



Achieving Net Gains through Ecological Offsetting

Guidelines for preparing a site-specific ecological offsetting plan.

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1.0 Introduction

The Nottawasaga Valley watershed supports a wide range of land uses and a diverse and interconnected system of natural features. The healthy function of these natural systems provides invaluable services for landowners, businesses, and numerous other stakeholders throughout the watershed. Examples of such services include maintaining healthy drinking water, providing flood and climate change mitigation functions, providing a diversity of recreational opportunities, and ensuring that native plants and wildlife have the necessary space to thrive. All of these important natural services must be balanced with the current development pressures that the watershed is experiencing, and will continue to experience moving forward.

While growth provides critical opportunities for economic prosperity, it also presents a challenge for the protection and enhancement of natural features throughout the watershed. To address this challenge, it is necessary to institute strategies and policies that ensure growth and development is carried out responsibly and sustainably. Land managers and watershed authorities frequently strive for “no net loss” of natural cover from a given landscape, calling for strict protections of features such as wetlands and woodlands. However, this can be challenging when proposals for development often call for the removal of such features to maximize yields.

In addressing this challenge, one concept gaining momentum is the establishment of policies which call for ‘compensation’ or ‘offsetting’ for the loss of natural assets. Such policies promote an innovative approach to ensuring “no net loss”, and are regularly structured to promote overall “net gains” of natural features on the landscape. This concept assigns a responsibility to compensate for the value and function of lost natural features, thereby ensuring important functions are maintained and enhanced on the landscape. In keeping with this principle, the guidelines contained herein aim to ensure that every loss of a natural heritage feature (or a portion thereof) in the Nottawasaga Valley watershed is met with an equal or greater gain in value and function.

1.1 NVCA’s Offsetting Mandate

By instituting a formal offsetting policy, it is not the intention of the Nottawasaga Valley Conservation Authority (NVCA) to promote an increase in removal of natural features throughout the watershed. The intention of this policy is to ensure that standardized compensation is provided for the removal of features, where such removal is eligible for approval. To accomplish this, natural features must be assigned a standardized value, and natural feature losses must be quantified on a project-specific basis. Compensation may come in the form of re-creation of the

lost feature(s), or through an alternative means deemed appropriate through a consultation process.

Instituting a formal policy for ecological offsetting will increase consistency in the review of development applications that propose to impact natural heritage features and associated functions throughout the watershed. NVCA's policy strives to set a standard of prioritizing avoidance, minimization, and mitigation of impacts, prior to considering offsetting as an option. When projects are considered eligible for offsetting, the process must always be scientifically defensible, and planned and implemented by qualified professionals. Offsetting is a long-term, adaptive, and co-operative process undertaken by multiple stakeholders, including developers, landowners, municipalities, NGOs, and regulatory agencies.

2.0 Policy Context

The *Conservation Authorities Act* provides the Authority with the mandate to develop programs to conserve, restore, develop and manage the watershed's natural resources. Under the *Act*, NVCA may prohibit development within wetlands or other areas where development could interfere with the hydrologic function of a wetland. However, the NVCA may grant permission for development in such areas if, in its opinion, the control of flooding, erosion, dynamic beaches, pollution or the conservation of land will not be affected by the development.

Further, Section 21(1) of the *Act* provides the basis for the Authority's review of planning applications as a commenting agency under the *Planning Act* as well as through agreements with its member municipalities. Municipal and provincial land-use planning policies generally prohibit or discourage development within features such as wetland and woodlands, unless the proposal can demonstrate no "negative impacts" to these natural features and their associated functions.

This policy context provides the foundation for the offsetting guidelines discussed herein. This guideline is prepared on the premise that any development plan which proposes to encroach on a natural feature cannot be undertaken without some degree of inherent negative impact to the feature itself. In this context, in order to support such a proposal, NVCA may impose a requirement to use ecological offsetting as a tool to compensate for minor negative impacts to a natural feature. As previously noted, and further reiterated below, the option to employ ecological offsetting will only be permitted as a last resort. These principles are discussed in further detail below.

Non-compliance or violation-related matters pertaining to applications made under O.Reg. 172/06 may have regard for the guidelines contained herein. However, the intent of this document is for use in development projects requiring an application under the 'Planning Act'.

2.1 Policy Conformity

Any proposal for development must begin with an objective assessment of conformity with relevant conservation authority, municipal, and provincial-level policies. Planning policies develop and change over time, and conformity must be demonstrated with those policies in place at the time a project application is submitted. Applicable policy documents include (but are not limited to):

- The Growth Plan for the Greater Golden Horseshoe (MMAH, 2017)
- Provincial Policy Statement (MMAH, 2014)
- County/Regional level Official Planning policies (e.g. Simcoe, Grey, Dufferin, Peel)
- Municipal level Official Planning policies
- Oak Ridges Moraine Conservation Plan (MMAH, 2002)
- Niagara Escarpment Plan (NEC, 2017)
- NVCA Planning and Regulations Guidelines

NVCA's offsetting policy and supporting guidelines are subject to revision based on changes to applicable planning policy over time.

2.2 Evaluating Significance

Within the context of land-use planning policies, a designation of 'significant' is particularly important in assessing policy conformity of a development proposal. Natural heritage features which are considered significant may receive strict protections under provincial, regional, and/or local-level planning policy. For example, under most planning policy, it would generally be prohibitive to develop within areas designated as 'Significant Woodland' or Provincially Significant Wetlands (PSWs). In general, designation of a natural feature as significant would preclude any consideration for removal of such a feature and, therefore, preclude any consideration for offsetting.

Depending on the type of feature, significance may be clearly designated by a regulatory authority, and may be mapped in applicable planning documents. This is often the case with previously-evaluated PSWs, which are accurately mapped and available for public review online (see Natural Heritage Information Center, 'Make-a-Map' application). Further, select municipalities have mapping available within official plan schedules to delineate areas identified as Significant Woodland.

Notwithstanding the above, a proponent should be aware that **the absence of mapping for significant features should not be equated to a lack of such**. Where natural features present a potential constraint to development, a site-specific Environmental Impact Study (EIS; or equivalent) must be prepared and include an objective assessment of the significance of relevant natural features. As part of the EIS process, the NVCA may request the involvement of the Ministry of

Natural Resources and Forestry (MNR) in matters related to PSWs, and may also request a formal wetland evaluation for wetlands which are presently unmapped or unevaluated. Significance of woodlands and wildlife habitat must be assessed by a qualified individual through the EIS process, or by regulatory agencies through the subsequent review process. Examples of resources that may be used to evaluate feature significance include:

- The Natural Heritage Reference Manual (OMNR 2010);
- The Oak Ridges Moraine Conservation Plan Technical Paper Series [#7 - Identification and Protection of Significant Woodlands (OMNR 2004);
- Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (OMNR 2015).

2.3 The 'No Impact' Test

The Provincial Policy Statement (MMAH 2014) defines *negative impacts* as:

"In regard to other natural heritage features and areas, degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive development or site alteration activities".

Based on the above definition, there may be scenarios where it can reasonably be demonstrated that minor encroachment on a natural feature would not adversely impact the core function of the feature as a whole. Such an assessment would be undertaken through an EIS, Feature-based Water Balance, or other appropriate analysis prepared by a qualified professional (with appropriate educational background and/or professional certifications). Reports must be prepared objectively and in consultation with review agencies to ensure that any field program is scoped appropriately. In preparing an EIS, a conclusion of "*no negative impacts*" cannot be supported solely on a plan to offset. That is, potential impacts must be assessed based on how the proposed activities will affect the state/function of the subject feature at the time of the assessment.

2.4 Policy Exemptions

Occasionally, NVCA receives applications to review non-conforming project proposals, e.g. where draft approvals have been granted for a project **under former outdated policies**. Notwithstanding this, prior to final approvals, proponents may remain responsible for undertaking an offsetting strategy for any relevant natural heritage features impacted by the development proposal.

3.0 Preliminary Considerations for Developing a Strategy

If a proponent has successfully demonstrated policy conformity and reviewed all options for avoidance, minimization, and mitigation, they may be eligible to consider offsetting. This will be determined in consultation with NVCA and other applicable review agencies. Any subsequent offsetting strategy will be prepared in consultation with these same agencies, and will outline all of the relevant considerations to ensure that proposed compensation measures are both adequate and viable. An overview of the preliminary stages of developing a strategy are as follows:

- **Reviewing the Mitigation Hierarchy:** Determining if/how much offsetting is actually necessary.
- **Quantifying the Area of Loss:** Determining the extent of proposed impacts to the affected feature(s).
- **Calculating the Area of Gain:** Determining the overall net gain required to offset the overall loss of the original feature(s) and its function.
- **Identifying an Offsetting Path:** Determining what offsetting options are available within the given area and within a reasonable timeframe, and prioritizing preferred options.

These key aspects are discussed below on an individual basis.

3.1 Reviewing the Mitigation Hierarchy

Offsetting is a last resort approach. Avoidance of impacts is the first priority with any development proposal, followed by all reasonable efforts to minimize unavoidable impacts. Rationale for an inability to avoid/minimize must be demonstrated through more than project efficiencies or practicalities. NVCA will actively participate in this portion of the pre-consultation, and provide input on potential project alternatives.

Where avoidance or minimization are not considered feasible, the next step is to explore options for mitigation. Mitigation can often be accomplished by employing appropriate measures during the construction process to reduce impacts to an affected natural heritage feature. NVCA will require that development plans creatively explore opportunities to maximize the retention of natural features, instead of defaulting to their removal, even if removal may represent the more convenient option. Mitigation may also take the form of restoration, where a natural heritage feature must be temporarily impacted during the development process, but can be demonstrably rehabilitated post-development. Such is often the case where temporary impacts from site grading or construction staging can be reversed to ensure that the original function of the subject feature is restored post-development.

Where avoidance, minimization, and mitigation are not considered feasible measures, the NVCA may consider development of an ecological offsetting strategy.

3.2 Quantifying the Area of Loss

The first step in the process of developing an offsetting strategy is quantifying the total '*area of loss*' of an applicable natural heritage feature, i.e., the total area that must be offset. In general, the *area of loss* is quantified by calculating the total area of the applicable feature(s) which will be directly and permanently removed for the purpose of the proposed project. This includes any and all activities associated with the project which will result in a direct and indirect loss of the original feature. Examples include:

- Direct building footprints
- Grading envelopes
- Alterations in surface and groundwater flows which will demonstrably result in adverse impacts to a feature.*

The cumulative area of loss must be calculated for each relevant impacted feature, on a per feature basis.

3.3 Quantifying the Area of Gain (Offsetting Ratio)

The proponent will need to determine the required '*area of gain*' for their specific project, a figure which is derived from calculating the *area of loss*, multiplied by an appropriate factor, the '*offsetting ratio*'. The *offsetting ratio* is applied to ensure that offsetting works result in an overall net gain, whereby the *area of gain* will meet or exceed the *area of loss*. For example, an *offsetting ratio* of 1:2 would dictate that the proponent 'replace' an area equivalent to twice the *area of loss*. Offsetting ratios are dependent on site-specific characteristics of the impacted natural feature. The base offsetting ratio for both woodlands and wetlands is 1:1; however, this ratio can increase significantly for either feature type, based largely on the following parameters:

- Quality of feature to be lost
- Successional characteristics of feature to be lost
- Replicability of the feature to be lost

* Where alterations in water input will result in an indirect loss/alteration of a feature, appropriate assessment should determine the extent of alteration and, therefore, the expected area of indirect impact/loss. Potential impacts to a feature may be dependent on community-specific sensitivities. The document, Wetland Water Balance Risk Evaluation (TRCA 2017), may provide guidance in this assessment process.

Tables 1 and 2 outline the criteria used to standardize the calculation of *offsetting ratios* for both woodlands and wetlands. Proponents should work through this table for wetlands and/or woodlands, depending on the nature of the proposed project. The *area of loss* and the appropriate *offsetting ratio* for each impacted feature will guide the proponent in determining the total *area of gain* for which they are responsible to compensate for. The *area of gain* can dictate the spatial requirements for offsetting works, or assist in calculating an appropriate figure for 'cash-in-lieu' offsetting, as discussed in Section 4.0.

3.3.1 Quantifying the Area of Gain—Woodlands

The base *offsetting ratio* for woodland communities is 1:1. The ratio is subject to increase based on two primary factors outlined in the following table. The final offset ratio would be the base ratio (1:1) plus the sum of the applicable factors (1 and 2). For example, for a native early successional woodland type where the average Diameter at Breast Height (DBH) of canopy trees is 15-30cm, the final *offsetting ratio* would 1:2.5. The maximum possible *offsetting ratio* for woodland offsetting would be 1:5, for replacement of a late-successional woodland type with a mature size class of canopy trees.

**Offsetting Ratio for Woodlands =
Base Offsetting Ratio (1:1) + Sum of the Applicable Factors**

Factor 1: Woodland Successional Type

Factor	Increase	Description & Rationale
Plantation/ Non-native Woodland	0	<p>Plantation-grown White Pine, Red Pine, Spruce spp., Scots Pine, etc., in early stages of growth and exhibiting limited regeneration of native hardwood cover or native herbaceous layer. Also includes woodlands where the highest strata is dominated by non-native cover, such as Manitoba Maple, Common Buckthorn, Norway Maple, etc.</p> <p>These communities are not representative of natural community assemblages and do not require offsetting at an increased ratio. Base ratio of 1:1 will apply, in order to replace lost cover function. Replacement plantings should strive to create native woodland assemblages. Mature plantations with significant hardwood regeneration should fall into next category.</p>
Early-successional; Intolerant Coniferous and/or Deciduous Species	0.5	<p>Mature plantations with significant native hardwood regeneration OR early-successional, primarily native woodland communities, typically dominated by species such as Trembling Aspen, Green Ash, White Birch, Black Cherry, White Cedar. Typically a product of relatively recent disturbance, and will often have herbaceous and shrub layers dominated by exotic species.</p> <p>Early-successional woodlands represent communities which are relatively easily replaced through planting strategies.</p>
Mid-successional; Mix of Intolerant and Tolerant Coniferous and/or Deciduous Species	1	<p>Mid-successional woodland communities. May be dominated by a mix of intolerant and tolerant species, such as Aspen spp., Red Oak, Red Maple, White Cedar, White Spruce, White Pine, Green Ash, White Ash, Black Cherry, American Basswood.</p> <p>Mid-successional woodlands represent communities which are less replicable through planting strategies. The lost function associated with this particular successional stage must be replaced by planting a larger overall area.</p>

Factor	Increase	Description & Rationale
Late-successional; Primarily Tolerant Coniferous and/or Deciduous Species	2	Late-successional woodland communities, often dominated by a limited diversity of shade tolerant species, such as Sugar Maple, American Beech, Eastern Hemlock, Yellow Birch, White Pine, Balsam Fir. Late-successional woodlands represent communities which form over long periods of time, and are not replicable through planting strategies. The lost function associated with this particular successional stage must be replaced by planting a larger overall area of young, early successional forest.

Factor 2: Size Class of Dominant Cover^{1,2}

Factor	Increase	Description & Rationale
<15cm DBH	0.5	Woodlands of any successional category where the average size class of canopy-level trees is less than 15cm, measured via DBH.
15-30cm DBH	1	Woodlands of any successional category where the average size class of canopy-level trees is 15-30cm, measured via DBH.
≥30cm DBH	2	Woodlands of any successional category where the average size class of canopy-level trees exceeds 30cm, measured via DBH.

1: Mature woodlands of any type represent a more significant loss on a temporal scale, and spatial requirements for offsetting should increase through a higher offset ratio. Mature size class and successional stage are considered unrelated for the purpose of this exercise. This is based on the premise that even a late-successional woodland type may be dominated by a relatively young age class (e.g. Sugar Maple woodlands managed for timber). Likewise, an early-successional woodland type can be dominated by a mature size class of trees (e.g. over-mature Trembling Aspen woodlands).

2: Factor 2 is not applicable to plantation forests or non-native woodland communities.

3.3.2 Quantifying the Area of Gain—Wetlands

The base *offsetting ratio* for wetland communities is 1:1. The ratio is subject to increase based on two primary factors outlined in the following table, plus two addition 'special feature' factors. The final *offsetting ratio* would be the base ratio (1:1) plus the sum of the applicable factors. For example, for a category 4 wetland type, which is highly groundwater-influenced, has organic soils, and where the average DBH of canopy trees exceeds 30cm, the final *offsetting ratio* would be 1:5. This represents the maximum possible offsetting ratio for a wetland compensation.

**Offsetting Ratio for Wetlands =
Base Offsetting Ratio (1:1) + Sum of the Applicable Factors**

Factor 1: Wetland Successional Type

Factor	Increase	Description & Rationale
Non-native Wetland	0	<p>Wetlands that are typically:</p> <ul style="list-style-type: none"> • Dominated (overall cover exceeding 50%) by non-native flora, such as Common Reed, Reed-canary Grass, Purple Loosestrife, Glossy Buckthorn, Common Buckthorn. • Limited to one of the following ELC community series: MAM, MAS, SWT. <p>Such communities do not represent natural community assemblages. Base ratio of 1:1 will apply, in order to replace loss of basic wetland hydrologic functions. Offsetting efforts will aim to create a native wetland type.</p>
Native, Non-treed Wetland	0.5	<p>Wetlands that are typically:</p> <ul style="list-style-type: none"> • Dominated by native species. • Early-successional in nature. • Contain no significant woody species cover. • Limited to one of the following ELC community series: MAM, MAS. <p>Wetlands under this category are relatively replicable on the landscape.</p>
Native, Shrub-dominated Wetland	1	<p>Wetlands that are typically:</p> <ul style="list-style-type: none"> • Early-successional in nature or maintained in a stable successional state. • Dominated by shrubs or low woody vegetation. <p>Wetlands under this category may require significant time for the full establishment of woody species communities following project completion.</p>
Category 4: Native, Tree-dominated Wetland	2	<p>Wetlands that are typically:</p> <ul style="list-style-type: none"> • Mid- to late-successional in nature. • Dominated by native tree cover. <p>Wetlands under this category may involve a variable level of difficulty to recreate. This is primarily due to the need to establish both suitable hydrologic conditions, and the time associated with re-establishing functional woodland cover.</p>

Factor 2: Size Class of Dominant Cover for Treed Wetlands¹

Factor	Increase	Description & Rationale
<15cm DBH	0	Treed wetlands of any successional category where the average size class of canopy-level trees is less than 15cm, measured via DBH.
15-30cm DBH	0.5	Treed wetlands of any successional category where the average size class of canopy-level trees is between 15-30cm, measured via DBH.
≥30cm DBH	1	Treed wetlands of any successional category where the average size class of canopy-level trees exceeds 30cm, measured via DBH.

1: See explanation under woodland table.

Factor 3: Groundwater Influence

Factor	Increase	Description & Rationale
High Degree of Influence	0.5	Any wetland types which have a high reliance on groundwater discharge. This may be evidenced by the presence of specific indicator plant species, or through the visible presence of seeps, groundwater upwellings, etc. Groundwater conditions can be difficult (impossible) to re-create within the scope of a wetland creation project. Wetlands with a high degree of groundwater influence will need to offset at a higher ratio to reflect the lack of replicability.

Factor 4: Soil Type

Factor	Increase	Description & Rationale
Organic Soils	0.5	Wetlands underlain by organic soil types, as determined through field soil testing and/or review of soil mapping. Organic soils can require significant time to develop; organic-soiled wetlands may require replacement with a mineral-soiled community at a higher offsetting ratio.

4.0 Technical Considerations

At this stage, the proponent has quantified the *area of gain* that is required to appropriately offset the impacts of their project. The proponent must now determine which of the two primary offsetting paths will account for this gain. These options include:

- Proponent-led Offsetting
- Cash-in-lieu Offsetting

The following section provides guidance on a variety of technical considerations for following each offsetting path.

4.1 Proponent-led Offsetting

NVCA's preferred approach is for the proponent to take responsibility for planning and implementing their offsetting project. In this scenario, NVCA serves as a technical advisor for the project, providing assistance (where possible) in identifying candidate project locations, and reviewing technical plans for the project. The proponent will be responsible for all costs associated with the project, and may also be responsible for covering an administrative cost to NVCA for time spent in this advisory role. A monitoring and maintenance component is required, which can be undertaken by a qualified consultant and reviewed by NVCA staff. Additional fees will be required if the proponent chooses to implement the project but have NVCA conduct the monitoring and maintenance component. Further specific technical considerations are outlined below.

4.1.1 Project Site Selection

NVCA maintains a set of standards for the selection and securement of appropriate locations for implementing offsetting works. The following parameters must be considered:

- **Land Ownership:** It is the preference of NVCA that proponent-led offsetting projects are undertaken on public lands to ensure the long-term security of the project. Where projects will be undertaken on private lands, portions of such lands may require conveyance to public authority or establishment of a conservation easement/agreement.
- **Geographic Location:** NVCA promotes a site-selection hierarchy, preferring that proponents seek out offsetting project sites which are as close as possible to the original impacted feature. Completing the offsetting works on the same property is ideal, provided that the property has the space to

accommodate the required *area of gain*. Where this is not feasible, the proponent should strive to source a location that is within the same municipal jurisdiction, e.g. settlement area or township. Failing the above, a proponent should source a location which is contained within the same subwatershed as the feature proposed to be impacted.

- **Site-specific Suitability:** In addition to geographic location, it is imperative to select a project site which can physically accommodate the target feature type for creation. For example, topography and soil composition of a candidate site should be assessed to determine if these parameters will support the desired hydrologic condition and target vegetation communities. Existing cover of a candidate project site must also be evaluated before confirming if the site is appropriate. For example, one natural heritage feature cannot be removed to accommodate another (e.g. clearing a native woodland to construct a wetland).
- **Replacement of Core Function:** While it may be difficult or impossible to immediately replace the ecological function associated with an impacted feature, there must be consideration for replacement of core functions. As a prime example of this, removal of a wetland with significant flood storage capacity should be offset by the creation of a feature with an equal or greater flood storage function within the same system.

NVCA may be able to assist the proponent in the process of securing a project site; however, it should not be expected that NVCA will have candidate project sites readily available for every prospective offsetting project. Examples of previously identified priority restoration areas within the NVCA watershed can be reviewed in the watershed Fisheries Habitat Management Plan (NVCA 2009). Proponents are encouraged to review this report to identify priority areas where natural feature creation would provide maximum landscape-scale benefits to the watershed. The Fisheries Habitat Management Plan can be reviewed on NVCA's website (www.nvca.on.ca). To continue to increase the efficiency of the offsetting process, NVCA will strive to produce additional guidance documents to support the selection of potential project sites.

4.1.2 Design and Implementation

Once a location and project site have been secured, the proponent is responsible for retaining a qualified professional for the design and implementation of the works. Design plans for a wetland will need to include considerations for grading/earthworks and pre- and post-construction water balance. It is important to demonstrate that a proposed project is viable in the long term from a hydrologic perspective, which should entail review by a qualified hydrogeologist. Landscape planning consultants involved in project planning should be recognized and certified

under the Ontario Association of Landscape Architects, Canadian Society of Landscape Architects, Ontario Professional Foresters Association, or equivalent.

NVCA and/or other agency permits may be required to support feature creation projects in certain sensitive /hazard areas, e.g. existing regulated areas. An engineering review may be required to ensure that proposed creation of a feature would not result in an increased risk associated with an existing natural hazard, particularly if a proposed project site would be located in a floodplain. NVCA will assist with identification of such requirements through the consultation process. Once an offsetting plan is approved by NVCA, implementation of the approved plan should be undertaken by qualified individuals. Depending upon scale and complexity, **NVCA may require that an offsetting project reach a certain state of completion prior to removal of the original feature.**

The document, *Guideline for Determining Ecosystem Compensation* (TRCA 2018), provides a series of feature creation design samples. Project proponents are encouraged to review this document at: www.trca.on.ca

4.1.3 Monitoring and Maintenance

All proponent-led offsetting plans are expected to maintain their form and function for the long term. While it is unreasonable to monitor and maintain a feature in perpetuity, NVCA requires reasonable assurance that the proponent-led offsetting feature will function long term. Therefore, monitoring and maintenance should be expected to continue for a minimum of five (5) years or until such time as the created feature has demonstrably reached a functional equilibrium. An averaged 70% success rate for any original planted materials is expected at the end of the monitoring period, with replacement plantings required for projects which fall short of this threshold. Replacement plantings should be subject to a renewed monitoring period, beginning at the date of installment. The proponent is solely responsible for ensuring that any failed planted materials are replaced. It is important to recognize that this may require ongoing financial obligations to the project beyond initial feature creation costs. Monitoring and maintenance must be carried out by qualified individuals. An annual monitoring and maintenance report shall be compiled which outlines the following:

- The monitoring efforts undertaken for each growing season for the five year period;
- The names and qualifications of the individuals undertaking the monitoring;
- The general condition of planted materials, including a photographic log;
- An outline of project deficiencies, and a list of steps taken to address the issues. This should include details on any additional planted materials required to supplement unsuccessful stock;
- A general assessment of the overall health and progress of the project.

The annual monitoring report shall be submitted to NVCA for review.

4.1.4 Administrative Considerations

In certain scenarios, the proponent may be required to provide a security payment to cover the projected cost of the offsetting project (or a portion thereof), potentially extending to the end of the monitoring period. The requirement for such a payment would be determined during the consultation process, and held in trust by NVCA until successful completion of the offsetting project. The cost of the security payment will be calculated using the same approach used to calculate a 'cash-in-lieu' payment, as outlined in section 4.2. A security payment would not be required if the feature creation project is completed prior to removal of the original feature.

It is expected that NVCA will provide an advisory role during the course of the project, including planning, design, implementation, post-construction, and monitoring/maintenance. While the proponent will be responsible to hire a consultant/contractor for each of these stages, NVCA will provide comment throughout the process. This will ensure that projects are being planned and implemented in a manner that satisfies the original terms of the offsetting agreement. As such, an administrative fee may be required to cover NVCA's staff time involvement in this advisory role. If deemed to be required, it is expected that this fee would be paid to NVCA prior to receiving approvals to move forward with offsetting, and not following project completion.

4.2 Cash-in-lieu Offsetting

An alternative approach to proponent-led offsetting is providing a cash-in-lieu payment to the NVCA or to a qualified third-party organization. While proponents are encouraged to explore their options for self-led offsetting, there are several benefits to transferring offsetting responsibilities to NVCA or a qualified third party. The primary benefit to the proponent is the transfer of the responsibility to offset. In addition, projects implemented by NVCA or other qualified third-party organizations may result in created features that are of higher quality and viability, providing greater ecological gains for the same cost. NVCA may also have additional opportunities at hand for offsetting, such as applying funds to the acquisition of conservation lands.

If the proponent will pursue this form of offsetting, the value of the cash-in-lieu payment will be determined based on the estimated cost of re-creating the original feature, at an area equivalent to the calculated *area of gain*. Additional fees are required to cover the cost of project administration and potential acquisition of lands to support the project. Cash-in-lieu payments will be placed in a fund and

allocated appropriately, as discussed further in this section. Once a proponent makes a cash-in-lieu payment, their responsibilities for offsetting are considered fulfilled.

4.2.1 Payment Calculation

The cash-in-lieu calculation is intended to reflect a standardized approach to calculating replacement costs for natural heritage features. The value of the standardized amount is based on three factors: a 'Feature Creation Cost', a 'Land Acquisition Fund', and an 'Administrative Fee'. The *Feature Creation Cost* calculation reflects an estimate of the cost to recreate a specific natural heritage feature, e.g. materials and labor. The *Land Acquisition Fund* accounts for the estimated cost to purchase/acquire lands for the purpose of the feature creation project. Finally, the *Administrative Fee* accounts for the estimated cost for NVCA staff to administer the project as a whole. Figures and further rationale are provided in the table below.

<p>Cash-in-lieu Value = Feature Creation Cost + Land Acquisition Fund + Administrative Fee</p>

Factor	Value	Rationale
Feature Creation Cost¹	<p>Wetland: \$80,000/ha</p> <p>Woodland: \$40,000/ha</p>	One averaged amount is provided for either woodland or wetland, and is reflective of the variable cost of creating different woodland/wetland community types. Variable costing results from different requirements for woody species densities, degree of earthworks, and type of herbaceous planting materials (e.g. plugs vs. seeds).
Land Acquisition Fund	15% of Feature Creation Cost	Lands must be purchased/acquired to ensure the long-term viability of the project. In some cases, all funds from a cash-in-lieu payment may be directed towards land acquisition (and related costs) for the protection of significant features. A provincially-approved NVCA Land Securement Strategy highlights targeted and/or areas of opportunity for acquisition throughout the watershed.
Administrative Fee	10% of Feature Creation Cost	Includes administration of funds and cost recovery for consultation with the proponent through the application process.

1: Based on NVCA estimates for feature-specific Feature Creation Costing and similar costing estimates by Conservation Authorities in neighboring jurisdictions (e.g. LSRCA 2017). Costs are subject to market fluctuations for materials, labor, etc. and, therefore, are subject to revision on an annual basis.

4.2.2 Strategic Use of Offsetting Payments

When a proponent makes a cash-in-lieu offsetting payment, it is NVCA's responsibility to ensure that funds are administered appropriately, and in a way that aligns with NVCA's offsetting mandate. However, it is critical to recognize that there will be organizational limitations to NVCA's capacity to administer, plan, and implement wetland offsetting projects. Further, the organization may be faced with administering payments for multiple projects simultaneously. This poses a variety of potential concerns, including NVCA's ability to source sufficient land to host projects, and the potential for significant lag time required for NVCA to plan and implement appropriate projects.

Notwithstanding the above points, NVCA will follow the standards contained in this policy guideline to the extent possible, to ensure that value and function of the lost feature is adequately compensated for. However, not all offsetting funds will be applied directly or immediately to physical feature creation. Instead, at the advice of an internal, multi-disciplinary steering committee, funds received by NVCA through cash-in-lieu offsetting payments will be directed to one or more of the project categories listed below:

- **Direct feature creation:** Creation of new natural feature areas (e.g. wetland/woodland) and/or expanding existing features on NVCA-owned (or acquired) property and/or private lands (with appropriate conservation agreements).
- **Feature enhancement:** Enhancement of existing natural features on NVCA-owned (or acquired) property and/or private lands (with appropriate conservation agreements).
- **Acquisition of ecologically-significant land:** Acquisition of lands containing significant natural features as outlined within the NVCA's Land Securement Strategy for the purpose of long-term conservation and stewardship of such features, with emphasis on those that abut or are within proximity to existing NVCA landholdings.
- **Other lands acquisition:** Acquisition of lands with demonstrable potential to host future feature creation projects. Lands should ideally be located strategically to ensure that future restoration will provide landscape-level benefits (e.g. corridor connectivity, expanding areas of existing natural cover).

In light of the points discussed above, NVCA will strive to administer any funds received through offsetting payments in a strategic and adaptive manner. Funds received through a cash-in-lieu payment may not be immediately directed towards a specific project, but held in trust until a suitable project opportunity presents

itself. One such strategic use of offsetting funds may be the gradual use by NVCA's stewardship and forestry departments as 'seed' money for grant leverage on relevant feature creation projects. This means that funds from one single cash-in-lieu payment may be used to leverage additional funds for multiple projects. Likewise, funds received through multiple cash-in-lieu offsetting agreements may be applied cumulatively to one larger project, including acquisition of lands and/or large-scale natural feature creation.

In order to ensure that NVCA-led offsetting projects occur in a manner that can be controlled and stewarded for the long term, initial priority allocation of offsetting payments may be toward land acquisition. Land acquisition represents an important option for allocation of funds, particularly when opportunities for direct feature creation are limited due to a lack of available project sites. Priority lands for acquisition, as outlined within NVCA's Land Securement Strategy, may present opportunities for enhancement through the creation of additional natural features. Through this approach, NVCA will work to strategically create a suite of readily-available opportunities for restoration and feature creation, on lands that are owned, managed, and protected by NVCA. In some extenuating circumstances, and as identified, funds may be directed towards the acquisition of lands which are of significant conservation concern, or of particular ecological significance on the landscape. NVCA views the acquisition of ecologically-sensitive lands as an appropriate use of offsetting funds.

4.2.3 Payment Administration and Accountability

Details for offsetting projects may be made available upon request or through a location on NVCA's website dedicated to showcasing internally-administered offsetting projects.

4.3 Exemptions and Extenuating Circumstances

Notwithstanding the technical guidelines outlined in this policy document, there may be extenuating circumstances that afford the proponent, NVCA, or other third party (i.e., the 'responsible party') one or more exemptions from the standards discussed above. Depending on each scenario, exemptions may be as simple as a reduction in the *offsetting ratio* used to calculate the required *area of gain*, or may be more substantive. Examples of extenuating circumstances include (but are not necessarily limited to) the following:

- Where the responsible party proposes to create a feature of demonstrably higher quality or landscape-scale functionality (greater flood storage capacity) than the feature proposed for removal. In this scenario, the resulting exemption would typically be an agreement to reduce the

prescribed offsetting ratio.

- Where the party responsible for feature creation is able to implement particularly significant compensation measures due to the unique and significant features associated with the project site.
- Where infrastructure projects are implemented under a Class EA process or where infrastructure projects must be implemented for the sole purpose of human safety. Depending on the circumstances, NVCA may waive part or all of the requirements for offsetting, provided that all attempts are made to mitigate impacts to affected natural heritage features.
- Where a feature proposed to be removed is less than 0.5 ha in overall size and exists in isolation on the landscape (e.g. providing no identifiable wildlife habitat or connectivity function), NVCA will consider compensation for complete removal of the feature. In the case of a wetland, this would generally only apply to proposals within settlement areas.

5.0 Summary and Conclusions

The guidelines contained in this document aim to ensure that losses of natural heritage features in the NVCA watershed are met with an equal or greater gain in value and function. The purpose of this policy is to ensure that growth and development within the watershed can occur responsibly and not at the expense of the local natural heritage system. While ecological offsetting is viewed by the NVCA as a tool of last resort, these guidelines aim to ensure that metrics associated with such situations are standardized for the benefit of all stakeholders. In dealing with this evolving concept, NVCA will strive to continue to develop and refine this tool based on ongoing consultation with member municipalities, the development community, and all other relevant stakeholders.

6.0 References

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