2012

Waitsfield Scrag Forest Management Plan

Prepared by the Waitsfield Conservation Commission with assistance from Kristen Sharpless, Ecologist

December 2012

WAITSFIELD SCRAG FOREST MANAGEMENT PLAN

WAITSFIELD, VERMONT

DECEMBER 2012

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I INTRODUCTION

This Management Plan has been created to guide the use of the ~640-acre Waitsfield Scrag Forest (WSF) in a manner that protects the ecological values of the Forest and for the long-term benefit of the current and future Waitsfield and broader Mad River Valley communities.

The WSF encompasses several parcels that the Town acquired by gift and purchase between 1991-2008. (See Appendix A and Trail Map). Most of these parcels (except for the Tucker Parcel) are subject to the legal terms and conditions of conservation easements held by the Vermont Land Trust which run with the land in perpetuity (Appendix A-VIII.2).

The property is also subject to the provisions of the Waitsfield Town Plan and Zoning Regulations, and several state and local regulatory permits. Together with the conservation easements mentioned above, these legal documents establish key guidance and sideboards for management and use of the WSF. A brief summary of these documents is provided in Appendix A – VIII.1 and VIII.3.

The Waitsfield Conservation Commission commissioned three studies and analyses of the WSF for the purpose of inventorying the ecological and timber resources of the property in order to inform management. These documents are:

- ***Audubon Forest Bird Habitat Assessment*** – Conducted in 2007 by Audubon Vermont conservation biologist, Steve Hagenbuch. Characterizes current habitat available for breeding birds of conservation concern and makes recommendations for how to protect and/or enhance habitat for these species on the property. Habitat unit map included (Forest Bird Habitat Map).

- ***Natural Features Inventory*** – Conducted in 2008 by Arrowwood Environmental. Identifies and describes upland and wetland natural communities on the property. Identifies state and locally significant communities and implications for some wildlife species. Natural community map included (Natural Community Map).

- ***Forest Stewardship Plan*** – Initially drafted in 2009 by Washington County Forester, Russ Barrett, and finalized in 2012. Identifies landowner goals and stand-by-stand objectives for forest management, describes current stand conditions, and prescribes silvicultural treatments to occur over 10-year period. Stand map included (Forest Stand Map).

In fall 2011, the Conservation Commission hired ecologist, Kristen Sharpless, to summarize the information in the easements and documents above and to begin drafting this plan. The summary and draft goals and policies were presented to the public for initial feedback in March 2012. Additional comments were received from natural resource professionals Dan Kilborn (Vermont Land Trust), Russ Barrett, Brad Greenough (Vermont Department of Forests, Parks, and Recreation), and Mariko Yamasaki (US Forest Service). A full draft of the plan was presented to the public and Select Board for review in early December 2012. The final plan was approved by the Select Board and Vermont Land Trust (Page iii).

This plan will be reviewed and updated as necessary in 10-15 years or sooner if circumstances dictate.

II VISION AND GOALS

II.1 VISION STATEMENT

The Waitsfield Scrag Forest is a remote, public forest valued by the residents of Waitsfield and the broader Mad River Valley community. Our vision is to conserve these lands for scenic, educational, and non-commercial, non-motorized recreational purposes, and to maintain their value for forestry, sustainable forest products, watershed protection, and habitat and biodiversity conservation. We also hope the Town's stewardship of these lands will serve as an exemplary demonstration and an inspiration for other forest landowners.

II.2 MANAGEMENT GOALS

The following are the goals of the Town of Waitsfield for the sustainable management and use of the Waitsfield Scrag Forest (WSF):

1. Practice sustainable forestry that generates forest products and/or revenue for the benefit of the Waitsfield community.

2. Conserve habitat for native plants and animals, including game and non-game wildlife. Limit non-native, invasive species to the extent possible.

3. Conserve biodiversity.

4. Protect riparian buffers, aquatic habitats, wetlands, waterways, water quality, and stream flow.

5. Model any active forest management on regional and historic patterns, frequencies, sizes, and intensities of natural disturbances to the extent possible.

6. Promote and manage non-commercial, non-motorized recreational uses that are compatible with other management goals.

7. Maintain and/or enhance ecological and recreational connections between the WSF and the surrounding Northfield Range.

8. Conserve the scenic beauty and open space values - including space for quiet solitude - of the forest, trails, vistas, wetlands, and waterways.

9. Promote educational and community uses of the WSF that are compatible with other management goals.

10. Monitor and respond to changes.

III PROPERTY DESCRIPTION

The Waitsfield Scrag Forest (WSF) consists of approximately 640 acres of forest and open, high-elevation wetland spanning both sides of the Northfield Range just south of the Scrag Mountain summit in Waitsfield, Vermont. The Northfield ridge runs north-south through the center of the WSF supporting high-elevation Montane Spruce-Fir Forests and rises to 2,860 feet at its highest point. Steep slopes descend from either side of the ridge, supporting mixed and hardwood forests at lower elevations, as well as a remote beaver wetland complex in a basin on the western slope. The property descends to the west forming much of the upper watershed of Folsom Brook until it reaches its lowest elevation at the southwestern corner of the Joslyn Parcel at 1600 feet. The eastern slopes form much of the upper watershed of Felchner Brook, which flows east into Northfield.

The following attributes characterize the WSF and its **primary conservation values**:

- 5,970 feet of ridgeline on the Northfield Range, a prominent scenic feature visible from many locations in the Mad River Valley.
- Part of one of the largest blocks of unfragmented forest (4,145 acres) in the Mad River Valley which provides vital habitat for wildlife that require large, road-less, forested areas for survival.
- Access and trails available to the public for non-motorized, non-commercial recreation.
- 6-acre, remote, high-elevation beaver wetland complex.
- A diversity of forest types and age classes that provide habitat for a variety of native wildlife species including moose, deer, bear, and breeding birds of conservation concern.
- Headwaters areas of Folsom and Felchner Brook watersheds.
- +/- 460 acres of productive forest soils supporting a valuable timber resource.

Figure 1: View of Scrag Mountain from the remote beaver wetland complex on the WSF (Photo credit: Kristen Sharpless).

III.1 History

Based on the lack of stone walls and rock piles and the property's steep, remote terrain it is unlikely that most of the WSF was ever cleared for agricultural use. The 1873 Beers Atlas shows that the closest homestead on the west side of the Northfield Ridge was at the end of Bowen Road where the trailhead is today (Historic View Map, 1873). The footpath that accesses the WSF across the Kisiel property travels through parts of this old hill farm (Figure 2) which still included open fields and pasture well into the twentieth century (Historic View Map, 1962).

Figure 2: The new footpath to the WSF through the Kisiel property travels along old fields that were part of a hill farm and have now grown up into young forest (Photo credit: Kristen Sharpless).

Waitsfield residents Pat Folsom and Gordie Eurich grew up on the hill and rode the "school barge" to school, which was a wooden cab with benches that sat on the bed of a truck. When it was retired, the barge was left up in what was the farm's back pasture, which has now regenerated to forest. The remnants of the barge can be found along the footpath on the Kisiel property at the north end of the formerly cleared agricultural land (Figure 3).

Figure 3: Remnants of the old school barge along the footpath to the WSF. The barge was left in the back corner of an upper pasture, which has now grown up into forest (Photo credit: Kristen Sharpless).

The only portion of the WSF that was likely every cultivated or pastured was the southeast corner of the Tucker Parcel on the east side of the Northfield ridge. A stonewall marks the boundary between the Tucker and Anonymous Donor Parcels and was probably created when the land was originally cleared.

Although too steep and rocky for farming, most of the WSF was likely used as a family woodlot and/or commercial timberland and harvested multiple times by previous owners before the Town began acquiring ownership of the parcels that make up the current WSF in the 1990s. A 1962 aerial photograph shows extensive logging trails winding through the forests that would become the WSF (Figure 4).

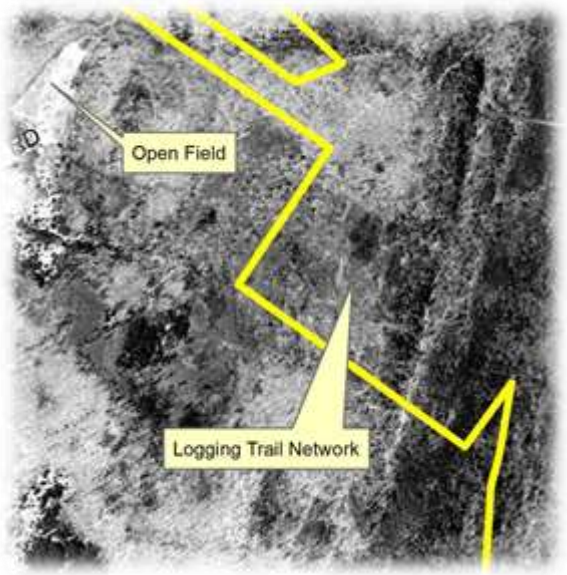

Figure 4: Old logging trails are visible on this 1962 aerial photo (Town Forest boundary shown in yellow). Timber harvesting has a long history on the WSF.

Commercial logging was – and still is – an important part of the Mad River Valley economy. Historically, logs were cut by hand and pulled out of the woods by horses or oxen then hauled by wagon, sled, or truck to mills along the Mad River where they were turned into everything from lumber and clapboards to boxes and packing material. Today, the only local mill remaining is the Baird Sawmill on Mill Brook in Waitsfield. Most of the wood harvested in the Mad River Valley today is sold locally for firewood or hauled to mills or other processing plants elsewhere in Vermont and Canada.

III.2 LANDSCAPE CONTEXT

The WSF sits in the middle of a 4,415 acre, road-less block of forest that spans the Northfield Range (Figure 5). This large, unfragmented block of forest is identified as Contiguous Habitat Unit (CHU) #19 and is described in the *Natural Heritage Inventory and Assessment for Waitsfield and Fayston, Vermont* (Arrowwood Environmental, 2007). CHU #19 has the following ecological values that should be considered and protected when making management choices on the WSF:

- Likely a **source** of bear, bobcat, fisher, coyote, moose and other mammals and birds that re-populate smaller, lower quality patches of forest habitat in the region.
- Relatively **high diversity of plant community types** (i.e. a high horizontal diversity) and **extensive areas of early successional habitat***.
- Likely contains **year-round populations** of black bear and other deep forest species.
- Extensive forested **stream riparian areas**.
- Functional **deer wintering habitat**.
- **Breeding habitat for high-elevation birds**, such as the rare and declining Bicknell's thrush.
-

*The majority of the early-successional habitat on the WSF was created after most of the Tucker Parcel was salvaged by the previous owners after the 1998 ice storm. Early-successional habitat is created during the ephemeral regeneration phase of forest development that typically lasts for 15-20 years post-disturbance while the dense new growth of shrubs and saplings are less than 20-30 feet in height. At the time of the writing of this plan, most of the forest that regenerated after the salvage cut on the Tucker Parcel has matured and is beginning to lose its function as early-successional habitat. Exceptions are a few very wet areas (see shallow emergent marshes on the Natural Communities Map) and old landings where shrubs and herbaceous plants are dominating and/or tree growth are slowed.

Large blocks of unfragmented forest habitat are critical for the survival of large, wide-ranging mammals as well as for breeding forest birds that have better reproductive success away from forest edges and human development, such as the scarlet tanager and wood thrush. The Audubon Vermont Forest Bird Habitat Assessment (Hagenbuch, 2007) identifies a suite of *responsibility birds* whose breeding populations are concentrated in the Atlantic Northern Forest region – which includes most of Vermont - and are also in decline or at risk for decline. Ideally, quality habitat for most of the 40 responsibility species and all of 15 focus wildlife species listed in the following section will be available on and around the WSF.

Figure 5: The WSF sits in the middle of a 4,415 acre road-less block of forest in the Mad River Valley that extends into the east side of the Northfield Range.

In order to ensure habitat availability for all of these species on the landscape, management decisions should be made after assessing the habitat features, and forest age classes and configuration on the surrounding 2500 acres.

The 2500 acre landscape that includes and surrounds the WSF is characterized by the remote, heavily forested, high-elevation Northfield Range ridgeline. Currently, based on aerial imagery analysis and knowledge of land use history and patterns, very old and very young forests both appear to occur only in very small amounts (~1%) in this landscape and on the WSF. Historically, prior to the extensive agricultural settlement and associated land clearing and timber harvesting that occurred during the 1700s and 1800s, old forests would have dominated the Northfield Range with young forest stands comprising a small percent of the landscape (1-3% of northern hardwood forests, and 3-6% of spruce-northern hardwood forests; Lorimer and White, 2003). Small, frequent disturbances such as windthrow and icestorms would have created numerous small to medium-sized canopy gaps. Large stand-replacing natural disturbances, such as hurricanes, would have been very rare.

Several of the large, common forest communities that comprise CHU #19, including the Montane Yellow Birch-Red Spruce, Northern Hardwood, and Red Spruce-Northern Hardwood Forests on the WSF, are state significant; they are some of the largest and highest quality examples of these communities existing in the state (Arrowwood Environmental, 2007). Sustainable forest management is compatible with maintaining the integrity of these communities as long as their unfragmented nature is also maintained. As a public forest, the WSF plays an important role in protecting the value and integrity of these communities.

III.3 Geology and Soils

The bedrock that forms the Northfield Range is comprised of metamorphic schists and phyillites of the Stowe Formation. This bedrock is exposed at rock outcrops on the WSF, as well as at eroded places along the main trail leading to the beaver pond. Glacial striations created by the abrasive forces of the last glaciers moving over bedrock are visible on the smooth, eroded surfaces of some of these rocks (Figure 6).

Figure 6: Glacial striations are visible on some exposed bedrock surfaces on the WS (Photo credit: Kristen Sharpless).

Most of the property is covered in glacial till, which forms the parent material for the shallow, rocky, well-drained Hogback-Rawsonville and Stratton-Glebe complex soils on the property's steep slopes (Soils Map). Mundal fine sandy loams are found along the eastern border of Stand 2. These soils have a perched water table 1-2 feet below the surface from fall to late spring, making these wet sites for all or much of the year.

III.4 Forests and Bird Habitat

Aside from the beaver wetland, all of the WSF is forested. Both natural communities (Arrowwood Environmental, 2007) and forest stands (Barrett, 2009) have been identified and mapped on the property (Natural Communities and Forest Stand Maps). A natural community *is an interacting assemblage of plants and animals, their physical environment, and the natural processes that affect them* (Thompson and Sorenson, 2005). Forest stands are a related, but different way of categorizing forest types for the purposes of management based on species composition, forest age, access, and/or other characteristics. In this case, 37 occurrences of five different upland natural communities were mapped and only 9 forest stands were mapped. Natural community classification can guide management within forest stands to work with natural species composition and processes such as disturbance regimes and forest succession. Forest stands are summarized here since these will be the units used as the basis for management with natural communities described and identifying occurrence numbers listed within each (e.g. Northern Hardwood Forest in polygons #64-69). Bird habitat as described in the Audubon Forest Bird Habitat Assessment (Hagenbuch, 2007) is also summarized here.

III.4.1 Stand 1: Northern Hardwoods

Acres: 195

Natural Community Type: Northern Hardwood (64-69) with small patches of Red Spruce-Northern Hardwood Forest. Both of these forests are part of state-significant occurrences. Includes a small Red-Oak Northern Hardwood Forest (10) and Northern Hardwood Seepage Forest (12).

Figure 7: Northern Hardwood forest on the WSF in Stand 1 (Photo credit: Kristen Sharpless).

Description: Generally a good-quality stand of log size northern hardwoods, considering the relatively high elevation and effects of the 1998 ice storm. Species makeup is 67% sugar maple, 12% beech, 9% yellow birch and 5% red spruce. Stand health is generally good. Site quality (productivity) is good to fair, with ledge outcrops and exposed knolls rated as poor. Stocking (number of stems per acre) is adequate. Recreational opportunities are rated as good for most types of extensive recreation, including hiking, hunting, and bird watching. Fair to good potential for growing high quality wood products. The stand is generally well-drained, with one major scenic stream with at least two small gorges, several intermittent streams and several areas that are seasonably wet.

Forest Bird Habitat Unit 1: Current conditions in this habitat type likely provide quality nesting habitat for a number of forest bird species, due in part to its well-developed vertical structure, including dense understory (regeneration), abundance of snags (dead standing trees), and coarse woody debris (large branches and portions of tree trunks on the ground). Timber harvesting has the potential to enhance habitat conditions for a wide variety of bird species including: black-throated blue warbler, wood thrush, veery, eastern wood-pewee, yellow-bellied sapsucker, American redstart, ovenbird, and scarlet tanager.

Figure 8: Black-throated blue warblers (above) nest (below) in dense understory vegetation in northern hardwood forests (Photo credits: Powdermill Avian Research Center and Steve Hagenbuch).

III.4.2 Stand 2: Northern Hardwoods

Acres: 53

Natural Community Type: Northern Hardwood (state-significant occurrence) with sizable patches of Red Spruce-Northern Hardwood Forest (39- 41). Includes two small patches of Shallow Emergent Marsh (50-52) and a seep (53).

Description: Cut heavily by the previous owner in 2000 for ice damage salvage. Site quality and the potential for timber production are fair to good. Regenerating to a mix of hardwood species. Currently, beginning to our-grow its value for early-successional habitat dependent wildlife such as ruffed grouse, snowshoe hare, and various songbirds. Fair to good potential for hunting and other forms of dispersed recreation.

Figure 9: Salvage harvesting after the 1998 ice storm created a large patch of young, regenerating forest on the Tucker Parcel (Photo credit: Kristen Sharpless).

Forest Bird Habitat Unit 2: Current structural conditions resulting from 2000 salvage harvest are likely providing nesting habitat for early-successional bird species. These conditions are temporal and the species that nest in them are habitat specialists, meaning that birds that require this nesting habitat will find it suitable for only approximately 10-12 years after the regenerating disturbance - in this case a clearcut - occurred. The structure and species composition, notably aspen, is also favored by ruffed grouse. The quality of this habitat for grouse is diminishing as the stand develops although it will remain suitable for a longer time for grouse than for songbirds.

Figure 10: Chestnut-sided warblers (left) and ruffed grouse (right) find nesting habitat in young, regnerating forests for 5-15 years until the forest canopy grows to greater than 20-30 feet tall (Photo credits: Charley Eisman and Kristen Sharpless).

III.4.3 Stand 3: Northern Hardwoods

Acres: 98

Natural Community Type: Northern Hardwood (69) with Montane Yellow Birch-Hardwood Forest (32) at higher elevations. Both of these forests are part of state-significant natural communities.

Description: A mature, but ice damaged stand of sawlog size northern hardwoods. Species makeup is 62% sugar maple, 16% beech, 15% yellow birch and associated species. Regeneration is generally abundant, but very heavy to beech, with some red spruce and yellow birch. Up to 15% of this stand may be too steep for traditional harvesting equipment. There is some moderate beech bark disease and varying degrees of ice damage. Site quality is fair to good. Stocking is adequate but with a high proportion of damaged trees. Good for upland wildlife species and for extensive forms of recreation. Fair to good site for timber production.

Forest Bird Habitat Unit 1: See Stand 1 description.

III.4.4 Stand 4: Mixedwoods – Paper Birch-Spruce

Acres: 60

Natural Community Type: Northern Hardwood (64, 68) with Montane Yellow Birch-Hardwood Forest at higher elevations. Some seeps are present (46-49).

Figure 11: The paper birch that regenerated in Stand 4 after clearcutting that was done approximately 50 years ago are now being replaced by other hardwood species and red spruce (Photo credit: Kristen Sharpless).

Description: This is a hardwood / spruce stand which was clearcut approximately 50 years ago. Birch and maple poles are mixed with spruce, fir, and maple saplings. Many birch poles have blown over or are victims of the 1998 ice storm. Excellent growth was noted on the released spruce and maple stems. Site quality is fair to good and stocking is adequate. Habitat is good for upland species, with heavy moose sign in the upper elevations. Fair potential for extensive recreation (due to tree density and downed trees); fair potential for timber production.

Forest Bird Habitat Unit 1: See Stand 1 description.

III.4.5 Stand 5: Spruce-Hardwood – Special Treatment Area

Acres: 124

Natural Community Types: Beaver Pond Complex that contains pond and Shallow Emergent Marsh in basin. Surrounded by Montane Yellow Birch-Spruce-Fir (state-significant) and Montane Spruce-Fir Forest at increasing elevations and Northern Hardwood Forest at lower elevations. Also includes a large seep (19) as well as some smaller seeps and a Spruce-Fir-Tamarack Swamp (43).

Figure 12: The forests around the beaver ponds are dominated by softwoods, including spruce and hemlock (Photo credit: Kristen Sharpless).

This area is designated as a Special Treatment Area in the Scrag conservation easement. Active forest management and timber harvesting may be conducted only to improve wildlife habitat. Good for recreation – the trail to the beaver pond and on to the northern boundary of WSF passes through this area. This stand contains approximately 1500' of Northfield mountains ridgeline and comes near – but does not include – the peak of Scrag. Approximately 65% of this stand is above 2500' in elevation, and includes seeps, a beautiful abandoned beaver pond, and a shallow emergent marsh.

Forest Bird Habitat Unit 4: Current conditions around the beaver wetland complex likely provide breeding habitat for bird species of regenerating and pole-sized conifer forests including magnolia warbler. Lesser abundant hardwood regeneration may be suitable for chestnut-sided warbler and white-throated sparrow breeding habitat and the open wetland habitat may support northern flickers, alder flycatchers, and swamp sparrows.

Figure 13: Magnolia warblers find good habitat in the dense softwoods around the beaver pond (Photo credit: Powdermill Avian Reaserch Center).

III.4.6 Stands, 6, 7, 8, and 9: High-Elevation Spruce-Hardwood

Acres: 115

Natural Community Types: Red Spruce-Northern Hardwood (state-significant), Montane Yellow Birch-Red Spruce Forest (state-significant), and Montane Spruce-Fir Forest.

These stands are generally steep, rocky high elevation sites, containing red spruce, northern hardwoods, and montane spruce-fir and yellow birch. Site quality, potential for timber production and recreation opportunities are all low, due to terrain restrictions. Stand 8 includes the headwaters of the stream flowing to the beaver pond, and contains over 3000' of ridgeline on the Northfield mountain range with over 90% of the stand being above 2500' in elevation. Stand 9 contains the headwater stream flowing to Felchner Brook on the east side of the Northfield mountain range.

Figure 14: The Northfield Range ridgeline rises to over 2500 feet in elevation (Photo credit: Kristen Sharpless).

Forest Bird Habitat Unit 3: All of the area within this unit is above 2,500' in elevation. This habitat was not visited during the assessment. Nonetheless, based on its description obtained from Leo Laferriere, it is likely that the forest supports blackpoll warbler and possibly magnolia warbler and Bicknell's thrush.

Figure 15: Bicknell's thrush live only on Vermont's highest mountains, and may find habitat along the Northfield Range (Photo credit: Vermont Center for Ecostudies)

III.5 WATER AND WETLANDS

III.5.1 Wetlands

A total of 33 occurrences of 6 different wetland communities have been mapped and described on the property (Arrowwood Environmental, 2007; Natural Communities Map).

III.5.1.1 Seeps

Seeps occur in forests where groundwater rises to the surface. These small plant communities provide valuable water resources for wildlife during the winter since they often do not freeze. They are also often the first places to green up in the spring, which makes them critical food sources for specie such as black bear during this sparse time of year.

III.5.1.2 Spruce-Fir-Tamarack Swamp

Two examples of these small wetlands are found on the property (Occurrences 43 and 15). These are forested wetlands that develop on bedrock benches where groundwater rises to and collects at the surface. These wetlands have a similar value to seeps for wildlife, and evidence that moose are using these sites for browse was discovered during the Arrowwood inventory.

III.5.1.3 Beaver Wetland Complex

This is the largest and most significant wetland on the WSF. The complex is comprised of a series of 5 open beaver ponds (or mud flats where ponds have drained) and associated emergent marshes. Native brook trout were observed in the inlet to the main pond in fall 2011. Wildlife such as moose, white-tailed deer, bear, newts, frogs, turtles, and a wide variety of songbirds likely make use of the varied and dynamic habitats associated with this complex. At the time of the writing of this plan, it appeared that beavers had abandoned the ponds due to a lack of food and the main pond had drained. This change is a natural part of this ecosystem's cycle; beavers will likely return once their preferred food – willow, alder, birch, and other hardwoods – have a chance to regenerate.

Figure 16: The beaver wetland complex on the WSF (Photo credit: Kristen Sharpless).

III.5.1.4 Vernal Pool

One vernal pool has been documented on the WSF (Occurrence 16). These temporary, woodland pools have particular value for amphibians, such as wood frogs and spotted salamanders, which rely on these small ecosystems for successful breeding.

Figure 17: Wood frogs mate and lay their eggs in vernal pools where eggs and larvae are free from predation by fish and other predators found in permanent water bodies (Photo credit: Kristen Sharpless).

III.5.1.5 Shallow Emergent Marshes

In addition to the marshes associated with the main beaver wetland complex, there are three other Shallow Emergent Marshes that sit on a wide bench on the east side of the ridge line (50-52). They likely provide habitat for a variety of wildlife and could be colonized by beavers in the future. The hydrology of these wetlands was altered by the 2000 salvage harvest when skidders rutted wetland soils. Any future vegetation management operations in this area should place a place a protective buffer around these areas to avoid further negative impact.

III.5.2 Streams

The property forms much of the upper watersheds of Folsom Brook draining to the west and Felchner Brook draining to the east. Several beautiful waterfalls and swimming hole-sized pools exist along the main beaver pond outlet draining into Folsom Brook (Trail Map). Many permanent as well as ephemeral streams drain down the steep slopes of the property in both directions. Care must be taken to protect the hydrology of these features during logging operations and when managing recreational use.

Figure 18: Waterfall along Folsom Brook (Photo credit: Kristen Sharpless).

III.6 Recreation and Access

III.6.1 Parking and Access

From the west, parking for visitors to the WSF is available at the end of Bowen Road where dedicated space for six cars is a condition for the Kisiel subdivision permit (AppendixB-IX.2; Trail Map). Bowen Road is a Class IV road, which the Town of Waitsfield grades once a year, but does not plow. Visitors may access the WSF through the Kisiel property along the new foot path that was completed in 2012. The Conservation Commission encourages neighbors of the WSF to notify and coordinate with the Conservation Commission if activities on adjacent properties will affect public use of the parking area and trails. Town access for logging equipment and a log landing is also a condition of the Kisiel subdivision permit along the woods road that will become a private driveway at the end of Bowen Road, but this road will not be available for public recreational access (Trail Map). Public use of the parking area and trails may be limited during Town logging operations if safety is a concern.

Currently, there is no public access to the WSF from the Northfield side. The end of Monti road is posted, so visitors would need to obtain landowner permission to park and access the WSF from the east. The portions of Stand 1 on the north side of Folsom brook and Stands 2 and 3 from the Northfield side are not directly accessible for logging equipment. Negotiations with neighbors would be necessary to obtain access across adjacent private land.

III.6.2 Current Recreational Uses

Current recreational use of the WSF is characterized as light, but common. The property is currently used by local hikers, dog walkers, and snowshoers who primarily walk the main trail to the Beaver Pond (Trail Map). Visitors also continue along this trail which crosses onto private land up to the top of Scrag Mountain. Although motor vehicle access is prohibited – except in the case of emergencies - some visitors occasionally use jeeps and ATVs on the main trail which has likely contributed to the significant erosion along this main access. There is no evidence that the WSF is currently being used by mountain bikers, horseback riders, or snowmobilers. Although the conservation easement gives the Town discretion to allow snowmobiling and there is anecdotal evidence of some activity in the past, snowmobiling is currently prohibited on the WSF due to a lack of suitable access, appropriate trails, connections to other snowmobiling trails, and an identified entity to manage snowmobiling use. Hunting is permitted, and the property is likely used for this purpose to some extent.

III.6.3 Trails

The only current trail access is for foot traffic from the end of Bowen Road through the Kisiel Property and continuing up to the Beaver Pond and on to the WSF's northern boundary (Trail Map). The lower part of this route is on a new footpath constructed by several Vermont Youth Conservation Corps crews in the summers of 2011 and 2012. These crews were hired with funding from grants the Conservation Commission secured from the Vermont Department of Forests, Parks, and Recreation, the Vermont Agency of Transportation, and Entrust (a private foundation). It is in excellent condition, but is not designed for uses such as horseback riding or snowmobiling. The trail continues on the upper part of the Kisiel property and then onto WSF lands, climbing steeply uphill to the beaver pond and beyond. This stretch of the trail is on an old logging road that is in bad condition in many places due to poor siting, lack of

maintenance, steep slopes, and unauthorized use by motorized vehicles over the years. It will be challenging to rehabilitate this route since water has incised the trail in many places making water bar installation difficult.

The main trail continues north past the beaver pond onto private property and is used by some visitors as an access to the top of Scrag Mountain. Two additional woods roads fork north off of the main trail on the Joslyn Parcel leading to and across the brook onto Dave Gavett's sugarworks. Dave maintains and uses a section of woods road that crosses the northern section of Stand 1, but currently, there is no permitted trail access to this road for recreational visitors to the WSF.

The primary management objectives related to maintaining and improving recreational access on the WSF are:

1. Rehabilitate and/or reroute main trail access to Beaver Pond in conjunction with a timber harvest.
2. With input from trail organizations/partners and the general public, plan for an expanded trail network that:
    a. Creates loops.
    b. Travels to a destination.
    c. Connects onto trails on adjacent parcels with public access.
    d. Is multi-use and makes use of existing and/or future skid trails.
    e. Adds appropriate signs for trail system.

Figure 19: Hiking along the main trail to the beaver ponds is currently the primary recreational use of the WSF (Photo credit: Kristen Sharpless).

IV POLICIES AND GUIDELINES

Several easements and permits – along with the Waitsfield Town Plan and zoning regulations – affect the uses that are permitted and restricted on the WSF (Appendix A). These documents must be adhered to when planning future management and use of the WSF.

IV.1 RECREATION AND TRAILS

Non-commercial, non-motorized recreation – including hiking, dog walking, snowshoeing, hunting, fishing, trapping, cross-country skiing, and wildlife observation - is permitted. Mountain biking is permitted, although the current trail network is not well-suited to this use. Horseback riding and snowmobiling are prohibited until such time a trail network(s) exists that can sustainably support these uses exists and an established group is identified that will take primary responsibility for managing snowmobiling use. Hunting, fishing, and trapping are permitted in legal seasons in accordance with the Vermont Department of Fish and Wildlife rules and regulations. However, fishing is discouraged because the trout are few and small, and we would like to encourage their presence. Beaver trapping is also discouraged because we want to restore the ponds to active use.

The following are guidelines for public use:

1) Respect wildlife, the forest, and other visitors.
2) Carry in and carry out trash and waste.
3) Open from dawn to dusk. For overnight camping, seek permission from the Waitsfield Conservation Commission.
4) No open fires.
5) Motorized vehicles (including snowmobiles) and horseback riding are prohibited.
6) In accordance with Town ordinance, dogs must be leashed or under voice control of the owner. Please pick up after your dogs.
7) Hunting, fishing, and trapping is permitted in legal seasons, but fishing and beaver trapping are discouraged.
8) Respect neighboring landowners and land-posting signs.
9) Observe appropriate use of trails:
   a) Limit trail use during mud seasons.
   b) No cutting or creation of new trails without permission from the Waitsfield Conservation Commission.
   c) Observe trail closures and reroutes.

Figure 20: Sign welcoming visitors that is posted along the main trail where it crosses onto the WSF (Photo credit: Kristen Sharpless).

The Town of Waitsfield via the Conservation Commission and Select Board will employ the following guidelines when planning for future maintenance and/or expansion of recreational and logging access to the WSF:

1) Ideas for new or expanded public use and/or new management of existing uses will be presented to the Waitsfield Conservation Commission, which will determine whether and how to proceed in a manner that is in keeping with the

vision and goals of this management plan.

2) Encourage non-motorized, non-commercial recreational use that:
    a. Is consistent with the protection of natural systems;
    b. Adheres to the terms of the conservation easements;
    c. Minimizes conflict between recreational uses;
    d. Respects the rights and privacy of adjoining landowners.

3) Temporarily restrict or curtail recreational activities when needed to allow for other management activities provided for by this plan (e.g. timber management) or when conditions are not suitable.

4) Update recreation recommendations as needed to reflect changes in recreational demand and changes in natural systems.

5) Recognize and take advantage of the educational opportunities created by recreational use.

6) Concentrate recreational use on existing trails and woods roads. Prohibit the creation of new trails except to replace unsuitable trails, to complete or create trail loops or travel to vistas, or to connect to trails on adjacent properties where public access is permitted.

7) Any significant development associated with a public use (which includes, but is not limited to trail maintenance, construction, and/or rerouting) conducted by an individual or group other than the Waitsfield Conservation Commission requires submission of a plan to the Commission that details (1) how infrastructure (e.g. trails) will be constructed and maintained, (2) how use will be managed, (3) how the Mad River Valley community will benefit from the development, (4) how ecological values identified in this Management Plan will be protected, (5) who is responsible for closing trails or dismantling other infrastructure if deemed necessary by the Town, and (6) a detailed map. Written approval of the plan by the Waitsfield Conservation Commission is required before any trail construction may begin. A written agreement between the Town and any non-town recreational group is likely to be required if the group will play a significant role in ongoing planning, construction, and maintenance.

8) Adhere to best available trail and recreational standards. Refer to the Vermont Trails and Greenways Manual (Vermont Trails and Greenways Council, 2007) and subsequent publications.

9) Encourage neighboring landowners to coordinate with the Town (through the Conservation Commission) on any activities on adjacent lands that are likely to affect public access to and use of the WSF.

IV.2 Forestry and Wildlife

IV.2.1 Focus Species Wildlife

The value of WSF's habitats for wildlife has been summarized in the previous landscape context, forest, and wetland sections. However, it is helpful for management purposes to simplify the task of integrating timber management and conservation of biodiversity by identifying and managing for a few focus species whose habitat needs cover those of many other species (Bryan, 2007). These include flagship species that are popular species among the public and

help raise support for conservation efforts; economically important species, such as fish and game species; and easy-to-identify species that are easily recognized by sight or sound with minimal training. An ideal suite of focus species includes several that are year-round residents. Selecting species that humans enjoy helps build support for focus species management. In addition, several relatively obscure species or species groups have been selected to represent important habitats that are less well known. The suite of focus species for the WSF property is:

- Barred owl
- Beaver
- Bicknell's thrush
- Black-throated blue warbler
- Brook trout
- Chestnut-sided warbler
- Fisher
- Magnolia warbler
- Moose
- Northern redback salamander
- Snowshoe hare
- Spotted Salamander
- White-tailed deer
- Wood frog
- Wood thrush

Managing for the needs of this full suite of species across the property would protect all existing habitats needed to support a diverse and functioning suite of ecosystems and native plants and animals.

IV.2.2 Forest Management Guidelines

Forest above 2500 feet will be left alone due to steep slopes, thin soils, poor access, and high value to wide-ranging wildlife (Protection Zone Map). Forest management in the Special Treatment Area (Forest Stand Map), which includes the beaver wetland complex, is limited to maintaining or improving natural functions and habitat for native wildlife if needed.

Forest Stands 1-4, which are below 2500 feet and outside of the Special Treatment Area, will be managed to improve (1) general forest health, (2) quality of the timber resource, and (3) wildlife habitat. A "healthy forest" is defined as "a resilient forest ecosystem that possesses the long-term capacity for self-renewal of its ecological productivity, diversity, and complexity (Sustainable Forestry Task Force, Field Staff Report, October 2007)". Management activities will promote a diversity of stand ages and naturally occurring forest types. Special attention will be given to the conservation of rare and exemplary natural communities, and the conservation and enhancement of native plant and animal species and their habitats, including, but not limited to, the establishment and retention of a range of sizes and types of downed woody material, snags, cavity trees, occasional large/old trees, and a small amount of early-successional habitat.

Concern over region-wide loss of early-successional habitat and population declines in associated species has led wildlife biologists and conservations organizations to recommend that a higher percent of forested landscapes be maintained in a young, regenerating condition than what would have been present historically (5-15%, DeGraaf etal., 2005; 3-5%, Audubon Vermont, personal communication, 2012). Similar concern over lack of mature forest stands with well-developed vertical and horizontal structure (e.g. large live trees, downed dead wood, and canopy gaps) has led to recommendations that significant portions of forested landscapes in our region be naturally allowed or actively managed to develop older forest characteristics (~50-60%, DeGraaf etal., 2005; 80%, Audubon Vermont, personal communication, 2012).

By these standards, very young and very old forests are currently under-represented on the WSF and surrounding landscape. Opportunities to create additional forest in these age classes should be taken where appropriate and compatible with other management goals. Due to access constraints and the desire to maximize the education and demonstration opportunities of timber harvests, most active management in the near future will likely take place on the west side of the property.

The majority of the operable areas of the WSF (Stands 1-4) should be managed as mid-late successional forest using uneven-aged systems, which will benefit wildlife species that include barred owl, fisher, wood thrush, black-throated blue warbler, and northern redback salamander. Uneven-aged systems mimic frequent natural disturbances, such as wind and ice storms. These disturbances form small (<2 acre) canopy gaps, which result in stands dominated by late successional species and with enhanced vertical structure. Riparian areas around Folsom Brook, the majority of the Joslyn Parcel, and the northern hardwood forests adjacent to Dave Gavett's sugarbush and the main trail are potential areas where very old forest could be allowed to develop in addition to the forests in the Protection Zone (Protection Zone Map).

Relatively small amounts of young, regenerating forest (early-successional habitat) should be created in Stand 1 where opportunities exist. Openings 1-2 or more acres in size should be created where silviculturally appropriate and where they will provide browse, cover, and foraging opportunities that benefit wildlife species including ruffed grouse, chestnut-sided warbler, magnolia warbler, white-tailed deer, and snowshoe hare. Additional field work will be necessary to determine the appropriate siting, size, and harvest method for these openings; these details and those for any other stand-level management will be described in the Forest Stewardship Plan.

Specific management guidance should be drawn from technical guides that include, but are not limited to, those listed in the *References and Resources* section and subsequent publications. The following specific guidelines should be followed to protect biodiversity, ecological health, water quality, and site productivity when planning timber harvests. Since timber management and wildlife habitat protection are dual goals for the property, many of the following guidelines (5-18) are adapted from the publication *Silviculture with Birds in Mind: Options for Integrating Timber and Songbird Habitat Management in Northern Hardwood Stands in Vermont* (Audubon Vermont and the Vermont Department of Forests, Parks, and Recreation, 2011):

1) Grow the largest trees and use the longest rotations possible within site and log quality limitations. (For example, for high quality red and sugar maple, yellow birch, beech, and white ash, the diameter objective should be 22 inches or greater.) Culmination of mean annual board foot growth for these species occurs at 100 to 120 years.

2) Favor native species over non-native ones when thinning or regenerating stands.

3) Use natural regeneration to the maximum practical extent.

4) Promote the seed bearing capacities of poorly represented native plant species.

5) Retain, release, and regenerate hard and soft mast species such as oak, beech, black cherry, serviceberry, and apple. These species produce food sources in late summer that are critical for wildlife preparing for winter. *Rubus* species (e.g. blackberry and raspberry) that dominate large openings are also important sources of soft mast for birds.

6) Retain, release, and regenerate yellow birch (*Betula alleghaniensis*) whenever possible since the branches and foliage of this species are preferentially chosen foraging substrates for many insect-eating bird species including blackburnian warbler, black-throated green warbler, and scarlet tanager. Successful regeneration of yellow birch may require larger gap (1+acre) disturbance and scarification.

7) Retain softwood inclusions in hardwood stands and hardwood inclusions in softwood stands. Overstory inclusions resulting from site conditions are more practical to maintain than those that are a result of disturbance history.

8) Control and monitor invasive plants. Migratory songbirds will eat buckthorn, autumn olive, barberry, and honeysuckle berries during the post-breeding season when they are fueling up for fall migration, but the berries are less nutritious than some native berries. Refer to *Best Management Practices for the Prevention and Treatment of Terrestrial Invasive Plants in Vermont Woodlands* and subsequent publications published by The Nature Conservancy (2011).

9) Consider all management activities within the surrounding landscape context (2500 acres). Work to create and/or maintain a forested landscape capable of supporting viable populations of species associated with a variety of forest types, successional stages, and patch sizes (horizontal diversity). Pay special attention to ensuring habitat for species whose life-history requirements include large areas of contiguous forest.

10) Strive to retain 3-5 snags per acre with one exceeding 18-inches dbh and two exceeding 16-inches dbh with priority given to retaining hardwoods. Where lacking, actively recruit large-diameter (>12" dbh) snags through girdling.

11) Use snags and potential cavity trees as nuclei for retained patches in larger openings. Retained patches may be islands or peninsulas extending from adjacent stands.

12) Use woodland seeps and springs as nuclei for uncut patches to retain snags, cavity trees, and other site-specific features since these are early-season sources of insects, green vegetation, and earthworms. Retained patches may be islands or peninsulas extending from adjacent stands.

13) Recognize that vertical structure is naturally limited in early and mid-successional stages. Look for opportunities to enhance vertical structure over time.

14) Consider and protect vernal pools and riparian buffers when laying out extent and location of openings.

15) Manage for horizontal age-class diversity over the property where opportunities exist.

16) Harvesting during frozen ground conditions is preferred, but if summer harvesting is required, it should be scheduled before the start of the bird breeding season (May 15) or after the second week in July if possible.

17) Strive to set aside four trees per acre that are representative of the stand and will serve as future biological legacies.

18) Where possible, leave slash on site to contribute to vertical structure and protect seedlings from moose and deer browse.

IV.2.3 Protecting Vernal Pools

Only one vernal pool has been identified and mapped on the WSF to date (Arrowwood Environmental, 2007). It is located in the southern portion of Stand 8, which is above 2500 feet and will not be actively managed. However, since these pools are small and temporary, additional pools may be located on the property in the future, in which case the following Best Management Practices for timber management near vernal pools should be followed as needed (adapted from Calhoun and deMaynadier, 2004):

1. Mark the pool's location. Identify the spring high water mark (during the wet season or using dry season indicators) and flag the pool's perimeter during harvest layout and prior to cutting.

2. Protect the pool basin and its natural vegetation. Leave the depression undisturbed. Avoid harvesting, heavy equipment operation, skidding activity, or landing construction in the vernal pool depression. Keep the pool free of sediment, slash, and tree-tops from forestry operations, including harvesting and road building. Leave slash or other woody debris that accidentally falls into the pool during the breeding season (March to June). Trees and branches that fall naturally into pools can serve as egg attachment sites.

3. Within a 100-foot protection zone around the pool maintain a minimum average of 75% canopy cover of trees a minimum of 20-30 ft. tall, uniformly distributed. The shade of a closed canopy will prevent premature warming and drying of the pool.

4. Within a 100-400-foot "amphibian life zone" around the pool maintain a minimum average of >50% canopy cover of trees 20-30 ft. tall, uniformly distributed using single-tree or small-group selection harvesting. The shade of the surrounding forest will protect dispersing juvenile amphibians.

5. Within both zones (400 feet around the pool):

    a. Maintain coarse woody debris by leaving a supply of older or dying trees to serve as recruitment for coarse woody debris, avoiding disturbing fallen logs, and leaving limbs and tops where felled. Adult amphibians spend most of their lives in surrounding upland habitats under moist logs and leaf litter.

    b. Protect the forest floor by harvesting only during completely frozen or completely dry soil conditions. Do not create ruts and minimize soil disturbance. Ruts can be barriers to amphibian migration. They may also collect water and attract breeding adults, but will not support the survival of offspring.

c. Avoid road or landing construction, which are barriers to amphibian migration.

IV.3 Logging Operations

The Washington County Forester – or another professional, experienced forester – will act on behalf of the Town to mark and oversee all timber harvests, including the layout, design, maintenance, and reclamation of all truck roads, skid roads, and landings. The forester will make sure that buffers along all waterways and sensitive areas are well delineated before harvesting starts and adhered to once the operation begins. Use of experienced and capable logging contractors with a clear understanding of stand treatment and the selection and marking of trees for removal is required. Loggers will work in accordance with Vermont water resource protection and general forestry regulations.

At a minimum, all harvest activities will be implemented according to Acceptable Management Practices (AMPs). Relevant recommended practices for protecting water quality, wetlands, stream crossings, and aquatic habitat from the *Good Forestry in the Granite State: Recommended Voluntary Forest Management Practices for New Hampshire* (Bennett, 2010) and subsequent publications should also be used. In addition, operations guidelines from *Silviculture with Birds in Mind: Options for Integrating Timber and Songbird Habitat Management in Northern Hardwood Stands in Vermont* (Audubon Vermont and the Vermont Department of Forests, Parks, and Recreation, 2011) and subsequent publications should be used to minimize residual stand damage, maintain pleasing aesthetics, and protect wildlife habitat.

IV.4 Water Quality

Steep slopes and numerous perennial and ephemeral streams make the soils of the WSF vulnerable to erosion if disturbed by logging or recreational uses, which could compromise water quality and aquatic habitats. At a minimum, all riparian zones will be managed according to Acceptable Management Practices (AMPs) to protect surface waters from harmful discharges. In addition, recommended practices for protecting riparian zones from the *Good Forestry in the Granite State: Recommended Voluntary Forest Management Practices for New Hampshire* (Bennett, 2010) and subsequent publications should be used. Riparian management and no-harvest zones should be identified and marked by a professional forester based on the width recommendations in that publication in combination with consideration of specific site characteristics. Zones may vary in width depending on stream channel size and character, the steepness of adjacent slopes, and soil character. No-harvest zones should be required along stream shores containing wet seeps, shallow or poorly-drained soils, or areas with slopes greater than 8%. In most cases, careful harvesting along permanent and ephemeral streams should be compatible with protecting stream and riparian functions and values. Any harvesting in riparian management zones shall maintain relatively continuous canopy cover (60-70%), plentiful sources of coarse woody and organic material, wildlife habitat connectivity, forest health, and vegetation species and sizes appropriate for the plant community type.

IV.5 Aesthetics

Aesthetics is a factor that should be taken into account while completing any type of project on the WSF, whether it is forestry, wildlife, or recreation-related. Aesthetically important areas should be maintained and

enhanced. Unique natural features such as unusually large and unique trees and shrubs should be preserved in their natural state. Individual large trees may be identified as Legacy Trees that will remain in the stand throughout all harvesting operations. These trees should be retained for aesthetics, as seed trees, and as future den and cavity trees for wildlife use. Unique cultural resources on the property such as old stone walls should also be maintained and protected during any work in adjacent area.

Given the property's location on the Northfield Range, which is a the major scenic view to the east in the Mad River Valley, any moderate to large openings in the forest canopy created during timber harvests on the west side of the WSF will likely be visible from and across the Route 100 corridor. It is possible that the public may view large openings as having a negative impact not only on the viewshed, but also on the forest. In these cases, part of successful harvest planning and preparation will include public outreach through local media, the Town website, and other platforms. A best effort will be made to clearly explain and justify the work that is planned before it starts and while it is being carried out, so that the public has a clear understanding of the harvest goals – particularly related to enhancing wildlife habitat – and how other values will be protected during the harvest.

IV.6 Forest Health

Although no significant forest health problems had been noted at the time of writing this plan, monitoring for pests, disease, and invasive plants and insects should occur regularly. Should forest health issues develop, prompt control methods should be implemented under the guidance of a professional forester.

IV.7 Boundary Maintenance

Boundary line condition on the WSF is currently fair to poor, with forested lines marked by faded blazes in places and completely lacking in others. To prevent confusion over line location and violations of timber rights from adjoining lands, all property lines should be painted with good quality boundary paint on a ten year cycle. In addition, all corners should be located and painted. After the boundaries have been initially re-marked, the Town should complete a boundary line review every three or four years. During the review, note areas that require additional painting to ensure the integrity of the boundary lines.

IV.8 Liability

Like any town owned land in Vermont, the WSF is afforded some protection from liability under the doctrine of sovereign immunity, as well as case law. In addition, the Town has additional liability insurance through a policy that covers all public land and facilities. Since trails may be maintained in a primitive condition, signs at all entry points should say, "Use at your own risk."

IV.9 Development

Conservation easements on all of the WSF parcels – except the Tucker Parcel, which is not subject to any restrictions – prohibit development, which includes: residential, commercial, industrial, or mining activities and the erection of any buildings or structures (with the exception of a small camp). The 2009 amendment to the easements for the Scrag Corp. and Anonymous Donor parcels allows that the *Grantee* (Vermont Land Trust) *may, in its sole discretion, approve future municipal uses of the Protected Property* (WSF) *such as energy production, telecommunication improvements, or public water supply* as long as those uses are compatible with the purposes and restrictions of the easement.

There has been considerable public dialogue in the past two years about the possibility of wind power development on the Northfield ridgeline, including the WSF portion. Based on current technologies, the Conservation Commission does not see the potential for such a project that would be compatible with the easement during the life span of this document (10-15 years). Any future projects that would be compatible with the easement would also need to be evaluated for compatibility with current town planning and zoning regulations (Appendix A).

IV.10 WILDFIRE

The threat of wildfire on the Scrag forest is very minimal. Factors which contribute to this low risk include the absence of large, concentrated amounts of coniferous (evergreen) flammable material; the general presence of damp green foliage from ground level up through the deciduous (leafy) treetops, and the general absence of prolonged vegetation-killing droughts.

The spring and fall seasons do pose some threat, when fallen leaves become dry, but these seasons are short due to spring regrowth and winter snowfall. If fires do start, suppression is the responsibility of the town Forest Fire Warden. This individual is appointed by the commissioner of the VT Dept. of Forests, Parks & Recreation, with the approval of the local Selectboard, and has direct control of the local fire department forest fire suppression activities.

IV.11 CLIMATE CHANGE

Warming temperatures, increasing levels of precipitation, and more frequent severe weather events are climate changes that have been documented across the region and are trends that have important implications for forest health and management in Vermont and on the WSF (Wilmot, 2011).

Tree growth may be positively impacted by increased amounts of carbon dioxide and rising temperatures, but warmer temperatures will also increase evapotranspiration, soil drying, and the frequency of short-term droughts. The cumulative impact of these changes will likely be increased stress and slower growth in many tree species. Since different tree species and forest sites will likely respond differently to the complex set of factors involved in climate change, regular monitoring should be used as a tool for adaptive management. Management outcomes and results of forest inventory should be carefully assessed and lessons learned along with the latest scientific understanding applied to the next plan.

Over time, tree species distributions will likely shift as average temperatures rise, growing seasons lengthen, and short-term droughts become more common in early spring and late fall. Northern hardwood forests in Vermont and on the WSF are predicted to be replaced by southern forest types that are dominated by oak and pine. The spruce-fir and spruce-hardwood forests along the Northfield ridge will likely transition to northern hardwood forests which is a trend that is already beginning across the state. Since species evolutionary response lags the pace of climate change, such transitions will take place slowly, and noticeable effects may not appear for decades. Anticipating these future shifts in species composition on the WSF during management planning and promoting a diversity of species, stand structures, and age classes across the property are key strategies that should be used to help the WSF forest systems successfully adapt to climate changes.

Forest pests and non-native, invasive plants are likely to spread across Vermont and to

the WSF since the growth and survival of these species improve as winter and summer temperatures rise, carbon dioxide levels increase, and native trees become increasingly stressed. Insect pests including hemlock woolly adelgid, emerald ash borer, and Asian longhorned beetle are spreading into Vermont and if they reach the WSF could kill all or most of the hemlock, ash, and maple trees on the property. Invasive plants including bush honeysuckle, Japanese barberry, and glossy buckthorn are not currently on the property, but spread quickly and could establish and outcompete native species in openings in the forest canopy created by natural disturbances (e.g. wind storms), forest harvesting, or die-back caused by forest pests.

Invasive plant and forest pest monitoring should be incorporated into forest inventories, and management strategies addressed in planning. In addition, strategies to reduce other stresses on forest health, such as lengthening harvest rotations, should also be taken to increase forest resiliency to forest pests and other indirect and direct impacts of climate change. The Conservation Commission should also take opportunities to educate the public and visitors to the WSF about the threats of forest pests since public outreach is an important strategy for managing and slowing the spread of pests and invasive plants. Sources of expertise, assistance, and resources related to forest pests include: the Vermont Department of Forests, Parks, and Recreation; the Nature Conservancy; and the Forest Pest First Detector Program.

IV.12 Adaptive Management

Over time, change is inevitable on the WSF – whether from climate change, natural cycles, timber harvesting activities, or other factors. And scientific knowledge and best practices in forest management will continue to evolve.

Recognizing this, and in keeping with the spirit of this plan's Management Goal #10 to "monitor and respond to changes" (see p. 2), the Town will adopt a flexible adaptive management approach. To the extent possible within available resources and capacity, the Town (through the Conservation Commission) will seek to monitor changes in on-the-ground conditions; stay abreast of the evolving scientific understanding of forest systems and science-based best management practices; and adjust management policies, guidelines, and practices accordingly.

V MANAGEMENT OBJECTIVES AND ACTIONS

The following objectives and actions are intended to be achieved over a 10-15 year timeline.

1) **Improve recreational and logging access.**
   a. Secure deeded logging and recreational access as described as a condition of the Kisiel subdivision permit (2012).
   b. Post signs and/or trail markers to direct visitors up main trail; pull brush across trails and woods roads without public access (Fall 2012-Spring 2013).
   c. Improve or reroute main trail to beaver pond in conjunction with next scheduled timber harvest.
   d. Evaluate potential for ridgeline trail/loop.
   e. Map existing trails on adjacent properties, and initiate discussions with adjoining landowners about opportunities to connect trails in the future.
   f. Create a proposed trail plan with input and assistance from other recreational groups and the general public. Implement plan as public support, funding, and capacity allow.
   g. Explore opportunities for general public and logging access from the Northfield side.

2) **Generate revenue and/or timber and firewood for community projects through scheduled timber harvests.**
   a) Conduct timber harvests scheduled in Forest Stewardship Plan.
   b) Look into opportunities to feature lumber from harvest in value-added community projects, such as construction of the new Town Hall, town building flooring, school bookcase construction etc.
   c) Engage local students and community members in educational opportunities surrounding the harvest such as marking, inventory, monitoring, field tours during harvest etc.
   d) Post signs informing visitors to the forest about the purposes of harvests.
   e) Explore the option of making firewood created by the harvest available to community members in need.
   f) Conduct a post-harvest inventory to assess whether objectives were achieved.
   g) Request assistance from Audubon Vermont, the Ruffed Grouse Society, and/or the Mad Birders to conduct pre- and post-harvest bird monitoring to assess impacts of silvicultural treatments on forest birds, including ruffed grouse.

3) **Address existing erosion and water quality issues.**
   a) Improve main trail to beaver pond in conjunction with scheduled timber harvest. If trail is re-routed, install water bars and take other measures necessary to stabilize existing, eroding woods road.
   b) Make a plan for addressing erosion and water quality issues on the Tucker parcel.

4) **Improve on-the ground identification of property lines.**
   a) Locate and mark corners and boundary lines.

VI REFERENCES AND RESOURCES

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VII GLOSSARY

Acceptable Growing Stock (AGS): Any potential crop tree to be retained and managed to meet the landowner's objectives. UVA guidelines (for sawlog production) describe AGS as trees of commercial species which have the potential to produce one 12-foot log or two non-contiguous 8-foot logs.

Acre: A standard unit of area measure. One acre equals: 43,560 square feet; 4840square yards; 10 square chains.

Adaptive management: A flexible philosophy and approach to managing land, water, and other environmental assets that is responsive to changes in on-the-ground conditions, new information and best practices, management capacity, and similar considerations.

Advanced regeneration: Natural regeneration that is established prior to a timber harvest.

Age Class: One of the intervals, commonly 10-20 years, into which the age range of trees are divided for classification.

AMP's: Accepted management practices pertaining to logging operations developed by the Department of Forests, Parks and Recreation and outlined in the booklet titled "Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont."

Annual Allowable Cut (AAC): A percentage of the growth in a stand that can be harvested to keep the timber yield sustainable. AAC is expressed in board feet per acre, per year (i.e. to keep stand A productive on a sustainable basis, 85 board feet per acre, per year can be harvested).

Aspect: The direction towards which a slope faces.

Basal Area: The cross sectional area of the stem of a tree at 4.5 feet above the ground (dbh). The basal area of a stand is the summation of all the trees or classes of trees per unit area of land. Basal area is expressed in square feet per acre. Basal area is directly related to stand volume and density.

Biological Diversity (Biodiversity): The complexity of life at all its levels of organization, including genetic variability within species, species and species interactions, ecological processes, and the distribution of species and natural communities across a landscape.

Biomass: The total weight of all harvestable vegetation from a stand. This term can also be used to describe a harvest that results in all material being processed into chips.

Board Foot: The volume of solid wood equivalent to a piece 12 inches long, 12 inches wide and 1 inch thick. A measure of standing or felled timber usually related to sawlogs.

Bole: The stem of a tree.

Browse: Buds, leaves, and twigs of seedling and sapling regeneration that are utilized as a food resource by wildlife.

Canopy: The combined cover of individual tree crowns.

Chain: A measurement of horizontal distance, 66 feet. Areas expressed in square chains can immediately be converted to acres by dividing by 10.

Cleaning: The removal of competing vegetation to release desired regeneration for optimal growth.

Clearcut: A silvicultural method which removes all trees from a designated area at onetime for the purpose of creating a new, even-aged stand. This management system is usually used to regenerate shade-intolerant tree species. Variations include patch and strip clearcutting.

Climax: An association of plants and animals that will prevail in the absence of disturbance.

Coarse woody material (CWM): Downed logs and branches >4 inches diameter.

Codominat: Trees with crowns forming the general level of the forest canopy and receiving full sunlight from above but comparatively little from the sides.

Contiguous Forest Habitat: An area of forested land with either no roads or low densities of class III or IV roads and little or no human development (buildings, parking areas, lawns, gravel pits).

Core Habitat: An area of land that is at least 300 feet from major roads or human structures.

Crop Trees: Trees to be grown to the end of the rotation in evenaged management or trees to be favored for future growth in unevenaged management.

Crown: The branches and twigs of the upper part of a tree.

Cruise: A survey of forest stands to determine the number, size and species of trees, as well as terrain, soil condition, access and any other factors relevant to forest management planning.

Cull: Trees that have no current or potential commercial value.

Deer Winter Habitat: An area of mature or maturing softwood cover, with aspects tending towards the south, southeast, or southwest, where deer find winter cover and browse.

Diameter at Breast Height (dbh): The diameter of a standing tree measured at 4.5 feet above the ground and expressed in inches.

Dominant: Trees with well-developed crowns which are above the canopy and receive direct sunlight from above and partially from the side.

Early-Successional Habitat: An area – usually larger than 1 acre in size - dominated by a high-density of shrubs and pioneer species seedlings and saplings. Regenerating forest and brushy, overgrown fields are two of the most common types of early-successional habitat. These conditions are temporal; generally lasting for 15-20 years in regenerating forest area, longer on old fields.

Edge: The boundary between forest and open land, such as a field or backyard. The transition from low herbaceous vegetation to tree canopy can be considered either a "soft" or "hard" edge. A soft edge is a gradual change in vegetation height moving into the forest. This gradual transition is important for buffering interior forest specialists like the wood thrush from the incursions of nest predators (such as raccoons and skunks) and nest parasites (such as the brown-headed cowbird) that are frequently found in open and developed areas.

Even-aged: An age class description of a stand in which the age of the trees is relatively close, usually within 20 years. Stands with two distinct age classes can also be referred to as even-aged.

Even-aged Management: Timber management that produces a stand of trees with relatively little difference in age usually 10-20 years. Even-age silvicultural systems include clearcut, seed-tree and shelterwood.

Fine woody material (FWM): Limbs and branches <4 inches diameter including slash.

Forest Management Plan (FMP): A long range plan designed to identify a landowner's goals and objectives and the silvicultural methods that will be employed to achieve those goals. FMP's in Vermont are typically written for a 15 year period and updated every 10 years.

Forest Type: A natural group or association of different species of trees which commonly occur together over a large area. Forest types are defined by one or more of the dominant species of trees in the type. Common commercial types in the northeast are: beech-birch-maple; beech-red maple; mixedwood; spruce-fir; white pine.

Forestry: The art and science of growing and managing forests and forest lands for the continuing use of their resources. *Sustainable forestry* is the practice of growing, nurturing, and harvesting trees to meet current needs without compromising soil, air, and water quality; biological diversity; wildlife and aquatic habitat; recreation; aesthetics, or the ability of future generations to meet their own needs (adapted from the Sustainable Forestry Initiative).

Fragmented Forest: Forest that is broken into small, unconnected patches primarily due to some form of development (e.g. residential, commercial, or major roads).

Girdle: To destroy the conductive tissue of a tree in a ring around the bole.

Group Selection: An uneven-aged harvesting method designed to favor intolerant or intermediate species. Trees are generally removed in groups in areas ranging from 1/20-2 acres in size.

Habitat: The place where a plant or animal can live and maintain itself.

Hardwoods: Broad-leaved trees which loose their leaves in the fall.

Harvest: A silvicultural treatment that is intended to establish regeneration. A harvest is generally a higher level of cutting intensity than a thinning.

High-grading: A liquidation cut in which only the best quality, highest value trees are removed. Cuts of this nature are short sighted and exploitative and result in the degradation of the forest ecosystem.

Horizontal Structure: The arrangement of different habitat types across the landscape. A landscape with mature and young forest habitats, open fields, and wetlands would be rich in horizontal diversity. Landscapes with greater horizontal diversity support a greater diversity of breeding forest birds and other wildlife.

Hydrologic Class: A measure of a bare soil's runoff characteristics. Group A soil has a high water infiltration rate and a low runoff potential. Group D soil has a very slow rate of water infiltration and is prone to high runoff.

Improvement Cutting: A silvicultural treatment in which poor quality and low value trees are removed to give the best trees more room to grow.

Individual Tree Selection: An uneven-aged harvesting method designed to favor tolerant species. Trees are removed individually to maintain a continuous and uniform crown cover. Also referred to as single tree selection.

Interior Forest: Forest condition that occurs with increasing distance from a forest edge.

Intermediate: Trees whose crowns reach the canopy level but receive little or no direct light from above and none from the sides.

Intermediate Treatments: Harvesting methods employed during even-aged management. The removal of trees from a stand between the time of establishment and the final harvest with the purpose of improving stand growth and/or species composition and/or health.

Intolerant Species: Trees unable to grow and develop in the shade of other species. Intolerant commercial species in Vermont include: paper birch and aspen.

Invasive Plant: A plant that is able to establish on many sites, grow quickly, and spread to the point of disrupting native ecosystems. Often non-native.

Landing: Any place where logs are assembled for further transport.

Leaf Litter: Dead plant material such as leaves, bark, and twigs that has fallen to the ground.

Liquidation Cutting: Removal of all merchantable products from the forest with no regard for stand improvement or regeneration, usually preceding the sale of the land.

Log Rule: A table or formula showing estimated volumes, usually in board feet, for various log diameters and lengths.

Mast: Nuts, berries, and seeds utilized by wildlife as a food resource. Soft mast are soft fruits, such as blackberries, raspberries, and cherries.

Maturity: Expressed in two ways: 1. Financial maturity occurs when a tree has reached the point where it has maximized value growth from the perspective of the market place; 2. Biological maturity occurs when a tree has reached the point where the energy cost of maintaining itself exceeds the energy input from photosynthesis. Financial maturity is reached long before biological maturity.

MBF: The abbreviation for one thousand board feet.

Mean Stand Diameter (MSD): The arithmetic mean diameter of the trees in a stand.

Medial Diameter (MD): This is developed by determining by the sum the number of trees per acre in each diameter class multiplied by the basal area in that class and then dividing the result by the total basal area. MD is useful in stands with a high proportion of saplings because it is less influenced by small trees and more accurately describes the size of the crop trees.

Midstory: Live, woody vegetation in the 6-30 foot height range including trees and shrubs.

Mixed Hardwoods: Timber stands characterized by a mixture of hardwood species.

Natural Community: An interacting assemblage of plants and animals, their physical environment, and the natural processes that affect them.

Natural Disturbance: Any relatively discrete event in time not directly caused by humans that disrupts ecosystem, community, or population structure and changes resources, substrate availability, or the physical environment. Examples for forest ecosystems in the northeast include wind and ice storms, insect outbreaks, and hurricanes.

Old growth forest: a forest in which human disturbance has been minimal and natural disturbance has been limited to small-scale windthrow events or natural death of trees.

Outcrop: A portion of bedrock that is exposed and protruding through the soil layer.

Overmature: A tree or stand of trees that is older than normal rotation age for the type.

Overstory: Those trees making up the main canopy. The overstory is usually referenced as the larger trees in the stand.

Pioneer: Shade intolerant species that are the first trees to develop in an area after a large scale disturbance or after the abandonment of a field. Pioneer species include aspen, gray birch, pin cherry, and paper birch.

Pole or Pole Timber: A tree or trees greater than 4.0 inches dbh and less than 10.0 inches dbh.

Precommercial Thinning: An intermediate harvesting operation in a young stand that does not generate income.

Prescription: A course of action to effect change in a forest stand (harvest, planting, TSI).

Regeneration: Renewal of a tree crop by natural or artificial means.

Release: The freeing of well-established seedlings or saplings from surrounding growth.

Residual: Trees that are left to grow in a stand after a silvicultural treatment.

Rotation: The length of time required to grow an even-aged crop of trees to a desired age.

Rotation Age: The age at which an even-aged stand is considered ready for harvest.

Salvage Cut: The removal of dead, dying and damaged trees after a natural disaster or insect or disease infestation to utilize the wood before it loses all of its commercial value.

Sanitation Cut: The removal of dead, dying or damaged trees to prevent or interrupt the spread of insects or disease.

Sapling: Trees taller than 4.5 feet but less than 5.0 inches dbh.

Sawlog: A log considered suitable in size and quality for producing lumber. Regional standards apply for diameter, length and freedom from defect. Sawlog is also used to refer to a tree that has reached sufficient size to produce a sawlog. Small sawlog trees are 12-16 inches dbh, medium sawlog trees are 17-20 inches dbh, and large sawlog trees are 22 inches dbh or greater.

Sawtimber: Trees that have obtained a minimum diameter at breast height that can be felled and processed into sawlogs. Typical minimum size limits for commercial species in Vermont are 8 inches dbh for softwoods and 12 inches dbh for hardwoods.

Seedlings: Trees that are less than 4.5 feet tall.

Seed Tree: An even-aged silvicultural method in which most of the merchantable trees are removed in the first cut, leaving a few scattered trees of desirable species to serve as a seed source for the new stand. The seed trees are removed after successful regeneration has

developed. The seed tree method is a regeneration cut used to create an even-aged stand of shade intolerant species.

Selection method: An uneven-aged silvicultural system where individual trees, or groups of trees, are removed from a stand to ensure a sustained yield from an uneven-aged stand.

Shade tolerance: The ability of trees to reproduce and grow in the shade of other trees. Tolerance ratings are very tolerant, tolerant, intermediate, intolerant, and very intolerant.

Shelterwood: An even-aged silvicultural system in which the mature trees are removed in a series of partial cuts that take place over a small portion of the rotation. The residual trees are left as a seed source and to provide shade and protection for the new seedlings. Three types of cuttings are used in this method:

1. The preparatory cut, in which the least desirable trees are removed to improve the quality and growth of the stand,
2. The seed cut, in which the regeneration is established,
3. The removal cut (or cuts) in which the mature trees are cut to release the regeneration.
4. Variations of this method include the group, irregular, strip, and uniform shelterwood.

Shrub: A multiple-stemmed or low-branching woody plant generally less than 16 feet tall at maturity.

Silviculture: The art and science of tending forest trees.

Site Class: A measurement of the quality of the soil in terms of its potential productivity. A site class of 1 indicates that the soil is highly productive and a site class of 4 is considered non-productive, usually due to excessively wet, dry, or thin soil.

Site Index: A measure of the relative productive capacity of an area. Site index is species specific and is based on a comparison of tree age and height.

Skid Trail: Any path in the woods over which multiple loads of logs are hauled, usually by a skidder or tractor. Primary skid trails are the main pathways that enter the landing.

Skidder: A four wheel drive, tractor-like vehicle, articulated in the middle for maneuverability, with a cable or grapple on the back end designed to bring logs or whole trees to the landing once that they have been felled.

Slope: A relative measure of steepness of the ground. Slope can be computed by dividing the rise in elevation by the horizontal distance traveled. Slope is usually expressed in percent (rise in ft /run) X 100. Slope can be derived automatically using various forest measurement tools.

Snag: A standing, dead tree.

Softwood: Coniferous trees, usually "evergreen" (the exception being tamarack), with needles or scale-like leaves.

Source habitat: [add definition]

Stand (Treatment Unit): A community of trees possessing sufficient uniformity in regards to composition, constitution, age, spatial arrangement or condition to be distinguishable from adjacent communities.

Stocking: An indication of the number of trees in a stand as compared to the optimum number of trees required to achieve some management objective, usually improved growth rates or increased timber values.

Stocking Level: Stocking levels are calculated by comparing either the basal area or the number of trees the site could support, if the growth potential of the land was fully utilized, to the basal area or number of trees actually on the site. UVA stocking categories include: understocked, adequately stocked, or overstocked.

Strip Cut: A timber harvesting operation where all of the merchantable trees are cut within a long, narrow strip. An even-aged cutting method usually used to regenerate spruce and fir.

Stumpage: The value of timber as it stands in the woods just before harvest ("on the stump"). Loggers usually bid on timber based on its stumpage value. Stumpage can also be used to refer to standing timber.

Succession: The orderly and predictable replacement of one plant community by another over time in the absence of disturbance.

Suppressed: Trees with crowns entirely below the general level of the forest canopy that receive no direct sunlight from above or the sides.

Thinning: A silvicultural treatment that reduces stand density to allow the best trees to grow with less competition. There are three kinds of thinning: crown thinning, low thinning, and free thinning.

Timber Stand Improvement (TSI): A non-commercial timber harvest conducted in stands of timber to improve the health, growth rate, and form of the remaining trees.

Tolerant Species: Trees that can grow satisfactorily in the shade of other trees. Tolerant species of commercial importance in Vermont include sugar maple, beech, red spruce, and hemlock.

Truck Road: A road capable of supporting a trailer truck that hauls logs from the landing to the mill.

Understory: Live vegetation in the 1-5 foot height range, including tree seedlings and saplings, shrubs, and herbaceous vegetation.

Uneven aged: An age class description of a stand of trees that contains more than two distinct age classes and a variety of size classes.

Uneven-aged (All-aged) Management: Timber management that produces a stand composed of a variety of age classes. Harvesting methods used in uneven-aged management include individual tree and group selection.

Vernal pool: A small, temporary body of water that occurs in a forest depression.

Vertical Structure: The complexity of vegetation and other structures as they are vertically arranged in the forest. A forest with a well-developed understory, midstory, and canopy exhibits complex or diverse vertical structure. Non-living features, such as coarse woody material and the microtopography of the forest floor, add to the complexity of vertical structure as well.

Vigor: The health and vitality of a tree. Vigor can most accurately be assessed by observations of foliage (density, width and color) and percent live crown.

Volume Table: A table that utilizes tree dbh or log diameters and log length(usually 16 feet) to estimate board foot volumes according to a set of assumptions ("log rules") about how the log will be processed into boards.

Windthrow: A tree or trees that have been toppled by high winds. A common phenomena along the edge of strip cuts and clearcuts.

Yield: Total forest growth over a specified period of time, less mortality, unmarketable fiber and cull.

Yield Table: A species-specific representation of the amount of useable wood fiber a forest can be expected to produce during a single rotation based on site index.

Sources

Adapted from Vermont Land Trust glossary using the following sources:

Audubon Vermont. 2012. Forest Bird Habitat Assessment. Terms and Explanations.

Thompson, Elizabeth H. and Eric R. Sorenson. 2005. *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont*.

Vermont Fish and Wildlife Department website. January 23, 2012. www.vtfishandwildlife.com

VIII APPENDIX A: EASEMENTS, PERMITS, AND REGULATIONS

Use and management of the Waitsfield Scrag Forest (WSF) is also guided by and must be compatible with the Waitsfield Town Plan and zoning bylaws. In addition, several easements and permits are legally binding and also affect permitted and restricted uses of the WSF.

VIII.1 TOWN PLAN AND ZONING BYLAWS

The use of the Waitsfield Scrag Forest (WSF) is subject to all relevant provisions in the Waitsfield Town Plan (July 26, 2010 and revisions that may follow) and regulations in the zoning bylaws (May 17, 2010 and revisions that may follow).

The WSF is located Waitsfield's Forest Reserve District. This district's purpose is to protect forest and water resources at higher elevations and to limit development with steep slopes, shallow soils, unique or fragile resources, headwater streams, wildlife habitat, and poor access to Town infrastructure. Agriculture and forestry uses are permitted.

VIII.2 CONSERVATION EASEMENTS

- **Scrag Corp. Parcel, 360 acres:** Gifted to the Town from Scrag Corporation in 1991. Subject to the terms and conditions of a Grant of Development Rights and Conservation Restrictions by Scrag Corporation to Vermont Land Trust, Inc., dated August 14, 1992, and recorded in Book 63, page 383 of the Town of Waitsfield Land Records. In 2009, the Town and the Vermont Land Trust, Inc, executed the First Amendment to Conservation Restrictions covering both the original Scrag property and the 200 acre property given by the anonymous donor in 2006 recorded in Book 135, pages 280-288. As specified in this First Amendment, the property is divided by conservation restrictions into two zones – a high-elevation limited use "Special Treatment Area" and an abutting lower elevation area with broader permitted uses. The amendment also states that the *Grantee may, in its sole discretion, approve future municipal uses of the Protected Property such as energy production, telecommunication improvements, or public water supply.* Development of public utilities in the Forest Reserve District is a conditional use in the current zoning ordinance, but is prohibited above 1700 feet in elevation in the current Town Plan.

- **Joslyn Parcel, 20 acres:** Town purchased from Donald Joslyn in 1997. This parcel partially abuts the original Scrag Corporation land and is also subject to a Grant of Development Rights and Conservation Restrictions as conveyed by Joslyn to Vermont Land Trust on May 1, 1991, and recorded in Book 60, pgs. 237 – 241.

- **Anonymous Parcel, 200 acres:** Gifted to the Town from an anonymous donor in 2006. Subject to the same terms and restrictions as the Scrag Corp. parcel as outlined in the original 1991 easement and 2009 amendment (see above).

- **Tucker Parcel, 60 acres:** Gifted to the Town from the Tucker family. A 60-acre parcel on the east slope of the ridge and abutting both the original Scrag Corporation and anonymous donor acquisitions. <u>This land is owned in fee simple and is not subject to deeded restrictions or easements.</u>

VIII.3 PERMITS

- **Kisiel Subdivision Permit, 2008:** Conditional upon granting recreational and logging access easements to the Town including a six car parking area at the end of Bowen Road, a hiking trail, and a logging access and log landing as shown on associated map created by McCain Consulting dated September 23, 2008. Permit number SUB-06-01.

- **Scrag Corp. Nine-Lot Subdivision, 1991:** Conditional upon allowing access and the construction of a parking area if the Town is unable to secure permanent public access elsewhere.

- **Act 250 Permit #5W1115 for Scrag Corporation and H. Christopher Whittle, 1991:** Subdivision of a 600-acre tract is conditional upon conveying an undeveloped 360-acre lot (Scrag Corp. Parcel) to the Town of Waitsfield. The 360-acre parcel cannot be developed nor can ownership be transferred without Commission approval.

IX APPENDIX B: SUMMARY OF PUBLIC INPUT

IX.1 NOTES FROM MARCH 22, 2012 PUBLIC MEETING

General

- ~40 people attended including neighbors, new-comers to town, people with lots of knowledge with and experience related to the forest, and a mix of ages.
- Generally people feel the Waitsfield Scrag Forest (WSF) is a special place – a gem that should be used and taken care of.
- Some expressed interest in helping (e.g. with trail maintenance, plan writing etc.).
- People liked learning about the place and what makes it unique – enjoyed the virtual tour, maps, photos. Interest in additional learning in the forest – public walks and tours.
- General support for the Conservation Commission and positive response to work done so far; seemed like folks felt that the Commission is on the right track with the planning process.
- Interest in follow-up and being kept updated on the plan's development – maybe another forum to review final draft.

History

- General interest in history of the property and how it was used. Stories were shared by those who used to hike, snowmobile, and hunt up on the property.
- Many people had stories to tell about the place and spending time up there. There is the opportunity to record these and include people's knowledge and remembrances in the plan.
- Pat Folsom and Gordie Eurich grew up on the hill and rode the school barge to school.
- Was there a history of fires on the property? Gordie remembers hearing that the top of Scrag burned in the 1940s and the volunteer fire department hiked up there to work on putting the fire out.

Recreation and Access

- General interest in more trails and better access.
- Liked the idea of a "Recreation Plan" that defines specifics for what uses will be allowed, where trails will go etc.; want to see that move forward soon.
- Any new trails should follow high standards of sustainable trail design for permitted uses to minimize negative impacts on ecological values (e.g. water, streams, erosion, wildlife etc.).
- Always keep big picture goals in mind when making decisions; Conservation Commission needs to be in control of what happens on the forest.
- Concern about potential impacts of and conflicts between different recreational users (e.g. mountain bikers and horseback riders – both have potential to cause erosion and trail degradation and don't tend to work well together).
- There used to be many more trails used for hiking and snowmobiling (likely old skid trails). Gordie used to use them a lot. He would like to see snowmobiling be allowed again. The Conservation Commission communicated that the conservation easement

prohibits snowmobiling on the WSF, but research after the meeting revealed that this is not the case; snowmobiling is not prohibited by the easement and is at Town's discretion.

- Suggestion – focus on creating loop and trail connections onto adjacent private land with access from the Waitsfield side. Work with neighbors and offer them incentives (e.g. small tax break) to permit public access to trails. Securing recreational access from the Northfield side shouldn't be a priority since Waitsfield residents won't travel over there to use it.
- Bowen Road parking area and trailhead – Needs to be well marked and maintained. It was suggested that the Town should take responsibility for plowing in the winter; currently it is not getting done. Current lack of parking and trail access due to logging operation on Kisiel's is a concern; when will the area be open again?
- Concern about poor fire and emergency access. There should be a way to get emergency vehicles into the forest if necessary.
- Dogs – they have negative impacts on wildlife (No one objected to the Conservation Commission's proposed rule that dogs should be leashed).

Forestry

- Explain what is meant by "sustainable" forestry in the plan.
- No one expressed concern about forestry uses and timber harvesting – other than to make sure it aligns with other conservation goals.
- Would like to see wildlife prioritized over revenue.
- Question = Are there harvest plans by stand? Answer = Yes, Russ Barrett's Forest Stewardship Plan prescribes treatments by stand. It's a draft that the Conservation Commission will work with Russ to finalize.
- Question = Are any of the sap lines (Dave Gavett's) on town land? Answer = No.
- General interest in and positive response to ideas for community uses of forest products from the WSF (e.g. community firewood program).

Wind Energy

- Agreement with Conservation Commission that wind development with existing technology would conflict with protecting conservation values of the property.
- General questions and concerns regarding this topic, but no disagreement with Conservation Commission's approach/stance.
- Question = If the town plan changes to allow wind development over 1700 feet, will the Conservation Commission change the management plan to allow as well? Answer = No, because the conservation easement contains additional restrictions on development related to public utilities and energy.

IX.2 NOTES FROM DECEMBER 3, 2012 PUBLIC MEETING

General

- 21 people attended
- Similar demographic to March 2012 meeting with some returning and some new folks.
- Interests/concerns expressed during introductions included:
    - Concerns about fire – particularly access to control fires should they occur (Leo indicated that fire risk in VT forests is generally currently low and that there has never been a fire on Scrag in his lifetime)
    - Use trails – like to walk dogs off-leash
    - Like seeing balance between active management and natural processes expressed in the plan
    - Value wildlife and wild places on the WSF
    - Want to see logging and active management return to the forest
    - Concern about ambiguity related to motorized vehicles – will snowmobiles be allowed? (Phil clarified that snowmobiling is currently prohibited in the plan since there isn't a suitable trail network or an organization that has expressed interest in taking responsibility for managing that recreational use. Could be an option in the future though if those things changed)
    - What's the definition of sustainable forestry? (provided in the plan under "forestry")
    - Climate change – should be addressed (additional comments and suggestions were provided as a follow up via email)
- General agreement that multiple uses are appropriate – although differences in opinion about what exactly that should look like.
- Generally a positive response to the CC's work and the plan.

Public Relations and Education

- Question = Is there a main contact to answer questions from the public? Answer = Yes, the CC will decide who that person is and post contact info. Suggestion = Send a mailing to folks in town sharing info about the forest, contact information etc. when that is available.

History

- Gibb has photos from 100 years ago of the Scrag mountainside – was cleared. He'll share these will the CC.

Recreation and Access

- There was some confusion over where the parking area will be at the end of Bowen Road – right or left side of the road? It is on the right side. Parking area is still being constructed, so this should be clearer when work is complete.
- Question = Will the bridge along the logging access hold log trucks or will trucks need to cross through the stream bed? Answer = The bridge should be able to hold the trucks.

- Question = How will the poor condition of the logging road on Kisiel's land be addressed? Answer = The CC will talk with the landowner and come up with a plan to improve and/or move the access as part of the Town's timber sale.

Wildlife

- Question = What was the result of the concern expressed about dogs having a negative impact on wildlife? Answer = The CC decided to allow dogs, but require that owners follow the Town's leash law. The clarification was made that dogs must be under physical or verbal control (CC will correct and clarify in the plan). Question = Will dogs be allowed within the Special Treatment Area? Concern expressed that this is an especially sensitive site. Answer = Yes, dogs will be allowed. Question = Could information educating dog owners about the negative impacts of dogs on wildlife be posted? Answer = Yes.
- Question = Are there any plans to plant trees, shrubs, or other plants that attract birds and wildlife (e.g. viburnum, serviceberry, apple etc.). Answer = No – the plan is to use forest management to favor and regenerate existing soft and hard mast trees with particular wildlife value, but perhaps there would be opportunities to plant in the future.

Forestry

- Question = Is the forest viewed as a money maker for the town? Answer = Revenue is a goal, but not at the expense of other values. Any revenues from timber harvesting are anticipated to be relatively modest and will be used to support the management of town land.
- Question = Who will make decisions about how riparian management zones are laid out since they are variable in width? Answer = A professional forester using the guidelines in the plan and referenced guides in consultation with the CC.
- There were some questions about how to interpret the statistics and information in the stewardship plan. These were clarified. Additional public education about how to interpret this technical document and the treatments prescribed in it will be needed.
- Question = What's the process the CC will go through to determine which trees will be cut as part of the harvest? Answer = A professional forester will be hired to act on behalf of the Town. S/he will select the trees to be cut based on the prescriptions and guidelines in the plan and mark them with paint. A logger will cut the marked trees.
- Question = Why wouldn't VT's heavy cut law be triggered by the planned harvest, since the area to be treated is greater than 50-60 acres? Answer = The heavy cut law only applies to clearcutting when all/most of the trees are removed; the treatments prescribed for Stands 1 and 3 will only remove a portion of the trees individually and in relatively small groups. The largest patch cuts will only be 2-3 acres.
- Question = How will the VLT forester be involved? Answer = S/he won't mark the trees, but will likely visit the site before, during, and/or after the harvest to consult and inspect.
- Question = Will there be access to patch cuts for bird watching and wildlife viewing, since these habitats are hotspots for wildlife? Answer = There may not be any maintained footpaths, but at a minimum the skid trail network will provide access.

X APPENDIX C: 2012 BIRD MONITORING RESULTS

X.1 MAY 18, 2012

Birders: Pat Folsom and Katie Woodruff
Scrag Town Forest, Washington, US-VT
May 18, 2012 8:00 AM - 12:00 PM
Protocol: Traveling
4.0 mile(s)
Comments: Estimated distance as 2 miles each way, maybe less than that.
21 species

Ruffed Grouse 3 Heard drumming at different elevations
Hairy Woodpecker 1 Heard only
Blue-headed Vireo 3
Red-eyed Vireo 6 Different elevations
Blue Jay 6
Black-capped Chickadee 6
Winter Wren 4 In the woods around the beaver ponds
Golden-crowned Kinglet 6 near beaver ponds, also lower on trail
Hermit Thrush 1 Above beaver ponds, singing and singing his haunting song
American Robin 4
Ovenbird 12 Everywhere, got a good look at one near the trail.
Black-and-white Warbler 2 Really good looks at one that landed on a branch in front of us
Common Yellowthroat 1 At beaver ponds
Magnolia Warbler 1 At beaver ponds
Black-throated Blue Warbler 8 All along the trail, mostly heard, but really good look at one bird.
Yellow-rumped Warbler 8 Several at different elevations
Black-throated Green Warbler 15 Everywhere!
Canada Warbler 6 We had to chase down this bird as its song was eluding us. Great views, then kept hearing them. Near the top of the climb
White-throated Sparrow 4 Singing and singing at beaver ponds and higher
Dark-eyed Junco 2
Scarlet Tanager 1 heard only, half-way up the mountain

X.2 JUNE 22, 2012

Birders: Pat Folsom and friends
Scrag Town Forest, Washington, US-VT
Jun 22, 2012 6:15 AM - 11:15 AM
Protocol: Traveling
5.0 mile(s)

Comments: Hiked to the beaver ponds, then to the cabin on top. Saw a bear between the falls and beaver ponds. Traveling north, got out of sight quickly when we spoke in loud voices.
30 species

Ruffed Grouse 5 Mom and 4 teens that flew
American Woodcock 1 Flushed near beaver ponds, not sure but saw one in the same spot earlier in the year.
Yellow-bellied Sapsucker 2
Downy Woodpecker 1
Blue-headed Vireo 1
Red-eyed Vireo 3
Blue Jay 4
Black-capped Chickadee 5
Red-breasted Nuthatch 2
Winter Wren 5
Golden-crowned Kinglet 2
Swainson's Thrush 1
Hermit Thrush 5
Wood Thrush 1
American Robin 1
Ovenbird 10
Black-and-white Warbler 2
Nashville Warbler 2
Common Yellowthroat 2
American Redstart 1
Magnolia Warbler 1
Blackburnian Warbler 3
Blackpoll Warbler 2
Black-throated Blue Warbler 5
Yellow-rumped Warbler 4
Black-throated Green Warbler 4
Canada Warbler 4
White-throated Sparrow 8
Dark-eyed Junco 6
Scarlet Tanager 1

X.3 JUNE 23, 2012 – PUBLIC WALK

Scrag Town Forest, Washington, US-VT
Jun 23, 2012 10:00 AM - 12:00 PM
Protocol: Traveling
1.0 mile(s)
Comments: Some people left early, especially when it got really steep.
17 species

Yellow-bellied Sapsucker 2
Red-eyed Vireo 4

Blue Jay 5
Black-capped Chickadee 2
Winter Wren 3
Veery 1
Hermit Thrush 2
American Robin 3
Ovenbird 5
Common Yellowthroat 3
Magnolia Warbler 1
Black-throated Blue Warbler 3
Yellow-rumped Warbler 3
Black-throated Green Warbler 4
Canada Warbler 1
White-throated Sparrow 6
Dark-eyed Junco 3

Scrag Town Forest - Public Access, Washington, US-VT Jun 23, 2012 8:45 AM - 10:00 AM
Protocol: Traveling
0.5 mile(s)
Comments: Lots of people showed up for the first public walk to town forest. Lots of great info given by Leo, Kristen.
11 species

Barred Owl 1
Yellow-bellied Sapsucker 2
Red-eyed Vireo 2
Red-breasted Nuthatch 1
Brown Creeper 1
Winter Wren 2
Hermit Thrush 5
Ovenbird 4
Black-throated Blue Warbler 2
Yellow-rumped Warbler 1
Scarlet Tanager 1

XI MAPS

ORTHOPHOTO MAP

TRAIL MAP

SOIL MAP

FOREST STAND MAP

PROTECTION ZONE MAP

FOREST BIRD HABITAT MAP

NATURAL COMMUNITIES MAP

HISTORIC VIEW – 1873

HISTORIC VIEW – 1962