRONMENTAL SCAN

To support a discussion of key components of wetland conservation and support the formulation of principles and recommendations, a number of jurisdictional scans and background materials encompassing legislative and policy tools; wetland impacts; restoration approaches; and offsetting were considered. While not all-encompassing, key areas of focus included the following:

- **State of Wetlands in Ontario**
 - Wetland types
 - Wetland functions
 - Wetland distribution
 - Wetland loss
- **State of Wetland Conservation Policies and Practice in Ontario**
 - Existing provincial policies for wetland protections
 - Wetland Conservation Strategy offsetting principles
 - Existing conservation authority offsetting policies
- **Jurisdictional Scan** of offsetting policies and approaches
- **Reconnaissance Literature Review:** Wetland Restoration Policy and Science Effectiveness
- **Presentations from practitioners** in the US Environmental Protection Agency and the Toronto and Region Conservation Authority, as examples of offsetting approaches.
- **A presentation on First Nations perspectives** on wetland conservation and offsetting.

References used to support these discussions are provided in the bibliography.

4 PANEL FINDINGS AND RECOMMENDATIONS

4.1 Panel Recommendation Framework

In addition to recommendations provided by participating Indigenous communities and organizations as highlighted in the Introduction, the Panel has arrived at a number of principles to inform the development of a wetland offsetting policy for Ontario as well as specific recommendations under the following themes:

- Indigenous engagement (see Introduction);
- Conservation outcomes;
- Policy opportunities;
- Monitoring, evaluation and adaptive management;
- Implementation options; and
- Communications, education and awareness.

Figure 3 presents the Panel’s framework for the principles and recommendations.

RECOMMENDATION FRAMEWORK

PRINCIPLES					
High-level principles that should guide the design and implementation of an offsetting policy in order to contribute to the desired outcome of Net Gain					
Net Gain Avoidance First Adaptive Equity Informed Transparency and Accountability Indigenous Engagement Limits to Offsets					
THEMES					
CONSERVATION OUTCOMES	IMPLEMENTATION OPTIONS	POLICY OPPORTUNITIES	MONITORING, EVALUATION, & ADAPTIVE MANAGEMENT	INDIGENOUS ENGAGEMENT	COMMUNICATION, EDUCATION & AWARENESS
THEMES DESCRIPTION					
Ensuring positive environmental impacts of an equivalent or greater magnitude and kind, or net gain	Tools, mechanisms and processes that can be used to support the implementation of wetland offsetting	Policy opportunities (i.e., legislation, regulation, policy guidance, standards) spanning all levels of decision making	Monitoring, reporting and evaluation needs to provide ongoing feedback regarding achievement of policy, program and projects goals	Engagement with Indigenous peoples on the development and implementation of a wetland offsetting policy	Education, communication, and awareness throughout policy development and implementation
RECOMMENDATIONS TOPICS					
Valuation Equivalency	Mitigation Sequence Duration Offset Ratios	Mitigation Sequence Offset Eligibility Policy Framework	Monitoring & Reporting Evaluation Adaptive Management	Engagement Cultural Values Resources	Education/ Outreach Engagement Communication
NUMBER OF RECOMMENDATIONS					
5	11	6	4	6	2

Figure 3. Wetland Conservation Strategy Advisory Committee Panel Recommendation Framework

The following sections present the Panel's approach in characterizing these themes and the associated recommendations.

4.2 Guiding Principles and Overarching Themes

The overarching goal of a wetland offsetting policy should be improved conservation outcomes. Consistent with the Wetland Strategy, offsetting should contribute to achieving net gain; it should not reduce wetland protections under existing policy and planning frameworks in the province. And, as noted in Section 2.5, offsetting should only be contemplated when all other steps in the mitigation sequence have been accomplished. Where wetland impacts cannot be fully avoided, they must be minimized and mitigated to the greatest extent possible before offsetting is considered.

The following principles should be considered in the development of a wetland offsetting policy;

Principle 1: Net gain. Consistent with direction in *A Wetland Conservation Strategy for Ontario*, the goal of the wetland offsetting policy should be net gain with respect to the extent and quality of wetland habitats, their functions, and traditional, cultural and Indigenous values.

Principle 2: Avoidance first. The wetland offsetting policy should position offsetting as the last step within a clear mitigation sequence.

Principle 3: Adaptive management. Offsetting objectives and performance standards should be clearly articulated in advance, with outcomes

being monitored systematically and reviewed periodically. Where results do not demonstrate satisfactory progress, management strategies should be adjusted to improve conservation outcomes.

Principle 4: Equity. The wetland offsetting policy should be designed and implemented in a manner that is fair and equitable to all parties, respecting the rights and concerns of Indigenous peoples, local communities and future generations.

Principle 5: Informed. Wetland offsetting should be undertaken through a decision-making process that considers the best available science and knowledge, including Traditional Ecological Knowledge.

Principle 6: Transparency and accountability. The wetland offsetting policy should incorporate provisions for oversight, tracking and public reporting on the effectiveness of implementation.

Principle 7: Limits to offsets. Some wetlands should be ineligible for offsetting based on their status, their vulnerability or their irreplaceability.

Adhering to these principles requires policy approaches that are flexible, consistent, transparent and clearly communicated.

4.3 Conservation Outcomes

The overarching goal of a wetland offsetting policy should be improved conservation outcomes. In order to achieve improved conservation outcomes there should be overall improvement in the ecological, social, cultural and economic benefits provided by

wetlands. Further, there should be no erosion of existing protections for wetlands provided by any local or provincial policy.

4.3.1 Wetland Valuation and Equivalency

Based on the targets of the Wetland Strategy, determination of wetland equivalence for the purpose of offsetting must consider both wetland area and function. Area is relatively straightforward to measure, but determining equivalent wetland function is much more complex, given the range of values provided by a wetland. A baseline assessment of each impacted wetland is necessary, to determine its functions and their value¹ within the particular subwatershed or watershed, including local rarity. While the wetland offsetting policy should offer some flexibility to accommodate local circumstances, offsets should normally be located in the same watershed. Offsets outside of the watershed could be considered where there is opportunity for greater conservation outcomes.

The scale of an offset should reflect the scale of the wetland function(s) and/or value(s) to be replaced; for example, hydrologic functions may need to be offset at a different scale than certain biodiversity functions. Higher offset ratios could be required for impacting wetlands that provide multiple ecological, cultural, and recreational benefits. It is also desirable to have consistent offset ratios, to avoid a system that encourages ‘shopping around’ jurisdictions for the lowest available offset ratio.

Recommendation 1: The Ontario Government should develop, collaboratively with partners and Indigenous communities, guidance to support the achievement and evaluation of offset equivalency (i.e., area, function, location, scale and values) and standards/criteria for assessing gains and losses.

Recommendation 2: Preference should be given to locating an offset within the same watershed as the impacted wetland, with the support of technical guidance. Offsets outside of the watershed could be considered where there is opportunity for greater conservation outcomes.

Recommendation 3: A proponent applying the mitigation sequence in a wetland which has not been evaluated by the Ontario Wetland Evaluation System should be responsible for having the wetland evaluated by a qualified wetland evaluator.

Recommendation 4: Offset approvals, including offset ratios, should aim for net gain in wetland function, values and area and should reflect risk and uncertainty (e.g., potential time lags, project failure) in the achievement of offsetting goals.

Recommendation 5: Offsetting ratios should include a sliding scale to reflect the degree of wetland loss in a geographic area (i.e. greater ratios in areas of greater loss).

¹ The Panel interprets the term ‘value’ to encompass the full range of social, cultural, traditional, hydrological and ecological values associated with natural wetlands.

4.4 Implementation Considerations

Implementation of a wetland offsetting policy will involve a variety of tasks by a number of parties. In particular, it will be necessary to clarify roles and responsibilities and develop the ‘rules’ for offsets, including thresholds, wetland offset eligibility, wetland offset location selection criteria, and offset duration.

4.4.1 Area of application

The Wetland Strategy places emphasis on areas where wetland loss has been greatest. While wetland loss has unquestionably been greatest in the south, there is merit in having a wetland offsetting policy apply across the entire province to ensure that ongoing losses are not overlooked in the north.

Recommendation 6: The wetland offsetting policy should apply across all of Ontario, taking into consideration different regional and legislative contexts.

4.4.2 Clear roles and responsibilities

Wetland impacts can occur through a wide variety of human activities, including the management and extraction of natural resources, land use changes and infrastructure development. As a result, a diverse array of organizations, individuals and landowners are likely to be involved in one or more aspects of offsetting. It is essential to understand key roles or regulators approving activities that result in wetland impacts or destruction, and those associated with restoration, and offsetting. In light of this, the following roles and responsibilities associated with offsetting have been identified:

- Review and approval of offsetting proposals;
- Implementation of offset projects (e.g. planning, consultation, construction);

- Monitoring and maintenance of offset sites;
- Inspection and verification of completed offsets;
- Long-term monitoring of offset function and performance; and
- Oversight and monitoring of the wetland offsetting program, including progress towards achieving policy objectives.

The Province has a key role in providing standards and guidance enabling offset evaluation and monitoring; research; adaptive management; funds administration (oversight of offsetting program); and information management, compliance monitoring and enforcement; program assessment; research; adaptive management; and education and outreach.

Conservation authorities or other local entities may develop watershed plans containing valuable information that will assist in the identification of wetland location and function, including offsetting opportunities. These organizations could also be involved in developing an inventory of offsetting opportunities, site evaluation; and site-specific authorizations, offset design and implementation, and monitoring. Conservation authorities’ watershed planning activities, and their work with municipalities and others in the development of watershed-based natural heritage system strategies, include mapping, evaluation and public engagement that could support the identification of offsetting sites and assist in establishing wetland restoration objectives.

Municipalities could play an important role in offset authorizations through land use approvals and associated site monitoring.

Private landowners, including land trusts could be involved in offset implementation and management.

Industry and large corporations, such as utilities that have large land holdings, can participate in wetland offsetting.

Proponents of an offset project should be responsible for payment of all costs associated with the planning and implementation and management of an offset.

Non-profit organizations could potentially play a variety of roles, including assisting in the development of an inventory or registry of offsetting opportunities (sites); site evaluation; and offset design, implementation and monitoring.

Neutral third parties could provide functions such as verification of offset construction or administration of certain aspects of delivery, such as a conservation banking system.

Recommendation 7: The Ontario Government should establish policy that defines the roles and responsibilities of agencies and parties involved in wetland offsetting, including those associated with permitting, implementation, inspection, monitoring, reporting, auditing and enforcement.

A conflict of interest could exist if the same agency that granted approval for an offset also oversees its construction, monitoring and adaptive management. It will be essential to separate the agency functions and distinguish clearly between program oversight and approvals. Other functions that should be separated from the approval agency include enforcement and compliance, which may be overseen by other agencies.

Recommendation 8: The oversight and implementation of wetland offsetting should be kept distinctly separate and assigned to different government agencies.

Recommendation 9: The wetland offsetting policy should be established and implemented in such a way as to be transparent and avoid conflict of interest in oversight and implementation.

Private landowners have an important role to play in wetland stewardship, especially in the south, and may be willing participants in restoration of a wetland for the purpose of offsetting. Some landowners may be reluctant to participate due to concerns about potential future land use restrictions that may result from wetland restoration or creation (e.g., designation of a Provincially Significant Wetland) or creation of habitat for listed species under the *Endangered Species Act*. These land restrictions could potentially also extend to abutting properties. Some panel members suggested that these property owners should not bear the full responsibility of potential land restrictions.

Recommendation 10: Landowners, and those with Aboriginal Treaty Rights and Inherent lands hosting compensation wetlands, as well as their neighbours, should be protected from undue hardship due to new restrictions on land uses indirectly created by the restored or created wetland.

4.4.3 Adherence to the Full Mitigation Sequence

One of the key observations emerging from experience in the US and elsewhere is that wetland offsets have failed to accomplish no net loss because the proponents have not been required to follow the steps in the mitigation sequence. In the absence of adherence to the full mitigation sequence, proponents sometimes proceed immediately to compensation, the last step in the sequence. Each development application with the potential to impact wetlands should therefore incorporate a requirement to demonstrate that the full mitigation sequence has been followed, considering offsetting only when all other steps have been accomplished.

Recommendation 11: The Ontario Government should establish standards for implementing each step of the mitigation sequence.

4.5.4 Duration of Offset Outcomes

Many offsetting projects have experienced significant lag times between wetland loss and achievement of the wetland offset. While proponents may wish to have some limit on the contractual obligations associated with an offset, offsets should last at least as long as the original impact and ideally in perpetuity while respecting ecological cycles (e.g., wetland successional pathways). Ongoing monitoring and performance measurement is required. The potential for longer term liability for either the proponent or another party who assumes responsibility also needs to be considered.

A restored or created wetland should not subsequently be damaged or destroyed or used in another offset.

Recommendation 12: The wetland offsetting policy and approval instruments should require that offsets be designed to function at least as long as the impact and preferably in perpetuity, respecting ecological cycles.

Recommendation 13: The wetland offsetting policy should be designed to avoid or minimize a time lag between wetland loss and offset gains and address risk and uncertainty. To avoid a lag time, the wetland offsetting policy should encourage an offset to be initiated before an impact occurs.

4.5.5 Identification and Tracking of Offset Opportunities

There is value in identifying and evaluating offsetting opportunities in advance of the need, and maintaining a publicly-accessible inventory of these opportunities in order to reduce delay in offset implementation. Offsetting opportunities, including sites where offsetting would be feasible, could be identified by various parties, including private landowners, land trusts and municipalities. The Panel believes that registration of offset

opportunities could be beneficial, provided that site evaluation and verification is conducted by an impartial third party.

Recommendation 14: The offsetting policy should provide practical guidance (e.g., technical direction, roles and responsibilities, definitions) on the establishment of watershed scale wetland restoration objectives and priorities.

Recommendation 15: The Ontario Government, or delegate with appropriate resources, should develop and maintain a publicly accessible information system that includes information such as an inventory of potential wetland offset opportunities and information about wetland offset authorizations at an appropriate watershed scale.

Although detailed program design was determined to be beyond the scope of the Panel's mandate, it is clear that the wetland offsetting policy should incorporate flexibility to respond to local circumstances and the particular functions and values of wetlands within a specific watershed context. There are a number of aspects of offsetting that require technical guidance; these may include equivalence and the preferred location of offsets. Such guidance would be helpful in establishing consistent terminology and definitions. A glossary is provided as a starting point.

Recommendation 16: The Ontario Government should establish technical guidance to support an offsetting policy, including standards for offset ratios (i.e., minimums, maximums and multipliers for size and function) and the location and size of offsets.

4.5 Policy Opportunities

A variety of activities, approved under a number of different statutes and other policy instruments, can result in impacts to wetlands, including but not limited to linear infrastructure, urban development, agriculture, and water level manipulations. The requirement to offset wetland loss and implement the full mitigation sequence should be embedded in the approval processes associated with key provincial legislation and policy such as *Planning Act*, Provincial Policy Statement, *Aggregate Resources Act*, *Environmental Assessment Act*, and *Drainage Act*.

There are a number of implementation mechanisms that could be considered to support offsetting (e.g., conservation banking, in-lieu fees systems, permittee-responsible mitigation). Approaches that allow an offset to be in place before an impact occurs are desired (e.g., conservation banking). There are both challenges and opportunities associated with current market-based models (i.e., in-lieu fee systems, permittee-responsible systems). While all of these may be considered for application in Ontario, there remains concern about the potential for time lags, the difficulty of demonstrating net gain, and challenges associated with program tracking and information management.

The Ontario Wetland Evaluation System (OWES) tool used determining and evaluating the area and critical functions of wetlands. OWES may be used in the implementation of an offsetting policy. The Wetland Strategy identifies the priority need to improve the evaluation of Provincially Significant Wetlands. The Panel noted that any future reviews or updates resulting in a change to the standard determining the significance of a wetland would have implications with respect to an offsetting policy.

Recommendation 17: Demonstrated adherence to the full mitigation sequence should be required in key approval processes under relevant Ontario legislation, in particular the *Planning Act*, *Environmental Assessment Act*, *Aggregate Resources Act* and *Drainage Act*, and within strategic policy, including the Provincial Policy Statement.

Recommendation 18: The Ontario Government should determine which offsetting mechanisms are most appropriate with respect to their ability to support the achievement of offsetting goals and objectives, including but not limited to conservation banking, in-lieu fees and permittee-implemented offsets, and should implement such mechanisms in legislation and regulations to be fully effective.

4.5.6 Offset Eligibility Criteria

The Panel discussed a variety of situations where wetland offsetting would or would not be appropriate. In a region where there has already been significant wetland loss (for instance, in southwestern Ontario and parts of southeastern Ontario), offsetting may be less desirable. In such situations the greater focus should be on net gain (creation of new wetlands) and protection and restoration of remaining wetland systems.

Some panel members were of the opinion that one offset should not be counted under two policies because such double-counting would contravene the principle of net gain. However, a voluntary action over and above the required compliance level could be considered a contribution toward offsetting.

Consistent with the Wetland Strategy, some sites, features and habitats will be ineligible for offsetting based on their status. These include Provincially Significant Wetlands (PSWs) and all coastal protected wetlands under the Provincial Policy

Statement. There are also wetlands that will be ineligible for offsetting based on their vulnerability or irreplaceability (e.g., bogs, fens, culturally-valued wetlands for harvesting and medicinal plants).

Some Panel members believe that that offsetting should be permitted only for impacts associated with low-functioning or severely degraded wetlands, or in cases where avoidance and minimization of impacts from linear infrastructure are not feasible and wetlands would otherwise be lost when development occurs.

The Ontario Stone, Sand and Gravel Association (OSSGA) acknowledges that the Wetland Strategy states that PSWs will not be eligible for offsetting. OSSGA is concerned that this restriction may limit opportunities that allow the implementation of offsets that could contribute toward better conservation outcomes (e.g., offsetting of small or relatively low value PSWs). This may be especially appropriate in cases where avoidance and minimization of impacts from extraction of provincially protected mineral aggregate resources is not feasible.

Wetlands are far more abundant, and often have different hydrological and ecological characteristics in northern Ontario than in southern Ontario. For that reason, wetland losses in the south should not be offset by gains in the north, and vice versa.

Recommendation 19: Current protections for Provincially Significant Wetlands and significant coastal wetlands should continue to apply to these systems.

Recommendation 20: The offsetting policy should recognize that there are limitations to offsetting and that not all types of wetlands can be offset.

Recommendation 21: The Ontario Government should develop a mechanism for determining wetland vulnerability and irreplaceability (e.g., wild rice harvesting areas).

Recommendation 22: Wetland losses in the south should not be offset by gains in the north, and wetland losses in the north should not be offset by gains in the south.

4.6 Monitoring, Evaluation and Adaptive Management

Natural habitats are dynamic, and adaptive management is essential. With climate change, certain wetland functions, such as flood attenuation, may be impacted to a greater extent than others. The need for mitigation will become more significant to ensure these functions are maintained. Monitoring systems should be designed to track specific indicators of wetland function and offsets should be re-evaluated periodically to ensure the intended function continues to be provided. Where monitoring results indicate unsatisfactory performance of an offset, action should be triggered through an adaptive management process. Effective short- and long-term monitoring is essential in any offsetting system to support adaptive management, with three scales of monitoring being required:

- Monitoring at the **site level**, to determine results and compliance with permit requirements;
- Monitoring at the **watershed or system level**, to evaluate broad-scale impacts on hydrologic and ecological functions; and
- Monitoring at a **provincial level**, to determine the overall effectiveness of the offsetting policy and associated programs.

Recommendation 23: Monitoring of wetland offsetting and restoration projects to support adaptive management should occur at three scales: site/project, to ensure that the offset project is implemented and functioning as intended (compliance and effectiveness monitoring); watershed, to confirm progress toward landscape-scale functional goals and targets; and province-wide, to confirm progress toward achievement of wetland offsetting policy goals.

Recommendation 24: Monitoring and adaptive management should be part of the original project design as a condition of approval and should be incorporated in project costing. All requirements, including monitoring parameters and time duration, should be established in advance of project approval.

Recommendation 25: The proponent of an offset project should be responsible for site-level monitoring and adaptive management over a specified period of time. Any delegation of these responsibilities to a third party should not absolve the proponent of responsibility for compliance with conditions of approvals.

Recommendation 26: The Ontario Government should develop a publicly accessible repository for monitoring information to enable adaptive management of wetland offsetting. This system should support provincial evaluation of program success and inform adaptive management and research priorities.

4.7 Communications, Education and Awareness

An effective wetland offsetting policy must be supported by the creation or expansion of effective engagement, education and communication strategies to ensure that the rules are clearly understood by all those involved or impacted by the policy.

Recommendation 27: The Ontario Government should develop education and outreach programs to support effective implementation of the wetland offsetting policy, including application of the mitigation sequence.

Recommendation 28: The Ontario Government should consult farmers and landowners to determine and address their unique challenges in preserving or restoring wetlands on their properties.

5 CONCLUSION

This report summarizes the work of the Panel from January to May 2018. The recommendations place very strong emphasis on prevention of impacts to wetlands, which will be best achieved by adherence to the full mitigation sequence. Offsetting should only be contemplated when avoidance, minimization, and mitigation efforts have been exhausted. For that reason, offsetting and the full mitigation sequence should be embedded in law and policy, with strong oversight.

In addition to one principle and several recommendations focussed on Indigenous interests and considerations, this report presents recommended guiding principles for the development of a wetland offsetting policy and a number of specific recommendations. Consensus was achieved in the development of the principles and recommendations. Panel membership was

diverse and included representatives from some Indigenous organizations and communities, non-government organizations, municipal government, conservation authorities, and industry. The Panel members' commitment to this important initiative, and its desire to achieve consensus, was reflected in a very high degree of participation. The guiding principles and recommendations reported here therefore represent a very broad spectrum of interests, overlain by a deeply-felt common commitment to the conservation of Ontario's wetlands.

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GLOSSARY

TERMS	DEFINITIONS
Adaptive Management	A systematic approach to improving management and accommodating change by learning from the outcome of management interventions.
Conservation	Actions that are intended to establish, improve or maintain good relations with nature. This can include protection, restoration, rehabilitation, management, stewardship and wise use. ¹
Conservation Banking	A system of accounting for wetland impacts and compensation that includes sites where wetlands exist in perpetuity. These wetlands provide transferable credits to be subsequently applied to compensate for authorized adverse impacts to other wetlands. In general, a bank sells credits to proponent whose compensatory mitigation obligations are then transferred to the bank sponsor.
Compensation	Measures taken to compensate for any residual significant, adverse impacts that cannot be avoided, minimized and/or rehabilitated or restored. ²
Equivalence	As no two wetlands are identical, designing offsets requires assessment of how to achieve benefits at the offset site that are equivalent to losses at the impact site.
Function	Wetland functions include, but are not limited to quality improvement, floodwater storage, fish and wildlife habitat, aesthetics, and biological productivity.
In-lieu fees	A fee that a proponent has to pay to a third party, to compensate for residual adverse impacts to a wetland. The third party (i.e. the offset provider) takes on the financial and legal responsibility for the offsets.

TERMS	DEFINITIONS
Mitigation	Measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and/or minimized. ²
Mitigation – compensation Sequence	<p>An expression of the value of leaving natural ecosystems intact and the risks and uncertainties inherent in human interventions aimed at minimizing disturbance and restoring, enhancing or constructing wetlands to create effective offsets.¹</p> <p>Mitigation sequences are usually comprised of three or four hierarchical steps which could include:</p> <ol style="list-style-type: none"> 1. Avoid: Measures taken to prevent impacts from occurring in the first place, for instance by changing or adjusting the development project’s location and/or the scope, nature and timing of its activities. 2. Minimize: Measures taken to reduce the duration, intensity and/or extent of impacts (including direct, indirect and cumulative impacts, as appropriate) that cannot be completely avoided, as far as is practically feasible. 3. Mitigate: Measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and/or minimized. 4. Compensate (offset): Measures taken to compensate for any residual significant, adverse impacts that cannot be avoided, minimized and/or rehabilitated or restored.²
Net Gain	A similar concept to no net loss however this approach ensures that the replacement ratio for wetlands lost and gained are greater than 1:1. ²
No Net Loss of wetlands	Balancing wetland loss with mitigation and restoration efforts so that functions and services are maintained and the area remains constant or increases. ¹
Offsetting	An approach in which negative impacts on wetlands are offset by the intentional restoration or creation of new wetlands, which can provide positive environmental impacts of an equivalent or greater magnitude and kind. ¹

TERMS	DEFINITIONS
Offset Ratio	A ratio which determines the amount of wetland compensation required by the permitting agencies to offset unavoidable adverse impacts to wetlands. For example, a ratio of 3:1 means three hectares of equivalent wetland must be restored for each hectare of natural wetland impacted or lost.
Precautionary approach	An approach to making decisions about the environment when risks are suspected but not known with certainty. The 1992 Declaration on Environment and Development states: “In order to protect the environment, the precautionary approach shall be widely applied by States [i.e. jurisdictions] according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.” ¹
Protection	A commitment to protect individuals, a population or subpopulation or an ecosystem (or portions of one) from adverse impacts that may result in their loss. ¹
Restoration	The process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed. Restoration can encompass a wide variety of actions, including removing a specific source of stress, restoring natural processes such as flooding and fire, removing invasive species or reintroducing extirpated native species. Restoration can also include elements of rehabilitation, reclamation and ecosystem creation (e.g., wetland creation). ¹
Scale	Spatial scale is the geographic extent over which an ecological process operates, while temporal scale is the time period (frequency) over which a process occurs. Wetland losses, however, are not measured merely in terms of acreage, but in terms of function, type, location, and time.
Time Lag	The time between the impact to a wetland caused by permitted impacts and the replacement of the wetland functions at the offset site.

Sources:

- 1 *A Wetland Conservation Strategy for Ontario, 2017–2030*
- 2 *Wetland Conservation in Ontario: A Discussion Paper*

