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Mokoma Conservancy
c/o Charles Knight
357 Rock Ledge Road
Laporte, PA 18626

Mr. Knight,

I have enclosed two copies of the Forest Stewardship Plan update. I added one Google Earth map image of the property. The property lines shown are approximate locations. Also enclosed is a copy of my Statement of services for the update to the Mokoma Conservancy Management Plan.

Chad Gadsby approved the update to the Forest Stewardship plan yesterday.

The most obvious changes on the property, from my perspective are: the well marked and maintained hiking trail system; the growth of trees inside the deer fence; and the apparent dominant tree species now being Black Birch.

The following pages will describe changes within each unit, followed by recommendations for management activities directed toward accomplishing the original objectives of management:

1. To protect and improve the water quality of Conklin Run.
2. To restore to the forest diversity of plant and animal life.
3. To restore the road clearings to vegetation.
4. To create or improve existing trails for recreational uses.

The trail system work and vegetation on road clearings has been largely accomplished. Maintenance will be an ongoing duty.

Please let me know if you and the Directors have questions.

Sincerely,



Jim Roberts

2016 update

EXISTING CONDITIONS FOR UNIT: 1

History:

Forest Type:

Ecosystem Succession: Over the 11-year period since the original Forest Stewardship Plan was created, a significant growth of new tree stems now occupy most of the areas that were then void of trees. The overwhelming percentage of the new growth has been Black Birch and Beech. The new tree development has effectively dominated all other plant growth.

Most of the overstory trees from 11 years ago are still present, although many have died. Those still alive have developed larger crowns and are now able to produce more seed for regeneration process.

The reason for the increase of the Black birch component of growth is due to the profuse seed production of the species. That combined with fast growth rate and low preference as a deer browse, has resulted in much less than desirable percentages of tree species represented on the land. These characteristics of growth essentially create a forest of less plant diversity.

Beech, being a seed reproduced tree, as well as a root-sprouting source of new growth and being of and low browse preference, has crowded out much potential diversity of plant life as well.

Hayscented fern and slight numbers of Striped maple are present.

The above description of growth paints a difficult path to plant diversity, but the following paragraphs, provide a sure hope for a better forest in the future.

The area enclosed by deer fencing has a dense growth of sapling and small pole size trees. The majority of new tree species are Black birch, Fire cherry, Yellow birch, and Beech.

One area within the fence was treated with herbicide controls in 2014. That particular area, shown on the Google Earth map, now has what appears to be a majority of growth being Soft maple, Black Cherry, and Fire cherry. The number of these species per acre will likely result in the development of a new, valuable forest. Seedlings planted within this area are doing well and will add some tree species diversity. Red oak, White oak, Basswood and other species have been successfully introduced.

Other species of trees and shrubs that are now found growing inside the fence (without being planted) include Bigtooth aspen, Quaking aspen, and Elderberry.

Other species may not yet have been identified. This shows deer fencing to an important tool for re-establishing plant diversity.

Other areas not treated within the fence have mostly Black birch, Beech, Fire cherry, Yellow birch, and striped maple growth. The outer edges of the fencing have some Soft maple, and Black cherry saplings too.

Potential for Wildlife:

Forest Health: N/A

Site Quality: Good

Approximate age: N/A

Timber Quality:

Stocking: Black birch, Beech, Soft Maple, Yellow birch, Cherry, White pine, Hemlock. Mature tree diameters range from 8 to 20 inches in Diameter at breast height (DBH). The new growth ranges from seedling to 6 inches DBH.

Basal Area: 40 to 60 Square feet/acre mature trees.

Potential for Wildlife Habitat: Currently, there is good potential for Beechnut mast production. Minimal browse is present for food and wildlife cover. Improving the habitat will require establishing a more diverse mixture and structure of plants.

Potential for Recreational Uses: Sections of the new trail system pass through in several locations. Hunting sites.

Potential for Timber Growth: The ground is capable of growing a much better mixture of vegetation than what currently exists.

Water Quality Issues: Spring seeps must be avoided during management activities, and the trail systems need to be maintained. Any logging trails or work roads must be stabilized with long-term controls after and during use.

Important Natural Features: This unit comprises over 50% of the ownership.

PLANS FOR UNIT

Owner Objectives for the Unit: To protect and improve the water quality of Conklin Run and to restore diversity to the forest plant and animal life.

Recommendations: Contact the NRCS in Bradford County about funding for EQIP Program cost share funding.

Planned Activities:

More herbicide control of vegetation is desirable within the deer fence to create additional diversity of vegetation. Plant a variety of native tree species and shrubs within newly treated sections of the area.

For plant and animal diversity, plan for another deer fence construction. Herbicide applications and harvest operations may be necessary prior to construction. Plan for planting of a variety of native tree species and shrubs.

GENERAL RECOMMENDATION (OPTION) FOR ALL MANAGEMENT UNITS:

In light of the explosion of Black birch numbers in all management units, I suggest that mature Black birch trees capable of producing seed be harvested, cut, or killed with herbicide. This would be an ongoing process that hopefully will reduce long term cost control of the tree. Black birch will never be eliminated, but this may be helpful for future management of the plant communities on the land.

EXISTING CONDITIONS FOR UNIT: Unit 2

History:

Forest Type:

Ecosystem Succession: Black birch and Beech have increased in percentage of tree stems in the Unit, though not as much as in Unit 1. Black cherry seedlings and pole size trees have been able to develop in a few areas. Soft maple is minimally noticed in the new growth.

There are some well-developed seed trees within the western area, which may be better suited to help establish new growth of trees inside a deer fence.

Hayscented fern controls a wider percentage of ground cover resulting in suppressed growth of seedlings in some areas.

Potential for Wildlife: Diversity of tree and shrub species is minimal now. This area still attracts wildlife species as they seek food and cover. Many birds nest in the unit and water resources in and around each section naturally draw many species.

Forest Health: Trees are generally healthy, although the best and healthiest trees were harvested prior to acquisition of the land. There is a need for control of the black birch tree to slow the spread of the species on the property.

Site Quality: Good

Approximate age:

Timber Quality:

Stocking: Soft Maple, Beech, Black birch, Yellow birch, Black cherry, Hemlock. Most tree range form 6 to 18 inches DBH.

Basal Area: 40 to 80 square feet/acre

Potential for Wildlife Habitat:

Potential for Recreational Uses: The trail systems passes through in several locations. Hunting sites. Wildlife observation.

Potential for Timber Growth:

Water Quality Issues: Maintain shade in the riparian areas for cooler water temperatures.

Important Natural Features:

PLANS FOR UNIT

Owner Objectives for the Unit: To protect and improve the water quality of Conklin Run and to restore diversity to the forest plant and animal life.

Recommendations: Contact the NRCS in Bradford County about funding for EQIP projects.

Planned Activities:

Target the control of Black birch by harvest or herbicide/mechanical measures.

Consider construction of another deer fence in the western area of the unit. This will likely require herbicide application and harvest operations.

Plan for, and monitor, erosion control implementations for roads and trails used during and after logging events.

If fence is constructed, choose a variety of tree species and shrubs to plant for enhancement of the habitat.

Fencing may cause reroutes of existing trails. This may be an opportunity to investigate new trails.

2016 update

EXISTING CONDITIONS FOR UNIT: 3

History:

Forest Type:

Ecosystem Succession: The slow demise of the hemlock trees in the unit is perhaps the most serious change on the property. Approximately 50% of the evergreen cover and shade is gone from the Conklin Run location. Maintaining shade over a stream is important in maintaining high water quality by the cooling offered from shaded riparian zones.

The canopy over the stream bottom has deteriorated, allowing sunlight to reach the forest floor. The result affects not only the water, but provides the light necessary to grow other plants in the partial sun. Currently there are thousands of 1 or 2 year old seedlings, many of which are Black birch growing throughout the unit. Other seedlings include Soft maple, Beech, Hemlock, Striped maple, Serviceberry and Blueberry.

Hardwood trees are not showing any obvious signs or effect from the thinning Hemlock crowns as yet, however, as the Hemlocks die, the hardwoods may become more prone to windfall/blowdown occurrences.

The area extending northward is a stand of mostly hardwood trees with some scattered Hemlocks. There are a couple of areas of more dense Hemlock stands. These have not experienced as much defoliation as the trees over Conklin Run. Many seedling and sapling sized hardwoods and Hemlocks have developed in the mostly sunny location. Several Black cherry saplings are evident and are being crowded by other vegetation, namely Black birch.

The road system has been vegetated very nicely. The grasses and legumes will likely need occasional lime and fertilizer applications. Use precaution to not over fertilize and cause pollution of the intermittent stream and Conklin Run. There are some cross drainage waterbars that need some maintenance to direct water across the road in high volume precipitation storms.

Potential for Wildlife: These areas are certainly valuable to many wildlife species. Thermal cover and protection from storms as well as nest and perch/roosting locations are provided, and a water source for all species and habitat for amphibians, crustaceans, etc.

Forest Health: Hemlock demise.

Site Quality: Good

Approximate age:

Timber Quality:

Stocking: Hemlock, Soft maple, Yellow birch, beech. Tree diameters are ranging from 6 to 20 plus inches DBH

Basal Area: 140 square feet/acre.

Potential for Wildlife Habitat: Changing dynamics of the timber stand structure will harm some and benefit others. As Hemlocks die they will become more valuable to woodpeckers and cavity nesting birds. More ground cover will likely benefit birds such as the Woodcock, ground nesting bird species, and others.

Potential for Recreational Uses: The trails system passes through the Conklin Run location. Hunting sites. Bird seeing studies.

Potential for Timber Growth:

Water Quality Issues: Decrease in shade cover from the loss of Hemlock trees.

Important Natural Features:

PLANS FOR UNIT

Owner Objectives for the Unit:

To protect and improve the water quality of Conklin Run.
To restore to the forest diversity of plant and animal life.
To restore the road clearings to vegetation.

Recommendations: Contact the NRCS in Bradford County about EQIP funding for planting and water quality cost share funds.

Planned Activities:

Plant a mixture of evergreen species such as: Norway spruce has the capability of growing as large as the Hemlock tree. It also does well in wetter soils. Red spruce and Black spruce will also tolerate wetter sites. These trees may eventually provide a replacement of the Hemlock shade. Evergreen trees can be planted along all of the waterways on the property.

Form a work team that is able to mobilize to pull out seedlings along the waterways in the unit. The primary target is Black birch. If not feasible, the seedling control can be contracted.

Promote the growth of Blueberry and Serviceberry in the unit as well.

Release Black cherry seedlings along the road by cutting competing vegetation, namely Black birch and Striped maple away from them.

Maintain functional waterbars and erosion control measures on roads and trails.

2016 update

EXISTING CONDITIONS FOR UNIT: 4

History:

Forest Type: Mature timber with hardwood and Hemlock components.

Ecosystem Succession: This unit has perhaps the most mature stand of trees. It was obviously treated differently during the last harvest operation, prior to current ownership. The semi-open stand has a nice mixture of mature hardwood species and Hemlocks, combined with openings vegetated with native shrubs and seedlings/saplings of new hardwood and evergreen reproduction. New tree development includes Black cherry, Soft maple, Yellow birch and Black birch, Beech, Hemlock and White pine.

The riparian edge of the swamp is primarily a 50 to 75 foot wide stand of Hemlock/White pine of medium to large diameter stately evergreens. The Hemlocks are experiencing some crown thinning. Currently, there is little vegetation growing under the evergreen canopy, but hardwood seedlings are beginning to appear with increases of sunlight penetration.

Striped maple and Hayscented fern are present, and may need to be controlled at some point

Potential for Wildlife: This area may hold the most variety of wildlife species due to the interface of several habitat types.

Forest Health: Hemlocks have some Adelgid infestation.

Site Quality:

Approximate age:

Timber Quality:

Stocking: Soft maple, Hemlock, Beech, Yellow birch, Black cherry, White pine, Black birch, Black gum.

Basal Area: Hemlock/White pine is approximately 160 square feet/acre, while the hardwood component is approximately 65 square feet/acre.

Potential for Wildlife Habitat:

Potential for Recreational Uses: The Sand Run Trails offer some beautiful sights for those that enjoy hiking and observing the beauty offered by nature. Each season of the year will be a different hike! Wildlife observation and hunting will also be rewarding.

Potential for Timber Growth: The site is productive, but timber should not be the primary management goal.

Water Quality Issues:

Important Natural Features:

PLANS FOR UNIT

Owner Objectives for the Unit:

To protect and improve the water quality of Conklin Run.

To restore to the forest diversity of plant and animal life.

To restore the road clearings to vegetation.

Recommendations: Contact the NRCS in Bradford County about EQIP funding for planting and water quality cost share funds.

This unit should not prioritize timber management, rather the aesthetic, recreational, and habitat features that are present.

Planned Activities:

Plant a mixture of Norway spruce and Red spruce in the understory of the Hemlock/White pine riparian zone for future evergreen cover. Minimize the growth of Black birch and other hardwood seedlings in the area until the evergreens have dominant crown position.

As Hemlocks deteriorate, hikers will need to be aware of branches and trees that may fall. Warning signs may be necessary on several of the hiking trails.

To benefit shrub development and young tree growth, use mechanical and/or herbicide to control undesirable tree and brush growth. Species to control are primarily Black birch and Striped maple and any invasive plants that appear. An example of this practice is to release Black cherry saplings for continued growth by increasing growing space and sunlight penetration to the cherry, or other species, such as Blueberry.

2016 update

EXISTING CONDITIONS FOR UNIT: 5

History:

Forest Type:

Ecosystem Succession: This unit can effectively be looked at as two separate areas now: the north side and the south. The north has for the most part become covered with trees in the sapling/small pole size class. The clearing made for a future road and development, was likely more narrow on the north side of the access road. Black birch, Beech, and soft maple are now a thick stand of developing trees. Some blueberry bushes are also present.

The south end of the unit is still mostly covered with grasses sedges and reeds. Some Hayscented fern patches and moss are also noticeable. The tributary to Conklin Run passes through the south end a too. Shrub species include quite a bit of Blueberry bushes, Raspberry and Blackberry. Trees include Black birch, Soft maple, Beech, and Hemlock seedling/saplings along the wooded edges. If enough time is given, the strip will also be covered with trees.

Potential for Wildlife: As a clearing, the area presents an opportunity to develop and maintain some acres in shrub level vegetation. The strip already attracts wildlife for browse, soft mast, birds feeding on insects, water source, ground nesting, etc.

Forest Health: Good. Young developing forest or shrub stand.

Site Quality:

Approximate age: 15 years

Timber Quality:

Stocking

Basal Area:

Potential for Wildlife Habitat: Has good potential.

Potential for Recreational Uses: Wildlife observation. Hiking, Hunting.

Potential for Timber Growth:

Water Quality Issues: Tributary stream crosses through the unit.

Important Natural Features: Water course.

PLANS FOR UNIT

Owner Objectives for the Unit:

To protect and improve the water quality of Conklin Run.
To restore to the forest diversity of plant and animal life.
To restore the road clearings to vegetation.

Recommendations: Contact the NRCS in Bradford County about EQIP funding for planting and water quality cost share funds.

Planned Activities:

Determine whether to keep the unit in shrub or forest cover.

To keep the unit in shrubs, the hardwood trees must be prevented from encroaching into the strip. Herbicide may be the most effective method to employ. Maintenance of the shrub cover will require cutting or herbicide application of trees as they grow taller than the shrubs. Eventually the shrubs may be thick enough to minimize any tree cutting.

Plant any of the spruce species from the stream out 30 feet on both sides. Favor native shrub species as the intended crop for the unit. Planting a few trees known to produce soft mast, such as Black gum, Cucumber tree, and Sassafras along the edges of the clearing will boost food source for the area. Wire Fencing may be necessary to protect trees from deer browse damage.

Plant Hawthorne, Grey and Red stemmed dogwood, Maple leaf Viburnum, Serviceberry plants throughout.

