Town of Dunn
Urban Forest Strategic Plan

Fred Clark

Clark Forestry, Inc.
PO Box 88
Baraboo, WI
53913

September 15th, 2008

I. Executive Summary

The Urban Forest Strategic Plan establishes goals, objectives, strategies, specific activities, and procedures for the Town of Dunn, its elected and appointed officials, and its staff, in caring for a healthy and growing tree and woodlot resource.

The Town Tree Board has adopted the following Mission Statement for an Urban Forestry program: "*The Town of Dunn Tree Board recognizes the importance of its trees, and seeks to manage its tree resource through a program of education, protection, and planting."*

The Urban Forestry Plan lays out four goals for moving toward the mission and vision established for trees in the Town of Dunn.

- ❖ Eliminate Hazard and High Risk Tree Situations
- ❖ Establish a Comprehensive Tree Care Program
- ❖ Enhance the Town Tree Resource through Planting and Restoration
- ❖ Encourage the Preservation and Care of Trees on Private Ownerships

In order to achieve the goals set out in this plan Dunn will need to move toward a comprehensive approach to urban forest management, based on sound arboriculture and forestry practices, and an ongoing inventory, that emphasizes planting, pruning, tree health, restoration, and education.

- The town will need to develop a simple, cost-effective method for assessing and mapping tree resources within town right-of-ways and parks.

- Trees along roads need to be evaluated for defects and hazards likely to result in failure and resultant damage to people or property.

- With the highest risk trees removed or made safe, investments can begin to help improve the health, diversity, beauty, and benefits of the tree resource.

- Maintaining the benefits of trees and the town's scenic tree resource will require an investment in tree planting, and restoration of roadsides infested by invasive brush and other undesirable vegetation.

- Trees on private lands comprise the majority of the town's tree resource. The town can best act to protect and enhance the tree resource on private lands through an active program of education and outreach.

The town will incur ongoing in-house staff costs in order to support an urban forestry program and fulfill the goals and objectives set out in this plan. Additional costs for contracted services to implement this plan are estimated to be **$8250** in 2009, **$18,425** in 2010, and **$18,935** in 2011.

II. Vision and Mission Statement

The Town of Dunn has been a nationally recognized leader among small communities working to protect rural lands in an environment of rapid suburban growth. Dunn's success in this area can be attributed to strong community leadership, innovative approaches, and an existing resource of intact farms, prairies, savannas, woodlots, wetlands, and rustic roadsides – in other words the town's rural character. Trees are an integral part of that rural character.

Trees form the remnant oak savannas that are one of the iconic images of southeast Wisconsin. Open grown bur and white oaks line many of Dunn's rural roadsides creating a uniquely rustic appearance. Well-placed shade trees shelter homes and buildings, save money on heating and cooling, create visual and sound barriers for privacy, and significantly increase the value of property. Heritage trees on public and private land, including oaks that very likely predate the American Revolution, are a reminder of the town's history and help provide a visible focus for land protection efforts.

Preserving a healthy tree resource is an essential part of preserving the rural character that the town has worked so hard to protect. A vision for a healthy tree resource in Dunn includes the following attributes:

- ***Town residents and visitors enjoy safe and attractive public roads and parks***
- ***Healthy trees and woodlots remain an integral part of the town's rural character.***
- ***Town residents appreciate trees and take responsibility for their care and replacement***
- ***Historic trees are protected and maintained with reasonable investments***
- ***The town, residents, and other partners (WDNR, Dane County) cooperate to capture opportunities to improve the tree resource and to address threats to tree health.***

The Town Tree Board has adopted the following Mission Statement for a tree program:

> ***"The Town of Dunn Tree Board recognizes the importance of its trees, and seeks to manage its tree resource through a program of education, protection, and planting."***

III. Statement of Purpose and Scope

The Urban Forest Strategic Plan is designed to establish goals, objectives and strategies, and to provide specific activities and procedures for the Town of Dunn, its elected and appointed officials, and its staff, in caring for a healthy and growing tree and woodlot resource.

This project did not include a systematic, town-wide inventory of tree resources, and was not intended to be a complete management plan. Additional information will be needed in order to fully assess the urban forest resource and effectively guide a routine tree management program. This strategic plan establishes key goals and objectives, and recommends activities and procedures needed to develop such a program.

This plan provides recommendations in the format of Goals, Objectives and Strategies.

Goals appear like this: V.1

Objectives appear like this: V.1.1

✓	*Strategies appear like this.*

This document was funded in part by an Urban Forestry grant from the Wisconsin Department of Natural Resources Forestry Division as authorized under s. 23.097, Wis. Statute, using funds from the USDA Forest Service. The United States Department of Agriculture prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. To file a complaint call (202) 720-5964."

IV. Background

IV.1 Basics

The Town of Dunn is located directly south of the City of Madison and is surrounded by the Cities of Fitchburg and Stoughton, the Villages of McFarland and Oregon and the Towns of Blooming Grove, Pleasant Springs, Rutland and Oregon. According to the U.S. Census, the 2000 population was 5,270 residents and at that time the Town contained almost 22,000 acres with nearly 90 percent of the total area classified as agriculture and undeveloped.

IV.2 Land Base

The entire Town of Dunn lies within the glaciated, gently rolling landscape of Southeast Wisconsin. Most of the land was originally prairie or oak savanna prior to European settlement, and thus was in great demand by settlers because of the ease of converting it to agricultural production. Upland soils throughout the Township are almost exclusively highly-productive silt loams of the Dodge, Plano and Ringwood series. Most of these soils are very suitable for crop production as well as for the growth of hardwood trees. Low-lying areas including small ponds and pothole wetlands are a legacy of the retreating Wisconsin glaciers.

IV.3 Land Conservation History

The Town of Dunn's character is and has been defined by both the variety and the abundance of its open spaces. The Town supports high quality wetlands, restored prairies and oak savannas, numerous small woodlots, and a productive working land base.

Land conservation has been a successful local priority in the town for several decades and Dunn is a nationally recognized leader in protecting rural landscapes. Dunn's Purchase of Development Rights program (PDR) was one of the first of its kind in Wisconsin.

The Town's first Land Use Plan, created in 1979, recognized the importance of protecting Dunn's resources because they are central to the Town's rural identity and the plan resulted in the creation of a model Open Space Preservation Plan. The early identification and protection of farmland and natural resources in the Town has allowed it to retain its character and identity despite its location adjacent to the rapidly growing and expanding Madison Metropolitan Area.

IV.4 Forests, woodlots, and trees and shrubs

Prior to European settlement, white and bur oaks were the most common and predominant tree species in open, fire-maintained oak savannas throughout the town. Other species such as red oak, black walnut, shagbark hickory, black cherry, red maple, sugar maple, white ash, basswood and American elm were present in protected areas but

much less common than they are today. Tree species that today are widespread and abundant but which were quite uncommon prior to 1850 included boxelder, cottonwood, silver maple, mulberry, and black locust.

With the settling and clearing of land and the gradual cessation of fires the prairie and oak savanna landscape changed to a primarily agricultural landscape. In areas that were not cultivated however, including wetter areas and locations that were more heavily wooded initially woodlots dominated by a mix of species sprang up and many of these remain in the Town today. Roadsides also became havens for trees and shrubs – and thus as a result primarily of natural establishment, supplemented by some intentional planting, many roads became lined with trees and shrubs, and they remain that way today.

IV.5 2005 tornado

On August 18th, 2005 a tornado touched down in Dane County and carved a ¼ mile path through the southern portion of the Town. The tornado's path was from near Grass Lake to just south of Lake Kegonsa in the SE corner of the Township.

Damage from the tornado included destroyed and damaged homes and outbuildings, damaged crops, and widespread and intense destruction of trees on private lots, on town right of ways, town parks, and on private woodlots.

Clean up from the storm began almost immediately with town staff working to clear roads and local residents and contractors removing downed and damaged trees. The Town was denied a request for FEMA assistance for storm clean-up, limiting the available resources for post-emergency work.

In Fall 2005 the Town moved to create a tree board, and thereafter received funding from the Wisconsin DNR Urban Forestry Grant program for a 2-phase effort to recover from the initial impacts of the storm, and to establish an Urban Forestry program.

In the first phase of the Urban Forestry Grant-funded project Clark Forestry, Inc. of Baraboo assisted the Town in performing a survey of affected residents in Summer 2006, and Clark foresters performed an assessment of remaining tornado damage on affected lands throughout the Town.

Based on the damage inventory, the town began an effort to complete storm damage work on yard trees within private ownerships. With support from the WDNR grant, 40 storm-damaged yard trees were eventually removed, 5 stumps were ground, and 24 storm-damaged trees were pruned by a contractor in 2006.

The town attempted to organize a coordinated effort to clean up and restore forest tree damage and re-plant within 86 acres of severely affected woodlots on 10 private ownership. Despite interest on the part of several landowners, this project was not initiated however due to lack of enough participation, and lack of funding, as grant requests to the WDNR Hazard Mitigation Program were not approved.

IV.6 Future challenges

The town faces several challenges in maintaining and improving a healthy and scenic tree resource. A few key challenges, not necessarily in order of priority, are:

- The large historic trees, especially bur and white oaks, that line many town roads are gradually dying off as a result of defects, insects and diseases, and old age, and they are not being replaced at the rate at which they are being lost.

- Invasive shrub species such as common buckthorn and honeysuckle are becoming more widely established and are gradually but continually replacing native trees in treelines and woodlots.

- Damage from the 2005 tornado and other storms has resulted in hundreds of lost trees, and heavy damage to at least 86 acres of woodlots.

- The town does not now have an inventory of trees or vegetation on roadsides within it's ownership, resulting in a limited ability to plan long-term tree management needs.

- There are a large number of hazard trees within the township, the removal and cleanup of which often occurs on an emergency basis, and which absorb a large proportion of available tree resources.

- There are a large number of town roads and park areas in need of investments in planting or vegetation management, however current funding for such work is limited.

V. Current Situation

V.1 Tree resources in town right of ways

The Town is responsible for managing roads and right-of-ways on approximately 64 miles of town roads. Town-owned roads typically include a 66' right-of-way that includes a shoulder, ditch bank, and slopes above the ditch. The most prominent trees along town roads are large white and bur oaks remaining from early settlement days, many of which are likely to exceed 200 years of age. Since many roadsides are dominated by "volunteer" vegetation, a wide variety of hardwood trees species are also common, ranging from red oaks and sugar maples to boxelders and black locust. Planted trees apparently dating back 60-100 years are also common along many roads, with the most commonly planted species being silver maple.

Roadside vegetation is increasingly becoming dominated by shrubs, including the non-native invasive species common buckthorn, various species of honeysuckle, and native but invasive species such as prickly ash. In many cases shrubs create a thicket or green wall that obscure trees and choke out grasses and wildflowers. Shrubs can serve as a visual and sound barrier, with some positive benefits, however lack of visibility can become a vehicle safety concern as well as an aesthetic issue.

Management of town rights of way is primarily limited to mowing shoulders and side slopes where grass predominates, and removing hazardous trees when they are identified, or when they fail. The town crew reports that a significant amount of time is spent responding to complaints about roadside trees, and in removing trees that have fallen along roads.

V.2 Trees in parks

Dunn has a number of park properties that provide for recreational uses, wildlife habitat, natural community restoration, and open space. Park trees are mostly growing in natural settings and for that reason an individual tree inventory would be impractical in parks. Where trees are generally younger – such as in several parks where prairie has been restored and oaks planted, maintenance of trees is a relatively low priority. In parks where trees are mature maintenance and tree health issues are more of a concern.

A few of the more actively used properties are described here.

<u>Sinaiko Park</u>

This park has a restored prairie and high quality remnant oak savanna that have been actively managed by parks board, volunteers and town staff. The grove of bur oaks appears to be generally healthy, although a few trees here have died and others are dying back in a manner that is consistent with the insect pest two-lined chestnut borer.

Old Town Cemetery

This property has another remnant bur oak grove and associated grass and herbaceous vegetation. Several old bur oaks were dying back at the time of inspection and two-lined chestnut borer is also suspected here.

Colladay Point Park

This site includes a several-acre restored prairie with a significant amount of volunteer tree and shrub growth including sumac, boxelder, and ash. Oaks and maple saplings have also been planted here. In the absence of burning or mowing trees and shrubs will likely take over the prairie here.

Dunn Heritage Park

This open site includes both upland and wet prairie with a mowed trail system. Planted swamp white oak and bur oaks here create a savanna effect. The site is in reasonably good condition although the invasive bi-ennial plant, wild parsnip is a management concern.

Kegonsa Manor Park

This park was directly in the path of the tornado and a large number of trees were destroyed here and on surrounding house lots. The Town Tree Board together with the public works department hosted a public tree planting here in 2006 to begin restoration work in that heavily affected area.

V.3 Other tree resources

Within the town there are a number of areas outside the scope of the town's authority and outside the scope of this report. Such areas include about 10 miles of highway right-of way on County Highways B, AB, and MN; and on the state-managed right of way along US Highway 51.

Within the town, the Wisconsin Department of Natural Resources manages over 1,300 acres at Hook Lake and Mud Lake Wildlife Areas, and the U.S. Fish and Wildlife Service manages approximately 45 acres. Dane County manages Babcock, Fish Camp Launch, Goodland Park and the Holtzman Resource Areas, totaling approximately 140 acres, as well as 226 acres in the Lower Mud Lake resource protection area. Opportunities may exist for the Town to cooperate in planning or in projects involving tree care by responsible agencies of those properties.

V.4 Trees on private ownerships

A wide variety of planted and naturally growing trees exist on private ownerships throughout the town.

The town's tree ordinance, Ordinance Number 20: An Ordinance to Protect and Preserve the Town's Urban Forest, provides limited authority for the town to protect trees on private lands (see attachments). Significant elements of the tree ordinance limit pruning of oaks for oak wilt, regulate damage or cutting of trees on town right-of-ways, and create a voluntary Heritage Tree Registry. Designation of heritage trees is only achieved by voluntary designation by the tree owner, however once designated, the tree board has the authority to prevent cutting or removal of designated heritage trees the tree.

The town's other tools for protecting trees include its role in reviewing and approving development plans through its various land use ordinances. The town plan commission may base decisions on land use requests on the impact on tree or woodlot resources, consistent with the town's Comprehensive Land Use Plan.

Frequently, trees on private ownership fall onto or grow over town roads, and conversely, trees within the town right of way often affect private ownerships. For this reason the town staff frequently communicate with residents about specific tree issues and work to build positive relations and best outcomes.

V.5 Historic Trees

Dunn has a large number of historic trees. The most significant element in this category are open grown white and bur oaks that line many town roadsides, and a few park properties. Trees of this size are difficult to age, but certainly many of these trees are in excess of 200 years old.

Other examples of historic trees would include trees or shrubs planted to commemorate special occasions or historic events.

The Town's Tree ordinance creates a heritage tree registry that will create a voluntary designation for historic trees.

V.6 Woodlots

Woodlots exist throughout the town ranging from small areas of less than 1 acre, to a few areas of adjoining properties that exceed 100 acres. According to the Dane County Regional Planning Commission's 1990 Land Use Survey, there were approximately 1,270 acres considered woodlands in the town. Although a few owners cut timber from time to time, woodlots throughout the town are rarely actively managed. Some woodlot ownerships larger than 10 acres are enrolled in Wisconsin's Managed Forest Law, with oversight provided by the Wisconsin DNR.

As noted above at least 86 acres of woodlots were affected by the 2005 tornado. These areas are now full of downed trees of all sizes and dense invading brush that has been released by the blowdown of canopy trees. Most of these areas are now almost impenetrable and if no action is taken they will continue to convert to invasive brush types with very few native trees left.

Other woodlots in the town are facing the same threats as woodlots throughout southeast Wisconsin: Gradual loss of native canopy trees and the concurrent replacement by non-native, invasive shrubs and other undesirable species. Most woodlots are gradually declining in quality and composition, but there are usually few resources available and limited awareness of the steps necessary to address the problem.

VI. Needs Statement

Goals, objectives and strategies for the town's tree program are detailed in the following section (VII). This section details some programmatic or internal needs the town will need to consider in order to achieve those goals and objectives. Based on inspections of trees in the town, interviews with town staff and tree board members, and input from residents, we suggest areas where Dunn will need to build capacity in order to achieve its goals for a healthy tree resource.

Urban Forestry Management

Dunn has been a conservation leader in many areas, and has consistently invested time and resources into planting trees in parks. The majority of tree care resources go toward removal of fallen and hazardous trees in town right-of-ways and mature tree care is primarily approached on an as needed basis. Consequently relatively few resources are dedicated to tree pruning or maintenance, tree health needs, or to replacement planting along roadsides. This current situation is typical of most rural townships, however a new model of management will be needed to achieve new goals.

- In order to achieve the goals set out in this plan Dunn will need to move toward a comprehensive approach to urban forest management, based on sound arboriculture and forestry practices, and an ongoing inventory, that emphasizes planting, pruning, tree health, restoration, and education.

- While the town has current capacity to handle many of its non-technical tree removals, Dunn should build capacity to perform more routine tree maintenance. To do this relatively modest investments may need to be made in small tools and equipment for planting, pruning, and maintaining newly planted trees.

Forestry Expertise and Training

Currently the town road and park crew make most decisions regarding tree removals or maintenance, in addition to performing a wide variety of other tasks ranging from road maintenance to park management. The crew does excellent work, however they are not trained arborists. The tree board includes 2 qualified arborists, however their own commitments prevents them from being readily available to advise crew members on tree removal or tree care decisions. We recommend that the town upgrade the level of professionalism it employs to manage its trees in order to assure the best outcomes and that resources are used effectively.

- Employ the services of a qualified arborist, or a forester with arboriculture experience, in performing town-wide tree inventory work. Both the hazard tree inventory and the roadside tree inventory recommended in this plan should be performed by qualified professionals, assuring that decisions made

for tree removal, maintenance and planting are based on sound science, and the needs to protect heritage trees and tree benefits are appropriately balanced with public safety. Any grant-funded tree inventory efforts should be performed by qualified professional arborists.

- Additional training for town staff will also help improve day-to-day decisions and operations. An initial ½ day training session focusing on hazard tree identification and tree health and maintenance will be held with town staff as part of this grant project. We recommend additional training for staff as it becomes available with the goal of seeing at least one crew member become an International Society of Arboriculture (ISA) Certified Arborist by 2010.

- Ideally, and at a point when resources become available, we recommend the town continue to engage the services of a qualified arborist or forester whose role would be to 1) guide the implementation of an urban forestry plan, and 2) advise and assist the town crew in day-to-day tree management, and 3) be available to advise and assist residents coordinating tree care on private property. Many small communities create a position of Village Forester. Typically this is a very part time position that is often filled by someone in or nearby the community. In the event of a major tree health threat or short-term crisis a village forester would play a key role in helping coordinate an effective response.

Tree Inventory and Mapping

There is currently no comprehensive inventory of town tree resources and no system in place for tracking such information. The town has an excellent mapping and GIS capability, and this tool could be expanded to include the capability of mapping and tracking information such as road right-of-way segments. The 100% method of tree inventory used by many cities and villages along developed streets is not practical in a rural township such as Dunn where most parks are managed for natural habitats, and where most roadside trees are volunteer and not planted trees.

- The town will need to develop a simple, cost-effective method for assessing and mapping tree resources within town right-of-ways and parks that will support planning for a routine tree management program.

Funding

Dunn is just beginning its urban forestry program and it currently has no dedicated source of funding. Initial efforts beginning in 2006, including this plan, have been funded through the WDNR Urban Forestry Grants program. Like every local municipality in Wisconsin, the Dunn is now constrained in its budget growth by state-wide levy limits that do not keep pace with normal cost inflation, and have already resulted in program cuts. Finding funding to move forward with an urban forestry program and implement the strategies within this plan will be challenging in the current environment.

- The town can pursue short-term grant funding to allow continuation of its urban forestry program and begin to implement the strategies recommended in this plan. Moving ahead with short-term funding will help build support within the community for the benefits of an urban forestry program. We encourage the town and its leaders to explore the means to provide a more stable funding base for urban forestry activities over time.

VII. Goals, Objectives and Strategies for Dunn Tree Resource

VII.1 Goal: Eliminate Hazard and High Risk Tree Situations

Public safety is always a paramount goal for a tree care program. Trees along roads need to be evaluated for defects and hazards likely to result in failure and resultant damage to people or property. Communities with an aging tree resource and many old, declining trees usually spend a disproportionate amount of resources responding to urgent needs, and fewer resources are available for planting, pruning and inventory. These are the very activities most needed for a community to get "ahead of the game" in tree care.

The large number of defective and hazardous trees, especially those along town right-of-ways, should be the first emphasis for management.

VII.1.1 Inventory Hazard and High-risk Trees

As a first step the town staff, with support from a qualified arborist, should perform a simple survey of all town roads to identify hazard trees warranting either complete removal, remedial pruning, or other maintenance to eliminate hazards. Trees evaluated in such an inventory would only be those whose condition creates a significant threat to people or property. At least 15 hazard trees warranting removal were identified for the town crew during the course of field inspections performed to prepare this report, however this was not a complete hazard tree inventory.

The hazard and high-risk tree inventory would collect information on the tree location, species, diameter, condition, and a recommendation for either: urgent removal, scheduled removal, safety pruning or cabling, along with other special considerations. Trees would be marked in the field according to the recommendations, which would allow for review by affected parties, and easy work flow by a contractor or work crew. Once a hazard tree inventory is completed, costs of completing the identified work can be estimated and bids can be requested to complete the work either in whole or in stages.

- ✓ *Town road and park crew should perform a survey of all town roads to identify hazard trees warranting complete removal, remedial pruning, or other maintenance to eliminate hazards. The crew should be advised by a qualified arborist who would provide a second opinion and final recommendation on borderline trees, historic trees, and trees with potential for neighbor conflict.*

VII.1.2 Identify and Remove Hazard Trees

A local government has a greater "duty of care" than an ordinary landowner with regard to trees, and a citizen, property owner or passing motorist has a reasonable expectation that a public right of way will be free from hazards. Identifying and removing hazard trees in planned operations helps demonstrate the town's fulfillment of that responsibility, and reduces the risk of property damage and possible injury from hazard tree failure. Planned removals usually result in significant cost savings compared with responding urgently to individual tree failures. This work can be performed cost effectively using town resources, or through outside contracting, or some combination of both those methods.

The decision to recommend removal of hazard trees should be made during the inventory by a qualified arborist. In general, criteria for removal should follow current arboricultural practice, and may include, but not be limited to, significant structural defects likely to result in whole or partial failure, significant strength loss as a result of internal decay of the tree bole, root loss as a result of damage or root rot organisms, or decline of the tree resulting in current or imminent loss of >50% of canopy. Dead or dying trees, especially as a result of forest health threats such as Dutch Elm Disease, Oak Wilt, Emerald Ash Borer, or other pest outbreaks that are responsive to sanitation efforts, will also be criteria for priority tree removal.

- ✓ *Begin a program of scheduled removals for hazard trees throughout the town, with a goal of completing all such work within three years.*

VII.1.3 Identify and Reduce Hazards in High-risk Trees

For purposes of this discussion, high-risk trees are trees with specific defects that can be made safe with pruning or other practices, without requiring complete removal. High-risk situations might include split limbs, weak crotches, large dead wood, unbalanced crowns (especially those over roads or wires), or trees dying back or declining as a result of previous stress, but which can likely remain alive for some time. In trees designated as Heritage Trees, a higher standard for removal should be required, so for example installing tree cables to secure weak or split crotches on an otherwise sound 36" bur oak could be recommended to preserve the tree and avoid the large cost of its removal.

Pruning and maintenance of high-risk trees should be performed by qualified tree workers. This work could be performed by the same crew that does tree removals as long as they are qualified to perform the additional work, but this may not be practical in all cases.

- ✓ *Begin a program of pruning (or other maintenance) for high-risk trees throughout the town with a goal of completing all such work within five years.*

VII.2 Goal: Establish a Comprehensive Tree Care Program

With the highest risk trees removed or made safe, investments can begin to help move toward a comprehensive urban forestry program that improves the health, diversity, beauty, and benefits of the tree resource. Moving toward this goal, and the strategies suggested to achieve it, will depend on funding sources that cannot be assured at this time. The goals and strategies detailed here can all be implemented at variable scales and intensities however, depending on the future availability of funding.

VII.2.1 Conduct Routine Tree and Vegetation Inventory.

In town parks and roads, trees grow together with irregular spacing along with grasses and shrubs in a much more natural environment than is found in manicured city parks and tree lawns. These natural roadsides are a town asset that should be preserved. Because of this, the tree resource on roads and parks does not lend itself to 100% inventory, however in order to plan for future needs and meet long-term goals, some type of tree and vegetation inventory is needed.

With 65 miles of town roads, collecting even a simple segment-based roadside inventory will be a significant undertaking. We do not have a firm price history for this type of work, but a working estimate for collecting and mapping a simple roadside inventory using the guidance above would be less than $150 per mile, or approximately $10,000 or less to complete the entire town road system. We also recognize that finding is limited

Once immediate hazard trees are removed the urgency level will be reduced and we anticipate that the inventory work could be spread out over 3-5 years, allowing the town to move ahead with scheduled work on areas that have been inventoried while moving throughout the town at a manageable pace.

In town parks, a more unstructured site inspection procedure that identifies tree management needs and makes recommendations for tree care or planting in a simple narrative that can be stored in a site file. This information can also be used in developing work contracts.

See *Section X 1.1* for more details on tree inventory methods.

- ✓ *Begin a program of roadside tree and vegetation inventory, with a goal of completing all town roads within five years.*

- ✓ *In consultation with the town Parks Commission, develop simple 1-page management schedules for each town park that describe current conditions, establish long-term goals, and list practices and timing to achieve those goals.*

VII.2.2 Preventative Tree Maintenance

Once inventory is completed and evaluated, management will focus on completing recommended work. For example, if 10 miles of town road are surveyed and 4 miles are identified for remedial pruning and scheduled tree removal, bids could be accepted from contractors to perform that work. Arborist contractors using aerial-lifts (similar to line-clearance contractors) can move along tree lines very efficiently, and the goal would be to accomplish all of the needed work (pruning, removals, shrub clearing, etc.) in one operation whenever possible. If particularly large trees need to be removed requiring loaders and other equipment, they can be scheduled in a different operation or that work could be done by town crews.

At this stage tree work should focus on improving tree health and tree quality in addition to addressing safety hazards. Pruning would include removal of safety hazards, pruning to balance crowns when needed, and to train younger trees for form and to minimize future problems. In general pruning should follow the most current version of the American National Standard for Tree Care Operations, ANSI Z133., however trees of undesirable species or volunteer trees with poor form in tree lines may not receive the same level of attention as more desirable trees.

We suggest a goal of completing an average of 6.5 miles of roadside maintenance each year, so that each segment of town road will be evaluated and treated at least once every 10 years. We can roughly guess (without inventory) that within the average 6.5 miles, as much as 1/3 to ½ of that distance may have no work needed. Most cities with active tree programs aim for a 6-7 year maintenance interval on street trees, so at this level of frequency there will likely continue to be occasional tree emergencies – but it should be significantly less than exists today. Tree management needs in parks can also be accomplished at this time.

We stress here that the intensity and extent of work performed will always have to be consistent with available funding. By classifying recommended activities into high/medium/and low priorities, with safety and tree health being first priorities, the extent of work contracted can be scaled to the funding available.

- ✓ *Begin conducting roadside tree and vegetation maintenance with a goal of completing maintenance trees and vegetation of all town road ROW's within 10 years – at a level of intensity and investment consistent with available resources (also VII 3.1).*

VII.2.3 Protect and Preserve Town Historic Trees

As discussed in previous sections, the town's remaining old oaks are one of the few living witnesses to the period before European settlement in Dunn. These beautiful old trees are part of what defines the character of the town. Many of these oldest trees are slowly falling away (although they can fall pretty quickly before they hit the ground).

The Heritage Tree program enacted as part of the town's tree ordinance provides a useful tool for identifying and protecting historic trees. Unless it creates a policy conflict, the town should designate Heritage Trees throughout it's own jurisdiction to signal it's commitment to the program.

Town trees qualifying for Heritage Tree status, whether or not they are formally designated, should receive additional consideration whenever management needs and decisions are made. For example, investments in cabling or pest treatments that might not be warranted for lesser trees should be considered to prolong the safe life of heritage trees, so long as the practices are based on sound arboriculture.

Likewise trees with other historic significance in the town should be identified and monitored as resources allow.

- ✓ *Enact and begin encouraging registration of historic trees on private ownerships in the Heritage Tree Registry.*

- ✓ *Identify candidate Heritage Trees in town parks and right-of-ways and ensure they receive appropriate protection and care to the extent resources allow.*

- ✓ *Pay special attention to tree health threats for heritage oaks, and consider applying cultural practices to minimize threats (see below).*

VII.2.4 Maintain Tree Health and Respond to Tree Health Threats.

Several insects and diseases commonly attack trees in the town, and new threats are on the horizon. Although aggressive efforts to treat or prevent insect or disease outbreaks with individual trees will rarely be warranted, management practices should be implemented with an eye to insect and disease risks and how to minimize them. Town staff should be knowledgeable about current insect and disease threats, and aware of appropriate practices to address them.

Foresters or forest health specialists with the Wisconsin DNR - Division of Forestry should be consulted to get the most current guidance before responding to any forest health threat.

A few threats in particular that will influence tree management:

Oak Wilt

Oak wilt is common in the town and kills many trees every year. Timing of pruning and removals to avoid summer wounding is a key prevention strategy. The Town Tree Ordinance prohibits cutting oaks between April 1st and October 15th, except in emergencies.

Dutch Elm Disease

DED affects many American elms every year. The disease has a similar biology to oak wilt. Except in the highest value cases, preventative fungicide injections will not be practical for town trees. Good sanitation to remove dead and dying elms, as well as those highly likely to be root grafted in disease pockets should be employed. Cut elm wood should always be removed from the site and either chipped, burned, cut and split, or piled and covered for one season to prevent transmission of the disease by bark beetles - DED's main insect vector.

Twolined Chestnut Borer

Adult twolined chestnut borers primarily attack oaks that are damaged by drought or trees that are suppressed or declining. Urban oaks that suffer stress from trunk and root injury, soil compaction, and changes in soil depth are equally vulnerable to attack by this pest. The town's stock of old bur and white oaks are susceptible to twolined chestnut borer attack, especially when they are under drought stress or in a state of decline.

Except in emergencies, do not prune infested oaks until after October 15th, when the extent of dieback can be clearly determined. Fell and remove infested oaks from autumn through early spring. In both pruning and removals, practice thorough sanitation, removing all infested wood and promptly chipping, burning or debarking to prevent emerging borers from surviving.

Supplemental watering can help reduce stress levels during droughts, improving tree health, although a 36" tree requires a larger volume of water than can easily be applied on remote locations away from water sources.

Gypsy Moth

Gypsy moth is now established throughout eastern and central Wisconsin. While gypsy moth infestation rarely results in outright mortality to healthy trees, it can

become a primary stressor that weakens susceptible trees enough to set them up for attack by secondary pests such as the twolined chestnut borer.

Use of burlap bands, or sticky barrier bands to trap gypsy moth larva can be effective in protecting individual trees during spring infestations.

If a severe infestation becomes established the town can consider use of a registered pesticide such as the microbial and biological pesticide *Bacillus thuringiensis (Bt).*

Emerald Ash Borer

Emerald ash borer (EAB), *Agrilus planipennis* Fairmaire, is an exotic beetle that was discovered in southeastern Michigan near Detroit in the summer of 2002. EAB larvae (the immature stage) feed on the inner bark of ash trees of all species, disrupting the tree's ability to transport water and nutrients. Emerald ash borer was discovered in Washington and Ozaukee counties in Wisconsin in summer 2008, and as of this writing the extent of the infestation was still undetermined.

Active control of EAB through systemic insecticide treatments is an option for yard trees, but will not be a practical option for ash trees in the town's jurisdiction. Although it is highly possible that EAB will spread throughout Wisconsin, it is premature to remove ash trees at this time. If an EAB infestation is discovered in Dane County, an emergency quarantine on ash products would go into effect.

The DNR Urban Forestry Program has produced an Emerald Ash Borer Toolkit for Wisconsin Communities to prepare them for the anticipated arrival of EAB. The toolkit can be accessed at http://www.dnr.state.wi.us/forestry/uf/eab/

✓ *Educate residents about the future threat of EAB and discourage any movement of ash firewood into the town*

✓ *Scout for possible signs of EAB during inventory work and when performing tree work*

VII.3 Goal: Enhance the Town Tree Resource through Planting and Restoration.

Maintaining the benefits of trees and the town's scenic tree resource will require a significant investment in planting and restoration. The conditions that allowed so many native tree and plant species to flourish 150 years ago are no longer present today. The town will need to actively manage and restore trees or other natural communities that are desired on the landscape.

Unlike cutting trees down, planting and restoration are activities that are attractive, get people excited, and that can help spur volunteers and build support for a tree program.

VII.3.1 Protect and Enhance the Park Tree Resource.

In town parks, planted trees are generally doing well, however many more planting opportunities exist in parks. Several parks, such as Sinaiko, Colladay Point or Dunn Heritage, support prairie and oak savanna vegetation. Planting here needs to reflect the needs to burn and maintain open conditions here – and swamp white oak and bur oak are ideal for that purpose.

The tree board and town staff will need to coordinate with the Parks Commission to ensure a common goal for planting in parks. A simple 1-page management plan should be developed for each park property that identifies current condition, states a management objective (e.g. "A tallgrass prairie and oak savanna ecosystem, with bur and white oaks established at a density not to exceed 50 trees per acre). Such a simple guidance along with a photo-map would be sufficient to allow planning for purchasing stock planting.

Some town parks (Colladay, Dunn Heritage) are dependant on regular use of fire to keep the tree and shrub component in check, and without it they would likely be quickly taken over by woody vegetation. Having clear goals for those properties will help determine how much planting needs to occur.

- ✓ *In consultation with the town Parks Commission, develop simple 1-page management schedules for each town park that describe current conditions, establish long-term goals, and list practices and timing to achieve those goals (also VII 3.1).*

- ✓ *Mature trees in parks should be evaluated and managed as needed for hazard and forest health considerations as described in previous sections.*

- ✓ *Invest in tree planting in parks consistent with management goals.*

VII.3.2 Roadside Restoration and Planting

While most trees growing along rights of ways are more or less natural vegetation, the current explosion of invasive shrub species is eliminating future natural germination of trees. Dunn will need to actively manage roadsides to reduce the dominance of unwanted vegetation and ensure the establishment of desirable trees to replace ones being lost. In some road segments the loss of old silver maples (Keenan Road near town hall for example) is resulting in almost complete conversion to common buckthorn. Although many people do not notice such a slow change, and shrubs rarely create a safety hazard,

the impact of those changes over a large area can have a cumulative impact on aesthetics and ecology.

Restoration

Common buckthorn and Eurasian honeysuckle are the two most common invasive shrub species in treelines. In some selected road segments where there are few if any desirable trees and an abundance of invasive vegetation, we recommend starting over. This would involve removing trees (e.g. dead elm and boxelder), and using a clearing methods such as forestry mowing equipment with carbide cutter teeth, to cut and mulch all woody vegetation below ground level prior to re-planting native trees along with a grassy cover crop. If invasive shrubs cannot be grubbed out below ground their cut stumps can be treated with a systemic herbicide such as Garlon-4 (triclopyr) that is applied in an oil carrier. See this WDNR fact sheet on buckthorn:
http://www.dnr.state.wi.us/invasives/fact/buckthorn_com.htm

This type of intensive "do over" is expensive, and the town will certainly not have resources available to do this on a large scale, at least initially. We suggest selecting a few short segments where this work can be performed on a pilot basis, to refine the best methods and demonstrate effectiveness.

In some areas invasion of the biennials wild parsnip and garlic mustard are also abundant in treelines. Wild parsnip is a safety hazard as a result of its phytotoxic properties on exposed skin and for that reason we recommend the town make efforts to control it. Hand digging below ground is effective for very small populations of just a few plants. Repeated mowing of plants after they flower but before they set seed is an effective control method for larger areas. Spot applications of Glyphosate or 2,4,-D herbicide can also be effective. See this WDNR fact sheet for wild parsnip:
http://www.dnr.state.wi.us/invasives/fact/parsnip.htm

In areas targeted for invasive species control it will be desirable to coordinate with neighboring landowners to improve control of infestations that cross property lines. After restoration, tree planting can occur following the same considerations as discussed below.

- ✓ *Secure funding and target one or more segments of town roadside for invasive species control, restoration and tree planting. Promote this practice.*

Planting

Dunn has many miles of roads, especially along cropped areas, with no woody vegetation, and where mowing maintains grasses. For open road segments where planting opportunities exist, the roadside inventory should develop planting targets including distance between trees, species mix, size, etc., before costing out and planning the planting effort. We suggest an average spacing of 100' between planted roadside trees, however wider spacing of up to 300' could be employed for specific objectives. Assuming both sides of a road being open, 100' spacing would result in about 100 trees per mile of road being planted.

All purchased trees should conform to the American Standard for Nursery Stock, ANSI Z60.1. published by the American Association of Nurserymen, Inc. 1250 I St. NW, Suite 500, Washington D.C. 20005.

While maintaining and replacing oaks is a desirable goal, a competing goal is to retain diversity in the tree resource to provide resilience to current or future threats to tree health. For this reason we recommend that roadside tree planting include a balanced mix of species – see table below.

Table V.1: Trees Recommended for Planting – Town of Dunn.

Common Name	***Latin name***	***Site Clearance***	***Suggested %***
Bur Oak	*Quercus Macrocarpa*	Tall	20
White Oak	*Quercus alba*	Tall	20
Swamp White Oak	*Quercus bicolor*	Tall	10
Honeylocust	*Gleditsia triacanthos*	Tall	10
Hackberry	*Celtis occidentalis*	Tall	10
Basswood	*Tilia Americana*	Tall	10
Red Maple	*Acer rubrum*	Tall	5
Kentucky Coffee Tree	*Gymnocladus dioica*	Med	5
Ohio buckeye	*Aesculus glabra*	Med	5
Cockspur hawthorne	*Crateaegus crus-galli*	Med	5
Flowering crabapple	*Malus sp.*	Small*	25
Serviceberry	*Amelanchier arborea*	Small*	25
American hornbeam	*Carpinus Caroliniana*	Small*	25
Ironwood	*Ostrya virginiana*	Small*	25

*Suitable for planting underneath utility lines.

- ✓ *Begin a roadside planting program, guided by roadside inventories, with a goal of establishing trees at an average density of 100 trees per mile along 2 miles of roadside each year.*

Maintenance

Small investments in early maintenance for newly planted trees is a very effective way to assure survival, long life, and reduced maintenance costs for trees as they mature.

- ✓ *Newly planted trees should receive routine maintenance during their early years of growth including supplemental watering during dry periods in at least the first two years after planting, and training pruning at least once every three years during the first ten years of growth.*

✓ *Invest in tools and equipment to maintain newly planted trees, including pole pruners and pole loppers, and a trailerable watering tank.*

VII.4 Goal: Encourage the Preservation and Care of Trees on Private Ownerships.

Most of the 36 square mile Town of Dunn is held in private ownerships, and trees on private lands comprise the majority of the town's tree resource. Private land trees include planted yard trees, trees in farmyards, treelines in crop fields, and private woodlots. Many residents hire arborists to perform tree care, others hire tree care contractors that may have little or no arboriculture training. A few woodlot owners harvest timber from their lands on an occasional basis.

The town has limited direct control over trees on private lands, however it does have authority provided through town ordinance. The State of Wisconsin also exercises some authority to protect trees and woodlots. A few of the regulatory "levers" that protect trees on private ownerships include:

- Restrictions on pruning or cutting of oaks, per Town Ordinance Number 20
- Protections for voluntarily designated "Heritage Trees", per Town Ordinance Number 20
- Protections for trees in development that may be stipulated by the town plan commission in reviewing and approving new development per authority granted in various land use related ordinances.
- Protections for trees or woodlots that may exist within conservation easements held by either through the Dunn PDR program, or non-governmental land trusts such as the Natural Heritage Foundation.
- Protections for trees or woodlots that may exist in state or federal conservation programs such as the Conservation Reserve Program or Wetland Reserve Program.
- Protections for private woodlots enrolled in Wisconsin's Managed Forest Law.

By far the town's strongest tool however for protecting trees and enhancing the tree resource on private lands arise from <u>non-regulatory activities</u> which can include:

- Town staff and tree board members directly educating residents about tree care and healthy trees.
- Providing an information conduit for resident's access to tree care information from other sources.
- The goodwill and influence generated as a result of the town demonstrating an active role managing it's own tree resource.

VII.4.1 Increase the Individual and Community Benefits of Trees on Private Property.

The town can best act to protect and enhance the tree resource on private lands through an active program of education and outreach. The tree board has already begun that effort successfully through well-publicized planting events, by providing trees to residents at little or no cost, and by promoting tree care in the town newsletter.

We recommend the following routine activities as part of this strategy:

- ✓ *Feature the tree resource in at least two issues of the newsletter annually.*

- ✓ *Hold at least one public event to celebrate trees annually.*

- ✓ *Contact neighboring residents in areas where roadside inventories are scheduled and use those contacts as opportunities for building support for trees and tree care with residents.*

- ✓ *Contact neighboring residents in areas where routine removals or pruning are scheduled. Resolve boundary and wood disposition questions prior to starting work where possible. Use those contacts as educational opportunities.*

VII.4.2 Increase the Individual and Community Benefits of Healthy Woodlots.

According to the 1990 land use census private woodlots comprise about 1220 acres, or very roughly 6% of the land base in the town. In many respects woodlots are the most neglected, and one of the most threatened natural resources in the town. By contrast, wetlands and prairies receive a good deal more resources and attention than do woodlands. If the current trajectory is followed, another generation will see most of what had been oak woodlands almost completely converted to thickets dominated by non-native invasive shrubs.

The town has limited resources in this area, and certainly cannot successfully address the challenge of maintaining and restoring forests alone. With out of sight being out of mind, the relative lack of interest on the part of landowners in the stewardship of woodlots is a significant challenge.

The town can promote sound stewardship of private woodlots through the following activities:

- ✓ *Feature a town woodlot, its owner and their activities in at least one issue of the town newsletter each year.*

- ✓ *Identify motivated owners of woodlots and assist them in executing a demonstration forest stewardship project. Publicize this demonstration through a field tour.*

- ✓ *Maintain a list of woodlot owners in the town, and be prepared to communicate with them directly about emerging issues such as gypsy moth or emerald ash borer.*

VIII. Action Items and Implementation Schedule*

Action Item	Target Date*
Eliminate Hazard and High Risk Tree	
Hazard tree survey – completed	Sept, 2008
Scheduled removals for hazard trees – completed	Sept, 2008
Pruning high-risk trees	Dec, 2009
Establish a Comprehensive Tree Care Program	
Roadside tree and vegetation inventory - year 1	August 2009
Parks tree and vegetation inventory	October 2010
Roadside tree and vegetation maintenance - year 1	April 2010
Identify and register historic trees	2009 - ongoing
Planting and Restoration	
Roadside planting (and maintenance) program – year 1	April, 2010
Roadside restoration and invasive species control – year 1	October, 2010
Park tree planting (and maintenance) program – year 1	April, 2010
Trees on Private Ownerships	
Newsletter items on tree resource 2x/yr.	2009 - ongoing
Public event to celebrate trees	2009 - ongoing
Demonstration forest stewardship project	Dec, 2012

*Target date represents the date by which the action item, or the first phase of the action item, will be completed. For ongoing activities, the target date represents the date or year by which the activity will commence. The scope of implementation on tree planting and maintenance activities will remain subject to available funding.

IX. Budget Justification

Following is an estimated budget for tree care activities that can be anticipated for implementation of the strategies recommended in the plan. These cost estimates are for external costs only (e.g. contractors), and do not reflect personnel and equipment costs that the town would contribute in-house to the urban forestry program.

Action Item	2009	2010	2011
Eliminate Hazard and High Risk Tree			
Hazard tree survey	1500		
Scheduled removals for hazard trees (2 days @800/day)*	1600		
Pruning high-risk trees (4 days @ 800/day)	3200		
Establish a Comprehensive Tree Care Program			
Roadside tree and vegetation inventory (13@150/mi)	1950	1950	1950
Parks tree and vegetation inventory		1500	
Roadside tree and vegetation maintenance (@$1100/mi)		3575	3575
Planting and Restoration			
Roadside planting program (200@ 45/ea)		9000	9000
Roadside restoration/ invasive species control (1 mi @ 2400)		2400	2400
Park tree planting program			2010
*Park and roadside planting maintenance (200@ .5 hrs)**			
Trees on Private Ownerships			
*Newsletter items on tree resource 2x/yr**			
*Public event to celebrate trees**			
*Demonstration forest stewardship project**			
Totals	**$8250**	**$18,425**	**$18,935**

*Items with asterisks are activities the town can perform all of or part of in-house.

X. Information and Evaluation

X.1 Managing tree resource information

Inventory information in natural resources allows managers to use time, money and people most effectively. Collecting and using data also costs time and money – so the perennial challenge in information management is only collecting the information that is really useful, and so there are more resources available to actually do the work that needs to be done.

Larger cities with urban forestry programs typically have extensive tree inventory databases. This data is increasingly integrated into Geographic Information Systems that may also include roads, utilities, and other elements of the built environment. The size and condition of the Dunn tree resource warrants a relatively simple approach to information – a modest step forward from where the town is in 2008.

If the town begins collecting tree resource information, either through routine inventory described in X1.1 or in scouting described in X 1.2, one person will need to be identified as the custodian of that information. That person could be a town employee, a contracted arborist/forester, or could be the town forester if such a position is ever created.

X.1.1 Inventory Methods

The basic information to be collected in a comprehensive roadside inventory should be as follows. See Appendix B for an example of a tree inventory worksheet.

1). The basic inventory/mapping unit will be segments of roadsides ranging from 1/10th of a mile and larger. Within that segment the general condition, management needs and recommended actions for that roadside and the trees within it would be recorded.

2). Individual trees that are either high-risk, hazardous, or considered candidate heritage trees would be recorded individually. For example all hardwood trees > 36" would be recorded individually regardless of condition. High-risk or hazardous trees larger than 24" needing removal or pruning would be recorded individually. Trees that do not meet this test would still be managed as needed, but would not warrant recording in an inventory. The arborist performing the inventory work would mark all trees designated for pruning or removal, or could elect to designate certain types of trees (e.g. "all boxelders <10" diameter that are crowding desirable native oaks") so that contractors or crews would have clear direction for work.

3). Since many roadsides include a significant component of invasive shrubs and other vegetation, management recommendations would also consider removal and restoration of undesirable vegetation, recognizing that resources may be limited to accomplish that work initially. The inventory should classify recommended work into low/medium/high priority.

4). Many roadsides include long stretches that are treeless. Recommendations for roadside inventory should include planting needs, and provide information on planting conditions, utilities, etc.

X.1.2 Tree health monitoring and scouting

Monitoring tree health should be a routine activity. Town crew members travel all town roads regularly enough that almost all scouting activities for tree health problems can occur opportunistically as other work is being performed. The town crew and tree board members can always be on the lookout for signs of tree defects and hazards, insect and disease outbreaks, and other tree problems. Tree board and town crew members should be aware of the most common tree health problems (e.g. oak wilt), as well as signs of future threats (e.g. emerald ash borer) that may be present but have not yet been identified in the area. There should be a clear protocol for how and to whom to report such information.

Town crew and tree board members should be aware of, and ideally should be able to identify the likely occurrence of the following basic situations:

- Clearly identifiable tree hazards
- Crown dieback
- Root injury
- Oak wilt disease
- Dutch elm disease
- Gypsy moth infestation
- Emerald ash borer

X.2 Measuring success

Elected leaders should be able to evaluate major program investments by how well goals and objectives are achieved. Most of the goals and objectives listed in this plan are performance-based, and progress toward meeting them can be gauged with at least some success using performance measures.

Following are measures that the town can track to report accomplishments and evaluate the success of its urban forestry program.

- ✓ Number of trees removed after failure. Emergency removals should decline significantly after Phase I of hazard tree removals are completed in 2009.
- ✓ Number of trees removed in scheduled removals. This number will spike in 2008-2009, and should decline thereafter as the oldest, most hazardous trees are removed from the population.
- ✓ Number of high-risk trees pruned. Likewise, this number should be high in 2008-2009, and should decline thereafter.
- ✓ Number of roadside miles inventoried.
- ✓ Number of roadside miles receiving routine management. If a stable funding source is secured this number would ideally remain somewhat constant.
- ✓ Number of roadside miles receiving restoration (invasive species) treatments. This number will likely be dependant on available funding and the work required will not exceed the need for the foreseeable future.
- ✓ Number of roadside trees planted and maintained.
- ✓ Number of park trees planted and maintained.
- ✓ Number of resident contacts regarding trees and tree-related assistance.
- ✓ Number of public events promoting trees.
- ✓ Number of articles about trees / woodlots in the town newsletter.

XI. Attachments

1). **Ordinance Number 20 – Town Tree Ordinance (Word)**

2). **Town of Dunn (draft) roadside inventory worksheet 9-15-08 (Excel)**

3). **Developing Tree Purchase and Planting Specifications for Bid –WDNR (Word)**

4). **New Tree Planting Brochure – WDNR (PDF)**

5). **Tree Pruning Brochure – WDNR (PDF)**