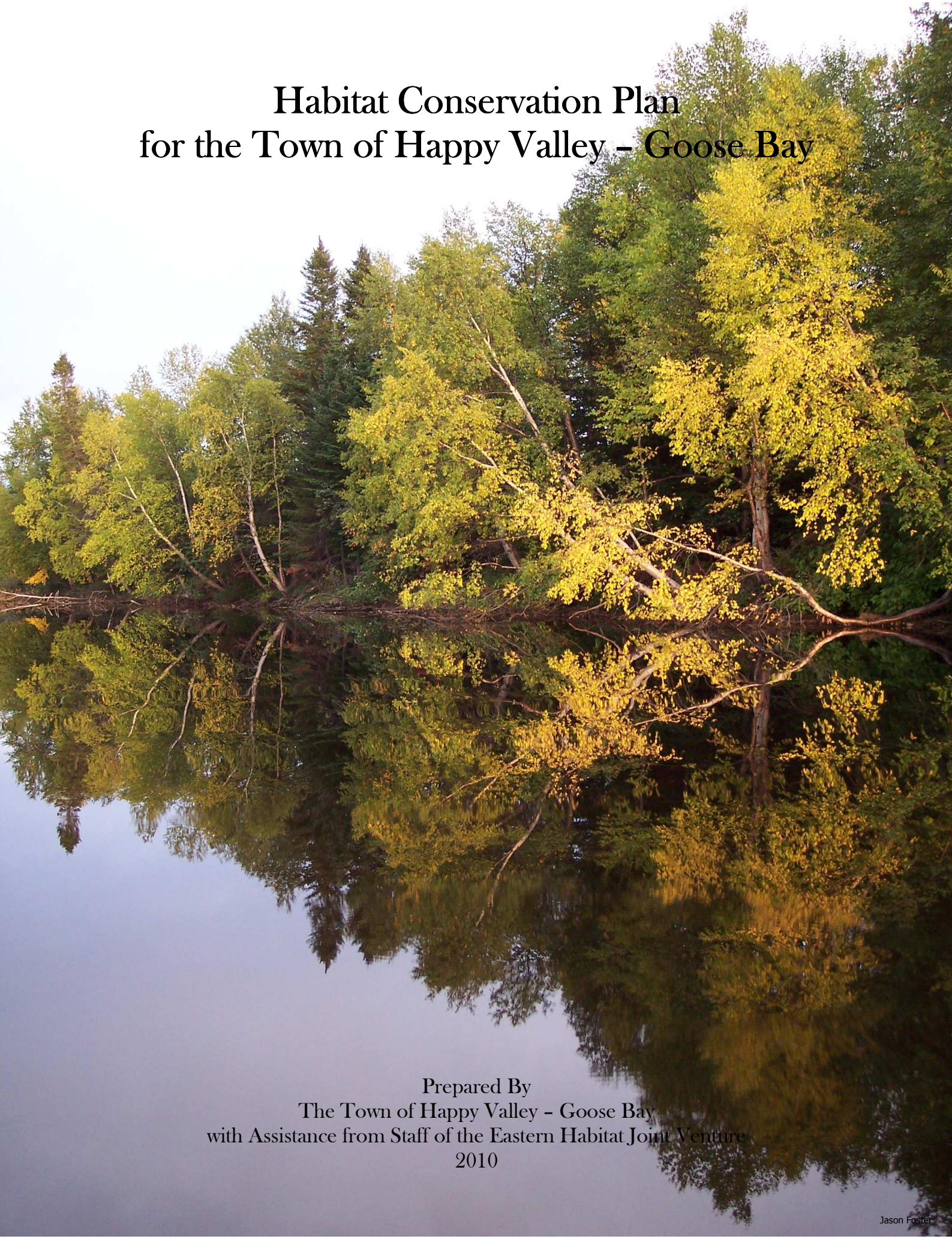
Habitat Conservation Plan for the Town of Happy Valley – Goose Bay



Prepared By
The Town of Happy Valley – Goose Bay
with Assistance from Staff of the Eastern Habitat Joint Venture
2010

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Habitat Conservation Plan for the Town of Happy Valley – Goose Bay

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Preface

In Newfoundland and Labrador some of the waterfowl and wildlife that are in greatest danger of being negatively impacted are those influenced by residential, commercial and industrial activities within the vicinity of municipalities. In this province, the primary focus of the Eastern Habitat Joint Venture is to conserve valuable waterfowl habitat (wetlands and associated upland) through Stewardship Agreements. The Town of Happy Valley – Goose Bay was identified as having just such ecologically valuable, and unique, wetland habitat located within its municipal planning boundary.

The Town of Happy Valley – Goose Bay signed an agreement in 2004 pledging their commitment to conservation and protection of wetlands within a specified Stewardship Zone. In accordance with this agreement, Happy Valley – Goose Bay manages these wetland areas with technical advice provided by the provincial Wildlife Division, in part via this Conservation Plan. With the signing of this plan, the agreement parties officially accept this Conservation Plan and agree to use it as a guide to govern activities within the designated Stewardship Zone.

The following signatories agree to work towards the implementation of the following "Habitat Conservation Plan" for the Town of Happy Valley – Goose Bay:

Mayor

June 30/2011
Date

Witness

June 30, 2011
Date

Director, Wildlife Division,
Department Environment and Conservation

Aug. 3, 2011
Date

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Section 1: Plan Overview

Plan Purpose: The Town of Happy Valley – Goose Bay will use this Conservation Plan as a guide to govern activities which impact wetlands and waterfowl in order to minimize negative impacts within the areas designated for conservation.

Plan Goals: (1) To conserve wetlands located within the designated Management Units and to promote wise use of wetlands located within the designated Stewardship Zone.

(2) To maintain and/or increase wildlife use of those areas, particularly by waterfowl and other avian species.

(3) To increase public awareness of the importance of wetland habitats for conserving waterfowl and other wildlife.

Plan Objectives: (1) To present a general assessment of the wetland habitats and waterfowl or wildlife species designated for protection.

(2) To recommend protection, conservation and enhancement strategies for both the Stewardship Zone and Management Units.

(3) To describe potential initiatives for education and awareness among the public in order to increase support and cooperation of the Town's citizens.

Section 2: Wetland Conservation in Newfoundland and Labrador

Introduction

Human development has resulted in the destruction of many types of habitat all over the world. Wetlands are among the areas most critically affected by this development and are, in fact, one of the most sensitive ecosystems on the planet. Wetlands are unique ecosystems that often occur at the edge of aquatic (water, fresh or salty) or terrestrial (upland) systems. They may be wet year-round, wet during certain seasons, or wet during part of the day. In general, "wetland" refers to land that has the water table at, near, or above the land's surface and refers to land which is saturated for a long enough period to promote wetland processes. In addition to bogs and swamps, wetlands include tidal marshes, forested wetlands, fens, estuaries and shallow open water (at a depth less than two meters). Healthy wetlands and associated uplands contain fresh, brackish or salt water and are some of the most biologically diverse and productive ecosystems on earth.

Wetlands play a major role in the status of continental ecosystem health, as well as regional and local ecosystem health. Wetlands serve as important buffers to flooding, function as enormous sinks for carbon and as natural reservoirs for the holding, purifying and recharging of water resources. From an economic stance, wetlands are associated with a range of values from recreational and subsistence opportunities for hunting, fishing, trapping for food and fur, the gathering of fruit and berries and for non-extractive activities like wildlife viewing, ecotourism, paddling sports and hiking. Wetlands also provide for the seasonal resource requirements of many waterfowl species and serve as important habitat for waterfowl throughout breeding, feeding, staging and over-wintering. All migratory waterfowl, many other migratory birds and half of all threatened and endangered species depend on wetlands and associated upland habitat for their existence.

The number and diversity of North America's wildlife species has been declining over the latter half of the twentieth century. At least a portion of this decline can be directly attributed to the loss of natural habitats to urban, industrial and agricultural expansion. Wetlands have historically been among those areas most critically impacted by human development. Today, wetlands around the globe and within Newfoundland and Labrador are being looked at as viable options for development by a variety of industries and natural resource based sectors, as technological advances make the alteration of wetlands a reality. Canada, the United States and Mexico have signed the North American Waterfowl Management Plan (NAWMP), thereby committing themselves to a long-term program of partnership projects aimed at assuring the survival and increase of waterfowl populations and protecting the wetland habitat on which their survival depends. A total of 21 joint ventures, ranging from species to regional-specificity, have been established to achieve and implement the objectives of the NAWMP. The province of Newfoundland and Labrador, through the provincial Wildlife Division, became a partner of the Eastern Habitat Joint Venture (EHJV) in 1989.

Eastern Habitat Joint Venture

The premise behind the EHJV is to conserve, enhance and restore wetlands for waterfowl in the six eastern Canadian provinces including Ontario, Quebec, New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland and Labrador. Each province deals with wetland and waterfowl issues slightly differently, depending on the unique requirements of each province and individual habitat concerns. Each provincial program, coordinated by a separate program manager, involves the cooperation of international partners, including government agencies and non-government groups, each working to forward specific goals and objectives of the NAWMP. In Newfoundland and Labrador the program is administered through the provincial Wildlife Division of the Department of Environment and Conservation. Its local contributors, other than the province, include Ducks Unlimited Canada, Canadian Wildlife Service, Nature Conservancy of Canada and Wildlife Habitat Canada. While each province may function independently, the Eastern Habitat Joint Venture works towards attaining common goals of influencing wetland habitat quality and quantity in Eastern Canada through conservation, enhancement and/or restoration initiatives.

NL EHJV Wetland Stewardship Program

Wetlands have historically been affected by heavy development pressure. In Newfoundland and Labrador development pressure occurs regularly and most often within municipal boundaries. As such, wetlands that exist within municipal boundaries are often at the greatest risk of destruction or alteration and often in greatest need of conservation and/or management. The Wetland Stewardship Program is perhaps the most successful program of the Eastern Habitat Joint Venture in Newfoundland and Labrador. Its principle goal is to help make municipalities, corporations, developers, landowners and other wetland habitat stakeholders more aware of the value of wetlands within their jurisdiction and to empower them to take action to conserve these areas. This leads to more informed development decision-making and works towards minimizing negative impacts on wetland areas and local ecosystems as a whole.

The program focuses largely upon signing Wetland Stewardship Agreements with municipalities, corporations and individual landowners who own or manage significant wetland habitat. A Wetland Stewardship Agreement represents a formal public commitment by a community, corporation, individual and the province, to act together to conserve wetlands for waterfowl. By signing a Wetland Stewardship Agreement, communities, corporations and individuals become an important link in a continental chain of conservation areas. To date eighteen municipalities in the province have signed Wetland Stewardship Agreements including Bay Roberts, Carmanville, Channel – Port Aux Basques, Come By Chance, Gambo, Gander, Grand Falls-Windsor, Happy Valley-Goose Bay, Hawke's Bay, Labrador City, Spaniard's Bay, Springdale, St. John's, Stephenville Crossing, Torbay, Wabush, Whitbourne, and Winterland. Corporate agreements have also been signed and include the Iron Ore Company of Canada and Corner Brook Pulp and Paper Limited. In addition, private landowners in several of the

communities surrounding the Grand Codroy Estuary (an estuary of international significance) have also been involved with the signing of Wetland "good steward" Agreements, demonstrating a commitment to local wetlands and waterfowl habitat.

The Process

Initial contacts are generally sought by both EHJV staff and local community leaders who wish to take action to conserve wetland and/or upland habitat. A determination is made between the parties of whether there exists mutual interest in pursuing a Stewardship Agreement. At the same time, surveys of the wetlands and associated uplands within a certain area of interest are carried out by EHJV staff to confirm a significant relationship exists between wetland or upland habitat and local waterfowl/wildlife use in the area.

Following these positive assessments, more intensive field investigations will be carried out to determine and agree on formal boundaries for Stewardship Zone(s) and Management Unit(s). A designated "Stewardship Zone" generally functions as a larger area of interest and will reflect municipal wetland areas and associated upland habitat within a Town's municipal planning boundary, within which the Commission would use its discretion when dealing with applications for development. Specific "Management Unit(s)", are significant wetland areas that have been identified as important to waterfowl during nesting, brood-raising, feeding and/or staging times. "Management Unit(s)" are intended to be incorporated as environmentally "sensitive areas", "conservation areas" or sometimes formal "protected areas" into Municipal Plans as governed by the Urban and Rural Planning Act (2000). These areas are, consequently, set aside by a community, individual or corporation in an effort to prevent habitat alteration and diminished wetland function or degradation that might be caused by development.

When sufficient information has been gathered, a preliminary proposal is presented to a community, individual or corporation for review, with suggested boundaries for a Stewardship Zone and Management Unit(s) clearly indicated. After the Stewardship Zone and Management Unit(s) have been agreed to, a formal Wetland Stewardship Agreement will be signed between the presiding body (town, corporation, or landowner) and the province. Under this agreement, the town, corporation or landowner maintains ultimate control over all areas under its jurisdiction, but are asked to abide by the details of a Wetland Stewardship Agreement. (Appendix 1).

After the signing of a formal agreement, the Eastern Habitat Joint Venture staff will assist the community, corporation or individual in preparing a Habitat Conservation Plan. This plan will serve to offer wetland-related best management practices and will provide recommendations and advice for conserving, enhancing and/or managing the wetlands and associated upland habitat contained within a body's area of authority. In the case of a municipal agreement, once the Habitat Conservation Plan has been accepted by council it is intended that it will be then incorporated into the town's existing or future municipal plan, operating plan or master plan for use during future development decisions.

Specifically, a Wetland Stewardship Agreement is signed with the hope that when land use decisions are made, the value of wetlands for wildlife will not be forgotten and that future land-use activities will not have a negative impact upon these values.

Roles of Stewardship Agreement Signatories

"The Province"- The Minister of Environment and Conservation is generally the designated signatory on behalf of the province. The Wildlife Division administers the Eastern Habitat Joint Venture in Newfoundland and Labrador. As such, staff of the Wildlife Division, are assigned, to implement on a provincial basis, the EHJV partnership program.

As a result of signing a Wetland Stewardship Agreement, the staff of the EHJV is expected to:

- Provide the Town with technical advice and assist in the development of a Habitat Conservation Plan.
- Review proposed developments within the Stewardship Zone(s) and Management Unit(s) that have the potential to impact wetlands.
- Assist the town in carrying out education and information initiatives to raise awareness of wetland related issues, and
- Support community conservation groups in implementing the Stewardship Agreement and Conservation Plan.

As a result of signing a Wetland Stewardship Agreement "the Town or Municipality" and its designated Mayor/Council is expected to:

- Ensure wise use, in consultation with staff of the EHJV, within designated Stewardship Zone(s), namely to contact staff of the EHJV in a timely manner when activities are proposed that may impact that habitat.
- Ensure that significant wetland and upland areas designated as Management Unit(s) are protected from destruction or degradation and to contact staff of the EHJV in a timely manner when activities are proposed that may impact that habitat.
- Incorporate the Stewardship Agreement and Habitat Conservation Plan into its next Municipal Plan draft or revision with the assistance of staff of the EHJV.
- With the assistance of EHJV staff, to educate residents and development planners about the stewardship program and their responsibilities.
- Implement over time the Conservation Plan recommendations in the community at large.
- Participate in the Stewardship Association of Municipalities Inc, a province wide organization made up of municipalities which have signed Stewardship Agreements.

Section 3: Wetlands and Waterfowl in Happy Valley – Goose Bay

Introduction to Happy Valley – Goose Bay and its Wetlands

The Town of Happy Valley-Goose Bay, with a population of ~7,500, is the centre of transportation, distribution and administration for the Labrador portion of the province of Newfoundland and Labrador. The Town is located in south-central Labrador and lies at the extreme western end of Lake Melville; on a peninsula bounded in the south by the Churchill River, approximately 11 kilometers above its entrance to Lake Melville, and in the north by Terrington Basin and Goose Bay.

Goose Bay was established in 1941 as a base for aircraft being ferried across the Atlantic to Europe and has been utilized at various times by the United States and Canadian Armed Forces, the Royal Air Force, and by various NATO forces engaged in low-level flight training exercises. The first settlers were those families who came to work with the Construction Company building the Goose Bay Air Force Base. The town of Happy Valley was formed in 1961, and in 1971, Happy Valley and Goose Bay amalgamated. Today, the population comprises of several different cultures, including the Native Inuit and Innu, Metis, as well as people from other parts of Canada and other countries.

The economy of Happy Valley-Goose Bay suffered greatly when the United States of America Air Force closed its base in 1975 and when the Labrador Linerboard Mill in Stephenville closed down in 1976. In 1980, the area received a boost when the Federal Republic of Germany signed an agreement to use the facilities in Goose Bay for low-level flight training activities. Mining at Voisey's Bay, as well as Lower Churchill also bring revenue to Happy Valley-Goose Bay. The community also contains plentiful industrial resources including the Goose Bay Airport and the Port of Goose Bay, which is the terminus for the Trans Labrador Highway, linking Goose Bay to the rest of Canada and North America. The Trans Labrador Highway now connects the coast of Labrador from Goose Bay to the southern coast and with continued upgrades to the highway means changing trading patterns, new business expansions, and increasing developments in the tourism industry.

The tourism sector in Happy Valley-Goose Bay has almost limitless possibilities for expansion, being still relatively undeveloped as a tourist destination. However, fishing, hunting, golf, skiing, canoeing and hiking are activities pursued in the vicinity. Labrador is internationally known for its world-class fishing and hunting opportunities, with the town of Happy Valley-Goose Bay being the centralized access area to most prime spots. Subsequently, fishing and hunting outfitters seem to be the most lucrative tourism operations. In addition, nature tourism has great potential; the environment is breath-taking and virtually untouched. The potential future designation of the Mealy Mountain area as a National Park will also affect tourism in the Lake Melville region.

Description of the Stewardship Zone

The Happy Valley – Goose Bay Stewardship Zone was created to assist the Town with its decision making, concerning the effects of development on wetlands and waterfowl and to assist in preventing or counteracting these negative effects. When the Stewardship Agreement was first signed in 2004, the town and residents became stewards of the wetlands within this Stewardship Zone and have committed to using a Stewardship Ethic in all decisions involving existing habitat to minimize and eliminate the effects of human activity on wetlands within the town.

The Town's Stewardship Zone, totaling ~26,940 hectares (66,569 acres), makes up the majority of the municipal boundary and contains most of the major wetlands and waterfowl habitat within the Town. Important wildlife habitat identified by EHJV staff include; the Gutter, areas surrounding Geyts Point, Churchill River, and a section of the Terrington Basin. Areas excluded within the Stewardship Zone include the Goose Bay airport, as well as Department of National Defense properties. (see Appendices 2 & 3).

Many wildlife and waterfowl species inhabit the Town of Goose Bay including Goose Bay Harbour. This area is known as an important waterfowl area, especially in early to mid-May because of the early thaw and as a result, many avian species stage in this area before leaving to other parts of the province.

Other important waterfowl habitats within the Town include the Terrington Basin, located east of North West River Road, and the Gutter, a tributary of Goose River. Terrington Basin, as well as adjacent wetland areas, is a noted location for nesting and brood raising waterfowl. Common waterfowl species observed in the area include Common merganser, Common golden-eye, Green-winged teal, Canada geese, as well as Osprey. The Gutter is a slow moving tributary, south-west of the Goose River. Emergent grasses and the relatively undisturbed habitat of the area provide an ideal nesting and brooding habitat for many waterfowl species. Common waterfowl sightings in the area include American black duck, Canada geese, Common golden-eye, Common mergansers, Green-winged teal, Lesser scaup, and Northern shoveler. Other avian species in the area consist of Red-tailed hawk and Herring gulls. The area also inhabits many fish species like Northern pike and Stickleback.

Description of the Management Units

Management Units are areas of significance to waterfowl, generally providing prime habitat for nesting and brood rearing. These areas are often also important recreational areas to Town residents, as well as visitors to the area. Together these areas support a diversity of avian species, including waterfowl, songbirds, and other wildlife within the Town. The Town of Happy Valley – Goose Bay has two Management Units; the Goose River Bog Management Unit and the Birch Island Creek Management Unit. These two areas encompass 5104.6 acres (2065.8 hectares) of valuable wetland and upland habitat for both waterfowl and other wildlife species.

Goose River Bog Management Unit (4295.46 acres)
The Goose River Bog Management Unit, found within the Town's Stewardship Zone, is located northwest of the Town of Happy Valley – Goose Bay. The Management Unit is located south of Goose River and encompasses a large section of Otter Creek and its tributaries. The area is approximately 5.5 kilometers in length, 4 kilometers in width and is almost entirely comprised of peatland with shallow open water patches.

Field assessment of the Goose River Bog Management Unit preliminarily indicates that common species observed in the area include Common golden-eye, Common merganser, Green-winged teal, Moose, Black bear, and Squirrel. The area is enriched with habitat that is commonly known to be utilized by waterfowl species for nesting, brood rearing and staging. (see Appendices 4 & 5).

Birch Island Creek Management Unit (809.1 acres)
The Birch Island Creek Management Unit, located south of the community, is approximately 3 kilometers in length and a kilometer wide. The southern section of the Management Unit uses the Churchill River as its southern boundary. Birch Island Creek meets Spring Gulch along its route (approximately 1 km from where the creek enters the Churchill River).

The substrate in the creek is almost entirely mud with brown opaque water that contains silt and poised sediments. The creek contains emergent plants and grasses such as willow and marshy areas are also abundant. Fallen trees in the creek provide food and shelter for fish and waterfowl, as well as other wildlife in the area. On the south side of the creek, the riparian zone consists of mixed deciduous and old coniferous vegetation. Other vegetation in the area includes wild calla, Crowberry, Red osier dogwood, Whitestem pondweed, Marsh cinquefoil, and other common plants (Appendix 6). Near Churchill River the water becomes shallower, with sandy riverbeds and banks.

A large number of wildlife species are known to utilize the area surrounding Birch Island Creek and the Churchill River. During a field assessment a wide variety of wetland and waterfowl species were recorded. American black duck, Canada Geese, Common golden-eye, Common merganser, Green-winged teal, Mallard, Northern pintail, Scoter and Wood duck are some of the recorded nesting and brood raring waterfowl in the area. Common songbirds include American robin, Black-capped chickadee, Gray jay, Northern water thrush, Ruby-crowned kinglet, White throated sparrow and Yellow-rumped warbler. Other avian species around the creek include the nesting Great horned owls, Ospreys, and Shorebird species like the Greater yellowlegs and Semi-palmated sandpiper.

Existing Land Use and Its Potential Impact on Wetlands and Waterfowl

Residential/Commercial Development

The Stewardship Zone in Happy Valley – Goose Bay currently consists of a large number of residential developments, as well as industrial and commercial developments and is well known for its Airport facility. No known development, however, has occurred within the Town's Management Units.

Fishing

Fishing within the Management Units of the community of Happy Valley – Goose Bay is not viewed as a significant concern with regards to its impact on waterfowl and wetland habitat. However, fishers should be reminded that waterfowl are easily disturbed during the nesting and brood raising period (May to mid-July), and if encountered they should use caution so as not to disturb the birds. Broods are very susceptible to predation when left unattended and during the nesting period adult waterfowl will often abandon the nest if disturbed. Similarly, when constructing docks or other structures, known nesting sites should be avoided.

Tourism/Recreation

Happy Valley – Goose Bay is an excellent and thriving location for recreation and tourism opportunities including world class hunting, fishing, snowmobiling, canoeing and kayaking. Other attractions in the area include golfing at the Amaruk Golf and Sports Club, enjoying beautiful scenery at Muskrat Falls, as well as local biking, walking and hiking trails. The Birch Brook Nordic Ski Club is also within a 20 minute drive of the Town. Although most recreational activities in Happy Valley – Goose Bay occur around water bodies, the current use of these areas, within the Stewardship Zone, appear to be complimentary to the continued existence of waterfowl and their habitat. Increases in recreational use provide ample opportunity for the implementation of educational programs and habitat enhancement projects. This also provides a great opportunity to raise awareness and educate visitors and residents about waterfowl and wildlife within the community and the importance of wetlands and upland habitat in the area.

All Terrain Vehicle (ATV) Use

ATV usage in the Town of Happy Valley – Goose Bay is governed by town by-laws which prohibit their public use except in designated areas.

Litter

Unfortunately, during a field assessment of Birch Island Creek Management Unit, it was recorded that the area has been visibly degraded with numerous vehicle wrecks along the north banks, as well as in the creek itself. Other debris such as garbage bags, car batteries and household furniture and appliances were identified to scatter the area. An extensive cleanup of Birch Island Creek is strongly recommended for the future.

Section 4: General Policies for Wetland Conservation

The Town's Commitment to Stewardship

In signing a Municipal Wetland Stewardship Agreement, the Town has made a public commitment to join an international network of important wetland habitat areas contributing to waterfowl presence and abundance in North America. Further, the Town has committed to using this Conservation Plan as a guide to best management practices in/around wetlands within its Stewardship Zone(s) and Management Unit(s). It is hoped that a stewardship ethic will be fostered within the community since the conservation of wetlands depends not wholly on Conservation Plans or regulations, but on the conservation/stewardship ethic of residents and of visitors to the Town.

The Stewardship Zone(s) and Management Unit(s) will be managed to ensure the maintenance and possibly enhancement of wetland habitat and waterfowl populations. Managing bodies will include the Town Council and the Department of Environment and Conservation, Wildlife Division, through staff of the Eastern Habitat Joint Venture.

Benefits for Residents

The strategies outlined in this Habitat Conservation Plan can provide many long term recreational and "quality-of-life" benefits for local residents. Wetland habitats are ideally suited to a variety of consumptive and non-consumptive recreational activities, including fishing, hiking, photography and bird-watching. The Town may wish to use these opportunities to increase tourism to the region. In developing recreational and tourism opportunities, careful consideration for the wildlife populations must be included in the planning process. Otherwise, human activities may result in negative impacts to the very resource that is providing the attraction.

Surely the most important benefit that people receive from stewardship is the opportunity to increase their knowledge of wetlands and nature in general. Programs such as the Wildlife Division's "Project Wild" foster an increased environmental ethic in youth and adults alike. Many of the enhancement and restoration strategies outlined in this Plan can be easily conducted by local community interest groups, thereby allowing "hands on" involvement in conservation efforts.

Management of the Stewardship Zones

Activities within the stewardship zone(s) should be managed on a "sustainable use" or "wise use" basis, whereby permitted activities are implemented so as to minimize impacts on wetlands, waterfowl or wildlife populations. Development proposals which,

in the view of council, may negatively impact wetland habitat, waterfowl or wildlife within the stewardship zone(s) should be forwarded to staff of the EHJV for comment with a thirty day notice period.

Management of the Management Units

Activities within the management units will be managed on a sustainable use basis, whereby permitted activities do not result in the loss of wetland or waterfowl populations. As such, wetland habitat will be at the forefront of management decisions. Efforts will be made to reduce pre-existing habitat degradation within Management Units. Only activities that have no negative or adverse impact upon wetland habitat and waterfowl/wetland-associated wildlife using those habitats should be permitted within the management units. Development proposals which, in the view of council, may impact wetland within the Management Units should be forwarded to staff of the EHJV for comment with a thirty day notice period.

Incorporation of Management Units in Municipal Plans

The Town Council, in preparation of a draft Municipal Plan or during the process of subsequent Municipal Plan Reviews shall incorporate the agreement into any resulting Municipal Plan. Specifically, the Management Unit(s), and any future Management Unit(s) as may be desirable from time to time, shall be declared or zoned "conservation areas", or if outside municipal planning boundaries, may seek to have them designated "Protected Areas" under subsection 31(1) (f) of the Urban and Rural Planning Act, 2000.

In passing regulations or by-laws related to the area's designation within a Municipal Plan, or any amendments to a future Municipal Plan, which could affect the Management Unit(s), the Town Council will consult with staff of the EHJV providing a thirty day window of notice for comment.

Riparian Buffers in the Stewardship Zones and Management Units

Riparian buffers are generally strips of untouched vegetation occurring between upland areas and wetlands, lakes, rivers, ponds and streams. They are composed of trees, shrubs, grasses, cattails and sedges and possess a high level of wildlife use, generally as "corridors" for travel, for protection from predators and against inclement weather. These areas filter and reduce surface water runoff from upland areas, trapping sediment and filtering out excess nutrients, pesticides and bacteria. Vegetation in riparian areas also affects how readily water enters soil and has a positive effect over the replenishing of local groundwater. They also serve to anchor soil with its roots, helping to build stream banks and prevent erosion. They are often important in controlling flood levels and are critical to a variety of plants and animals. Fish habitat quality is also influenced by the amount of riparian edge left along shorelines. Treed buffers provide shade and

serve to keep water temperatures down. They also impact water quality and they provide spawning and rearing areas for fish species, and nesting areas for waterfowl. They serve as a food source for a variety of wildlife when leaves and insects/insect larvae drop into the water body off of surrounding trees and shrubs.

The province, via the provincial Lands Act – Section 7(1), generally requires a crown land reserve or easement of 15 meters along all water bodies greater than 1 meter in width and the maintenance of permanent riparian areas next to watercourses within the province. It is important that the town ensures adherence to this crown land reserve designation by all of its residents. The vegetated (untouched) buffer exists as the minimum protection around all waterbodies and marsh areas and is considered critical within the designated Management Unit(s). Agriculture and cabin development seem like the two most likely disturbances to riparian vegetation.

Management by Committee

It is recommended that Towns seek to manage their Stewardship Zone(s) and Management Unit(s) via a formal committee of council. This may take the form of an "Environment Committee" or "Wetlands Committee" generally chaired by a member of council with volunteers from the local community making up the remainder of its membership. It has been our experience that such, often dedicated and dynamic, committees often have greater success in raising the profile of the environment and the wetland protected areas within the larger community thereby increasing public understanding and support over the long-term. By involving local individuals a greater sense of ownership is fostered thereby strengthening the conservation commitment.

Section 5: Wetland Conservation and Education Strategies

Waterfowl Monitoring Program

EHJV staff have devised an easy to use Community-Based Waterfowl Monitoring Protocol (see Appendix 7) and will assist community partners in its implementation. It is hoped that Towns, local community interest groups and interested volunteers (often bird-watchers) will establish a Waterfowl Monitoring Program within all areas of the Stewardship Zone but, particularly, within the designated Management Unit areas. The program could even be incorporated into portions of the regular school class curriculum or into the objectives of local natural heritage organizations. Data collection can provide information on changes that are occurring within the wetland area and can indicate problems or progress towards a desired goal of waterfowl populations. Monitoring can also provide data on whether a site is developing in a way that is conducive to achieving a community's goal. Regular monitoring (Figure 1) can also be a way to flag potential problem areas (i.e. early indicators of water quality issues). Additionally by involving local residents, the profile of the area is enhanced to the long-term benefit of conservation.

Figure 1 – Waterfowl Monitoring Survey in Codroy Valley. Photos by: EHJV Staff

Recreational Use Development

Recreational walking and bird watching have become some of the most popular non-consumptive outdoor activities that occur across Canada. In many stewardship zones and management units there may exist the potential to develop a trail system and/or interpretive signage to allow public access to your communities' significant wetlands (see appendix 8). This will also help raise in the community the profile of the habitat and the fact that the stewardship agreement exists. Trail or other development should be undertaken in consultation with staff of the EHJV. One of the most effective ways for people to learn is through doing. Bringing young people and members of the general public into special areas (in a natural setting) for the purposes of applied learning would be a critical part of any educational programming planned for the area.

Sustainable, recreational, use of wetlands can be encouraged with the designation of a walking trail whereby foot traffic can be controlled and access to the any fishing, canoeing, or nature-viewing can still be facilitated. Care must be taken during any trail construction so as not to degrade the quality of habitat within the estuary. Trail maintenance will be required and this responsibility should also be clearly understood from the outset. Potential signage, other than interpretation, might include critical times for waterfowl nesting and brood-rearing could be posted at areas along a walking trail and at a potential parking area to raise awareness of the sensitive nature of the area and to identify the best times to utilize the area to minimize disturbance. Critical times for waterfowl nesting and breeding could also be posted discreetly at points around the ponds and around the Management Unit boundaries.

Several stewardship communities have taken the concept of recreational use of their stewardship areas a step further, actually building "Interpretation Centres" in strategic locations targeted to bring residents and visitors into the conservation area to enjoy and learn about the wetlands and wildlife (see Appendix 9). These buildings, shelters or amphitheatres can serve as wonderful, natural locations for certain educational programs and seasonal community activities where a more permanent venue is appropriate. This type of project would lend itself to specific sources of funding or grants (i.e. Commercial Building Incentive Program). Other venues of this sort have been funded and assisted in core-funding by industry leaders like Petro Canada (Fluvarium) and Irving Oil (the Irving Eco-Centre).

Conservation Corps Green Teams

The Newfoundland and Labrador Conservation Corps annually sponsors summer "Green Teams" and "Interns" generally comprised of university and high school students, to work within communities on worthwhile environmental projects. In the past, such teams have been placed in communities with Wetland Stewardship Agreements. Examples of potential projects could include constructing and installing waterfowl nest boxes, which has been completed in past by a local Green Team, installing nesting platforms (for geese) followed by subsequent monitoring throughout summer waterfowl

breeding/brood-rearing seasons. Green Team members could be tasked with training local high school students or community members in appropriate monitoring protocol and could develop brochures and educational material designed to raise awareness for conservation and stewardship initiatives. This project could be extended to bird houses and would serve to provide data on birds using various habitats within the entire Wetland Stewardship Zone.

Artificial Nesting and Loafing Structures

Geese:
The use of artificial structures to provide nest sites for Canada geese began almost 70 years ago across North America. These structures are among the most widely used, and successful, goose management practice (Figure 2). Nesting structures are intended to increase nest success in the face of predation or flooding. Success usually reaches levels of 85-90% versus 65-75% on natural islands or marshes. Natural sites, generally, continue to be used by nesting pairs (they do not "switch" over to an artificial structure). Artificial structures work towards increasing a population's base from an established area outwards and towards increasing the average productivity of an area.

The advantages of using artificial nest structures for Canada geese are that occupancy is typically high, costs are generally low, structures are adaptable in terms of placement and results are usually rapid and tangible. One issue often overlooked is the basic maintenance required on an annual basis, to remove old nesting material and to check structure integrity. However, this is often easily accomplished by local school groups, conservation corps teams or local community groups. Selection of appropriate construction material and appropriate nest-building materials along with careful placement at appropriate locations will facilitate long-term durability, necessitate minimal maintenance, and ensure nest structure longevity. Geese with an established nest location generally use that area over and over. Artificial nest structures, like nesting rafts, provide nesting locations for the next generation of breeding individuals or for individuals who may have had nests destroyed or disturbed. Commercial goose platforms are also an option. EHJV staff is available to assist during all phases of the construction and placement process of the nesting raft.

Figure 2 - Canada Goose Artificial Nesting Island. Photo by EHJV staff

Geese are territorial when nest structures are placed closer than ~100 meters, and especially when structures are within sight of one another. Loafing sites should be provided close to the structures. Structures should be placed 10-15 meters from the shoreline so that predators cannot harass nesting birds and should be anchored firmly with enough slack to avoid flooding of the structure during periods of high water. Styrofoam or some sort of flotation device like "fenders" should be installed under the structure to ensure buoyancy and mitigate flooding potential. Given that goslings cannot negotiate a vertical rise of more than four inches, each 6 to 8 inch high nest box would require a ramp six inches wide and oriented at an approximately 45 degree angle. Nesting material placed into the nest box should form a bowl with tapered edges so that the gosling ramps and nest bowl permit the young to exit the nest box.

Maintenance is done in winter, which means easy access to nest structures via snow shoes or skis. Monitoring would also form an important part of the nest raft project to ascertain level of occupancy and nest success. This type of project would be a realistic one for a Conservation Green Team.

Ospreys:
Ospreys are fish eating raptors that are frequently observed hunting in wetland habitats, particularly those along the coast. Unfortunately, populations of these birds plummeted in North America during the 1950's and 1960's due to the wide spread use of pesticides and other pollutants which have a tendency to bioaccumulate in birds of prey, like the osprey. For many osprey populations, bioaccumulation results in frequent reproductive failures. With the banning of many pesticides in the early 1970's, many osprey populations have made a comeback.

Osprey prefer to nest on tall, often dead, trees on the shoreline of lakes and bays that are at least 2 meters deep but make nests in a multitude of locations (i.e. telephone poles, communication towers, etc.) as long as the area is wide open with an adequate food supply. Preferred natural sites are scarce due to timber harvesting and shoreline developments.

In many parts of Canada, the installation of artificial nest structures by concerned citizens and community groups have facilitated the comeback of the osprey. Osprey nest structures have been installed at several sites in Newfoundland, including the Memorial University Botanical Gardens in St. John's, the Stephenville Crossing area and in Winterland. Many people take great pleasure in watching these majestic birds raise their family and fish the shallow waters of nearby lakes and bays.

It may be advisable to install a single osprey platform at a carefully chosen location to determine whether the ecosystem can sustain a single, monogamous, breeding pair of osprey, with subsequent platforms planned accordingly (see Appendix 10). In conjunction with an observation tower, area residents could potentially enjoy a "bird's eye view" of osprey daily life high atop an artificial nesting structure. Artificial nesting platforms should be located in areas with minimal human use and where human impact would be least.
Involvement of schools, youth groups and community organizations in the construction/maintenance/observation of the nesting structure could instill a sense of pride and awareness that would go far in fostering a community stewardship ethic.

Island Construction:
A number of wildlife species, such as terns and waterfowl, nest and loaf on islands due to a reduced risk of predation from land-based predators. Many of the wildlife species present within wetlands would benefit from the construction of artificial islands. These structures can be constructed simply from wooden cribs (Tamarack Larch would be an appropriate choice for building material), measuring approximately four square meters that have been filled with rock and soil (see Appendix 11). The islands must be positioned so that they are higher than the highest water mark. Hardy shrubs and herbaceous plants (i.e. alder, willow) must be planted on the islands to provide cover and to prevent occupancy from gulls. Care must be taken to prevent the use of toxic construction materials (i.e. treated wood, contaminated soils) and disturbance to plant and animal communities. One must also consider the potential for increased predation on certain avian species that may use the constructed islands. One must consider the potential necessity for annual removal and reinstallation of islands in response to ice conditions tidal influenced areas.

Other forms of artificial islands exist and involve the planting of native marine plant species into landscaping fabric, which is then fixed to floating structures made of plastic piping or empty gabion baskets. This type of floating island requires careful placement in areas that do not have widely fluctuating salinity levels and require placement such that disturbance would be minimal during the period in which roots are establishing. Floating islands may be beneficial in terms of oxygenating the water column, as algal

blooms would not "smother" the highly perched plants. The floating plants should, ideally, continue photosynthesizing despite the presence of algae, and may be of benefit in "taking up" some of the excess nutrients in the estuary effectively deterring algae growth. These floating islands would also, likely, require annual removal and reinstallation.

Nest Boxes

Cavity Nesting Waterfowl:
Cavity nesters such as the Common Golden eye have certain habitat requirements for nesting and when available they use abandoned woodpecker holes or natural tree cavities caused by disease, fire or lightning. In the absence of these natural cavities, they will use constructed nest boxes (Figure 3). These shelters, however, need to be installed correctly and placed in a location that is inhabited with waterfowl.

When installing nest boxes, there are important guidelines that are to be followed. These guidelines will help increase the success of nest box usage. When nest boxes are to be installed, the EHJV staff often includes a map where the nest boxes should be placed to encourage use by the target duck species. It will also help ensure that the placement of nest boxes will enhance wetlands that are included in the Stewardship Agreement signed by the community. As a general rule, we ask that the location of the nest boxes be marked using a global positioning system (GPS). If the community requires assistance they can contact the EHJV staff or the local conservation officer. It is very important that we receive coordinates for nest boxes for reporting purposes.

Nest boxes can be mounted on tree trunks (preferably dead but solid trees) that extend slightly over the water's surface. Nest boxes may be placed on metal poles close to the edge of a pond, but we advise extreme caution in this situation so that snowmobilers do not run into your poles during winter months. If there is even a slim chance that someone could run into the metal pole, we suggest that you find another way to install your nest box.

Good placement would involve a dead tree standing along a shore. Better placement would be on a solid tree standing in water. Suitable placement would also be on a metal pole in a safe area (with no danger of being hit by motorized vehicles), on a shoreline next to a dead or flooded tree, firmly planted into the pond or marsh bottom. Boxes can be placed on live spruce or larch, but may loosen as the tree continues to grow. If using a live tree, remember to clear away limbs from just on top of the box so that squirrels and marten don't end up jeopardizing the lives of your ducklings. Keep in mind that beaver may chew live hardwoods like birch, so placement on these trees should be avoided, as you will soon be wondering where your nest box went!

Boxes should be placed above typical high water levels at a height that still allows you to clean (annually) and monitor the boxes. Ideally, boxes will be placed as high as possible, but at least 4 to 6 feet above the water's surface. Boxes should be placed on trees that

bend slightly over the water's surface. When ducklings are ready, the adult will force them out of the entrance of the nest box and it is important that the box be positioned appropriately or the duckling may not fledge successfully and an ill-placed box has been known to actually jeopardize lives of ducklings.

Try to keep your nest box close to water and clear a path (of any small branches, etc.) so that ducks have a direct line of access from the water. The entrance hole should face the water. Do not place boxes so close together that competition will occur. As a rule, boxes should be placed no closer than 50 meters apart (one nest box per acre is considered acceptable) and shouldn't be placed where ducks can see each other from neighboring boxes.

Boxes must be maintained every year (with winter months being the preferred time for maintenance) by scraping out old planar shavings and replacing with new, clean, planar shavings. It is very important not to use sawdust as the pieces are too small and can actually suffocate ducklings. A garden store or sawmill would be an easy source for planar shavings or mulched wood. 8 to 10 cm of clean wood shavings should be placed in the bottom of the box before breeding season. Hens will actually reject nest boxes that do not have shavings, and eggs could freeze if there are not enough shavings in the bottom of the box.

Common Golden eye will raise multiple broods in a well-maintained and suitably placed nest box. If you are lucky, you will actually get to see duckling leaving the box (although you should avoid approaching the nest box to check on its use during important times like hatching and fledging), but mostly you will find signs left over in the box when you prepare for its annual maintenance. You should look for light coloured duck down, bits of egg shell or shell-membrane (like a piece of paper) left behind when duckling hatch and mixed up wood shavings. Ducklings in the area indicate there are ducks and it is quite possible that they have used the nest boxes provided. It is also a great idea to keep in mind that other birds and small mammals may have used the nest boxes as well.

Constructing and installing nest boxes (see Appendix 12) is a very exciting activity to help enhance waterfowl in the Conservation Areas around your community. It does, however, take time, commitment and maintenance and if any technical advice or help is needed it is advised to contact the EHJV staff at the Wildlife Division.

Figure 3 - Cavity Nest Box in Cobb's Pond, Gander. Photo by Charmaine Barney

Roosting and nesting structures for non-waterfowl species:
An off-shoot of a nest box project could be a cooperative project between a Green Team, a local science class and/or a local youth groups or businesses. Individuals could build, install and monitor a variety of nest structures (Figure 4) that might be appropriate for birds like Tree Swallows and Northern Flicker, for owls like the Great Horned and for bats….all commonly found around agricultural areas. This would prove beneficial to local farmers in that many bird species (and bats) feed on insects and may serve as natural pest control. In addition, providing nests for certain birds may also help reduce (or keep in check) populations of birds that may not be desirable to farmers (i.e. crows, starlings) and rodents (i.e. mice) while increasing biodiversity on the agricultural landscape.

Figure 4 - Bat Roosting Box. Photo by Gerry Yetman

Educational Programs

Public education is essential in the development of a greater sense of wetland stewardship among town residents. There are several well developed wetland education programs that span every season and every age group including “Wetlands in Winter” (Tantramar Wetlands Centre), “Marsh Bingo” and “Creatures of the Night” (Oak Hammock Marsh Interpretive Centre), “Junior Naturalists” (Wye Marsh Wildlife Centre), “Project Webfoot” (Ducks Unlimited Canada). A number of night programs also exist that would be appropriate for Girl Guide and scout troupes. Certain programs may qualify for external funding through various private enrichment grants (i.e. Mountain Equipment Co-op or the Canadian Wildlife Federation).

Project Wild:
Project Wild is an educational program conducted by the Newfoundland and Labrador Wildlife Division and is aimed at youth from kindergarten to grade six. Its goal is to develop awareness, knowledge, skills and commitment resulting in informed decisions, responsible behavior and constructive actions concerning wildlife and the environment upon which all life depends. Project Wild is not just "wildlife" education. It is a broad environmental education program focusing on wildlife. Wildlife is used as a tool that naturally captures student interest and as a symbol for the fragility of the environment providing a means to also educate youth about the value of wetlands for waterfowl.

Waterscapes:
This activity guide is produced by the Eastern Habitat Joint Venture and is a guide for helping youth appreciate and understand wetlands within Newfoundland and Labrador. The guide is complete with lesson plans, case studies and outreach projects intended to

work on a conceptual framework to guide teachers and students through an understanding of basic ecology and to direct experience with wetlands and stewardship. The guide is provided free of charge to stewardship communities and is formatted for use with learners in grades 4-8.

Backyard Habitat for Canada's Wildlife:
This habitat awareness initiative is made available by the Canadian Wildlife Federation and is administered in conjunction with the Wildlife Division's Salmonier Nature Park. This program enables the average townsperson to become an active participant in helping wildlife and in enhancing habitat for wildlife use. Backyard Habitat for Canada's Wildlife is a program that offers immediate, specific and inexpensive suggestions on how to make life better for wildlife in a particular habitat.

Greenwing Program:
This conservation awareness program targets grade four students, who have been identified as being most ready to receive and consider conservation messages. The Greenwing program is initiated by the "adoption" of a fourth grade class by local businesses or individuals. Members are then given a wealth of items ranging from t-shirts and lunch bags, encouraging a conservation-minded approach to daily life, and educational magazines revealing the wonders of wetlands, wildlife species and natural areas. Greenwing events are also available to any Greenwing members, where conservation minded adults (i.e. potentially EHJV staff members) host project days or educational field trips with support from Ducks Unlimited Canada. Greenwing members who attend a Greenwing event typically leave an event with a greater sense of conservation awareness, and a parting item like a birdhouse or birdfeeder.

Nature and Art:
Some stewardship communities have used the wetlands and associated wildlife as opportunities to also serve as a natural location to bring together nature and art. This is made much simpler if a central building or interpretation area is present on site. Local art classes and drama groups use the freedom afforded by an outdoor theatre for educational exercises. This could involve field trips whereby students could interpret the beauty of wetlands - and nature in general - through various mediums (chalk, paint, etc.) or a day of sketching to the sound of nature or music. Being innovative in efforts to assemble art supplies might include visiting websites like Crayola.com which offer special resource grants to educators.

Similarly, drama classes could develop a play or a series of dramatic readings based upon wetlands or nature with evening delivery within a lighted amphitheatre. Several amphitheatres in Eastern Canada utilize the open-air concept to show nature-related videos or videos with an environmental message outdoors in the evening. Videos could be tailored to various ages and could include nature-related craft projects. A good starting point for videos and educational nature-oriented craft projects for children may include websites like hookedonnature.org and planetpals.com.

Habitat Enhancement

In some wetland areas, the surrounding habitat has already been degraded or lost and could benefit from the planting of wetland and waterfowl "friendly" plants. A number of aquatic plant species have the ability to remove large quantities of pollutants from water. These plants improve water condition by "uptaking" excessive amounts of nitrogen, phosphorous and carbon – substances associated with the occurrence of algal blooms – by storing them in plant tissues. Many "classic" beneficial plant species have limited distribution in Newfoundland, and should not be introduced to the sensitive ecosystem of the estuary without consideration of the potential consequences, including the possibility of invasive plants out-competing native plant species.

Often, the natural balance within an ecosystem can be changed when new species are introduced. The relationships that develop between plants and animals may also change within a particular habitat. Introduced species are referred to as "exotic" species if they are not native to an area. Competition naturally exists between organisms within an ecosystem but the introduction of exotic, or nonnative, species can alter the balance within the ecosystem and have negative effects upon the natural populations within the region and the ecosystem as a whole.

Eelgrass is an aquatic grass is known to have significant value for waterfowl and providing habitat for many aquatic species such as juvenile salmonids. It is possible to encourage the growth of Eelgrass beds through an inexpensive project of habitat management and shoot transplantation from a nearby donor site. A thorough site evaluation would have to be initiated in consultation with staff of the EHJV to assess the topography of the coastal area, water salinity and substrate suitability before proceeding with the project. However, encouraging eelgrass bed establishment is a project that has been successfully completed in a number of areas across Canada.

Certain species of willow (Salix discolor) and alder (Alnus crispa) are native to the island of Newfoundland, are found in areas of the Avalon Peninsula, and are renowned for their hardiness, their ability to withstand tidal inundation and their extensive network of roots. Their ability to uptake excess nutrients from the water column would make these native species an important addition to coastal shorelines. In addition to bank stabilizing properties and nutrient uptake characteristics, willow and alder buds and shoots are an important food source for small mammals like muskrat and snowshoe hare, and bird species like Ruffed Grouse and Grosbeaks.

In terms of wetland plants that would be of dietary importance to waterfowl populations, three-square bulrush (Scirpus americanus), Salt Water Cord Grass (Spartina alterniflora), Wild Rye (Elymus virginicus) and Blue-joint Grass (Calamagrostis canadensis) are all native to the island portion of Newfoundland and would all supply food to a number of

estuary inhabitants. Tall stands of established Cord Grass and Wild Rye also offer a great deal of shade and cover to waterfowl and may lower water temperature to prevent algal blooms from occurring.

In terms of bank or shoreline stabilizing properties Blue-joint Grass and Dune Grass (Ammophilia breviligulata) may be appropriate choices. Once established these grasses would provide a great deal of cover and concealment to waterfowl species. Low growing native shrubs may be interspersed with either grass species to enhance the desired effect of seclusion.

Hunting

It is the clear intent of the Wildlife Division and the Eastern Habitat Joint Venture that hunting, as a sustainable consumptive resource use activity, be maintained within wetland habitats that contain waterfowl. Some communities have taken it upon themselves to seek to close stewardship zones to hunting subsequent to signing a stewardship agreement. It is important to understand however that the provincial Wildlife Act and associated Wildlife Regulations indicate that shooting is not permitted within 1000m of a school, playground or athletic field or areas that are within 300 m of a dwelling. If required, appropriate signage may be developed through consultation with Wildlife Division staff and would need to have the section of the NL Wildlife Act from which the regulation has been quoted - pertaining to the illegal discharge of a firearm - clearly identified (see example in Appendix 13). Placement of no-shooting signs should be left up to the discretion of local Conservation Officers.

Litter Removal

It is strongly recommended that community interest groups and individual residents work cooperatively to remove the large quantity of litter in and around all portions of management units/stewardship zones on a regular basis, while making certain to avoid those times of year (May to August) when waterfowl may be disturbed during breeding, staging or brood rearing periods. Programs such as Ocean Net and Vanaqua Shoreline Cleanup assist communities in organizing litter cleanups.

Water Control Structures

A community may wish to enhance a wetland area by changing the water flow or controlling the water depth to attract waterfowl (Figure 5). Ducks Unlimited Canada (DUC), a partner of the Easter Habitat Joint Venture, has a great deal of experience in this area. Staff of the EHJV can put you in touch with DUC to assess the possibilities, costs and issues in this area.

Figure 5 – Water Control Structure installed by Ducks Unlimited Canada at the Glynmill Inn Marsh, Corner Brook. Photo by Charmaine Barney

APPENDIX 1

MUNICIPAL STEWARDSHIP AGREEMENT

THIS AGREEMENT made at Happy Valley-Goose Bay, in the province of Newfoundland and Labrador, this 22 day of June 2004.

BETWEEN: **HER MAJESTY THE QUEEN IN RIGHT OF NEWFOUNDLAND AND LABRADOR** , as represented by the Honourable the Minister of Environment and Conservation

(hereinafter called the "Minister")

-of the one part-

AND: **THE TOWN COUNCIL OF THE TOWN OF HAPPY VALLEY-GOOSE BAY**, a corporation pursuant to Section 15 of the *Municipalities Act, 1999*

(hereinafter called the "Town")

-of the other part -

WHEREAS the Government of Newfoundland and Labrador has entered into an Agreement with others for the implementation of the North American Waterfowl Management Plan through the Eastern Habitat Joint Venture;

AND WHEREAS the parties hereto recognize that the proper protection and management of both wetlands and uplands habitats are fundamental tools in maintaining and enhancing waterfowl populations in the province;

AND WHEREAS the Minister proposes that certain important wetlands and associated wildlife habitat within the Town be protected and enhanced through and with the cooperation of the Town in accordance with this Agreement and the Habitat Management Plans developed hereafter;

AND WHEREAS the Town has agreed to enter into the Agreement for the purpose of protecting and enhancing those areas of important wetland habitat within its jurisdiction.

NOW THEREFORE IT IS AGREED BY THE PARTIES AS FOLLOWS:

1. The lands herein delineated and designated as a Stewardship Zone (being the lands outlined on a certain Schedule annexed hereto and marked "A") shall be managed in accordance with the terms and conditions of this agreement including any Habitat Management Plan developed hereunder for better protection of the wetlands for waterfowl and other wildlife.

2. Within the Stewardship Zone, the Parties will establish the Management Units identified in Schedule "A" and other Management Units as may be desirable from time to time which shall be subject to the terms and conditions of a Habitat Management Plan designated to enhance and protect wetland habitats, the waterfowl and other wildlife which use those habitats.

3. The Habitat Management Plan shall be developed in cooperation with the Town and the Minister agrees to provide such advice and expertise necessary or advisable for the development of the Habitat Management Plan.

4. The Town agrees that in the preparation of a Municipal Plan for the Town or any amendments to any existing Municipal Plan, the areas designated as Management Units shall be recommended by the Town to be appropriately declared protected areas under subsection 13(3) of the *Urban and Rural Planning Act, 2000* (or such other legislation in amendment or substitution therefore as may be brought into effect from time to time). The Town in passing regulations or by-laws related to the protected areas so designated under the Municipal Plan or amendments thereto and which may affect the Stewardship Zone shall do so in consultation with the Minister and in keeping with the principals of this Agreement.

5. The parties to this agreement, their consultants, servants, or agents, shall have and exercise reasonable rights of access to the Stewardship Zone for all purposes necessary or incidental to this Agreement and in particular, but without limiting the generality of the foregoing, for the purpose of developing and carrying out the Habitat Management Plan.

6. Each of the parties hereto agrees that they will exercise their best efforts to further develop management measures for the more effectively carrying out of their mutual intentions as expressed in this agreement.

IN WITNESS WHEREOF the parties have caused these presents to be executed in accordance with their respective rules and regulations the day and year first before written.

SIGNED SEALED AND DELIVERED
by the Honourable the Minister
of Environment and Conservation
in the presence of:

Witness

THE HONOURABLE THE MINISTER OF ENVIRONMENT AND CONSERVATION

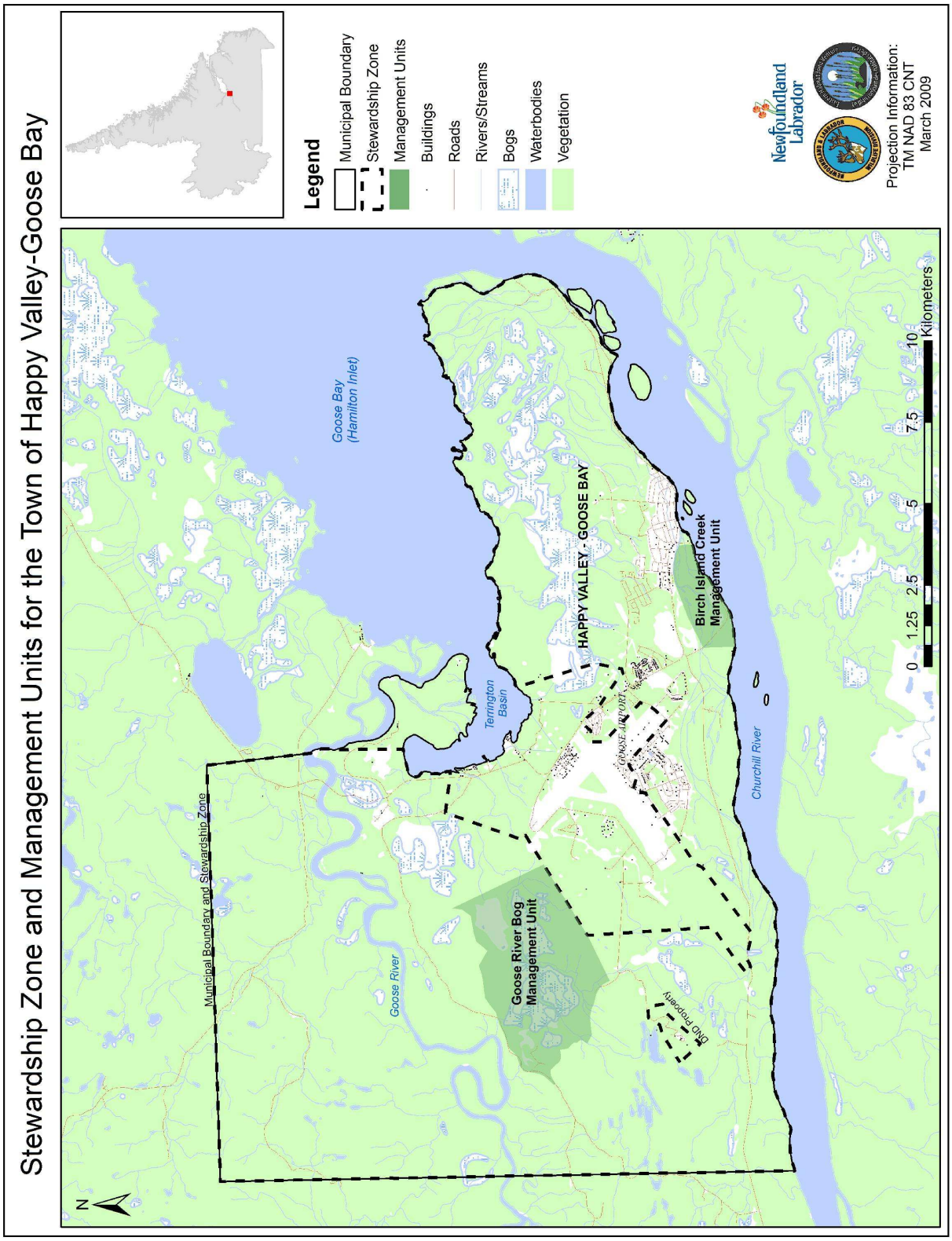
THE SEAL OF the Town Council of
the Town of Happy Valley-Goose Bay
hereunto affixed in the
presence of:

Witness

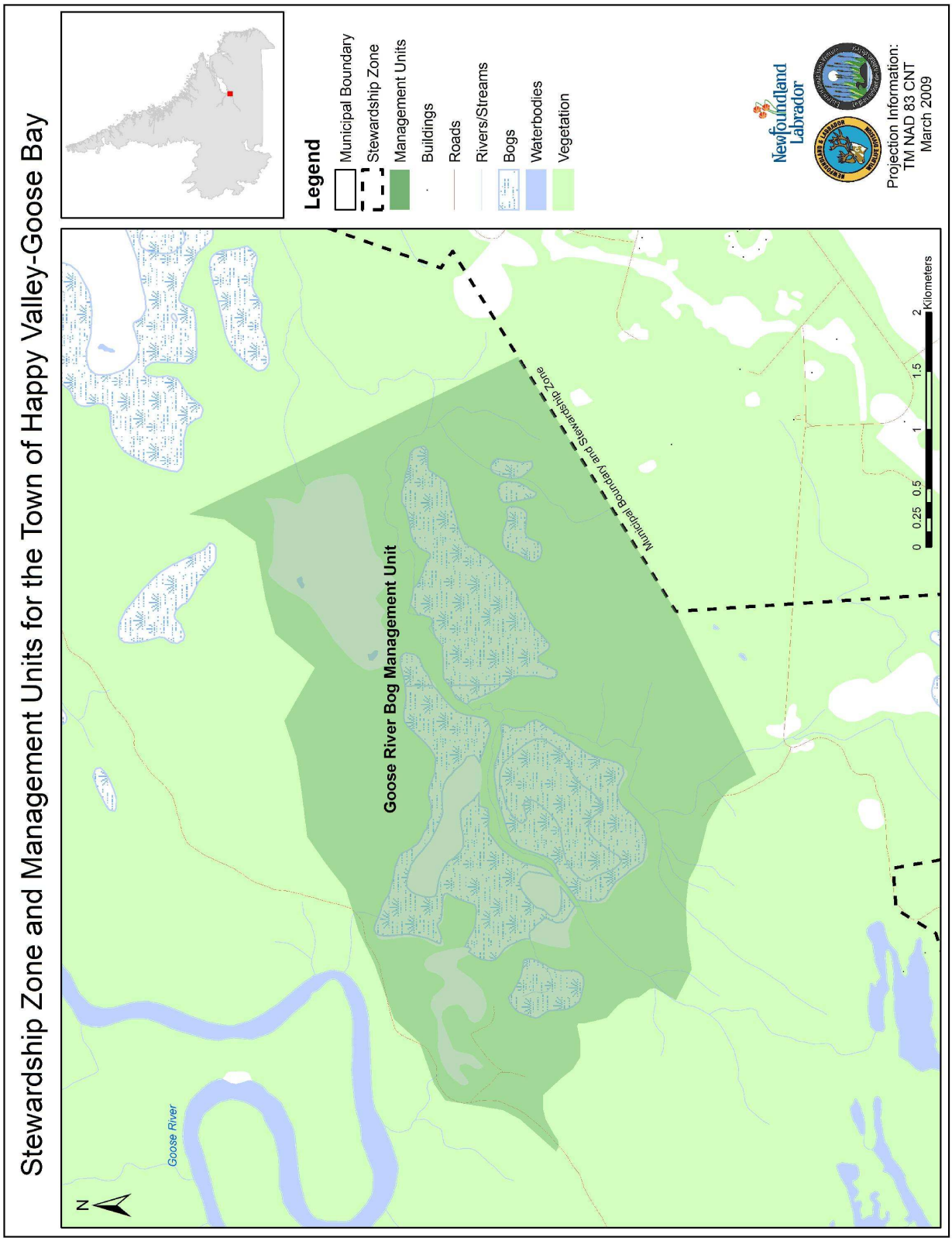
THE TOWN COUNCIL OF THE TOWN OF HAPPY VALLEY-GOOSE BAY

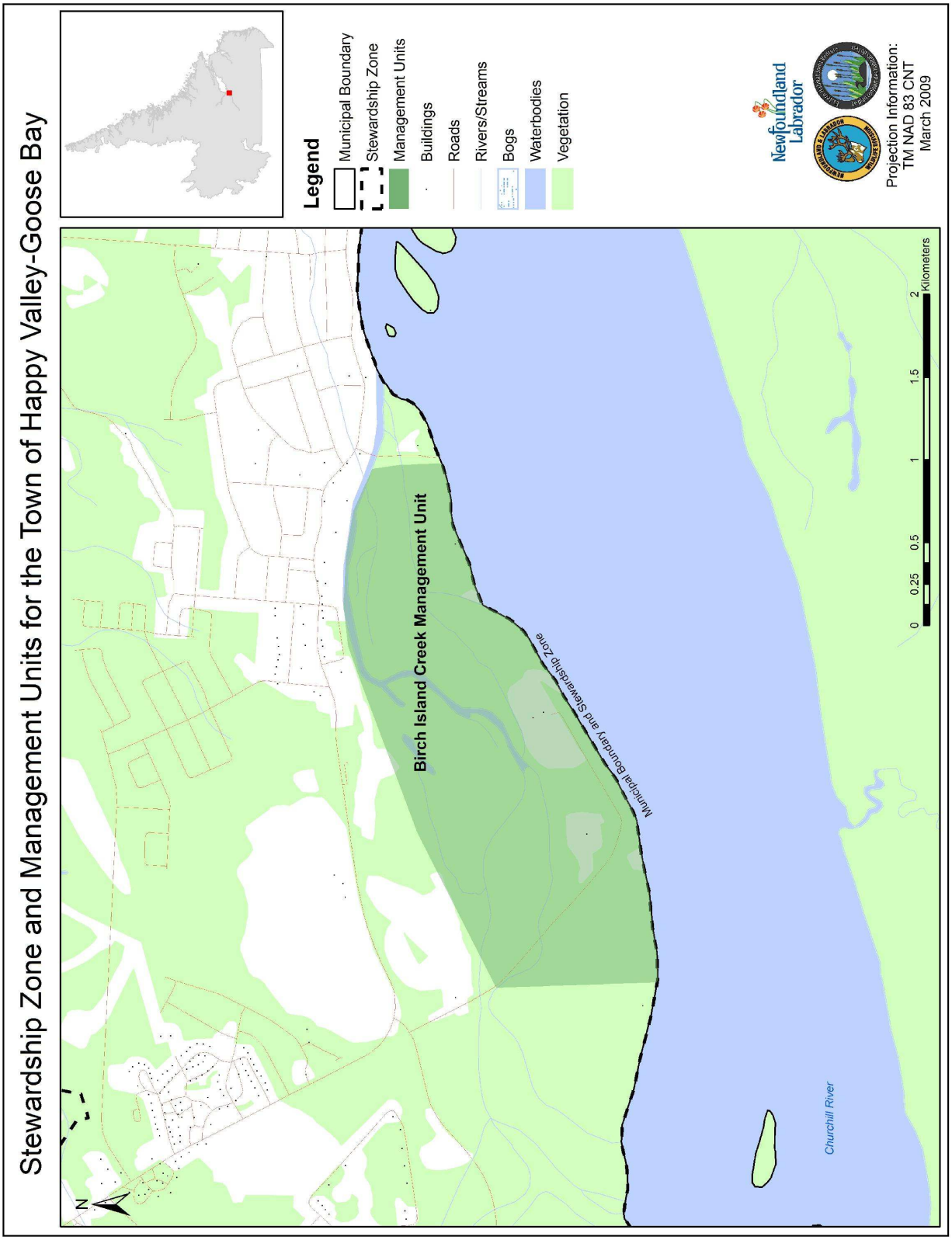
SCHEDULE A

APPENDIX 2
Map of the Stewardship Zone and Management Units in the Town of Happy Valley – Goose Bay



APPENDIX 3
Detailed Map for the Stewardship Zone and Management Units for Happy Valley – Goose Bay




Stewardship Zone and Management Units for the Town of Happy Valley-Goose Bay
Legend
Municipal Boundary
Stewardship Zone
Management Units
Buildings
Roads
Rivers/Streams
Bogs
Waterbodies
Vegetation
Birch Island Creek Management Unit
Municipal Boundary and Stewardship Zone
Churchill River
N
0 0.25 0.5 1 1.5 2 Kilometers
Projection Information:
TM NAD 83 CNT
March 2009
Newfoundland Labrador

APPENDIX 4
Some Bird Species found in the Happy Valley – Goose Bay Stewardship Zone

Group	Common Name	Scientific Name
Loons	Common Loon	Gavis immer
Herons	American Bittern	Botaurus lentiginosus
Geese and Ducks	Wood Duck	Aix sponsa
	Northern Pintail	Anas acuta
	Northern Shoveler	Anas clypeata
	Green-Winged Teal	Anas crecca
	Mallard	Anas platyrhynchos
	American Black Duck	Anas rubripes
	Lesser Scaup	Aythya affinis
	Ring-necked Duck	Aythya collaris
	Canada Goose	Branta canadensis
	Common Golden-eye	Bucephala clangula
	Hooded Mergansers	Lophodytes cucullatus
	White-winged Scoter	Melanitta fusca
	Common Merganser	Mergus merganser
	Greater Scaup	Aythya marila
	Harlequin Duck	Histrionicus histrionicus
	Red-Breasted Merganser	Mergus serrator
	American Wigeon	Anas americana
	Blue-winged Teal	Anas discors
	Barrows Golden-eye	Bucephala islandica
Ospreys, Eagles, Hawks and Falcons	Northern Goshawk	Accipiter gentilis
	Red-Tailed Hawk	Buteo jamaicensis
	Merlin	Falco columbarius
	American Kestrel	Falco sparverius
	Bald Eagle	Haliaetus leucocephalus
	Osprey	Pandion haliaetus
Grouse and Ptarmigan	Ruffed Grouse	Bonasa umbellus
	Spruce Grouse	Dendragaous canadensisz
	Willow Ptarmigan	Lagopus lagopus
Plovers and Sandpipers	Spotted Sandpiper	Actitis macularia
	Semipalmated Sandpiper	Calidris pusilla

Group	Common Name	Scientific Name
	Common Snipe	Capella gallinago
	Wilson's Common Snipe	Capella gallinago delicata
	Semipalmated Plover	Charadrius semipalmatus
	Lesser Yellowlegs	Tringa flavipes
	Greater Yellowlegs	Tringa melanoleuca
	Solitary Sandpiper	Tringa solitaria
Gulls and Terns	Herring Gull	Larus argentatus
	Ring-Billed Gull	Larus delwarensis
	Great Black-backed Gull	Larus marinus
	Common Tern	Sterna hirundo
Auks	Dovekie	Alle alle
	Black Guillemot	Cepphus grille
	Common Murre	Uria aalge
Doves	Rock Dove	Columba livia
Owls	Great Horned Owl	Bubo virginianus
Kingfishers	Belted Kingfisher	Megaceryle alcyon
Woodpeckers	Yellow-staffed Flicker	Colaptes auratus
	Black-backed Woodpecker	Picoides arctus
	Hairy Woodpecker	Picoides pubescens
	Three-toed Woodpecker	Picoides tridactylus
	Yellow-bellied Sapsucker	Sphyrapicus varius
Passerine Birds	Bohemian Waxwing	Bombycilla garrulous
	Common Redpoll	Carduelis flammea
	Hoary Redpoll	Carduelis hornemanni
	Pine Siskin	Carduelis pinus
	Hermit Thrush	Catharus guttatus
	Gray-cheeked Thrush	Catharus minimus
	Swainson's Thrush	Catharus ustulatus
	American Crow	Corvus brachyrhynchos
	Common Raven	Corvus corax
	Blue Jay	Cyanocitta cristata
	Blackpoll Warbler	Dendrioca striata
	Yellow-rumped Warbler	Dendroica coronata
	Myrtle Warbler	Dendroica coronata
	Magnolia Warbler	Dendroica magnolia
	Palm Warbler	Dendroica palmarum

Group	Common Name	Scientific Name
Passerine Birds	Yellow Warbler	Dendroica petechia
	Black-throated Green Warbler	Dendroica virens
	Yellow-bellied Flycatcher	Empidonax falviventris
	Alder Flycatcher	Empiodonax traillii
	Horned Lark	Eremophila alpestris
	Evening Grosbeak	Hesperiphona vespertina
	Tree Swallow	Iridoprocne bicolor
	Dark-eyed Junco	Junca hyemalis
	White-winged Crossbill	Loxia leucoptera
	Boreal Chickadee	Parus hudsonicus
	Savannah Sparrow	Passerculus sandwichensis
	Fox Sparrow	Passerella iliaca
	Gray Jay	Perisoreus canadensis
	Pine Grosbeak	Pinicola enucleator
	Black-capped Chickadee	Poecile atricapilla
	Ruby-crowned Kinglet	Regulus calendula
	Northern Waterthrush	Seiurus noveboraacensis
	American Redstart	Setophaga ruticilla
	Red-breasted Nuthatch	Sitta canadensis
	American Tree Sparrow	Spizella arborea
	European Starling	Sturnus vulgaris
	American Robin	Turdus migratorius
	Orange-crowned Warbler	Vermivora celata
	Tennessee Warbler	Vermivora peregrine
	Wilson’s Warbler	Wilsonia pusilla
	White-throated Sparrow	Zonotrichia albicollis
	White-crowned Sparrow	Zonotrichia leucophrys

APPENDIX 5
Other Wildlife Species found in the Happy Valley – Goose Bay Stewardship Zone

Group	Common Name	Scientific Name
Amphibians	Blue-spotted Salamander	Ambystoma laterale
	American Toad	Bufo americanus
	Two-lined Salamander	Eurycea bislineata
	Spring Peeper	Psuedacris crucifer
	Northern Leopard Frog	Rana pipiens
	Mink Frog	Rana septentrionalis
	Wood Frog	Rana sylvatica
Fish	Longnose Sucker	Catostomus catostomus
	White Sucker	Catostomus commersonii
	Lake Whitefish	Coregonus clupeaformis
	Northern Pike	Esox Lucius
	Three-spine Stickleback	Gasterosteus aculeatus
	Stickleback	Gasterosteus sp.
	Rainbow Smelt	Osmerus mordax
	Nine-spine Stickleback	Pungitius pungitius
	Atlantic Salmon	Salmo salar
	Artic Char	Salvelinus alpinus
	Brook Trout	Salvelinus fontinalis
	Lake Trout	Salvelinus namaycush
Mammals	Moose	Alces alces
	Arctic Fox	Alopex lagopus
	Wolf	Canis lupus
	Beaver	Castor canadensis
	Red-backed Vole	Clethrionomys gapperi
	Star-nosed Mole	Condylura cristata
	Porcupine	Erethizon dorsatum
	Northern Flying Squirrel	Glaucomys sabrinus
	Snowshoe Hare	Lepus americanus
	River Otter	Lutra canadensis
	Lynx	Lynx canadensis
	Woodchuck	Marmota monax
	Marten	Martes americana
	Pygmy Shrew	Microsorex hoyi
	Meadow Vole	Microtus pennsylvanicus
	Short-tailed Weasel	Mustela erminea
	Ermine	Mustela erminea

Group	Common Name	Scientific Name
	Least Weasel	Mustela rixosa
	Mink	Mustela vison
	Little Brown Bat	Myotis lucifugus
	Woodland Jumping Mouse	Napaeozapus insignis
	Muskrat	Ondatra zibethicus
	Deer Mouse	Peromyscus maniculatus
	Heather Vole	Phenacomys ungava
	Caribou	Rangifer caribou
	Masked Shrew	Sorex cinereus
	Water Shrew	Sorex palustris
	Bog Lemming	Synaptomys borealis
	Red Squirrel	Tamiasciurus hudsonicus
	Black Bear	Ursus americanus
	Red Fox	Vulpes fulva
	Meadow Jumping Mouse	Zapus hudsonius

APPENDIX 6
Botanical Inventory of the Happy Valley – Goose Bay Stewardship Zone

Common Name	Scientific Name
Balsam Fir	Abies balsamea
Red Baneberry	Actaea rubra
Mountain Alder	Alnus crispa
Speckled Alder	Alnus incana ssp. rugosa
Bartram's Chuckley Pear	Amelanchier sp.
Bristly Saraparilla	Aralia hispida
White Birch	Betula papyrifera
Swamp Birch	Betula pumila
Leatherleaf	Chamaedaphne calyculata
Chara	Chara spp.
Caribou Moss	Cladonia spp.
Corn Lily	Clintonia borealis
Northern Comandra	Comandra livida
Goldthread	Coptis groenlandica
Bunchberry	Cornus Canadensis
Red-osier Dogwood	Cornus stolonifera
Large Toothwort	Dentaria maxima
Black Crowberry	Empetrum nigrum
Fireweed	Epilobium angustifolium
Water Horsetail	Equisetum fluviatile
Horsetail	Equisetum sylvaticum
Fissidens	Fissidens spp.
Bedstraw	Galium triflorum
Creeping Snowberry	Gaultheria hispidula
Sheep Laurel	Kalmia angustifolia
Bog Laurel	Kalmia polifolia
Larch	Larix laricina
Labrador Tea	Ledum groenlandicum
Twinflower	Linnaea borealis
Stiff Clubmoss	Lycopodium annotinum
Running Pine	Lycopodium complanatum
Tree Clubmoss/Ground Pine	Lycopodium Obscurum
Canada Mayflower	Maianthemum canadense
Black Spruce	Picea marina
Polopody Fern	Polypodium virginianum
Trembling Aspen	Populus tremuloides
Whitestem Pondweed	Potamogeton praelongus
Marsh Cinqefoil	Potentilla palustris

Common Name	Scientific Name
Pincherry	Prunus pensylvanica
One-Sided Pyrola	Pyrola secunda
Skunk Current	Ribes glandulosum
Bakeapple	Rubus chamaemorus
Raspberry	Rubus idaeus
Hairy Plumboy/Dewberry	Rubus pubescens
Willow	Salix spp.
Pitcher Plant	Sarracencia purpurea
Three-leaved False Solomon's Seal	Smilacina trifolia
Goldenrod	Solidago spp.
Showy Mountain Ash	Sorbus decora
Twisted Stalk/White Mandarin	Stretopus amplexifolius
Tall Meadow Rue	Thalictrum ploygamum
Starflower	Trientalis borealis
Common Bladderwort	Utricularia macrohiza
Blueberry	Vaccinium angustifolium
Marshberry	Vaccinium oxycoccus
Partridgeberry	Vaccinium vitis-idaea
Northern Wild Raisin	Viburnum cassinoides
Squashberry	Viburnum edule
Northern White Violet	Viola pallens

APPENDIX 7
Community – Based Waterfowl Monitoring
Project Protocols and Data Sheets

Generally within a community's wetland Management Units, a set number of locations for viewing waterfowl are chosen and outlined on a detailed map. These sites are chosen, for ease of access and ability to view waterfowl over a wide area, but they are also relatively evenly distributed around the wetland. Sites can be chosen to sample productive, historically productive and potentially non-productive waterfowl locations to give a representative snapshot of inhabitants of the estuary.

Each site location should be visited during a single day, within a two-three hour period, which will mean, in most towns, that more than one person will need to be involved. The survey should occur, at least once within a two week period in both the spring and fall. You are most welcome to complete and record as many observations as your schedules permit but the above indicates that, at a minimum, at least two surveys would occur annually.

These surveys should occur **during the last two weeks of June and during the first two weeks of October and should occur either in the early morning (starting at dawn and up to ~ 3 hours afterwards) or in the early evening (starting ~3 hours before dusk).**

If you are not already familiar with the area it would be advantageous for you to become familiar with the sample locations identified on the map prior to the day of your survey. It may also be prudent to seek private landowner permission in advance of your intended survey day. In addition, identify access points (ex. determine whether best approached by foot or by boat) well in advance so that your survey can be completed in a single morning or evening.

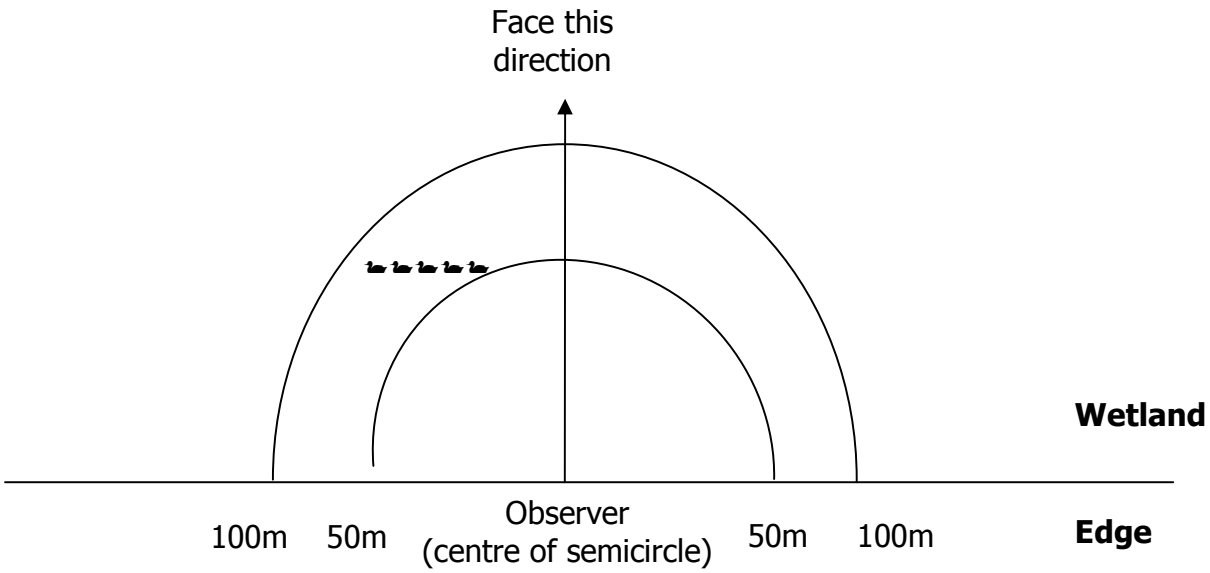
Survey Locations

The intended survey sites should be relatively easy to access (off roads or meadows) and are intended to follow the shoreline of the wetland. **Observations should be made within a semi-circle** oriented towards the wetland instead of attempting to watch in a full circle all around you which could form an unnecessarily difficult amount of survey area in a short period. Orient yourself so that you can maximize the amount of wetland being observed (i.e. your view should not encompass a large swath of open field or roadway) **out to a distance of ~100m on either side of you**. It may be prudent to become familiar with what a 100m distance roughly looks like before setting up your survey.

Some sites may be more easily accessed by non-motorized water craft such as canoe or kayak. If you choose to use canoe or kayak, the centre of the semicircle will become your boat and you will orient your semicircle accordingly. It will be especially important to

approach your survey site slowly and quietly by boat or kayak since your odds of flushing waterfowl will be increased.

Consider the following drawing as your sample area:



Tools you should consider having include the following:

- A keen eye!
- Field notebook or data sheet (attached)
- Pencil - record findings
- Watch - keep track of time (10 minutes per survey site)
- Bird field guide
- Pair of binoculars and/or a spotting scope (binoculars may be sufficient)
- Appropriate outdoor clothing
- Cellular phone in case of an emergency

Conducting the Survey

Surveys should only be conducted under suitable or good weather conditions. This includes good visibility out to 100m, reasonably warm air temperature, little or no precipitation and little or no wind. If poor conditions develop and last for an extended period, it is suggested that you reschedule your survey for another day. **Once you have reached the survey site and oriented yourself so that you have maximal view of the area, sit quietly and begin timing for 10 minutes.** It is advised that you record any waterfowl that may be flushed out of the sample area during your approach and/or set up period in the space provided at the bottom of your record sheet, indicating that waterfowl left the area just prior to the survey.

Record all waterfowl species seen within the survey area during the 10minute period. If possible distinguish between male and female adults where possible and the numbers seen (including individual ducklings making up broods) in the appropriate space on the attached record sheet. Use a separate column for each sample site, identifying the site # at the top of the column. Also note any ducks that fly over, through, or out of, your sample area at the bottom of the reporting sheet.

Do not guess! It is entirely acceptable to record a species as unknown. You should be certain of the identity of a species before recording it. Birding workshops and informal bird watching excursions in your local area will make you proficient at identifying species common to your area in no time! If you find that you are recording several unknowns….that is perfectly acceptable. As years go by, you will become more and more adept at identification.

Additional Information to Record

If you are able to identify other, non-waterfowl, species of birds either by call or site in the vicinity of your survey area, please enter those in the space provided at the bottom of the appropriate column on the reporting sheets.

Excessive disturbance or noise from a number of sources (people talking, vehicles, farm equipment, boat traffic, etc.) could influence the behavior and movement of waterfowl that you are monitoring. Please take time to record any type of disturbance at the bottom of your reporting sheet (under the appropriate column corresponding to your survey site).

General / Safety Considerations

It is important to be mindful of the tides and the wetland (damp, soft, slippery) habitat that you may be asked to survey near, making personal safety your top priority. Further, if survey locations fall on private property, first seek permission from the land owner to access the property.

It is important throughout your survey that you aim to cause as little disturbance as possible to the birds that you are viewing, considering that many ducks will either be raising broods at the time of your survey or preparing for long migrations and a high level of disturbance could mean an impact on waterfowl foraging. If you approach an area and it seems to be causing a hen to separate from her ducklings, leave the area. If you approach an area and an adult seems at all aggressive (i.e. Canada goose hissing), leave the area. Common sense is important; don't put yourself or the birds that you are watching in jeopardy.

Finally, **have fun!** The intent behind this survey is to have an enjoyable community waterfowl-monitoring effort. **Not every person has to commit to monitoring all of the same survey locations every year**, but your birding group may find it more manageable to have the same person (or group) monitor the same few sample locations year after

year. If certain people in your community live close to certain survey sites, have special knowledge of certain sample sites or have a strong desire to sample certain sites year after year…..feel free to organize your survey group accordingly. Similarly, if you would like to rotate the groups of sites making up your larger survey area amongst your birding group that is acceptable, as long as the non-productive sites are factored into how you distribute the sites amongst volunteers.

What Will Happen to The Data?

Each year data sheets will be returned to EHJV staff who will compile the information to maintain a database on the diversity and abundance of waterfowl usage of the wetlands in question. This information is available on request but summary results will be forwarded to participants each year to keep you up to date on how your wetland and waterfowl are doing.

Feedback

We would appreciate learning more about any problems that you might have encountered with this protocol and would welcome any suggestions for improvement. The Eastern Habitat Joint Venture can be contacted anytime using the contact information enclosed.

The Completed Survey Sheets Should Be Returned To:

NL Eastern Habitat Joint Venture
Wildlife Division - Department of Environment and Conservation
P.O. Box 2007 • 117 Riverside Drive
Corner Brook, NL • A2H 7S1
Phone: (709) 637-2006
Fax: (709) 637-2032

EHJV Community-Based Waterfowl Monitoring Reporting Sheets

Sheet #____ of ____ Date DD/MM/YY

Weather Conditions

Visibility:
Wind:
Temperature:
Precipitation:

**MFUD = Male/Female/Adult of Unknown Sex/Duckling*

Waterfowl Species	Site # ____ Start Time: End Time:				Site # ____ Start Time: End Time:			
	M	F	U	D	M	F	U	D
American Black Duck								
American Wigeon								
Blue-winged Teal								
Canada Goose								
Common Golden eye								
Common Loon								
Common Merganser								
Eurasian Wigeon								
Greater Scaup								
Green-winged Teal								
Long-tailed Duck								
Mallard								
Northern Pintail								
Northern Shoveler								
Red-breasted Merganser								
Ring-necked Duck								
Other:								
Disturbance in the area								
Non-waterfowl species in vicinity of survey area								
Waterfowl moving through, into/out of, or over survey area								

APPENDIX 8
Interpretive Signage and Trail Systems

Interpretive signage in Winterland. Photo by EHJV Staff

Lundrigan's Marsh Lookout, St. John's. Photo by EHJV Staff

APPENDIX 9
Interpretation Centers and Other Structures

The Wetland Interpretation Centre in the Grand Codroy Valley during the 1st annual Feather and Folk nature festival. Photo by Charmaine Barney.

View from the Wetland Interpretation Centre rear deck. Photo by Charmaine Barney.

Ecomuseum Shelter and Amphitheatre in Winterland by EHJV Staff

The Fluvarium in St. John's. Photographer Unknown.

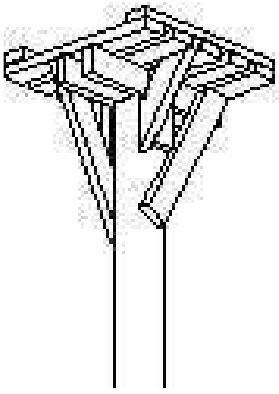
APPENDIX 10
Potential Artificial Osprey Platform

Instructions/Material for Artificial Osprey Platform Construction:

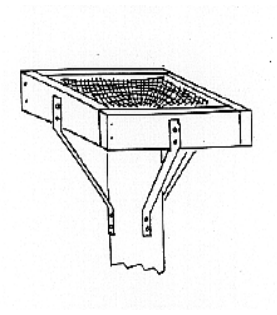
Quite a number of osprey artificial nest designs have been developed for different habitats and sites. One of the more suitable designs for Winterland is the Minnesota Design. This structure is mounted on a single pole (i.e. untreated telephone pole) at least five meters above the ground. All nail and bolt holes are pre-drilled to prevent splitting. The wire mesh is nailed in the platform. Steel braces are bolted to the platform and the lag screws are used to secure the platform to the pole. Some sticks should be wired to the nest to help stimulate nest building. The use of tamarack larch or cedar is highly recommended.

Nesting structures should be placed within fifty (50) meters of water and at least one hundred meters from the nearest residence. Regular inspection of the structure is necessary. After a few years some nests become quite large because the osprey continually adds new sticks. This weight may cause support structures to break. If the nest does become large, it is often a good idea to remove some nest material outside of the breeding season. With proper construction and maintenance, the nest structure may last up to fifteen to twenty years. It is not uncommon for several years to go by without osprey use of the artificial structure. Only an osprey can ever truly know what an osprey seeks during placement of nesting structures!

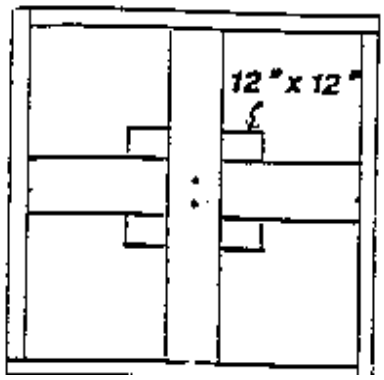
Osprey Platform (Images Courtesy of the Minnesota Raptor Centre):



1) Platform View

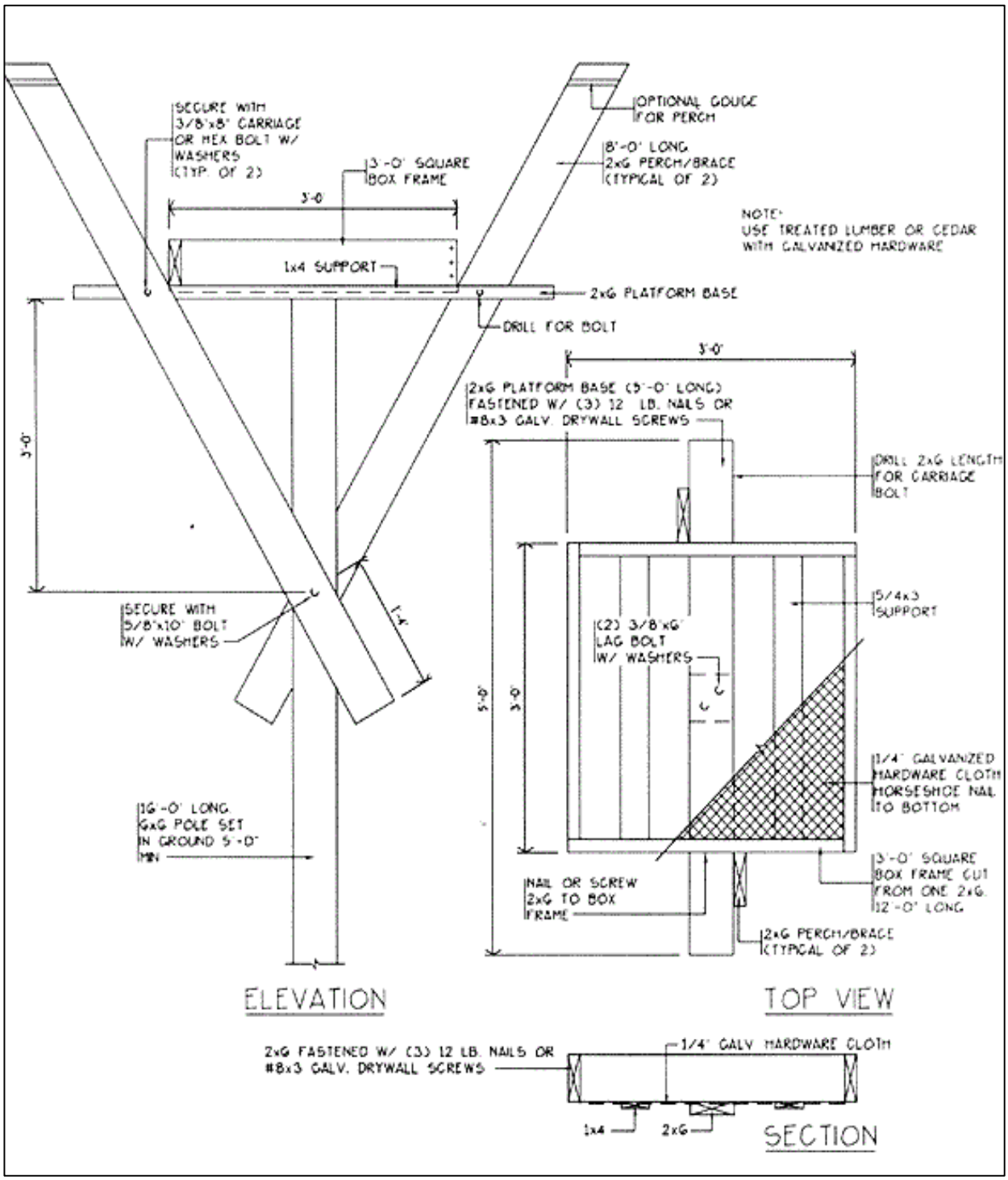


2) Platform side-view



3) Osprey platform top view

Artificial Osprey Platform design



APPENDIX 11
Potential Constructed and Floating Islands

Instructions/Material for Constructed and Floating Islands:

1) 2m X 2m floating island constructed from high modular polypropylene floating booms and heavy gauge mesh:

Photo Courtesy of "Water Lines"

2) 3.5m octagonal floating island constructed from high modular polypropylene floating booms and heavy gauge mesh:

Photo Courtesy of "Water Lines"

3) By adding a floating island to a pond you will see dramatic improvements in the ponds water quality as well as the habitat for waterfowl. Islands are ideal for ponds surrounding towns to help improve wetlands as well as the habitat for waterfowl and other wildlife species. Visit CanadianPond.ca for more details.

Photos Courtesy of "Canadian Pond Products Limited"

4) Installation of floating island in the United Kingdom By “Water Lines” Staff:

Photo courtesy of "Water Lines"

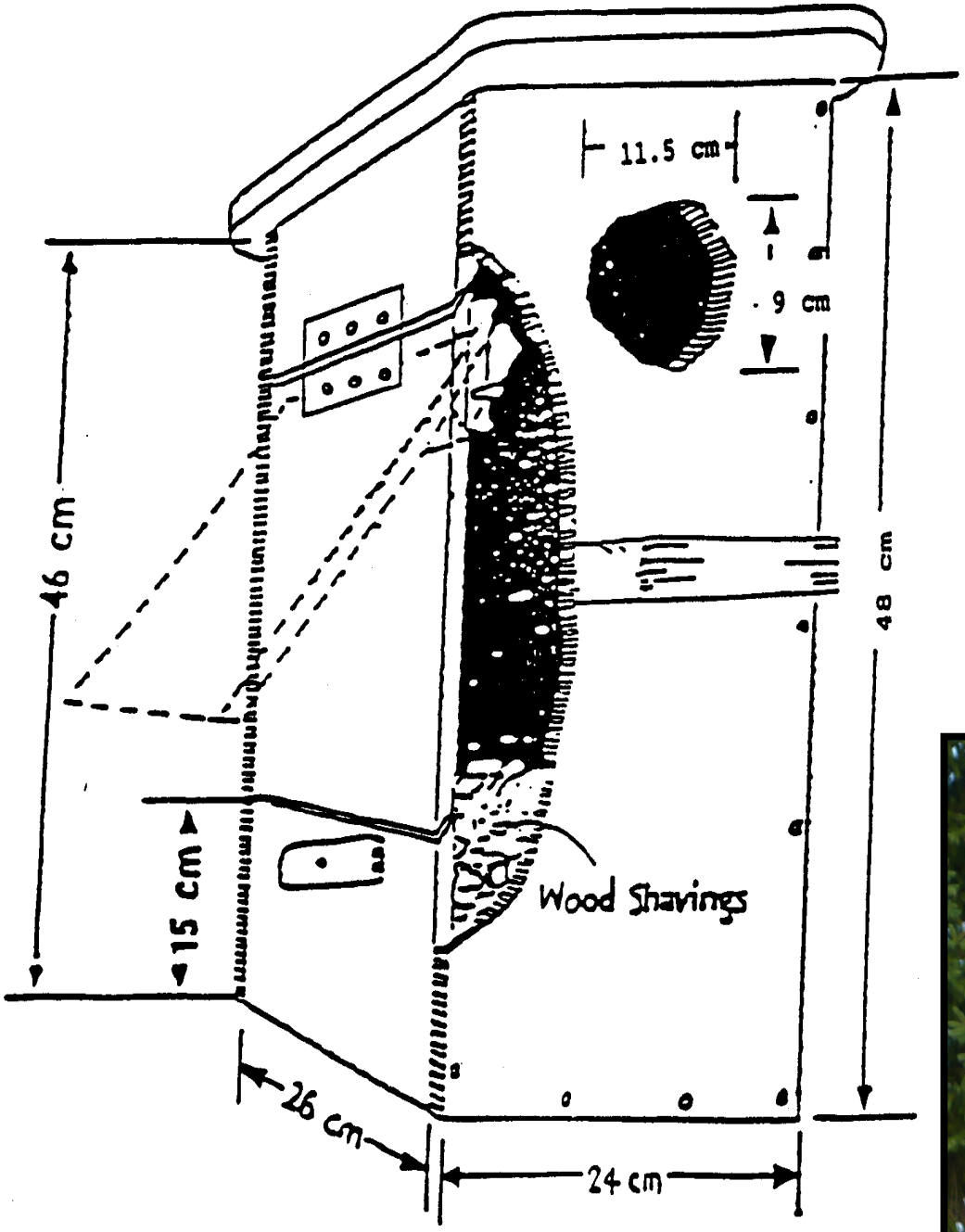
5) Image of a timber rock crib installed in Kingsford, Mississippi by the Pine Creek Watershed Conservation Project. A proper crib is built from new, square-cut timber, not wire or driftwood or round logs tacked together with small nails. The timbers are assembled into a slatted, box-like affair. The box is then filed with rock and can weigh up to several tones:

Photo Courtesy of "Pine Creek Watershed"

6) Timber rock crib being installed in Kingsford, Mississippi by the Pine Creek Watershed Conservation Project. High quality construction would be essential to placement of this style of rock crib within the Shearstown Estuary to withstand ice and winter storm conditions. Design may have to be modified to deal with specific conditions existing within the estuary:

Photo Courtesy of "Pine Creek Watershed"

APPENDIX 12
Design and Dimensions for Cavity Nest Boxes



APPENDIX 13
Appropriate Wording Required for a Potential "No-Shooting" Sign

APPENDIX 14
Construction of Bird Blinds

Image of inside and outside of bird blind in Grand Falls-Windsor:

Photo Courtesy of Corduroy Brook Trail Association

Photo Courtesy of Corduroy Brook Trail Association

APPENDIX 15
Construction of a Viewing Deck

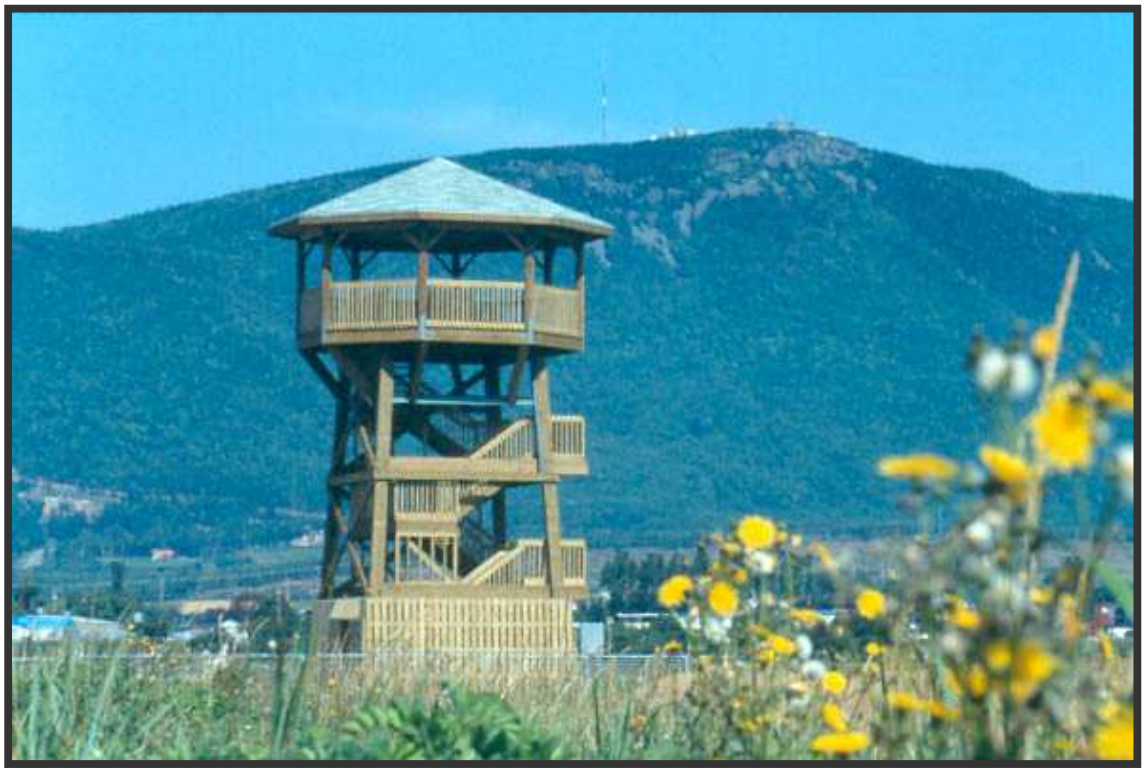
Image of viewing deck with interpretive panel in Glovertown:

Photo taken by EHJV Staff

APPENDIX 16
Bird-watching (Viewing) Towers

Bird-watching (Viewing) Towers overlooking estuary in Carleton, Quebec built in 1990 for $50,000 by local construction companies:

Photographer Unknown



Photographer Unknown