

CHARLOTTE PARK & WILDLIFE REFUGE COMPREHENSIVE MANAGEMENT PLAN



2019

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A. Overview of the Park

The purpose of the Charlotte Park and Wildlife Refuge (the "Park") is to preserve the Park lands in their undeveloped state, protecting the scenic vistas, biodiversity, and natural beauty of the property, while continuing some historic agricultural uses as appropriate; and to provide the residents of Charlotte and the general public with opportunities for aesthetic enjoyment, passive outdoor recreation and the study of nature. **Exhibit 1** contains a map of the Park with management units noted.

The Park land, located between U.S. Route 7 and Greenbush Road in Charlotte, Vermont, has been managed as an agrarian landscape for two hundred years. This approximately 290-acre property consists of both active agricultural fields and non-agricultural land. It is a significant wildlife habitat, with a balanced mosaic of forest, successional woodlands, shrub lands, meadows and wetlands. There are approximately 2.25 miles of gravel trails winding through farm fields, meadows and woodlands. Additional hiking trails through the forested area in the southern portion of the Park and through the woodlands and wetlands in the western portion allow visitors to experience further the diversity of ecosystems that make up the Champlain Valley landscape. It is a popular place for riding horses, walking, hiking, bird-watching and nature observation in all seasons.

A farm barn (the "Thorp Barn") stands near the existing farm access road on Route 7. The oldest section of the barn, dating from the late 1700s, and subsequent additions reflect changes in agricultural practices in the Champlain Valley over the last 200 years.

The largely westerly exposed property is gently rolling to steeply sloped. Typical of the area, its soils are mostly clay based and therefore poorly to moderately drained. There are, however, some gentle slopes of moderate to well drained loam. The Park's open fields are intended to remain in agricultural use, thereby perpetuating its historical use and visual character. Many of the abandoned fields, reverting to shrub growth with successional hardwoods and pine, are being threatened by the aggressive growth of non-native invasive plants. In the past decade, control of these plants has been a priority, and the Park serves as a demonstration site for invasive plant management.

One of the Park's important aesthetic attributes is its panoramic views of the Green Mountains, Adirondack Mountains and Lake Champlain, particularly from viewpoints at the eastern extremities of the property and from U.S. Route 7. The highest elevation, at 428 feet, is located just west of Route 7 near Snowdrift Lane. As the property slopes down to the west its character changes from open agricultural lands to relatively mature woodlands grading to successional forests with several ephemeral streams flowing into a wetland near the western perimeter. The principal stream is a headwater tributary of Holmes Brook, which flows to Lake Champlain. Lake water quality, a major focus of State efforts, is an important function of the Park. The lowest point, at approximately 180 feet, is near the railroad overpass at the western edge of the property at Greenbush Road.

The Park is designed to promote enjoyment of its natural and visual amenities. The network of trails is laid out for recreational use such as walking, hiking and cross-country skiing. Equestrian

use is allowed on designated trails. Benches are located at scenic or other special sites. Scenic corridors along Route 7 have been protected for the benefit of motorists. A small parking area is located at Greenbush Road, in the southwestern corner of the property. Access to the trails and a self-guided nature walk, just over a mile in length, begins here. There is a visitor sign-in sheet and an illustrated nature guide available at the entrance. Trail maps and brochures are contained in **Exhibit 8**.

As a designated “Wildlife Refuge” in this Champlain Valley landscape, it functions admirably. Wildlife species that benefit from this diverse mosaic of habitats are those that find food, water, safe cover, breeding and nesting/denning areas in the open fields, hedgerows, brushy areas, forests, forest edges, dead snags and wetlands that characterize the Park. Some species that have been seen or are expected in these habitat niches have been documented by the Vermont Department of Fish and Wildlife and are presented in **Exhibit 5**. A more comprehensive list of avian species registered for this site at the Laboratory of Ornithology, Cornell University is also appended in **Exhibit 5**. Of particular interest are rare species of grassland birds (bobolink and savannah sparrow) that are nesting in some of the upper hay fields. A special management regime has been designated for these fields, and they are part of a Champlain Valley Grassland Bird Program that includes several neighboring properties.

The deer population is not excessive. Understory damage has not been experienced, even though there is no hunting. Bobcat sightings are increasing. Beaver have recently returned to their traditional wetland. The Park has an important east-west connectivity corridor link for animal movement from Pease Mountain and Mutton Hill and for north-south linkage along the railway and transmission line corridor. More birds of prey are being seen. It has also just become known (2016) that the Park is one of the key locations as the easternmost shrinking range of the golden-winged warbler and that it will host an Audubon research project.

To protect wildlife, no pets are permitted in the Park (ground-nesting birds as well as other types of wildlife are vulnerable to dogs, even on a leash), nor is hunting allowed except upon action by the Charlotte Selectboard.

The Park’s various habitats are home to a wide diversity of native plants. Dr. Norman Pellet compiled a comprehensive list of woody plants in 1999. See **Exhibit 7**. The exhibit also contains lists of invasive species, and recommended plantings for woodlands, successional woodlands and hedgerows. This information is being compiled and updated continually.

In summary, the Park contains many types of habitat and an abundance of edge conditions. Due to the diminution of surrounding habitats by development, the Park will be increasingly important as a refuge for wildlife as expansion of the Burlington suburban area proceeds. The recreational use of the Park increases with each passing year, making it a valued outdoor space for town residents and beyond.

B. Management Structure

The operating principles and governance structure for the Park were set forth in an executed Memorandum of Understanding dated May 12, 1997, between the Town of Charlotte and the Demeter Fund. The Memorandum has functioned as an operational element of this plan. The governance of the Park consists of an Oversight Committee, appointed by the Selectboard, comprised of Charlotte citizens interested in the Park and representatives of municipal committees. Governing documents for the Park are found in **Exhibit 1**.

The Selectboard shall determine the number of Oversight Committee members and their length of service. To the extent feasible, members will include a representative of the Charlotte Selectboard, the Town Tree Warden, a Park neighbor, a local equestrian trail rider, a member of the Conservation Commission and Trails Committee. The Demeter Fund shall have the right to appoint a representative to the Oversight Committee.

The Oversight Committee shall conduct the day-to-day management of trails and other features of the Park. The Oversight Committee will be directly responsible for interpreting and revising, if necessary, the Management Plan, to recommend policy for the Park as circumstances warrant, and for managing the subcontractors working in the Park. The Selectboard shall approve Management Plan revisions and will administer an agricultural lease program with local farmers. The management of the agricultural lease will be the responsibility of the Oversight Committee.

A conservation easement was imposed on the property prior to its conveyance to the Town of Charlotte. The easement restricts use to open space, agricultural, and specified non-commercial, recreational uses. The Vermont Land Trust (VLT) is the lead agency responsible for enforcing the terms of the easement. Any physical changes to the Park require written approval in advance by the VLT, as set forth in the easement contained in **Exhibit 1**.

C. Security & Other Provisions

Security

A security program is essential to maintenance of public safety as well as the orderly use, physical integrity and appearance of the Park.

The *Ordinance Regulating Conduct in the Charlotte Park and Wildlife Refuge* contained in **Exhibit 1** was enacted to ensure use of the Park “in a manner consistent with the goals of maintaining the Park as a wildlife preserve and for passive recreational activities that do not impact wildlife or the plant communities existing within the Park.” The Selectboard is responsible for enforcing the Ordinance.

Park rules will be posted at designated Park accesses. Park land will be legally posted against hunting, fishing and trapping.

Hours/Daily Procedures

The Park will be open to the public year-round from 8 a.m. to 1/2 hour after sunset. The parking lot will be open, weather permitting, on the same schedule. Town personnel reporting to the Park Oversight Committee will conduct opening and closing of the parking lot gate.

Typical daily security operations include:

1. Open gate at the Greenbush Road parking area at 8 a.m.
2. Lock gate at the Greenbush Road parking area 1/2 hour after sunset.
3. Pick up any trash debris in the parking lot area.

Keys to Park gates will be distributed to each of the following people: personnel responsible for daily opening and closing of the gate(s), a member of the Park Oversight Committee, a member of Charlotte Volunteer Fire and Rescue Service, a designated person at the Town Offices. The farmer who holds the lease on Park agricultural lands will be given a key to gates at farm accesses.

Access from Route 7 is restricted to the following: emergencies, park maintenance and agricultural uses. Town permission is necessary to use any entrance off Route 7 for research and other Park related activities, for equestrian use, and for use by individuals with disabilities that prevent them from accessing the Park from the Greenbush Road parking area. The Park entrances located on Route 7 shall be closed and/or locked when not in use.

Trail Inspection and Monitoring

The Park Oversight Committee is responsible for monitoring and patrolling the trails and Park lands. Close monitoring of Park maintenance by the Oversight Committee has taken the place of the "Trail Patrol" envisioned when the Park was created. Maintenance issues should be addressed as soon as possible and appropriate signage displayed if trails or portions of the Park are closed due to wet or deteriorated conditions.

Emergency Guidelines

Emergency contact information and instructions will be posted at the Greenbush Road parking area. Protocols shall be developed with Charlotte Fire and Rescue for emergency procedures.

Other Provisions

- Pets are prohibited throughout the Park.
- Except with Town permission, bicycles and all forms of motorized vehicles operated by the public shall be restricted to the parking lot off Greenbush Road.
- Authorized personnel are permitted to use bicycles and motorized vehicles throughout the Park for security, emergency services, maintenance, and agricultural and woodlands

management.

A volunteer program initiated and managed by the Oversight Committee exists to support and augment the various activities including trail patrols, maintenance and clean-up.

D. Landscape Management Plan and Maintenance Standards

The Landscape Management Plan and Maintenance Standards are designed to address the entire property, including all aspects of the Park with respect to recreation, wildlife, and agriculture. All these uses shall coexist, with no one activity dominating the Park.

The Plan will serve as a guide to the Park Oversight Committee in its exercise of Park operations, by recommending standards for each type of landscape or feature, described in the Plan as “Management Units.” **Exhibit 1** contains a map illustrating the location of each management unit. The units are identified by a letter designation.

Conservation of wildlife and wildlife habitats in the Park is paramount; the Park shall be managed for biological diversity. To protect wildlife, dogs and other pets are not allowed in the Park. Firearms are prohibited. The Selectboard may, following consultation with the Vermont Department of Fish and Wildlife, authorize a managed hunt or other means of population control within the Park for the purpose of maintaining the population of wildlife at environmentally sustainable levels. In that instance, the Department shall establish the parameters for population control and shall manage all aspects of it. See *Ordinance Regulating Conduct in the Charlotte Park and Wildlife Refuge* in **Exhibit 1**.

A 1997 review of the Park by the District Wildlife Biologist found that the carrying capacity of the site was sufficient to support the existing deer population. This document can be found in **Exhibit 5**. A review in the spring of 2011 concluded that the deer population remained at the same level as 1997, with hardly any evidence of damage to plants. It is recommended that this be reviewed again within 3 years. Future surveys should be conducted at the onset of each new decade.

In 1997 the Town of Charlotte and the Demeter Fund executed a memorandum of understanding for the Park. This document outlined the purpose, uses, and responsibilities for conveying the Park to the Town of Charlotte. The Park land comes with development rights and conservation restrictions that were given to the Vermont Land Trust, Inc. and the Vermont Housing and Conservation Board by the Demeter Fund. The primary purpose of the rights and restrictions is for the conservation and protection of agriculture, forestry, outdoor recreation, wildlife and open space resources. See governing documents in **Exhibit 1**.

The Management Plan exhibits provide guidelines for improvements in the Park. For additional plantings within the Park, a recommended plant list is provided. Details for gravel and hiking trails describe recommended pruning methods, materials for trail construction, and specifications for stream and bog bridges.

Invasive Species – General

Description

This part of the Park plan addresses the problem of non-native invasive species, including but not limited to plants, insects, animals and worms, found in field edges, old pastures, woodlands and wetlands of the Park property.

Since 2007, projects to control invasive plants have been ongoing throughout the Park. Although several areas have been greatly improved, others have not yet been addressed. Non-native invasive plants out-compete native plants that provide the diversity and habitat for insects and birds. They interfere with forest and herbaceous regeneration by shading out native plants. The work to control invasives is a long-term and continuous effort.

In 2009 the Park Oversight Committee, working with the University of Vermont LANDS Stewardship program and the Nature Conservancy developed *The Charlotte Park and Wildlife Refuge Invasive Species Management Plan* contained in **Exhibit 7**. The Invasive Species Management Plan prioritizes work areas and recommends removal and control methods. Continued management includes strategies and methods that are environmentally safe and cause the least disruption to wildlife and natural areas.

Management Standards for Invasive Species

- The Invasive Species Management Plan will be updated with new invasive threats and management techniques.
- Early detection and rapid response (EDRR) will be practiced for new infestations of invasive species.
- In areas that are accessible, mechanical removal such as brush-hogging or use of an excavator to pull invasive trees and shrubs can be done. An effort will be made to treat cut stumps with herbicide to prevent re-sprouting. The work will be done in a way that protects native plants to the extent possible.
- Bare soils left from plant removal will be seeded with native grasses and wildflowers.
- Early season mowing in wildlife meadows will be “patch” mowing, focusing on invasive plants, while allowing native plants to flower and go to seed.
- To prevent the spread of seeds from invasive plants, mowing and brush hogging equipment will be cleaned before and after mowing.

- Herbicides such as glyphosate may be used as a “last resort” option, if no other mechanical or organic method of control is effective. Use will be in compliance with State of Vermont regulations for licensure and permitting. A State certified applicator is required for use of herbicides on Town-owned land.

Work Plan

1. Follow recommendations and priorities established in the Invasive Species Management Plan. Update the Plan using available information resources and current research.
2. Include funding for invasive plant removal in the annual Park budget.
3. Maintain records of work areas, methods of treatment and resources used.
4. Engage community volunteers to help with invasive plant removal and restoration with native plants.

Erosion Control - General

Description

Because of the steep slopes with farm fields, trails and a network of streams, wetlands and drainage ditches, the control of erosion is a priority in the management of Park land. Tributaries flowing from the highest points near Route 7 join with other waterways to enter Holmes Creek near Greenbush Road. This creek flows west, with water flowing into Lake Champlain by the Charlotte Beach. Farm fields left bare and corn fields with no cover crop are very susceptible to erosion, causing soil to be lost and nutrients to be carried downstream during spring thaw and heavy rains. Ditches and culverts that are not properly maintained can cause damage to trails and bridges. Stream banks and drainage ditches can be degraded by erosion and head-cutting.

Karen Bates, Vermont Department of Environmental Conservation Planner, provided recommendations in the 2010 document, *Management Suggestions for Charlotte Town Agricultural Fields in the Watershed of Holmes Brook*. A 2011 letter from Gretchen Alexander provides further recommendations regarding head-cut management. Documents related to watershed management and erosion control can be found in **Exhibit 6**.

In 2011 and 2012, riparian buffers were established by the stream/tributary between Units A and B and in the hedgerow on the northern edge of the Overlook. Using funding provided by the U.S. Fish and Wildlife Service, a variety of native shrubs were planted in the buffers. Woody vegetation in the buffer provides many benefits. It helps filter sediment out of overland runoff, thus decreasing phosphorous and sediment pollution to Lake Champlain. The root structure of woody vegetation provides resistance to the erosive power of floodwater and helps maintain a stable bank condition. Woody vegetation provides important habitat for many creatures both in and around the stream environment. This habitat is essential not only for the direct cover it provides to wildlife, but it also acts as a contiguous corridor to facilitate wildlife movement in

the landscape.

In 2016, erosion control planning through the Ahead of the Storm initiative resulted in improvement of two drainage areas in the Park. The erosion control methods implemented at the sites can be used in other erosion prone areas. See documents in **Exhibit 6**.

Erosion control issues are addressed in several sections of the Park Management Plan, including sections on agriculture, trail maintenance and riparian buffers. General standards and strategies are described below.

Management Standards for Erosion Control

- The management of the agricultural lease is the responsibility of the Park Oversight Committee. Agricultural uses will be allowed, provided they assure a high level of erosion control and protection of Park soils and infrastructure. Permanent hay crops on fields will be maintained to prevent damaging sheeting and gullies from large storms.
- Riparian buffers will be at least 50 feet wide and protected by fencing or posts to mark the boundaries of the buffers, especially in agricultural areas.
- Some larger trees should be allowed to grow to provide an over-story, perching and nesting sites (while still maintaining an open view).
- Invasive plants and shrubs will be controlled or removed regularly to maintain a healthy native plant diversity.
- Hedgerows will be retained to help reduce surface erosion and loss of soil to wind erosion.
- If gullies and head-cuts appear they will be repaired in a timely manner to prevent further degradation and soil erosion.
- Ditches and culverts will be maintained to allow water to flow freely.

Work Plan

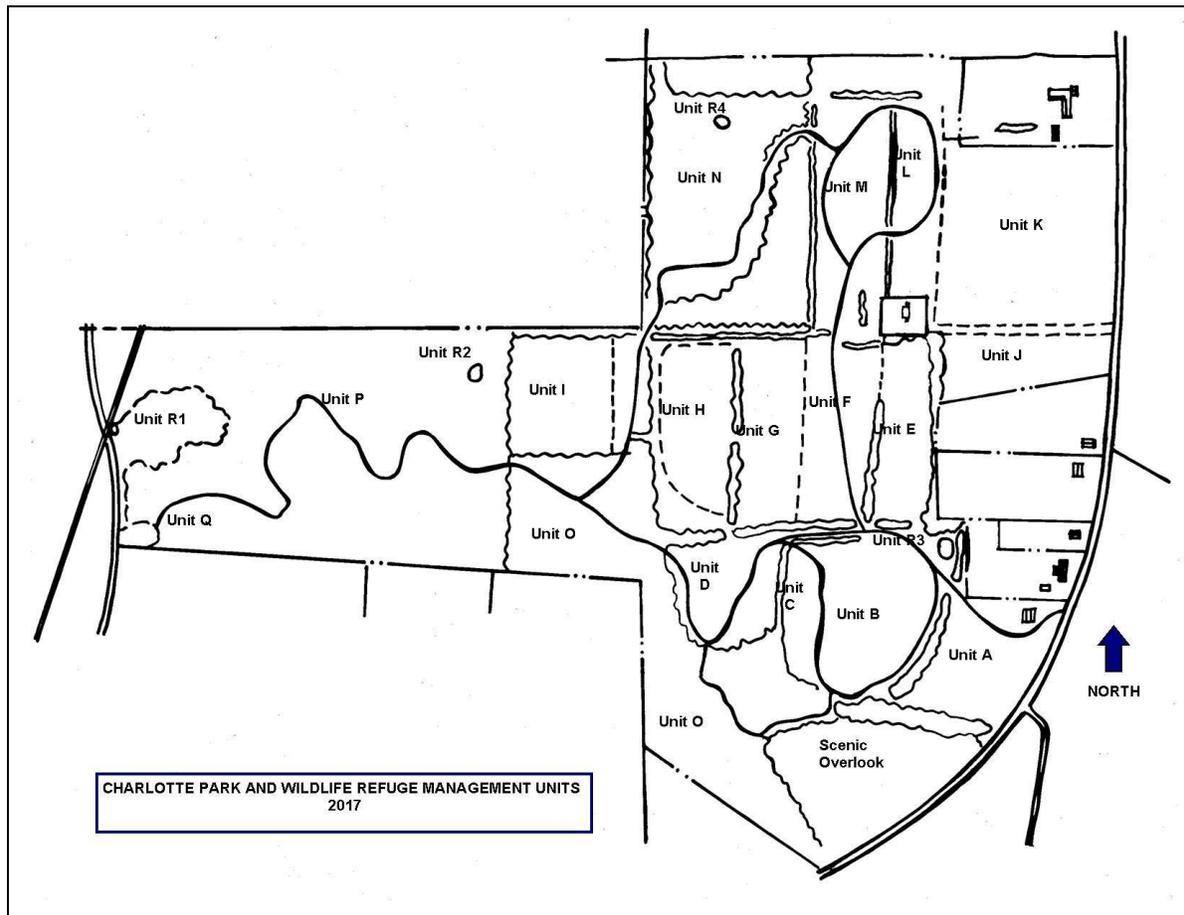
1. Follow headwaters guidelines in **Exhibit 6** and update guidelines as needed.
2. Conduct annual evaluation of the trails, gullies, agricultural areas, head-cuts and ditches.
3. Carry out maintenance and implement plans to deal with new areas of erosion.
4. Install and maintain posts or fences to define riparian buffers.
5. Encourage the growth of native shrubs in buffers by removing invasive plants, and by selective mowing and plant care (pruning and mulching).

Wildlife Practices

1. Retain hedgerows and buffers—they create wildlife corridors and provide a valuable food source and habitat for all creatures in the Park, including birds, mammals and insects.
2. Install bird houses on posts and in larger trees to provide nesting sites for threatened avian species.
3. Seed cleared project areas with diverse native plants to provide a food source and habitat for wildlife.

Agriculture

Portions of the Park have been historically and are currently in agricultural use. Due to soil types, topography, and multiple uses in the Park (including agriculture, recreation and wildlife protection) specific agricultural practices have been implemented for designated units. These lands are valued as a resource for supporting local agriculture and for demonstrating best agricultural and land use practices. The farmer who leases the agricultural units shall be responsible for following the agricultural practices and management standards outlined in the following sections. The agricultural lands include Units A,B,C,E,F,G,H,I,J,K,L,M and the Scenic Overlook. These lands are mainly on the east side of the Park, sloping, in some cases steeply, to the west.



General Agricultural Practices

1. Land use practices must take into account the types of soils, the slope of the land, and the springs and ponds that create wet seepage. There is an ongoing need to implement and enforce agricultural practices aimed at minimizing erosion.
2. Employing a policy of permanent hay fields reduces the risk of soil erosion. Eliminating exposed soil within the Park is a top priority to aid in the reduction of soil erosion during

spring thaw and heavy rains.

3. Records shall be maintained as to the mowing schedule for all agricultural units. Whenever possible, when fields and recreational meadows are in forbs, they shall not be mowed until August 1st to avoid disturbing nesting birds and white-tail deer fawns. Unit F west of the trail and Unit G have been designated for field nesting birds and will not be mowed until August 1st. See agricultural lease documents in **Exhibit 2**.
4. Hay fields have the added benefit of complementing the walking and horse trails that wind through the active agricultural fields, allowing breathtaking and varied views of Lake Champlain, the Adirondack Mountains and the Green Mountains. Hay fields are low profile, preserve the scenic views, and create a natural environment for pollinators, mammals (both large and small), hawks, predators and herbivores.
5. Areas of bare soil will be seeded in the spring, summer and fall as needed.
6. In order to maintain a safe environment for the animals that live and travel through the Park, the people who use the trails, and for water quality, the use of herbicides, pesticides, and fertilizers will be strictly controlled and monitored with accurate record keeping. The use of natural verses chemical herbicides and pesticides, only as needed, on agricultural units is preferred. Any use of pesticides and herbicides will be in compliance with EPA and State of Vermont regulations. If there is a planned application of an herbicide or pesticide that will affect humans, signage should be placed at the entrance of the Park and the treated areas closed to pedestrian use for a safe period of time.
7. Protecting water quality is a priority in the Park, with the EPA guiding the reduction of nutrient runoff into Lake Champlain. The existing riparian buffers between Units A and Unit B, between Units A and the Scenic Overlook, and the southwest corner of Unit E, will be monitored and maintained by the Park Oversight Committee. Opportunities to reduce runoff and erosion within the Park will be implemented on an ongoing basis. Runoff and erosion not only affect productivity of agricultural lands in the Park, but are a major contributor to phosphorus loading and eutrophication of Lake Champlain.
8. Hedgerows and riparian buffers shall not be removed. They shall be retained for soil protection and wildlife corridors. The Park Oversight Committee is responsible for management of hedgerows and riparian buffers.
9. The Scenic Overlook was acquired by the Town of Charlotte prior to the establishment of the Charlotte Park and Wildlife Refuge and has been incorporated into the Park for management purposes. The approximately 25 acre property was purchased using funds from the U.S. Department of Interior, Bureau of Outdoor Recreation. The grant document contained in **Exhibit 1** describes the project as a purchase of the property for “protection and future limited recreational use.” The field is included in the agricultural lease, with the requirement it be kept in permanent hay. This use fits the goals of recreation, view preservation, wildlife habitat, agriculture, and public enjoyment.

10. Agricultural access to the Park is currently located by the Thorp Barn on Route 7 (1520 Ethan Allen Highway). The Town has a right to an access for limited use at the “Varney Farm” property. Access documents can be found in **Exhibit 3**. The location of the access is to be determined.

Agricultural Lease

Approximately 100 acres of Park land are used for agriculture and have been available for lease to local farmers. The farmer/lessee is responsible for developing a business model and nutrient management plan that conforms to the Management Plan of the Park. The Park Oversight Committee and Selectboard will ensure that stewardship and use of the agricultural units protect Park land and infrastructure, and are consistent with the goals and standards outlined in the Park Management Plan.

The following areas are not part of the agricultural lease:

1. Hedgerows
2. Riparian buffers
3. Trails and roads
4. Ditches and culverts.

The management of these areas is the responsibility of the Selectboard through the Park Oversight Committee.

Agriculture: Permanent Hay Lands

Management Units A,B,E,G,H,I,J,K, and the Scenic Overlook

Description

Due to topography and heavy Vergennes soils in these units, they should remain in permanent hay as part of the active agriculture use on the property. This will allow for more stable groundcover on areas that are consistently wet and/or highly erodible due to steep slopes.

The fields are used by various wildlife species. Small mammals, such as meadow voles, skunks, raccoons, and eastern cottontails, use open hay fields. They are also areas actively used by nesting birds, notably bluebirds, turkeys and grouse. Bobolinks and Eastern Meadowlarks nest on the ground in hay fields. Grains and seeds are important components in the diets of mourning doves, wild turkeys and many other native avian species.

Management Standards for Agriculture and Wildlife

- Units shall be maintained as permanent hay fields. Diverse seed mixes with grasses and forbs, including nitrogen fixing legumes are to be used.

- Fields shall be mowed to be maintained as a meadow and to prevent vegetative succession.
- The leasing farmer will meet with the Park Oversight Committee as requested.
- Fertilizer and herbicide application records will be made available to the Park Oversight Committee.
- Only the amount of fertilizer that is in the nutrient management plan shall be used. Natural methods of pest management shall be encouraged.

Work Plan

Agricultural Practices

1. Maintaining hay fields with overplanting shall be done as needed with the use of diverse seed mixes with grasses and forbs, including nitrogen fixing legumes.
2. Use of herbicides and pesticides shall be discouraged on all agricultural units and kept to a minimum. Use of natural methods of pest control is preferred. If there is a planned application of an herbicide or pesticide that will affect humans, signage should be placed at the entrance of the Park and the treated areas closed to pedestrian use for a safe period of time. Records shall be maintained and submitted to the Park Oversight Committee of all herbicides and pesticides used. Any use of pesticides and herbicides will be in compliance with EPA and State of Vermont regulations.
3. Repair of damage caused by agricultural equipment to the trails, roads and other infrastructure is the responsibility of the lessee.
4. In order to maintain views and to control invasive plants, the Park Oversight Committee may oversee mowing of the area from the edge of Route 7 to the field edges. Mowing and other work in the State right-of-way may require a permit from the Vermont Agency of Transportation.

Wildlife Practices

1. Unit F west of the trail and Unit G are designated for field nesting birds and will not be mowed until August 1st to allow the young birds to fledge.
2. The use of herbicides and pesticides is strongly discouraged during nesting and spring reproduction cycles.

Agriculture: Recreation Meadows:

Management Units: C,F,L,M

Description

These units are designated as managed fields to perpetuate their open appearance utilizing herbaceous groundcovers and vegetation. Fields will be kept at a “controlled” height for passive recreation uses, except for Unit F west of the trail, which has been designated a field nesting bird area. As the pressure for safe nesting sites increases in the Champlain Valley, more of the recreational meadows could be designated as field nesting bird areas.

Management Standards for Agriculture and Wildlife

- Units shall be maintained as a meadow. Use diverse seed mixes with grasses and forbs, including nitrogen fixing legumes. Encourage native wildflowers.
- Units C, L & M, shall be mowed throughout the year to maintain as a meadow and to prevent vegetative succession, taking into consideration bird nesting habits and wildflower growth cycles.
- Approximately 13 acres in Unit G and Unit F (west of the trail) are designated as a field nesting bird area. See lease agreement in **Exhibit 2**
- The Park Oversight Committee reserves the right to designate additional field nesting bird areas in the agricultural units. The Committee will seek the advice of Audubon Vermont or other experts, and will negotiate with the leasing farmer, terms for waiver of the lease payment or other means of compensation.

Management Standards for Recreation

Fields shall be maintained at a consistent height to allow for passive recreational uses, except for Unit G and Unit F west of the trail, which will not be mowed until August 1st.

Work Plan

Agricultural Practices

1. Maintaining recreational fields with overplanting shall be done as needed with the use of diverse seed mixes with grasses and forbs, including nitrogen fixing legumes.
2. The field nesting bird area in Units G and F is not to be mowed until August 1st.

Recreational and Wildlife Practices

The mowing schedule for meadows shall be 2 to 6 times per year, as needed with an average height of 6 to 9 inches.

Trails and Farm Access Road

Trails throughout the Park allow the public to view the scenic landscape and observe the diversity of plants and animals in the woodlands, wetlands and meadows. Signage along trails and brochures available at the Greenbush Road parking area provide educational information and trail maps.

A walking trail with bog bridges and a surface of wood chips starts at the parking area and connects with a network of gravel trails designed and constructed for passive recreational and equestrian use. At points along the trails are overlook areas with amenities such as benches and plantings. A hiking trail through the forest at the southeast corner of the Park provides low-impact access to woodland areas. A gated farm road providing access from Route 7 to the agricultural units is located at the eastern edge of Unit A.

Trail maps and brochures are contained in **Exhibit 8**.

Gravel Trails and Access Road

Description

Gravel trails have been constructed for passive recreational and equestrian use. A gate at the eastern edge of the Park in Unit A provides access for emergencies, agricultural vehicles, park maintenance, and other community activities with permission of the Park Oversight Committee. An entrance and parking area for equestrian use and use by individuals with disabilities that prevent them from accessing the Park from the Greenbush Road parking area has been under consideration for many years. Documents related to an option at the “Varney Farm” can be found in **Exhibit 3**.

Management Standards

- Gravel trails shall be maintained at an 8 ft. width with mowed shoulders of no more than 4 ft. Where agricultural units border trails, there shall be a grass mowing strip of at least two feet separating the units and trails that shall be maintained as a trail shoulder. See **Exhibit 8, Trail Maintenance and Mowing Specifications**.
- Culverts and ditches have been installed to allow water to flow freely while protecting trails from erosion.
- The park gate on Route 7 shall be closed and/or locked when not in use.

Work Plan

- Gravel will be added and trails graded as needed. The gravel color, depth and composition shall be the same or match the material that currently exists on the trails. Trail slope will be maintained where this measure has been used to allow water to flow across the trail. Erosion, rutting and other damage will be repaired as necessary.

- Gravel trails, trail shoulders, overlook areas, access roads and the perimeter of the Thorp Barn will be mowed regularly to maintain a tidy appearance. See mowing specifications in **Exhibit 8**.
- The Route 7 farm access road shall be graded and gravel added as needed. Culverts and drainage ditches under and along the farm access road and trails shall be kept clear of debris.
- Fallen trees will be cleared from trails. Trees will be cut mainly to remove non-native invasive species, to promote regeneration, to remove tree limbs and dead branches where hazardous conditions exist, or to remove dead, dying, or malformed trees that threaten public safety along trails. Trees and shrubs along the edges of trails will be pruned to promote user safety. Guidelines for pruning can be found in **Exhibit 7**.

Walking Trail (Roberts Way), Maintenance Trails and Hiking Trails (Turkey Lane)

Description

These low impact trails have been constructed through the woodlands and wetlands of the Park. The trails are designed for walking, running, skiing and snow-shoeing. Bridges have been constructed to cross streams and bog bridges placed to protect fragile areas.

Standards

- The trails shall be maintained for passive recreational use.
- Bog bridges will be maintained over consistently wet areas.
- Stream bridges will be maintained. The number of stream crossings should be kept to a minimum.
- Stream and bog bridges shall be designed and constructed for visitor safety, to control erosion and to blend with the natural landscape.

Work Plan

1. The walking trail and side trails shall be maintained at a 4 ft. width.
2. The trails will be mowed and trimmed as needed to maintain a tidy appearance. Grasses shall be maintained at a minimum height of 4 inches to allow for healthy regeneration, encouraging a diversity of grasses and wildflowers. The lawn area around the second overlook bench will be mowed regularly. See mowing specifications in **Exhibit 8**.
3. Fallen trees will be cleared from trails. Trees will be cut mainly to remove non-native

invasive species, to promote regeneration, to remove tree limbs and dead branches where hazardous conditions exist, or to remove dead, dying, or malformed trees that threaten public safety along trails. Trees and shrubs along the edges of trails will be pruned to promote user safety. Guidelines for pruning are shown in **Exhibit 7**.

4. Ditches and other drainage structures along the hiking trails shall be kept clear of debris.
5. Missing and damaged informational and directional signs along the trails will be replaced.
6. Stream and bog bridges will be repaired and replaced as needed, following specifications in **Exhibit 8**.

Parking Area

Management Unit Q

Description

A gravel 12-car parking lot with a looped one-way driveway is located in the southwestern corner of the Park along Greenbush Road. Plantings have been placed to screen the parking lot from views from an abutting residential property to the south, and to provide shade and interest.

Management Standards

- Selective cutting will be initiated to encourage diversity and health of successional woodlands to the north and east of the parking lot.
- Planting of trees and shrubs shall use native species of value to wildlife.
- Mowed areas bordering the parking lot and driveway shall be maintained at a height to allow for healthy regeneration of grasses and wildflowers.
- The gravel parking area will be maintained for automobile, bicycle and emergency access. The grade of the driveway and parking lot shall be maintained to control drainage runoff.
- Signage should be educational and informative but have minimal visual impact.
- Buffer plantings and chain link fencing shall be maintained along the southern property line to provide screening from the abutting residential property.
- Shade trees shall be maintained in a safe, healthy condition.
- Specimen ash trees will be preserved.
- Information kiosk and trail maps will be maintained and updated.

Work Plan

1. The driveway and parking area will be graded and gravel added as needed.
2. Areas bordering the parking lot and driveway are to be mowed as needed during the growing season. See mowing specifications in **Exhibit 8**.
3. Signage will be repaired and replaced as needed.
4. Vines along the fence should be cut to allow healthy growth of trees.
5. Specimen ash trees will be treated according to best practice.

Maintained Meadows and Shrubland Bird Habitat Areas

Management Units D, N, northwest portion of Unit P, western portion of Scenic Overlook

Description

The maintained meadows and shrubland bird habitat areas support wildlife diversity in the Park while providing aesthetic features. They are dominated by herbaceous vegetation such as common milkweed, goldenrod, aster, clover, thistle species, common ragweed, and various sedges and grasses. Wet areas of Units D and N have native plants such as Joe Pye weed, herb willow, boneset and wool grass. Old fields that have been allowed to grow are characterized by non-woody perennials and a few pioneer tree species. There are early successional trees in Units D and N: ash and red cedar predominately. The rocky and hilly section of Unit N that was used as pasture contains mature shagbark hickory, bitternut hickory, and willow along an old fence line with a pond.

Old fields and pastures are used by many types of wildlife. Numerous species of voles, mice and shrews are found in meadows. Raptors perch in trees to hunt rodents. Ground nesting birds such as killdeer and meadowlarks nest in recently abandoned fields. Flycatchers, swallows and other insectivorous birds feed on insects. Leopard frogs and various snakes can also be found. Pollinators and other insects benefit from fields of native plants, and they in turn feed birds and other wildlife.

In 2010-2011, through the effort of Mark LaBarr of Audubon Vermont and funding from a Together Green Fellowship grant, a shrubland bird habitat area was established in the western portion of Unit P. The eastern portion of this unit is almost completely overgrown with honeysuckle, making access and management extremely difficult.

Audubon Vermont, as part of the Champlain Valley Bird Initiative, provided a habitat assessment and avian conservation recommendations for this and other areas of the Park. Strategies in the 2012 document, *Audubon Vermont, Habitat Assessment for the Charlotte Park and Wildlife Refuge, Charlotte, Vermont* have been used in the improvement and management of wildlife meadows in Units N, D and the Scenic Overlook. See documents in **Exhibit 5**.

The wildlife meadows and bird habitat areas contain ponds and waterways that should be considered in management of the units. Some meadows are crossed by trails and accesses for agriculture and maintenance. Information on these features can be found in other sections of the Park Management Plan.

Management Standards

- Units shall be managed as meadow with selective trees retained for “Olmsteadian” look.
- Meadows shall be brush-hogged every 3-5 years after August 1 to maintain as meadow and control forest succession, leaving some shrubs, trees, saplings and snags throughout.

- Meadows shall be brush hogged in sections or patches, leaving some areas undisturbed to provide cover and food for species while the disturbed areas regenerate. Whenever possible, units shall be brush-hogged from early fall to winter to avoid breeding season of birds and to allow native plants to produce seeds.
- To prevent the spread of seeds from invasive plants, mowing and brush hogging equipment will be cleaned before and after mowing.
- Where possible, an uncut buffer of shrubby vegetation will be maintained as the field transitions to the forested portions of the Park. This “soft” buffer can be a productive area for many birds.
- Target non-native plants such as honeysuckle and buckthorn for removal. Treat invasive plants with herbicide to insure they will not re-grow. See *Charlotte Park and Wildlife Refuge Invasive Species Management Plan* in **Exhibit 7**.
- Retain orchard trees such as apple and pear.
- Selectively cut trees and keep vegetation low in the Scenic Overlook to maintain the view from Route 7. Copses of dogwood and other native shrubs provide cover and nesting opportunities for wildlife without interfering with views.
- Overseed as needed to encourage meadow diversity. Use diverse seed mixtures with grasses and forbs, including nitrogen fixing legumes. Encourage native wildflowers and species important as pollinator plants.

Work Plan

1. Refer to *Audubon Vermont, Habitat Assessment for the Charlotte Park and Wildlife Refuge, Charlotte, Vermont* for management of specific units.
2. Leave patches of native plants into winter for forage and cover for birds and small mammals.
3. Selectively cut trees outside of the nesting season to improve habitat, to maintain an open view, and to remove diseased trees or dead trees where hazards exist. Trees may be girdled and left as perches and nesting sites for cavity nesters.
4. Remove or control new invasive species as they appear.
5. Erect and maintain nesting boxes for cavity nesting species such as Eastern Bluebirds and Tree Swallows. The boxes should be cleaned every spring.
6. Record and map Park maintenance projects, mowing and brush-hogging.

Hedgerows

Description

Hedgerows are located between the agricultural units and consist of a variety of vegetation, including native plants such as dogwood, staghorn sumac, maples, American elm, shagbark hickory, white ash; and non-native invasive species such as honeysuckle and buckthorn. They help to provide windbreaks on the more exposed areas of the property.

Hedgerows enhance connections between forested areas, provide cover for mammals and other wildlife, and are important travel corridors for wildlife. Carnivores such as the coyote and bobcat may use hedgerows for dispersal and for foraging or migration from denning areas. Raptors, especially red-tailed hawks, perch in large trees along the edges of fields when hunting. American kestrels, eastern bluebirds, indigo buntings, and eastern phoebes are examples of common species that utilize hedgerows or fencerows for perching on field edges. In some locations, hedgerows block noise and the view of traffic on Route 7.

Management Standards

- Hedgerows will not be removed. Existing agricultural access points between units will be maintained.
- Panoramic views of Lake Champlain and the Adirondack Mountains shall be maintained by controlling tree height in areas west of the upper trails and overlook benches, and by maintaining “windows” or openings that allow a view of the distant landscape through the vegetation in the east-west hedgerows.

The following hedgerows shall be maintained primarily at shrub height:

Hedgerow between Units C and D

Hedgerow between Units L and M

Hedgerow between units M and N

The hedgerow between Units G and H shall be managed to allow continuous views from Unit F.

View “windows” shall be maintained in the following hedgerows:

Hedgerow between Units C and G

Hedgerow between Units G and N

The removal of invasive plants in hedgerows often results in a more open view of the landscape.

- Non-native invasive species will be removed from hedgerows. See *Charlotte Park and Wildlife Refuge Invasive Species Management Plan* in **Exhibit 7**. Hedgerows will be monitored for re-growth of invasive plants and introduction of new species.

- Native trees and shrubs will be allowed to grow to provide good cover for mammals. Large trees will be allowed to remain for perch sites for hawks and other birds that use edges. Snags shall be retained to provide habitat for wildlife that utilize cavities.
- Hedgerows shall be enhanced with native plants from the recommended plant list in **Exhibit 7**.

Work Plan

1. Continue to carry out hedgerow clearing to remove invasive plants Allow native trees and shrubs to remain and thin if necessary.
2. Consider tree height in managing hedgerows. Avoid planting tall trees that could block the view of the distant landscape from Route 7, upper trails and Park overlooks. Use selective tree thinning to maintain open views in designated hedgerows.

Woodlands

Management Unit O

Description

Woodlands in this unit are characterized by diverse tree species and age classes. Upland forest and some shrubby abandoned agricultural fields create a patchy landscape. The canopy is comprised of predominately paper birch, red maple, black cherry, American elm, shagbark hickory, sugar maple, butternut, bitternut hickory, burr oak and red oak. Many large snags are scattered in the upper upland forest on the south and eastern edges of Unit D. Honeysuckle and buckthorn species remain pervasive in the understory and shrubby open areas, although considerable progress has been made in clearing these plants, particularly adjacent to trails. Pioneer species such as eastern red cedar, American elm, and gray dogwood are also growing in the open shrubby areas.

There are privately owned woodlands south of and immediately adjacent to the refuge. Opportunities for cooperative conservation and management of these woodlands may be pursued.

Wildlife that benefit from these habitats are associated with early and mature hardwood forest and dense shrubs. White-tail deer bed down in the dense shrubby understory and travel through the upland forest and open areas. Foxes and coyotes use upland forest for denning. Owls, woodpeckers, and chickadees nest in cavities of old trees. Bats use trees as roosts, especially large trees with loose, exfoliating bark and a high degree of solar exposure. These include dead trees or live trees such as shagbark hickory. Grouse, woodcock, wood thrushes, cardinals, catbirds, and thrashers nest in the dense understory. Cedar waxwings and American robins eat fruits of honeysuckle, grape, and Virginia creeper in late summer and early fall.

Management Standards

- Native tree species will be allowed to continue to grow and mature in the upland forest.
- Selective cutting and invasive plant removal will be used to encourage diversity and health of woodlands.
- A diversity of native woodland species to include a mix of trees, shrubs and groundcovers will be encouraged. Native shrubs will be allowed to dominate the understory in the forest, thereby providing cover for deer and ground-nesting birds.
- Snags and dying trees shall be retained to provide habitat for cavity-nesting wildlife except in instances where these threaten public safety near trails.
- Where possible, the cutting of trails through thick shrubby areas will be avoided to prevent disturbance to ground nesting animals.

- Existing pioneer tree, native tree and shrub species will be allowed to continue to grow to provide good cover for mammals.
- Human access to the woodlands will be limited to prevent disturbance to ground nesting birds.

Work Plan

1. Non-native invasive plants species should be removed and controlled throughout the Park. See *Charlotte Park and Wildlife Refuge Invasive Species Management Plan* in **Exhibit 7**.
2. Areas where no native or desired plants are present will be replanted with native species from the recommended plantings listed in **Exhibit 7**
3. With the exception of selective clearing to maintain the view windows described above, trees will be cut mainly to remove non-native invasive species, to promote regeneration, to remove tree limbs and dead branches where hazardous conditions exist, or to remove dead, dying, or malformed trees that threaten public safety along trails. Some thinning may be conducted to promote health of select trees, particularly high value trees. Examples include rare or lesser known species, disease resistant butternut, planted disease resistant elms, or inoculated ash trees. Cut wood and wood debris should generally be left for wildlife habitat and nutrient cycling.
4. Some experimental, or demonstration plantings of disease resistant native trees is envisioned, particularly of tree species that are in decline or have disappeared due to exotic pests. Examples include American elm, (*Ulmus americana*), American chestnut, (*Castanea dentata*), and butternut (*Juglans cinerea*).
5. Select specimens of ash tree (*Fraxinus* sp.) will be targeted for treatment according to the protocol described in **Exhibit 7**, *Charlotte Park and Wildlife Refuge Tree Pest Protocol*.
6. Additional measures (such as placing nesting boxes) for wildlife reintroduction and enhancement will be established.

Successional Woodlands and Old Orchard

Management Unit P

Description

Photo images of this section from 50 years ago show an open landscape with a few large trees, and land that was used for pasture. Since farming was discontinued, trees and shrubs have been allowed to grow, and in many areas there is now a mix of early successional tree species such as quaking aspen, willow, elm, gray birch, eastern red cedar, white pine and green ash; and slower growing hardwoods such as maple and oak. There is an old abandoned orchard in the southwest corner near the parking area. Unit P also demonstrates the impact of non-native invasive plants on the normal succession from open land to more stable woodlands. Honeysuckle, buckthorn and Amur maple grow in abundance. In an area near a pond in the northeast section of this unit, the growth of honeysuckle is so dense, the area is almost inaccessible. The control of invasive plants has been a focus of the Park Oversight Committee for over 10 years. Some of the earliest invasive plant control projects in the Park were done under the guidance of the Nature Conservancy along the trails and in the woods in Units P and O. The Park became a Wise on Weeds demonstration site.

With the support of Audubon Vermont, a shrubland bird habitat area was established in the northwest meadow portion of Unit P in 2010 and 2011. The management of this area is described in *Wildlife: Maintained Meadows and Shrubland Bird Habitat Areas* and in *Audubon Vermont, Habitat Assessment for the Charlotte Park and Wildlife Refuge, Charlotte, Vermont*. This document can be found in **Exhibit 5**.

The western edge of Unit P is crossed by the Vermont Transco/VELCO transmission corridor. Attached to the easement is an agreement regarding the removal of invasive plants in right-of-way management. See documents in **Exhibit 4**.

Many wildlife species inhabit early successional forests. Small mammals such as moles, mice, chipmunks, and squirrels inhabit young forests. Coyotes, foxes and mustelids, such as minks and weasels, use early successional forests to build dens and to travel to feeding areas. Commonly observed avian species are hairy woodpeckers, red-eyed vireos, black-throated blue warblers, eastern wood pewees, and wood thrushes. American woodcock, ruffed grouse and veerys nest on the ground in early successional forests. Red-spotted newts, wood frogs, and various snakes can also be found. White-tail deer, foxes, raccoons, and numerous birds feed on apples in the abandoned orchard. In recent years, bobcats have been seen in the Park.

Management Standards

- Selective cutting and invasive plant removal will be used to encourage diversity and health of woodlands.

- A diversity of native woodland species including a mix of trees, shrubs and groundcovers will be encouraged.
- Woodlands will be maintained for wildlife habitat. Orchard trees should be trimmed to allow for greater apple yield for fruit-eating wildlife. Trails shall be kept 50 ft. from orchard areas, if possible, to minimize disturbance to wildlife.
- Existing pioneer trees, native trees and shrubs will be allowed to continue to grow to provide good cover for mammals. Snags will be kept to provide habitat for wildlife that utilize cavities.

Work Plan

1. Non-native invasive plants species should be removed and controlled throughout the Park. See **Exhibit 7 - Tree and Plant Inventory and Management**.
2. Areas where no native or desired plants are present will be replanted with native species. See recommended plant list in **Exhibit 7**.
3. Trees will be cut mainly to promote habitat or regeneration, to remove tree limbs and dead branches where hazardous conditions exist, or to remove dead, dying, or malformed trees that threaten public safety along trails. Some thinning may be conducted to promote health of select trees, particularly high value trees. Examples include rare or lesser known species, disease resistant butternut, planted disease resistant elms, or inoculated ash trees. Cut wood and wood debris should be left for wildlife cover.
4. Some experimental or demonstration plantings of disease resistant native trees is envisioned, particularly of tree species that are in decline or have disappeared due to exotic pests. For example: American elm, (*Ulmus americana*) American chestnut, (*Castanea dentata*), and butternut (*Juglans cinerea*).
5. Select specimens of ash tree (*Fraxinus* sp.) will be targeted for treatment according to the protocol described in **Exhibit 7**, *Charlotte Park and Wildlife Refuge Tree Pest Protocol*.
6. Additional measures (such as placing nesting boxes) for wildlife reintroduction and enhancement will be established.

Wetlands, Ponds and Streams

Management Units R1, R2, R3, R4

Description

Wetlands are scattered throughout the Park. The largest wetland (R1) is at the western edge near Greenbush Road. R1 is an abandoned beaver pond and is comprised of emergent vegetation and a few green ash snags. Purple loosestrife (a non-native invasive plant) is interspersed in the cattail marsh. Honeysuckle and buckthorn are also present. There does not appear to be any open water in the lower wetland. The wetland is crossed by the VELCO power line. A concrete culvert allows water to flow under the railroad embankment at the western edge of the Park.

There are three ponds in the Park: R2, R3, and R4. R3 is near the upper agricultural fields behind the Thorp Barn. Water from the highest point in the Park fills this pond. It usually has water all year. R2 is in the lower section of the Park, in Unit P just west of the westernmost crop field. This pond is surrounded by very dense honeysuckle growth. R4 is near the northern hedgerow in Unit N. The hedgerow has a nice stand of large willows. All ponds are small, contain open water, and have cattails on the perimeter. R1 and R2 show evidence of past beaver activity.

The main stream flowing toward Lake Champlain is called Holmes Creek. A tributary begins in a wet area in Unit K. It proceeds south through private land to R3, the pond behind the Thorp Barn. The water flows under a gravel farm access road into a riparian buffer between agricultural units A and B. It is joined by water from a wetland area near Route 7 in the northeast edge of the Scenic Overlook. These streams come together to enter Turkey Lane Woods (Unit O). There is a small "head cut" here, caused by erosion before the riparian buffer was established. The stream descends steeply over a rocky stream bed though the woods heading west, and is joined near the lower pedestrian bridge on the Roberts Way trail by a tributary originating near Horsford Nursery and flowing through private lands to the south. The stream flows through wetland R1, goes under the railroad embankment and Greenbush Road and flows toward the Charlotte Beach, entering Lake Champlain under the covered bridge on Lake Road.

One vernal pool has been located. It is south of the Roberts Way trail, not far from the Greenbush Road parking area. A vernal pool is a seasonal body of water, lacking a stream inlet or outlet, that occurs in depressions in the forest. There are no fish in this water to feed on the eggs of amphibians. The seasonal pattern of filling with water in the spring and drying out in the summer makes this an important habitat for some amphibians. Vernal pools provide amphibian breeding habitats, and support the life cycle of wood frog, spring peeper, salamanders, and red-spotted newt.

All species of wildlife depend on wetlands, ponds, and streams. Wetlands are important habitat for turtles and avian species such as red-winged blackbirds, great blue herons, bitterns and tree swallows. Mammals travel to wetlands, streams and ponds to feed and drink. Raccoons, mink, and weasels utilize wetlands. Beaver and muskrat are obligate wetland species.

Management Standards

- Wetlands, streams and riparian areas will be maintained as natural wildlife habitats and for natural stream regulation.
- Ponds will be maintained as natural drainage areas and wildlife habitat.
- Vernal pool(s) will be maintained as isolated pools with an undisturbed buffer of at least 50 feet and limited disturbance buffer of at least 200 feet.
- A minimum of a 50 foot buffer will be maintained between trails and wetlands to minimize disturbance to nesting birds and other wildlife and to maintain water quality. Bridges and bog bridges will be maintained to reduce erosion of soils in and adjacent to wetlands and streams.
- Hedgerows, woodland and shrublands bordering ponds shall be maintained and enhanced with native species for wildlife corridors.
- Shoreline disturbance, especially removal of vegetation, will be kept to a minimum.
- Cutting should only be done to encourage biological diversity and health of the wetlands, i.e. removal of invasive plants. See *Charlotte Park and Wildlife Refuge Invasive Species Management Plan* in **Exhibit 7**.
- Trees will be cut only as needed to remove non-native species, to promote regeneration; or to remove diseased trees or dead trees where hazards exist. Generally, cut wood and wood debris should be left for wildlife cover and nutrient recycling. Large brush and wood piles may be removed, burned or chipped.
- A diversity of native woodland and wetland species to include a mix of trees, shrubs, and herbaceous plants will be encouraged.
- Beaver will be allowed to continue the cycle of invading/abandoning wetland areas. It is unlikely that beaver will become a nuisance because there is limited running water and preferred food for beaver.

Work Plan

1. Monitor units for non-native plants and control invasive species as problem areas are found. The use of herbicides in wetlands may require a State permit. Maintain a population of Galerucella beetles as needed to control purple loosestrife.
2. Monitor beaver activity for flooding risk and use measures such as “beaver baffles” to prevent flooding of nearby roads and neighboring properties.

3. Plant areas where no native or desired plants are present with native species. See recommended plantings in **Exhibit 7**.
4. Install nesting boxes or other measures for wildlife reintroduction and enhancement.
5. Monitor use of vernal pools by amphibians.
6. Work cooperatively with neighboring private landowners to develop or maintain buffers to reduce sediment and nutrient inputs to streams passing through their lands that end up in the refuge.

VELCO (Vermont Transco LLC) Transmission Corridor

The location of the transmission corridor is along the railroad tracks at the western edge of the Park property. The specific location is described in the Easement Deed between the Town of Charlotte, the Vermont Land Trust, Inc. and the Vermont Housing and Conservation Board; and Vermont Transco LLC and depicted on a survey plat dated January 23, 2008. The easement documents can be found in **Exhibit 4**.

Along with the maintenance guidelines and requirements in the Charlotte Park and Wildlife Refuge Management Plan, further management practices are stipulated in the easement deed and Attachment A; *VELCO/Charlotte Agreement Regarding Vegetation Management in the Charlotte Park and Wildlife Refuge* - November 30, 2007.

Thorp Barn

The Thorp Barn is located adjacent to Route 7 at the eastern edge of the Park. The earliest section of the barn, possibly dating from the late 18th century, is a scribe rule hand-hewn, timber frame structure with flared gunstock posts. With its various additions and modifications, the barn reflects the changes in agricultural practices in the Champlain Valley over the past 200 years.

The barn was identified in the Historic Sites and Structures Survey done by the Vermont Division for Historic Preservation in 1976 as a “related structure” on the Gisele Folsom property. It was described as a vertical-boarded, gable-roofed barn with multi-paned transoms and a metal silo.

In 1998, a town committee was formed to evaluate the barn and begin restoration. This committee raised over \$60,000 from grants and donations from the Freeman Foundation, the Vermont Division for Historic Preservation, the Charlotte Historical Society and local donors. These funds made it possible to stabilize the barn and rebuild the stone foundation under the east side of the building. In addition to this, the restoration committee gathered historical information and created materials which can be used for future educational activities. After three years of work, the committee disbanded in 2001.

In 2001, the Shelburne Museum erected a reproduction English barn based on the type of construction seen at the Thorp Barn. The Thorp Barn was also featured in the 2002 Vermont Public Television documentary, “*Barns: Legacy in Wood and Stone.*”

Town Meeting 2005 brought new interest in the Thorp Barn and several community members stepped forward to serve on a committee. This group worked on park and barn access issues—and made a recommendation to the Charlotte Selectboard that the barn be used to display farm tools and implements from Charlotte’s agricultural past. Committee members collected items donated for future display. There is currently no active Thorp Barn Committee.

The barn shall be repaired and maintained as needed to keep the structure secure and to minimize further deterioration. It is a goal that the Thorp Barn be restored and used in a way consistent with the natural, agricultural, recreational and historical values of the Charlotte Park and Wildlife Refuge.

Operating Budget

Maintenance of the Charlotte Park and Wildlife Refuge is the responsibility of the Town of Charlotte. The annual budget will include funding for ongoing maintenance of Park land, trail infrastructure and the Thorp Barn.

There are no costs associated with agricultural crops on leased land. The farmer who leases the fields will be responsible for his/her own supplies and any soil amendments, and shall compensate the Town of Charlotte consistent with current values.

Charlotte Park and Wildlife Refuge Management Plan Exhibits

Exhibit 1 – Governing Documents

Memorandum of Understanding: Town of Charlotte and the Demeter Fund - May 12, 1997

Grant of Development Rights and Conservation Restrictions: Demeter Fund to Vermont Land Trust and the Vermont Housing and Conservation Board - June 23, 1998

Warranty Deed and Management Agreement: Demeter Fund, Inc. and Town of Charlotte - July 10, 1999

U.S. Dept. of Interior Bureau of Outdoor Recreation fund agreement for the Charlotte Scenic Overlook - 1973-74

Ordinance Regulating Conduct in the Charlotte Park and Wildlife Refuge - 1998

Charlotte Park and Wildlife Refuge Management Units – 2017

Exhibit 2 - Agriculture

Maps of agricultural acreage and soils

Charlotte Park and Wildlife Refuge Agricultural Lease (current lease)

Exhibit 3 - Access and Parking

Easement and Right-of-way Deed on Nordic Holsteins Parcel (Varney Farm): Nordic Holsteins, LLC to Town of Charlotte - February 28, 2011

Agreement to Amend Easement and Right of Way Agreement dated February 28, 2011 - June 2014

Vermont Land Trust proposed parking plan - 2014

Exhibit 4 – Vermont Transco, LLC (VELCO) Transmission Corridor

Easement Deed: Town of Charlotte, Vermont Land Trust, Inc. Vermont Housing and Conservation Board and Vermont Transco, LLC - March 2008

Easement Plat - 2008

Attachment A, VELCO/Charlotte Agreement Regarding Vegetation Management in the Charlotte Park and Wildlife Refuge, November 30, 2007

Exhibit 5 - Wildlife Inventory and Management Recommendations

1997 Deer Population Assessment by Lawrence Garland, Vermont Department of Fish and Wildlife

Wildlife species expected to occur in Demeter Fund West Property, Charlotte, VT and Figure 1. Forested Lands bordering Demeter Fund West Property - 1997

Cornell Lab of Ornithology e-Bird - Charlotte Park and Wildlife Refuge
<https://ebird.org/hotspot/L210535>

Audubon Vermont Habitat Assessment for the Charlotte Park and Wildlife Refuge, Charlotte, Vermont - 2012

Exhibit 6 - Watershed Management and Erosion Control

Management Suggestions for Charlotte Town Agricultural Fields in Watershed of Holmes, Karen Bates, DEC Basin Planner – June 5, 2010

Head cut management options, letter from Gretchen Alexander, VT DEC – January 11, 2011

Town of Charlotte - Holmes Brook riparian buffer map prepared by the U.S. Fish and Wildlife Service

Charlotte Park and Wildlife Refuge Ahead of the Storm Projects

Exhibit 7 - Tree and Plant Inventory and Management

List of woody plants at Demeter Park in Charlotte as seen near the paths, by Norman Pellett, September 1999

Recommended Plantings for Woodlands, Successional Woodlands and Hedgerows – 2019

Invasive Species Management Plan - 2009

Update of Invasive Species Inventory for the Charlotte Park and Wildlife Refuge Invasive Species Management Plan (July 2009) page 6 - 2019

Charlotte Park and Wildlife Refuge Tree Pest Protocol – 3/21/18

Typical Tree Pruning Detail for Hiking and Gravel Trails – 1999, updated 2019

Vermont Urban and Community Forestry management recommendations:
<https://vtcommunityforestry.org/>

Exhibit 8 – Trail Maintenance and Mowing Specifications

Trail maps and brochures

Typical Gravel Trail Detail - 1999

Typical Stream Bridge and Bog Bridge Details – 1999

Charlotte Park and Wildlife Refuge Bog Bridge Plan 2017

Mowing Specifications

Management Plan Exhibits

Exhibits can be found at
<https://www.charlottevt.org/>

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