



Interim Forest Management Plan

Big Roche-a-Cri Fishery Area

Property Identifiers

| | |
|-------------------------|---------------------------------------|
| Property Name: | Big Roche-a-Cri Fishery Area |
| Property Type: | Fisheries Management |
| Forestry Property Code: | 0107 |
| Property Location: | Adams County and Waushara County |
| Property Acreage: | 813 Acres |
| Master Plan Date: | 1980 Not an NR44 compliant masterplan |
| Property Manager: | Jennifer Bergman |

Property Assessment

A. Property Context

Ecological Landscape: The property is located in the Central Sand Plains Ecological Landscape

Bedrock: Late Cambrian sandstone that contains strata of dolomite and shale. Most exposures are of Cambrian sandstones. Precambrian igneous (granite) and metamorphic (gneiss) rocks lie beneath the sandstone.

Geology & Landforms: An extensive, nearly level expanse of lacustrine and outwash sand that originated from a huge glacial lake characterizes much of the Central Sand Plains. Sand was deposited in Glacial Lake Wisconsin by outwash derived from melting glaciers to the north. Exposures of eroded sandstone bedrock remnants as buttes, mounds, and pinnacles are unique to this ecological landscape.

Soils: Most soils formed from deep sand deposits of glacial lacustrine or outwash origin or in materials eroded from sandstone hillslopes and sometimes with a surface of wind-deposited (aeolian) sand. These soils are excessively drained, with very rapid permeability, very low available water capacity, and low nutrient status. In lower-lying terrain where silty lacustrine material impedes drainage, the water table is very close to the surface. Such areas are extensive in the western part of the ecological landscape where soils may be poorly drained with surfaces of peat, muck, or mucky peat. Thickness of peat deposits ranges from a few inches to more than 15 feet.

Hydrology: The hydrology of the Central Sand Plains is characterized by large areas of wetlands and a number of generally low-gradient streams that range from small coldwater streams to large warmwater rivers. Major rivers include the Wisconsin, Black,



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East Fork of the Black, Yellow, and Lemonweir. A number of headwaters streams originate in the extensive peatlands west of the Wisconsin River. Natural lakes are rare and are limited to riverine floodplains and a few scattered ponds within the bed of extinct Glacial Lake Wisconsin. The hydrology of this ecological landscape has been greatly disrupted by past drainage, channelization, impoundment construction, and groundwater withdrawal.

Current Landcover: The eastern portion of the Central Sand Plains is a mosaic of cropland, managed grasslands and scattered woodlots of pine, oak, and aspen. Many of the historic wetlands in the east were drained early in the 1900s and are now used for agricultural purposes. Plantations of red pine are common in some areas.

B. General property description

The Big Roche-a-Cri State Fishery Area has a project boundary goal of 1,030 acres and 843 acres has been purchased by the State in the project boundary area totaling a little over \$343,000 to protect and enhance Big Roche-a-Cri Creek, and to provide the public with a multitude of recreational opportunities. The Fishery Area is managed for trout habitat, wildlife, and upland best forest management practices. Additional benefits include for the public to recreate on the property for hiking, bird watching, hunting, trapping, snowshoeing, fishing and more.

Big Roche-a-Cri Creek is Class I trout water from County Highway W in Adams County upstream to the headwaters in Waushara County. This same section is classified as an Outstanding Resource Water to the Adams County line and is classified as an Exceptional Resource Water in Waushara County. From County Highway W downstream to Big Roche a Cri Lake, the stream is Class II trout water. A Class I classification are for high quality trout waters that have provide habitat for sufficient natural reproduction to sustain populations of wild trout, at or near carrying capacity. Consequently these streams require no stocking of hatchery trout. Class II streams have habitat to support some natural reproduction, but not enough reproduction occurs for the trout population to utilize available space and food. Therefore, stocking of hatchery trout is required to maintain a desirable sport fishery. Stocking has occurred throughout the past in the Class II waters.

Since 1998, an annual fish survey has been conducted at a trend site. The catch rate of adult brook trout at this site has varied from approximately 400 to 900 fish per mile. In 1980, Big Roche-a-Cri Creek was the first stream in Adams County to receive trout habitat improvement work. The Department completed trout habitat improvement work within the Big Roche-a-Cri State Fishery Area located off of Archer Drive. The habitat project included installing 29 overhead structures (also called boom structures) using the Guidelines for Management of Trout Stream Habitat in Wisconsin. In 2014, a maintenance project was started to replace the overhead structures and complete additional trout habitat improvement work. In the past other trout habitat work included: removing willow and alder brush, planting of native grasses in improve shading and stabilize the streambank, and beaver and beaver dam removal.

The Big Roche a Cri Fishery area has been improved with public parking areas off of Archer Drive, Adams County and off of 4th Avenue, Waushara County. Other parcels can be accessed off of the road (1st Avenue, 2nd Avenue, and County Highway KK, Waushara County). In addition, the State Fishery Area is maintained with signs and gates installed to prevent vehicle use on the property.



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C. Current forest types, size classes and successional stages

Current forest types, size classes and successional stages

The property consists of 813 acres, of which 194 (24%) is non-forested and 619 (76%) is forested.

Type classification for the 194 non-forested acres are:

| | |
|------------------------------------|-----------|
| Upland Grass..... | 3 acres |
| True Grasses..... | 57 acres |
| Herbaceous Vegetation..... | 8 acres |
| Low-Growing Shrubs..... | 7 acres |
| Lowland Herbaceous Vegetation..... | 3 acres |
| Water..... | 1 acre |
| Lowland Brush-Alder..... | 113 acres |
| Lowland Brush- Red Dogwood..... | 2 acres |

Timber types for the 619 forested acres are:

| | |
|----------------------|-----------|
| Aspen..... | 5 acres |
| White Birch..... | 14 acres |
| Red Maple..... | 170 acres |
| Oak..... | 139 acres |
| Jack Pine..... | 33 acres |
| Red Pine..... | 23 acres |
| White Pine..... | 77 acres |
| Swamp Hardwoods..... | 150 acres |
| Tamarack..... | 8 acres |

Stand age records the dominant tree's age in 5 year increments and is used to aid as a management tool to help determine when to harvest some trees. Currently, the aspen (5 acres) on the Fishery Area is between 21-25 years of age. Aspen stands usually decline and deteriorate near the age or 55-60 on good quality sites. The White Birch type (14 acres) is mature to over mature and is divided into the 76-80 and 81-85 year age class currently. Red Maple (170 acres) is the largest cover type with 27.4% of the total forested acres. Red Maple age ranges from 16 years to 75 year with 74% being between 66 and 75 years old which is mature or near mature. Oak Stands (139 acres) also have a wide age spread from 31-125 years of age. All but 9 acres are over the age of 76 years old and are mature to over mature on this site. Jack Pine (33 acres) is about half way through its life cycle in the age class of 31-35. Red Pine stands (23 acres) are of mixed origin with some natural reproduction and other areas of plantation origin. 8 acres of Red Pine is 31-35 years old and the remaining 15 acres is 51-55 years old. White Pine (77 acres) also comes from both a plantation and natural origin. 68 acres is between 26 and 55 years old while the remaining 9 acres is 121-125 years of age and is mature on this site. Swamp Hardwoods (150 acres) is the second largest timber type with 24% of the forested area. The Swamp Hardwoods vary in age from 16 to 80 years of age and will see little in the way of active management due to their proximity to the Big Roche-a-Cri Creek. Tamarack (8 acres) is all encompassed in the 36-40 year age class and is roughly halfway through its expected life span.

The primary forest management objectives for the forest timber types on the Big Roche-a-Cri Fishery Area property are listed below.



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Aspen: Aspen forests consist predominantly of trembling aspen (also known as quaking aspen) and big tooth aspen. Red maple, paper birch, balsam fir, red oak, white pine, and other native trees commonly grow with aspen. Aspen is a relatively short lived tree that usually regenerates all at once following a major disturbance such as wind, fire, or cutting. Aspen requires full sunlight and does not grow well in the shade of taller trees. Aspen grows best on well-drained loamy soils, but can do well within a wide range of soil conditions. Clearcutting (coppice) is the best method to regenerate aspen. The target age for aspen on the Big Roche-a-Cri Fishery Area is 45 years.

White Birch: White birch comprises at least 50% of white birch forests, but pure stands of white birch are rare to find. Commonly white birch stands are found containing aspen, balsam fir, jack pine, red oak, sugar maple, white spruce, yellow birch, and American beech. White birch grows best on well drained fertile soils, glacial outwash, and glacial till. White birch needs full sunlight to grow and survive and without enough sunlight white birch will be out competed by other more shade tolerant species. White birch stands on the Big Roche-a-Cri Fishery Area are over mature and are converting into a later successional forest type.

Red Maple: Red maple stands are predominantly red maple and include northern red oak, white birch, aspen, white pine, black cherry, and black oak. Red maple can be found on a wide range of soil types and is considered mid-tolerant of shade while growing. Red maples rarely live to be over 150 years of age on very good quality sites. Red maple will have a target rotation age of 65 years on the Big Roche-a-Cri Fishery Area.

Oak: The oak cover forest type at the Big Roche-a-Cri Fishery area is primarily made up of black oak and white oak along with aspen, white pine, red maple, and elm. Oak trees are a mid-tolerant species when dealing with shade from other trees, and do best when given full light to grow. Oak forests have evolved with fire and regenerate very well after a fire burns through the stand. That is why foresters try to emulate the effects of fire to regenerate oak seedlings. That is usually done through clearcutting and making large open gaps for the seedlings to get full sunlight. Oak regeneration on the Big Roche-a-Cri will be done by cutting gaps around the large mature oak trees where the acorns can germinate with less shading and growing competition from nearby trees. The target rotation age of oak on the Big Roche-a-Cri FA is 65 years.

Jack Pine: Jack pine forests are composed of more than 50% jack pine. Red pine, white pine, oak, aspen, and other native trees commonly grow with jack pine. Jack pine needs full sunlight and regenerates after forest fires. Jack pine is declining in abundance in Wisconsin due to forest fire control efforts. It is a hardy species and is most common on dry sandy soils, but grows well on well-drained loamy sands. Jack pine is managed through even-aged silviculture such as clearcutting and over-story removal harvests. The target rotation age for the jack pine type on the Big Roche-a-Cri FA is 45 years.

Red Pine: Red Pine forests are composed of more than 50% red pine. White pine and jack pine, aspen, oak, and other native trees commonly grow with red pine. Red pine has been a common tree in plantations. Red pine grows best in well-drained loamy sands and sandy loams within its range in northern and central Wisconsin. It can grow on a wide range of other soil conditions if introduced by planting. All red pine acreage is of plantation origin on the Big Roche-a-Cri FA. The objective of the red pine is to conduct improvement thinnings at ages 25, 35, and 45, with a final harvest for regeneration at age 55. Red pine in central Wisconsin faces several insect and disease issues which must be evaluated and considered during management.



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White Pine: White pine forests consist of more than 50% white pine. Red and jack pine, aspen, paper birch, red maple, oak, balsam fir, white spruce, eastern hemlock and other native trees commonly grow with white pine. White pine is a long-lived tree species that was common in Wisconsin's historic forests. Heavy logging during the cutover made white pine scarce for a time. As trees are becoming old enough to be good seed producers, its numbers are increasing. White pine grows in almost all soil conditions in Wisconsin but does best on loamy sands, sandy loams, and loam soils. The white pine type on the Big Roche-a-Cri FA has both natural and plantation origin stands. The objective for white pine on the Big Roche-a-Cri FA is to encourage expansion and the maintenance of this type through improvement thinnings and regenerations harvests at age 100, while keeping some large mature white pine as well.

Swamp hardwoods: Swamp Hardwood Forests consist of any combination of more than 50% black ash, green ash, red maple, silver maple, swamp white oak, or American elm. This type occurs on wetlands characterized by a fluctuating water table near or above the soil surface with a subsurface water flow. Aspen, white cedar, balsam fir, white pine, white birch and other native trees commonly grow with swamp hardwoods. Swamp hardwoods typically grow on very wet soils in closed water basins that do not have a stream or river running through them and that experience significant water table fluctuation. Though capable of growing in semi-stagnant conditions, they grow best if the water is moving and aerated. Swamp hardwoods are subject to wind throw due to high water table. On some sites, the growth of swamp hardwoods can be slow, making some swamp hardwood stands non-productive. Swamp hardwood stands on the Big Roche-a-Cri FA will be managed to promote long lived tree species such as oak and red maple to protect the fishery, this will be done using single tree selection methods to promote growth and forest health.

Tamarack: Tamarack stands are more than 50% swamp conifers with tamarack being the predominant species. Red maple, aspen, white pine, and paper birch can be found with tamarack growing on mineral soil like in the Big Roche-a-Cri FA. Tamarack can grow on a variety of soils from moist organic peats and mucks, but does best on rich moist, but well-drained loamy soils near streams, lakes, or swamps. Maximum age is 150-180 years, but tamaracks commonly produce seed before the age of 50. Tamarack is very intolerant of shade and needs full sunlight to grow. The tamarack on the Big Roche-a-Cri FA will be managed using an even-age clearcut method near the age of 80 years.

D. NHI: Endangered, threatened, Special Concern species, Species of Greatest Conservation Need (SGCN)

There is one federally endangered species, one state threatened species and a couple state special concern species identified within the general vicinity of the property. Negative impacts to these species will be avoided by following the DNR's Species Guidance Documents: <http://dnr.wi.gov/topic/endangeredresources/guidance.asp> In cases where species guidance documents haven't been developed, avoidance of rare species will occur via practices such as time of year restrictions, modified harvest boundaries, and/or consultation with rare species experts.

There are a number of High Priority Species of Greatest Conservation Need (SGCN) identified within the Central Sand Plains Ecological Landscape that merit consideration for management on the property.

http://dnr.wi.gov/topic/WildlifeHabitat/documents/PriorityRpt_EL7.pdf. These species include: American woodcock, Golden-winged warbler, Whip-poor-will, dusted skipper



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butterfly, karner blue butterfly, Persius duskywing butterfly, Olympia marble butterfly (young forest/early successional species), and the Red-shouldered hawk (old forest/late successional species).

E. Wildlife Action Plan Conservation Opportunity Areas (COA),

Big-Roche-a-Cri Fishery Area is located in the Central Sand Plains Ecological Landscape as defined in Wisconsin's Wildlife Action Plan (WAP). The ecological setting of the property holds state significance for being within the Central Wisconsin Grassland Conservation Opportunity Area. Although the majority of this property is comprised of forested habitat, the grasslands that remain are of importance as much of the surrounding uplands have been converted to agricultural lands. There are a number of Priority Conservation Actions that have been outlined in the WAP aimed at protecting and enhancing the natural communities present in the area including:

- Maintain lowland shrub communities like alder thicket and shrub-carr, and manage the surrounding working forest to benefit Golden-winged Warblers by leaving scattered off-site aspen, ash, and tamarack in shrub-dominated areas and managing the adjacent upland forest in a shifting mosaic of patch sizes and age classes to provide continuous habitat.

- Manage oaks as a large-scale mosaic of patches along a successional gradient that includes oak forest, oak woodland, oak opening, and open wetland.

- Identify and restore oak/conifer barrens and shrub-dominated habitats through the application of prescribed fire and timber management.

F. Significant cultural or archeological features

According to the Wisconsin Historical Society database, no historical sites are recognized. No known archeological sites are on the property.

G. Invasive species

The invasive species known to exist on the property include spotted knapweed, honeysuckle, buckthorn, autumn olive and Japanese barberry. Wisconsin's BMP's for Invasive Species are mandatory on state owned land and will be followed prior to conducting any forest management activities.

H. Existing State Natural Areas (SNA) designations/natural community types limited in the landscape

No High Value Conservation Forests have been identified on the Big Roche-A-Cri Fishery Area

I. Primary public uses (recreation)

The Big Roche a Cri State Fishery Area provides the public opportunities for fishing, hunting, trapping, hiking, wildlife viewing, and bird watching. Grouse, woodcock, squirrel, rabbit, turkey and deer are hunted. Big Roche a Cri Creek is one of the best trout streams in Adams County and has been known to be heavily fished. Brown trout and native brook trout inhabit the stream.



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J. Biotic Inventory Status

None completed as of March 2015

K. Deferral/consultation area designations

No proposed sites as of March 2015

IFMP components

Management Objectives:

These forests are managed primarily to protect water quality, to provide quality wildlife habitat, and to sustainably harvest timber. Forest management objectives include maintaining existing forest types and developing a diversity of age classes with emphasis on young but including old forest areas for both game and non-game species dependent on these types. This will largely be accomplished through sustainable silvicultural systems that will increase the diversity and structural complexity of wildlife habitat while at the same time avoiding disturbance to riparian areas along the stream corridor.

Forest Management Objectives:

1. Maintain oak cover types where feasible.
 - a. Diversify age classes with emphasis on developing younger stands
 - b. Regenerate oak stands where feasible and promote oak in young mixed hardwood stands.
 - c. Promote/retain larger diameter trees where feasible.

2. Maintain conifer cover types
 - a. Promote older, large diameter white and red pine
 - b. Encourage expansion of white pine

3. Maintain aspen with emphasis on developing younger stands

4. Swamp hardwoods
 - a. Monitor ash resource for emerald ash borer
 - b. Retain and promote large diameter trees, large snags, and large course woody debris

5. All Stands
 - a. Promote snags and course woody debris.
 - b. Protect hydrology
 - c. Protect rare species



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Property Prescriptions

Aspen- Regenerate and promote aspen using even-age management (clearcutting) to increase quality and size of future aspen stands with a target rotation age of 45 years.

White Birch- Natural Conversion to a mixed red maple stand using shelterwood or patch clearcut methods. Since the birch in the stand are currently over mature and many are already dead the stand will be managed as part of the red maple stands. Other silvicultural methods described in the DNR Silviculture and Forest Aesthetic Handbook may also be used. Maintaining white birch in the stand will be a priority and will be included in the silviculture at the time of harvest which is targeted for 60 years.

Red Maple- Regenerate and promote diversity in the red maple stands. A shelterwood or group selection type of harvest will be used to promote diversity by allowing aspen, oak, and ash to regenerate by creating varying light intensities to the forest floor. An emphasis will be put on retaining oak as a mast bearing tree by maintaining large oaks as reserve or green trees. Many large oaks also serve as habitat for cavity nesting game and non-game species. Red maple stands have the target year for rotation set at 65 years with the possibility of some stands having a longer rotation length for aesthetic reasons.

Oak- Regenerate and promote this type primarily through coppice (clearcutting) or overstory removal. Retain groups or individuals for green tree retention and wildlife trees to serve as mast bearing trees and to develop into snags. Oak stands have a target rotation age of 75 years.

Jack Pine- Regenerate and promote this type using even-age management (clearcutting) at a target rotation age of 45 years. Encroachment of oak and white pine is probable after clearcutting, and is acceptable since all species are commonly associated with one another.

Red Pine- Conduct improvement thinnings at ages 35 and 45 with a final harvest at age 55. A natural conversion to an oak or white pine type after harvest is expected, but artificial regeneration by machine planting red pine is also an option if natural conversion fails to meet productivity or consideration for possible conversion to native grassland prairie.

White Pine- Conduct improvement thinnings at age 30 and 60 to develop large diameter trees with a final harvest at age 100. The final harvest will maintain some large diameter pines for aesthetic and wildlife benefits. Other management actions are allowable if they are in accordance with the DNR Silviculture and Forest Aesthetics Handbook.

Swamp Hardwoods- Promote forest health, diversity, and vigor using single tree selection, group selection, and other allowable actions detailed in the DNR Silviculture and Forest Aesthetics Handbook. This forest type borders the Big Roche-a-Cri Stream is helps to protect the waterway. All timber harvesting equipment will be more than 100 feet away from the stream, and will work with the goal of maintaining long lived tree species near the stream. Diversity is a priority in this area to meet needs of stream protection as well as wildlife habitat and food sources. Efforts will be made to encourage a balance between red maple, ash, oak, white pine, and black cherry in this area.

Tamarack- Maintain and promote tamarack on the Big Roche-a-Cri FA by using clearcutting or strip clearcutting to regenerate the stand at a target age of 80 years old.



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Grasslands- Cool and warm-season grassland will be maintained via prescribed fire, mechanical and chemical control of unwanted species. Consider using the best native stands for seed collecting to supplement poorer stands and new conversion areas.

Invasive Species- Identify invasive plant species and implement control practices such as prescribed fire, hand pulling, chemical and mechanical control to eliminate or reduce the negative impacts.

All stands –

- Utilize BMP's for Water Quality to protect streams and wetlands when conducting timber sales.
- Utilize BMP's for Invasive Species to help limit the introduction and spread of invasive species when conducting timber sales
- Retain reserve/legacy/green tree retention trees as groups or individuals throughout the property within harvested stands
- Follow DNR's Species Guidance Documents:
<http://dnr.wi.gov/topic/EndangeredResources/guidance.asp>. to protect rare species. In cases where species guidance documents haven't yet been developed, avoidance to rare species will occur via practices such as time of year restrictions, modified harvest boundaries, and/or consultation with rare species experts.

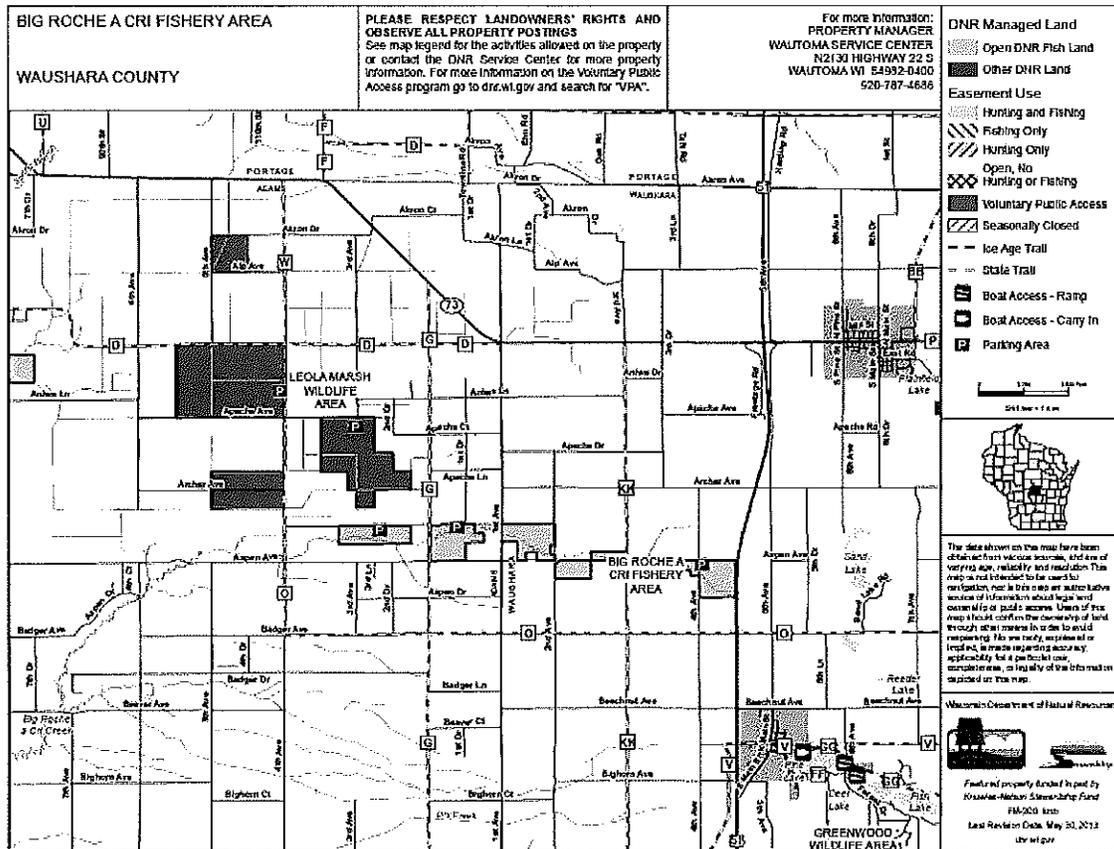


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Maps

a. Property Boundary and ownership Maps



b. Satellite Photo showing Surrounding Land Use



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James Gardner

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James Gardner
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Approvals:

Janice Bergman

Property Manager

10/8/15

Date

Robert H. [Signature]

Area Program Supervisor

10-16-15

Date

Mark Doss

Forester

6-16-15

Date

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Regional Ecologist

10-8-15

Date