



PROPERTY DESCRIPTION

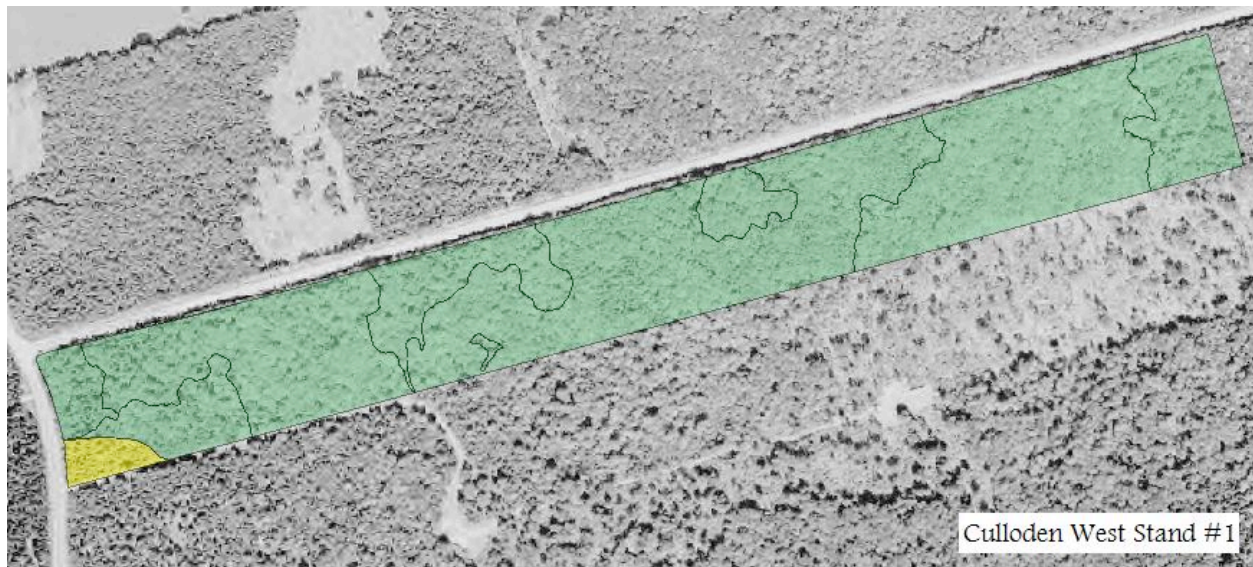
This property is long and narrow, running from west to east alongside the Culloden road in Queens County. The entire property has excellent road access as roads border the western and northern sides. The property has never been ploughed but over the years clear cuts and partial cuts have been made throughout. There are nine different stands, most of which have large amounts of balsam fir. Throughout the property you will find large eastern hemlock as well as yellow birch, white birch and some white spruce.

Special notes:

Many species of birds were seen and heard on the property including a barred owl. Signs of red squirrel, snowshoe hare and raccoon were identified during the survey and several wood frogs were sighted. This indicates that this property supports good wildlife activity. The property lacks

wildflowers and shrubs both in number and diversity of species. No garbage piles were discovered on the property.

STAND TREATMENTS



Stand #1 (0.26 ha): Located in the southwest corner of the property, this stand is mostly flat with a gentle slope down to the west. Stand #1 is the result of a small clear cut that regenerated in densely crowded balsam fir. Presently very little light reaches the forest floor but the trees are starting to lose their crowns.

Drainage: high **Watercourse:** no

Ploughed: no

Origin: clear cut

Dominant and codominant trees:

#1: balsam fir	80% of stand	age: 40	Diameter: 16.6cm	Ht: 13m
#2: white spruce	15% of stand	age: 40 - 50	Diameter: 14.4cm	Ht: 11.1m
#3: white birch	5% of stand	age: 30	Diameter: 15cm	Ht: 12.3m

Tree source: stump and root sprout: 0% seed: 100% plantation: 0%

Maturity class: over mature

Canopy description: tall and closed

Stocking: overstocked

Tree quality: low

Regeneration <5m: low #1: balsam fir Ht: 0.05m #2: white spruce Ht: 1m #3: red maple Ht: 0.01m #4: trembling aspen Ht: 0.2m

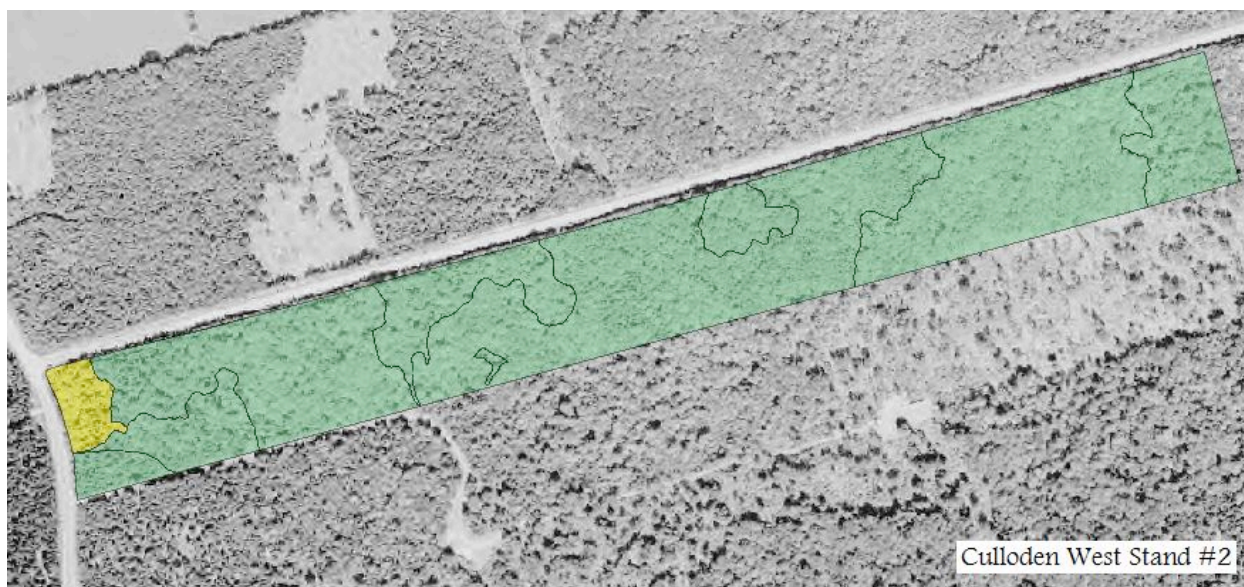
Other plant species: eastern hemlock, red spruce, wild raisin, blueberry, starflower, wild lily-of-the-valley, twinflower, bracken fern

Total % ground cover: 60% moss 0% shrub 5% flower 2% tree

Coarse woody debris: medium **# Snag trees:** low **Quality of snags:** low

Wildlife: raccoon scat, red squirrel, black capped chickadee, blue jay, hairy woodpecker

Treatment: Create three 10m diameter patch cuts. In these patch cuts plant sugar maple, striped maple, yellow birch, American beech, white pine, as well as shade tolerant shrubs to increase diversity, create food sources, provide habitat and to improve the future value of the stand.



Stand #2 (0.36 ha): Stand #2 is located in the northwest corner of the property. The stand is flat with a mix of deciduous and coniferous trees, ranging from 50 to 60 years old with some large white spruces 23 to 24 m tall. In the south of the stand is a large natural opening that contains white spruce and many snags. There is large amount of deadfall, particularly in the open patch.

Drainage: high

Watercourse: no

Ploughed: no

Origin: partial cut

Dominant and codominant trees:

#1: balsam fir 30% of stand age: 60 Diameter: 22.9cm Ht: 20m

#2: red maple 30% of stand age: 50 Diameter: 21.6cm Ht: 19m

#3: white spruce 20% of stand age: 90 Diameter: 32.2cm Ht: 23.7m

#4: white birch 20% of stand age: 50 Diameter: 21.5cm Ht: 20m

Tree source: stump and root sprout: 0% seed: 100% plantation: 0%

Maturity class: mature

Canopy description: tall and patchy with sidelight

Stocking: fully stocked

Tree quality: medium

Regeneration <5m: medium #1: balsam fir Ht: 0.5m #2: red maple Ht: 0.5m

Other plant species: trembling aspen, striped maple, red-berried elder, raspberry, bunchberry, blueberry, clintonia, wild lily-of-the-valley, twinflower, starflower, veronica, sarsaparilla, hawkweed, bedstraw, wood fern, bracken fern, lung lichen, old man's beard

Total % ground cover: 0% moss 0% shrub 40% flower 30% tree

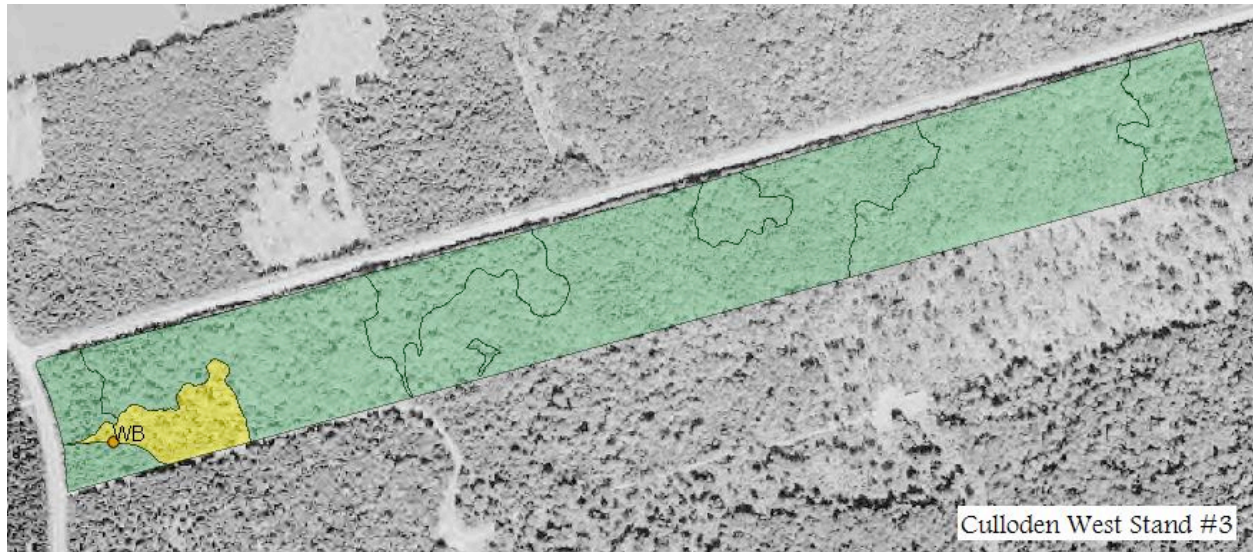
Coarse woody debris: high # **Snag trees:** high **Quality of snags:** medium

Wildlife: wood frog, red squirrel

Treatment:

Selectively harvest the largest white spruce, creating patches for planting with white pine, red oak, sugar maple, white ash as well as shade tolerant shrubs like witch hazel. Prune and release

any good quality red maple and white birch. Limb and drop deadfalls that are not in contact with the ground to speed their decomposition. Plant the natural opening with red oak, white ash, sugar maple, white pine, alternate leaf dogwood, beaked hazelnut, and witch hazel, which would greatly increase biodiversity in the stand.



Stand #3 (0.65 ha): This stand is located in the western half of the property with a slight slope down to the northwest. The stand is primarily composed of balsam fir with white birch and red maple as well. In the middle of the stand are some small natural openings. There is one very large white birch in the stand and is by far the oldest of the trees in the stand (See map Culloden West Stand #3).

Drainage: high **Watercourse:** no

Ploughed: no

Origin: partial cut

Dominant and codominant trees:

#1: balsam fir 70% of stand age: 40 Diameter: 14.8cm Ht: 14m

#2: white birch 20% of stand age: 35 Diameter: 15.9cm Ht: 14.5m

#3: red maple 10% of stand age: 35 Diameter: 14.4cm Ht: 15m

Tree source: stump and root sprout: 10% seed: 90% plantation: 0%

Maturity class: mature

Canopy description: tall, closed, and patchy

Stocking: fully stocked

Tree quality: medium

Regeneration <5m: medium #1: balsam fir Ht: 1m #2: red maple Ht: 0.2m #3: American beech Ht: 0.1m

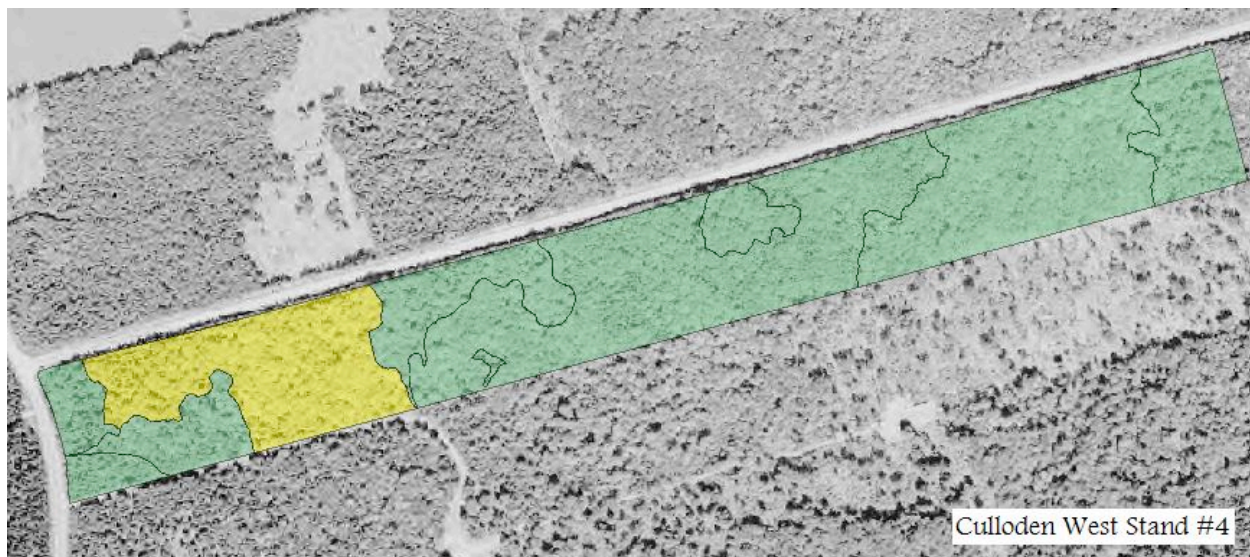
Other plant species: yellow birch, white spruce, serviceberry, wild currant, common elderberry, wild currant, wild raisin, common elderberry, clintonia, bunchberry, starflower, wild lily-of-the-valley, wood fern, bracken fern, lung lichen, Indian pipe

Total % ground cover: 10% moss 0% shrub 5% flower 5% tree

Coarse woody debris: medium # **Snag trees:** low **Quality of snags:** low

Wildlife: wood frog, black-capped chickadee, red squirrel

Treatment: Cut three patches in the densest balsam fir. Enlarge the natural openings. Plant both areas with white pine, eastern hemlock, sugar maple, alternate-leaf dogwood, beaked hazelnut, witch hazel and hobblebush.



Stand #4 (2.4 ha): This stand is relatively flat and well drained. It is a mixed wood stand with red maple as the dominant species. This stand originated from a partial cut resulting in red maple stump and rootsprouts and lots of balsam fir. There are natural openings in the stand with large numbers of wildflowers and red maple regeneration. A dozen large hemlock are scattered throughout the stand.

Drainage: high **Watercourse:** no

Ploughed: no

Origin: partial cut

Dominant and codominant trees:

#1: red maple	55% of stand	age: 50	Diameter: 23.2cm	Ht: 19.5m
#2: yellow birch	20% of stand	age: 50	Diameter: 21.3cm	Ht: 18.6m
#3: balsam fir	15% of stand	age: 50	Diameter: 19.2cm	Ht: 16.3m
#4: eastern hemlock	10% of stand	age: 200	Diameter: 61.5cm	Ht: 21m

Tree source: stump and root sprout: 30% seed: 70% plantation: 0%

Maturity class: mature

Canopy description: tall and patchy

Stocking: fully stocked

Tree quality: medium

Regeneration <5m: medium #1: balsam fir Ht: 1m #2: red maple Ht: 0.5m #3: yellow birch Ht: 0.1m

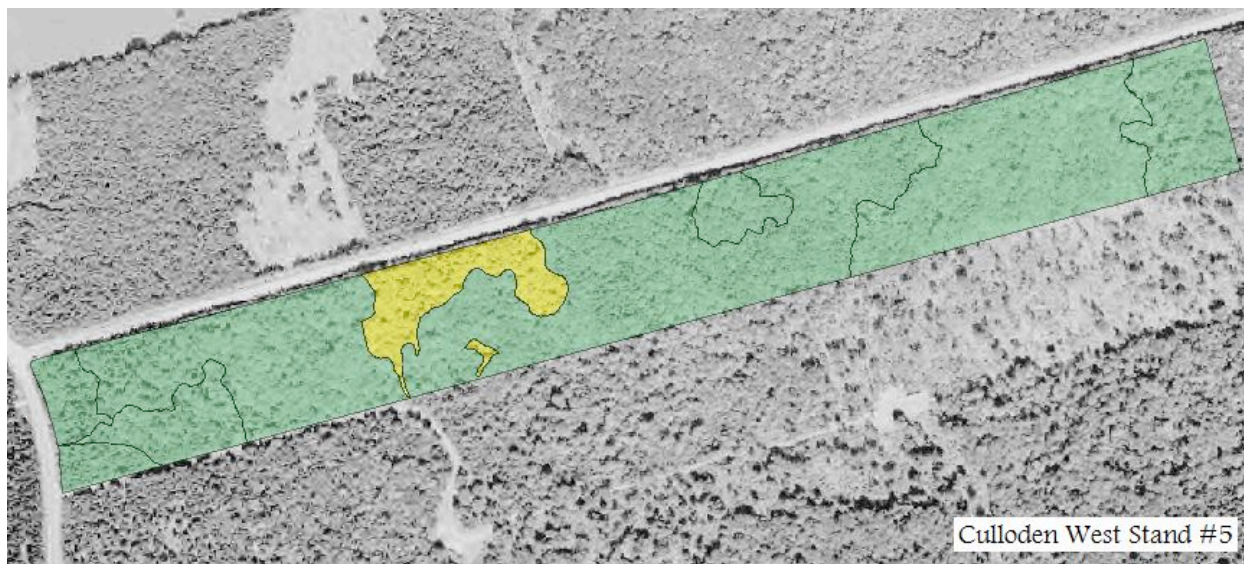
Other plant species: ground hemlock, red-berried elder, bunchberry, twinflower, clintonia, common lady's slipper, wild lily-of-the-valley, sarsaparilla, starflower, veronica, wood fern, beech fern, ground pine, lung lichen, old man's beard, Indian pipe

Total % ground cover: 5% moss 20% shrub 5% flower 5% tree

Coarse woody debris: high **# Snag trees:** medium **Quality of snags:** medium

Wildlife: red squirrel, black and white warbler, red breasted nuthatch, brown creeper, hairy woodpecker, ovenbird, black capped chickadee

Treatment: Selectively harvest red maple for fuel wood, removing the poorest quality trees first and thinning crowded and multi-stemmed trees. Create patches in the thickest areas of balsam fir. These patch cuts and the natural openings and should be planted with, white pine, red spruce, sugar maple, striped maple, American beech, red oak, alternate-leaved dogwood, beaked hazelnut, witch hazel and hobblebush. This stand offers an opportunity for direct seeding, either with red oak acorns or by using seed from clean American beech and striped maple growing in Stand #8.



Stand #5 (0.96 ha): This stand is located along the northern boundary and slopes down gently to the east. Old eastern hemlocks dominate the site, with red maple and yellow birch growing throughout. The stand has very little regeneration and seems to lack vigour. Located south of the main stand is a small boot-shaped area that stands alone.

Drainage: high

Watercourse: no

Ploughed: no

Origin: partial cut

Dominant and codominant trees:

#1: eastern hemlock 50% of stand age: 150-200 Diameter: 49.2cm Ht: 19.7m

#2: red maple 30% of stand age: 60 Diameter: 31cm Ht: 18.3m

#3: yellow birch 20% of stand age: 60 Diameter: 31.5cm Ht: 22m

Tree source: stump and root sprout: 0% seed: 100% plantation: 0%

Maturity class: mature

Canopy description: tall and closed with some side light.

Stocking: fully stocked

Tree quality: medium high

Regeneration <5m: low #1: red maple Ht: 0.3m

Other plant species: American beech, white birch, white pine, white spruce, balsam fir, ground hemlock, blueberry, clintonia, bunchberry, sarsaparilla, starflower, twinflower, wild lily-of-the-valley, common lady's slipper, painted trillium, wood fern, hay scented fern, lung lichen, old man's beard, Indian pipe, red-banded polypore

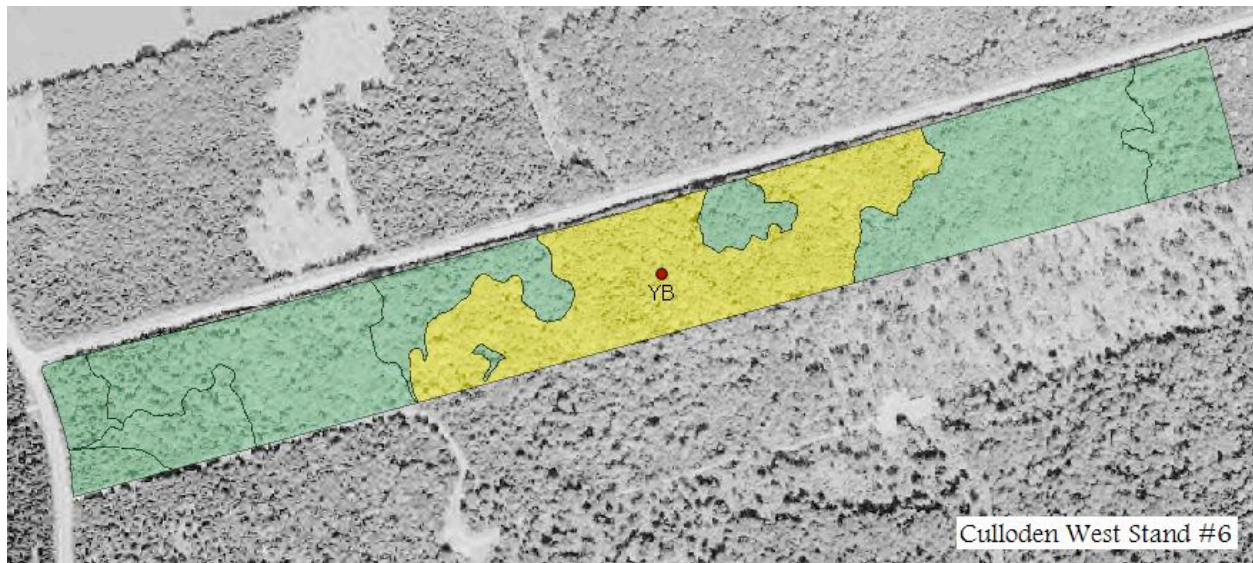
Total % ground cover: 5% moss 10% shrub 5% flower 5% tree

Coarse woody debris: medium high # **Snag trees:** medium **Quality of snags:** medium

Wildlife: red squirrels, black-capped chickadee, red-breasted nuthatch

Treatment: The stand seems to be in poor health. It may be a good place to do soil sampling to see if we can determine an obvious cause. Any harvesting of the eastern hemlock should be done

with the utmost care. A few poor quality trees could be removed for product and these openings planted with sugar maple, white pine and red spruce.



Stand #6 (4.26 ha): This large stand is located in the center of the property. Although the species composition changes throughout the stand, it is characterized by balsam fir as the dominant species with white and yellow birch as the codominant species. Walking from west to east, large eastern hemlocks give way to sugar maples. The stand contains many balsam fir snags.

Drainage: high **Watercourse:** no

Ploughed: no

Origin: partial cut

Dominant and codominant trees:

#1: balsam fir	35% of stand	age: 50-60	Diameter: 16.5cm	Ht: 15m
#2: white birch	20% of stand	age: 50	Diameter: 18.5cm	Ht: 19m
#3: yellow birch	20% of stand	age: 50	Diameter: 18.1cm	Ht: 18.5m
#4: red maple	15% of stand	age: 50	Diameter: 19.1cm	Ht: 18.2m

Tree source: stump and root sprout: 10% seed: 90% plantation: 0%

Maturity class: mature

Canopy description: Tall patchy

Stocking: fully stocked

Tree quality: medium low

Regeneration <5m: medium #1: balsam fir Ht: 0.2m #2: red maple Ht: 0.1m #3: striped maple Ht: 0.1m

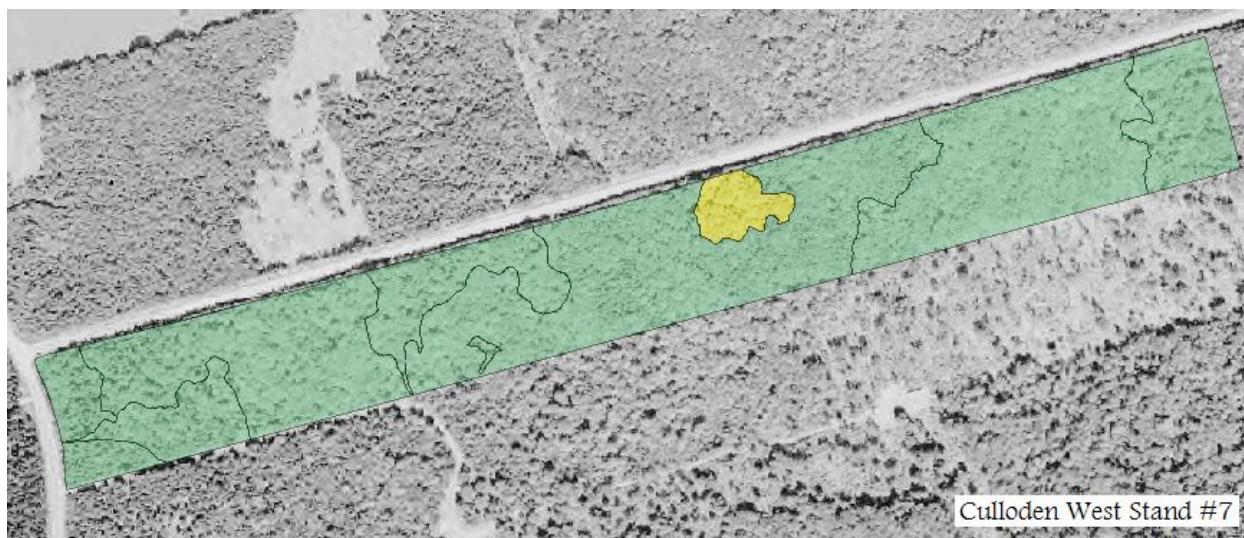
Other plant species: American beech, sugar maple, eastern hemlock, white spruce, pin cherry, ground hemlock, blueberry, bunchberry, prince's pine, twinflower, wild lily-of-the-valley, shinleaf, common lady's slipper, beech fern, wood fern, bracken fern, ground pine, running pine, lung lichen, old man's beard, Indian pipe

Total % ground cover: 10% moss 10% shrub 5% flower 5% tree

Coarse woody debris: high **# Snag trees:** high **Quality of snags:** medium

Wildlife: black-capped chickadee, blue jay, raven, red squirrel, American goldfinch, snowshoe hare scat, young ruffed grouse flushed from southern border line, sapsucker

Treatment: Selectively harvest the white birch and the poorest quality yellow birch. Red maple can be harvested for fuel wood. Create patch cuts in areas of dense balsam fir. These patch cuts should be planted with red spruce, white pine and ironwood. Shrubs and wildflowers should also be planted to add diversity and improve wildlife habitat including witch hazel, hobblebush, alternate-leaf dogwood, hairy sweet cicely, common yellow violet. The best location for the yellow violets is in the north-east section of the stand where the soil has more moisture.



Stand #7 (0.38 ha): This vigorous stand is located along the north boundary and is surrounded by Stand #6. The stand is primarily composed of good quality yellow and white birch with some red maple. Most trees are single stemmed and would benefit from pruning, thinning and releasing. With proper attention this stand will return high value in the future. Access to this stand is particularly good. A barred owl being mobbed by blue jays was observed in this stand.

Drainage: high **Watercourse:** no

Ploughed: no

Origin: clear cut

Dominant and codominant trees:

#1: yellow birch 55% of stand age: 40 Diameter: 19cm Ht: 17m

#2: white birch 30% of stand age: 40 Diameter: 21.3cm Ht: 18m

#3: red maple 10% of stand age: 40 Diameter: 19cm Ht: 18m

Tree source: stump and root sprout: 5% seed: 95% plantation: 0%

Maturity class: immature

Canopy description: tall and closed

Stocking: fully stocked

Tree quality: high

Regeneration <5m: medium #1: balsam fir Ht: 0.5m #2: red maple Ht: 0.1m #3: sugar maple Ht: 0.1m #4: striped maple Ht: 0.2m #5: trembling aspen Ht: 0.2m

Other plant species: American beech, eastern hemlock, balsam fir, wild raisin, prince's pine, wood fern, lung lichen, Indian pipe

Total % Ground Cover: 5% moss 0% shrub 0% flower 40% tree

Coarse woody debris: medium **# Snag trees:** medium **Quality of snags:** medium

Wildlife: hairy woodpecker, many blue jays, barred owl, wood frog, snowshoe hare scat, and an old fox den in a berm close to the road.

Treatment: Prune and release all potential crop trees. Underplant with 10 eastern hemlock, 10 red spruce, 10 ironwood and rare shrubs such as five hobblebush and five witch hazel. Yellow violet, Christmas fern and royal fern would also do well in this stand.

Stand #8 (2.78 ha): This stand is located near the eastern end of the property and slopes down gently to the southwest. The stand is primarily composed of American beech with some red maple and yellow birch. Most of the American beech are cankered. Balsam fir regeneration covers one third of the forest floor and there are several natural openings in the stand. There is one exceptionally large and beautiful eastern hemlock approximately 200 years old and one 14m striped maple with abundant seed.

Drainage: high **Watercourse:** no

Ploughed: no

Origin: partial cut

Dominant and codominant trees:

#1: American beech	35% of stand	age: 60+	Diameter: 23.7cm	Ht: 15.5m
#2: red maple	30% of stand	age: 40-50	Diameter: 19cm	Ht: 16m
#3: yellow birch	20% of stand	age: 50	Diameter: 21cm	Ht: 16m
#4: sugar maple	10% of stand	age: 40-50	Diameter: 17.8cm	Ht: 16m
#5: white birch	5% of stand	age: 40	Diameter: 18cm	Ht: 16.2m

Tree source: stump and root sprout: 0% seed: 100% plantation: 0%

Maturity class: mature

Canopy description: tall, patchy with lots of side light

Stocking: fully stocked

Tree quality: medium

Regeneration <5m: high #1: balsam fir Ht: 0.5m #2: red maple Ht: 0.1m #3: yellow birch Ht: 0.1 #4: American beech Ht: 0.1 #5: striped maple Ht: 0.1

Other plant species: striped maple, eastern hemlock, balsam fir, pin cherry, ground hemlock, blueberry, ground pine, starflower, twinflower, common lady's slipper, wild lily-of-the-valley, wood fern, lung lichen, old man's beard, beech drops, Indian pipe

Total % ground cover: 5% moss 5% shrub 10% flower 60% tree

Coarse woody debris: medium high **# Snag trees:** medium **Quality of snags:** medium

Wildlife: lots of bumble bees, black-capped chickadee, juvenile American robin, black and white warbler, female northern parula

Treatment: Create 15 to 20 patches by harvesting cankered beech and poorest quality red maple for fuelwood. These patches and the natural openings can be planted with eastern hemlock, white pine, red spruce, red oak, white ash, alternate-leaf dogwood, highbush cranberry, wild raisin, beaked hazelnut, witch hazel and hobblebush. These plantings will increase biodiversity, create food sources and improve wildlife habitat.

Stand #9 (0.96 ha): This stand is located at the eastern end of the property. It is relatively flat with a gentle slope down to the south. This crowded young stand is heavily dominated by small-diameter balsam fir, with some low quality yellow birch and red maple. There is a forest road near the southern edge of the stand that is over grown with balsam fir and other tree species.

Drainage: high **Watercourse:** no

Ploughed: no

Origin: partial cut

Dominant and codominant trees:

#1: balsam fir 55% of stand age: 30 Diameter: 13.4cm Ht: 12.5m

#2: yellow birch 20% of stand age: 30 Diameter: 10.2cm Ht: 13m

#3: red maple 15% of stand age: 30 Diameter: 11cm Ht: 13

Tree source: stump and root sprout: 15% seed: 85% plantation: 0%

Maturity class: mature

Canopy description: tall and closed

Stocking: overstocked

Tree quality: low

Regeneration <5m: low #1: red maple Ht: 0.1m #2: balsam fir Ht: 0.1m

Other plant species: American beech, white birch, gray birch, striped maple, pin cherry, ground hemlock, starflower, wild lily-of-the-valley, Indian pipe

Total % ground cover: 0% moss 0% shrub 0% flower 10% tree

Coarse woody debris: low # **Snag trees:** low **Quality of snags:** low

Wildlife: red squirrel gathering material for winter den

Treatment: Release and prune any trees of value. Remove balsam fir to create five patch cuts 10m in diameter, and plant with sugar maple, white pine, red spruce, alternate-leaf dogwood, American mountain ash, serviceberry, wild raisin, beaked hazelnut and highbush cranberry.

Priorities:

Restoration work should always be aimed at improving the overall health and value of the forest. On this property, there is an excess of balsam fir of all ages, the stands are generally young, many of the trees are of poor quality and the biodiversity is low. There are also areas where harvesting can be carried out for fuelwood and lumber, and other areas where pruning would be very beneficial to the future value of the woodland. The following are the initial areas that we will be working on:

- Create patch cuts in balsam fir and plant a variety of native species of trees, shrubs, wildflowers and ferns in Stands #1, #2, #3, #4 and #9.
- Underplant more shade tolerant trees and shrubs in Stands #5, #6 and #7 to increase diversity, create food sources and improve wildlife habitat.
- Harvest white spruce from Stand #2.
- In Stands #5 and #6, selectively harvest fuelwood and lumber.
- Prune and release young potential crop trees in all of the stands.

Additional comments: Direct seeding of red oak and witch hazel should be tested as an inexpensive and effective way to propagate these high-value and rare species.