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BAYFIELD COUNTY FORESTRY & PARKS DEPARTMENT ANNUAL WORK PLAN

January 1 through December 31, 2017

The Bayfield County Forestry and Parks Department Work Plan for the 2017 calendar year gives direction and meaning to the Forestry and Parks budget, further defines and supplements the Comprehensive Fifteen Year Land Use Plan, and emphasizes current goals and needs of the County Forest, Parks and Trails Programs. This plan also complies with Chapter NR47 Wisconsin Administrative Rules for the administration of the County Forest Administrator Grant Program.

SUSTAINABLE TIMBER HARVEST

One of the primary missions of the Bayfield County Forestry and Parks Department (hereafter "Department") is to manage, conserve, and protect the natural resources of the county forest. Multiple use and sustainable forest management practices will be utilized to provide a wide variety of forest products and amenities for current and future generations. Sustainable forest management is commonly defined as meeting the forest resource needs and values of the present without compromising the similar necessities of future generations.

Wisconsin's county forests are governed under County Forest Law (s. 28.11) and were created to become working forests, with an emphasis on optimizing the production of forest products and maximizing public benefits. Below is the purpose statement as found in s. 28.11(1):

> *The purpose of this section is to provide the basis for a permanent program of county forests and to enable and encourage the planned development and management of the county forests for optimum production of forest products, together with recreational opportunities, wildlife, watershed protection and stabilization of stream flow, giving full recognition to the concept of multiple-use to assure maximum public benefits; to protect the public rights, interests and investments in such lands; and to compensate the counties for the public uses, benefits and privileges these lands provide; all in a manner which will provide a reasonable revenue to the towns in which such lands lie.*

Partnership with the DNR

In accordance with s. 28.11, the DNR oversees the county forest program. As per that partnership, the DNR provides an abundance of professional, technical and financial assistance to counties having lands entered in the county forest program. On the Bayfield Count Forest, the annual time commitment (time standards) allocated by the DNR to the county has been calculated at 3,395 hours and primarily includes, but is not limited to:

1. Establishment of timber sales. Roughly 20% to 25% of the annual sustainable harvest goal is accomplished by DNR foresters.
2. Forest reconnaissance (both compartment and stand updates).
3. Forest stand data entry (WisFIRS, see below) and maintenance.
4. Regeneration monitoring, both artificial and natural.
5. Timber stand improvements (TSI).
6. Timber sale administration.
7. Mechanical site preparation for natural regeneration.
8. Mechanical site preparation for artificial regeneration.
9. County forest road and trail construction and maintenance.
10. Road right of way and wildlife (game) opening mowing/maintenance.
11. Support from professional forest management specialists, including forest hydrologists, wildlife biologists, forest ecologists, forest health specialists, GIS specialists, etc.
12. Support, manage and administer the county forest group certifications, for both SFI and FSC (both forest certificates are administered by the DNR through a group format).
13. Assistance in the development and maintenance of the comprehensive land use and annual work plans.
14. Function as a catalyst for the transfer of technology and professional or scientific information, as well as providing opportunities for training or enhancement.
15. Financial support through various grants, aids and loans.

Forest Certification

The Bayfield County Forest is dual, third party certified (as part of the Wisconsin County Forest Program group certificates, as managed by the DNR). For the past ten plus years, the Department has maintained forest certificates with both SFI (Sustainable Forestry Initiative) and FSC (Forest Stewardship Council). The DNR maintains all aspects (administratively and financially) of both the SFI and FSC group certificates.

The standards, principles and/or strategic direction of each non-profit, independent forest certifying body are developed by their respective board members and staff, which include representation from conservation organizations, academia, tribal entities, family forest owners, private forest landowners, public forest landowners and the forest products industry. Each certifying organization is further structured into three sectors (SFI) or chambers (FSC), reflecting environmental, social and economic components. This diversity reflects the wide variety of interests in the forest management community.

As part of certification, the county forest management program is audited annually against the strict standards, guidelines and principles of each independent organization. To date, every year, Bayfield County has either met or exceeded each standard.

Maintaining forest certification isn't a mandate. The Department invites each certifying entity to analyze and scrutinize our management of the forest. We ask them to subject our forest management practices, plans and principles to their strict, rigid and dynamic internal standards, principles and guidelines. In a nutshell, their findings confirm what we already know: that the county forest is extremely well managed by professionals who are passionate about what they do. Maintaining one certificate, let alone two, is a significant commitment and demonstrates the county's desire to ensure the public that we have some of the best managed forests in the country.

In 2017, the Department will continue working with each independent certifying body, as well as the DNR, to ensure that the county forest is sustainably managed, not only to the standards and expectations of those auditing and overseeing the program, but also to the professional principles and values exhibited and demanded by all staff members within the Department.

Sustainable Harvest Goals

The Bayfield County Forest totals 171,993 acres, making it the fourth largest county forest in the state. Timber harvests are important for the economic well-being of Bayfield County, as well as for the health and vigor of the forest. One of the major objectives of timber management is to produce a perpetual sustained yield of forest products. In part, this is realized through the analysis and scheduling of forest stands for management and, ultimately, the development of sustainable annual and long term harvest goals. Implementation of sound, professionally recognized forest management and harvesting techniques is an essential part of the process.

Numerous criteria are analyzed when developing short and long term sustainable management goals. Existing reconnaissance data (as entered and compiled in WisFIRS, short for Wisconsin Forest Inventory and Reporting System, a data management application developed and maintained by the WDNR), along with thorough field inspections conducted by professional Bayfield County Forestry and Parks Department staff and DNR foresters, will be used to determine which stands are ready for treatment.

Short or long term adjustments to the management approaches or philosophies of specific forest types may also be incorporated in the goal development process. Such modifications may be needed as a means to address numerous challenges that eventually (or inevitably) arise over the course of managing a vast and diverse forested resource. Some of which include: addressing unbalanced age class distributions; the management direction of timber types where a large percentage of the acreage base is either at or approaching maturity; unpredicted or unexpected responses to previous silvicultural treatments; response to insect or disease outbreaks or other natural disasters i.e. wind storms; challenges regarding natural or artificial regeneration i.e. deer browse, invasive species control, etc; responses to research or other professional recommendations regarding the management approaches of specific forest types or communities.

In addition, the long term monitoring of stands that have previously received treatment is crucial in determining the success of past management practices. The results of previous management will also aid in the development and implementation of future prescriptions.

- The estimated 2017 sustainable harvest goal for the Bayfield County Forest is 5,030 acres. This represents a decrease of 30 acres (roughly 0.6%) when compared to the harvest goal for 2016.

As previously stated, numerous factors have the potential to influence the harvest goal for any given year. Below is a brief summary regarding the 2017 management approaches/issues/direction for the major timber types on the forest:

Jack Pine:

At nearly 12,500 acres, jack pine is the fifth largest timber type on the county forest. It's also a very young type, with over 55% of the acreage base established within the past 20 years and another 25% between 21 and 30 years ago (nearly 80% of the acreage base is less than 30 years old).

Jack pine exists in basically two areas on the forest, all within the Northwest Sands Ecological landscape. Roughly 2,500 acres exist on sandy soils in the northern parts of the county (mostly east of Valhalla – on the northeastern most fringe of the NW Sands) and 10,000 acres in the barrens areas located near Iron River and north of Barnes.

Most of the stands located in the pine barrens north of Barnes are part of the Barnes Barrens Management Area (currently at roughly 7,000 acres). This special management area was designated in 2012 with the goal of developing and maintaining critically important Pine Barrens habitat through the simultaneous management of jack pine and open/early successional barrens. Among other things, the Barrens Management plan defines operational parameters and guidelines that must be followed to achieve the desired future condition.

A few important objectives of the Barnes Barrens Management Plan are as follows:

- Delineate approximately 11,500 acres as a special management area on the Bayfield County Forest for the simultaneous management of timber products and the development and maintenance of early successional Open and Brush Prairie Pine Barrens habitat.
- Identify and delineate a "core" area and four management zones within the special management area.
- Each zone surrounds a roughly 1,000 acre, permanently open core area and ranges in size from roughly 2,500 to over 2,900 acres. The management zones are assigned a 12 year harvest interval (each zone is completely harvested over a period of 12 years). During the harvest interval, whenever possible, all stands within each zone will be harvested and seeded or planted exclusively to jack pine. From the time of harvest until the point when the jack pine regeneration is approximately 10 feet in height, stand characteristics will meet the criteria for Brush Prairie Barrens. Typically, suitable Brush Prairie habitat will exist for 10 to 15 years after harvest. The habitat created during this 10 to 15 year

window will serve as temporary or "surrogate barrens". Combined with the permanently open core, when fully established, between 3,500 to nearly 4,000 acres of prime barrens habitat will exist within this special management area.

- Develop a timetable for the systematic harvest and regeneration of timber in each designated management zone. When fully regulated, jack pine stands will be managed on roughly a 48 year rotation (as stated above, it will take about 12 years to manage each zone).
- Designate approximately 200 contiguous acres within each zone as Kirtland's Warbler Habitat Areas (KWHA). Reforest these areas to jack pine at densities that are conducive to creating suitable Kirtland's Warbler habitat. Currently, suitable habitat contains at least 1,200 stems per acre, combined with 1 to 5 unforested openings per acre. Openings should total approximately 25% of the stand and be evenly distributed (the first confirmed nesting and successful fledging of Kirtland's Warblers in Bayfield County occurred in the Barnes Barrens Management Area in 2016. All five nestlings successfully fledged).
- Some aspen, red pine and scrub oak will also exist within the Barrens, but the goal will be to regenerate jack pine whenever possible.
- Development of the Barrens will take some time, as the Department is still managing the results of previous management (with a diversity of species and age classes). However, the core area is on target to be fully established by at least 2035 (and probably much sooner). Once all stands are cleaned up and ready, the Department will begin the harvest of Zone 1, thus marking the beginning of the floating barrens.
- In the meantime, the Department will continue to monitor the effectiveness of the plan. As with any plan, amendments, alterations or modifications are expected. The Department will also continue to work with the DNR regarding the technical aspects of barrens development and maintenance.

In the jack pine type, for the past decade, the Department has made an attempt to carry mature stands on the landscape for as long as possible. This was done primarily to provide a relative even flow of annual harvest, as well as to maintain a level of mature jack pine on the forest (i.e. structural diversity).

However, currently, many stands are experiencing significant mortality, at levels equal to or exceeding 30%. The Department can no longer carry these mature stands without experiencing even greater losses of volume. A higher percentage of dead and dying trees also increases the risk of insect and/or disease outbreaks (as well as heavier fuel loads), which would potentially have a negative impact on other stands in the area. As a result, the short term objective is to manage all stands experiencing 30% or greater mortality within the next two years (a process that started in 2016).

In 2016, the focus was managing the targeted stands within the Barnes Barrens Management Area. In 2017, the focus will be on stands located outside the Barrens. Once the stands with the greatest amount of mortality have been managed, the Department will evaluate the remaining and plan accordingly. If the Department determines that other stands are rapidly deteriorating or otherwise need to be managed immediately, the goal for 2017 may be adjusted accordingly.

Once the management of the over mature stands is completed (by the end of 2017), it is anticipated that the vast majority of remaining mature jack pine will be managed within the next five to ten years (again, with an emphasis on carrying mature stands for as long as possible). Afterwards, it is anticipated that there will be a narrow window where significantly less jack pine will be managed, at least until the next larger age classes begin to reach maturity (generally between 50 to 60 years of age).

- The 2017 goal for jack pine will be broken into two parts: 281 acres located outside of the Barnes Barrens Management Area and 64 acres located inside the Barrens, for a total of 345 acres. This represents a slight decrease of 20 acres when compared to the total goal for 2016 (365 acres). The Department will also continue to manage stands located within the Barnes Barrens Management Area as outlined in the plan. Modifications to the plan may be necessary, depending on a stands response to treatment or the development of better direction, and will be addressed on a case by case basis.

Red Pine:

Red pine is the third largest timber type on the county forest, comprising a total of nearly 18,000 acres. Most of the acreage base is composed of plantations, but about 1,000 acres of natural stands exist. Natural stands tend to be much smaller in size (acreage) and widely scattered throughout the forest.

The general model for red pine management is fairly simple. Most of the management centers around stands of artificial origin (plantations). In plantations, once stands reach the stage in which they can be managed (typically around 30 years old), a timber sale is established. That harvest cycle is then repeated about every 10 years. Once a stand has been thinned about three times, harvest intervals tend to slow a bit, primarily contingent upon the growth response from previous treatments. At this point, harvest intervals can still be on a 10 year cycle, but more typically end up closer to every 12 to 15 years.

Depending on a variety of factors, including responses to previous treatments, presence of insects or disease, general management direction for the timber type, forest product development and markets, etc., the stand can be rotated anywhere between 70 and 120 years of age (a little earlier or later depending on the above mentioned factors).

Rotation typically involves prescribing a clearcut, in which all trees are removed (especially critical if re-establishing a red pine plantation, as older trees can be vectors for future insect or disease infestations). Natural stands are managed as well, with a focus on stands of higher density or those that have enough acreage for harvest. However, roughly 95% of the harvest goal is derived from the management of plantations.

- The 2017 goal for red pine is 915 acres (roughly 855 acres prescribed for thinning and 60 as regeneration). This represents a decrease of 20 acres (or about 2%) when compared to the goal for 2016 (935 acres).

Northern Hardwood:

In the northern hardwood type, prescriptions for existing stands have repeatedly conflicted with field observations. Previously, the standard prescription given to nearly all northern hardwood stands was un-even aged management (or a thinning), regardless of stand or site quality. Consequently, many stands over the past 20 years have been managed with un-even aged prescriptions (i.e. relatively light selective harvests which incorporate small gaps to facilitate new regeneration). Northern hardwood stands developing on drier (or wetter) sites of medium to medium-poor quality have generally not responded well to the traditional methods of management (or traditional thinking).

Through routine and regular regeneration monitoring, the Department is discovering that regeneration gaps (associated with traditional un-even aged management practices) are oftentimes dominated by ironwood, while the preferred species that do regenerate (i.e. maple, basswood, yellow birch, oak) are low in number, slow to develop/grow and/or repeatedly browsed by deer (which allows them to get quickly overtopped by undesirable species). Growth and development on the remaining stems is also largely poor and slow, with stands, in general, just not responding to the traditional practices. Additionally, it was discovered that previous treatments oftentimes didn't incorporate enough regeneration gaps (something the Department has remedied through the establishment of a systematic approach to gap design and placement).

The county forest contains nearly 20,000 acres of northern hardwoods (including stands typed as red maple), making this the second largest cover type on the forest (aspen being the largest). For the reasons previously stated, the Department is in the process of re-evaluating the management approach on all stands of northern hardwood, especially those developing on medium to medium poor quality sites. The Department is finding that more intensive or less traditional methods on these poorer quality sites, that utilize larger canopy gaps (or groups) or even aged practices, yield more favorable results.

One goal for 2017 is to continue updating all recon information in the northern hardwood type, with a focus on stand and site quality (both existing and potential) when developing future prescriptions. Results from previous management and subsequent regeneration monitoring will also aid in the development of future prescriptions. In the meantime, the 2017 goal for un-even aged management was decreased slightly and even-aged management increased slightly, as a temporary response to current observations and predicted future prescriptions.

Once all stands have been updated (again, the goal is to have that completed, or mostly completed, by the end of 2017), it is anticipated that many of those developing on poor to medium-poor quality sites will be managed with more intensive un-even aged or even-aged treatments, while stands on medium quality or better sites will continue to be managed with more traditional un-even aged prescriptions.

Whether traditional or more intensive, all regeneration gaps associated with all uneven-aged treatments will continue to be designed and applied systematically. The systematic approach to gap placement ensures that all gaps are of the appropriate size and evenly distributed throughout the stand. Systematic application also helps to ensure that prescribed stand level gap targets are

met (i.e. a typical prescription may have a goal of 10% to 20%, sometimes more, of the stand in gaps). Knowing the general gap size and total number installed makes it easy to determine stand level accomplishments. Flexibility is also part of the design, as gaps can be moved slightly or excluded altogether, depending on the overall goals of the prescription. Systematically installed gaps are also easy to re-locate, which is critical when performing routine monitoring or when needing to address issues/concerns regarding regeneration.

When utilizing un-even aged management methods on the poorer quality sites, whenever practical, larger gaps (or groups) will be incorporated with lighter thinning as an attempt to maintain structural integrity within the stand, develop a new age class (regeneration), increase species diversity (regeneration) and improve quality on the remaining/residual trees. Growth and development on poorer quality stands will be significantly less than similar treatments on better sites. It is anticipated that future re-entry into these stands may increase slightly. Traditional methods state that re-entry should be attainable every 10 to 20 years (depending on growth and response to previous treatment). Northern hardwood growth and development is typically much slower on sites of lesser quality. As a result, re-entry may be every 20 to 30 years.

- The 2017 goal for thinning or un-even aged management is 555 acres, which represents a slight decrease of 30 acres when compared to the goal for 2016. The 2017 goal for even aged management is 335 acres, which constitutes a slight increase of 15 acres when compared to the goal for 2016. The overall northern hardwood management goal for 2017 is 890 acres, which is nearly identical to the goal for 2016 (895 acres).

Red Oak:

The Department also recently completed the re-inventory of all mature stands of red oak on the forest. This was accomplished over the past few years, as an attempt to better capture management needs and priorities. As expected, the updating process has revealed a significant decrease in acres ready for, or otherwise in need of, a thin.

There is a little over 15,000 acres of the red oak type on the forest. Of that, nearly 90% is older than 75 years (nearly 13,500 acres). To drill down further, nearly 65% is 90 years of age or older (approximately 10,000 acres). In essence, the vast majority of red oak on the forest is either at or rapidly approaching maturity.

The rotation age for red oak is generally around 100 years of age (up to 120 years on higher quality sites and lower on poorer quality sites). At current status, the Department is faced with the potential task of addressing (regenerating) a large acreage base of mature red oak, basically all at the same time. That's neither practical, nor feasible. This is a prime example of where management goals sometimes need to be adjusted in order to better manage a resource.

The general management direction for red oak is to maintain the type (dominance), where practical, and spread out or distribute the regeneration phase as much as possible. It will vary by location, but, generally speaking, and barring any natural influences i.e. insects, disease, wind, drought, etc., the regeneration phase can be extended equally over the next 20 to 25 years. The process has already begun, as this issue was identified years ago (hence one of the reasons to update the type).

As a result, the overall goal for regeneration will be around 400 acres per year. This will provide better regulation of the red oak resource, yield a more uniform flow of forest products, generate a more even distribution of age classes over the landscape (which will also maintain structural diversity and produce more diverse wildlife habitat), and create a more balanced work load, both short and long term.

As part of the update process, stands were prioritized based on age, quality, species diversity (whether there was a significant component of over mature aspen or birch), previous management (if any), etc. Furthermore, stands were ranked based on the potential or likelihood of maintaining (regenerating) the red oak component. Red oak can be one of the most challenging timber types to regenerate on a good day. Understanding how these current stands were established (the stands we are managing today) can reveal some of the challenges we face today.

Most of the red oak stands we are managing today originated during the period of the last big cutover (early 1900's). Back then, stands were basically clearcut, with little (if any) regard to resource damage, best management practices for water quality (or anything for that matter) or slash control. Soil scarification was extensive, as was logging debris. Then the fires came. The result, extensively scarified sites, exposing a large percentage of bare mineral soil, with little to no competing vegetation, no mature overstory trees, and very little impact from animals that love to nibble on acorns or freshly regenerating seedlings i.e. deer or hare (there wasn't much for regulation back then and homesteaders needed to eat too).

Red oak, being a fire tolerant species, is built for this exact scenario. It needs relatively bare mineral soil, a good amount of sunlight, little competition from other tree species, and minimal predation or browse pressure. While the intensive fires killed much of the competing vegetation, it only knocked back the red oak. Carbs stored in the root system afforded it the luxury of rapidly developing after the fire. Newly germinating acorns were under ideal growing conditions and also quickly established. All new red oak seedlings rapidly and aggressively attained dominance, well before other tree species were able to re-establish. The result: a dense stand of red oak, oftentimes with only minor components of paper birch, aspen, red maple, white pine, red pine and, on better sites, sugar maple.

Fast forward to today. Much emphasis is placed on the suppression of wildfires with the goal of reducing or eliminating its potentially devastating impacts. While prescribed fire is fairly commonly used today as a management tool to facilitate the regeneration of oak, the scale and intensity of previous (historical) stand initiating fires will never be duplicated (and results of prescribed fires are oftentimes unreliable and difficult to predict). Deer numbers (and other seedling or acorn predators), by design, are currently much larger than 100 years ago and have the potential to completely wipe out any red oak regeneration attempt. Stands of oak are generally all the same age (either mature, between 90 to 100 years of age, or approaching maturity), meaning oak sprouting potential and acorn viability (both critically important in the development of new oak stands) will only continue to decrease. Current harvesting methods and management practices result in a lighter footprint on the landscape, meaning scarification isn't as intensive and mineral soil is less exposed.

Methods of regeneration have also evolved over time. All are geared towards manipulating light and competition. Silvicultural techniques such as shelterwood, seed tree and clearcut are all used in attempts to regenerate new stands of red oak. Some methods, like the shelterwood, leave a few more trees, equally distributed, on the landscape, with the goal of establishing and tending the new crop of trees before eventually removing most of the overstory (to release the advanced regeneration). Other methods, like the seed tree, leave fewer trees, still equally distributed on the landscape, with the goal of making more light and resources available for new seedlings. Seed tree methods also typically leave the remaining mature trees in place (meaning we don't come back in to remove them), thus reducing damage to newly developing and recruiting seedlings, which would inevitably occur during the removal of the overstory. Clearcut methods are the most intensive, often removing most of the overstory and heavily relying on the subsequent flush of regeneration to establish the next stand. Each method has its pros and cons and all are used on the forest when attempting to regenerate red oak, with the Department currently experiencing greater success with more intensive harvests.

Regardless of the regeneration method, other components required to successfully develop a new stand of red oak still need to be considered i.e. competition control, soil scarification, herbivory control, acorn dispersal and viability, and sprouting potential, etc. If competing vegetation is a concern, some stands are scarified with a dozer and straight blade in an attempt to knock back undesirable tree species and expose mineral soil. Anchor chains, salmon blades or other implements are also used as a means to scarify soil and reduce competing vegetation. Prescribed fire can also be used to control unwanted vegetation. Timing of acorn dispersal and quantity (and quality) of acorn production are also critical, but much more difficult to predict and control.

When determining where to invest additional inputs in the management of red oak, all of the above mentioned factors need to be considered, as does site quality and location. Some stands on higher quality sites will receive intense pressure from red and sugar maple. They also tend to occur on rugged locales, making it difficult to stage and maneuver heavy equipment (or administer a prescribed fire). Many of these stands may be better suited as moderate quality northern hardwoods i.e. more maple and less oak. Management direction in this scenario may be to thin lightly, incorporate large gaps or groups and allow the stand to naturally convert to northern hardwood, with a lesser component of oak.

On the other end of the spectrum, oak stands growing on lower quality sites tend to be associated with heavier components of aspen, birch and pine. Red oak growth and development is also typically poor. Managing these stands with a goal of increasing the component of aspen, birch or pine may be seriously considered.

In general, maintaining as much red oak as possible is a priority for the Department. However, a considerable amount of emphasis will be on sites of medium quality, where oak production and quality (or potential) is good, and additional inputs from the Department, if needed, are the most effective.

- The goal in 2017 will be to regenerate approximately 400 acres of red oak. Whenever possible (or practical), an emphasis will be placed on maintaining stands as red oak. In addition, approximately 160 acres will be thinned and 340 acres will receive an overstory

removal (harvesting most of the remaining overstory trees from a previous shelterwood prescription). Overstory removals will only occur if the Department has determined that the stand has successfully regenerated with desirable tree species.

Aspen:

At nearly 78,000 acres, aspen is, by far, the largest single cover type on the county forest (roughly 45% of the entire forest). Similar to the issue with red oak, a significant portion of the aspen type occurs within a relatively narrow age class window. Nearly 55% of the aspen type is between 25 and 45 years of age, with an additional 20% greater than 45 years old. Ultimately, to address the relatively large wave of aspen soon to reach maturity, the Department needs to make minor adjustments to the management approach for this type.

The management and regulation of the aspen type is pretty straight forward. Under ideal conditions, and assuming an equal distribution of age classes, the sustainable harvest goal for aspen is essentially calculated by dividing the total acreage by the rotation age. The rotation for aspen varies by location and site quality, but generally is between 50 and 55 years of age (sometimes longer on the highest quality sites or shorter on poorer sites). When considering just the raw numbers, if the average rotation age were around 52 years (and it is), the optimal sustainable harvest goal for aspen would be approximately 1,500 acres per year.

When calculating the long and short term sustainable management goals for the aspen type (as is done with all other forest types), all data is analyzed by location (IRMU – Integrated Resource Management Unit). Each unit (IRMU) represents a general area of the forest. Each area contains slightly different growing conditions and influences.

Current age class distributions, site quality, previous management (or stands excluded from management), recommended forester prescriptions, etc., are all weighted and analyzed when determining the harvest goal per unit. Current age class distributions are charted against desired distributions to determine if additional adjustments to the management strategies are needed. In some cases, like those we are experiencing now, the Department needs to enter some stands a little sooner (i.e. as early as 40 years old), in order to better distribute age classes on the landscape and avoid similar problems in the future.

In order to spread this narrow band out and realize a more evenly distributed condition of age classes, we need to harvest some stands sooner than normal. These adjustments will produce similar benefits as addressed in the red oak section, including a more regulated distribution of aspen on the landscape. When fully regulated (and when all stands excluded from future management are removed from consideration), the sustainable harvest goal for aspen will be about 1,400 acres per year.

- The 2017 sustainable harvest goal for aspen is 1,375 acres. This represents an increase of 35 acres when compared to the goal for 2016 and nearly 175 acres when compared to the goal for 2014. Again, the small increases are generally due to the Department addressing the large acreage band of relatively narrow age class distributions looming on the not so distant horizon.

It's worth noting that the aspen type, particularly trembling aspen, is predicted to be one of the more negatively impacted forested communities, when modelled against a potentially warming climate. With roughly 45% of the ownership comprised of the aspen type, that is a concern.

At greatest potential risk would be stands currently developing on sites of poor quality (where nutrients and/or moisture are most limited and trees are inherently stressed). Aspen developing on dry to very dry sites or sites that are overly wet, would be the most at risk. Another goal for 2017 will be to develop a process or direction to analyze stands most susceptible, if climate change models are correct, and flesh out future management strategies and goals.

Since predicted warming climate related impacts are expected to be decades away, any modifications to management would most likely occur well into the future (when the youngest stands approach maturity). Still, having the discussion now will allow us to be better prepared, especially if predictions hold true.

Total Sustainable Harvest Goal:

One of the objectives in managing the forest is to strive for a regulated, even flow of harvests, equally distributed over the landscape. However, sustainable harvest goals typically fluctuate slightly from year to year. Most fluctuations are explained by the irregular distribution of age classes over the entire forest and, subsequently, when they are ready for management.

Among other things, fluctuations are also a result of a change in management direction for individual timber types, responses to natural disturbances or other unforeseen natural events, a relatively poor response in growth from previous management, modifications in response to accomplishments from the previous year or land acquisition.

Table 1 displays the sustainable harvest goal (acres) per primary timber type for 2017 (again, during the season, the harvest goal may be adjusted for a variety of reasons, i.e. response to unanticipated natural events or significant changes in reconnaissance data or as otherwise stated above). The goal for 2016 is also included for comparison:

Table 1: Sustainable Harvest Goal (acres)

Timber Type	2016	2017
Aspen	1,340	1,375
Northern Hardwood	895	890
Red Oak	870	900
Paper Birch	30	30
Scrub Oak	255	215
Red Pine	935	915
Jack Pine	365	345
White Pine	90	90
Swamp Conifer	140	140
Swamp Hardwood	100	100
Fir/Spruce	40	30
Total	5,060	5,030

On the Bayfield County Forest, the primary annual differences in sustainable harvest goals are a result of a variety of factors, some of which include: improved reconnaissance information, a significant increase in the number of stands reaching management age (particularly in the aspen, red oak and red pine types), the inclusion of harvest goals for the swamp hardwood and swamp conifer timber types (types that were excluded from consideration in the past), adjustments in the management approaches of the aspen, red oak and northern hardwood timber types, and modifications as a result of stand level responses to previous treatments.

In 2015, the county purchased 1,855 acres of industrial forest lands with the assistance of the Knowles Nelson Stewardship grant. The county also included 747 acres of county owned, non-county forest lands, as a match. In total, 2,602 acres were added to the county forest program. These acres will naturally provide an increase in harvest levels, particularly in the red pine type.

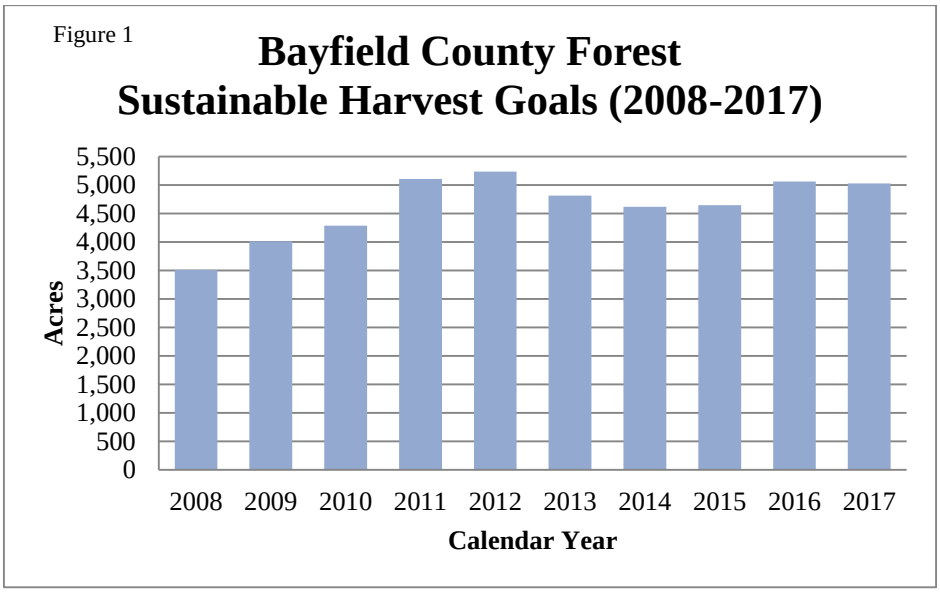
In 2016, the county purchased another 198 acres of land previously owned by the Wisconsin DNR. Over the past two years, the county has added 2,800 acres to the county forest. Much of this land has immediate management potential and will have a modest impact on short and long term sustainable harvest goals.

Over the past decade, the sustainable harvest goal has changed significantly. The peak harvest goal was in 2012, with a target of 5,238 acres. This was primarily due to the addition of numerous older, backlogged stands. Now that most of the backlogged stands have been managed, the annual sustainable harvest goal should hover between roughly 4,500 and 5,000 acres per year.

Since 2006, the sustainable harvest goal has increased by approximately 60%; from 3,134 acres to 5,030 acres in 2017.

Figure 1 displays the total sustainable harvest goals over the last ten years (since 2008).

Figure 1



Maximizing the sustainable management of the county forest was a primary goal heading into calendar year 2011. As displayed in Figure 1, the average sustainable harvest goal from 2011 through 2017 increased by over 1,250 acres per year, when compared to the average goals from 2006 through 2010.

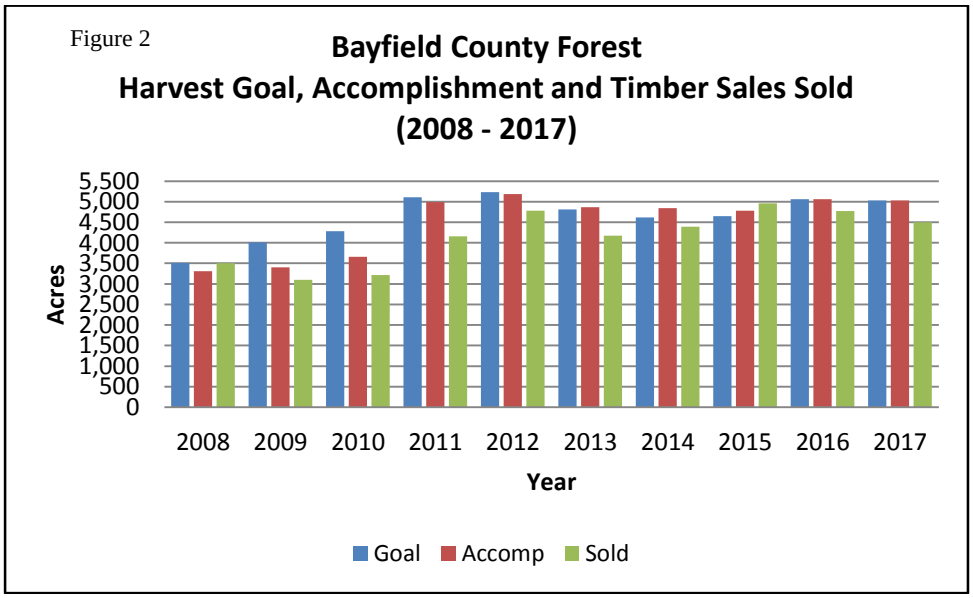
The significant increase in the sustainable harvest goal created a substantial increase in the amount of time required to successfully accomplish the goal. In addition, numerous other forest management responsibilities increased over the same time period creating a significant deficit in time required to accomplish both annual and long term goals.

To address the deficit, one full time forester position was added to the staff in early 2011. The impact of the additional forester was immediate (see Figures 2 and 3 below). A recreation forester position was created in 2013. Initially, roughly 20% of this position's workload was dedicated towards various forestry related activities.

However, as the recreational footprint of the Department and subsequent responsibilities have increased significantly over the past few years, the amount of time this position has to dedicate towards forestry activities is almost nil.

Figure 2 displays the annual sustainable harvest goal, accomplishment and sold timber sales from 2008 through 2017 (2016 and 2017 are estimates):

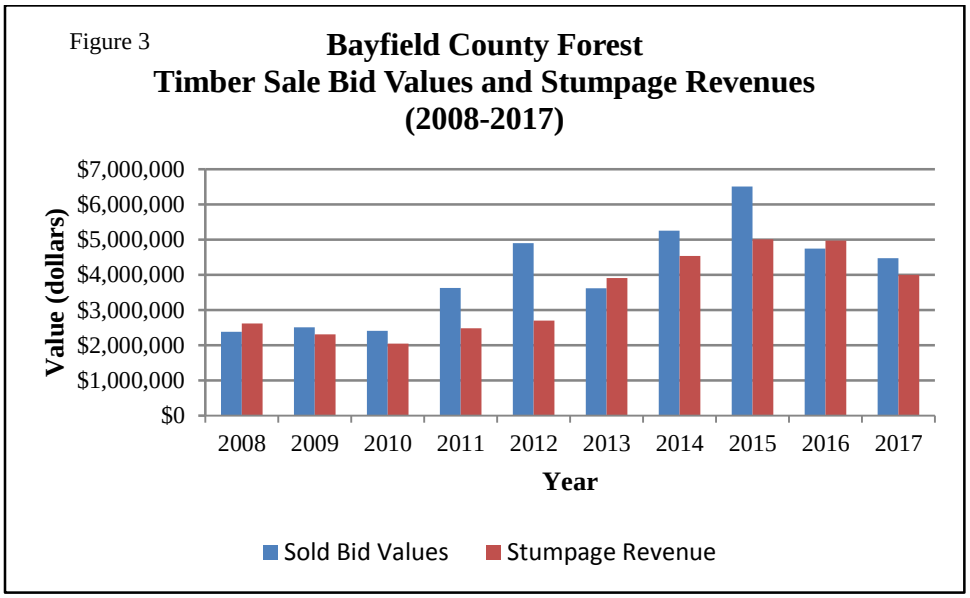
Figure 2



Prior to 2011, the Department averaged 45 timber sales, covering 3,044 acres per year. The average total winning bid value for those sales was approximately $2.36 million. Since 2011, the Department has averaged 57 sales, covering just over 4,500 acres. During that time, the average total winning bid values have more than doubled, from roughly $2.36 million to nearly $4.8 million. The total winning bid values in 2015 topped $6.5 million!

Figure 3 displays the total sold value of timber sales and actual revenues from stumpage (harvested timber) from 2008 through 2017 (2017 is a conservative estimate):

Figure 3



Bayfield County generated just over $5.0 million in total stumpage revenue in 2015 and will generate over $5.0 million again in 2016, a stark contrast to the average $2.285 million generated between 2007 and 2010.

Ten percent of the total stumpage revenues generated from the county forest are distributed to Townships that contain county forest land. Distribution is prorated and based solely upon the total amount (percentage) of acres located within each Town. In 2016, that total amount was just over $504,000 (based on a stumpage revenue stream of $5.04 million). Prior to 2013, towns received an average annual total payment of roughly $220,000. In addition to the mandated 10% stumpage payment, towns also receive an annual PILT payment (payment in lieu of taxes) from the state, at a rate of $0.30 per acre.

Maximizing the sustainable harvest of the forest has numerous benefits. Not only does it have the potential to significantly increase revenues, but it also supports numerous local jobs, fosters new job growth, provides additional recreational opportunities, provides exceptionally well managed products to local wood industries, improves forest health and productivity, protects water quality and creates/maintains a diversity of wildlife habitat.

<u>More Sustainable Harvest Information and Green Tree Retention</u>

During the timber sale establishment process, scheduled stands are examined to determine if they are indeed ready for management. Traditionally, some aren't, leading to approximately 10% of the sustainable harvest goal being removed from management consideration. In general, some stands either aren't ready for management, are typed incorrectly or are removed from future management consideration for another reason i.e. riparian/wetland protection, steep or inoperable

slopes, special, rare or unique features, etc. Stands that simply aren't ready for treatment are re-scheduled for future management. Stands that are used to protect wetlands and other riparian, sensitive, unique, or special features are permanently removed from future harvest consideration.

- After removing approximately 10% from harvest consideration, the long term net sustainable harvest goal (actual timber sale establishment) will range between roughly 4,000 to 4,500 acres per year. Based on the sustainable harvest goal for 2017, the expectation is that approximately 4,500 acres will be ready for management, which equates to about 2.6% of the forest. Over the long term, when only considering the net sustainable harvest goal, management will occur on roughly 2.3% to 2.6% of the forest per year.

Additionally, as part of the timber sale process, a representative portion of most stands are purposely left unmanaged, termed green tree retention (also called legacy tree, reserve tree, etc). This can be accomplished by leaving individual trees or small patches (remnants) of the previous stand or a combination of the two. Green tree retention can also be incorporated as part of other reasons to leave stands unmanaged i.e. BMP's for water quality, unique/special features or aesthetic considerations.

- The goal for green tree retention is to reserve roughly 3 to 10%, of the original stand area, as unmanaged, scattered individual trees or remnant small patches, on each timber sale.

However, due to the nature of some stands or forested communities, green tree retention is not always considered or feasible. For example, jack pine stands/barrens require intensive management to maintain. Remnants of older trees provide vectors for insect or disease outbreaks that can be devastating to newly developing stands. For that reason, green tree retention is not applied wherever threats to young regenerating stands exist (primarily jack or red pine) or when the regeneration of target species would otherwise be compromised.

The retention of reserve trees (or green tree) can provide numerous benefits, all of which ultimately contribute to the conservation of biological diversity. Among other benefits, these structures facilitate the perpetuation of some biota (plant and animal species and genotypes) on site. They can maintain landscape connectivity by enabling the movement of some organisms. Reserve trees also influence reorganization and recovery processes after a timber sale, as well as help to sustain functional roles and modify the post disturbance environment.

Green tree retention in stands that required significant amounts of riparian protection can add up to be substantially greater than the upper threshold of 10%. It's fairly common to see retention levels at 25% or greater in stands with heavy riparian protection measures. Finally, green tree retention really only applies to stands that are managed with more intensive even aged practices i.e. clearcutting, seed tree harvesting, etc. Stands that are thinned, already leave behind more trees than those that are harvested. Of the 2.3% to 2.6% of the forest that is managed over the course of a year, roughly 55% is managed with more intensive even aged harvests.

It's worth nothing that a substantial portion of the forest has already been removed from future timber management consideration. Roughly 11,000 acres, or about 6% of the forest, have been designated and removed from the scheduling process. The reasons for removal are numerous,

many of which having been previously mentioned, and primarily include: riparian/wetland protection; conservation of rare or unique landscapes (i.e. Glacial Kettles and Shultz Swamp); and protection of sensitive slopes (primarily in the clay plain).

It should also be noted that, regardless of market conditions or budget shortcomings (or anything for that matter), the sustainable harvest goals have never been, nor ever will be, artificially inflated or adjusted. Quite simply, it is what it is, all based on sound data and science.

Timber Sale Administration

Since 2011, the Department has sold an average of 57 new sales every year (covering about 4,500 acres per year). This number has ranged from a low of 53 sales in 2012 (though covering nearly 4,800 acres) to a high of 64 sales in 2016 (which also covered nearly 4,800 acres). Timber sales are sold on a two-year contract. Extensions may also be granted, which can extend a contract up to a period of four years (and, in some cases, longer).

Depending on the sale restrictions of the contract, markets, seasonal conditions, etc., a contractor can choose to go active on a timber sale at virtually any time throughout a given year. Once a timber sale goes active (actually slightly before), the Department immediately begins the administration process.

Timber sale administration is a critically important facet of any forest management program, as it serves to ensure field operations are in compliance with the contract and accomplishing the goals of the sale. On a routine and regular basis (from the start of the contract to the end), Department staff work directly with timber harvesting contractors on all facets of the sale, including, but not limiting to, timber sale contract review, harvesting parameters and restrictions, goals of the timber sale, road and skid trail layout, recreational concerns (if any present), Best Management Practices for Water Quality, monitoring of sale progress, tracking and scaling of harvested timber, etc. As part of the process, if any issues or concerns arise, they are dealt with promptly, as per the contract.

A total of 74 timber sales went active in 2016. Timber sale activity can last anywhere from a period of a few weeks to a few months to most of a year, depending on the size of the sale, harvesting restrictions, operating conditions and the general goals of the contractor. As of the end of CY 2016, the Department has 133 timber sales under contract, with a total contract value of nearly $12.0 million. During any point in the year, anywhere from around 10 to upwards of 20, or more, timber sales can be active at one time.

The Assistant Administrator assumes the lead role in the administration of all active timber sales. When activity ramps up, Department foresters and the DNR will provide some assistance.

FOREST INVENTORY

Correct, up-to-date stand information is imperative in the development of accurate short and long term sustainable harvest goals. There is a direct correlation between the quality and accuracy of the reconnaissance data and the ability for forest managers to confidently develop precise short

and long term sustainable harvest goals. The accuracy of any sustainable harvest goal is only as good as the data from which it was derived. Therefore, it is important to update a certain level of stand information on an annual basis.

Table 2 summarizes the inventory goal (compartment and stands) and actual accomplishments since 2008:

Table 2: Bayfield County Forest Inventory (acres)

Year	Goal	Accomplishment
2008	17,000	9,807
2009	10,000	2,872
2010	10,000	4,079
2011	10,000	9,728
2012	10,000	8,135
2013	10,000	9,316
2014	10,000	8,552
2015	12,500	16,868
2016	12,500	10,000
2017	12,500	12,500
Average	11,450	9,186

Starting in 2014, the Department focused on updating select individual cover types rather than entire compartments, though a few compartments were still updated. In 2014, the two major cover types targeted for update were mature stands of red oak and mature stands of jack pine. The goal of re-inventory was to develop a system to better prioritize the future management of these two types.

In 2015 and 2016, the target species was the remaining stands of mature red oak (and developing strategies/plans for northern hardwood), for similar reasons. In total, approximately 2,600 acres of mature jack pine was re-inventoried in 2014 and approximately 9,000 acres of red oak (all mature stands) were re-inventoried between late 2014 and early 2016.

In 2017, the focus will be acquiring better information on stands of northern hardwood. One of the goals will be to develop accurate prescriptions that will incorporate growth potential based, in part, upon site or habitat quality.

Site quality, and, subsequently, stand quality are highly variable within the northern hardwood type. As previously stated, the prescription applied to nearly every stand, by default, has been all-aged management (individual tree selection). While this prescription is preferred over much of the cover type, it is not sustainable on many of the low end moderate, and nearly all of the poor quality sites. The goal of northern hardwood re-inventory is to better capture site and stand quality as part of the silvicultural prescription.

Once the re-inventory is complete, it is anticipated that the total acreage slated for all-aged management will decrease slightly, with a small increase in even-aged management (especially on the poor to moderately poor quality sites). However, the use of group selection as an alternative to the traditional individual tree selection method may be applied on moderate to poor

quality sites. This will maintain a more uneven-aged structure and allow mature stands to perpetuate on the landscape (and maintain structural diversity).

- The total update goal for 2017 will remain 12,500 acres. Of that, roughly 3,000 acres will be in the form of a compartment update. The rest will be in the form of northern hardwood stand updates. Since 2001, 185 of 202 compartments, totaling over 151,000 acres have been updated. The goal is to re-inventory the remaining 17 compartments over the next 4 years. Once completed, it will put the Department on pace to achieve the 15 year re-inventory goal. At which time, a 15 year, modified re-inventory cycle will be implemented.

When updating entire compartments, priorities will be placed on those that contain a larger percentage of old data (≥20 years old), as well as compartments that contain a larger percentage of stands prescribed for management in the near future.

REFORESTATION

Reforestation, be it natural or artificial, is a core building block of forest sustainability and a fundamental component of any forest management program.

A successful reforestation program provides numerous benefits, some of which include: the restoration of forest productivity, fertility and environmental function; the assurance of a perpetual, sustainable supply of forest resources and amenities for future generations; the protection of soil and water quality; and the establishment and development of quality wildlife habitat.

Table 3 summarizes the reforestation efforts that are planned for 2017:

Table 3: Bayfield County Forest Reforestation Program Summary 2008 - 2017 (acres)

Year	Planting				Seeding	Site Preparation				Maintenance			Monitoring
	Red Pine	Jack Pine	White Pine	Other[1]	Jack Pine	Trench	Fire Plow	Scarify	Spray	Fire	Spray	Bud Cap	Regen
2008	378	207	24	0	0	796	88	0	442	0	0	0	1,683
2009	487	415	0	0	0	726	72	0	348	40	0	0	2,652
2010	367	196	0	0	0	363	118	0	420	42	305	0	2,183
2011	319	153	35	68	0	900	88	0	186	21	324	0	1,424
2012	295	107	274	0	0	0	177	120	727	32	609	0	2,736
2013	281	174	92	0	558	264	0	40	0	0	449	239	2,522
2014	0	0	0	0	0	503	20	115	264	0	273	239	2,929
2015	62	0	129	0	202	717	0	99	634	0	0	239	2,337
2016[2]	334	39	0	0	393	450	0	100	496	0	230	209	2,500
2017	44	0	0	0	460	250	0	300	570	0	180	132	3,000
Avg.	257	129	55	7	161	497	56	77	409	14	237	106	2,397

[1] *In 2011, tamarack and white spruce.*

[2] *Estimates.*

Spring Planting

The planting program has changed significantly since 2013. Between 2008 and 2013, an average of 350 acres of red pine, 210 acres of jack pine and 70 acres of white pine were planted every year. Since 2013, the average has been 110 acres of red pine, 10 acres of jack pine and 30 acres

of white pine. In addition, prior to 2013, 0 acres of jack pine was artificially seeded. From 2013 through 2017, an average of nearly 330 acres of jack pine has been seeded per year.

The primary reasons for the changes in the reforestation program (planting and seeding) are as follows: 1) re-planting of the old fuel break areas has been completed. The last remaining 144 acres was seeded to jack pine in 2016; 2) a general lack of previously open areas, which, in the past, were planted to red pine; 3) a lack of mature red pine stands that are ready for regeneration; 4) movement towards primarily jack pine regeneration in the Barnes Barrens Management Area; 5) an emphasis on seeding when attempting to regenerate jack pine; 6) much of the acreage planted during the early 2000's was in direct response to severe defoliation and subsequent mortality related to an outbreak of jack pine bud worm.

As mentioned above, one direction over the past decade plus was to reforest some of the previously established fuel breaks. The breaks were/are located in the barrens area, south of Iron River and north of Barnes. These breaks were approximately ¼ mile wide by a few miles long and were maintained in a grass state. In theory, the breaks would provide a first level of defense if an intensive wild fire were to occur. Portions of the break still exist near the Potawatomi sub-division, but a majority of the breaks have been reforested.

In total, roughly 1,300 acres of old fuel break have been reforested, primarily to red pine, but also some jack pine. Approximately 350 acres still exist near the sub-division. As part of the local wildfire mitigation plan, the Department now incorporates wider harvest corridors along road rights of way in an attempt to increase the defensible space (the goal is to maintain a grass or fuel free zone at least 50 feet in width on each side of a road corridor). Also, an additional fuel break road (averaging 100 feet in width) was established between Barnes and Weldon roads, to provide another level of defense in an area where some private development exists.

In 2016, 334 acres were planted with containerized red pine stock, which also included 131 acres that were re-planted (routine monitoring revealed survival counts lower than target levels – so sites were re-planted). Also, 39 acres were planted with containerized jack pine stock.

In 2017, approximately 44 acres will be planted with containerized red pine, with a total of approximately 35,000 seedlings (planted at a rate of roughly 800 seedlings per acre).

In the future, the general expectation is that red pine plantings will hover between 100 and 200 acres or less per year, while white pine under plantings will vary, depending on the availability of suitable sites. We will continue to analyze red pine to determine if there is a need to begin regeneration harvests sooner, in an attempt to evenly distribute age classes over the landscape. If so, annual harvests, and subsequent reforestation levels, would be adjusted accordingly.

Spring Seeding

The seeding program also changed significantly over the past few years. Before 2013, the Department had generally moved away from artificial seeding. Starting in 2013, the Department began implementing objectives that were developed in the Barnes Barrens Management Plan. Among other things, the plan identifies a preference to regenerate a jack pine dominated

landscape (within the Barrens area), with artificial seeding as the preferred reforestation method. Seeding is preferred primarily because of the potential to create a more naturally regenerating landscape.

Before a site is seeded it needs to be mechanically prepped and usually sprayed. This provides a better seedbed for the delicate jack pine seed to germinate and develop. Also, there needs to be enough acres available before local contractors are interested in the work. Many of the acres that were trenched in 2015 were also sprayed in 2016. These sites would then be seeded in 2017.

The timing of timber harvests also has a direct impact on how many acres will be available for reforestation. As previously stated, timber sales are sold under two year contracts. The contractor can request up to two - one year extensions (meaning it can take up to four years to complete the sale).

In 2017, approximately 460 acres will be seeded with jack pine, using about 115 pounds of seed (seeded at a rate of roughly 4 ounces per acre).

Site Preparation

In 2017, approximately 250 acres are planned for site preparation via power trenching, 570 acres will be treated with chemical and 0 acres will be fire plowed. Site preparation goals reflect the amount of known sales that have been completed within the past year (and are in need of site prep). Occasionally, other timber sales are finished in time for addition to site prep goals. When that happens, the goal is adjusted accordingly, as budgets allow.

In addition, approximately 300 acres of red oak, paper birch and/or northern hardwoods will be scarified, usually with a dozer and straight blade. Scarification will facilitate the natural regeneration of red oak and paper birch, as well as reduce competition from non-desirable species, such as ironwood and, in some stands, red maple. Much of this work is accomplished by DNR staff, with DNR equipment. If fire plow sites become available in 2017, there may be some additional acres treated, again, as budgets allow.

Release

The spraying (release) of young red pine plantations is treated on an as needed basis. Occasionally, young plantations need treatment in order to release seedlings from undesirable vegetative competition. This release can significantly increase seedling growth and improve the rate of survival. In 2017, approximately 180 acres of young red pine plantations may be aerial sprayed to release the conifers from competition. These stands will be monitored once again in the spring before determining if release is required. Similarly, a few stands may be added if determined to be in need of treatment.

The prescribed burn program, for the regeneration and/or maintenance of specific timber types (typically red oak), is still under review to gauge the effectiveness of fire. As a result, 0 acres will be burned in 2017, though the DNR still maintains portions of the fuel break via prescribed fire. Currently, roughly 125 acres of existing fuel break is scheduled for maintenance via

prescribed fire. This work is accomplished by the DNR with DNR staff and equipment. Department staff may provide some assistance with prescribed burning.

Timber stand improvement (or TSI) may also be prescribed on regenerating stands in need of maintenance. In 2017, 0 acres are scheduled for TSI (which typically involve chain or brush saws to remove undesirable trees). However, stands of red oak, northern hardwood, paper birch or others in need of maintenance, may be considered, as conditions and budgets allow.

In the future, it is anticipated that some form of TSI will be required to improve the growth potential and survival of desired regeneration in many previously managed hardwood stands i.e. northern hardwoods, red oak, birch, etc., as well as some conifer stands (primarily white pine under plantings). Internally, time is a limiting factor, as mechanical hand release is very labor intensive. The Department may need to develop TSI contracts to manage the anticipated workload.

Seedling Protection

Starting in 2013, the Department used bud caps to protect young jack pine seedlings from browsing by white tailed deer. In total, 239 acres were bud capped. This literally involves stapling a 3"x 3" piece of copy paper over the terminal bud/leader of each planted seedling. The reason: plantation monitoring in this area has shown signs of excessive deer browsing. Failure to protect the seedlings could lead to plantation failure. Bud capping would need to be repeated every year until the seedlings are beyond the reach of the deer, which typically takes 3 or 4 years. Currently, the focus is on stands that are planted with containerized jack pine (as these seedlings are a little more nutrient rich when compared to bare root stock or natural regeneration).

These same stands were capped in 2014 and 2015. One stand reached the desired height and was removed from capping in 2016. A few more have attained the desired height conditions and will be removed in 2017. The goal for 2017 will be 132 acres. Because most of the jack pine in the future will be regenerated via seed, bud capping will most likely only be used when absolutely necessary, and mostly on jack pine stands that were planted with containerized stock.

The Department also maintains two large scale deer exclusion fences on the forest. Both were constructed with eight foot tall, high tensile woven wire. A 29 acre exclusion is located south of Oulu and was installed during the spring of 2007. While a 50 acre exclusion is located south of Cable and was installed during the fall of 2008. Both fences were constructed on stands being actively managed for red oak. Both locations are routinely monitored to study the growth and development of regeneration and to better understand the potential influences of browsing by deer.

Both fence locations have also been recently harvested, where the overstory was removed to allow established regeneration to recruit. Each site will continue to be monitored to evaluate the effectiveness of the fence. The fences will also be maintained throughout this process, with the goal of eventual removal once seedlings have established and attainted dominance.

A few smaller scale fences (less than ¼ acre in size) have also been constructed on the forest. These are much smaller in size, but still intended to monitor the impacts of excessive browsing by white tailed deer. As we monitor regeneration in stands of northern hardwoods (and red oak), small exclusion fencing may also be installed around canopy gaps as a way to monitor regeneration and potential browsing impacts. This will occur as time and budgets allow.

Natural Regeneration

The majority of stands managed by the Department regenerate naturally i.e. they do not require site preparation, planting or seeding in the reforestation process. In 2017, thousands of acres, across a variety of forest types, will be naturally regenerated. The exact amount is solely dependent on the total number of acres harvested in previous years.

Forest types such as northern hardwoods and aspen regenerate naturally via seed, stump sprouting and/or coppicing (vegetative sprouting from existing root system) and require very little additional input from the Department. However, the natural regeneration of hardwood forest types such as red oak and paper birch often require additional Departmental maintenance efforts.

As stated numerous times above, natural regeneration monitoring is also revealing excessive ironwood competition in stands of northern hardwoods. These stands may require additional inputs from the Department in order to achieve the desired future stand condition.

Examples of additional inputs to aid in the natural regeneration process include: pre or post sale site scarification to prepare a favorable seed bed and reduce competition, pre or post sale burning or timber stand improvement (TSI) to reduce competition from undesirable tree seedlings and/or prepare favorable seedbeds, and deer browse protection i.e. fencing, repellents, etc. to improve the tree seedlings chance of survival. These additional inputs occur when issues or opportunities arise and are treated on a case by case basis.

Seedling Counts

All planted and seeded sites and many areas that were regenerated naturally require survival or regeneration counts. Data collected from the counts are used to determine stocking levels of desired tree species and, ultimately, to evaluate the success of the reforestation activity.

Seedling counts are generally administered at one, two, three, five and ten years after the regeneration activity on most planted and seeded sites. Seedling counts on naturally regenerating hardwood stands are typically administered two to four years after harvest (depending on the forest type) and also include one to two additional surveys to determine success. Some stands may receive additional monitoring after 10 years of age, especially if issues are discovered or if stands aren't responding to treatment.

- In 2017, seedling counts will be administered on roughly 1,700 acres of sites that were regenerated artificially (planted or seeded) and on roughly 1,300 acres of sites regenerated naturally (primarily stands of northern hardwood and red oak).

Counts administered on natural sites generally focus on: stands that may require additional inputs i.e. mechanical scarification, prescribed fire, etc.; cover types that are typically difficult to regenerate i.e. red oak, paper birch; stands where competition from undesirable species has traditionally been more prevalent i.e. ironwood in stands of northern hardwood; and stands that have a history of excessive browsing from white tailed deer.

Prescribed Fire

Prescribed fires has traditionally been used to maintain portions of the fuel breaks located in the Township of Barnes, as well as to facilitate natural red oak reproduction in stands located throughout the county forest.

In 2017, 0 acres of forested stands will be treated with prescribed fire, where the goal is to facilitate the regeneration of certain tree species i.e. red oak. However, portions of the existing fuel breaks may be treated with fire, if conditions allow. Fuel break burns are coordinated by the DNR.

In 2017, it is anticipated that the DNR will burn approximately 125 acres of existing fuel break off Blue Lake Road in the Town of Barnes. County staff has always been invited to assist in the process and generally do, if time allows.

WILDLIFE

A number of wildlife projects will again be undertaken in 2017. The majority of wildlife habitat improvement work conducted on county forest land will be accomplished utilizing funding from Wisconsin DNR grant programs, specifically, the County Conservation Aids and Nickel-an-Acre programs.

The Nickel-an-Acre program reflects a change from the previous Dime-an-Acre funding. As indicated in the name, the program funding was cut in half starting in 2010 and will continue to be funded at a nickel an acre into the foreseeable future. The County Conservation Aid grant requires a 50% county match on eligible projects.

The Conservation Aids project for 2017 have yet to be determined. There traditionally has been approximately $3,993 available for eligible projects. Additional monies may also be available, as determined by the total amount of unallocated funds.

The Nickel-an-Acre grant totals roughly $8,467. This grant has been used to fund a variety of County Forest wildlife projects in the past.

Potential projects for 2017 could include, but are not limited to:

- Site prep and seeding for jack pine in the Barnes Barrens Management Area.
- Mechanical and/or chemical treatments for wildlife opening maintenance (currently roughly 100 acres combined per year).
- Wildlife habitat development/improvement throughout the forest.

- Mechanical site prep for natural white birch, red oak or northern hardwood regeneration.
- Prescribed burning of wildlife openings and oak regeneration areas.
- Fish habitat projects.
- Habitat projects on old homesteads.
- Wildlife monitoring.
- Breeding bird surveys.
- Land acquisition.
- Trail development and renovation (primarily for hunting access).
- Trail mowing and/or game opening maintenance.
- Equipment purchase (where the equipment would have a specific benefit wildlife habitat).
- Invasive species control and eradication.
- Deer exclosures for red oak regeneration (fencing).
- Seedling protection (bud capping, spraying, etc.).

Any of the above listed projects, or those of a similar nature, could be implemented in 2017, generally as conditions and funding allow.

ACCESS MANAGEMENT

The revised Access Management Plan (Chapter 700) was finalized and approved in 2013. Implementation of the Plan began in 2014 and will continue through 2017. The focus will be on the placement of road and trail markers, informational signage, minor repairs of existing roads and trails, evaluation of and potential changes to current use designations and the installation or removal of restrictive features (i.e. berms, gates, etc.) to manage motorized access.

Also, the Department will monitor existing road and trail infrastructure to determine future use status or need. All new roads created as part of a timber sale will also need to be reviewed to determine the future use status. Motorized and non-motorized uses are consistently increasing. The Department will continue to address recreational needs and requests on a case by case basis.

Repair and maintenance of the infrastructure will occur on an as needed basis, as funding allows. Road building projects may also be developed, especially on those that receive high levels of use, are located in more sensitive areas in need of minor attention, and/or provide access into current or future timber sales and have the potential to increase future stumpage prices. Road projects can be performed by Department staff, DNR staff or general contractors.

The Access Management plan will also be reviewed periodically to determine effectiveness and/or in response to general feedback. Any and all proposed updates to the Plan will be presented to the Committee for review.

The Department will continue to maintain roughly 40 miles of Primary Forest roads, for which we receive DOT County Forest Road Aids (currently $336/mile, which is pro-rated based on available funding). The Department will also continue to identify, plan and/or develop additional forest roads and trails, as the need arises, for later entry into the County Forest Road program.

BAYFIELD COUNTY FOREST PLAN

The existing County Forest Comprehensive Land Use Plan for the period 2006 – 2020 may be amended to reflect changes and/or updates. Some items that may require updating in 2017 include, but are not limited to:

- Integrated Resource Management Unit (IRMU) summaries.
- IRMU boundaries.
- Barnes Barrens Management Plan summary.
- Timber sale contract language.
- Firewood permit language.
- Miscellaneous forest products permit language.
- Timber sale rutting policy.
- Forest certification (addition of FSC).
- Silvicultural revisions/updates on individual forest types.
- Updates to specific sections of the Plan.

It is fully anticipated that the updating process to certain sections of the Plan will begin in 2017. At this time, it is not fully known which sections will be updated first. Chapters 600 (Protection), 500 (Land Management and Use) and 800 (Integrated Resource Management) are all high on the priority list. All updates would be addressed by the Committee, will incorporate a level of public input/involvement and eventually be addressed by the full Board for final approval.

OTHER ACTIVITIES

Recreation:

The Department will continue to work with the County Tourism Department and interested user groups regarding recreational activities occurring on the county forest. The demand for recreational use on county forest land continues to increase.

Over the past few years, the Forestry and Parks Committee has approved numerous re-routes of snowmobile and ATV trails, the construction of new, and re-routes of existing, mountain bike and cross country ski trail networks and numerous improvements to existing hiking, mountain bike and cross country ski trails.

Requests to host events on trails located within the forest continues to increase as well. Some of the more notable events that utilize portions of trails located on the forest include: the American Birkebeiner Cross Country Ski Race, the Chequamegon Fat Tire Mountain Bike Race, the Cable Area Off-Road Classic Mountain Bike Race and the Apostle Islands Sled Dog Race. Over the past few years, the Department (Committee) approves an average of approximately twenty (20) organized events per year that utilize trails located on the county forest.

The Department also maintains land or recreational use agreements with a variety of organizations, some of which include: the American Birkebeiner Association, CAMBA, North

Country Trail Association, North End Ski Club, Ashwabay Outdoor Education Foundation, National Fish Hatchery, Town of Barnes and more. In general, the use agreements highlight specific areas or trails within the forest and outline management or use requirements expected from each organization. Use requests are treated on a case by case basis and require approval from the Committee.

Requests for new or improvements to existing motorized and non-motorized trail systems are expected to continue in 2017 and beyond. Requests for additional trails will be treated on a case by case basis, as per the Access Management Plan.

Counters have been installed in a variety of settings to determine actual use of certain trails and/or areas. Data received from these counters will provide the county with valuable information needed to determine future direction. Counters will continue to be installed throughout the forest to monitor usage in 2017.

Throughout any given year, the Department will explore additional opportunities to enhance and improve the recreational use of the forest. Existing networks are routinely analyzed and areas are explored for new or improved recreational potential. Some potential projects for 2017 include:

1. Finish minor repairs and signing of the Lost Creek Falls Trail. Due to an abundance of trail use, the Department may also install a temporary portable restroom at the Lost Creek Falls trail head.
2. Maintenance of the two newly constructed yurts on County Forest land. During the summer of 2016, one yurt was constructed in the Cable area and one near Mt. Ashwabay. An alternative access route is being considered for the Mt. Ashwabay yurt and may be established in 2017.
3. Explore the potential for additional yurt locations. If any are located, develop a plan and budget and present for future consideration, most likely as part of the 2018 budget.
4. Re-evaluate the Jolly network. As part of the process, determine existing uses and future direction. Also re-explore partnerships with the Ashwabay Outdoor Education Foundation, as well as the Town of Bayfield, regarding future maintenance and grooming of the trails.
5. Explore the potential of creating new, or improvements to existing, multi-use, non-motorized trails at numerous locations including: the Glacial Kettles Area, Spring Creek Area, the Menard Road Area and Big Rock Campground and/or other locations throughout the Forest where good potential exists. It may also require submitting applications to one or more grants, to assist in any requirements related to planning, development or construction. Pursue as time and funding allows.
6. Explore the potential of improving or expanding the existing motorized trail networks on public and private lands (both state funded and non-funded). This may require collaborating with other public land managers i.e. USFS, DNR, etc., the Red Cliff Tribe, interested user groups and the general public. It may also require submitting applications to one or more grants, to assist in any requirements related to planning, development or construction. Pursue as time and funding allows.
7. Explore the potential of creating dispersed rustic camping sites on other portions of the

county forest. Pursue as time and funding allows.

8. Develop and implement strategies for advertising and/or promoting recreation on the county forest. This may include collaborating with the Tourism Department, as well as other agencies or local businesses where tourism is a primary objective. Pursue as time and funding allows.
9. Generate a new recreational trail development and maintenance strategy, with an emphasis on identifying critical trail connections and areas for new construction or enhancement. The plan would/could include strategies for both motorized and non-motorized recreation, as well as the development of incentives or other appreciation type programs for private landowners when trails are located on private land.
10. Continue working with existing user groups on the management of approved trails located within (or otherwise connected to trails located on) the forest. This could include assistance, both financially and/or physically, associated with the construction, maintenance or development of new or existing trails and trail heads. Also includes consultation and collaboration regarding potential re-routes or other issues pertaining to the management of the trails.
11. Update the GIS database to accurately reflect the location and relevant information regarding all currently approved motorized and non-motorized trails, trail heads, recreational structures and access routes on the forest.
12. Development and installation of interpretive signs and/or kiosks along popular or well used trails or areas. The goal of the signs would be to convey information regarding any timber management that did or will occur in the general proximity of the recreational trail or area. The signs would be fairly general in nature and intended to provide baseline information regarding forest management. Funding for portions of this work has already been approved by the state, as per various DNR fire assistance grants.

<u>Insects and Disease:</u>

The DNR and Department are continuing to monitor the effects of forest insects such as the jack pine budworm, two-lined chestnut borer, emerald ash borer (though not currently located on the forest), and gypsy moth. If any additional sites containing a significant amount of damage are discovered, they will be promptly managed. Also, as new threats are encountered, the Department may need to alter management plans accordingly.

The most notable "new" threat regarding the overall health of the forest is the gypsy moth. Gypsy moth numbers, and subsequent defoliation, had been previously observed in very high numbers in the Bayfield Peninsula. The greatest numbers have been found along higher elevations located in the general vicinity of Jammer Hill and Echo Valley Roads. Red oak and aspen are their preferred primary food sources and are the most susceptible to potential mortality, especially the suppressed and over mature individuals (red oak being of most concern). Significant defoliation of red oak and aspen occurred in these areas during the summer of 2012.

However, egg mass numbers declined dramatically in 2013 and remained low in 2014 and 2015, and relatively low in 2016, indicating that defoliation may only be minor in 2017 and beyond. As a result, we will resume all red oak management in the areas where egg mass counts were high in 2012 (currently IRMU's 1 and 8). If gypsy moth numbers significantly increase in 2017, oak management may be adjusted accordingly. If oak management is reduced in specific units,

the sustainable goal in all other units may be adjusted accordingly.

The Department is continuing to work with the DNR regarding up to date information and management recommendations, as well as determining the best course of action regarding general forest management practices in the face of a threatening gypsy moth defoliation event or any other impact by insects or disease.

Emerald ash borer (EAB) was discovered in Douglas County and, most recently, in Sawyer County, our neighbors to the west and south. As a result, those counties have been quarantined, meaning, in general, that there are now restrictions on the movement of wood. To date, EAB has not been discovered in Bayfield County. However, based on current locations, discovery in Bayfield County is inevitable.

It is estimated that ash contributes less than 0.5% of annual stumpage revenues and is present, as a dominant forest type, on less than 1.0% of the county forest. Other than targeting ash a little more often during management (and encouraging the regeneration of other suitable species), Bayfield County is not expecting a major change in forest management practices if/when EAB is found on the forest, though the movement of ash products would be regulated if/when quarantined.

Invasive Species:

The Department routinely inspects roads and timber sales for the presence of invasive species. If located, a plan for treatment is developed. The presence of invasive species (both native and non-native) is relatively rare on the Forest. The Department typically treats a few small patches of land per year.

The most common non-native invasive species treated on the county forest are buckthorn (in the forest) and spotted knapweed (on roads and trails). Black locust has been the most common native invasive to be treated on the forest, typically occurring in small isolated patches in the vicinity of old, abandoned homesteads.

Treatments have traditionally been performed by Department staff, usually involving chemicals. In general, the Department treats less than 10 acres of invasive species per year. In 2017, that number is expected to be as high as 50 acres. Consequently, it may become necessary to contract out treatment, especially if other Department activities require more time or become higher priority. All occurrences are managed on a case by case basis, as funding allows.

In 2014, the Department received a Sustainable Forestry Grant for the treatment of spotted knapweed on 50 miles of forest roads in the Barnes Barrens Management Area. The project was completed in 2015. However, spotted knapweed maintains a persistent and viable seedbed for around 7 years, meaning multiple successive treatments are required to reduce the population.

The same 50 miles of road was treated in 2016 and will be treated again in 2017. The long term goal is to use herbicide to manage and eventually eliminate (or significantly reduce) knapweed in the area and, hopefully, prevent any further spread into the barrens. The project focuses on roads

that are the most heavily infested, but more still needs to be done.

Permits:

Every year, the Department reviews numerous requests to utilize portions of the Forest. Requests vary, but the most commonly include: providing access to private lands; providing access to land or trails for hosting organized recreational events; collecting balsam boughs; and collecting firewood. All requests are treated on a case by case basis and are typically handled with a use permit.

Table 4 summarizes the total permits and approvals issued by the Department from 2008-2016 (2016 is an estimates):

Table 4: Bayfield County Forest Summary of Issued Permits and Approvals

Year	Fire Wood	Balsam Boughs	Cones	Christmas Trees	Birch Stems	Access	Events	Disabled Hunting	Storage
2008	360	8	0	1	0	2	9	3	1
2009	423	5	1	1	0	0	10	3	1
2010	436	5	1	1	0	3	10	3	2
2011	503	7	1	6	0	9	10	10	2
2012	441	6	1	7	0	8	12	7	2
2013	406	16	13	3	2	6	17	6	2
2014	486	9	6	4	1	7	21	5	2
2015	394	8	5	5	0	10	18	9	1
2016	450	8	5	4	1	8	18	8	1
Avg.	433	8	4	4	0	6	14	6	2

Many of the permit templates are old or outdated. The Department will periodically review existing permits, including permit fees, or identify the need for new ones and bring all recommendations to the Committee for review.

Town Road Aids:

In 2010, Bayfield County developed the Town Road Aid Fund. This fund was created to help improve problem areas on Town Roads that provide critical access to the County Forest. Town Road Aids were initially funded at 1% of total annual timber sale revenues (enacted once actual revenues exceed the budgeted amount). Starting in CY 2014, Bayfield County increased the funding level to 2%, with a cap of $80,000. As a result, in CY 2016, there was $80,000 available for eligible Town Road projects.

It is anticipated that $80,000 will be available in 2017. All projects are submitted to the Department and ultimately approved by the Forestry and Parks Committee. The Department works closely with each Town in the development and administration of each potential project.

Land Acquisition:

The Department will continue efforts to acquire private properties on a willing seller, willing buyer basis, when advantageous to the long term goals of Bayfield County. A priority will be given to land located within the existing county forest blocking.

In December 2014, the Department received preliminarily approval for two Knowles-Nelson Stewardship Land Acquisition Grants. The grants were officially awarded in June 2015. As a result, Bayfield County purchased 1,392 acres from Meteor Timber and 463 acres from Lyme Timber. Additionally, the county provided a match of 747 acres of county owned, non-county forest land. In total, 2,602 acres of land was added to the county forest.

By using the appraised value of county owned land as the required match, the Department can tailor projects that significantly reduce (or eliminate) out of pocket expenses. The Meteor Timber and Lyme Timber acquisition projects totaled roughly $2.616 million (including the cost of land, appraisals and other associated fees). The county received approximately $2.265 million from the Stewardship grant (primarily from the appraised value of matched lands). As a result, the county spent roughly $350,000, out of pocket, to purchase over $2.6 million in productive forest land.

In the most recent state budget, county forests received a separate line of appropriation under the Knowles-Nelson Stewardship Grant for $5.0 million each year. The county still maintains ownership of approximately 245 acres of non-county forest lands that could be used as a match in future Stewardship projects. These properties were appraised at $423,000, meaning they would have roughly $211,500 worth of buying (match) power (as per the Grant, properties owned for more than one year are valued at ½ of the appraised assessment).

As previously mentioned, in late fall 2016, the county purchased another 198 acres of land previously owned by the Wisconsin DNR. Combined, these two acquisitions have added 2,800 acres to the county forest.

In 2017, the Department will continue to examine the potential for future Stewardship projects, or other similar grant options, for the purpose of purchasing forest land, using the above mentioned or other suitable county owned, non-county forest lands, as well as donations or cash, as a match.

Forestry and Parks Department Garage and Equipment

Periodic and general maintenance will be required on the newly constructed Forestry and Parks Department garage (construction finished in the fall 2014), including minor work on the grounds and landscaping.

The installation of new overhangs that would have extended over the eave side entry doors was not completed in 2016. It is anticipated that previously approved funding will carry over in 2017, with the work completed late spring or early summer.

The Department maintains a sizeable fleet of vehicles, implements and equipment, including, but not limited to:

1. Eight (8) 4x4 pickup trucks.
2. Five (5) ATV's.
3. One (1) UTV.
4. Three (3) snowmobiles.
5. One (1) bat wing field mower and one (1) trail mower.
6. One (1) 2002 115 hp New Holland TM115 tractor, with end loader.
7. One (1) 2006 John Deere 450J bulldozer.
8. Two (2) light weight trailers.
9. Numerous site prep implements including Brackee seeders, anchor chains, and various plows.
10. Numerous power tools, saws and trimmers.

The repair and maintenance on any of the above listed items could occur at any time during CY 2017. All repairs are treated on a case by case basis, as budgets allow. Major repairs (or replacements) may require funding that would exceeded budgeted amounts. If that occurs, additional requests for funding will be brought to the Committee and full Board.

Management of Other Bayfield County Owned Lands:

Currently, Bayfield County owns approximately 2,000 acres of county tax title lands, not including lots and other small parcels, in addition to the above listed county forests Lands. Also, the county owns approximately 3,100 acres of land located in the Bibon Swamp.

On occasion, the Department will monitor these parcels for land and/or timber sales, monitor for potential trespass issues, negotiate road, utility and recreational easements or permits and explore for sand and gravel potential. As new parcels are acquired, typically through tax delinquency, the Department will commonly inspect for timber management potential and/or for potential retention and enrollment into County Forest Law.

Good Neighbor Authority:

The US Forest Service has been authorized to enter into cooperative agreements with states to carry out approved forest, rangeland and watershed restoration services, including timber sales, on federal land, as per the Good Neighbor Authority (GNA). Under a cooperative agreement between the US Forest Service and the DNR, the DNR may conduct forest management activities on federal lands. Further, the DNR may contract with a county for the purposes of conducting forest management activities on federal lands, as outlined under the GNA agreement.

Recently (fall 2015), the DNR and the Chequamegon-Nicolet National Forest (CNNF) signed a ten year GNA Agreement, which will be reviewed annually to update the scope of work, as well as to identify additional timber and restoration treatments. The partnership enables the CNNF to more fully implement their forest plan and increase the amount of timber offered for sale. The goal for the CNNF in FY 2017 is to again reach 100 million board feet in timber sales. Through the GNA, the DNR has a goal of assisting the CNNF in accomplishing approximately 25 million

board feet (roughly 5,500 acres) of additional timber sales in FY 2017 (that may not have been established otherwise).

The DNR anticipates 15 to 20% of the timber sale work identified under the Agreement to be accomplished by interested counties. If interested, a county can decide their level of involvement, which could include the use of existing staff or hiring part time employees. Counties would be reimbursed for all expenses, including salary, fringe, supplies and service costs, and overhead. Also, if interested, each county would need to adopt a resolution, which approves entering into an MOU with the DNR. As per the MOU, each county would be required to enter into a GNA program contract with the State, which describes the level of involvement and project budget (i.e. rates of reimbursement).

In spring 2016, Bayfield County entered into a GNA MOU with the DNR. As part of the MOU, the county agreed to become a contractor of the state, with the ultimate goal of assisting in the establishment of timber sales on federal land. Program contracts are established with the state on an annual basis and subject to a mutually agreed upon scope of work. The Department will continue to work with the state on the development of annual GNA program contracts.

The scope of work defines the level of involvement the Department is willing to provide, outlines general goals and expected accomplishments and establishes an estimated budget. All salary, fringe, supplies, services and overhead costs, contributed by the county as per the GNA program contract, are reimbursed by the state. All work provided by Department staff related to GNA will come as overtime, as the Department has no time to spare during normal business hours. The scope of work is subject to annual revisions and Department involvement will be highly dependent on opportunities located within the Washburn Ranger District.

In 2017, it is anticipated that the Department could allocate roughly 500 hours of time towards the establishment of timber sales on Federal land within the Washburn Ranger District. Again, this would be as overtime (and totally dependent upon interest from Department staff), which would be identified and reimbursed as such under any GNA program contract signed with the DNR.

PARKS

The management of all Bayfield County parks and campgrounds was assigned to the Forestry Department in September 2010. The four parks and campgrounds include:

1. Twin Bear Campground
2. Delta Lake Campground
3. Big Rock Campground
4. Atkins Lake Park

Since 2010, numerous changes and upgrades have been made to many of the campgrounds. Some of the more significant improvements include:

1. Twin Bear Campground
    a. Complete electrical rebuild and upgrade throughout entire

campground.
   b. Repair of all major outbuildings and cabin.
   c. New fishing pier near the beach area.
   d. New ADA ramp construction near beach area.
   e. Creation of new tent camping site.
   f. Re-establishment of sand beach.
   g. New individual gas water heaters for each of the three showers.
   h. New playground equipment near the beach area.
   i. Re-surfacing of walking path near Puig's Point.
   j. New wireless high speed internet access throughout the entire campground.
   k. New locks/keysets on all outbuildings (all keyed the same).
   l. Added canoe and kayak rentals.
2. Delta Lake Campground
   a. Complete re-grade on nearly all existing campsites.
   b. New playground equipment near beach area.
   c. New fishing pier.
   d. Repair of all major outbuildings.
   e. New electric added to remaining campsites.
   f. New wireless high speed internet access throughout the entire campground.
   g. Installation of new mooring dock and small picnic area.
   h. Modifications to the ADA ramp/path.
   i. New locks/keysets on all outbuildings (all keyed the same).
   j. Added canoe and kayak rentals.

All parks and campgrounds undergo routine cleanup of brush and downed trees on a regular basis. Parks and campgrounds are also regularly inspected for hazard trees and branches, which are removed as needed. The removal of hazard trees or branches typically occurs when camping is inactive, usually in the late fall or early spring. Most of the trees are cut up and left on site to be used as firewood. Every year, there will be some removal of hazard trees and/or branches.

Some anticipated projects or minor repairs needed to the parks and campgrounds in 2017 include:

1. Twin Bear Campground
   a. Continue hazard tree removal and overhead branch mitigation, as needed.
   b. Inspection of retaining walls on a few campsites for future repair.
   c. Re-grade on a few existing campsites and road surfaces.
   d. Explore the need to add gutters on the cabin store to divert water away from the entrance to the building.
   e. Explore the potential for two new tent campsites on the hill behind shower building. Clear area and remove hazard trees. Develop as funding allows.
   f. Install/re-establish speed bumps at multiple locations.
   g. Install fencing around new electrical box near garage.

h. Upgrade/repair fence around garage.
i. Replacement of numerous old picnic tables.
j. Transplant trees from hill behind the shower building to the perimeter of the beach to provide future shade.
k. Draft and implement a noxious weed mitigation plan for the campground. Continue to monitor for new infestations. Treat as required.
l. Replace entire mooring network with new docks. Install additional mooring docks, if needed.
m. Monitor existing infrastructure, repair as needed and as budgets allow.

2. Delta Lake Campground
    a. Evaluate the condition of all primitive toilets in the campground. Replace as necessary.
    b. Re-deck and/or rebuild the ADA access ramp near the beach area.
    c. Explore potential of tent camping on County owned island.
    d. Some minor clean up and rehabilitation of grounds may still be necessary after the winter 2014/2015 timber sale, which removed all hazardous trees.
    e. Replacement of numerous old picnic tables.
    f. Monitor existing infrastructure, repair as needed and as budgets allow.
3. Big Rock Campground
    a. Explore the potential of adding a covered pavilion near entrance of campground.
    b. Minor repair on access roads. Most likely will require additional surface material.
    c. Explore potential of developing a primitive walking/nature trail within the 40 acre county parcel.
    d. Replacement of numerous picnic tables.
    e. Explore the potential of developing a hike in campsite or yurt on the property.
    f. Possible replacement of a door on one of the bathrooms.
4. Atkins Lake Park
    a. Replace sign leading into the park.
    b. Replacement of dock and old picnic tables, if necessary.

Numerous unknown issues or projects will undoubtedly surface throughout the year. All unknown issues will be addressed based on significance and/or importance, as time and budgets allow.

MOTORIZED TRAILS AND RECREATION

The management of county recreational trails was assigned to the Forestry and Parks Department in July 2013. Primarily, this involves the management/oversight of all state funded motorized trails located on county and private land (also groom snowmobile trails on federal land). To help accomplish this task, Bayfield County maintains agreements with the Bayfield County Snowmobile Alliance and local ATV clubs (and USFS).

Table 5 displays the total miles and annual maintenance funds received from the State of Wisconsin per trail type:

Table 5: Mileage and Funding For Trails Managed by Bayfield County

Trail Type	Miles	Rate/Mile	Total
Snowmobile	437	$250	$109,250
ATV Summer	86.75	$600	$52,050
ATV Winter	168.15	$100	$16,815
UTV	86.75	$100	$8,675
Total	778.65		$186,790

In addition to the routine maintenance performed on these trails by the Alliance and local clubs, below is a listing of anticipated Trails projects or issues that may be addressed in 2017:

1. Generate a recreational trail development and maintenance strategy, with an emphasis on identifying critical connections and areas for new construction or enhancement. This may require input from existing partners and user groups, as well as the general public.
2. Re-establish roles and responsibilities with the BCSA, snowmobile clubs and ATV clubs.
3. Update contracts with the BCSA and other clubs.
4. Continue to resolve numerous landowner disputes regarding land ownership and/or trail location.
5. Continue to work, along with the County Tourism Department, on building a supportive network of local chambers, business owners and community members that will help in the financial and/or logistical support of the Bayfield County trail networks
6. Maintain a database identifying each club and officers, as well as location and mileage maintained for snowmobile and ATV trails.
7. Develop and maintain a database identifying the location and condition of all bridges, culverts, gates and outbuildings on snowmobile and ATV trails.
8. Creating a maintenance/inspection schedule for #7.
9. Develop and maintain a database for all existing permits or easements allowing snowmobile and ATV trails to occur on private land.
10. Develop and maintain a database that categorizes the importance of each trail to the overall network/community i.e. high, medium, low. The database would help ascertain the importance of future repair work. For example, a major repair on a trail designated as low importance might not be a high priority.
11. Combine #'s 9 and 10 to determine where to focus obtaining future easements or access permits.
12. Develop updated permit/easement form.
13. Pursue the concept of compensation to private landowners who allow recreational trails on their land.
14. Potential land purchase to secure ATV and snowmobile trail access on Trail 7 in the Town of Barnes.
15. Coordinate with the USFS on the recently approved grant to re-route a portion of the snowmobile trail near Kimball Road.

16. Complete repair work on Trail 1 off Klemik Road.
17. Complete repair work on Trail 1 east of Swedlund Road, that was damaged from the heavy July 2016 rain storm (FEMA project).
18. Complete repair work on Trail 31 north of 43 Road, that was also damaged from the heavy July 2016 rain storm (also a FEMA project).
19. Coordinate with the Snowmobile Alliance and DNR on the implementation of the newly established Snowmobile Electronic Reports System (SNARS), recently developed by the state.
20. Complete the installation of the new privy at Trail 22/24 intersection. Privy has been installed, but need to finish up the approach work.
21. Close out the installation of the new clearspan bridge on snowmobile/ATV Trail 3, over the East Fork of the Flag River.
22. Re-grade and/or re-surface Trail 17 (Banana Belt Road) in Iron River.
23. Continue to work on funding a new trailhead shelter on Trail 3, near the intersection of Flag Road and the Battleaxe.
24. Finalize plans for a bridge installation on Trail 63 within the Bibon Swamp State Natural Area.
25. Finalize plans for a clearspan bridge over North Pike's Creek on Trail 31/1 near Compton Lane, or find a suitable re-route around the problem area. Working with the Bayfield Regional Conservancy and Bayfield County Land and Water Conservation to re-establish the natural stream channel and repair streambank bed.
26. Compile a list of beaver dam issues impacting trail infrastructure. Coordinate with USDA APHIS Animal Control Services to eradicate the problem animals and destroy associated dam structures.

The above listed items are known issues or projects that need attention in 2017. All or most of the projects that will require significant repair work or new construction/installation will be submitted to the State for potential funding.

Numerous unknown issues or projects will undoubtedly surface throughout the year. All unknown issues will be addressed based on significance and/or importance, as time and budgets allow.

Meet the Staff

The information listed above describes the general Departmental goals and objectives for CY 2017. Below is a brief background history of Department and DNR staff employed to accomplish those goals.

Administrator: Jason Bodine.

a. Experience: Forester with Bayfield County from 2000 to 2009. Administrator from 2009 to present.
b. Highest Level of Education: Master of Science in Forestry from Michigan Technological University.
c. Primary Role: administers and manages all aspects of the forestry, parks and recreation programs. Directs day to day operations and all planning efforts. Supervises all employees working within the Department.

Assistant Administrator: Steve Probst.

a. Experience: Forester with Bayfield County from 1999 to 2000. Assistant Administrator from 2000 to present.
b. Highest Level of Education: Bachelor of Science in Forest Management from UW Stevens Point.
c. Primary Role: assist the administrator in all facets of the forest management program. Provides lead field role in all aspects of timber sale administration.

Forester: Mike Amman.

a. Experience: Forester with Bayfield County from 2003 to present.
b. Highest Level of Education: Bachelor of Science in Natural Resources from UW Madison.
c. Primary Role(s): timber sale establishment, forest reconnaissance, reforestation and regeneration monitoring and database management (GIS and WisFIRS). Assist in other aspects of the forest management program.

Forester: Andrew O'Krueg.

a. Experience: Forester with Bayfield County from 2010 to present.
b. Highest Level of Education: Bachelor of Science in Forest Management from UW Stevens Point.
c. Primary Roles(s): timber sale establishment, forest reconnaissance, reforestation and regeneration monitoring and database management (GIS and WisFIRS). Assist in other aspects of the forest management program.

Forester: Jeremiah Neitzel.

a. Experience: Forester with Bayfield County from 2011 to present.
b. Highest Level of Education: Bachelor of Science in Forest Management from UW Stevens Point.
c. Primary Roles(s): timber sale establishment, forest reconnaissance, reforestation and regeneration monitoring and database management (GIS and WisFIRS). Assist in other aspects of the forest management program.

Forester: Jason Holmes.

a. Experience: Forester with Bayfield County from 2012 to present.
b. Highest Level of Education: Master of Science in Forestry from Michigan Technological University.
c. Primary Roles(s): timber sale establishment, forest reconnaissance, reforestation and regeneration monitoring and database management (GIS and WisFIRS). Assist in other aspects of the forest management program.

Recreation Forester: Jenifer Bratsch.

a. Experience: Recreation Forester with Bayfield County from 2016 to present.
b. Highest Level of Education: Master of Science in Physical Geography from the University of Calgary.
c. Primary Roles(s): assist in the management of state funded ATV and snowmobile programs, all recreation related activities on county forest lands, including all designated non-motorized trails and yurts, and county owned campgrounds and day use parks.

Forest Technician: John Mesko.

a. Experience: Forest Technician with Bayfield County from 2001 to present.
b. Highest Level of Education: employed in the general field of forest management for over 30 years.
c. Primary Roles(s): heavy equipment operation, road and trail maintenance, repair and construction, parks maintenance, assist in the timber sale program, assist in the reforestation program.

Office Manager: Patricia Bruno.

a. Experience: Office manager with the Forestry and Parks Department from 2011 to present. Employed in other departments within Bayfield County from 1994 to 2011.
b. Highest Level of Education: Vocational School Certificate.
c. Primary Roles(s): maintains accounts receivable and payable, prepares vouchers for all expenditures, manages all accounts and paperwork associated with the timber sale program, manages and prepares all financial records, statements and reports, provides customer service.

WDNR – County Forest Liaison Forester: Joseph LeBouton.

a. Experience: WDNR - County Forest Liaison Forester from 2011 to present.
b. Highest Level of Education: PhD candidate in the Department of Forestry at Michigan State University for five years where he studied links between forest landscape composition, white-tailed deer densities and northern hardwood forests.
c. Primary Roles(s): coordinating the DNR's contribution to Bayfield County Forest management activities. The DNR provides the county with enough forest management assistance annually to set up 25% of the sustainable harvest, perform roughly 50% of the required forest reconnaissance updates, as well as contribute to road maintenance, forest improvement activities, prescribed fire, and wildlife habitat improvement projects.

Submitted by Jason Bodine, Forestry & Parks Administrator, December 31, 2016.