

Ho-Chunk Nation
Land Management Plan
Former Badger Army Ammunition Plant
Sauk County, WI



October 2014

**Ho-Chunk Nation
Land Management Plan
for
Former Badger Army Ammunition Plant Parcels**

1.0	Master Plan	
1.1	Executive Summary.....	4
1.2	Introduction.....	4
1.3	Goals and Objectives.....	4
1.4	Natural and Cultural History.....	5
1.5	Euro-American History.....	6
1.6	Land Ownership and Land Use Patterns.....	7
1.7	Economic/Population.....	8
1.8	Biological Diversity.....	8
1.9	Threatened and Endangered Resources.....	8
1.10	Recreation Resources.....	11
1.11	Cultural Resources.....	11
1.12	Geology, Soils, Hydrology, and Climate.....	12
1.13	Wildlife and Plant Communities.....	12
1.14	Forest Resources.....	13
1.15	Forest Type Descriptions.....	13
1.16	Aquatic Resources.....	14
1.17	Parcel Identification.....	14
1.18	Natural Areas.....	15
2.0	Land Management Plan	
2.1	Overall Ecosystem Management.....	16
2.2	Land Management.....	17
2.2.1	Mission.....	17
2.2.2	Management Goals.....	17

2.3	Land Cover.....	17
2.4	Threatened and Endangered Vegetative Species.....	19
2.5	Invasive Species.....	19
2.6	Bison Program.....	21
2.6.1	Introduction.....	21
2.6.2	Program History.....	21
2.6.3	Management Objectives.....	22
2.6.4	Herd Development.....	23
2.7	Prairie.....	23
2.7.1	Introduction.....	23
2.7.2	Program History.....	23
2.7.3	Management Objectives.....	24
2.7.4	Current Prairie Areas.....	25
2.7.5	Management.....	25
2.8	Forest.....	25
2.8.1	Management Objectives.....	25
2.8.2	Current Forest Conditions.....	26
2.8.3	Forest Reconnaissance and Inventory.....	26
2.8.4	Management.....	26
2.9	Wildlife.....	27
2.9.1	Management Objectives.....	27
2.9.2	Birds.....	28
2.10	Hunting.....	28
2.10.1	Deer.....	28
2.10.2	Wild Turkey.....	29
2.10.3	Small Game.....	29
2.11	Agriculture.....	29
2.11.1	Management Goals.....	29

2.11.2	Erosion.....	30
2.12	Aquatic Resources.....	30
2.12.1	Management Objectives.....	30
2.12.2	Surface Waters.....	30
2.12.3	Fisheries.....	31
2.12.4	Watershed.....	31
2.12.5	Wetlands.....	31
2.13	Evaluate Progress.....	32

3.0 Sources

Figures

- Figure 1 Parcel Transfer Map
- Figure 2 Ho-Chunk Nation General Land-use

1.0 Master Plan

1.1 Executive Summary

The Ho-Chunk Nation (HCN) has requested the transfer of an estimated 1552.71 acres of the Badger Army Ammunition Plant (BAAP) declared as surplus pursuant to 25 U.S.C. § 450j(f)(3). This transfer would be for the use and benefit of the Ho-Chunk Nation and their people. The BAAP land has very important historic and cultural significance to the Ho-Chunk people, as it lies within their aboriginal territory and includes a number of historic and pre-historic sites of significance to the tribe.

The transfer of a portion of the BAAP land to the Nation would allow for the restoration of the natural habitats including prairie, wetlands and oak savanna. Habitat restoration activities would complement the reintroduction of a bison herd onto the BAAP property. The bison program will be vital to combating diabetes and other health problems which are common among the Ho-Chunk People. Lastly, the transfer would allow for an increased level of protection and preservation of the historical and cultural elements found on the property.

The purpose of acquiring the BAAP parcel is, as reflected in the mission statement of the United States Department of the Interior, Bureau of Indian Affairs "to enhance the quality of life, to promote economic opportunity, and to carry out the responsibility to protect and improve the trust assets of American Indians, Indian Tribes and Alaska Natives." In accord with those objectives and the Indian Self-Determination Act, acquisition of this property for the benefit of the Ho-Chunk Nation would provide, promote and enhance the Ho-Chunk Nation programs for historic and cultural resource protection, natural resource enhancement, education, employment and economic development. The property would be used to strengthen and expand these programs that are supported, in significant part, by contracts between the Nation and the Department pursuant to the Self-Determination Act, and will primarily benefit the Nation's 7,415 enrolled tribal members.

1.2 Introduction

The Badger Army Ammunition Plant occupies 7,354 acres in the predominantly rural countryside of Sauk County, Wisconsin. The Badger Plant was constructed in 1942 following the United States entry into World War II. The Plant provided ammunition propellant for the duration of the war effort, and was again operative during the Korean and Vietnam Wars. In late 1997 the U.S. Army determined that the BAAP facility was no longer needed to meet the United States defense needs.

Subsequent efforts to define a future for the Badger property have proved challenging due to the site's unusually rich natural and cultural history, the wide range of potential reuse options, and the complexity of local, state, national, and tribal interests involved. The current scenario would result in the Ho-Chunk Nation acquiring 1552.71 acres with the remaining acreage being divided amongst several landowners including the WI Dept. of Natural Resources, U.S. Dept. of Agriculture-Dairy Forage Research Center, Bluffview Sanitary District, WI Dept. of Transportation and the Town of Sumpter.

1.3 Goals and Objectives

The resources of BAAP will be managed by the Ho-Chunk Nation to promote, preserve, and enhance its unique natural, scenic, and cultural features. Management activities are intended to:

- Protect the aesthetic, cultural, scenic, and wild qualities as well as the native wildlife and plant communities. Special emphasis will be placed on designated federal and state-listed species, species of special concern, and other unique biotic features.
- Protect, conserve, and maintain all significant cultural sites.

- Provide for and manage the use and enjoyment by visitors and maintain a diversity of low-impact recreational opportunities for people of all abilities.
- Utilize sound natural resource and agriculture management practices to improve water quality, maintain soil productivity, and protect wildlife habitat.
- Develop a bison program to support HCN nutritional programs and provide educational opportunities.
- Strive to operate a self-supporting project through grants, donations, bequests, and possibly fee-based recreation that is consistent with the overriding commitment to preserve Badger's natural, historical and cultural features.
- Ultimately establish and maintain a visitor's center that includes information and exhibits on Badger's geologic and natural uniqueness, bison management, cultural significance and history of the ammunition plant. The center would also provide information and exhibits on the history of Native Americans and Euro-American habitation of the Sauk Prairie, as well as an educational classroom.

1.4 Natural and Cultural History

The Badger Army Ammunition Plant lies at the junction of three landforms: the Precambrian, quartzite Baraboo Hills to the north; the rolling, terminal moraine of the last (Laurentide) ice sheet to the east; and the glacier's flat, fertile outwash plain to the west. Prior to Euro-American settlement, which began in the 1840s, the tract was a mosaic of tallgrass prairie, oak savanna and semi-open oak woodland.

The Ho-Chunk (formerly known as the "Winnebago") recognize the BAAP property as part of their aboriginal lands that stretch from the Green Bay area west south westwardly into parts of Minnesota then down to the Rock River, over to the Chicago area then north again. Within this area lay thousands of years of ancestors, traditional villages and cultural sites attributed to the Ho-Chunk People. Many of the culturally significant sites throughout the region are still actively acknowledged and used by the tribe to fulfill spiritual needs. Historically, the areas south of Devils Lake (Day-wa-kun-chunk, or Spirit Lake) provided an area where traditional crops such as corn, squash and beans could be readily farmed, medicinal plants could be gathered and seasonal game could be harvested. Along with this, there are ancestral burials, effigies mounds and other earthen components still spiritually and physically in tact which the Ho-Chunk recognizes. Specifically, the BAAP property falls within a cultural district that is an important part of a Traditional Cultural Properties (TCP) associated with the Devils Lake area. The Ho-Chunk considers the BAAP lands an important part of what makes this area spiritually whole.

Ho-Chunk Nation's historical influence over the BAAP property far surpasses that of other transient tribes who traveled through or utilized the area during the historic periods. First contact between Europeans and Ho-Chunk people occurred in 1634, where Jean Nicolet first stepped ashore in what is now known as the Green Bay area. Jean Nicolet's intentions were to establish contact with the "People of the Sea", which the Ho-Chunk were known as by neighboring tribes to the east.

During the early and mid-1800's other dissident easterly tribes such as the Sauk, Fox, and the Kickapoo began to establish villages in various locations throughout the south central Wisconsin region to avoid the pressures of non-Native American populations increasing in their own traditional homelands. During the treaty periods from 1816-1837, the U.S. Government also recognized this area as Ho-Chunk territory by establishing land cession treaties in acknowledgement. Yet by the end of 1837, all land based territories originally recognized as Ho-Chunk had been lost through the treaty process. At that time the removal periods began for the Ho-Chunk which lasted from 1837-1881, effectively making the Ho-Chunk aliens within their own aboriginal homelands. Eight separate attempts were made to remove the Ho-Chunk from Wisconsin to reservations haphazardly set up for them in different parts of Iowa, Minnesota, South Dakota and Nebraska. These attempts ended in failure due to the perseverance of the Ho-Chunk People who repeatedly made their way back to Wisconsin on foot each time they were removed. It was not until 1881

when special legislation was passed permitting Wisconsin Ho-Chunk, avoiding this process by hiding out in the wildernesses of Wisconsin, to formally receive 40-acre homesteads to reside on as land owners.

Today, the Devils Lake region, including the BAAP property, is a fundamental part of the Ho-Chunk traditional belief system, thus necessitating the need for proper cultural protection and unrestricted use by the Ho-Chunk People. The Ho-Chunk Nation is best suited to incorporate and integrate these tribal needs into management of the property.

1.4 Euro-American History

Farmers made use of the fertile prairie soils by turning much of the parcel into productive farmland and also used the adjacent Baraboo Hills for woodlots. In 1941, when the Army announced plans to construct the plant, the former prairies and savannas were relatively treeless—a patchwork of grass hay, row crops, small grains, pasture, hedgerows and farmsteads. In the absence of wildfire, small tracts of savanna left unplowed and ungrazed were developing into woodlots. Those parts of the Baraboo Hills oak woodland that hadn't been cleared were closing in and succeeding to more fire-sensitive, shade-tolerant species like maples and ashes.

The coming of the plant decimated the Sauk Prairie farming community, originally displacing 80 farm families from 10,000 acres. Auctions occurred daily in the spring 1942 forcing families to move. Many farms were assessed at very low values, forcing some families to resort to suing the government at a time when the national psyche was one of government support and personal sacrifice. Hard feelings remain after six decades. Three one-room schools, three churches and a town hall were absorbed by the plant and, like the farmsteads, were torn down. A few homes were moved to local communities. The two cemeteries on the tract were carefully maintained (and another lone grave discovered) but burials were no longer allowed, leaving some family members interred beside the vacant plots of their survivors. After the War, the Army eventually sold some 2,500 acres back to families of veterans as it was not needed to maintain the existing plant.

At the same time, construction of the plant helped end the Depression for thousands of workers and local residents who benefited from retail sales and local construction projects. The construction crew peaked at 12,000 in August 1942, and production began the following winter. Construction and production workers poured in from near and far, finding housing in everything from homes, spare rooms, attics, on-site barracks and a nearby Civilian Conservation Corps (CCC) camp, to trailers and outbuildings. A Federal Housing Project community, Badger Village, was constructed nearby for workers, and the adjacent section of Hwy 12 became Wisconsin's first rural 4-lane highway. Several local businesses and construction companies got their start during this time.

The plant (then called Badger Ordnance Works) was one of 77 Government-Owned Contractor-Operated (GOCO) industrial plants constructed by the U.S. Army for WWII, and one of 23 of these plants that produced explosives or propellants. Badger Ordnance Works was operated by Hercules Powder which produced nitrocellulose that was further processed into smokeless powder, ethyl centralite (E.C.) powder, and rocket powder. The latter product required nitroglycerin, which was also produced at the plant. These propellants were shipped elsewhere to be incorporated into ammunition for small arms, cannons, grenades and small rockets. A dynamite (TNT) production area was planned and partially constructed on lands now under WI Dept. of Natural Resources ownership, but the project was terminated early on in the construction process.

The workforce peaked at 6,600 with three shifts working around the clock. Workers commuted by carpool and plant buses from as far as 80 miles. It included production workers, safety and security forces, administrators, engineers, maintenance and crafts people, a small hospital staff and others. Most of the 1,400+ buildings were of wood-frame construction, which incorporated many design features related to specific production and safety requirements, including non-static concrete-graphite floors, break-out doors, escape chutes, blow-out roofs, concrete partitions, soil-filled timber barricades to direct explosions upward, high-capacity sprinkler systems, etc. To avoid sparks, some machines were powered by steam or

compressed air, and some buildings were lit through windows from the outside. The spacing between specific buildings reflected the distance that explosions might carry. Safety was also incorporated into operational procedures and functional uniforms, which varied among production areas. Smoking and matches were prohibited. Workers were often checked when arriving or leaving the plant, and were generally restricted to their work areas while on-site. A "plant culture" developed around the common experiences that related to production, safety issues, rationing and work on the "home front". These were reflected in a plant newspaper, recreation hall, and stories that have lasted nearly 60 years.

The plant closed shortly after the War ended, but was maintained in readiness until the outbreak of the Korean conflict, when about 5,000 workers again produced smokeless and rocket powder. Near the end of this war, a new section was built to produce Ball Powder. The plant was kept in stand-by mode again until 1966, when it began production for the Vietnam War. During the ensuing 10 years, the plant produced nearly as much propellant as it had for the first two wars combined. It was the focus of at least two antiwar protests and an unsuccessful aerial bombing by protester Karleton Armstrong, whose uncle had been killed by an accidental explosion at the plant in 1945. Armstrong eventually blew up Sterling Hall at UW-Madison in protest of the war.

At the end of Vietnam era production, new facilities were built to produce acids and nitroglycerin. Other facilities were eventually constructed to clean groundwater contaminated by earlier, unsafe disposal practices, and polluted soil and other materials were treated or land-filled. A "buffer" area used for wildlife conservation eventually developed into a 1,400-acre area for prairie and savanna restoration that was managed with several partners. The U.S. Dept. of Agriculture eventually built a Dairy Forage Research Center on the southeast corner of the property and began leasing several hundred acres from the Army for agricultural studies and production. A few warehouses, storage tanks, and an office building were leased to local businesses. The plant was kept at ready until the announcement of its impending excession in 1997. This was part of a larger decision to decommission ordnance plants no longer needed after the Cold War. Salvage of some redundant production lines at the Badger Plant began soon thereafter.

1.6 Land Ownership and Land Use Patterns

The majority of BAAP lands has or will tentatively be transferred to USDA-Dairy Forage Research Center (2,107 acres), WI Dept. of Natural Resources (WDNR) (3,387 acres) and the Ho-Chunk Nation (1,552.71 acres). The remaining acreage will be owned by Bluffview Sanitary District, Town of Sumpter and WI Dept. of Transportation.

The USDA constructed the Dairy Forage Research Center in the 1970s on the government land that was formerly BAAP. In addition, USDA has used approximately 2,000 acres of the remaining 7,354 Army-managed acres since that time for agricultural purposes. USDA requested control of those agricultural fields when Badger was declared excess, and received the acreage in September 2004. USDA continues to use these lands for agricultural research involving forage production and grazing.

The WDNR has acquired the majority of the lands they requested under sponsorship of the National Park Service. These lands are now part of the newly created Sauk Prairie Recreation Area. The WDNR continues to move forward with land transfers as parcels are remediated to meet all applicable state and federal requirements for transfer. WDNR is currently in the process of developing a master plan for the Sauk Prairie Recreation Area. A draft master plan is expected to be released for public comment in the fall of 2014 or early 2015. WDNR lands are primarily fallow, forested or agricultural lands that are periodically open to public access during this ownership transition phase.

Approximately 164 acres has been transferred to the Bluffview Sanitary District. These lands are associated with the existing wastewater treatment plant and community drinking water system that services the remaining buildings on the BAAP parcel and the Bluffview residential community located west of the BAAP parcel.

WI Dept. of Transportation has acquired approximately 61 acres of the BAAP parcel as part of area highway projects to improve transportation safety. Three parcels totaling approximately 4 acres is expected to be transferred to the Town of Sumpter for long-term management of existing cemeteries.

1.7 Economic/Population

The HCN parcel is located in the Township of Sumpter in Sauk County, Wisconsin. Based on the 2010 U.S. Census Bureau Demographic Profile, the Township of Sumpter has a population of 1,191 and a median household income of \$ 37,083. Sauk County has a total population of 61,976 and a median household income of \$ 52,355.

Major employers in Sauk County include the Ho-Chunk Nation Casino and Hotel Convention Center, Lands End, Wilderness Lodge, Grede Foundries and the Kalahari Resort and Convention Center.

1.8 Biological Diversity

Badger lies strategically between the Wisconsin River and the Baraboo Hills, which is the largest remaining stand of mature hardwood forest in the state. A moraine divides the Badger Army Ammunition Plant property from north to south continuum. The eastern half, characterized in pre-settlement days by rolling savannas and kettle ponds, was covered by glacial ice during the most recent ice age. Outwash from the melting glacier formed the plains on the western half of the property. From this flat glacial outwash grew a prairie with soil that was among the richest found in the state.

The biological importance of the property is considerable. Despite the history of intensive land use, remnants of nine natural plant communities survive, including oak savannas and dry prairie. These habitats have been all but eliminated elsewhere in the state. Prior to settlement in the 1800s, savannas and prairies were common features of the Wisconsin landscape, but today less than 1% of the prairies and 0.02% of the savannas remain.

An inventory of the plants at Badger indicates that although much of the property is overrun by invasive species of grasses and woody plants, there is still an abundance of native species. The list of species in a 1993 study includes eight listed as threatened or endangered at the state or federal level and several other species either nominated for listing or listed as "special concern." The small pockets of remnant native communities and scattered patches of native plant species are extremely valuable as seed banks for restoration efforts on site and at other locations in the area.

Despite the scarcity of native plant communities, Badger is also one of the most important habitats for native grassland birds in Wisconsin and even the entire Midwest. The extensive high-quality, mature pastures at the plant provide habitat for meadowlarks, dickcissels, bobolinks, upland sandpipers, and many other species that were once common across the state, but have declined precipitously with the conversion of pasture agriculture to mowed forage crops and row crops. With over half of Wisconsin's grassland bird species in decline, the Badger lands are critical to their survival and eventual recovery.

1.9 Threatened and Endangered Resources

Plant Communities

A 1993 Nature Conservancy (TNC) study identified ten rare plant species at 11 sites within BAAP. These plants were listed as threatened or endangered at the state and/or federal level or nominated for listing or currently listed as "special concern."

Rare Plants Found at Badger Plant, TNC 1993

Common Name	Scientific Name	Status
Round-stemmed false foxglove	<i>Agalinus gattingeri</i>	State threatened
Woolly milkweed	<i>Asclepias lanuginosa</i>	State threatened
Purple milkweed	<i>Asclepias purpurascens</i>	State endangered
Drooping sedge	<i>Carex prasina</i>	State threatened

Prairie bush clover	<i>Lespedeza leptostachya</i>	State endangered Federally threatened
Slender bush clover	<i>Lespedeza virginica</i>	State threatened
Wild quinine	<i>Parthenium integrifolium</i>	State threatened
Tuberled orchid	<i>Platanthera flava</i>	State threatened
Upland boneset	<i>Eupatorium sessilifolium</i>	Rare/special concern
Glade mallow	<i>Napaea dioica</i>	Rare/special concern

Source: Preliminary Ecological Restoration Plan for BAAP, 1999

In 1999, the BAAP attempted to relocate these rare plant species populations on three search sites including TNC sites 11, 104 & 106 (Appendix 1) which are located on a portion of the acreage that the Ho-Chunk Nation will acquire. Investigators did not relocate the following species which were found in the 1993 survey: Drooping sedge *Carex prasina* (WI special concern), Round-stemmed false foxglove *Agalinis gattingeri* (WI threatened), and Slender bushclover *Lespedeza virginica* (WI threatened). Further searches for these plant populations during the earlier period of the growing season could be more successful at relocation (BAAP Rare Plant Mngt & Inventory, 2000 Appendix 2). Site 104 however, picked up a new rare plant, Wild Quinine *Parthenium integrifolium*, which has been introduced in prairie restoration efforts. Tracts O and Q2 contain sizeable parcels that have been used as prairie nursery grounds by the Wisconsin DNR. The 2000 Rare Plant Management Inventory Plan for Badger documents a number of prairie forbs and graminoids that occur on search site 104 within the prairie nursery area of Tract O.



Purple Milkweed

Plant Species Inventory - Site 104

Forbs

Scientific Name	Common Name
<i>Silphium terebinthinaceum</i>	Prairie dock
<i>Solidago canadensis</i>	Canada goldenrod
<i>Baptisia alba</i>	White wild indigo
<i>Echinacea purpurea</i>	Purple coneflower
<i>Solidago rigida</i>	Stiff goldenrod
<i>Monarda fistulosa</i>	Wild bergamot
<i>Ratibida pinnata</i>	Gray-headed coneflower
<i>Rudbeckia triloba</i>	Brown-eyed susan
<i>Helianthus grosseserratus</i>	Sawtooth sunflower
<i>Petalostemon candidum</i>	White prairie-clover
<i>Parthenium integrifolium</i>	Wild Quinine

Graminoids

Scientific Name	Common Name
<i>Andropogon gerardii</i>	Big bluestem
<i>Sorghastrum nutans</i>	Indian grass
<i>Panicum virgatum</i>	Switchgrass

Source: Badger Rare Plant Inventory and Management Plan, 2000

Plant Species Inventory - Site 11

Forbs

Scientific Name	Common Name
<i>Leeria</i>	Cut grass; White grass
<i>Eupatorium perfoliatum</i>	Common Boneset
<i>Lobelia cardinalis</i>	Cardinal flower
<i>Impatiens capensis</i>	Spotted touch-me-not
<i>Polygonum sagittatum</i>	Arrow-leaved tearthumb
<i>Veronicastrum virginicum</i>	Culver's root
<i>Lycopus uniflorus</i>	Northern bugleweed
<i>Cicuta maculata</i>	Water-hemlock
<i>Impatiens pallida</i>	Pale touch-me-not

Graminoids

Scientific Name	Common Name
<i>Phalaris arundinacea</i>	Common Name
<i>Scirpus cyperinus</i>	Reed canary grass
Source: Badger Rare Plant Inventory and Management Plan, 2000	Wool-grass

Plant Species Inventory - Site 106

Canopy

Scientific Name	Common Name
<i>Pinus strobus</i>	White Pine
<i>Acer saccharum</i>	Sugar Maple
<i>Quercus</i>	Oak

Forbs

Scientific Name	Common Name
<i>Goodyera pubescens</i>	Downy rattlesnake plantain
<i>Dryopteris</i>	Shield-fern; Wood fern

Graminoids

Scientific Name	Common Name
<i>Carex pennsylvanica</i>	Pennsylvania sedge

Source: Badger Rare Plant Inventory and Management Plan, 2000

Grassland Birds

Ornithologists have recorded sharp declines in breeding populations of 12 species of grassland birds in Wisconsin over the last 30 years. In fact, grassland birds have experienced steeper, more consistent population declines throughout the Midwest and the U.S. than any other group of species. These declines reflect in part the conversion of land use from open pasture to row crops and frequently harvested hay fields (Ecological Restoration Plan, 1999). Badger is home to 16 species of birds considered to be endangered, threatened, or of special concern in Wisconsin, as well as 6 species under "watch" status due to steep population declines (Sauk Prairie Conservation Alliance). The 1999 Preliminary Ecological Restoration Plan for Badger reported that most of the grassland bird species found at Badger are concentrated in modestly grazed fields that surround the buildings. This area experiences little human disturbance as the majority of the buildings are

Eastern Meadowlark



presently not in use. The Bobolink, Eastern Meadowlark and Sedge wren comprised the three most common grassland bird species in the Ho-Chunk area as surveyed by Mike Mossman in 1998.

Grassland Birds of Conservation Concern at Badger, 1993, 1997, 1998

Common Name	Species Name	Status	Location at BAAP
Upland Sandpiper	<i>Bartramia longicauda</i>	State imperiled	Industrial zone
Eastern Meadowlark	<i>Sturnella magna</i>	Special concern	Throughout Industrial zone
Western Meadowlark	<i>Sturnella neglecta</i>	Rare or uncommon in state; special concern	Throughout Industrial zone
Bobolink	<i>Dolichonyx oryzvorus</i>	Rare or uncommon in state; special concern	Scattered tall grassland areas
Sedge Wren	<i>Cistothorus plantensis</i>	Rare or uncommon in state	prairie restoration and wetland
Dickcissel	<i>Spiza americana</i>	Special concern	Scattered, infrequent
Field Sparrow	<i>Spizella pusilla</i>	Special concern	1300-acre rest. Area
Vesper Sparrow	<i>Pooecetes gramineus</i>	Special concern	short-grassy fields
Grasshopper sparrow	<i>Ammodramus savannarum</i>	Rare or uncommon in state; special concern	grazed areas near buildings

Source: Preliminary Ecological Restoration Plan for BAAP, 1999

1.10 Recreation Resources

Recreational activities at the property have been limited in past primarily due to safety concerns with failing infrastructure and environmental remediation activities. However, the majority of infrastructure has been removed throughout the plant and environmental remediation activities are nearly completed allowing for increased access. Past activities have included limited deer hunting, fishing, bicycle racing, hiking, volunteer habitat restoration work days and site visits by geology, wildlife and natural resource based clubs.

The property slated for transfer to HCN has substantial recreational opportunities for tribal members and visitors to the property. There are significant opportunities for low-impact recreation such as hiking, biking and wildlife viewing. There is also potential to expand hunting programs at the property to include regular hunts for deer and small game such as wild turkey and pheasant.

The Nation will also support low-impact recreation activities that will educate and help property users understand the importance and uniqueness of the natural resources associated with this property. Interpretive nature walks, hiking, wildlife viewing and bison tours are some examples of activities the Nation intends to promote upon acquisition of the property.

1.11 Cultural Resources

Cultural resources are a broad term that encompasses prehistoric, historic, architectural, and traditional cultural sites, artifacts, and relics. Culturally significant places provide a tangible link to our history, contribute to our heritage, and shape our cultural identity. The protection and preservation of historic and cultural sites is an important and long-standing federal priority. It is reflected in not only general federal statutes such as the National Historic Preservation Act, 16 U.S.C. §§ 461 and 469, but also in statutes that expressly protect sites and resources of special importance to Native American people, such as the Native American Graves Protection and Repatriation Act, 25 U.S.C. §§ 3001 *et seq.*, and the Archeological Resources Protection Act, 16 U.S.C. §§ 470aa and 470cc. The Ho-Chunk Nation is equally committed to

these goals, in particular as they affect sites of cultural and historical significance on the aboriginal lands occupied by the Ho-Chunk people.

Surveys of known cultural and historic sites have been conducted under the National Historic Preservation Act Section 106 process. The completion of this process resulted in the drafting and execution of the *Memorandum of Agreement for the Badger Army Ammunition Plant, NHPA Section 106 Compliance* document. Precautions will be taken to ensure that the implementation of this management plan will not negatively impact these sites.

1.12 Geology, Soils and Climate

Geology

The Badger Ammunition Plant is situated south along the Baraboo Hills. The Baraboo Hills, formed 1.6 billion-years-ago, rise 500 feet above the surrounding landscape. The Green Bay Lobe covered the eastern half of the Baraboo Hills and deposited a terminal moraine that bisected the Badger Property from north to south and created Devils Lake to the North. The Ho-Chunk Nation acquisition is located west of the terminal moraine in an area that is predominantly glacial outwash.

Soils

The general soil groups associated with lands slated for acquisition include the McHenry-St. Charles, Baraboo Rock Outcrop, Ettrick-Fluvaquents and wet-Curran soil groups.

The McHenry-St. Charles Group is dominated by well-drained soils that have a loamy surface layer and subsoil underlain by glacial till. These soils are moderately permeable with high available water capacity. Crop cultivation and/or grazing potential are good on gently sloping soils with conservation planning and adequate erosion control measures.

Ettrick-Fluvaquents and wet-Curran soil groups are generally found along Highway 12 including the western portion of the Badger Plant. These soils are dominated by somewhat poorly-drained to very poorly-drained soils underlain by outwash sand or stratified loamy and sandy deposits. These soils mainly support crop production, pasture and woodlots. Flooding and wetness may be limiting factors at certain times of the year.

The Baraboo Rock Outcrop group is found in the northernmost parcel slated for acquisition. The soil group is characterized by gently sloping to very steep, moderately well drained, medium textured soils and quartzite rock outcroppings. The rock outcrops are bare exposures of quartzite bedrock. The presence of stones and steep slope limit the use of this group to primarily forestry, wildlife habitat and conservation.

Climate

The climate of Sauk County is common to the latitude and interiors of this region of the Midwest. Seasons vary widely from year to year and vary considerably in temperature and precipitation. Weather systems generally move across the county from West to East. Spring is a mixture of warm and cold periods that can produce intense precipitation events of short duration. Summers are warm with frequent hot and humid spells that last only a short time. Fall typically arrives in mid-September to early November and can have abnormally warm sunny days. The transition from fall to winter is often abrupt with temperatures dropping overnight and remaining cold until spring. The average first freeze is September 28th and the last May 10th. The growing season averages 142 days with some variation depending on location. The average temperature is 22.1 degrees F in winter and 70.9 degrees F in summer. Total annual precipitation is 32.37 inches with 60% typically falling in April through September.

1.13 Wildlife and Plant Communities

The Ho-Chunk Nation will acquire an estimated 1552.71 acres of the northwestern portion of BAAP. Much of this acreage was heavily utilized when the plant was active and had a high density of infrastructure including buildings. Most of the present vegetation is comprised of weedy, rapidly establishing native and invasive species. As a result, the bulk of the plant community diversity is currently limited to the northern

section where local conservation groups and the Army alike have managed a buffer zone for wildlife habitat. This area is included in the 1300 acre wildlife habitat “buffer” that surrounds much of Badger. Soils, geology, restoration activities and plant communities were well documented in a U.S. Army and Conservation Coalition funded 1999 Ecological Restoration Plan for the 1,300 acre area. The Ho-Chunk will receive an estimated 205 acres of this “buffer” area.

In 1993, sixteen remnants of natural plant communities were identified by The Nature Conservancy mostly within the 1,300 acre buffer area that surrounds the plant. They included dry and dry-mesic prairie, oak savanna, southern dry and dry-mesic forest, southern hardwood swamp, pine relict, bedrock glade and sandy meadow. Other communities identified included cropland, conifer plantation, degraded wetland, herbaceous and woody old field, ponds (impounded and natural), woodland, and “wildlife plantings”. A total of 598 plant species were identified: 71 species of birds, 137 aquatic insects, 25 species of butterflies, 15 mammals and 16 herptiles. Follow-up plant surveys were conducted in 1999. Apart from bird surveys, few wildlife monitoring projects have been conducted subsequently.

1.14 Forest Resources

Forest cover is limited to the steeper portions of the plant, in the uppermost northern section of the Ho-Chunk acquisition. The woodland cover is mixed, depending on the extent to which the original woodland vegetation is present and the level of disturbance sustained during the construction and industrial phases of Badger operation. For instance, “The Southern Hardwood Swamp” as described in TNC’s 1993 biological inventory is a product of altered hydrology and subsequent invasion by wet-adapted species. Still, as these areas have been managed for wildlife and or as woodland tracts, they have endured relatively little disturbance following the initial planting of conifers in the 1970’s. Many areas which suffered heavy disturbance during construction but which were later abandoned have grown up into bushy and woody thickets of Eastern cottonwood (*Populus deltoides*), Boxelder (*Acer negundo*), Quaking aspen (*Populus tremuloides*), Black cherry (*Prunus serotina*), Black locust (*Ribinia pseudoacacia*) and other tree species depending on the location. Forest types as defined by The Nature Conservancy and located on the northern Ho-Chunk section include Southern Hardwood Swamp, Dry-Mesic Oak Woodland and an Acid bedrock glade. The pine plantations have been harvested by the Army in recent years to help offset the costs of remediation efforts.

1.15 Forest Type Descriptions

Dry-Mesic Oak Woodland

Theses wooded communities occur on the south-facing slope of the Baraboo Bluffs on the northern edge of the plant surrounding the reservoirs and north of Oleum Pond. They are characterized by various oak species (white *Quercus alba*, black *Q. velutina*, and red *Q. rubra*) as well as Shagbark hickory, Black cherry, Red maple (*Acer rubrum*), and Ironwood (*Carpinus caroliniana*). These degraded woodland areas have been grazed historically. Due to the lack of fire and grazing, thickets of brush now dominate the understory on some forested sites. TNC botanists on these sites located two significant elements: Upland boneset (*Eupatorium sessilifolium*) and the state-threatened Drooping sedge (*Carex prasina*).

Bedrock Glade

Located within the bluff portion on the northern edge of the acquisition is a small acid bedrock glade. Glades are rare plant communities found in scattered locations on unglaciated quartzite throughout the Baraboo Hills. Bedrock glades in the region are forest openings dominated by relatively evenly-spaced, small statured trees and a sparse shrub and sapling layer. They occur on rocky ledges or outcrops and contain some elements of sun-loving species in the understory; white oak and shagbark hickory dominate the canopy. Two state-threatened species were located on the Badger glades: Slender bush-clover (*Lespedeza virginica*) and Round-stemmed false foxglove (*Agalinus gattingeri*). Upland boneset was another significant species found.

Pine Relict

Pine relicts occur in portions of the Driftless Area of southwestern Wisconsin on sloping or level sandstone or rarely on quartzite bluffs. White pine and Black oak dominate the overstory. Blueberry (*Vaccinium* sp.)

and Partridgeberry (*Mitchella repens*) occur in the understory. The pine relict located at Badger is associated with TNC site 106. Two state threatened species occur there: Round-stemmed false foxglove and Slender bush clover.

1.16 Aquatic Resources

The HCN Badger parcel contains two intermittent streams, several excavated ponds and small areas of wetland resources. The intermittent streams originate in the Devil's Lake State Park area and flow into the northern portion of the HCN parcel. The stream commonly referred to as Pine Glen Creek enters the HCN parcel in the former Cannon Range area. Pine Glen Creek is relatively natural in the upper reach but has been ditched westerly towards the Ballistics Pond. There are also additional man-made ditches that flow into this channelized section during significant precipitation events. Pine Glen Creek connects to the northern end of the Ballistics Pond and also feeds two shallow scrapes that were created with help from the U.S. Fish and Wildlife Service. The second intermittent stream flows southwest near the Oleum Plant Area on the WDNR parcel prior to entering the Nation's parcel just south of the clay borrow areas. The stream traverses the HCN parcel from east to west and was likely altered in many areas to improve drainage during plant construction and operation.

The HCN parcel also contains several excavated ponds including the Ballistics Pond, two Fish and Wildlife Service scrapes east of the Ballistics Pond and a potentially new pond created from a recent clay borrow excavation south of the water filtration plant. The Ballistics pond is an approximately 10-acre area that was excavated in 1942 during plant construction. The pond received filter backwash water from the water treatment plant that contained flocculants and fine sediments. Soil, sediment and water samples taken during the Army's Remedial Investigation indicated that contamination was not a significant problem at the site and no remedial work was required. Additional analysis of fish tissue for Mercury contamination concluded that Mercury levels in the Ballistics Pond were similar to levels found throughout the State.

The two scrapes created with assistance from the U.S. Fish and Wildlife Service hold water on a seasonal basis. These scrapes are connected to the Ballistics Pond and have water control structures that may help to manage water elevations during the year. There is also potential for a new pond near the water filtration plant in the area that was recently excavated to provide clay for the landfill expansion. It is not known at this time what hydrologic regime will develop on this excavation.

The wetland resources associated with the HCN parcel are predominantly found in the northwest portion of the parcel in the Ballistics pond area. A low area north of the Ballistics Pond was originally cleared of vegetation but has since regrown into a woody community containing attributes of a southern hardwood swamp. This small area is dominated by both native and non-native species of woody and herbaceous vegetation. An additional small wetland area is located to the east and northeast of the Ballistics Pond and also includes the area adjacent to the Pine Glen Creek ditch. The small wetland area is dominated by non-native vegetation while the ditch area does contain some native wetland perennials.

1.17 Parcel Identification

The Nation has adopted the Army and GSA parcel identification system to simplify land-use planning and drafting of this document. This identification system has allowed the Nation to effectively compile and review the vast amount of data that have been generated relating to the property. These parcels have distinguishing features, which will have an influence on their future use and management actions. The following table identifies the HCN parcels by the Army's prior use:

Parcel	Army Reference Name	Acreage
K4	East Ball Powder Pilot Plant	54.95
O	Northwest Corner	332.17

O1	Filtration Plant	3.89
O3	Ballistics Range	12.87
O4	Solvent Recovery Still	10.35
O5	Cannon Range	14.41
O7	West Ball Powder Pilot Plant	33.00
P1	Historic Shops Area	68.13
Q1	Box Wash Area	43.54
Q2	B and C Line Rest Houses	145.58
Q3	B and C Line Central Area	239.22
R	Production Support and Labs	93.68
R1	Old Acid Area	14.11
S4	Ball Powder Dry Houses	9.83
S5	Ball Powder Rework	15.71
U2	D and E Lines Rest Houses	100.43
U3	D and E Lines Central Area	130.72
X1	Open Space	58.33
X2	B Nitrocellulose Areas	42.37
X3	C Nitrocellulose Areas	36.95
Y	E Nitrocellulose Areas	68.15
Y2	D Nitrocellulose Areas	24.32
Total Acreage		1552.71

1.18 Natural Areas /Parks

Baraboo Bluffs

The HCN parcel adjoins the Baraboo Bluffs along the northern boundary. The Bluffs are the remnants of an ancient mountain range that contain some of the oldest rocks found on earth. The Bluffs are a significant natural resource that contains the largest track of oak-maple forest in the upper Midwest along with a diverse landscape of ecological habitats that foster a home for over 23 federal or state listed threatened or endangered species.

Devil's Lake State Park

The HCN Badger Property is bordered by Devil's Lake State Park to the north. The park features a 369 acre mounded seepage lake that was created when the Green Bay lobe of the glacier blocked the Wisconsin River from its original path through the Baraboo Range, blocking both ends of the drainage with glacial drift, resulting in the formation of the lake. The park is a destination for 1.3 million visitors each year that enjoy hiking, swimming, boating, fishing, biking, cross-country skiing and hunting.

Pine Hollow

The Pine Hollow area is located on both Devil's Lake State Park and future Ho-Chunk Nation land along the northern boundary of the former ammunition plant. Pine Hollow is a deep gorge with exposed quartzite bedrock that opens into the HCN parcel. The views at Pine Hollow are unique and made it a popular picnic area for school and church groups historically until the Badger plant closed off access for security reasons during the production era.

2.0 Land Management Plan

2.1 Overall Ecosystem Management

Ecosystem is a term that has crept into the nation's collective vocabulary and is commonly used in regard to environmental issues; but what does it really mean, and how is it relevant to the management of the Badger Army Ammunition Plant? Ecosystem is derived from ecology, the branch of biology that studies the relationships between living organisms and their environment, and their dependency upon each other for survival. When the organisms and the environment interact, an ecosystem is formed. The exploitation or neglect of any organism can upset the delicate balance such that the system is forever changed.

An ecosystem not only encompasses water, land, air and wildlife, it also includes people. Of all the organisms in an ecosystem, *Homo sapiens* have the most impact and the greatest influence in preventing the loss and exploitation of other species. The demise of species and their habitat is all too often the unfortunate consequence of humans trying to conquer their environment for the sake of development and economic gain. Natural and cultural resources, and the environmental processes that affect them, are fundamentally influenced by society and vice versa.

Understanding the complex interrelationships within an ecosystem and a commitment to their maintenance are essential in ensuring a vital ecosystem—a high quality of life, healthy environment, and a productive, sustainable economy. The National Park Service states that “The long-term sustainability of the environmental, societal, and economic systems on which public lands and their surrounding human communities depend, requires a collaborative approach that integrates scientific knowledge and maintains flexibility in order to make adjustments over time.” (Sustainability can be defined as a contract among the people, the land, and future generations which maintains and renews resources for the long-term.) Therefore, the knowledge and skills of natural resource professionals will be used to preserve the Badger Army Ammunition Plant as a distinct resource, rather than relying on nostalgia and politics to make management-related decisions.

The primary goals of ecosystem management are to conserve, restore, and maintain the ecological integrity, productivity, and biological diversity of natural landscapes. The overriding objective is to ensure the ecological sustainability of the land. The Ho-Chunk Nation will adapt an ecosystem management approach that will encompass the natural environment, society, and economy – the entire system. This vision is based on the awareness that the resources protected within Badger are not isolated from the surrounding communities and environment but are inextricably linked to them. Any upcoming strategies that the Ho-Chunk Nation embarks upon to preserve and protect the property will work towards providing a balance between human needs and long-term environmental protection.

Ecosystem management will strive to restore and sustain the health, productivity, and biological diversity of ecosystems and the overall quality of life through a natural resource management approach that is fully integrated with social and economic goals. Although the ecosystem management approach is more effective than species-by-species management, the needs of certain key species must receive priority attention as part of ecosystem management.

For every action there is an equal or greater reaction. The activities of the visitors, though they may be low-impact, will inevitably affect the ecosystems of Badger, adjacent land, and local communities. It will be the Ho-Chunk Nation's primary responsibility to balance the repercussions of all activities with the health of the ecosystems while contributing to the local economy. Education and information are the keys to the preservation and protection of the Badger property and its resources. In addition to providing ecosystem management, the Ho-Chunk Nation will strive to include education in all management activities. The more visitors and the local community understand the dynamics of the ecosystem of which they are a part, the greater their respect will be for the many elements comprising the system. Providing a deeper understanding of the web of life will be beneficial to the visitors of today, as well as to the future generations who will be the ultimate caretakers of the land.

2.2 Land Management

2.2.1 Mission

Land Management will ensure protection of the soils, waters, flora, and fauna that comprise the Badger property through sound management techniques and consideration of the human influence.

2.2.2 Management Goals

- Provide resource-based research opportunities for educational purposes.
- Explore both traditional and innovative land and water management practices.
- Improve and maintain wildlife habitat.
- Preserve and protect biological diversity.
- Restore and develop the native ecosystems.
- Improve aesthetic views.
- Improve and maintain the health of the natural ecosystems, especially where recreation activities are likely to be most intense.
- Develop monitoring programs for wildlife, vegetation, and water quality.
- Control and eradicate invasive species, such as garlic mustard, buckthorn, reed canary grass, olives and honeysuckle.
- Monitor management and visitor impacts on the natural features of the Badger property and use gathered information to modify management actions when necessary.

2.3 Land Cover

Land cover types on the HCN parcel are diverse and generally fall into the following categories:

Broad Cover Types	Sub-types
Hardwoods	Mixed hardwoods, lowland hardwoods, and hardwoods
Coniferous	Natural pine, conifer plantations, and hemlock
Wetlands	Sedge meadow, wet grass, and wet brush
Agricultural	Hay, row crops and dedicated pastureland
Open Land	Grass, brush, upland grasses, and upland brush areas that May contain infrastructure.

A mosaic of vegetation exists on the Ho-Chunk Nation property. Vegetative cover provides habitat and food for a variety of wildlife, promotes water infiltration, and discourages runoff thereby minimizing the

effects of erosion. Despite the fact that agriculture, livestock and Army operations have altered the vegetation, remnants of pre-settlement vegetation and forest exist today. The following table identifies the current land-cover by Army tract id and the potential land use for each parcel (Figure 2).

Current and Future uses of HCN Tracts at Badger (Tract id defined by the U.S. Army).

Tract id	Current Status	Potential Land Use
K4	Open Land-grasses,	Habitat Restoration with long-term goal of bison area
O	Hardwoods, coniferous, wetlands, open lands-grasses, brush, upland brush, Ballistics pond, creek/ditches.	Restore to Oak-Savanna, mesic and wet-mesic prairie; stream/wetland restoration: Maintain unique natural features.
O1	Open land	Maintain unique natural features. Restore Oak-Savanna after structure removal.
O3	Open land-brush, grasses, infrastructure, Corporate Lease	Research and Development, habitat restoration.
O4	Open land-grasses	Habitat restoration
O5	Hardwoods, Coniferous, Open land-Pine Relict and Acid Bedrock Glade; Meadow; Infrastructure	Maintain unique natural features. Restore Oak-Savanna, bison management area.
O7	Open land-grasses	Habitat Restoration with long-term goal of bison area
P1	Open land, Agricultural: Dairy Forage Lease, grasses.	Forage field, agriculture
Q1	Open land-grasses	Habitat Restoration with long-term goal of bison area
Q2	Open land-grasses	Habitat Restoration with long-term goal of bison area
Q3	Open land-grasses	Habitat Restoration with long-term goal of bison area
R	Open land-grasses, infrastructure	Long-term goal of prairie planting
R1	Open land-grasses	Long-term goal of prairie planting
S4	Open land-grasses	Habitat Restoration with long-term goal of bison area
S5	Open land-grasses	Long-term goal of prairie planting

U2	Open land-Infrastructure, grasses	Habitat Restoration with long-term goal of bison area
U3	Open land-Infrastructure, grasses	Habitat Restoration with long-term goal of bison area
X1	Open land-Infrastructure, grasses	Prairie planting or possible forage field for bison.
X2, X3	Open land-Infrastructure, grasses	Long-term goal of prairie planting
Y, Y2	Open land-Infrastructure, grasses	Long-term goal of prairie planting

2.4 Threatened and Endangered Plant Species

Walk-throughs of known locations which have been reported to have a rare, threatened or endangered species of plant at the state or federal level will be conducted annually during the growing season. The locations will be marked both on the ground as well as with GPS. This knowledge will help the HCN better manage for these species by avoiding disturbance to those areas as well as manage for conditions that promote conditions amenable to those life histories.

In order to ensure the preservation and encourage the establishment of rare species on the HCN parcel, highest restoration priorities will include:

- Removal of invasive trees, shrubs, grasses and forbs from existing prairie, oak savanna, bedrock glade, pine relict and oak woodland communities;
- Management of remnant sites with periodic fire and selective cutting to eliminate invasive and/or exotic species, restore structure and to encourage desired native species;
- Reintroduction of rare or extirpated native plant and animal species to simulate the diversity, structure and complexity of the original biotic communities.

2.5 Invasive Species

Non-native species are recognized as the most serious threat to the integrity of a ground cover as they can spread rapidly and interfere with, dominate, or replace native plant communities. Eradication of invasive species can be done manually or chemically. Although the Ho-Chunk Nation prefers manual control, this method may not always be feasible or considered the best management practice. It is important that all options for the most effective management alternative are considered, which is why the use of chemicals has not been dismissed. Chemical management will be determined on a case-by-case basis and will be subject to a HCN internal department review. Regardless of the control method, monitoring the results will be an essential component of managing the invasive species.

A hands-on management approach will be taken to remove invasive exotic species that pose a threat to native species. Preferred controls include timed pulling and digging to eliminate the invasives. Generally, biological control agents are preferred over chemical agents because the long-term repercussions of their use are minimal; however, pesticides may also be used for invasive species removal. Pesticides may include herbicides, insecticides, and fungicides. Management of invasive species will be determined on a

case-by-case basis to ensure that each problem species is addressed individually rather than adopt a “one size fits all” policy. The following section addresses management of known non-native species of concern at Badger.

Garlic Mustard (*Alliaria petiolata*)

An extremely aggressive plant that needs little time to become established, Garlic mustard has no native predators or diseases. Each plant produces more than 500 seeds annually, which can survive for an average of 5 years. Fortunately, the garlic mustard populations identified on the Badger Property are relatively isolated and can likely be kept under control without extensive management at this time. Other parks and reserves experiencing garlic mustard infestation have organized volunteer “weed-outs” where the plant is pulled and destroyed. This would be incorporated at Badger in an annual volunteer work day held in the spring and with classes looking for work projects. With the increased amount of traffic on the Badger property, the probability of visitors unknowingly transporting the plant by hoof, wheel, or foot is high. Educating visitors about garlic mustard and other invasive species will be conducted on a regular basis, either through the distribution of publications or verbally upon registration.

Reed Canary Grass (*Phalaris arundinacea*)

Reed Canary Grass forms persistent, monotypic stands on sites disturbed by agricultural use, drainage, filling, siltation, and other perturbations. It is found in a variety of disturbed wetlands including inland fresh meadows, shrub-scrub wetlands, and wooded wetlands. Reed canary grass can also colonize in disturbed upland sites. This grass overtakes areas with a thick, mat-like cover, prohibits the seeding of other trees and vegetation, and does not provide habitat for amphibians, waterfowl, or other wildlife that more native grass species would. The use of chemicals and controlled burning may be necessary to eradicate this plant. Management zones may be designated to compare various management methods, including chemical and manual practices.

Common Buckthorn (*Rhamnus cathartica*) and Japanese Honeysuckle (*Lonicera japonica*)

The buckthorn tree and Honeysuckle shrub are aggressive invaders of grasslands and woodlands. They have few natural enemies, and rapidly shade out the forest understory. They should be cut and treated with herbicide. Fire and digging will also be used to control these species.

Autumn Olive (*Elaeagnus umbellata*)

It is drought tolerant and thrives in a variety of soil and moisture conditions. This trait allows it to invade grasslands, fields, open woodlands and disturbed areas. It threatens native ecosystems by out-competing and displacing native plant species, creating dense shade and interfering with natural plant succession and nutrient cycling. Because autumn olive is capable of fixing nitrogen in its roots, it can grow on bare mineral substrates. Individual young plants can be hand-pulled, ensuring that roots are removed. Cutting, in combination with herbicide application, is effective. Hedges can be cut down using a brush type mower, chain saw, or similar tool, and stumps treated

Yellow and White Sweet Clover (*Melilotus* sp.)

These clovers readily invade open habitats and already have successfully exploited many Midwestern native prairies and open, unflooded communities. Sweet clover is a biennial which means that the plant always puts its energy into developing a healthy root system during the first season, and during the second season, it flowers, sets seed and dies. The plants flower May-September, producing hardy little seeds that may remain viable in the soil for years (up to 30 years or more). Seed production is critical for its continued existence, and is the key to controlling it. Sweet clover will be controlled by hand-pulling and cutting, and herbicide application when necessary.

Dame's Rocket (*Hesperis matronalis*)

Dame's rocket is an herbaceous biennial forb that grows up to 4 feet tall. It is thought to be a limited invasive species that will readily invade disturbed ground but is rarely found in undisturbed areas. Plants will be removed immediately before seed set. Integrated management efforts should include the elimination of seed production and the depletion of the seed bank and may combine herbicide or mechanical removal of rosettes with removal of seed heads from any plants that have bolted.

2.6 Bison Program

2.6.1 Introduction

Countless numbers of the great bison once inhabited North America. The herds consisted of millions, easily covering entire states. Those who lived with the bison were grateful to their Creator and the spirits of the great animals for all that was provided to them. In his policy of subjugation of the native tribes, the white man slaughtered the bison in great numbers. Over time, where once millions of bison had roamed free, there were but a few hundred left.

The Ho-Chunk Nation managed a bison program for many years and is currently awaiting the outcome of the BAAP transfer before making decisions on the future of the bison program. The Bison Program actively worked with multiple HCN departments to address several health problems which are common among the Ho-Chunk People. One of these is diabetes, a major health problem for which there is no cure and little relief.



Research has shown that bison meat is lower in fat and richer in iron than beef and therefore helps diabetics with managing their sugar and insulin levels. Bison meat provides a highly nutritious, low-fat alternative to commercially processed, chemically altered meats. The Nation used bison meat at its Elder meal sites, special events, pow-wows and for distribution to diabetic households. Reintroduction of the Bison Project on BAAP lands would be a vital part of the Nation's strategy to combat diabetes.

2.6.2 Program History

The Ho-Chunk Nation joined the Inter-Tribal Bison Cooperative in 1993 with 4 head of bison. The Nation began the major effort of establishing the bison herd at the 640-acre Bison Prairie I farm located near Muscoda, Wisconsin at this time. Bison Prairie I is situated along the Lower Wisconsin River and provides an ideal location for this program because of the rolling gentle topography, prairie conditions and cultural significance of the area to the Ho-Chunk People. These same characteristics are found at the Badger property and are considered one of the driving forces for acquisition of lands at the facility.

Bureau of Indian Affairs Circle of Flight funding (Contract CTF55T43947) was used in the early stages of the bison program to assist with the establishment of grasses and forbs at the Muscoda Bison Prairie I. This Self-Determination Act Contract established approximately 100 acres of plantings that would be suitable for the bison's diet. These plantings have been managed organically without the use of pesticides or commercial fertilizers.

From 1993, the herd grew substantially and fluctuated between 150-200 bison per year depending on the need for bison meat, birthrate and pasture and forage conditions. The bison were rotated between 10 separate pastures at Bison Prairie I. It is the aim of the Ho-Chunk Nation to ensure the health of the bison and the balance of nature through complete organic farming. Hay and feed for the herd was grown on-site without the use of pesticides or commercial fertilizer. Also, unlike the standard practice of giving livestock large doses of antibiotics to promote growth, medications are seldom dispensed.



2.6.3 Management Objectives

- Reestablish and preserve bison upon Ho-Chunk aboriginal lands.
- Develop and implement a bison grazing study at Badger to determine bison health and whether there are health risks associated with consuming bison from the property.
- Provide research and education opportunities about bison and organic farming.
- Establish a bison herd that allows for the distribution of bison meat to a greater number of tribal members with low-fat dietary needs.
- Practice organic agricultural in daily operations at Badger.

Parcels K4, O7, P1, Q1, Q2, Q3, S4, S5, U2 and U3 have been initially designated as the areas most suitable for the different needs of the bison program. These tracts total approximately 814 acres and could be used for prairie establishment/pasture and forage.

The establishment of viable pasture area and forage base would begin upon transfer and include the implementation of the necessary land use practices such as prairie grass planting, prescribed burning and the treatment of unwanted and invasive species. Coinciding with development of pasture and forage areas will be the installation of fencing systems for worker/visitor safety and to control bison movement on the property. The Nation intends to fence parcels Q2 and U2 initially because this area will be relatively free of infrastructure concerns upon transfer. This area would also serve as the grazing study area for the bison. Parcels Q3 and U3 will be used as additional forage areas for bison during the grazing study period. Fences would eventually be constructed around Q3 and U3 for future pastureland as long as the research studies have shown that bison health and human health risks are not an issue. Parcels P1, K4, S4 and O7 would be utilized for additional forage areas and prairie establishment as needed. The Nation will need to conduct soil testing and vegetation surveys following transfer to determine current forage value, soil pH, nutrient levels, soil texture and other properties.

Additional infrastructure will include the upgrade of one existing well in parcel Q3 and the construction of a new well for livestock watering within the HCN parcel. A second well would likely be centrally located

in the center of parcels Q2, U2, Q3 and U3. This would allow the Nation to follow a rotational grazing program allowing for the regeneration of forage for bison throughout the growing season if needed.

2.6.4 Herd Development

Bison can reach a height of 5-6 feet and weigh from 800-2000 pounds. Some unique features of the bison include the massive head and the high hump. They are a very large dark brown mammal with both sexes having horns. These are true horns and they will not shed the horns. Some may live to about 25 years old; however the average age is between 15 and 20 years old. They live in the open plains and once traveled to the north for the woodlands and the opens and then back south for the grasslands. They begin breeding between age 2 and 3 and the gestation period is 9 months, in most instances they have one calf.

Development of a larger herd is a long-term process that is dependent on many things including, but not limited to, tribal need, forage/pasture development, safety concerns, bison health, weather, program expenses and calving success. The Inter-tribal Bison Cooperative recommends one bison per 8 acres dependent on site conditions, while the Nation anticipates that Badger could support a higher density while still incorporating sound resource management using an organic farming operation. There has also been limited discussion with the other future landowners at Badger about a cooperative grazing program for the Nation's bison herd. This effort could potentially be used as a vegetation management tool on the property and allow for an increase in the size of the overall herd.

The following information will be gathered on all bison housed at this facility; microchip for identification, immunizations, weight, age, sex, along with any specific health issues or concerns for each individual animal. The Nation will collect data with assistance from researchers. This information will then be used to determine growth rates and health concerns of the herd. Our ultimate goal is to have safe bison products that can be used at the Elder meal sites, special events, pow-wows and for distribution to diabetic households.

2.7 Prairie

2.7.1 Introduction

The prairies of the Midwest played a significant role in the development of America once forested habitats of eastern United States were occupied or exploited. Settlers found that the vast and open grasslands of the Midwest provided new challenges, new opportunities, and a new way of life.

The original prairies extended from western Indiana to the eastern portions of Kansas, Nebraska; North and South Dakota and south to Oklahoma and Texas. This area of rich soils was home to roaming herds of bison and elk, prairie chickens, grassland birds and many species of waterfowl.

The settlement of the Midwest prairie region began in the early 1840s and proceeded westward from Indiana and eastern Illinois. By the 1890s, the vast Midwest prairies were essentially gone. The diverse grassland communities and prairie sod were gradually converted by oxen and plow to cropland. Wet prairies and their related wetlands were also drained and converted to corn, oats, and wheat. Rural communities, whose economies were largely based on agriculture, sprang up throughout the region and supported the production, use, and transportation of these commodities.

2.7.2 Program History

The Ho-Chunk Nation has been involved with management and restoration of prairie habitats on tribal lands for many years. The Nation has partnered with many groups and agencies on prairie projects that have resulted in the restoration and enhancement of upwards of 400 acres. Past partners have included the: U.S. Fish and Wildlife Service, USDA-Natural Resource Conservation Service, Bureau of Indian Affairs, Wisconsin Waterfowl Association and County Land Conservation Departments.

The Nation has repeatedly entered into Self-Determination Act Contracts with the Bureau of Indian Affairs for restoration projects, under which the Nation has assumed work under the Bureau's Circle of Flight Program. As set out in these contracts, the Nation operates resource management programs to "acquire, manage, develop and enhance tribal resources" including "land, water, fish and wildlife, range, forestry, irrigation, and other programs designed to manage, develop and enhance tribal resources.



To Sanak Ska Project, Juneau County

Specifically, under these contracts the Nation has undertaken the restoration and management of different prairie habitats on almost 300 acres of Nation land located at the To Sanak Ska Property, Wo gis na pi Property, Gleason Property and Bison Prairie I Property.

The Wo gis na pi project, located in LaCrosse and Monroe counties, has resulted in the restoration and enhancement of approximately 12-acres of wet prairie and wetland habitat and the creation of approximately 17-acres of mesic prairie stream buffer at the project site that has greatly enhanced wildlife habitat and improved water quality by reducing surface water runoff into the stream and wetland systems. This project was a cooperative effort with the Bureau of Indian Affairs, Natural Resource Conservation Service, Northland Cranberry and LaCrosse/Monroe County Land Conservation Departments.

The 272-acre To Sanak Ska Property was purchased by the tribe in 1998 for a residential development project. The Nation then later determined that the property had indications of historic wetland and prairie communities that were severely altered from past agricultural practices. Large drainage ditches had been excavated in an attempt to drain the property for traditional row cropping and grazing of livestock. The Nation then decided that the south part of the parcel would be more beneficial to the surrounding community as conservation and outdoor education area rather than a residential development.

In 2000, the Ho-Chunk Nation began restoration of this property with the conversion of 120 acres of marginal agricultural land back to a functional wetland system. The wetland restoration involved restoring wetland hydrology at the site by regrading and redirecting flow from an existing drainage ditch into historic wetland basins and newly constructed wetland scrapes. This phase of the project was completed by 2001 and resulted in the natural germination of an amazingly diverse wetland and wet-prairie plant community.

The second phase of this project involved the ongoing restoration of approximately 130 acres of mesic prairie found adjacent to the wetland communities. This phase was a cooperative effort aimed at preserving and enhancing these areas for the benefit of wildlife and wetland water quality. The project involved the removal and treatment of unwanted vegetation and the re-establishment of native grasses and forbs once common on this site. The first prairie planting of 40 acres was completed in the spring of 2004 with the remaining 90 acres being planted in the fall of 2004 and 2005.

The Nation also has active prairie restoration sites on approximately 100 acres on the Kickapoo Trust lands located in Vernon County, Wisconsin. Multiple fields that were previously used for farming have been taken out of agricultural production and planted with native prairie grasses and forbs. Several of these parcels had problems with gully erosion that contributed to sedimentation and degraded water quality in nearby streams and wetlands.

2.7.3 Management Objectives

- Improve and maintain existing prairie habitat and restore historic prairie habitats to maintain biodiversity and wildlife habitat.

- Provide educational opportunities relating to prairie management.
- Develop partnerships with surrounding landowners and natural resource groups to manage Badger resources using a complimentary site-wide approach.
- Develop native grass plantings for use in future bison herd development.

2.7.4 Current Prairie Conditions

WIDNR prairie nurseries and restoration plots were established within HCN parcels O and Q2 but have not been actively managed because of the uncertain future of the Badger parcel. The lack of management practices such as regular mowing, prescribed burning and invasives treatment has resulted in these areas becoming encroached upon by woody vegetation such as Olive spp., Box elder and Prickly Ash. Invasive and naturalized grasses have also become established within these areas and will likely out-compete the native plant species if more aggressive routine management is not implemented.

2.7.5 Management

The Nation intends to manage existing prairie habitat using a variety of management practices including the reintroduction of prescribed fire on the landscape of the Badger property. Mechanical, physical and chemical treatments will also be required to combat invasive species and encroaching woody vegetation. Planting of local genetic plant material will also be an important consideration for restoration of prairie habitats at the Badger Property.



Prescribed Burn on Nation Lands

The Nation has found that site conditions are conducive to prairie work on multiple parcels including: O, O3, O4, X1 and possibly R, R1, X2 and Y. Restoration of these areas would be a cooperative effort with a multitude of groups and agencies contributing expertise, labor, equipment and supplies. Multiple prairie habitat types would be reestablished in these areas including oak savanna, dry-mesic, mesic and wet-mesic habitats.

Restoration efforts in these parcels would require removal of unwanted vegetation using mechanical (cutting, disking, grubbing), chemical (herbicide) or physical treatments (prescribed burning, grazing, flooding). This would be followed by necessary site preparation, seed selection and planting. Once planted the areas will require active management to promote the new plantings and control invasive and unwanted species.

2.8 Forestry

Due to the size of the Badger Property, opportunities exist to manage such diverse aspects of the property as education, research, recreation, erosion control, wildlife habitat, and aesthetic views. The Ho-Chunk Nation's ultimate management goal is to restore and develop the native forest and non-forest ecosystems as budget, staffing, and volunteer interests allow; it is not to establish a collection of exotic ecosystems that did not exist prior to European settlement. Forest management will also promote historic biodiversity; emphasize the improvement and maintenance of the health of natural forest ecosystems, especially where recreation activities are likely to be most intense; and restore native grasses.

2.8.1 Management Objectives

- Conduct a forest reconnaissance and inventory of the Ho-Chunk Nation Badger resources as funding and staff allow.

- Provide research and education opportunities.
- Designate various forest management zones for experimental areas and projects, such as oak savanna restoration.
- Selectively harvest conifer plantations and hardwoods as needed to promote natural communities and restoration objectives.
- Maintain some open areas.
- Connect hardwood stands and fragmented forests where appropriate.

2.8.2 Current Forest Conditions

The predominant timber types that exist on the parcel consist of hardwoods and stands of coniferous plantations. Forests occupy only a small portion of the Ho-Chunk parcel, and natural succession is transforming more of the Badger parcel to woody vegetation each year. Many of the landscapes that are returning to forests have a relatively recent history of disturbance, exotic introductions, and soil erosion.

2.8.3 Forest Reconnaissance and Inventory

Upon transfer the Ho-Chunk Nation would conduct an assessment of forest resources at Badger. This would include variable plot cruise for merchantable trees and a survey of forestry resources for habitat restoration purposes. Data collected would include species present, forest health, size class, volume/acre, basal area and age for the different forest types. Also, 100th acre plots would be taken to tally any regeneration. Management recommendations would be made based on Nation's objectives. Inventories would need to be updated every 5-10 years, on average, depending on species present and management objectives.

2.8.4 Management

Forest Stand	Objective
Conifer Plantations	Transition into native, hardwood stands and oak savanna.
Pine Relicts	Preserve and enhance both the aesthetics and continuity of the community.
Degraded Prairie/Oak Savanna	Restore a prairie/oak savanna community by monitoring and management.
Oak Savanna/Oak Woodland	Enhance and preserve the remnant oak woodland/oak savanna complex. Maintain conditions that favor pine relict species migration.
Southern Mesic and Dry Mesic, Northern Hardwood Stands	Restore structural diversity and enhance interior forest habitat by restoring contiguous canopy coverage.
Grasslands/Upland Brush	Reforest with an ecologically appropriate species to lessen woodland fragmentation, preserve aesthetics and wildlife habitat.

Southern Sedge Meadows	Set back woody encroachments through management including prescribed burning, mechanical treatments etc...
------------------------	--

Management will generally use practices that have proven useful in attaining desired forest conditions and will use other methods that explore innovative approaches. Various forest management zones will be designated and used for experimental projects, such as prairie and wet meadow demonstration sites and reed canary grass removal. Prairies are comprised of native warm season plants and grasses that, unlike the non-native (European) plants, bloom throughout the season. Because they stay green throughout the summer, prairies are helpful in preventing fires. Settlers converted prairies to crop or pastureland, and prevented and/or controlled the wildfires that had kept prairies free of trees and brush. Not only are prairie plants beautiful, they also control erosion by forming low-growing ground cover that requires little maintenance. Prairie plants can be used to stabilize stream banks and riparian areas.

Commodity production from the forest is not a priority for the Badger property. Youth or friends groups may be involved in or conduct planting projects as a means of involving the community in forest management activities. Coniferous timber harvest will be conducted near established roads and on level or moderate slopes. All forest management activities will be conducted in a manner that minimizes erosion and protects water quality.

2.9 Wildlife

The open landscape and lack of public disturbance on the Badger Property and the association with agriculture have made the general area prime habitat for wildlife. Wildlife on the property is comprised of a variety of mammal, bird, reptile, and amphibian species. Population surveys are recognized as the foundation of wildlife management. Therefore, all management activities will be based on surveys and studies of populations and habitats. The Ho-Chunk Nation will network with skilled natural resource specialists to provide expertise on habitat and population assessments. The Ho-Chunk Nation will not provide single-species management, but rather manage wildlife as a whole. However, the needs of individual species will not be ignored, and special attention may be given to the following focal species:

- Keystone species—play a significant role in an ecosystem, and has an influential effect on ecosystem structure or function relative to its abundance.
- Endemic species—restricted to a specified region or locality.
- Area-sensitive species—dependent on a specific type of environment to survive.

2.9.1 Management Objectives

- Protect rare and endangered species and their habitat.
- Provide a high quality tribal hunting opportunity that balances hunter safety and sustained use of the wildlife resource.
- Implement ongoing monitoring and inventory programs of both wildlife user groups and wildlife populations.
- Maintain wildlife populations such that they are compatible with food and cover resources.
- Investigate the creation of separate management unit/hunting zones or permit system.
- Provide education and research opportunities.

Maintaining and improving habitat will be the most influential management activity that will foster a healthy wildlife population; therefore, the preservation and protection of wildlife habitat and biological diversity are a priority. Game and non-game animal populations are expected to fluctuate naturally as is typical of a natural community. Many wildlife species prefer a mosaic of different vegetation types rather than an extensive, uniform stand therefore efforts will be made to leave important food-giving trees intact (e.g., cherry, oak, and ironwood) if compatible with other management activities. In addition, thinning stands in appropriate areas will allow sunlight to reach the forest floor to promote growth of the understory for cover and browse.

2.9.2 Birds

The Ho-Chunk Nation intends to work with government agencies, conservation groups and research institutions in an effort to establish routine bird surveys to gauge bird populations, abundance, and the distribution found on the Ho-Chunk parcel. The Nation intends to conduct bird surveys on an annual basis with special emphasis on areas with critical habitat and documented threatened or endangered species.

To maintain the healthy populations that currently exist, diverse cover types including native grasslands, grassy fields, sedge meadows, and upland forests will be protected and maintained. Songbirds and other species that thrive in grassland or savanna habitat are likely to increase in the areas that will be restored to that type. In addition, maintaining patches of hardwood forest will provide habitat for forest-interior songbirds.

Birds are more vulnerable to disturbances at certain times of year, especially during the nesting season; therefore, precautions will be taken to avoid disturbing bird populations during these sensitive times. High disturbance activities such as burning, mowing and hay harvesting will not be done during sensitive breeding periods whenever possible.

2.10 Hunting

The Badger Plant has become a very popular hunting ground. More scientific counts, surveys, and monitoring programs will be developed and conducted with the intent of determining more specific hunter and other wildlife user group numbers (e.g., birdwatchers). These figures will aid in developing the most appropriate actions to manage wildlife, as well as to provide hunters and other user groups with safe and high quality experiences on the property. The plan's primary focus will be on restoring the land back to its original prairie and oak savanna.

The hunting areas may be divided into zones for management purposes, hunter safety and to decrease hunting pressure for a more enjoyable hunt. Hunters may only be allowed to hunt in their given zone for hunting period assigned. Zones for the Ho-Chunk owned portions of land have yet to be determined.. Hunters would be provided maps that detail the zones, routes in and out, any restricted areas and assigned parking areas.

2.10.1 Deer

The forested lands and agricultural tracts on the property, as well as the lack of permanent settlement, make the property an ideal habitat for the white-tailed deer. In terms of aesthetic, economic, and environmental management, the deer is one of the most important animals on the property. The white-tailed deer is an animal of edges; therefore, the most beneficial means of maintaining a healthy herd will be to maintain the present openings and their interspersions with other habitat types. An overabundance of deer can have damaging effects on vegetative cover, including crops and the flora of natural areas. Deer hunting during state hunting seasons will be the primary means of controlling the deer population. In addition, if circumstances dictate, it may be necessary for the Ho-Chunk Nation to develop special deer hunting policies to further control/monitor populations, as well as to address safety issues associated with different types of hunting.

2.10.2 Wild Turkey

Wild turkeys are the largest game bird in North America. In the late 1800s, extensive logging, unrestricted hunting, and the introduction of diseases severely depleted their numbers in Wisconsin. Today, the wild turkey population in Sauk County is thriving since its reintroduction to the state in 1976. As with other wildlife, the improvement and protection of habitat is directly related to the health of the flock. The wild turkey prefers mature hardwood forests, especially oak, with non-agricultural and agricultural openings nearby.

2.10.3 Small Game

Small game species also inhabit the property and include squirrel, rabbit, pheasant, grouse, woodcock, and waterfowl. The DNR states in its Wildlife Management Plan that maintaining adequate habitat for waterfowl is a vital management concern as habitat is being lost to the increasing demands of the human population. Two ponds exist on the property in the northwestern corner, which are adequate habitat for waterfowl.

2.11 Agriculture

The majority of the Badger Property was used for agricultural purposes by the landowners before federal acquisition and construction of the Badger Army Ammunition Plan. Today, agriculture continues to be a major land use on the Sauk Prairie. The Nation has identified the following management goals relating to agriculture on the property.

2.11.1 Management Goals

- Continue to provide limited acreage for agricultural purposes in the short term to promote the eventual conversion to prairie and bison pasture.
- Continue to practice farming methods that have proven useful in minimizing erosion and runoff.
- Utilize sound agricultural management practices to maintain or enhance soil productivity and improve water quality.
- Promote alternative farming, such as sustainable and organic agriculture.
- Use the property to provide education on agriculture and the dynamics of a rural area.
- Develop partnerships with FFA chapters, schools, and agriculture businesses and organizations in the watershed.

Portions of several of the HCN parcels have been used on and off over the years for agricultural purposes. USDA Dairy Forage Research Center has used areas for pastureland and cropping to meet the needs of their research program. A portion of parcel P1 is currently being used by USDA-DFRC for cropping purposes.

The Ho-Chunk Nation has an agriculture lease bid procedure and lease agreement that is currently used on multiple Ho-Chunk Nation agricultural parcels. The input and advice of current and future leaseholders will be solicited and considered during the lease process. Minimum bid requirements will be established by previous rental rates for the property and surrounding area. Leases may be implemented based on an exchange of services to facilitate the preparation and planting of areas for prairie and pasture. Any monetary proceeds from a lease would be directed towards financial support of maintenance, management and any remaining infrastructure concerns. This type of system is currently in place for the HCN Kickapoo Trust Lands, and has proven to be an effective means of offsetting the costs of maintenance and management.

2.11.2 Erosion

Prior to mechanized farming, it was common for settlers to plow every accessible piece of land. Eventually this practice, grazing, and other detrimental land uses took a heavy toll on the land as precipitation and wind continually washed or blew away the topsoil.

In the early 1940s, the federal/county cooperation in Soil Conservation Districts helped to improve conditions. Rotational cropping and grazing and soil fertility improvement programs were all practiced which significantly minimized and controlled erosion. Current USDA programs require farmers to follow a Conservation Management Plan that minimizes erosion and protects the watershed from runoff. Manure management guidelines will also be established prior to spreading on any fields on the property. In addition, the Sauk County LWCD monitors farming practices to ensure that management plans are being followed. The Ho-Chunk Nation will also use the Farm Service Agency's mapping system for consistency in tract and farm numbers.

Soil suitability for pasture, agriculture, woodlots and potential trails/roads are listed in tables provided in the Sauk County Soil Survey. These tables illustrate the varying soil classes on the property and indicate that parcels K4, O7, P1, Q1, Q2, Q3, R, R1, S4, S5, U2, U3, X1, X2 and Y are suitable for the proposed uses of bison pasture, forage and prairie restoration. Likewise, portions of parcel O, O1 and O5 are suitable for oak savanna restoration and other restoration projects.

2.12 Aquatic Resources

2.12.1 Management Objectives

- Manage the aquatic resources of the HCN Badger parcel for the benefit of wildlife and water quality while considering current and future land uses of the property.
- Partner and support efforts by Sauk County Land and Water Conservation Department (LWCD), WDNR, Natural Resource Conservation Service (NRCS), Otter Creek Watershed Group, U.S. Fish and Wildlife Service and other non-profit organizations in the watershed to preserve, enhance, and restore aquatic resources within Badger and the watershed as a whole.
- Provide research and educational opportunities relating to water resource management.
- Gather resource information through water resource studies, wetland surveys, and monitoring programs administered by various Ho-Chunk Nation departments, U.S.EPA and the Bureau of Indian Affairs.

2.12.2 Surface Waters

Prior management of the surface waters reflected the Army's need to accommodate runoff and plant process water during operation. The two intermittent streams and Ballistics pond were created and/or severely altered to channelize runoff and accept filter backwash from the water treatment plant. Only recently have management and restoration activities shifted to take into consideration additional uses such as recreation, wildlife habitat and outdoor education.

The Nation currently has a surface water management program that is responsible for managing all wetland and surface water resources found on tribal lands. The Nation is currently conducting a surface water inventory of all waters, and assessing baseline conditions on key waters of interest. The program is funded by the Ho-Chunk Nation and the U.S. EPA. The Nation intends to expand this effort to the surface water resources at Badger to:

- Assess current chemical water quality and biological communities to identify areas of concern.

- Establish a water quality baseline to measure future trends and responses to land management activities.
- Identify areas for potential enhancement and restoration of surface water resources.
- Raise awareness and provide outdoor educational opportunities for tribal members and the surrounding community.

The Nation will focus considerable efforts on surveying the two creeks that flow from the Devil's Lake State Park area to determine if channelized portions of these creeks should and can be restored to a more natural condition. A more natural stream course would likely provide greater biological diversity, improve water quality and could help with potential downstream flooding and sedimentation issues.

2.12.3 Fisheries

Fisheries management was not a major focus for past resource managers because of the limited surface water resources that are capable of supporting fish populations. The Ballistics pond and Pine Glen Creek are the only water on the HCN parcel that are known to have supported fish populations. The Ballistics pond was used for recreational fishing until recently when deconstruction and environmental remediation required restricted access to the plant. The Ho-Chunk Nation intends to survey, monitor and assess this resource for future recreational fishing and educational opportunities. The Nation will also expand biological sampling efforts to the remaining surface water resources to determine the presence and composition of aquatic macroinvertebrate and fish populations.

2.12.4 Watershed

The majority of the HCN parcel is located in the Otter Creek Watershed which is a subbasin of the Lower Wisconsin River Basin. Local stakeholders have raised concerns with the extent and duration of summer flooding within the Otter Creek watershed. As a landowner within the watershed the Nation not only seeks to protect the soil and water resources of the Badger property, but will work closely with a variety of stakeholders to try and reduce flooding and improve overall water quality within the watershed. The Nation will work with stakeholders to identify project areas within Badger that could be used to alleviate the extent and duration of flooding within the watershed and to improve water quality and wildlife habitat.

2.12.5 Wetlands

Wetlands are generally defined as areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support vegetation that is typically adapted for life in saturated soil. Wetlands include swamps, bogs, marshes, shallows, muskegs, wet meadows, estuaries, fens, and riparian areas. Wetlands can help prevent non-point pollution sources from degrading water quality. Properly managed wetlands intercept runoff and transform and store pollutants such as sediment, nutrients, and certain heavy metals. In addition, wetland vegetation can keep stream channels intact by slowing runoff and by evenly distributing the energy in runoff. Wetland vegetation also regulates stream temperature by providing streamside shading.

The Nation's goal is to apply sound resource management techniques to promote a diverse habitat system that supports a variety of native flora and fauna, improves wetland water quality and provides multiple opportunities for education and recreation. A secondary goal is to help build tribal and community understanding of wetland habitats and their functional values. This in turn will allow tribal staff to make more informed decisions relating to land-use planning and land management for the parcel.

Ho-Chunk Nation staff will conduct a survey of wetland resources within the parcel following acquisition to determine floral diversity and the potential for wetland creation, enhancement and restoration. Vegetation surveys will be used to collect information on the prevalence of wetland perennial vegetation

and floristic quality along with data on invasive species. Invasive species management will be a major activity for all areas of the parcel. The Nation is currently treating Reed Canary Grass on two different parcels using herbicide spot treatments. This treatment method is promising and could be expanded to the Badger parcel as needed.

2.13 Evaluate Progress

To ensure that the objectives of land management are being met and maintained, an annual review of management activities will be undertaken by various HCN departments involved with the property. If necessary, management activities and objectives will be adjusted accordingly based on the knowledge gained through monitoring and past experiences.

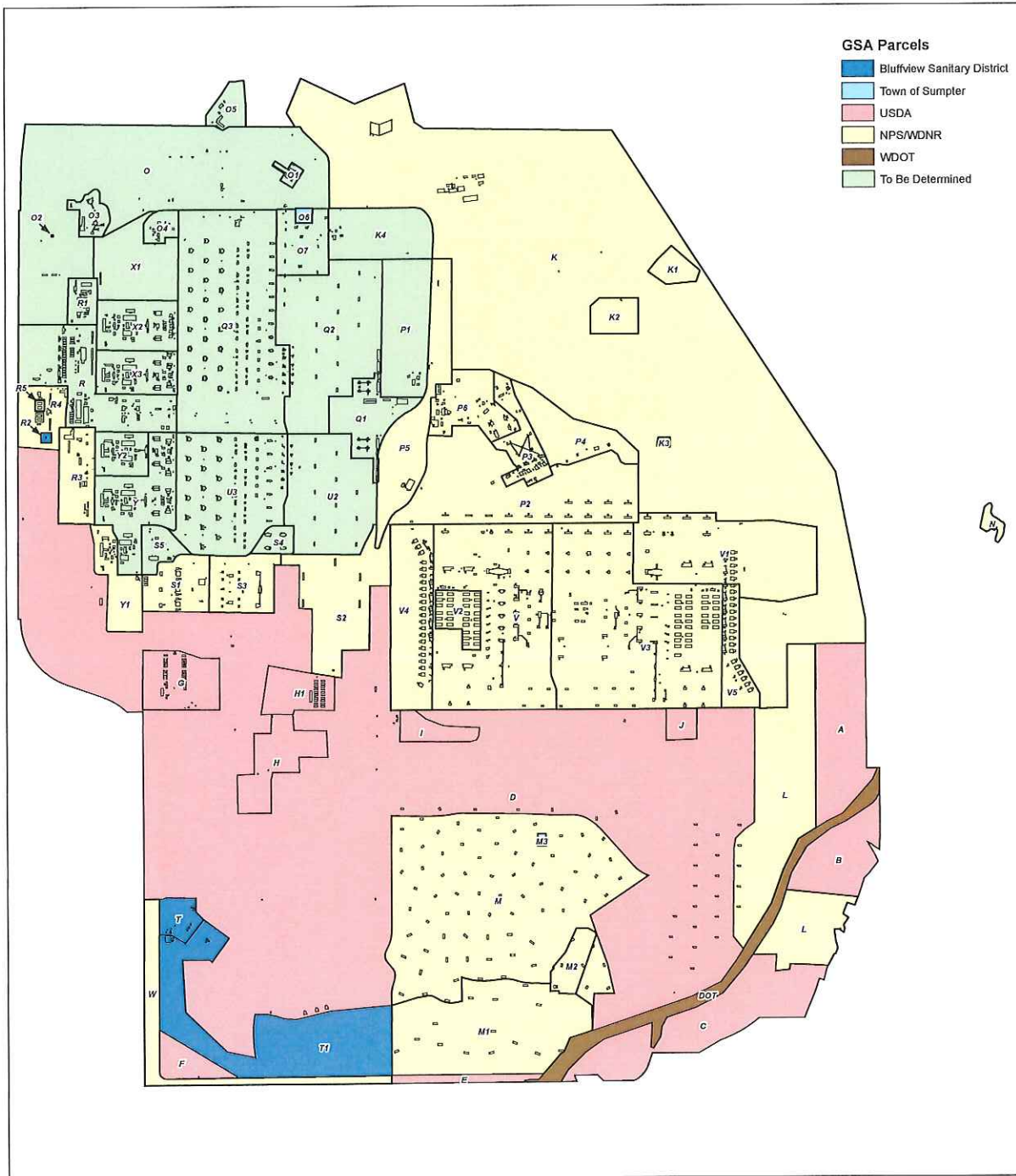
Working with Federal, State, non-government agencies, consulting firms, topic-specific interest groups and individuals will result in a variety of opportunities to review the land management processes for agricultural lands, pasturelands, aquatic resources, prairies, wildlife area, forests and infrastructure areas. Grants and other sources of funding and staff will be sought for ongoing evaluations that help assess the health of specific resources that in combination provide a picture of general environmental health of the parcel.

3.0 Sources

- Badger History Group. Webpage Information <http://www.badgerordnancehistory.org/>
- Gundlach, H.F. 1980. Soil Survey of Sauk County. USDA Soil Conservation Service. Madison, WI.
- Hoffman, R. and K. Kearns. 1997. Wisconsin Manual of Control Recommendations for Ecologically Invasive Plants. Bureau of Endangered Resources, WI Dept. of Natural Resources, Madison, WI. 102pp.
- Master Plan: Kickapoo Valley Reserve. Webpage Information <http://kvr.state.wi.us/home/manage.htm>. (Multiple Contributors)
- Northern Tallgrass Prairie. U.S. Fish and Wildlife Service. Website Information <http://www.fws.gov/midwest/NorthernTallgrassPrairie/history.htm>
- Rhead, D. 1998. Natural Resource Management Plan, Revised January 1998, Badger Army Ammunition Plant, Baraboo, WI. 300pp.
- Thompson, K and J. Welsh. 1993. The Biological Inventory of the Badger Army Ammunition Plant Sauk County, Wisconsin. Report to the Department of Defense by the Nature Conservancy Chapter.
- U.S. Army Toxic and Hazardous Materials Agency/U.S. Army Environmental Center. 1993 Remedial Investigation Badger Army Ammunition Plant, Baraboo, Wisconsin, Final Remedial Investigation Report (Data Item A011). USATHMA, Aberdeen Proving Grounds, Maryland.
1999. Preliminary Ecological Restoration Plan for 1300 acres of the Badger Army Ammunition Plant Baraboo, Wisconsin. (Multiple Contributors)
1987. Development Plan, Town of Sumpter, Land Use Planning Committee. Town of Sumpter, Wisconsin.
2001. Final Report on the Work of the Badger Reuse Committee including Values, Criteria, and Concept Plan Map for the Reuse of the Badger Army Ammunition Plant Property. (Multiple contributors)
2006. Badger Army Ammunition Plant Installation Action Plan. Webpage Information <https://aero.apgea.army.mil/pIAP-Doc/badgeraap/badgeraap.html>. (Multiple contributors)

Figure 1

Badger Army Ammunition Plant GSA Parcels



- GSA Parcels**
- Bluffview Sanitary District
 - Town of Sumpter
 - USDA
 - NPS/WDNR
 - WDOT
 - To Be Determined

Total Acreage in Transfer 7,275.24 (Surveyed)
 Note: The acreage totals and total sum of acreage listed on this map may not equal the surveyed total due to rounding error.

Breakout of Acreage by Owner	
Bluffview San. Dist.	163.86
NPS/WDNR	3,387.41
Town of Sumpter	3.59
USDA	2,106.72
WDOT	61.21
To Be Determined	1,553.04

Parcel Key					
Parcel	Description	Approximate Acreage	Parcel	Description	Approximate Acreage
Parcel A	North Rear Corridor Buffer	88.00	Parcel D	Herbicide Corridor	332.77
Parcel B	South Rear Corridor Buffer	53.38	Parcel O1	Firewood Pile	3.89
Parcel C	Southwest Corner	114.23	Parcel O2	Mill Corridor	0.83
Parcel D	Home and Livestock Magazines	1503.32	Parcel O3	Ball on Range	12.87
Parcel DOT	DOT Right of Way	60.21	Parcel O4	Salt and Potash Area	10.35
Parcel E	South Buffer	15.55	Parcel O5	Canon Range	14.41
Parcel F	Southwest Corner	201.9	Parcel O6	Flourine Corridor	2.64
Parcel G	Competition Club Area	45.13	Parcel O7	Water Ball Powder Filling Plant	33.00
Parcel H	Propagator Burning Ground	44.63	Parcel P1	Historic Shop Area	58.12
Parcel H1	Gate 15 Storage Houses	20.60	Parcel P2	Post at Pike Area	151.84
Parcel I	Lavender #2 Area	16.83	Parcel P3	Old #102	33.25
Parcel J	New Unexploded Area	8.91	Parcel P4	HQ Pond Area	42.13
Parcel K	Historic Corner	1162.42	Parcel P5	Packhouse Stack Area	78.23
Parcel K1	Lavender #3	12.30	Parcel P6	Fire Acid & New #103	43.26
Parcel K2	Detergent Burning Ground	17.29	Parcel P7	Box Wash Area	43.94
Parcel K3	Wooded Park Pond	1.91	Parcel P8	B-S Clay Wash House	115.58
Parcel K4	East Ball Powder Filling Plant	54.85	Parcel P9	B-S Clay Wash Area	229.22
Parcel L	Rear Corridor	103.38	Parcel R	Production Support and Lab	63.65
Parcel M	Home Magazines	353.31	Parcel R1	Old Acid Area	14.11
Parcel M1	Sorting Pouch/South Magazine	105.65	Parcel R2	W-8 #1	1.01
Parcel M2	Sorter/South Area	19.27	Parcel R3	Maintenance & Storage Area	33.75
Parcel M3	Truck Cemetery	1.02	Parcel R4	Administration Area	27.83
Parcel N	Rear Pump	4.56	Parcel R5	Building 200	1.04
Parcel O1	Ball Powder Site Line	45.47	Parcel V1	Ball Powder Production	272.45
Parcel O2	Lead Ford House	87.48	Parcel V2	Ball Powder Production	82.10
Parcel O3	Ball Powder Coaling Line	39.87	Parcel V3	Ball Powder Production	25.89
Parcel O4	Ball Powder Dry House	8.93	Parcel V4	Ball Powder Production	47.79
Parcel O5	Ball Powder Re-work	15.71	Parcel V5	Ball Powder Production	35.33
Parcel T	W-8 #1 and Green #201	147.41	Parcel V6	Ball Powder Production	41.37
Parcel U	DAE Line Pack House	100.43	Parcel V7	Ball Powder Production	36.96
Parcel U1	DAE Line Central Area	130.72	Parcel V8	Ball Powder Production	16.15
Parcel V	Ball Powder Production	208.00	Parcel Y	Fill Area	33.91
Parcel V1	Lavender #1	136.65	Parcel Y1	D-Hook Base Line	24.32
Parcel V2	Ball Powder Dry House	22.15			
Parcel V3	Ball Powder Production	272.45			
Parcel V4	Ball Powder Production	82.10			
Parcel V5	Ball Powder Production	25.89			
Parcel V6	Ball Powder Production	47.79			
Parcel V7	Ball Powder Production	35.33			
Parcel V8	Ball Powder Production	41.37			



Plot Date: 1/22/13

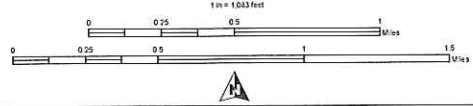
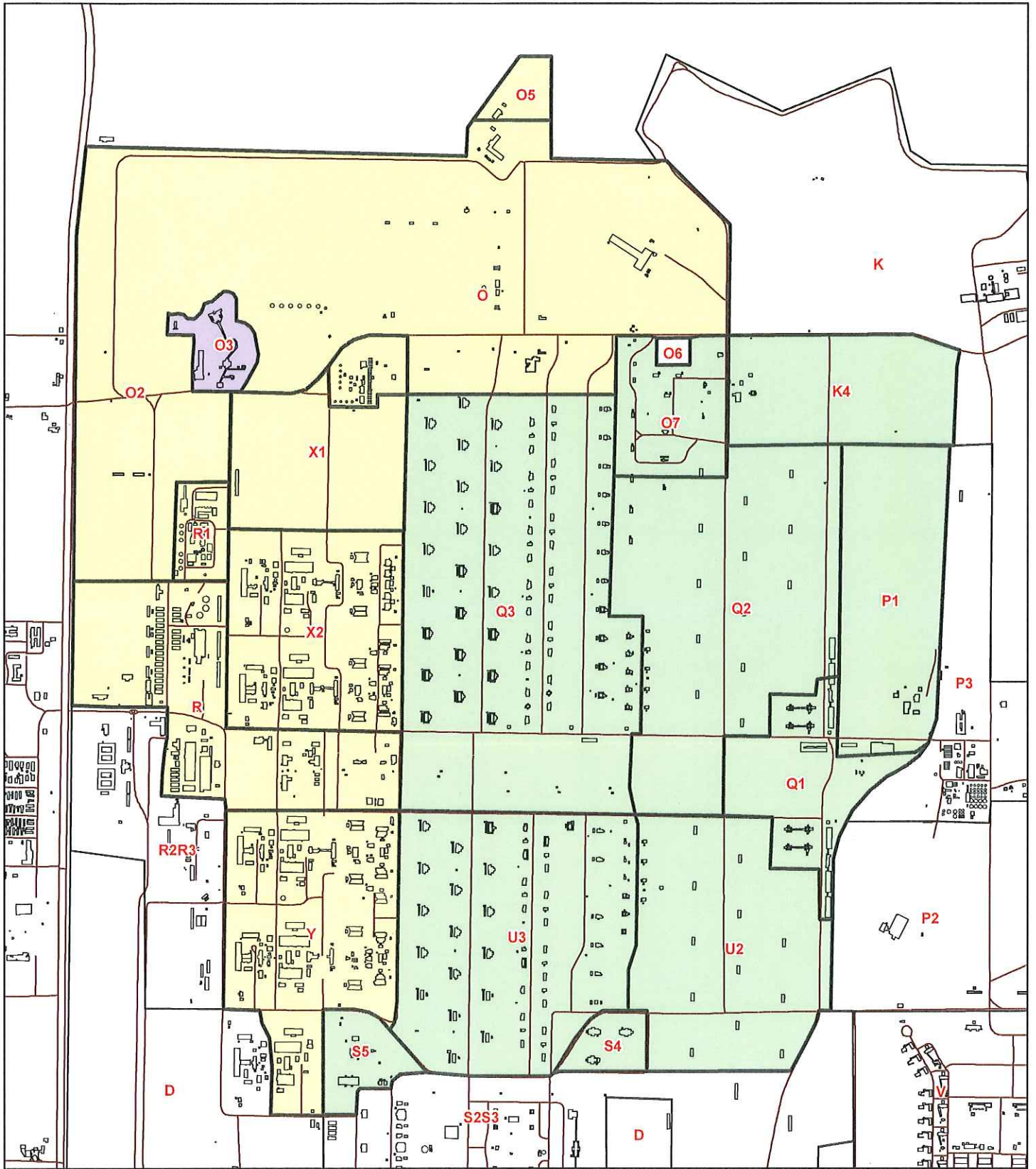


Figure 2

Ho-Chunk Nation Land-use Plan of the Badger Property



0 0.125 0.25 0.5 Miles

Reference map only. Obtain certified survey map for legal purposes.
HCN DNR GIS 051507

Legend	
	Bison Project, Agriculture
	Habitat Restoration
	Research & Development